LADOT

Year One Snapshot

A Review of the 2019-2020
Dockless Vehicle Pilot Program

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FINAL DRAFT

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THE TIMES

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Welcome to the Dockless Vehicle Pilot Program **Year One Snapshot**.

People in Los Angeles deserve safe and affordable transportation choices to get around the city. Los Angeles is a sprawling metropolis spanning 503 square miles. Its sheer size and geographic variability create challenges for the city's transportation network. The Los Angeles Department of Transportation's (LADOT) Dockless Vehicle Pilot Program aimed to balance the needs of multiple stakeholders across the city: technology companies who wanted to provide a new kind of transportation service; Angelenos who needed ways to get around, people concerned about sidewalk clutter and safety; leaders from low-income communities of color who wanted to ensure equal access to the program; and environmentalists that were both worried about the potential damage to sensitive habitats and excited about a new low-emission way to travel. Our goal was to allow an even playing field for companies to enter the market, while balancing a streamlined approach to regulation with an urgency to resolve complaints. In order to open the market, we had to provide clear assurance that we could monitor a large program with multiple operators, hold them accountable when needed while allowing enough room for thoughtful innovation, testing, and learning.

The Dockless Vehicle Pilot Program Year One Snapshot summarizes LADOT's experience managing dockless shared micromobility services — electric scooters and bikes—between April 2019 and March 2020. During that time frame, Angelenos took a total of 10.3 million trips on electric scooters and bikes to travel to work or school, to access healthcare and childcare services, and to access transit.

This report evaluates the Pilot Program and its eight permitted operators through the lens of safety, equity, access, and the community's quality of life. Making groundbreaking use of dockless vehicle trip data, compliance audit findings, user surveys, and other data sources, this report highlights the key challenges and opportunities related to dockless mobility. Lessons learned from the Pilot Program will inform data privacy and digital management policies and program direction for future shared mobility programs in Los Angeles.

01

Mobility and Technology in Los Angeles

Transportation Technology in Los Angeles

Los Angeles has a rich history of introducing new transportation technologies. From the birth of the Pacific Electric Railway Company's interurban streetcar network to the more recent expansion of shared urban mobility options, Los Angeles has always served as a laboratory for new mobility services and transportation policy innovation.

Los Angeles has fostered one of the most robust transportation technology marketplaces in the U.S. The advancement of pioneering mobility partnerships like the BlueLA all-electric car sharing, LA Metro Bike Share, and the development of the Mobility Data Specification (MDS) serve as indications of a broader shift in how the Los Angeles Department of Transportation (LADOT) engages with companies. We are testing out models and tools that invite companies to bring new ideas to the city without creating monopolies, vendor lock-in, or black box solutions. This approach empowers LADOT to focus on what we do best: managing, building, and operating streets and sidewalks.

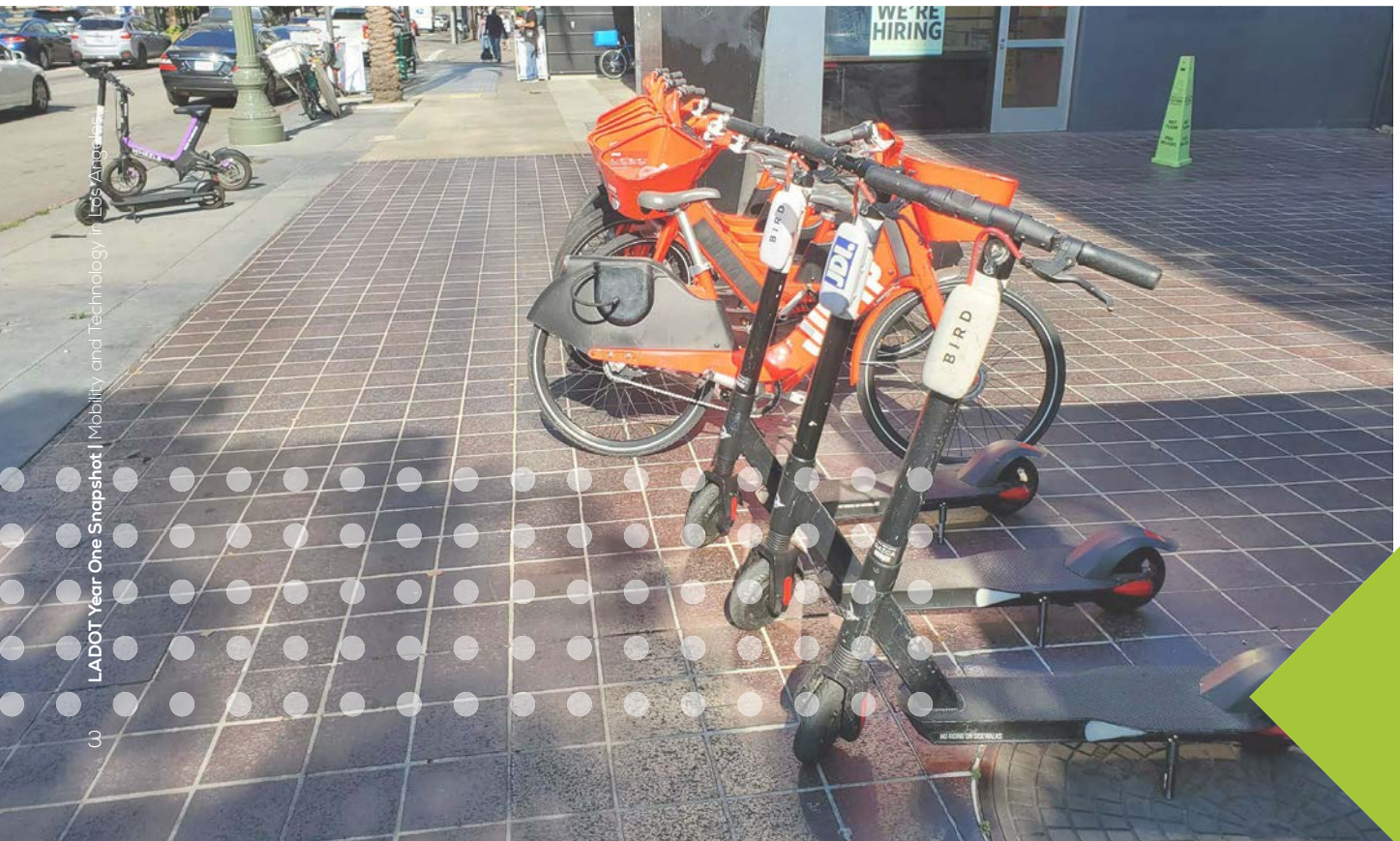
Perhaps more so than any other city in the United States, Los Angeles has unique transportation needs that require diverse mobility solutions. New investments in urban mobility made by LADOT, Metro, and private operators have led to a rich ecosystem of mobility products and services providing meaningful transportation options for Angelenos.

LADOT openly encourages transportation innovations that solve real mobility problems. Instead of taking a passive stance or inundating the market with stifling regulations, LADOT created a sandbox where new mobility services could test their service models. Though operators launched service without permission from the City, LADOT did not jump to remove these operators from the market. LADOT saw this as an opportunity to leverage new technology, while testing new regulatory frameworks and tools to protect the public right-of-way.

The Age of Dockless Mobility

Los Angeles has become a testing ground for new transportation technologies. This began in 2012 with the introduction of ride-hailing services like Uber and Lyft and continued with the launch of shared dockless mobility services, like shared electric scooters, bikes, and other seated small vehicles. What is unique about the current phenomena of shared micromobility is its dockless nature: operators and users are no longer bound to a limited number of docking stations. Instead, vehicles can be deployed, unlocked, ridden, and dropped off anywhere in the city's right-of way.

In November 2017, Lime debuted dockless bikes in Watts and San Pedro and Ofo deployed a small fleet of dockless bikes in Griffith Park. Less than a year later, Bird and Lime released their electric scooters on the streets of Los Angeles without City approval. These unpermitted launches, where operators flood the market before the city establishes regulations, have become a staple for tech companies. With dockless mobility though, they immediately prompted concerns of public safety, accessibility, and right-of-way management. Both small and established operators have followed suit with their own rogue launches in the hopes of entering the market before the City regulates them. To future-proof our program, LADOT positioned its Dockless Vehicle Pilot Program as a comprehensive framework for governing all shared micromobility options, irrespective of mode type and business model.



A Business Model Built on Venture Capital

The volatile nature of the dockless micromobility industry reflects the challenges of regulating such a dynamic mobility model. Venture capital (VC) funding rounds are a key to understanding the direction of the mobility market and how operators make decisions. Many startups raise capital through external funding to grow their business. Funding rounds provide outside investors the opportunity to inject cash into a growing company that they believe can provide a significant return on investment in the future.

Figure 1. Operator Funding Rounds (March 2020)

Operator	Funding Round
Bird	Series D
Bolt	Series A
JUMP	Public/Initial Public Offering (IPO) complete; Lime acquired Jump's assets in May 2020
Lime	Series D
Lyft	Public/IPO complete
Sherpa	Subsidiary to Bird
Spin	Series A
Wheels	Series A

While the path for each startup and the timeline for funding varies, operational and business decisions are often tied to attracting more funding and asserting investor confidence. On the surface, a rogue launch is a means to an end—gaining access to a market. However, rogue launches are a signal to VC investors that a city like Los Angeles is open for business. The reliance on VC funding to sustain and scale business operations means operators heavily weigh the priorities of their investors in their decision-making. While these priorities may be at odds with local regulations and public interest objectives, in some cases, they intersect. In an effort to win and retain customers, operators oversaturate sidewalks with devices to ensure they are readily available.

02

The Pilot

Following the rapid influx of unpermitted dockless vehicles in Los Angeles, the Los Angeles City Council unanimously approved a moratorium in March 2018 to temporarily ban dockless vehicles until officials could approve rules governing their use. During this time, LADOT worked to quickly develop new rules and regulations governing the operation of dockless and adaptive vehicles in Los Angeles.

Several months later, the City Council unanimously approved the Dockless On-Demand Personal Mobility Rules & Guidelines (Version 0.1), which provided a regulatory framework for dockless modes like shared electric bikes and scooters and established requirements for a One-Year Permit Program. LADOT initially administered a 120-day conditional permit followed by a 45-day extension to allow operators time to respond to the new guidelines and submit One-Year Permit Program applications. A total of 11 operators responded, eight of which received permits to operate electric scooters and bikes after the conditional permit period.

BIRD BOLT JUMP Lime

lyft S SPIN WHEELS

Pilot History Timeline

2018

March
City Council unanimously approves moratorium to temporarily ban dockless vehicles.

September
City Council unanimously approves the Dockless On-Demand Personal Mobility Rules & Guidelines (Version 0.1).

November
LADOT administers a 120-day Dockless On-Demand Personal Mobility Conditional Permit.

December
One-Year Permit Program application is released.

2019

January
Conditional Use Permits are extended 45 days.

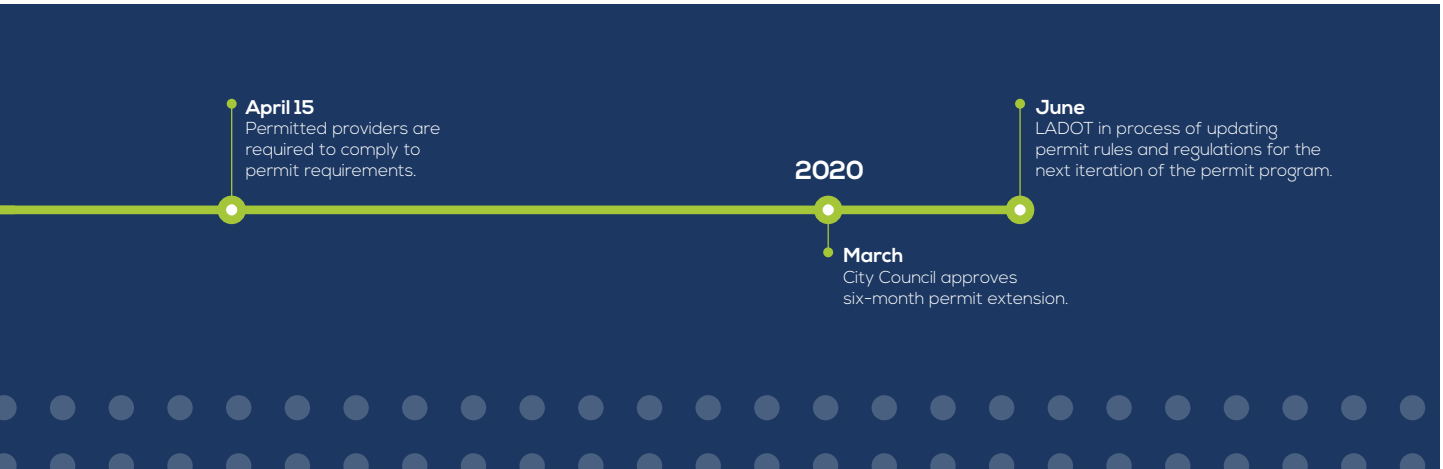
March
One-year permits are issued

Rather than begin with a permanent permit program, the City opted to create a One-Year Pilot Permit for On-Demand Personal Mobility to test and learn new tools and enforcement mechanisms through a pilot model. The pilot structure allowed LADOT to quickly adapt to the rapidly evolving industry, test different management tools, explore the effect on different communities, and ensure that dockless vehicles aligned with the City's goals. Learnings from the Pilot Program help inform state and local policy, data governance, and mobility management more broadly. LADOT's Dockless Vehicle Pilot Program was comprehensive in its requirements; however, it adopted a degree of flexibility that created opportunities for learning and collaboration with the operators. The program established a marketplace that enables service and innovation and promoted the use of MDS for right-of-way stewardship.

What did LADOT seek to learn?

Through the Dockless Vehicle Pilot Program, LADOT sought to understand dockless, on-demand technology and the implications on mobility, city streets and the people that use them. Each section of this report highlights what LADOT learned throughout the pilot process. Overall, the pilot period enabled LADOT to accomplish the following:

- Understand dynamic and evolving marketplace of private mobility operators
- Better understand public safety, accessibility and equity concerns
- Use dockless trip data to understand mobility trends and track operator performance
- Deploy and test digital tools to manage operations and directly alleviate neighborhood concerns
- Learn from peer cities



Vision and Objectives

From its inception, the Dockless Vehicle Pilot Program envisioned that all Angelenos would have access to safe, affordable, and sustainable mobility options that support inclusive communities. This supports LADOT's Transportation 2.0 vision of a mobility system that tackles congestion, enables economic development, provides equitable service, and saves lives. The program was guided by the following objectives:

Safety: Ensure safety of all roadway users, including non-riders.

Equity: Provide people of color with a dignified choice, access to and availability of the service, and a program that mitigates disproportionate impacts of deployment.

Access: Provide sustainable mobility options for residents, employees, and visitors of Los Angeles.

Quality of Life: Ensure that people's quality of life is improved and not inhibited.

Each section of this report is measured against these objectives and indicates whether LADOT's vision for each objective was achieved ( ), partially achieved ( ), or not achieved ( ).

Nimble adaptation was a necessary hallmark of the pilot, reflecting the rapidly changing nature of the dockless micromobility industry. LADOT prioritized resource efficiency, leveraging the functionality of MDS (described in detail on page 11) and other management tools to efficiently manage operators in the public right-of-way.

Key Regulations

The Dockless One-Year Permit application and **On-Demand Personal Mobility Rules and Guidelines** establish the following requirements that governed the Dockless Vehicle Pilot Program. Permitted operators were required to comply by April 15, 2019.

System Design

- **Term of permit:** 12 months.
- **Vehicle types:** Electric scooters, electric bikes, and pedal bikes. Adaptive vehicles were allowed but no operators applied for them.
- **Number of operators:** Unlimited.
- **Fleet size and management:** Operators were allowed a maximum of 10,500 vehicles, of which a maximum of 3,000 are allowed in non-Disadvantage Communities (DACs), 2,500 in DACs, and 5,000 in San Fernando Valley DACs.[1]
- **Product check:** Summary of operator vehicles, mobile applications, and certifications of safety standard compliance.

Monitoring & Operations

- **Data sharing:** Maintain MDS compliance and submit quarterly reports on usage rates of equity service options.
- **MyLA311 integration:** Integrate MyLA311 and close out service request tickets within 2 hours.
- **Parking compliance:** Remedy incorrectly parked and inoperable vehicles within 2 hours.

Financial & Risk Management

- **Insurance:** Maintain general commercial liability insurance, workers compensation insurance, umbrella insurance, performance bond throughout the pilot.
- **Proof of business tax compliance:** Register with the City's Office of Finance for business tax compliance.
- **Indemnification:** Agree to the City's Indemnification agreement.

Operator Plans

LADOT required operators to submit plans describing their approach to addressing several topic areas within the permit application. LADOT did not prescribe specific requirements, but rather gave operators flexibility to adjust operations and innovate on the following areas to achieve program objectives.

- **Implementation Plan:** Operators describe service implementation, including timelines and service area maps.
- **Parking Plan:** Operators describe strategies for promoting safe and legal parking practices, including incentives, fees, and employing the use of geofencing.
- **Equity Plan:** Operators describe criteria for low-income customer plans and non-smartphone and non-credit card payment options.
- **Community Engagement Plan:** Operators describe operator-led outreach activities, including key stakeholders, proposed activities, and engagement strategies in underserved communities.

1 DACs refer to areas throughout California that most suffer from a combination of economic, health, and environmental burdens, as determined by the California Communities Environmental Health Screening Tool (CalEnviroScreen).

Key Takeaways

This report highlights four key takeaways. The takeaways summarized below will serve as common themes reflected throughout this report.

Expanded Mobility

Dockless vehicles served as a valuable mobility option for Angelenos, but failed to adequately serve communities with the greatest need for accessible and affordable mobility. During the pilot, Angelenos took a total of 10.3 million trips on electric scooters and bikes. During the same period, 19 million trips were taken on DASH and LADOT transit.

Riders primarily used electric scooters and bikes for regular commute and recreation trips. Dockless vehicle trips replaced trips from other modes including driving.

Providing abundant mobility options is not an end in itself, but a tool to address the broader challenges Angelenos face accessing opportunities to gain economic mobility. Thus, the Pilot Program highlighted the need to further incentivize and address the financial burdens, safety and access concerns, and geographic and technological barriers faced by vulnerable populations such as older adults, people with disabilities, and low-income households.

Responsible Data Use

LADOT's policy, planning, regulatory, and operational functions are the foundation of right-of-way stewardship. Without data and technology to manage movement and enforce rules, LADOT would not fulfill its stewardship responsibilities. As underscored in LADOT's Technology Action Plan (TAP), LADOT aims to use technology and elements of MDS to steward both the physical and digital public realm.

LADOT takes cybersecurity and rider privacy very seriously. The agency drafted Data Privacy Principles and operationalized most key actions related to these principles, per City Council directions. LADOT worked with the City Information Technology Agency and other data protection and security experts to implement additional data security controls, data sharing protocols and data breach protocols for the purposes of this program. Data privacy is an evolving policy area. LADOT will continue working with key stakeholders and experts in this space to ensure sensitive information is protected.

Efficient Management and Enforcement

LADOT staff developed a groundbreaking tool called MDS to evaluate the effectiveness of program and policy actions.

MyLA311 empowered people to share concerns in real time, and the city effectively used it to monitor transportation-related service requests and hold operators accountable to keep the public right-of-way clear. Lessons learned during this period will help other cities implement similar programs.

Innovation and Testing

The Pilot Program served as a testing ground for LADOT to better understand how to permit, manage, and regulate dockless vehicles. LADOT identified problems and experimented with different solutions throughout the pilot process.

Given that equitable access was a chief concern, LADOT tested program incentives and requirements to benefit disadvantaged communities. Overall, these incentives were not sufficient in achieving sizable deployment and access for low-income stakeholders.

LADOT experimented with physical and digital policy tools in select locations. LADOT installed drop zones in Downtown and Venice and collaborated with operators to test digital policy tools such as special operations zones (SOZs) and geofences.

03

The Tools

LADOT tested a wide variety of programmatic, digital, and infrastructure tools to manage the Dockless Vehicle Pilot Program and deliver on the program's key objectives: Safety, Equity, Access, and Quality of Life. The following section describes key pilot management tools and conveys the complexity of managing the Dockless Vehicle Pilot Program.

The Mobility Data Specification and Digital Policy

For years, cities across the country experienced a common problem when regulating shared mobility operators. Each city asked for unique data, in different formats, with varying degrees of precision and varying degrees of success to hold companies accountable to policy goals. This created an environment where every data point requested became a negotiation, and operators built custom data feeds or monthly reports at great cost and limited utility. Cities needed a common approach to benefit cities and operators, alike.

Pioneered by LADOT, the Mobility Data Specification (MDS) is a digital tool and notification system that allows cities and operators to share information. MDS conveys information in a standard format. Similar to a common language, MDS establishes a standard way to communicate information and regulations between operators and LADOT. MDS is a cost-effective tool to digitally manage public and private operators that use the public right-of-way because it minimizes the time, staffing, and resources needed for compliance, enforcement, and monitoring. The roadmap for MDS includes taxis, carshare, and buses.

OBJECTIVES ACHIEVED

- Safety ✓
- Access ✓
- Equity ✓
- Quality of Life ✓

TAKEAWAYS

01 Mobility

02 Data-Driven

03 Managed

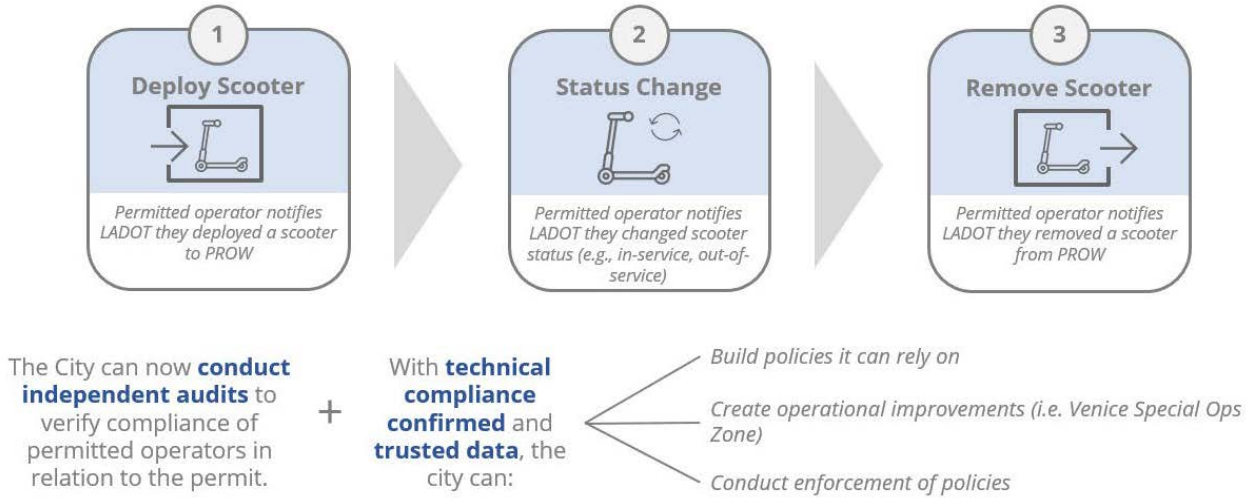
04 Experimental

How does MDS work?

Implementing MDS technology is part of a broader effort to understand dockless mobility and its implications for the general public. MDS articulates the operating requirements operators must follow to be compliant. Through MDS, LADOT can establish a Service Level Agreement (SLA) for operators and determine compliance and performance levels. The SLA provides notifications to LADOT from operators which reflect the behavior of dockless vehicles.

These are the agreements and notifications LADOT established, but any other city can establish metrics and notification agreements that work for their individual city priorities and the operators that operate within the public right-of-way.

Figure 2. How It Works

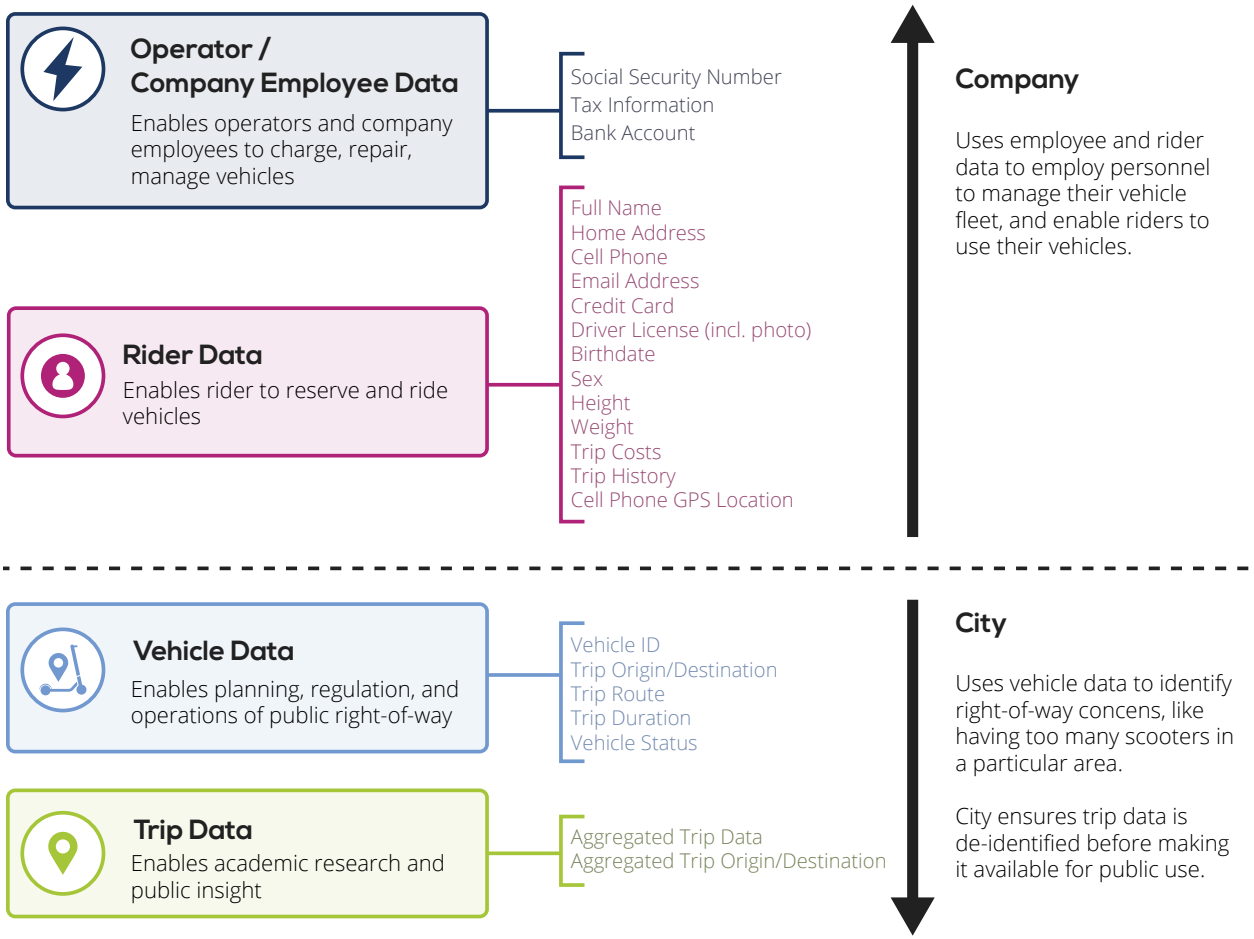


The graphic above is an example of how LADOT receives notifications from operators, as part of its efforts to manage the public right of way and better understand on-demand technology and its implications on the City.

How was MDS used?

LADOT requires permitted operators operating in the public right-of-way to notify the City of movements of their GPS-enabled fleet. As the illustration below shows, LADOT collects vehicle and trip data. Vehicle data may help the city identify right-of-way concerns, such as an oversaturation of vehicles in an area. LADOT uses de-identified trips to understand ridership trends and utility of the services, to inform safety improvements and other planning efforts.

Figure 3. Data Use by Entity Type



MDS and Data Privacy

LADOT adheres to sound practices for privacy standards, commits to data collection transparency, and—above all else—protects individual privacy. MDS is designed to process only the most minimal vehicle data necessary to enforce city-defined policies. Additionally, the department applies strong privacy protections and security protocols to the vehicle data it receives. For example, raw MDS data is categorized as confidential under the City of Los Angeles Information Handling Guidelines, which exempts the data from the California Public Records Act. LADOT applies strong access controls and de-identification measures to the data. These measures are reflected in LADOT's Data Protection Principles, which include:

- **Data categorization:** Raw trip data is designated as Confidential Information.[2]
- **Data minimization:** Raw data will be aggregated, de-identified, obfuscated, or destroyed where there is no need for single vehicle data or where data is no longer needed for management of the public right-of-way.
- **Access limitation:** Raw trip data related to vehicles and vehicle trips is limited to what is required for operational and regulatory needs as established by City Council.
- **Security:** The City will enact administrative, physical, and technical safeguards to secure and assure integrity of data.
- **Transparency for the public:** Data types collected via the MDS and the length of time that data is retained will be shared with the public.

Data protection is central to how we manage digitally-enabled mobility services. **Appendix A** summarizes our approach to privacy and data protection, what are we doing today, and our action plan moving forward.

2 LADOT designates raw trip data as Confidential Information under the City of Los Angeles Information Technology Policy Committee (ITPC) Information Handling Guidelines. This long-standing policy governs the obligations of the City to protect all manners of data under its control. LADOT will withhold this Confidential Information as exempt from release under the California Public Records Act.

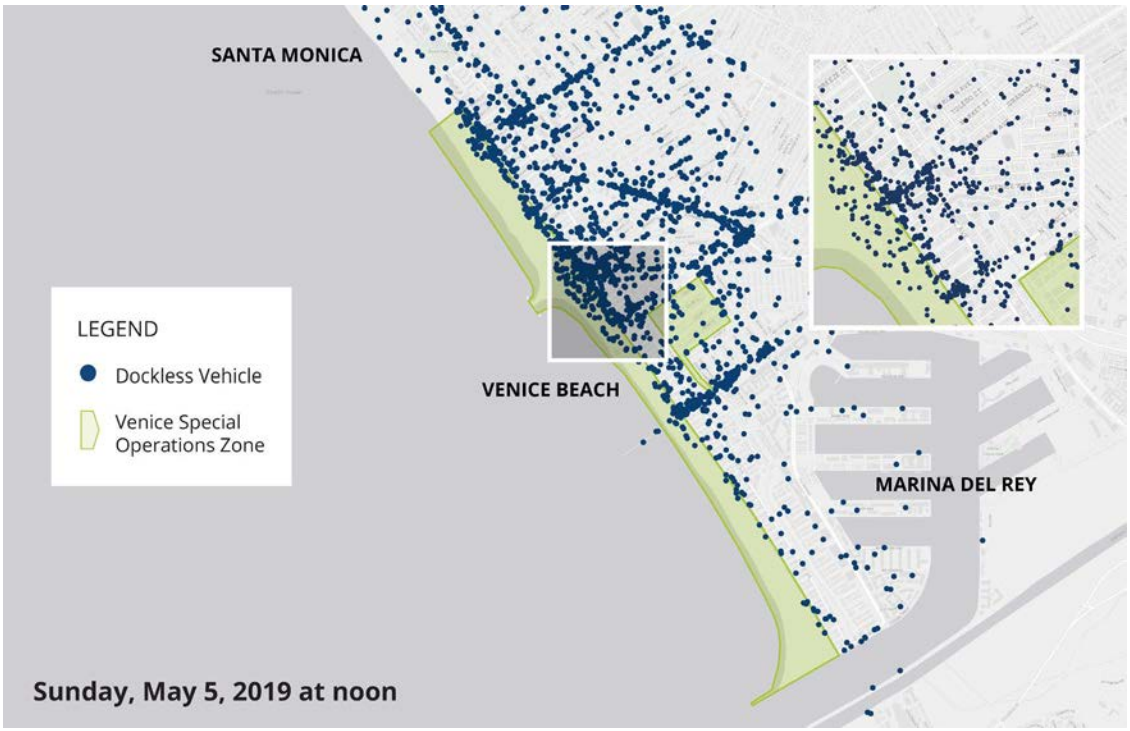
During the pilot, digital tools helped LADOT communicate City policy directly to the companies operating in the city using code. MDS enabled LADOT to monitor and hold companies accountable to their obligations.

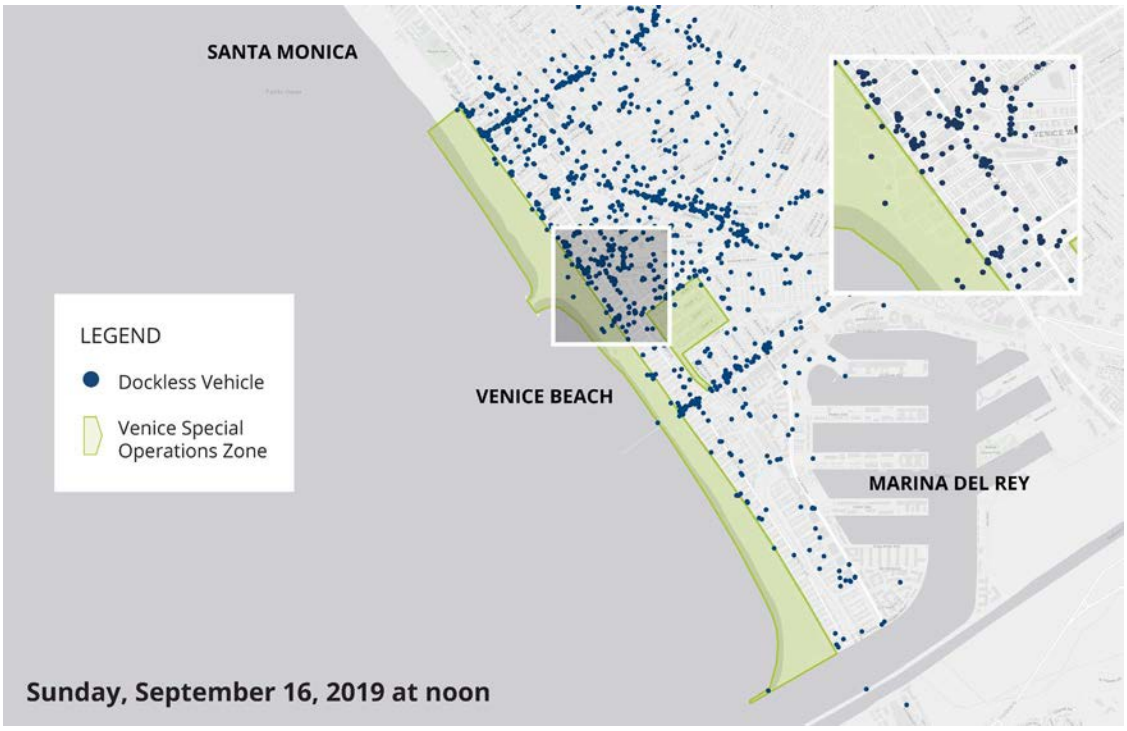
The Venice Special Operations Zone (SOZ) illustrates how MDS helps the City address community concerns and enforce existing rules. Compared to other areas of Los Angeles, Venice had some of the highest saturation of devices of any neighborhood in the city. This over concentration of activity led to a spike in neighborhood concerns during the initial months of the pilot. In May 2019, LADOT established the Venice Special Operations Zone (VSOZ) to address vehicle oversaturation and illegal riding on the Venice Boardwalk, bike path, and canals. The zone also allowed the department to test the use of geofence technology to reduce vehicle speeds to 0 mph. LADOT enacted the following digital policies in the Venice SOZ area:

- Deploy vehicles between the hours of 5:00 a.m. to 10:00 a.m. daily.
- Deploy a maximum of 150 vehicles across 22 LADOT-identified parking zones.
- Deploy up to five devices per operator per parking zone.
- Rebalance vehicles only within LADOT-identified parking zones after 10:00 a.m. daily.

Figure 4 illustrates the impact on Venice before and after we put the policy in place. The use of MDS to verify operator compliance, coupled with in-field enforcement, led to successful results. Scooter and bike saturation decreased from 270 average daily vehicles deployed pre-SOZ to 15 average daily vehicles deployed post-SOZ, across all operators. MyLA311 service requests fell by nearly 30% from June to September even as overall ridership climbed. In short, the SOZ allowed the department to preserve mobility options in a community while reducing clutter and neighborhood complaints. LADOT levied some penalties against non-compliant operators, but for the most part, operators collaborated with LADOT to achieve a good outcome.

Figure 4. Deployment of Dockless Vehicles in Venice Beach Before and After LADOT Implemented Special Operating Zones (SOZ)





The before and after images show how digital policy can have an efficient impact in keeping Venice Beach clear of dockless vehicles while keeping the public ROW clear.

Compliance Audits

Ensuring traffic law and regulatory compliance by vehicles operating in the public right-of-way is a constant and evolving challenge. People speed even though there are speed limits and they park their cars where they should not. As stewards of the public domain, LADOT and its partner agencies are continually challenged to educate road users and deliver on-the-ground enforcement to keep Angelenos safe while keeping people and goods moving.

Dockless vehicles present an equally challenging compliance environment. While LADOT establishes clear regulations governing deployment levels and other operational requirements, operators in a highly competitive start-up industry may have varying levels of staffing and resources to scale up and maintain compliance as they grow.

MDS and on-the-ground auditing work together to improve compliance and to test the validity of operator data. Some for-profit operators across many industries have falsified data to evade government regulation, particularly when those regulations have a fiscal impact. MDS reduces an operator's ability to manipulate data, and gives the city fundamental confidence in the accuracy of the information they are receiving. This transparency is critical to the City's ability to enforce regulations, plan, and invest in resources.

OBJECTIVES ACHIEVED

Safety	✓	Access	✓
Equity	○	Quality of Life	✓

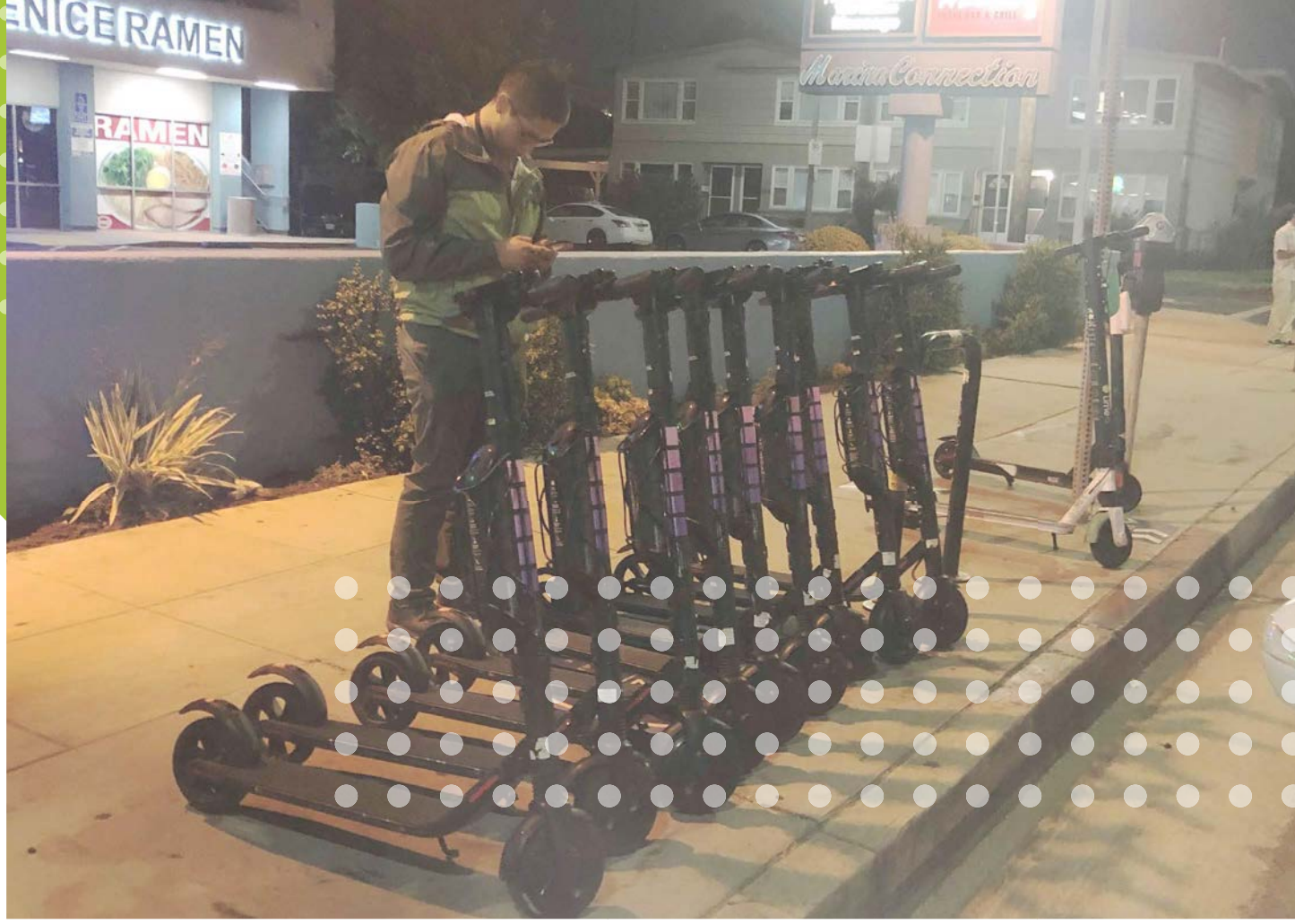
TAKEAWAYS

01 Mobility

02 Data-Driven

03 Managed

04 Experimental



To supplement and cross-check technical reporting, LADOT performed monthly audits throughout Los Angeles to capture the following:

- **Venice SOZ deployment:** if operators exceeded the five-vehicle deployment maximum at designated parking zones and/or deployed outside of the approved zones
- **User parking:** how and where a vehicle is parked
- **Vehicle condition:** vehicle quality, remaining battery charge, displays required "No Riding on Sidewalks" decals
- **Unpermitted operators:** operators that deployed vehicles, yet do not have a permit
- **Location accuracy:** whether the vehicle's physical location matched what was in the operator app and MDS

Compliance Apps

LADOT developed and tested two mobile data collection tools to streamline the compliance auditing process. Using and testing new tools was a hallmark of the Pilot Program, helping LADOT to efficiently collect information and identify compliance issues. The sections below describe two of LADOT's most important compliance apps.

Audit Mobile App

LADOT used the Audit Mobile App to verify whether operators accurately registered and reported their deployed vehicles in MDS. The app uses MDS data to locate nearby vehicles, which enables LADOT to conduct on-the-ground audits using a mobile phone. Auditors can locate vehicles via an in-app map, look up information about specific vehicles, and report the following compliance violations:

- A vehicle is registered in MDS, but cannot be found where the operator reported it
- A vehicle is found in the public right-of-way, but not registered by the operator in MDS
- A vehicle is improperly parked (tipped over, in a prohibited area, or too many vehicles parked in a designated parking zone)
- A vehicle appears unsafe and should receive maintenance

Figure 5. Audit Mobile App

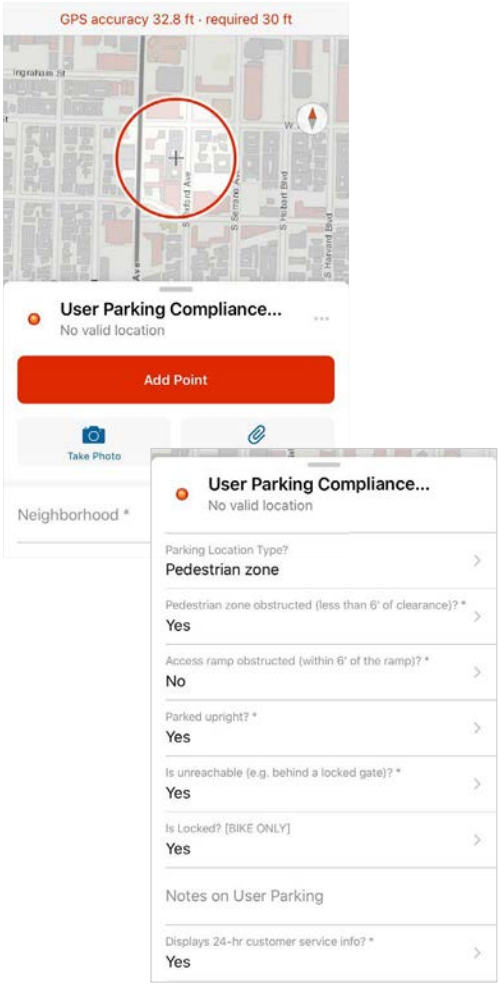
Compliance Apps Cont.

ArcGIS Collector Tool

LADOT also customized a geographic information system-based ArcGIS Collector tool into two digital data collection forms for compliance audits: (1) SOZ Compliance and (2) User Parking Compliance and Vehicle Quality. The SOZ Compliance Form assessed compliance to deployment maximums in the Venice SOZ. The User Parking Compliance and Vehicle Quality form documented vehicle location accuracy, how and where vehicles were parked, and the physical condition of vehicles throughout the city. Both forms are map-driven, meaning auditors can record vehicle location by dropping a pin on a map and export for further analysis later.

When field audit findings are compared against MDS data in real time, LADOT can use data to validate whether operators are allowing vehicles to occupy the physical realm in quantities that are above and beyond the operator's cap allotment. On the ground field checks, for example, have revealed cases where vehicles are being reported as removed but are physically still on-street. This has been evident with the introduction of new device models.

Figure 6. Audit Collector Tool



LADOT is exploring developing a tool that will simplify data collection by equipping the app with a QR code scanner to quickly scan the VIN of the vehicle being audited and to help the auditor assess and compare the field status of a vehicle to the data in the operator app.

Physical Tools

In partnership with Council District 5, LADOT designed and applied more than 40 "No Electric Scooter Riding on Sidewalk" stencils on pedestrian-heavy sidewalks, including Third Street, Melrose Avenue, and Beverly Boulevard. The goal of applying these stencils was to increase safety and awareness of sidewalk riding rules.

Sidewalk stencils are a cost-effective method to supplement safety reminders that are currently messaged in-app and on devices. LADOT determined sidewalk stencil locations primarily by public perception and high-activity sites. In the future, LADOT aims to continue using trip and deployment data to identify additional streets where high ridership levels overlap with high pedestrian volumes.

OBJECTIVES ACHIEVED

- Safety ✓
- Access ✓
- Equity ✓
- Quality of Life ✓

TAKEAWAYS

01 Mobility

02 Data-Driven

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04 Experimental

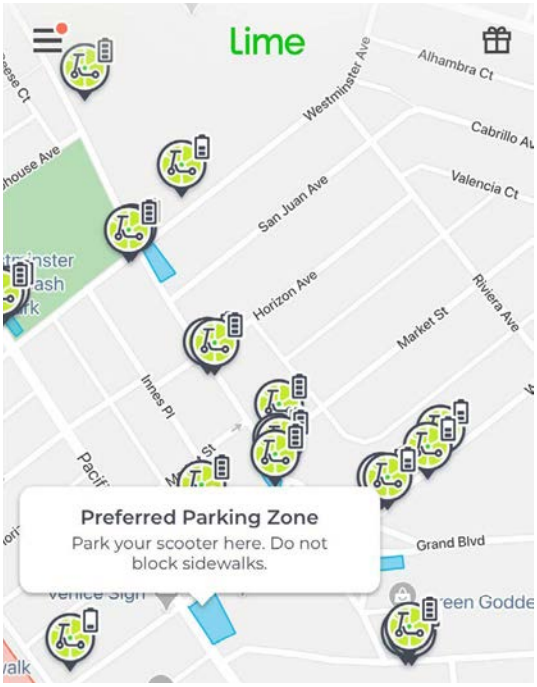
Drop Zones

Drop Zones are specially marked parking areas designed for dockless mobility devices. Drop Zones consist of several vinyl stickers, which can be moved as parking demand changes. In an effort to keep sidewalks clear, LADOT installed over 30 Drop Zones throughout Downtown prior to issuing permits in April 2019, determined in partnership with the CD 14 council office and local business owners. LADOT vetted the proposed locations to ensure they were ADA-compliant. We installed additional Drop Zones in other parts of Downtown and Venice, bringing the total number of Drop Zones to 72. Several operators created digital replicas of Drop Zones within their apps to inform users where to park in Downtown and Venice.

Drop Zones are a key component to LADOT's enforcement strategy within the Venice SOZ. LADOT has paired this physical infrastructure with a policy that caps the number of scooters each operator can deploy within a Drop Zone. In doing so, LADOT has effectively communicated to operators where to deploy while simultaneously regulating the number of vehicles within Venice.

Our experience with Drop Zones in the first year was mixed: while they provided an opportunity for the public to engage with LADOT and indicate where they perceived a need, the decals faded quickly, and the locations did not always match with high scooter use. In year two, LADOT plans to create an ongoing inventory of decal locations and match those to highest observed use.

Figure 7. Location of Drop Zone As Shown in Operator App



Location of Drop Zones as shown in operator app
Source: Lime

Corrals

Drop Zone decals are most appropriate on sidewalks, which means that they sometimes result in vehicles spilling onto pedestrian pathways. The growing number of dockless bikes and scooters parked on sidewalks can make it difficult for people with disabilities and pedestrians to get around. Bike parking corrals are places where the city replaces a single parallel parking space with several bike parking racks. Corrals can be a safe place to store scooters in an organized way off the sidewalk. During the year one pilot, LADOT installed a bike parking corral on Abbot Kinney to assist with the Venice Special Ops Zone, which was successful in creating storage to match the demand without creating obstacles and clutter on the sidewalk.

Safe Riding Infrastructure

A key concern regarding the dockless vehicles is sidewalk riding and the potential risk of pedestrian-involved collisions. Current regulations require dockless mobility users to ride in the travel lane, however, users may feel unsafe riding alongside automobiles. In year one, LADOT evaluated where people were riding in downtown against available crash data for all users. The data informed an infrastructure investment plan. Approximately $2 million from permit fees will go towards building infrastructure, including but not limited to the extension of protected bike lanes on Figueroa Street as part of the MyFigueroa Streetscape Project and the installation of protected bike lanes on 7th Street.

Data on micromobility movement from 2019 provides evidence that protected bike infrastructure is important to travelers. In 2019, LADOT installed more than a dozen protected bikeways throughout the region. LADOT installed protected bikeways in Downtown LA on Main Street and Spring Street The Main and Spring Forward project ( ). While the Spring Street installation predated MDS data gathering, the Main Street portion of the protected bikeway was installed in November 2019.

Figure 8 shows the change in ridership between October and December 2019 on six different streets in the Main and Spring Forward project area. Although the protected bike infrastructure was already installed on Spring Street in early 2019, ridership on Main Street (only one block away) increased 4.3% following the installation of a two-way protected bike lane, indicating that dedicated, protected bike infrastructure is an important element of a comprehensive program to address safety and sustainability.

Figure 8. Downtown Dockless Ridership after Installing Protected Bike Infrastructure

MyLA311

As part of the One-Year Permit Program, LADOT required operators to integrate with MyLA311, a non-emergency request management system that links residents to city services and information. Operators were expected to respond to service requests by inspecting, relocating, or removing the vehicle if it was improperly parked or in need of maintenance. Per permit requirements, operators must respond to service requests within two hours if the request was submitted between 7 a.m. and 10 p.m. LADOT aggregates service request information to track high-level metrics that inform program management and compliance (see page 63 for operator performance).

OBJECTIVES ACHIEVED

Safety	✓	Access	○
Equity	○	Quality of Life	✓

TAKEAWAYS

01 Mobility

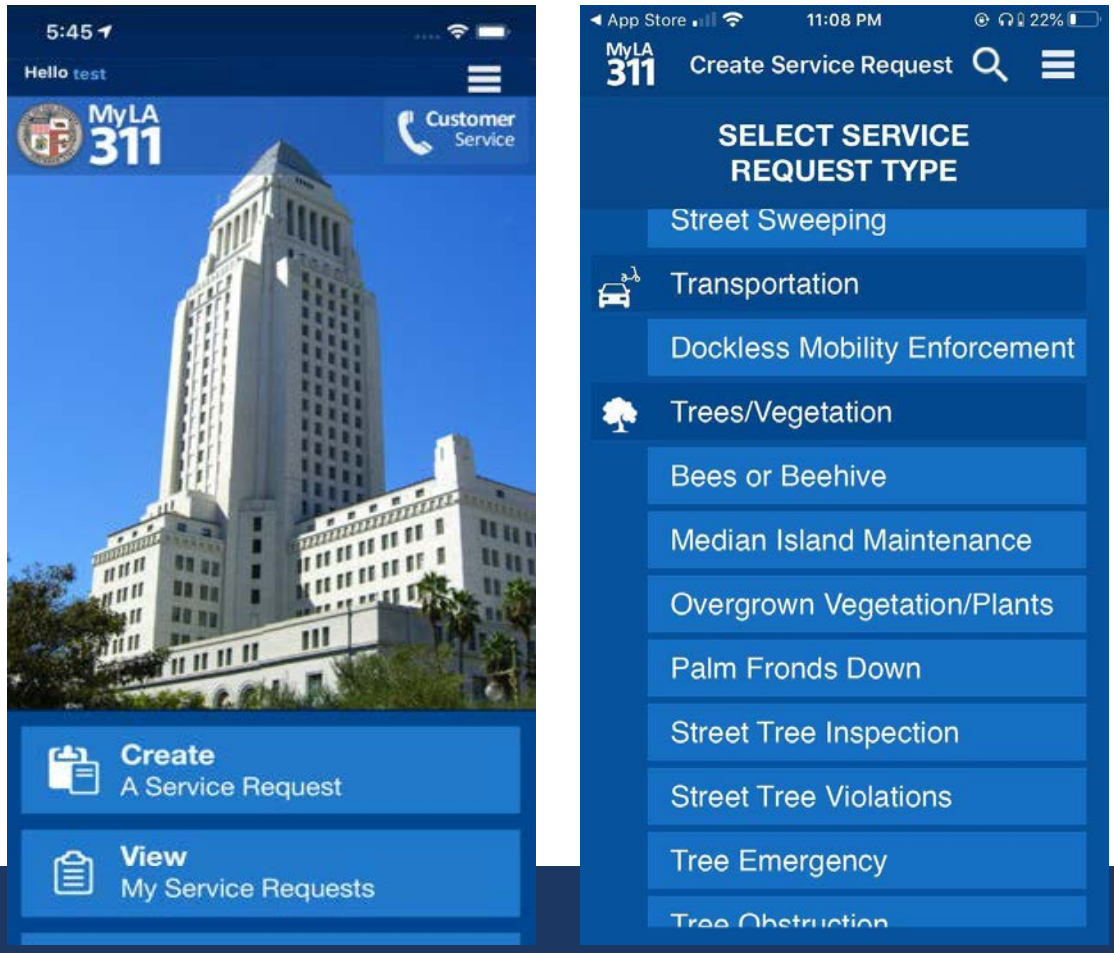
02 Data-Driven

03 Managed

04 Experimental

While MyLA311 presented a comprehensive list of violations, it did not cover several edge cases, which required increased collaboration between LADOT and operators. For example, operators struggled to meet performance targets for management requests involving devices found in the Venice Canals. Operators that had access to dive teams dedicated to retrieving devices from bodies of water were able to respond quicker than those with smaller operations teams. Through these discussions, LADOT further adjusted their methodology for calculating operator responsiveness by removing unique use cases from monthly averages and tracking them separately, thereby giving operators greater flexibility to resolve these issues.

Figure 9. MyLA311 Service Request App



Community Engagement and Other Feedback Tools

Community engagement was used as a tool to understand issues and opportunities related to program design, policy gaps, and product-market fit. LADOT organized and hosted quarterly community meetings to provide general information on the permit program and to facilitate dialogue between the public and the operators. Meetings typically consisted of a brief presentation on program updates from LADOT staff and a period for comments and questions. Meeting topics ranged from demonstrations on how to use MyLA311, criteria for low-income plans, and proper parking practices. Operators, local business improvement districts, Neighborhood Councils, and Council District staff attended these meetings and were given the opportunity to ask questions and share their feedback.

LADOT organized and hosted quarterly community meetings to provide general information on the permit program and to facilitate dialogue between the public and the operators. Meetings typically consisted of a brief presentation on program updates from LADOT staff and a period for comments and questions. Meeting topics ranged from demonstrations on how to use MyLA311, criteria for low-income plans, and proper parking practices.

We chose meeting locations based on electric scooter and bike ridership trends from MDS and MyLA311 response volumes. LADOT also conducted three quarterly user surveys between May 30 and December 18, 2019, generating 7,848 responses. All permitted operators distributed surveys in-app at the end of a ride. Key survey results are captured in Section 4.

OBJECTIVES ACHIEVED

- Safety ✓
- Access ✓
- Equity ✓
- Quality of Life ✓

TAKEAWAYS

01 Mobility

02 Data-Driven

03 Managed

04 Experimental

Educational Campaigns

In the months leading up to the Dockless Vehicle Pilot Program, LADOT collaborated on a safety campaign with Santa Monica to establish a unified message around safe riding and common sense parking practices. LADOT purchased ad space on DASH and Metro buses and bus shelters to deliver the "Take the Friendly Road" campaign message. Hundreds of Metro and DASH buses displayed interior bus cards. LADOT jointly ran safety ads with the City of Santa Monica that included messaging from "The Electric Scooter Rules to Know Before You Go."

The campaign touched on various topics, including:

- Parking responsibly;
- Only one rider per scooter;
- Riding on the street;
- Driver's license requirement;
- Helmet use recommended; and
- Filing service requests through MyLA311.

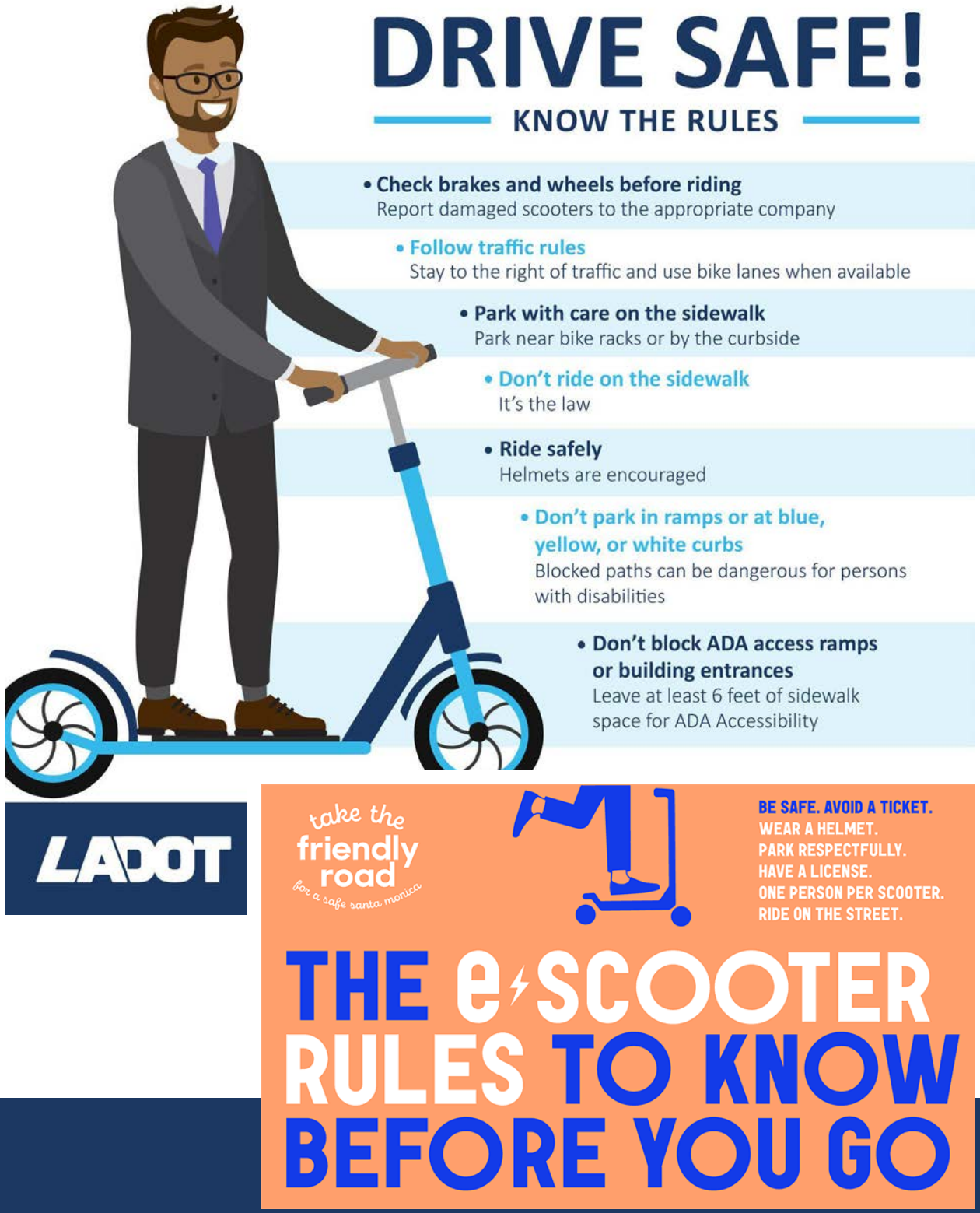
OBJECTIVES ACHIEVED

Safety	✓	Access	○
Equity	○	Quality of Life	✓

TAKEAWAYS

01	02	03	04
Mobility	Data-Driven	Managed	Experimental

Figure 10. Dockless Mobility Educational Campaign Materials

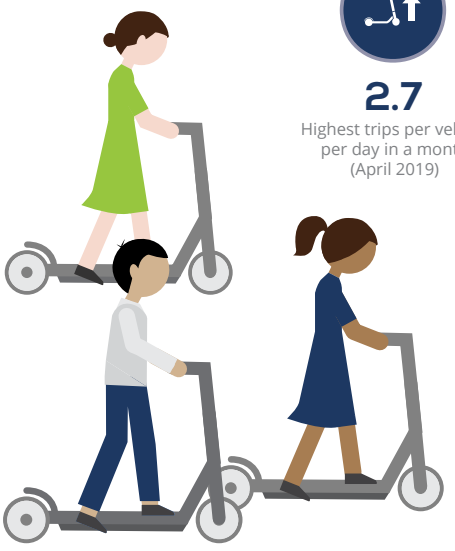


04

The Results

The Dockless Vehicle Pilot Program showed how electric scooters and bikes can bolster LADOT's vision for a mobility system that is safe, equitable, accessible, and supportive of people's quality of life. The pilot demonstrated LADOT's capacity and technology resources to create flexible regulatory frameworks to evaluate new mobility services. The pilot highlighted ongoing challenges and lessons learned that will guide the Year 2 program and other future mobility permit programs.

Figure 11. Dockless Pilot Results for Year 1



10.3 million
Total ridership

2.7
Highest trips per vehicle per day in a month (April 2019)

2.1
Lowest trips per vehicle per day in a month (December 2019)

4.5
Highest average monthly deployment[3] per 1,000 residents (July 2019)

2.3
Lowest average monthly deployment per 1,000 residents (January 2019)

54% of rides
originated or ended in a non-DAC

44% of rides
originated or ended in a non-San Fernando Valley DAC

2% of rides
originated or ended in a San Fernando Valley DAC

17,746 vehicles
Highest average monthly deployment (July 2019)

9,056 vehicles
Lowest average monthly deployment (January 2020)

44% of riders
Drive less often

3 Deployment within the context of this report is defined as the average vehicle state of all vehicles in the public-right-way for a given month, regardless of how the vehicle ended up in the right-of-way (e.g. provider drop-off or user trip end, etc.).

Access and Availability

LADOT built a pilot program that enabled permitted operators to provide abundant, readily available mobility to a wide variety of the city. If operators elected to serve the San Fernando Valley and disadvantaged communities, they could deploy up to 10,500 vehicles at a time. The number of actual deployed vehicles systemwide declined precipitously over the course of the pilot, from 17,746 vehicles in July 2019 to 9,056 vehicles in January 2020. By the end of the pilot, deployment numbers were almost half of what they were during peak deployment periods, largely due to several operators making business decisions to reduce deployment, seasonal ridership impacts, and Bolt leaving the market, among other reasons.

OBJECTIVES ACHIEVED

Safety	○	Access	◑
Equity	○	Quality of Life	◑

TAKEAWAYS

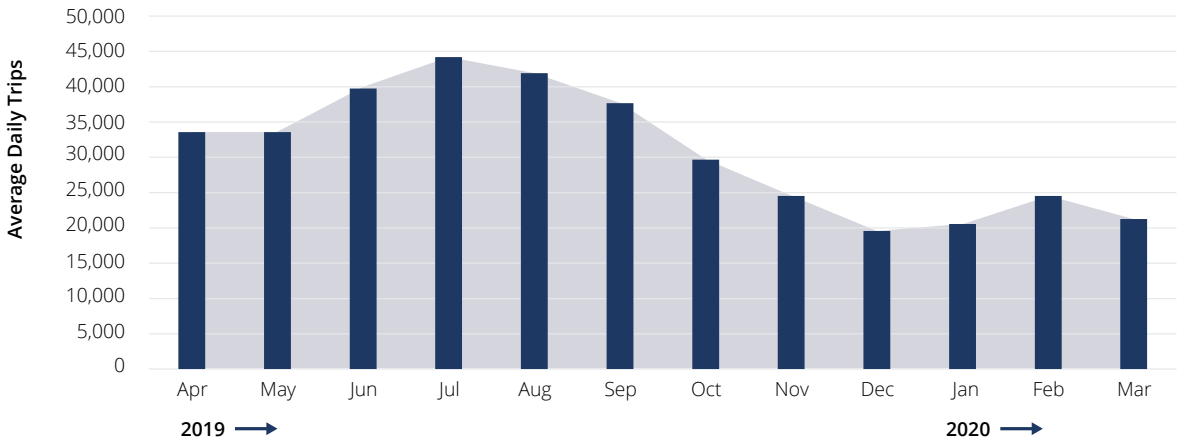
01 Mobility

02 Data-Driven

03 Managed

04 Experimental

Figure 12. Average Daily Trips by Electric Scooters and Bikes



Deployment in San Fernando Valley (SFV) DACs peaked in July 2019 with only 551 vehicles while deployment in Non-SFV DACs peaked in August with 6,616 vehicles. By the end of the pilot, SFV-DAC deployment dropped 19% from peak deployment periods. Taken together, these trends suggest deployment patterns saturated everywhere but SFV DACs a few months after the pilot began. The fleet cap incentive and reduced fees were insufficient on their own to induce operators to deploy in the San Fernando Valley or to provide consistent service in other disadvantaged communities.

Figure 13. Total Monthly Deployment by Area Type

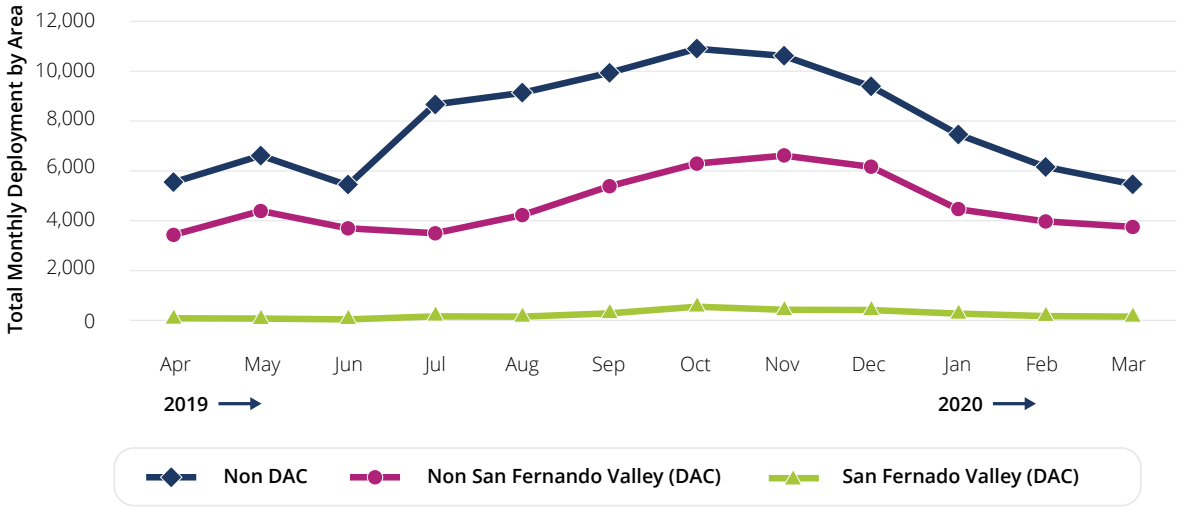
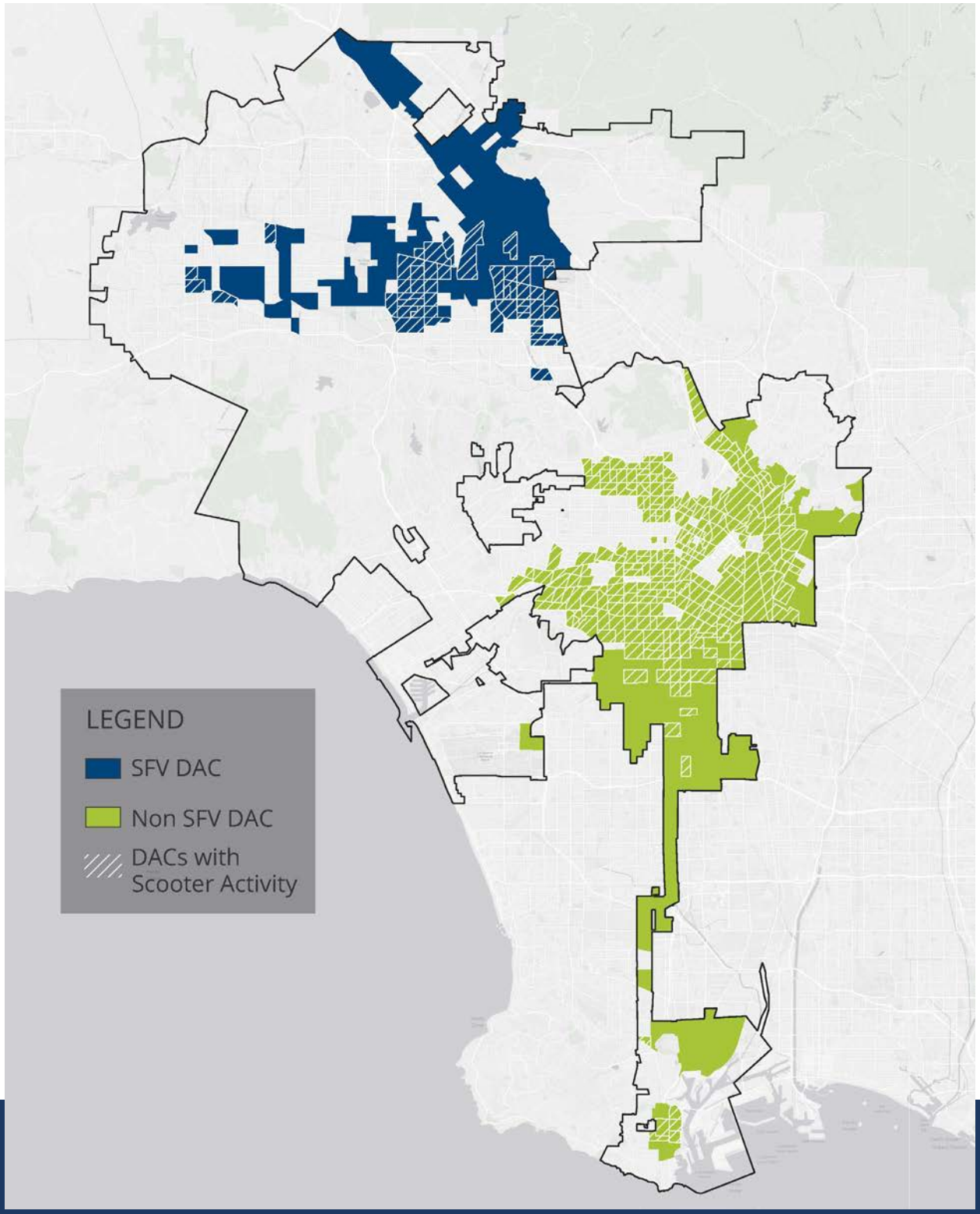


Figure 14. Dockless Activity in SFV and non-SFV DACs



Ridership and Mobility

During the pilot period, people rode electric scooters and bikes throughout Los Angeles to varying degrees. Ridership trends, trip patterns, and user types help inform whether the Pilot Program was effective in its reach. Riders took a total of 10.3 million trips between April 2019 and March 2020, with activity peaking during summer months. Average daily trip volumes by month convey similar trends.

Ridership patterns mirror deployment patterns. The more vehicles that are deployed, the more people use them. Conversely, when systemwide fleet size decreases, so does use. As the program progressed, use grew to 76 rides per month per device in July 2019. This indicates that there is a demand for electric scooters and bikes if readily available and accessible. In reviewing lessons learned from the Venice Special Operations Zone, a high level of saturation is not necessary to achieve strong ridership and improve mobility. A more desirable outcome would be a large fleet more evenly deployed throughout the city to ensure a high number of trips without creating neighborhood complaints.

OBJECTIVES ACHIEVED

- Safety
- Access
- Equity
- Quality of Life

TAKEAWAYS

01 Mobility

02 Data-Driven

03 Managed

04 Experimental

Figure 15. Total Trips and Average Daily Trips per Month

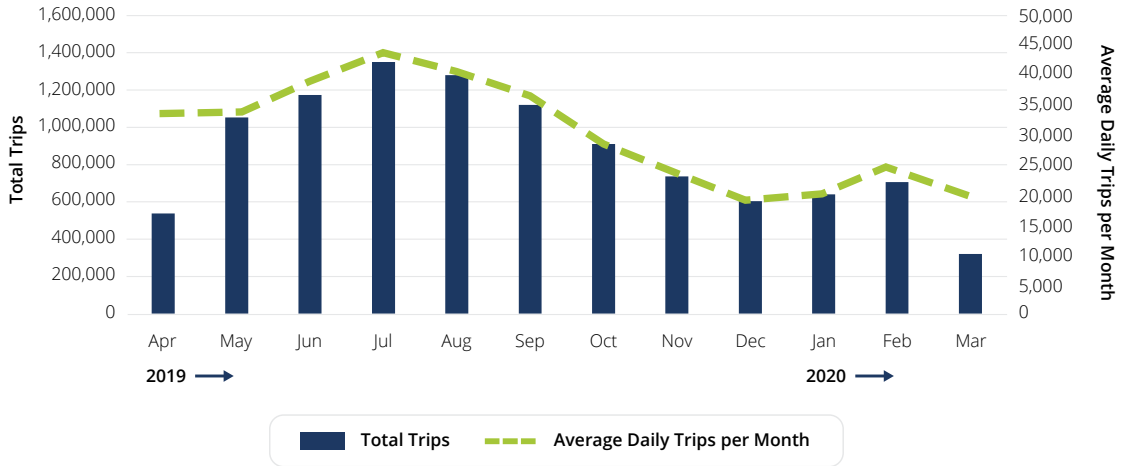
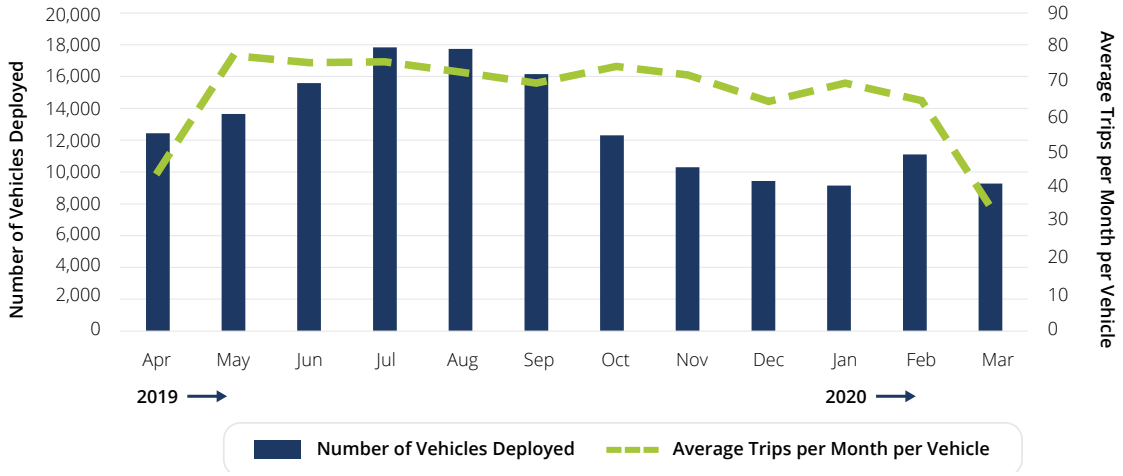


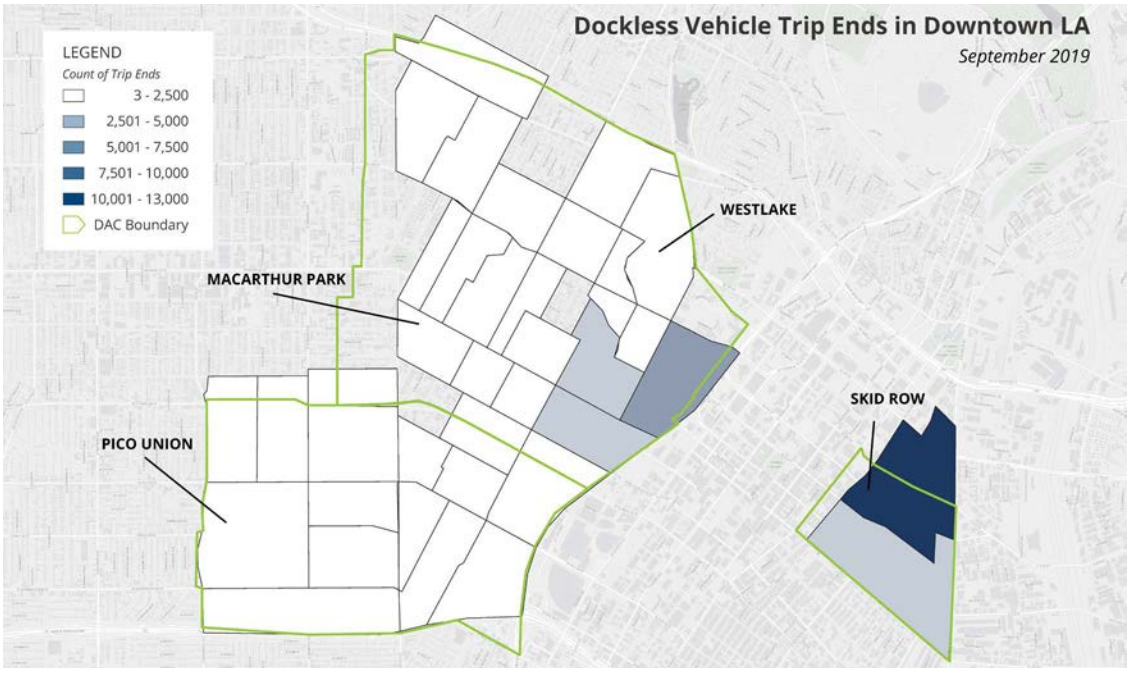
Figure 16. Average Monthly Device Use

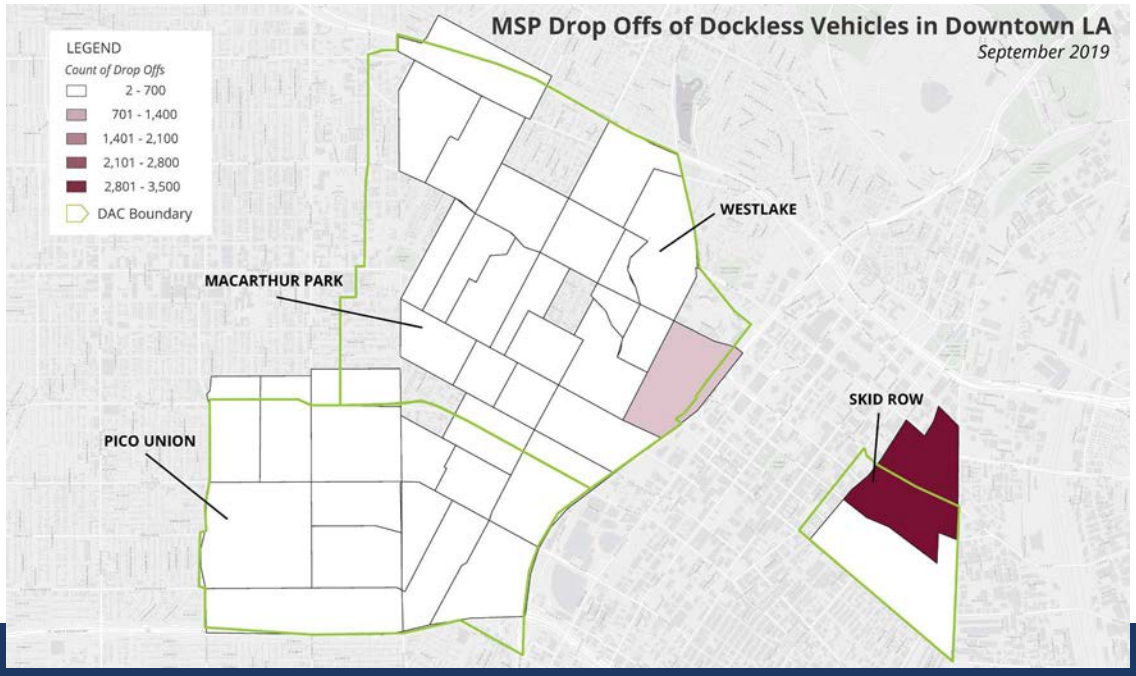


Over 50% of trips originated or ended in non-DACs, 44% originated or ended in non-SFV DACs, and 2% of all trips began or ended in SFV DACs. While this trend is generally reflective of overall deployment, operators clearly avoided some communities, and thus ridership is low or non-existent. For example, the Pico Union/Macarthur/Westlake neighborhood accounted for 1.4% of all trips even though it is a dense, well-connected part of the city with need for affordable mobility and high transit ridership.

LADOT found little difference between trips ended by customers and those delivered by rebalancers. In other words, scooters often stayed close to where operators deployed them. These findings highlight the need to restructure requirements and incentives to encourage deployment and usage in disadvantaged communities.

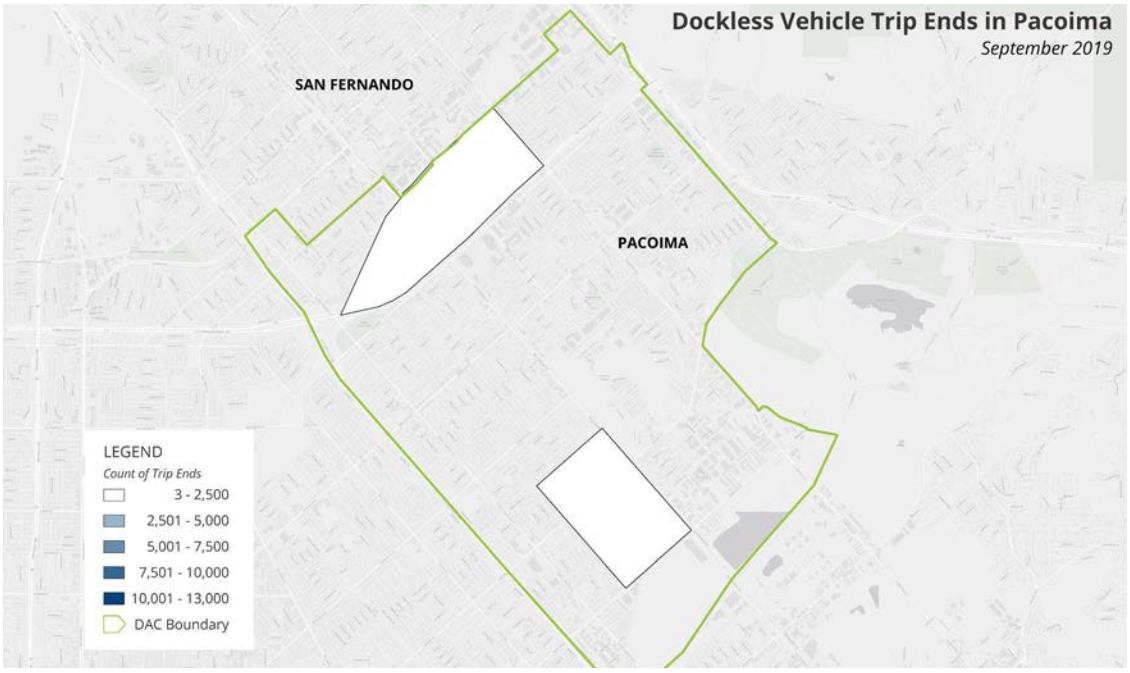
Figure 17. Trip Ends and Operator Drop Offs of Dockless Vehicles in Downtown LA

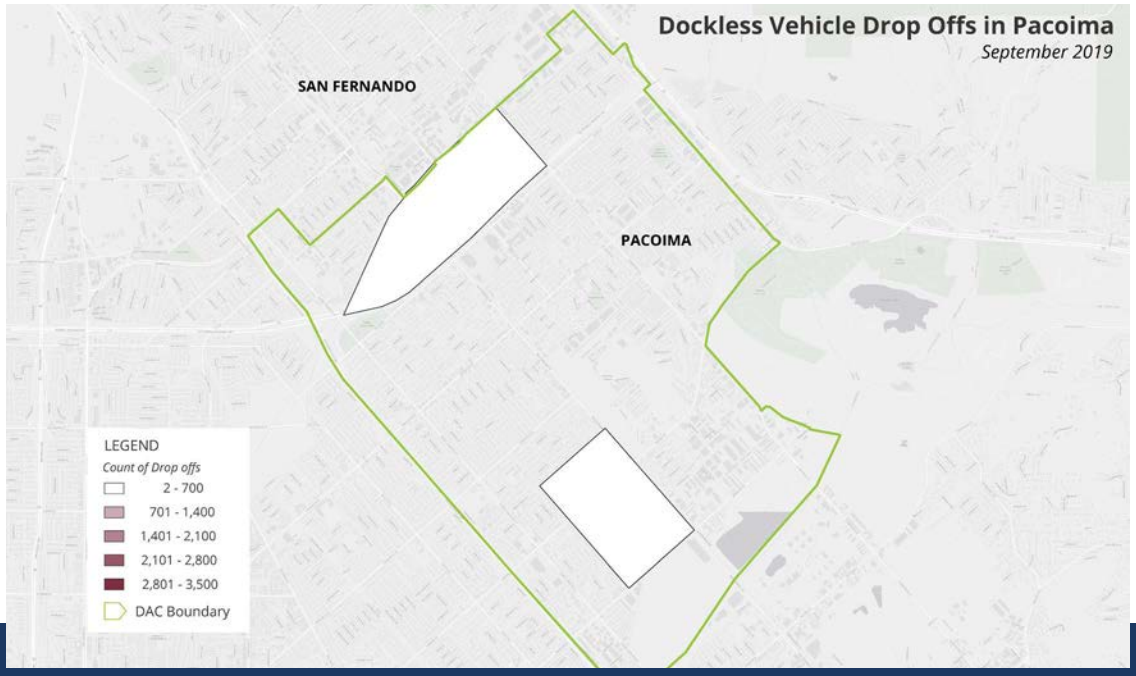




These maps compare operator drop offs and user trip ends by census tract in disadvantaged communities in Downtown Los Angeles neighborhoods of Pico Union, MacArthur Park, and Skid Row. In some areas, deployment is balanced with trip ends, while other areas show low activity. For example, shades of red show the number of operator vehicle drop offs and shades of blue show the number of vehicle trip ends that riders have made in the same area.

Figure 18. Trip Ends and Operator Drop Offs of Dockless Vehicles in Pacoima





These images show a comparison between operator drop offs and user trip ends by census tract in disadvantaged communities in the Pacoima neighborhood. Pacoima has low vehicle and operator activity (shown in white).

Ridership Profile

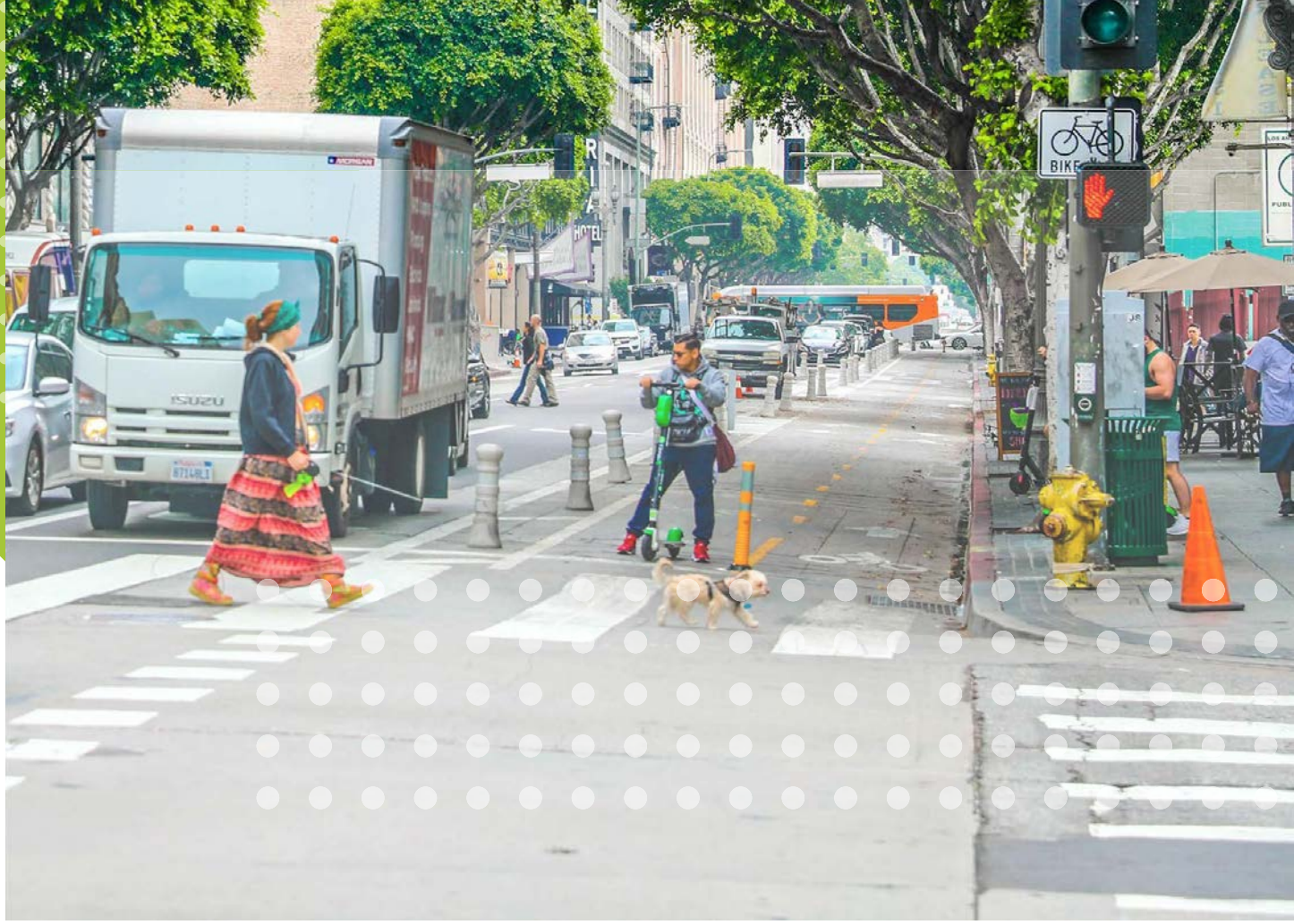
According to survey results, the Pilot Program supported a wide variety of trips for residents and visitors to Los Angeles. Of the 7,848 people who completed LADOT's user survey, 70% are Los Angeles residents, 16% were residents of other LA County areas, and out-of-county visitors made up 15% of respondents.

Survey respondents indicate a higher share of participants who identify as male (64%), higher income, and between the ages of 18-34 (58%) than the overall demographics of the pilot geography. Nearly a quarter of respondents reported earning more than $100,000, which exceeds the median household income for LA County ($68,093), while 16% earn between $50,000 and $74,999. Additionally, roughly 12% of respondents fall below the federal poverty line, though it is unclear whether this represents jobless or low-wage students. Sixty percent of respondents who reported living in Los Angeles reported owning a vehicle, while 26% do not have regular access to a vehicle, suggesting significant potential for substituting car trips and providing more mobility for those with limited options.

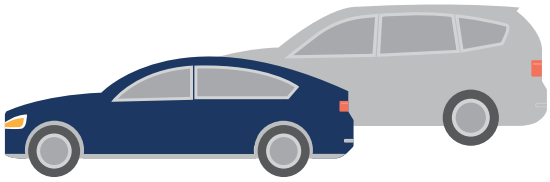
Operators should actively address barriers to reaching a more diverse user base and achieve a rider profile that is representative of Los Angeles' demographics.

OBJECTIVES ACHIEVED

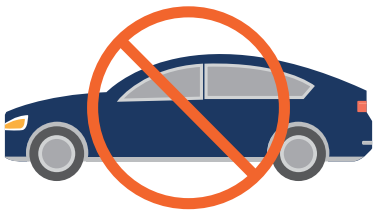
TAKEAWAYS



60% of people reported have access to a vehicle



26% of people **do not** have regular access to a vehicle



64% of people identify themselves as male

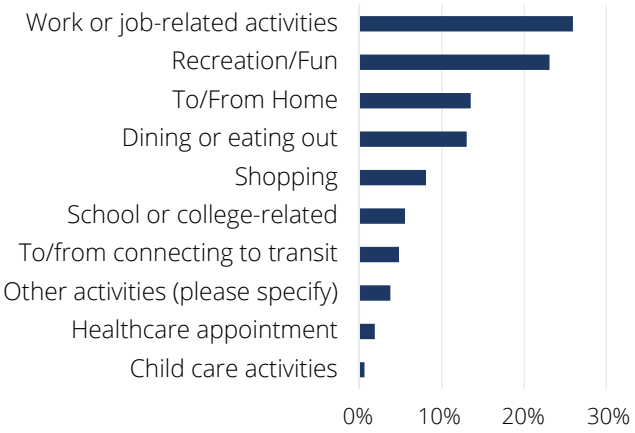
58% of people are between the ages of 18-34

Why People Ride

Dockless vehicles served as a viable transportation option for many Angelenos for a variety of trip purposes. Almost half of all trips were essential trips, which include commuting to and from school or work, accessing healthcare and child care services, and accessing transit. According to user surveys, nearly a third (32%) of trips were work- or school-related. More than half of all respondents who ride frequently (at least 3 times a week), use dockless electric scooters or bikes for commuting.

Almost a quarter of trips were for recreation, which suggests people simply enjoyed riding them. These trends are similar to those in Santa Monica[4] and Portland[5] where dockless mobility devices were most commonly used for work-related (29% and 18%, respectively) and recreational trips (26% and 28%, respectively). In Chicago,[6] motivations for riding varied by how frequently they reported using dockless mobility devices.

Figure 19. Trip Purpose



Dockless mobility helped with daily errands and other essential trips. Eight percent of people use dockless mobility devices for shopping trips, 2% for healthcare appointments, and 1% for childcare activities.

OBJECTIVES ACHIEVED

- Safety
- Access
- Equity
- Quality of Life

TAKEAWAYS

01 Mobility

02 Data-Driven

03 Managed

04 Experimental

4 Portland Bureau of Transportation. 2018 E-Scooter Findings Report. 15 Jan. 2019.
5 City of Santa Monica. Shared Mobility Pilot Program Report. Nov. 2019.
6 City of Chicago. E-Scooter Pilot Evaluation. Jan. 2020.

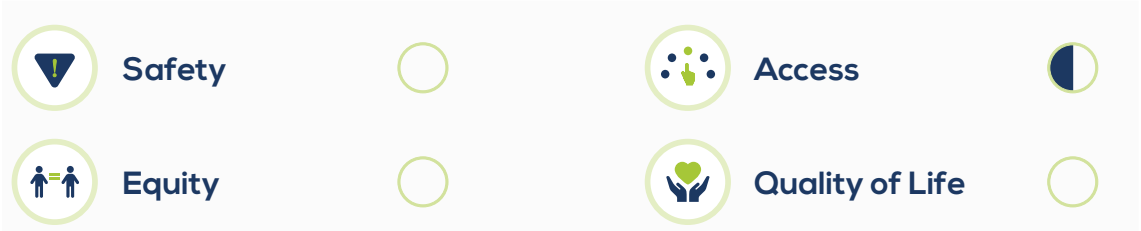
Where People Go

Dockless electric scooter and bike deployment, and therefore activity, peaks in central Los Angeles where neighborhoods have denser concentrations of housing, jobs, and retail/entertainment than other parts of the city. The top 10 neighborhood destinations for dockless micromobility trips were Downtown, Venice, Hollywood, Koreatown, Westwood, University Park, Westlake, Fairfax, Mid-Wilshire, and North Hollywood. The top five neighborhood destinations in the San Fernando Valley were North Hollywood, Studio City, Van Nuys, Woodland Hills, and Northridge. Trip ends were significantly lower in South Los Angeles, but its top five neighborhood destinations were University Park, Exposition Park, Historic South-Central, West Adams, and Central-Alameda.

While the Pilot Program established clear destination hot spots, safe streets—supported by infrastructure—mattered to riders. The majority of survey respondents (66%) would ride on-street only if bicycle facilities (i.e. bike lanes, protected bike lanes, greenways, etc.) are available. Over half of respondents (53%) rode on-street without bike lanes and 32% rode on sidewalks.[7] The lack of safe riding infrastructure was a significant barrier to entry for many riders and may lead to continued sidewalk riding. To curb illegal sidewalk riding, LADOT will continue to endeavor to build safe infrastructure on streets with high ridership.

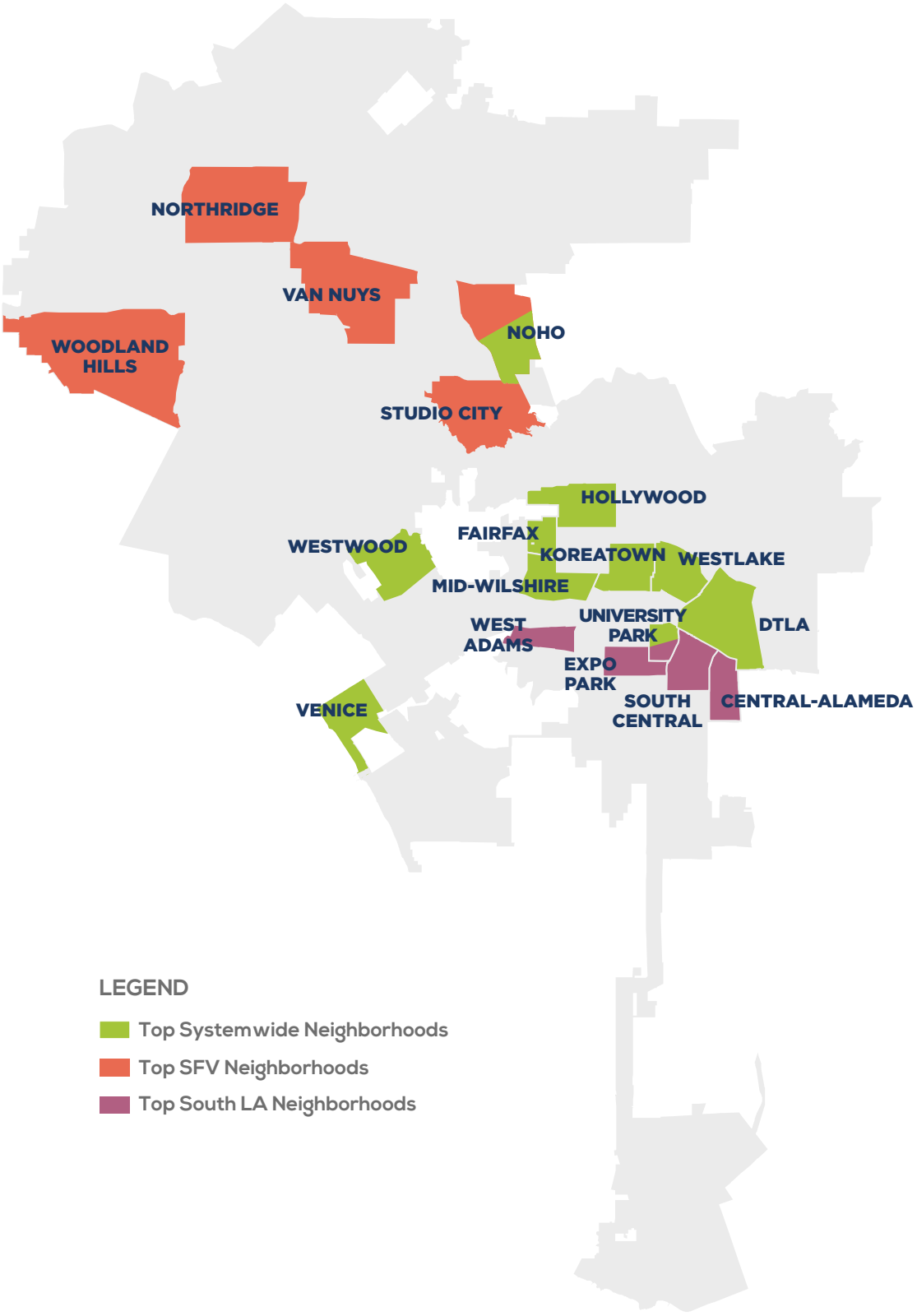
7 Respondents were given the option to select all responses that apply for this question. As such, the cumulative total of responses is greater than 100%.

OBJECTIVES ACHIEVED



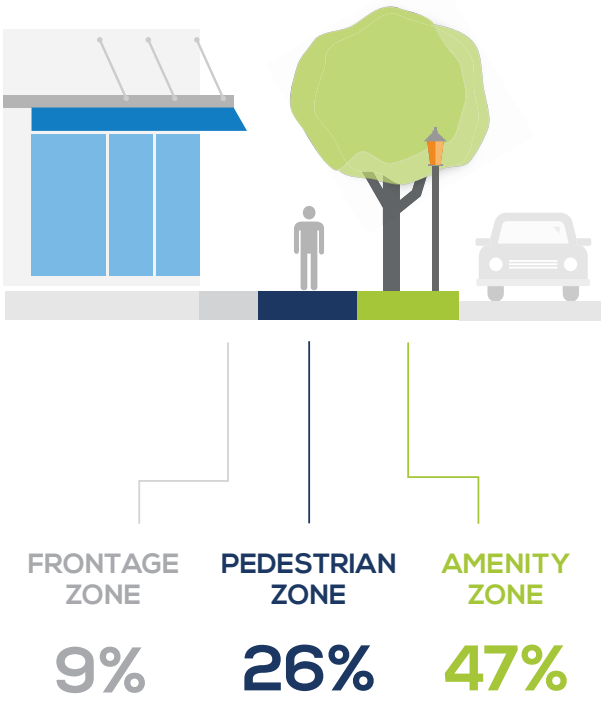
TAKEAWAYS

Figure 20. Top Neighborhood Destinations for Dockless Micromobility Trips



Where People Park

Given the dockless nature of electric scooters and bikes, a key concern amongst City Council members, advocacy groups, and the general public is tidy vehicle parking. According to compliance audit data, 47% of audited vehicles were parked in the amenity zone, 26% were parked in the pedestrian zone, 9% were parked in the frontage zone, and 2% were parked on private property. While these results are similar to what has been observed in other cities, even just one vehicle blocking an ADA access ramp is one too many. Further enforcement, public education, and parking infrastructure is needed to reduce the number of improperly parked vehicles.



OBJECTIVES ACHIEVED

- Safety
- Access
- Equity
- Quality of Life

TAKEAWAYS

01 Mobility

02 Data-Driven

03 Managed

04 Experimental

Mode Shift

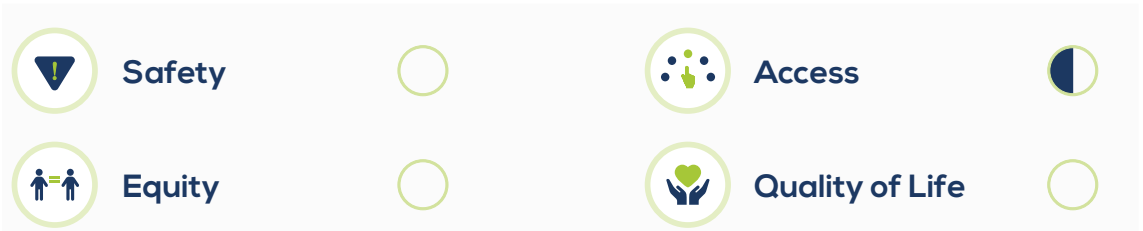
LADOT permitted dockless vehicles to expand mobility options and encourage mode shift to more sustainable options. Electric scooters and bikes have begun to change how some people get around. Most riders drove less (44%) and used taxi/ridehailing services like Uber and Lyft less (49%) since first using electric scooters or bikes, indicating that dockless vehicles can reduce passenger vehicle miles traveled and associated greenhouse gas emissions. While some early studies suggest that operational emissions and lithium ion battery disposal may negate the sustainability benefits of dockless mobility, LADOT needs to better understand the lifecycle costs of dockless mobility.[8]

Overall, most survey respondents noted that their mode usage is about the same as before: walking (55%), biking (60%), and use of transit (59% bus, 61% rail). Nearly a third of survey respondents (29%) walk less which might suggest reduced physical activity. However, this does not reflect the distance to walk to and from an available electric scooter or bike, which often ranges between 100 feet and a quarter mile.

More granular, longitudinal data will help LADOT understand the long-term implications to travel behavior. These initial results suggest dockless mobility may replace some walking and driving trips.

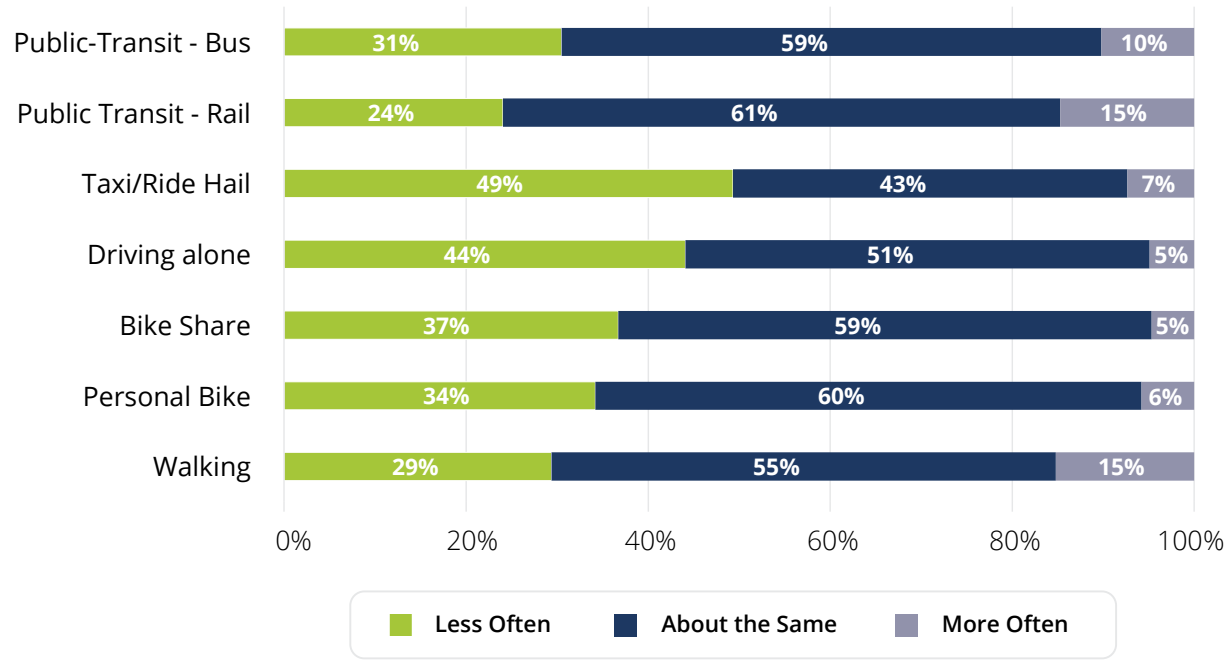
8 Joseph Hollingsworth et al 2019 Environ. Res. Lett. 14 084031

OBJECTIVES ACHIEVED



TAKEAWAYS

Figure 21. Mode Shift Since Using Electric Scooters or Bikes



Average Trip Distance

Nearly 70% of survey respondents said they would have walked (48%), hailed a ride using Uber or Lyft (21%), or driven alone (12%) had electric scooters and bikes not been available. Across Los Angeles County, the average recorded ridehail trip is between two and four miles.[9] These results suggest that dockless vehicles are used for short-distance trips. A snapshot of distance traveled by dockless vehicles over the course of two weeks in October shows the average distance traveled for scooters was 0.97 miles, and the average distance for bicycles was 0.90 miles.[10] A third of dockless mobility trips replaced what would have otherwise been made by car, either alone or through a ridehailing service.

0.97 miles

0.90 miles

9 Feigon and Murphy. Broadening Understanding of the Interplay Between Public Transit, Shared Mobility, and Personal Automobiles. 2018. TCRP Project J-11/Task 25 Final Report.

10 Distribution of Trip Distance by Vehicle Type for October 1-14, 2019.

CO2 Impact of Micromobility

Micromobility has the potential to replace single-occupant car and ridehailing trips, thereby reducing emissions. Using a combination of quarterly survey results, trip data, and life cycle CO2 emissions assumptions for each mode, the 8.4 million miles travelled on dockless vehicles during the Pilot Program resulted in an estimated reduction of 1,802 metric tons in CO2 emissions.

Figure 22 shows the estimated CO2 impact micromobility had on each mode. The miles travelled by mode was determined by multiplying the total miles travelled during the Pilot Program with quarterly survey responses to the question "If an e-scooter/e-bike was not available what mode of transportation would you have used instead?". This was combined with CO2 emissions assumptions to estimate CO2 savings.

Figure 22. Estimated CO2 Savings by Mode

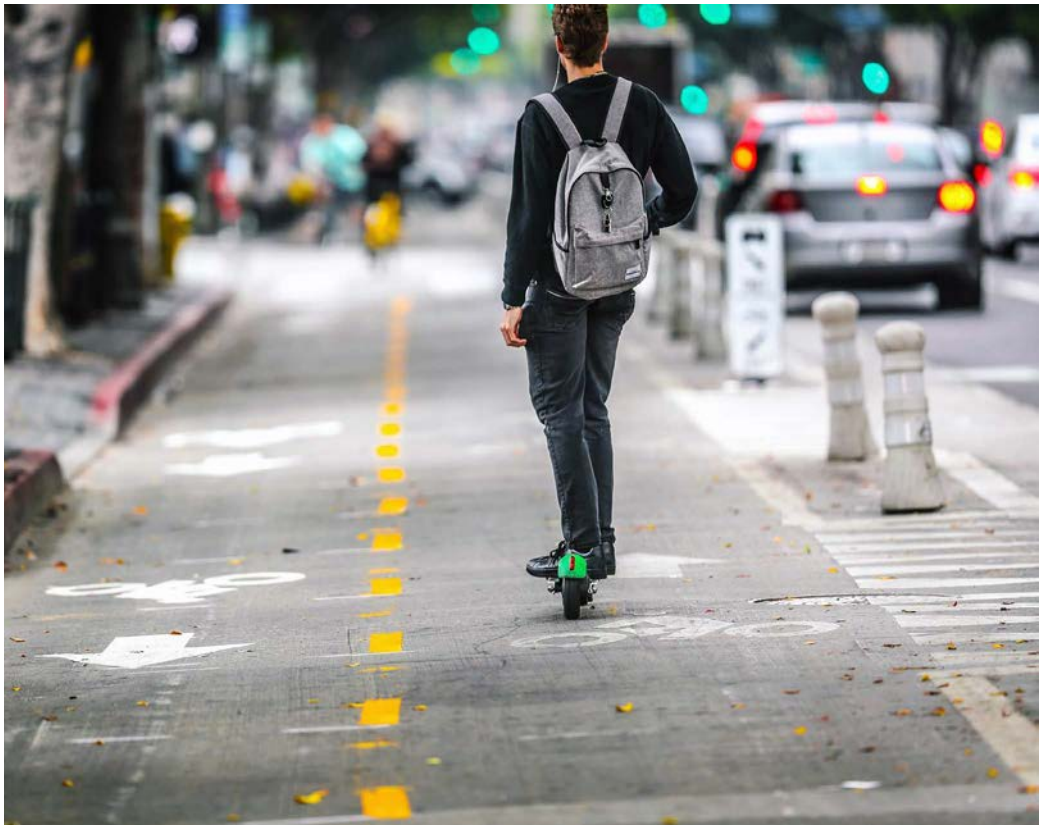
Mode	Percent Responses	Miles Travelled (est)	CO2 Emissions (grams/mile)	CO2 Savings (tons)
Walk	48%	4,032,687	0	0
Ride hail	21%	1,790,746	593.88[11]	1,063.5
Drive alone	12%	977,948	404[12]	395.1
Public transit (bus)	6%	529,992	290[13]	153.7
Personal bike	4%	294,680	0	0
Public transit (rail)	2%	164,071	163[13]	26.7
Metro Bike Share	2%	152,197	0	0
Taxi	2%	145,721	593.88[11]	86.5
Carpool/vanpool	2%	139,085	100	13.9
Other	2%	137,085	202[14]	27.6
Motorcycle/moped	1%	52,891	404[12]	21.3
Carshare	0%	34,541	404[12]	13.9
TOTAL	--	8,451,803	--	1,802

11 https://www.ucsusa.org/sites/default/files/2020-02/Ride-Hailing%27s-Climate-Risks.pdf
12 https://www.epa.gov/greenvehicles/greenhouse-gas-emissions-typical-passenger-vehicle
13 https://www.transit.dot.gov/sites/fta.dot.gov/files/docs/PublicTransportationsRoleInRespondingToClimateChange2010.pdf
14 https://iopscience.iop.org/article/10.1088/1748-9326/ab2da8

CO2 Impact of Micromobility Cont.

Nearly half the trips taken on dockless vehicles during the Pilot Program replaced walking trips. However, nearly a third replaced high-emissions, single-occupant car trips or ridehailing trips. Using a value of 202 g/mi of life cycle CO2 emissions for each electric scooter mile traveled,[15] the manufacturing, charging and rebalancing of dockless vehicles emitted approximately 1,707 metric tons of CO2, a savings of approximately 95 metric tons of CO2 (5%).

There are inherent limitations to this analysis, including key assumptions that customers who would have used all other modes of transportation would have traveled average trip distances. Using an average trip distance therefore may underestimate the emissions benefit, as it is more plausible that walking trips, for example, would be shorter than average, while car and ridehailing trips would have replaced longer dockless vehicle trips.



15 https://iopscience.iop.org/article/10.1088/1748-9326/ab2da8

Access to Transit

Electric scooters and bikes can enhance the existing transit system by strengthening connections to nearby transit stops and mobility hubs. However, both survey and ridership data showed that people rarely used dockless vehicles as a first/last mile ride to transit. Only 5% of survey respondents accessed their electric scooter or bike after a bus or rail trip.

This does not account for how essential dockless mobility became for many regular riders. While most trips did not provide first or last mile transit access, frequent users are much more likely to use these services to access transit than infrequent users. Forty percent of frequent riders use dockless vehicles to ride to or from transit stops. This suggests that regular riders are integrating electric scooters and bikes into their daily commuting habits and finding new ways to connect to public transit.

According to MDS data, relatively few trips start or end at an LA Metro station: 7.9% of trips begin within approximately 100 meters of an entrance to an LA Metro station, and 6.4% of trips end within approximately 100 meters of an LA Metro station entrance. Of the top ten most common stations associated with micromobility trips, seven are in or adjacent to DACs.

OBJECTIVES ACHIEVED

Safety	○	Access	◑
Equity	○	Quality of Life	○

TAKEAWAYS

01	02	03	04
Mobility	Data-Driven	Managed	Experimental

Figure 23. Distribution of trip starts and trip ends by proximity to transit stations

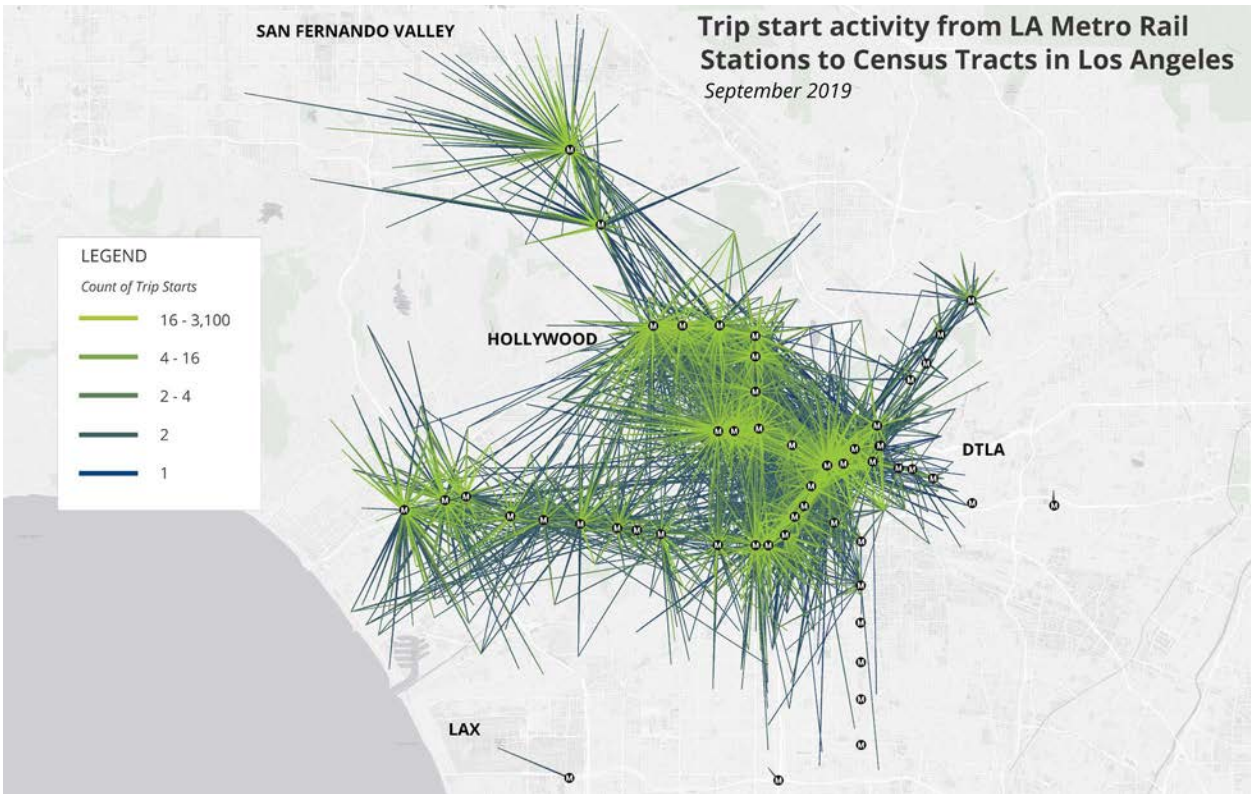
LA Metro Station	Percent of Trip Starts	Percent of Trip Ends	DAC (Y/N)*
Not near a Metro Stop	92.1%	93.6%	N/A
7th Street / Metro Center Station	1.4%	1.2%	N
Pershing Square Station	0.7%	0.6%	Adjacent
Hollywood / Highland Station	0.6%	0.6%	Adjacent
Hollywood / Vine Station	0.5%	0.4%	Y
Wilshire / Vermont Station	0.5%	0.4%	Adjacent
Wilshire / Western Station	0.5%	0.3%	N
Pico Station	0.3%	0.3%	Adjacent
Wilshire / Normandie Station	0.3%	0.3%	Adjacent
Expo / Bundy Station	0.3%	0.2%	N
North Hollywood Station	0.3%	0.2%	Y
All Other Metro Stations	2.5%	1.9%	N/A

**Adjacent indicates that the Station is on a border between DAC and non-DAC areas.*

The 7th Street / Metro Center Station was the most common point of connection for transit access trips. Riders primarily dropped off and picked up micromobility devices along 7th St. and S. Figueroa St. near several of the main entrances to the station. Trips beginning at an LA Metro station are less likely to occur on weekends. This is consistent with less frequent LA Metro service during these times.

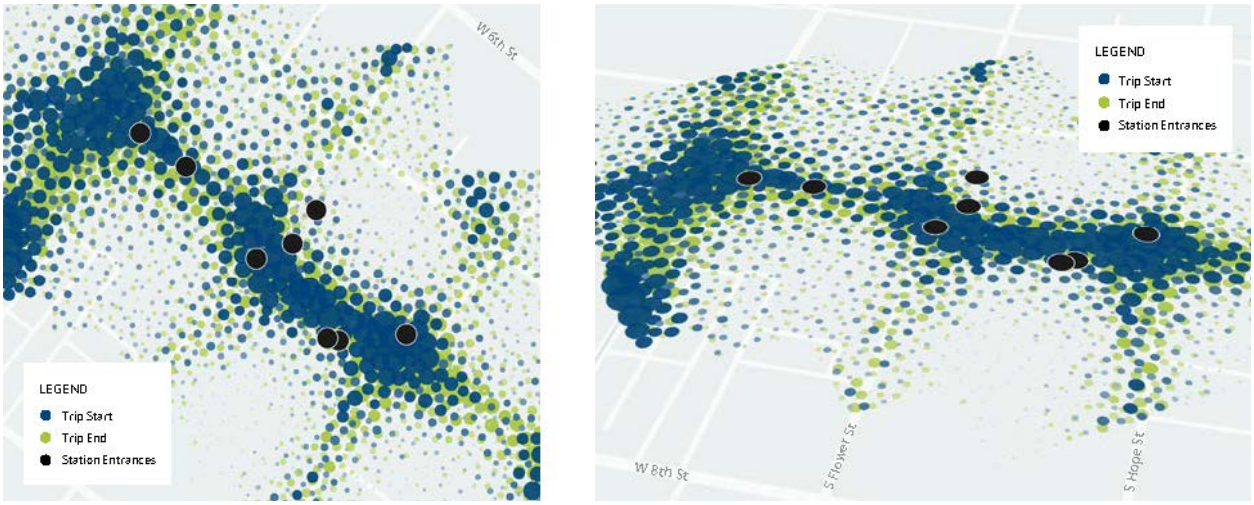
Given that intermodal connections to and from transit are low, more incentives may be needed to encourage electric scooters and bikes as a first/last-mile trips to major transit hubs.

Figure 24. Trip Start Activity in September 2019 From LA Metro Rail Stations



Dockless vehicles are used to access Metro rail stations as first and last mile solutions. Note that the image shows additional variability in scooter length and distance of usage across Los Angeles. The heatmap shows aggregated trips originating from the LA Metro Rail Stations to census tracts in LA. Each census tracts are shown as points of the center of census tracts.

Figure 25. Trip start and end activity density outside 7th Street/Metro Center station entrances



Snapshot of vehicles parked outside of Metro station entrances. By understanding the distribution of vehicles, LADOT can apply targeted digital parking policy.


Vermont Av
3700 S

05

The Issues and Opportunities

The Dockless Vehicle Pilot Program showed how electric scooters and bikes can bolster LADOT's vision for a mobility system that is safe, equitable, accessible, and supportive of people's quality of life. The pilot demonstrated LADOT's capacity to create flexible regulatory frameworks to evaluate new mobility services. The pilot surfaced ongoing challenges and lessons that inform the Year 2 program and other future mobility permit programs.

Affordability and Equity Measures

Cities have approached equity for shared micromobility from two angles: access to the services and availability of the vehicles. LADOT requires dockless micromobility operators to include an Equity Plan in their applications to outline how they will ensure access to their systems for those without a smartphone, those who may be unbanked or without a credit card, and those who are considered low-income. The Equity Plan requirements aimed to address financial barriers to dockless services.

Each operator had to present a plan to handle the following three challenges to:

1. Offer a cash option, non-smartphone option, and a low-income plan
2. Waive any hold deposits and provide unlimited free trips under 30 minutes for low-income customers
3. Verify low-income status

Source: Streetsblog LA

OBJECTIVES ACHIEVED

Safety	○	Access	◑
Equity	◑	Quality of Life	○

TAKEAWAYS

01 **Mobility**

02 Data-Driven

03 Managed

04 **Experimental**

Operators addressed these challenges by providing unlimited rides under 30 minutes for a monthly subscription fee. Operators required proof of enrollment in a local, state, or federal assistance program to establish eligibility. Operators offered a variety of alternative payment options for unbanked users and provided either an SMS text or call-in option to unlock rides for users without access to smartphones. As of January 2020, there were a total of 2,898 low-income plan enrollments across all operators. Lime had the greatest number of enrollments (957) followed by Bird (936) and Lyft (494). Although enrollment increased over time, more can be done to expand awareness of equity programs. Equity requirements were also limited to addressing income-based factors.

Figure 26. Summary of Dockless Operator Equity Plans

Operator	Low-Income Program (and verification process)	Cash Payment	Non-Smartphone	Additional Program Features
Bird	Bird Access offers service for $5 a month. Allows unlimited rides of 30 minutes or less. Open to those eligible for a state or federal assistance program.	Accept pre-paid debit cards.	SMS text to unlock available.	• App in several languages. • Bilingual marketing materials. • Multilingual customer service. • Military Service Members and Veterans program.
Bolt	Bolt Forward offers 50% off all rides "for those that qualify."	Can add to account with a check or money order.	SMS text to unlock available.	---
Jump	JUMP Boost offers service for $5 a month. Allows 60 minutes of free ride-time every day. Open to those who use Supplemental Nutrition Assistance Program (SNAP) benefits and other local and state benefit programs.	Cash payments through PayNearMe for older models. Can use Uber gift cards.	Call to unlock for non-smartphone access.	---
Lime	Lime Access offers a monthly subscription. Allows unlimited rides of 30 minutes or less. Open to those who qualify for any financial assistance program.	Cash payments through PayNearMe.	SMS text to unlock available.	---

Operator	Low-Income Program (and verification process)	Cash Payment	Non-Smartphone	Additional Program Features
Lyft	Lyft's Community Pass program offers service for $5 a month. Allows unlimited rides of 30 minutes or less. Open to those enrolled in or eligible for a state or federal assistance program such as Medicaid, SNAP, the Low-Income Fare is Easy (LIFE) program, or a discounted utility bill.	Accept pre-paid debit cards.	Call to unlock for non-smartphone access during services hours.	---
Sherpa	Sherpa's low-income program offers a monthly subscription. Allows unlimited rides of 30 minutes or less. Open to those eligible for a state or federal assistance program.	Accept pre-paid debit cards.	SMS text to unlock available	• App in several languages. • Bilingual marketing materials. • Multilingual customer service.
Spin	Spin's low-income program offers a monthly subscription. Allows unlimited rides of 30 minutes or less. Open to those eligible for a local assistance program.	Spin Access cards can be purchased for cash payments.	SMS text to unlock available.	---
Wheels	Wheels for All offers a monthly subscription. Allows unlimited rides of 30 minutes or less. Open to those enrolled in or eligible for a state or federal assistance program.	Cash payments accepted through promotional cards at partner locations.	Call to unlock through a reservation system.	---

LADOT required operators to submit a community engagement plan and to report on their efforts quarterly. Most operators hosted meetings and events with community-based organizations, non-profits, business improvement districts, and neighborhood councils throughout the Pilot Program. A few went further in their efforts.

Bird tabled at several public events to provide educational and safety materials, lead vehicle demonstrations, and show people how to use MyLA311. Lime led community education and awareness events and established a program that allowed riders to donate a portion of their trip costs to a local organization. Lyft partnered with several community-based organizations to launch local initiatives. Spin had a street ambassador program to sign up new riders, answer questions, and gather feedback. Spin used various social media platforms to engage with riders on best practices for parking.

The operators have varying levels of experience in community engagement. In the future, LADOT expects companies to invest resources and work with community-based organizations to encourage activity. This partner-based approach might include coordination with LADOT to enable more targeted outreach and improve engagement outcomes.

Source: Joe Linton /Streetsblog LA

Fleet-Based Incentives

In addition to providing an Equity Plan, LADOT created an incentive program to encourage operators to deploy vehicles in Disadvantaged Communities (DAC). DACs refer to areas throughout California that most suffer from a combination of economic, health, and environmental burdens. DACs are determined by the California Office of Environmental Health Hazard Assessment using CalEnviroScreen Version 3.0, a screening tool based on a climate index that incorporates factors such as potential exposure to pollutants, socioeconomic factors, and prevalence of certain health conditions.

The intent of the fleet-based incentive was to incentivize vehicle availability in low-income communities of color. Operators deploying in DACs that scored above the 75th percentile as defined by CalEnviroScreen 3.0 got an additional 2,500 vehicles, and operators deploying in DACs within the San Fernando Valley could gain an additional 5,000 vehicles, all for a discounted per vehicle rate. Although several operators initially committed to deploying in DACs, average monthly deployment in DACs fell precipitously during the pilot and never achieved its potential.

OBJECTIVES ACHIEVED

- Safety
- Access
- Equity
- Quality of Life

TAKEAWAYS

01 Mobility

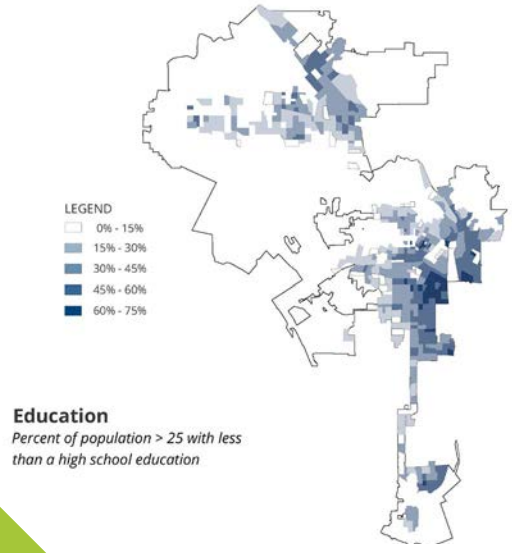
02 Data-Driven

03 Managed

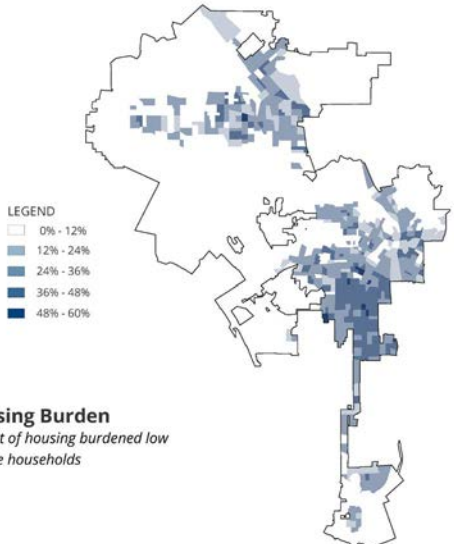
04 Experimental

DACs may serve as an appropriate analytical framework for other types of environmental, public health, and equity assessments, however, requiring a percentage of total fleet in large geographies does not guarantee access, nor does it address the unique mobility needs of the people that live there. A new equity zone designation is needed that more accurately reflects the geography of mobility need, displacement risk, and other racial equity measurement criteria.

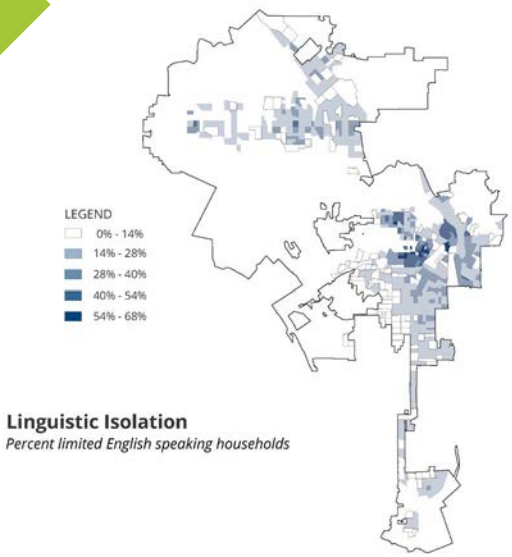
Figure 27. Demographic Distribution in DACs



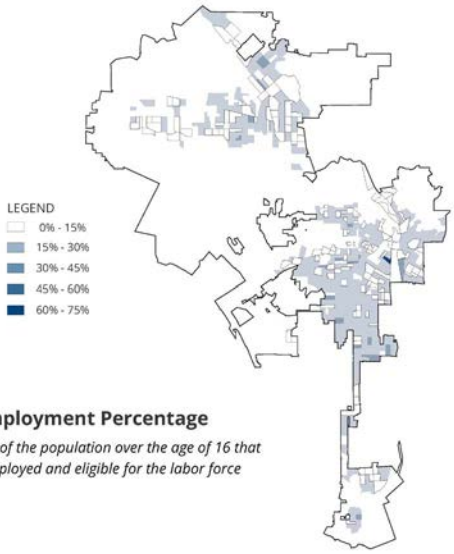
Education
Percent of population > 25 with less than a high school education



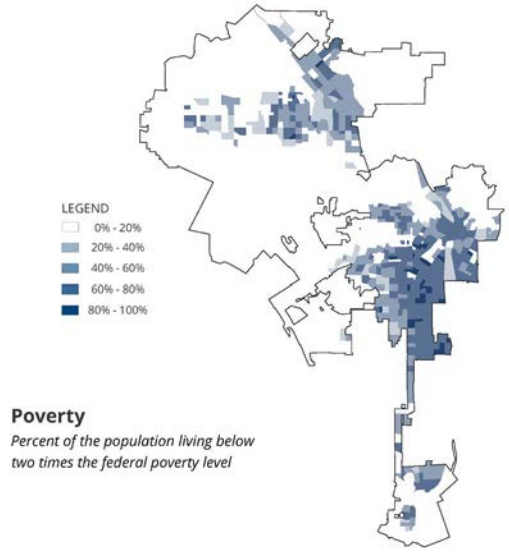
Housing Burden
Percent of housing burdened low income households



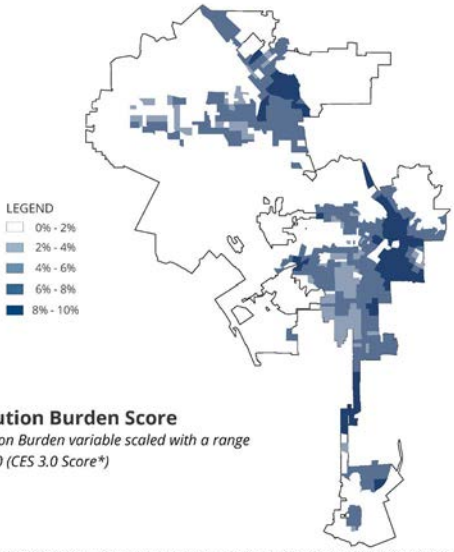
Linguistic Isolation
Percent limited English speaking households



Unemployment Percentage
Percent of the population over the age of 16 that is unemployed and eligible for the labor force



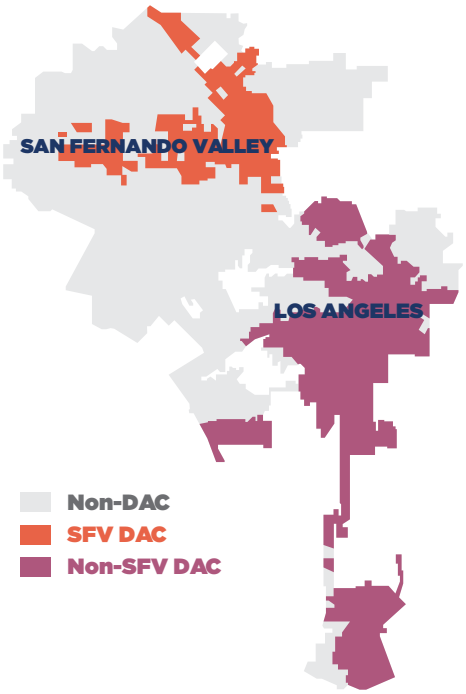
Poverty
Percent of the population living below two times the federal poverty level



Pollution Burden Score
Pollution Burden variable scaled with a range of 0-10 (CES 3.0 Score)*

*CalEnviroScreen identifies California communities by census tract that are disproportionately burdened by, and vulnerable to, multiple sources of pollution.

Figure 28. DACs vs. non-DACs



DAC designations and fleet incentives did not ensure equitable access to dockless vehicles. Deployment volumes within SFV DACs were significantly lower than those for non-SFV DACs and for non-DACs throughout the Pilot Program. During peak deployment periods, non-DACs altogether had 42% greater deployment volumes than non-SFV DACs, and over 95% greater deployment volumes than SFV DACs. LADOT has undertaken a deeper look at concentrations of mobility need and how to ensure disadvantaged communities have reliable access to mobility programs in the future.

- Although we require operators to provide equity programs to low-income users, according to the LADOT user survey results, 85% of riders are not aware of them. Many operators work with Council Offices and community-based organizations to promote and solicit enrollment in equity programs. However, most operators have limited staff dedicated to overseeing all outreach activities for the entire Los Angeles market.
- Equity Plan requirements do not consider vulnerable populations outside of those who are low-income, unbanked, and/or do not have smartphones. Among those left out are people that may face barriers to access such as older adults and people with disabilities. LADOT can work with operators to ensure that the program provides access for all, including those facing mobility challenges.
- In terms of operator responsiveness to constituent complaints, operators were most responsive to MyLA311 service requests in non-SFV DACs, which includes Downtown LA. The average response time in non-SFV DACs was 8.9 hours while the average response time in non-DAC areas was 11.6 hours. Of note, the SFV DACs had the smallest fleet size but saw the longest average response time with 12.8 hours. Average response times are skewed by service requests that have higher average response times than most other service request types (e.g. device in the Venice Canals). LADOT may consider implementing an issue-dependent, tiered SLA framework for MyLA311 dockless service requests.

Rider Behavior & Safety

Pilot data reveals that dockless vehicles, overall, represent a safe transportation option for Angelenos. The Dockless Vehicle Pilot Program experienced no deaths[16] across 10.3 million trips between April 2019 and March 2020. While this advanced LADOT's Vision Zero initiative, the program can do more to educate riders to improve safe riding behavior and ensure vehicles are safe and well-maintained.

- The Los Angeles Police Department issued 1,316 citations related to electric scooters and e-bicycles as of March 15, 2020. Roughly 85% of those citations were for sidewalk riding.[17]
- A total of 339 scooter-related emergency medical incidents were reported from March 2019 (when operators were first issued permits) to February 2020. Seventy-two percent of these incidents resulted in visits to the emergency room.[17] Incidents peaked in the summer from June to August and then diminished, which is reflective of higher ridership during these months and higher ridership by less experienced riders.
- A total of 407 scooter-related collisions were reported from 2019 through March 15, 2020.[18] Almost 80% of scooter-involved collisions involved drivers while 3% involved a person walking. Although no collisions were fatal,[19] 11% lead to severe injuries, while 43% resulted in a visible injury.

OBJECTIVES ACHIEVED

TAKEAWAYS

16 Section 21235(g) of the California Vehicle Code states that the operator of a motorized scooter shall not operate a motorized scooter upon a sidewalk, except as may be necessary to enter or leave adjacent property.

17 Compiled from weekly scooter incident reports from the Emergency Medical Services Bureau of the Los Angeles Fire Department.

18 LAPD scooter-involved traffic collision YTD stats for 2019 and 2020. Collision data is aggregated based on vendor, LAPD Division Breakdown, and types of collision. Based on this aggregation, the analysis is unable to attribute factors (e.g. proximity to bicycle infrastructure, vehicle speed limits, time of day, etc.) that could further contextualize collision trends.

19 LADOT is aware of one fatality in Hollywood involving a pedestrian who was riding a scooter just prior to the collision. LAPD did not classify this as a scooter collision under their current reporting system, but LADOT's Dockless program managers worked with Vision Zero Core Team to discuss prevention strategies in the area following the collision.

While LADOT posts the City's parking and safe riding rules on the program website and operators include in-app safety info, rider knowledge varies. Less than three-quarter of riders (67%) know that a valid driver's license is required to ride an electric scooter or bike. Less than half of riders know that riding is prohibited on the Venice Beach Boardwalk (47%) and/or the Venice Ocean Front Walk (45%).

Even when riders know the rules, their behavior might not reflect their understanding of the rules. While the majority of riders (82%) know not to ride on sidewalks, a third of riders still prefer to ride off-street on sidewalks.

The vast majority of MyLA311 service requests were parking related. Seventy-nine percent complained of improperly parked vehicles and 10% complained of vehicles parked on private property.

Rider safety education is a shared responsibility between LADOT and the permitted operators, requiring ongoing accountability on both ends. LAPD is in charge of enforcing rider infractions.

Figure 29. Rider Awareness Knowledge of Safe Riding Rules[20]

Safe Riding Rules	Percent of Awareness
No riding on sidewalks	82%
Must obey the rules of the road	81%
Must be at least 18 years of age	68%
Must have a valid driver's license	67%
Helmets are required	48%
No riding on the Venice Beach Boardwalk	47%
No riding on the Venice Ocean Front Walk	45%

LADOT and Council Offices have been working with LAPD to enforce and reduce sidewalk riding. The face value of a sidewalk-riding citation is $197. Between January and mid-July, LAPD issued 800 tickets to electric scooter users and cited them for more than 900 violations, ranging from sidewalk riding to riding without a valid license. Approximately two-thirds of the violations involve sidewalk riding. LAPD conducted several enforcement stings targeting sidewalk riding as part of the City's efforts to reduce collisions and injuries. More coordination between LADOT and LAPD can evaluate the efficacy and scalability of sidewalk riding citations and to address the potential equity concerns related to enforcement and policing in communities of color and low-income areas.

20 Quarterly Rider Survey (May-December 2019)

Vendor Operations & Pilot Experimentation

LADOT adopted a spirit of testing and collaboration and sought out opportunities to learn with operators throughout the permit period. Experimentation allows us to test new tools, reveal deficiencies, identify performance metrics, and shape policies that work for Los Angeles. LADOT has piloted several digital policies for micromobility in small geographic areas to understand their impacts and how they might apply to the broader citywide context. Examples of experimentation include the SOZs, event management, auditing and technical compliance.

OBJECTIVES ACHIEVED

TAKEAWAYS

Auditing and Technical Compliance

Inspection and auditing establish the facts needed for regulatory action, incentives, and rewards. Measurable, or auditable, compliance is essential for the dockless program because it establishes certainty that operators are complying with policy. This method provides an objective, evidence-based foundation for rewarding or penalizing operators.

LADOT created several regulatory enforcement tools to support the auditing process. With these tools, City employees can check each device to ensure that the device's real-world status and position are accurately reflected in MDS. These tools enable City employees to monitor and assess operator compliance to SOZ regulations and parking requirements.

Technical compliance refers to adherence to MDS data reporting requirements. In November 2019, LADOT discovered that most vehicles found in the public right-of-way were correctly reflected in MDS. The department discovered that the status of more than 30% of vehicles from one mobility operator were inaccurately reported in MDS. Other audit trips have revealed new, unregistered devices in the public right-of-way. LADOT communicated discrepancies to operators and were able to verify compliance and correction, resulting in thousands of vehicles being represented correctly in MDS.

Public and Private Event Management

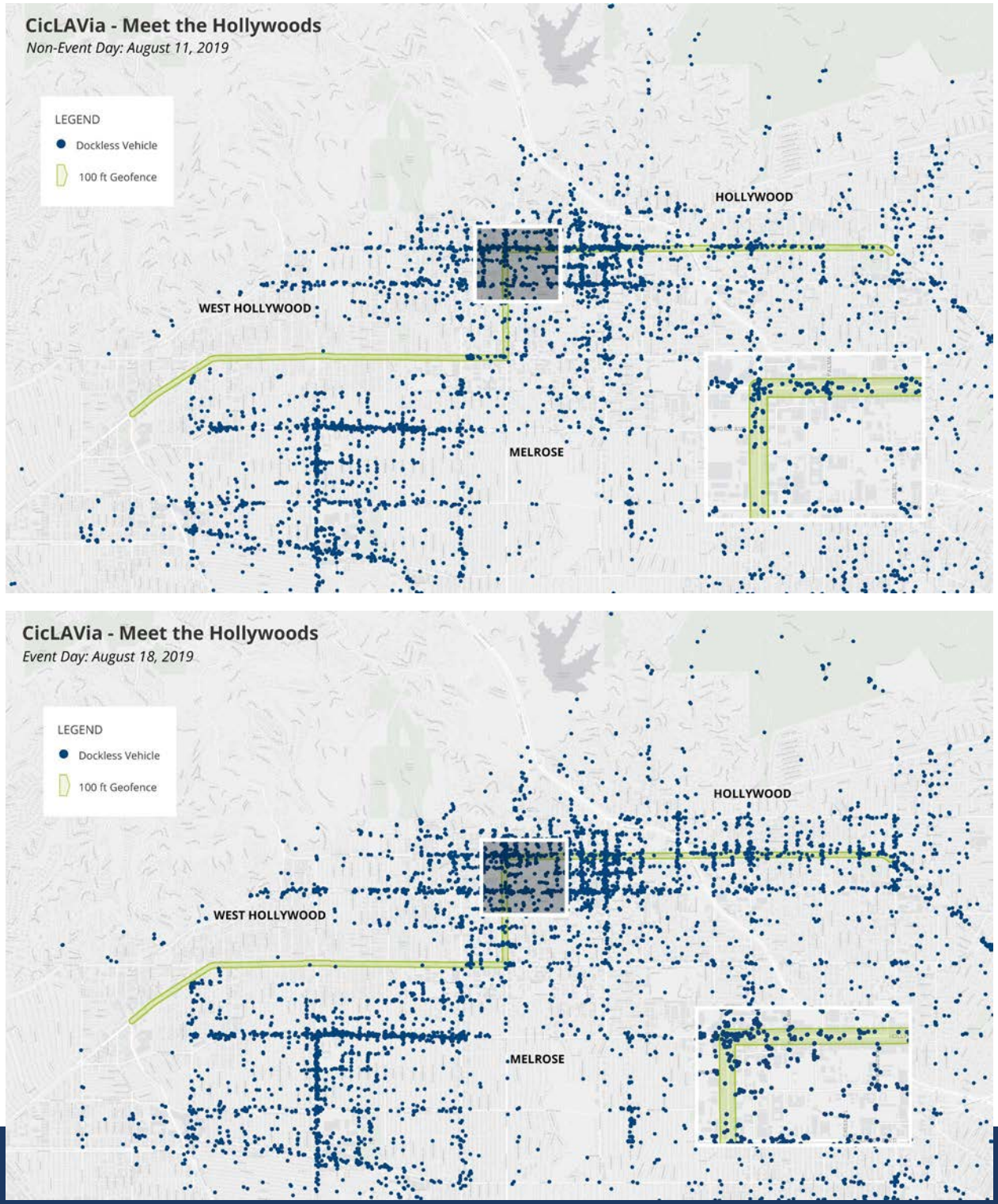
Events are a major source of electric scooter and bike demand and create potentially significant operational challenges. The non-profit organization CicLAvia hosts community events multiple times per year, which requires entire streets and intersections to be closed to motorized traffic for the day. Though no cars or trucks are permitted, larger-than-usual volumes of people walking and biking, as well as children learning to bike create an environment where faster-moving vehicles (like electric scooters) can be disruptive.

During the pilot period, there were five CicLAvia events. To help ensure safety in these temporary pedestrian areas, LADOT established policies specifically for micromobility use. They included speed limits, prohibiting users from starting and ending trips, and prohibiting deployment of micromobility vehicles within a geographic area. LADOT identified the geographic area via a GIS tool and imported that into its MDS system thus creating a "geofence." LADOT codified the policy rules in MDS via a digital policy manager tool, and referenced the geofence. LADOT then communicated the policy and geofenced location to operators by email.

Once we published the policies to the companies, we measured compliance to the policy by counting the vehicles violating the geofence.

During the "Meet the Hollywoods" CicLavia event in August 2019, LADOT geofenced approximately fourteen City blocks. Four operators had scooters in the area, with over 200 devices in the immediate vicinity of the event. CicLavia draws tens of thousands of attendees and the combination of geofencing and direct communication between LADOT, operators, and event organizers allows partners to manage the impacts together.

Figure 30. Scooter Activity during CicLAVia - Meet the Hollywoods Event (August 2019)



CicLAvia route map and locations of scooters locked in and around CicLAvia for Meet the Hollywoods event. This image shows a snapshot of trip ends between 9 am and 4 pm on event day, highlighting policy compliance.

Source: LADOT

Special Operations Zones

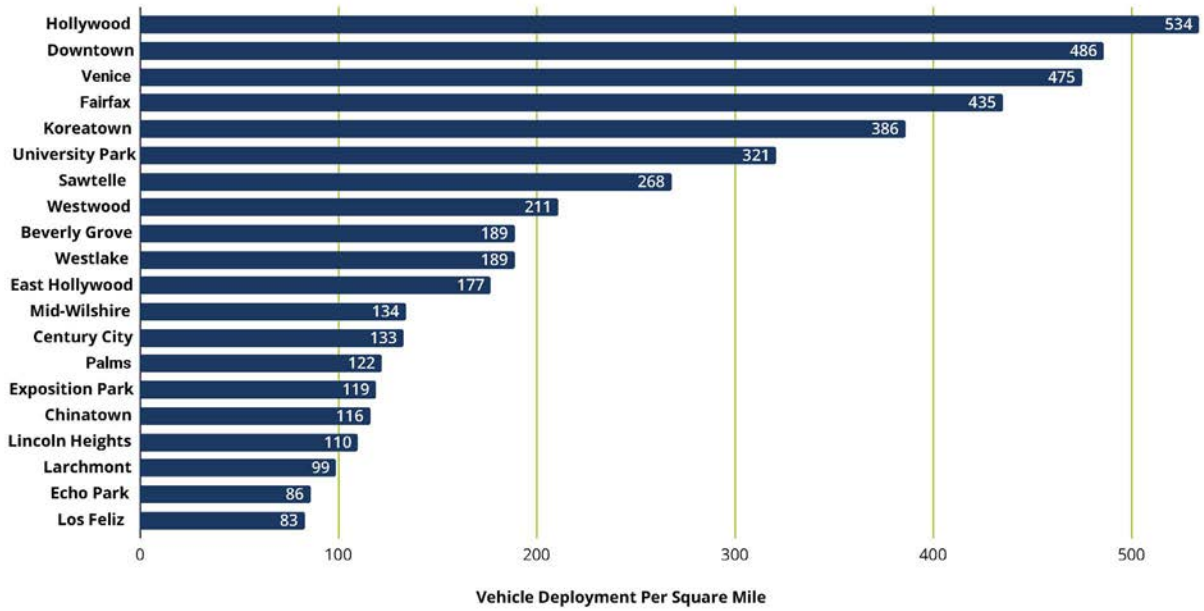
In May 2019, LADOT established a Special Operations Zone (SOZ) in Venice in response to concerns related to oversaturated deployment, untidy parking, and conflicts between people riding dockless devices and people walking along the boardwalk. The Venice SOZ has served as the testing ground for piloting digital policies and enforcement mechanisms. Operators are limited to deploying at most five dockless mobility devices at each Drop Zone where space is available. LADOT determined Drop Zone locations based on perceived deployment hotspots. Our lessons learned from piloting digital policies like the Venice SOZ will inform the implementation of SOZs in other parts of the city.

LADOT staff, with support from Nelson\ Nygaard and Ellis & Associates, conducted monthly audits to enforce SOZ policies. Operators that exceed the 5-vehicle cap or deploy vehicles outside of Drop Zones receive a warning followed by a temporary suspension of all operations within the SOZ. Operators were generally responsive to SOZ enforcement and were able to restructure operations to meet policy requirements. In several instances, LADOT suspended an operator from the Venice SOZ for seven days for violating deployment maximums. These data-driven enforcement actions led to improved compliance within the Venice SOZ.

Other regions of Los Angeles have been identified as potential sites for piloting digital policy applications. Similar to Venice, Downtown Los Angeles experiences high use of dockless mobility services, and an oversaturation of dockless vehicles. Lessons and best practices gleaned from the Venice SOZ experience can help to inform SOZ implementation in other parts of the City.

For example, the Hollywood Walk of Fame is a popular destination that, similar to the Venice boardwalk and beach path, experiences high pedestrian volumes and high utilization of dockless vehicles. As shown in Figure 31 below, electric scooter and bike deployments in Hollywood and Downtown Los Angeles were more dense than in Venice.

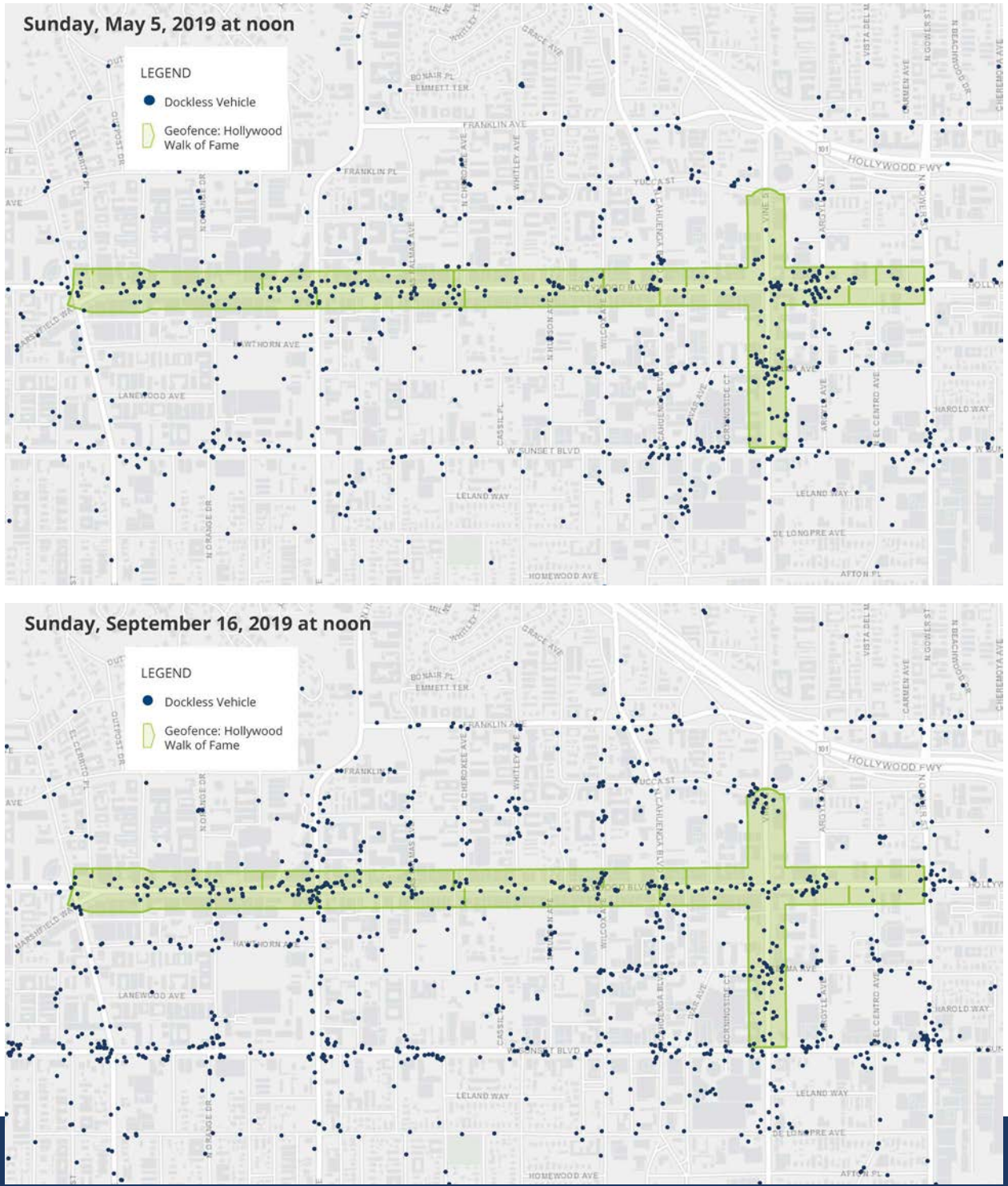
Figure 31. Dockless Vehicle Deployment Density



In April 2020 LADOT created a new Special Operations Zone policy with a geofence along Hollywood Blvd. from La Brea Ave. to Gower St. and along Vine St. from Sunset Blvd. to Yucca Ave. Operators were instructed that the following policies are to be implemented:

- Users are prohibited from reserving vehicles, starting trips, and ending trips within the SOZ
- Operators are prohibited from deploying vehicles, within the SOZ
- If a vehicle is found to be left in the SOZ, either through MDS or other notification (such as 311), operators are expected to pick up the vehicle within two hours of being dropped off
- Fully Motorized Vehicles are required to throttle down to 0 mph in the SOZ

Figure 32. Deployment of Dockless Vehicles on the Hollywood Walk of Fame Over Time Without Digital Policy Measures in Place



Similar to Venice Beach, the Hollywood Walk of Fame experiences high levels of tourist and pedestrian activity while sharing the same space with dockless vehicles.

Fleet Rebalancing

Dockless mobility experiences peak directional travel, which creates issues related to oversaturation in some neighborhoods and a lack of vehicle supply in others. Residents often travel in similar directions at similar times (e.g. travel to and from work or school). These travel patterns can lead to spikes in demand and shortages of mobility devices in some places and oversupply of devices in others. Operators deploy large numbers of operational staff to repair and recharge scooters, and these workers move vehicles from areas of oversupply to areas of higher demand.

An alternative way of looking at comparing supply and demand is evaluating where operators and customers take vehicles in the city. In most neighborhoods, the ratio of user vehicle trip destinations and operator vehicle drop-offs is balanced. However, some neighborhoods appear to have imbalance. Nearly 80% of scooters in Playa Del Rey were brought there by operators, while far more scooters were brought by users than operators in areas including Panorama City, north of North Hollywood, Chinatown, and near Jefferson Park.

OBJECTIVES ACHIEVED

TAKEAWAYS

Figure 33. Percenatge of Operator Drop Offs and Rider Trip Ends in DACs in the City of Los Angeles in September 2019

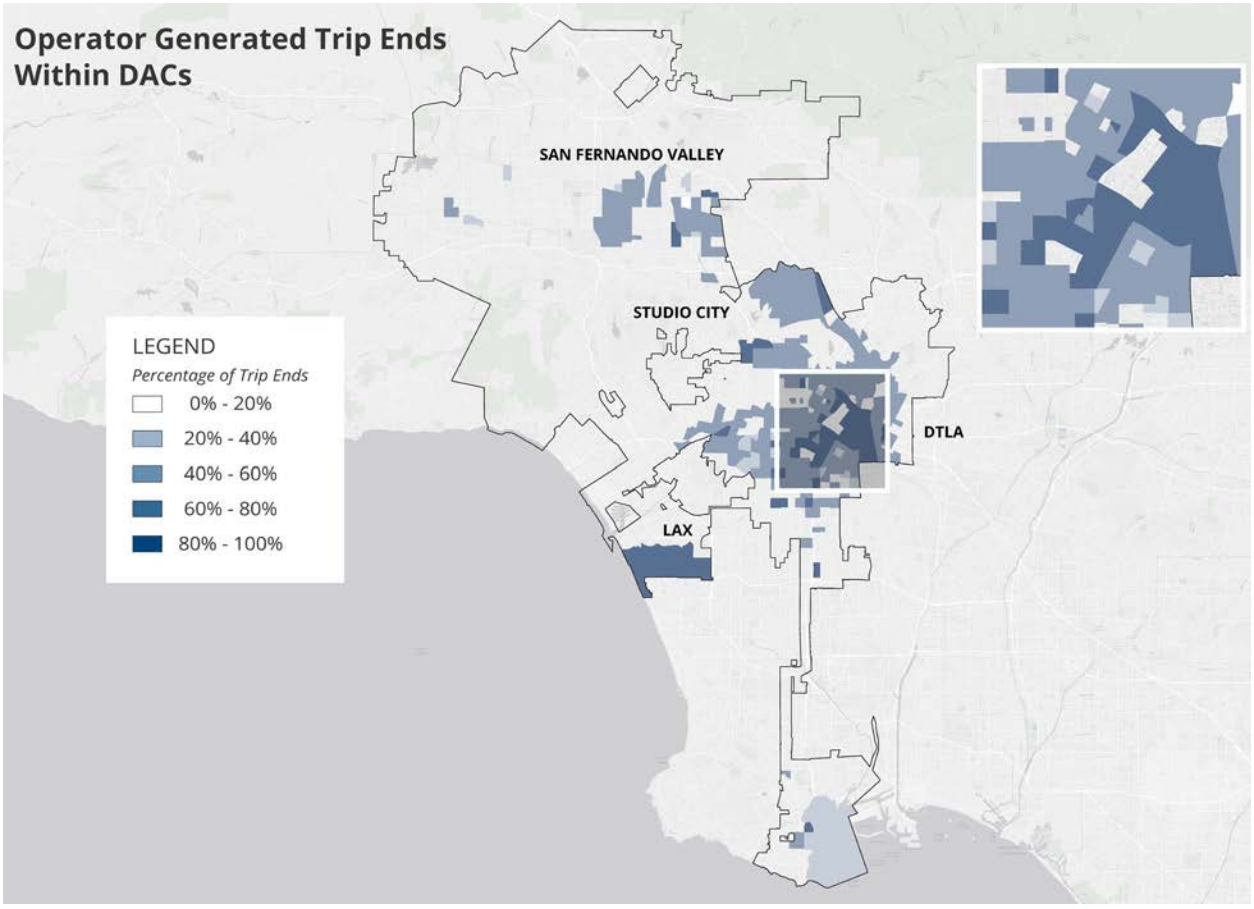


Figure 33 compares the arrival of devices in Los Angeles neighborhoods and the percentage of devices that were brought by users versus those that arrived via operator drop-offs.

Public Realm and Parking

When dockless electric scooters and bikes launched in Los Angeles, City Councilmembers and their constituents were concerned with oversaturation of abandoned vehicles and untidy parking. Vehicles that tip over or are obstructing travel paths might create accessibility challenges for people with physical, visual, and cognitive abilities while disrupting the public realm. LADOT audited parked vehicles to check for improper and obstructed parking. These audits found that:

- Nearly half of all audited devices were observed to be correctly parked in the amenity zone (47%) while 26% were parked within the pedestrian zone.
- One in five audited vehicles obstructed the pedestrian zone and failed to provide at least 6 feet of clearance.
- Seven percent of vehicles were observed to block access ramps and 8% of vehicles were tipped over.

OBJECTIVES ACHIEVED

Safety	◐	Access	○
Equity	○	Quality of Life	◑

TAKEAWAYS

01 Mobility

02 Data-Driven

03 Managed

04 Experimental

These values are similar to what has been observed in other cities,[21] indicating that LADOT's enforcement, education, and collaboration with operators were successful in achieving the outcomes Council directed. However, even one vehicle obstructing ADA access is unacceptable. Although operators have implemented in-app features that provide detailed parking instructions for users, additional efforts can expand user education around parking.

LADOT required operators to submit detailed parking plans outlining potential incentives and in-app features they can deploy to improve parking outcomes. While most operators delivered on their plans, the pilot was not structured or resourced to evaluate the effectiveness of the operator's parking plans. Greater collaboration between LADOT and operators can continue to identify a set of incentives that are appropriate to the Los Angeles market.

21 During the first year of their pilot programs, Seattle DOT reported roughly 4% of all audited dockless bikes obstructed ADA access while the District Department of Transportation reported nearly 7% of all audited dockless vehicles were parked undesirably.

Operator Responsiveness

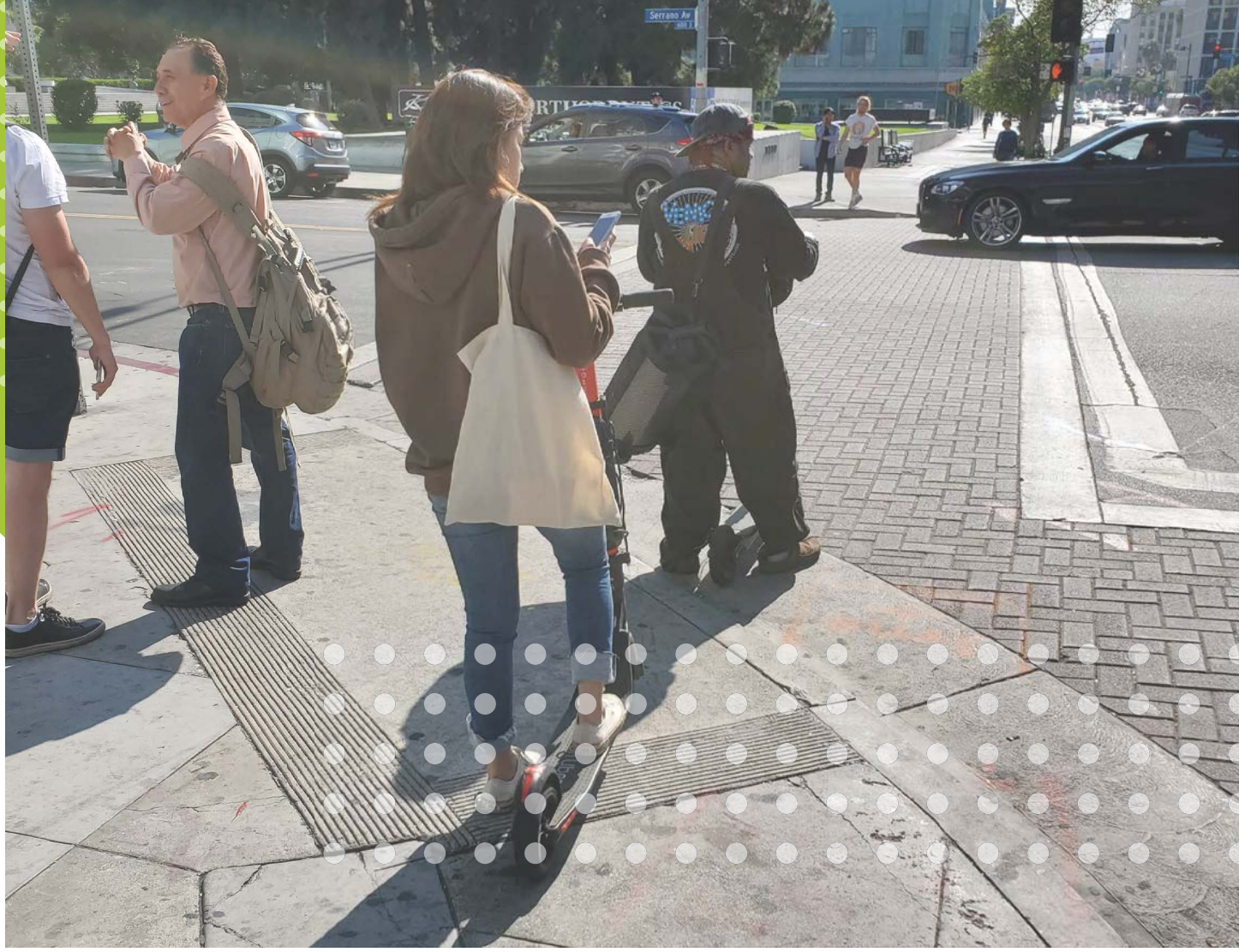
LADOT required operators to respond to all MyLA311 service requests within two hours, which means all service requests, including improper parking, illegal deployments, and broken devices carry the same weight. Between March 1, 2019 and March 22, 2020, LADOT received a total of 12,653 MyLA311 Dockless Mobility Service Requests.

- 68% of service requests were resolved within the required two-hour window.[22]
- Almost 90% of all service requests involved vehicles that were improperly parked or parked on private property. The least common violation type was 'Low Battery', which accounted for 0.2% of all service requests.
- Service requests involving unpermitted operators had the longest average resolution time at 41 hours while service requests involving vehicles parked on private property had the lowest average resolution time at eight hours.
- A majority of service requests were reported from non-DAC (84%) and non-SFV DAC areas (14%). These trends are reflective of deployment patterns where areas with higher service request volumes have a higher density of dockless vehicles.

OBJECTIVES ACHIEVED

TAKEAWAYS

22 Service requests involving 'Sidewalk Riding' were excluded from this calculation. Unlike other violations, 'Sidewalk Riding' service requests are not assigned to an operator and are immediately resolved after the service request is created. LADOT created this violation as a way to gauge general sidewalk riding behavior.



An opportunity is to modify MyLA311 response time requirements for violation types based on the volume of service requests. For example, service requests involving improperly parked vehicles may have a required response time of two hours while service requests involving abandoned vehicles in the Venice Canals may have a required response time of 24 hours. Shifting time requirements to a tiered system can help guide operators in prioritizing the most urgent service requests.

Residents have expressed concerns about the durability of vehicles. While not explicitly addressed here, MDS permits operators to deregister vehicles with a specific reason, including “decommissioned” or “missing” vehicles. In the future, these events could be used to evaluate the durability of vehicles and validated with audit data collected in the field.

06

The Future of On-Demand Mobility

The Pilot Program achieved many positive outcomes, while it fell short on others that will require new policies, protections, and partnerships. What is indisputable - shared electric scooters and bikes demonstrate potential to become a vital mobility option for Angelenos. People are taking trips—the most trips of any dockless mobility program in North America—and many of those trips are replacing the use of cars and ridehail.

The development and use of Mobility Data Specification (MDS) data was essential to manage permitted fleets and monitor company performance. Without access to trip and vehicle status data governed by MDS, our program decisions and direction for Year 2 would rely on guesswork and prediction. We are looking to lessons learned about enforcement, equity, privacy, and mobility to guide Year 2 recommendations.

Disadvantaged Community (DACs) designations and fleet incentives aimed at operators did not ensure access to dockless vehicles across LADOT's many diverse communities. Likewise, the program's current Equity Plan requirements did not fully address the range of barriers to accessing dockless services, such as geographic, technological, financial, and cultural barriers. Additionally, the requirements fail to consider other vulnerable populations that may face barriers to access, such as older adults and persons with disabilities. The role of potentially discriminatory rider enforcement in Black, brown, and immigrant communities remain a critical consideration. The shared goal of LAPD and LADOT is that companies communicate rules clearly to riders and play an education role to assist in reducing the conflicts between riders and others in the public right-of-way.

In the advent of the COVID-19 pandemic, dockless mobility is an important mobility option that can offer redundancy when public transit is not available—particularly for those essential workers that need reliable and on-demand transportation.

LADOT learned vital lessons about dockless mobility, the way the private mobility industry operates and serves the mobility needs of Angelenos, and the data necessary to engage with these services. In the years to come, we will take the program in several new directions.

New Direction 01

Delivering On-Demand Mobility – in all its various forms.

01 | Delivering On-Demand Mobility – in all its various forms.

In Year 1, the Dockless Mobility Pilot Program served as a proving ground for shared, electric, small vehicle transport—primarily in the form of dockless scooter and bike share providers. However, the mobility ecosystem is rapidly evolving with new modes, new product features, and new ways to get a vehicle when you need it. We seek to build a program that uses a wide lens—beyond vehicle types and business models currently on the market.

Given the range of potential micromobility solutions that could expand mobility options for Angelenos, LADOT will **rebrand the program to On-Demand Mobility Program** and enable a broader set of shared micromobility services that span:

- Dockless, dock-based, and hybrid parking models;
- Different vehicle types and form factors less than 1,000 pounds; and
- Different operating models, such as subscription-based fleet services to employers, direct to consumer monthly rentals, and even goods delivery.

Shifting toward the On-Demand Mobility Program will engage a broader ecosystem of shared micromobility services that is in service of public mobility objectives. Under this branding, LADOT will look to council to approve regulations appropriate to different modes. For example, mopeds may require a driver's license and have separate insurance requirements. Eventually, LADOT's goal is to pull all permitted programs under the oversight of the for-hire transportation team. This framework will enable a more rapid and responsive expansion of new modes and services to give residents a larger set of options to get around.

The commonalities between different technologies suggests that certain policies and regulations can apply across the shared mobility service spectrum irrespective of mode type.

We are in the midst of establishing **a universal permit program** for for-hire vehicles and we plan to transition dockless and all other forms of on-demand mobility into this broader permitting framework. This strong regulatory framework can hold companies accountable for delivering desired program outcomes. At the same time, regulations should be flexible enough to enable the entry of new mobility service models.

New Direction 02

Refined outcomes for the On-Demand Mobility program.

02 | Refined outcomes for the On-Demand Mobility program.

LADOT will deliver the On-Demand Mobility program and other mobility programs that operate in the public right-of-way based on clear objectives. The On-Demand Mobility program will align program actions, compliance and enforcement, and daily operations against our overarching goals and outcomes established in the Strategic Plan, Vision Zero Mayoral Executive Directive, LA's Green New Deal, and the Technology Action Plan.

The On-Demand Mobility program's new program objectives include:

Healthy, transparent, and equitable

Give Angelenos more accessible transportation choices. Empower impacted communities to participate in transparent decision making. Reduce racial and social inequities. Improve mental and physical health outcomes.

Safety-focused

Lead with safety. Imbed neighborhood needs in permit requirements and service provider accountability metrics.

Clean and resilient

Give those who are able options to drive less and use clean transportation options for short trips.

Open marketplace

Create local jobs. Foster competition and innovation in an open marketplace. Regulate to reward good actors.

New Direction 03

A nuanced focus on mobility equity.

03 | A nuanced focus on mobility equity.

To correct policies and program features that failed to meet expected equity outcomes, LADOT will establish a mobility equity framework. This framework will influence policy and mobility programs beyond On-Demand Mobility. The six equity principles that emerged from the Dockless Vehicle Pilot Program's Core Advisory Board (CAB), public agency leaders, and community-based organization (CBO) representatives will comprise the framework. The following equity principles build off of established frameworks developed by the Greenlining Institute and the Government Alliance on Race and Equity (GARE).

1. Correct past inequities and be transparent about how you do it
2. Start with race
3. Recognize how transportation needs intersect with other needs
4. Push toward true inclusion
5. Center historically oppressed voices and communities first
6. Value community knowledge as real expertise

The sections below highlight some of the key directions that LADOT will take to reset the On-Demand Mobility program and better address inequities and the mobility needs of communities of color.

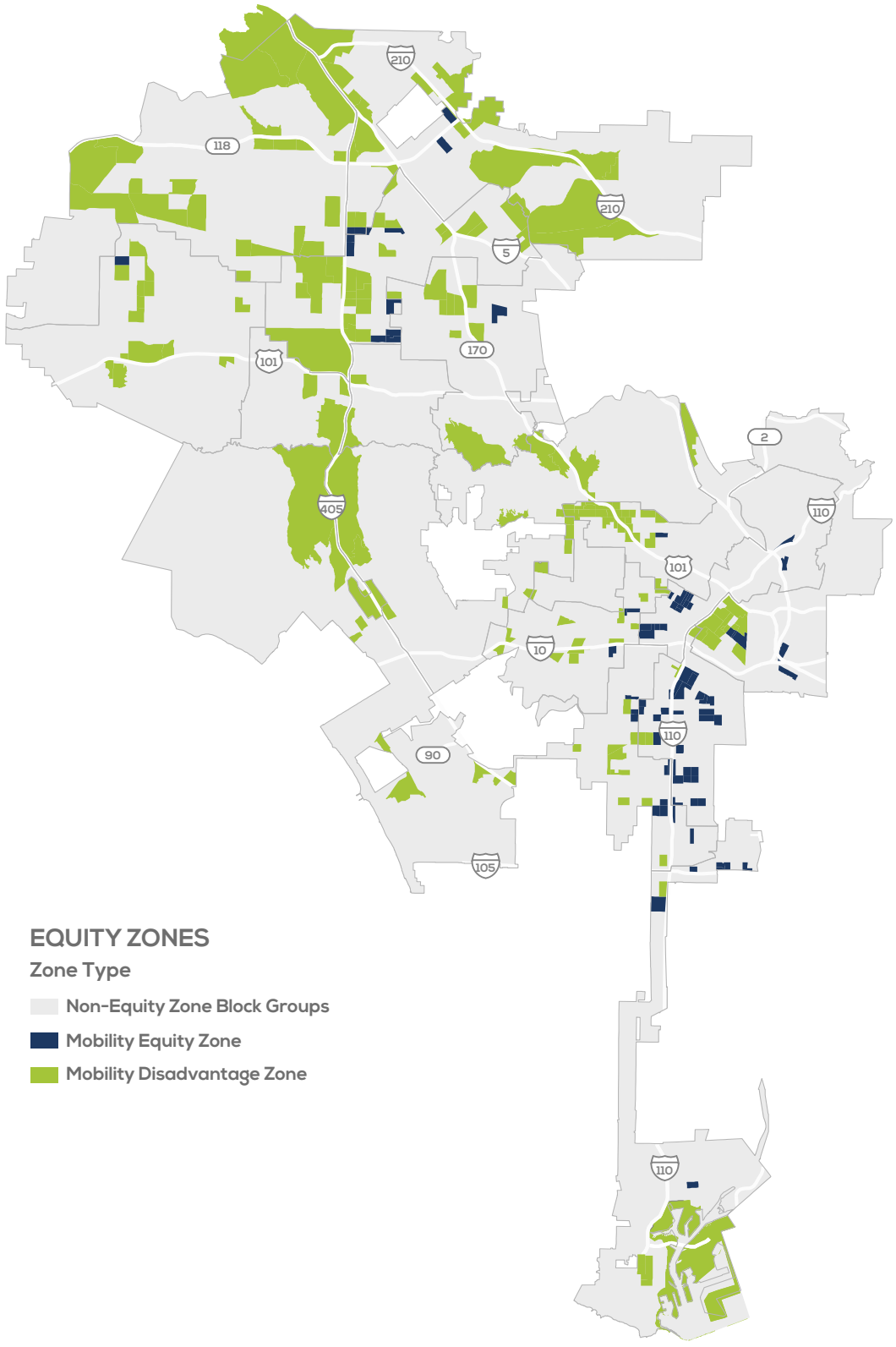
From DACs to Nuanced Equity Zones

Setting operational requirements and incentives against the Disadvantaged Communities (DACs) designation in Year 1 did not guarantee access to scooters and bikes, nor did it address the unique mobility needs of the people that live there. LADOT will establish new designations that more accurately reflect the geography of mobility needs, displacement risk, and other racial equity factors in Los Angeles. The new equity zone designations consist of the following tiers:

- **Mobility Equity Zones (MEZ):** Areas that are transportation disadvantaged and meet the Hardship Index developed by the Nelson A. Rockefeller Institute of Government as a filter for socio-demographic vulnerability. Transportation disadvantaged refers to areas that have transportation deficiencies, which include a lack of access to transportation options (based on frequency of transit, level of traffic stress on major streets, and generalized travel cost based on travel time), and crash safety risks.
- **Mobility Disadvantage Zones (MDZ):** Areas that are transportation disadvantaged but do not meet the Hardship Index.

MEZs and MDZs (as shown in Figure 34) will be updated regularly to ensure program decisions and policies are based on the most current data and reflect how areas of transportation disadvantage change over time.

Figure 34. Mobility Equity Zones and Mobility Disadvantage Zones



Price Capping for Equity Zone Trips

LADOT will establish a price cap for dockless trips that begin and/or end in an equity zone, with price caps varying by equity zone tiers. LADOT will require a lower price cap (no more than $1.25 for rides beginning and/or ending in MEZs and no more than $1.75 for rides beginning and/or ending in MDZs) to increase the affordability and accessibility of on-demand mobility, while mimicking the price of public transit fares.

Equity-Centered Program Requirements

LADOT will update permit requirements to better align on-demand mobility regulations with mobility access, enrichment, and anti-displacement outcomes. Some of the mobility equity program requirements that we will use to eliminate barriers to mobility services include:

- Daily deployment requirements and equitable distribution of vehicles in MEZs and MDZs;
- Consistent low-income subscription rates to eliminate customer confusion;
- Monitoring operator-driven strategies for increasing awareness of low-income programs within operator equity plans;
- Better reporting of the existing non-smartphone and cash payment options requirement; and
- New operator plans to engage with older adults and persons with disabilities.

We will continue to assess equity program enrollment to determine if and how they are addressing populations with limited mobility and accessibility.

Job Creation and Community-Based Operations

Los Angeles is a hub for mobility innovation, and we want to build long-term career prospects in this industry for unemployed and underemployed Angelenos. The On-Demand Mobility program will serve as a job creator, building full-time employment opportunities in the shared micromobility industry through new requirements and partnerships. LADOT will develop incentives to encourage operators to create full-time job opportunities and site their operations in an equity zone. Our aim is to shift the industry away from temporary independent contractor positions that do not guarantee a living wage or benefits.

In addition to building new job opportunities, LADOT will subsidize operations and maintenance support through third party contractors and/or non-profit CBOs using permit fee revenue. We will then support operators to match operations and maintenance needs with CBO placement opportunities. We will engage the CAB to determine and monitor the benefits or unintended negative impacts of this program requirement.

Inclusive Engagement and Transparency

LADOT plans to dedicate funding and resources towards a robust community engagement program that prioritizes populations with the fewest mobility choices. Engagement should integrate company-led engagement efforts. LADOT will continue engagement with the Core Advisory Board, expanding on its Dignity Infused Community Engagement model Connected to the spirit of openness and dialogue, LADOT will deliver new ways to transparently report on program performance for the On-Demand Mobility program.

LADOT will publish regular performance reports to increase transparency and accountability around program objectives, mobility data management, and equity outcomes, in particular. Similar to the approach taken in Minneapolis, LADOT will provide public access to aggregated MDS data on the City's Open Data Portal.


LADOT
Moving Los Angeles Forward

New Direction 04

Digital policy, parking management, and public realm stewardship.

04 | Digital policy, parking management, and public realm stewardship.

Digital policies—and the Mobility Data Specification system that enables them—are critical tools to effectively and dynamically manage the public-right-of-way.

New MDS Functions and a Dynamic Regulatory Environment

MDS has successfully supported LADOT's Dockless Mobility pilot permit. However, new requirements and a dynamic operating environment will require LADOT to test and capitalize on greater functionality within the MDS environment. LADOT will establish digital policy thresholds for SOZs, various geofence types, drop zones, and temporary major events involving road closures, among others. We will also establish new features to ensure compliance on the equity-based price capping requirement and encode enforcement thresholds and penalty standards within MDS.

In Year 2, LADOT will document and formalize digital policies via MDS to allow for regulatory flexibility, making iterative changes to ensure geofences, speed controls, and deployment zones are meeting our management objectives as designed. We will formalize and streamline operations to ensure efficient program delivery. In Year 1, the language to communicate digital policy via email was ambiguous and informal. For example, some operators interpreted the language of the CicLAvia policy emails less strictly, which resulted in inconsistent implementation of digital policy features and geofencing (e.g., some providers only limited travel speeds by throttling down the motors of the scooters).

The "Lock-To" Option and Parking Zones

Cities like San Francisco and Chicago recently required lock-to functionality to ensure that parked scooters are not tipped over and do not block sidewalks, curb ramps, or crosswalks, while enabling traditional wheel locking where bike racks are not available. LADOT will require that all dockless on-demand vehicles be lock-to enabled, allowing for vehicles to lock to bike parking and other acceptable parking infrastructure. LADOT will continue to install bike parking racks citywide to enable an eventual requirement that dockless bicycles and scooters be locked when not in use.

We will establish parking zones to enable a mix of dockless, virtual "docking" at Drop Zones, and lock-to requirements to improve parking outcomes in different neighborhoods. We proposed the development of two parking zones, which we will communicate via MDS to companies:

- **Zone 1: Dockless + Drop Zones** — Parking within zones characterized by low dockless use and low availability of bicycle parking will continue as-is. Parking within zones characterized by medium to high dockless use and low availability of bicycle parking will receive Drop Zones paired with provider incentives that encourage users to park within Drop Zones.
- **Zone 2: Lock-to Zones** — Parking within zones characterized by high dockless use, relatively high pedestrian activity, and/or medium to high availability of bicycle parking will serve as test sites for lock-to. At first, test sites will be limited to two to three zones potentially at or around SOZs. While the ultimate intent is to establish mode-agnostic parking areas, lock-to will require an expansion of bicycle corrals and racks throughout the city, funded by On-Demand Mobility fee revenue.

On-Demand Micromobility Parking Program

After two years of experimentation, we understand that dockless mobility options need more choreographed parking, particularly in areas with high parking and deployment demand. Drop Zones helped reduce sidewalk clutter and improve user parking behavior in Downtown and Venice. However, LADOT will need to expand parking options and scale them across the city to better organize the public realm.

Given limited bicycle parking supply and the potential for thousands of devices locked to racks, LADOT will need to gradually phase in the lock-to requirement alongside the expansion of bicycle and other micromobility parking.

In addition to creating formal parking zones (see above), LADOT will develop an on-demand micromobility parking program to effectively manage, scale, and evaluate Drop Zones and other parking infrastructure across the city. The parking program will also include installation of bike parking and in-street parking corrals to support phasing-in the lock-to requirement. Micromobility parking will benefit people needing to park their personal or shared small vehicles. LADOT will manage geofenced Drop Zones, track incentives outlined in provider parking plans, and monitor whether and how providers include Drop Zones within their apps. We will also create a mechanism for businesses and property owners to propose and fund micromobility parking solutions.

Better MyLA311 Integration

Initially, LADOT sought to use the City's demand-responsive MyLA311 information system to connect service requests directly to operators. While this interim integration streamlined service requests, LADOT seeks to build general protocols and service request categories within the MDS environment that can be scaled to other mobility services and cities. This further integration will enable MyLA311 service requests to be delivered to operators via MDS API.

In addition, LADOT will establish a hierarchy for MyLA311 issues to guide providers in prioritizing the most urgent service requests. In addition, we will clearly define what is considered an adequate response to a service request and adjust response time requirements for operators based on violation type and volume of service requests.

Within MyLA311, we will adjust interface language to be more user friendly and pilot new violation categories such as Abandoned Vehicle and Unpermitted Company, reflecting inadequate service request categories.

New Direction 05

An Outcome-Centered Fees, Incentives, and Deployment Marketplace.

05 | An Outcome-Centered Fees, Incentives, and Deployment Marketplace.

In Year 1, LADOT learned that providers largely do not serve equity zones, even when they are offered reduced per vehicle fee incentives. This passive approach does not result in more trips in equity zones. We need a better mix of incentives and nudges to achieve the wide range of public mobility and right-of-way management outcomes.

LADOT will create a new marketplace of fees, deployment incentives, and deployment requirements. The goal of this marketplace is to get better service in neighborhoods with the fewest choices. Within this marketplace, operators can choose their path to achieve their ideal fleet size, where vehicles can be placed, and the service and performance tradeoffs that can lead to fleet increases and other incentives.

A flexible marketplace approach can have the greatest impact on our ability to achieve better equity, deployment, and fleet size outcomes. LADOT will establish a fee structure that reflects the cost to administer, manage, and enforce the program, while balancing the need to support sustainable industry operations. Ultimately, this new incentive and deployment marketplace will better manage the public right-of-way and advance mobility equity.

Open Marketplace

Similar to Year 1, LADOT will not cap the number of companies that can enter the market, nor will it cap the types of on-demand micromobility modes that can apply for a permit. We will balance the need to increase mobility options for Angelenos with establishing clear expectations for performance and compliance thresholds. We expect operators to exhibit operational excellence or face penalties. Good performance will be critical for permit renewal in Year 2 and beyond.

Performance-Based Fleet Caps

LADOT will set a base fleet cap of 3,500 vehicles and award fleet increases based on good performance. Because dockless fleets concentrated in a limited number of neighborhoods during the pilot period, LADOT will require deployment and operations in Mobility Equity Zones.

LADOT did not establish a minimum fleet size in Year 1, resulting in several providers deploying fewer than 300 vehicles citywide. During the Year 2 permit program, LADOT will supplement the performance-based fleet capping system with a minimum fleet size. LADOT will establish a lower minimum fleet size for small and minority-owned businesses.

Fees

LADOT seeks to establish an On- Demand Mobility program fee structure that reflects the cost to administer, manage, enforce, and support sustainable vendor operations. For Year 2, LADOT will continue the one-time annual permit administration fee and replace the current $130 per vehicle fee with a variable per trip fee. High demand locations, such as Special Operations Zones (SOZs), have a greater management impact on LADOT and will command a higher per trip fee.

To ensure equitable access, Mobility Disadvantage Zones (MDZs) and Mobility Equity Zones (MEZs) will have a reduced and no per trip fee, respectively. This critical incentive complements MEZ deployment requirements. MDZ per trip fees will be lower than the base and SOZ fees.

Deployment Marketplace

LADOT must ensure deployment across the city is equitable and avoids both oversaturation in high demand locations and low availability in Mobility Equity Zones. We will limit the number of deployments in current and future SOZs, as is currently practiced in Venice. To gain access to high utilization areas such as Venice, Downtown Los Angeles, and Hollywood, providers must deploy a percentage of their total daily fleet in select equity zones. Our goal is to achieve at least 10% total fleet deployment in MEZs and MDZs for those providers that deploy in high utilization areas.

City Council can consider an innovative cap-and-trade subsidy model to shift the obligation of equity zone deployment to companies that want to operate in equity zones. Companies can offload their equity zone deployment requirements if they subsidize another provider to deploy in equity zones.

Incentive Marketplace

LADOT will establish the following incentives, among others:

- Eliminate per trip fees for trips to and/or from MEZs.
- Apply subsidies for MEZ trips (pending funding availability).
- Increase fleet size if operators surpass quarterly equity zone trip per vehicle per day (TVD) thresholds; achieve compliance targets; and demonstrate programmatic and technological innovation.
- Auction higher per trip fees to the highest bidder in exchange for greater supply in SOZs where deployment caps are not achieved.

Subsidizing On-Demand Mobility

On-demand, shared micromobility presents a clear public benefit and plays a key role in helping to advance LADOT's broader transportation goals. LADOT can consider identifying new funding sources to subsidize on-demand mobility service, particularly to ensure that serving equity zones is financially viable for operators. We can present revenue share mechanisms through some combination of on-vehicle and in-app advertisements and/or sponsored content for Council consideration. We will also pursue local, state, and federal grant funding to support equity zone subsidies, incentives, community-based organization partnerships, and community engagement.

New Direction 06

A rigorous compliance and enforcement framework.

06 | A rigorous compliance and enforcement framework.

LADOT will adopt a compliance program for the On-Demand Mobility Program that measures permitted provider and system performance in several key areas. The compliance framework could scale for for-hire vehicles and other future permitted mobility programs. The building blocks of LADOT's compliance evaluation and performance program include:

- **Technical compliance:** Ensure that policies implemented in the digital space are achieving their intended outcome in the real world.
- **Operational compliance and performance evaluation criteria:** Establish ongoing proactive operational compliance. Operational compliance measures operator performance across several categories, including vehicle availability; vehicle quality and safety; user and provider parking compliance; operator responsiveness to MyLA311 service requests; and adherence to application requirements.
- **Automated compliance validation that enable real-time warnings:** Build tools that track and automate compliance and enforcement activity for key compliance areas, such as fleet size thresholds; deployment thresholds in equity zones; deployment infractions in SOZs; and technical compliance thresholds. Automate compliance and enforcement activity to reduce impact on limited staff bandwidth to deliver the compliance program. These tools will enable compliance tracking and proactive notification to both City staff and operators.
- **Data collection and auditing methods, analysis, and reporting:** In-field verification will focus on variables associated with on-demand vehicle availability, vehicle quality, and vehicle parking compliance, all of which inform performance metrics that assess operator alignment to LADOT's overarching mobility, equity, and safety goals. The main reporting tools for the compliance program include a public dashboard and report card, an internal dashboard and report card, and internal and public monthly reports. The dashboard will incorporate real-time and monthly metrics, with the data varying on each depending on the frequency of data reporting.

Point-Based Fine, Penalty, and Enforcement Framework

By establishing clear performance standards and enforcement actions, we are signaling to operators and the general public our expectations for right-of-way stewardship. Enforcement should be proportional to the degree of severity and should balance specificity with enough flexibility to allow providers to act in accordance with a rule or regulation.

LADOT will establish fines, penalties, and thresholds that are outcome-oriented, fair, and definitive. LADOT will institute a points-based penalty structure where companies accrue points based on non-compliance and poor performance. Compliance will be weighted by violation type. For instance, a minor violation will accrue lower penalty points as opposed to a major violation or a violation that poses a serious safety hazard, which will command a much higher point value.

LADOT will establish a monthly fine structure based on accrued points that are determined by cumulative compliance performance. Under this fine structure, a provider's monthly points total will determine what amount they are fined on a monthly basis. A higher point total represents poor program performance and a larger fine.


SHERPA
NO RIDING ON SIDEWALKS

New Direction 07

A culture of safety.

07 | A culture of safety.

As more on-demand mobility options become available, LADOT will establish safety requirements that guide user behavior or vehicles, vehicle design standards, and public infrastructure planning. LADOT will continue to conduct regular vehicle quality audits to ensure that vehicles are safe to operate and in good working order.

Guided by MDS trip data and performance evaluations, LADOT will use program fee revenues to fund safe street infrastructure and develop a citywide public education campaign on how to operate and park vehicles. Rider safety education will continue to be a shared responsibility between LADOT and the permitted operators, requiring ongoing accountability on both ends. However, LADOT will commit funding and resources to expand awareness far beyond the reach of the Year 1 Pilot Program.

LADOT has established new protocols that require operators to address safety and access concerns due to COVID-19. The global pandemic has heavily impacted how and where people travel. Ridership is at an all-time-low due to health concerns and safer at home orders. LADOT required operators to implement temporary sanitation protocols to address safety and access concerns. This may include developing sanitation guidelines and requiring providers to develop a sanitation plan. LADOT may also reduce per trip fees during ongoing outbreaks and require operators to provide a reduced monthly subscription rate for frontline workers as defined in Section 5.vii of the City's Safer at Home Order.

APPENDIX A

LADOT and Dockless Mobility Data Protections

LADOT and Dockless Mobility
Data Protections

With over 30,000 shared mobility devices (scooters and bicycles) registered with the City of Los Angeles, LADOT receives data notifications from dockless companies to confirm vehicle availability in disadvantaged communities, confirm company compliance with regulations that reduce sidewalk clutter and oversaturation, and prevent vehicles from operating in prohibited areas. The data also allows LADOT to audit the compliance of dockless companies with permit regulations, and confirm the accuracy and validity of the data they provide. From the onset of the program, protecting privacy has been a priority for the department and a design principle of the Mobility Data Specification the department uses to access data.

Privacy as Core Principle

LADOT maintains 52 different business lines -- from parking enforcement and traffic control to taxis and scooters -- and most require the use or receipt of data. For all of those business lines, LADOT is required to comply with all existing citywide data standards. Recognizing the unique nature of dockless mobility data received as part of its Dockless Shared Mobility Pilot, LADOT has gone beyond the City's standards, and developed program-specific approaches to protect and manage dockless mobility data.

As part of its Dockless Pilot, LADOT created Data Protection Principles to provide specificity to the classification, handling, and protection of the data received as part of this program. Key aspects of the Principles include classifying Pilot data as confidential to protect it from public records requests, limiting access to the data within the department, and establishing a Master Data License and Protection contract to govern any City sharing with third parties. These principles explicitly prohibit monetization of the data, and also explicitly prohibit law enforcement from accessing MDS data without a warrant, subpoena or other court-ordered action.

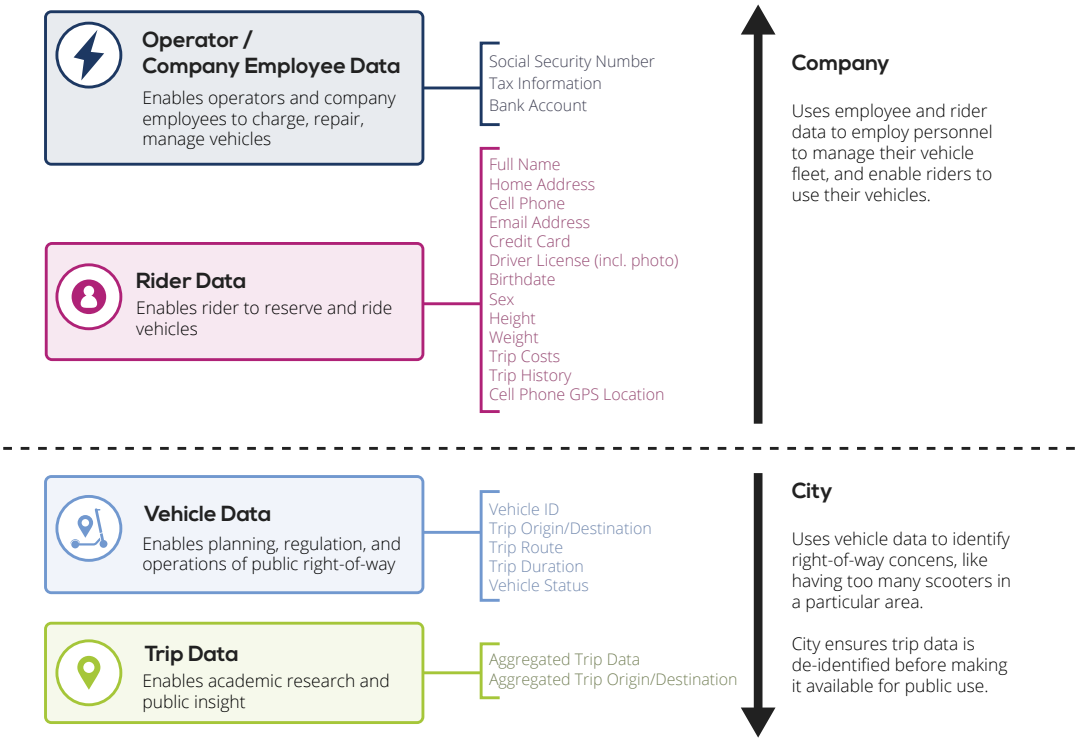
In addition, the data providers send LADOT is encrypted in transit and LADOT encrypts all Pilot data notifications it receives using the AES-256 algorithm, an advanced encryption standard for electronic data based on specifications set by the U.S. National Institute of Standards and Technology.

Ongoing Pilot Efforts

LADOT convened a Core Advisory Board (CAB) to engage with experts and community stakeholders and analyze equity considerations for the Pilot, including approaches to data. The board made a series of recommendations including, developing additional communications on how LADOT is using dockless data to solve problems and address community impacts, and identifying data points that should be collected to inform equity metrics.

What Data Does LADOT Receive?

LADOT requires permitted operators operating in the public right-of-way to notify the City of movements of their GPS-enabled fleet. As the illustration below shows, LADOT collects vehicle and trip data. Vehicle data may help the city identify right-of-way concerns, such as an oversaturation of vehicles in an area. LADOT uses de-identified trips to understand ridership trends and utility of the services, to inform safety improvements and other planning efforts.



LADOT continues to refine the department's data practices. Key elements that LADOT will implement going forward include:

01

Publishing to the City Open Data Portal:

To share valuable insights with the public LADOT will publish de-identified Pilot data sets to the City's Open Data Portal, using proven and secure methods.

02

A Data Retention Policy Designed for Dockless Mobility Data:

Peer cities and experts agree that data should only be retained for as long as it is necessary for the data's intended purpose and use. In discussion with the City Attorney, data privacy experts, and peer cities, LADOT has developed retention policies for dockless mobility data that are in compliance with the City of Los Angeles Administrative Code Section 12.3(b):

- Depending on its purpose and role in future adjudication, any location data LADOT receives will be deleted or aggregated to minimize risk of re-identification, within 30-90 days from the time of receipt or collection.
- Location data will be deleted or de-identified within 30 days of receipt or collection for Safety and Planning/ Capital Investment Use Case Types.
- Location data will be deleted or aggregated to minimize risk of re-identification within 90 days of receipt or collection for Compliance Use Case Types.

These draft policies noted above are being reviewed by ITA and the City Attorney and will be implemented Fall 2020.

03

Dockless Data Aggregation and Minimization:

To further improve data protections, LADOT will apply data treatments and strategies for each data use case. This will be a combination of data minimization and anonymization approaches, which will include aggregation, binning Trip Origin/ Destination notifications, and K-anonymization as well as other future treatments as tools to protect data privacy evolve over time. LADOT is employing these approaches to improve data privacy and further reduce the risk that anonymised vehicle data can be used for re-identification.

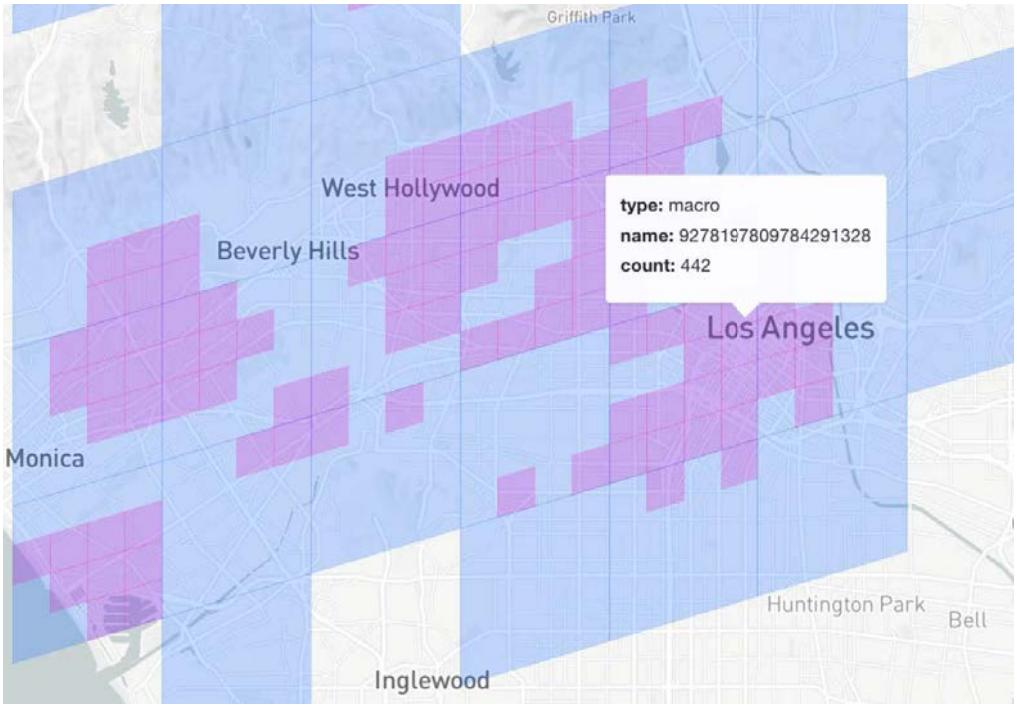
04

LADOT Data Principles Update:

LADOT will continue to identify new protocols to update its data principles and define procedures for data minimization, anonymization, and retention, which will be revisited on an annual basis. New findings will be published in future Transparency Reports.

What is K-Anonymization?

K-anonymization is a data minimization approach that guarantees that no fewer than a specific number of scooter or bike trips can be uniquely grouped to a given time period and geographic area. For example, LADOT can set the variable of "k" to be a 10 minimum trips per zip code per week, so if fewer than 10 dockless trips occurred within a given zip code that week, the data set would not contain the location of any trips for that geographic area for that week and would instead be counted within a larger grouping for that week. This approach ensures that data remains useful while improving data protections by reducing the risk that anonymised data can be re-identified.



This image shows a set of dockless "trip start" notifications grouped or "binned" at two grid sizes to anonymize information.

LADOT