2020
E-SCOOTER PILOT
EVALUATION

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Letter From the Commissioner

Dear Chicagoans,

I am excited to share CDOT's analysis of our second e-scooter pilot program with the public. As we contemplate bringing new technology and transportation modes to Chicago, data transparency and objective analysis are important pillars in our decision-making. Two very different e-scooter pilots have helped guide us through the opportunities and challenges posed by e-scooters on our public way.

The second pilot in particular dealt with the uncertainties of COVID-19 as fewer destinations were available to some of our users, reducing the potential for higher ridership. However, the ability to ride a greener single occupancy mobility option in open air provided a safe environment for others. The lock-to technology also helped significantly improve the clearance of our sidewalks and public way from clutter that can block ADA access. The pilot results also confirm that a geographic component is necessary to ensure equitable access to any new mobility option in our neighborhoods. We hope this report will ignite a conversation across our City to help us determine if e-scooters can add to the micromobility landscape in Chicago.

Gia Biagi
Commissioner
Chicago Department of Transportation

Executive Summary

About the Pilot

In June 2019, the Chicago Department of Business Affairs and Consumer Protection (BACP) and the Chicago Department of Transportation (CDOT) launched a four-month e-scooter pilot with 10 vendors and 2,500 scooters in a 50 square mile area on the West, near Southwest and near Northwest Sides of Chicago. During and after the 2019 pilot, the city analyzed data on e-scooter use and vendor performance, solicited feedback from the public, and convened an advisory group of community, business, and advocacy organizations. With the findings from these evaluation processes, CDOT and BACP created updated terms for a 2020 e-scooter pilot.

The 2020 e-scooter pilot aimed to better understand what role e-scooters play as a potentially travel option in Chicago; the operational challenges e-scooters present and the ways they can be lessened; and, how effectively e-scooter vendors can operate citywide while promoting increased mobility and access for everyone. Notable aspects of the 2020 pilot terms include an Equity Priority Area that covered approximately half of Chicago in which each e-scooter vendor was required to deploy at least 50% of their fleet, and a "lock-to" requirement for e-scooter parking. The 2020 pilot terms also emphasized education requirements for riders. Vendors were required to develop a safety quiz, and all riders renting a shared e-scooter in Chicago in 2020 were required to answer at least 80% of questions correctly on the quiz before their first ride. Additionally, the 2020 e-scooter pilot offered the opportunity to test another socially-distanced transportation mode for the public as the COVID-19 global pandemic unfolded.

The 2020 e-scooter pilot ran from August 12 to December 12 with three participating vendors: Bird, Lime and Spin. Each e-scooter company that participated in the 2020 pilot was permitted to deploy up to 3,333 scooters for a total citywide fleet of 10,000 devices.

212 **sq mi**
Size of the 2020 pilot area

2.6 **million**
Total population of pilot area

3
Number of vendors operating in 2020 e-scooter pilot

123 **days**
Duration of the 2020 pilot

10,000
Maximum number of devices allowed to operate

The Role of Scooters in the Transportation Network

On average, 7,415 e-scooters per day were deployed and available on Chicago's streets during the 2020 pilot. The City estimates that 540,035 trips were taken during the pilot, equating to an average of 0.59 trips per e-scooter per day. Approximately 125,000 (23%) of all trips originated in the Equity Priority Area. In general, e-scooters were used primarily for shorter-distance trips. The average trip distance was 2.10 miles and average trip duration was 18.50 minutes.

When e-scooter riders were surveyed about how they would travel if an e-scooter was not available, walking and biking were the most common modes mentioned as likely alternatives. Some riders reported that they would have used ride hail or driven alone instead. An overwhelming majority of e-scooter riders surveyed (90%) agreed e-scooters made it easier to reach a destination or complete a trip, and 60% agreed that shared e-scooters are useful in meeting daily transportation needs.

When e-scooter riders were surveyed about where they rode e-scooters to, no dominant trip purpose was identified. Approximately one third of riders said they "sometimes" or "often" used e-scooters to make social visits, to ride for enjoyment, to attend recreational activities, or to do household errands. Riders who live in the Equity Priority Area were 1.6 times more likely to say they "sometimes" or "often" used a shared e-scooter to get to or from work than riders citywide. E-scooter trips were concentrated on Friday through Sunday with over half of all trips made on these three days of the week.

Compared to Chicago's overall population, shared e-scooter riders in the 2020 pilot were almost twice as likely to be in the 25-34 age group, almost twice as likely to have a Bachelor's degree, 1.7 times more likely to identify as white than average, and 1.3 times more likely to identify as male than average. Despite the overall demographic profile of scooter riders, nearly 25% of the trips in the 2020 scooter pilot started or ended in the Equity Priority Area. Outside the Equity Priority Area (where companies had no requirement to deploy e-scooters), trips origins were heavily concentrated in just a few Chicago Community Areas on the North and Near West Sides of the city.

540,035
Total mobility trips for analysis

4,391
Avg daily trips

10,735
Most trips in a single day (Sept 5)

23.4%
Share of trips in Equity Priority Area

E-Scooter Operations & Enforcement

During the 2020 pilot the City of Chicago tested a number of operational requirements which resulted in improved performance. In general, in 2019 and 2020, geofencing to exclude scooters from areas where they were not allowed to operate was largely successful -- geofenced areas included the Central Business District, the 606, Lakefront Trail, and certain college campuses. The 2020 pilot tested a requirement that e-scooters must be locked to a fixed object to end a trip. This also improved operations and reduced calls to 311 regarding parking complaints.

Concern over e-scooters operating on the sidewalk remained high in 2020 even though only one official 311 complaint was logged regarding sidewalk riding. On their pilot applications, scooter vendors committed to bringing sidewalk riding detection technology to demonstrate in the city. However, no vendors ultimately deployed this technology during the pilot.

BACP conducted a total of three field and data enforcement missions during 2020 to test vendor compliance with pilot terms and conditions. The vast majority of the violations noted during the pilot were for not achieving the e-scooter coverage and fleet rebalancing requirements in the Equity Priority Area. All vendors ultimately came into compliance on the rebalancing requirements. The City also attempted to measure injury risks associated with e-scooters in partnership with the Chicago Department of Public Health. The normalized rate of e-scooter-related emergency room visits per scooter trip was 0.27 per 100,000 trip records. However, most injuries recorded were relatively minor injuries to the scooter users themselves, not to other people.


Credit: Spin

Access and Availability

In 2020, the City refined the Equity Priority Area concept by requiring companies to rebalance their fleet twice per day to meet fleet the coverage and distribution targets. This was based on a 2019 pilot observation that e-scooters deployed into Priority Areas would move out of the area over the course of the day. The refined 2020 pilot led to good scooter access, with approximately 90% of the Equity Priority Area being within a 5-minute walk of an e-scooter.

The City did not set the prices that vendors could charge for e-scooters in either the 2019 or 2020 pilots. All vendors priced e-scooters with a $1 unlock fee and a per-minute cost. In 2020, the typical per-minute was $0.39. Two vendors offered discounts on the per-minute fees for trips that started or ended in the Equity Priority Areas. Without discounts, the typical cost of the average 18.5 minute e-scooter trip was approximately $8 in 2020. All three vendors offered cash-based access options, and all three vendors offered a text-to-ride feature for riders without a smartphone. Usage of both of these programs was too low to draw any meaningful insights.

Operators were strongly encouraged, but not required, to deploy seated devices that provide a more accessible option for riders with disabilities. All three vendors deployed only a very small number of seated devices, they were never available on operators' apps as part of the shared fleet, and these devices were deployed only in the closing weeks of the pilot.

Share of Devices Deployed (per square mile), by Community Area

0% - 0.23%
0.23% - 0.50%
0.50% - 0.77%
0.77% - 1.24%
1.24% - 2.19%

0   1.25   2.5   5 Miles
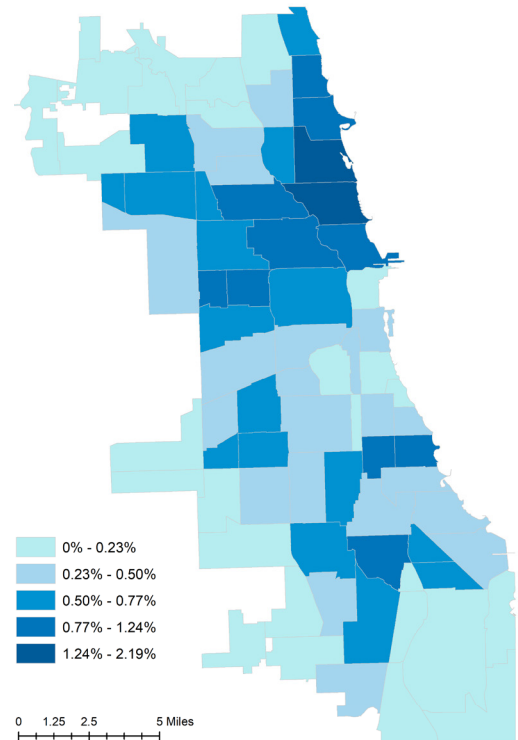
$8
Typical cost of the average 18.5 minute e-scooter trip in 2020

56%
Share of riders who agreed e-scooters were affordable

Public Opinion

In general, the city received fewer complaints related to pilot in 2020 than in 2019. For example, 311 reports dropped 75% when factoring in the increased number of devices. Nearly half of the 311 complaints logged in 2020 did not list a clear complaint or indicated complaints that were actually not a violation of the pilot terms. Over 20% of the 311 calls were for e-scooters locked to private property, especially fences.

E-scooter riders and non-riders had differing opinions on the future of scooters in Chicago: 88% of e-scooter riders indicated that scooters should be part of Chicago's transportation system, while 65% of non-riders thought that shared e-scooters should not be available in Chicago. Riders generally wanted to see further improvements in the e-scooter systems including payment integration (such as Ventra or Transit app) and equipment upgrades like seated scooters, improved brakes, and larger wheels. Sidewalk riding and e-scooter parking, especially on residential streets, were major pain points in 2020 for non-riders.

Credit: Spin

Credit: Bird

Credit: Lime

-75%
Decline in e-scooter-related 311 reports-per-device-deployed compared to 2019 pilot

88%
Shared of riders surveyed who said shared e-scooters should be part of Chicago's transportation future

31%
Shared of non-riders surveyed who said shared e-scooters should be part of Chicago's transportation future

Looking Ahead

Based on survey results of scooter riders in 2019 and 2020, e-scooters appear to serve as useful transportation for some people. The reported trip purposes, reported substitution of ridehail and drive-alone trips with e-scooters, and data on trip lengths suggest that e-scooters fill a mobility need for short trips.

Several technologies and features tested in 2020 were successful at managing e-scooter operational issues, particularly geofencing and lock-to parking requirements. On the other hand, concern about sidewalk riding remained very high -- although the nature of the actual problem is hard to quantify with data. Scooter vendors recognize this concern and have indicated to the city that technologies like sidewalk riding detection could address this issue, but no such technologies were delivered in either the 2019 or 2020 pilot.

Results from the 2020 and 2019 pilots reiterate the importance of managing e-scooter supply to balance scooter availability and system usability with potential oversaturation and clutter in the public way. The Equity Priority Area measures tested in 2019 and 2020 also demonstrate the need to actively manage coverage, distribution, and rebalancing standards for e-scooter fleets. Outside the Priority Areas, e-scooters and e-scooter use clustered in a few neighborhoods. However, when the city set strong equity-based targets for coverage and distribution, vendors were able to deploy and balance their fleets accordingly, and people rode e-scooters.

Credit: Spin

Credit: Bird
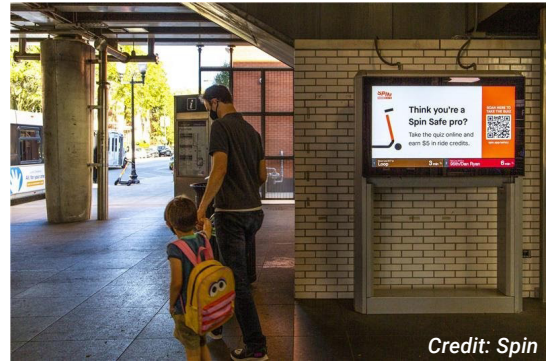
About the 2020 Pilot

Pilot Purpose

In June 2019, the Department of Business Affairs and Consumer Protection (BACP) in conjunction with the Chicago Department of Transportation (CDOT) launched an e-scooter pilot which ran from June 15, 2019 to October 15, 2019 under an Emerging Business Permit (EBP). EBPs are issued by BACP for a non-renewable two-year period, allowing the City to test innovative businesses that do not fall under current license structures.

Under the original EBP, the City ran a second pilot in 2020 that lasted from August 12, 2020 to December 12, 2020 with three participating vendors: Bird, Lime and Spin. The purpose of the 2020 pilot was to further learn how scooters function within Chicago's transportation system. The 2020 pilot terms were adjusted from those in 2019 based on performance, feedback from the public, and input from an advisory group consisting of community, business, and advocacy organizations. A summary of community questions and objectives for the 2020 pilot is available in the Appendix. Three main themes emerged to explore in the 2020 pilot.

Role in the transportation network: How are e-scooters used citywide?

Dangers, inconveniences, and non-compliance: How might these be limited or mitigated?

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

24 months
Maximum lifespan of an Emerging Business Permit

123 days
Duration of both the 2019 and 2020 e-scooter pilots

3
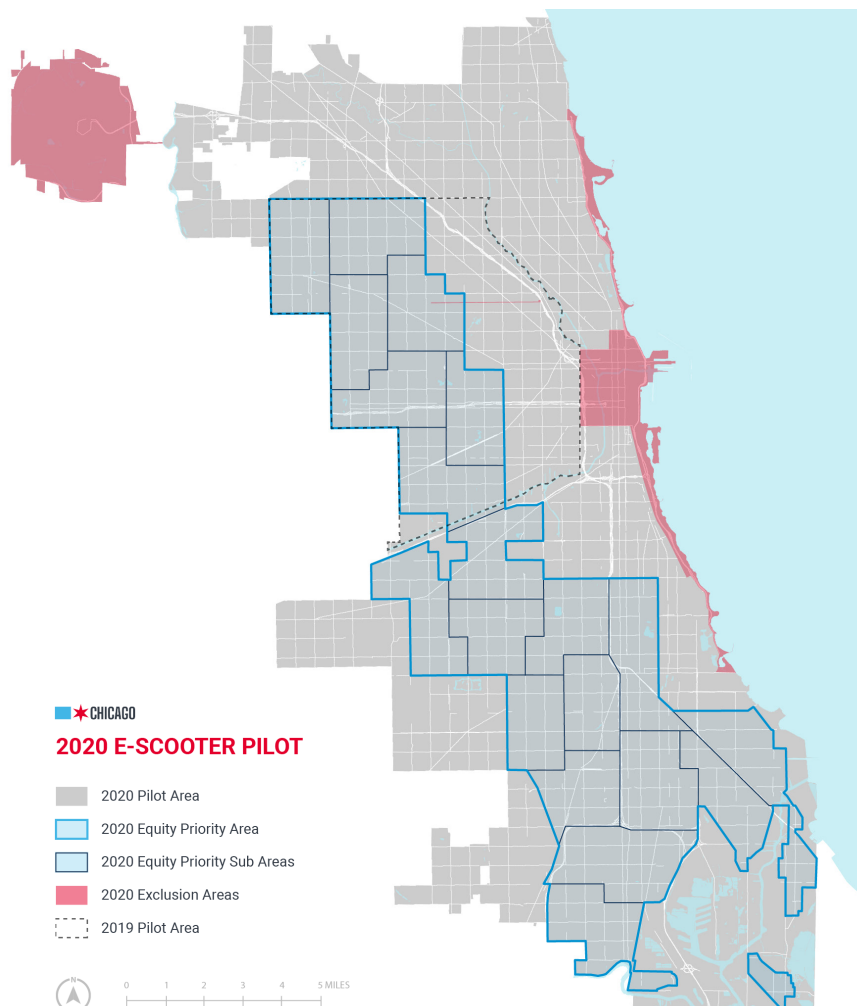Vendors selected to operate in 2020 e-scooter pilot

4
Vendors applied to operate in 2020 e-scooter pilot

10
Vendors participated in the 2019 pilot and were eligible to apply to operate in 2020 pilot

Overview of 2020 Pilot Terms

Number of Vendors: Whereas the 2019 pilot had 10 participating vendors, the 2020 pilot was limited to 3 vendors to reduce the administrative burden on the City staff and to improve the rider experience. Vendors were selected through an application process consisting of questions and criteria designed to determine if a vendor would be able to meet the City's objectives, terms, and conditions for the EBP. Four vendors responded with a complete application, and the City selected the 3 highest-scoring applicants.

Coverage and Distribution: The e-scooter pilot area was expanded to cover nearly the entire city, an area four times larger than that tested in the 2019 pilot. In addition, the Chicago Department of Public Health (CDPH) Healthy Chicago 2.0 Economic Hardship Index and additional mobility and demographic factors were used to define an Equity Priority Area where residents face elevated economic, health and mobility barriers, covering approximately 45% of the pilot area. The Priority Area was subdivided into 20 smaller sub-areas, and each vendor in the pilot was required to deploy 2.5% of their e-scooter fleet to each sub-area to try and achieve availability of e-scooters across the city.

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2020 E-SCOOTER PILOT

- 2020 Pilot Area
- 2020 Equity Priority Area
- 2020 Equity Priority Sub Areas
- 2020 Exclusion Areas
- 2019 Pilot Area

0 1 2 3 4 5 MILES

212 sq mi
Size of the 2020 pilot area

50 sq mi
Size of the 2019 pilot area

45%
Share of pilot area designated as an Equity Priority Area

2.6 million
Total population of pilot area

Fleet Size: The total size of the pilot was increased to 10,000 e-scooters to reflect the larger geographic area of the 2020 pilot. Each vendor was required to ramp up to and maintain a fleet of between 3,000 and 3,333 devices during the pilot.

Fleet Management: E-scooters could remain out on the streets overnight but were not available for public use to try and reduce the traffic and air quality impacts of vendors being required to collect all e-scooters each night and re-deploying them each morning.

Parking: Unlike the 2019 pilot, all e-scooters in the 2020 pilot were required to be equipped with locks, and users were required to lock scooters to a fixed object in the public right of way (e.g. bike rack, street sign) at the end of their trip. The purpose of this requirement was to try and reduce clutter and obstruction of the sidewalk.

Full terms of the 2020 pilot and vendor selection process are available at: www.chicago.gov/scooters.

Key aspects of the pilot terms that were not changed from 2019 include the following:

Time and Duration: The pilot lasted four months with scooters allowed to operate from 5am-10pm.

Use Restrictions: E-scooter riding was prohibited on all sidewalks, the Bloomingdale Trail (the 606), the Lakefront Trail, and the Central Business District (CBD).

Credit: Spin

E-Scooter Technology: Devices were required to be capped at a maximum speed of 15 MPH and meet standards on braking, visibility (lights and reflectors), bells and device size.

Administrative Fees: Vendors were charged an upfront fee of $1/day/device to cover the costs of administering the pilot.

The 2020 pilot also requested the testing of various new vendor provided technologies and features including seated scooters (see p. 39), sidewalk riding detection (see p. 25), new rider education requirements (see p. 30) and other concepts such as "helmet selfies."

Data Collection and Evaluation

Information presented in this report is drawn from several sources to capture both quantitative information as well as qualitative feedback.

- Mobility Data Specification (MDS) data feeds provided by vendors to the City which contained information on devices deployed and trips made[1]
- 311 data for resident issue reports
- An online feedback tool to gather information from both riders and non-riders
- A survey developed for and administered to shared e-scooter riders

CDOT partnered with Dr. Abolfazl Mohammadian and Dr. Ehsan Rahimi from the University of Illinois at Chicago's (UIC) Department of Civil, Materials, and Environmental Engineering to develop a shared e-scooter rider survey. This collaboration produced a survey and distribution methods that achieved a representative sample, allowing responses to provide a strong and reliable understanding of shared e-scooter riders, their habits, their experiences, and their feedback.

15 mph
Maximum allowed e-scooter speed

2 million
Total individual data "events" collected via MDS feeds

2,400
Completed responses received to rider survey

[1]The City did not have access to any personal rider information attached to trips. Further, individual trip timestamps were rounded to the nearest hour and the accuracy of start/end locations was also rounded off prior to analysis to further avoid identifying personal movements.

The 2020 Pilot in Context

Results between the 2019 and 2020 pilots cannot be directly compared since pilot terms were modified in 2020 based on 2019 learnings. Notably, the 2020 pilot served a much larger service area during the COVID-19 pandemic.

Additionally, it is very difficult to understand the full nature and extent of impacts the COVID-19 pandemic may have had on shaping outcomes in the 2020 pilot. As COVID mitigations, e-scooter operators were required to clean key device points (e.g. handlebars) every time a staff member or contractor came into contact with a device. Some potential effects of the pandemic to consider include the following:

Weather and season: COVID-19 delayed the launch of the 2020 pilot, which ran from mid-August through mid-December, whereas the 2019 pilot ran from June through October. A regression analysis was conducted to compare total daily trips with daily high temperature, daily low temperature, and daily precipitation. This analysis found a statistically significant correlation: for every degree increase in daily high temperature 147 more e-scooter trips are expected (all else equal). No significant relationship was identified between precipitation and trips. See Appendix for more detail.

COVID-related restrictions on activities: Approximately 10% of non-e-scooter users surveyed said COVID-19 prevented them from using a shared e-scooter because they did not feel safe or did not have anywhere to go. Nevertheless, Chicago's Divvy bikeshare system saw record ridership in August, September, and October 2020.

58
The 2020 pilot launched 58 days further into the calendar year compared to the 2019 pilot

147
For every degree increase in daily high temp, 147 more e-scooter trips could be expected

10%
Non-e-scooter users surveyed that said COVID-19 prevented them from using a shared e-scooter

E-Scooter Use

Supply of E-Scooters for Trips

Each of the three vendors in the pilot could deploy up to 3,333 devices and were required to deploy at least 3,000 devices. Vendors could slowly ramp up device deployment in the first few weeks of the pilot and ramp down in the final few weeks. On average, 7,415 e-scooters were available in Chicago during the pilot, and device availability peaked on October 26, 2020, at 9,091 devices.

Average Daily Device Deployments, by Vendor
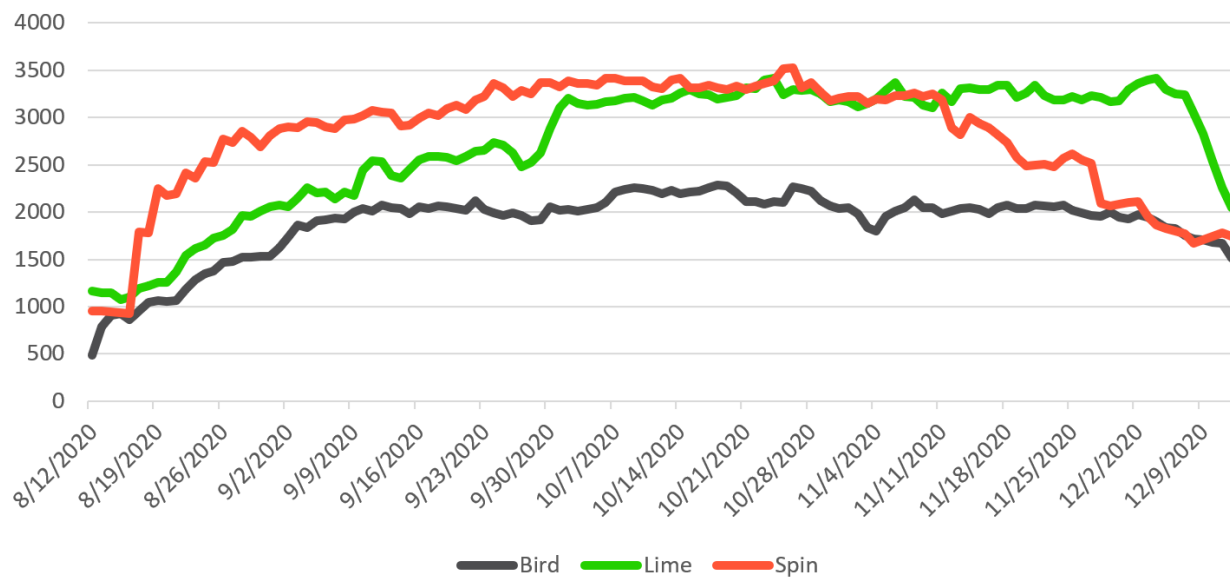
Device Distribution Heatmap Snapshots

September 12

October 12

November 12
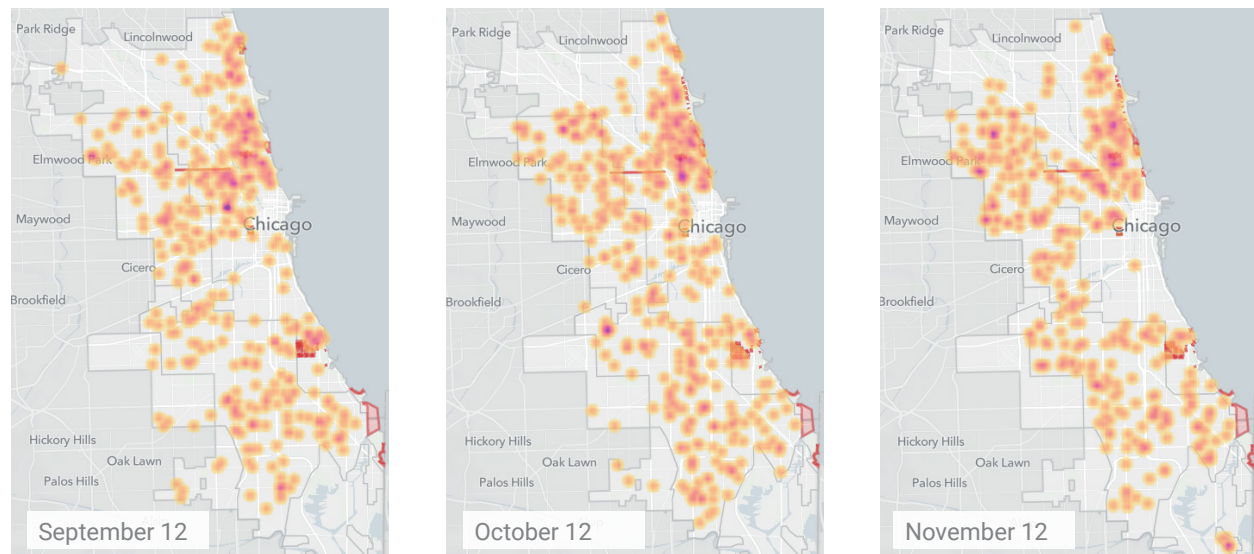
Number of Trips

A total of 630,616 total trip records were created during the 2020 pilot. After processing the data to remove records that were too short in time or distance to represent actual trips, the City estimates that 540,035 trips were taken during the pilot. Approximately 126,000, or 23%, of those trips started in the Equity Priority Area.

Daily trip rates peaked in September at 6,642 trips/day on average and then declined by approximately 40% month-over-month through October, November, and December.

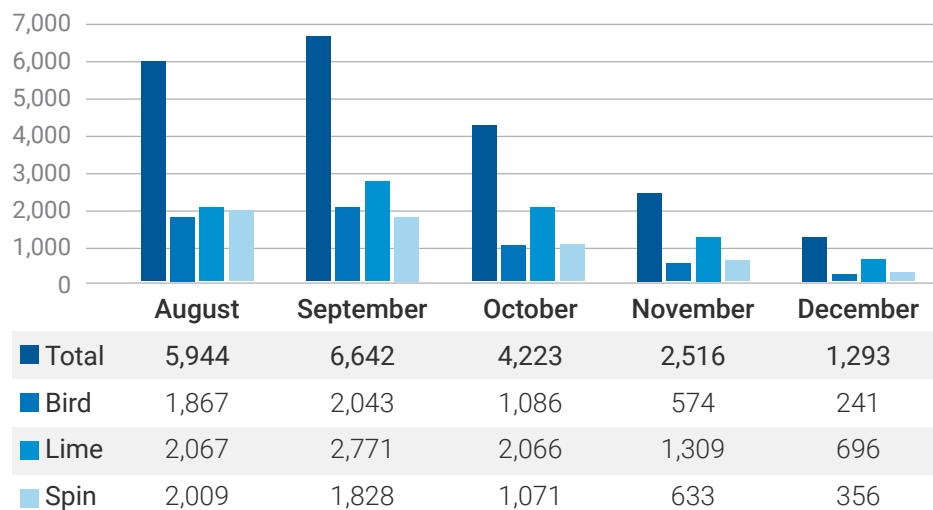Whereas all vendors had the same requirements to supply e-scooters (fleet size, availability, and distribution), customer demand (use) varied by vendor. 28.2% of trips during the pilot were on Bird e-scooters, 43.7% on Lime e-scooters, and 28.0% on Spin e-scooters.

630,616
Total trip records

540,035
Total mobility trips for analysis

4,391
Avg daily trips

10,735
Most trips in a single day (Sept 5)

23.4%
Share of trips in Equity Priority Area

126,462
Total trips in Equity Priority Area

Average Trips/Day

	August	September	October	November	December
■ Total	5,944	6,642	4,223	2,516	1,293
■ Bird	1,867	2,043	1,086	574	241
■ Lime	2,067	2,771	2,066	1,309	696
■ Spin	2,009	1,828	1,071	633	356

Transportation Choice/ Travel Behaviors:

As there is no standard unit to compare demand between different travel modes and services in the City, it is difficult to understand the significance of e-scooter use with respect to other options. Walking, biking, taking transit, and driving, all have different levels of cost, availability, speed, comfort, and supporting infrastructure, each of which is a key factor to determine how many trips want to be taken, can be taken, and are taken by each mode. 82,700 people walk to work in Chicago.[2] During the 2020 pilot, approximately 12,500 trips/day were made on the Divvy bikeshare system which had a fleet size of approximately 9,000 bikes. CTA ridership on an average weekday during the pandemic was 303,000 on buses and 154,000 on rail. CTA ridership on an average day before COVID was 700,000 each on buses and rail.

2.1 miles
Avg trip distance

18.5 min.
Avg trip duration

Utilization:

Utilization or trips-per-deivce-per-day is a common industry metric of e-scooter supply and demand relative to a given fleet size. In 2020, this metric averaged 0.59 trips-per-device-per-day citywide, 0.26 in the Equity Priority Area, and 0.97 outside the Equity Priority Area. These low utilization rates mean that the average e-scooter sat unused for the vast majority of the day. In 2019, the pilot averaged 3.0 trips-per-device-per-day, although several differences could have influenced this, including the service area of pilot area being limited to neighborhoods with higher population density, the cost of trips being higher in 2020, and potential impacts of COVID. Utilization in 2020 also varied by vendor and by month.

0.59
Avg trips per device per day

Trips-per-Device-per-Day

	August	September	October	November	December
Bird	1.6	1.0	0.5	0.3	0.1
Lime	1.4	1.1	0.6	0.4	0.2
Spin	1.0	0.6	0.3	0.2	0.2
Total	1.3	0.9	0.5	0.3	0.2

Users and Use

When asked how frequently they had taken a shared e-scooter trip in the last month, the majority of riders (59%) said they took 1-3 trips, including 23% of riders who took one trip. 8.5% of riders said they took more than 10 trips in the last month, and survey results indicate that this relatively small group of riders took more than one third of all trips.

8.5%
Share of riders who took more than 10 e-scooter trips in the last month

[2] Source: US Census Bureau and http://www.activetrans.org/sites/files/2020regionalmodesharereport.pdf

Distance and Duration of Trips

Trip distance, trip duration and calculated trip speed varied inside and outside the Equity Priority Area.

Distance: The average distance of an e-scooter trip in 2020 was 2.10 miles citywide, 2.57 miles in the Equity Priority Area, and 1.95 miles outside the Equity Priority Area.

Duration: The average e-scooter trip lasted 18.50 minutes citywide, 27.64 minutes in the Equity Priority Area, and 15.62 minutes outside the Priority Area.

Speed: The calculated end-to-end trip speed of e-scooter trips was 6.8 MPH citywide, 5.6 MPH in the Equity Priority Area, and 7.5 MPH outside the Priority Area.

It is possible that increased trip distance within the Priority Area is related to different land use patterns or a lower population density within the Priority Area. However, it is not understood at this time why trips within the Priority Area took longer to cover a given distance (i.e. were slower).

Overall, average trip lengths in the 2020 pilot were 40% longer than in 2019. This trend of increased trip distance was also observed in peer city e-scooter programs and in Chicago's Divvy bike system. It is possible that this trend is related to an overall shift in trip patterns due to the COVID-19 pandemic.

Avg Trip Distance (miles), by Community Area

Legend:
- 1.7 - 2.0
- 2.0 - 2.5
- 2.5 - 3.0
- 3.0 - 3.5
- 3.5 - 4.9

0   1.25   2.5   5 Miles
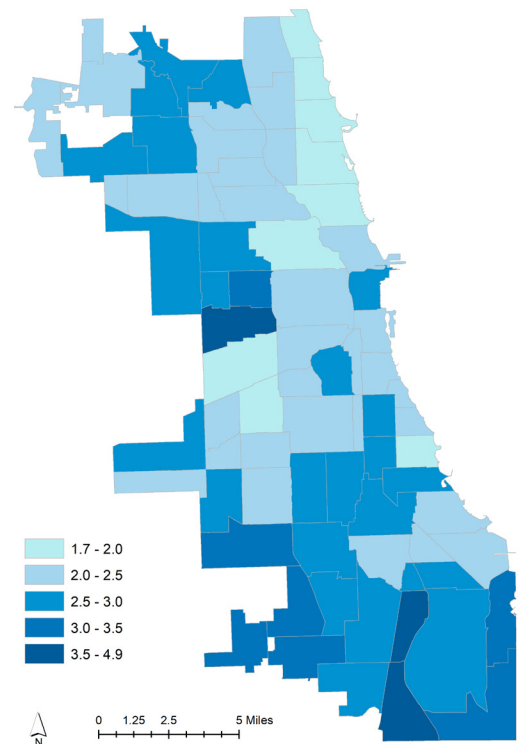
Avg Calculated Trip Speed (mph), by Community Area:

Legend:
- 3.9 - 5.0
- 5.0 - 5.9
- 5.9 - 6.9
- 6.9 - 8.1
- 8.1 - 9.8

0   1.25   2.5   5 Miles
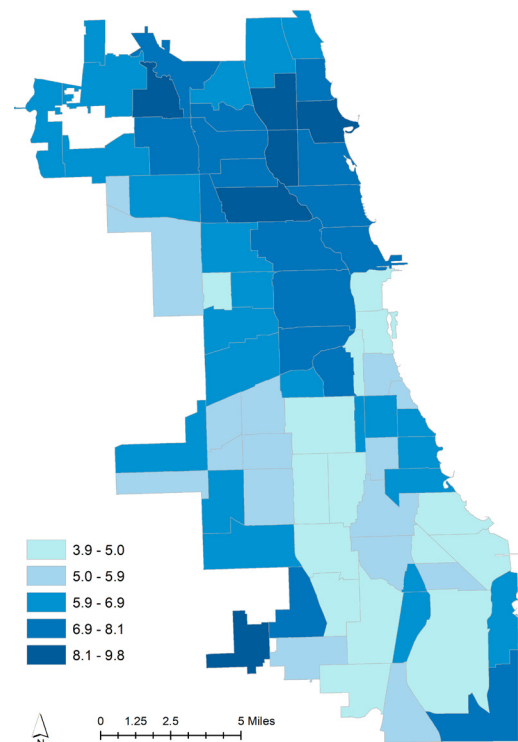
Location of Trips

Trips made have been classified by where the trip started. A substantial number of trips started in Community Areas on the North and Near West sides of the city, with 60% of all trips during the pilot originating in just eight of the city's 77 Community Areas, and 29.2% of trips originating in Lake View and Lincoln Park which account for only 2.9% of the total pilot area and 6.5% of the population. Approximately 23.4% of all trips originated in the Equity Priority Area, which covered approximately 45% of the pilot area and accounted for 44.7% of the population.

When adjusting for the varied geographic size and population of different community areas, Lake View and Lincoln Park still top the list, with the highest number of trips per square mile happening in Lake View and the highest number of trips per person happening in Lincoln Park.

Top-10 Community Areas by Trips:

Community Area	Trips/ Pop*	Trips/ Sq Mi	Total Trips	Share Trips
Lincoln Park	1,014	21,979	69,628	12.9%
Lake View	877	28,150	88,066	16.3%
West Town	628	11,541	52,808	9.8%
Hyde Park	572	9,704	15,701	2.9%
Near West Side	446	4,905	27,887	5.2%
Uptown	422	10,517	24,557	4.5%
Logan Square	352	7,097	25,470	4.7%
Near North Side	274	8,915	24,519	4.5%
Edgewater	227	7,382	12,830	2.4%
Rogers Park	143	4,230	7,778	1.4%

per 1,000 residents

Total Trips per Square Mile, by Community Area

- 0 - 500
- 500 - 2,000
- 2,000 - 6,000
- 6,000 - 20,000
- 20,000 - 28,150

0   1.25   2.5   5 Miles
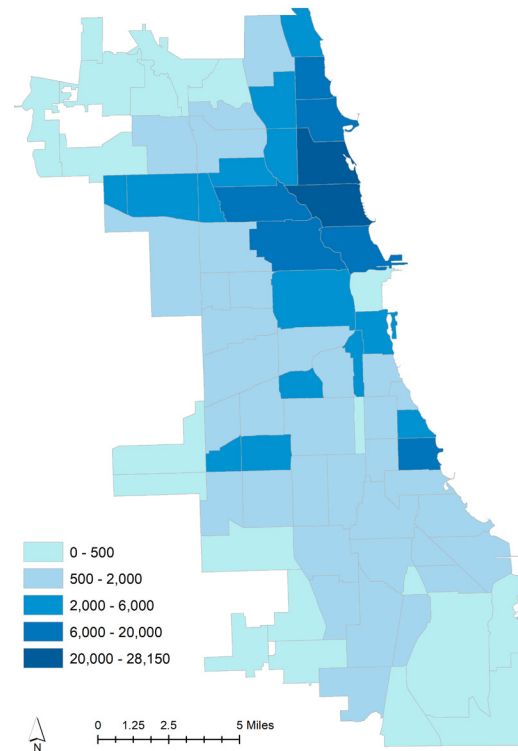
Total Trips per 1,000 Residents, by Community Area:

- 0 - 80
- 80 - 165
- 165 - 350
- 350 - 627
- 627 - 1014

0   1.25   2.5   5 Miles
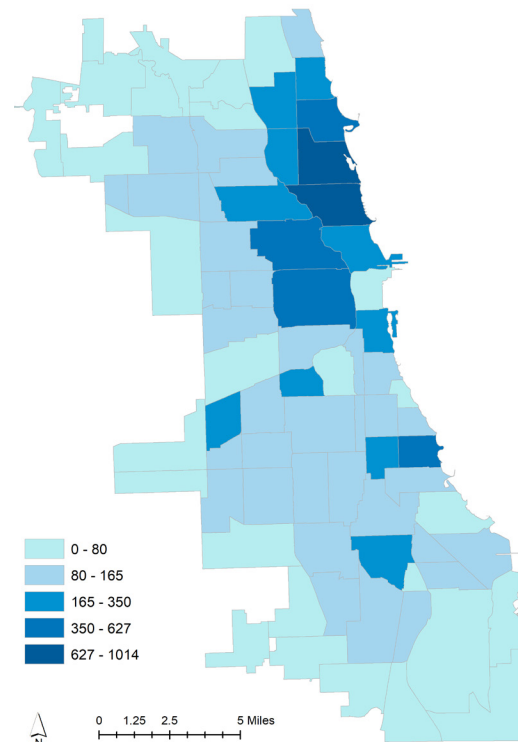
Timing of Trips

E-scooter trips were more likely to happen between Friday and Sunday with over half of all trips made on these three days of the week. During the 2019 pilot, weekday trips followed a somewhat traditional commuting pattern with an uptick in the morning and a clear peak in the late afternoon. By contrast, in 2020 trips gradually increased through the day to a peak in mid-to-late-afternoon. It is possible that this shift in the time of trip making is related to the disruption of traditional commuting during the COVID-19 pandemic and a relatively greater use of e-scooters for non-work trips in 2020 than 2019.

Share of Trips by Day of Week:

Day of Week	Share of Trips
Sunday	15.7%
Monday	11.2%
Tuesday	11.0%
Wednesday	13.3%
Thursday	13.2%
Friday	16.2%
Saturday	19.3%

Average Daily Trips by Start Hour (2020):
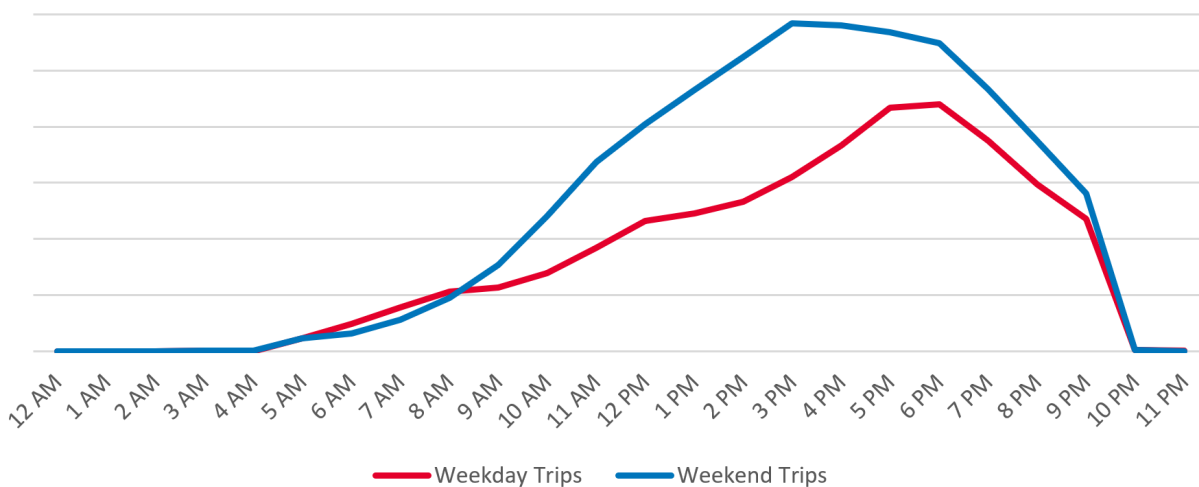
Average Daily Trips by Start Hour (2019):
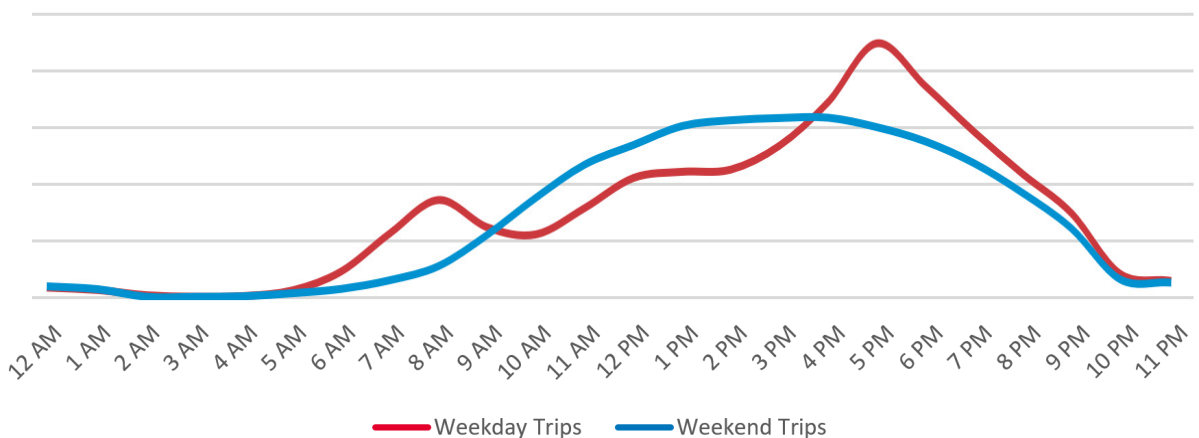
Purpose of Trips

Among all riders, 90% agreed e-scooters make it easier to reach a destination or complete a trip, and 60% agreed that shared e-scooters are useful in meeting their daily transportation needs.

Shared e-scooter riders surveyed were asked how often in the past month they used a shared e-scooter for various purposes. The results below are the share of riders who responded "sometimes" or "often," as opposed to "once" or "never." There was no single trip purpose that overwhelmingly characterized how and why e-scooters were used. Approximately one third of riders said they "sometimes" or "often" used e-scooters to make social visits, to ride for enjoyment, to attend recreational activities, or to do household errands. Riders who live the Equity Priority Area were 1.6 times more likely to say they sometimes or often used a shared e-scooter to get to or from work.

Percent of E-scooter Riders Who Indicated an E-scooter Trip Purpose "Sometimes" or "Often"

Trip Purpose	All	Priority Area	Black or African American	Hispanic or Latino
Visiting friends/relatives	**34%**	37%	41%	37%
Riding around having fun	**33%**	39%	48%	42%
Attending recreational activities	**31%**	30%	33%	33%
Doing household errands	**30%**	33%	43%	32%
Eating meals outside of home	**24%**	30%	33%	26%
All other shopping activities	**24%**	26%	34%	30%
Routine Shopping (e.g. groceries)	**23%**	25%	34%	28%
Going to or from the workplace	**16%**	26%	27%	23%
Health care appointments	**11%**	11%	17%	11%

Priority Area = Residents whose self-identified home zip codes fell within the Equity Priority Area
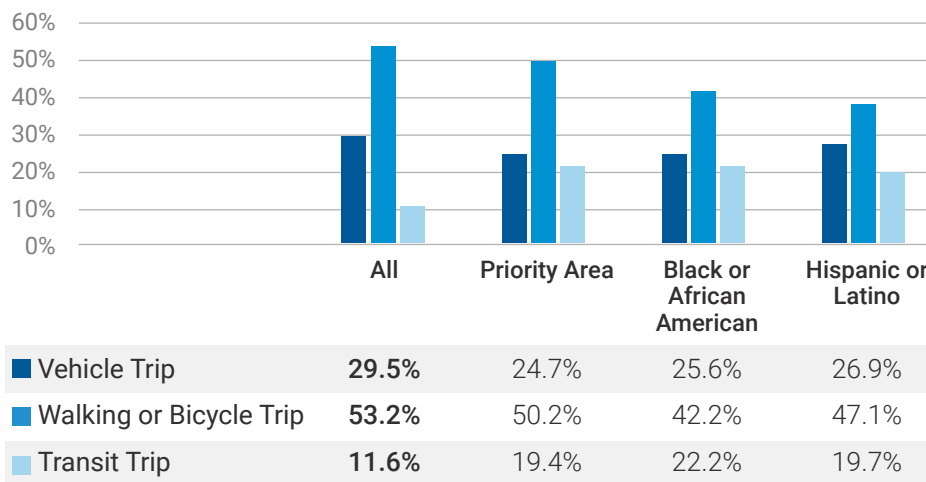
Alternate Mode Choice for E-scooter Trips

Shared e-scooter riders surveyed were asked what alternate travel mode they would have used if an e-scooter had not been available for their most recent trip. Among all e-scooter riders, 53.2% said they would anticipate choosing to walk or bike instead, 29.5% would choose to drive or use ride-hail instead, and 11.6% would choose to take transit instead. 4.5% of riders reported they would have not made a trip at all.

29.5%
Share of e-scooter trips that replaced a vehicle trip

Substitute Mode Choice for Most Recent E-scooter Trip (by Share of Trips)

	All	Priority Area	Black or African American	Hispanic or Latino
■ Vehicle Trip	**29.5%**	24.7%	25.6%	26.9%
■ Walking or Bicycle Trip	**53.2%**	50.2%	42.2%	47.1%
■ Transit Trip	**11.6%**	19.4%	22.2%	19.7%

Priority Area = Residents whose self-identified home zip codes fell within the Equity Priority Area

Interactions with Transit Use:

E-scooters have the potential to interact with transit in two ways:

Complementary: 36% of shared e-scooter riders in 2020 said they used an e-scooter to get to or from a CTA bus, CTA rail or Metra. Survey results indicate that 36% of e-scooter riders used CTA rail almost daily before the COVID-19 pandemic and 24% used CTA buses almost daily.

36%
Share of e-scooter riders who used an e-scooter to get to or from transit at least once

Substitution: COVID-19 had a specific impact on transit mode choice. Approximately 22% of e-scooter riders surveyed said they "often" used an e-scooter to avoid using transit because of COVID-19 concerns.

Overall, the average daily trips on e-scooters in the 2020 pilot (4,500/ day) equates to 1.0% of total CTA average daily weekday ridership (457,000/day) during the pilot.

1.0%
Avg daily e-scooter trips compared to avg daily CTA trips

Interactions with Divvy Use:

E-scooters have the potential to interact with bikeshare in three ways:

New market segment: Half of e-scooter riders said they "never" used Divvy, suggesting that shared e-scooters introduced many riders to shared micromobility.

Complementary: 23% of shared e-scooter riders reported also having a Divvy membership.

Substitution: When 2020 shared e-scooter riders were asked to consider their most recent shared e-scooter trip, 10% said they would have used Divvy if an e-scooter had not been available. This potentially represents approximately 520 trips per day, or about 4% of Divvy's average daily ridership during the pilot.

Overall, August, September and October 2020 all saw record monthly ridership for the Divvy system. August 2020 was the highest-ever ridership month for Divvy (19,756 trips/day) since the system launched in 2013.

50%
Share of e-scooter riders who said they have never used Divvy

19,756
Avg Divvy trips/day in August 2020, a system record

Detailed Substitution Mode Choice for E-Scooter Trips (by Share of Trips)

Trip Purpose	All	Priority Area	Black or African American	Hispanic or Latino
Walked	**39.5%**	42.4%	34.8%	37.9%
Ride-Hail (Uber, Lyft, Via)	**18.9%**	13.1%	12.6%	14.2%
Personal Vehicle	**10.5%**	11.2%	12.2%	12.7%
Divvy Bikeshare	**9.8%**	4.6%	3.5%	5.2%
CTA Bus	**8.2%**	14.5%	18.3%	14.5%
No Trip	**4.5%**	3.2%	7.0%	4.3%
Personal Bicycle	**3.9%**	3.2%	3.9%	4.1%
CTA Train	**3.2%**	4.2%	3.0%	4.9%
Other	**0.9%**	2.5%	2.2%	2.0%
Personal Scooter	**0.3%**	0.0%	0.9%	0.0%
Taxi	**0.1%**	0.4%	0.9%	0.0%
Pace Bus	**0.1%**	0.7%	0.9%	0.3%
Metra Train	**0.0%**	0.0%	0.0%	0.0%

Priority Area = Residents whose self-identified home zip codes fell within the Equity Priority Area

Who Made E-scooter Trips

Compared to Chicago's overall population, shared e-scooter riders in the 2020 pilot were almost twice as likely to be in the 25-34 age group, almost twice as likely to have a Bachelor's degree, 1.7 times more likely to identify as white than average, and 1.3 times more likely to identify as male than average.

E-Scooter Users Reported Demographics

Age	E-Scooter Riders	Chicago Residents Over 18
18-24	18.0%	12.1%
25-34	54.0%	24.9%
35-44	20.0%	18.3%
45+	8.0%	44.7%

Education	E-Scooter Riders	Chicago Residents Over 25
High School or Less	5.5%	36.3%
Some College or Associate Degree	19.0%	22.4%
Bachelor's Degree	50.0%	23.9%
Graduate or Professional Degree	24.0%	17.0%

Race and Ethnicity	E-Scooter Riders	Chicago Residents
White, not Hispanic or Latino	59.0%	33.3%
Black or African American	11.0%	29.6%
Hispanic or Latino	16.0%	28.8%
American Indian or Alaska Native	1.0%	< 1%
Asian	8.0%	6.6%
Native Hawaiian or Pacific Islander	1.0%	< 1%

Gender	E-Scooter Riders	Chicago Residents
Female	37.41%	51.3%
Male	60.1%	48.7%
Other	0.92%	*not captured by census data*
Prefer Not to Answer	1.57%	*not captured by census data*

Household Income	E-Scooter Riders	Chicago Residents
Less than $50,000	29.4%	42.3%
$50,000 - $100,000	35.9%	25.4%
$100,000 - $150,000	16.3%	14.7%
More than $150,000	18.5%	17.6%

Safety, Satisfaction and Compliance

Sidewalk Riding

Sidewalk riding remained the top issue among non-riders surveyed, with 88% agreeing that people riding e-scooters on the sidewalk was concerning to them. However, only one 311 complaint was recorded regarding sidewalk riding. While it was not a requirement, two vendors indicated in their pilot applications that they would deploy sidewalk riding detection technology to alert riders to correct their behavior during the pilot. However, neither vendor ultimately deployed the technology during the pilot. To date, no e-scooter vendor has proven sidewalk riding detection technology on a large scale in the US.

Geofences

Geofences are digital fences that communicate with e-scooters to slow and/or stop if they enter a restricted area where e-scooters are not permitted. Major geofences in the 2020 pilot were the Bloomingdale Trail (the 606), Lakefront Trail, Central Business District, and portions of the campuses of DePaul University, Loyola University, the University of Illinois at Chicago and the University of Chicago. Data and anecdotal evidence indicate that, compared to the 2019 pilot, geofences in the 2020 pilot performed very well, potentially due to improved device technology/operator implementation and revised geofencing strategies by the City. Overall, based on device data tracking, the average non-compliance rate of geofences of the Lakefront Trail and Central Business District was two-tenths of one percent (0.2%)

- DePaul University was proximate to a major node of scooter deployments and ridership. The University reported consistent issues of e-scooters being left on campus property. DePaul officials also reported that it was difficult to contact vendors to correct issues, noting that it often took over an hour to get through to report an issue.

- On the Lakefront Trail, resident complaints and reports from the Park District early in the pilot indicated that some e-scooter riders were consistently accessing and riding along the trail. In response, the City mandated vendors implement specific geofences at Lakefront Trail access points, after which reports of e-scooters on the Trail and instances of devices appearing on the Trail on data feeds were negligible

Geofence Violations on Lakefront Trail and in Central Business District

	Bird	Lime	Spin
Lakefront Trail devices per day	1.7	0.6	0.4
Central Business District devices per day	4.4	3.4	2.8
Total average devices deployed per day	*1,795*	*2,695*	*2,581*

E-Scooter Parking

Feedback and pilot data indicate the device locking requirement substantially improved parking performance over the 2019 pilot. An observational survey over three days of 261 devices in Lake View and Lincoln Park (which saw among the highest densities of devices) found that 97.3% of devices were locked and parked correctly. Reports of improper parking were significantly reduced in 2020: to 0.16 complaints per 1000 devices per day compared to 0.72 in 2019. This translates to approximately one complaint per day on average during the 2020 pilot. However, survey data of non-riders reveal a split sentiment on parking: 40% said the locking requirement helped improve parking issues, and 40% said it did not.

The most common complaint filed with 311 (73 reports) was about e-scooters locked to private property—typically fences. The second most common complaint filed with 311 (39 reports) was that an e-scooter was locked to a municipal sign pole posting a Residential Disabled Parking permit space. The City relayed these reports to vendors to rectify with extra urgency. The City reserved the right to confiscate an e-scooter that was in violation of pilot rules if the vendor did not resolve the issue within two hours. The City retrieved one scooter locked to a municipal sign pole marking a Residential Disabled Parking permit space. Anecdotal input received from community stakeholders and leaders focused on concerns over the quantity of scooters locked in the public right of way, even if they were locked appropriately. Parking of e-scooters in the parkways on residential streets, while allowed, was often a concern for some.

People with Disabilities:

Among non-rider survey respondents with disabilities, 44% agree that the locking requirement was helpful, and the Mayor's Office for People with Disabilities reports it heard no specific concerns about e-scooter parking in 2020, compared to frequent concerns in 2019. However, 50% of non-rider survey respondents with disabilities said that e-scooters parked on sidewalks were "often" a danger or inconvenience and 66% that e-scooters parked on sidewalks made it more difficult to access a bus stop or train station.

New in 2020, devices were required to have contact information in braille and raised lettering to make it easier for residents with visual impairments to contact e-scooter vendors. About 1.5% of non-rider survey respondents with disabilities said they contacted an e-scooter vendor using braille on a device. The City also received feedback from people with disabilities that braille on some devices was in very small print and difficult to access, located at the bottom of the e-scooter's stem.

Bird educational messaging on proper parking practices to keep pathways clear (credit: Bird)

Conflicts with Bike Parking:

The City's Municipal Code allows scooters and other similar devices (both shared and privately-owned) to park at and lock to bike racks. The City worked closely with vendors to implement best practices for parking methods to mitigate the effect of e-scooter deployments on bike parking. As the pilot progressed, e-scooter operators adjusted parking methods with the goal of leaving sufficient parking available for bicycles.

The photos at right show an example of a vendor taking up a large share of bike rack parking in the first week of the pilot and their response following resident complaints

The City received feedback from residents who felt e-scooters should not be allowed to park at bike racks as well as feedback that scooters and bikes using the same racks was acceptable. Opinions were most strong among non-e-scooter riders who say they use a personal bicycle often or almost daily, with 65% of these respondents agreeing that the e-scooter locking requirement made it more difficult to find bike parking. The city observed rogue "bicycles only" stickers applied to some city bike racks. 311 received a total of four reports (out of 337 total reports) of e-scooters creating a conflict with available bike parking.
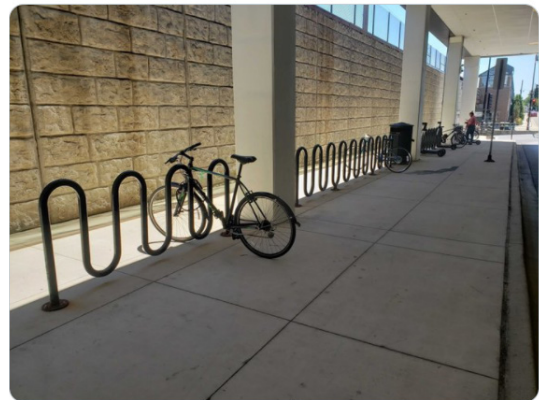

Credit: @hieronymus_burp

Bird ✔
@BirdRide

Replying to @hieronymus_burp @lakecountydem and 4 others

Thank you for reporting this to us, a local team member has removed the Birds from this area.

12:52 PM · Aug 19, 2020 · Twitter Web App
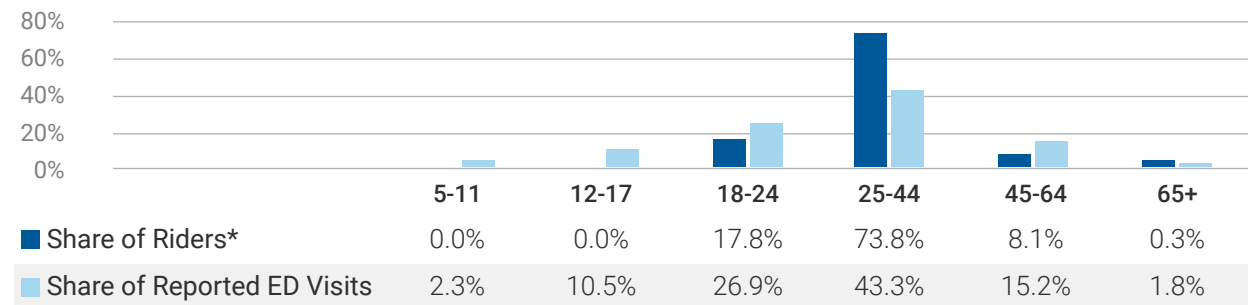

Credit: @streetsblogchi

Rider Safety

Survey results indicate that roughly half of Chicagoans feel there is room to improve scooter safety. 45% of riders say they want safer devices, and 56% of non-riders (and 72% of non-riders with a disability) said they did not use an e-scooter because they were concerned about safety.
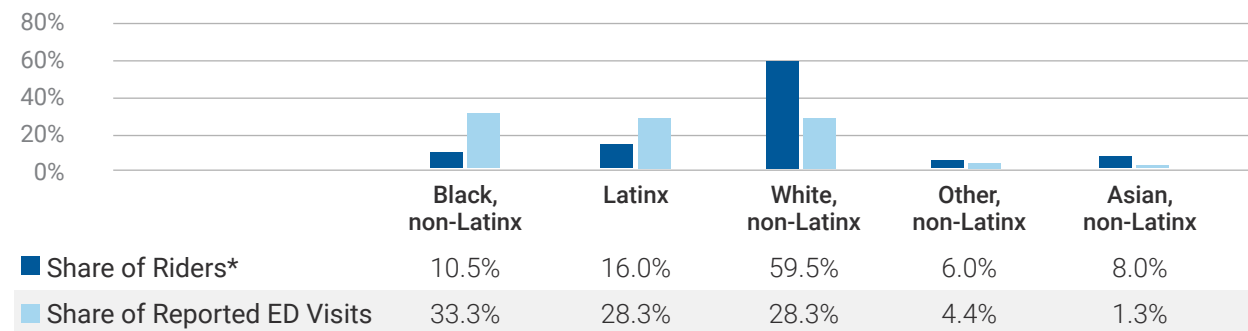
Injuries:

A total of 171 probable emergency department visits due to e-scooter incidents were recorded during the 2020 pilot, compared to 192 in the 2019 pilot. The normalized rate of scooter-related ER visits per scooter trip was slightly higher in 2020 than 2019 (0.27 per 100,000 trip records in 2020 vs. 0.23 per 100,000 trip records in 2019) 93% of recorded ER visits related to e-scooters were e-scooter riders themselves, and 5% were pedestrians injured by an e-scooter. No patients were admitted to the hospital due to an ER visit, and 98% of patients were discharged with non-serious injuries.

Riders identifying as Black and Latinx were disproportionately represented (when correcting for the share of trips made) in records of ER visits related to e-scooters. The reason for this is not known. Although riders were required to be age 18 or older to operate a shared e-scooter, 22 reported injuries were of minors. *See following page for an important note on injury data.*

Reported Emergency Department (ED) Visits by Age

	5-11	12-17	18-24	25-44	45-64	65+
■ Share of Riders*	0.0%	0.0%	17.8%	73.8%	8.1%	0.3%
■ Share of Reported ED Visits	2.3%	10.5%	26.9%	43.3%	15.2%	1.8%

Reported Emergency Department (ED) Visits by Race/Ethnicity

|	Black, non-Latinx	Latinx	White, non-Latinx	Other, non-Latinx	Asian, non-Latinx
■ Share of Riders*	10.5%	16.0%	59.5%	6.0%	8.0%
■ Share of Reported ED Visits	33.3%	28.3%	28.3%	4.4%	1.3%

Based on rider survey

Helmet Use and Availability:

According to survey results, 25% of e-scooter riders say they wore a helmet sometimes (32% in the Equity Priority Area) and 9% say they wore a helmet often.

Per the terms of the pilot, vendors were required to offer riders free helmets. Vendors reported giving away a total of 998 free helmets, including 718 from Spin, 200 from Lime and 80 from Bird. Two operators—Bird and Lime— stated in their pilot applications that they would implement "helmet selfie" incentives: riders take a selfie in the e-scooter app and earn ride credits if the app sees the user wearing a helmet. Lime was not able to deploy the technology. Bird reported 87 selfies collected.

Credit: Spin

Credit: Spin

Education and Communication:

Vendors were required to meet new education requirements in 2020 for e-scooter riders and the public. Vendors largely communicated rider education through their apps, pushing messages about safety and rules of operation—with a special focus on courteous operation in the public way and proper parking. Most notably, vendors were required to develop a safety quiz, and all riders renting a shared e-scooter in Chicago in 2020 were required to answer at least 80% of questions correctly on the quiz before being able to start their first ride. Vendors also pushed out rider education messaging on social media. Both Spin and Bird also ran educational advertisements on CTA vehicles and at CTA stations, with Bird specifically targeting areas with higher rates of complaints about poor parking behavior.
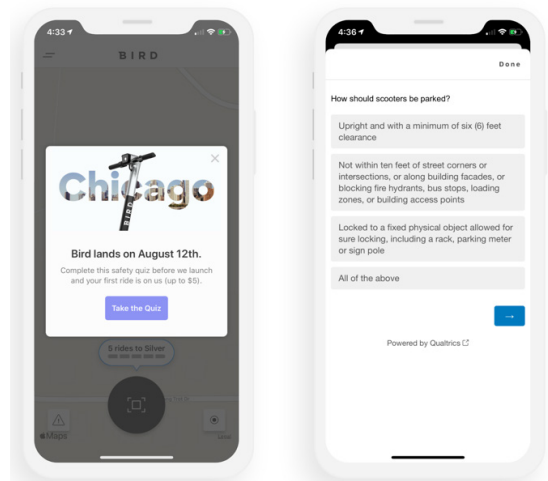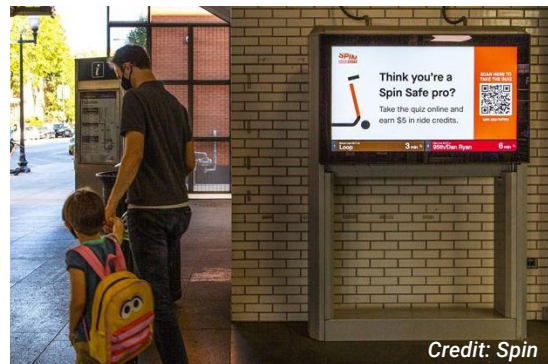
Safety quiz shown in the Bird app (credit: Bird)

NOTE ON INJURY DATA: The Chicago Department of Public Health analyzed potential injuries related to shared e-scooters during the 2020 pilot by analyzing hospital emergency department visit data. These results should be interpreted very cautiously due to several important limitations. First, the data only captured people with injuries seen at Chicago EDs (and Chicago residents seen at non-Chicago Illinois EDs). People who were injured, but did not seek care, or who were seen in non-emergency department medical settings are not included. Second, the data only includes injuries that were labeled appropriately in the ED medical record. It is possible that injured individuals may have been misclassified and not identified. Finally, this data is only an estimate; CDPH cannot assign injuries as being e-scooter pilot related. In addition, in 2020, CDPH did not ask Chicago hospitals to tag "e-scooters" injuries as they did in 2019 for the first e-scooter pilot

311 Reports

During the 2020 pilot, 337 reports were filed through 311 for e-scooter-related issues. This equates to 2.7 reports per day on average, but 311 report rates peaked when the pilot launched and declined over the duration of the pilot. The average number of 311 reports-per-day-per-device was 75% lower than in 2019. Nearly half of 311 reports were either blank or did not list a specific violation of pilot rules (e.g. resident wanted all e-scooters be removed from their neighborhood). The most common issue reported was e-scooters locked to private property, especially fences (21.7% of all reports)

Vendors were required to rectify reported problems within two hours and the public was encouraged to first contact e-scooter vendors to resolve any issues before contacting 311. Only 11% of non-riders surveyed agreed it was easy to contact e-scooter vendors to resolve an issue, and only 13% of non-riders agreed e-scooter vendors resolved issues in a timely manner. Just under 40% of riders said it was easy to get customer support.

311 Reports per Day

Month	Reports
Aug.	3.0
Sep.	4.1
Oct.	3.1
Nov.	1.4
Dec.	1.2

311 Reports

Reported Issue	# of Reports
Reported Issues that Violated Pilot Rules	
E-scooter locked to private property	73
E-scooter locked to handicap pole	39
Scooter blocking public way (sidewalk, alley, etc.)	29
E-scooter parked unlocked	15
E-scooter parked on private property (driveway, lawn)	14
Resident unable to reach e-scooter vendor	3
E-scooter on 606 or Lakefront Trail	2
E-scooter riding dangerously	1
E-scooter riding on the sidewalk	1
Reported Issues that Did Not Violate Pilot Rules	
Issue unclear/ No violation of pilot rules	69
Comment blank/ Not enough information	32
Request for all e-scooters to be removed from area	26
E-scooters on parkway or locked to tree	20
General dislike for e-scooters	9
E-scooters taking up too much room on bike racks	4

City Enforcement of Vendors

The City created a transparent enforcement policy (available online at www.chicago.gov/scooters) to improve clarity with how the City would assess vendor compliance and the actions the City may take for non-compliance. Vendors reported that, for the most part, enforcement policies were clear. However, multiple vendors expressed a desire to be made aware of violations more quickly.

Enforcement Actions:

BACP conducted three field enforcement missions in partnership with CDOT to check for compliance on device requirements, operational and parking compliance, and vendor responsiveness to issues. Device information was also pulled from data feeds to check for compliance with deployment requirements throughout the pilot. Per the terms of the pilot, Equity Priority Area rebalancing requirements were checked twice per day, with each instance of failed rebalancing resulting in a violation (i.e. up to two violations per day). The first round of enforcement occurred the week of August 31, and vendors with violations were sent "Notices to Correct" for each violation. Notices to Correct are not violations per se, but rather an official warning with a mandated date upon which compliance must be achieved. Three subsequent rounds of enforcement were conducted the weeks of October 4, November 16, and upon the conclusion of the pilot. Violations observed in these subsequent missions resulted in "Administrative Notices of Violation" or, citations.

A total of 14 Notices to Correct and 256 Administrative Notices of Violation were issued during the pilot, as shown on the next page.

Vendor Response to Enforcement:

After receiving Notices to Correct (warnings) for failure to meet Priority Area requirements and minimum device requirements, Lime soon achieved compliance, while Bird did not. After beginning to receive administrative notices of violations (citations) for not meeting the requirement to have 50% of devices deployed in the Equity Priority Area, Bird achieved compliance. By the end of the pilot, Bird did not achieve compliance on minimum device requirements nor the requirement to distribute 2.5% of devices to each of the 20 sub-areas within the Equity Priority Area.

3
Enforcement field and data missions

14
Notices to Correct (Warnings) issued

258
Administrative Notices of Violation (Citations) issued

74%
Share of citations issued related to failure to comply with Equity Priority Area requirements

96%
Share of citations issued to a single vendor—Bird

Enforcement Actions

Notices to Correct (Warnings)	Bird	Lime	Spin
Failure to rebalance required share of e-scooters in each of 20 Priority Sub-Areas	1	1	0
Failure to deploy minimum number of required devices per day	1	1	0
Failure to correct e-scooter parked improperly within two hours of being reported	1	1	1
Failure to have an operational warning bell on one or more inspected scooters	1	1	0
Failure to have a clear opt-in policy for sharing data with third parties	0	1	1
Failure to display an app-based rider quiz that includes safety questions	1	1	0
Failure to provide vendor information on e-scooter in braille	1	0	0
Total Notices to Correct	**6**	**6**	**2**

Administrative Notices of Violation (Citations)	Bird	Lime	Spin
Failure to correct e-scooter parked improperly within two hours of being reported	1	1	1
Failure to have an operational warning bell on one or more inspected scooters	0	1	0
Failure to provide vendor information on e-scooter in braille	3	0	0
Failure to rebalance required share of e-scooters in each of 20 Priority Sub-Areas	144	5	0
Failure to rebalance required share of e-scooters in Equity Priority area	40	1	0
Failure to deploy minimum number of required devices per day	59	0	0
Failure to have an operational warning bell on one or more inspected scooters	0	1	0
Total Administrative Notices of Violation	**247**	**8**	**1**

Coverage, Distribution and Equitable Access

Geographic Distribution of E-scooters

The 2020 pilot featured an Equity Priority Area covering approximately 45% of the pilot area. Vendors were required to deploy 50% of their devices to the Equity Priority Area, including a further requirement to deploy 2.5% of their e-scooter fleet to 20 sub-areas within the larger Equity Priority Area. Outside the Priority Area vendors could choose how much or how little of the city to serve.

Coverage of Equity Priority Area:
Over the course of the entire pilot, the City's standard was achieved with 53.3% of devices deployed within the Equity Priority Area. Vendors varied in the extent and consistency to which they achieved the coverage target: Spin met the coverage requirement 98.8% of pilot days, Lime 72.4% of pilot days, and Bird 44.7% of pilot days.

Coverage Outside the Equity Priority Area:
Outside the Equity Priority Area, the pilot saw a significant concentration of deployments to a relatively small geography in the North and Near West Sides of the city. On average, about 1/3 of all devices were deployed to just eight community areas.

Avg Daily Percent Share of Devices Deployed to the Priority Area

	Bird	Lime	Spin
August	46.0%	41.0%	56.2%
September	44.7%	53.4%	57.8%
October	48.2%	53.5%	55.3%
November	57.6%	53.4%	55.9%
December	59.8%	54.7%	55.9%
Entire Pilot	**50.43%**	**51.52%**	**56.26%**

Avg Total Daily Share of Devices Deployed, Top-10 Community Areas

| Community Area	Share
Lake View	6.84%
Lincoln Park	6.48%
West Town	5.69%
Near West Side	4.40%
Austin	3.33%
Logan Square	3.19%
Near North Side	2.89%
Belmont Cragin	2.86%
Uptown	2.73%
Auburn Gresham	2.63%

Equity Priority Area Distribution

In the 2019 pilot, the City discovered that many e-scooters were deployed to the Equity Priority Area in the morning and then ridden or rebalanced out of the area in the afternoon and evening, leaving the areas underserved. In 2020, Equity Priority Area vendor device deployment compliance was checked both in the morning and afternoon. As a result, device availability substantially improved throughout the day in 2020. Additionally, the Priority Area was divided into 20 smaller subzones, and vendors were required to deploy 2.5% of their devices to each zone.

Spin consistently met the distribution requirement over the course of the pilot. Lime had strong compliance also, falling short of the requirement by 0.1% percentage points in two zones when data are averaged over the entire pilot. Bird's performance in meeting the requirements in many Equity Priority Sub-Areas was inconsistent.

Avg Distribution of Vendor E-scooters Fleet by Equity Priority Sub-Area

Bird

- 0.9% - 1.9%
- 2.0% - 2.4%
- 2.5% - 7.1%

Lime

- 2.4%
- 2.5% - 2.9%

Spin

- 2.8% - 3.0%
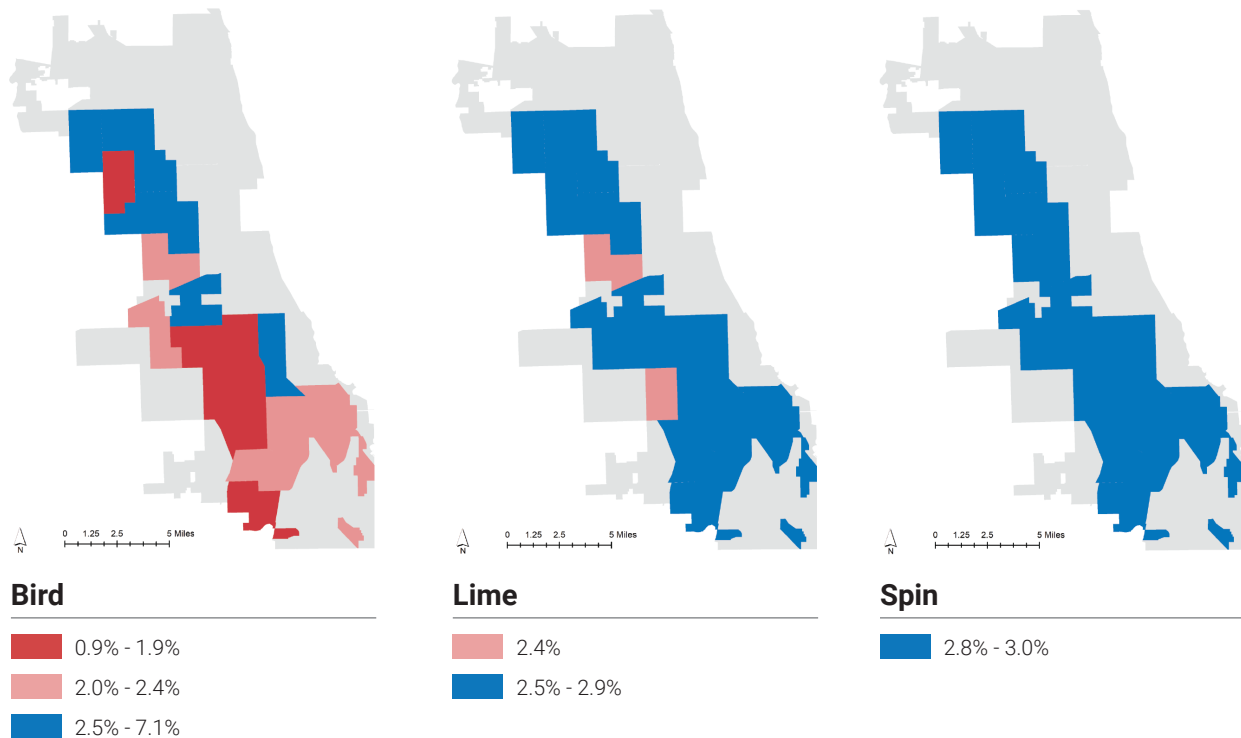
Physical Access to Devices:

The number of devices deployed reached their highest points in mid- and-late-October, peaking at just over 9,000 on October 26. Deployment data pulled from the pilot mid-point—on October 14—show that nearly half of the Priority Area was within a two-minute walk of a device, and almost the entire Priority Area was within a five-minute walk.

Access to Devices

October 14, 2020	Entire Pilot Area	Priority Area
Pct area w/in 2 minutes of a device	36.2%	47.8%
Pct area w/in 5 minutes of a device	72.2%	92.0%

Priority Area residents who did take a shared e-scooter trip reported improved mobility and accessibility. Among those riders, 80% said that shared e-scooters are more convenient than other travel modes, 85% said e-scooters made their travel more efficient and 87% said e-scooters made it easier to reach a destination or complete a trip. Further, 64% of riders who live in the Priority Area said that shared e-scooters were useful in meeting their daily transportation needs.

Just under 75% of riders in the Priority Area agreed a shared e-scooter was usually available when they wanted one—on par with the share of all riders. Survey data indicate however that riders in the Priority Area often had to walk longer distances to reach a device, with 15% saying they often had to walk more than five minutes, compared to just 10% of all riders.

Duration of Walk to Access E-scooter

	All	Priority Area	Black or African American	Hispanic or Latino
Often had to walk < 2 minutes	29%	25%	28%	27%
Often had to walk > 5 minutes	28%	27%	13%	17%

Priority Area = Residents whose self-identified home zip codes fell within the Equity Priority Area

9,091

Highest number of devices deployed at single point in time

87%

Share of riders who said e-scooters made it easier to reach their destination

75%

Share of riders who said an e-scooter was usually available when they wanted one

Affordability and Payment

Cost:

The City did not set the prices that vendors could charge for e-scooters in either the 2019 or 2020 pilots except to require that operators offer reduced-price options for riders with restricted incomes. In the 2020 pilot, all vendors charged a $1.00 unlock fee while Bird charged $0.37 per minute and Lime and Spin charged $0.39 per minute for a standard ride. These fees represented a substantial increase from the $0.15 per minute cost charged by most vendors in the 2019 pilot.

By far the top complaint the City heard from riders throughout the pilot and in the survey was that shared e-scooters cost too much. Just 56% of riders agreed that shared e-scooters were affordable, while 11% were neutral and 33% disagreed.

Lime and Bird both offered 50% discounts on per-minute costs for riders that started or ended in the Priority Area. Two-thirds of Priority Area riders agreed that shared e-scooters were affordable, much higher than the 55% share of all riders. 2020 pilot vendors report just under 1,200 riders who signed up for low-or-moderate-income (LMI) discount programs—up 60% over 2019.

Banking Barriers:

All three vendors offered cash-based access options, and two vendors offered substantially more access points than 2019, but reported usage was extremely low. Lime and Bird each utilized a network of a couple hundred retailers throughout the City where riders could pre-pay for rides in cash. Spin had "Cash Cards" available for sale at their warehouse and at least one community partner site. Bird reported two unique riders who used their cash-based option for a total of 46 rides, Spin reported no riders who purchased one of their Cash Cards, and Lime did not provide reliable data. Vendors also reported that their devices could be accessed with prepaid debit cards, but no usage data is available for those transactions.

Smartphone Barriers:

All three vendors offered a text-to-ride feature for riders without a smartphone. Bird reported one unique rider who took one ride using the functionality, Spin reported no riders, and Lime was not able to provide data on use.

$1.00
Fee to unlock an e-scooter

$0.39
Per-minute cost for Lime and Spin; $0.37 for Bird

+112%
Increase in standard cost of an 18-min ride in 2020 pilot compared to 2019

55%
Share of riders who agreed e-scooters were affordable

Community Outreach

Vendors were required to meet new education and outreach requirements for engaging both e-scooter riders and all Chicago residents. Vendors met key requirements in rider education but generally performed poorly in wider community outreach, although performance varied among vendors.

Vendors were required to partner with CDOT's SAFE Ambassadors at a minimum of two community events on the South and West Sides each month, for a total of eight events. Vendors were also required to host learn-to-ride events and helmet giveaways and distribute educational materials to community organizations, businesses and aldermanic offices. Due to COVID-19, events could be in-person or virtual.

Vendors were asked to self-report their performance on education requirements, including events hosted:

Spin reported 18 in-person and digital outreach and education events, including eight digital and 10 in-person events as well as additional learn-to-ride and helmet giveaway events.

Bird reported eight total education and outreach events, which included learn-to-ride and helmet giveaway events, as well as additional aldermanic and community organization meetings.

Lime reported two helmet giveaways and rider safety events, in addition to sharing nationally-broadcast virtual rider safety lessons.

Credit: Spin

Credit: Bird

Credit: Lime

Seated Devices

Operators were strongly encouraged, but not required, to deploy seated devices that provide a more accessible option for riders with disabilities. City staff actively engaged with vendors throughout the pilot, answering logistical questions and regularly checking in on progress. Bird and Lime deployed a small number of devices that essentially affixed a pole and a seat onto the base of a standard scooter, while Spin deployed a device that resembled a cross between an e-scooter and a moped.

All three vendors deployed only a very small number of seated devices. These devices were not available in operators' apps as part of the shared fleet, but were instead available in closed communities in the closing weeks of the pilot.

Credit: Bird

Credit: Spin

Feedback on the Future of E-scooters

Public Opinion

Public opinion on the future of shared e-scooters in Chicago varied greatly, particularly between e-scooter riders and non-riders. In general, shared e-scooters are very popular with riders and unpopular with non-riders.

Rider Opinion:
88% of riders believe shared e-scooters should be part of Chicago's transportation system, including 49% who strongly agree. 91% of respondents said they intend to continue using shared e-scooters in the future. These sentiments were consistent for riders within and outside the Equity Priority Area.

Non-Rider Opinion:
One-third of residents surveyed who never rode an e-scooter still said the service should be part of the transportation system, although that support is tepid (mostly rated as "somewhat agree"). 64% of non-riders surveyed said e-scooters should not be part of Chicago's transportation system, including 43% who strongly disagreed. Non-riders surveyed who live within the Priority Area agreed more than the average respondent that shared e-scooters should be part of Chicago's transportation system (40%). Among survey respondents who are Divvy riders but did not use a shared e-scooter in 2020, nearly half said they support shared e-scooters in Chicago.

91%
Share of riders who intend to continue using e-scooters in the future

+10%
Support for shared e-scooters among non-riders between 2019 and 2020 pilot surveys

Share Of Survey Respondents Who Say That E-Scooters Should Be Part Of Chicago's Future Transportation System, 2019 vs 2020:

Category	2019	2020
Riders Surveyed	86%	88%
Non-Riders Surveyed	21%	31%
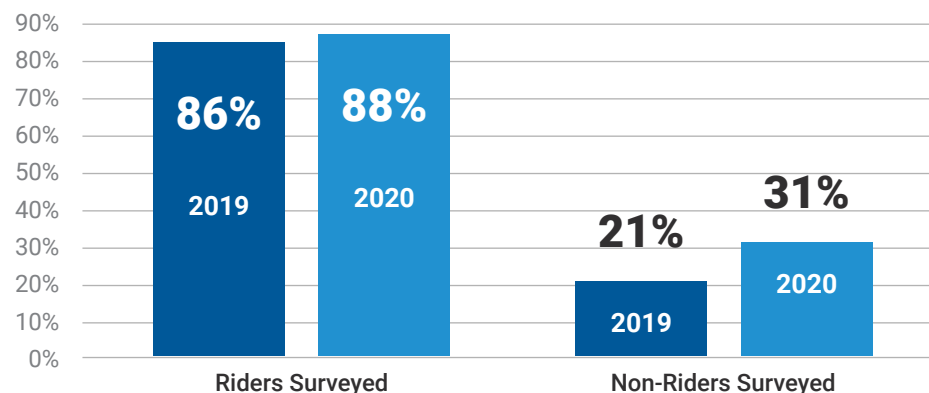
Feedback on Future Improvements

In separate surveys, shared e-scooter riders and non-riders were both asked what improvements they wanted to see in potential future e-scooter programs.

Feedback from Riders:

The highest priorities among all riders are integrated Ventra payment and more dedicated lanes on streets, although dedicated lanes were rated noticeably lower for Priority Area riders. Riders want to be able to operate shared e-scooters downtown and on the Lakefront Trail, want more e-scooters and want to see safer/more robust devices (larger wheels, stronger brakes). There is moderate demand for seated devices, particularly among Priority Area riders. Also, riders asked for limits on the size of a hold a vendor can place on a their credit card, and that vendors should allow riders to pay-as-you-go for the cost of a ride, as opposed to being required to load increments of money onto their accounts.

Feedback on Future Improvements (E-Scooter Riders)

Future Improvements (Riders)	All Riders	Priority Area*
Integrate payment with Ventra	58%	53%
More e-scooters	45%	49%
Allow e-scooters on the Lakefront Trail	41%	45%
Allow e-scooters to operate downtown	47%	45%
More robust devices (larger wheels, stronger brakes)	45%	43%
More dedicated lanes on streets	58%	41%
Seated or other accessible devices	20%	27%
Park e-scooters in designated docks	21%	17%
Other	16%	16%
Prevent e-scooters from operating on sidewalks	23%	16%
Just one company operating	14%	14%
Fewer e-scooters	2%	1%

Priority Area = Residents whose self-identified home zip codes fell within the Equity Priority Area

Feedback from Non-Riders:

Among non-riders, the highest priorities are preventing sidewalk riding and requiring parking e-scooters in designated racks or docks. A total of 87% of non-riders surveyed agreed that at least some e-scooters should be parked in docks or racks. 67% of non-rider survey respondents agreed that e-scooters should not be allowed to park on residential streets, including 54% who strongly agreed. Non-riders also say that fewer e-scooters, integrated Ventra payment and more dedicated lanes on streets would improve future shared e-scooter programs. Also, feedback was received that vendors should be held to stricter customer service requirements.

Advocates for people who are blind or have visual impairments have strongly recommended that e-scooters be required to emit a low sound to warn pedestrians when they are approaching and where they are parked.

Opinions on future improvements differ substantially among non-riders who have a positive opinion of shared e-scooters, indicating specific improvements that may attract new riders. These respondents most want to see integrated Ventra payment, e-scooters downtown and more dedicated lanes on streets.

Feedback on Future Improvements (Non-E-Scooter Riders)

Future Improvements (Non-Riders)	Non-Riders	Non-Riders, Positive Opinion*
Prevent e-scooters from operating on sidewalks	71%	40%
Park e-scooters in designated docks	67%	39%
Fewer e-scooters	38%	2%
Integrate payment with Ventra	35%	65%
More dedicated lanes on streets	33%	47%
Other	26%	17%
Just one company operating	21%	13%
Allow e-scooters to operate downtown	19%	48%
More robust devices (larger wheels, stronger brakes)	19%	33%
Seated or other accessible devices	18%	33%
Allow e-scooters on the Lakefront Trail	12%	37%
More e-scooters	8%	31%

Survey respondents who did not take a shared e-scooter trips in 2020 but agreed that e-scooters should be part of Chicago's transportation network

Feedback from Vendors:

The City held multiple meetings with vendors and administered an end-of-pilot survey for them to provide feedback. The following input was received from one or more vendors:

- Shared e-scooters should be allowed to operate in the Central Business District and the Lakefront Trail.
- Hours of operation should be extended to midnight.
- More on-street infrastructure is needed to reduce sidewalk riding.
- More parking infrastructure is needed.
- Fleet requirements should be more dynamic and flexible, especially accounting for demand.
- The City should provide more facilitation in connecting vendors with community organizations.
- Vendors should be notified of infractions as soon as possible, instead of via citations mailed weeks later.
- The fee structure should be amended to allow greater flexibility and be based on trips as opposed to devices deployed.
- Vendors should have reward incentives for high ridership in equity areas and compliance with pilot rules.
- Vendors should be required to hire W-2, full-time employees.
- Vendors should be allowed flexibility of employment models.

APPENDIX

Complete 2020 Pilot Objectives:

For additional information on the pilot, visit www.chicago.gov/scooters. All objectives that are qualified (i.e. improve, reduce) are intended to be compared against the 2019 pilot.

SAFETY:
- Test new policies, technologies and equipment to improve safety and comfort of riders and non-riders.
- Reduce dangers and inconveniences to people with disabilities.
- Mitigate conflicts and inconveniences caused to other street users, especially pedestrians and transit riders.
- Reduce illegal sidewalk riding.
- Improve parking compliance.

EQUITY AND ENGAGEMENT:
- Improve mobility and accessibility outcomes for residents who face elevated economic, health, mobility and/or accessibility barriers.
- Improve resident access to scooters throughout the day in equity priority areas.
- Achieve a more balanced geographical distribution of devices across priority areas throughout the day.
- Improve the ease of accessing e-scooters for unbanked or underbanked residents.
- Improve the ease of accessing e-scooters for residents without smartphones.
- Test new educational outreach strategies and methods.
- Involve new community stakeholders in developing the pilot, in engaging with and educating residents during the pilot and in evaluation.

OPERATIONS:
- Reduce administrative burden on the City.
- Understand opportunities and complications of operating e-scooters on a larger geographical scale.
- Test more intentional partnerships with CTA at stations and bus stops, including e-scooter parking.
- Improve geofencing effectiveness.
- Reduce the environmental impact of e-scooter company operations.
- Improved vendor compliance with data sharing and improved ease of accessing vendor data.
- Create and trial a clarified enforcement policy.

EVALUATION:
- Develop a reliable and meaningful assessment tool related to the pilot purpose.
- Deploy a public evaluation survey that gathers a more representative sample.
- Better understand purposes for e-scooter trips.
- Better understand which modes e-scooter trips replaced, where applicable.

Analysis on Impact of Weather on E-scooter Trips

To better understand the correlation between weather factors and number of scooter rides, regressions were run of total daily trips on daily high temperature, low temperature, and precipitation.

A statistically significant correlation was found between daily temperature levels and the number of daily trips, but no statistically significant relationship was found between daily precipitation and number of scooter trips.

Temperature and Daily Rides:

Table 1 demonstrates the regression findings for the relationship between temperature and total daily trips. It may be interpreted to demonstrate that for every degree increase in higher temperatures, there was an average increase of 147 e-Scooter trips. Similarly, every degree increase in daily low temperature resulted in an average increase of 162 rides. In both cases, the strongest level of statistical significance-- a p-value smaller than 0.01-- is seen designated by three asterisks.

Figures 1 and 2 show the relationship graphically; each point designates the temperature and total trip relationship for a given day and each line visualizes the best fit line between data points. A strong correlation is seen through the steep slope of these lines.

Table 1:

Total e-Scooter Trips and Temperature

	Dependent variable:	
	Total Trips	
	(1)	(2)
High Temp	146.780***	
	(11.102)	
Low Temp		162.297***
		(13.363)
Constant	-4,416.113***	-2,666.661***
	(749.676)	(675.081)
Observations	123	123
R^2	0.591	0.549
Adjusted R^2	0.588	0.546
Residual Std. Error (df = 121)	1,982.661	2,080.954
F Statistic (df = 1; 121)	174.792***	147.509***

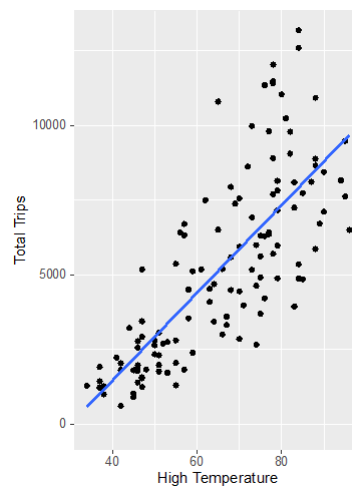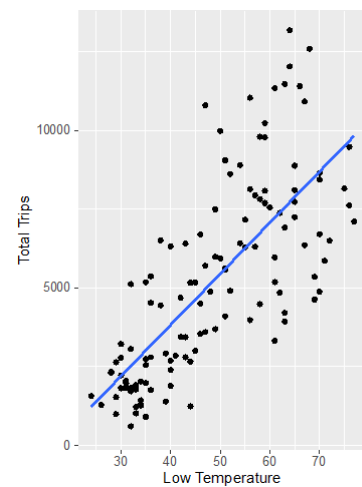Note: *p<0.1; **p<0.05; ***p<0.01

Figure 1:

Figure 2:

Precipitation and Daily Rides:

Table 2 demonstrates the relationship between precipitation and daily rides. Unlike the relationship between total trips and temperature, there is not a statistically significant relationship between the two, with a p-value greater than 0.1.

Figure 3 plots total daily trips against precipitation levels, and it shows that there is not the same type of linear relationship between these two variables that we saw in the relationship between temperature and total rides.

Table 2:

Total e-Scooter Trips and Precipitation

	Dependent variable:
	Total Trips
Precipitation	-2,149.910*
	(1,174.236)
Constant	5,398.464***
	(294.430)
Observations	123
R^2	0.027
Adjusted R^2	0.019
Residual Std. Error	3,057.841 (df = 121)
F Statistic	3.352* (df = 1; 121)
Note:	*p<0.1; **p<0.05; ***p<0.01

Figure 3: