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Designing a Carsharing Pilot Program for Los Angeles

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DESIGNING A CARSHARING PILOT PROGRAM FOR LOS ANGELES

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16. Abstract

Access to safe, affordable, and reliable vehicle transportation in Los Angeles (LA) is not equitably distributed. Low-income and households of color often have private vehicle access rates far lower than city-wide averages. Carsharing, the practice of users renting cars for short periods of time, has the potential to greatly improve private vehicle transportation equity in LA while also bringing other key benefits to the city.

The client for this report, the Neighborhood Council Sustainability Alliance, specifically wanted to examine how a peer-to-peer (P2P) carshare pilot program could be designed to maximize the benefits for LA. To research this topic, the authors of this report did an extensive literature review, conducted interviews with key stakeholders, reviewed both public and private documents from carshare companies, and performed a statistical analysis on trip data from carshare operators.

The City of LA continue and expand its partnership with the station-based carshare operator BlueLA, while also launching a new carshare pilot program in Hollywood. This neighborhood - with its high density, diverse mix of ethnicity and income levels, high visitation rate from non-residents, and excellent connections to public transit - has many ideal conditions to sustain successful P2P carshare operations. Further, the city should support this pilot program by designating up to 10 parking spaces in high-profile locations around Hollywood exclusively for P2P carshare vehicles. Lastly, the city should leverage the Los Angeles Department of Transportation and LA County Metropolitan Transportation Authority advertising infrastructure to promote P2P carshare services from providers like Getaround and Turo.

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EXECUTIVE SUMMARY

Access to safe, affordable, and reliable private vehicle transportation in Los Angeles (LA) is not equitably distributed. Low-income and households of color often have private vehicle access rates far lower than city-wide averages. This aligns with nation-wide trends where these types of households have also been shown to spend a much higher percentage of their incomes on transportation, nearly 30% of income on average (The High Cost of Transportation in the United States, 201). This inequity has major implications on quality of life, and also limits access to economic opportunities.

Carsharing, the practice of users renting cars for short periods of time, has the potential to greatly improve private vehicle transportation equity in LA while also bringing other key benefits to the city. Carsharing can lower the barriers to private vehicle access by eliminating high upfront vehicle costs, and removing hurdles posed by low credit scores. There are three main types of carshare models: station-based, free floating, and peer-to-peer (P2P). A station-based carsharing model is when a company owns a fleet of vehicles that users rent from, and return to, a designated station. In a free floating model, vehicles from a company's fleet can be picked up, and dropped off within a designated zone. Finally, with P2P, private car owners make their vehicles available on a company's platform, and users rent vehicles in their area.

Other North American cities have demonstrated how carsharing programs can be successfully launched in communities, and there are several carshare services already operating in LA. The client for this report, the Neighborhood Council

Sustainability Alliance (NCSA), specifically wanted to examine how a P2P carshare pilot program could be designed to maximize the carshare benefits for LA. To research this topic, the authors of this report did an extensive literature review, conducted interviews with key stakeholders, reviewed both public and private documents from carshare companies, and performed a statistical analysis on trip data from carshare operators. Several key findings came from this research. Notably, carsharing has been shown to effectively expand private vehicle access to underserved and disadvantaged communities. Also, these programs can lead to reduced vehicle miles traveled, cut greenhouse gas emissions, and decrease rates of private vehicle ownership among members - effectively reducing the amount of vehicles on city streets.

Based on these results, this report makes several recommendations. The first recommendation is for the City of LA to continue with, and expand, their partnership with the station-based carshare operator BlueLA, while also launching a new carshare pilot program. Next, the pilot program should be launched in Hollywood as this neighborhood - with its high density, diverse mix of ethnicity and income levels, high visitation rate from non-residents, and excellent connections to region-wide public transit - has many of the ideal conditions to sustain successful P2P carshare operations. Further, the city should support this pilot program by designating up to 10 parking spaces in high-profile locations around Hollywood exclusively for P2P carshare vehicles. Lastly, the city should leverage the Los Angeles Department of Transportation (LADOT) and LA County Metropolitan Transportation Authority(Metro) advertising infrastructure to promote P2P carshare services from providers like Getaround and Turo. If these recommendations are followed, this pilot program will have a

significant impact on equity for private vehicle access, help reduce traffic congestion, improve connections to transit, and can serve as a model for other neighborhoods throughout LA to follow.

INTRODUCTION

INTRODUCTION

The Client

The client for this project is the Neighborhood Council Sustainability Alliance (NCSA). Founded in 2015, NCSA was formed for the purpose of advancing environmental sustainability throughout Los Angeles (LA). There are 6 local neighborhood councils represented among NCSA's membership. One of the key goals for NCSA's Transportation Committee is to reduce GHG emissions from transportation in LA. Therefore, NCSA proposed the project for a pilot carsharing program to examine how carsharing can improve transportation in LA, through increased private vehicle access, while also reducing the number of cars on city streets and increasing adoption of other more sustainable modes of transportation.

Policy Problem

Access to affordable transportation is a formidable challenge in many North American cities. Many households struggle to afford private vehicles, especially in LA, due to the high cost of fuel, parking, maintenance, registration and insurance. According to the carsharing company Envoy, private car ownership frequently costs nearly $1,000 per month with all expenses included (Envoy Cost Comparison Flyer). These expenses create a visible lack of equitable access to personal vehicles in LA, and members of many communities are unable to enjoy the full benefits that these vehicles bring. Likewise, a significant gap in equitable access to cars exists in LA. 22% of Native American, 21% of Black,13% of Asian and Pacific Islander, 13% of Latino, and only 8% of White households in Los Angeles did not own a vehicle as of 201 (National Equity Atlas, 201).

Carsharing is a promising strategy for increasing equitable vehicle access, allowing people from different ethnicities and financial backgrounds to have an equal chance of accessing private vehicles. Carsharing is a model where users rent cars for short periods of time, either from a company's own fleet or from private individuals through a company's platform, which allows users access to vehicles near them for many types of trips. Peer-to-Peer (P2P) carsharing refers to the model where private vehicle owners rent their cars out to users through a company's platform. Carsharing services give drivers an alternative to owning a personal vehicle by offering lower upfront costs. This type of service allows many low-income households to access affordable private vehicles, provides drivers an incentive to lower their vehicle usage, and can reduce the number of vehicles on the road in the long term. However, the City of LA is currently not advancing large-scale efforts to promote P2P carsharing, and few formal partnerships with carsharing companies currently exist. The Los Angeles Department of Transportation (LADOT) is reluctant to aggressively support P2P carsharing due to complaints of residents who perceive that carsharing limits street parking (Lank et al., 2020). NCSA believes LADOT, and the City of LA, should adopt a more robust strategy for supporting, and promoting carsharing to fully reap the benefits that these services can bring to local communities. These benefits include: providing access to private cars to those who cannot own one, increasing economic productivity for local businesses, local job growth, reducing the transportation cost burden for middle and low-income households, and reducing congestion in LA.

This report focuses on the policy question: **How can carsharing best be leveraged to promote equitable access to private vehicles in LA?**

BACKGROUND

BACKGROUND

Several companies dominate the current carsharing landscape in LA with varying business models. This section provides a brief overview of the main operators in this space offering carsharing services in LA.

BlueLA

Powered by Blink Mobility since 200 , BlueLA is a carsharing service that exclusively uses EVs. BlueLA vehicles are available 24/7, and can be picked up and dropped off at 40 locations around LA, including Westlake, Koreatown, Pico-Union, Downtown LA (DTLA), Echo Park, Boyle Heights, and Chinatown. The company began operating the all-electric carsharing service in 2008, and is committed to providing access to affordable, and clean transportation alternatives. Standard Membership is $5 per month, and vehicles cost $0.20 per minute. Members pay for the time they rent the vehicle with no insurance, electric vehicle (EV) charging fees, and maintenance costs. Community Memberships, an income-qualified membership, cost $1 per month with vehicles costing $0.15 per minute (Los Angeles, CA Electric Car Sharing Service).

Envoy

Founded in 2017 by real estate and tech entrepreneurs, Envoy is a carsharing platform that provides onsite mobility services including electric carsharing and EV charging for apartments, offices, and hotels. The company is committed to providing affordable, convenient, and sustainable transportation. Envoy's "Mobility as an Amenity" service is a turn-key solution that includes technology to reserve and access vehicles, drivers insurance, maintenance, and EV chargers (About Envoy). The service is available in 14 markets across 10 states in the U.S.

Envoy's service costs range from $0.15 - $0.50 per minute or $45 - $150 daily, depending on the car model (Envoy series a press release).

Getaround

Founded in 200 , Getaround is a P2P carsharing service operating in more than 800 cities around the world. As of 201 , Getaround has 5 million users and 20,000 connected cars globally. Consumers use the Getaround app to find, book and unlock cars, and Getaround Connect, an electronic device installed in Getaround cars, provides GPS tracking, anti-theft functionality, and cellular communications (About Getaround®). Getaround cars' prices are set by the host, and the median price is around $8.36 per hour.[1]

Mocean Lab

Mocean Carshare, powered by French carsharer Vulog, and operated by MoceanLab, was launched in January 2020 as a service exclusively in LA, and ended at the end of 2021. Mocean is a free-floating carshare service which enables drivers to quickly, and conveniently rent a hybrid-electric vehicle (HEV) at an affordable price, comparable to the cost of renting an electric scooter (McKinney, 2021). Mocean has around 25 low-emission HEVs available in West LA and the Sawtelle area. The carsharing service was the only transportation service in LA that enabled drivers to pick up and drop off vehicles anywhere in a designated home zone. Mocean's vehicles cost $0.42 per minute, $14 per hour, and $86 per day.

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[1] (This number is the result when searching at 7pm on January 23, 2022, to use from 10am to 11am on January 24, 2022 in Westwood. Users have to pay other fees such as fuel fees.)

Turo

Turo is a P2P carsharing company founded in 2010, based in San Francisco. As of 2020, Turo serves over 14 million members in 7,500 cities and 56 countries with 450,000 vehicles, making it the world's largest carsharing marketplace and one of the biggest P2P carsharing companies (Ranking the top-earning cars on Turo | Turo Calculator). Turo's average trip length is 4 days, and the trip price is around S330, allowing the host to have an average earning of S6,753. Turo's vehicle prices are set by the hosts, with a minimum of S30 per day, and owners earn around 60%- 0% of the trip price. Consumers can rent the vehicles through an online website or a mobile app. The most booked vehicles are compact cars (20%), sport utility vehicles (SUV) and pickups (20%), and midsize cars (13%) (Lai, 2020).

METHODOLOGY
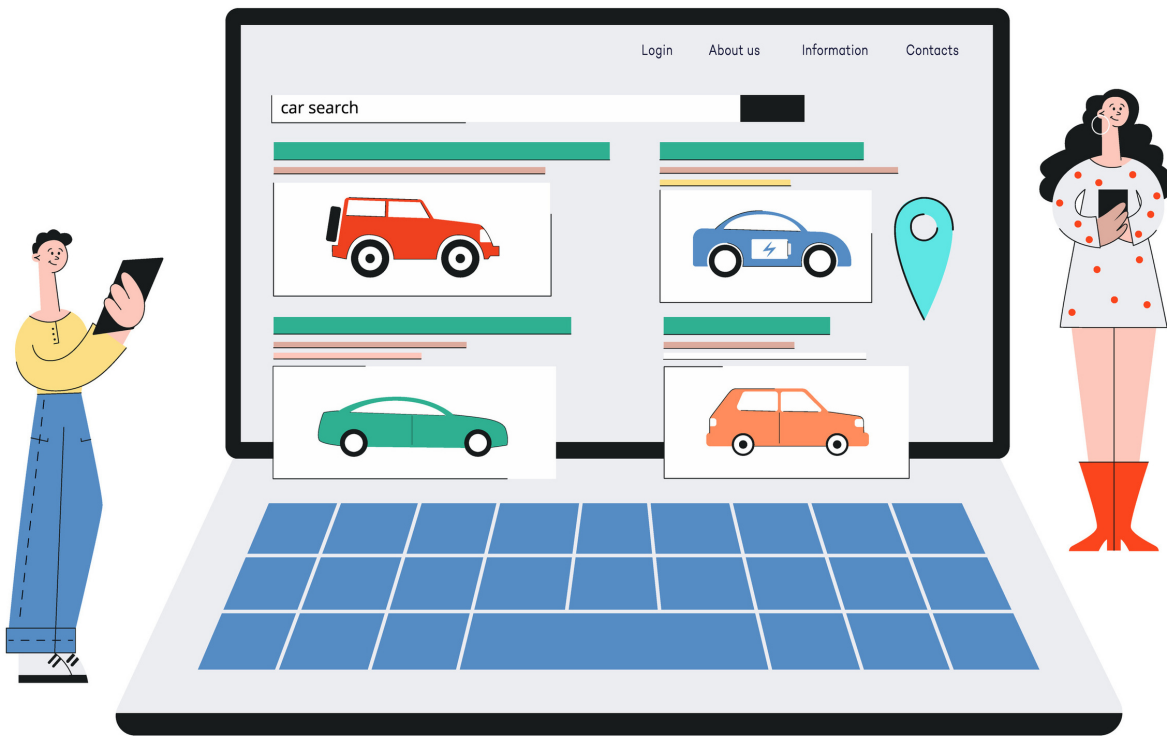
METHODOLOGY

The research methodology for this report broadly consists of a literature review looking at relevant case studies, quantitative methods, and qualitative strategies. These strategies reveal insight into carsharing operations, the benefits of carsharing, and viable policy solutions to help advance carsharing in the City of LA. The process for determining the project's methodology involved collaboration with our client, the NCSA, as well as reaching out to relevant research centers, such as UCLA's Institute of Transportation Studies, for consultation on data availability.

The first methodological strategy includes a broad literature review as well as an examination of case studies looking at the implementation of carsharing services in other cities. The literature review focuses on the carsharing industry as a whole, societal benefits from carsharing, experiences of carsharing companies, the LA carsharing policy landscape, and case studies from other regions.

The quantitative methodology relies on reaching out directly to various carsharing companies, and acquiring relevant data to perform statistical analysis. Data requests were sent to carsharing companies including Getaround, Envoy, Turo, Mocean Lab, and BlueLA (through LADOT). Existing connections between NCSA and these stakeholders helped facilitate data-sharing relationships, and productive conversations. This report ultimately incorporates data from Mocean, Envoy, and BlueLA. These businesses and

stakeholders represent a variety of carsharing models that, together, can provide a full picture of carsharing operations in the LA region. The data obtained from these companies include trip and usage data, user survey data, and other data that showcase carsharing benefits, and characteristics of service provision. This report also considers socioeconomic data from the LA area to supplement carsharing provider data, and understand neighborhood characteristics of carsharing locations.

The qualitative methodology involves interviews, and discussions with carsharing stakeholders as well as acquiring survey results from carsharing companies. The authors of this report and NCSA members spoke either virtually, or in person, with representatives from Getaround, Envoy, Turo, Mocean, and Forth (a carsharing operator based in Portland, Oregon) to understand the challenges faced by carsharing providers, business trends, and other issues relevant to the policy question. A representative from LADOT was also interviewed to better understand the department's view on shared mobility, carsharing from a policy implementation, and development perspective, focusing on the city's experience with its BlueLA electric carsharing program.

Data

Trip Data

Trip data obtained from Mocean includes dates, locations of the start, and endpoints of the trips spanning from December 201 to December 2021. Although the information is anonymized, it is tied to account and vehicle IDs, so repeat users and vehicles can be distinguished. In addition to this basic information, it also contains useful information such as the duration, and the distance of the trips.

Survey Data

In addition to trip data, Mocean also provided two different surveys that this report analyzes. The first is a survey of Mocean carshare members. The second is a general population survey, which includes Mocean members, and non-members. The carshare member survey responses were collected from July 2020 to December 2021. Mocean partnered with Davis Research (an independent market research firm) and gathered survey responses from 238 members. If a member completed the survey, they were entered in a drawing for $100 of Mocean Carshare credit.

The survey included questions about customer satisfaction, demographic information, transportation mode usage, and program impacts as perceived by members. This analysis focuses on the program impact data that was required for the City of LA. Specifically, questions of interest include the number of household vehicles before and after joining, whether membership has impacted vehicle purchasing behavior, and transportation mode usage. The survey's demographic data provides key insights as well.

Figure 1: Summary Statistics of Mocean Member Survey

1.1 Mocean Member Survey Respondents by Income

Percentage of Respondents vs Annual Household Income ($)

- <50,000: 30
- 50,000 - 99,999: 33
- 100,000 - 149,000: 19
- >150,000: 17
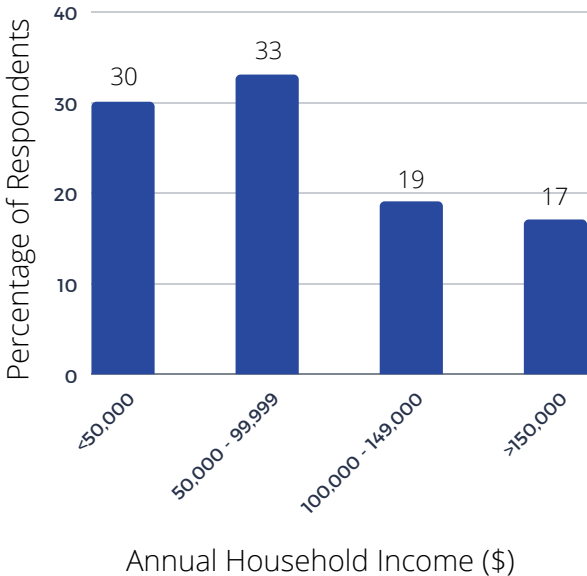
1.2 Mocean Member Survey Respondents by Ethnicity

Percentage of Respondents vs Ethnicity

- African American: 15
- Asian American: 20
- Caucasian: 36
- Hispanic/Latino: 13
- Native American: 0.97
- Others: 15

1.3 How Do You Primarily Use Mocean?

Percentage of Respondents vs Purpose of Trips

- Commuting to Work: 3.3
- Job-Related Travel: 6.7
- Errands /Leisure: 68
- An Almost Equal Mix of Uses: 22
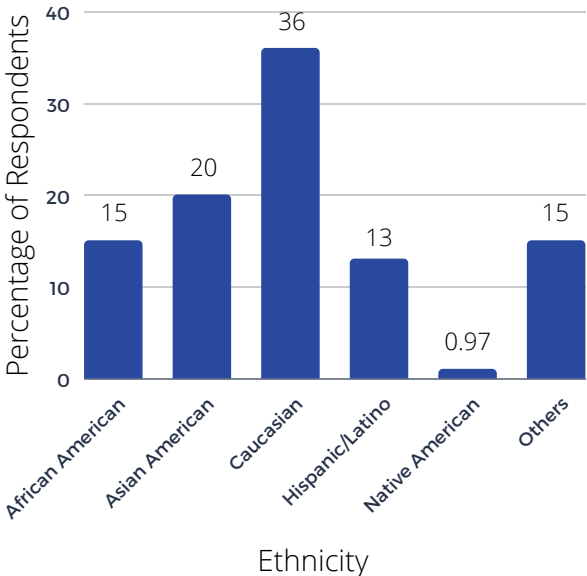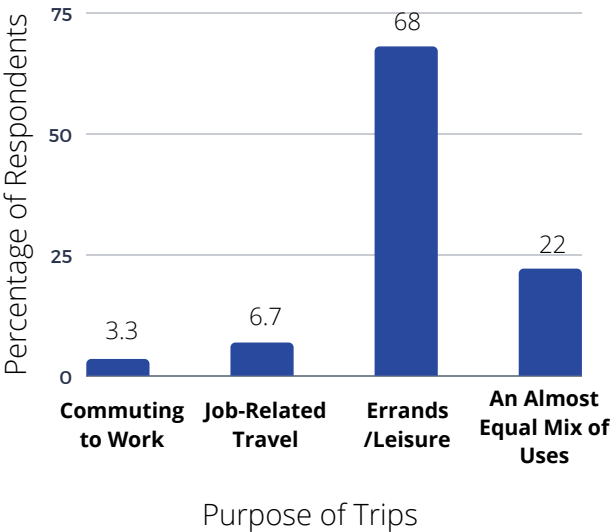
1.4 How Do You Primarily Use Mocean?

- Yes
- No

Yes: 44
No: 55
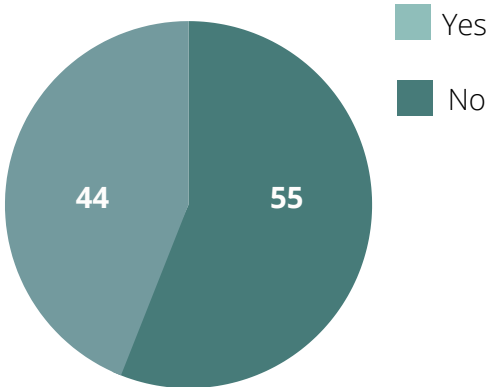
1.5 Household Vehicles Before Joining Mocean
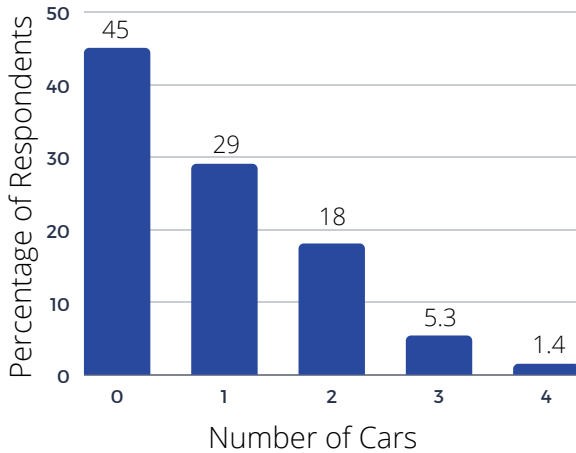
1.6 Household Vehicles After Joining Mocean
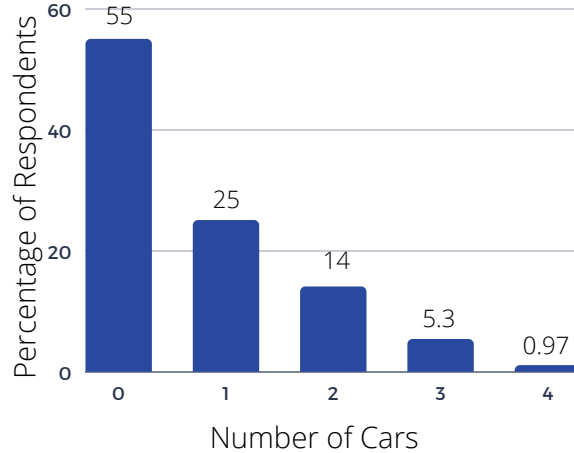
The general population survey collected 3,605 responses from people living, and working within LA County. The survey was designed to terminate if the respondent entered a zip code outside of LA County. The survey contains questions surrounding knowledge, and awareness of carsharing programs, the likelihood of usage and support, and whether respondents are likely to utilize a carsharing program. This survey also includes demographic information, and usage of different modes of transportation.

This report analyzes survey questions from each survey that are the most useful, and informative for the policy question. Graphs and visual representations highlight specific, important survey insights.

POLICY CONTEXT

POLICY CONTEXT

Carsharing History

Carsharing in the United States (U.S.) first emerged in the 1 80s as an innovative shared transportation mode, but failed in two separate demonstration projects due to inconsistent user income, vehicle use by non-members, inadequate pricing models, and breakdowns of fleet vehicles (Cohen & Shaheen, 2018). Carsharing eventually reemerged in North America in the 1 0s, operating in major Canadian cities like Vancouver, and U.S. cities like Rutledge, Missouri and Boulder, Colorado. Since then, advances in telecommunications, wireless service, and online technologies have revolutionized the industry as carsharing programs adopt automated reservations, and mobile apps to facilitate transactions. While carsharing started out as a roundtrip transportation option, new operational models emerged like free-floating, P2P carsharing, and fractional ownership. The fractional ownership model allows individuals to sublease a vehicle owned by a third party, giving them rights to shared vehicle service in exchange for taking on some operation and maintenance expenses (Shaheen et al., 2018).

The idea of starting a carsharing pilot program first came to the LA City Council's attention when former Councilmember Eric Garcetti presented in September of 2005 (Council File 05-2017). The City Council passed the motion in October of 2007, authorizing LADOT to obtain letters of interest from carsharing companies to participate in a one year pilot program (City of Los Angeles, City Council, 2005). About nine months later, LADOT reported back

with recommendations for the City Council. LADOT proposed starting a pilot program around the University of California, Los Angeles (UCLA), and University of Southern California (USC) campuses with the carshare company, Zipcar. At this time, Zipcar was the largest carsharing company in the U.S., having just merged operations with another large competitor, Flexcar. Zipcar proposed starting in four areas: North Westwood Village near UCLA, around USC, DTLA, and the Hollywood area. Initially, five to 20 vehicles were placed in each of the four proposed areas (City of Los Angeles, City Council, 2008). LADOT and Zipcar ultimately agreed on two of the four proposed areas, the UCLA and USC areas. In August of 2008, the City Council approved the agreement between LADOT and Zipcar.

In November of 2014, the City Council approved a multiple-provider carshare permit pilot program. LADOT came up with a fee schedule for the permitting process, and approved a new ordinance. In October of 2015, the City of LA received a grant from the California Air Resources Board (CARB) for the Carsharing and Mobility Options in Disadvantaged Communities Pilot Project. This grant added 100 vehicles, 80% being EVs or plug-in hybrids, and 20% being HEVs, for placement in disadvantaged communities. LADOT then initiated a contract with Blue California "to install, operate, and maintain an EV carshare pilot program" for 11 years, which was approved by the City Council at the end of 2016 (City of Los Angeles, City Council, Transportation Committee, 2016). The now highly successful program known as BlueLA provides EV carsharing services to DTLA, Koreatown, Pico Union, and Westlake. In 2020, the City of LA received another CARB grant from the Sustainable Transportation Equity Project which awarded LADOT with just over $7 million. Some of these funds have been put

towards expanding BlueLA. In August of 2021, LADOT was approved to triple BlueLA's fleet size from 100 to 300 EVs, expand to other disadvantaged communities (South LA, East Hollywood, Boyle Heights, and DTLA), and expand from 40 stations to 100 stations while adding 300 more chargers. Beyond BlueLA, LA County Metropolitan Transportation Authority (Metro) has partnerships with both Getaround and Zipcar to provide vehicles at select Metro stations in LA County.

The biggest challenge for the City of LA has been the LA Municipal Code (LAMC), and ensuring that these carsharing programs comply with it. Since the first pilot program started in 2005, many of the municipal codes have had to be amended or new codes have been created.

P2P carsharing represents a new model that expands the economic gains of carsharing from just customers to include those who host their private vehicles through third-party carsharing providers. P2P carsharing first launched in 2010 in Cambridge, Massachusetts, and by 2017 there were over 2. million individuals participating in P2P carsharing using a combined 131,331 vehicles across six operators in North America (Metro). The past several years have seen rapid growth in P2P carsharing. While certain legal hurdles related to insurance and liability issues have emerged, and caused companies like RelayRides to withdraw from states like New York, these challenges are not seen as an existential threat to the sector as a whole (Schwieterman et al., 2017).

KEY CHALLENGES
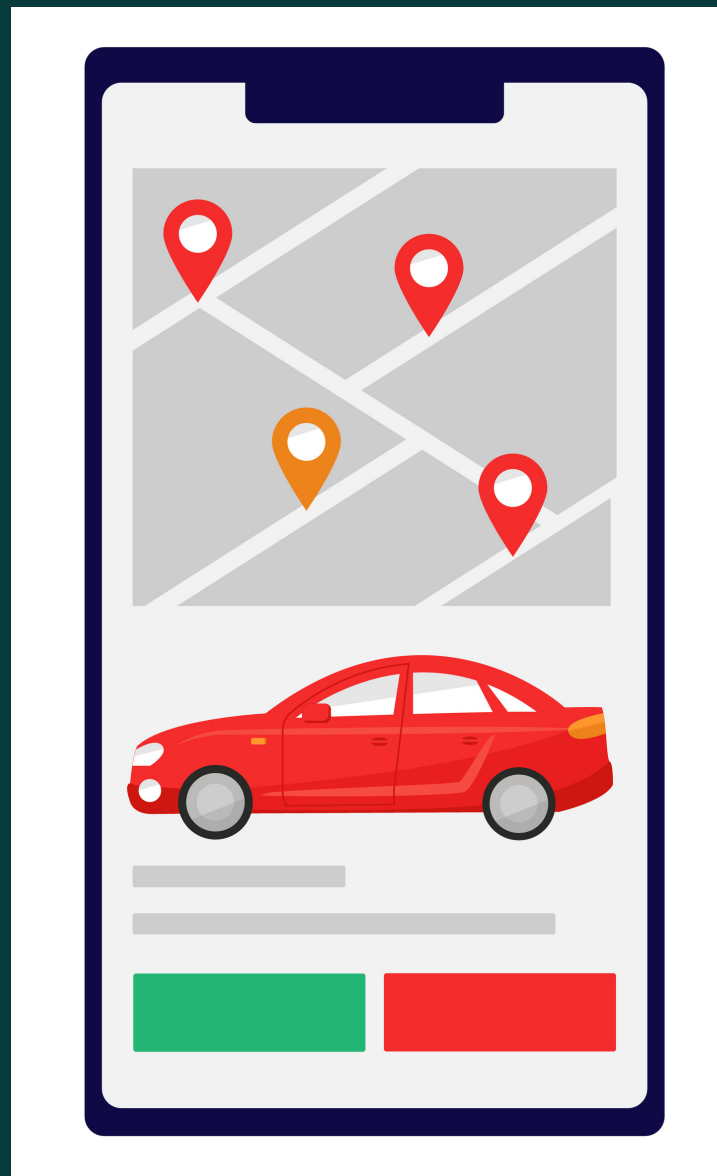
KEY CHALLENGES

There are three main stakeholders for implementing carsharing policies in LA: policymakers such as the City Council, carsharing companies, and end users. These stakeholders face the following key challenges in aligning with NCSA's goal of promoting carsharing in LA.

Transportation Challenges In Los Angeles

LA is currently experiencing a host of transportation challenges that cause both inequitable outcomes and dangerous externalities. Car ownership in LA has increased dramatically in recent decades. Between 2000 and 2015, private vehicle ownership increased from 1.7 to 2.4 vehicles per household in the Southern California region. Additionally, while the region added only 0.25 cars per new resident in the 1   0s, from 2000 to 2015 the region added nearly one car per new resident, or 2.1 million additional vehicles (Manville et al., 2021). The benefits of car ownership and access, however, are not distributed equally. As of 201 , only 8% of White households owned zero vehicles, while 13% of Asian and Pacific Islander, 13% of Latino, 21% of Black, and 22% of Native American households lacked access to a car in LA (National Equity Atlas, Car Access by Race/Ethnicity in Los Angeles, CA, 201). This disparity in car ownership is significant, as transportation enables access to essential locations and opportunities. Studies in LA show that automobiles provide the most access to employment opportunities within a reasonable commute time (Essential Destinations, 2021). For example, research has found a positive relationship between access to cars and the employment rates of welfare recipients

(Blumenberg & Ong, 2001).

Tension exists between providing equitable access to cars and adding more cars to a region already suffering from an overreliance on private vehicles. More cars in LA contribute to more traffic congestion, unhealthy air pollution, and carbon dioxide emissions relative to more efficient transportation modes like public transit, walking, or biking. In 2017, 7 % of commuters in LA County drove alone to work in a car, while only 6% used public transit and 3% walked (Commute Mode Share in LA County (2005-2017), 201). The transportation sector is the largest contributor to GHG emissions in California, making up nearly 40% of the state's emissions as of 201 . Most of the sector's emissions, about 70%, come from the tailpipes of passenger vehicles (Current California GHG Emission Inventory Data, 2021). Emerging shared mobility options like carsharing have the potential to address both the excessive use of cars among the general population and the lack of access to mobility benefits faced by those who do not currently own cars. A growing number of academic and industry studies suggest that carsharing often has numerous benefits including delayed or forgone vehicle purchases, increased use of alternative transportation modes, reduced vehicle miles traveled, increased access and mobility for formerly carless households, reduced fuel consumption and GHG emissions, and increased environmental awareness.[2] Advancing promising shared mobility modes like carsharing in LA has the potential to improve equitable access to mobility and reduce negative externalities, enabling behavioral changes among members that advance positive social and environmental goals.

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[2] For instance, see (Cohen & Shaheen, 2018), (Namazu & Dowlatabadi, 2015), (Metro Vancouver, 2014), and (Vancity, 2018)

Lack of P2P Policies and Experience

The City of LA currently has no policy regarding P2P carsharing. Generally, the city prohibits individuals and entities engaged in renting vehicles as a business from parking or leaving their vehicles in the public streets without permission, while it has established a procedure to issue such permits to carsharing programs (City of Los Angeles, City of Los Angeles Municipal Code §80.73.1(a)). By paying fees specified in the municipal code, carsharing organizations can get access to metered spaces, and they can use other designated on-street spaces or off-street city-controlled spaces as their fixed station (City of Los Angeles, City of Los Angeles Municipal Code §80.58.1). However, P2P carsharing differs from other carsharing services in that, like Airbnb in the housing market, companies offer a platform for owners who want to rent out their cars. For this reason, the City of LA regards P2P carsharing services as being provided by these individuals, and P2P carsharing does not fall under the existing policy framework for carsharing programs. Therefore, P2P carsharing vehicles cannot take advantage of many policies favorable toward carsharing. This lack of existing policy also means uncertainty for the platform providers in starting a business. In an interview, a carsharing company stated that they would first check the existing policies and legal aspects of each city before choosing where to expand their business. Hence, such uncertainty may always be a barrier for the potential companies that are thinking of starting the service in LA.

LADOT is still trying to understand the benefits and feasibility of P2P carsharing in LA. In October of 2017, the City Council proposed a motion to establish parking designation procedures for P2P carsharing that is similar to non-P2P

carsharing (City of Los Angeles, City Council, 2017). Nonetheless, the motion has not caused LADOT to establish any policy so far.

Lack of Awareness and Misconceptions

Some of the biggest challenges for carsharing programs are the lack of awareness and misconceptions about carsharing services from potential users. People frequently mistake carsharing with ride-hailing services such as Uber and Lyft. Figure 2 shows how familiar people in LA are with carsharing and other ride-hailing services. This data comes from Mocean's general population survey. Only about 10% of respondents said they know carsharing services "very well" or "somewhat well," while the awareness of ride-hailing services like Uber and Lyft was considerably higher. Figure 3 and Figure 4 show the results for two sub-samples (people whose incomes are either less than or greater than $100,000 per year). These figures reveal that the lack of awareness is more salient among those who have relatively low income.

Figure 2: Familiarity With The Service
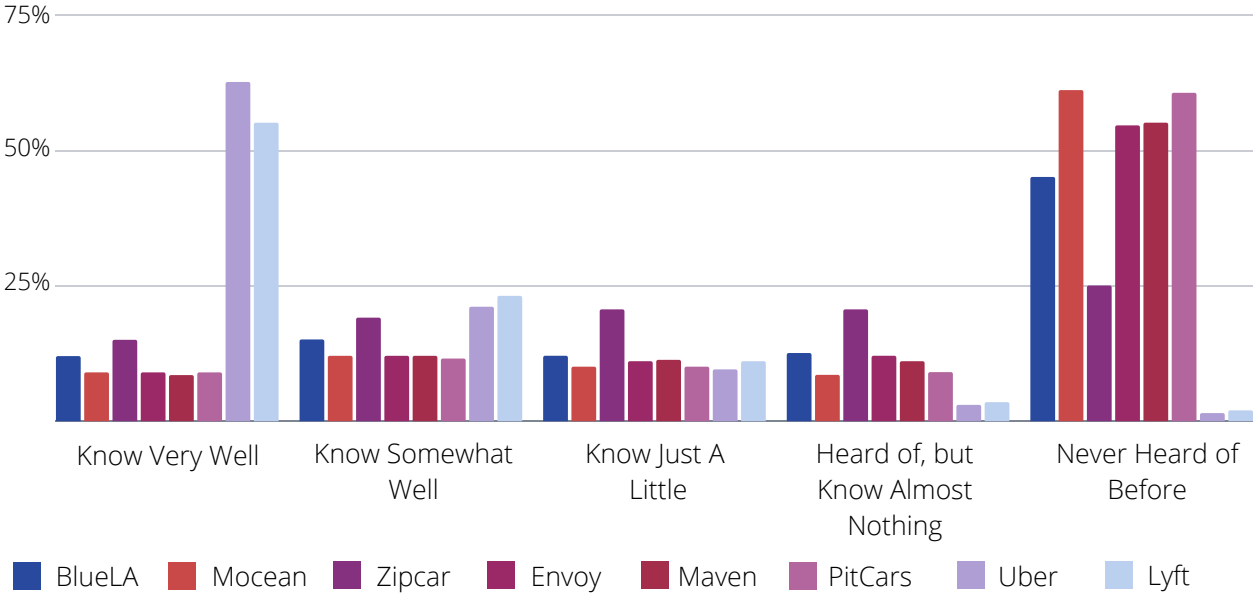
Source: Mocean General Population Survey Wave 1-5

Figure 3: Familiarity With The Service For People Whose Income Is Less Than $100,000

Legend: BlueLA, Mocean, Zipcar, Envoy, Maven, PitCars, Uber, Lyft
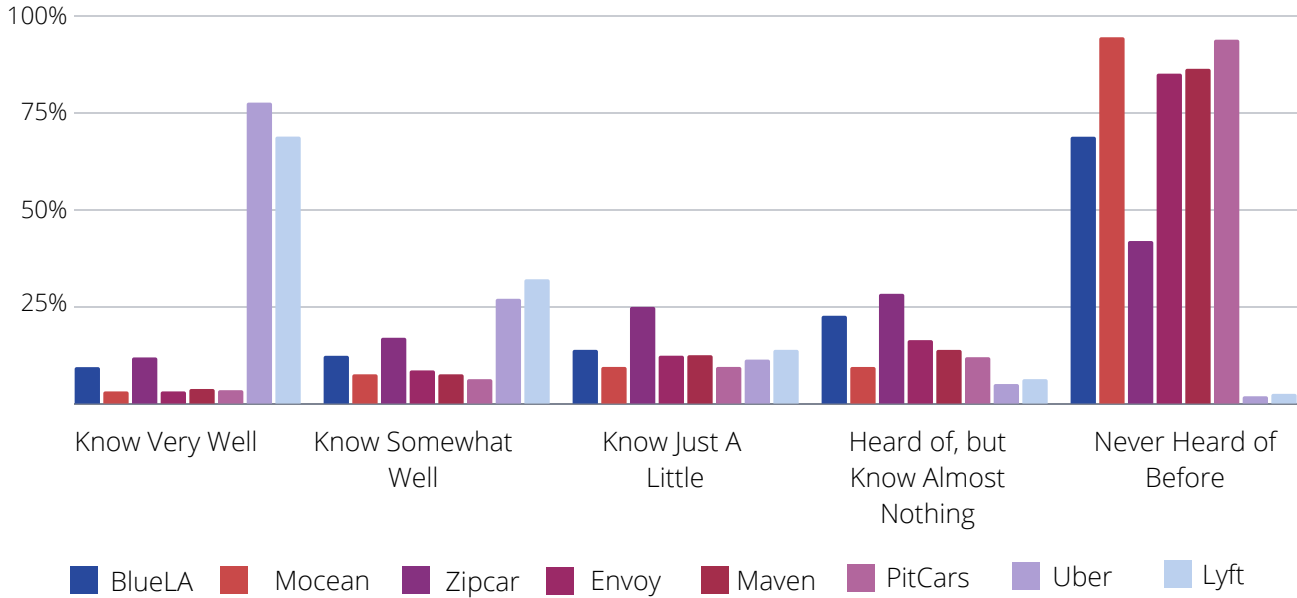
Figure 4: Familiarity With The Service For People Whose Income Is More Than $100,000 [3]

Legend: BlueLA, Mocean, Zipcar, Envoy, Maven, PitCars, Uber, Lyft
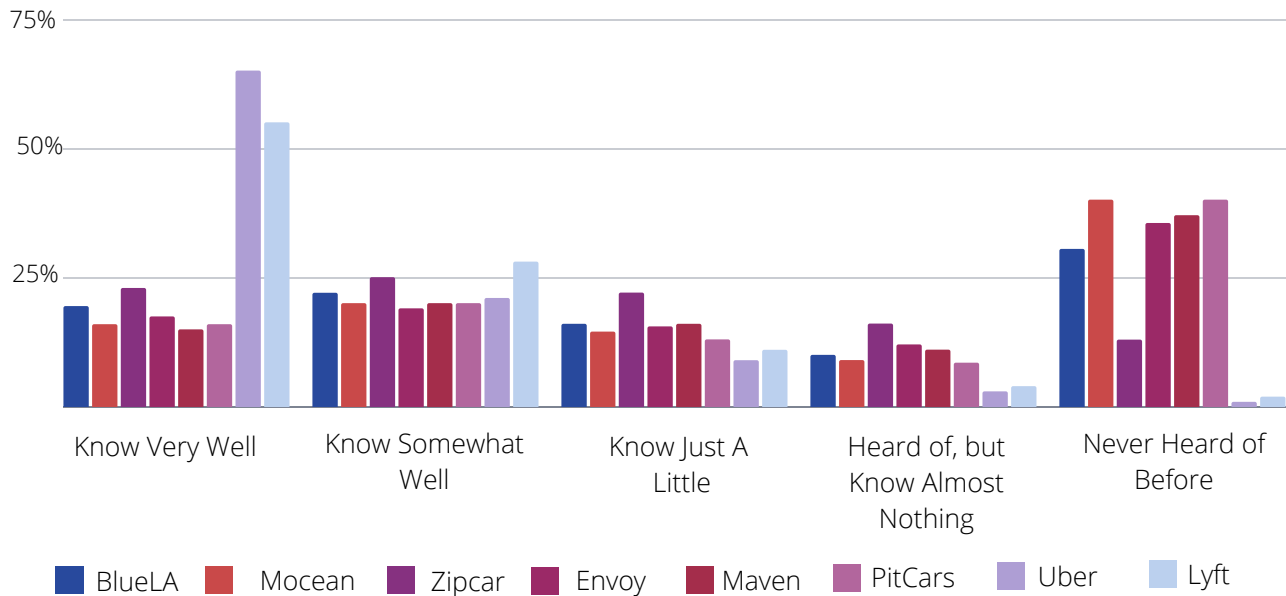
[3] In Figure 2, 3, and 4, the bars are in the order of the company, and the order is the same as the legend.

Survey responses support the idea that greater awareness could lead to higher carshare usage. Among those who responded to Mocean's general population survey, and answered that they never used carsharing, more than 70% answered they would seriously consider using carsharing at some point.[4] Additionally, more than 0% of people who rarely or never use carsharing generally supported the idea of carsharing.[5] Table 1 indicates the top ten reasons why people considered using carsharing, but have yet to try to use it.[6] Survey respondents state that they have not used carsharing because they "do not know much about it" (13.7%), and it is "not available" or "did not know it was available" in their area (12.6%).

Table 1: Why People Have Yet To Try Carsharing

Answers to "what would you say are the key reasons why you have yet to try and use a carsharing service?" (n=1,162)	Percentage
Like using my own car, or Have my own car	23.6%
Don't know much about it	13.7%
Not available in my area/Didn't know it was available	12.6%
Don't need it/don't really go anywhere/work from home	.4%
Expensive	8.8%
COVID-1 risk	7.2%
Not convenient	6.3%
Haven't had the chance/opportunity yet	6.2%
Use other types of transportation (Public, Uber)	4.6%
Don't trust other people	4.4%

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[4] A survey question is "Is a service like this something you would seriously consider using at some point?"
[5] A survey question is "In general, do you support the idea and use of car sharing in your area?"
[6] This is an open question in the survey, and respondents' answers are aggregated.

Parking concerns are also a major challenge for carsharing. Often, new carshare programs will face opposition from stakeholders that fear the carshare operations will result in lost parking spaces. For instance, when Mocean first launched its service in DTLA, it experienced fierce backlash from local businesses. The businesses felt that Mocean's vehicles took over too many parking spaces. According to an interview with LADOT, local businesses often oppose carsharing projects as they fear that lost parking spaces for customers could impact their revenue. However, LADOT also stated that this opposition usually decreases once carsharing's benefits become more clear as more people use the service. Since Council members receive many complaints about parking from their constituents, this misconception often acts as an obstacle to obtaining political support.

Psychological Obstacles to Using Others' Cars

Psychological obstacles to using others' cars may prevent people from using shared vehicles. Many drivers are not used to the concept of renting cars to and from strangers, which can lead to hesitancy around the concept. Table 2 summarizes non-users' answers from Mocean's general population survey on why they do not support the idea of carsharing. The most common reason is a lack of trust and perception of danger from using others' vehicles. Similarly, Table 3 shows reasons why people are not interested in carsharing, revealing that 14.6% of respondents do not trust people and 8. % think it is not safe. Furthermore, from the potential user's perspective, the consistent availability of cars cannot be guaranteed, and inconveniences related to driving someone else's car could arise. From the car owner's perspective, key obstacles involve fears of lending cars to complete strangers, a long paperwork process with carsharing companies, and restricted access to one's own car. These misconceptions

regarding carsharing prevent many drivers from accessing, and benefitting from these services.

Table 2: Reported Reasons About Why People Do Not Support Carsharing

Answers to "why you do not support the idea of car sharing, as it relates to the good of society?" (n=164)	Percentage
Don't trust people/dangerous	43. %
Not interested	24.4%
Not safe (e.g. because of COVID-1)	24.4%
Not enough restrictions or regulated enough	3.7%
Other	5.5%
Nothing (N/A)	1.2%
Don't know/Not sure	3.7%

Table 3: Reported Reasons About Why People Are Not Interested In Carsharing

Answers to "what would you say are the key reasons why a car sharing service is of no interest to you? " (n=4 3)	Percentage
Like using my own car/Have my own car	47.5%
Don't trust other people	14.6%
Don't need it	13.8%
Not convenient	.1%
COVID-1 risk	8. %
Not safe	8.1%
Can't access it anytime I want	5.5%
Expensive	4.1%
Lack of availability	2.6%
Other	0.8%
Nothing (N/A)	2.2%
Don't know/Not sure	2.2%

Financial Sustainability

The city relies on private carshare companies to provide their services in LA. For non-P2P carsharing models, substantial costs for upfront investment, and operations are a major hurdle. Companies must pay for vehicles, stations, operating costs, insurance, parking permits, and maintenance, all while providing an affordable, and competitive price to consumers. According to Forth, high insurance costs are particularly challenging for operators that do not have a large number of vehicles in their fleet, and cannot leverage the benefits of economies of scale. To compensate for these high costs, service utilization, and the per-vehicle usage, rate must be high to keep revenues ahead of costs, and prevent prices from being prohibitively expensive for users.

This substantial cost and the need to achieve high usage makes for a highly competitive environment in this space, and business failures are common. For example, Car2go, which once had the largest market share globally, and also operated in LA in 2014-2015 (Martin & Shaheen, 2016), ended its service in all North American regions on February 2 , 2020 (Service Ended, 2020). When they announced termination in 201 , Car2go cited rapidly emerging competition in the mobility landscape. The challenge of maintaining high usage in a competitive environment is less of an issue for P2P carsharing models because these companies do not need to cover high upfront investment in new vehicles. The company Envoy represents an alternative model for achieving financial stability. Envoy provides exclusive carsharing vehicles to development properties, and obtains stable revenue via subscription fees from property owners. For instance, Envoy charges monthly fees between S 50 and S2,800 per vehicle in addition to 50% of the revenue from the residents' use (Envoy).

Such alternative sources of revenue help the services lower the target for usage, making them more sustainable.

Affordability

Currently, carsharing users are mainly middle and higher-income populations. Based on a survey of Mocean's members, 70% of them earn above $50,000 per year. Likewise, Mocean's General Population Survey also shows that the proportion of people often or occasionally using carsharing is higher for those earning over $100,000 (51.1%), than it is for those earning under $100,000 per year (23. %). In Table 1, 8.8% of people answer that they do not use carsharing because it is expensive, showing that price can be a hurdle. Most carsharing services charge low prices per minute or per hour, and trip prices seem to be compatible relative to other on-demand options such as Uber and Lyft.[7] However, there are often other costs to consider. Table 4 summarizes costs other than trip prices. Many services like Mocean, Zipcar, and BlueLA also have standard membership fees. Users may also face booking fees, protection insurance, fuel or electric fees, and delivery fees. As more fees add up, carsharing costs increase. Due to these many costs, it may become unaffordable for lower-income populations, especially when companies do not have a discounted program for income-qualified members.

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[7] According to BlueLA's use data in August to October of 2021, the majority of the trips are less than 3 hours: 25% is less than 1 hour and 34 % is between 1 to 3 hours. The rest of the trips are between 3 to 5 hours. Also, the median duration of the trips of Mocean from September to December 2021 is 76 minutes.

Table 4: Examples Of The Fees Other Than Trip Prices

Company	Examples of Other Fees
Getaround	Booking fee: 3% (S1 minimum), License fee: S10 (one time), Under 25 fee, Fuel/electric fee *Standard protection plan is included in the booking fee.
Turo	Trip fee: a total percentage of the daily rate, Protection: 18%-100% of the trip price, Young Driver fee (under 25), Delivery fee, Fuel/electric fee etc.
Envoy	-
Mocean	S0/month, S20/month - get S30credits, S50/month- get S80 credits S100/month- get S100credits
BlueLA	S5/month (standard plan), S1/month (community plan for low-income people)
Zipcar	S7/month, S70/year Application fee: S25 (one time)

The Limited Availability of Non-P2P Carsharing Service

Although the City of LA has tried to expand non-P2P carsharing through BlueLA, its availability is still very limited. Figure 5 shows the current 40 BlueLA locations, as well as locations of other carsharing services. As of October 2021, the number of available BlueLA vehicles was 60, with just 1 to 3 vehicles at each location at any given time. Further, these sites are not evenly distributed through the city, and most BlueLA stations are concentrated in specific areas.

Expanding BlueLA would benefit people in neighborhoods where the service is not currently available. However, there are two main reasons that service

availability is limited. First, non-P2P carshare companies must invest in new vehicles and facilities, incurring substantial upfront costs. Second, for carsharing services to be profitable, they must operate in neighborhoods where vehicles are in high-demand. Neighborhood characteristics, population density, walkability, and vehicle ownership rates, are critical factors driving demand.

Mocean, while in operation, offered an important carshare service in LA. Mocean began in DTLA, but later expanded its services to other areas. Figure 6 maps Mocean vehicle usage at the census tract level from their final 4 months of operation (September to December 2021). After Mocean ceased operation the need for more carshare services in these neighborhoods became even greater.

Figure 5: Current Station Locations Of BlueLA And Other Major Carsharing Services In The City of LA
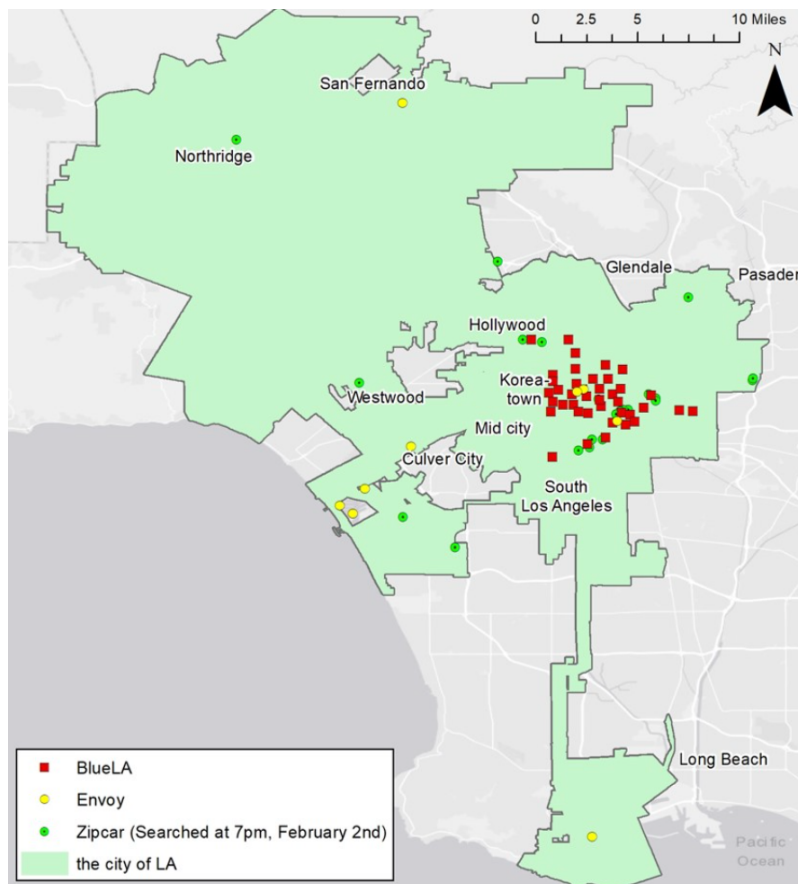
Figure 6: Number Of Uses Of Moceans' Vehicles In The City Of LA At Census Tract Level (from September to December 2021)
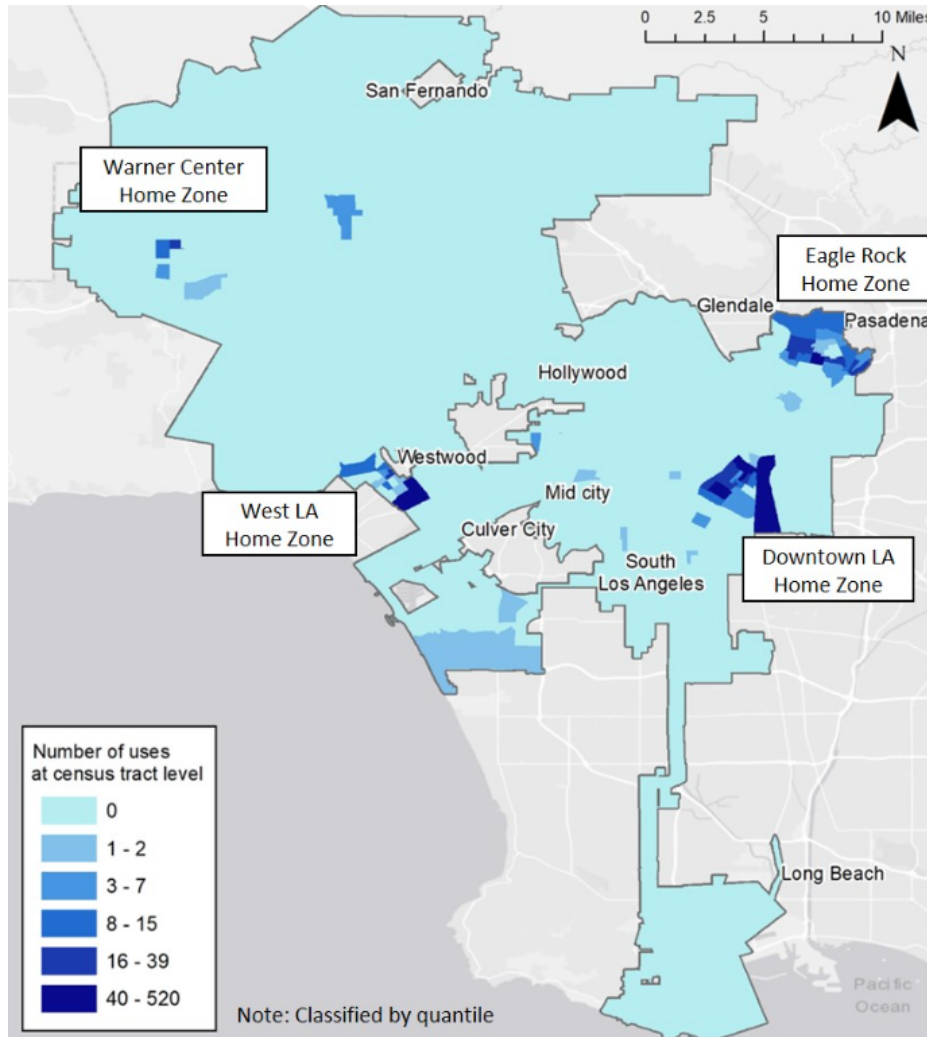
Pandemic Impact

The COVID-1 pandemic impacted all types of shared mobility services, including carsharing. In the U.S, during April of 2020, using mobility for recreational and retail purposes decreased by 35%, and commuting to work dropped by 37%. This is due in part to social distancing requirements to avoid close personal contact and shared spaces. Furthermore, many businesses closed down, and some workplaces moved to remote working, which gave people less reason to go out for leisure, and work. The allure of owning private vehicles

increased as many perceived shared transportation modes like carsharing as unsafe (Global, 2020).

The pandemic has directly impacted carsharing businesses' revenue, and has even shut down some programs. For instance, the worldwide microchip shortage caused by COVID-related supply chain disruption increased vehicle prices, which limited Mocean's ability to purchase sufficient vehicles. Furthermore, carsharing usage decreased during the pandemic as people started to avoid using shared vehicles. Mocean trip data shows that vehicle use stagnated through August of 2020, and declined from November of 2020 to February of 2021, when COVID cases surged. Such low usage made Mocean invest additional money for marketing, but it lowered the profits further. Likewise, General Motors had provided a station-based carsharing service, Maven, in LA, and stopped operation in the spring of 2020 due to the pandemic.

KEY OPPORTUNITIES

KEY OPPORTUNITIES

Many LA neighborhoods have characteristics conducive to a successful carsharing program. First, communities with low private auto ownership rates are likely to benefit the most from the access to private vehicles that carsharing provides, which may lead to a higher rate of community members willing to support carsharing. A study of carsharing users in San Francisco showed that 71% of survey respondents did not own a vehicle (On-Street Carsharing Pilot Evaluation, 2017). Second, high neighborhood population density makes it more likely that carshare vehicles will have a high usage rate, thanks to a larger pool of potential users, and can help ensure the service will be financially sustainable. Third, residents in areas that already have a high usage rate of public transportation and other alternative modes of transportation are more likely to incorporate carsharing into their transportation habits. That same study in San Francisco showed that carshare users were more likely to walk, bike, and use public transit than nonmembers (On-Street Carsharing Pilot Evaluation, 2017). Finally, communities with a disproportionate percentage of high- or low-income households would be most likely to support carsharing.

BlueLA serves as a great example of carsharing in disadvantaged communities within the City of LA. A City Council Transportation Committee report states that BlueLA has added 1,872 new users from April of 2018 to May of 2021, with about half being from disadvantaged communities. Users have taken a total of 63,000 trips and driven about 1.23 million miles (City of Los Angeles, City Council, Transportation Committee, 2021). With the grant LADOT received from CARB in

2020, BlueLA will expand its number of vehicles, stations, chargers, and area of service. BlueLA's success has lessened the stigma around EVs in these communities, and increased awareness of carsharing services. This makes the communities of DTLA, Hollywood, Koreatown, Pico Union, and Westlake promising areas to pilot a P2P carsharing service.

Another compelling reason to promote carsharing, specifically P2P carsharing, is the potential to generate additional revenue for individual car owners. P2P operations are unique in that they allow owners to offer their vehicles to other members of the community for a fee when their cars are not being used. The additional income generated by making one's vehicle available on these platforms can be significant, and takes relatively little effort. Getaround, one of the leading P2P carsharing platforms, conducted a pilot program in the Chicago metropolitan area in conjunction with other organizations to test the viability of their service in different neighborhood types. They found that owners who offered their cars on the service had the highest earnings in high-density neighborhoods with medium to high income residents. Average monthly earnings per vehicle in these types of neighborhoods was $247, net of fees (Chicagoland Peer-to-Peer Carsharing Pilot Program, 2018). Additionally, even in high-density and low income neighborhoods where earnings were lowest, car owners still averaged $145 in earnings, with the highest per car revenue generation reaching $1,038 per month (Ibid.). These amounts are substantial since they are respectively equivalent to 2.58% and 18.48% of the median monthly income of $5,618 in LA in 201 (Census Bureau, American Community Survey, 201). The profitability of these operations offers a potentially significant new source of income for owners and their communities, and could be a powerful incentive for

expanding P2P carsharing programs throughout LA.

Lastly, carsharing also offers the opportunity to bring major environmental benefits to LA while taking additional cars off of local streets. Research by Rodier et al. shows that U.S carshare programs have reduced overall vehicle miles traveled (VMT) as carshare participants often lowered their private vehicle ownership rate (2022). This reduction in VMT leads to lower overall GHG emissions, even for carshare programs that exclusively use internal combustion engine vehicles (ICEVs) although, these GHG cuts are much more drastic when EV vehicles are used for carsharing. Moreover, the impact of these programs on private vehicle ownership can be significant. One study estimated that, in free floating carshare programs, a carshare vehicle could take an additional 7-11 private vehicles off the road on average as the availability of carsharing enticed some people to forgo, or delay, car ownership (Cohen & Shaheen, 2018). Taking cars off the road can bring additional benefits, such as reduced congestion, and can help free up land used as parking space for other purposes.

POLICY OPTIONS

CAR SHARING

POLICY OPTIONS

P2P Pilot Program

This policy option would create a partnership with an existing P2P carsharing company, and promote the company's services by two means: promotion and designated parking spaces for P2P carsharing vehicles. This report has identified that traditional carsharing services, including BlueLA, require substantial startup costs along with high service utilization to compensate for these costs. Therefore, traditional non-P2P carsharing options involve higher risks for continuous operation in competitive environments, and limitations exist for how fast these companies can expand into new areas, and earn profits. Furthermore, these companies face challenges due to people's reluctance to use shared vehicles and the soaring vehicle prices resulting from the pandemic. P2P carsharing companies are not burdened by high vehicle costs, however, and have other key advantages. The P2P model is therefore a viable way to promote equitable vehicle access. Table 5 summarizes the proposed P2P pilot program option.

Creating a partnership between LADOT and a P2P company would help with the logistics of this project. LADOT has experience with carsharing partnerships like BlueLA, which can inform approaches and implementation for this pilot program. The city of Chicago has partnered with Getaround to pilot a P2P program, creating a robust program through public and private partnerships to reach targeted communities while facilitating funding, and support. Lower prices for consumers would help increase users and program engagement, but

this need must be balanced with providing adequate revenue to car owners to incentivize offering their vehicles through the program.

Advertisement efforts from various entities can inform the public of P2P carsharing availability and its benefits. Any successful pilot program will require efforts by NCSA and other local organizations to encourage community participation in P2P carsharing. A major way that NCSA can help with this pilot program is by leveraging its relationships with elected officials, nonprofit partners, community organizers, and its network of neighborhood councils. Through these contacts, NCSA could communicate announcements about local services on council meeting agendas, and help disseminate information to community groups. Educating the public about the benefits of P2P carsharing, both those desiring private vehicle access and those interested in offering their vehicles, is paramount to achieving high participation rates. Education materials can consist of home mailers, e-blasts, posts on social media, and physical flyers left at strategic locations such as churches, community centers, and local businesses. Any promotional materials should emphasize the ease of use for the services, low cost to users, the profit potential for vehicle owners, and the environmental benefits that these services offer local neighborhoods.

Other entities like city and county agencies will also benefit greatly from increased carsharing, and therefore should also prioritize promoting the services. Local transit agencies, especially, should be highly-incentivized to help promote these services as carsharing users tend to support and ride public transit. Carsharing can also provide an important method for users to connect to other transit services. A key promotional tool these agencies wield is their

advertising infrastructure. Local transit agencies can help promote carsharing by offering discounted, or free, advertising space on the sides of buses, transit stops, and the interior of transit vehicles to carshare services involved in the pilot program. Further, the burden of these advertising efforts could be split in the greater LA metropolitan area, with LADOT focusing on advertising at the city-level, and Metro covering the rest of LA County. Finally, these transit agencies could coordinate with NCSA to concentrate their promotional efforts in specific neighborhoods, either on stationary infrastructure, or on transit lines that run through specific areas.

Another key policy lever for promoting P2P carsharing in LA is designated parking. As LADOT has already worked with private carshare services to issue special permits, and earmark specific parking locations exclusively for carshare vehicles, LADOT can make similar efforts to promote P2P services. LADOT could set aside more spaces throughout the city where only vehicles registered with P2P platforms are allowed to park, in exchange for an annual fee payment. This policy option suggests that the city should start with a small number of parking spaces, as few as 10, in a designated neighborhood to test its effectiveness before expansion. LADOT can set the same annual fee for each designated space that other carsharing companies face, which is between $00 and $3,300, depending on the annual meter revenue in parking space areas (City of Los Angeles, City of Los Angeles Municipal Code §80.58.1). P2P companies are likely to support such a proposal as designated parking as it attracts more potential customers. The city of Boston has adopted a similar program by partnering with Getaround, which demonstrates the feasibility of this type of program (DriveBoston Licenses to Occupy Dedicated Spaces, 201). The

parking spaces themselves should be located in highly visible locations with distinct signage. Using highly visible locations and clear signage, or specially colored curbs and paint, will help further promote carsharing, and bring attention to the availability of the service in local neighborhoods.

The process of choosing neighborhoods for parking space designation will use the following criteria: population density, demographic characteristics, income level, vehicle ownership rates, walkability, public transit connections, and the availability of the other carsharing services. These criteria are important for sufficient carsharing utilization, and achieving equity.

This P2P pilot program aims to serve high population neighborhoods with diverse racial backgrounds, which include sufficient minority groups and low-income people to enjoy private vehicle benefits without actually having to own them. The Chicago case study shows that high-density areas allow more vehicles to participate and higher utilization rates relative to less dense areas. Ideally, these neighborhoods may have a mix of financial backgrounds, with household income levels ranging beneath the federal poverty level for a family of four ($26,500) to $100,000+ (Poverty and Lower Living Income Level Guidelines, 2021). The wide range of income levels will allow medium and high-income households to provide vehicles for lower income households. By serving these neighborhoods, the pilot program would accommodate different households' needs and increase its success rate.

	Advertisement	Designated Parking
Key Features	• Promote community participation and education by the NCSA's effort • Advertise the availability and benefits of P2P carsharing at the spaces around public transit	• Provide designated parking spaces where only P2P vehicles can park. (up to 10 spaces) • P2P companies pay LADOT an annual fee for the spaces of S 00, S2,100 or S3,300 per space, depending on annual parking revenue from the meters
Responsible Entity	• LADOT • Partner with existing P2P companies • NCSA • Metro	• LADOT • Partnership with existing P2P companies
Neighborhood	• All over the city of LA, but prioritize selected neighborhoods	• Selected neighborhoods

Status Quo

Maintaining the status quo of LA's carsharing landscape entails keeping the city, and county's current partnerships intact. LADOT is currently partnered with BlueLA. This option includes the current expansion project of BlueLA from the grant the city received in late 2021 to expand infrastructure and services. LADOT is in the process of tripling BlueLA's fleet (from 100 EVs to 300), expanding into new neighborhoods, and adding more EV charging stations (40 stations to 100 stations). BlueLA currently operates in DTLA, Westlake, Pico Union, Koreatown, Echo Park with plans to expand into East Hollywood, Boyle Heights, South LA, and increase service in DTLA. Metro has a partnership with Getaround, which currently occupies 110 parking spaces at 27 Metro stations in

LA County (Kuehl, 201). Metro has also partnered with Zipcar, which currently operates 20 Zipcar vehicles at 10 Metro park-and-ride stations (Shared-Use and Mobility Center, 2015). Other carsharing companies operate independently with no partnerships with the city, including Turo and Envoy. LA already has a foundation of carsharing services that residents and visitors can use. Keeping the status quo of carsharing would not reduce any benefits.

Expanding BlueLA

Another non-P2P carsharing option is for LADOT to further expand BlueLA's service. As the program has so far been successful enough to warrant expansion, it could branch out even further to service more neighborhoods. This is the easiest direction for the City of LA to further promote carsharing as the partnership already exists, and it is consistent with the course of actions LADOT has taken to this point. BlueLA currently focuses on servicing the top 25% of disadvantaged communities[11] in the city based on California Environmental Protection Agency's California Communities Environmental Health Screening Tool, Version 3.0 (CalEPA's CalEnviroScreen 3.0 index) (Tang, 2015). Expanding further into more disadvantaged areas, and even into less-disadvantaged communities could bring more vehicle access, reduced GHG emissions, and decreased costs for residents in these new areas. Expanding BlueLA also expands awareness and knowledge of EVs to communities that may not otherwise have access to such technology.

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[11] For purpose of SB535, disadvantaged communities are defined as "the top 25% scoring areas from CalEnviroScreen along with other areas with high amounts of pollution and low populations". These are census tracts that are impacted and vulnerable to multiple sources of pollution for the purpose of SB 535.CARB grants for BlueLA mandates that these grants are used in CalEnviroScreen's disadvantaged community.
(SB 535 Disadvantaged Communities, 2017)

Partnerships

The City of LA can pursue more partnerships with other carsharing services. There are many other companies in LA that could benefit from city partnerships or support, such as Envoy or Zipcar. Zipcar has already partnered with the city in the past to service the areas around UCLA, USC, and Hollywood, but the partnership was discontinued. The city could support these companies through grants or subsidies, which will allow expansion for fleets and operating areas. Through partnerships, the city could designate these companies to operate in neighborhoods that can derive the most benefit from them.

CRITERIA

CRITERIA

This analysis uses four primary criteria to evaluate the policy options provided in the previous section: equity, impact, cost, and feasibility.

Equity

This criterion is key to answering the policy question at the center of this study. Any type of transportation service in LA must prioritize the needs of communities, especially those that suffer from a lack of access to safe, reliable and affordable services (Stacy et al., 2020). Typically, low-income communities experience much longer commuting times and distances, leading to higher fares than the middle and upper income populations (Kodransky & Lewenstein, 2014). With more equitable access to sufficient transportation, disadvantaged communities should experience reduced commuting time, lower travel costs, and better access to employment opportunities.

Providing equitable carsharing access to a community means ensuring that the service is available to households regardless of level of income, ethnic background, or immigration status. An important segment of the population that policies should serve is low-income households without private vehicles. In the US, around 4% of non-Hispanic white households have no cars, while 8% of Hispanic and 14% of Black households are carless (Wachs & Taylor, 2020). Among the households that own private vehicles, 75% of them make more than $50,000 per year (Carlier, 2021). According to Mocean's survey data, most of the company's customers were Caucasian and male, making more than $50,000 per year. This shows that low-income and disadvantaged communities have yet to benefit from carsharing services.

Impact

This criterion measures the policy option impact on increasing carsharing in LA. Therefore, this report evaluates each policy option by whether it is likely to induce people to use carsharing. A policy option will have a significant impact on carsharing usage if it is implemented in high-density neighborhoods, it is available widely throughout the city, and if sufficient vehicles are made available. If applicable, the report also provides impacts on additional benefits such as improving traffic congestion and reducing GHG emissions.

Cost

This criterion evaluates the financial costs for LADOT and Metro as the relevant agencies for each policy option. Non-P2P carsharing options like "expanding BlueLA'' require the city to pay upfront investment costs to subsidize new vehicles and stations. While such investment costs would be large, additional promotion would also come with a cost for LADOT. If LADOT designates additional parking spaces for carsharing vehicle use, it would incur the costs of lost meter revenue. However, the city could possibly raise revenue through other means. For instance, the current LAMC requires carsharing companies to pay various fees to operate their businesses. Such permitting fees can expand if establishing policies for P2P carsharing. This report's analysis uses this cost criterion to measure the budgetary feasibility and cost-effectiveness of the options.

Feasibility

Political

Political feasibility is critically important to any policy solution at the city level involving carsharing. Local residents often perceive carsharing as an inconvenience that takes away valuable parking spaces or a nuisance if users park illegally or improperly. Beyond the fear of losing street parking to carshare vehicles, Mocean survey data indicates that certain opponents resist carsharing because they distrust the services or users, they view it as unsafe, or they believe it is not regulated enough. Public complaints and resistance against carsharing operations can filter up to City Council members, who have influence over whether carsharing pilot programs can happen in their districts. Because the ultimate success or failure of any pilot program begins with its ability to gain support among local residents and elected officials, political feasibility is a key evaluative criterion for all policy options. Therefore, the political feasibility of various policy options is evaluated based on the likelihood of support from relevant elected officials and local community members. A policy option is deemed to have high political feasibility if elected officials and residents are likely to support it, moderate feasibility if elected officials and residents have been neutral in the past, and low feasibility if elected officials or residents are unlikely to support it.

Administrative and Technical

Administrative feasibility relates to the capacity of existing city departments or other relevant institutions to successfully implement a given policy option. This is a key evaluative criterion as a policy solution at the city level must be

logistically, and organizationally feasible. It should have clear implementation and enforcement responsibilities given to officials. Similarly, technical feasibility refers to the ease with which a policy can be implemented. For example, policy options modeled after existing pilot programs with a proven record, such as the city's experience with BlueLA, may be more technically and administratively certain than new policy proposals that are untested. The degree to which city staff and their limited resources would be involved in the administration and implementation of a policy proposal strongly impacts the policy's long-term viability, making administrative and technical feasibility important criteria for policy alternatives.

Evaluation Rating Scale

Equity - Will the policy option increase the private vehicle access of low-income people in disadvantaged communities?

Low	The policy option does not serve disadvantaged communities based on CalEnviroScreen 3.0 index. Therefore, it has an insignificant effect on their private vehicle access.
Medium	The policy option serves disadvantaged communities, but has a moderate effect on their private vehicle access and is located in limited areas.
High	The policy option serves disadvantaged communities. It significantly affects their private vehicle access.

Impact - Will the policy option increase the rate of car share usage?

Low	The policy option will not induce people to use carsharing.
Medium	The policy option will induce people to use carsharing, but has a moderate impact at the city-level as service is available in limited areas, provided in the low-density areas, or vehicle availability is limited.
High	Carsharing program has high participation and a significant impact at the city-level as it is broadly available, provided in the high-density areas, and has sufficient vehicle availability.

Cost - Does the policy option have significant financial costs for the City of Los Angeles?

Low	The policy option requires significant, sustained annual costs for additional staff and infrastructure in the long term.
Medium	The policy option has some short-term (up to two years) start-up costs for additional staff, vehicles, or infrastructure investment, but does not require sustained annual costs.
High	The policy option requires little or no additional costs such as additional staff or infrastructure investments, or existing grant funds can cover the cost.

Feasibility - Is the policy option politically and administratively feasible for the City?

Low	The policy option is new to LADOT and needs technical expertise to perform. Elected officials or residents have opposed similar measures in the past, or are unlikely to support them.
Medium	The policy option requires some expertise, but it is not difficult to implement. Elected officials or residents have indicated neither support nor resistance in the past or support is possible
High	The policy option does not require technical expertise. LADOT and related entities have experience with performing the same or similar policy. Elected officials or residents showed support for similar policies in the past or are expected to support them.

EVALUATION

EVALUATION

Table 6: Overall Scoring

Policy Options	Equity	Impact	Cost	Feasibility
P2P Pilot Program	High	High	Medium	High
Status Quo	Medium	Medium	High	High
Expanding Blue LA	High	High	Low	High
Partnerships	Medium	Medium	Medium	High

(*) Note: As described at the beginning, "High" evaluation in this Financial Cost criteria means the policy option does not require a substantial cost.

P2P Pilot Program

Equity - High

P2P carsharing vehicles can be made available across all communities and accessible to all populations regardless of ethnicity or income level. Further, promotional efforts can be targeted to increase awareness of the P2P pilot program among specific segments of the community, such as low-income households. Designated P2P parking spaces can also be located in low-income communities to promote the use of P2P services. In Figure 7, each map represents a different criterion for evaluating the viability for a P2P carshare program: race, median income, car ownership, and population density. Taking all the maps into account, neighborhoods like Mid City, Wilshire Center, Koreatown, Hollywood, and Echo Park are ideal locations for a P2P pilot program. These locations are at least moderately diverse, tend to have lower median household income levels ($50,000 and lower), have moderate car ownership rates (0.75 - 1.50 per household), and have high population density. However, Koreatown, Wilshire Center, and Echo Park already have established BlueLA operations available (Figure 5). Therefore, this report does not recommend launching a new pilot program in these neighborhoods. Instead, Hollywood is a more attractive option to bring the benefits of carshare services to underserved communities.

Figure 7: Neighborhood Evaluation For P2P Pilot Program

7.1 Race of Los Angeles Residents by Census Tract

Criteria for P2P Pilot Program Neighborhood Selection in Los Angeles, California
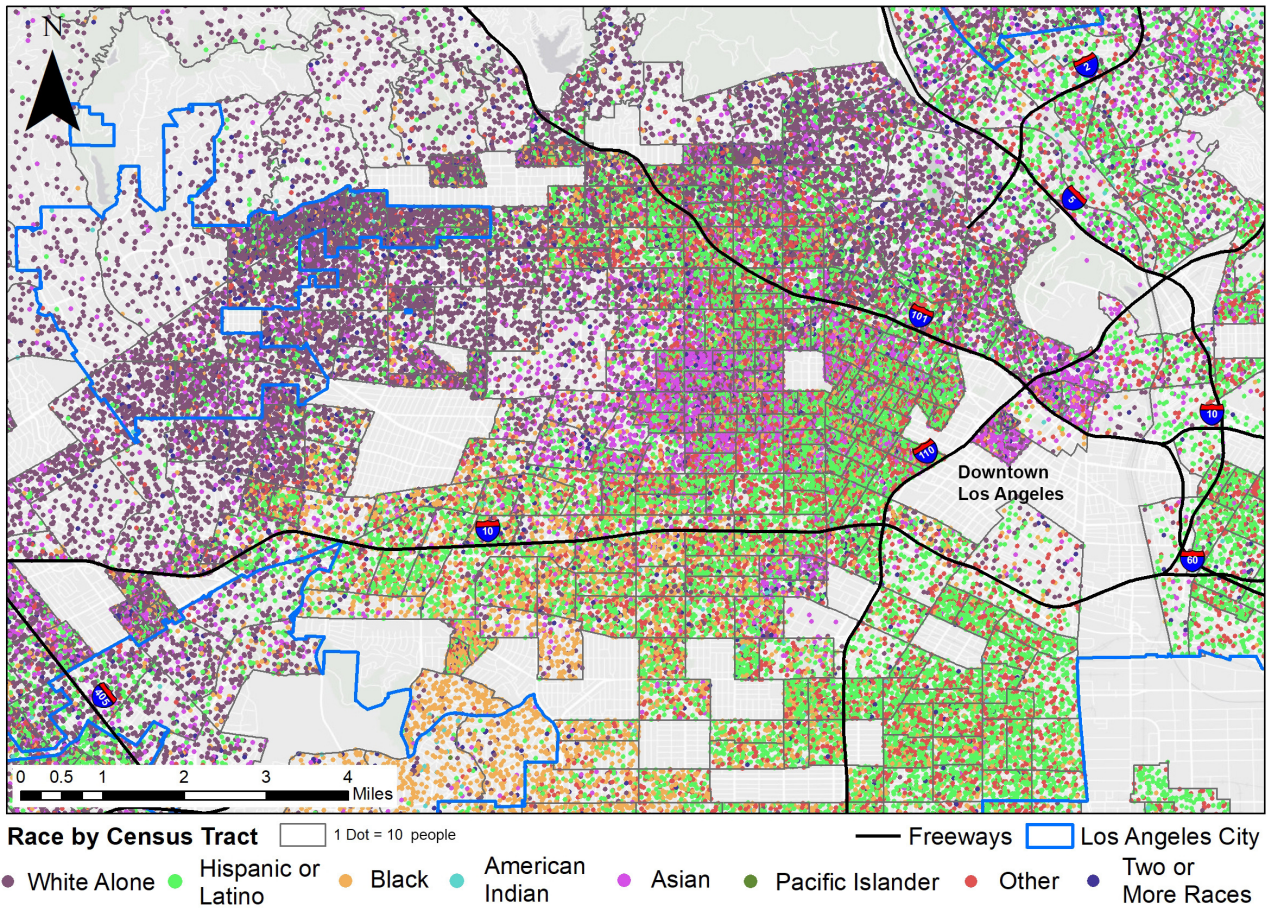Data Sources: US Census, USC Price, City of Los Angeles, EmpowerLA
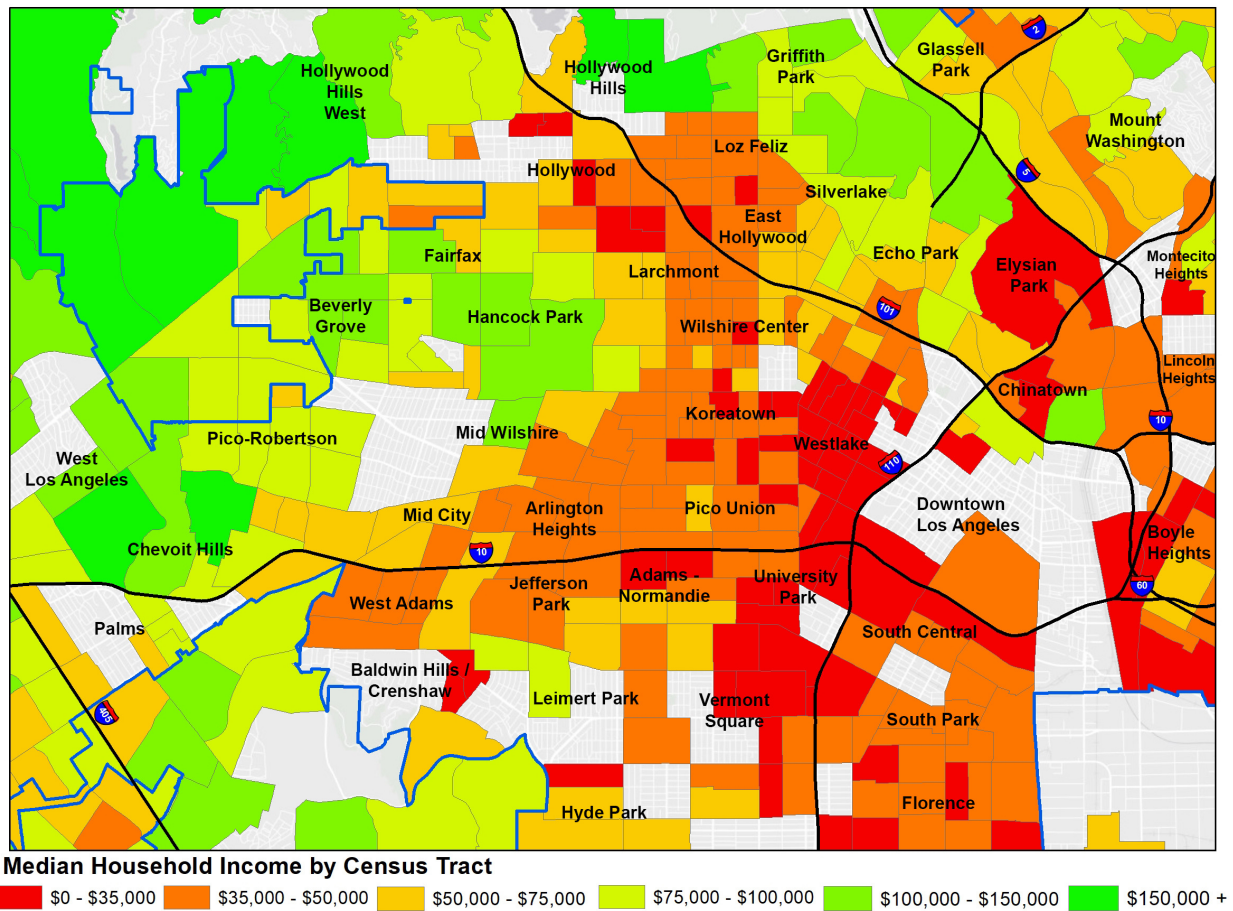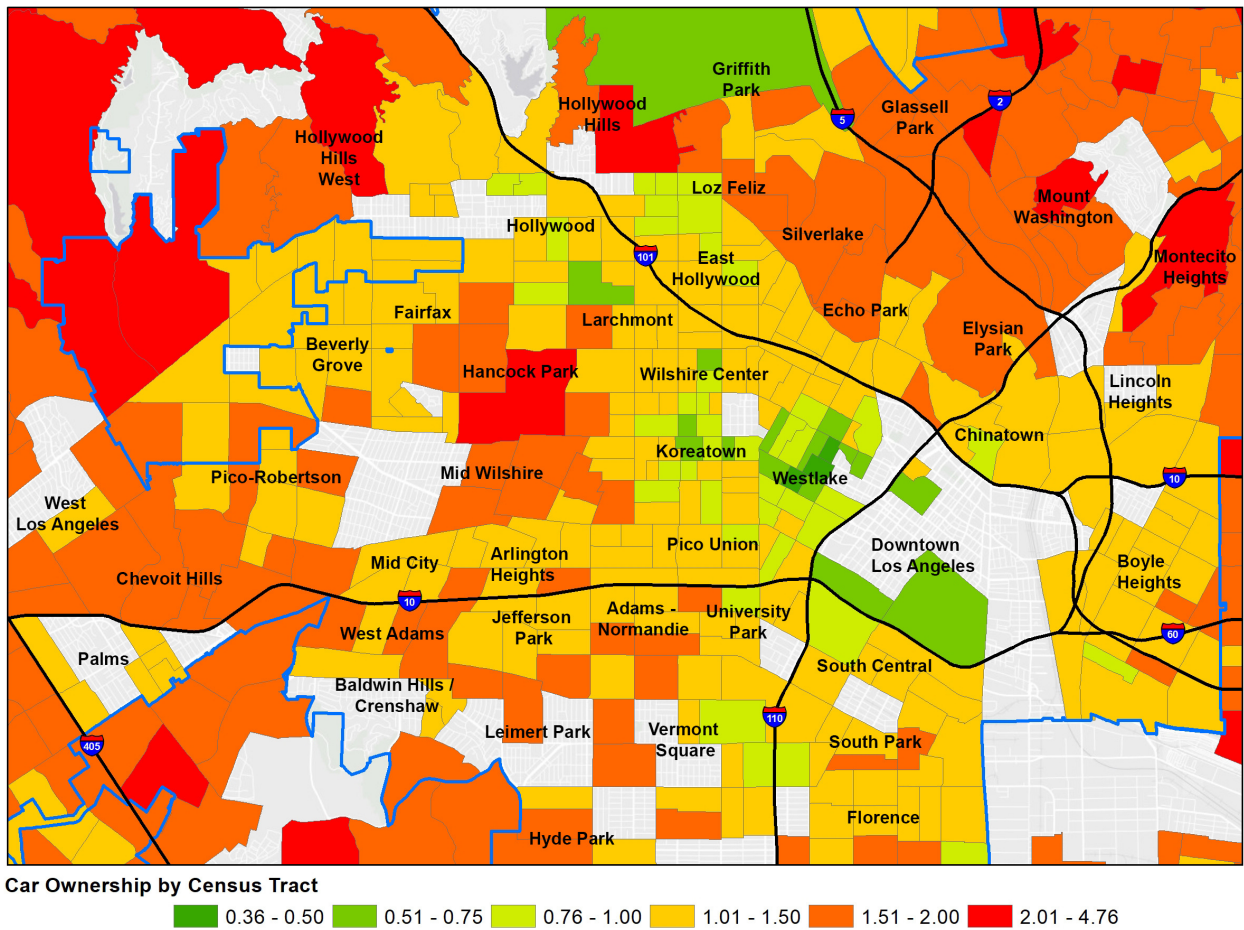
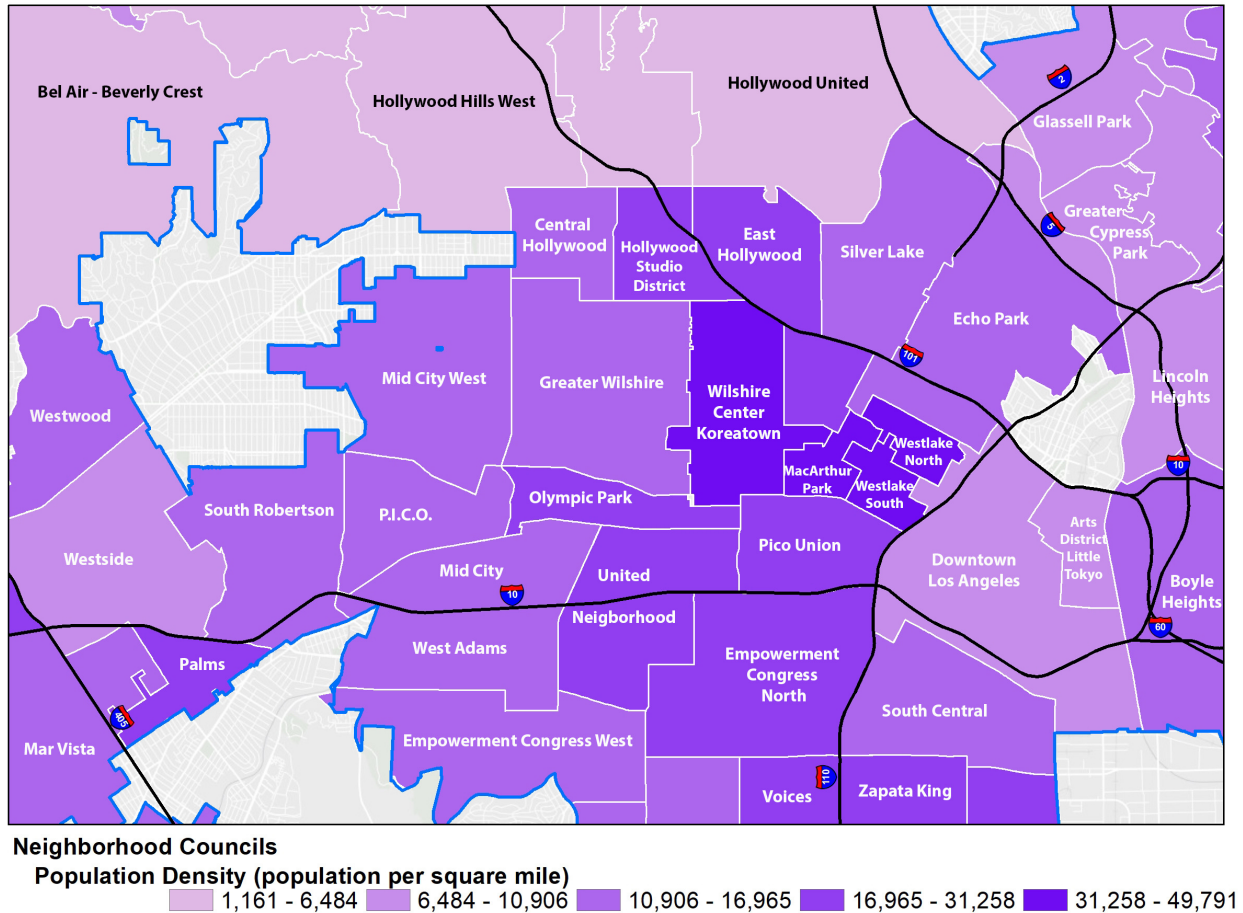Figure 7.2 Median Household Income of Los Angeles Residents by Census Tract

Median Household Income by Census Tract

$0 - $35,000 $35,000 - $50,000 $50,000 - $75,000 $75,000 - $100,000 $100,000 - $150,000 $150,000 +

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[12] Not all neighborhoods are labeled.

Figure 7.3 Household Car Ownership by Census Tract [13]

Car Ownership by Census Tract

0.36 - 0.50	0.51 - 0.75	0.76 - 1.00	1.01 - 1.50	1.51 - 2.00	2.01 - 4.76

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[13] Not all neighborhoods are labeled.

Figure 7.4 Population Density by Neighborhood Councils in Los Angeles

Neighborhood Councils
Population Density (population per square mile)
1,161 - 6,484 | 6,484 - 10,906 | 10,906 - 16,965 | 16,965 - 31,258 | 31,258 - 49,791

Impact - High

Case studies of P2P carshare programs from other cities can be used to estimate the impact of a pilot program in LA. Hollywood, for example, fits the profile of a "high-density low-income" (HDLI) urban area (OpenStreetMap, 2022) similar to neighborhoods that were part of a pilot program conducted in Chicago (Chicagoland Peer-to-Peer Carsharing Pilot Program, 2018). In the Chicago example, HDLI areas had a P2P participation rate of 1 car owner, and 5 vehicle renters per 5,000 residents (OpenStreetMap, 2022). Given Hollywood's population of approximately 111,000 residents (City of Los Angeles

Neighborhoods Population & Race, 2020), the pilot program can be expected to draw 22 local car owners, and more than 110 renters to participate in this service. Previous research by Cohen and Shaheen has shown that, on average, a one-way free floating carshare vehicle can remove 7-11 vehicles from the road (2018). Based on these figures, it is estimated that the anticipated 22 participating vehicles in the Hollywood pilot program could remove between 154-242 cars from neighborhood streets. Removing hundreds of cars would help alleviate traffic congestion, cut harmful vehicle emissions in the community, and reduce demand for on-street parking in Hollywood.

Cost - Medium

The major costs for the pilot program include expenses for advertising, converting parking spaces for P2P vehicles, and the lost parking meter revenue from the converted parking spaces. Revenue from permit fees for P2P platform companies can offset some of this lost parking meter revenue for the city. Despite these expenses, the cost of the P2P pilot program is still significantly lower than expanding BlueLA because P2P parking spaces do not require the installation of EV charging infrastructure. Further, the P2P pilot program does not necessitate high upfront capital costs for purchasing new vehicles, nor will it require ongoing fleet maintenance expenses from the city. This difference in the initial investment makes the P2P pilot program option very affordable compared to other non-P2P options. Based on the available data, this report estimates a start-up cost of between $63,250 - $113,250 for the P2P pilot program, but this program should generate annual excess revenue of about $5,700 (Table 7). Though this figure could increase if advertisement costs are reduced through greater grassroots engagement from NCSA and word-of-mouth advertising.

Table 7: The Estimate Of The Cost Of The P2P Pilot Program

	Estimated amount ($)	Sources for the estimation
Start-up cost		
Advertisement cost	50,000 – 100,000	• The city of LA spent $100,000 for advertising BlueLA at the beginning of the program. This estimate regards this amount as an upper bound.
Cost for converting parking spaces	13,250	• On average, the city of LA spent $2,650 to establish 1 BlueLA station. This cost includes pavement, markings, striping, and meterhead removals (City of Los Angeles, BlueLA Data Report). • Since this program does not require meterhead removals, this estimate divides the average cost by half. • $1,325 per space times 10 spaces
Start-up cost total	63,250 – 113,250	
Annual cost and revenue		
Lost parking meter revenue	27,320	• The average revenue of the city's 33, 8 metered parkings in FY 201 -20 is $1,366 (City of Los Angeles, Los Angeles Open Data and Budget for the Fiscal Year 2021-2022) • Since the Hollywood neighborhood has high population density, this estimate multiplies the average revenue by 2. • $2,732 per space times 10 spaces
Revenue from permit fees	33,000 (revenue)	• Based on the current program for non-P2P carsharing companies, the annual fee is $3,300 per space if the revenue from the designated parking space falls between $2,000 and $3,600 (City of Los Angeles, City of Los Angeles Municipal Code §80.58.1) • $3,300 per space times 10 spaces
Annual Total	5,680 (revenue)	

Feasibility - High

The City of LA has previously formed successful partnerships with other carshare companies, including Mocean and BlueLA. This experience will help with the administrative and technical tasks needed for launching the P2P pilot program. Specifically, designating parking spaces for P2P carsharing can follow the same blueprint, and use the same fee structure that has already been established for non-P2P carshare initiatives. There have also been other partnerships between local agencies and carshare companies. For example, Getaround established a program with Metro to encourage carshare use around 27 transit stations throughout LA County (Hymon, 201). Experience from this program could be leveraged to pursue similar efforts with other agencies, or to expand on the existing Metro partnership to further promote carsharing. The Hollywood area also has a long track record of strong political support for carsharing. In 2018, the LA City Council voted 13-0 to approve a station-based pilot program in Hollywood operated by ZipCar (Staff, 2018). The success of this program makes it likely that strong support remains for new carsharing initiatives.

Status Quo

Equity - Medium

There are hundreds of carshare vehicles available for rent in LA and many times more registered users for various services. By the end of October 2021, BlueLA alone had 2,671 valid memberships. Data shows that low-income individuals made up more than 40% of BlueLA's membership base and accounted for almost 46% of all trips taken on the service between August and October of 2021. Clearly, BlueLA is having a major impact on equitable access to vehicles, but this impact is limited to relatively narrow geographic areas. Other carshare

services operating in LA, like Zipcar, Getaround, and Turo, are more dispersed throughout the city. Figures 8, , and 10 below map the availability of vehicles from Zipcar, Getaround, and Turo. For both Turo and Getaround, the number of available vehicles depends partly on the time of day and the dates selected. The amount of available vehicles listed on Getaround's website can reach up to 200.[14] While there is good carshare vehicle availability overall, availability can vary by neighborhood. Areas like DTLA have many carsharing options, while other places, like Central LA have few to none. Therefore, the status quo's equity is rated medium.

Figure 8: Zipcar Station Locations In The City of LA (Zipcar in Los Angeles, 2022)

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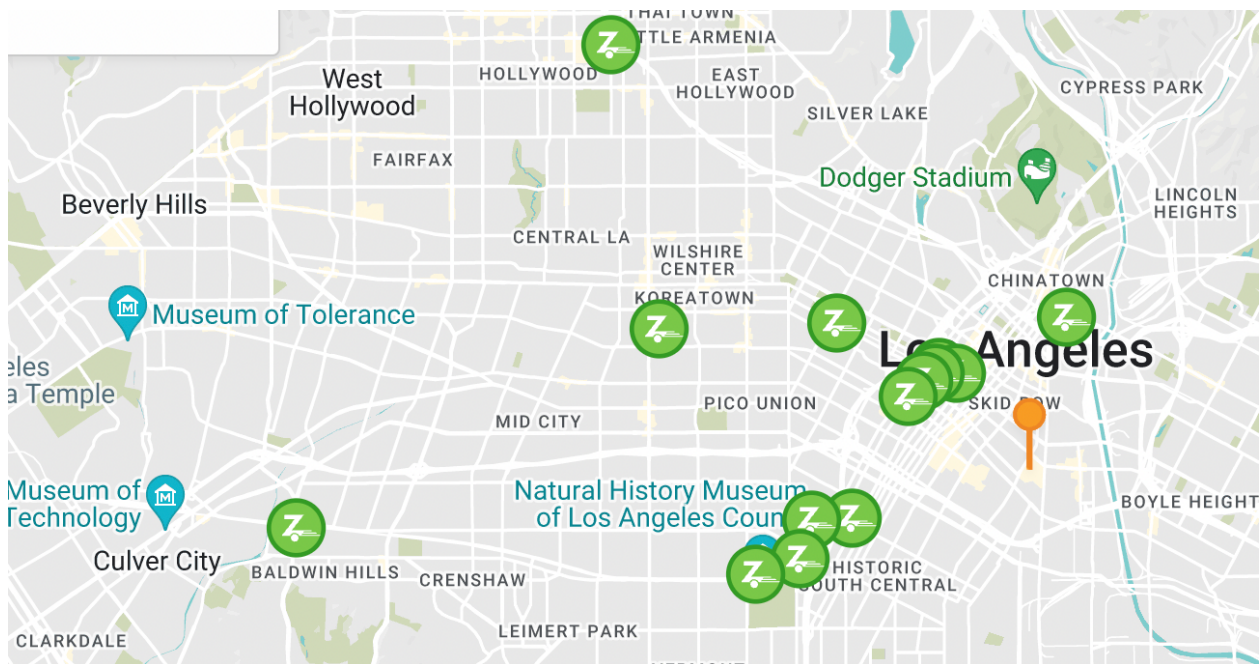
[14] Note: Turo and Getaround are free floating models. In Figure , the symbol with a car represents a single vehicle and the symbol with three dots represents multiple vehicles in that location. In Figure 10, a single dot represents a single vehicle available. A random date and time was specified to generate the Figure 's results, the same date and time was used to generate Figure 10's results as well.

Figure   : The Number Of Available Vehicles From Getaround (Getaround)
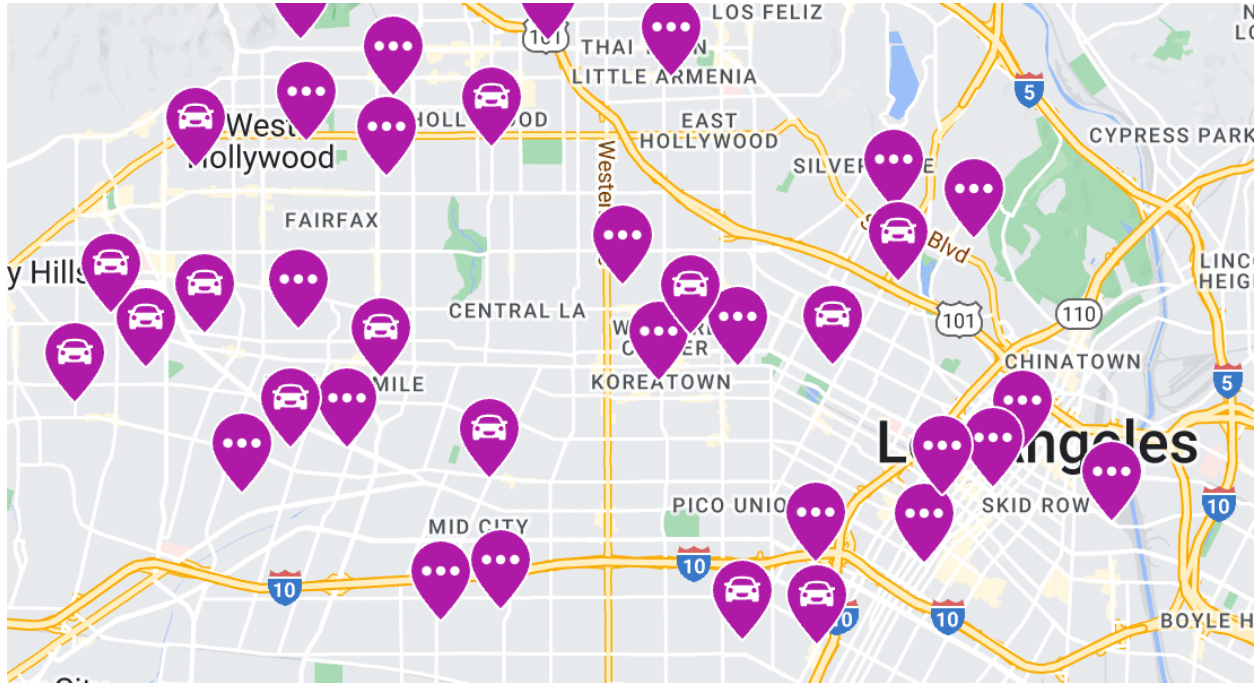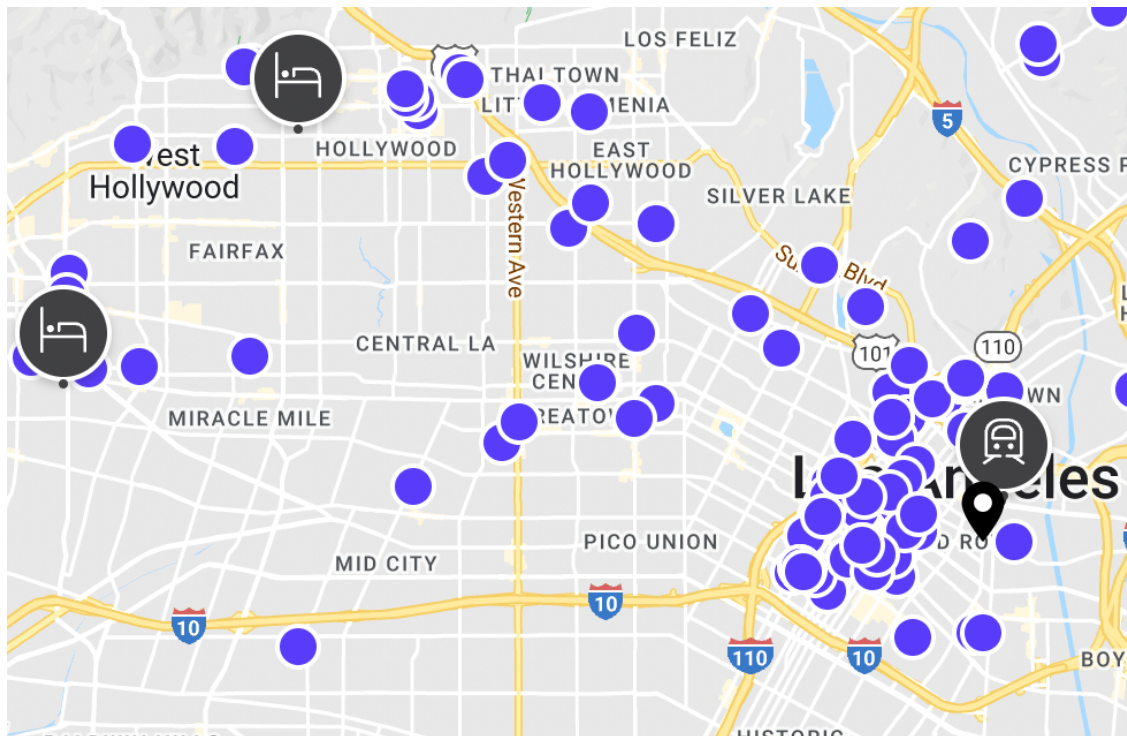

Figure 10: The Number Of Vehicles Available From Turo (Turo Search)

Impact - Medium

BlueLA's entrance into LA's carshare landscape has caused an increase in usage. The ratio of total usage to available vehicles has increased from November 201 to October 2021, showing that the demand for BlueLA's service is growing. As discussed earlier, there is a lack of carsharing's awareness. As shown in Table 1 in Section V, 13.7% report that they "do not know much about" carsharing, and 12.6% say carsharing is "not available" or they "did not know it was available" in their area. In Figure 2, there are high levels of unfamiliarity of various carshare companies among respondents. Carshare services are being used in LA but usage could increase if people became more aware and familiar with it. Considering that there is an uneven distribution of carshare options across LA, and that there is a lack of awareness of these services, leads to the impact being rated at the medium level.

Cost - High

Keeping the status quo would require no additional costs to the City of LA, therefore, it has a high level of financial feasibility. Currently, BlueLA operates on mostly private funding from the operating company and CARB grant funding. Tables 8 and   show the summary comparison of commitments and funds from the original contract and the most current renegotiated contract (The City of Los Angeles, 2021). In the 2020-2021 fiscal year, the City of LA included a S400,000 budget for BlueLA (The City of Los Angeles, 2020).[15]

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[15] A part of this budget is used for other e-scooter programs.

Table 8: Summary Comparison Of Commitments And Funds For First Negotiated Contract Between BlueLA And The City of LA 2017 For BlueLA's Launch

CARB Grant Funds (C.F. 15-1227)	
Car Share Operations Start-up Support	S600,000
Parking Conversion	S106,000
SPRF (Parking Revenue) Credits	S252,600
Outreach Manager and Street Ambassadors	S3 2,000
Advertising	S100,000
Technical Advisory Services (SUMC)	S218,743
Sub Total	S1,66 ,343
Additional City Commitments	
BOE Street Damage Restoration Fee Waivers	S300,000
LADWP Charging Station Rebates	S800,000
LADWP Customer Fee Waivers	S80,000
Additional City Commitments Sub-Total	S1,180,000
Public Investment Total	S2,84 ,343
(Private Investment Total)	S10,000,000

Table   : Summary Comparison Of Commitments And Fund For Renegotiated Contact Between BlueLA And The City Of LA 2021 For Expanding BlueLA

| CARB Grant Funds (C.F. 1 -0131)	
Operating Incentive to Carshare Operator	S800,000
Reimbursable Advertising and Marketing	S500,000
Technical Advisory Assistance and Outreach (MDP Costs)	S600,000
E-Bikes (Match to STEP)	S300,000
Usage Discounts for Low-Income Members and Community Based Organizations (Carshare and E-Bikes)	S800,000
Sub Total	S3,000,000
Additional City Commitments	
In-Kind Staff Time	S538,000
Cash Match (Required by CARB #G14-LCT-03)	S100,000
LADWP Construction and Equipment Contingency	S2,400,000
BOE Construction (A) and Excavation (U) Permit Fee	S400,000
LADWP Permit and Inspection Fee	S 0,000
Sub-Total	S3,528,000
5-Year Expansion Public Investment Total	S6,528,000
(Private Investment Total)	S24,204,000

Feasibility - High

The LA City Council has approved the BlueLA Pilot Program. Keeping the status quo should be favorable among city officials. There are no significant hurdles associated with maintaining the status quo, which makes this option highly feasible.

Expanding BlueLA

Equity - High

Expanding BlueLA further would increase equitable access to private vehicles. Currently, BlueLA has plans to grow to 300 vehicles in their fleet and have 100 stations throughout LA. Figure 11 shows that BlueLA is already in areas deemed "best" for the program. Further expanding the program into the remaining "best" and "better" areas would improve accessibility to the service. It is important for programs to promote equitable access for all demographic groups, especially among Black, Hispanic, and low-income communities. Some of the low-income communities with highly concentrated Black and Hispanic populations to consider for future expansion are Arlington Heights (14.3 % Black, 62.06% Hispanic, $31,421 median income), Chinatown (15.6 % Black, 34. 3% Hispanic, $22,754 median income), and Crenshaw (4 .5 % Black, 38.34% Hispanic, $37, 48 median income) (Los Angeles Times, LA Median Income). These three neighborhoods are located near central areas, have a diverse racial population and mixed level of incomes, making them the ideal neighborhoods for BlueLA to expand to and bring more access of private vehicles.

Figure 11: Carshare Expansion Index From Shared-Use Mobility Center (SUMC) (Shared-Use Mobility Center, 201)
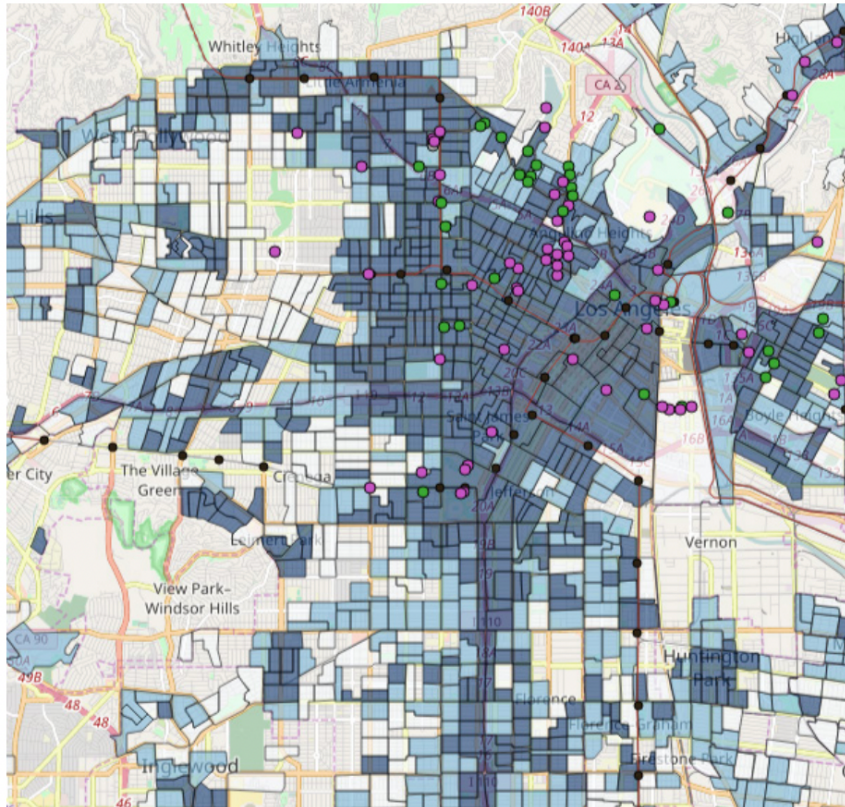
Results of SUMC Expansion Index as mapped in the customized online tool.

Almost all of the Phase One areas of the project as well as much of Boyle Heights, South LA near USC, and the East Hollywood / Thai Town areas are well suited for expansion in the near future.

Carshare Expansion Index

- Best
- Better
- Good

Impact - High

Given BlueLA's high usage rate, expansion into new areas of the city would be expected to have a significant impact on carsharing usage overall. However, with the limited amount of areas left to expand into that are classified as "best" according to the SUMC Expansion Index in Figure 11,the impact of future expansion may be expected to show diminishing returns in terms of usage. Nonetheless, this report gives expansion efforts for this service a high impact rating.

Cost - Low

Due to BlueLA being funded by two CARB grants, further expansion of the program would require additional funding. The city could fund this expansion, but funds also could come from more grants or other sources. Table serves as a blueprint for which costs would be associated with further expansion. A S3 million CARB grant was awarded to LADOT to previously expand BlueLA, and a similar amount would likely be needed to initiate another expansion. Expanding BlueLA would require additional infrastructure like creating new stations (designating parking spots and installing charging stations) and purchasing more EVs. Due to the uncertainty of a potential funding source and the approximately S3 million needed to expand, this criterion is rated at the low level.

Feasibility - High

BlueLA's success has warranted expansion in the past, so it is likely that further expansion in the future is highly feasible. City officials may want to see a positive impact from the currently planned expansion granted in 2021, but it is likely that popularity among residents and the city remains robust.

Partnerships

Equity - Medium

Creating new partnerships with other carshare companies beyond BlueLA could lead to more vehicle diversity (different types of vehicles, different neighborhoods targeted, choices in carshare companies) which would improve access to private vehicles in LA. Currently, BlueLA's fleet primarily consists of Chevy Blots, Zipcar's fleet consists of miscellaneous ICEVs, and Getaround's fleet varies depending on the vehicles that users make available. Creating new partnerships with companies like Turo, Getaround, or Zipcar would bring more variety of vehicles to LA's carshare landscape like trucks, sedans, SUVs, HEVs, EVs, ICEVs, etc. Pursuing more partnerships helps to promote more carsharing services, and allows interested users to choose the best-suited service (membership price, vehicle availability, vehicle types, rental rates, etc). New partnerships could focus service in neighborhoods that are predominantly disadvantaged, have low private vehicle access, or have little to no access to carsharing. Adding to the carshare landscape in LA in areas that have little to no carshare services operating can help bring access to private vehicles to those areas.

Impact - Medium

New partnerships could expect to see similar variability in fleet size, membership numbers, demographics, and usage rates across different services, and depending on which areas of the city they concentrate their operations. Given these variances, we expect the net impact to have medium significance overall.

Cost - Medium

Depending on the type of partnership pursued, partnerships could have widely varying costs for the City of LA. Partnerships would require a contract to be negotiated between the city and carsharing operators, with potentially varying financial commitments. A partnership similar to BlueLA would likely include significant costs, as highlighted by the $10 million in starting costs from the city's initial negotiated contract. Other funding commitments from the city were for the charging portion of BlueLA's program, but depending on the partnership this could be unnecessary. Partnerships could also entail significantly lower costs, as exemplified by the city's arrangement with Mocean to permit select parking spots for carsharing. Because the exact format of future partnerships is uncertain and cost estimates could vary greatly, this option is rated medium.

Feasibility - High

The city has been involved in previous partnerships with carsharing companies like Zipcar and currently with BlueLA. As learned from the city's partnership with BlueLA, these public-private partnerships can have great benefits for both parties like flexibility, speed, and resources (Shared-Use Mobility Center, 201). Increasing partnerships between the city and carsharing companies is highly feasible due to the support and success associated with existing partnerships.

RECOMMENDATIONS

RECOMMENDATIONS

This report recommends that the City of LA pursues a P2P carsharing pilot program while maintaining its current relationship and support for BlueLA. BlueLA has proven its worth as an equitable and effective carsharing option, particularly for disadvantaged communities. Since the status quo scenario already calls for BlueLA expansion, existing plans to invest in the electric carsharing service should be an important part of the city's transportation future plans. Establishing a new P2P pilot program in Hollywood would greatly enhance carsharing options in the city and the mobility of Angelenos as a whole. P2P carsharing provides unique benefits to users and the local community as it gives car owners an opportunity to earn extra money from their vehicles while increasing automobile access for car-less households and bringing environmental benefits. Therefore, P2P carsharing should be given the opportunity to thrive through a pilot program.

The LA neighborhood of Hollywood is an ideal location for a P2P pilot program for several reasons. Of all the 272 neighborhoods in LA County, as determined by the LA Times Mapping LA project, Hollywood has the seventh highest population density with 22,1 3 people per square mile. Hollywood's ethnic makeup consists of 42.2% Latino, 41% White, 7.1% Asian, 5.2% Black, and 4.5% other, which is relatively diverse compared to other neighborhoods. The median income level of residents in the Hollywood neighborhood is approximately S44,400 in 2022 dollars (Los Angeles Times, Hollywood). Approximately 18% of Hollywood households do not own a car, meaning that a P2P carsharing program could benefit these households greatly (Household Size by Vehicle

Available, 2013). Hollywood draws significant tourism, which provides more potential customers for carsharing companies operating in the area. As the restrictions and effects of the pandemic continue to abate, tourists and visitors to the area are returning in great numbers. Between April and June of 2021, foot traffic on Hollywood Boulevard increased (by 153%), as well as hotel occupancy rates (Martin, 2021). Prior to the pandemic, in 2018, LA had a record number of visitors, 50 million, with attractions in the Hollywood area being a major draw for tourists (LA Tourism, 201). The Hollywood area boasts many popular destinations that could attract carsharing users, including the Hollywood Bowl, the Hollywood Walk of Fame, TCL Chinese Theater, and the Pantages Theater. Walkscore.com classified Central Hollywood as one of the most walkable neighborhoods in LA, with a walk score of 5. It also has a good public transit score of 66, and is great for biking with a score of 73 (Central Hollywood neighborhood in Los Angeles, Walkscore). As this report has shown, carshare users are more likely to walk, bike, and use public transportation than non-carshare users.

Figure 12: Map Of Hollywood (Los Angeles Times, Hollywood)
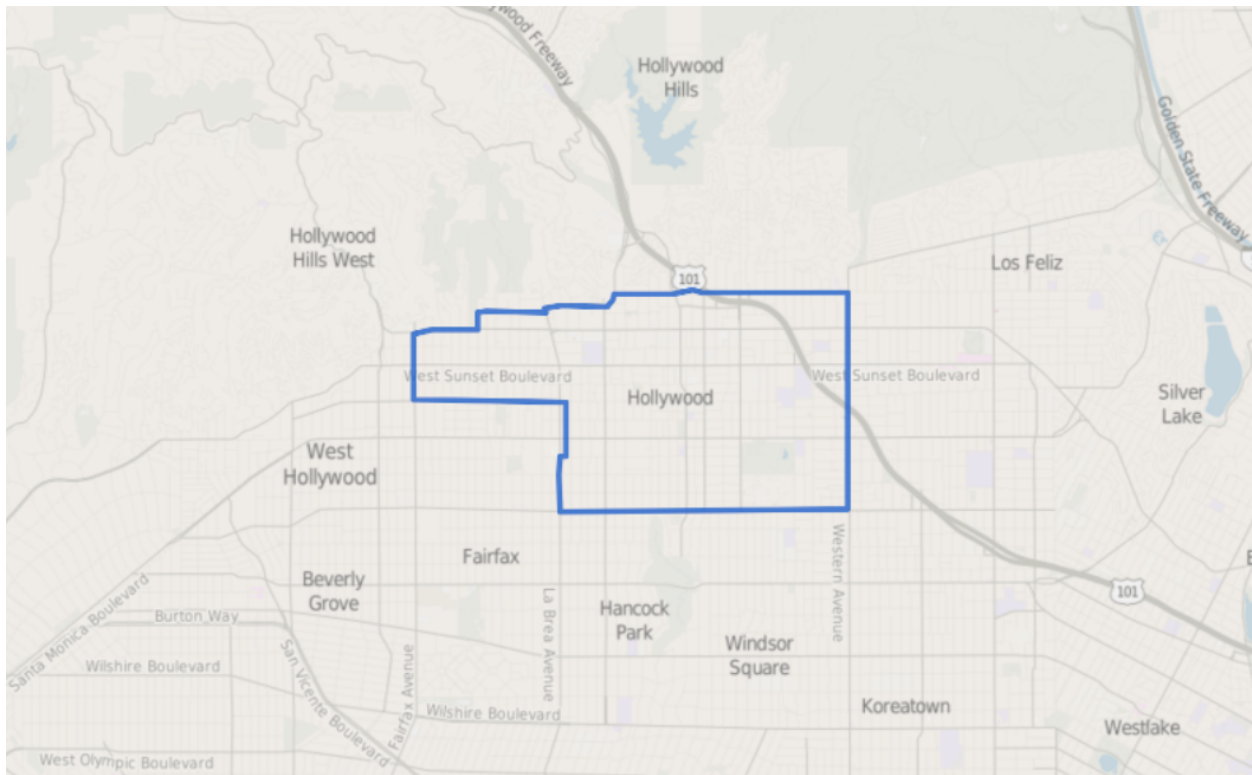
For a P2P pilot program to be successful in this area, parking spaces exclusively designated for P2P vehicles are critical. In order to implement the designated parking spaces, the pilot program should take into account two key features: where to provide the spaces and how to design them. First, since the pilot program intends to make P2P carsharing more popular and convenient, parking spaces should be located in high-traffic areas. Accordingly, using spaces close to Metro stations or popular destinations is preferable. Figure 13 shows a map of Hollywood in which green dots indicate parking meters and orange squares correspond to Metro stations. There are a sufficient number of meters near most stations that would make ideal locations for P2P parking. Second, these spaces should be designed so they are immediately recognizable. The spaces should have clear signs and lines with eye-catching colors. Figure 14 shows an example

of a designated parking space for Zipcar in New York City. Spaces in LA should be similarly designed. Additionally, participating P2P vehicles should have clear insignia, stickers, or permits to identify that they comply with city parking codes. An interview with Mocean representatives revealed that the company had difficulties with erroneous parking tickets because their cars were not recognized by parking enforcement. The P2P pilot program should build on this experience by working with parking enforcement to increase awareness by their officers of the new parking status for these vehicles.

Figure 13: Parking Meters And Metro Stations In Hollywood
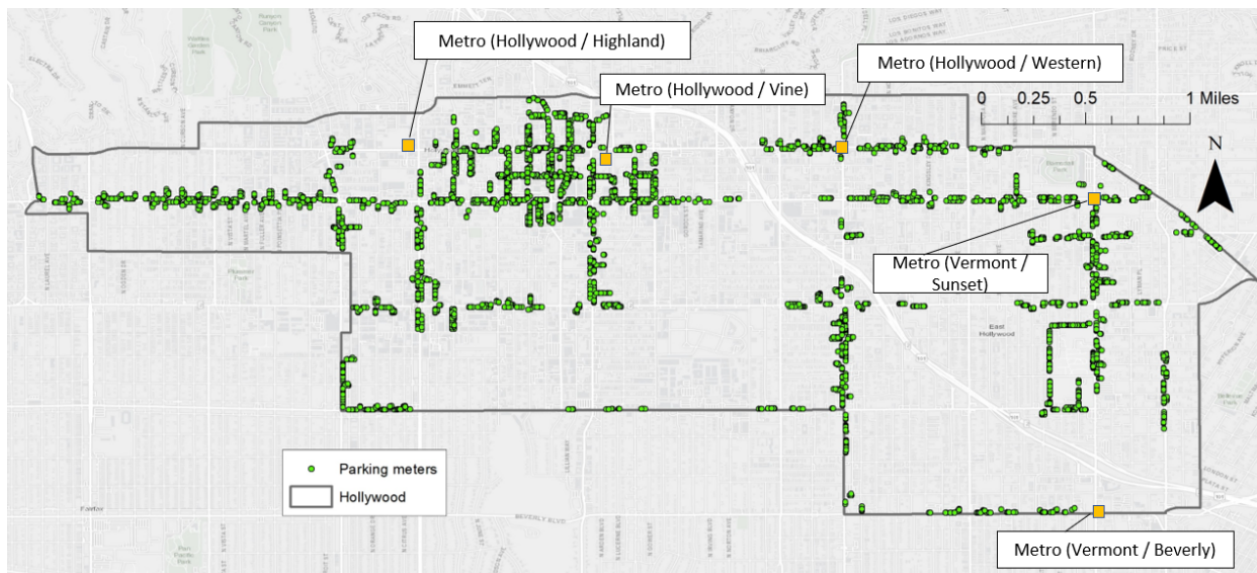
Figure 14: An Example Of Designated Parking Spaces, The City of New York

If the city can successfully promote one or more P2P carsharing services in strategically-selected neighborhoods, such a pilot program would have a high policy impact in increasing the rate of carsharing. Increased P2P carsharing would provide substantial benefits for a relatively low cost to the city. This is because, in comparison to the high costs associated with maintaining a sizeable fleet of shared vehicles in station-based or free floating carshare models, P2P carsharing utilizes existing assets in the form of privately owned vehicles. This eliminates the need to purchase or maintain new fleet vehicles. A pilot program that has designated parking spaces at desirable locations would also increase the program's impact, and promote equitable vehicle access. Environmental and traffic congestion benefits would also materialize. This report estimates that a P2P pilot program in Hollywood would draw in 22 local car owners to offer their vehicles for the service, and ultimately remove

between 154-242 cars from neighborhood streets. Because carsharing encourages people to delay or abandon private vehicle purchases, users have been shown to replace private car trips with more carsharing rides, bus trips, walking, or biking. Removing hundreds of cars would help alleviate traffic congestion, cut harmful vehicle emissions in the community, and reduce demand for on-street parking in Hollywood. The P2P pilot program option would focus heavily on the promotion of P2P carsharing to increase the number of users and the number of available vehicles. The widespread benefits of P2P make a pilot program option highly feasible, as it should appeal to many constituents (both car owners and non-car owners).

To maximize the impact of P2P carsharing and enhance equity further, the city can explore incentives for more EV owners to make their cars available on P2P carsharing platforms. This would bring greater environmental benefits, and closely align with the city and state's goals of transitioning to zero emission vehicles over the next decade and beyond. Another way to enhance the pilot program in the future would be to consider including reserved spaces for P2P providers in LADOT's mobility hubs, which are currently being planned throughout the city as central locations for multimodal transportation options. The clear benefits of expanding and promoting P2P carsharing through a pilot program, coupled with the future potential to better integrate the transportation mode into the city's infrastructure, makes pursuing a P2P pilot program an ideal way to increase equitable access to private vehicles while achieving a myriad of other social, economic, and environmental benefits.

LIMITATIONS

LIMITATIONS

Certain limitations exist with this report's analysis and conclusions. While trip data and survey data were rigorously utilized for this analysis, these data came from only Mocean, which is not a P2P carsharing company. Drawing conclusions from one company's data when there are several companies with different business models operating within Los Angeles may have limitations. However, the report's conclusions likely speak to general carsharing trends within the city.

The nature of certain literature review findings also present some limitations. Most of the academic literature, studies, and research involving the benefits and impacts of carsharing refer to more traditional station based or free floating models. There is very little existing literature on the benefits of P2 carsharing specifically. This report therefore referenced studies that looked at other carshare models to extrapolate some proposed benefits of the P2P pilot program. The particular impacts of P2P carsharing might be slightly different than the impacts of more widely-studied carsharing models, which presents a potential limitation.

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