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Fares Alone Will Not Sustain the Long-Term Operations of Electric Vehicle Carsharing Programs in Underserved Communities

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Issue

Access to affordable and reliable transportation options is a significant issue in low-income, rural, and otherwise underserved communities across the United States. Carsharing is one promising option for households that are unable to afford a personal vehicle or have unreliable or insufficient access to a personal vehicle. California has developed multiple grant programs funding shared mobility start-ups (such as carsharing) in underserved communities. This funding is particularly beneficial in areas where private, for-profit carshare companies won't or can't operate.

While there have been several short-term electric vehicle (EV) carshare pilot programs in recent year, it is less clear what the long-term financial sustainability of these services might be and if these services could be a cost-competitive option compared to serving these same communities with traditional public transit. To address this gap in knowledge, our research team used data provided by Míocar, a non-profit electric carsharing service that exclusively serves marginalized suburban and rural communities, to construct a financial model of the relationship between service cost, revenue, and net operating income under different operational scenarios. The model allows us to analyze utilization rates, operational costs, and potential revenues to better understand the long-term sustainability of EV carshare programs in rural and underserved areas, including the need for ongoing subsidies.

Key Research Findings

Fare revenues are unlikely to sustain the long-term operations of EV carshare services in underserved and low-income communities. Under the cost scenarios examined, we found that fare revenues offset between 4% and 18% of total operating costs of a smaller 20-vehicle carshare fleet, and between 10% and 48% for an expanded 80-vehicle carshare fleet. The most optimal scenario in our study suggests that public subsidies or other external revenue sources (e.g., financial arrangements with housing communities or funding from other project sponsors) would need to be at least 52% of operational costs to sustain business operations. We estimate that public subsidies or other revenue sources supporting EV carshare programs in underserved communities generally will need to cover between 60% to 90% of total operational costs depending on fleet size, size of the active user base, fare models, organizational structure, and service location.

EV carshare in underserved communities will likely require ongoing public subsidies, however, these subsidies are lower than what is required to operate conventional transit service in terms of portion of total costs. A comparison of EV carshare costs and revenue to public fixed-route and on-demand transit costs and revenues in the same region shows that EV carshare can achieve comparable or greater fare revenues per vehicle revenue mile (i.e., the number of miles driven while passengers are

in the vehicle) than public transit. The six months of Míocar operations data used in this study (from October 2023 to March 2024) show that fare revenues amount to about 13% of operational costs as compared to between 4% and 8% for transit agencies operating within the same service area.

High fixed costs for EV carshare suggest that larger fleets are more cost-effective, but fleet size must be aligned with the size of the user base to avoid underutilization of vehicles. Fixed organizational costs of staff and overhead contribute to a low net operating income for smaller fleets. For example, staff and overhead account for nearly 75% of expenses for the existing fleet of 41 Míocar EVs. Expanding the Míocar fleet significantly reduces the monthly operational cost per vehicle and increases net operating income as long as per-vehicle utilization remains consistent. However, a fleet of any size that significantly outsizes its user base will achieve a lower ratio of revenues to costs than a small or moderately sized fleet that adequately matches user demand.

Policy Implications and Future Research

EV carshare services designed as affordable transportation options in low-income communities are unlikely to be profitable, which may be why the presence of private shared mobility providers is limited in these areas. State funding sources have been instrumental in providing underserved areas access to EV carshare, but current policies primarily focus on short-term pilot demonstrations and do not typically support long-term operations for an existing service. If long-term subsidies are not available, operators may benefit from exploring revenue models that do not rely on user fares per reservation, but instead involve arrangements such as subscription models between the carshare operator and affordable housing communities or cities.

Future studies evaluating the sensitivity of service demand to vehicle availability and hub location in both rural and urban communities may provide valuable data for EV carshare operator and public agency transportation planning and implementation. This includes comparing the performance, cost-effectiveness, equity outcomes, and climate benefits of EV carsharing to other modes that allow for intercity travel. Studying EV carshare operations in different types of communities such as urban, suburban, small town, and rural areas and comparing to local transportation alternatives to understand where the service is most effective may yield valuable results for policymakers and planners.

More Information

This policy brief is drawn from the report "Understanding Demand, Revenues, and Costs of Electric Carsharing in Underserved Rural and Suburban Areas" available at www.ucits.org/research-project/rimi-4b-03. For more information about the findings presented in this brief, contact Brian Harold at bsharold@ucdavis.edu.

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