RESEARCH REPORT

New Mobility and Equity

Insights for Medium-Size Cities

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July 2020

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"New mobility" technologies, such as car sharing, ride sharing, ride sourcing, electric scooters, and dockless and docked bike sharing, are providing residents a growing number of options to travel within and across neighborhoods (Clewlow, Foti, and Separd-Ohto 2018). These forms of mobility provide on-demand transportation options and operate outside traditional public transportation systems. As new mobility technologies gain popularity, they present an opportunity to build more equitable transportation systems.

Through their responsive nature, new mobility technologies have the potential to reduce existing transportation inequities. But without proper planning, they could reinforce existing inequities and fail to deliver inclusive and equitable transportation outcomes.[1] To ensure new mobility services successfully increase equitable access to transportation, local policymakers must intentionally incorporate equity considerations into planning and implementation by assessing and responding to barriers to transportation access such as cost of use, service availability, geographic distribution of routes, physiological challenges, and social barriers.

The impacts of new mobility tend to focus on large cities such as New York, San Francisco, Seattle, or the District of Columbia. However, new mobility is increasingly present in many medium-size cities (those with 150,000 to 300,000 people), and yet questions remain about the effects of these technologies in these cities, the practices being developed to ensure equitable access and use of new mobility services, and an understanding of how those practices differ from those in larger markets. Medium-size cities have the advantage of seeing how larger cities have responded to new mobility companies and therefore have the opportunity to more proactively build regulatory frameworks, build partnerships, and support equitable outcomes. However, these cities also face issues different from those in the larger, more densely populated cities that new mobility companies operated in first, and they therefore have fewer models to draw best practices from.

This report has two main goals: (1) to identify what medium-size cities are doing to incorporate new mobility technologies into transportation and equity plans and (2) to identify how these cities can develop proactive planning and decisionmaking structures to incorporate new mobility technologies. Being proactive rather than reacting in an ad hoc manner allows cities to partner with new mobility

companies more effectively and engage community residents to ensure inclusive and equitable transportation outcomes.

Our research is informed by interviews with representatives from local and regional planning organizations from 10 medium-size jurisdictions and from three new mobility companies. Participants were asked about topics such as protocols around data sharing, distribution of roles and responsibilities, and strategies for incorporating equity into new mobility planning. Our research is further informed by key insights gained from a roundtable of representatives from five of the jurisdictions.

We find that cities are using the new mobility space to lean into process improvements and incorporate equity into their transportation planning and systems. Cities must identify equity goals in advance, identify equity gaps in existing systems, and position new technology to bridge those gaps. Our research reveals several mechanisms medium-size cities are using to take these steps:

- **Flexible agreements** such as requests for proposals, permits, and pilots allow cities to test and embed equity mandates into new mobility operations.
- I**ntermediary data companies** can help medium-size cities increase data capacity, navigate data privacy laws, and manage relationships with new mobility companies.
- **Collaboration across jurisdictions and sectors** is key to building out a transportation infrastructure that is critical for new mobility use.
- Cities can hardwire equity considerations into their operations by **recalibrating internal structures and integrating equity guidance in their strategic plans**.

We begin our report with an overview of transportation equity followed by a discussion of new mobility, including how we define it and which modes we include in our definition. We then review how cities more generally are dealing with new mobility technology and what strategies they are implementing to support equitable outcomes. Next, we share the new mobility context for medium-size cities more specifically. Finally, we present findings from our engagement with transportation and equity stakeholders in medium-size cities, identifying key challenges, solutions, and future opportunities for practice and research.

New Mobility, Equity, and Cities

Building More-Equitable Transportation Networks

The current transportation landscape in US cities has been shaped by decades-long demographic shifts abetted by the development of the interstate highway system in the 1950s. White households moved from the city to the suburbs in large numbers, and car ownership allowed these families to continue to commute into the city for jobs (Turner and Skidmore 1999; Woods 2012). At the same time, restrictive lending and purchasing practices barred Black families from this same move, and increased highway construction cut through cities and disrupted many Black neighborhoods (Karas 2015).

However there has been a general reversal of this residential pattern as younger and higher-income people have increasingly chosen to move back into the urban core (Baum and Hartley Snow 2017; Couture and Handbury 2017; Edlund, Machado, and Sviatschi 2015). In some cities, increased density in the urban core has pushed lower-income residents into the less dense suburbs, creating transportation challenges for these residents (Kneebone and Berube 2013; Rayle 2015; Revington 2015).

Further, government funding in the transportation system continues to favor automobile infrastructure and maintenance. In 2015, about 17 percent of federal transportation spending went to railroads and highways compared with 0.4 percent for transit. For state and local governments, 69 percent of transportation expenditures went to highway construction and maintenance compared with 22 percent for transit (Bureau of Transportation Statistics 2015). Wealth differences between people of color and white residents make it easier for white residents to purchase a car and thereby access jobs and other resources (Gautier and Zenou 2010). Furthermore, current government funding priorities disincentivize the development of additional multimodal and equitable transit options.

Historic exclusion by race and income in local and regional transportation systems presents profound challenges for people living in low-income communities and people of color. Although high-quality, reliable, and accessible transportation helps connect people to employment, education, health care, social networks, and services, a lack of options isolates residents whose primary mode of movement is public transit from these resources.

Using an equity frame, policymakers, providers, and advocates can work toward ensuring that all people have access to transportation that serves their needs at an equitable cost (both in time and in money). To do so, leaders must build equity goals into the planning, scoping, and evaluation of technology projects. Equitable transportation decisions require deep and meaningful community input

so that transportation networks best support transit users' varied needs across individuals, communities, and regions. Moreover, cities and companies can invest in infrastructure and talent and use analytics to track and react to equity outcomes across their programs and services. Finally, local governments must also address structural barriers to new mobility technology use, such as a of lack access to a bank account and streets that are unsafe for multimodal transportation (Greene et al. 2019).

The Arrival of New Mobility Services

Uber and Lyft were the first companies to bring ride sourcing (box 2) to US cities when they launched in San Francisco in 2009 and 2012, respectively. The companies spread rapidly across the country, and within five years of their introductions, both ride-sourcing companies were completing over a million rides a day.[2] This growth has had a varied impact on transportation use and behavior (Schwieterman and Livingston 2018). One study found that ride-sourcing users in the US decreased their use of bus services and light rail services by 6 percent and 3 percent, respectively. At the same time, ride sourcing increased commuter rail services 3 percent. Although ride sourcing might limit the number of personal vehicle owners, most ride sourcing users (91 percent) have not changed their vehicle ownership (Clewlow and Mishra 2017).

Between 12 and 54 percent of car-sharing participants in North America walk more often. Studies differ on whether or not car sharing increases or decreases public transit ridership. Studies of six individual locations across North America found that between 13.5 percent and 54 percent of car-sharing participants take public transit more frequently. However, one study of approximately 9,500 participants across North America found a slight shift away from public transit ridership. The most current studies and member survey results released by US and Canadian car-sharing organizations show that up to 32 percent of car-sharing members sold their personal vehicles. A 2008 research study with a sample of about 9,500 participants documented that 25 percent of car-sharing members sold a vehicle, and 25 percent of members postponed a vehicle purchase because of car sharing (Martin, Shaheen, and Lidicker 2010).

Beyond ride sourcing, the growth of micromobility has added more transportation options for city residents. The first publicly available bike-share systems landed in the United States in 2008 with the SmartBike system in the District of Columbia, offering 120 bikes at 10 stations.[3] These systems expanded rapidly, from four bike-share systems nationwide in 2010 to 55 systems in 2016. Today, Capital Bikeshare in the District of Columbia, CitiBike in New York City, and Divvy in Chicago operate the largest systems.[4] In 2018, dockless electric scooters arrived and likewise have expanded rapidly.[5]

According to the National Association of City Transportation Officials (NACTO), as of 2018, over 85,000 e-scooters were available for use in about 100 US cities. The number of trips taken on micromobility modes more than doubled from the previous year (2017) with a total of 84 million rides, 38.5 million of which were taken on dockless electric scooters. Scooter and bike-share riders reported using these modes to get to work, connect to transit stations, and to ride recreationally. In a survey of four cities, the top two reasons people chose station-based bike-share systems was as connection to transit and to travel to and from work; those using dockless electric scooters reported getting to and from work and getting to and from recreation and exercise as their top uses (NACTO 2019b).

New mobility companies also collect data that can provide valuable input for transportation planning processes. These companies have the capacity to collect, process, and analyze large amounts of data, such as vehicle status, trip history, and routes taken. In partnering with new mobility companies, cities can also better understand where people are traveling from and where they are traveling to. For example, the city of Los Angeles has established a mobility data specification (MDS) that lets municipalities analyze new mobility providers' data in real time, allowing them to better oversee the new services.[6] Some companies, however (particularly Uber), have pushed back against the MDS, citing privacy concerns regarding personally identifiable information. In response, the city revoked the company's scooter permit.[7] City transportation departments can also use this information to inform and improve public transportation service and access (Goldsmith and Leger 2020).[8] Partnerships between transit agencies and private transportation entities can create transportation systems that better respond to individual riders' needs. As city residents increasingly rely on new mobility as a transportation option, cities must look ahead to shape new mobility services so that they best serve residents and are accessible and inclusive to all riders.

Because these technologies were rolled out fairly quickly, local governments have struggled to provide companies with clear and consistent guidelines on issues such as enforcing safety, supplementing public transportation networks, managing traffic, and maximizing access (Goldsmith and Gardner 2020). Governments from medium-size cities can and have learned from their larger counterparts to address the challenges that arise from the arrival of new mobility in their broader transportation systems.

BOX 1
What Is New Mobility?

New mobility brings together a variety of "on-demand" forms of transportation that operate outside of legacy transportation networks such as car ownership, mass transit, or traditional taxi services.

- **Car sharing** products allow consumers to rent a car for a short period, often by the hour. Companies such as Zipcar and Free2Move allow users with an account to select a car at specific locations and use the car for an hourly rate. After their trip, drivers can drop the car off at a designated location and pay for the time they used the car.

- **Ride sharing** allows users to share a ride with other passengers in a single vehicle. With a phone or a smartphone app, users can call a car to their current location. Passengers in the vehicle will be dropped off at their predetermined locations in an order based on algorithms that account for time, location, traffic, and other factors. Companies such as Via fall under this category.

- **Ride-sourcing** services connect passengers looking for rides to drivers who are using their personal vehicles to source rides. Much like taxis, passengers request rides and pay the driver for the service. Uber and Lyft are the best-known operators of this mode. Ride sharing and ride sourcing are operated by transportation network companies (TNCs), companies that use online or mobile booking services to arrange rides or car rentals for passengers. Via also offers ride-sourcing services in the District of Columbia and New York City.

- **Micromobility** refers to shared docked and dockless bicycles (pedal and electric assisted) and electric scooters. Companies such as Lime, Spin, Bird, Veoride, and Gotcha fall into this category. Many cities also host docked bicycles, where bicycles must be parked in a docking station upon completing a ride. For example, the District of Columbia has Capital Bikeshare; Madison, Wisconsin, has B-Cycle; and Detroit, Michigan, has MoGo.

In our interviews, participants spoke mostly about ride sourcing and micromobility, so our review focuses on these modes.

How New Mobility Affects Disparities in Access to Transportation

New mobility platforms allow several means of accessing services, provide on-demand mobility options, and can more efficiently dispatch vehicles based on a rider's specific needs. City governments, transit agencies, and planning organizations look to work with new mobility companies to ensure broad and equitable access and improved service at an affordable price for all riders. These partnerships must balance the tension between companies' need to make a profit and cities' need to produce the most equitable and inclusive outcomes for residents by increasing access to transportation services for all

demographics. In considering equitable transportation access for all residents, cities need to understand how new mobility can expand transportation options for underserved groups (Greene et al. 2019). This requires addressing barriers to transportation, such as the geographic distribution of services, economic barriers, physiological challenges, and limits in awareness or interest (Shaheen et al. 2017; Zack 2018).

ACCESS FOR UNDERSERVED NEIGHBORHOODS

When new mobility services are introduced, they are often concentrated in areas that already have robust transportation options, such as the city core and neighborhoods that attract tourists (Goldsmith and Leger 2020; Zack 2018). In this way, new mobility can exacerbate preexisting inequities in access to public transportation by leaving out areas in low-income neighborhoods or neighborhoods farther outside of the city, where residents may benefit the most from a new service. Increased access can be achieved through more equitable geographic distribution of bicycles, scooters, and car service.

Ride-sourcing services can provide both first- and last-mile service for riders in areas underserved by public transit. City transit agencies have worked with TNCs to complement public transportation systems as first-mile and last-mile options. For example, cities such as Dayton, Ohio, and San Clemente, California, subsidize TNC rides that start or end at bus and train stations. Other cities, such as Dallas, Texas, are integrating TNC options into their transit agency's mobile app (Greene et al. 2019; Schwieterman, Livingston, and Van der Slot 2018).

In addressing vehicle access in the micromobility space, cities commonly use two tools to increase deployment in communities underserved by transit systems: *percentage distributions* and *fee incentives.* Through percentage distributions, cities require that a certain share of vehicles be deployed in low-income and priority neighborhoods, often in exchange for allowing the company to deploy a larger fleet in other parts of a city (Zack 2018). With fee incentives, cities use a tiered structure to encourage mobility companies to redistribute units to low-income areas by charging lower per unit fees there and higher fees everywhere else (Zack 2018).

ACCESS FOR UNDERSERVED GROUPS

In addition to expanding into neighborhoods otherwise underserved by public transit options, new mobility can also serve residents who rely on public transit for off-peak commuting. Although this service can sometimes negatively affect support for public transit investment, it also can provide important first- and last-mile service. For example, Pinellas Suncoast Transit Authority's Late Shift pilot

offers transportation-disadvantaged riders free trips with TNC partners when bus services are not running.[9]

However, the applications required to use new mobility services can create access barriers for some users. Arranging service for shared transportation typically relies on access to a mobile app linked to credit cards, creating barriers for users without smartphones or bank accounts.[10] Three in 10 Americans with incomes under $30,000 do not have smartphones, and 7.7 percent of residents in the United States do not have bank accounts (Prosperity Now 2017).[11] Some new mobility companies have addressed this concern by offering alternative payment options. For example, the Capital Bikeshare program in Arlington County, Virginia, allows users to pay for use and membership fees with cash.[12] And Lime Access allows users to pay in cash for a Lime e-scooter ride at any CVS or 7-11 store and provides a text-to-unlock feature that lets riders without smartphones use the service.[13]

Rapid mobility technology change can also contribute to unforeseen access challenges for users with disabilities if local government and companies do not consider their needs. One survey found that on the day of the survey, 34 percent of respondents with a disability made zero trips compared with 13 percent of respondents without a disability. About 36 percent of respondents who made no trip reported staying home because they have a disability or are housebound. Respondents with disabilities also reported that they compensate for transportation limitations by reducing day-to-day travel (71 percent) and using public transit less often (14 percent) (Brumbaugh 2018).

Although public transit agencies have been working to increase bus stop compliance with accessibility requirements in the Americans with Disabilities Act, new mobility technology can fill gaps in accessibility by bringing transit options directly to users (Brumbaugh 2018; Bureau of Transportation Statistics 2012). The city of Boston partnered with Lyft, Uber, and Curb to subsidize paratransit trips (Greene et al. 2019). The program allowed the city to offer more affordable and efficient paratransit services through instant booking and wheelchair-accessible vehicles, leading to less expensive trips and shorter wait times.[14]

To address barriers to transportation access, service providers must understand the impacts on both individuals and communities. To ensure new mobility services address these concerns, cities can grant operating permits to companies that develop products and strategies for users facing barriers. For example, in their vendor selection process, cities can ask companies to propose how they might reach out to members from underserved communities. Within this process, companies should also share how they intend to provide cash payment options, access for those without smartphones, discounts for low-income users, and multilingual materials (Zack 2018).

Medium-Size Cities: A Research Agenda

We focus on medium-size cities because we identified a gap in the research in how these cities are working to improve equity in the use of new mobility. These medium-size cities have observed how larger cities have responded to implementing new mobility technologies, so they have an opportunity to proactively build regulatory frameworks and partnerships to support inclusive outcomes before those new technologies are implemented. However, although some lessons from the larger cities can be applied by medium-size cities, there is a new context that creates considerations medium-size cities must pay attention to. These include limited resources and capacity to implement regulations and monitoring, questions about whether a city's market is large enough to leverage to impose regulations and requirements on mobility companies, and, most importantly, cities' ability to entice new companies to operate and stay there.

To better understand these issues, the research team scanned several transportation plans, conducted interviews with stakeholders in 10 cities (figure 1), and held a full-day convening with representatives of five of those cities. (Appendix A provides our research methodology and appendix D provides more information on participant cities.) These cities all had populations between 150,000 (for Springfield, Massachusetts) and 285,000 (for Greensboro, North Carolina) and were in metropolitan areas ranging in size from 450,000 (in Reno, Nevada) to 2.4 million (in Orlando, Florida), or to 3.7 million (if including Tacoma in the larger Seattle-Tacoma region). These cities share some characteristics, but they are also quite diverse in their regions, economies, topographies, and populations.

FIGURE 1
Participant Cities
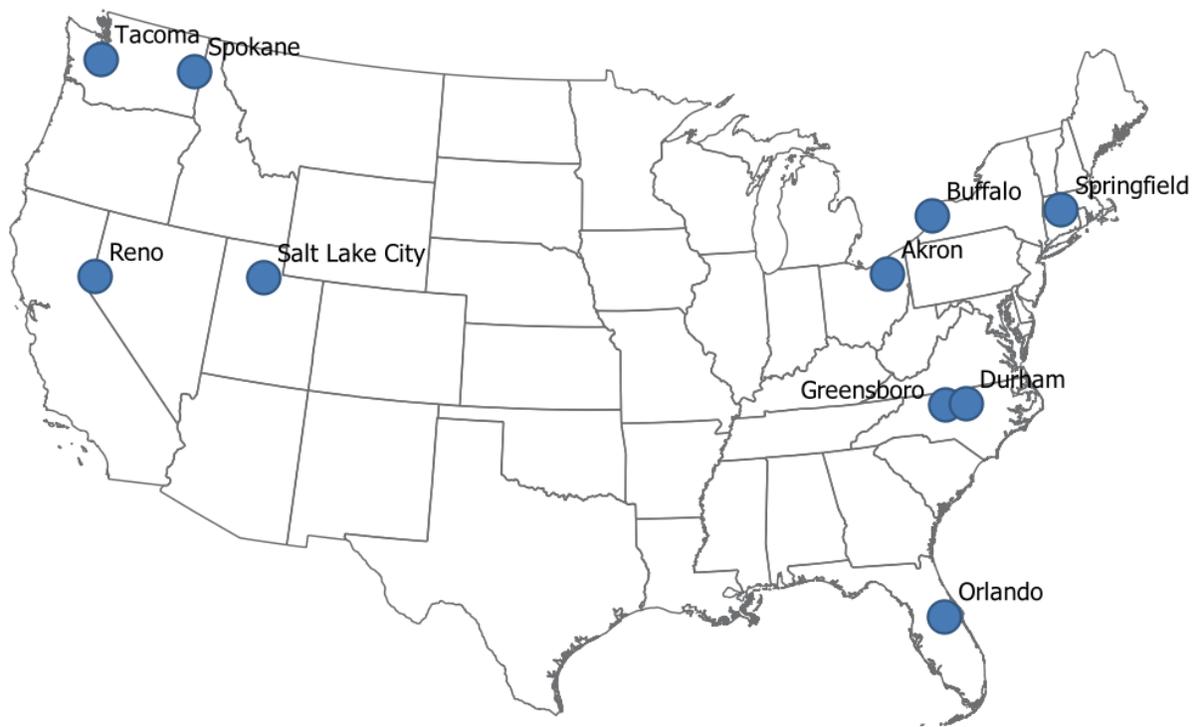
Opportunities, Barriers, and Potential Solutions

Based on our phone interviews, in-person roundtable, and review of the literature (discussed further in appendix A), we derive key themes for how medium-size cities are incorporating new mobility technologies into broader transportation systems to achieve their equity goals. We begin with themes that express opportunities for new mobility technologies to address transportation equity challenges, then we discuss some of the barriers local stakeholders identified to harnessing these opportunities. Finally, we share approaches and innovative solutions that cities are using to address these barriers.

New Mobility Technologies Are *Part* of the Solution to Transportation Equity Challenges in Medium-Size Cities

THEY CAN HELP ADDRESS TRANSPORTATION GAPS IN LOCATION AND TIMING

According to the American Public Transportation Association, 45 percent of Americans have no access to public transportation.[15] New mobility technologies can improve transportation equity by expanding transportation options during off-peak hours, increasing access in underserved communities, and decreasing travel time. They can serve as first- and last-mile connections to public transit or as stand-alone options for those without a private vehicle. They can also increase travel-time reliability, create advanced booking options, and reduce travel times (Shaheen et al. 2017). For low-income residents in particular, increasing transportation options and expanding access can broaden the number of jobs that are accessible in a daily commute (Greene et al. 2019) and increase access to health care services, grocery stores, and other health-promoting services.

Almost all our participants agreed that new mobility technologies can help supplement transportation service when public transportation is operating infrequently or where transportation access is nonexistent. Several participants spoke of first- and last-mile connections as a significant benefit of these modes. If used in this way, they can reduce barriers to public transportation for people who depend on it but may live too far from a stop. Moreover, some participants we spoke with noted that providing more transportation options, especially for those who only want to make a short trip, may help transit authorities optimize routes (for example, by eliminating the need for a bus to stop at every corner or to go out of the way to reach one location).

THEY MAY GENERATE COST SAVINGS FOR CITIES AND USERS

In addition to providing more flexible transportation options, new mobility technologies can also generate cost savings for riders and transportation agencies. Many new mobility companies offer transit subsidies which, coupled with the reduced wait and ride times, could help users get to their destination more quickly for a similar or lower cost. Saving time by taking a faster mode of transportation means users are more likely to arrive on time for work, which can ultimately increase job retention and free up time that users can spend on other activities. A 2019 study by the Massachusetts Institute of Technology that examined the impact of providing 50 percent discounted fare cards to Massachusetts Bay Transit Authority riders found that riders given the discount took 30 percent more trips than riders in the control group *and* took more trips to health care and social services.[16] Although that study did not include new mobility transportation, subsidies offered by new mobility companies could have the same effect.

Offering more transportation options—especially ride sharing, car sharing, and ride sourcing—can also reduce residents' need to own a private vehicle and thus reduce household transportation costs on cars, insurance, gas, and maintenance (Shaheen et al. 2017). New mobility technologies can also lower costs for public transit agencies' paratransit services. Some cities are working with companies such as Lyft and Uber that can provide on-demand paratransit for a fraction of what it would cost the city to provide the ride (Greene et al. 2019).

But Several Barriers Limit New Mobility Technologies' Potential

INFRASTRUCTURE GAPS

Among participants, all cities named new mobility as *part* of the solution to equity challenges but emphasized that more funding is needed for public transportation and associated infrastructure to address equity gaps. Despite an increase in the number of public transit passenger trips (including rail, bus, metro, subway, light rail, commuter bus, vanpool service, and paratransit) in the past 25 years, transit infrastructure continues to be underinvested. According to the American Society of Civil Engineers, 15 percent of facilities, 17 percent of systems (e.g., power, signal, communications, and fare collecting), 35 percent of guideway elements (e.g., tracks), and 37 percent of stations in the US are not in a "state of good repair,"[17] and addressing this backlog of maintenance is projected to cost the country $122 billion by 2032.[18]

Bike lane and adequate sidewalk infrastructure is also lacking in many communities. For example, a 2017 report by the city of Austin, Texas, showed that only 51 percent of the city had sidewalks.[19] In Los Angeles, a local nonprofit estimated that in 2017, half of the city's 11,000 miles of sidewalk were damaged.[20] Medium-size cities are not immune to this problem. Durham, North Carolina's 2017 Bike + Walk Implementation Plan identified 420 miles of sidewalk and 461 miles of road in need of new or improved bicycle infrastructure (City of Durham 2017). The city of Akron, Ohio, released a plan to fix only 160 sidewalk sections out of the 410 identified by residents as needing replacement (and even more sidewalks may be in disrepair but not reported by residents).[21] Several of our participants acknowledged the need to upgrade sidewalk and bike lane infrastructure to ensure the safety of pedestrians and micromobility riders and to ensure bikes and scooters are not parked where they do not belong. Participants also noted that if communities have been historically underinvested, the infrastructure may not already exist or be adequate to support bike and scooter use. Notably, one participant shared that the arrival of scooters in his city created a stronger interest in bike lanes where widespread public support for them was previously limited.

Many participants also discussed how limited broadband access or smartphone use in certain communities can prohibit people from booking rides through an app or a website. Similarly, people who are unbanked or do not have access to a credit card may be unable to use technologies that require purchase with a credit card. Some cities expressed a desire to connect their public transportation passes with new mobility technologies to streamline payment options and make it as easy as possible for riders to get around with one card. However, participants noted that many of these changes would require large, system-wide upgrades that are too expensive for many transit systems.

POPULATION SIZE, JOB DISTRIBUTION, AND GEOGRAPHY

The specific attributes and contexts of medium-size cities matter. Smaller population bases, decentralized employment centers, and generally lower densities make new mobility potentially less profitable in medium-size cities than in their more populated counterparts. Several of our participants noted that new mobility technologies may not be practical or geographically feasible solutions in their cities. For example, some mentioned the broader challenge of job distribution in their region and how new mobility technologies, which can either be too expensive for long-distance rides or, for micromobility options, too difficult to ride long distances, were unlikely to address job access challenges if job centers were located far from people who needed jobs. Participants from Buffalo also cited the weather as being a major barrier to implement new mobility.

PERCEPTIONS AND USER PREFERENCES

Many participants shared that new mobility technologies were unlikely to be more widely used because of safety concerns, lack of knowledge among some groups about how to use the technology, discomfort with riding these modes, or personal tastes.

SILOS WITHIN AND BETWEEN ORGANIZATIONS RESPONSIBLE FOR OPERATING, PLANNING, AND SUPPORTING TRANSPORTATION SYSTEMS

For most of our participants, relationships with new mobility companies are built through the municipal transportation department or the regional transportation authority. Although these bodies are responsible for signing contracts with new mobility companies, they are typically not responsible for building or maintaining the infrastructure needed for new mobility technologies to be properly used (such as bike lanes or curb cuts). In general, the planning, transportation, and public works operations are siloed in different departments and sometimes across several organizations. Participants shared that these divisions have led to unnecessary friction between departments, overlapping responsibilities, poor customer service and responsiveness, and misuse of funds where project timelines should have

been aligned but were not. Some participants shared that this lack of coordination has also made it difficult to advocate for Complete Streets designs that prioritize multimodal transportation rather than catering more to automobiles.[22] Further, rigid guidelines in one department can affect the implementation of new services and programs in another.

A lack of coordination among departments and an inability to streamline workflows may be particularly salient in medium-size cities, where smaller staff sizes and budgets already limit the city governments' capacity to be proactive.

New mobility company participants also expressed some frustration in coordinating with cities where no person had been charged with managing the city's relationship with the companies. In particular, they spoke about challenges coordinating across multiple departments to implement the various components of their service, and they remarked that the departments often disagreed about how to handle certain challenges related to technology.

DEVELOPMENTS IN NEW MOBILITY TECHNOLOGIES OUTPACE TRADITIONAL TRANSPORTATION PLANNING PROCESSES

"Micromobility is housed inside structures that were designed to create 20-year highway projects and with people who were trained to create 20-year highways"
—Roundtable participant

The United States Department of Transportation's Federal Highway Administration requires that all Metropolitan Planning Organizations (MPOs) develop transportation plans that address at least a 20-year planning horizon.[23] In the United States, however, docked bike shares have only existed since 2008, and micromobility has only existed since 2018 (or later in most cities we interviewed representatives from). In this short period, several companies in this space have already merged or folded. During our convening, several participants expressed uncertainty over how new mobility technologies and companies would progress in the near future. Some of this uncertainty focused on the companies' viability and whether mergers, acquisitions, or failures would lead to fewer companies, less competition for market share, and less ability for cities to leverage competition to make certain requests. Others questioned whether new modes of transportation—scooters in particular—would

remain popular a few years into the future. With these questions, some participants expressed a hesitation to reorient long-term planning decisions around what could be a fleeting assemblage of companies, systems, and technologies (Latour 1996).

Many participants also expressed they do not have the funds, staff, authority, or resources to stay at the cutting edge of decisions around new technologies. Although MPOs can help create a vision for a connected regional transportation system, MPOs often don't have the authority to implement plans, so they struggle to react quickly to the ever-changing new mobility landscape. As one participant put it, "We can put policy out there and offer recommendations, but when it comes down to implementation, we don't own the streets and we can't make those decisions to manage curb space."

COVID-19, Public Transportation, and New Mobility

Our research and interviews for this report were conducted before the COVID-19 pandemic had spread to the US, so we do not know how it is affecting the cities in our study. But the pandemic has obviously thrown a wrench into transportation planning efforts. Much uncertainty remains about how a US recovery will affect public transportation and new mobility companies in the long term. Already, public transportation systems are seeing significant declines in ridership.[a] Spending on electric scooter and ride sharing has also declined 80 percent or more,[b] and many new mobility companies are beginning to lay off employees.[c] However, some cities are looking to new mobility options to solve transportation challenges caused by the pandemic. Many companies are offering free service or reduced prices during the pandemic and offering additional support programs to cities, such as partnerships with health facilities and delivery services.[d] Some cities are also creating more space for residents to use micromobility options since car traffic has dropped as people stay home. For example, some cities are closing down roadways to car traffic or creating new temporary bike lanes.[e]

[a] Robert Puentes, "COVID's Differing Impact on Transit Ridership," Eno Center, accessed May 21, 2020, https://www.enotrans.org/article/covids-differing-impact-on-transit-ridership/.
[b] Lauren Leatherby and David Gelles, "How the Virus Transformed the Way Americans Spend Their Money," *New York Times*, April 11, 2020, https://www.nytimes.com/interactive/2020/04/11/business/economy/coronavirus-us-economy-spending.html.
[c] Andrew J. Hawkins, "How the Novel Coronavirus Is Speeding the Scooter Apocalypse," *The Verge*, May 13, 2020, https://www.theverge.com/2020/5/13/21257307/electric-scooter-bikeshare-covid-19-bird-lime-uber-subsidies.
[d] "COVID-19 Shared Micromobility Status Tracker," North American Bikeshare Association, accessed June 17, 2020, https://nabsa.net/resources/covid19tracker/.
[e] "These 5 Cities are Getting Micromobility Right in Response to COVID-19," Bird blog, May 16, 2020, https://www.bird.co/blog/these-5-cities-getting-micromobility-right-response-covid-19/.

DATA GAPS

Even accounting for the potential benefits of new mobility, respondents expressed the need for more data to understand what works best to reach equity goals. For example, respondents from several cities relayed concerns that without knowing where riders are going or the purpose of their rides, they do not know whether new mobility is supplementing transit routes or supplanting them. In addition to wanting to learn more about usage in specific geographies, participants shared that data could help them understand key demographics that current transportation options are unable to serve and highlight potential new audiences for increased service or new lines. One participant also mentioned that additional data around cost and usage could help them reevaluate their own pricing strategies, possibly even *raising* prices for those with a greater willingness to pay for transportation services.

In general, participants indicated that companies share citywide data that is not always helpful for planning purposes. Among the companies we spoke with, several mentioned that they share high-level data with cities such as peak usage hours, number of units used per hour and per day, and common routes, but none will share individual trip data to protect users' identities. Our city participants also shared that they receive information about the average velocity of trips, average travel time, and how many units have broken down.

But even where data are made available, capacity to make use of those data is limited. Several transportation directors we spoke with shared that they only have a few planners on staff, and they often do not have dedicated staff who can analyze new mobility data specifically and incorporate it into larger transportation plans. Participants expressed a desire for data analysis support and the technical capabilities to connect several data sources covering various modes of transportation. In Salt Lake City, the transportation director shared in his interview that he has access to a data dashboard that shows micromobility usage, but he does not have the staff capacity to analyze it as much as he would like.

STATE PREEMPTION

States are also beginning to create laws about new mobility use, although many of these efforts have limited or prohibited municipalities from implementing their own regulations. According to a 2018 report published by the National League of Cities, 41 state legislatures have passed bills that preempt cities from regulating TNCs such as Uber and Lyft. Some of these bills authorize the use of these services statewide; others either prohibit their use or establish frameworks for how they can operate within the state (NLC 2018). And according to NACTO, over 44 e-scooter bills were introduced in 26 states at the beginning of 2019 (NACTO 2019b). In Texas, after the city of Austin implemented local

regulations on ride-sourcing companies, Uber and Lyft left the city, pushed for a referendum that would have overturned the regulations, and, after that was rejected, supported a state law that created a statewide framework but preempted local laws.[24]

Despite These Challenges, Medium-Size Cities Are Using New Approaches to Overcome Barriers to Achieve Transportation Equity

CITIES ARE USING REQUESTS FOR PROPOSALS, PERMITS, PERMITTING FEES, AND PILOTING PERIODS

Among those we interviewed, almost all cities are using requests for proposals (RFPs), permits, permitting fees, or piloting periods to test and then embed equity considerations into new technologies. When developing an RFP, permit, or pilot, cities should weigh several key considerations:

- The duration of the permits or licenses and thus how responsive they can be to quickly and/or frequently change requirements

- Market demand for new mobility technologies

- Equity requirements (including pricing and discounted pricing plans, payment options, fleet distribution and/or availability of units, adaptive device requirements, safety, and local hiring) and the possible incentives that may need to be offered to companies to offset these

- Communications and community engagement requirements (such as public engagement, user education and outreach, especially outreach to disadvantaged groups; customer service; language requirements; and partnership with advocacy groups)

- Limitations on the number of companies allowed to operate and the number of vehicles that any one company can deploy

- What conditions constitute terminating a permit or license (e.g., breaching contract terms or violating local regulations regarding operation, such as speed limits and parking)

- The amount of fees to charge and what these fees will fund (e.g., a mobility coordinator, infrastructure to facilitate the use of these technologies, or city staff time to regulate companies and ensure that public rights of way remain accessible to all)

- Data-sharing requirements (and whether a third-party will be used to gather and analyze data) and user privacy

- State and local legal constraints

For more information about these, we recommend consulting NACTO's report on Guidelines for Regulating Shared Micromobility (NACTO 2019a) and Transportation for America's Shared Micromobility Playbook (Transportation for America 2019).

Recognizing that new companies are especially willing to negotiate when trying to enter a new market, many cities use a competitive RFP process to select companies that can operate within their guidelines. The RFPs stipulate cities' requirements (such as equity), but they generally allow companies a lot of creativity and flexibility to describe how they will meet the city's needs. Cities using RFPs shared that they use the reapplication process to keep companies accountable to evolving city needs. Respondents from most cities in our study stated a desire to *limit* the number of companies operating in the city, saying that allowing a limited number of vendors helps the city improve communication with companies and leads to better regulation. This finding tracks with another research study conducted by the Pedestrian and Bicycle Information Center among medium-size cities.[25] However, some cities do not limit the number of companies, instead allowing all companies that comply with city laws to operate. One participant, who comes from a city that attracts many visitors and thus has a high demand for micromobility, shared that having so many companies operating within one jurisdiction forces companies into compliance: if they are found to be out of compliance, they will quickly be kicked out and replaced by other companies.

Interviewees from cities that use permits rather than RFPs lauded the increased flexibility and responsiveness permits give them. Because the technologies are fairly new, they cited a need to update regulations and requirements quarterly or biannually to keep up with what they learn about how the technology is being used. With a permit, the city relinquishes direct management and operations but can still set specific rules and regulations. Revoking a permit for noncompliance may also be easier than terminating an RFP agreement (NACTO 2019a). Along with issuing a permit, cities often require companies to pay permitting fees—typically a fee per unit and another fee for general operations. Although funds from permitting fees can go into city general funds, some cities are directing permitting fees for more specific uses related to the technology. For example, they can be used to pay the salaries of new staff members charged with working with new mobility companies or to fund infrastructure improvements that will facilitate the use of new mobility technologies.

Some cities that were just beginning to regulate new mobility companies also mentioned using a piloting period to learn more about what challenges they might experience, what demands they wanted to make, and how to regulate companies. Beginning with a piloting period can be useful to assess uptake in the community, conduct outreach and engagement to understand how the public perceives the new technology, and to understand how different companies operate and respond to city requests.

In Baltimore, the city launched a six-month micromobility pilot that any company could participate in if it paid the piloting fee. The city used this pilot to test different equity-based requests (for example, requiring a percentage of units to be placed in city-designated locations each day), understand how companies complied with proposed regulations, and gather public input through community meetings. After analyzing the pilot data, Baltimore extended the pilot while the city council reviewed the pilot evaluation report and approved an improved framework for a permit program. The annual permit program launched with incremental improvements to regulations that had each been discussed in public meetings and were released for public comment before adoption. Allowing several opportunities and forums for input allowed Baltimore to move forward to a permit program in an intentional way that considered different perspectives from the pilot.

A city like Baltimore may provide a useful model for approaching these efforts thoughtfully, but even with its challenges, it is a large city with several assets, well-funded institutions, and features. Smaller cities with fewer resources and weaker market conditions may have greater challenges in setting up competitive pilots. Our interviews with micromobility companies revealed that they operate on slim margins, and if requests from cities become too great, they may pull out because profitability is not possible. For example, companies shared that they often *lose* money by operating in low-income communities (because of lower take-up rates and reduced fares). To offset these losses, they will often request increased fleet sizes in downtown and tourist zones. Although cities may be opposed to negotiating with companies on certain matters, they will need to consider their size and potential ridership to effectively negotiate.

CITIES ARE WORKING TO GET THE DATA AND ANALYSIS SUPPORT THEY NEED

"From where we stand, equity is a core value, but we're mode agnostic. How do the modes work together? We need the data to talk about mobility overall."—Roundtable participant

Accessing the data needed to understand equity while maintaining users' privacy as required by law is a difficult balance. Many cities around the country have begun to use the MDS, a standardized data and application programming interface format developed by the Los Angeles Department of Transportation.[26] Although the MDS does not include personally identifiable information, it includes ride start and end points and ride routes, which many consider to be private information and could be

easily used to identify a person. The Los Angeles Department of Transportation was recently sued by Uber and the American Civil Liberties Union over the use of the MDS, stating that it is in violation of the Fourth Amendment.[27]

Cities across the country know that to understand how transportation can improve equity, they will need more data to understand the problem. Many cities currently require that companies share data in a certain format (for example, through MDS or the General Bikeshare Feed Specification), provide historical data, provide data updates on a regular basis, protect personally identifiable information, and utilize some form of GPS tracking in each unit (Transportation for America 2019). Although data access is still a challenge for many cities in our study, some are taking steps to proactively secure the data they need to understand new mobility ridership. In Greensboro, North Carolina, the city's dockless electric scooter permit required permittees to share several data points: information from a customer survey, total number of trips per month and per week, total trip distance, average distance and trip duration, number of scooters in circulation, daily trips per scooter, number of scooters vandalized or damaged, number of users per frequency of use, and total number of complaints.[28] For more information on what data cities are collecting, we recommend consulting the brief Sharing and Mobility Data for Planning and Policy Research from the University of California Institute of Transportation Studies (Matute 2020).

Respondents from several cities in our study mentioned using third-party data management companies such as Populus and Remix to help with data integration and analysis. These types of companies can not only increase data capacity, they can also help cities navigate complex data privacy laws and manage relationships with new mobility companies, such as by ensuring data are being shared at intervals that are useful for analysis. Further, several participants that use third-party data management shared that the companies were able to help them access real-time data that differ from those provided by the MDS. Although the use of these companies is not unique to medium-size cities, they can be particularly helpful where cities of this size have limited staff or data expertise.

Respondents from several cities in our study also expressed a desire for these data management companies to connect them with other medium-size cities and share best practices around data usage. Having multiple sources of information on best practices and venues to discuss shared challenges and opportunities can be an effective way to overcome the limited resources or capacity of any one city. Several large membership organizations, such as NACTO, the American Planning Association, and the National League of Cities fill some of these gaps, but interviewees shared that hearing from other cities of a similar size is particularly useful.

CITIES ARE REORIENTING OPERATIONS AROUND EQUITY

Our scan of transportation plans and interviews with stakeholders in the transportation field revealed that equity is being embedded into organizations, plans, and processes in several different ways. Some cities have established equity-focused roles within departments or even created citywide equity offices focused on achieving equity across all municipal departments. In Tacoma, Washington, for example, the Office of Equity and Human Rights is charged with "identifying and eliminating the underlying drivers within our community that perpetuate racial inequity and provide opportunity and advancement for all."[29] More specifically, the office focuses on ensuring equity in city service delivery, decisions, and community engagement. Likewise, the city of Durham has an Equity and Inclusion Department that "will support an environment of inclusive and equitable community economic development that promotes shared prosperity" through city contracting and establishment of a citywide equity plan.[30]

Aside from reorganizing internal operations or creating new roles dedicated to achieving equity, some participants also shared that they use equity as a value or a goal in their strategic planning processes. For example, the newly created Department of Integrated Development in Akron, Ohio, launched a five-year strategic framework in 2019 that lists equity as a core value for planning and established a goal to create a "more equitable Akron."[31] In Reno, Nevada, the Regional Transportation Commission of Washoe County's 2040 transportation plan includes a chapter on how the organization is "promoting equity and environmental justice."[32]

Interestingly, most transportation plans we reviewed did not draw an explicit connection between equity and new mobility technologies,[33] and none established goals for making sure that access to and use of new mobility technologies is equitable. Although the plans we consulted were mostly written in the past three years[34] (the same period over which micromobility emerged in the US), the plans may have been written while cities were still unsure whether new mobility technologies (especially micromobility) would come to their cities or how widespread their use would be; therein city officials did not see a need to include them in plans. Cities and MPOs also may not have seen long-term plans as the appropriate mechanism for embedding new mobility and equity goals, preferring instead to use RFPs and permits, as discussed.[35] However, a few plans do mention the connection between new mobility technology and equity. The Washoe County Regional Transportation Commission's 2040 regional transportation plan (which includes the city of Reno) explains that the impact of ride sharing on mobility will require additional analysis. The plan also acknowledges that "due to costs that are typically higher than transit fares, equity concerns should also be given consideration."[36] Salt Lake City's first-ever transit master plan, launched in 2017, discusses lack of smartphone access as a barrier to addressing equity concerns related to ride-sharing services. It also mentions a need to "address

potential or perceived equity implications of providing shared ride services programs in some neighborhoods that may be generally higher-income than others."[37] Buffalo's 2050 regional transportation plan describes specific communities to consider when guiding equity in transportation planning. The plan also describes the goals of the transportation system to (1) improve equitable access to education and employment centers and (2) improve public access to parks, greenways, and waterfronts, and most importantly, it acknowledges that statistics for communities of concern need to be compared with those for the overall population.

Efforts to examine how transportation plans incorporate equity goals consider factors such as

- access to diverse payment options;
- disparate impacts from transportation projects, including environmental justice and gentrification;
- equitable transportation investment;
- handicap accessibility;
- integration of transit planning with affordable housing planning and job distribution;
- affordability of options;
- ride-sharing and ride-sourcing partnerships;
- service hours and locations;
- access to grocery stores, parks and recreation facilities, health care services, and banking; and
- safety.

To learn more about these factors, see appendix C.

As cities work to embed principles and goals into plans, it is important that they focus on the human experience rather than the transportation mode to respond to local needs. As stated by the Untokening Collaborative, "focusing on the body allows for the consideration of the constraints imposed upon that body and centers the lived experience of marginalized people."[38]

Our interviews with new mobility companies revealed that they also think about equity. Many companies have staff members explicitly charged with ensuring that project teams across the country are thinking about how to equitably serve all parts of a city through new products and features in their apps. For example, the Lime website mentions "equitable distribution of shared scooters, bikes and transit vehicles."[39] However, that effort aims to "reduce dependence on personal automobiles for short distance transportation and leave future generations with a cleaner, healthier planet," *not* to ensure all people have equal transportation access. To meet that stated goal, Lime offers discounted fares for

people who receive government assistance.[40] Spin also provides riders without smartphones or credit cards access to Spin bikes through the Spin Access program.[41]

CITIES ARE SEEKING COMMUNITY INPUT AND WORKING WITH COMPANIES TO CONDUCT RIDER WORKSHOPS AND LAUNCH AWARENESS CAMPAIGNS.

Effective community engagement is a critical piece of planning for equity. Although data can help cities understand where certain access gaps may exist, engagement can help highlight the human experience behind the numbers. Because new mobility technologies are still new to a large segment of the population, it is especially important to build in time to understand how the public feels about these options and to gather input from all demographics in the city.[42] All this outreach requires time, a dedicated budget, staff trained in community engagement, and organizational flexibility to respond to community needs.

Our interviews with new mobility companies highlighted a number of steps companies are taking to overcome these barriers: conducting bike and scooter safety workshops, offering demonstrations at festivals and community events, providing adaptive bikes and scooters or wheelchair-accessible vehicles for riders with different abilities, and implementing communications and awareness campaigns focused on safety. Indeed, interviewees from some cities mentioned they *require* that companies take these steps as part of their permits or RFPs and that they see them as part of companies' broader corporate responsibility to ensure safety and expand access.

CITIES ARE DEVELOPING COLLABORATIVE MODELS TO ENGAGE KEY REGIONAL PLAYERS.

Nearly all participants in our study expressed the need for increased federal funding for public transportation. Many also spoke of the need for major employers and anchor institutions to add their voice to transportation advocacy efforts, and in some cases, to help subsidize transit options for their employees. One participant said that she knows employers advertise good public transit options to entice prospective employees and even use those options as criteria for selecting new office locations, but they rarely lend their weight to transportation advocacy or help fund transit infrastructure upgrades that could help maintain and attract their workforce.

To counter this reality, some cities are working more closely with major employers to talk about how the availability of more transportation options can support their business goals. In Baltimore, for example, when a new employer opens in the city, the Baltimore Development Corporation shares a fact sheet created by the city's Department of Transportation with the organization's leadership. The sheet has information on new mobility options, nearby transportation hubs and routes, and how to request

bike rack installation. In Seattle, the nonprofit Commute Seattle works with employers to comply with Seattle's Commute Trip Reduction law, offer small-business incentives on transportation passes, and help employers put together their commuter benefits program (which is mandated by law for all companies in Seattle with over 20 employees).[43]

Cities can also partner with neighboring communities, universities, commercial districts, nonprofits, and visitors' bureaus to create regional mobility programs, promote shared modes of transit, and collaborate on enforcement initiatives.[44] In the District of Columbia, the Community Partners program run by Capital Bikeshare engages local nonprofits, government agencies, and social service organizations to sign their clients up for bike-share memberships that cost only $5 a year. As of late 2017, the program had 18 organizations with 800 District residents participating, and they made nearly 7,000 rides a month.[45]

CITIES ARE USING THE NEW MOBILITY SPACE TO LEAN INTO PROCESS IMPROVEMENTS AND INCORPORATE EQUITY INTO SYSTEMS

"The emphasis I want to put is on process. It is not about the scooter. It is about identifying your priorities and developing a framework for what you want to see."
—Meg Young, Baltimore City Department of Transportation

Planning for new mobility can be an opportunity to introduce a broader conversation about equitable transportation practices within an organization or community and to discuss the data, systems upgrades, staffing, and process improvements needed to get there. To have this conversation, cities need more disaggregated data on issues such as

- spatial equity (e.g., fleet distribution or the distribution of public parks, grocery stores, and health care services);

- payment methods and use of reduced-fare programs, smartphone ownership and broadband internet access rates, and banking and credit card access rates;

- average wait times and the availability of rides;

- transportation costs as a share of monthly incomes; and

- quality of service (including number of high-frequency routes available and the quality of bus stops).

For more information on these issues, we recommend consulting the Equity and Smart Mobility study by the Institute for Sustainable Communities and the Center for Neighborhood Technology (2019).

Cities also need to understand who shows up for public engagement events and transportation committee meetings and who is represented on transportation boards. As articulated by the Untokening Collaborative, "the lived experiences of community members must be given priority as "data" in assessing infrastructure and investment needs, while also accounting for the deep and lasting trauma form the erasure of social, cultural and economic networks."[46]

Finally, and perhaps most importantly, cities need to understand, evaluate, and mitigate the disparate impacts that are caused by inequitable transportation investment, including health and wealth disparities and unequal access to quality schools, safe neighborhoods, and jobs. One way cities can understand these impacts is to conduct a health impact assessment to explore the health implications of new construction, service cuts, or fare increases. The Alameda County Public Health Department Health Impact Assessment on Bus Funding and Access is one such example (Alameda County Public Health Department 2013).

Several cities in our study shared that they are already working to incorporate new mobility technologies into forthcoming long-range plans. In Orlando, the MPO will be working to address micromobility and access in their 2045 long-range plan. And in Buffalo, the Greater Buffalo Niagara Regional Transportation Council dedicated a chapter in their new long-range plan *Moving Forward 2050* that outlines how micromobility and other noncar options can help the region "provide more choices for travelers, as well as greater coverage and frequency for those who cannot or choose not to use a personally owned vehicle."[47]

Some cities are also considering how new mobility technology can link up with broader transportation systems through first- and last-mile connections and by better integrating data across modes to understand access challenges. In Durham, North Carolina, for example, the regional transportation provider, Go Triangle, began operating a pilot program called RTP Connect in partnership with Lyft and Uber in August 2019. Through RTP Connect, riders receive subsidized rides with the ride-sourcing companies when they request a ride to the regional transportation center. To integrate the services, Uber added a link on the program's website that a user can click to load the subsidized ride; on the Lyft app, a user enters a promotional code to receive the discounted rate.[48] The

pilot has not undergone a full analysis yet, but RTP Connect organizers say the program is reaching approximately 90 to 120 people a day.

Many cities are also creating workarounds to payment option challenges, such as by allowing people to purchase key fobs or ride passes at convenience stores using cash or to book rides using standard SMS texts. Some cities are beginning to consider whether new mobility technologies can be reprogrammed to accept public transportation passes as a form of payment. A US Department of Transportation report on shared mobility and transportation equity proposed that cities could switch public transit payment from card-based to account-based systems, allowing users to transfer subsidies across transit modes (Shaheen et al. 2017). Although this level of integration would vastly improve residents' ability to use new mobility for first- and last-mile connections and could boost new mobility ridership overall, it is an extremely costly switch for cities, government administrators, and mobility companies. Although Buffalo does not currently have micromobility options, our participant from that city stated that transit stakeholders in Buffalo have been working for the past few years to implement an account-based system wherein a user could use a single payment card to access several different modes of transportation.

In addition to integrating payment systems, some cities are also looking to streamline the use of transportation subsidies across modes. Some cities are working with companies to subsidize rides for certain purposes (such as to take expecting mothers to medical appointments). In Columbus, Ohio, Smart Columbus is operating a program with Uber and Lyft that takes women with low-incomes and women of color to prenatal appointments (Institute for Sustainable Communities and CNT 2019). Many cities also partner with companies to offer discounted pricing to people with low incomes and those enrolled in either federal or state assistance programs, such as the Supplemental Nutrition Assistance Program or the Special Supplemental Nutrition Program for Women, Infants, and Children.

Transportation equity extends beyond payment systems. For years, transportation equity advocates have been thinking about how to makes streets more equitable. Almost all US cities are designed to prioritize the automobile as the primary mode of transportation. The emergence of the Complete Streets movement sought to rectify that by directing city planners and engineers to "routinely design and operate the entire right of way to enable safe access for all users, regardless of age, ability, or mode of transportation." [49] In a brief on why complete streets are more equitable, Smart Growth America points out that "low-income communities are disproportionally affected by unsafe streets" and suffer disproportionate health impacts from air pollution. Adults of color are also "less likely than white adults to get enough physical activity and are more likely to be obese." Finally, "Latino

and African American households are much more likely to not have access to a vehicle" (Smart Growth America 2016). In summary, streets that prioritize automobiles are inherently inequitable.

In response to this reality and to facilitate the use of more environmentally friendly options, cities of all sizes are passing Complete Streets ordinances and using other tactics to get planners and engineers to rethink how streets are used. The city of Greensboro, North Carolina, sent its Engineering Manager out into the streets to see how people were using new mobility technologies. This effort gave the manager a broader perspective of how streets are used and the need for more bike-, scooter-, and pedestrian-friendly planning.

CITIES ARE REORGANIZING DEPARTMENTS AND COMMUNICATIONS TO MORE EFFICENTLY IMPLEMENT AND MONITOR NEW MOBILTY SERVICES

As cities across the country seek to increase equity in their communities, many have recognized that they must examine their internal structures and systems before they can address broader problems in the community. Cities are looking at how they can reorganize departments, simplify budgeting processes, and create new roles that break down silos and barriers to progress. Particularly among medium-size cities, these changes can also solve budgetary and capacity challenges that impede progress. For example, less redundancy in work streams could free up time and resources to allocate to other purposes.

A 2019 study conducted by the Pedestrian and Bicycle Information Center that examined how medium-size cities (defined as ranging from 50,000 to 880,000 people) that are managing dockless electric scooter programs found that "all cities interviewed reported that they had underestimated the time required to implement and manage an e-scooter program."[50] This finding aligns with our research, as we found that many cities with robust micromobility offerings have started creating Micromobility Coordinator or Smart Mobility Advisor positions as a way to better manage these new technologies. The Greater Buffalo Niagara Regional Transportation Council, for example, created a Smart Mobility Advisor position charged with thinking about regional connectivity and better integration of smart mobility options into the city's regional transit grid. In Greensboro, a Bicycle and Pedestrian Coordinator works on micromobility-related projects. Cities can use permitting and operating fees to fund these positions.

A less common but potentially more effective approach cities can take is to integrate departments that often work together on projects to streamline workflows (for example, combining their planning and public services departments). The city of Akron in 2018 combined its Planning and Urban Development, Economic Development, Downtown Operations, and Recreation departments (as well as

elements of its Engineering Bureau) into one new department, the Office of Integrated Development. Then in 2019 the city launched a planning process to define the department's strategic framework that centers equity. The framework states, "In pursuit of equity, OID will work to both identify and eliminate the barriers and root causes that prevent the full participation of some groups in Akron's growth and prosperity. OID understands that to improve equity there must be increased fairness within its own systems, processes, and procedures, as well as justice in the distribution of resources."[51]

Conclusion

New mobility can build more equitable cities by incorporating communities and populations historically underserved by existing transportation options. But without a concerted push for equity, these innovations may simply reinforce the inequities that already exist. Whether new mobility competes or collaborates with existing transportation options (particularly public transportation) is an open question. Since mass transit is a limited component of transportation mix in most US cities, new mobility has the potential to further weaken smaller transit systems or to make them more useful, more accessible, and more relevant to more people.

Crucially, cities need foresight and planning to make new mobility as additive as possible. Cities must identify equity goals before new mobility options enter the market, identify equity gaps in existing systems, and position new technologies to help bridge those gaps. But knowing the future is tough: new mobility technologies are indeed new, and the industry is still rapidly developing. Even before the COVID-19 pandemic, cities were concerned about (and saw evidence of) retrenchment, and new mobility companies faced questions about their long-term profitability and viability. Now, with much of our mobility on pause, these concerns may be even more pressing.

"We've made implicit or explicit decisions about funding transit. We're talking about a public system that couldn't serve everyone and now we're asking private companies to serve the people the public systems don't or couldn't serve. How do we hold private actors to equity and access goals if the public sector is not reaching them? We need to use this opportunity to revamp the whole system."
—Harriet Tregoning, New Mobility Alliance

However, even with these uncertainties, the current moment provides an opportunity to build systems and approaches that can respond to whatever future mobility technologies may be in store. Much of this opportunity focuses on cities' capacity to be *flexible* and make decisions about that technology's potential effects on existing systems and communities. Establishing open lines of communication and centering equity before new technologies emerge should lead to a more effective and equitable response to them.

It also provides an opportunity to build a research agenda focused on how new mobility can be used to create more equitable communities. Even as cities increasingly incorporate equity into their governance structures, little is known about how effectively these changes improve equity or what specific program components are most effective. In addition, much work remains to understand how new mobility could bolster other equity goals, such as increasing access to affordable housing. Finally, what impact does the lack of diversity in the transportation and planning fields have on what projects and goals are pursued?

Medium-size cities and regions find themselves in a unique space: they have the advantage of learning from other jurisdictions, yet they are also well aware that lessons learned in one locale do not necessarily pertain to another. This report shows that cities are finding their own way and developing innovative approaches to respond to the challenges and promises of new mobility technologies. If stakeholders *across* cities can communicate to share challenges and innovations, a sort of "distributed learning" model can arise, whereby shared information can help overcome some of the capacity limits that medium-size cities may otherwise face.

Appendix A. Methodology

We began with an initial scan of city, county, and regional transportation plans in "medium-size cities," which we defined as cities with a population between 150,000 and 300,000. We analyzed to what extent these plans mentioned equity. In selecting the cities to interview, we focused on cities with plans that incorporated equity, but we also included cities that mention equity only briefly. This allowed us to include cities at different stages of incorporating equity into their transportation planning, from those that were just beginning to those who were dedicated to increasing their equity work.

We interviewed 15 individuals representing 11 organizations in eight states. Within our sample, six participants worked in city transportation departments, four in MPOs, and one in a transit authority. We spoke to transit planners, transportation directors, directors of planning and community and economic development, equity officers, and engineers. Some participants held specific positions coordinating smart mobility or bicycles and pedestrians. We also spoke to representatives of new mobility companies such as Uber, Lime, and Via.

We then held a full-day convening with representatives from five of the cities included in the interviews. The city representatives extended an additional invitation to a partner in their work. These partners included ride-sharing companies, data intermediaries, and city officials outside of the transportation department. The convening focused on the current state of new mobility in the cities with representatives in attendance as well as opportunities and challenges for medium-size cities when working with new mobility companies. The convening provided an opportunity for city representatives and their invited partners to share their perspectives and experiences working with new mobility companies to promote transportation equity in their cities.

Appendix B: Examples of How Transportation Plans from Medium-Size Cities Incorporate Equity

The following list of transportation plans are examples from medium-size cities across the US. We list them here to provide examples of how cities of this size are incorporating equity; we do not necessarily promote these as models for how to incorporate equity.

- **Madison, Wisconsin. 2017. Madison in Motion: Transportation Plan Background**
  https://www.cityofmadison.com/transportation/documents/MIM/MIMBriefingBookWeb.pdf.

  » The plan identifies eight goals, with Goal 3 being "Create Transportation Equity for All Residents." Mentions equity specifically in regard to

  - increasing bike network access;

  - integrating affordable housing planning with transit planning, transit-oriented development planning, and Activity Center planning;

  - enhancing the accessibility of affordable housing by public transit services;

  - expanding the availability of the low-income transit pass program to all eligible people and coordinating with human services providers to do this; and

  - using the Racial Equity/Social Justice evaluation tool on the plan.

- **Buffalo, New York. 2018. Moving Forward 2050** https://www.gbnrtc.org/movingforward2050.

  » The plan presents the need to "improve equity in our communities, so that residents of all diverse neighborhoods across the region have equal access to opportunities" as a key goal. As regional performance metrics, the plan measures progress as (1) a decrease in commuting time and (2) an increase in the share of residents with access to public parks and recreation areas, and the plan describes the need to compare communities of concern with the rest of the population.

  » The plan has an entire section on "Equity in Our Communities" that describes communities of concern as "areas with significant concentrations of residents with low incomes, people of color, foreign born residents, individuals with disabilities, senior citizens and children, and limited English proficiency (LEP) speakers." The section defines three goals for achieving equity: "better access to jobs, education, training, and services; supporting

investment; and better health outcomes for communities of concern." The section also lays out next steps for equity and environmental justice in transportation planning.

» In a section on new mobility, the plan states, "new mobility services will not naturally solve equity issues without proper planning. For instance, mobility-as-a-service (MaaS) platforms may be difficult to access for non-English speakers. These services might be unaffordable or out of reach for communities of concern, and may not accommodate the needs of people with children, older adults, or people with disabilities. Residents may lack internet access to use MaaS, or may be reluctant to use new mobility options. Moreover, resident who do not have a credit card or bank account may not be able to access new mobility services." The plan then lists six ways to adapt an approach that centers equity.

▪ **Orlando, Florida. 2016. 2040 Long Range Transportation Plan**
https://metroplanorlando.org/wp-content/uploads/2040-lrtp-plan-overview-1.pdf.

» Equity is discussed under the fourth goal, "Quality of Life," stating, "Environmental Justice – Identify the needs of low-income and minority populations, involve these populations in the planning process, and seek to equitably distribute the benefits and burdens of transportation investments among all populations."

▪ **Jersey City, New Jersey. 2017. Plan 2045: Connecting North Jersey**
https://www.njtpa.org/NJTPA/media/Documents/Planning/Plans-Guidance/Plan-2045/njtpa_plan2045_final2.pdf?ext=.pdf.

» The plan references the need to "address the needs of low-income, minority and other underserved communities with equitable transportation investments. This includes supporting community redevelopment that accommodates affordable housing, enhances transportation options and is inclusive of the region's diverse population."

» The plan also makes specific reference to public-private partnerships and equity: "Public-private partnerships will play an important role in ensuring investments are coordinated and equitably serve all segments of the population."

▪ **Spokane, Washington. 2019. Connect Spokane: A Comprehensive Plan for Public Transportation** https://www.spokanetransit.com/projects-plans/comprehensive-plan#:~:text=Connect%20Spokane%3A%20A%20Comprehensive%20Plan,least%20the%20next%2030%20years.

» The plan sets goals under the "Community Resilience and Socio-economic Health" principle to "position transit to mitigate the effect of rising fuel costs on the increasingly large

segment of population that is unable to afford other travel options" and under the "Supporting the Community" principle to "attend to the social and transportation challenges faced by groups within the community." However, the plan does not specifically mention which groups of people these are.

» The plan also calls out the need to use "Flexible Services," such as TNCs, to provide additional mobility options, especially for low-income workers who work the night shift.

» The plan lists "diverse ridership" as a principle for determining revenues and fares and states, "a range of fare options recognizes the diversity of trips measured in customer attributes, distance, travel times, and purpose."

» In compliance with the Title VI of the Civil Rights Act of 1964, the plan requires that the transportation authority assess and mitigate disproportionate burdens if a fare change or service change disproportionately affects low-income or minority populations.

- **Washoe County, Nevada. 2018. 2040 Regional Transportation Plan**
  https://rtcwashoe.wpengine.com/wp-content/uploads/2017/02/FinalRTPBook_Dec20_2018-small-trim.pdf.

  » The plan has a chapter dedicated to "Promoting Equity and Environmental Justice." This chapter describes how the transportation authority complies with federal civil rights, disability, and environmental justice laws and specifically calls out people of color, people with low incomes, people with disabilities, and people with limited English proficiency as groups to engage with through meaningful public participation.

  » The plan's seventh chapter, "Integrating All Types of Transportation," describes the various forms of new mobility present in the county. The chapter's section on shared mobility mentions that ride-sourcing costs are typically higher than transit fares, so "equity concerns should be given consideration." The plan does not call out any equity concerns for bike sharing.

- **Salt Lake City, Utah. 2017. Salt Lake City Transit Master Plan**
  http://www.slcdocs.com/transportation/Plans/SLC_TMP_FULL_FINAL.pdf.

  » The plan's section on "Ride Services Partnership Parameters/Concerns" lists equity as a consideration and lays out the following contract stipulation to address with the services: "Address potential or perceived equity implications of providing shared ride services program in some neighborhoods that may be generally higher-income than others, i.e., providing better (door-to-door) service to a higher-income area than is available in lower income areas" and "address potential equity concerns related to accessibility for people without smart phones (e.g. partner with a third party to allow riders to schedule via the web instead of a smart phone)."

Appendix C: Examples of How RFPs, Permits, and Pilots Incorporate Equity

The RFP, pilot, and permit examples in this appendix highlight some of the variation in how cities are incorporating equity into these documents. This list is not based on a systematic review of documents. Furthermore, some of the examples here come from cities with larger populations than those we focus on in this report. However, we include them as models for what medium-size cities could do should they choose to launch a new mobility pilot.

- **Baltimore, Maryland. 2019. Department of Transportation Dockless Vehicle Pilot Program** https://transportation.baltimorecity.gov/sites/default/files/Pilot%20evaluation%20report%20FINAL.pdf.
  - » "To ensure equitable distribution of dockless vehicles across the city, DOT set equity zones to investigate whether or not the service is creating new transportation options for residents of areas that are historically underserved. A requirement in the pilot agreement with vendors states that 25% of vehicles deployed daily must be placed in the "equity zones," which consist of 15 Community Statistical Areas selected as based on household income levels."
  - » "Lessons Learned: More can be done to assure access to vehicles through morning deployment requirements and specific deployment locations. DOT will need to be thoughtful in requiring deployment to areas where the vehicles are likely to be ridden, including main streets throughout the city and not just downtown."
  - » Equity of Access request: "Providers must offer non-smart phone and low-income options and make an app accessible to visually impaired (talkover, voice back)."
  - » Recommendations for a Resident Mobility Advisors program.

- **Orlando, Florida. 2019. Bicycle and Scooter Ordinance Establishing a Pilot Program** https://www.orlando.gov/Initiatives/Bike-Share-Scooter-Share-Pilot-Program#:~:text=A%20maximum%20total%20number%20of,minimum%20of%209%20inch%20wheels.
  - » The ordinance established a one-year pilot program where companies "may stage a maximum of 60% of the total allowable fleet in operation within the Downtown

Community Redevelopment Agency (CRA) boundary east of Interstate-4 and must maintain a minimum of 20% of the total allowable fleet in operation within the Downtown CRA boundary west of Interstate-4. The remaining portion of the fleet must be staged outside of the CRA but may not be staged in City of Orlando Historic Districts, or other areas designated by the permit or the Director."

- **Durham, North Carolina. 2020. Shared Active Transportation Renewal and Permit Application** https://durhamnc.gov/DocumentCenter/View/30703/2020-SATS-Renewal-and-New-Permit-Application.

  » Applicants must describe, "How you intend to reduce barriers to low-income persons to rent shared devices; available payment options, including options for persons with neither a smart phone nor a credit card, and communication to customers for these options; how you will maintain a sufficient number of shared devices in low and moderate income areas, including at least 20% of devices within specific census tracts."

  » The application also states that the city will use a third-party provider to "process parking, availability and trip data in a format that allows for safe, equitable and effective management of the shared active transportation system throughout the city."

- **Washington, DC. 2019. Dockless Vehicle Sharing Program** https://ddot.dc.gov/release/ddot-announces-operators-2019-dockless-vehicle-sharing-program.

  » Potential operators committed to offering, "unlimited half-hour rides for free to individuals with an income level at or below 200% of the federal poverty guidelines, cash options for payment, and non-smart phone options for renting vehicles."

  » The District also established Dockless Equity Emphasis Areas and said that the District Department of Transportation will be closely monitoring operators' ridership in these areas as part of overall program evaluation and as a condition for operators to grow their fleet size.

  » Operators are "encouraged" but not required to maintain a multilingual website.

- **Oakland, California. 2019. 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.

  » "Operators shall maintain a multilingual website, call center and app customer interface, with languages determined by the City, that is available twenty-four hours a day, seven days a week. Languages shall include, at a minimum, Spanish and simplified Chinese."

» "Operators shall conduct outreach to adjacent businesses, residents, and neighborhood groups to solicit their feedback on potential designated Scooter parking locations."

» "Dockless Scooters should be distributed equitably throughout Oakland. More than 50% of Scooters must be deployed in Oakland's Communities of Concern, as designated by the Metropolitan Transportation Commission."

» "Operators must provide Adaptive Scooters for persons with disabilities. The total percentage of Adaptive Scooters shall be based on expected need, performance, and usage."

» "Operators shall make available ways to use and pay for the service that do not require a smart phone or credit card. Operators shall offer a discounted membership for those with low-income, equivalent to $5 for one year of unlimited 30-minute rides for those who participate in the State Nutritional Assistance Program (SNAP) or California Alternative Rates for Energy (CARE). Low-income plans will be considered equivalent if a significant discount is provided. Operators shall implement a marketing and targeted outreach plan at its own cost or pay an in-lieu fee to OakDOT to increase awareness of low-income discount options."

» The city's website describes shared mobility principles including racial equity, equitable access to services, traffic safety, inclusive outreach and engagement, healthy communities and environment, and affordability.[52]

Appendix D: Typology of Cities Interviewed

TABLE D.1

City Characteristics

City	Pop.	Drives alone to work (%)	Takes public transport. to work (%)	Where relationships with new mobility companies are held	Position that manages new mobility	City governance	Regional transport. structure	Micromobility
Akron[a]	198,252	81.3	4.2	City of Akron Department of Integrated Development	Deputy Mayor for Integrated Development	Strong mayor	Regional Transit Authority, MPO, State Department of Transportation	No micromobility at this time
Buffalo[a]	259,574	67.2	11.5	NA	Smart Mobility Advisor	Strong mayor	Buffalo Niagara Regional Transportation Council	Lyft, Uber, Social Bikes
Durham[a]	257,232	75.9	4.2	City of Durham Transportation Department	Transportation Planner	Manager – city council	Durham-Chapel Hill-Carrboro MPO, Triangle-J Council of Governments	Lime, Spin, Bird, Gotcha
Greensboro[a]	284,816	82.2	1.5	City of Greensboro & Greensboro Urban Area Metropolitan Planning Organization	Pedestrian and Bicycle Planner	Manager – city council	MPO, regional transportation authority, Piedmont Authority for Regional Transportation	Lime
Orlando	269,414	78.3	4.2	City of Orlando Transportation Department	Held across various positions	Strong mayor	MetroPlan, Central Florida Commuter Rail Commission, Lynx, Central Florida Expressway Authority	Lyft, Uber, Lime, Spin, Jump, Bird, Razor, Lynx
Reno[a]	239,732	76.3	2.4	City of Reno, Department of Community and Neighborhoods Transportation Division	Will be funding a "New Mobility Coordinator"	Manager – city council	MPO comprising 2 Reno City Council, 2 Washoe County Commission, and 1 Sparks City Council members on Board.	Lyft, Uber
Salt Lake City	194,188	67.7	6.7	Salt Lake City Transportation Division		Strong mayor	Wasatch Front Regional Council MPO	Lime, Spin, Bird, Razor, Wheels
Spokane	212,982	76.5	3.9	City of Spokane	Pedestrian and Bicycle Planner	Strong mayor	Spokane Regional Transportation Council (RTPO/MPO)	Lyft, Uber, Lime
Springfield	154,613	74.3	4.6	Pioneer Valley Planning Commission		Strong mayor	MPO and Pioneer Valley Planning Commission	Lyft, Uber, Valley Bike Share
Tacoma	207,280	75.1	5.6	City of Tacoma Public Works - Mobility		Manager – city council		Bird and Lime

Notes: MPO = metropolitan planning organization; pop. = population; RTPO = regional transportation planning organization; transport. = transportation.

[a] City representatives also attended the New Mobility Roundtable.

Appendix E: New Mobility and Equity Roundtable Participant List

- Karen Armendariz, Public Engagement Specialist, Metropolitan Washington Council of Governments

- Daniel Barker, Mastercard Center for Inclusive Growth

- Daniel Doenges, Planning Manager, Regional Transportation Commission of Washoe County

- Geoffrey Donahue, Executive Director, My Ride to Work

- Emily Egge, Chair of Bicycle and Pedestrian Advisory Commission, City of Durham, Department of Transportation

- Chandler Hagen, Bicycle and Pedestrian Coordinator, City of Greensboro, Department of Transportation, MPO and Greensboro Transit Authority

- Gray Johnston, Transit Planner, City of Greensboro, Department of Transportation, MPO and Greensboro Transit Authority

- Lisa Kenney, Smart Mobility Advisor, Greater Buffalo Niagara Regional Transportation Council

- Ben LaRocco, Director of State and Federal Policy, Lime

- Mark Maloney, Director of Public Transportation, Regional Transportation Commission of Washoe County

- Brendan Mehaffy. Director, City of Buffalo Office of Strategic Planning

- Ali Schmidt-Fellner, Mastercard Center for Inclusive Growth

- Valerie Shae, Director of Planning & Strategic Development, Akron METRO Regional Transit Authority

- Tamar Shapiro, Head of Analytics, New Urban Mobility Alliance

- Rodney Stiles, Head of Policy, Populus

- Sharada Strasmore, Micromobility Coordinator, District Department of Transportation

- Evan Tenenbaum, Transportation Planner II, City of Durham

- Harriet Tregoning, Director, New Urban Mobility Alliance

- Meg Young, Shared Mobility Coordinator, Baltimore City Department of Transportation

Appendix F: RFPs, Permits, and Pilots

Topic	Key consideration	Approach
Permit or license duration	The level of responsiveness to quickly and/or frequently change requirements	Pilots and permits *may* be more responsive and flexible
Market demand	Estimated ridership and ridership patterns	Higher assumed demand gives city more ability to influence company behavior
Equity requirements	Identifying equity measures and goals; balancing requirements with incentives	Cities with stronger market demand may have more leverage; those with lower demand may require more incentives
Communications and community engagement	Outreach, particularly to disadvantaged groups; balancing city/municipal efforts with requirements to vendors	Participation in town halls/neighborhoods meetings with city transportation officials, provide information on websites about safety and alternative payment methods, offer information in the languages spoken by members of your community, gather resident feedback during the piloting phase
Limit on number of companies or vehicles	One (or few) companies with more vehicles, more companies with fewer vehicles, or no limitations	City needs to balance goals (including equity, safety, and accessibility goals) with mobility partners
Permit or license termination	Identify potential causes for termination (infractions, failure to meet metrics, other reasons)	Cities with more market demand can institute stricter policies
Fees	Amount to charge; what fees will fund	Higher fees may provide additional funding, but may depress demand and private sector interest
Data-sharing	Internal capacity to analyze (or use of third-party vendor); balancing usefulness of data against civil liberties and privacy concerns	Focus on data that would be most useful in identifying status and progress towards goals; consider third-party, especially if internal capacity is limited
State and local legal constraints	Localities in some states have more legislative power in this area than those in other states	State-level lobbying, or else just working within exiting constraints

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