Micro Mobility as a Vehicle for Resilience

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**Summary**

Given the opportunities and barriers that coronavirus and climate change highlights, it is proposed that supporting micro mobility means supporting a resilient transportation system because it has the ability to provide individualized transportation that keeps the economy moving, meets climate action goals, and promotes an equitable transportation system. We will get there when cities support their existence, build out safety infrastructure, and establish equity.

**Key Terms**

*Micro Mobility*- a category of small (<100 kg) shared vehicles including docked and dockless bicycles, electric bicycles (e-bikes), and electric scooters (e-scooters) utilizing using app-based technology; also referred to as scooters, bicycles

*Micro Mobility Operations*- term used to describe both private and public sector micro mobility companies and programs, respectively.

*New Urbanism*- new urbanism is a form of city planning that moves away from traditional, single-use, low-density building patterns and emphasizes the creation of communities designed for a smaller carbon footprint and more connectivity

*Connectivity*- system of connections in path or road networks, prioritizing the directness of links.

*Multi-Modal*- a transportation system where diverse transportation options work together, including walking, cycling, public transit and automobile, and factors for land use.

*First-last Mile Connection*- used to describe passenger travel getting to/from bus and rail stops.; also used to describe end point deliveries from centralized distributors.

*Net Greenhouse Gas*- describes the difference between greenhouse gasses emitted and sequestered annually. Carbon dioxide, methane, and water vapour are the most prevalent greenhouse gases contributing to global climate change.

*Use Life Cycle*- term used to describe the length of a rideable bicycle or scooter life.

**Purpose**

The purpose of this paper is to emphasize the role micro mobility plays in building resilience, and to recommend improvements moving forward.

**Introduction**

Over the past couple of years, micro mobility has become increasingly influential in connecting local transportation networks. Micro mobility refers to “a category of small (<100 kg) vehicles including docked and dockless bicycles, electric bicycles (e-bikes), and electric scooters (e-scooters) that are shared using app-based technology” (Urbansim Next Report). Regarded for its ability to complement multi-modal transportation systems, micro mobility increases connectivity in urban areas while decreasing car-related congestion and greenhouse gas emissions. A recent study published by Susan Shaheen et al. identified many positive outcomes of bikeshare systems including “increased mobility, reduced greenhouse gas emissions, decreased automobile use, economic development, and health benefits” (S. Shaheen, 2019, p. 1). Additional impacts reported were reduced congestion and fuel use (S. Shaheen, 2019). Across the nation, cities including Austin, San Francisco, and Columbus have incorporated micro mobility, resulting in stronger multimodal networks and improved first-last mile connections. Micro mobility not only aligns cities with ideals of new urbanism, but also creates more resilient transportation networks via bike and scooter share systems. According to the Organisation for Economic Co-operation and Development (OECD), resilience is defined as “ theability to absorb, recover and prepare for future shocks (economic, environmental, social & institutional)”. Micro mobility can play an essential role in keeping cities moving forward economically, environmentally, and socially in face of shocks. Amongst the current scramble for resilience, scooters and bicycles have proven the ability to provide car-free transportation for those who need to access and distribute local resources. Businesses, non profits, and government agencies have also employed micro mobility to provide for individuals’ basic resources. The combination of recent global events such COVID19, longer term risks such as climate change, and more acute issues such as economic hardship, highlight the need for this form of transportation resilience.

**Discussion**

*Micro Mobility as a Vehicle for Resilience*

There is an urgent need to invest in local resilience capabilities in cities across the State of Oregon, and micro mobility provides a proven and turnkey solution to filling this resilience gap due to the technologies’ economic, environmental, and social benefits.

*Economically*

Micro mobility’s inexpensive and flexible nature has the advantage of connecting people and goods to the economy, regardless of the current climate. Multiple operations, including Lime and Capital Bikeshare, have been granting free 30 minute rides to essential workers to move “people seamlessly through cities, as an individual form of transportation” (Lime). Representatives from Lime say micro mobility “can help fill an integral transportation gap at this important time” (Lime). It is a highly flexible technology which not only benefits a wide array of stakeholders ranging from local businesses, governments, and essential workers, but can also easily maintain the CDC’s recommended six feet of distance from others.--Micro mobility remains a viable system for moving essential people. Finally, with spikes in E-Commerce and home delivery services due to COVID-19 shelter-in-place orders, micro mobility can serve as the vital connection in lowering costs of first-last mile goods distribution. Combined, these flexible and efficient characteristics of micro mobility implementations provide sound economic benefits to local jurisdictions currently weathering stay-at-home orders and looking to jumpstart their economic recovery.

*Environmentally*

Micro mobility’s ability to decarbonize transportation systems while strengthening their overall efficiency assists cities in reaching climate action goals.

City Lab found that most car trips are less than a mile, and micro mobility could easily offer a substitute with some behavior change. Cities, such as Santa [Monica](https://www.smgov.net/uploadedFiles/Departments/PCD/Transportation/SantaMonicaSharedMobilityEvaluation_Final_110419.pdf), [Chicago](https://www.smartcitiesdive.com/news/breakdown-of-chicago-scooter-pilot-by-the-numbers/571461/), [Portland](https://www.portlandoregon.gov/transportation/article/709719), and [Arlington](https://mobilitylab.org/research-document/arlington-county-shared-mobility-devices-smd-pilot-evaluation-report/), have deployed micro mobility and have found that 30 to 55 percent of e-scooter trips would have otherwise been taken by automobile (City Lab). Because environmental costs of charging, manufacturing, and use of micro mobility are extremely low, the city’s annual net greenhouse gas emissions can invariably be lowered when micro mobility trips replace car trips.

Micro mobility also complements existing public transit, making multi-modal transportation much stronger and accessible. Most people in the United States are “comfortable” walking less than a ¼ mile to or from public transit stops. The ability to connect people to public transit greatly reduces net GHG emissions per capita. As the world emerges from 2020 coronavirus lockdown, coronavirus-precautious commuters are predicted to avoid public transportation and ride-share options resulting in increased car-dependency and higher GHG emissions. Now more than ever, it is crucial to invest in micro mobility options to combat detrimental behavior patterns.

*Socially*

Micro mobility also gives value to to individual well being.There are social benefits to people seeing and interacting with one another in their daily lives. Car-dependent travel separates people and has been proven to raise anxiety and depression levels. In Santa Monica, where micro mobility is employed in daily life, people used shared mobility devices most often for short work-related trips (29%), recreation (26%), eating out (14%), to get to/from home (11%), and shopping (8%), creating more opportunity for meaningful interactions (Santa Monica).

Additionally, micro mobility increases transportation options for those who cannot afford a car. Transportation access is crucial in one’s ability to be employed, which has extreme effects on social issues ranging from mental health to poverty. Although transportation policy alone is not the panacea for the mismatch between low-income individuals and jobs, it can potentially improve job access (Blumenberg and Ong). Micro mobility supplies greater opportunity to cultivate better social outcomes, resulting in a more resilient population.

**Consideration**

*Private Sector vs Public Sector Micro Mobility*

Within micro mobility funding structures, two models exist: through local government transportation programs (in form of sponsorships and partnerships) and through private sector venture capitalists. Plagued with unstable business models, safety concerns, and strict city regulation costs, private sector micro mobility companies, such as Bird and Lime, have struggled to prove profitability.

Alternatively, the other model of micro mobility exists within the control of local government transportation planning. Partnerships between local non-profit organizations and transportation agencies work together to deploy micro mobility.

COVID19’s economic downturn has tested both sectors; however, local government bike-share programs have proven to be more stable. Santa Monica’s 2019 Pilot Report notes the benefits of the partnership model include reducing risk of service interruptions, increasing public outcomes and joining safety and education campaigns with service providers (Santa Monica 2019).

*Safety*

In a 2019 study, DuPuis et al. identified common issues that arose during shared micro mobility pilot programs: pedestrian safety (riding on sidewalk), insufficient bike infrastructure; curb space management (inappropriate parking); and data reporting (DuPuis, Griess, & Klein, 2019).

To mitigate these issues and support safe riders, cities are updating road infrastructure by creating bike lanes and creating physical barriers between existing bike lanes and automobile lanes (DuPuis et al., 2019, p. 15).

*Equity and Access*

It is important to consider that some are prevented with significant barriers in joining the micro mobility movement due to physical, mental or financial ability. A reputable study published by the Mineta Transportation Institute found that bikeshare users are likely to have a higher income and level of education and are more likely to be male, younger, and Caucasian than the average person (Shaheen, Martin, Chan, Cohen, & Pogodzinski, 2014). Some of the barriers relate to safety and ability concerns; however, income factors play an influential factor in access as well. Many scooter and bicycle share systems are run through a smart phone app requiring a debit card, adding barriers to low-income riders. Additionally, literature on micro mobility pilots reveals lack of helmet usage is a challenging issue for communities and service providers due to the imposed extra cost of helmet ownership. Due to this reality, scooters and bicycles end up being ridden primarily in higher income areas, posing an issue of access.

**Recommendation**

*Recommendation #1- Support the Existence of Micro Mobility*

Transportation is a right and both state and local government should play a role in ensuring its availability. Despite funding and governing struggles, these micro mobility fill an essential role in building resilience so city and state policy need to play an influential role in keeping micro mobility around. In recent months, cities such as Portland, Oregon have temporarily waived “e-scooter daily fees of up to $0.20 per scooter and $0.25 per trip in exchange for Spin reducing the cost of a ride by around 50 percent (David Zipper and Marla Westervelt, CityLab). Oregon state government can support this further by allocating funds and resources for these micro mobility companies. Guidelines such as The National Association of City Transportation Official Shared Mobility Guidelines chart out necessary mobility program elements (NACTO). Cities in Oregon that do not have a partnership with a local bike share system must encourage partnerships if they are serious about building transportation resilience.

*Recommendation #2- Build Infrastructure*

Infrastructure must be in place in order for cities to reap the benefits of micro mobility.

In Oregon specifically, the Oregon Bicycle Bill ORS 366.514m requires the inclusion of facilities for pedestrians and bicyclists wherever a road, street or highway is being constructed or reconstructed and applies to the [Oregon Department of Transportation](https://en.wikipedia.org/wiki/Oregon_Department_of_Transportation) (ODOT) as well as Oregon cities and counties. Cities and states need to follow through with this legislation for the safety of riders. Appropriate infrastructure asserts the precedent that rider safety matters and should be built to support micro mobility’s success.

*Recommendation #3- Account for Equity in Process and Outcomes*

Transportation equity is a critical piece in building resilience that is fair and open to all. While scooters and bike share offer significant opportunities to increase the carless population’s mobility, this comes with implications. Cities must account for the mobility needs of differently abled individuals and should involve the public in micro mobility decision making. To mitigate equity and access concerns, cities should invest in chip card programs, helmet programs, and scooters and bike redistribution. The chip cards would be available to anyone in local convenience stores with cash. Helmet programs would lower start up costs for new riders. The redistribution allows for modes to be available to all, despite ridership patterns.

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