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Mobility for the People: Evaluating Equity Requirements in Shared Micromobility Programs

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Mobility for the People: Evaluating Equity Requirements in Shared Micromobility Programs

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Hana Creger, The Greenlining Institute



Mobility for the People

Evaluating Equity Requirements in Shared Micromobility Programs

Final Report

NITC-RR-1401

by

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16. Abstract Technology-enabled shared micromobility services have expanded mobility for some travelers, but significant barriers to use limit their uptake among certain groups. To address these barriers, cities and professional transportation organizations have undertaken two distinct efforts to operationalize equity in shared micromobility services: 1) drafted equity frameworks in an attempt to clearly define equity within the transportation context and to provide guidelines for what cities should consider when designing equity-based mobility programs; and 2) some cities have attempted to ameliorate access disparities by establishing new requirements for shared micromobility programs. Both equity frameworks and program requirements mark important steps to operationalizing equity in shared micromobility. Yet our understanding of the scope and breadth of each—and how they actually impact mobility and accessibility of historically underserved travelers—remains limited. To address this gap, we ask and answer four questions: 1) What equity requirements do shared micromobility programs include? 2) What strategies are employed by cities/agencies seeking to operationalize equity in shared micromobility programs? 3) To what extent are programs monitored and evaluated to determine if program requirements translate to more equitable outcomes in practice? and 4) How do current frameworks approach equity in shared micromobility? To answer these questions, we collected information from 239 shared micromobility programs across the U.S., conducted five case studies, and reviewed existing literature and mobility equity frameworks. We find that shared micromobility equity requirements are common but far from universal, and that equity requirements are more common in joint micromobility (e-scooter plus bikeshare) programs than they are in stand-alone bikeshare or e-scooter systems. A tremendous range exists in the types and structures of equity requirements imposed by different cities across seven dimensions of equity requirements: reduced fares, multilingual services, cash payment compatibility, non-smartphone access, adaptive vehicles for users with disabilities, mandated geographic service areas, and targeted marketing and outreach. This research suggests that most cities, regardless of the robustness of their city or program-level goals, could benefit from a logic model exercise to ensure clear connections between program goals, components, and data collection. The most promising practices to advance equity in shared micromobility programs include: 1) linking operational incentives to desired equity outcomes; 2) dedicating staff time and resources to managing shared micromobility programs; 3) ensuring that there is a clear arc connecting <i>specific</i> goals with program requirements; 4) matching each program requirement with targeted data collection to enable an assessment of how successfully each requirement is meeting its goals; and 5) conducting transparent evaluations to measure progress and identify future paths of improvement or iteration.			
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DISCLAIMER

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EXECUTIVE SUMMARY

Driven by advances in technology over the past several years, shared micromobility services such as bikeshare and shared e-scooters have proliferated in the U.S., with programs in nearly every state. While these technology-enabled services have expanded mobility for some travelers, significant barriers to use limit their uptake among certain groups. To begin to address these barriers, cities and professional transportation organizations have undertaken two distinct efforts to operationalize equity in shared micromobility services. First, they have drafted equity frameworks in an attempt to clearly define equity within the transportation context, and to provide guidelines for what cities should consider when designing equity-based mobility programs. Second, some cities have attempted to ameliorate access disparities by establishing new requirements for shared micromobility programs. Requirements range by city and program, but generally fall within seven categories: reduced fares, multilingual services, cash payment compatibility, non-smartphone access, adaptive vehicles for users with disabilities, mandated geographic service areas, and targeted marketing and outreach.

Both equity frameworks and program requirements mark important steps to operationalizing equity in shared micromobility. Yet our understanding of the scope and breadth of each—and how they impact mobility and accessibility for historically underserved travelers—remains limited. Equity frameworks often offer prescriptive directives for those planning and implementing shared micromobility programs, but none yet offer a clear framework for how to evaluate programs once they are in place to determine how well a program is delivering on equity promises. Without a comprehensive understanding of how to evaluate shared micromobility equity in practice, or a clear view of the breadth and types of shared micromobility equity requirements currently imposed—including in program development process, implementation, and evaluation—cities face a murky view of how to deliver equitable access in shared micromobility services.

In this research, we ask and answer four questions: 1) What equity requirements do shared micromobility programs include? 2) What strategies are employed by cities/agencies seeking to operationalize equity in shared micromobility programs? 3) To what extent are programs monitored and evaluated to determine if program requirements translate to more equitable outcomes in practice? and 4) How do current frameworks approach equity in shared micromobility? To answer these questions, **we collected information from 239 shared micromobility programs across the U.S., conducted five case studies, and reviewed existing literature and mobility equity frameworks.**

In addition to answering our key research questions, **we also developed an Equity Evaluation Framework.** The Greenlining Institute’s “Making Equity Real in Mobility Pilots” resource, which is designed to provide guidance for those developing a mobility

pilot, served as the foundation for our Equity Evaluation Framework. Unlike Greenlining's framework, which is intended for cities to use prospectively as they develop a mobility program, our framework is meant to be retrospective for cities to evaluate and understand how a program is currently designed and functioning, and where additional development could more firmly focus and include equity in all stages of the program. The Equity Evaluation Framework is broken into four sections: 1) program structure and context, 2) aligning with community needs, 3) program design, and 4) program evaluation and iteration.

KEY FINDINGS

Equity requirements are common, but far from universal. We found policy documentation in 62% of the 239 programs evaluated in this research. While some programs had just one equity requirement, others had between six and seven equity requirements spanning the observed categories. Other cities/agencies "recommend," "encourage," "prefer," or say equity-based program elements are desired, but do not go so far as to require operators to implement various equity elements.

Equity requirements are more common among e-scooter programs than bikeshare, although joint micromobility programs (e-scooter plus bikeshare) are the programs most likely to have equity requirements. The higher share of micromobility and e-scooter programs with equity requirements compared to bikeshare may be related to their relative newness, and a growing awareness of the need for proactive equity-based policies to ameliorate historic and systemic transportation inequities and exclusion. The median bikeshare system evaluated in this research began in 2016 compared to 2019 for e-scooters and joint micromobility programs.

The most prevalent equity requirements across both bikeshare and scooter programs target implementation equity. Specifically, many cities/agencies include requirements related to technology access, such as requiring smartphone-alternative access (36%), cash payment options (33%), and a reduced fare option (32%). The cities that have these requirements also take a wide variety of approaches to each. Many cities or agencies that require operators to provide reduced fares do not stipulate specific rates or pricing structures. Geographic distribution requirements, required by 30% of programs, vary greatly, likely in part due to divergent local contexts. Less common requirements include offering service in multiple languages (26%) and requiring adaptive vehicles (5%).

Process equity requirements are less common than requirements imposed during implementation. About one-quarter (28%) of programs require micromobility vendors target outreach and marketing efforts at communities and groups historically marginalized and/or underserved by transportation. Like implementation requirements, joint micromobility programs are more likely to impose process equity requirements (41%) compared to either stand-alone bikeshare (25%) or e-scooter (27%) programs.

Cities do not have uniform leverage they can exert over private service providers, which impacts what staff feel they can require. Depending on the size and

attractiveness of the market, some cities may feel that they cannot make the same demands of a service provider that another city might. While conversations with staff suggest that larger cities may be in a better position to make demands of companies than cities in smaller markets by dint of their market power, it is also possible that equity efforts in one city may pave the way for opportunities in another.

Most cities/agencies that enact equity requirements are primarily focused on expanding access to shared micromobility services; fewer measure shared micromobility outcomes. This includes programs highlighted in this research that have both robust equity and data sharing requirements. For instance, reporting on the percentage of time that service providers met their geographic distribution targets is a partial measure of access, not outcomes. Reporting on ridership numbers, such as the number of trips made by low-income pass holders, is a better reflection of outcomes but only a limited number of programs collect and report on such data.

A key challenge to evaluating outcomes is connecting data to evaluation. Most programs (83%) impose data sharing requirements. Far fewer, however, publish public-facing evaluation reports (27%) or incentivize or enforce meeting equity requirements (15%). Cities/agencies can consider two dimensions of outcomes: outcomes across space and outcomes across individuals. Many cities/agencies collect data sufficient to examine outcomes across space (e.g., trips originating in different neighborhoods or to/from targeted equity zones). Many fewer, however, collect data related to users, instead relying on proxy metrics such as trip start and end points as a measure of equity.

We find that equity statements or goals at the city level are not a guarantee for equity requirements in shared micromobility programs. Nor does the absence of city-level equity goals or statements preclude equity requirements in shared micromobility programs. Like previous researchers (Howland et al., 2017), we find that many equity goals and statements remain relatively amorphous and general, creating challenges operationalizing the equity statements into tangible actions.

Most cities, regardless of the robustness of their city or program-level goals, should bolster the connections between stated program goals, required equity components, and collected data. Cities/agencies seeking to expand their equity efforts would benefit from first defining program goals if none yet exist. Staff should also agree on a shared definition of equity to ensure a common foundation from which to base clear and actionable goals. Staff within the same department or agency may define equity differently, so reconciling those differences and establishing a shared definition is paramount. In conducting a policy scan of U.S. micromobility programs, we found that very few places appear to have a clear, public-facing definition of equity.

We find that, by and large, cities/agencies do not conduct mobility needs assessments prior to shared micromobility program launch to determine how a program fits within the broader context of community priorities, or even if it is a priority for a community. To move towards a model of community empowerment,

cities/agencies would need to make significant overhauls in how they plan to include—and act on—community input beyond a single mode or project by dedicating resources to open-ended needs assessments.

Cities and agencies vary greatly in their approach to advancing equity in shared micromobility programs; some of the promising approaches include: 1) link operational incentives to desired equity outcomes; 2) dedicate staff time and resources to manage shared micromobility programs; 3) ensure that there is a clear arc connecting *specific* goals with program requirements; 4) match each program requirement with targeted data collection to enable assessment of how successfully each requirement is meeting its goals; and 5) conduct transparent evaluation to measure progress and identify future paths of improvement or iteration.

Additional research is needed to evaluate the relative effectiveness of the different approaches cities and agencies take to prioritize the requirements that most effectively advance equity. While we originally sought to evaluate the extent to which different equity program requirements translate to desired outcomes, we found that the data needed to evaluate equity requirement efficacy are rarely collected. In this research, we document the prevalence of seven common equity requirements, but we do not assert that these requirements invariably lead to desired outcomes. Ultimately, additional research efforts—supported by data collection—are needed to make such determinations.

Finally, cities must pair program-specific efforts with broader efforts needed to truly advance equity. Even the most accessible shared micromobility programs cannot compensate for missing infrastructure or unsafe streets. In the words of one service provider we spoke with: operators “can bring data to the table” but they “cannot provide the money or political will to make the big infrastructure changes that are needed.”

TRANSLATING RESEARCH INTO PRACTICE

Using project findings, we created two practice-oriented outputs to tangibly apply this research into practice. First, we developed an interactive Shared Micromobility Equity Map detailing shared micromobility equity requirements in 239 U.S. cities, the most comprehensive database of shared micromobility programs to date. The map documents the shared micromobility equity requirements collected in this project from bikeshare, e-scooter share, and joint micromobility programs across the U.S. The interactive map depicts shared micromobility program locations and equity requirements and allows users to both search and filter the database as desired. For example, city staff may be interested in what requirements a peer city has implemented; alternatively, staff may want to know which cities have implemented reduced fare requirements as part of their shared micromobility equity plan.

Second, we created an online Shared Micromobility Equity Evaluation Tool. The Equity Evaluation Framework Tool operationalizes the framework outlined in this report to provide an interactive web-based evaluation tool targeted towards public-sector

agencies or departments that operate, permit, or regulate shared micromobility services. The tool creates a user-friendly interface for agencies or departments to evaluate equity in their current shared micromobility program(s) across elements included within the Equity Evaluation Framework Tool. Similar to the framework, the Tool emphasizes how equity should be incorporated throughout shared micromobility program design process, implementation, and evaluation.

1.0 INTRODUCTION AND BACKGROUND

Long-standing inequities in transportation access have not ended with the new suite of technology-enabled modes operating on city streets and sidewalks. Research repeatedly finds, for example, inequitable access to bikeshare systems with respect to race and income (Dill et al., 2015; S. Shaheen et al., 2017). Recognizing existing inequities, cities and professional transportation organizations have undertaken two distinct efforts to operationalize equity in shared micromobility services. First, they have drafted equity frameworks in an attempt to clearly define equity within the transportation context and to provide guidelines for what cities should consider when designing equity-based mobility programs. Second, some cities have attempted to ameliorate access disparities by establishing new requirements for shared micromobility programs (including stand-alone bikeshare and electric scooter share (e-scooters) and joint micromobility). Requirements range by city and program, but generally fall within seven categories: reduced fares, multilingual services, cash payment compatibility, non-smartphone access, adaptive vehicles for users with disabilities, mandated geographic service areas, and targeted marketing and outreach programs.

Both equity frameworks and program requirements mark important steps to operationalize equity in shared micromobility. Yet our understanding of the scope and breadth of each—and how they impact mobility and accessibility of historically underserved travelers—remains limited. Equity frameworks often offer prescriptive directives for those planning and implementing shared micromobility programs, but none yet offer a clear framework for how to evaluate programs once they are in place to determine how well a program is delivering on equity promises. In addition, while equity requirements have proliferated around the country, no clear understanding exists about either their prevalence or specific components. The few databases that record information about shared micromobility systems (for example, the Bureau of Transportation Statistics (BTS) (2022) maintains a database about bikeshare and e-scooter systems, and the New Urban Mobility Alliance (NUMO) (*n.d.*) maintains a visual database of bikeshare, e-scooters, and moped share systems across the U.S.), do not include information about equity requirements.

Without a comprehensive understanding of how to evaluate shared micromobility equity in practice, or a clear view of the breadth and types of shared micromobility equity requirements currently imposed—including in program development process, implementation, and evaluation—cities face a murky view of how to deliver equitable access in shared micromobility services. To address this gap, we ask and answer four questions: 1) What equity requirements do shared micromobility programs include? 2) What strategies are employed by cities/agencies seeking to operationalize equity in shared micromobility programs? 3) To what extent are programs monitored and evaluated to determine if program requirements translate to more equitable outcomes in practice? and 4) How do current frameworks approach equity in shared micromobility? To answer these questions, we collected information from 239 shared micromobility

programs across the U.S., conducted five case studies, and reviewed existing literature and mobility equity frameworks.

In this report, we focus specifically on stand-alone bikeshare, e-scooter share, and joint micromobility (bikeshare and e-scooter) programs, as cities have the greatest leverage to impose requirements compared to other forms of shared mobility like carshare and ride-hailing. Carshare, for example, often operates out of private garages not subject to city permitting or data sharing requirements. Ride-hailing regulation is frequently preempted at the state or county level. To date, only New York City regulates the number of ride-hail vehicles, and only New York City and Chicago require data reporting as a precondition to ride-hail operation.

Following this introduction, we divide this paper into six sections. First, we review literature related to equitable access to shared micromobility services, including how existing equity frameworks approach the issue. Second, we present the data and methods employed in this research. We then present a new Equity Evaluation Framework designed to aid cities with understanding how their current program is delivering equity and identifying areas for growth. Fourth, we discuss the equity requirements present across U.S. bikeshare and e-scooter programs. Next, we examine equity requirements in five case study cities. Finally, we conclude with a discussion of implications for transportation policy and planning.

2.0 LITERATURE REVIEW

2.1 HISTORY OF SHARED MICROMOBILITY IN THE U.S.

The earliest shared micromobility programs in the U.S. began in the 1990s with the introduction of bikeshare systems first in Portland, OR, followed by Minneapolis/St. Paul, MN (S. A. Shaheen et al., 2010). Many of these initial bikeshare programs were free to use and riders could pick up or drop off bikes anywhere, in a precursor to what is now described as “dockless bikeshare.” Shaheen et al. (2013) refer to these early programs as “first generation bikeshare,” tracing the evolution of bikeshare to the more recent demand-responsive systems enabled by technology. Bikeshare users today can locate and unlock bicycles using a smartphone application, and service providers balance and redistribute bicycles as needed to meet demand using real-time data.

Bikeshare programs experienced significant growth in the mid-2010s, increasing from 65 docked programs in 2015 to 112 just two years later (Bureau of Transportation Statistics, 2022). In 2017, new systems were added to the micromobility mix, including the introduction of 51 dockless systems, as well as the first deployment of shared e-scooters in Santa Monica, CA (Bureau of Transportation Statistics, 2022; Hall, 2017). Shared e-scooter programs proliferated quickly in the first two years: the Bureau of Transportation Statistics recorded 149 e-scooter systems in 2018, increasing to 252 in 2019.

The rapid expansion of e-scooter programs was facilitated by an influx of venture capital to several micromobility start-ups, some of which deployed their devices in cities before securing operating permits (Westervelt & Zipper, 2020). As a result, some cities, such as San Francisco and Santa Monica, issued temporary bans on the devices while they developed a formal permitting process (Marshall, 2018). In contrast to e-scooter programs, which are almost exclusively vendor-owned, bikeshare programs—particularly docked ones—have been supported by a variety of different business models over the years. In their 2012 study of 19 bikeshare programs in the U.S. and Canada, Shaheen et al. (2013) found that 58% were nonprofit systems, 21% were privately owned and operated, 16% were publicly owned and contractor operated, and 5% were publicly owned and operated.

Despite a bumpy rollout of e-scooters in some markets, shared micromobility ridership surged in 2019—in large part due to scooters—with 136 million trips made on shared bikes, electric bikes (e-bikes), and e-scooters, a 60% increase from 2018 (NACTO, 2020). The market experienced significant turbulence in 2020 as a result of the COVID-19 pandemic, with ridership dropping substantially when stay-at-home orders were first issued (Bureau of Transportation Statistics, 2021). Some micromobility programs were suspended, and others closed entirely. While 2020 proved to be a particularly volatile year in the micromobility market, ridership began to recover in 2021 and many suspended programs resumed operations (Bureau of Transportation Statistics, 2021;

Tong, 2020). The Bureau of Transportation Statistics (2022) registered 248 e-scooter, 69 docked bikeshare, and 36 dockless bikeshare systems in the U.S. in 2021.

2.2 BARRIERS TO ACCESS AND USE OF SHARED MICROMOBILITY PROGRAMS

In the years since the first U.S. bikeshare programs launched, researchers have sought to understand how the benefits of these programs are distributed and who is most likely to use them. Surveys of shared micromobility users repeatedly reveal that travelers are disproportionately higher-income and white compared to the general public (City of Minneapolis, 2018; City of Santa Monica, 2019a; Portland Bureau of Transportation, 2018; San Francisco Municipal Transportation Agency, 2019). These findings are not coincidental—structural barriers have historically limited access for some groups, inhibiting their ability to use and benefit from these systems (Dill et al., 2015; S. Shaheen et al., 2017).

One of the mostly commonly studied barriers is the spatial distribution of docking stations and/or devices (Aman et al., 2021; Bhuyan et al., 2019; Chen et al., 2019; Hosford & Winters, 2018; Meng & Brown, 2021; Mooney et al., 2019). Researchers have repeatedly found that service geographies, which are often concentrated in downtown areas, limit access for certain groups based on sociodemographic characteristics. In a study of bikeshare systems, Aultman-Hall and Ursaki (2015) found disproportionately lower Black population shares within bikeshare service geographies in six out of seven cities, with Chicago, New York, and Boston being particularly unbalanced. Researchers examining Coast Bike Share in Tampa found that bikeshare accessibility was very unevenly distributed, with higher rates of accessibility for people who identified as white, Asian, or non-Hispanic (Chen et al., 2019). Aman et al. (2021) conducted a spatial analysis of bikes and scooters in Austin and found that both were disproportionately more accessible in the central city, and that approximately 80% of the population had effectively zero access to scooters.

Barriers to use extend far beyond the spatial distribution of devices, of course. To better understand barriers to bikeshare use, McNeil et al. (2017) surveyed residents of traditionally underserved neighborhoods. They found that people of color and lower-income residents cited more barriers to the adoption of bikeshare—and bicycling generally—than higher-income white residents. Commonly cited barriers included the costs of membership, concerns about liability, and lack of knowledge about the systems. Additional barriers include the quality of existing infrastructure, as well as income and income-related factors, such as access to a debit/credit card, a smartphone, and a data plan (McNeil et al., 2017).

2.3 EQUITY FRAMEWORKS AND MOBILITY PLANNING

As this field of research has developed and the array of barriers to micromobility have become better understood, some researchers have devised frameworks to categorize the different dimensions of exclusion that can suppress adoption and use. Frameworks

adopt varied approaches, indicative of the complexity of evaluating equity in transportation more broadly and micromobility specifically. Despite their unique approaches, all three frameworks center equity in the development of mobility programs. Lee et al. (2017), for example, differentiate between spatial, social, and procedural barriers. Shaheen et al. (2017) developed the STEPS framework, differentiating between spatial, temporal, economic, physiological, and social barriers to use.

Table 2.1 STEPS framework (Shaheen et al., 2017)

Barrier	Definition
Spatial	Spatial factors that compromise daily travel needs (e.g., excessively long distances between destinations, lack of public transit within walking distance)
Temporal	Travel time barriers that inhibit a user from completing time-sensitive trips, such as arriving to work (e.g., public transit reliability issues, limited operating hours, traffic congestion)
Economic	Direct costs (e.g., fares, tolls, vehicle ownership costs) and indirect costs (e.g., smartphone, internet, credit card access) that create economic hardship or preclude users from completing basic travel
Physiological	Physical and cognitive limitations that make using standard transportation modes difficult or impossible (e.g., infants, older adults, and disabled)
Social	Social, cultural, safety, and language barriers that inhibit a user's comfort with using transportation (e.g., neighborhood crime, poorly targeted marketing, lack of multilanguage information)

Source: Adapted from Shaheen et al. (2017)

While frameworks such as these help to define the different dimensions of equity in the context of mobility planning, equity-focused nonprofits have devised frameworks that are designed to provide more explicit decision-making guidance for practitioners. In June 2017, the nonprofit and transportation advocacy organization TransForm published “A Framework for Equity in New Mobility” outlining key questions cities and governing bodies should ask in order to evaluate potential equity impacts. These questions are organized under four priority areas: 1) Increased Access to Opportunity; 2) Affordable Options; 3) More Healthy and Safe Communities; and 4) Reduced Income Inequality and Underemployment (Cohen & Cabansagan, 2017a).

The Greenlining Institute's 2018 “Mobility Equity Framework” is organized around similar outcomes: Increase Access to Mobility, Reduce Air Pollution, and Enhance Economic Opportunity. Unlike TransForm's framework, it offers a step-by-step process to achieve those outcomes rather than questions for reflection. The first step is to “identify the mobility needs of a specific low-income community of color,” by conducting a community mobility needs assessment (Creger et al., 2018, p. 4). The second step is to conduct a “mobility equity analysis to prioritize transportation modes that best meet those needs while maximizing benefits and minimizing burdens” (Creger et al., 2018, p. 4). To aid in this step, Greenlining includes a variety of different equity indicators that

pertain to the three primary outcomes. As a final step, they advocate for placing “decision-making power in the hands of the local community” in order to truly center equity in the process (Creger et al., 2018, p. 4).

Creger et al. are not alone in suggesting that a community mobility needs assessment should be the first step in any mobility planning process focused on equity. A report published by the California Air Resources Board (2018) on transportation barriers faced by low-income people recommends that needs assessments be prioritized as a first step to expand access for marginalized, underserved, and/or underrepresented groups. They note that agencies like the California Department of Transportation (Caltrans) should partner with community-based organizations on these efforts in order to “leverage community knowledge and established trust” (California Air Resources Board, 2018). Nonprofit and community-based organizations have also conducted mobility needs assessments in recent years at a variety of different scales. For example, TransForm, Verde, and the King County Mobility Coalition have conducted needs assessments at site, neighborhood, and regional scales in the San Francisco Bay Area, Portland, OR, and Seattle, WA, respectively (Giampetro, 2021; Iraheta Gonzalez et al., 2018; Massey et al., 2020). Mobility assessments such as these elucidate findings that enable cities and agencies to better tailor services to meet the needs of residents. For instance, the TransForm and Verde assessments found that many residents did not have a driver’s license (25-50% and 55%, respectively). This suggests that services that require a driver’s license to sign up—as some services do—would create a barrier to adoption. With this information in hand, cities or agencies drafting micromobility permitting requirements or service contracts could include a clause that operators make their services available to those without a driver’s license. These assessments also revealed key findings about the level of awareness that residents had about different mobility options, their level of interest in them, and the barriers and/or concerns they had about them—information that is critical for mobility providers to understand.

2.4 EQUITY PROGRAMMING FOR SHARED MICROMOBILITY SERVICES

To address barriers to micromobility use, many cities have started building equity requirements into e-scooter and bikeshare operating agreements or permit systems, drawing upon the aforementioned body of equitable mobility frameworks that have been created in recent years (Cohen & Cabansagan, 2017b; Creger et al., 2018; Kodransky & Lewenstein, 2014; Young et al., 2019). Examples of imposed equity requirements include: reduced fare plans, multilingual accessibility, ability to process cash payments, non-smartphone access, adaptive vehicles for users with disabilities, geographic coverage requirements, targeted outreach and marketing, and co-locating vehicles at affordable housing developments and community centers, among others (Shared Use Mobility Center, 2019). These requirements align with the different dimensions of exclusion identified by researchers (Lee et al., 2017; S. Shaheen et al., 2017).

To better understand the breadth of equity programs and identify the most promising practices, researchers have conducted national policy scans and surveys of shared micromobility programs. Howland et al. (2017) and McNeil et al. (2019) surveyed 56 and 70 bikeshare systems in 2016 and 2019, respectively. Riggs and Kawashima (2020) conducted a policy scan of e-scooter programs in April 2019. As of 2016, about one-quarter of bikeshare programs had written equity policies in place, with larger systems (500+ bikes) much more likely to have written policies (Howland et al., 2017). Written policies and statements, however, often lacked specificity or cited measurable outcomes. In some cases, no mechanisms existed to either collect data or evaluate equity in any systematic way (Howland et al., 2017; Riggs & Kawashima, 2020). McNeil et al. (2019) and Riggs and Kawashima (2020) find comparable rates of equity programs by 2019, with 58% to 60% of e-scooter and bikeshare programs incorporating equity policies, respectively.

Researchers also report varied levels of prevalence across equity requirement types. Howland et al. (2017) found that equity considerations tended to play the largest role in station siting, fee structure, and payment systems. McNeil et al. (2019) found that the most common equity goal among surveyed systems related to affordability, followed by providing access to specific groups, such as people with disabilities. And Riggs and Kawashima (2020) found that programs typically included low-income payment plans, distribution requirements, and geographic caps on the number of scooters allowed. The research did not, however, provide a more detailed catalogue of the prevalence and types of requirements.

Janssen et al. (2020) compared e-scooter policies in 10 U.S. cities across 12 policy dimensions, including fleet size caps, parking regulations, data sharing requirements, and equity, among others. Based on their analysis, they find that equity regulations tend to fall into one of three primary buckets: distribution, marketing, and accessibility. (They include cash payments, smartphone alternatives, and adaptive vehicles under their definition of accessibility.) Of the 10 cities examined, only one did not impose any equity requirements, while the remaining nine had some combination of required and/or recommended equity components.

Another study conducted by Johnston et al. (2020) examines the ways that cities are attempting to address e-scooter equity with a focus on five U.S. cities: Atlanta, GA; Austin, TX; Charlotte, NC; Los Angeles, CA; and Portland, OR. They focus on four equity dimensions in their analysis: distribution requirements, affordability and discounted pricing plans, alternative methods of activation, and community engagement. Similar to Janssen et al. (2020) and Riggs & Kawashima (2020) (Janssen et al., 2020; Riggs & Kawashima, 2020), they find a patchwork of different equity requirements that vary by city. Distribution requirements appear most often, while community engagement requirements appear the least.

These policy scans provide important insight into the prevalence and breadth of shared micromobility equity requirements. However, they tend to be modally siloed, with bikeshare and scooter share programs evaluated separately. We complement and build

upon these efforts by conducting a comprehensive national policy scan of stand-alone bikeshare and scooter share programs and joint micromobility programs, cataloging the prevalence of equity requirements across seven dimensions. We ask and answer four key questions in this research: 1) What equity requirements do shared micromobility programs include? 2) What strategies are employed by cities/agencies seeking to operationalize equity in shared micromobility programs? 3) To what extent are programs monitored and evaluated to determine if program requirements translate to more equitable outcomes in practice? and 4) How do current frameworks approach equity in shared micromobility? While existing mobility frameworks and best practice documents provide guidance to jurisdictions as they create and design micromobility programs, no such frameworks exist to aid jurisdictions in evaluating programs. In this work, we present an equity evaluation framework specifically designed for shared micromobility.

3.0 METHODOLOGY

We used three methods to answer our research questions: first, we used literature in combination with input from our Technical Advisory Committee (TAC) to create an Equity Evaluation Framework; second, we gathered equity requirements for shared micromobility programs across the U.S.; and finally, we conducted five case studies of micromobility programs to understand the nuance and process behind developing equity requirements for shared micromobility programs. We discuss each of these methods in depth below.

3.1 CREATING AN EQUITY EVALUATION FRAMEWORK

To develop an Equity Evaluation Framework, we first reviewed existing resources designed to guide agencies as they scope and develop mobility pilots and programs. Two leading equity-focused nonprofits, the Greenlining Institute and TransForm, have both produced this type of guidance (the “Mobility Equity Framework” and “A Framework for Equity in New Mobility,” respectively). As a companion piece to their equity framework, The Greenlining Institute also published the “Making Equity Real in Mobility Pilots” resource, which is a step-by-step guide designed to help agencies consider how equity can be centered in the process of scoping and developing a pilot. They emphasize the importance of embedding equity into every element of a pilot, from goal setting and community engagement to implementation and evaluation.

The idea that equity must be firmly focused and included in all stages of the process is gaining increased traction among agencies and practitioners. For example, the Seattle Department of Transportation published the Transportation Equity Framework Implementation Plan (Seattle Department of Transportation, 2022), which centers equity—and specifically community engagement, decision-making, transparency, and accountability—in all elements of their work. Their interactive online plan outlines concrete strategies (e.g., wayfinding, long-term funding, barriers to transit) and over 200 tactics (e.g., analysis and assessment, program, outreach and engagement) alongside implementation start dates. The agency organizes strategies and tactics across 10 values (e.g., safety, transit access, transportation justice), and provides clear and succinct equity statements for each sphere of transportation work.

Our goal with the Equity Evaluation Framework was to develop a tool that could be used retrospectively by agencies rather than prospectively with questions about if/how equity was considered and imbued throughout the pilot design, implementation, and evaluation process. We opted to use Greenlining’s “Making Equity Real in Mobility Pilots” guide, which outlines four key elements, as the basis for our own tool:

1. **Embed Equity in the Mission, Vision, and Values.** Explicitly state a commitment to equity in your pilot project. This goes beyond just equitable access to mobility, but also must aim to address other interconnected injustices

that low-income people of color face, such as health disparities, a lack of economic opportunities, and community power and engagement.

- 2. Build Equity into the Process.** Create partnerships with low-income people of color and other marginalized communities in the development and deployment of the pilot project. (This includes conducting a Mobility Needs Assessment and a Mobility Equity Analysis, as well as centering Community Decision-Making.)
- 3. Implementation: Ensure Equity Outcomes.** The implementation of the pilot project must lead to equity outcomes.
- 4. Measure and Analyze for Equity.** To keep improving outcomes, regularly evaluate the equity successes and the equity problems of pilots.

Using these four key steps as a scaffold, we developed a set of questions for each step, as well as a conceptual framework to show how users (e.g., city, agency, or departmental staff) would move through the sections depending on their answers. The final tool, discussed in subsequent sections, includes four evaluative steps: 1) program structure and context; 2) aligning with community needs; 3) program design; and 4) program evaluation and iterations.

The Equity Evaluation Framework was developed in conjunction with input from our TAC. We completed a first draft of our Equity Evaluation Framework in February 2020 and shared it with the TAC. Based on TAC member feedback, we substantially updated the framework, including revising and reordering questions. During the revision, we migrated the static framework in Microsoft Word to the online survey platform Qualtrics. Qualtrics enabled us to add survey logic to guide users through the evaluation process. Once we had refined the framework in Qualtrics, we invited the TAC to provide a second round of feedback in August 2021 before finalizing it.

3.1.1 Goal, Data, and Evaluation Metric Crosswalk

Because the Equity Evaluation Framework aims to enable cities to clearly identify connections between goals, program components, and data, we developed a “crosswalk” to connect the three. The crosswalk shows how equity goals can be operationalized through program requirements. For example, if a city wants to increase mobility for low-income people, the city should require operators to reduce fares to ameliorate access barriers for this target population. The absence of such program requirements represents a disconnect between a city or program’s stated goals and its ability to realize them.

The crosswalk focuses on three types of equity goals, central to the Equity Evaluation Framework:

- 1. User-based goals** (e.g., increase access for Black, Indigenous, and People of Color (BIPOC) communities, youth, older adults, people with disabilities, immigrants and refugees, etc.)
- 2. Outcome-based goals** (e.g., increase access to jobs, health care, grocery stores, etc.)
- 3. Environment-based goals** (e.g., improve air quality)

The Greenling Institute’s “Mobility Equity Framework” provided a starting point for these goals, with further refinement after input from our TAC. We then drafted a list of potential program components that would link to the three identified equity goals. Finally, we reviewed a variety of academic and public-sector sources (City of Santa Monica, 2019b; Krapp, 2020; Litman, 2020; Portland Bureau of Transportation, 2020; Twaddell & Zgoda, 2020) to develop a list of metrics to measure equity based on project goals.

It is worth noting that these crosswalks do not represent the full universe of micromobility program components and metrics that could reflect the three goals we identified. For instance, a city could potentially require a company to report on how their vehicle’s component materials are made, prioritizing companies that source from suppliers with strong environmental and/or labor protections. As noted previously, equity is a complex topic with many dimensions, so putting bounds around the framework was necessary. We also wanted to avoid overwhelming city staff—our core audience—with an infinite list of questions. We therefore focused the Framework on program components and metrics that are within city and agency staffs’ areas of influence.

Finally, we note that previous frameworks have been used for program evaluation. For example, in a Mobility On Demand Sandbox Demonstration Project evaluation, USDOT (2018) produced a table connecting project goal, evaluation hypotheses, performance metrics, data types, and sources for the Chicago Transit Authority Sandbox Project. The crosswalk produced in this research is aimed to be broadly applicable to a range of micromobility programs rather than reflective of a single program. Additionally, these crosswalks aim to highlight both the range of data and metrics needed to evaluate different programmatic goals, as well as how a single collected data point or evaluation metric can be used to elucidate understanding across multiple program goals. The guidelines produced here can easily be tailored to specific program or city contexts and used to divine case-specific hypotheses and metrics.

3.2 SHARED MICROMOBILITY EQUITY REQUIREMENT POLICY SCAN

Between September 2020 and May 2022, the research team created a shared micromobility equity requirement database using a combination of online internet searches for publicly available policy documents including program websites, permit applications, municipal codes, rulemaking documents, requests for proposals (RFPs), and requests for information. For cities without publicly posted information, we contacted city staff via email and phone. In sum we collected system-level data for 239 scooter share, bikeshare, and joint micromobility programs across 41 U.S. states plus Washington, DC. Given our focus on requirements enacted by cities, we excluded any programs operated by universities rather than by cities or public agencies. We note that not all identified programs were active as of Spring 2022, and some either temporarily or permanently shuttered during the COVID-19 pandemic. We recorded details about program structure that relate to equity requirements or operations, including level of

regulation, operating structure, and qualitative information on equity goals or statements, as applicable. We also collected data specific to equity requirements, gathering program components across three dimensions shown in Figure 3.1: process, implementation, and evaluation.

Importantly, we did not record equity components that were not required by the city. For example, if a provider has a blanket service offering, such as a reduced fare option, (e.g., Lime Access) but is not specifically required by the city, it is not recorded in the database. Similarly, we did not count elements suggested or mentioned by a city that were not outright required; for example, Cleveland, OH's scooter share permit states "vendors with the following characteristics are most likely to be competitive applicants...A willingness and ability to operate multiple device types" (City of Cleveland, 2021, p. 6). Statements including "must" and "shall" were counted as a firm requirement. We also categorized language as a requirement if a program specified that vendors or applicants "should" provide particular elements based on conversations with city staff and comparison of intra- and inter-program language. For example, the Shared Rideables program (Sacramento, CA) permit application states "The operators should strive to provide a cash payment option for customers." We coded this as the program requires operators to provide cash payments.

While most program components closely mirror city requirements, the database should be considered a point estimate for the number of equity *requirements*; as such, it is a minimum estimate of the number of equity *components* actually in practice. For example, a city may only require an operator provide reduced fares, but the operator also offers methods for users to access vehicles without a smartphone or bank account as part of its general service offerings. We also did not include either student or senior passes in measures of social equity. While both groups are commonly targeted for fare discounts in other transportation contexts (e.g., transit, reduced carshare memberships) (Saphores et al., 2020), we opted to focus on broader dimensions of social exclusion such as reduced fares that encompass financial barriers commonly faced by members of both these population groups.

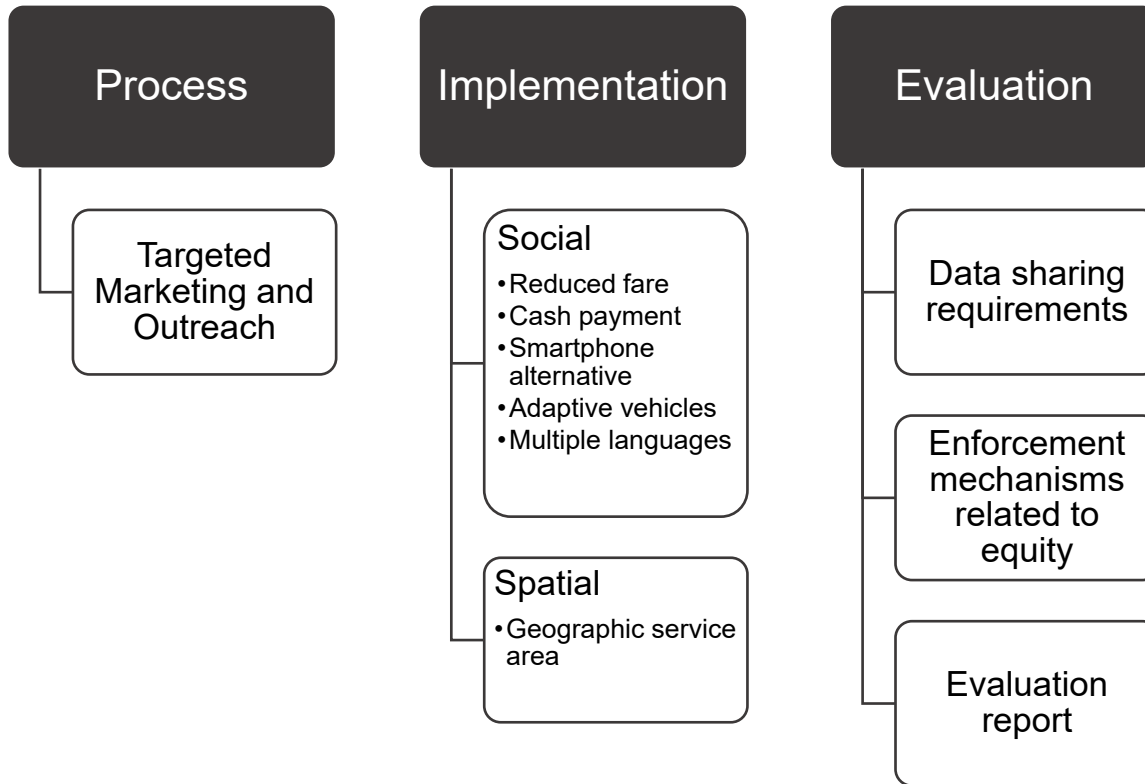


Figure 3.1 Equity program requirements across three dimensions

Alt Text: Equity program requirements across three dimensions. First, process equity incorporates targeted market and outreach. Implementation equity includes both 1) spatial equity of geographic service areas, and 2), social equity related to reduced fares, cash payment, smartphone alternatives, adaptive vehicles, and multiple languages. Finally, evaluation considers the post-implementation elements needed to understand the effect of imposed process and implementation requirements: data sharing, evaluation reports, and enforcement mechanisms related to equity.

Programs typically operate under four distinct structures. First, permit-based systems direct mobility companies to apply for permits to operate which are approved or rejected by the permitting entity, such as the city or county. Permit applications often require operators to explicitly spell out how they intend to meet the requirements enumerated by the permitting agency. The permitting process is typically a competitive process (e.g., San Francisco E-scooter Program). Second, licenses operate similarly to permits; under license agreements, operators must apply for a license to operate, but so long as the operator meets the minimum requirements, they usually will be granted a license (e.g., East Lansing E-scooter Ordinance). Third, under service contracts, a city/agency issues a contract to a specific vendor or vendors, often through a competitive process which grants the vendor(s) exclusivity (e.g., Denver Dockless Mobility). Finally, operating agreements are similar wherein multiple parties agree to abide by a set of terms and conditions and may or may not grant exclusivity to a vendor (e.g., Burlington Shared Micromobility Program).

Using collected bikeshare, scooter, and joint micromobility policies, we first qualitatively assessed program equity goals or statements. We then analyzed trends observed across cities' equity requirements, offering examples from cities across the U.S. to illustrate the various forms shared micromobility equity requirements take.

3.3 CASE STUDIES

To gain a deeper understanding of both how cities formulate equity requirements in shared micromobility and experience them in practice, we selected five case study cities. We had six primary goals for each case study, including to:

1. Identify the level of alignment between stated goals, requirements, and data collected, and evaluate what these programs are doing well and where there is room for growth;
2. Understand if and how the shared micromobility program equity requirements specifically fit with broader equity efforts in the city and/or mobility needs assessments;
3. Catalog community engagement and outreach efforts around shared micromobility programs, including the types of community engagement events, frequency and duration, and actors and venues involved;
4. Document how individual equity requirements were identified, the motivation for different requirements and their unique structures, and who played a role in shaping the decision-making process;
5. Understand how equity requirements are used when assessing permit/license applications, and how/who determines the relative role of equity in the selection process versus other program dimensions like safety or labor; and
6. Determine how data requirements and performance metrics were developed.

We selected five case studies. Case study selection criteria included geographical context and city size; we aimed to consider a range of cities across both dimensions. We also only included cities that had some—and often many—equity requirements in place; we did not conduct case studies in cities where no equity requirements existed. Finally, we aimed to document both bikeshare and e-scooter programs through the case study research. The five case study cities in this project include: Baltimore, MD; Charleston, SC; Chicago, IL; Denver, CO; and Washington, D.C.

For each case study city—with the exception of Chicago—we interviewed city staff in charge of the shared micromobility program. No City of Chicago staff were available for interviews within the project timeframe. We opted to retain Chicago as a case study city nonetheless due to its unique program structure, robust equity requirements, and depth of program information available online. For the remaining cities, we conducted interviews over Zoom and used our Equity Evaluation Framework as an interview guide. Each interview lasted about 45 minutes.

3.4 LIMITATIONS

Micromobility is a dynamic mode that changes due to market volatility and program iteration as cities learn from short-term pilots and adjust programs based on prior experience. The data reported in this paper reflect a snapshot in time. The sample is also limited by data accessibility, including availability of needed data online or via staff communication. The sample, therefore, is also biased towards systems with available data, which may bias results. In sum, we excluded from our analysis 24 programs for which we were unable to verify data. Excluded programs were not statistically different from included programs in terms of either being active programs or city population. They were, however, disproportionately bikeshare programs (67% compared to 41% of included programs).

4.0 EQUITY EVALUATION FRAMEWORK TOOL

Figure 4.1 shows the Equity Evaluation Framework Tool designed to guide users through a series of questions about an existing shared micromobility program or policy. Appendix A includes the full list of questions in the tool, as well as skip logic employed. The evaluation tool is available online and is designed to provide users with a baseline for determining how well a mobility program centers and embeds equity from start to finish. It is also designed to help illustrate the need for alignment between goals, program components, and data requirements, as well as the importance of community engagement throughout the process. Some questions ask for a simple “yes” or “no” response, while others require reflection. In the following sections, we outline the primary questions posed by the tool and themes highlighted by each segment.

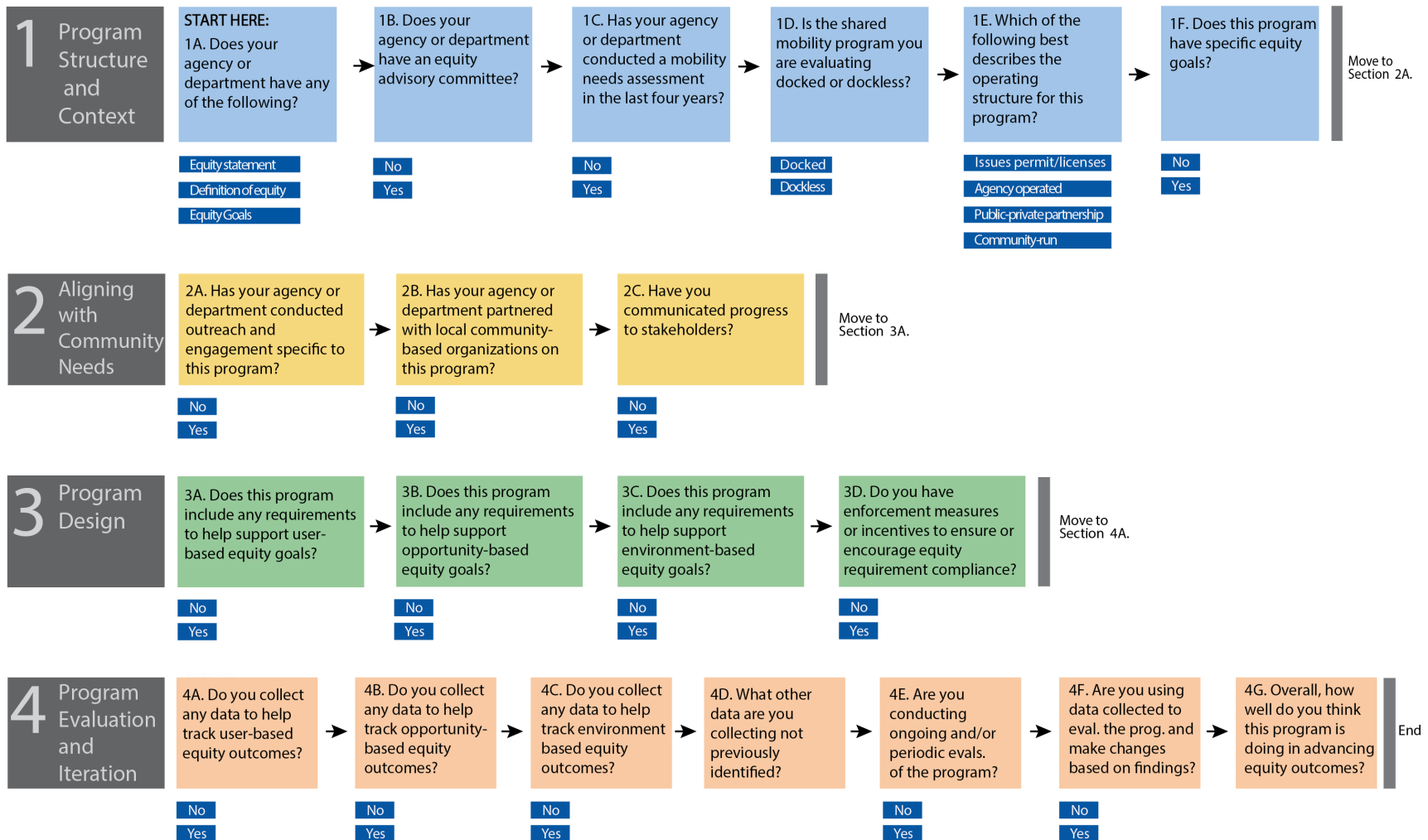


Figure 4.1. Equity evaluation framework tool overview

Alt text: The Equity Evaluation Framework Tool outlines four primary steps: 1) program structure and context; 2) aligning with community needs; 3) program design; and 4) program evaluation and iterations. Each step includes a series of questions to guide an agency or entity through an equity evaluation. Each step is discussed in greater detail in the following sections

4.1 STEP ONE: PROGRAM STRUCTURE AND CONTEXT

The first step of the Equity Evaluation Framework Tool gathers context, both about the responding agency and the shared micromobility program being evaluated. Figure 4.2 emphasizes that the evaluated program is but one element within a broader ecosystem of potential equity efforts that can occur at both the city and programmatic level. The responding agency or department must first consider the broader equity efforts that surround the shared micromobility program, such as city- or agency-wide equity statements, goals, or definitions. The agency or department also reports on the presence/absence of an equity advisory committee and if they have conducted a mobility needs assessment within the past four years. Step one concludes with inquiring about the program type (docked or dockless), structure (permitted, licenses, agency-operated, public-private partnership, or community-run), and if/what equity goals are specific to the program.

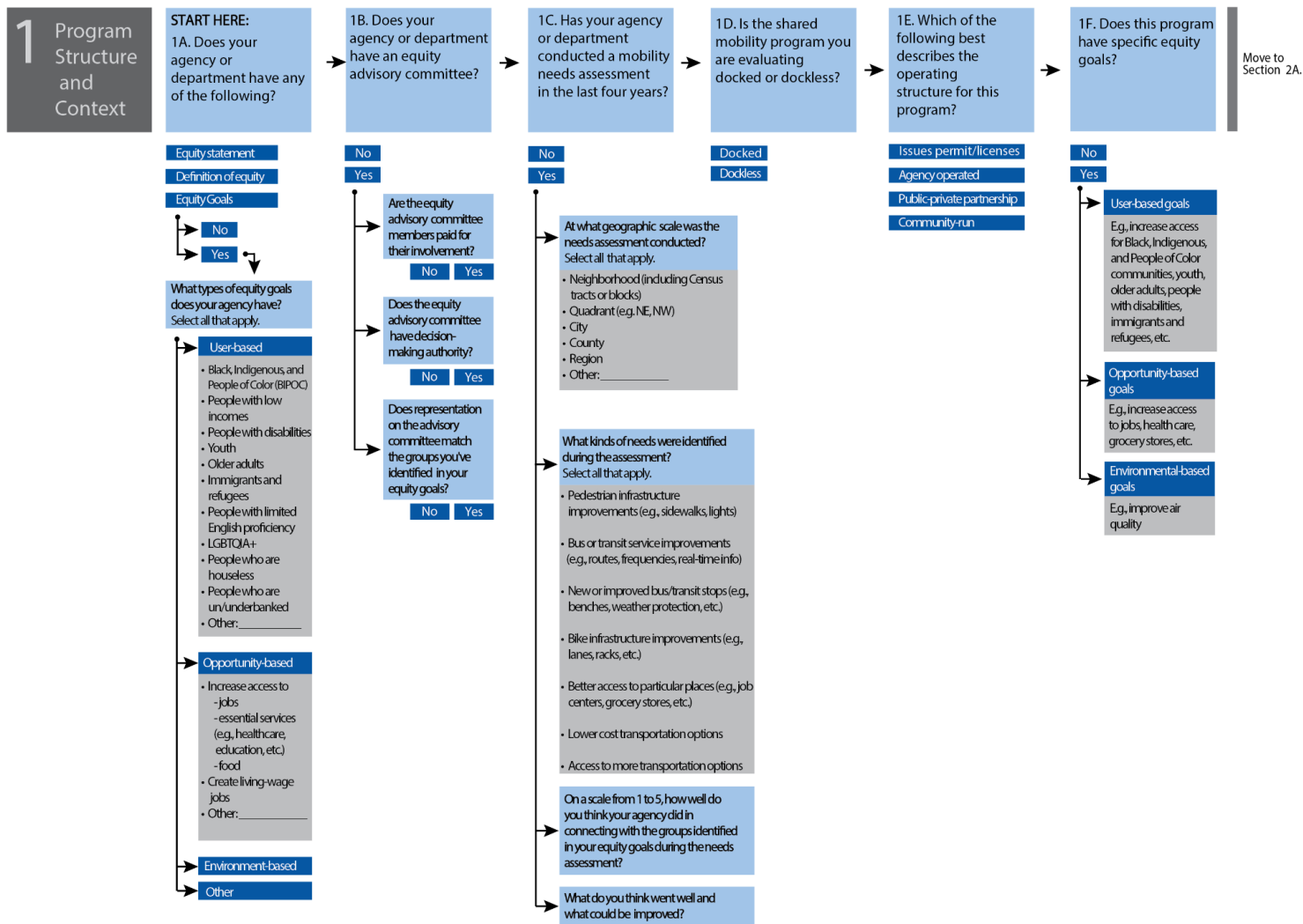


Figure 4.2. Program structure and context

Alt text: Step one in the Equity Evaluation Framework Tool is Program Structure and Context. Step one requires a department or agency to ask: 1) Does your agency or department have an a) equity statement, b) equity goals, c) definition of equity?; If yes, what types of equity goals does your agency have (user-based, opportunity-based, environmental-based, other)?; 2) Does your department have an equity advisory committee? If yes, are members paid, have decision-making authority, and include groups identified in equity goals?; 3) Has your department or agency conducted a mobility needs assessment in the last four years? If yes, at what geographic scale, what barriers were identified, how well were groups identified in the goal-making process identified, what went well and what could be improved?; 4) Is the shared micromobility program docked or dockless?; 5) Which best describes the operating structure for this program?; and 6) Does this program have specific equity goals? If yes, what user-based, environmental, and opportunity-based goals exist?

4.2 STEP TWO: ALIGNING WITH COMMUNITY NEEDS

To build strong relationships, outreach and engagement should be embedded *throughout* the process and not just one discreet step along the way (see Figure 4.3). Step two focuses on opportunities for engagement before, during, and after a program, policy, or pilot has been implemented. The step requires agencies to report on the types of outreach and engagement activities they have completed throughout the process, and to reflect on how well staff believe the agency or department has done in connecting with groups identified within program or city equity goals, if applicable. The step, likewise, emphasizes the role of community partnerships to go beyond superficial involvement, and the importance of both paying community partners for their time and empowering them with decision-making authority.

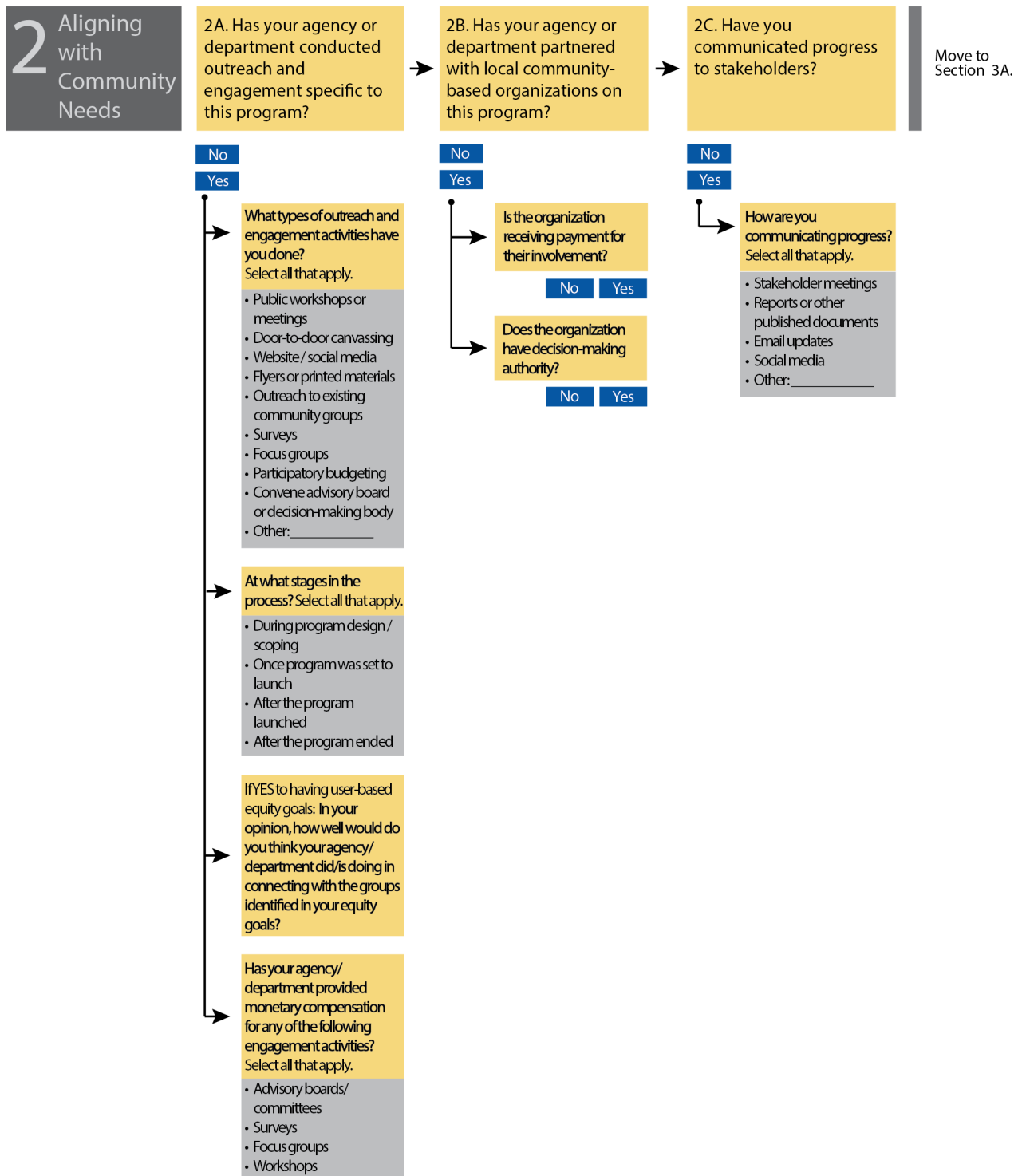


Figure 4.3. Aligning with community needs

Alt text: Step two in the Equity Evaluation Framework Tool is Aligning with Community Needs. Step two asks departments and agencies to respond to three questions: 1) Has your agency or department conducted outreach and engagement specific to this program? If yes, what types of engagement activities have you used, at what point in the process, and have engaged groups or communities received monetary compensation for engagement?; 2) Has your agency or department partnered with local organizations or groups on this program? If yes, is the group receiving payment or have decision-making authority?; and 3) Have you communicated progress to stakeholders? If yes, how?

4.3 STEP THREE: PROGRAM DESIGN

In step three, we ask a series of questions about an agency's shared micromobility program requirements. The primary objective of this step is to both document program components and evaluate if/how different program components are aligned to user-, opportunity-, and/or environment-based goals (see Figure 4.4). The tool provides the opportunity for respondents to select from a list of possible program components—developed through policy scan efforts—or to write in other program components that would likewise advance the broad goals addressed in this step. The step concludes with a question about if/how either enforcement measures or incentives are used to encourage compliance with equity requirements.

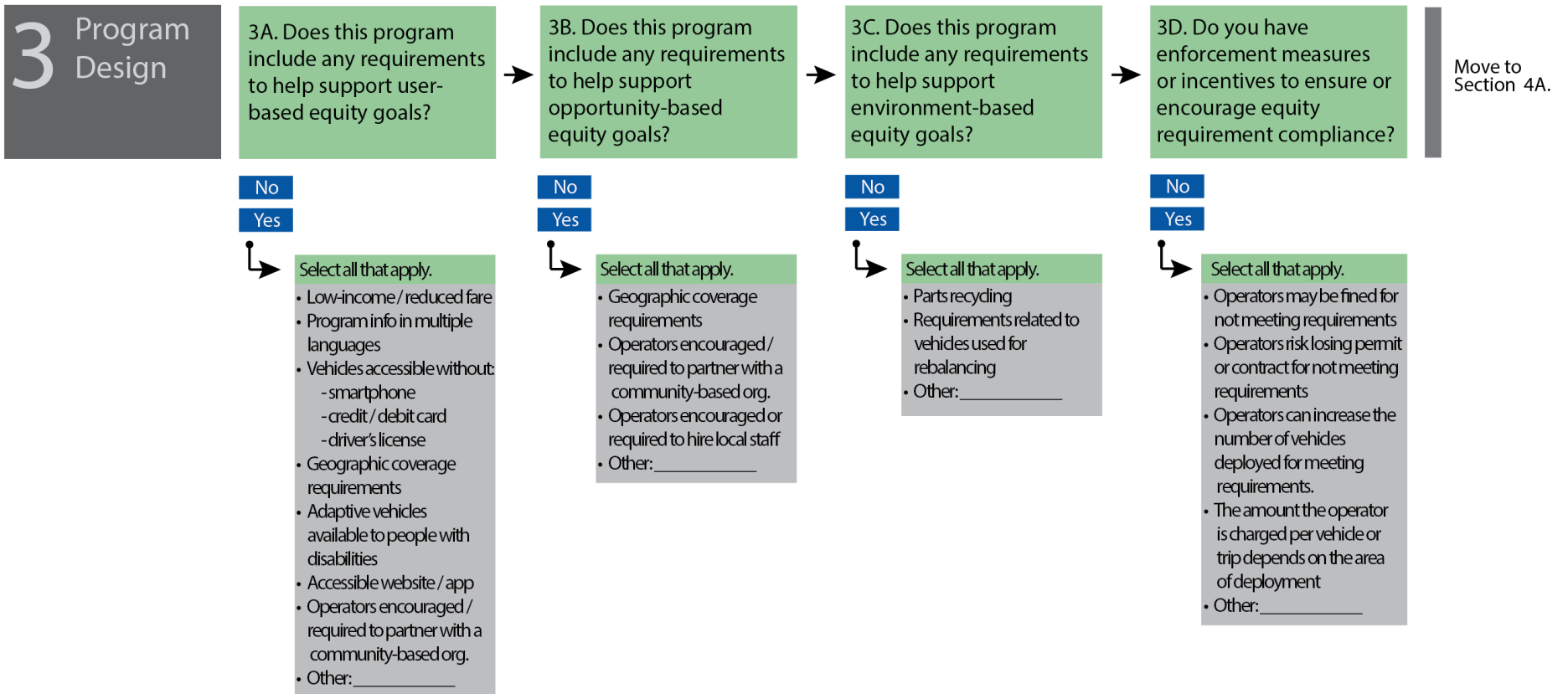


Figure 4.4. Program design

Alt text: Step three in the Equity Evaluation Framework Tool is Program Design. Step three asks four questions: 1) Does the program include any requirements to support user-based goals? If yes, which?; 2) Does the program include any requirements to support opportunity-based goals? If yes, which?; 3) Does the program include any requirements to support environment-based goals? If yes, which?; and 4) Do you have any enforcement measures or incentives to encourage compliance with equity requirements? If so, what?

4.4 STEP FOUR: PROGRAM EVALUATION AND ITERATION

Figure 4.5 depicts the final step of the Equity Evaluation Framework Tool, which emphasizes how equity in shared micromobility cannot end with program design. Instead, thoughtful data collection and evaluation are critical to understanding the effects of equity programming, where they are succeeding, and where additional iteration is needed to meet program goals. The step first asks respondents if they are collecting data related to user-, opportunity-, or environment-based equity goals, and outlines examples of data that may help evaluate programs across the three dimensions. Agency staff are also encouraged to reflect on both if/what types of ongoing or periodic evaluations they are conducting, and if/how data analysis and findings are being used to iterate the program.

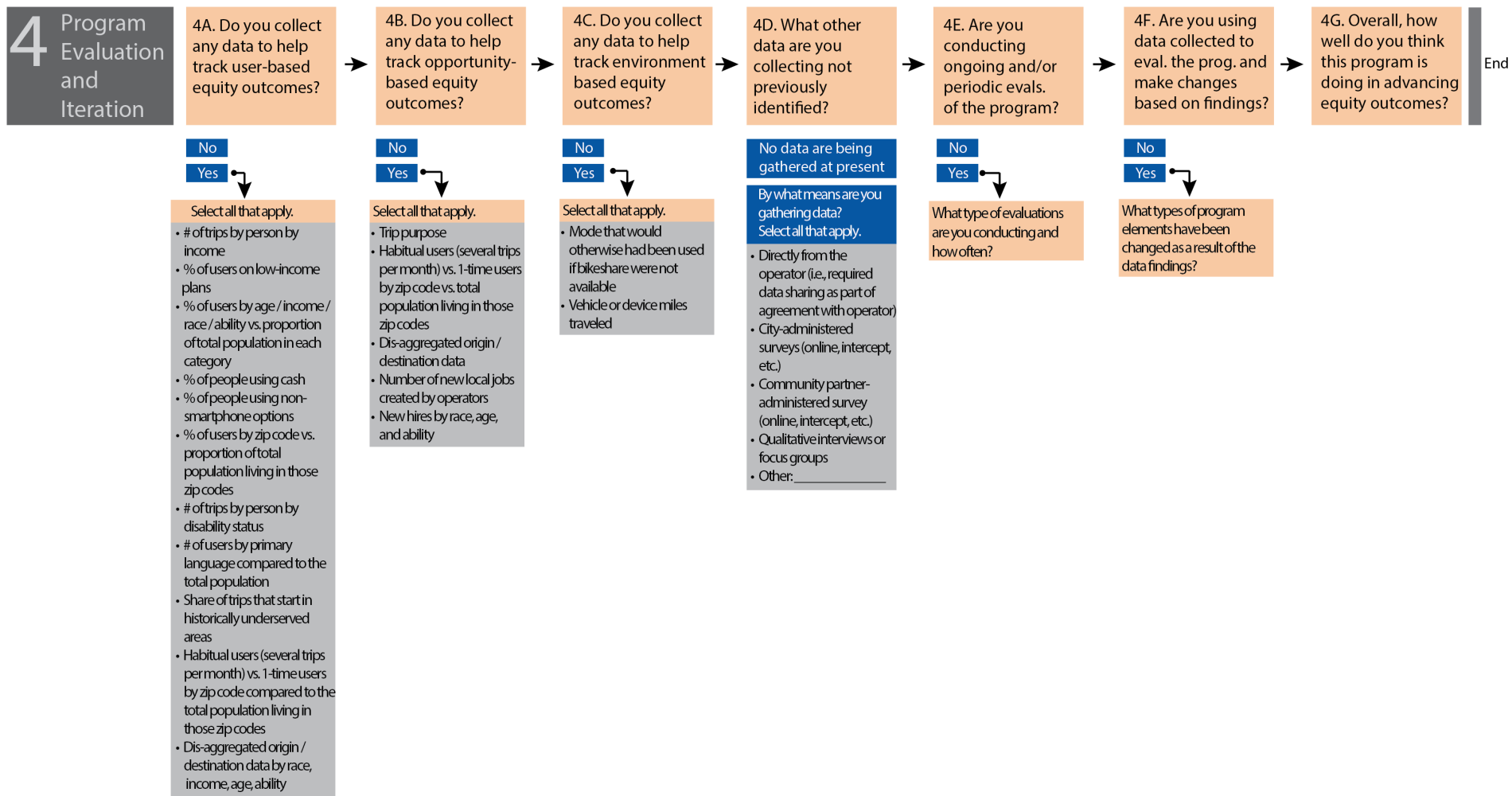


Figure 4.5. Program evaluation and iteration

Alt text: Step four in the Equity Evaluation Framework Tool is Program Evaluation and Iteration. Step four asks seven questions: 1) Do you collect any data to help you track user-based equity outcomes?; 2) Do you collect any data to help you track opportunity-based equity outcomes?; 3) Do you collect any data to help you track environment-based equity outcomes?; 4) What other data are you collecting not previously identified?; 5) Are you conducting ongoing or periodic evaluations of the program?; 6) Are you using data collected to evaluate the program and make changes based on the findings?; and 7) Overall, how well do you think this program is doing in advancing equity outcomes?

4.5 CONNECTING GOALS, PROGRAM COMPONENTS, AND DATA

The two crosswalks are designed for micromobility services and intentionally focus on program outcomes rather than opportunities. In other words, we do not focus on education or access to vehicles (e.g., number of scooters per square mile) as we consider these interventions needed in order to realize the outcomes captured by these crosswalks. In other words, rather than examining simply *if* vehicles are in a neighborhood, this crosswalk strives to understand *how much* vehicles are used in that neighborhood. Limited use in a neighborhood may, in turn, reflect needed policy interventions, including additional vehicles in a neighborhood or community outreach.

These crosswalks differ from those previously produced in that previous works do not explicitly connect singular program goals to evaluation hypotheses, performance metrics, and data (see, for example, the USDOT's Mobility On Demand Sandbox program evaluation in Chicago (USDOT, 2018)). Instead, the goal of these crosswalks is to highlight both the range of data and metrics needed to evaluate different programmatic goals, as well as how a single collected data point or evaluation metric can be used to elucidate understanding across multiple program goals.

As with the Evaluation Tool, we again focus on user-based, outcome-based, and environment-based goals. Table 4.1 depicts a crosswalk to show agencies how to connect program goals with specific program components. We use green to indicate program components we think are *directly* related to the goal, and yellow to indicate program components that may be *indirectly* related to the goal due to intersectionality (i.e., a person may face multiple barriers at once). For example: If an agency has a user-based goal of expanding mobility for people with low incomes, requiring a reduced fare option would be directly related to that goal. If an agency wants to expand mobility options for people with disabilities, they should require adaptive vehicles, but some people with disabilities may also benefit from a reduced fare if they are also low-income. This would be indirectly related to the goal of expanding mobility for people with disabilities.

Table 4.2 shows a crosswalk between goals and evaluation metrics agencies could employ to measure how well the program performs against the goals established for the program. For example, if a city specifically wants to increase mobility access for BIPOC communities, they should ideally collect data about the number of trips taken by users, disaggregated by race/ethnicity. Green indicates metrics *directly* related to the goal, and the yellow indicates metrics that may be *indirectly* related to the goal if a metric represents a correlation between a metric and program component (e.g., the share of people using non-smartphones to hail a ride may be an imperfect proxy for age). This crosswalk highlights how data that cities typically require of micromobility companies, such as the geographic distribution of vehicles or the share of trips completed using cash payments, are important but insufficient to fully understand the equity outcomes produced by a program. Micromobility providers themselves typically do not collect user demographics due to privacy concerns. To better understand the characteristics of

users and understand both who is using micromobility services (and conversely who is *not* using them), user surveys are needed. While these may be cost prohibitive for cities to deploy on their own, some cities have written city-directed user surveys into their permit contracts with shared micromobility operators. Columbia, SC, for example, requires operators conduct an annual survey of members while the City of Culver City, CA, specifies that the “Operator shall distribute a City-provided customer survey to Users per City’s request during the Term of this Operating Agreement” (City of Culver City, 2020, p. 17). In embedding user survey requirements within operating agreements, cities both avoid the costs of deploying an independent survey, while also gaining direct access to micromobility service users.

Level of geographic aggregation will also likely vary based on goal and evaluation metric. Evaluating the spatial distribution of trips, for example, may require fine-grained latitudes and longitudes using data formats including General Bikeshare Feed Specification (GBFS) or Mobility Demand Specification (MDS); indeed, many cities specify such industry standard data formatting requirements as part of operating agreements. At the same time, user data collected via surveys may necessitate broader geographies; for example, riders may be reticent to share home addresses with surveyors. Instead, cities may need to approximate users’ home addresses at the zip-code level.

Table 4.1. Program components and goals crosswalk

		Program Components										
		Low-income or reduced fare	Multiple languages	Smartphone alternative	Geographic distribution	Adaptive vehicles	ADA compliant website / app	Cash payment options	Partnerships with CBOs / advocates	Local hiring initiative	Electric fleets	Recycle parts
Goals												
User-Based												
	BIPOC	●			●				●			
	Low-income	●		●				●				
	People with disabilities	●		●		●	●		●			
	Older adults	●		●		●	●					
	Youth	●										
	Limited English Proficiency	●	●						●			
	Unhoused	●		●				●	●			
Opportunity-Based												
	Access to jobs				●	●	●		●			
	Job creation									●		
	Access to food				●				●			
	Access to healthcare				●				●			
Environment-Based												
	Air quality										●	●

Table 4.2. Evaluation metrics and goals crosswalk (two pages)

Potential Evaluation Metrics (continues on next page)

	# of trips by person by race / ethnicity	# of trips by person by income	# of users on low-income plans	% of users by age/income/race/ability vs. proportion of each to total population	% of people using cash options	% of people using non-smartphone options	% of people using by zip code vs. proportion of total population in each zip code	# of trips by person by disability status	# of users by primary language vs. total population
Goals									
User-Based									
BIPOC	●			●			●		
Low-income		●	●	●	●	●	●		
People with disabilities				●				●	
Older adults				●		●	●		
Youth				●			●		
Limited English Proficiency							●		●
Unhoused			●		●	●			
Opportunity-Based									
Access to jobs									
Job creation									
Access to food									
Access to healthcare									
Environment-Based									
Air quality									

Potential Evaluation Metrics (continued from previous page)

	Trip purpose	Share of trips that start in historically underserved areas	Habitual vs 1-time users by zip code vs. total pop. in those zip codes	Aggregated origin-destination	Disaggregated origin-destination (by race, income, etc.)	Modal substitution	VMT	# of new local jobs created by companies	New hires by race, age, ability, etc.
Goals									
User-Based									
	BIPOC	●	●	●	●		●		●
	Low-income	●	●	●	●				
	People with disabilities		●	●	●				●
	Older adults	●	●	●	●		●		●
	Youth	●	●	●	●		●		●
	Limited English Proficiency	●	●	●	●		●		
	Unhoused								
Opportunity-Based									
	Access to jobs	●	●	●	●				
	Job creation							●	●
	Access to food	●	●	●	●				
	Access to healthcare	●	●	●	●				
Environment-Based									
	Air quality					●	●		

5.0 EQUITY REQUIREMENTS IN U.S. SHARED MICROMOBILITY PROGRAMS

5.1 CITYWIDE EQUITY GOALS

Very few shared micromobility programs cite program-specific equity goals. Therefore, we briefly consider the broader context in which shared mobility programs are designed and review, briefly, how cities themselves address equity issues more broadly. The extent to which cities connect shared micromobility equity requirements to specific equity goals is difficult to categorize or quantify as cities' approaches to equity vary widely overall. Some cities define equity and set equity goals at the city level, with the intention that these goals are operationalized throughout all city programs, initiatives, and policies. For example, the City of Chicago's Office of Equity and Racial Justice developed a definition of equity "that can be embraced by the entire City of Chicago enterprise," defining equity as both a *process* and an *outcome* with a particular focus on race and "how it has been used (historically and presently) to unjustly distribute opportunity and resources..." (City of Chicago, 2021a). Their equity process requires that "access and opportunities for groups who have the greatest need" be prioritized (City of Chicago, 2021a). The Chicago Department of Transportation subsequently developed an e-scooter permit program building on the citywide vision that requires vendors to provide geographic coverage in pre-designated "Equity Priority Areas," a reduced fare option, and a text-to-unlock option, as well as a requirement that vendors conduct community outreach (Chicago Department of Transportation, 2020).

Similar to Chicago, the Office of Racial Equity in San Francisco sets citywide equity goals and policies, and has the authority to direct the departments of both the City and County of San Francisco (Office of Racial Equity: A Division of the San Francisco Human Rights Commission, n.d.). Their work is guided by a vision statement: "Transforming systems to support the collective liberation of Black, Indigenous, and People of Color in San Francisco." At the departmental level, the San Francisco Municipal Transportation Authority (SFMTA) and San Francisco County Transportation Authority (SFCTA) have also developed a collective framework that guides their approach to emerging mobility services and technology. One of the framework principles is "Equitable Access," which they define as:

All people, regardless of age, race, color, gender, sexual orientation and identity, national origin, religion, or any other protected category, should benefit from Emerging Mobility Services and Technologies, and groups who have historically lacked access to mobility benefits must be prioritized and should benefit most. (San Francisco Municipal Transportation Authority, 2017).

To help ensure access for groups who have "historically lacked" it, San Francisco requires vendors to provide adaptive devices, along with other social and spatial equity requirements.

Cities that identify specific groups in their equity definitions, goals, and vision statements (e.g., BIPOC) or particular geographic areas (e.g., “equity zones”) are in a better position to measure the success of their equity program requirements than those whose goals are more amorphous or ill-defined. The City of Denver, for example, has a goal of being “an inclusive city that integrates social equity, race, and social justice into policies, practices, programs, and budgetary decisions to create equitable outcomes” (Office of Social Equity & Innovation - City and County of Denver, n.d.). The Department of Transportation and Infrastructure requires that bikeshare and e-scooter vendors provide “significantly reduced pricing for need-based groups who qualify for local, state, or federal assistance programs” (Denver Department of Transportation and Infrastructure, n.d.). However, the lack of specificity in the citywide goal makes it difficult to determine the extent to which program requirements like these are helping to achieve the equitable outcomes they desire.

Other cities, such as East Lansing, MI, do not appear to have any citywide or departmental equity goals, but they require vendors to abide by rules that target different dimensions of equity. For instance, as part of its Conduct of License for e-scooter vendors, East Lansing requires vendors to “Implement a marketing and targeted community outreach plan...to provide access to electric skateboard services and promote the use of electric [scooters] citywide, particularly among low-income communities” (City of East Lansing, 2019). The ordinance does not, however, require vendors to provide a low-income fare. Furthermore, none of the data the city requires enable them to measure the extent to which low-income people are actually using the devices. The absence of use-based data inhibits the city’s ability to track use among low-income populations and understand if the program is achieving its desired outcomes.

While it is difficult to classify cities as either having equity goals or *not* having them since approaches to equity vary so widely, our review of these programs elucidates two primary findings: first, well-defined, program-specific equity goals are rare. While many programs included either implementation equity components (e.g., reduced fares, geographic requirements) or process equity requirements (e.g., targeted outreach), few published intentional equity statements that motivated the program. An absence of programmatic goals—including goals around equity—could be due to oversight, may relate to the speed at which agencies/cities were tasked to shape a shared micromobility program, or could reflect limited engagement with community groups during project scoping phases. This latter hypothesis is difficult to assess given the formal documents collected for this research (RFPs, municipal codes, etc.) do not typically address project scoping phases. Another possible explanation for limited program-level goals is that some programs may rely on city- or agency-wide equity goals to guide program design and, therefore, do not stipulate their own program-specific goals. Second, goals appear to have a heavy emphasis on finding ways to broaden *access*, without a clear focus on what specific *outcomes* they seek, which limits cities’ ability to measure program success.

5.2 PROGRAM EQUITY REQUIREMENTS

Shared micromobility equity requirements are common, but far from universal; we found equity requirements documented in 62% (n=149) of the 239 programs evaluated in this research. Of programs that had at least one equity requirement, three-quarters had two or more requirements. Others, such as Oakland, CA, Washington, D.C., and Seattle, WA, had between six and seven equity requirements spanning the observed categories. Having at least one equity requirement was more common in joint micromobility (bikeshare and e-scooter) programs (76%) compared to either e-scooter or bikeshare programs (60% and 58%, respectively). One possibility of the greater propensity for equity requirements in joint micromobility programs is their more recent start date (2019, on average) compared to bikeshare programs in our sample (2016, on average). During these intervening three years, cities may have learned lessons about micromobility equity, access, and exclusion from bikeshare systems (e.g., Hosford and Winters (2018)). At the same time, e-scooter programs likewise had an average start date of 2019, and a lower share had equity requirements compared to joint micromobility programs that govern both e-scooters and bikeshare.

In this research we focus specifically on *required* program elements rather than recommended or preferred program elements. In doing so, we record the floor of equity programming in shared micromobility requirements; programs may have additional equity components that go above and beyond city requirements. Other cities “recommend,” “encourage,” “prefer,” or say equity-based program elements are desired, but do not go so far as to require operators to implement various equity elements. City staff contacted for this research reflected that requiring versus suggesting or preferring a program component could reflect a number of different elements at play such as political decisions, or because the requested program element was novel and not well-tested in other cities (i.e., cities weren’t sure that the ask was feasible). Staff stated that program requirements reflected essentially a minimum bar for the city; operator proposals that do not meet city requirements are quickly discarded. Although companies’ applications are not disqualified if they do not offer preferred program elements, city staff noted that preferred elements often still played a role in operator selection. If, for example, two companies met all city stipulations, but one company met the requirements *and* provided preferred program elements, the company that met more of the city’s wish list was more likely to be selected.

In the following sections, we consider requirements related to process equity, implementation equity, and program evaluation.

5.2.1 Process Equity

Programs mandate process equity through targeted marketing and outreach efforts to reach marginalized and/or underserved communities; we did not count marketing or outreach requirements as targeting equity unless marginalized populations were explicitly identified in the policy language. Table 5.1 shows that just one-quarter of bikeshare programs require marketing and outreach efforts to target historically

marginalized and/or underserved groups or neighborhoods, compared to 27% of e-scooter programs and 41% of joint micromobility programs.

Table 5.1. Share of micromobility programs with process equity requirements

	Bikeshare	E-scooters	Micromobility (e-scooters + bikeshare)	Total
Targeted marketing and outreach	24.7%	27.1%	41.3%	28.9%

Many cities or agencies overseeing programs with process equity requirements require operators to detail a specific engagement plan within their application to operate. Rochester, MN, for example, requires that operators, “Describe how [they] will serve and promote ridership in low-income communities” (City of Rochester, 2020a). Los Angeles Department of Transportation (LADOT) (2021) includes particularly robust procedural equity requirements, requiring outreach—and documentation of outreach—at multiple points and with key groups. Specifically, LADOT requires:

“Operators to engage with the community and key stakeholders. Operators seeking to participate in the Dockless Mobility Annual Permit are required to partner with a Community Based Organization (CBO) and complete a Community Engagement Plan, which includes at a minimum:

- *Description of key stakeholders and residents, including any existing neighborhood organizations or advisory councils serving the Project Area*
- *Description of any meeting(s) held in neighborhoods within the Project Area, including dates, if already begun doing outreach.*
- *Description and timeline of proposed community engagement activities...*
- *Description of how Operator will engage underserved communities. Providers must submit a detailed quarterly report that includes a log of all outreach conducted as well as any outreach materials provided to key stakeholders and residents.”*

5.2.2 Equity Requirements in Program Implementation

Cities implement a variety of requirements to deliver equity at program implementation. Most commonly, programs address issues around the digital divide that include smartphone and banking access. About one-third of programs require vendors to provide smartphone alternatives (36%) and cash payment options (33%) (see Table 5.2). Smartphone and cash payment requirements typically use general language rather than specifying precise access methods (e.g., text to unlock, etc.). Dallas, TX, is emblematic of the type of regulatory language used for these types of equity requirements: “Operators shall provide a cash option for riders to unlock dockless vehicles” (City of Dallas, 2020).

Table 5.2. Share of micromobility programs with implementation equity requirements

	Bikeshare	E-scooters	Micromobility (e-scooters + bikeshare)	Total
Reduced rate	29.9%	26.0%	50.0%	32.2%
Adaptive vehicles	3.1%	6.3%	4.4%	4.6%
Geographic component	19.6%	30.2%	50.0%	29.7%
Smartphone alternative	29.9%	30.2%	60.9%	36.0%
Cash payment option	20.6%	31.3%	63.0%	33.1%
Multiple languages	26.8%	29.2%	19.6%	26.4%

Smartphone and cash requirements are closely followed by a direction to provide a reduced rate to residents earning low incomes (32%). Most cities or agencies that require operators to provide reduced fares do not stipulate specific rates or pricing structures. Charleston, SC, for example, requires reduced rates, but puts the onus on operators to detail their proposal:

“Contractor shall submit a proposed fare and membership structure and briefly describe the rationale. Include any information on discounted memberships for people living on low incomes, students, etc. and a process geared towards an easy registration and self-qualification process for these memberships, including income verification proxies (e.g. enrollment in social support programs such as SNAP, WIC, public housing, etc.... The Contractor must receive prior approval from the City to make any changes to the agreed upon fee schedule” (City of Charleston, 2021a).

Others, however, detail specifically either target populations and/or pricing structures. Austin, TX, leaves open the exact fare discount but clearly identifies a reduced fare target population, stating in its RFP that companies must provide “an affordable option that does not require the user to access the service via a smartphone application for any customer with an income level at or below 200 percent of the federal poverty guidelines” (Austin Transportation Department, 2021). San Francisco’s e-scooter program does identify a specific pricing structure, stipulating that low-income user plans must either offer a 50% fare discount or unlimited trips under 30 minutes to riders earning below 200% of federal poverty guidelines (SFMTA, 2021).

Spatial equity requirements, imposed by 32% of programs, vary greatly, likely in part due to divergent local contexts. Seattle, WA, for example, requires vendors to distribute at least 10% of bikes and scooters to pre-identified “Environmental Justice Communities Areas of Focus” (Seattle Department of Transportation, 2021). Chicago, IL, and Oakland, CA, mandate much higher deployment in targeted neighborhoods, requiring at least 50% of scooters be deployed within Equity Priority Areas and Communities of Concern, respectively (City of Chicago, 2020a; Oakland Department of Transportation, 2019). Others stipulate a range across the entire city: Providence, RI, requires micromobility vehicles to be spread across five zones, with each having between 10% and 50% of fleet vehicles in each zone every day (City of Providence, 2019).

Birmingham, AL, offers broader geographic equity requirements and mandates that operators present a written plan to provide “equitable access in neighborhoods and to communities and Users that are underserved by mobility and transportation options” (City of Birmingham, 2020, p. 6).

Less common requirements include offering service in multiple languages (26%). Some cities specify the languages that providers must offer (e.g., Rochester, MN, requires scooter providers to provide user information in English, Spanish, Hmong, and Somali (City of Rochester, 2020b)). Others require more ambiguous multilingual options (e.g., Milwaukee, WI, states that “The operator shall provide a multi-lingual website, a call center, and a mobile application customer interface” (City of Milwaukee, 2021)).

The least common equity requirement was for adaptive vehicles (5%). Variation existed within the programs that do have this requirement; for example, Oakland, CA, requires adaptive scooters be provided; Chicago, IL, requires operators to develop an Adaptive Bicycle Sharing pilot; and Seattle, WA, requires vendors to pilot new innovative scooter designs.

Across implementation categories, a higher share of e-scooter and joint micromobility programs impose equity requirements. One possibility, as previously mentioned, is that these newer programs learned from the equity pitfalls identified in earlier bikeshare programs, and proactively responded to these findings by implementing equity requirements.

5.2.3 Data Reporting and Program Evaluation

A primary way that cities or agencies can evaluate equity requirements is through data analysis. Most programs (83%) require that private operators share data with the city or agency, with data requirements more common among newer programs and scooter programs relative to older programs or bikeshare programs (see Table 5.4). Some cities define the types of data they require: San Jose, CA, for example, requires that “Data for all Shared Micro-Mobility Device types must be provided to the City, and partners, in the General Bike Feed Specification (GBFS) and Mobility Data Specification (MDS) formats, or some other format as specified by the City on its website, each through an API” (City of San Jose, 2021). Other cities require that specific city-defined metrics be provided. Table 5.3 shows the types and range of data requirements specified by cities, although the table does not represent an exhaustive list of variables. Many cities likewise specify data formatting requirements, with the majority requiring data to be submitted in the MDS format. Cities often require both monthly data reports in conjunction with real-time information via publicly accessible API and/or operator agreement to provide data upon request. Interestingly, many cities recognize both the limitations of vehicle or trip-level data in answering questions about program use and outcome metrics, as well as the high costs and logistical challenges presented by user surveys designed to fill these gaps in knowledge. As a result, several cities require companies to—on an annual or otherwise specified basis—distribute a city-developed survey to their users. Baltimore City Department of Transportation, for example, requires “The Permit Holder shall

include a clickable link to a yearly DOT survey in the mobile application and the Permit Holder shall send the survey link to all active users via e-mail, both within 10 days of notifications from DOT” (Baltimore City Department of Transportation, 2021b).

Table 5.3 Specific data metrics required by cities and agencies

Category	Examples of required metrics
User	<ul style="list-style-type: none"> -Number of app downloads -Number of active users -Number of daily, weekly, and monthly riders -Number of repeat users -Number of users participating in any discount programs disaggregated by program type (i.e., low-income, student, cash payment option, access without smartphone)
User Survey	<ul style="list-style-type: none"> -Sent out by operator on behalf of city or agency.
Trip-based	<ul style="list-style-type: none"> -Total trips by day of week, time of day -Origin/destination of all trips -Average trip distance -Average trip speed -Number of trips originating/ending in select geographic areas (e.g., opportunity zones) -Number of rides by low-income, cash payment, and non-smartphone users disaggregated by type of plan and home zip code -Number of miles traveled by users broken down by type of shared micromobility device -Number of rides per user per day -Trip made by program member or non-member
Community outreach, public engagement, complaints	<ul style="list-style-type: none"> -All customer complaints received via app, email, or phone call with response time noted -Reports on any City meeting attended, community events attended or marketing efforts -Summary of customer comments/complaints, resolution to, and time it took to resolve each complaint -Work done to publicize and promote equity programs -Any reports of illegal parking or rebalancing requests from the public
Vehicles	<ul style="list-style-type: none"> -Incidents of device theft and vandalism -Device maintenance and disposal reports (e.g., repair information by vehicle model and type of repair) -Number of shared micromobility devices in circulation -Average time each shared micromobility device spends available (not in use) -Any updates to maintenance or operational plans
Safety	<ul style="list-style-type: none"> -Collision history report including the number, severity, and location and time of crash

In addition to identifying particular data, some cities or agencies often address the growing concern of data privacy and protection. LADOT, for example, publishes both “Data Protection Principles” (LADOT, 2019) as well as specific “Guidelines for Handling

of Data from Mobility Service Providers” (LADOT, 2018). In these documents, LADOT addresses the tension between needing data to make planning and policy decisions while also maintaining individual privacy: “If the City decides to publicly share Confidential data, and to the extent permitted by law, LADOT will release the data as either aggregated, blurred or otherwise obfuscated to the point where primary identification risk is minimized while still retaining its usefulness for city planning or research functions.” LADOT also acknowledges that it must balance its role, as a public agency, in responding to public requests for information, along with its role of ensuring individual data privacy: “If the City receives a public records request for Confidential data, the City will not release unobfuscated Confidential data to the extent the City determines such data are exempt from release under the California Public Records Act, unless required to do so pursuant to a court order” (LADOT, 2018).

While the majority of programs collect data, far fewer (27%) publish public-facing evaluation reports (see Table 5.4). Evaluation reports typically examine program goals, metrics, and recommend next steps for program iteration or implementation. The frequency with which programs or cities publish evaluation reports varies greatly. At the same time, the lack of a public-facing report does not mean that cities or departments do *not* use the data to evaluate or understand the program. Data can be used to inform internal operations; evaluation metrics are often reported to city council to inform council members of program operation and use, and internal evaluations may also be used to adjust regulations for future permit or contract cycles.

Table 5.4. Share of micromobility programs with evaluation requirements

	Bikeshare	E-scooters	Micromobility (e-scooters + bikeshare)	Total
Data sharing requirement	70.1%	90.6%	93.5%	82.9%
Evaluation report	32.0%	18.8%	34.8%	27.2%
Equity-related enforcement	8.3%	16.7%	23.9%	14.6%

Even fewer programs (15%) enforce equity requirements using established data and metrics. Some provide incentives for meeting equity requirements, such as fleet increases (e.g., Charlottesville [VA] Dockless Scooters and Bike Share, Minneapolis [MN] Scooter Program, Providence [RI] Placement and Operation of Personal Transportation Devices). Seattle Department of Transportation (SDOT) flips this incentive on its head, instead penalizing companies with reduced fleet sizes for *not* meeting equity requirements. SDOT 2021 Pilot Permit Requirements (v. 1.2) state: “If vendor is not compliant with equity focus area requirements of offering reduced fares, the Program Manager may reduce the vendor's maximum fleet size and/or levy fees.” Others discount fees for instituting equity requirements (e.g., San Diego Shared Mobility), while others specify that permit renewal is contingent on evaluating and meeting equity requirements (e.g., Shared Active Transportation System, Durham, NC).

To further our understanding of how cities determine which equity components to require and why, we conducted five case studies, which we present in the next section.

6.0 CASE STUDIES

The five case studies discussed in this section align closely with the Equity Evaluation Framework Tool. For each case study city, we document process and implementation equity efforts, as well as evaluation and program iteration. We discuss broad themes across the five case study programs in the body of this report. Full background and extensive details and discussion about each program can be found in the Appendix. The five programs examined include:

1. Baltimore, MD: Dockless Vehicle For Hire Program
2. Charleston, SC: Holy Spokes Bikeshare
3. Chicago, IL: E-Scooter Pilot Program
4. Denver, CO: Dockless Mobility Vehicle Pilot Program
5. Washington, DC: Public Right-of-Way Occupancy Permits

The programs differ from one another by mode, location, city size, and objective.

6.1 ALIGNING WITH COMMUNITY NEEDS

6.1.1 Program Objectives, Including Equity

Many shared micromobility programs operate within a broader context of city-level equity efforts. These often guide program-level equity efforts or stand in place of program-specific equity goals. The Chicago Department of Transportation (CDOT), for example, adhered to city-wide equity principles, but did not establish pilot-specific goals. Other cities establish programmatic goals in addition to citywide efforts. In Denver, equity was not highlighted as a central goal (“The goal of this program is to provide safe, coordinated, and organized micromobility services to Denver residents and visitors, and a meaningful quantity of free and/or subsidized micromobility service to Denver residents to encourage SOV trip replacement” (City and County of Denver, 2020)), although the Request for Qualifications (RFQ) obliquely noted that “Equity is the important to the City.” When asked about this, City staff said that they hope to develop more concrete equity goals, but thus far have primarily focused on making progress on the City’s safety and mode shift goals.

Charleston, likewise, did not mention equity program-level goals in their 2017 RFP for a bikeshare vendor. Charleston first released a bikeshare RFP in 2014, but did not

receive any responses that staff deemed to be a good fit. Equity was not a primary focus of the 2017 RFP. Instead—heavily motivated by the failed 2014 RFP process—the City was primarily interested in attracting a bikeshare operator that would be willing to launch a program in Charleston without any direct financial support from the City. Since the program launched in 2017, equity has become a greater focus. In its 2021 RFP, the City incorporated various equity-focused requirements. While the City appears to be making progress in terms of moving towards a more equitable program design, the City does not have clearly defined equity goals, which hampers its ability to measure progress.

By contrast, both Baltimore City Department of Transportation (BCDOT) and Washington, DC, Department of Transportation (DDOT) established clear equity-based program goals. BDCOT, for example, outlined three program-specific goals—including equity—in its 2021-2022 Permit Application:

1. **Increase safety** for everyone, including those renting vehicles, sharing a sidewalk and sharing the roadway.
2. **Improve equity** for Baltimore City residents, including through opportunities, employment, and the ability to access amenities regardless of personal characteristics, historical disenfranchisement, or geographical locations within the city.
3. **Promote active and sustainable transportation** for a healthier community and cleaner environment.

DDOT uses its programmatic goals to award permits (DDOT, 2020a). Programmatic goals are weighted according to priority and include:

1. **Accountability:** Minimize adverse impact on residents and ensure transparency about operators' strengths and weaknesses (21%).
2. **Sound Equipment Design:** Allow only vehicles that are designed to be safely stored and function in public space (3%).
3. **Safety:** Support user safety through education, vehicle monitoring, and vehicle maintenance (27%).
4. **Innovation:** Successfully manage public space while encouraging permit holders to offer innovative solutions to problems, exceptional equipment, and smart education practices (10%).
5. **Equitable Access:** Promote equity among vehicle users including geography and income (15%).
6. **Labor:** Ensure that operators offer meaningful employment and enough labor to be accountable and safe, and provide equitable access (11%).
7. **Sustainability:** Strengthen sustainability initiatives (3%).
8. **Data:** Ensure the provision of data sufficient to monitor the performance of individual operators and the program as a whole, and to plan for program improvements (10%) (DDOT, 2020a).

The program-specific scorecard reflects broader DDOT efforts to incorporate equity in programming and project selection. DDOT issued an explicit equity statement in which it

acknowledges the role that transportation has and continues to play in disparate access across population groups (DDOT, n.d.). DDOT also uses an equity scorecard to evaluate potential equity impacts during all funding decisions (DDOT, 2021c). Dockless programs, however, because they are not publicly funded, do not undergo evaluation of DDOT’s overarching scorecard in addition to the above program-specific scorecard evaluation. Finally, DDOT has an Office of Racial Equity (for more see City of Washington, D,C, (2021)) charged with advancing equity across the organization, and a representative from this office has previously been included while scoring operators’ bids.

6.1.2 Community Needs Assessment

Table 6.1 shows that none of the case study programs conducted explicit mobility needs assessments prior to the program launch; instead, most relied on existing knowledge often garnered from other micromobility efforts. Both Denver and Washington, DC, for example, relied on knowledge about barriers and access to their docked bikeshare system to shape dockless micromobility programs. Others used equity-focused city metrics to tailor program goals and evaluations rather than conduct program-specific assessments. Baltimore, for example, used data from the Baltimore Neighborhood Indicators Alliance (BNIA) to set program goals and conduct evaluations. Finally, Charleston stated that the city’s involvement in mobility planning is quite limited, as most transportation planning is carried out at the county rather than city level.

Table 6.1 Case Study Community Needs Assessments

	Mobility Needs Assessment? (Y/N)	Details
Baltimore	N	City staff have not conducted a community mobility needs assessment specific to dockless mobility services. Staff have, however, used data from the Baltimore Neighborhood Indicators Alliance (BNIA) to set program goals and conduct evaluations. BNIA’s “Vital Signs” are compiled and hosted by the University of Baltimore and visualize indicators at the Community Statistical Area (CSA) level (Baltimore Neighborhood Indicators Alliance, 2021).
Charleston	N	City staff noted that most transportation planning is done by Charleston County rather than the City of Charleston, and this limits its work and involvement in mobility planning.
Chicago	N	We were unable to confirm whether the City of Chicago conducted a community mobility needs assessment prior to the launch of the e-scooter pilot program since we relied on published documents for this case study. However, there is no reference to a mobility needs assessment in either of the evaluation reports.
Denver	N	The City has not conducted a community mobility needs assessment, but staff commented that they “used what they knew from B-Cycle” when developing the Shared Micromobility program. For instance, they knew they needed to expand the system geographically from community members who voiced demand for a citywide program rather than the downtown-centered B-Cycle system. As a result, expanding the dockless program service area became an important provision in the RFQ.

Washington, DC	N	DDOT did not conduct a community mobility needs assessment explicitly for dockless modes, but instead relied on a previous mobility needs assessment done for Capital Bikeshare station planning. Because DDOT has limited control over where dockless vehicles are deployed by private companies, staff have focused on efforts to distribute dockless vehicles across space.
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6.1.3 Outreach and Relationship Building

Three distinct models of outreach occurred across the five case study cities: city-led efforts; city mandated or incentivized outreach efforts; and grant-supported external outreach efforts (see Table 6.2). BCDOT staff were the most directly involved in outreach and relationship building across the five case study cities. City staff reported doing extensive community outreach and engagement over the last few years specific to the dockless vehicles program. Activities have included the following:

- Attend community association meetings (program staff reported attending over 40 since the pilot first launched);
- Go door to door to speak with community members in areas where the vehicles are deployed, with a particular focus on speaking with people in the designated “equity zones”;
- Post flyers in neighborhoods;
- Maintain a general email inbox and respond individually to emails;
- Conduct annual surveys (they have alternatingly surveyed community members and riders, and are working with Johns Hopkins University on a survey specifically of riders who begin a ride in an equity zone);
- Coordinate with downtown development associations because those areas have some of the highest ridership, and the associations employ city guides who can answer questions about dockless vehicles;
- Maintain regular communication with the Mayor’s Commission on Disabilities and Federation for the Blind, which has its U.S. headquarters in Baltimore; and
- Publish quarterly and annual reports.

BCDOT also convenes a monthly Dockless Vehicle Committee (DVC) to advise on the Dockless Vehicle Program. The committee is comprised of other city agencies, advocacy organizations, and local nonprofits. The level of engagement the City has undertaken speaks not only to the fact that the City has invested resources in the program by hiring a full-time staff member to oversee it, but also to the motivation of the staff.

Unlike BCDOT, DDOT staff do not conduct the bulk of public outreach; instead, the agency strongly incentivizes or requires effective outreach of operators. DDOT requires companies to report their outreach efforts each month. An April 2020 fleet increase, for example, required companies to first meet a threshold number of low-income and essential worker rides. Staff note that some operators effectively use their local networks to increase sign-ups among targeted populations. DDOT staff tracks sign-ups

to ensure that no system abuse happens (i.e., that people who do not qualify for low-income programs are signed up in order to meet quotas for fleet increases). One disadvantage of tracking sign-ups rather than rides is that while sign-ups may be relatively easy to collect (e.g., at a community event with free giveaways) they may not necessarily translate into additional ridership among target groups. DDOT staff also acknowledge the challenges inherent in engaging populations with limited abilities to maintain phone services and data plans.

Finally, the City of Charleston provides a third model of outreach: grant-based support. The city was awarded a bikeshare grant to 1) support partnerships between the bikeshare program and local nonprofits and advocacy groups, and 2) expand the program to areas without stations. The City itself, however, does not have regular engagement processes. Defining clear goals and establishing clear engagement and evaluation processes represent opportunities for growth as cities work towards achieving both more equitable access and equitable outcomes.

Table 6.2 Case Study City Engagement and Outreach Efforts

	Details
Baltimore	<p>City staff reported doing extensive community outreach and engagement over the last few years specific to the dockless vehicles program. Activities have included the following:</p> <ul style="list-style-type: none"> • Attend community association meetings (program staff reported attending over 40 since the pilot first launched); • Go door to door to speak with community members in areas where the vehicles are deployed, with a particular focus on speaking with people in the designated “equity zones”; • Post flyers in neighborhoods; • Maintain a general email inbox and respond individually to emails; • Conduct annual surveys (they have alternately surveyed community members and riders, and are working with Johns Hopkins University on a survey specifically of riders who begin a ride in an equity zone); • Coordinate with downtown development associations because those areas have some of the highest ridership, and the associations employ city guides who can answer questions about dockless vehicles; • Maintain regular communication with the Mayor’s Commission on Disabilities and Federation for the Blind, which has its U.S. headquarters in Baltimore; and • Publish quarterly and annual reports.
Charleston	<p>City staff have not done any outreach or engagement work related to Holy Spokes either before the program or since it has been in operation. They have instead relied on a grant-funded partnership with Charleston Moves, a local nonprofit, to support outreach and engagement.</p>
Chicago	<p>During the first pilot year city staff, at a minimum, conducted an online survey, set up a program specific email, monitored social media, and held in-person stakeholder meetings as part of their engagement efforts (City of Chicago, 2020b). The stakeholder meetings included representatives from transportation groups,</p>

	disability advocates, local chambers of commerce, and community organizations, among others. According to the 2019 Pilot Evaluation Report, the City “convened this group for conversations leading up to the pilot, throughout the program, and following its conclusion” (City of Chicago, 2020b).
Denver	During the pilot, the City conducted two surveys and worked with a consultant to complete a report with findings about the pilot program, which gave staff needed insight about mode replacement which staff noted “was kind of a blind spot at the time.” However, staff said they otherwise took a “hands-off” approach to community engagement and largely relied on the permitted operators to conduct engagement. Staff did not program specific outreach events prior to releasing the RFQ, in part, because they hoped to complete the contracting process quickly. They hoped that an expeditious contract period would minimize the service gap left by B-Cycle, which ended bikeshare operations in January 2020. City staff said that they to intend to ramp up outreach and engagement efforts in 2022 after a next round of hiring that will help increase staff capacity.
Washington, DC	DDOT primarily relies on operators to conduct public outreach, a condition outlined in its terms of operation. Staff engage with the public through three primary ways: 1) meetings with advisory councils—ward-based groups and comprised of members of the public appointed by elected officials—once per quarter; 2) responding to public comment received via email; and 3) advertising the program through other city social services such as the Department of Human Services (DHS). For the latter, DDOT staff presented to DHS case managers. They also distributed information about the dockless vehicle program alongside SNAP materials, as SNAP is a qualifying program for free and reduced cost services.

6.2 PROGRAM DESIGN, EVALUATION, AND ITERATION

6.2.1 Program Equity Requirements

Table 6.3 documents the varied equity requirements imposed by the five case study cities; as previously discussed, we did not select any cities with zero equity requirements and strove to achieve a balance of example cities across modes, geographies, and sizes. The five cities together demonstrate the wide variety of approaches cities have instituted to tackle equity in shared micromobility services.

One of the more unique requirements the City of Denver outlined in the RFQ was a requirement that operators be willing to provide a “meaningful number of free passes or rides” for Denver residents (City and County of Denver, 2020). In 2019, the City purchased 5,280 free annual B-cycle passes for residents and was interested in seeing that kind of program offering continue. It did not specify a minimum number of free rides, however, since it was asking companies to provide the passes as part of their operating agreement rather than making the purchase themselves as they had done with B-Cycle. City staff noted that the number of free rides operators proposed in their response was an important criterion in the City’s evaluation process; evaluators viewed

a proposer's willingness to provide free passes as a proxy for their commitment to invest in Denver. Interestingly, the City did not specify any equity provisions for the passes/rides—such as being made available to people with lower incomes—just that they be available for residents of Denver.

Both Baltimore and Chicago used equity as part of a scoring rubric to select a vendor. Chicago's ordinance stipulates that applicants will be scored and ranked using the following criteria:

- The applicant's hiring plan and steps it commits to take to identify, train, and employ City residents that have been historically disadvantaged in participating in the local economy;
- The applicant's ability to make scooter service accessible to people with disabilities;
- The applicant's ability to help meet the City's goal of effectively improving mobility and accessibility for residents who face elevated economic, health, social, mobility and accessibility barriers; and
- The applicant's citywide education, engagement, outreach, rider safety, operations, and technology and innovation plans.

Numerous cities examined in this study included preferred—but not required—program elements. As a result, the equity requirements documented elsewhere in this report represent a minimum number of equity components deployed in cities. Baltimore provided useful insight into cities' decision-making process for requiring versus preferring various program elements. Baltimore, for example, does not require companies to provide accessible vehicles, but companies that have accessible vehicles as part of their fleet offerings are scored higher during the selection process than those that do not. Companies also receive higher scores for having a Baltimore-based staff with “fair compensation and benefits,” for “equitable and community-based hiring,” and for providing “robust and diverse training” (Baltimore City Department of Transportation, 2021a). When asked about the decision to prefer but not require these program elements, City staff noted that there is a fine line to walk when determining what they can require of for-profit companies. Since the City does not subsidize operations, it has to pick and choose what it can require. In some cases, it indicates a preference rather than requirement because staff are unsure if particular requests are currently feasible. By indicating preference, they alert companies of future city wishes while acknowledging that new programs or requirements cannot always be met overnight. City staff noted that maintaining a “wish list” is important for program evolution. By establishing a preference for companies that provide accessible vehicles in one permit year, staff can revise preference into a firm requirement in future years.

Charleston bikeshare has gone through an evolution of equity requirements over the course of its operation. The 2016 Charleston RFP did not include any explicit equity requirements. Contractors were only asked to describe how the system would be “made available to all socio-economic levels of the community, including those without a credit card.” Gotcha Bikes, the selected vendor, did establish a \$5 annual low-income pass through the “Just Rides” program, but no other equity program components have been

implemented since bikeshare launched in 2017. The City of Charleston engaged a consultant to help prepare the 2021 RFP, and the newest RFP includes a variety of equity requirements.

Table 6.3 Equity Requirements Across Case Study Cities

	Baltimore		Charleston		Chicago		Denver		Washington, DC	
	Y/N	Details	Y/N	Details	Y/N	Details	Y/N	Details	Y/N	Details
Spatial Equity										
<i>Geographic Component</i>	Yes	Companies shall deploy no less than 5 percent and no more than 25 percent of their fleet to each of the deployment districts defined by the DOT and must deploy at least three vehicles in each equity zone.	Yes	Contractor asked to describe their plan for ensuring bicycle access in equity zones defined by the city.	Yes	Licensees are required make scooters available to all residents of the city and the commissioner is authorized to create geographic areas for the purpose of requiring and implementing the equitable distribution of scooters.	Yes	At least 30 percent of vehicles will be made available daily (at morning deployment) in communities ("opportunity areas") that have historically been underinvested in to increase their access to new transportation options, particularly focusing on areas with low vehicle ownership and high transit ridership.	Yes	Company must balance fleet of dockless shared vehicles by deploying at least 3percent of undocked vehicles in each ward between 5:00 a.m. To 10:00 a.m. Each day.
Social Equity										
<i>Reduced Rate</i>	Yes	Low-income options for individuals at or below 200 percent of federal poverty level	Yes	\$5 annual membership option available through the just ride program with gotcha bikes as the contractor.	Yes	Licensees must provide low-income and unbanked pricing programs.	Yes	Describe how the proposer will reduce barriers to using shared micromobility for low-income users, notably barriers related to credit card, bank account, and smartphone access.	Yes	Companies shall offer low-income customer plan that waives any vehicle deposit, offers an affordable cash payment option, and provides unlimited trips under 15 minutes to customers with income levels at or below 200percent of the federal poverty guidelines.
<i>Adaptive Vehicles</i>	No	Companies that offer adaptive vehicles receive hiring ratings during the competitive permit process, but it is not a requirement.	No	While not a required system component, contractors were asked to describe their experience and capabilities in response to the 2021 RFP.	No	While not a requirement, applicants for a license will be scored on their ability to make scooter service accessible to people with disabilities.	No		No	
<i>Smartphone Alternative</i>	Yes	Companies shall offer the option to rent dockless vehicles without the use of a smartphone.	Yes	Contractor asked to describe options for a user to pay, reserve, unlock, and park without a smartphone.	Yes	Licensees must make e-scooters available by phone, text, or other non-smartphone options.	Yes	Describe how the proposer will reduce barriers to using shared micromobility for low-income users, notably barriers related to credit card, bank account, and smartphone access.	Yes	Dockless electric scooters must offer the ability to be located and unlocked without a smartphone.
<i>Cash Payment</i>	Yes	Companies shall offer the option to rent dockless vehicles through cash payments.	Yes	Contractor asked to describe options for a user to pay, reserve, unlock, and park without a credit card.	Yes	Licensees must provide low-income and unbanked pricing programs.			Yes	Dockless electric scooters must offer a cash payment option within the district.

Multiple Languages

Yes

Companies shall maintain live, multilingual 24-hour customer service phone line.

No

No language requirements identified in the 2021 RFP.

No

No mention of language requirements in the ordinance.

No

Preferred, but not required. Information on the website should be available in English and Spanish; staff should be available who speak fluently in Spanish. Additional language fluency will be viewed favorably.

No

Permit holder is encouraged to maintain a multilingual website with languages identified in the District of Columbia Language Act of 2004.

Procedural Equity

Targeted Outreach/Marketing

Yes

Any marketing campaigns conducted by companies shall include an effort to reach underserved or low-income populations.

Yes

Contractor asked to describe strategies to reach out to populations who would benefit from smartphone alternatives and cash payment options.

No

While not a requirement, applicants for a license will be scored on their education, engagement, and outreach plans.

No

Not required but considered in the evaluation process. Must provide proposer's marketing and public engagement plan and must discuss in proposal "experience with shared micromobility program marketing and community engagement, including experience with targeted marketing to groups underrepresented among shared micromobility users.

Yes

Permit holder agrees to conduct a marketing campaign at its own cost to promote the use of dockless sharing vehicles, particularly among low-income residents.

6.2.2 Data Requirements

The format, detail, and frequency of data sharing varied greatly across the five case study cities (see Table 6.4). Some specified industry-standard data formats such as Mobility Data Specification (MDS) and General Bikeshare Feed Specification (GBFS).

Not all cities with robust data sharing requirements, however, explicitly tied each data point to one of the three goals outlined in the permit application. Setting key performance indicators (KPIs) to evaluate each goal may help the City ensure that both 1) it establishes clear metrics to evaluate progress or areas for improvement across the program goals, and 2) requires the appropriate data needed to evaluate each KPI.

Table 6.4 Case Study Data Requirements

	Format	User Survey Required	Report Frequency / Data
Baltimore	MDS	Each permit holder must send all active users an annual survey designed by BDOT staff to be sent. Survey must be sent via app and email.	Monthly report 1. Reports on any Dockless Vehicles lost due to theft or vandalism; 2. Aggregated repair information on Permit Holder's Dockless Vehicles by model of vehicle and by type of repair; 3. Any reports of illegal parking or rebalancing requests from the public; 4. All customer complaints received via app, email, or phone call with response time noted; 5. Reports on any City meeting attended, community events attended or marketing efforts; 6. The number of active users during the past month; 7. The number of rides by low-income pass, cash, and non-smartphone users within the past month; 8. The number of low-income, cash, and non-smartphone users, disaggregated by the type of plan and user home zip code; 9. The number or trips taken by users of the low-income pass; and 10. Any updates to maintenance or operational plans.
Charleston	GBFS	No	Monthly Report • Statistics on ridership by station • Membership statistics • Monthly business/financial metrics • Operations reports
Chicago	MDS compliant with GBFS	No	Quarterly reports to the City "containing information regarding customers, scooter utilization, parking impacts, operations, safety, and sustainability as provided in rules". Some of the required data included disaggregated trip data indicating whether a trip was booked without a debit or credit card and/or without a smartphone (City of Chicago, 2019b)

Denver	-	The city requires operators to conduct surveys of members to track customer satisfaction, reasons for joining, socio-economic characteristics, and mobility behavior, such as mode substitution.	<p>Real-time information available via dashboard including:</p> <ul style="list-style-type: none"> • Utilization rates • Total downloads of web application, active end users, and repeat end users • Total trips by day of week, time of day including trips per vehicle • Origins, destinations depicted in graphical and table format by month • Average trip distance • Average trip speed • Trips originating or ending in Opportunity Areas • Summarized incidents of theft and vandalism • Vehicle maintenance and disposal reports • Complaint history report including the number of complaints, the nature of the complaints, and the time it took to remedy each complaint • Number of end users participating in discount programs, by program type (if applicable) • Collision history report including the number, severity, location and time of crash, in a format as determined by the executive director. • Payment methods <p>Operators are also expected to produce “an annual report detailing survey results and other metrics related to citywide goals”</p>
Washington, DC	No		DDOT specifies detailed data requirements, including the frequency of data reports (monthly) and format of data delivered (five CSV files, one geojsons spatial data file, and one narrative report). Required data evolve with each permit cycle; new to 2021 is a customer summary report documenting the complaints companies are receiving and how they are responding to each. See Appendix for full details about data sharing requirements.

6.2.3 Program Evaluation

City staff uniformly spoke to the value of learning from past pilots or experiences to iterate shared micromobility programs. The formal evaluation to inform iterations, however, varied widely. DDOT, for example, aims to evaluate program performance each month. Most evaluations remain internal to the department, with the last evaluation report published in 2018 (DDOT, 2018). The City of Baltimore has published two evaluation reports: the first followed the conclusion of the pilot, and the second at the end of the first permit year (2019-2020). Both reports are organized around assessing progress towards the program goals. Both reports also include a set of evaluation questions and a specific equity analysis (see Appendix for details). Baltimore focuses its evaluations on assessing access equity. Data collected throughout the pilot and the first-year permit program assessed the extent to which dockless vehicles could be accessed in an equitable manner across spaces and individuals.

Many of the city evaluations centered around broad themes or goals. For example, Chicago’s 2020 evaluation report is organized around three main themes:

- ***Role in the transportation network: How are e-scooters used citywide?***
- ***Dangers, inconveniences, and non-compliance: How might these be limited or mitigated?***

- **Coverage, distribution, and equitable access:** *How successfully and uniformly can vendors operate in a large citywide service area and how might vendors address potential economic, health, or accessibility barriers to using e-scooters?*

Evaluations, too, have evolved and been formalized over time. In Charleston, for example, the 2021 RFP identified a set of objectives (as it did during the 2016 RFP), but went a step further than the 2016 RFP by identifying KPIs. The RFP notes the following:

Additionally, the Contractor should draw on their experience as a bike share operator and their understanding of the community fabric and transportation context of the City of Charleston to propose one or more performance metric(s) for equitable service delivery across the entire program. Describe the metric(s), how it might be documented, and why it is a reliable indicator of whether or not the City is achieving its goal of equitable bike share service.

6.2.4 Program Iteration

Each city’s staff emphasized how program iterations through evaluation and community feedback has strengthened the program over time. We review primary takeaways from each city below.

DDOT staff highlighted the iterative nature of the permitting process. During each iteration, staff update requirements, including removing old requirements. Iterations stem from evaluations of the data from the previous cycle. DDOT staff evaluated the first pilot (September 2017 through August 2018) to answer specific questions, chief among them relating to how dockless modes compared—and potentially expanded—the reach of the station-based Capital Bikeshare system, or how dockless modes might impact revenues or ridership of the docked system. Other questions related largely to feasibility and operations, such as the best operating structure (e.g., procurement vs. public-private partnerships); what the community was most concerned about; and if dockless modes would be well maintained and abide by parking regulations. In the 2018 Evaluation Report forward, D.C. Mayor Muriel Bowser also questioned if dockless modes could expand options for low-income and unbanked residents. Although this question was not addressed in the 2018 Evaluation Report, it highlights how questions of equity were under consideration at early stages of the dockless program. The report likewise concluded that the “program has shown promise, but there is not yet strong empirical evidence that dockless vehicle sharing is reaching different populations and locations than Capital Bikeshare. DDOT should better understand this issue and identify program requirements or incentives in this regard” (DDOT, 2018, p. 36). Since then, DDOT has harnessed the imperative identified in this first evaluation report and implemented robust equity requirements, particularly those targeting income- and geography-based exclusion.

According to Denver staff, the pilot program was “integral” in helping inform the equity requirements they incorporated into the RFQ. The evaluation report, for instance, notes that the safety of riders and non-riders is a “critical challenge” that motivated the City to

require that proposers submit a robust public education plan as part of the RFQ (City of Denver & Apex Design, 2021). Unlike cities including Baltimore and Chicago, however, Denver opted not to take a phased pilot approach and instead issued five-year service contracts to two operators. The longer contract period may yield positive benefits including deeper relationships between the city and operators, a greater willingness for private operators to invest in the city (e.g., through free rides), and reduced administrative burden on staff; however, the longer period may also preclude the city's ability to rapidly iterate the program based on lessons learned. Staff indicated that they plan to evaluate the program as they go, and that they will issue a new bid at the end of the five years incorporating what they have learned into the next RFQ. The Appendix documents the evolution of Denver's RFQ into the ultimate contract language with Lime and Lyft.

Baltimore's phased approach to managing dockless vehicles has enabled it to iterate as it learns. For instance, during the pilot, the City found that companies were not meeting the minimum deployment requirements in the equity zones and that companies were often deploying the dockless vehicles at the edges of—rather than throughout—the zones (Baltimore City Department of Transportation, 2019). The City updated its distribution requirements for the first permit year as a result of these findings. City staff stated that after they found that companies were not properly rebalancing dockless vehicles throughout the day, they instituted a second daily compliance check. Companies must now provide the minimum number of dockless vehicles in each equity zone in the morning *and* the afternoon, and the City checks compliance twice per day. City staff noted that requiring companies to reapply for operating permits on an annual basis has worked to their advantage as short-term (one-year) permit cycles allow the city to update equity requirements based on the previous year's experience. To further incentivize compliance with requirements, the City now offers automatic permit renewal options for companies that meet expectations.

Similar to Baltimore, Chicago used a phased pilot approach to iterate its shared e-scooter program over time. The City operated a four-month pilot between July and October 2019 and then took several months to evaluate findings before it released updated guidelines for the second four-month pilot. Among the changes it made between the two pilots was to increase the fleet deployment requirements in the priority areas from 25% to 50% , and—similar to Baltimore—to institute a twice daily rebalancing requirement (City of Chicago, 2021c). The 2020 E-Scooter Evaluation Report was released in May 2021, providing policymakers with several months to review the findings before introducing and ultimately passing an ordinance in October 2021 making the program permanent.

Finally, the 2021 Charleston RFP is substantially different than the RFP issued in 2016. Interestingly, many of the changes appear to reflect the role that a consulting firm played in helping to develop the latest RFP than of the City's own reflection and evaluation of its existing bikeshare program. (City staff said the consultant they worked with is well-versed on bikeshare best practices.)

7.0 DISCUSSION

7.1 PREVALENCE OF EQUITY REQUIREMENTS IN SHARED MICROMOBILITY PROGRAMS

In this research, we asked: 1) What equity requirements do shared micromobility programs include? 2) What strategies are employed by cities/agencies seeking to operationalize equity in shared micromobility programs? 3) To what extent are programs monitored and evaluated to determine if program requirements translate to more equitable outcomes in practice? and 4) How do current frameworks approach equity in shared micromobility? We opted to focus exclusively on bike share, e-scooter share, and joint micromobility programs because unlike other forms of shared mobility (e.g., carshare and ride-hail), cities have the authority to exert significant leverage over services that operate in cities' rights-of-way.

We find that 62% of the 239 micromobility programs we reviewed include at least one equity requirement, and that equity requirements are more common in joint micromobility programs than either stand-alone e-scooter (27%) or bikeshare (25%) programs. Previous research found that 58% of e-scooter and 60% of bikeshare programs included at least one equity requirement (McNeil et al., 2019; Riggs & Kawashima, 2020). We offer three possible explanations for the differences between our research and previous findings: 1) We focused specifically on equity requirements mandated by the city or jurisdiction, while past research often examined program equity components regardless of whether cities specifically required those components; 2) We examined a different sample of bikeshare and scooter programs, including previous research that combined stand-alone e-scooter/bikeshare programs with joint micromobility programs (that govern both bikeshare and e-scooters) while we analyzed each category separately; and/or 3) We relied on a different methodology, including examining written policies and contacting staff via phone and email, compared to self-reported equity programs via surveys of city or program staff.

The higher share of e-scooter and joint micromobility programs with equity requirements compared to bikeshare may be related to the programs' relative newness, and a growing awareness of the need for proactive equity-based policies to ameliorate historic and systemic transportation inequities and exclusion. The median bikeshare system evaluated in this research began in 2016 compared to 2019 for e-scooters and joint micromobility programs. With growing calls for racial justice stemming from the 2020 Black Lives Matter movement, we may see an increase in equity statements and/or a growing array of requirements to address the multiple dimensions that exclusion takes. For example, while many programs include requirements to bridge the technological divide and extend access to travelers without smartphones or credit/debit cards, fewer include requirements related to targeted outreach, service geographies, language options, or accessible vehicles. These findings corroborate what we heard from one e-scooter operator about their experiences, anecdotally. The operator observed that the most common requirements they come across in RFPs are low-income discounts and

geographic coverage components, with the third most common being a requirement to do community outreach and partner with a community-based organization. This anecdote roughly, although not perfectly, echoes our findings that smartphone alternatives and cash payment requirements were the most common equity requirements (36% and 33%, respectively) followed by reduced rate (32%), geographic coverage (30%), and targeted outreach (29%).

Approximately two-thirds (62%) of shared micromobility programs have at least one equity requirement. Yet a single equity requirement (e.g., reduced fare) is insufficient to ameliorate historic and systemic transportation inequities and intersectional barriers that individuals may face in accessing shared micromobility services. Fewer than half (46%) of examined programs impose more than one equity requirement. To do so requires a multipronged approach that recognizes and addresses different dimensions of exclusion that may manifest in shared micromobility access. In subsequent sections, we discuss how cities can better align program goals, requirements, data, and evaluation to ensure equity is imbued in all stages of the process and that cities are able to better assess if and how program components should iterate to better meet equity objectives.

When considering the scope of equity requirements across cities, it is important to acknowledge that cities may not have uniform leverage they can exert over private service providers. Depending on the size and attractiveness of the market, some cities may feel that they cannot make the same demands of a service provider that another city might. For instance, DDOT staff noted that the City anticipated getting pushback from companies when it decided to require companies to provide free, unlimited 30-minute rides to income-qualified individuals. However, companies did not object to the new requirements, which DDOT staff assumed was because micromobility companies consider Washington, D.C., an important market. Charleston staff, by contrast, feared that mandating extensive requirements would preclude any operators from applying to operate in the city. While conversations with staff suggest that larger cities may be in a better position to make demands of companies than cities in smaller markets by dint of their market power, it is also possible that equity efforts in one city may pave the way for opportunities in another. For example, cities may adopt data or equity requirements from programs operating in other cities, adjusted to local context. Cities with smaller planning or transportation staff may lack the capacity to develop robust equity programs from scratch. Instead, they could consider requirements already implemented elsewhere and adjust them to fit the local context; because the requirements are already implemented elsewhere, the city can be confident that mobility operators are capable of executing on them.

7.2 A NEED TO FOCUS ON ACCESS AND OUTCOMES

Most cities that enact equity requirements focus on expanding *access* to shared micromobility services; fewer measure shared micromobility *outcomes*. Even some programs highlighted in this research that have both robust equity and data sharing requirements focus evaluation on the extent to which they have achieved more equitable access. While, by definition, achieving more equitable outcomes requires having more equitable access to services, measuring both elements can help to identify

remaining gaps in service or barriers to access. For example, cities may require that bikes are distributed across space and audit vehicle distributions daily to ensure operators are complying with distribution requirements. However, by measuring outcomes (e.g., number of trips originating and ending in neighborhoods; number of trips by people enrolled in reduced rate programs), cities can better identify remaining gaps. Offering a service—whether it is a bike on a corner or a reduced fare—is insufficient to ensure access as people lead intersectional lives and often face multiple barriers simultaneously. A bike on one’s street may be close by, but inaccessible if a person cannot afford the fare. A reduced fare may be available, but hurdles to apply for and activate that fare may be onerous or opaque. In Portland, OR, people wishing to sign up for the discounted Spin Access program in person face limited opportunity: the Spin office is only open on Mondays from 11 a.m. to 2 p.m. (Spin, 2022). Measuring outcomes, therefore, is necessary to understanding if and how efforts to mandate access across space and individuals are succeeding.

A key challenge to evaluating outcomes is data availability. Cities can consider two dimensions of outcomes: outcomes across space, and outcomes across individuals. Many cities collect data sufficient to examine outcomes across space (e.g., trips originating in different neighborhoods or to/from targeted equity zones). Many fewer, however, collect data related to users, instead relying on proxy metrics such as trip start and end points as a measure of equity. Yet geographic origins and destinations cannot provide information about users’ characteristics important to understanding additional dimensions of equity and exclusion. For example, are e-scooter trips taken in an equity zone taken by neighborhood residents, or by people visiting the neighborhood’s bars and restaurants? Some cities disaggregate use by equity requirement or program to better understand different dimensions of use or exclusion. Washington, D.C., for example, requires operators to report the number of trips, miles, and minutes made by people signed up for the reduced rate plan. DDOT then took concrete action based on data evaluation; when staff observed lower uptake in the low-income pass programs, they tied fleet increases to low-income plan sign-ups to encourage operators to reach out to more communities.

Another method for cities to understand who uses shared micromobility services are user surveys. While some programs may conduct their own surveys (e.g., Capital Bikeshare administers its own user survey), surveys can prove expensive and challenging to administer. Cities such as Baltimore, therefore, require operators to send a city-created survey annually to users via app and email. Distributing a survey via micromobility operators is free to the city, reaches any user connected to the app or email, and allows the city to ask questions directly related to program goals or objectives.

Using a combination of trip data and user surveys, cities should include a suite of evaluation metrics that focus on neighborhood-level evaluations (e.g., share of trips originating/ending in neighborhoods by income) as well as user-based outcomes (e.g., share of users by race, gender). To fully evaluate the latter, cities need to either partner with shared micromobility operators or independently field user surveys to understand who is using the services, as well as who may remain excluded. Surveys may remain

anonymous and disconnected from user data (e.g., trip origins or destinations) to allow cities to disaggregate data by race, gender, income, ability, and other sociodemographic traits, while also protecting user privacy.

7.3 BETTER ALIGNMENT NEEDED BETWEEN PROGRAM GOALS, COMPONENTS, AND DATA

Many cities have goals, program components, and collect data. These three components, however, are not always clearly connected to ensure that cities can evaluate a program to determine if it meets program objectives, or what iterations should be implemented to better target programming. Cities should strive to create explicit connections between equity goals, program components, and data requirements by following a clear logic model at the outset to ensure robust equity evaluation and program delivery. In many cases, it proved challenging to determine the extent to which equity program requirements are explicitly linked to equity goals given the varied approaches cities themselves take to equity. Some cities have adopted equity goals at the city level, others at the departmental level, some have both, and others have none at all. Some cities have developed equity vision statements—sometimes in lieu of goals—and others have issued statements on equity, particularly in the wake of the 2020 Black Lives Matter movement. Others have departments, offices, or task forces tasked with specific objectives such as drafting a strategic plan, or broad mandates such as working across city agencies to advance equity. We find that equity statements at the city level are not a guarantee for equity requirements in shared micromobility programs; nor does the absence of city-level equity goals or statements preclude equity requirements from shared micromobility programs. Like previous researchers (Howland et al., 2017), we find that many equity goals and statements remain relatively amorphous and general, creating challenges operationalizing the equity statements into tangible actions.

Cities varied in their approach to requiring data sharing. Some required vendors to share data without outlining specific data to be reported. Sunnyvale, CA, for example, requires “permitted [bikeshare] operators to provide information on the entire Sunnyvale fleet, including all trips that start or end in Sunnyvale, on a monthly basis” (City of Sunnyvale, 2018). Others specify both data format (e.g., Mobility Data Specification (MDS) or General Bikeshare Feed Specification (GBFS)) and enumerate specific variables to be reported. Tacoma, WA’s, shared scooter program, for example, requires:

"The shared mobility vendor shall make data available to the City that is compliant with the Mobility Data Specification (MDS) format for GBFS. The data shall be made available to the City, at a minimum, on a weekly basis...The minimum basic data provided and available for viewing should include:

- Quantity of vehicles deployed
- Location of where vehicles have been deployed
- Locations of trips
- Number of rides/trips
- Average trip length

- Average trip distance
- Number of unique users

All shared mobility vendors shall submit quarterly summaries to the City outlining performance related to equity, including:

- Number of local users who accessed the fleet without a smart phone
- Number of local users who accessed the fleet using a cash payment option
- Number of local users who signed up for the low-income discount programs
- Work done to publicize and promote your equity programs" (City of Tacoma, 2020).

The City of Tacoma is one of many programs to require data formatted in MDS. MDS ensures accessible and high-quality data that can be compared across locations and has become industry standard. Programs seeking to iterate or impose data requirements should consider requiring data formatted in MDS to ensure high-quality data are delivered.

Most cities, regardless of the robustness of their city or program-level goals and data collection details, could benefit from self-evaluation to ensure clear connections between program goals, components, and data collection. For example, Baltimore has established three goals for its dockless vehicle program, including an equity specific goal: "Improve equity for Baltimore City residents, including through opportunities, employment, and the ability to access amenities regardless of personal characteristics, historical disenfranchisement, or geographical locations within the city" (Baltimore City Department of Transportation, 2021a). A next step would be to identify which specific program components would help meet the goal, followed by developing a set of KPIs to measure success. For example, a related program component would be a local hiring requirement and a KPI would be the number of new, local hires made by the operators. Asking questions such as "Has or will this KPI lead to an actionable outcome?" may also be beneficial. Assessing the linkages across program goals, program components, and data can help strengthen the alignment between goals and outcomes for cities that are advanced in their equity efforts, such as Baltimore, and offer a clear starting place for cities with more fledgling equity programs.

Cities without current equity goals that are seeking to expand their equity efforts should prioritize setting clear equity-focused program goals. They may ask themselves: What they are hoping to achieve with the program? Who do they want to benefit from the program? What broader city goals can be advanced through this program? Staff should also agree on a shared definition of equity to ensure a common foundation from which to base clear and actionable goals. Staff within the same department or agency may define equity differently, so reconciling those differences and establishing a shared definition is paramount. In conducting the policy scan, we found that very few places appear to have a clear definition of equity, or at least did not have this information publicly accessible.

7.4 EQUITY REQUIREMENTS CANNOT SUBSTITUTE FOR SYSTEMIC CHANGES

Community empowerment has been an important point of discussion with our Technical Advisory Committee throughout the course of this project. To what extent are the community members—who are often the target audience for many of the equity requirements cities are instituting—involved in the conversation? Are cities conducting community mobility needs assessments to determine what these community members want and need before establishing shared micromobility programs? Based on the data we gathered and the case studies we conducted, we find that by and large, cities are not conducting mobility needs assessments prior to shared micromobility program launch to determine how a program fits within the broader context of community priorities, or even if it *is* a priority for a community. Perhaps a mobility needs assessment would reveal that shared micromobility is not a solution that community members are interested in, or perhaps they are interested but would prefer individual over shared devices. Or, perhaps they are interested but only after infrastructure investments are first in place.

A number of possible reasons exist for why so few shared micromobility programs stem from community needs assessments, many of them pointing to systemic limitations in how cities plan, as well as the fact that they require money, time, and dedicated staff. One challenge may be mismatched levels of government responsible for planning. For instance, in Charleston, while the City runs the bikeshare program, it is the County and *not* the City that is responsible for doing most of the transportation planning, including community engagement efforts. These kinds of jurisdictional divisions of labor are not uncommon.

Second, cities may also engage community members about a specific mode or a potential project, rather than create more open-ended conversations about mobility needs. To move towards a model of community empowerment, cities would need to make significant overhauls in how they plan to include—and act on—community input beyond a single mode or project by dedicating resources to open-ended needs assessments.

Third, many cities may have experienced intense pressure to develop a permitting process before (or even after) shared devices were deployed, perhaps without permission, on city streets. In this way, cities planned reactively to a new mode in the public right-of-way. As with any new technology, however, cities recognized that large uncertainties remained over who, how, or where people would use shared modes. Places like Baltimore, Chicago, and Washington, D.C., purposefully adopted short-term permit systems to iterate their programs as they learn more about what does and does not work. Many of these efforts have included community engagement of different styles, venues, and times. Yet cities must pair program-specific engagement with broader efforts needed to truly advance equity. Even the most accessible shared micromobility programs cannot make up for missing infrastructure or unsafe streets. In the words of one service provider we spoke with: operators “can bring data to the table”

but they “cannot provide the money or political will to make the big infrastructure changes that are needed.”

7.5 PROMISING APPROACHES AND FUTURE RESEARCH

While we originally sought to evaluate the extent to which equity program requirements translate to desired outcomes, we found that many cities/agencies do not collect or require the types of data needed to conduct that level of analysis. For instance, targeted outreach and marketing requirements coupled with reduced fare programs may be more effective at advancing equity outcomes than requiring service operators to maintain a 24-hour multilingual call center, but more data are needed to support comparative analyses. In this research, we document the prevalence of seven common equity requirements, but we do not assert that these requirements invariably lead to desired outcomes. Additional research is needed to evaluate the relative effectiveness of the different approaches cities and agencies take so that the requirements that are most effective at advancing equity are prioritized.

While we cannot point to requirements that most effectively deliver equitable outcomes, we did identify a few promising approaches to advance equity in shared micromobility programs. Including equity requirements in an RFP or operating agreement is critical, as is what those components are and how they address the intersectional nature of equity and exclusion. Yet requirements are just a starting point. Cities also need to link operational incentives to desired equity outcomes. Washington, D.C., for example, increases scooter fleet caps based on the share of users who sign up via the reduced fare program. Others (e.g., Chicago) limit fees applied to reduced fare trips or trips that originate in low-income neighborhoods. In Baltimore, companies that comply with regulations can request to have their permits automatically renewed rather than having to submit a new, lengthy application. Performance-based metrics can be effective, so long as they are applied consistently across operators and contexts. We also found that it may be useful for cities to start with relatively short pilot timelines (e.g., one year). While short pilots add administrative burden on city staff, they also present opportunities to adjust and improve the program based on previous evaluations.

Unsurprisingly, cities that dedicated staff time and resources to managing shared micromobility programs tend to have more robust equity programs than those that did not. In Baltimore, for example, a full-time staff member is assigned to overseeing the dockless vehicle program, allowing them to dedicate the time needed to conduct intensive engagement and evaluation—including attending more than 40 neighborhood association meetings, going door to door to talk to community members, and doing two-hour observations in each of the 20 designated equity zones as part of the evaluation process. It is worth noting, however, that the Baltimore staff is highly self-motivated and instigates many of these efforts of their own volition, not because the City requires it. This is an important reminder that the strength of these programs is often heavily dependent on the staff who are hired to manage them. To encourage similar efforts, cities should make concerted efforts to hire diverse, equity-focused staff with lived experience and/or familiarity with impacted communities to lead shared micromobility programs and/or write specific equity-focused objectives into job positions.

Finally, most—if not all—cities would benefit from ensuring that there is a clear arc connecting *specific* goals with program requirements; that each program requirement is matched with targeted data collection to enable an assessment of how successful each requirement is in meeting its goals; and transparent evaluation to measure progress and identify future paths of improvement or iteration. Through each of these processes, cities must not only engage with the community members these equity requirements are intended to serve, but, ultimately, move towards a model of co-creation and empowerment in order to truly move the needle on equity.

8.0 NEXT STEPS: TRANSLATING RESEARCH INTO PRACTICE

In this research, we found that shared micromobility programs in the U.S. implement a wide array of equity requirements ranging from absent to robust. Of the 239 shared micromobility programs reviewed, 62% have clear equity requirements. Research also reveals, however, that even when programs have equity requirements, those requirements are not always supported by data collection and evaluation metrics needed to assess the efficacy of requirements in practice. Instead, requirements—when implemented—often appear in a vacuum divorced from broader goals to guide program development. Furthermore, many agencies do not collect data or calculate evaluation metrics to ensure that the program delivers on its equitable outcome promises. Taken together, this leads to the implementation of shared micromobility equity programs that do not have clear connections between goals, program design and requirements, and evaluation, which makes assessing equity outcomes difficult or impossible.

Using findings from this research, we generated two concrete practice-oriented outputs to directly apply this research to practice. First, we developed an interactive Shared Micromobility Equity Map detailing shared micromobility equity requirements in U.S. cities, as no such database or archive previously existed. The absence of a comprehensive list poses challenges to cities considering implementing or iterating their own shared micromobility equity requirements. The map documents the shared micromobility equity requirements from bikeshare and shared e-scooter programs across the U.S. Each record includes detailed information about what, if any, equity requirements are imposed (e.g., none, reduced fare, smartphone alternative access, etc.). The interactive map shows practitioners where shared micromobility programs are and what program components are present. It also enables searching and filtering to fit one's needs and questions. For example, city staff may be interested in what requirements a peer city has implemented; alternatively, staff may want to know which cities have implemented geographic service requirements as part of their shared micromobility equity plan.

Second, we created an online Shared Micromobility Equity Evaluation Tool. The Equity Evaluation Framework Tool operationalizes the framework outlined in this report to provide an interactive web-based evaluation tool targeted towards public-sector agencies or departments that operate, permit, or regulate shared micromobility services. The tool creates a user-friendly interface for agencies or departments to evaluate their current shared micromobility program(s) across elements included within the Equity Evaluation Framework Tool. Similar to the framework, it emphasizes how equity should be incorporated throughout shared micromobility program design, implementation, and evaluation. At each step, the tool offers public staff the opportunity to assess and reflect on their own program, as well as access examples of shared micromobility equity approaches. It also provides flexibility to allow agencies to evaluate unique and/or future shared micromobility modes within the same framework. Upon completing the evaluation, respondents receive a customized output based on provided answers,

including a qualitative score for each assessed program and action plans tailored to their unique program components. The online tool allows agencies to collaborate across staff members, save progress as needed, and reference previous evaluation summaries. Please contact the report authors for additional details about either the Shared Micromobility Equity Map or Shared Micromobility Equity Evaluation Tool.

9.0 REFERENCES

- Aman, J. J. C., Zakhem, M., & Smith-Colin, J. (2021). Towards Equity in Micromobility: Spatial Analysis of Access to Bikes and Scooters amongst Disadvantaged Populations. *Sustainability*, 13(21), 11856. <https://doi.org/10.3390/su132111856>
- Aultman-Hall, L., & Ursaki, J. (2015). Quantifying the Equity of Bikeshare Access in US Cities. *Transportation Research Center Research Reports*.
<https://scholarworks.uvm.edu/trc/267>
- Austin Transportation Department. (2021). *Director Rules for Deployment and Operation of Shared Small Vehicle Mobility Systems*.
https://austintexas.gov/sites/default/files/files/Transportation/Dockless_Final_Accepted_Searchable.pdf
- Baltimore City Department of Transportation. (2019). *Baltimore City Dockless Vehicle Pilot Program Evaluation Report*. <https://transportation.baltimorecity.gov/bike-baltimore/dockless-vehicles>
- Baltimore City Department of Transportation. (2020). *Baltimore City Dockless Vehicle Program Annual Evaluation Report: Permit Year One*.
<https://transportation.baltimorecity.gov/bike-baltimore/dockless-vehicles>
- Baltimore City Department of Transportation. (2021a). *Baltimore City Dockless Vehicle for Hire Program Permit Application: July 1, 2021—June 30, 2022 Permit Period*.
<https://transportation.baltimorecity.gov/bike-baltimore/dockless-vehicles>
- Baltimore City Department of Transportation. (2021b). *Dockless Vehicles for Hire: Rules and Regulations*.

<https://transportation.baltimorecity.gov/sites/default/files/Dockless%20Rules%20Regs%20FINAL.pdf>

Baltimore Neighborhood Indicators Alliance. (2021). *Vital Signs 19 | BNIA – Baltimore Neighborhood Indicators Alliance*. https://bniajfi.org/vital_signs/

Bhuyan, I. A., Chavis, C., Nickkar, A., & Barnes, P. (2019). GIS-Based Equity Gap Analysis: Case Study of Baltimore Bike Share Program. *Urban Science*, 3(2), 42. <https://doi.org/10.3390/urbansci3020042>

Bosselman, A. (2019, November 21). BREAKING: Denver's Bike Share Program Will Shut Down; City Will Shake up Scooter Program. *Streetsblog Denver*. <https://denver.streetsblog.org/2019/11/21/breaking-denvers-bike-share-program-will-shut-down-city-will-shake-up-scooter-program/>

Bureau of Transportation Statistics. (2021, March 24). *COVID-19 Crushes Bikeshare and E-scooter Ridership, Closes Systems Permanently in Some Cities | Bureau of Transportation Statistics*. <https://www.bts.gov/data-spotlight/covid-19-crushes-bikeshare-e-scooter-ridership>

Bureau of Transportation Statistics. (2022). *Bikeshare and E-scooters Data and Visualizations*. <https://data.bts.gov/stories/s/Bikeshare-and-E-scooter-Table-of-Contents/fseh-ipecc/>

California Air Resources Board. (2018). *Low-Income Barriers Study, Part B: Overcoming Barriers to Clean Transportation Access for Low-Income Residents*. https://ww2.arb.ca.gov/sites/default/files/2018-08/sb350_final_guidance_document_022118.pdf

Capital Bikeshare. (2021a). *Capital Bikeshare*. <https://www.capitalbikeshare.com/>

Capital Bikeshare. (2021b). *Capital Bikeshare Development Plan*.

<http://www.capitalbikeshare.com/blog/capital-bikeshare-development-plan>

Chen, Z., Guo, Y., Stuart, A. L., Zhang, Y., & Li, X. (2019). Exploring the equity performance of bike-sharing systems with disaggregated data: A story of southern Tampa. *Transportation Research Part A: Policy and Practice*, 130, 529–545. <https://doi.org/10.1016/j.tra.2019.09.048>

Chicago Department of Transportation. (2020). *E-Scooter Share Pilot Program*.

https://www.chicago.gov/content/city/en/depts/cdot/supp_info/escooter-share-pilot-project.html

City and County of Denver. (2020). *Denver Transportation and Infrastructure Request for Qualifications: Shared Micromobility*.

<https://www.denvergov.org/content/denvergov/en/contract-administration/current-bidding-opportunities/2020/rfq-shared-micromobility-services.html>

City and County of Denver. (2021a). *License Agreement for Denver Shared Micromobility Services—Lyft Bikes and Scooters*.

<https://denver.legistar.com/LegislationDetail.aspx?ID=4855768&GUID=570D366C-0E5E-4563-8D52-9687DB007E4F&Options=&Search=>

City and County of Denver. (2021b). *License Agreement for Denver Shared Micromobility Services—Neutron Holdings d/b/a Limebike*.

<https://denver.legistar.com/LegislationDetail.aspx?ID=4855768&GUID=570D366C-0E5E-4563-8D52-9687DB007E4F&Options=&Search=>

City of Baltimore. (2015, July 9). *About Us*. Office of Equity and Civil Rights.

<https://civilrights.baltimorecity.gov/about>

Equity Assessment Program, Article 1 39-1 (2018).

<https://civilrights.baltimorecity.gov/equity-ordinance>

City of Baltimore. (2020, January 14). *Equity Ordinance*. Office of Equity and Civil Rights. <https://civilrights.baltimorecity.gov/equity-ordinance>

City of Birmingham. (2020). *Ordinance No.20-24*. https://www.birminghamal.gov/wp-content/uploads/2020/02/COB-Shared-Micromobility_Ord.-No.-20-24.pdf

City of Charleston. (n.d.). *Equity, Inclusion, and Racial Conciliation | Charleston, SC - Official Website*. Retrieved October 27, 2021, from <https://www.charleston-sc.gov/equitycommission>

City of Charleston. (2015). *City of Charleston 2015 Bike Share Program RFP*.

<https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&cad=rja&uact=8&ved=2ahUKEwj1jpvsnYz0AhVTFjQIHZleDhgQFnoECAMQAQ&url=https%3A%2F%2Fcharleston-sc.gov%2FDocumentCenter%2FView%2F9406%2F15-P035R-Bike-Share-Program-final&usg=AOvVaw21Bw7Sqgy1DES9OSQruSGW>

City of Charleston. (2021a). *Charleston Bike Share Program, Request for Proposals 21-P023R*.

City of Charleston. (2021b). *City of Charleston 2021 Bike Share Program RFP*.

<https://www.charleston-sc.gov/bids.aspx?bidID=601>

City of Chicago. (2019a). *Amendment to Divvy Bicycle Sharing System Agreement*.

<https://chicago.legistar.com/LegislationDetail.aspx?ID=3887347&GUID=60A9B523-B180-40FB-A352-A7A0570B612F&Options=Advanced&Search=&FullText=1>

City of Chicago. (2019b). *City of Chicago Requirements for Scooter Sharing Emerging Business Permit Pilot Program*.

https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&cad=rja&uact=8&ved=2ahUKEwiGh4Lamoz0AhUyHTQIHSUrAnAQFnoECA0QAQ&url=https%3A%2F%2Fwww.chicago.gov%2Fcontent%2Fdam%2Fcity%2Fdepts%2Fcdot%2FMisc%2FEScooters%2FEScootersPilotProgramTerms_06-07-19.pdf&usg=AOvVaw07sMXPuS-BHYM9yXwrRP3O

City of Chicago. (2020a). *Chicago 2020 E-scooter Pilot: Mid-Pilot Report (Aug 12 – Oct 12)*.

[https://www.chicago.gov/content/dam/city/depts/cdot/Misc/EScooters/2020/2020%20Chicago%20E-scooter%20Pilot%20Mid-Pilot%20Report%20\(10-12-20\).pdf](https://www.chicago.gov/content/dam/city/depts/cdot/Misc/EScooters/2020/2020%20Chicago%20E-scooter%20Pilot%20Mid-Pilot%20Report%20(10-12-20).pdf)

City of Chicago. (2020b). *City of Chicago E-Scooter Pilot Evaluation*.

https://www.chicago.gov/city/en/depts/cdot/supp_info/escooter-share-pilot-project.html

City of Chicago. (2021a). *Chicago's Equity Statement of Principles*.

<https://www.chicago.gov/content/city/en/sites/office-of-equity-and-racial-justice/home/Equitystatement.html>

City of Chicago. (2021b). *City of Chicago 2020 E-Scooter Pilot Evaluation*.

https://www.chicago.gov/city/en/depts/cdot/supp_info/escooter-share-pilot-project.html

City of Chicago. (2021c). *Scooter Sharing Municipal Code Amendment*.

<https://chicago.legistar.com/LegislationDetail.aspx?ID=4994287&GUID=98754A45-E689-4F42-B0EB-6A72EE963D75&Options=&Search=&FullText=1>

City of Cleveland. (2021). *Permit Application Instructions: Shared Mobility Device and Bicycle Vendor 2021-2022 Permit*.

<https://www.clevelandohio.gov/sites/default/files/rfp-rfq/SharedMobilityPermitApplicationInstructions.pdf>

City of Culver City. (2020). *Electric Scooter Share Phase 2 Pilot Program Operating Agreement*. https://www.culvercity.org/files/assets/public/new-folder/2020-03-18_att-draft-phase-2-pilot-program-operating-agreement.pdf

City of Dallas. (2020). *Ordinance No. 31479*.

<http://citysecretary2.dallascityhall.com/resolutions/2020/03-25-20/20-0468.pdf>

City of Denver, & Apex Design. (2021). *Dockless Mobility Vehicle Permit Pilot Program Final Report*. <https://www.denvergov.org/Government/Agencies-Departments-Offices/Department-of-Transportation-and-Infrastructure/Programs-Services/Micromobility-Program#:~:text=In%202018%2C%20Denver%20launched%20a,public%20right%2Dof%2Dway.&text=Over%20the%20course%20of%20the,over%206%2C500%20trips%20per%20day>.

City of East Lansing. (2019). *City of East Lansing Ordinance No. 1453*.

<https://www.cityofeastlansing.com/2035/Electric-Scooters>

City of Milwaukee. (2021). *Dockless Scooter Pilot Study 2021*.

<https://milwaukee.legistar.com/View.ashx?M=F&ID=9279266&GUID=29A538B7-06D1-416A-96A4-73C3B1AB5FD8>

City of Minneapolis. (2018). *2018 Minneapolis Motorized Foot Scooter Pilot Survey Summary*.

<https://tableau.minneapolismn.gov/views/2018ScooterMobilitySurveyOpenData/2>

018ScooterPilotSurveySummary?iframeSizedToWindow=true&:embed=y&:showAppBanner=false&:display_count=no&:showVizHome=no

City of Providence. (2019). *Regulations Governing the Placement and Operation of Personal Transportation Devices in the City of Providence.*

<https://www.providenceri.gov/wp-content/uploads/2019/08/PTD-Regulations-Sept-1-2019.pdf>

City of Rochester. (2020a). *REQUEST FOR PROPOSAL FOR A BICYCLE AND SCOOTER SHARING PROGRAM.*

<https://www.rochestermn.gov/home/showdocument?id=27069>

City of Rochester. (2020b). *REQUEST FOR PROPOSAL FOR A BICYCLE AND SCOOTER SHARING PROGRAM.*

<https://www.rochestermn.gov/home/showdocument?id=27069>

City of San Jose. (2021). *Shared Micro-mobility Permit Administrative Regulations.*

<https://www.sanjoseca.gov/home/showpublisheddocument/67740/637600484365070000>

City of Santa Monica. (2019a). *Shared Mobility Pilot Program Summary Report.*

https://www.smgov.net/uploadedFiles/Departments/PCD/Transportation/SantaMonicaSharedMobilityEvaluation_Final_110419.pdf

City of Santa Monica. (2019b). *City of Santa Monica Shared Mobility Device Pilot Program Public Survey Results (Conducted 7-16-2019 to 8-2-2019).*

https://www.smgov.net/uploadedFiles/Departments/PCD/Transportation/SharedMobilityReport_PublicSurvey_Final.pdf

City of Sunnyvale. (2018). *Licensing Agreement Between the City of Sunnyvale and Lime*.

City of Tacoma. (2020). *Public Works Engineering Request for Proposals, Micromobility, Specification No. PW20-0099F*.

City of Washington, DC. (2021). *Office of Racial Equity*. <https://oca.dc.gov/page/office-racial-equity>

Cohen, S., & Cabansagan, C. (2017a). *A Framework for Equity in New Mobility*. TransForm. <https://www.transformca.org/transform-report/framework-equity-new-mobility>

Cohen, S., & Cabansagan, C. (2017b). *A Framework for Equity in New Mobility*. TransForm. <https://www.transformca.org/transform-report/framework-equity-new-mobility>

Creger, H., Espino, J., & Sanchez, A. S. (2018). *Mobility Equity Framework: How to Make Transportation Work for People*. The Greenlining Institute. https://greenlining.org/wp-content/uploads/2019/01/MobilityEquityFramework_8.5x11_v_GLI_Print_Endnotes-march-2018.pdf

DDOT. (n.d.). *Equity Statement*. Retrieved November 8, 2021, from <https://ddot.dc.gov/page/equity-statement>

DDOT. (2018). *Dockless Vehicle Sharing Demonstration*. https://ddot.dc.gov/sites/default/files/dc/sites/ddot/publication/attachments/Dockless%20Demonstration%20Evaluation%2012-17-18_FINAL.pdf

DDOT. (2020a). *2020 Dockless Vehicle Sharing Program Permit Scoring Outcomes*.

https://ddot.dc.gov/sites/default/files/dc/sites/ddot/page_content/attachments/2019.12.6%20Applications%20Matrix%20v3.pdf

DDOT. (2020b). *GOVERNMENT OF THE DISTRICT OF COLUMBIA DEPARTMENT OF TRANSPORTATION WASHINGTON, D.C. TERMS AND CONDITIONS FOR THE PUBLIC RIGHT-OF-WAY OCCUPANCY PERMIT*.

https://ddot.dc.gov/sites/default/files/dc/sites/ddot/page_content/attachments/Final%20Dockless%20Scooter%20Terms%20and%20Conditions.pdf

DDOT. (2021a). *Capital Bikeshare*. <https://ddot.dc.gov/page/capital-bikeshare>

DDOT. (2021b). *Making Dockless Vehicles Accessible to all Washingtonians*.

<https://ddot.dc.gov/page/making-dockless-vehicles-accessible-all-washingtonians>

DDOT. (2021c). *The Equity Scorecard*. ArcGIS StoryMaps.

<https://storymaps.arcgis.com/stories/8ce1d5c8b4644a7cbff0467d68bf7c6b>

Denver Department of Transportation and Infrastructure. (n.d.). *Denver's Scooter and Bike Share Program*. Retrieved July 29, 2021, from

<https://www.denvergov.org/Government/Departments/Department-of-Transportation-and-Infrastructure/Programs-Services/Micromobility-Program>

Dill, J., Mathez, A., McNeil, N., & Howland, S. (2015). *Who uses peer-to-peer carsharing? An early exploration*. 94th Annual Meeting of the Transportation Research Board, Washington, DC.

Giampetro, C. (2021). *King County Community Transportation Needs Assessment*. King County Mobility Coalition.

- Greenfield, J. (2021, October 14). Scooters now a permanent part of Chicago's mobility mix, plus deets on Divvy scooters. *Streetsblog Chicago*.
<https://chi.streetsblog.org/2021/10/14/scooters-now-a-permanent-part-of-chicagos-mobility-mix-plus-deets-on-divvy-scooters/>
- Hall, M. (2017, September 26). Bird scooters flying around town. *Santa Monica Daily Press*. <https://www.smdp.com/bird-scooters-flying-around-town/162647>
- Hosford, K., & Winters, M. (2018). Who are public bicycle share programs serving? An evaluation of the equity of spatial access to bicycle share service areas in Canadian cities. *Transportation Research Record*, 2672(36), 42–50.
- Howland, S., McNeil, N., Broach, J., Rankins, K., MacArthur, J., & Dill, J. (2017). Current Efforts to Make Bikeshare More Equitable: Survey of System Owners and Operators. *Transportation Research Record: Journal of the Transportation Research Board*, 2662(1), 160–167. <https://doi.org/10.3141/2662-18>
- Iraheta Gonzalez, C., Hipólito, A., Jimenez, M., Moreno, P., & Gordon, A. (2018). *Living Cully Community Mobility Needs Assessment* (p. 36). Verde.
<https://static1.squarespace.com/static/57bf2cf2bebafb692dd3505c/t/5bd379377817f7ea5f6943ae/1540585788699/Verde+Mobility+Assessment.pdf>
- Janssen, C., Barbour, W., Hafkenschiel, E., Abkowitz, M., Philip, C., & Work, D. B. (2020). City-to-City and Temporal Assessment of Peer City Scooter Policy. *Transportation Research Record*, 2674(7), 219–232.
<https://doi.org/10.1177/0361198120921848>

- Johnston, K., Oakley, D. A., Durham, A., Bass, C., & Kershner, S. (2020). Regulating Micromobility: Examining Transportation Equity and Access. *Journal of Comparative Urban Law and Policy*, 4, 40.
- Kodransky, M., & Lewenstein, G. (2014). *Can Shared Mobility Help Low-Income People Access Opportunity?* Living Cities & ITDP.
<https://www.livingcities.org/resources/284-can-shared-mobility-help-low-income-people-access-opportunity>
- Krapp, A. (2020). *Transportation Equity Project Prioritization Criteria (Capstone Report)* [University of Illinois at Urbana-Champaign].
<https://www.ideals.illinois.edu/handle/2142/108931>
- LADOT. (2018). *Guidelines for Handling of Data from Mobility Service Provider*.
<https://ladot.lacity.org/sites/default/files/documents/ladotguidelinesforhandlingofdatafrommmps2018-10-25.pdf>
- LADOT. (2019). *LADOT Data Protection Principles*.
https://ladot.lacity.org/sites/default/files/documents/2019-04-12_data-protection-principles.pdf.pdf
- LADOT. (2021). *Dockless Mobility Annual Permit*.
<https://ladot.lacity.org/sites/default/files/documents/ladot-dockless-mobility-annual-permit.pdf>
- Lazo, L. (2021, July 1). Capital Bikeshare expands as Washington commuters return—
The Washington Post. *The Washington Post*.
<https://www.washingtonpost.com/transportation/2021/07/01/electric-bike-dc-capital-bikeshare/>

- Lee, R. J., Sener, I. N., & Jones, S. N. (2017). Understanding the role of equity in active transportation planning in the United States. *Transport Reviews*, 37(2), 211–226. <https://doi.org/10.1080/01441647.2016.1239660>
- Litman, T. (2020). *Evaluating Transportation Equity: Guidance for Incorporating Distributional Impacts in Transportation Planning* (p. 71). Victoria Transport Policy Institute. https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&cad=rja&uact=8&ved=2ahUKEwj3_5nFqlz0AhUNJzQIHskpCa0QFnoECAgQAQ&url=https%3A%2F%2Fwww.vtpi.org%2Fequity.pdf&usg=AOvVaw1UMNUR7gG_4LkQz8DAcLdm
- Marshall, A. (2018, August 30). San Francisco Is Bringing Back Banned Electric Scooters—With Limits. *Wired*. <https://www.wired.com/story/san-francisco-santa-monica-e-scooter-permits/>
- Massey, J., Beezer, D., & Stauber, A. (2020). *Community Transportation Needs Assessment: Process, Results, and Lessons Learned*. TransForm. <https://www.transformca.org/transform-report/community-transportation-needs-assessment>
- McNeil, N., Dill, J., MacArthur, J., Broach, J., & Howland, S. (2017). Breaking Barriers to Bike Share: Insights from Residents of Traditionally Underserved Neighborhoods. *TREC Final Reports*. <https://doi.org/10.15760/trec.176>
- McNeil, N., MacArthur, J., Broach, J., Cummings, A., Stark, R.-L., Sanders, R., & Witte, A. (2019). *National Scan of Bike Share Equity Programs*.

- Meng, S., & Brown, A. (2021). Docked vs. dockless equity: Comparing three micromobility service geographies. *Journal of Transport Geography*, 96, 103185. <https://doi.org/10.1016/j.jtrangeo.2021.103185>
- Metzger, H. (2021, March 30). Council committee delays vote on changes to e-scooter, shared bike operations in Denver | Government | denvergazette.com. *The Denver Gazette*. https://denvergazette.com/news/government/council-committee-delays-vote-on-changes-to-e-scooter-shared-bike-operations-in-denver/article_d55e8464-919b-11eb-8732-f7ae0f9b866f.html
- Mooney, S. J., Hosford, K., Howe, B., Yan, A., Winters, M., Bassok, A., & Hirsch, J. A. (2019). Freedom from the station: Spatial equity in access to dockless bike share. *Journal of Transport Geography*, 74, 91–96. <https://doi.org/10.1016/j.jtrangeo.2018.11.009>
- NACTO. (2020). *Shared Micromobility in the U.S.: 2019*. National Association of City Transportation Officials. <https://nacto.org/shared-micromobility-2018>
- New Urban Mobility Alliance. (n.d.). *New Mobility Atlas*. Retrieved July 28, 2021, from <https://www.numo.global/new-mobility-atlas>
- Oakland Department of Transportation. (2019). *City of Oakland Dockless Scooter Share Program Terms and Conditions + Permit Application*. <https://cao-94612.s3.amazonaws.com/documents/OakDOT-Scooter-Share-Terms-and-Conditions-May-2019.pdf>
- Office of Racial Equity: A Division of the San Francisco Human Rights Commission. (n.d.). *Our Vision and Values*. Retrieved July 27, 2021, from <https://www.racialequitysf.org/about>

- Office of Social Equity & Innovation - City and County of Denver. (n.d.). *Equity Values and Goals*. Retrieved July 29, 2021, from <https://www.denvergov.org/Government/Departments/Mayors-Office/Programs-and-Initiatives/Social-Equity-and-Innovation>
- Portland Bureau of Transportation. (2018). *2018 E-Scooter Findings Report*. <https://www.portlandoregon.gov/transportation/article/709719>
- Portland Bureau of Transportation. (2020). *2019 E-Scooter Findings Report*. <https://www.portland.gov/transportation/escooterpdx/2019-e-scooter-report-and-next-steps>
- Riggs, W., & Kawashima, M. (2020). *Exploring Best Practice for Municipal E-Scooter Policy in the United States* (SSRN Scholarly Paper ID 3512725). Social Science Research Network. <https://doi.org/10.2139/ssrn.3512725>
- San Francisco Municipal Transportation Agency. (2019). *Memorandum: Powered Scooter Share Program Staff and Interested Parties*. https://www.sfmta.com/sites/default/files/reports-and-documents/2019/08/scooter_policy_directive_041519_signed.pdf
- San Francisco Municipal Transportation Authority. (2017, November 9). *Guiding Principles for Emerging Mobility Services and Technologies* [Text]. SFMTA; San Francisco Municipal Transportation Agency. <https://www.sfmta.com/reports/guiding-principles-emerging-mobility-services-and-technologies-0>
- Saphores, J.-D., Shah, D., & Khatun, F. (2020). *A Review of Reduced and Free Transit Fare Programs in California*.

Seattle Department of Transportation. (2021). *Free-Floating Scooter Share Pilot Permit Requirements for the 2020-2021 pilot permit cycle*. Seattle Department of Transportation.

<https://www.seattle.gov/Documents/Departments/SDOT/NewMobilityProgram/SDOT%20Scooter%20Share%20Pilot%20Permit%20Requirements%201.2%20.pdf>

Seattle Department of Transportation. (2022). *Transportation Equity Framework Implementation Plan*.

<https://app.powerbigov.us/view?r=eyJrIjojZjAzMjUyMTktNzk0NS00ZGIyLWFiZGMtYWVmYTQ5ODA1YTc5liwidCI6Ijc4ZTYxZTQ1LTZiZWItNDAwOS04Zjk5LTM1OWQ4YjU0ZjQxYiJ9>

SFMTA. (2021). *2021 SFMTA Powered Scooter Share Program Permit Application*.

https://www.sfmta.com/sites/default/files/reports-and-documents/2021/03/2021_powered_scooter_share_permit_application_and_appendix_a.pdf

Shaheen, S. A., Cohen, A. P., & Martin, E. W. (2013). Public Bikeshearing in North America: Early Operator Understanding and Emerging Trends. *Transportation Research Record: Journal of the Transportation Research Board*, 2387(1), 83–92. <https://doi.org/10.3141/2387-10>

Shaheen, S. A., Guzman, S., & Zhang, H. (2010). Bikeshearing in Europe, the Americas, and Asia: Past, Present, and Future. *Transportation Research Record: Journal of the Transportation Research Board*, 2143. <https://trid.trb.org/view/911158>

Shaheen, S., Bell, C., Cohen, A., & Yelchuru, B. (2017). *Travel Behavior: Shared Mobility and Transportation Equity*. <https://trid.trb.org/view/1498424>

- Shared Use Mobility Center. (2019). *Efforts to Improve Equity of Bikeshare Programs*.
<https://learn.sharedusemobilitycenter.org/publication/efforts-to-improve-equity-of-bikeshare-programs/>
- Spence, S. (2021, August 18). *Council opts against formal support of equity report, may make commission permanent*. Charleston City Paper.
<http://charlestoncitypaper.com/city-opts-against-formal-support-of-equity-report-but-may-make-commission-permanent/>
- Spin. (2022). *Spin Access*. <https://www.spin.app/spin-access>
- Tong, S. (2020, September 2). E-scooters and bikes rebound as COVID-19 crisis keeps on rolling. In *Marketplace*. <https://www.marketplace.org/2020/09/02/e-scooters-bikes-rebound-covid-19-crisis-keeps-on-rolling/>
- Twaddell, H., & Zgoda, B. (2020). *TRCP Research Report 214: Equity Analysis in Regional Transportation Planning Processes, Volume 1: Guide (2020)*. National Academies of Sciences, Engineering, and Medicine.
<https://doi.org/10.17226/25860>
- USDOT. (2018). *MOD Sandbox Demonstrations Independent Evaluation: CTA Integrated Fare Systems—From Transit Fare to Bike Share Project Evaluation Plan*. https://rosap.ntl.bts.gov/view/dot/40262/dot_40262_DS1.pdf?
- Westervelt, M., & Zipper, D. (2020, April 16). Anyone Feel Like Saving Electric Scooters? *Bloomberg.Com*. <https://www.bloomberg.com/news/articles/2020-04-16/subsidize-e-scooters-cities-should-consider-it>

Young, L., Irvin, E., & Shankar, P. (2019). *Equity and Smart Mobility*. Center for Neighborhood Technology. <https://www.cnt.org/publications/equity-and-smart-mobility>

APPENDIX

9.1 CASE STUDIES

9.1.1 Baltimore, MD: Dockless Vehicle for Hire Program

The City of Baltimore has taken a phased approach to managing dockless vehicles beginning with a six-month pilot conducted between August 2018 and January 2019. After the conclusion of the pilot, the City published an evaluation report and recommended creating a permanent program based on pilot findings. Following the passage of Council Bill 19-0324, the City established an annual permit program in August 2019 and issued its first permits, which it extended for an additional six months due to the COVID-19 pandemic. A second round of annual permits was issued for 2021-22; the City will issue a third round of permits for 2022-23.

Equity has remained a key focus for the City of Baltimore from the initial pilot through the current program iteration. It incorporated several equity components into the pilot, including deployment in predetermined “equity zones,” and has developed a robust set of equity requirements over time. By taking a phased approach with annual permit applications, the City has been able to regularly evaluate its dockless vehicle program and iterate requirements as needed.

Baltimore’s established goals for its dockless vehicle program are connected to both the program equity requirements and data collection efforts, which enables regular program evaluation. In that regard, **Baltimore demonstrates clear alignment between goals, requirements, and data collection, although the program might benefit from defining clear key performance indicators (KPIs)**. Baltimore City Department of Transportation (BCDOT) staff have also conducted extensive community engagement efforts since the first pilot was launched in 2018, setting a strong example for other cities.

9.1.2 Aligning with Community Needs

9.1.2.1 *Equity Goals*

At the city level, Baltimore has an Office of Equity and Civil Rights whose mission is to “carry out activities to eliminate inequity, inequality, and discrimination” (City of Baltimore, 2015). Baltimore City Council also passed an Equity Assessment Ordinance in September 2018 mandating that each city agency identify an “Equity Coordinator” responsible for managing the agency’s Equity Assessment (City of Baltimore, 2020). Equity is defined in the ordinance to mean “closing the gaps in policy, practice, and allocation of City resources so that race, gender, religion, sexual orientations, and income do not predict one’s success, while also improving outcomes for all” (Equity Assessment Program, 2018). These efforts

are indicative of the City's interest in prioritizing equity and applying an equity lens to its work.

In addition to the city-level efforts, BCDOT outlines three program-specific goals in its 2021-2022 permit application:

- ***Increase safety*** for everyone, including those renting vehicles, sharing a sidewalk and sharing the roadway.
- ***Improve equity*** for Baltimore City residents, including through opportunities, employment, and the ability to access amenities regardless of personal characteristics, historical disenfranchisement, or geographical locations within the city.
- ***Promote active and sustainable transportation*** for a healthier community and cleaner environment.

9.1.2.2 Community Mobility Needs Assessment

City staff have not conducted a community mobility needs assessment specific to dockless mobility services. Staff have, however, used data from the Baltimore Neighborhood Indicators Alliance (BNIA) to set program goals and conduct evaluations. BNIA's "Vital Signs" are compiled and hosted by the University of Baltimore and visualize indicators at the Community Statistical Area (CSA) level (Baltimore Neighborhood Indicators Alliance, 2021).

9.1.2.3 Outreach/Engagement and Relationship Building

City staff reported doing extensive community outreach and engagement over the last few years specific to the dockless vehicles program. Activities have included the following:

- Attend community association meetings (program staff reported attending over 40 since the pilot first launched);
- Go door-to-door to speak with community members in areas where the vehicles are deployed, with a particular focus on speaking with people in the designated "equity zones";
- Post flyers in neighborhoods;
- Maintain a general email inbox and respond individually to emails;
- Conduct annual surveys (they have alternately surveyed community members and riders, and are working with Johns Hopkins University on a survey specifically of riders who begin a ride in an equity zone);
- Coordinate with downtown development associations because those areas have some of the highest ridership, and the associations employ city guides who can answer questions about dockless vehicles;
- Maintain regular communication with the Mayor's Commission on Disabilities and Federation for the Blind, which has its U.S. headquarters in Baltimore; and
- Publish quarterly and annual reports.

BCDOT also convenes a monthly Dockless Vehicle Committee (DVC) to advise on the dockless vehicle program. The committee is comprised of other city agencies, advocacy organizations, and local nonprofits. **The level of engagement the City has undertaken speaks not only to the fact that the City has invested resources in the program by hiring a full-time staff member to oversee it, but also to the motivation of the staff.**

9.1.3 Program Design, Evaluation, and Iteration

9.1.3.1 Program Equity Requirements

Table 9.1 outlines the equity components of Baltimore’s dockless vehicle program. Baltimore has had a geographic equity component since the initial pilot launched, which it has continued to refine. During the pilot, the City required companies to deploy at least 25% of its fleet in designated equity zones, which were initially determined using neighborhood median household income data (Baltimore City Department of Transportation, 2019). To further refine the equity zones after the initial pilot, BCDOT held a workshop with planners representing the City’s nine planning districts. Together they identified a list of 40 potential equity zones—each zone is roughly a few blocks in size—which were overlaid with key indicators including percentage of households with no vehicle access and average commute time to work. City staff eventually narrowed the number of zones to 20 after visiting each potential zone to confirm accessibility characteristics. They also updated vehicle deployment requirements for the equity zones, mandating the companies deploy at least three vehicles in each zone rather than a fleet percentage.

Baltimore’s dockless vehicle program requires companies to provide several social equity components. Baltimore requires that companies offer a reduced rate for people living at or below 200% of the federal poverty level, and for vehicle access without the use of a smartphone. Companies must also offer a cash payment option. Additionally, the City requires companies to maintain a multilingual customer service phone line and, after conversations with National Federation of the Blind, staff added a requirement that companies affix Braille stickers to all devices. The City has also established procedural equity requirements mandating that companies do at least one educational/outreach event per year in each equity zone.

In addition to establishing firm requirements, the City identified *preferred* program elements. For example, it does not require companies to provide accessible vehicles, but companies that have accessible vehicles as part of their fleet offerings are scored higher during the selection process than those that do not. Companies also receive higher scores for having a Baltimore-based staff with “fair compensation and benefits,” for “equitable and community-based hiring,” and for providing “robust and diverse training” (Baltimore City Department of Transportation, 2021a). When asked about the decision to prefer but not require these program elements, City staff noted that there is a fine line to walk when

determining what they can require of for-profit companies. Since the City does not subsidize operations, it has to pick and choose what it can require. In some cases, it indicates a preference rather than requirement because staff are unsure if particular requests are currently feasible. By indicating preference, they alert companies of future city wishes while acknowledging that new programs or requirements cannot always be met overnight. **City staff noted that maintaining a “wish list” is important for program evolution. By establishing a preference for companies that provide accessible vehicles in one permit year, staff can revise preference into a firm requirement in future years.**

Table 9.1 Baltimore dockless vehicle for hire program snapshot

Start Date	AUGUST 2019	
Operating Structure	Permit	
Equity Requirements		
<i>Spatial Equity</i>		
<i>Geographic Component</i>	Yes	Companies shall deploy no less than 5% and no more than 25% of their fleet to each of the deployment districts defined by the DOT and must deploy at least three vehicles in each equity zone.
<i>Social Equity</i>		
<i>Reduced Rate</i>	Yes	Low-income options for individuals at or below 200% of federal poverty level.
<i>Adaptive Vehicles</i>	No	Companies that offer adaptive vehicles receive hiring ratings during the competitive permit process, but it is not a requirement.
<i>Smartphone Alternative</i>	Yes	Companies shall offer the option to rent dockless vehicles without the use of a smartphone.
<i>Cash Payment</i>	Yes	Companies shall offer the option to rent dockless vehicles through cash payments.
<i>Multiple Languages</i>	Yes	Companies shall maintain live, multilingual 24-hour customer service phone line.
<i>Procedural Equity</i>		
<i>Targeted Outreach/ Marketing</i>	Yes	Any marketing campaigns conducted by companies shall include an effort to reach underserved or low-income populations.
Data Sharing	Yes	Companies are required to report trip data via MDS, to submit a monthly report, and to share a DOT survey with active users.
Compliance/Enforcement Mechanism	Yes	Compliance assessed on an ongoing basis through data reporting (and daily zone-based deployment checks); Permits may be renewed depending on compliance during the year.

9.1.3.2 Data Requirements

The City requires permit holders to provide trip data via MDS, as well as to provide a monthly report that includes the following information (Baltimore City Department of Transportation, 2021a):

1. *Reports on any dockless vehicles lost due to theft or vandalism;*
2. *Aggregated repair information on permit holder's dockless vehicles by model of vehicle and by type of repair;*
3. *Any reports of illegal parking or rebalancing requests from the public;*
4. *All customer complaints received via app, email, or phone call with response time noted;*
5. *Reports on any City meeting attended, community events attended or marketing efforts;*
6. *The number of active users during the past month;*
7. *The number of rides by low-income pass, cash, and non-smartphone users within the past month;*
8. *The number of low-income, cash, and non-smartphone users, disaggregated by the type of plan and user home zip code;*
9. *The number or trips taken by users of the low-income pass; and*
10. *Any updates to maintenance or operational plans.*

Additionally, the City requires each permit holder to send an annual survey—prepared by BCDOT staff—via its app and email to all active users. In addition to collecting user demographics, survey questions help the City gauge its progress towards various program goals. For example, the City asks what mode the survey respondent would otherwise have taken if an e-scooter had not been available, and whether respondents own fewer vehicles as a result of the program. Both questions help the City assess progress towards meeting the overarching program goal of promoting sustainable transportation.

While the City has robust data sharing requirements, it does not explicitly tie each data point to one of the three goals outlined in the permit application.

Setting KPIs to evaluate each goal may help the City ensure that both 1) it establishes clear metrics to evaluate progress or areas for improvement across the program goals, and 2) requires the appropriate data needed to evaluate each KPI.

9.1.3.3 Program Evaluation

The City of Baltimore has published two evaluation reports: the first followed the conclusion of the pilot, and the second at the end of the first permit year (2019-2020). Both reports are organized around assessing progress towards the program goals. Both reports also include a set of evaluation questions and a specific equity analysis. Table 9.2 shows how evaluation questions for the permit

and first year of the pilot compare, with the equity evaluation question remaining constant. During the pilot and first year of the permit program, the City identified two primary goals: 1) Directly increase equity of access for underserved communities; and 2) Promote efficient and sustainable transportation modes (Baltimore City Department of Transportation, 2019, 2020). These goals differed slightly from the goals outlined in the 2021-2022 permit discussed earlier in this case study.

Table 9.2 Baltimore’s pilot and program evaluation questions

Evaluation Questions	
<i>Pilot (2019)</i>	<i>Permit Year One (2019-2020)</i>
How safe are dockless vehicles compared to other transportation modes?	Has safety improved under the permit program?
When, where, and why do people choose to use dockless vehicles?	Where and when do people choose to use dockless vehicles?
Can the vehicles be accessed in an equitable manner under the current provisions?	Can the vehicles be accessed in an equitable manner under the current provisions?
What are the impacts of dockless vehicles on other roadway users?	-
What structures can be put in place to ensure a successful permanent program?	-

The City focuses its evaluations on assessing *access equity*. Data collected throughout the pilot and the first-year permit program assessed the extent to which dockless vehicles could be accessed in an equitable manner across spaces and individuals. The pilot evaluation report, for example, emphasizes company compliance with equity zone deployment requirements. In the second evaluation report, the City included an “Equity Zone Deep Dive Analysis” as an appendix. This appendix includes information about the equity zone selection process, frequently traveled routes, and trip-level data by zone. In addition to relying on data shared by the companies, city staff said that they conducted their own on-the-ground observations in each equity zone.

9.1.3.4 Program Iteration

Baltimore’s phased approach to managing dockless vehicles has enabled it to iterate as it learns. For instance, during the pilot, the City found that companies were not meeting the minimum deployment requirements in the equity zones and that companies were often deploying the dockless vehicles at the edges of—rather than throughout—the zones (Baltimore City Department of Transportation, 2019). The City updated its distribution requirements for the first permit year as a result of these findings. City staff stated that after they found that companies were not properly rebalancing dockless vehicles throughout the day, they instituted a second daily compliance check. Companies must now provide the minimum number of dockless vehicles in each equity zone in the morning *and* the afternoon, and the City checks compliance twice per day. **City staff noted that requiring companies to reapply for operating permits on an annual**

basis has worked to their advantage, as short-term (one-year) permit cycles allow the city to update equity requirements based on the previous year's experience. To further incentivize compliance with requirements, the City now offers automatic permit renewal options for companies that meet expectations.

9.2 CHARLESTON, SC: HOLY SPOKES BIKESHARE

The City of Charleston, SC, launched the bikeshare program “Holy Spokes” in 2017 after several years of planning. The City first released a bikeshare RFP in 2014, but did not receive any responses that were deemed to be a good fit. It released a second RFP in 2016 and awarded Gotcha Bikes a three-year contract with two one-year extension options. With the current contract set to expire in 2021, the City released a new RFP in summer 2021 and is in the process of selecting a new contractor to be the sole bikeshare operator in Charleston.

Equity was not a primary focus of the 2017 RFP. Instead—and heavily motivated by the failed 2014 RFP process—the City was primarily interested in attracting a bikeshare operator that would be willing to launch a program in Charleston without any direct financial support from the City. Since the program launched in 2017, equity has become a greater focus. The City of Charleston was awarded a bikeshare grant to 1) support partnerships between the bikeshare program and local nonprofits and advocacy groups, and 2) expand the program to areas without stations. With the existing contract set to expire, the City has taken the opportunity to emphasize equity as it seeks to identify a new bikeshare contractor. In its 2021 RFP, it incorporated various equity-focused requirements. **While the City appears to be making progress in terms of moving towards a more equitable program design, the City does not have clearly defined equity goals, which hampers its ability to measure progress.** Furthermore, the City does not have regular engagement or evaluation processes. Defining clear goals and establishing clear engagement and evaluation processes represent opportunities for growth as cities work towards achieving both more equitable access and equitable outcomes.

9.2.1 Aligning with Community Needs

9.2.1.1 Equity Goals

In June 2020, the Mayor and City Council voted to create the Special Commission on Equity, Inclusion, and Racial Conciliation (SCEIRC). The commission is tasked with the “creation of measurable outcomes, promotion of greater accountability, and coordination of community wide efforts to achieve racial equity” in Charleston (City of Charleston, n.d.). In August 2021, the commission published a report along with a set of key recommendations to advance racial equity relating to topics such as economic empowerment, health disparities, environmental justice, housing and mobility. Charleston’s City Council, however, opted not to formally adopt the report produced by the commission (Spence, 2021). As a result, the City of Charleston does not have formally established equity goals.

Bikeshare program objectives are identified in both the 2016 and 2021 RFPs. In 2016, program objectives included the following (City of Charleston, 2015):

- *Provide affordable, safe, and efficient transportation available to all residents and visitors of all income levels;*
- *Reduce greenhouse gas emissions by increasing the number of trips made by bicycle and reducing the number of trips made by automobile;*
- *Promote bicycling as an alternative form of transportation, recreation, and exercise;*
- *Provide bicycle accessibility to all socioeconomic groups;*
- *Facilitate transit for commuters, tourists, and other visitors (complement existing mass transit);*
- *Integrate public and private transportation modes by solving the “last mile” issue whereby transit, automobile or pedestrian modes can use a public bicycle to complete their journeys;*
- *Create green jobs and promote businesses in Charleston; and*
- *Provide a service resulting in high rates of membership satisfaction.*

Objectives in the 2021 RFP have been updated and are more explicitly equity-focused (City of Charleston, 2021b):

- *Position Charleston as a national leader in equitable bike share usage and operations;*
- *Expand micromobility options beyond the Peninsula;*
- *Utilize bike share and other micromobility options to fill first and last mile gaps in access to transit;*
- *Create and sustain public/private partnerships that extend the bike share program’s value to the Charleston community; and*
- *Maintain a bike share program that satisfies current funding partners, attracts new partners, and provides service at no operating cost to the City.*

9.2.1.2 Community Mobility Needs Assessment

The City of Charleston has not conducted a community mobility needs assessment. City staff noted that most transportation planning is done by Charleston County rather than the City of Charleston, and this limits its work and involvement in mobility planning.

9.2.1.3 Outreach/Engagement and Relationship Building

City staff have not done any outreach or engagement work related to Holy Spokes either before the program or since it has been in operation. They have instead relied on a grant-funded partnership with Charleston Moves, a local nonprofit, to support outreach and engagement.

9.2.2 Program Design, Evaluation, and Iteration

9.2.2.1 Program Equity Requirements

The 2016 RFP did not include any explicit equity requirements. Contractors were only asked to describe how the system would be “made available to all socio-economic levels of the community, including those without a credit card.” Gotcha Bikes, the selected vendor, did establish a \$5 annual low-income pass through the “Just Rides” program, but no other equity program components have been implemented since bikeshare launched in 2017.

The City of Charleston engaged a consultant to help prepare the 2021 RFP, and the newest RFP includes a variety of equity requirements, as shown in Table 9.3. The RFP references five of the seven equity components we specifically looked at during our policy scan. In terms of spatial equity, the RFP notes that the contractor “should describe their plan for ensuring bicycle access” in neighborhoods that have been defined as equity zones by the City and “should describe their proposed Service Level Agreement metrics related to service provided to the Equity Zones.” The RFP includes social and procedural equity requirements, noting that the contractor “should describe options for a user to pay, reserve, unlock, and park a bicycle that do not require a smartphone or credit card, as well as strategies to reach out to populations who would benefit from these options and enroll them in the program.” The “successful” applicant needs to share examples of prior work that have incorporated similar equity elements. The City will not require the selected contractor to provide adaptive vehicles, but the RFP notes that the City is interested in making adaptive vehicles available, and contractors are encouraged to describe their experience and capabilities in this regard. The only equity program component that is not referenced in the RFP is multilingual options.

Additional elements in the RFP are worth highlighting as they relate to economic empowerment and environmental justice, which are areas highlighted in the SCEIRC report to advance racial equity in Charleston. The RFP asks contractors to describe how their hiring plan “will follow best practices regarding local hiring, inclusion of members of traditionally underserved communities in the hiring process, and fair wages.” It also notes that “Successful respondents will include considerations for accomplishing rebalance in a matter that maximizes carbon reduction.”

Table 9.3 Charleston Holy Spokes bikeshare program snapshot

Start Date	MAY 2017
Operating Structure	Service Contract
Equity Requirements (2021 RFP)	
<i>Spatial Equity</i>	

<i>Geographic Component</i>	Yes	Contractor asked to describe their plan for ensuring bicycle access in equity zones defined by the City.
Social Equity		
<i>Reduced Rate</i>	Yes	\$5 annual membership option available through the Just Ride program with Gotcha Bikes as the contractor.
<i>Adaptive Vehicles</i>	No	While not a required system component, contractors were asked to describe their experience and capabilities in response to the 2021 RFP.
<i>Smartphone Alternative</i>	Yes	Contractor asked to describe options for a user to pay, reserve, unlock, and park without a smartphone.
<i>Cash Payment</i>	Yes	Contractor asked to describe options for a user to pay, reserve, unlock, and park without a credit card.
<i>Multiple Languages</i>	No	No language requirements identified in the 2021 RFP.
Procedural Equity		
<i>Targeted Outreach/ Marketing</i>	Yes	Contractor asked to describe strategies to reach out to populations who would benefit from smartphone alternatives and cash payment options.
Data Sharing	Yes	Open content data to be provided via GBFS.
Compliance/Enforcement Mechanism	Yes	Initial agreement term is for three years, and the City may extend agreement on an annual basis if the City determines extension is in "its best interest."
Evaluation Report	No	None published yet.

9.2.2.2 Data Requirements

City staff confirmed that they have had access to data, including trip and membership data, since bikeshare launched in 2017. They monitor membership in different membership programs, including the Just Rides program, and have made changes to station sites based on data findings. Some stations have moved or closed entirely due to low ridership.

The data sharing requirements laid out in the 2021 RFP are similar to the data the City has had access to since the program launched in 2017. In addition to providing open data via the General Bikeshare Feed Specification (GBFS), the City requires the contractor to provide a monthly report that should include, at a minimum:

- Statistics on ridership by station
- Membership statistics

- Monthly business/financial metrics
- Operations reports

9.2.2.3 Program Evaluation

The City of Charleston has not conducted a systematic evaluation of its bikeshare program and has not produced any evaluation reports to date. Given that the RFP from 2016 laid out a number of program objectives, the City could evaluate its program success to date against those objectives, although the lack of KPIs may limit evaluation.

Like the 2016 RFP, the 2021 RFP also identified a set of objectives, but goes a step further than the 2016 RFP by identifying KPIs. The RFP notes the following:

Additionally, the Contractor should draw on their experience as a bike share operator and their understanding of the community fabric and transportation context of the City of Charleston to propose one or more performance metric(s) for equitable service delivery across the entire program. Describe the metric(s), how it might be documented, and why it is a reliable indicator of whether or not the City is achieving its goal of equitable bike share service.

9.2.2.4 Program Iteration

As of fall 2021, the City of Charleston is launching the first large-scale iteration of its bikeshare program and using the expiration of its current contract with Gotcha Bikes as an opportunity to think about the future of bikeshare in Charleston. **The 2021 RFP is substantially different than the RFP issued in 2016. Interestingly, many of the changes appear to reflect the role that the consultant played in helping to develop the latest RFP than of the City's own reflection and evaluation of its existing bikeshare program.** (City staff said the consultant they worked with is well-versed on bikeshare best practices.)

The City will be selecting a contractor for a three-year agreement with the option to extend for an additional two years at the discretion of the City. If the contractor is not satisfactorily meeting the requirements laid out in the RFP and the subsequent agreement, the City could choose not to extend the agreement beyond the original contract terms.

9.3 CHICAGO, IL: E-SCOOTER PILOT PROGRAM

Chicago's E-Scooter Pilot Program launched in 2019, beginning with a four-month pilot between June and October. The City of Chicago has previous experience operating a shared micromobility program and has operated a bikeshare program—Divvy Bikes—since 2013. For its inaugural 2019 pilot, the City issued permits to 10 companies. Each company was permitted to operate 250 e-scooters each. The City ran a second pilot

from August 2020 through December 2020 with just three companies. The two pilots were conducted through the Department of Business Affairs and Consumer Protection (BACP) Emerging Business Permits program. In October 2021, Chicago's City Council voted to approve a permanent dockless e-scooter program (Greenfield, 2021).

9.3.1 Aligning with Community Needs

9.3.1.1 Equity Goals

The City of Chicago has created an "Equity Statement of Principles," defining equity as both an *outcome* and a *process* (City of Chicago, 2021a):

- *As an **outcome**, equity results in fair and just access to opportunity and resources that provide everyone the ability to thrive. Acknowledging the present and historical inequality that persist in our society, equity is a future state we strive to create where identity and social status no longer predestine life outcomes.*
- *As a **process**, equity requires a new way of doing business: one that (1) prioritizes access and opportunities for groups who have the greatest need; (2) methodically evaluates benefits and burdens produced by seemingly neutral systems and practices; and (3) engages those most impacted by the problems we seek to address as experts in their own experiences, strategists in co-creating solutions, and evaluators of success.*

The City's "Guiding Principles" include (City of Chicago, 2021a):

- **Deepen our spectrum of engagement.** *We must shift power at "decision-making tables" and learn how to co-create solutions with those most impacted by the problems, as they are experts in their own experiences.*
- **Routinize equity impact analyses in our process and practice.** *We must interrogate systems that seem neutral for unintended impacts and work to mitigate harmful outputs. We must ensure that the benefits and burdens of the decisions we make flow in a fair and just manner.*
- **Be accountable for equitable progress.** *We must use data and metrics to have honest and transparent conversations about the impact of our work.*

These principles are intended to guide the work of all City of Chicago departments, including the Department of Transportation (CDOT). The City did not establish specific goals for either of the pilots, though the purpose of the pilots was to "learn how scooters function within Chicago's transportation system" (City of Chicago, 2021b).

9.3.1.2 Community Mobility Needs Assessment

We were unable to confirm whether the City of Chicago conducted a community mobility needs assessment prior to the launch of the e-scooter pilot program since we relied on published documents for this case study. However, there is no reference to a mobility needs assessment in either of the evaluation reports.

9.3.1.3 Outreach/Engagement and Relationship Building

During the first pilot year city staff, at a minimum, conducted an online survey, set up a program specific email, monitored social media, and held in-person stakeholder meetings as part of their engagement efforts (City of Chicago, 2020b). The stakeholder meetings included representatives from transportation groups, disability advocates, local chambers of commerce, and community organizations, among others. According to the 2019 Pilot Evaluation Report, the City “convened this group for conversations leading up to the pilot, throughout the program, and following its conclusion” (City of Chicago, 2020b). The 2020 E-Scooter Pilot Evaluation Report does not detail any outreach/engagement efforts undertaken by the City, instead summarizing the outreach the companies were required to do as part of their operating permit. The City may have completed additional outreach/engagement not included in these reports, but considering both reports are comprehensive this provides us with a general understanding of the type of engagement it conducted.

9.3.2 Program Design, Evaluation, and Iteration

9.3.2.1 Program Equity Requirements

During the first two pilot phases in 2019 and 2020, the City of Chicago instituted a number of equity requirements similar to those mandated by other large cities with e-scooter pilots or programs. Requirements included minimum fleet deployments in designated “priority areas,” cash payment options, the ability to access an e-scooter without a smartphone, and targeted communication and outreach efforts (see Table 9.4). The City also encouraged companies to prioritize equitable hiring, including hiring “(i) 75% of their staff from Chicago; and (ii) at least 30% of their staff from job training placement programs operating in Chicago” (City of Chicago, 2019b). During the second phase of the pilot, the City strongly encouraged companies to provide seated vehicles to increase accessibility for riders with disabilities (City of Chicago, 2021b).

Many of the requirements from the first two phases of the pilot were incorporated into the 2021 ordinance that passed in October and made the e-scooter program permanent (City of Chicago, 2021c). The ordinance stipulates spatial equity requirements including:

Each licensee shall make scooters available to all residents of the City, applying an operational protocol that distributes scooters relatively evenly, based on population, throughout the entire City. The Commissioner,

following concurrence by the Commissioner of Transportation, is authorized to create, by rule, geographic areas in the City for the purpose of requiring and implementing distribution of scooters in each geographic area to advance City's transportation goals including, but not limited to, the equitable distribution of transportation programs.

Chicago e-scooter pilots previously established two Equity Priority Areas; the city then tracked trips made within these zones. According to the E-Scooter Evaluation Report, approximately 23% of trips started in one of the Equity Priority Areas during the 2020 pilot (City of Chicago, 2021b).

The City likewise requires a host of requirements targeted at dimensions of social equity, including requiring companies to provide, at minimum, low-income and unbanked pricing programs, and clear and easily discoverable information about how to access e-scooters by text, phone call, or other non-smartphone means. The ordinance stipulates that applicants will be scored and ranked using the following criteria:

- *The applicant's hiring plan and steps it commits to take to identify, train, and employ City residents that have been historically disadvantaged in participating in the local economy;*
- *The applicant's ability to make scooter service accessible to people with disabilities;*
- *The applicant's ability to help meet the City's goal of effectively improving mobility and accessibility for residents who face elevated economic, health, social, mobility and accessibility barriers; and*
- *The applicant's citywide education, engagement, outreach, rider safety, operations, and technology and innovation plans.*

Since this ordinance was issued in October 2021, no companies have yet been issued licenses under these new regulations. It therefore remains to be seen what the requirements will look like in practice.

Table 9.4 Chicago e-scooter share ordinance snapshot

Start Date	JUNE 2019 (1ST PILOT)	
Operating Structure	Permit	
Equity Requirements (2021 Ordinance)		
Spatial Equity		
<i>Geographic Component</i>	Yes	Licenses are required to make scooters available to all residents of the City, and the Commissioner is authorized to create geographic areas for the purpose of requiring and implementing the equitable distribution of scooters.
Social Equity		

<i>Reduced Rate</i>	Yes	Licensees must provide low-income and unbanked pricing programs.
<i>Adaptive Vehicles</i>	No	While not a requirement, applicants for a license will be scored on their ability to make scooter service accessible to people with disabilities.
<i>Smartphone Alternative</i>	Yes	Licensees must make e-scooters available by phone, text, or other non-smartphone options.
<i>Cash Payment</i>	Yes	Licensees must provide low-income and unbanked pricing programs.
<i>Multiple Languages</i>	No	No mention of language requirements in the ordinance.
<i>Procedural Equity</i>		
<i>Targeted Outreach/ Marketing</i>	No	While not a requirement, applicants for a license will be scored on their education, engagement, and outreach plans.
Data Sharing	Yes	Licensees must be fully compliant with MDS and GBFS and must provide a quarterly report containing information regarding customers, scooter utilization, parking impacts, operations, safety, and sustainability.
Compliance/Enforcement Mechanism	Yes	Commissioner may suspend or revoke operating license if licensee violates any adopted rules.
Evaluation Report	Yes	The City published two comprehensive evaluation reports following the 2019 and 2020 pilots.

9.3.2.1 Data Requirements

The 2021 ordinance specifies that companies must share data via MDS and be fully compliant with GBFS; these requirements match what the City required during the first two pilot phases. The ordinance also stipulates that companies must provide quarterly reports to the City “containing information regarding customers, scooter utilization, parking impacts, operations, safety, and sustainability as provided in rules” (City of Chicago, 2021c). While the details of what these reports will entail are yet to be determined, it seems likely that the City will require many of the same data points that it requested during the two pilots. Some of the required data included disaggregated trip data indicating whether a trip was booked without a debit or credit card and/or without a smartphone (City of Chicago, 2019b). **Using these data proved key to understanding equity requirements in practice; the City found, for example, that trips made without credit/debit cards or smartphones were relatively rare** (City of Chicago, 2021b).

9.3.2.2 **Program Evaluation**

The City published extensive evaluation reports following the 2019 and 2020 pilots drawing upon collected data. Like other cities, it used MDS data, survey responses of riders, and 311 complaints logged to evaluate the program. The 2020 evaluation report is organized around three main themes:

- **Role in the transportation network:** *How are e-scooters used citywide?*
- **Dangers, inconveniences, and non-compliance:** *How might these be limited or mitigated?*
- **Coverage, distribution, and equitable access:** *How successfully and uniformly can vendors operate in a large citywide service area, and how might vendors address potential economic, health, or accessibility barriers to using e-scooters?*

9.3.2.3 **Program Iteration**

Similar to Baltimore, Chicago used a phased pilot approach to iterate its shared e-scooter program over time. The City operated a four-month pilot between July and October 2019, and then took several months to evaluate findings before it released updated guidelines for the second four-month pilot. Among the changes it made between the two pilots was to increase the fleet deployment requirements in the priority areas from 25% to 50% , and—similar to Baltimore—to institute a twice daily rebalancing requirement (City of Chicago, 2021c). The 2020 E-Scooter Evaluation Report was released in May 2021, providing policymakers with several months to review the findings before introducing and ultimately passing an ordinance in October 2021 making the program permanent.

Comparing Chicago's E-Scooter and Bikeshare Program Requirements

In addition to e-scooters, Chicago operates a station-based bikeshare program, Divvy Bikes, which first launched in June 2013. The City of Chicago has a service contract with Lyft which currently operates the system, although the City owns the original 600 docking stations and 6,200 bikes. The City of Evanston is a program partner in addition to Lyft.

Divvy operates more trips and maintains more vehicles compared to the City's dockless e-scooter program. Divvy operates around 9,000 bikes compared to 7,415 e-scooters that were permitted in the 2020 pilot. It also provides about three times as many trips per day compared to scooters (12,500 and 4,391, respectively), reflecting higher per-vehicle utilization on Divvy compared to e-scooters. According to the E-Scooter Evaluation Report, a total of 630,616 total trip records were created during the 2020 pilot, of which approximately 23% started in one of the Equity Priority Areas (City of Chicago, 2021b). The daily trip average was 4,391 for the e-scooters, with an average of 7,415 devices available on any given day. During the same period, the daily average for Divvy bikeshare trips was approximately 12,500 with a fleet size of about 9,000.

The City and Lyft negotiated a contract amendment in the spring of 2019, agreeing upon a significant system expansion as well as a number of equity requirements. The City addressed spatial equity concerns by establishing nine "Coverage Zones." Each zone has a "Coverage Target" of two bikes per 1,000 residents; the operator is required to meet the target at least once per day in each zone (City of Chicago, 2019a). In addition to the Coverage Zones, the City identifies five "Economic Hardship Areas" (EHAs) based on Census and public health data. The five Economic Hardship Areas identified for the station-based bikeshare system differ from the two Priority Zones identified in e-scooter pilot phases.

Divvy operates a Divvy for Everyone (D4E) program, which includes a cash payment option and \$5 annual memberships available to residents who qualify for SNAP, WIC, LIHEAP, FAFSA, or public housing assistance. (No e-scooter program offers a flat fee annual membership as of October 2021.) The contract amendment also specified that the operator is required to pilot an adaptive bike sharing or rental program, which the City did not require of e-scooter operators.

Interestingly, the City stipulates that the operator's performance "will be assessed between May and October in each EHA individually based on (a) average daily rides per thousand residents recorded per month in that EHA and (b) Outreach Events..." The City has devised an accompanying points system to evaluate performance, and the operator receives points based on the number of rides starting or ending in an EHA per month, the number of outreach events the operator participates in or conducts, and for reporting details of such events to the City. If the operator does not clear 28 points in an assessment period, then the City can fine the operator for every point below 28. They also note: "D4E enrollment activities are permitted and encouraged...but regularly scheduled D4E in-person enrollment shifts at partner organizations and service centers

do not qualify as outreach events” (City of Chicago, 2019a). It makes sense that a station-based bikeshare program with a sole operator requires a different compliance structure than e-scooters, where the City can simply revoke an operator’s permit for non-compliance.

9.4 DENVER, CO: DOCKLESS MOBILITY VEHICLE PILOT PROGRAM

The City of Denver launched a Dockless Mobility Pilot Program in August 2018, and issued permits to five dockless scooter operators and two dockless bicycle operators. In November 2019, the City made the decision to transition away from a permit program and to instead seek out contractors through a competitive bid process (Bosselman, 2019). This decision coincided with the end of the City's decade-long contract with B-Cycle, the City's docked bikeshare operator. The City released a request for qualifications (RFQ) in March 2020 seeking operators to provide shared micromobility services, including both e-scooters and bicycles and/or e-bikes, and awarded five-year contracts to Lime and Lyft in May 2021.

9.4.1 Aligning with Community Needs

9.4.1.1 Equity Goals

The City of Denver's Office of Social Equity and Innovation has established four overarching equity goals (Office of Social Equity & Innovation - City and County of Denver, n.d.):

1. *Denver will be an inclusive employer where city staff is valued, supported, and given the tools to advance social equity, race, and social justice.*
2. *Denver will be an inclusive city that integrates social equity, race, and social justice into policies, practices, programs, and budgetary decisions to create equitable outcomes.*
3. *Denver will be an inclusive government that effectively engages the community to create equitable outcomes.*
4. *Denver will use nationally recognized research and data-driven practices to support the city's progress toward social equity, race and social justice.*

In addition to these citywide goals, the City also established a goal for the shared micromobility program, although equity is not mentioned outright: "The goal of this program is to provide safe, coordinated, and organized micromobility services to Denver residents and visitors, and a meaningful quantity of free and/or subsidized micromobility service to Denver residents to encourage SOV trip replacement" (City and County of Denver, 2020). The RFQ notes that "Equity is the important to the City," but does not provide additional detail. When asked about this, City staff said that they hope to develop more concrete equity goals, but thus far have been primarily focused on making progress on the City's safety and mode shift goals.

9.4.1.2 Community Mobility Needs Assessment

The City has not conducted a community mobility needs assessment, but staff commented that they "used what they knew from B-Cycle" when developing the shared micromobility program. For instance, they knew they needed to expand the system geographically from community members who voiced demand for a citywide program rather than the downtown-centered B-Cycle system. As a

result, expanding the dockless program service area became an important provision in the RFQ.

9.4.1.3 Outreach/Engagement and Relationship Building

During the pilot, the City conducted two surveys and worked with a consultant to complete a report with findings about the pilot program, which gave staff needed insight about mode replacement which staff noted “was kind of a blind spot at the time.” However, staff said they otherwise took a “hands-off” approach to community engagement and largely relied on the permitted operators to conduct engagement. Staff did not program specific outreach events prior to releasing the RFQ, in part, because they hoped to complete the contracting process quickly. They hoped that an expeditious contract period would minimize the service gap left by B-Cycle, which ended bikeshare operations in January 2020. City staff said that they to intend to ramp up outreach and engagement efforts in 2022 after a next round of hiring that will help increase staff capacity.

9.4.2 Program Design, Evaluation, and Iteration

9.4.2.1 Program Equity Requirements

Table 9.5 summarizes the equity components the City of Denver included in its RFQ. In terms of spatial equity, the City requires operators to deploy at least 30% of vehicles in communities that historically have been underinvested in, which they refer to “Opportunity Areas” (City and County of Denver, 2020). They also asked that companies describe how they “will reduce barriers to using shared micromobility for low-income users, notably barriers related to credit card, bank account, and smartphone access.” Staff indicated that this was framed as a “flexible ask” rather than a firm requirement, but that companies responded to it as though it were a requirement.

The City RFQ did not require operators to provide adaptive vehicles, and stipulated that making information available in multiple languages was preferred but not required. The City also did not require operators to conduct targeted outreach or engagement, but it did ask operators to submit a Marketing and Public Engagement Plan and to describe their experience doing targeted outreach elsewhere.

One of the more unique requirements the City of Denver outlined in the RFQ was a requirement that operators be willing to provide a “meaningful number of free passes or rides” for Denver residents (City and County of Denver, 2020). In 2019, the City purchased 5,280 free annual B-cycle passes for residents and was interested in seeing that kind of program offering continue. It did not specify a minimum number of free rides, however, since it was asking companies to provide the passes as part of their operating agreement rather than making the purchase themselves as they had done with B-Cycle. **City staff noted that the number of free rides operators proposed in their response was an**

important criterion in the City’s evaluation process; evaluators viewed a proposer’s willingness to provide free passes as a proxy for their commitment to invest in Denver. Interestingly, the City did not specify any equity provisions for the passes/rides—such as being made available to people with lower incomes—just that they be available for residents of Denver.

Table 9.5 Denver program snapshot

Start Date	July 2018 (Pilot Program)	
Operating Structure	Service Contract (2021)	
Equity Requirements		
Spatial Equity		
<i>Geographic Component</i>	Yes	At least 30% of vehicles will be made available daily (at morning deployment) in communities ("Opportunity Areas") that have historically been underinvested in to increase their access to new transportation options, particularly focusing on areas with low vehicle ownership and high transit ridership.
Social Equity		
<i>Reduced Rate</i>	Yes	Describe how the Proposer will reduce barriers to using shared micromobility for low-income users, notably barriers related to credit card, bank account, and smartphone access.
<i>Adaptive Vehicles</i>	No	
<i>Smartphone Alternative</i>	Yes	Describe how the Proposer will reduce barriers to using shared micromobility for low-income users, notably barriers related to credit card, bank account, and smartphone access.
<i>Cash Payment</i>	Yes	Preferred, but not required. Information on the website should be available in English and Spanish; staff should be available who speak fluently in Spanish. Additional language fluency will be viewed favorably.
<i>Multiple Languages</i>	No	
Procedural Equity		
<i>Targeted Outreach/ Marketing</i>	No	Not required but considered in the evaluation process. Must provide Proposer’s Marketing and Public Engagement Plan and must discuss in proposal "Experience with shared micromobility program marketing and community engagement, including experience with targeted marketing to groups underrepresented among shared micromobility users."
Data Sharing	Yes	
Compliance/Enforcement Mechanism		
Evaluation Report	Yes	

9.4.2.1 Data Requirements

Denver specified a number of data reporting requirements in their RFQ, including the following “real-time” information to be available in a dashboard:

- *Utilization rates*
- *Total downloads of web application, active end users, and repeat end users*
- *Total trips by day of week, time of day including trips per vehicle*
- *Origins, destinations depicted in graphical and table format by month*
- *Average trip distance*
- *Average trip speed*
- *Trips originating or ending in Opportunity Areas*
- *Summarized incidents of theft and vandalism*
- *Vehicle maintenance and disposal reports*
- *Complaint history report including the number of complaints, the nature of the complaints, and the time it took to remedy each complaint*
- *Number of end users participating in discount programs, by program type (if applicable)*
- *Collision history report including the number, severity, location and time of crash, in a format as determined by the executive director*
- *Payment methods*

The City requires operators to conduct surveys of members to track customer satisfaction, reasons for joining, socio-economic characteristics, and mobility behavior, such as mode substitution. Operators are also expected to produce “an annual report detailing survey results and other metrics related to citywide goals” (City and County of Denver, 2020).

9.4.2.2 Program Evaluation

Working with a consultant, the City collected data about the pilot program and published an interim report in February 2019 and a final evaluation report in March 2021. It utilized operator data, an online survey, intercept surveys, and field observations to evaluate the program against goals established in the City’s Mobility Action Plan (City of Denver & Apex Design, 2021). Table 9.6 summarizes these goals and lists the performance metrics and measures associated with each goal. **Though equity was not a central focus of the pilot program—the only equity measure they evaluated was the number of trips originating in an Opportunity Area—the report does provide clear linkages between goals and performance evaluation metrics.** However, the findings are sparse in sections and suggest a need for more robust data. In the equity section, for example, the report notes the number of vehicles that were deployed in the Opportunity Areas on a sample day, but not the number of trips that

actually originated or ended in those areas (City of Denver & Apex Design, 2021).

Table 9.6 Denver pilot program evaluation metrics

Goal	Performance Metric	Measure
Accelerate Safety Improvements and Robustly Pursue Vision Zero	Collisions	Number of collisions and near misses
	Parking Compliance	Number of dockless vehicles properly and improperly parked
	Traffic Compliance	Number of dockless vehicles compliant and non-compliant with red traffic signals, stop signs, and riding direction of travel and bike lanes
Deliver a Multimodal Network that Encourages Mode Shift	First & Final Mile	Number of people who use dockless vehicles as part of a transit trip
	Trip Distance	Average dockless vehicle ride distance
	Trip Replacement	Number of dockless vehicle rides that replace automobile trips
	Vehicle Accessibility	Number of readily available dockless vehicles in the system
	Vehicle Use	Number of rides per vehicle per day in the system
Embrace Innovative Policies, Technologies, and Strategic Partnerships	System Rebalancing	Percentage of vehicles rebalanced at the beginning of the day to transit stops per program overview
	Permit Compliance	Evaluation of permittee commitments to share data and pay permit fees
Protect the Climate and Improve Public Health	Active Transportation	Number of scooter rides that replace active transportation trips such as walking or biking
	Equity	Number of dockless vehicle rides that originate in Opportunity Areas
	Climate Impact & Carbon Footprint	Emissions reductions and dockless vehicle lifespan
Improve Funding, Planning, Organizational Structure, and Public Involvement	Public Perception	Public perception of the dockless mobility program

Source: City of Denver Dockless Mobility Vehicle Permit Pilot Program Final Report (2021)

9.4.2.3 Program Iteration

According to Denver staff, the pilot program was “integral” in helping inform the equity requirements they incorporated into the RFQ. The evaluation report, for instance, notes that the safety of riders and non-riders is a “critical challenge” that motivated the City to require that proposers submit a robust public education plan as part of the RFQ (City of Denver & Apex Design, 2021). Unlike cities including Baltimore and Chicago, however, Denver opted not to take a phased pilot approach and instead issued five-year service contracts to two operators. **The longer contract period may yield positive benefits including deeper relationships between the city and operators, a greater willingness for private operators to invest in the city (e.g., through free rides), and reduced**

administrative burden on staff; however, the longer period may also preclude the city's ability to rapidly iterate the program based on lessons learned. Staff indicated that they plan to evaluate the program as they go, and that they will issue a new bid at the end of the five years incorporating what they have learned into the next RFQ.

Comparing Denver’s RFQ to the Final Contracts with Lyft and Lime

Many points of possible evolution exist in shared micromobility equity programs; as a result, what actually gets implemented may not exactly match what was included in an RFQ or permit. In Denver’s case, the Department of Transportation and Infrastructure (DOTI) developed the RFQ and then reviewed the proposals received, rating each based on a variety of factors. After making their selections, DOTI then underwent the process of actually contracting with the two selected operators, Lime and Lyft, including securing contract approval from City Council. Such negotiating processes—with either private operators or other public stakeholder bodies—can be arduous and may result in contracts that do not perfectly align with what the City may have intended or required at the outset. For instance, city staff went before the Land Use, Transportation, and Infrastructure Committee three times in spring 2021 before the committee voted to approve the contracts and send it on for a full City Council vote (Metzger, 2021).

The finalized signed contracts do include many of the provisions that were outlined in the original RFQ. Denver staff noted that Denver is “a place where the companies want to be” so they may have more leverage than other cities to ensure that provisions outlined in the RFQ were included in the contract. However, the final language does leave room for interpretation in places. Table 9.7 shows how some of the requirements included in the RFQ appear in the final contracts. Several interesting equity elements exist in these programs, such as Lime’s commitment to “endeavor to distribute up to 2,640 pedal bikes to people struggling with homelessness [and] teens” (City and County of Denver, 2021b). What this will look like in practice remains to be seen for this nascent program, but it reinforces the need for program monitoring and evaluation.

Table 9.7 Comparing Denver’s RFQ and contract language

	RFQ Language	Lime Contract	Lyft Contract
Fleet Deployment and Spatial Equity	30% of the total vehicle fleet shall be deployed in Opportunity Areas at the time of the daily initial dockless unit deployment.	For each day on which Lime deploys dockless vehicles, Lime shall deploy dockless vehicles in Opportunity Areas in an amount equal to 30% of the total electric fleet that Lime deploys in Non-Opportunity Areas on that day, at the time of the daily initial dockless vehicle deployment... The required percentage and location of Opportunity Areas is subject to adjustment as mutually agreed upon by Lime and the executive director as conditions warrant. Dockless vehicles must	30% of the average daily on-ground vehicle fleet shall be located in Opportunity Areas at least once daily... The required percentage and location of Opportunity Areas may be adjusted as mutually agreed upon by the executive director and Lyft. Vehicles are ideally redistributed to the 30% Opportunity Area level with best effort to complete by 7:00 a.m. each day vehicles are deployed.

		start to be deployed to the Opportunity Area no later than 7:00 a.m. and be fully deployed no later than 9:00 a.m. each day vehicles are Deployed.	
Customer Service & Language Requirements	The Licensed Operator shall have a customer service phone number, website, and smartphone application customer interface that are available 24 hours a day, seven days a week for customers to report safety concerns, complaints or ask questions... Staff should be available who speak fluently in Spanish. Additional language fluency will be viewed favorably.	Lime shall have a customer service phone number, website, and smartphone application customer interface that are available 24 hours a day, seven days a week for customers to report safety concerns, complaints or ask questions and a customer service voice service available to respond to customers... Lime staff should be available who speak fluently in Spanish.	Lyft shall have a customer service phone number, website, and smartphone application customer interface that are available 24 hours a day, seven days a week for customers to report safety concerns, complaints or ask questions... Lyft staff should be available who speak fluently in Spanish.
Free Rides	Providing a meaningful number of free passes or rides to residents: In 2019, the City purchased 5,280 free annual B-cycle passes for residents. Continuing this tradition, and ideally increasing either the number of free passes or providing a set number of free rides for each resident, is a priority for the City. Respondents should clearly state how many free and/or subsidized passes and/or rides they will provide each year, how they plan to attract new riders, and how they will use the free passes and/or rides to incite	Lime shall use commercially reasonable efforts to distribute no fewer than 5,280 free Lime Prime passes for Denver residents participating in an alternative mode commute incentive program such as RTD's EcoPass program or other mutually agreed program by Lime and the Department.	Lyft shall provide no fewer than 5,280 free annual passes to Denver residents. These passes are separate from the Community Pass and are to be made available to Denver residents regardless of income level.

	additional use of the system.		
Equity Goals and Program Components	Providing Equity in Service. The service should strive for equity in its deployment, financial equity for unbanked individuals to access the service, equity for those under age 18, and equity in serving as many residents as possible, particularly those living within the Opportunity Areas.	Lime shall provide unlimited, free 30-minute bike and scooter rides for participants qualifying for Lime Access. Lime shall provide a rate of up to \$1 for a 30-minute bike/e-bike ride for any ride beginning in an Opportunity Area...Lime shall provide a discounted rate \$1 to unlock and \$0.15/minute for any scooter ride beginning in an Opportunity Area... Lime shall use best efforts to enroll no fewer than 2,640 Denver residents in Lime Access program no later than one or two years after initial deployment. Lime shall offer a cash payment option for those eligible for Lime Access... Lime shall endeavor to distribute up to 2,640 pedal bikes to people struggling with homelessness, teens, and those who need access to permanent transportation throughout the duration of the program. Lime shall endeavor to implement a program for on-demand delivery of adaptive seated scooters for daily rental no later than one year after initial deployment.	Lyft's low-income discount program , Community Pass shall make bikes and scooters available for \$3 per month. The Community Pass shall provide scooters and e-bikes at a cost of \$0.05 per minute with no deposit or unlock fee required. The Community Pass shall be made available to end users who are eligible for a State of Colorado or federal assistance program including, but not limited to, Medicaid, Supplemental Nutrition Assistance Program (SNAP) or RTD's LiVE program. The Community Pass shall include an option for cash payments.

Sources: City and county of denver (2021a, 2021b)

9.5 WASHINGTON, D.C.: PUBLIC RIGHT-OF-WAY OCCUPANCY PERMITS

Washington, D.C., began issuing Public Right-of-Way Occupancy Permits to dockless scooters and bikes shortly after they began to arrive in fall 2017. As of

fall 2021, the District Department of Transportation permits five companies to operate dockless modes within the city.

9.5.1 Aligning with Community Needs

9.5.1.1 Equity Goals

DDOT includes overarching programmatic goals as part of its dockless permit applications (DDOT, 2020a). Programmatic goals are weighted according to priority and include:

1. **Accountability:** Minimize adverse impact on residents and ensure transparency about operators' strengths and weaknesses. (21%)
2. **Sound Equipment Design:** Allow only vehicles that are designed to be safely stored and function in public space. (3%)
3. **Safety:** Support user safety through education, vehicle monitoring, and vehicle maintenance. (27%)
4. **Innovation:** Successfully manage public space while encouraging permit holders to offer innovative solutions to problems, exceptional equipment, and smart education practices. (10%)
5. **Equitable Access:** Promote equity among vehicle users including geography and income. (15%)
6. **Labor:** Ensure that operators offer meaningful employment and enough labor to be accountable and safe, and provide equitable access. (11%)
7. **Sustainability:** Strengthen sustainability initiatives. (3%)
8. **Data:** Ensure the provision of data sufficient to monitor the performance of individual operators and the program as a whole, and to plan for program improvements. (10%) (DDOT, 2020a)

The program-specific scorecard reflects broader DDOT efforts to incorporate equity in programming and project selection. DDOT issued an explicit equity statement in which it acknowledges the role that transportation has and continues to play in disparate access across population groups (DDOT, n.d.). DDOT also uses an equity scorecard to evaluate potential equity impacts during all funding decisions (DDOT, 2021c). Dockless programs, however, because they are not publicly funded, do not undergo evaluation of DDOT's overarching scorecard in addition to the above program-specific scorecard evaluation. Finally, DDOT has an Office of Racial Equity (for more see City of Washington, D,C, (2021)) charged with advancing equity across the organization, and a representative from this office has previously been included while scoring operators' bids.

9.5.1.2 Community Mobility Needs Assessment

DDOT did not conduct a community mobility needs assessment explicitly for dockless modes, but instead relied on a previous mobility needs assessment done for Capital Bikeshare station planning. Because DDOT has limited control over where dockless vehicles are deployed by private companies, staff have

focused on efforts to distribute dockless vehicles across space. Earlier attempts to define specific equity areas within the district were based on 1) adapted Council of Governments (COG) definitions of an Equity Emphasis Area, or 2) through master plans and the Office of Planning, which were unsuccessful. DDOT, therefore, ultimately decided to require distribution across local wards, and have continually pushed for additional vehicle availability across space. In September 2021, for example, operators were required to deploy, at minimum, 3% of their fleet (about 75 vehicles) per ward, up from a previously required 20 vehicles per ward.

9.5.1.3 Outreach/Engagement and Relationship Building

DDOT primarily relies on operators to conduct public outreach, a condition outlined in its terms of operation. Staff engage with the public through three primary ways: 1) meetings with advisory councils—ward-based groups and comprised of members of the public appointed by elected officials—once per quarter; 2) responding to public comment received via email; and 3) advertising the program through other city social services such as the Department of Human Services (DHS). For the latter, DDOT staff presented to DHS case managers. They also distributed information about the dockless vehicle program alongside SNAP materials, as SNAP is a qualifying program for free and reduced cost services.

While DDOT does not itself conduct the bulk of public outreach, it strongly incentivizes or requires effective outreach for operators. DDOT requires companies to report their outreach efforts each month. An April 2020 fleet increase, for example, required companies to first meet a threshold number of low-income and essential worker rides. Staff note that some operators effectively use their local networks to increase sign-ups among targeted populations. DDOT staff tracks sign-ups to ensure that no system abuse happens (i.e., that people who do not qualify for low-income programs are signed up in order to meet quotas for fleet increases). **One disadvantage of tracking sign-ups rather than rides is that while sign-ups may be relatively easy to collect (e.g., at a community event with free giveaways), they may not necessarily translate into additional ridership among target groups.** DDOT staff also acknowledge the challenges inherent in engaging populations with limited abilities to maintain phone services and data plans.

9.5.2 Program Design, Evaluation, and Iteration

9.5.2.1 Program Equity Requirements

Table 9.8 shows the equity requirements DDOT imposes on all dockless mobility providers operating within the district. Equity requirements fall into two broad categories: 1) geographic based, and 2) income based. DDOT staff feel that they are able to make broader demands of micromobility providers compared to smaller cities, as D.C. is a highly desirable operation market.

While DDOT does not mandate specific locations where dockless vehicles must be deployed, it does stipulate that vehicles must be distributed throughout the city. Specifically, at least 3% (about 75 vehicles) must be deployed in each city ward each day. This deployment requirement is an increase from previous program iterations, which required 20 vehicles deployed in each ward.

DDOT requires companies to offer free 30-minute trips per day for anyone earning 200% of or below the federal poverty level (DDOT, 2021b). Additionally, companies must offer a low-income rider plan that waives vehicle deposits, must make “affordable” cash payment options available, and enable vehicles to be located and unlocked without a smartphone. DDOT staff noted that not all equity requirements have great uptake: typically, only one to two people per month, for example, utilize cash payment options. Cash payments for companies in D.C. typically mean that companies allow riders to purchase debit gift cards (e.g., Visa or Mastercard cash card), and it remains unclear if limited utilization stems from limited need or from difficulties accessing and using a cash-based program.

DDOT requires that any company operating more than 720 vehicles maintains at least 1% of its ridership from its low-income customer plan.

The requirement provides a quantifiable goal for companies, who are required to market and promote dockless services, particularly among low-income residents.

D.C.’s dockless vehicle program does not offer adaptive vehicles. Its station-based bikeshare system, Capital Bikeshare, likewise does not provide adaptive vehicles, although it is currently considering adding some as part of an expansion effort (Lazo, 2021). This approach differs from the vision outlined in DDOT’s 2018 Evaluation Report, which posited that being freed from stations opened additional possibilities for dockless modes to incorporate adaptive vehicles (DDOT, 2018).

DDOT assesses compliance on an ongoing basis through data reporting (e.g., deployment checks) and fleet cap requirements that hinge on fulfilling equity-based requirements. Permit renewal provides an additional enforcement mechanism, and DDOT considers compliance to equity requirements (among other requirements) alongside the permit renewal application.

In addition to internal data collection, DDOT publishes a public-facing API and requires data to be reported in MDS format.

Table 9.8 Washington, D.C., dockless vehicle for hire program snapshot

Start Date	SEPTEMBER 2017
Operating Structure	Permit
Equity Requirements	
<i>Spatial Equity</i>	

<i>Geographic Component</i>	Yes	Company must balance its fleet of dockless sharing vehicles by deploying at least 3% of unique vehicles in each ward between 5:00 a.m. to 7:00 a.m. each day.
Social Equity		
<i>Reduced Rate</i>	Yes	Companies shall offer a low-income customer plan that waives any vehicle deposit, offers an affordable cash payment option, and unlimited trips under 30 minutes to customers with income levels at or below 200% of the federal poverty guidelines. If a company operates a fleet greater than 720 vehicles, they must maintain 1% of all ridership on a monthly rolling basis from the low-income customer plan.
<i>Accessible Vehicles</i>	No	
<i>Smartphone Alternative</i>	Yes	Dockless electric scooters must offer the ability to be located and unlocked without a smartphone.
<i>Cash Payment</i>	Yes	Dockless electric scooters must offer a cash payment option within the district.
<i>Multiple Languages</i>	No	Permit Holder is encouraged to maintain a multilingual website with languages identified in the District of Columbia Language Access Act of 2004.
Procedural Equity		
<i>Targeted Outreach/ Marketing</i>	Yes	Permit Holder agrees to conduct a marketing campaign at its own cost to promote the use of dockless sharing vehicles, particularly among low-income residents.
Data Sharing	Yes	
Compliance/Enforcement Mechanism	Yes	Compliance assessed on an ongoing basis through data reporting (daily zone-based deployment checks; monthly rider program enrollment). Permits may be renewed depending on compliance during the year.
Evaluation Report	Yes	Periodic

9.5.2.2 Data Requirements

DDOT specifies detailed data requirements, including the frequency of data reports (monthly) and format of data delivered (five CSV files, one geojsons spatial data file, and one narrative report). Table 9.9 lists the specific variables that DDOT requires are delivered with each CSV monthly data file. It further specifies required detail about data accuracy including time (times accurate to the minute) and location (latitude longitude within five decimal places). Required data evolve with each permit cycle; new to 2021 is a customer summary report documenting the complaints companies are receiving and how they are

responding to each. DDOT staff note that data remain limited in answering some questions they are interested in, such as crash reporting, which is not automatically reported by the mobility operator as events are logged by proactive passengers who self-report incidents.

All data reporting requirements are listed in the operator terms and conditions. DDOT aims to use data to answer questions both specific to a given month, as well as how trends are changing over time such as how long vehicles are lasting now compared to the program outset.

Table 9.9 Washington, D.C., dockless vehicle program data reporting requirements

File	Definition	Variables Included
User data	Shall consist of one line per active user (>1 trip/month)	-Unique user ID -Vehicle type -Num. of trips -Mean trip dist. -Median trip dist.
Vehicle data	Shall consist of one line per active (>6 hours/month) vehicle	-Vehicle ID -Vehicle type -Date entered service -Date exited service -Num. days in service -Mean trip dist. -Median trip dist. -Num. of maintenance instances
Summary File	Includes all data for the relevant month	-Total trips -Total vehicles -Num. of vehicles removed from service -Num. times vehicle lights / wheels / tires / brakes / pedals / gears / locks / other parts were repaired
Customer Data	Document each interaction with public or customers through all channels	-Interaction type (e.g., safety, maintenance, other) -Incident date/time -Vehicle ID -Vehicle type -Incident latitude/ longitude -Travel path -Incident severity -MPD crash report -Vehicle speed -Narrative -Remedy time
Customer Summary		-Num. customers who took ride in last month -Total minutes customers active in last month -Num. trips in last month -Num. low-income plan sign ups -Num. low-income customers that took >1 trip/month -Total trips, miles, and minutes traveled by low-income customers in last month

Source: DDOT (2020b)

DDOT collects extensive data related to low-income plan sign-ups and travel among those enrolled in the low-income plan (see Table 10). It does not collect data related to other equity dimensions (e.g., cash or smartphone access). Staff noted very limited use of cash fare (one or two people per month) as well as unclear ties to equity (unbanked person vs. someone with bank access who is wary of using their credit card for data privacy purposes) as reasons to not collect cash fare data.

DDOT has limited-to-no insight into who its dockless users are, although staff are seeking to remedy this through a number of ongoing activities. DDOT is currently exploring a partnership with NUMO to survey e-scooter users in the district. They have also partnered with academic researchers to examine user demographics through data DDOT does have available, such as credit card data.

9.5.2.3 Program Evaluation

DDOT aims to evaluate program performance each month. Most evaluations remain internal to the department, with the last evaluation report published in 2018.

9.5.2.4 Program Iteration

DDOT staff highlighted the iterative nature of the permitting process. During each iteration, staff update requirements, including removing old requirements. Iterations stem from evaluations of the data from the previous cycle. DDOT staff evaluated the first pilot (September 2017 through August 2018) to answer specific questions, chief among them relating to how dockless modes compared—and potentially expanded—the reach of the station-based Capital Bikeshare system, or how dockless modes might impact revenues or ridership of the docked system. Other questions related largely to feasibility and operations, such as the best operating structure (e.g., procurement vs. public-private partnerships); what the community was most concerned about; and if dockless modes would be well maintained and abide by parking regulations. In the 2018 Evaluation Report forward, D.C. Mayor Muriel Bowser also questioned if dockless modes could expand options for low-income and unbanked residents. Although this question was not addressed in the 2018 Evaluation Report, it highlights how questions of equity were under consideration at early stages of the dockless program. The report likewise concluded that the “program has shown promise, but there is not yet strong empirical evidence that dockless vehicle sharing is reaching different populations and locations than Capital Bikeshare. DDOT should better understand this issue and identify program requirements or incentives in this regard” (DDOT, 2018, p. 36). Since then, DDOT has harnessed the imperative identified in this first evaluation report and implemented robust equity requirements, particularly those targeting income- and geography-based exclusion.

Comparing Washington, D.C.'s, E-Scooter and Bikeshare Program Requirements

Capital Bikeshare is Washington, D.C.'s, station-based bikeshare system that launched in 2010, nearly a decade before dockless vehicles entered the scene. Service is operated by Motivate through a service contract with the city, and D.C. partners with surrounding municipalities (e.g., Arlington County, City of Alexandria, Fairfax County, Prince George's County, and Montgomery County) to expand service beyond the city's boundaries (DDOT, 2021a).

Similar to the dockless shared micromobility system, Capital Bikeshare includes numerous equity-based provisions, although the specific nature of those differs substantially. Capital Bikeshare does not offer outright free rides for those under the federal poverty rate as the dockless system does, but it offers near-free rides with \$5 annual membership for residents who qualify for SNAP, TANF, or other low-income assistance programs. Discounted memberships can be purchased through various methods that accommodate cash-based, pre-payment, and debit, although Capital Bikeshare no longer accepts gift cards due to previous issues of bikes being checked out with gift cards and not returned. The system offers smartphone alternative check-out options, and riders can access bikes using either a ride code generated from a station kiosk or using an issued bike key (Capital Bikeshare, 2021a).

Like the dockless systems, it spreads its 500 stations across the city (Capital Bikeshare, 2021a), although research has found that—in D.C. as well as other cities—station-based shared micromobility services have more limited service geographies compared to the dockless system (Meng & Brown, 2021). Capital Bikeshare program staff frequently work with community partner organizations to connect low-income residents with discounted memberships.

Capital Bikeshare, as a service contract, receives all data from its service provider, as well as conducts periodic rider surveys. Similar to the dockless services, Capital Bikeshare periodically evaluates its services and releases updated Capital Bikeshare Development Plans to guide the continued growth of the system (Capital Bikeshare, 2021b).

9.6 A-1 EQUITY EVALUATION FRAMEWORK TOOL (QUALTRICS VERSION)

Q1

Introduction

Ensuring equitable access to shared micromobility services such as bikeshare and e-scooter share has increasingly become an important focal point for cities. These requirements are often tied to larger equity goals around increasing mobility and access to opportunities for specific groups, such as communities of color. Without conducting a systematic evaluation, however, it is impossible to know whether these programs and policies are achieving equitable outcomes, and where opportunities exist to create more inclusive programs.

Purpose

In order to answer the question, “Has the program or policy increased equity outcomes?” it is important to connect the dots between city or program goals, program design, and evaluation metrics. Who is the program intended to serve? How were the unmet needs of local communities identified? Was meaningful community engagement conducted to inform program design? Do the program requirements connect to the group(s) the program is specifically trying to serve? Do the evaluation metrics connect to the goals? There are a separate set of questions for carshare, bikeshare, scooter share, or another shared micromobility programs.

Outcome

This evaluation tool will guide you through a series of questions about an existing shared micromobility program or policy to help determine the strength of the connections between program goals, design, and evaluation metrics. There are a separate set of questions for carshare, bikeshare, shared e-scooters, or another shared micromobility program, and you'll be able to select at the beginning which type of program(s) you want to evaluate. Once complete, you'll be provided with general guidance and examples to draw from as you move forward.

Completing this evaluation requires a time investment, but doing equity work well does take time. Hopefully, it will provide you with a sense of the current strengths and weaknesses of your shared micromobility program(s), and where there are opportunities for growth.

Q2 To start, we want to ask a few questions about what type of agency you work for and how your agency/department is thinking about equity. This information will help us tailor this evaluation tool to your specific situation.

Q3 What kind of agency do you work for?

- Municipal/city
- County
- Regional (e.g., MPO)
- State
- Federal
- Other: _____

Q4 What is the name of your agency?

Q5 Does your agency and/or department have any of the following? Select all that apply.

- Statement on equity
- Definition of equity
- Equity goals
- None of these

Display This Question:

If Does your agency and/or department have any of the following? Select all that apply. = Equity goals

Q6 What types of equity goals does your agency and/or department have? Select all that apply.

- **User-based goals** (e.g., increase access for Black, Indigenous, and People of Color communities, youth, older adults, people with disabilities, immigrants and refugees, etc.)
- **Opportunity-based goals** (e.g., increase access to jobs, health care, grocery stores, etc.)
- **Environmentally-based goals** (e.g., improve air quality)
- Other: _____

Display This Question:

*If What types of equity goals does your agency and/or department have? Select all that apply. = **User based goals** (e.g., increase access for Black, Indigenous, and People of Color communities, youth, older adults, people with disabilities, immigrants and refugees, etc.)*

Q7 Have you specifically identified any of the following groups in your **user-based equity goals**? Select all that apply.

- Black, Indigenous, and People of Color (BIPOC)
- People with low incomes
- People with disabilities
- Youth
- Older adults
- Immigrants and refugees
- People with limited English proficiency
- LGBTQIA+
- People who are houseless
- People who are unbanked/underbanked
- Other: _____

Display This Question:

If What types of equity goals does your agency and/or department have? Select all that apply. = Opportunity based goals (e.g., increase access to jobs, health care, grocery stores, etc.)

Q8 Do you have any of the following **opportunity-based equity goals**? Select all that apply.

- Increase access to jobs
- Increase access to essential services (e.g., health care, education, etc.)
- Increase access to food
- Create living-wage jobs
- None of these
- Other: _____

Q9 Does your agency/department have an equity advisory committee?

- Yes
- No
- Not sure
- Other: _____

Display This Question:

If Does your agency/department you have an equity advisory committee? = Yes

Q10 Are the equity advisory committee members paid for their involvement?

- Yes
- No
- Not sure

Display This Question:

If Does your agency/department you have an equity advisory committee? = Yes

Q11 Does the equity advisory committee have decision-making authority? ([Click here to read more about examples of equity advisory committees having decision-making authority.](#))

- Yes
- No
- Not sure

Display This Question:

If What types of equity goals does your agency and/or department have? Select all that apply. = User based goals (e.g., increase access for Black, Indigenous, and People of Color communities, youth, older adults, people with disabilities, immigrants and refugees, etc.)

And Does your agency/department you have an equity advisory committee? = Yes

Q12 Does representation on the advisory committee match the groups you've identified in your equity goals?

- Yes
- No
- Not sure

Q13 Has your agency/department conducted a community mobility needs assessment in the **last four years**? ([Click here to see more information about community mobility needs assessments.](#))

- Yes
- No
- Not sure
- Other: _____

Display This Question:

If Has your agency/department conducted a community mobility needs assessment in the last four years... = Yes

And Has your agency/department conducted a community mobility needs assessment in the last four years... = Other:

Q14 At what geographic scale was the needs assessment conducted? Select all that apply.

- Neighborhood (including Census tracts or blocks)
- Quadrant (e.g., NE, NW, etc.)
- City
- County
- Region
- Other: _____

Display This Question:

If Has your agency/department conducted a community mobility needs assessment in the last four years... = Yes

Q15 What kinds of needs were identified during the assessment? Select all that apply.

- Pedestrian infrastructure improvements (e.g., sidewalks, street lights, signalized crossings, etc.)
- Bus or transit service improvements (e.g., routes, frequencies, real-time arrival info, etc.)
- New or improved bus/transit stops (e.g., benches, weather protection, etc.)
- Bike infrastructure improvements (e.g., bike lanes, bike racks, etc.)
- Better access to particular places (e.g., job centers, grocery stores, etc.)
- Lower-cost transportation options
- Access to more transportation options
- Other: _____

Display This Question:

If Has your agency/department conducted a community mobility needs assessment in the last four years... = Yes

And What types of equity goals does your agency and/or department have? Select all that apply. = **User based goals** (e.g., increase access for Black, Indigenous, and People of Color communities, youth, older adults, people with disabilities, immigrants and refugees, etc.)

Q16 On a scale from 1 to 5, how well do you think your agency/department did in connecting with the groups identified in your equity goals during the needs assessment?

Not well at all	Slightly well	Moderately well	Very well	Extremely well
1	2	3	4	5



Display This Question:

If Has your agency/department conducted a community mobility needs assessment in the last four years... = Yes

Q17 What do you think went well and what could be improved?

Q18 Next, we want to ask you questions about the shared micromobility programs your agency/department permits, operates, or regulates in any way.

Q19 How many **bikeshare programs** does your agency/department permit, operate, or regulate?

- 0
- 1 _____
- More than 1

Skip To: End of Block If How many bikeshare programs does your agency/department permit, operate, or regulate? = 0

Q20 Which program would you like to evaluate first?

Q21 Is the bikeshare program **docked** or **dockless**?

- Fully docked
- Fully dockless
- Mixture of docked and dockless (e.g., people can lock bikes at locations other than docks)
- Other: _____

Q22

In what year did this **bikeshare program** first start?

Q23 Which of the following best describes the operating structure for this **bikeshare program**?

- My agency/department **issues permits** to bikeshare operators.
- My agency/department is **solely responsible** for operating this program.
- My agency/department operates this program through a **public-private partnership agreement**.
- This program is **community-run**.
- Other: _____

Q24 Does this **bikeshare program** have specific equity goals? (*Click here to see examples of program-specific equity goals.*)

- Yes
- No

Display This Question:

If Does this bikeshare program have specific equity goals? (Click here to see examples of program sp... = Yes

Q25 What types of equity goals do you have for this **bikeshare program**? Select all that apply.

- **User-based goals** (e.g., increase access for Black, Indigenous, and People of Color communities, youth, older adults, people with disabilities, immigrants and refugees, etc.)
- **Opportunity-based goals** (e.g., increase access to jobs, health care, grocery stores, etc.)
- **Environmentally-based goals** (e.g., improve air quality)

Other: _____

Display This Question:

If What types of equity goals do you have for this bikeshare program? Select all that apply. = User based goals (e.g., increase access for Black, Indigenous, and People of Color communities, youth, older adults, people with disabilities, immigrants and refugees, etc.)

Q26 Have you specifically identified any of the following groups in your **user-based equity goals**? Select all that apply.

- Black, Indigenous, and People of Color (BIPOC)
- People with low incomes
- People with disabilities
- Youth
- Older adults
- Immigrants and refugees
- People with limited English proficiency
- LGBTQIA+
- People who are houseless
- People who are unbanked/underbanked
- Other: _____

Display This Question:

If What types of equity goals do you have for this bikeshare program? Select all that apply. = Opportunity based goals (e.g., increase access to jobs, health care, grocery stores, etc.)

Q27 Do you have any of the following **opportunity-based equity goals**? Select all that apply.

- Increase access to jobs
- Increase access to essential services (e.g., health care, education, etc.)
- Increase access to food
- Create living-wage jobs
- None of these

Other: _____

Display This Question:

If Has your agency/department conducted a community mobility needs assessment in the last four years... = Yes

Q28 You indicated that your agency/department conducted a mobility needs assessment in the last four years. Was **bikeshare** specifically identified as a need or want by community members during the assessment?

- Yes
- No
- Unsure
- Other: _____

Display This Question:

If Has your agency/department conducted a community mobility needs assessment in the last four years... = Yes

Q29

In your opinion, how well does your agency/department's **bikeshare** program align with the results of the community mobility needs assessment? Where is there room for improvement?

Q30

To build strong relationships, outreach and engagement should be embedded throughout the process and not just one step along the way. Ideally, it should happen before, during, and after a program, policy, or pilot has been implemented.

Q31 Has your agency/department conducted outreach and engagement specific to this **bikeshare program**?

- Yes
- No
- Not sure
- Other: _____

Display This Question:

If Has your agency/department conducted outreach and engagement specific to this bikeshare program? = Yes

Q32 What types of outreach and engagement activities have you done? Select all that apply.

- Public workshops/meetings
- Door-to-door canvassing
- Established website and/or social media
- Distributed flyers or other printed materials
- Outreach to existing community groups
- Surveys
- Focus groups
- Participatory budgeting
- Convene advisory board or shared decision-making body
- Other: _____

Display This Question:

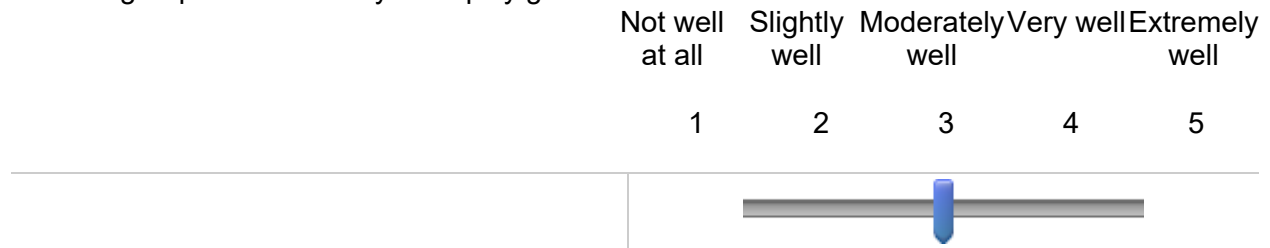
If Has your agency/department conducted outreach and engagement specific to this bikeshare program? = Yes

Q33 At what stages in the process has your agency/department conducted engagement? Select all that apply.

- During program design and scoping
- Once the program was set to launch
- After the program launched
- After the program ended (*if applicable*)
- Other: _____

Display This Question:
If Has your agency/department conducted outreach and engagement specific to this bikeshare program? = Yes

Q34 In your opinion, how well do you think your agency/department did/is doing in connecting with the groups identified in your equity goals?



Display This Question:
If Has your agency/department conducted outreach and engagement specific to this bikeshare program? = Yes

Q35 What do you think went well? What do you think could be improved?

Display This Question:
If Has your agency/department conducted outreach and engagement specific to this bikeshare program? = Yes

Q36 Has your agency/department provided monetary compensation for any of the following engagement activities? Select all that apply.

- Advisory boards or committees
- Surveys
- Focus groups
- Workshops
- Other: _____
- None of these

Q37 Has your agency/department partnered with local community-based organizations on this program? (*Click here to read more about shared micromobility program partnerships with community-based organizations.*)

- Yes
- No
- Not sure
- Other: _____

Display This Question:

If Has your agency/department partnered with local community based organizations on this program? (C... = Yes

Q38 Is the community-based organization receiving payment for their involvement?

- Yes
- No

Q39 Does the community-based organization have decision-making authority? (*Click here to read more about examples of community-based organizations having decision-making authority.*)

- Yes
- No
- Not sure

Q40 Have you communicated progress to stakeholders? (e.g., project updates, communicating how community feedback has or will be incorporated, etc.)

- Yes
- No
- Not sure
- Other: _____

Display This Question:

If Have you communicated progress to stakeholders? (E.g., project updates, communicating how communi... = Yes

Q41 How are you communicating progress? Select all that apply.

- Stakeholder meetings
- Reports or other published documents
- Email updates
- Social media
- Other: _____

Q42 Next, we are going to ask you a few questions about your bikeshare program requirements, components, and the data that you are collecting.

Q43 Does this **bikeshare** program include any of the following requirements to help support **user-based equity goals**? Select all that apply.

- Bikes must have a low-income or reduced fare rental or membership option
- Information about program must be available in multiple languages
- Bikes must be accessible to rent without a smartphone
- Deployment of bikes must meet geographic coverage requirements
- Adaptive bikes must be made available to people with disabilities
- Bikes must be accessible to rent without a credit or debit card
- Bikes must be accessible to rent without a driver's license
- Website and/or app must be accessible
- Operators are encouraged or required to partner with community-based organizations
- Other: _____

Q44 Does this **bikeshare** program include any of the following requirements to help support **opportunity-based equity goals**? Select all that apply.

- Deployment of bikes must meet geographic coverage requirements
- Operators are encouraged or required to partner with community-based organizations
- Operators are encouraged or required to hire local staff
- Other: _____

Q45 Does this program include any of the following requirements to help support **environmental-based equity goals**? Select all that apply.

- Parts recycling
- Requirements related to vehicles used for rebalancing
- Other: _____

Q46 Do you have enforcement measures in place for providers if equity requirements are not met or do you have provider incentives to encourage compliance? (*Click here to learn more about compliance and enforcement measures.*)

- Yes
- No
- Not sure
- Not applicable

Display This Question:

If Do you have enforcement measures in place for providers if equity requirements are not met or do... = Yes

Q47 What are your enforcement and/or incentive mechanisms? Select that apply.

- Operator may be fined for **not meeting** requirements
- Operator risks losing permit or contract for **not meeting** requirements
- Operator can increase the number of bikes deployed for **meeting** requirements
- The amount the operator is charged per bike or trip depends on the area of deployment
- Other: _____

Q48 Disaggregated user data are important for understanding the extent to which equity program requirements are contributing to equitable outcomes. Are you able to collect any of the following data to help track **user-based equity outcomes**?

- # of trips by person by income
- % of users on low-income plans
- % of users by age/income/race/ability vs. proportion of total population in each category
- % of people using cash options
- % of people using non-smartphone options
- % of users by zip code vs. proportion of total population living in those zip codes
- # of trips by person by disability status
- # of users by primary language compared to the total population
- Share of trips that start in historically underserved areas
- Habitual users (several trips per month) vs. one-time users by zip code compared to the total population living in those zip codes
- Disaggregated origin/destination data by race, income, age, ability
- None of these

Q49 Are you able to collect any of the following data to help track **opportunity-based equity outcomes**?

- Trip purpose
- Habitual users (several trips per month) vs. one-time users by zip code vs. total population living in those zip codes
- Dis-aggregated origin/destination data
- # of new local jobs created by operators
- New hires by race, age, and ability
- None of these

Q50 Are you able to collect any of the following data to help track **environmental-based equity outcomes**?

- Mode that would otherwise had been used if bikeshare were not available
- Vehicle or device miles traveled
- None of these

Q51 What other data you are collecting not previously identified? *(If applicable.)*

Q52 By what means are you gathering data? Select all that apply.

- Directly from the operator (i.e., required data sharing as part of agreement with operator)
- City-administered surveys (online, intercept, etc.)
- Community partner-administered survey (online, intercept, etc.)
- Qualitative interviews or focus groups
- Other: _____
- No data is being gathered at present

Q53 Are you conducting ongoing and/or periodic evaluations of the program?

- Yes
- No
- Not sure

Q54 Are you using data collected to evaluate your **bikeshare** program and make changes based on findings? (e.g., change program requirements, update RFPs, change operators, etc.)

- Yes
- No
- Not sure

Display This Question:

If Are you using data collected to evaluate your bikeshare program and make changes based on finding... = Yes

Q55 What types of program elements have been changed as a result of the data findings?

Q56 Overall, how well do you think your **bikeshare** program is doing in advancing equity outcomes?

Q57 That is the end of this program evaluation section! What you would like to do next?

- Evaluate another bikeshare program
- Evaluate an e-scooter share program
- Evaluate another shared micromobility program
- Submit this evaluation and receive results