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Charging Ahead: How Income and Home Access Shape Electric Vehicle Adoption among Ridehailing Drivers

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Issue

Transportation network companies (TNCs), also known as ridehailing, such as Uber and Lyft, have contributed to increased vehicle miles traveled (VMT) and associated emissions in California's urban areas over the past decade. In response, Senate Bill (SB) 1014 – the Clean Miles Standard – requires TNCs to achieve 90% electric vehicle (EV) miles traveled and zero greenhouse gas (GHG) emissions per passenger mile by 2030. The California Public Utilities Commission (CPUC) and the California Air Resources Board (CARB) oversee implementation and enforcement of these targets.

To understand the barriers and preferences for EV adoption among TNC drivers, we used a mixed-methods approach that integrates qualitative and quantitative data. This included 10 expert interviews, 8 driver group discussions, and a statewide survey of 436 full- and part-time TNC drivers conducted between May 2023 and April 2024. The survey gathered detailed information on drivers' socio-demographic profiles, attitudes toward EVs, driving behaviors, and policy preferences, such as charging credits (i.e., a monetary incentive or prepaid allowance to offset the cost of EV charging activities and EV charging equipment) and EV purchase discounts (i.e., price reductions or instant rebates

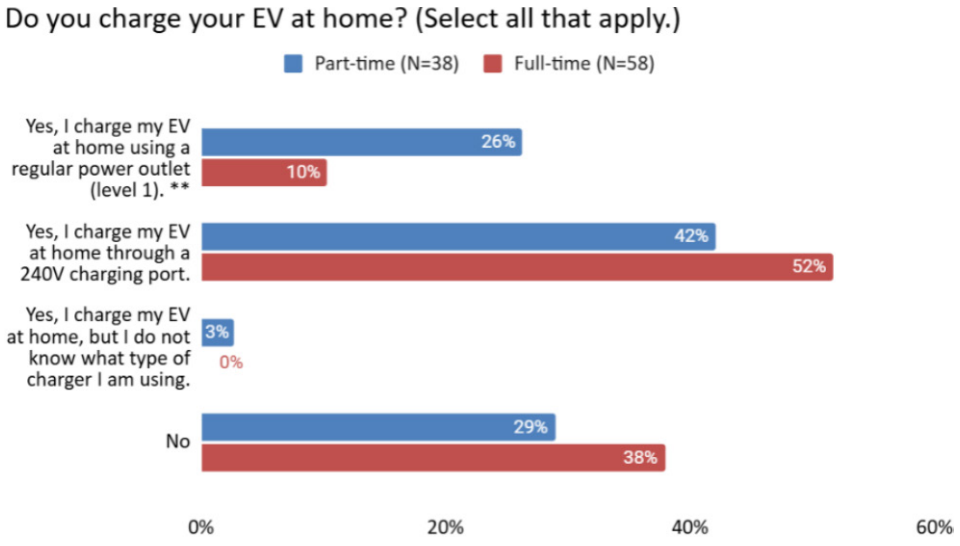

Figure 1. Comparing Home Charging Access for Full- and Part-Time TNC EV Drivers.

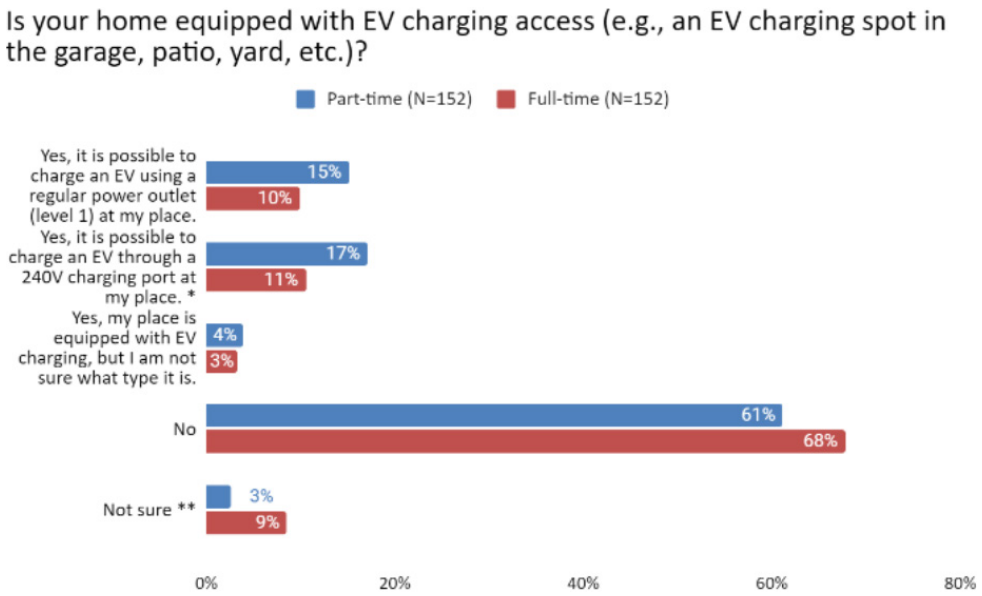

Figure 2. Non-EV Driver's Home Charging Access Among Full- and Part-Time Ridehailing Drivers.

at the point of sale). In addition, the survey presented hypothetical decision-making scenarios to explore how factors such as income level, home charging access, and prior EV experience influence a TNC driver's willingness to acquire an EV. Using statistical analysis, we estimated the most influential factors for EV adoption for full-time as well as part-time drivers. We then ran "what-if" simulations to explore how different combinations of incentives and driver characteristics might change the appeal of EV adoption.

Key Research Findings

Part-time TNC drivers have better access to home charging than full-time drivers, yet their EV adoption rates remain lower. Among EV-owning drivers, 52% of full-time drivers rely on Level 2[1] chargers at home compared to 26% of part-time drivers who use slower Level 1[2] outlets (see Figure 1), likely due to their more flexible driving schedules. Nearly 30% to 40% of EV drivers in both groups report no home charging access. Among non-EV drivers, 36% of part-time drivers and 24% of full-time drivers have some access to home charging (see Figure 2). This mismatch between charging readiness and EV adoption suggests an opportunity to encourage uptake among part-time drivers through targeted home charging incentives.

Home charging access and prior EV experience are the strongest predictors of EV adoption. Drivers with both home charging and prior EV driving experience are significantly more likely to express interest in using an EV for ridehailing. This is particularly true for part-time drivers. In contrast, public charging convenience factors (e.g., proximity to and time to locate fast chargers during operation) have minimal influence on hypothetical choice scenarios used in the survey, likely due to a driver's limited familiarity or ability to evaluate these operational constraints.

Full-time drivers are generally more interested in EV adoption but face greater income and operational constraints. Although full-time drivers tend to be more confident about EV range and supportive of electrification in general, they are more vulnerable to income loss from charging-related downtime. Because full-time drivers often rely on consistent daily earnings, they require incentives that reduce operational costs. Notably, interest in EV adoption among full-time drivers increases with income. Part-time drivers exhibit more nuanced responses to income, likely because of the greater flexibility they possess from having multiple income sources.

Incentive effectiveness varies based on driver type, income, and EV price (Figure 3). Lower-income full-time drivers are especially responsive to larger point-of-sale purchase discounts, while part-time drivers benefit more from moderate charging credits (fixed monetary allowances to offset charging expenses) as well as affordable EV models. However, the effectiveness of incentives diminishes as EV prices rise or as the incentive size becomes small relative to driver income. In other words, high EV prices can limit the effectiveness of purchase discounts and charging incentives in encouraging EV adoption.

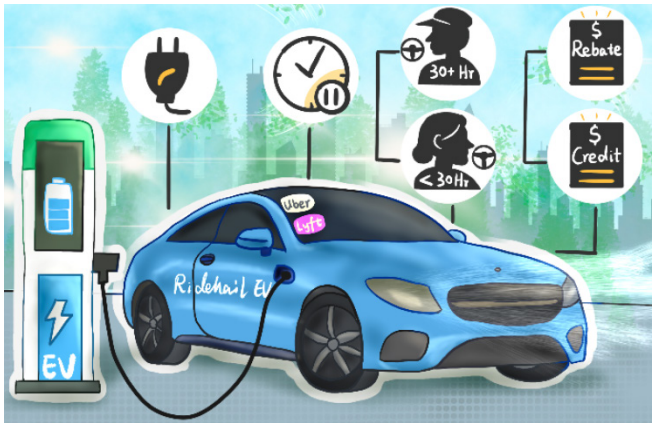

Figure 3. Incentive Preferences Differ by Driver Type, Income, and EV Price.

Policy Implications and Recommendations

For all stakeholders:

- Avoid one-size-fits all incentives. Programs should account for driver type (full-vs. part-time, level of income reliance on driving, weekly driving hours, charging access). This applies broadly to state agencies (e.g., CARB, CPUC), TNC companies, utilities, multifamily housing developers and managers, etc.

For CPUC and CARB:

- Differentiate incentives by driver profile. Full-time drivers respond best to income-based purchase discounts, while part-time drivers are more motivated by charging incentives (e.g., $500 to $1,500).
- Prioritize layered incentives that combine both vehicle purchase and charging support.

For ridehailing companies:

- Collaborate with public agencies to identify different driver subgroups and tailor outreach.
- Integrate in-app tools to match drivers with incentives based on a driver's financial circumstances and driving habits.
- Partner with rental companies and automakers to expand affordable EV access.

For utilities anad multifamily housing developers and managers:

- Expand home and public EV charging infrastructure, with a focus on multifamily housing and areas where full-time drivers live and work.
- Maintain public fast chargers to minimize malfunctions, downtime, and income losses.
- Explore pricing mechanisms and/or time-of-use charging incentives that align with TNC shift patterns.

More Information

This policy brief is drawn from an open access journal, which once published can be found at www.ucits.org/research-project/2023-24. For more information, please contact Susan Shaheen at sshaheen@berkeley.edu.

[1]Level 2 chargers: typically 240 volt chargers that add 12 to 80 miles per charging hour.

[2]Level 1 chargers: usually 120 volt chargers that add three to five miles of range per charging hour.

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