

Electrifying Ridehailing: A Cross-Sector Research Agenda

Angela Sanguinetti and Ken Kurani
University of California, Davis, Institute of Transportation Studies

May 2022

Issue

Electrifying ridehailing services provided by transportation network companies (TNCs) such as Uber and Lyft can reduce greenhouse gas emissions and air pollution) and provide cost savings on fuel and maintenance to TNC drivers. Policy levers have emerged to nudge the industry in this direction. California's Senate Bill 1014 establishes a "Clean Miles Standard" requiring that an increasing percentage of ridehailing services be provided by zero-emissions vehicles. However, the path to achieving this goal is unclear. This brief is the last in a series on TNC electrification. It presents a research agenda identified by government and industry stakeholders, articulating what they believe are the most important questions to address to find the path to TNC electrification. This brief also highlights which perceived research needs are shared broadly and which differ across government and industry stakeholders. The aim is to facilitate a shared understanding for better research, policy, and business practices.

Researchers at UC Davis conducted two brief online surveys of stakeholders from California state and federal government, TNCs, and automakers. The surveys asked stakeholders, "What is the most important question that needs to be addressed to facilitate the electrification of TNCs, and why?" Open-ended responses to this question were compiled, thematically organized, and synthesized into a set of broad research questions with examples, which stakeholders were asked to rank in the second survey.

Key Research Findings

Research questions synthesized from stakeholder input are presented below in order from most to least important across all 25 stakeholders (Figure 1). Equity was a prevalent theme that cut across many research questions and is highlighted within them rather than called out as a single question.

- 1. How can the electric vehicle value proposition for TNC drivers be improved to reach (or exceed) cost parity with gasoline vehicles in most circumstances?** For example, what incentive schemes and vehicle acquisition/use models would make electric vehicles the more economic choice for TNC drivers, including those with low incomes and either poor or insufficient credit history?
- 2. What are TNC drivers' perceived barriers (beyond objective costs and charging availability) to acceptance of electric vehicles and how can they be addressed?** For example, if the value proposition for electric vehicles is made competitive, how will drivers become aware of this, since total cost of ownership is complex to calculate? What is the prevalence and impact of range anxiety on drivers' propensity to adopt electric vehicles? What is the impact of driver perceptions of charging availability and charging preferences?
- 3. What are the infrastructure needs to support TNC electrification?** For example, how should supportive infrastructure programs prioritize home vs. public charging and geographic distribution/strategic location of public

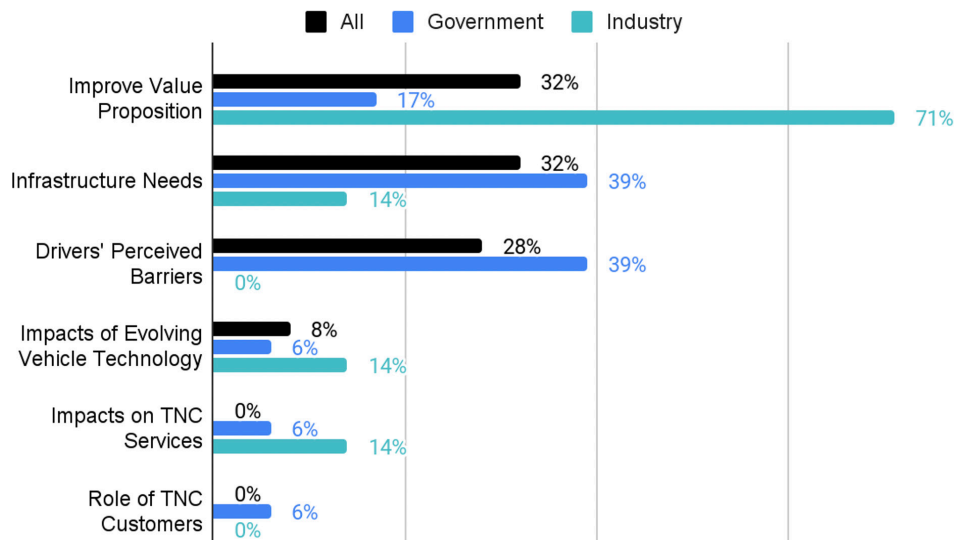


Figure 1. Percentage of stakeholders who ranked each research question as number one in importance

charging? What are potential issues and strategies related to competition between private electric vehicle drivers and TNC drivers for shared infrastructure and coordinated use of dedicated infrastructure among TNC drivers? What are the needs and potential solutions for communicating information about charging availability and compensating drivers for charging time?

4. What are the impacts of changing electric vehicle technology? For example, how would increased electric vehicle range, more diverse electric vehicle body styles, and lower prices affect TNC electrification?

5. What will be the impacts of TNC electrification on the landscape of ride-hailing services and what are solutions to address negative impacts? For example, will there be less availability of TNC services overall due to fewer drivers and/or fewer driving hours, different distribution of service availability in terms of geography and/or time of day, and/or different pricing? What will be the impact on underserved communities (e.g., changes in service availability where electric vehicle and/or charging access is more limited) and what are potential solutions to address these impacts?

6. What role might TNC customers play in the transition to electrification? For example, to what degree will customers accept electric vehicles for ride-hailing services? What are the barriers (e.g., range anxiety)? Could consumer demand be leveraged to further incentivize TNC electrification?

There are distinct differences between government and industry stakeholder groups in terms of their ranking of these six questions. Industry stakeholders overwhelmingly focused on the importance of improving the value proposition of electric vehicles for TNC drivers, perhaps explaining why no industry stakeholder phrased their questions in terms of drivers’ perceived barriers. In contrast, government stakeholders emphasized charging infrastructure needs and other driver-perceived barriers beyond cost and charging, perhaps emphasizing the TNC-PEV value proposition less because governments already have invested heavily in incentive programs and are more interested in other possible strategies.

More Information

This policy brief and the others in this series are drawn from “Characteristics and Experiences of Ride-Hailing Drivers with Electric Vehicles,” and the forthcoming paper “Driving and Charging Electric Vehicles on Ride-hailing in the United States,” both authored by Angela Sanguinetti and Ken Kurani of the University of California, Davis. The papers and additional policy briefs can be found here: <https://www.ucits.org/research-project/2021-35/>.

For more information about the findings presented in this brief, contact Angela Sanguinetti at asanguinetti@ucdavis.edu.

Research presented in this policy brief was made possible through funding received by the University of California Institute of Transportation Studies (UC ITS) from the State of California through the Public Transportation Account and the Road Repair and Accountability Act of 2017 (Senate Bill 1). The UC ITS is a network of faculty, research and administrative staff, and students dedicated to advancing the state of the art in transportation engineering, planning, and policy for the people of California. Established by the Legislature in 1947, the UC ITS has branches at UC Berkeley, UC Davis, UC Irvine, and UCLA.

Project ID UC-ITS-2021-35 | DOI: 10.7922/G2CV4G2J