Low-Income Carsharing Report

Produced March 2020
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FORTH
Empowering Mobility

Low-Income Carsharing Report

FORTH
2035 NW Front Ave, Suite 101
Portland, OR 97209
Phone: 503.724.8670

www.forthmobility.org

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Executive Summary

Carsharing first arrived in the U.S. in 1998 when an entrepreneur in Portland, OR received a grant from the Oregon Department of Environmental Quality to help start a small company called CarSharing Portland, which was modeled after Mobility CarSharing Switzerland. Operators including Zipcar, Flexcar, Car2go, Getaround and many other for and non-profit operators have sprung up since.

"Carsharing's primary social benefit is that it allows lower-income people, students, and seniors to affordably and sustainably maintain their mobility and participate fully in society..."

There are multiple well-documented individual, social and community benefits of carsharing[1]. Individual benefits include freedom from the cost burdens and other hassles of car ownership including monthly payments, insurance, maintenance, repairs, parking, parking and other tickets, annual vehicle registration, and car shopping. Carsharing's primary social benefit is that it allows lower-income people, students, and seniors to affordably and sustainably maintain their mobility and participate fully in society while reducing parking demand, and air pollution and greenhouse gas emissions, because each carsharing vehicle removes an average of 15 privately owned cars from the community, as participants sell a vehicle or forgo a planned purchase. This decreases parking demand and creates opportunities to reallocate land for parks, new housing, or other community needs. Also, former car owners shift their travel behavior significantly after joining, increasing their transit use, walking, and cycling reducing their total vehicle miles traveled (VMT) by an average of 44 percent[2].

Managing a fleet of cars is expensive and carsharing is a difficult low-margin business even in ideal circumstances. Carsharing operators often struggle to break even and operators cannot offer carsharing services at prices inexpensive enough to attract low-income drivers. Nevertheless, many U.S. carsharing organizations have used external funds to offer carsharing services to bring the many benefits of on-demand, self-service automobility to low-income drivers so this overview is far from comprehensive. In this report, we strive to describe programs that demonstrate unique or particularly interesting approaches to low-income carsharing.

Despite all of the benefits described above, carsharing is still relatively unknown in most U.S. cities. So for all of the reasons cited above, carsharing advocates may want to focus more on making carsharing services more widely available rather than on making them truly inexpensive.

Making driving inexpensive hasn't ever been the true goal of carsharing. After all, owning and operating a fleet of cars is inherently expensive, and part of what makes carsharing so impactful is that it incentivizes *infrequent, judicious use of cars* while continuing to encourage users to rely primarily on less costly, cleaner alternatives like walking, bicycling and riding public transit. Even if subsidized, carsharing should be priced to cost more than riding public transit or a bicycle. In fact, this is what makes carsharing so beneficial for many households: it allows people to access a car for a few hours a month at far less cost than buying a car and driving all the time. As noted on the Ithaca CarShare website:

> *The average car owner spends $760 per month to finance, fuel, insure, and maintain their vehicle. The average Ithaca Carshare member spends around $100 per month.[3]*

Finally, it's worth noting that carsharing, despite its many benefits, remains structurally inequitable, since only people who have a valid driver's license can directly participate. Even if the most often-cited barriers to participation — cost, means of payment, having a valid driver's license, etc. — were overcome, many people still wouldn't be able to rely on carsharing — not until carsharing fleets are replaced by fully accessible robo-taxis.

[1] Source: https://www.researchgate.net/publication/46439823_Carsharing_A_Guide_for_Local_Planners
[2] Source: https://www.researchgate.net/publication/46439823_Carsharing_A_Guide_for_Local_Planners
[3] Source: www.ithacacarshare.org

Methodology & Terminology

A significant amount of this report was created from primary sources and accounts from people who have worked within each of these programs.

As many models have been tried, this report intended to be a qualitative analysis of the low-income car-share landscape to inform cities or other organizations on program design based on best practices and lessons learned.

There is no standardized spelling convention for how to write about this service -- CarSharing, car sharing and carsharing are all used more or less interchangeably. We've tried to spell specific brands accurately, but in other places we used "carsharing."

Carsharing Operating Models

Carsharing programs generally fall into one of three models: round trip, one-way, or peer-to-peer.

Round-trip carsharing requires members to begin and end their trip at the same location, typically paying by the hour, mile, or both. Examples include:

- Zipcar
- HOURCAR
- MioCar
- Envoy
- Enterprise CarShare

One-way carsharing enables users to begin and end their trips at different locations throughout free-floating zones. This category also includes one-way, station-based models with designated parking locations. Examples include:

- BlueLA
- AAA GIG
- Car2go

Peer-to-peer (P2P) carsharing operates similarly to round trip carsharing; however, the vehicles themselves are typically owned or leased personally, by individuals. Sometimes referred to as "Airbnb for Cars," these sharing platforms provide commercial insurance and 24x7 customer support. Individuals often subsidize the cost of their own personal vehicle by renting it out through the peer-to-peer model. Examples include:
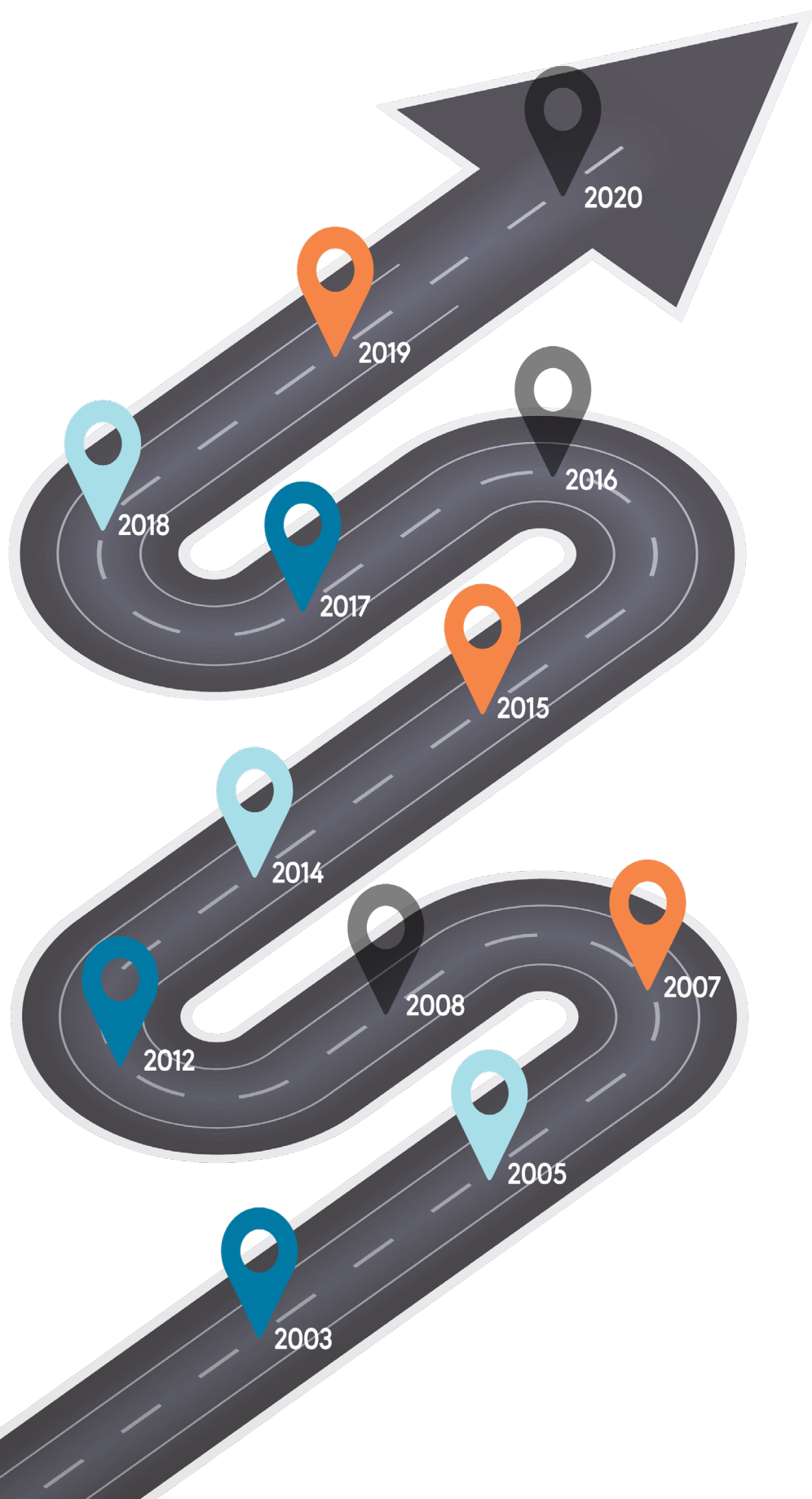
- Getaround
- Turo

Overview of Low-Income Carsharing

Most carsharing operators are keen to serve lower-income populations if they can do so in a way that is financially and operationally sustainable. What follows is a summary of a few notable low-income carsharing projects, listed in chronological order. This is not intended to be a comprehensive inventory of all low-income carsharing initiatives.[4]

[4] Readers of this document are encouraged to suggest additional programs for inclusion, especially programs with unique approaches that we haven't covered.
[5] Source: https://www.theautochannel.com/news/2003/08/25/167417.html
[6] Source: https://www.bikeforums.net/living-car-free/363511-anybody-have-any-experience-flexcar.html

2020 Clean Rural Shared Electric Mobility Project

2019
MioCar

PBOT Transportation Wallet Affordable Housing Pilot

Car2go APANO and Metro PILOT's CarSharing Project

2018 Envoy Car Sharing at Affordable Housing Locations

2017
Hacienda CDC Community Electric Vehicle Project

BlueLA

HOURCAR & Xcel Energy EV Transition

Our Community Carshare

2016 Victor Valley Transit Authority

2015 BlueIndy

2014
eGo CarShare, Multimodal Transportation Toolkits

Car2go

2012 Easy Go Richmond Program

2008 Ithaca Carshare "Easy Access" Program

2007 Buffalo CarShare

2005 Flexcar's King County Job Access Reverse Commute Program

2003 Flexcar and Vancouver Housing Authority

Flexcar and Vancouver Housing Authority

Vancouver, WA (2003)

Flexcar, the City of Vancouver, WA and the Vancouver Housing Authority (VHA) partnered to provide round-trip carsharing access to VHA staff as well as nearby affordable housing residents. Flexcar stationed one of its vehicles at VHA headquarters in a "semi-exclusive" configuration, making it available for use by VHA staff during business hours, and by other Flexcar members including nearby affordable housing residents at all other times.

This pioneering initiative didn't subsidize use by low-income residents, and subsidies weren't actually needed. Simply by contracting with Flexcar for the use of a Flexcar during normal business hours, the VHA ensured that a carsharing vehicle would be placed at an otherwise commercially-unviable location that was convenient to many low-income housing residents. Many local residents used the service, so the VHA catalyzed the provision of access, for its clients, to a previously-unavailable, low-cost transportation option without having to offer any end-user subsidies.

Flexcar's King County Job Access Reverse Commute Program

Seattle, WA (2005)

In 2005 the Federal Transit Administration's Job Access Reverse Commute (JARC) program funded a King County Department of Transportation partnership with Flexcar, social service agencies, community-based organizations, and housing authorities to give low-income drivers discounted access to Flexcar's round-trip carsharing service. The program worked with job training and work placement organizations and allowed job hunters and subsidized housing residents to use Flexcar vehicles for discounted rates. Precise details are hard to find, but a 2007 post on an online bulletin noted that:

> *...if you're looking for work in Seattle, you can sign up... and the membership fee is free for the first year. Plus, for the first 6 months/180 days of membership, you get to rent cars at discounted rates (around $5-7 an hour instead of $10-12). And for job-related stuff like interviews, orientations/training, they let people rent cars for around $3 an hour.*[6]

The program was popular but it was discontinued once subsidy funds dried up. We haven't been able to track down any data or other evidence to determine if low-income users continued to use the service after subsidies ended. It seems likely that at least some did continue to use Flexcar or similar services such as Zipcar, Car2go, ReachNow, Getaround, Turo, or Envoy, all of which came later.

Buffalo CarShare

Buffalo, NY (2007)

Buffalo CarShare launched in early 2007 with a $150,000 New York State Energy Research & Development Authority (NYSERDA) grant and focused on offering round-trip carsharing to low-income users. More than 50% of its members earned less than $25,000 a year, it always offered very low rates, and members paid an average of $100 per month for membership and usage. It had a retail storefront, offered very hands-on customer service, and accepted payment by credit or debit card.[7]

Buffalo CarShare was popular and the New York State Department of Transportation and NYSERDA awarded it a second grant of $280,000 to replicate its model in other cities. It was able to help Capital CarShare launch in Albany, but in mid-2015 an insurance barrier prevented continued operation as a non-profit so it was sold to Zipcar, which still operates on several university campuses in Buffalo but was unable to continue a city-wide program.[8]

As already noted, Capital Carshare of Albany, NY was spun out of Buffalo Carshare in 2014 as a standalone non-profit. It has always run on the same basic model and had to weather similar challenges, though funding from the local transit agency allowed it to continue without being taken over by Zipcar. Capital CarShare has lean operations and a small fleet of about 12 cars that it reportedly plans to replace with EVs in 2020.

Ithaca Carshare "Easy Access" Program

Ithica, NY (2008)

Ithaca Carshare is a small non-profit round-trip carsharing operator with 30 vehicles and 1,300 members in a community of roughly 50,000 people. It launched in 2008 and offered an affordable and reliable transportation option to residents of Ithaca and Tompkins County. Most of Ithaca Carshare members are between the ages of 20 and 34 and many are affiliated with either Ithaca College or Cornell University, so usage is best during spring and fall seasons when classes are in session. The organization serves members of all incomes.[9]

Ithaca CarShare's Easy Access plan is a reduced-cost version of the company's It's My Car monthly plan for low-income users. Originally funded by the Federal Transit Administration's JARC program, Easy Access is available to Tompkins County residents with income at or below 150% of the official US poverty level. Memberships cost $10 per month (vs. the normal $30 per month), plus the regular hourly and mileage rates. Easy Access members also receive a monthly $15 driving credit that can be applied to hourly and mileage rates, and unused credits roll over for up to six months. Ithaca Carshare encourages infrequent users to enroll in the Just in Case plan, which has even lower fixed costs than Easy Access.

In 2017 the FTA ruled that carsharing could no longer receive JARC money, and since then the Easy Access program hasn't received outside funding. Ithaca Carshare has continued to fund the program internally and 33 people were enrolled as of January 2020. However, self-funding isn't financially sustainable, in part because Easy Access participants tend to require more staff support than regular members; for example, they sometimes pay in person at the office rather than online with a credit card, and they also account for more past-due payment write-offs. Despite these challenges, Ithaca CarShare remains committed to finding funds to continue the Easy Access program.

Easy Go Richmond Program

Richmond, CA (2012)

Easy Go Richmond was a 2012 pilot project between Getaround, a Bay Area transportation consulting firm called TransMetro, and the City of Richmond. The $1.8 million station-based carsharing project was funded through fines paid by the nearby Chevron refinery for air quality violations. A mix of electric, hybrid and internal combustion vehicles were purchased and posted to Getaround's peer-to-peer carsharing platform, and the program also operated a popular $1 per trip Kid's Cab service that shuttled children to and from Richmond schools and after-school activities. The program's ten cars — hybrid Honda Civics, several neighborhood electric vehicles, and a minivan — were stationed near social service agencies, which were set up as the vehicles' "owners" on the Getaround platform.

After about six months, Easy Go's shared vehicles achieved 18% utilization while charging an average of $3 per hour. The program was projected to break even once its fleet hit a 60% utilization rate, but it never achieved that rate and the service was cut when funds ran out.

The primary lesson learned from this early project was that there's peril in trying to do too much, too fast. The project sought to extend carsharing to a very low income neighborhood using a new, app-based carsharing platform and untested neighborhood electric vehicles. Unsurprisingly, the program struggled to operate efficiently and gain traction, and costs quickly exceeded income. Had a similar program used inexpensive, fuel-efficient vehicles that interacted correctly with the Getaround software operating expenses would have been lowered and there would also have been fewer user experience glitches. Many more people probably would have tried a simpler service.

[7] Source: https://www.govtech.com/transportation/Buffalo-NY-Nonprofit-Launches-Carsharing-Service-for-Low-Income-Peo.html
[8] Source: https://www.buffalorising.com/2015/05/buffalo-carshare-in-jeopardy-seeks-help-from-the-community/
[9] Source: https://www.dot.ny.gov/divisions/engineering/technical-services/trans-r-and-d-repository/C-06-33%20Ithaca%20Carshare%20Final%20Report%20NYSERDA%20Agreement%209821.pdf

eGo CarShare, Multimodal Transportation Toolkits

Denver and Boulder, CO (2014)

eGo CarShare, which was formerly Boulder CarShare, received its second Congestion Mitigation and Air Quality (CMAQ) grant in 2014 to create multimodal transportation toolkits for affordable housing residents in Denver and Boulder. These toolkits included subsidized transit passes, discounted carsharing access, discounted bike-share memberships and multimodal transportation education. Program partners included the Boulder Housing Partners, Denver Housing Authority, and Habitat for Humanity of Metro Denver.

Then in the summer of 2019, eGo CarShare announced a pilot featuring Colorado's first ever EV car share in a mixed income community located at Navajo and 10th Street in the Mariposa District of Denver. This includes a dedicated streetside EV charging station that serves eGo CarShare's vehicle and provides free EV charging access for the general public.

It's difficult to determine how much eGo's services have benefited low-income users since there are only about 50 vehicles serving Denver and Boulder; however, Executive Director Peter Krahenbuel said that of their 3,000+ active Members, they estimate that at least 50% of its fleet services LMI areas. According to their annual internal member survey, 37% of eGo's members have a combined household income of under $35,000; while 53.1% have combined household incomes of less than $50,000. Now that Car2go has left Denver perhaps eGo will be able to expand into more neighborhoods and serve even more people.

Car2go

Eugene, OR (2014)

Car2go Eugene was a small-market experiment for Daimler's free-floating carsharing service that ran for only about 8 months. Although there were only 50 vehicles available to serve the entire market, local officials encouraged Car2go to launch across a large geographic area that included many low-income neighborhoods. This contributed to very low vehicle density, low utilization rates and cars stranded in suburban areas with little demand.

According to a letter to members from Car2go Eugene when it pulled out after a mere 8 months:

> In the time car2go has been operating in Eugene, we've seen that each of the 50 car2go vehicles available for use by our Eugene members have been utilized, at most, once per day. This is a stark contrast to the vehicles in the Portland Home Area, which are driven by members over seven times per day per vehicle.

Car2go Eugene's program might have been more viable if the operator had started with a smaller initial operating area that encompassed only the University of Oregon and denser areas closer to downtown, where the company's demographic studies predicted the highest concentration of likely users.

The main takeaway from this project's demise is that attempting to serve a large area with challenging demographics and land-use characteristics right out of the gate likely undercut the operation's financial viability. A better approach would have been to first gain a foothold in a small service area and to expand slowly, perhaps even with temporary public financial support, into new, more challenging neighborhoods.

BlueIndy

Indianapolis, IN (2015)

The BlueIndy car sharing program launched in Indianapolis in September 2015 with 25 charging stations and 50 all-electric Bolloré Bluecars, which are similar to their French version but adapted to meet American regulations. The vehicles have a range of about 120 miles. Standard fees were $9.99 per month for a one year membership, plus 20 cents per mile, and while the system offered Youth and Student memberships for $30 a year and 15 cents a mile, there was no program specifically targeting low-income drivers.

The City of Indianapolis invested $6 million in the service, and BlueIndy promised to share profits with the city once its own $40 million investment was recouped and Indianapolis Power & Light recovered 125% of the more than $3 million in ratepayer hikes that made the charging stations possible. Membership and utilization did grow steadily but still fell short of projections, and in late 2019 BlueIndy announced that the service would end in mid-2020.

IndyStar journalist James Briggs, a BlueIndy user and supporter, wrote a thoughtful opinion piece on why the project failed, noting that:

> *For starters, Indianapolis' car ownership culture presented a small base of potential adopters – probably smaller than anyone understood when the service launched in 2015. That problem was compounded by BlueIndy's user experience, which was too clunky to convert the members it gained into evangelists who would convince other people to sign up... Even the people who used BlueIndy didn't really love it. As a result, BlueIndy rentals plateaued at around 50,000 per year after starting out with 36,150 in its first year, according to a recent report from the Indianapolis Business Journal.*[10]

Another takeaway from BlueIndy's failure is that, regardless of who starts a carsharing program, local political, business and community support are essential to these services' long-term sustainability. This program was started by a Republican mayor and closed down after enduring years of withering criticism by local Democrats. Perhaps this program would have been more popular if local interests had pushed for a reduced-rates program for low-income drivers similar that now being offered by BlueLA's program.

[10] Source: https://www.indystar.com/story/opinion/columnists/james-briggs/2019/12/20/blueindy-indianapolis-electric-carsharing-greg-ballard/2709243001/

Victor Valley Transit Authority

Needles, CA (2016)

The Victor Valley Transit Authority launched a round-trip carsharing program in 2016 in partnership with Enterprise CarShare in the town of Needles, California (pop. 5,000). Registered residents of the program can rent either a sedan or a minivan to run errands and go to appointments for the discounted rate of $5 per hour. A car can be reserved online, and picked up at its designated parking location. Over a quarter of the town's residents live below the poverty line, and this program improves mobility options for those unable to afford private cars. A gas card and liability insurance are included with every rental. One interesting aspect of this program is that it doesn't require a credit or debit card. Users can sign up for the Sole PayCard to pay for the service.

Forth has inquired, but at present time hadn't yet learned how this program is funded.

Hacienda CDC Community Electric Vehicle Project

Portland, OR (2017)

Forth launched the Community Electric Vehicle (CEV) Project in 2017 to address transportation inequities in the Northeast Portland neighborhood of Cully. Residents of Cully and employees of Hacienda Community Development Corporation (CDC) have limited transit service and alternative transportation options, and Forth worked with Hacienda, a Latino neighborhood CDC, to place three used Honda Fit EVs at the CDC's headquarters, one for staff use and two as low-cost community car rentals via the Turo peer-to-peer (P2P) car-rental platform. The project faced a variety of challenges relating to insurance, technological barriers, potential customers without credit cards or driver's licenses, and difficulty reaching out to people with limited English proficiency, but the project team learned from every new challenge and over a one-year pilot project, users completed 66 community rentals and 12 Hacienda employees drove almost 2,000 miles, saving Hacienda CDC more than $1,000 in mileage reimbursements and prompting one staff member to buy a used electric car. American Honda extended its loan of the vehicles after the program ended, and two Honda Fits remain at Hacienda CDC.

This Hacienda CEV Project resulted in many lessons learned. First, the program probably erred in using Turo, which wasn't an ideal platform for this project because it doesn't offer self-service vehicle access and it only supports rentals in 24-hour increments. Forth realized that Getaround's P2P carsharing technology was better suited for the Hacienda CEV project, but Getaround declined to participate due to the many challenges they encountered during the 2012 Easy Go Richmond program described above. The project also ran into several barriers to user adoption, including many Hacienda residents' limited English, lack of driver's licenses and/or lack of credit cards. Even the program's use of EVs, a still-new and potentially intimidating technology at the time, may have deterred some users. This combination of factors resulted in a program that, while initially well-received, turned out to be quite labor intensive and under-utilized. Still, it resulted in significant learning that Forth can to apply to future projects, including the Hood River Clean Rural Shared Electric Mobility (CRuSE) project.

BlueLA

Los Angeles, CA (2017)

BlueLA, which is modeled after BlueIndy, is a one-way carsharing service launched in 2017 as a key component of Central Los Angeles' mobility strategy. BlueLA offers anyone over 18 years of age with a valid driver's license access to a growing network of self-service, shared electric vehicles 24-hours a day, 7 days a week.

BlueLA stations are on-street "pods", consisting of one self-service kiosk and 5 parking spots, each with an electric charger where users can pick up and drop off vehicles. The one-way service model means there's no need to return the car to the starting point. One occasional issue is that a parking space may not be available at the user's desired destination pod, in which case the car must be returned at a different nearby pod, or sometimes even parked at a nearby unreserved on-street parking space.

BlueLA offers significant discounts to low-income users and local residents who sign up for annual memberships, vs one-time users and tourists.

Fees for locals with annual memberships total $12 or $9/hour, while tourists and other one-time users pay $0.80 per minute -- or $48 per hour! -- for the same service!

BlueLA is funded by a $1.7 million grant from the California Air Resources Board's California Climate Investments (CCI) program.[11] Other partners include The Los Angeles Department of Transportation (LADOT), the LA Mayor's Office of Sustainability, the Shared Use Mobility Center, Mobility Development, Inc. and a committee of community-based organizations. To date the program has delivered a system of 100 electric vehicles and 200 chargers across central Los Angeles, in the communities of Westlake, Koreatown, Pico-Union, Downtown, Echo Park, Boyle Heights, and Chinatown.[12]

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[11] The California Climate Investments Program invests billions of cap-and-trade dollars to reduce greenhouse gas emissions, strengthen the economy and improve public health, particularly in disadvantaged communities

[12] Source: https://thenewswheel.com/carsharing-program-bluela-makes-evs-affordable-for-low-income-drivers/

HOURCAR & Xcel Energy EV Transition

Twin Cities and Rochester, MN (2017)

HOURCAR is a Minnesota nonprofit carsharing organization serving the cities of Saint Paul, Minneapolis and Rochester, MN since 2005. HOURCAR provides its members with convenient, short-term access to a fleet of over 60 vehicles at more than 50 hubs located in various neighborhoods. HOURCAR allows payment with either a credit card or a transit fare card. Reservations are by website, a cell phone app or telephone. They currently employ a round-trip model but in 2017 they announced a partnership with Xcel Energy under which they will transition to a "hybrid" model: a one-way, free-floating operation featuring an all-EV fleet and a network of parking & charging hubs. Users will be incentivized, but not required, to return cars to a charging hub.

In announcing the plan, Executive Director Paul Schroeder said,

> *"We are especially interested in maximizing the impact of these changes in low-income communities, which are disproportionately affected by NOx emissions and airborne particulates. Children who grow up in these neighborhoods have higher rates of asthma and other breathing disorders," Schroeder said. "We aim to create access to electric vehicle carsharing in these areas, lowering emissions while also increasing access to flexible and affordable transportation choices, a double win for these communities."*

Planning the transition to the new, all-EV, one-way, free-floating model has begun, and HOURCAR's goal is to introduce this new service by mid-2020. Many people and organizations in the alternative transportation space will be eagerly tracking their progress.[13]

Our Community Carshare

Sacramento, CA (2017)

Our Community CarShare is a free-to-use, round-trip carsharing service operated by Zipcar but subsidized with public dollars to expand access to disadvantaged communities. The free, membership-based transportation service is located in several locations in Sacramento. Hundreds of residents of several affordable housing complexes can reserve clean zero-emission vehicles to run errands, get to appointments, and take local trips. Some of the EVs are stationed at the residential communities and two additional vehicles are available for reservation by registered users at the Sacramento Valley Station. The California Air Resources Board (CARB) provided a $1.3 million grant through California Climate Investments (CCI).

[13] Source:http://www.startribune.com/minneapolis-foundation-s-new-fund-helps-three-nonprofits-address-climate-change-in-low-income-neighborhoods/513357522/

Envoy Car Sharing at Affordable Housing Locations

Sacramento, CA (2018)

Envoy is a round-trip mobility platform that serves specific community groups by providing on-demand electric vehicles as an amenity for apartments, hotels, holiday destinations and workplaces. Envoy's service functions much like other round-trip car sharing services such as Zipcar and Getaround, but the vehicles they place are typically available only to a specific user group (e.g. residents and/or tenants of an apartment, condo or office building) to be used as an "amenity".

Envoy vehicles are placed at properties with a dedicated parking space and charger and can be reserved instantly or in advance by authorized users through the Envoy There mobile app. The site host (e.g. apartment or commercial building owner or manager) typically pays a fixed monthly fee, and revenues are split between Envoy and the site host.

Envoy has been deployed at several affordable housing developments to serve low-income populations. In early November of 2018 Envoy deployed 20 vehicles -- each with its own dedicated Level 2 charger -- at 10 multi-family properties in Sacramento, with the intention of expanding to more than 140 vehicles at 70 locations via partnership with Electrify America.

The Envoy user experience is fairly high-tech. Members of the communities that Envoy serves can download the free Envoy There app and are granted access to their property's specific vehicles. There are no membership or start-up fees, and drivers can use vehicles spontaneously or reserve one for future use. Payment is by the minute, hour, or day, and the rates include insurance, maintenance and roadside assistance. The app can be used to check vehicle availability, unlock/lock cars and start/end bookings. Participating drivers are also issued a key fob that unlocks the vehicles. All Envoy vehicles are round-trip and must be returned to their pick-up location. Envoy's vehicles can be reserved and used by Uber and Lyft drivers, and in a few markets the vehicles are already being used this way during periods of low carsharing demand.

Envoy promotes its services to everyone from luxury properties to low-income communities. It reduces users' reliance on personal cars, reduces traffic congestion and helps real estate developers reduce parking requirements. Users can cut their driving-related expenses by eliminating car payments, auto insurance, and parking fees.

Envoy manages vehicle cleaning, maintenance and repairs. Users can contact Envoy support through the *Envoy There* app to report problems or damage, and Envoy will dispatch a team to inspect the car and/or provide a temporary replacement.
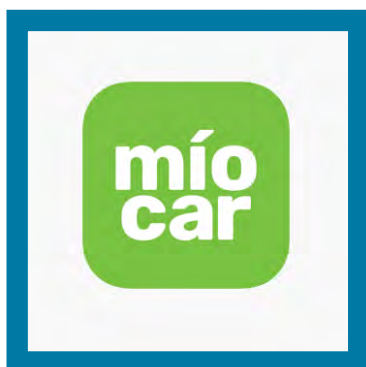
MioCar

Visalia, CA (2019)

Launched to the public in July 2019, MioCar is one of the nation's first rural car sharing programs. The project's first phase consists of 8 locations in primarily farm worker communities of 5-15,000 residents in California's San Joaquin Valley. 27 vehicles were expected to be deployed gradually over the program's first six months.

As of January 2020 MioCar had more than 300 applicants and 150 active members using a handful of cars. Pricing is $4 per hour or $35 per day, and $45 per day on weekends.

Another exciting aspect of MioCar is that it seems to have been able to partner with local community organizations to find volunteer drivers, typically retirees, who provide rides to people without driver's licenses. This has expanded Miocar's service into a blended carsharing service and an inexpensive, volunteer-staffed equivalent to Lyft or Uber. This means that MioCar is providing two distinct transportation services — carsharing and ride-hailing — to two populations: those who don't have a car but can drive themselves and those who need someone to drive them.[14]

MioCar's low-cost model seems very promising for small, rural communities. It is funded by the California Air Resources Board and uses a social enterprise model involving an affordable housing provider called Self Help Enterprises and the California Vanpool Authority.

PBOT Transportation Wallet Affordable Housing Pilot

Portland, OR (2019)

In 2019 the Portland Bureau of Transportation (PBOT) partnered with TriMet, Scooter Vendors, and Car2go to offer low cost/free transportation options to seven low income housing developments located within the metro area. PBOT's Transportation Wallet program didn't create any new transportation programs; instead, it focused on expanding access to existing programs by giving "transportation benefits" directly to end-users to make existing services more accessible to more people. The pilot for low-income users focused on providing subsidized transportation options to people who live in affordable housing, and one of the project goals was to test new ways to reduce the barriers to using transportation options while boosting the use of more active modes like transit, walking, and biking. PBOT understood that many residents were "unbanked", so they provided a prepaid credit card that allowed residents to register with vendors that require a card-based means of payment.

The initial pilot program proved very popular and PBOT is now working to expand it into a fully-customizable digital platform that automates and simplifies landlords', employers', and social service agencies' distribution of transportation benefits while letting beneficiaries manage their account online and see how they've spent their benefits. Alternative transportation experts and organizations are eagerly awaiting the launch of the updated Transportation Wallet. If the program that emerges is user friendly and truly scalable, it could be genuinely transformational.

Car2go APANO and Metro PILOT's CarSharing Project

Portland, OR (2019)

Starting in 2020, tenants of a new affordable apartment building in Portland's Jade District that is managed by the Asian Pacific American Network of Oregon (APANO) and ROSE Community Development Corporation were to have gained free access to Car2go along and multilingual technology education to help people access the service in a new location outside Car2go's previous service area.

This pilot project offered an interesting approach to expanding a free-floating carsharing to low-income communities because APANO's property would have been established as a non-contiguous "pickup and drop zone" for CAr2go vehicles. The grant aimed to provide a valuable transportation option to a specific organization while simultaneously pulling Car2go into a hitherto-unserved neighborhood. Unfortunately Car2go closed its North American operations before the project was launched, the overall approach seemed very promising, and we hope that AAA GIG or another free-floating carsharing operator will try it. This project would have explored whether subsidized carsharing trips plus culturally-responsive education would accelerate and lead to long-term adoption of Car2go's service.

Clean Rural Shared Electric Mobility Project

Hood River, OR (2020)

Forth's Clean Rural Shared Electric Mobility Project (the "CRuSE Project") will demonstrate plug-in electric vehicle (PEV) car sharing in rural Hood River, Oregon. It will focus on low income populations and an ambitious goal of creating a sustainable, self-funding model for rural PEV carsharing. The project includes an impressive array of partners including: American Honda, Pacific Power, Envoy Technologies' car sharing platform, OpConnect, Pacific Northwest National Laboratory, The City of Hood River, The Port of Hood River, The Mid-Columbia Economic Development District, Hood River Columbia Area Transit, and Mid-Columbia Housing Authority.

The above partners are committing financial or in-kind support that, taken together, significantly lower upfront costs with the aim of demonstrating that community supported EV car sharing using a state-of-the-art sharing platform can offer carsharing services to low income residents, city employees and visiting tourists in a cost- effective and financially sustainable way. The user groups will each gain access at different price points. The program will fund a number of enhancements to the Envoy Technologies car sharing app to make it more broadly usable:
- Spanish language translation for the EV car sharing app
- Tiered pricing, to allow for different pricing for each of the 3 different market segments
- Alternate payment mechanisms to increase access for unbanked individuals

This program will launch in 2020. It is unique in that it will use EVs to offer carsharing services to a combination of low-income residents, tourists and government fleet users in a small town. The program hopes to become self-supporting by minimizing costs, maximizing utilization, and charging each user segment different rates.

Recommendations

Many operators have tried to provide low income populations with carsharing services and several organizations have met with qualified success; however, nobody to date has really figured out how to provide access to large numbers of low-income people in a way that's financially sustainable. Much has been learned from all of these early low-income carsharing programs, but for the time being, at least, it appears that carsharing services that want to serve low-income populations will still require ongoing public subsidy of some form.

Serving low-income populations in cities that already have a large carsharing operator is less challenging than starting a local, small-town carsharing service from scratch. But convincing a large operator with already-thin margins to serve low-income areas may require considerable finesse. Also, whereas larger operators are unlikely to enter small communities with little overall demand for carsharing, this doesn't mean that small towns don't need carsharing; in fact, the need is often acute in small towns, especially those with high percentages of low-income people, because it is often very difficult to access quality medical care and other essential services without a car.

The following recommendations are informed from our own experiences, as well as interviews with a number of current and past carsharing operators. Most of them apply equally to small towns and large cities.

Invest in a Good Platform

MioCar uses a sophisticated, app-based carsharing platform that works about as well as many platforms used by much larger, urban carsharing services, so the user experience is excellent. The MioCar program was developed by Mobility Development Inc. and uses a platform developed in Ireland.

Urban programs should carefully weigh the pros and cons of different carsharing platforms. Among the leading big-city carsharing platforms are Vulog, Ridecell, Wunder and IVERS. Each of these offer live demos, but a good place to read about key features is Movmi Consulting's recent report entitled *Selecting a Carshare Technology Vendor.*[15]

[15] To request a copy contact Sandra Phillips, Movmi Consulting, whose email address is sandra@movmi.net.

Reach Out Mindfully Through Local CBOs

It's easy to overlook the importance of clear and thoughtful communication and outreach. Carsharing is completely unfamiliar to most people, so unless a service is so intuitive and compelling that it becomes truly viral, programs must be introduced in a very clear manner. There are also trust barriers to overcome with new technology-based services, especially among people with lower educational attainment and people who don't speak English as their native language.

Leverage Community Partnerships

Another promising approach for rural communities will soon be tested by Forth's CRuSE program. This will test the viability of a program that minimizes operating costs by using donated vehicles, donated parking spaces and low-cost fuel (electricity) on one hand, while trying to boost overall revenue by using a sophisticated sharing platform (Envoy) and offering its service to different customer bases at different price points. If this pilot project is able to generate sufficient revenue to become self-sustaining it may offer another model for smaller communities.

Try Blending Carsharing and Ride-hailing

As noted above, MioCar has been able to partner with local community organizations to find volunteer drivers, typically retirees, and thereby expanded Miocar's service into a blended carsharing service and an inexpensive, volunteer-staffed equivalent to Lyft or Uber. Of the major urban services, ReachNow was the first to try something similar when they briefly experimented with hiring drivers in Seattle to use their vehicles as TNC vehicles at times of low carsharing but high TNC demand. Envoy is now doing the same thing in certain California markets, to boost utilization on their vehicles during periods of low carsharing demand.

Use Carrots, Rather than Sticks, to Expand Service Areas

Car2go's experience in Eugene failed because the local municipality wanted to "boil the ocean" by launching across a huge area, including many neighborhoods with minimal initial viability, with very few vehicles. The Vancouver Housing Authority, by contrast, was able to catalyze the expansion of Flexcar's service territory simply by becoming a business user and committing to a significant amount of monthly usage. Similarly, APANO was on the verge of catalyzing the creation of a new Car2go drop zone in a low-income area simply by securing a small grant and using the funds demonstrate and spur demand. Since free-floating carsharing services don't require reserved parking and establishing a drop zone has become almost effortless with some of the new carsharing software platforms, this could be a promising way to expand these services into new, non-contiguous geographic areas.

Create Tiered Pricing

BlueLA's program, which was also designed with significant support by Mobility Development Inc., is promising despite its very generous funding from California's Cap & Trade system. A similar tiered pricing approach will soon be piloted by Forth for CRuSE project, which will recruit three distinct user groups and charge each of them a different price to access the same service. If the system can attract the optimal mix of users while keeping a tight lid on operating costs, perhaps it can even become self-funding. Reduced or waived parking and permit fees can also be used to pull service providers into low-income areas.

Watch for New Payment Technologies

One way to expand the carsharing market is to lower prices; another is to remove barriers for people who are underbanked or entirely unbanked.

Credit cards have gone from being a gimmick just a few decades back to being a major part of Americans' financial lives. General purpose credit cards such as Visa, MasterCard and Discover can be found in 70.2 percent of all American households, according to the U.S. Census Bureau. That may seem high, but it means that nearly 30% of households don't have a credit card, and many carsharing companies still can only accept credit cards for payment, so three in ten U.S. households simply cannot access carsharing services even if they are available locally. Whereas it's beyond the scope of this paper to discuss all of the different means of payment that can expand access to various alternative transportation services, this "Improving Unbanked Access to Shared Mobility Services" white paper offers an excellent summary of promising approaches to overcoming these problems.

One approach that intrigues Forth is the City of Portland's Transportation Wallet program, which doesn't spend money trying to stand up new carsharing operations, but it still holds great promise as a way to expand access. This city funded program recognizes that carsharing, bike-sharing, public transit and even e-scooter sharing are all low margin businesses, so instead of pushing local operators to expand their service territories or drop their rates, it tries to pull them in a more inclusive and widely accessible direction by putting transportation spending power into the pockets of potential low income users of alternative transportation services. Qualified low income residents participating in the Transportation Wallet program receive fare medium (e.g. a reloadable debit card) that can be used to pay for public transit, carsharing, bike, or e-scooter-sharing, and TNC rides. This will function somewhat like a Basic Minimum Income stipend, except that the funds will only be redeemable for qualified transportation services.

The Sole Pay Card that Victor Valley Transportation Authority's carsharing program accepts may also be worth exploring, and other payment companies like PayPal and Venmo are almost certainly working on innovative technologies that could be accepted by new transportation services. We'll continue to watch this space closely.

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Credit Card Holders

70%

30%
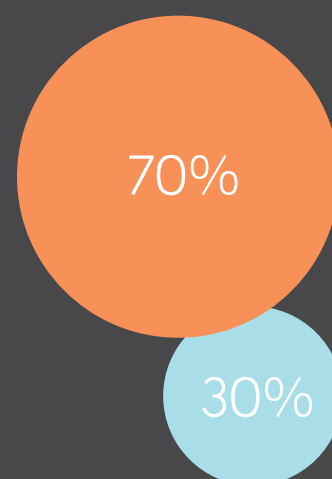
Non Holders

Incorporate New Mobility Technologies

Vehicles themselves, as well as carsharing platforms, are constantly evolving, so try to build a flexible service.

For example, some cities have recently begun to insist that carsharing operators use electric vehicles. Forth supports a shift to EVs as quickly as possible; however, regulators should be very cautious about mandates, because insisting on the use of electric vehicles for carsharing will add near-term capital and operating costs -- and further compress operators' profit margins. EVs cost more to purchase and they require charging infrastructure, and although they require less maintenance, other operating costs are higher. For example, EV carsharing services require more "touches" because the cars still require more frequent "refueling." So cities and advocates should be careful about mandating electric cars. Insisting on a platform that can accommodate EVs, and providing incentives for a shift to EVs over time might make more sense than insisting on an operator's use of only EVs. Remember: this is a very difficult, low-margin business.

Another trend to watch is the growing prevalence of very small shared electric vehicles. Shared, electric micro-mobility offerings already include e-scooters companies (Bird, Lime, Spin, etc.), shared e-bikes (JUMP, Lyft e-bikes), but also shared microcars (Getaround LEV), and shared electric mopeds (Revel, Scoot). Ideally, a carsharing member could, in a single app, access any one of a full range of vehicles, depending on the nature of her or his immediate need.

Another new technology to watch for is the long-predicted launch of robo-taxi services that companies like Waymo and Tesla are working on which, if and when they materialize, will eliminate the differences between — and potentially entirely displace — carsharing and ride-hailing. Some believe that these long predicted fleets of app-hailed, self-driving robotic taxis will truly democratize transportation,

because everyone, including young children, the elderly, infirm and disabled, and the very poor will be whisked inexpensively and conveniently from door to door.   Why is this service expected to be inexpensive? Because each driverless taxi should be able to serve the needs of a dozen or more households, so each vehicle's capital costs will be divided across many users and many hours of utilization per day, versus the 1-2 hours per day that a personally-owned car is typically driven. Some futurists think these services will be so cheap and convenient that they'll end most personal car ownership, while also leading to the demise of the automotive, car insurance, parking and fossil fuel industries.[16] Whether this will actually happen, of course, depends on who you ask, but if it does, one thing is clear: the implications will be massive.

[16] Sources: https://www.shareable.net/a-self-driving-future-at-the-intersection-of-driverless-cars-and-carsharing/
https://www.youtube.com/watch?v=OkPSjcAy6jc

Acknowledgments

To research this paper Forth contacted many individuals and institutions that work on car sharing and other types of shared mobility and asked them to help identify past attempts to offer car sharing services to low income populations. We received generous input from longtime carsharing consultant Dave Brook, Sharon Feigon and her staff at the Shared Use Mobility Center, Creighton Randall of Mobility Development Inc., Ken Hills, the former General Manager of Car2go Portland (and Eugene), Fred Kahn of TransMetro Consulting, Jennifer Dotson of Ithaca CarShare, Peter Krahenbuel of eGo CarShare, and Sergio Lopez of Forth. We asked these organizations to describe the "lessons learned" from the programs they were associated with, and tried to summarize those lessons faithfully in the paper's final section. Forth has identified sources of more general information via footnotes but they may not be comprehensive. If readers notice any factual errors or omitted references please contact Forth.

www.forthmobility.org

Address:
FORTH
2035 NW Front Ave, Suite 101
Portland, OR 97209

Phone:
 503.724.8670