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# The Equitable Commute Project

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# SUMMARY

## QUESTION: WHY ARE MICROMOBILITY SOLUTIONS VITAL TO NEW YORKERS AND HOW DO THEY FIT INTO THE POST-PANDEMIC RECOVERY PLAN?

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### WHY IMPORTANT:

1. *Environmental Concerns (micromobility is more sustainable than motorized vehicles).*
  2. *Reduce business costs with lower congestion*
  3. *Health benefits to riders.*
  4. *Lower Income riders travel at off peak hours, which are longer and more costly.*
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### RECOMMENDATIONS:

1. *Establish the Equitable Commute Project (ECP), a coalition effort that will seek to get micromobility solutions to 10,000 low-income essential workers by subsidizing the cost by 50%. Assumed outcomes are:*
    - *10,000 hours saved in commuting time every day*
    - *680 megatons of direct reduction in greenhouse gas emissions.*
    - *500 direct and indirect green jobs created.*
  2. *Improve the collection and management of data regarding micromobility to further ensure the city can make proper policy decisions.*
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### CONSTRAINTS:

1. *Safety Hazards (limited number of bike lanes, storage, how to ride a bike, etc.)*
2. *Cost (e-bikes are expensive).*
3. *Fears of Theft.*
4. *Cultural Biases.*






## INTRODUCTION

Micromobility — defined as human-scale vehicles, including personal and shared bikes, scooters, and mopeds — has grown massively in popularity in major cities around the world. This trend has been accelerated by the drive toward socially-distanced travel during the COVID-19 pandemic. Bike share programs, electric bikes, and e-scooters are changing the face of transportation and infrastructure, but the proportion of users, compared to the population as a whole, remains small. In New York City, fewer than one percent of workers commute by bike. Previous research has demonstrated that micromobility is a more sustainable mode of travel than motorized vehicles, improves air quality, reduces business costs from motorized traffic congestion, and provides a health benefit to riders.

This proposal aims to address major concerns regarding micromobility uptake, particularly among women and people of color. New Yorkers have reported several factors: hazards from the limited number of protected bike lanes, the cost of a bike or e-bike, fears of theft, and storage difficulties. Some report cultural biases, a feeling that bikes are for poor people and that car ownership is a signal of upward mobility, and some New Yorkers simply don't know how to ride a bike.

The Equitable Commute Project, a two-year pilot program for 10,000 participants, will make bikes, e-bikes, and e-scooters more widely available to low-income essential workers. This proposal will discuss the challenges associated with essential worker commutes, micromobility usage, and potential solutions in New York City.



## BACKGROUND

The need to accommodate low-income essential workers is apparent. The spatial distribution of frontline workers is distinctly different from the general population, as shown in Figure 1a; many of these workers live in the outer boroughs. The densest public transit service is centralized in Manhattan with key corridors to Queens and Brooklyn (as shown in Figure 1b), and not provided sufficiently close to frontline workers' residential areas.



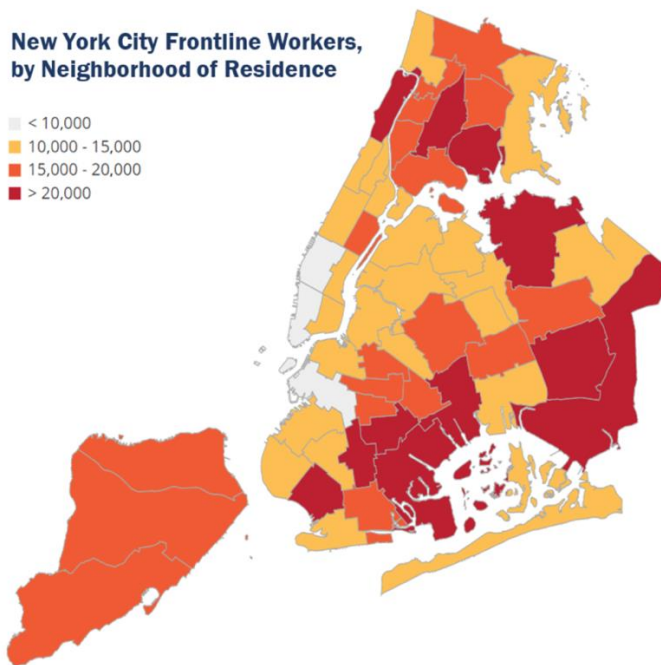


Figure 1a: Frontline workers by neighborhood of residence (ACS 2014-2018)<sup>1</sup>



<sup>1</sup> "New York City's Frontline Workers," *New York City Comptroller*, March 26, 2020, <https://comptroller.nyc.gov/reports/new-york-citys-frontline-workers/>.

Figure 1b: Density of transit services provided in New York City<sup>2</sup>

Furthermore, a majority of frontline workers uses public transit in the off-peak hours. This is problematic because cuts to off-peak services have been dramatic during COVID-19. A comparison of systemwide subway average wait times based on service schedules shows that, while peak hour service levels have improved, off-peak service wait times have worsened. Before COVID-19, the off-peak wait time was 12% longer than peak periods; now, off-peak waits are 44% longer than peak periods.<sup>3</sup>

## Comparison of average systemwide wait time with NYCT subway

	Peak-hour Average Wait Time (in minutes)	Off-peak Average Wait Time (in minutes)
<b>Pre-COVID (01/09/2020)</b>	6.22	6.98
<b>Post-COVID (09/10/2020)</b>	5.90	8.52

Micromobility — personal and shared bikes, scooters, and mopeds — has become essential transportation in major cities. Historically, during major crises, like earthquakes and oil shortages, micromobility has served as the most resilient, affordable mode.

In New York City, these modes were a lifeline during the COVID-19 shelter-in-place of 2020. As subways were shut down overnight, micromobility filled the gap for workers forced to find another mode. When commuters assumed the subways were petri dishes, they took to bikes; even during the height of the pandemic, New Yorkers rode Citi Bikes at 2019 levels.<sup>4</sup> People rode their own bicycles, too; bike shops reported sales at three times the normal levels.<sup>5</sup> Revel's shared mopeds expanded into new service areas and grew rapidly in popularity starting in May 2020: more than 200,000 new riders signed up for the service in the spring and summer of 2020.<sup>6</sup>

<sup>2</sup> "Transit Visualization Client," TRAVIC, <https://travic.app/?z=12&x=-8230422.6&y=4977066.2&l=transport>.

<sup>3</sup> "General Transit Feed Specification (GTFS): Making Public Transit Data Universally Acceptable," GTFS.org, <https://gtfs.org/>.

<sup>4</sup> Sarah M. Kaufman et al., "Transportation During Coronavirus in New York City," NYU Rudin Center for Transportation Policy and Management (July 2020), 2: <https://wagner.nyu.edu/files/faculty/publications/Full%20Report.pdf>.

<sup>5</sup> Ibid., 73.

<sup>6</sup> Kate Knibbs, "Freedom, Mayhem, and the Uncertain Future of Revel's Zippy Mopeds," WIRED, May 25, 2021, <https://www.wired.com/story/revel-electric-mopeds-freedom-mayhem-uncertain-future/>.



Although workers and students are returning to their places of work and learning, the micromobility boom continues. Citi Bike continues to break the record number of rides per day, reaching a new high of 106,838 rides on May 15th, 2021.<sup>7</sup>

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## THE EQUITABLE COMMUTE PROJECT (ECP)

To maintain rider safety amid this growing demand, New York City must accommodate and encourage micromobility by providing designated safe spaces for riders away from cars, trucks, and pedestrians.

One major challenge of micromobility is the cost of purchasing and maintaining these vehicles. Although e-bikes are thirty times less expensive than buying, storing, and maintaining cars, they remain out of reach for many essential workers. Purchase prices are approximately \$1,000 per e-bike and \$300 per e-scooter; maintenance costs include regular vehicle charging; and helmets and locks present additional costly necessities.

The need for more direct commutes, more reliable, affordable, and resilient modes, and better services for historically underserved populations is clear. In response, the Equitable Commute Project, a coalition effort that seeks to place micromobility in the hands of 10,000 low-income essential workers by subsidizing 50% of the purchase price, has been established. The intended impact is to shorten commutes and make them more reliable, as these workers often travel during off-hours, when other modes are unavailable or impose long wait times.

E-bikes, e-scooters, e-mopeds, and other modes can be exceedingly expensive to purchase and maintain. The ECP model will partner with employers and private sponsors to subsidize half of the purchase price. The model will also make low-interest loans available for the remainder through Spring Bank (a Community Development Financial Institution and B Corporation), to assist participants who are underbanked or lack credit histories. ECP has already begun programming in the Bronx in partnership with Montefiore Health Systems.

In addition, ECP is partnering with innovative companies like Oonee and Swiftmile to provide on-street vehicle charging, as well as secure parking, to limit electrical costs and danger of theft. ECP will also create new green jobs in micromobility maintenance and repair. The training will be provided through a partnership with The Hope Program – a widely respected workforce training nonprofit organization.

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<sup>7</sup> “Citi Bike Has Best Biking Week Ever,” *Citi Bike*, May 2021, <https://www.citibikenyc.com/blog/citi-bike-has-best-biking-week-ever>.



The Equitable Commute Project is a progressive solution to address the mobility needs of a worker population often overlooked by traditional transportation planning, and provide reliable access to work opportunities.

Once ECP reaches the goal of 10,000 participants, assumed outcomes from this project include:

- 10,000 hours saved in commuting time every day
- 680 megatons direct reduction in greenhouse gas emissions
- 500 direct and indirect green jobs

As the Project grows, the ECP coalition will track successes and modify plans accordingly. The coalition is particularly interested in maximizing program impacts, including:

- Vehicle matches made and self-reported demographics of participants, to ensure a racially just effort
- Time and money saved by participants
- Jobs created and placements made
- Carbon emissions avoided
- Participants' health indicator improvements
- New riders attracted to micromobility and broader uptake trends

These metrics will ensure that the Equitable Commute Project is on track to deliver quality clean, safe, resilient, and reliable mobility solutions.

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## POTENTIAL POLICY INITIATIVES TO TRACK

In addition to ECP's program-specific measurements, New York City should consider tracking the following policy initiatives, which are City-controlled aspects of micromobility's success.

Improvements to data acquisition and management are key in tracking and deploying micromobility policy initiatives. The current levels of public data capture sociodemographic data sufficiently well (e.g., Lee et al., 2021)<sup>8</sup>, but the data related to behavioral preferences for different modes of transportation (e.g., [NYMTC's Household Travel Survey](#)) are not sampled at a rate that provides sufficient accuracy for tracking essential workers. In other words, even if micromobility services collect data from their users, there is no baseline travel demand model of essential workers to supplement. As such, policies on micromobility cannot be properly evaluated on their performance. A

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<sup>8</sup> Mina Lee, Joseph Y. J. Chow, Gyugeun Yoon, Brian Yueshuai He, "Forecasting e-scooter substitution of direct and access trips by mode and distance," *Transportation Research Part D: Transport and Environment*, 96 (July 2021): 10.1016/j.trd.2021.102892, <https://arxiv.org/abs/1908.08127>.





remedy is to collect additional survey data on potential users of the micromobility that also identifies their employment industries, sampling at sufficiently high rates to establish a desired reliability level.

Another important policy initiative relates to safety. Micromobility is a mode that spans across both vehicular and pedestrian modes, and accidents of either type can have high severity, and they can occur both on the road as well as on the curb. Because micromobility is an emerging mode, statistics on accidents remain limited and, as a result, safety treatments are subjects of ongoing research. Due to the limited data, effective safety treatments will require advanced corridor monitoring to track not only the collisions that occur but also potential conflicts and movements, both on the streets and curbs as well as transitional movements.<sup>9</sup> This can be accomplished through dedicated video cameras and automatic video detection software, like the kind that is employed to track pedestrians' social distancing during COVID-19.<sup>10</sup> High-traffic micromobility corridors can be identified based on major bike paths and bike lanes, as shown in Figure 2.

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<sup>9</sup> This is a major source of scooter crashes, as noted by Shah et al. Nitesh R. Shah, Sameer Aryall, Yi Wen, and Christopher R. Cherry, "Comparison of motor vehicle-involved e-scooter and bicycle crashes using standardized crash typology," *Journal of Safety Research*, 77 (June 2021): 217-228, <https://www.sciencedirect.com/science/article/pii/S0022437521000384>.

<sup>10</sup> Fan Zuo, Jingqin Gao, Abdullah Kurkcu, Hong Yang, Kaan Ozbay, and Qingyu Ma, "Reference-free video-to-real distance approximation-based urban social distancing analytics amid COVID-19 pandemic," *Journal of Transport & Health*, 21 (June 2021): 101032, <https://www.sciencedirect.com/science/article/abs/pii/S2214140521000268>.





**Bike Map Legend:** Bike Path / Greenway Bike Path with special hours Bike Lane Bike Route On-Street Route Warning More  
Info **LEGEND**

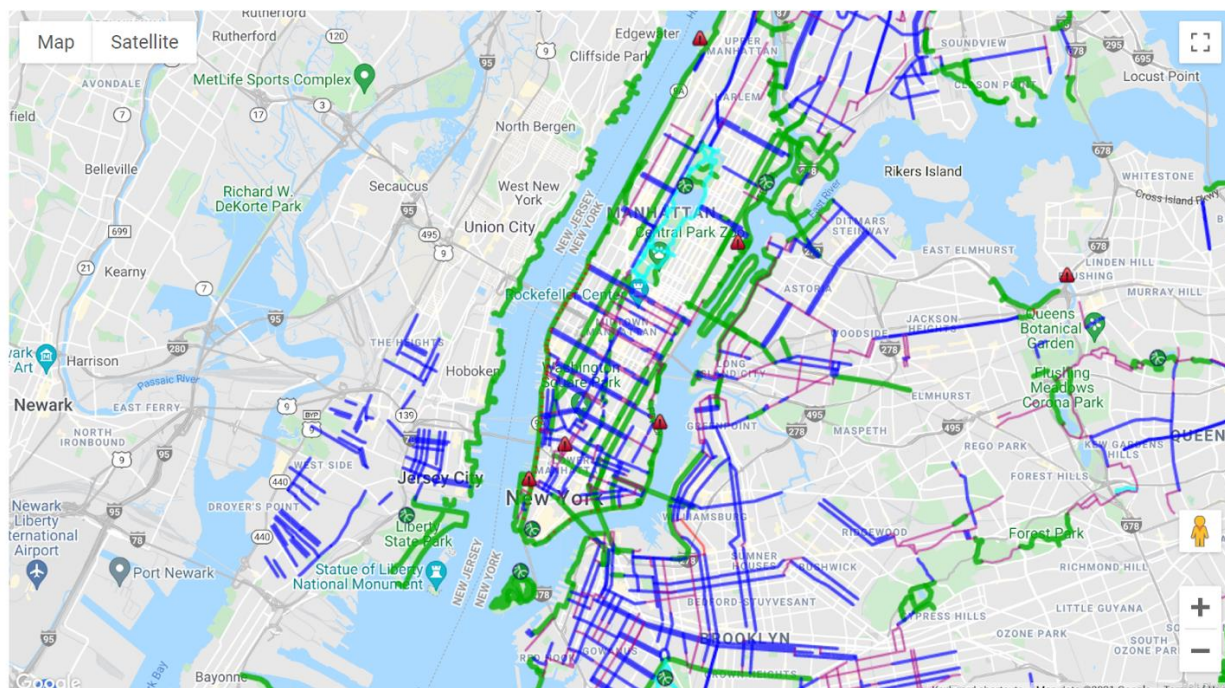


Figure 2. Bike paths and bike lanes in NYC<sup>11</sup>

As Table 1 shows, the cost of insufficient off-peak transit service is disproportionately higher for essential workers. One possible remedy is some form of subsidy for those workers during the off-peak period, such as transit fare discounts to those workers, although this effort assumes that the service remains accessible to the workers at those times. Another is to use those funds to subsidize the costs of using alternative modes during off-peak periods, like the existing micromobility services or ridesharing (restricted to designated stops to control for operator costs). Third, the funds can alternatively be allocated to investing in micromobility vehicles that can be shared between essential workers who sign up for the program. Some portion of the funds would be needed to maintain an effective re-balancing/recharging operation and investments in accessible electric charging hubs.

To this end, the Equitable Commute Project seeks to make micromobility more widely available to New York City's low-income essential workers to improve their access to work, economic opportunities, and reduced travel times.

<sup>11</sup> "New York City Bicycle Maps," *NYC Bike Maps*, <https://www.nycbikemaps.com/>.