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# Vroom or Bust?

## Towards a Chicago E-Scooter Strategy in 2020 and Beyond

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Shared electric scooters continue to excite and confound city governments worldwide. Since e-scooters first appeared in Santa Monica in 2017, cities have engaged in a trial-and-error policy process to reap the benefits, limit the costs, protect the public interest. Backers tout the devices as a solution to problems with global ramifications, a sustainable first- and last-mile solution that can remove cars from city streets. Others raise concerns about safety, clutter, equitable access, and environmental impact – and whether e-scooters can live up to companies’ lofty claims.

To settle these issues and others, Chicago initiated a four-month pilot on the city’s West Side beginning in June 2019. The pilot featured ten companies, and was structured to investigate how e-scooters could fit into Chicago’s transportation system. It paid special attention to implications for transportation equity, access, and mobility options.

The pilot generated new trip and operational data, but left certain big-picture questions unanswered. Mayor Lightfoot described the results as “mixed” – encouraging in that it appeared to shift some trips from car to e-scooter, but disappointing in the areas of storage, company compliance, and ridership demographics. As a result, the City recommended a second pilot in 2020 to further investigate how e-scooters can address lingering [equity, clutter, and safety questions](#).

Chicago’s cautious approach reflects continued uncertainty about the larger social benefits and costs of e-scooters. Even as a second pilot promises clearer operational data, these bigger questions deserve their own investigation. To what extent should

the City embrace the devices? How can Chicago approach a second pilot in ways that strengthen its overall mobility strategy?

With these questions in mind, this paper offers a national and international overview of the e-scooter and micromobility trends, and outlines the 2019 pilot program in Chicago. It leaves aside operational and technical questions. Instead, it proposes strategic policy recommendations based on the City's goals of improving sustainability, mobility, and equitable access. A prudent yet ambitious policy approach could allow the City to take advantage of advances in urban mobility while limiting the risk of blindly embracing an unproven mode.

## Key Recommendations

- **Embrace micromobility, not e-scooters specifically.** Develop a Chicago micromobility strategy. Invest in micromobility infrastructure, which can bring citywide environmental, congestion, and quality-of-life benefits, but let companies pay e-scooter-specific costs.
- **Expand the second e-scooter pilot – in restricted form – to downtown Chicago.** A useful pilot will test whether the devices can safely improve mobility in the city's most congested areas.
- **Don't discount recreational trips.** Analyze and consider how to plan for the large portion of "lap" trips.
- **Continue to pursue solutions targeting safety, clutter, and sustainability.** These concerns rightly remain a high priority for the City.
- **Continue to prioritize equitable and affordable access.** Chicago can learn from other cities to ensure companies make devices available and affordable to all.

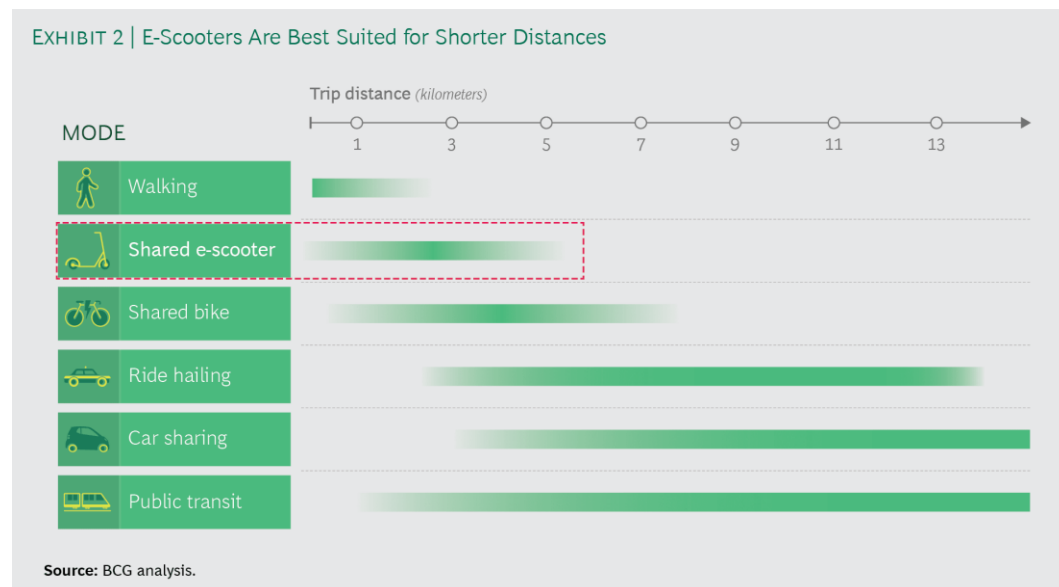
## E-Scooters and Micromobility in Context

A growing number of city leaders and transportation planners acknowledge the negative consequences of car-oriented planning on carbon emissions, air quality, traffic safety, health outcomes, and mobility options.<sup>1</sup> At the same time, cities struggle with growing numbers of vehicles and traffic congestion.

As a result, many cities have experimented with policies designed to shift people from cars to more efficient modes of transportation. Recently, micromobility – very light vehicles such as bicycles, e-bikes, hoverboards, and e-scooters – have grown in popularity. To cities, they promise to replace car trips with journeys that pollute less and take up less space. To residents, they promise an affordable, fun means of getting around – and can be [faster than cars](#) in congested city centers.

Researchers and industry experts expect micromobility vehicles to proliferate, whether accessed through an app or bought in a store. Deloitte predicts global e-bike sales to surpass 40 million units annually by 2023, far exceeding electric cars

and trucks. In the US and Europe, sales are growing rapidly.<sup>2</sup> E-scooter and e-bike services are expanding, with new vehicle types and a [growing number of rides](#) with potential environmental, congestion and quality-of-life advantages over cars.<sup>3</sup>



Source: [Boston Consulting Group, "The Promise and Pitfalls of E-Scooter Sharing."](#)

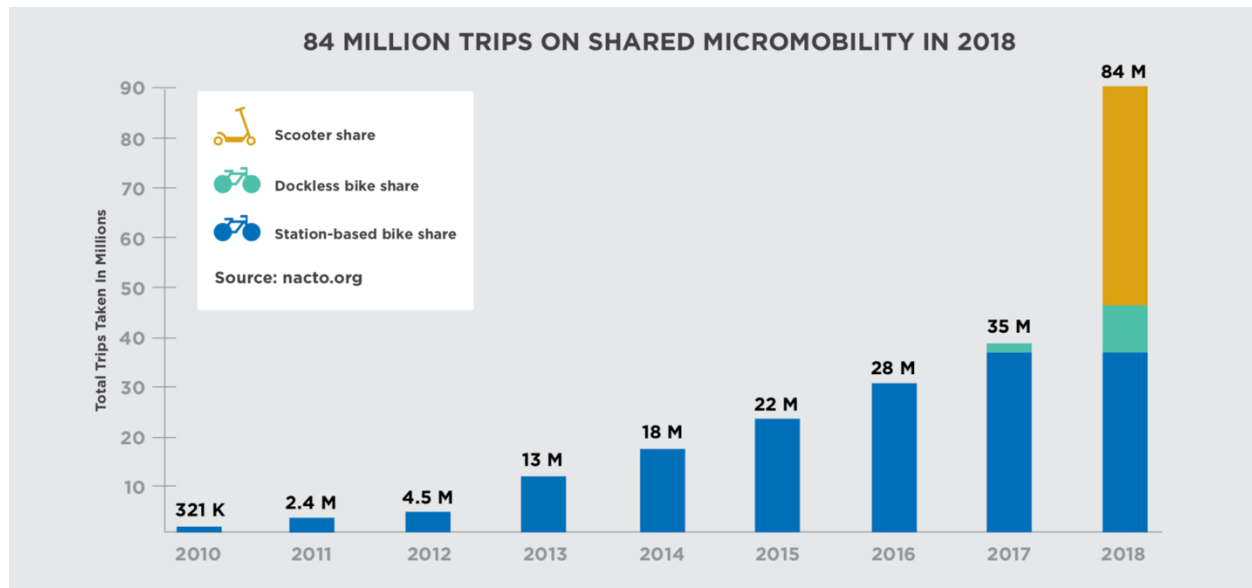
These devices tend to work best for relatively short trips, whose length – and price – varies according to vehicle type. [A 2019 study](#) from the National Association of City Transportation Officials (NACTO) found e-scooter trips to average one-and-a-quarter miles in distance – potentially useful for last-mile trips – while docked shared bikes tended to be used on slightly longer trips. [Shared e-bike trips](#) can be longer, commonly reaching five or six miles. Different vehicles have different capabilities: bicycles can carry cargo and negotiate rough roads more capably than today's e-scooters.

In Chicago, [51 percent of car trips are less than 3 miles](#) – and 39 percent are less than 2 miles. To be sure, many of these trips cannot easily be shifted to other modes, but even replacing a portion of these car trips with micromobility could markedly reduce congestion. Indeed, [a 2019 INRIX study](#) named Chicago one of the US cities best positioned to benefit from micromobility because of its density and large proportion of short car trips.

## The Rise of E-Scooters

E-scooters took off especially quickly. In 2017, e-scooter companies Bird and Lime dropped [hundreds of the devices](#) on the streets of Santa Monica, California, leaving stunned city officials to figure out what to do with them. Two years after they first appeared, e-scooter services had already spread to hundreds of cities, from Paris to Seoul, [raised billions of dollars](#) from investors, and [racked up millions of rides](#). At one

point, BCG predicted the global e-scooter market would reach \$40 to \$50 billion by 2025.<sup>4</sup>



Source: [National League of Cities, "Micromobility in Cities: A History and Policy Review."](#)

For cities, the introduction of scooters has brought the promise of a more sustainable, efficient, and useful transportation system, but also concerns about safety and the allocation of street space. An analysis of news stories in ten cities after the introduction of e-scooters found the most common concerns – in order of relevance – were irresponsible riding, safety, street clutter, vandalism, and conflicts over street space.<sup>5</sup> In several cities, news outlets have repeatedly described the contest between scooter proponents and opponents as “war.”<sup>6</sup>

Early reports suggested high rates of injury from e-scooter rides. A CDC study in Austin, Texas, for example, found one third of injuries occurred on the first ride, and nearly half of injuries involved the head.<sup>7</sup> However, a recent international study from the OECD’s International Transport Forum found e-scooter injury risk similar to that of cycling.<sup>8</sup>

Questions abound over whether e-scooters are an enduring trend or a fad. Scooter companies lose money and rely on investors’ money to fund operations. [Some speculate](#) that the [companies have no path to profitability](#), and [will disappear within years](#), which scooter companies and their investors dispute. In some cities, such as Austin, Texas, ridership has declined sharply since their introduction, a possible reflection of the novelty wearing off as well as lower vehicle caps.<sup>9</sup> Regardless of their long-term prognosis, companies may make business decisions to pull out of cities with short notice, posing a risk to cities and residents who rely on the devices.

Cities have become more assertive in regulating e-scooter services since they first appeared, banning companies that repeatedly violate regulations and – in several

cases – barring the devices outright, at least until a more tightly regulated program can be developed. Some cities have reduced the number of operators, lowered vehicle caps, and implemented stricter rules over time to gain control over aggressive companies and reckless riders. In Paris, for example, [Mayor Anne Hidalgo has proposed](#) reducing speed limits from 25 to 20km/h, reducing the cap from 20,000 to 15,000 vehicles, and limiting the number of providers to three. In May 2018, San Francisco ordered companies to cease operations entirely before implementing a [strict pilot program](#) for which only two companies qualified. Since then, it has [expanded the scooter program](#) to four companies and 10,000 vehicles. And in Marseille, where e-scooter services are tendered, city leaders [kicked out the company with the largest market share](#) for bad parking practices.

### Potential Benefits, Potential Pitfalls

#### Hit the throttle?

- Potential to replace short car trips with a more efficient mode
  - *51% of car trips in Chicago are less than 3 miles*
- Smaller carbon footprint than cars
  - *Less than half the carbon impact of cars, declining further with efficient collection practices*
- Easily deployed to outlying and underserved neighborhoods with large minority populations
- Creates new base of support for safer, multimodal streets with potential to benefit all

#### Or hit the brakes?

- Safety questions for riders and other road users
  - *An [International Transport Forum report](#) finds similar risks for e-scooter and cycling trips, but earlier reports suggest higher risk.*
- Uncertain long-term business prospects may pose risk of price increases and service cuts
- Net carbon impact unclear
  - *If e-scooters replace fewer automotive trips than surveys indicate, and if collection does not become more efficient, they may cause a net increase in carbon emissions.*
- Disproportionately young, male, white ridership
- History of aggressive company tactics means City must vigilantly defend public interest

### Takeaways from Chicago's First Pilot: A Mixed Picture

Chicago banned e-scooters outright before initiating a four-month pilot on June 15, 2019. Ten companies participated, each with a cap of 250 devices. The pilot area was a 50-square-mile geofenced area on the city's West Side, which included two "priority zones" in its northwest and southwest portions. Companies were required to place one quarter of their scooters in each priority zone every morning.

Overall, the pilot reflected principles set out by Chicago's Mobility Task Force, including creating accessible, equitable mobility choices; promoting healthy and sustainable communities; and ensuring that the regulation of private providers is guided by public benefits.

The City's evaluation of the data found some encouraging signs from the pilot, some cause for concern, and some surprising data.

Overall, the program generated 821,615 trips, of which 664,975 rides were available for analysis due to data problems.<sup>10</sup> Put into context, the ridership – about 7,000 per day – was less than the average weekday ridership of more than forty individual CTA bus routes.<sup>11</sup> Nevertheless, it far exceeded Divvy ridership.

The City classified nearly forty percent of rides – some 257,679 trips – as test rides or “laps” which ended where they started. This points to a significant portion of trips taken by scooter-curious riders or simply for leisure. Indeed, this aligns with data from Austin, Louisville, and Portland, Oregon, which shows scooters in those cities experience the highest ridership not during weekday rush hours, but on Saturday afternoons.<sup>12</sup> The average trip length in Chicago was about 1.5 miles, but greater – about 2 miles – in the priority zones.

### *Ridership*

Some advocates expressed hope that scooters could address Chicago's transportation inequities, particularly in the priority zones in the western portion of the pilot area. These neighborhoods have fewer public transportation options – and proportionally more African Americans, Latinos, and residents living in poverty – than the eastern portion of the pilot area.

Nevertheless, riders skewed whiter, higher income, and more male than the population of the pilot area – an indication of the devices' skewed appeal. Few trips were made by older people. Only 14.7 percent of trips started in the priority zone, despite a requirement that operators place half of scooters in the priority zone each morning. Evidently, demand in the non-priority zone exceeded that of the priority zone.

The proportion of rides in the priority zones was perhaps less than the City expected. But it compares favorably to Divvy ridership during the same period in 2018, in which an astounding 99 percent of trips in the pilot area began in the non-priority zone.<sup>13</sup> To be sure, this disparity reflects not just the relative (albeit modest) appeal of scooters in the priority zone, but also the stark shortcomings of the Divvy program.

E-scooters likely ate into Divvy ridership growth, which rose 6 percent citywide but only 1 percent in the pilot zone. But they more than tripled shared micromobility trips in the pilot zone, as e-scooter trips outnumbered Divvy rides by more than two and a half times. About half of rides began or ended near a transit stop, but the data does

not clarify how many riders took e-scooters in lieu of transit, and how many used e-scooters to connect to transit.<sup>14</sup>

### *Rider and Company Behavior*

A survey of riders showed a 43 percent said they chose e-scooters over driving or ride-hailing, although the City analysis suggests these figures are inflated.

Nonetheless, this figure approximates results from Raleigh and Portland, in which about 35 percent of riders reported they chose an e-scooter trip over a car trip.<sup>15</sup>

Nevertheless the City concluded the devices were likely responsible for reducing a significant number of car trips.

The City's pilot evaluation report identified 192 probable injuries related to the pilot, as reported by Chicago-area hospitals. About a fifth of e-scooters were not parked properly, a nuisance for pedestrians, especially the elderly and disabled.

Riders and non-riders differed sharply over whether the program should continue. Complaints centered on street clutter and safety. The City concluded that the pilot revealed promise in filling transportation gaps, but it questioned the degree to which e-scooters filled these gaps. Furthermore, the pilot evaluation report lamented the environmental cost of collecting the e-scooters each evening, the concentration of trips in places with already plentiful transportation options, and companies' subpar compliance with rebalancing requirements.

## **Recommendations**

How can Chicago proceed to in a second pilot – and beyond – to advance its mobility goals?

### *1. Embrace micromobility, not e-scooters specifically.*

E-scooters are the vehicle du jour, but their future remains uncertain. While they appear to bring certain congestion and environmental benefits, questions persist over whether e-scooters services are sustainable businesses. E-scooters carry cargo poorly, and ridership thus far is disproportionately wealthier, white, and male. The City also has yet to determine how e-scooters' benefits compare to their costs.

But beyond e-scooters specifically, micromobility as a category – encompassing bike, e-bike, scooter, skateboard, and other very small vehicles – poses enormous opportunities. In Chicago, half of car trips are under three miles. Shifting just a portion to very small vehicles can significantly improve air quality, reduce congestion, increase residents' mobility, and enliven public life.

Paris, which has embraced micromobility, illustrates one possibility. There, very small vehicles [serve as the backbone](#) of Mayor Anne Hidalgo's celebrated "15-minute city"



plan, which proposes residents be able to access all daily needs within a 15-minute trip. With small vehicles, supportive infrastructure, and an innovative strategy, Paris can promote quick, safe, daily trips that bypass car congestion and get more people on the street.

*1a. Develop a citywide micromobility strategy.*

A comprehensive strategy can enable Chicago to foster micromobility in a way that elevates its benefits and minimizes its downsides. Micromobility modes share many commonalities: where they fit on the street, the types of trips they can be used for, and storage, accessibility, and safety challenges.

Rather than start from scratch for each vehicle type, the City can develop a holistic vision based on existing mobility goals. Such a strategy should address regulatory questions, interventions in the built environment, and tactics to ensure the vehicles benefit residents across the entire city. It should also explore a path to mobility as a service (MaaS) through payment and platform integration.

Other cities have begun to move towards general micromobility policies. In Washington, DC, for example, the District Department of Transportation builds [micromobility corrals](#), and has a program to make all shared dockless vehicles – e-scooters and bikes – [accessible to lower-income residents](#).

This micromobility strategy can build on the roadmap developed by the Chicago Mobility Task Force in March 2019, which urged the City to ensure that they “are accessible for all and do not impede the public way.”<sup>16</sup>

Outreach programs should engage with neighborhood residents to build support. Likewise, improving public transit must be a central part of any micromobility strategy.

*1b. Invest in safe, multimodal streets and other micromobility infrastructure.*

City investment in e-scooter-specific infrastructure is risky, and prioritizes one industry over the broad public interest. But aggressive city investment in mode-agnostic micromobility infrastructure can create wide-ranging improvements with little risk. These include neighborhood greenways, bike lanes, and streets designed for slow speeds. Chicago’s bike network – where small vehicles best operate – remains uneven. Few pleasant east-west connections exist, and expansion of the bike network has slowed. The longer this infrastructure stagnates, the longer it discourages the adoption of e-bikes, pedal bikes, e-scooters, and other small vehicles.

Mobility hubs, stations where riders can choose among multiple shared mobility modes, have generated excitement in cities such as [Minneapolis](#) and [Munich](#) and should be investigated for Chicago.



E-scooter-specific infrastructure such as docks and corrals should be paid for by e-scooter companies. But micromobility infrastructure should be a high priority. Whether or not e-scooters endure, Chicago's residents will benefit from the human scale and freedom of movement offered by safe, multimodal streets.

*2. Expand the second e-scooter pilot – in a restricted form – to downtown Chicago.*

Some politicians and advocacy groups balk at the prospect of introducing unpredictable small vehicles to an already crowded downtown. However, the City should seriously consider bringing the vehicles to congested central areas.

One of the biggest promises of e-scooters, untested in Chicago, is their potential to solve cities' intractable geometry problem: how to move growing numbers of people through crowded areas. Chicago's center has seen a sharp rise in short ride-hailing trips, with nearly one in six ridehailing trips beginning *and* ending downtown. Shifting a portion of these rides to e-scooters could markedly reduce downtown congestion and speed up buses.<sup>17</sup> In addition, the downtown area has extensive cycling infrastructure in which scooters can safely operate.

Safety must be a top priority. Provisions such as docking or lock-to requirements, and limiting the number of devices allowed to enter the downtown zone, can help. Geofenced slow zones, like those used in some [crowded Nordic city centers](#), could also be useful.

Can e-scooters help reduce downtown congestion? A pilot that skips downtown deprives Chicago of the answer.

*3. Don't discount recreational trips.*

In the first pilot, 16 percent of rides were "laps" that ended in the same place they started. Another 16 percent were short test rides. Because the pilot focused on e-scooters as transportation – how they could facilitate trips to destinations – these recreational trips were not analyzed. But recreational trips are inherent to e-scooters, just as they are to other modes like bicycles. In Santa Monica's 2018-2019 e-scooter pilot, for example, riders reported 26% of trips as recreational.<sup>18</sup>

Analysis of "lap" trips can provide useful data about where people ride, and what kinds of people – locals? tourists? – make these trips. Laps should not be assumed to be irrelevant to the public good. A large number of lap trips through parks, for example, would suggest the devices can improve access to green space. On the other hand, if lap trips concentrate in already congested areas, they may be less desirable.

Therefore, a second pilot should be structured to reflect the kinds of trips people are likely to take—and consider how these trips should and should not have bearing on future policy.

4. *Continue to pursue solutions targeting clutter, safety, and sustainability.*

Several operational issues – highlighted in the City’s pilot evaluation report – remain unsolved, but are likely solvable. In the first pilot, companies failed to ensure riders parked the devices appropriately. Companies should be held responsible, with strict penalties, for blocking sidewalks and creating clutter. But again, other cities can serve as instructive examples: San Francisco adopted [lock-to provisions](#), so that parked scooters would have to be affixed to a bike rack or other immovable object. Companies such as Sweden’s Voi, offer riders in-app bonuses for parking vehicles in less-busy [“great parking spots.”](#)

Safety remains a concern, and vehicle design improvements, app-based rider education, and other techniques should be investigated. Operational improvements in charging can reduce the carbon footprint of the devices and should also be explored. The City is already focused on these issues.

5. *Continue to prioritize equitable and affordable access.*

The first pilot’s priority zones helped ensure the availability of scooters in the western portion of the pilot area. Although ridership in the non-priority zone dwarfed priority-zone ridership, e-scooter ridership far exceeded Divvy ridership in the priority zone.

These efforts should continue – and Chicago should consider policies developed by other cities to further ensure the devices are available and affordable to residents. In San Francisco, for example, [SFMTA offered companies](#) a larger cap on the number of devices in exchange for meeting specific equity and accessibility provisions.

Affordable, accessible micromobility holds promise for low-income residents living in transit-deprived areas. As such, improving access and ensuring affordability should remain a priority for e-scooters. At the same time, Chicago must continue to expand access to the Divvy program, which remains sparse and little-used on the South and West Sides, and can serve different types of trips, and different populations, than e-scooters. Building public buy-in through outreach and engagement in these neighborhoods should be a top priority.

## **Going Forward**

As the evaluation report makes clear, the City’s ability to administer its e-scooter program depends on its access to clear data in accordance with the Mobility Data

Standard (MDS) and General Bikeshare Feed Specification (GBFS). Likewise, enforcing, articulating, and measuring the outcomes of each of these strategies depends on the City's unfettered access to the data it needs.

The e-scooter pilot program forced Chicago to confront questions likely to recur as micromobility develops. By treating e-scooters as an opportunity to prepare for wider-ranging disruptions in the mobility landscape, Chicago can position itself to realize the benefits of new technologies and limit their pitfalls.

*Samuel Kling, PhD, is Global Cities Fellow and ACLS/Mellon Public Fellow at the Chicago Council on Global Affairs. This working paper was informed by a roundtable hosted by the Council on October 15, 2019, on lessons learned from the 2019 Chicago scooter pilot, which featured policymakers, city officials, advocates, and representatives from the private sector.*

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<sup>1</sup> Stefan Gössling, "Integrating e-Scooters in Urban Transportation: Problems, Policies, and the Prospect of System Change," *Transportation Research Part D* 79 (2020).

<sup>2</sup> Deloitte, [Technology, Media, and Telecommunications Predictions 2020](#), 120.

<sup>3</sup> Annie YJ Chang et al., [Trend or Fad? Deciphering the Enablers of Micromobility in the US](#) (SAE International: July 2019), 8.

<sup>4</sup> [Daniel Schellong, Philipp Sadek, Carsten Schaetzberger, and Tyler Barrack, "The Promise and Pitfalls of E-Scooter Sharing," Boston Consulting Group, May 16, 2019.](#)

<sup>5</sup> Gössling, 6.

<sup>6</sup> Gössling, 7.

<sup>7</sup> City of Austin, [Dockless Electric Scooter-Related Injuries Study](#), April 2019, 5.

<sup>8</sup> International Transport Forum, [Safe Micromobility](#), February 2020, 21-22.

<sup>9</sup> [Austin, Texas, Shared Micromobility Dashboard.](#)

<sup>10</sup> City of Chicago, [E-Scooter Pilot Evaluation](#), January 2020, 7.

<sup>11</sup> [CTA Annual Ridership Report, 2018.](#)

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<sup>12</sup> Chang et al., 8.

<sup>13</sup> Chicago E-Scooter Evaluation, 22.

<sup>14</sup> Chicago E-Scooter Evaluation, 8.

<sup>15</sup> Joseph Hollingsworth et al, "Are e-scooters polluters? The environmental impacts of shared dockless scooters," *Environmental Research Letters* 14 (2019): 8.

<sup>16</sup> Chicago Mobility Task Force, [Roadmap for the Future of Transportation and Mobility in Chicago](#), 35.

<sup>17</sup> City of Chicago, [Transportation Network Providers and Congestion in the City of Chicago](#) (October 2019), 2.

<sup>18</sup> City of Santa Monica, [Shared Mobility Pilot Program Summary](#) (November 2019), 5.