

TCRP Project B-47 and NCHRP Project 20-102(30)

Transformational Technologies and Mobility Inclusion Playbook

This Research Background is supplemental to *TCRP Research Report 244/NCHRP Research Report 1101: Transformational Technologies and Mobility Inclusion Playbook* [TCRP Project B-47 and NCHRP Project 20-102(30)]. The full report can be found by searching for the report title on the National Academies Press website (nap.nationalacademies.org).

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RESEARCH BACKGROUND

TCRP Research Report 244/NCHRP Research Report 1101: Transformational Technologies and Mobility Inclusion Playbook is a joint publication of research performed under TCRP Project B-47, “Impact of Transformational Technologies on Underserved Populations,” and NCHRP Project 20-102(30), “Equity Impacts of Shared AVs on Transportation Disadvantaged Communities.”

Recent years have witnessed the rapid emergence of shared and on-demand mobility services driven by economic, environmental, and social forces. These services, ranging from micromobility options to car-based services and ridehailing platforms, have gained significant popularity and have become mainstream. Although these services offer numerous benefits, there is a concern that they may further exacerbate disparities, thus isolating diverse populations and leaving them behind. Limited smartphone ownership, lack of access to mobile banking services, and insufficient broadband connectivity are examples of key barriers faced by underserved communities. Failure to address the needs of these populations in transportation planning can perpetuate historical, institutional disenfranchisement.

The objective of TCRP Project B-47 was to develop a playbook for achieving inclusive mobility, with a special focus on ensuring that underserved communities benefit from technology-enabled mobility services. The project analyzed the effects of transformative technologies on mobility accessibility, identified barriers, and explored strategies to facilitate access to and use of mobility services for underserved communities or provide alternatives to ensure inclusive mobility.

NCHRP Project 20-102(30) aimed to compile research and policy and identify critical challenges and opportunities for supporting inclusive mobility for underserved populations and improving transportation equity as the market share of automated vehicles (AVs) increases. In the not-too-distant future, agencies and private operators may consider implementing and deploying shared AVs, an emerging technology with the potential to close current transportation gaps for transportation-disadvantaged populations. Shared AVs can potentially reduce the number of vehicles on the road, solve parking challenges, reduce congestion, and if electric, reduce greenhouse gas emissions.

The playbook focuses on transformational technologies, including app-based carpooling services, bikesharing services, carsharing services, e-scooter sharing services, ridehailing services, and fully automated vehicle services with a focus on shared services. It incorporates the findings of NCHRP Project 20-102(30) to acknowledge the role of shared AVs in enhancing transportation equity as the market share of AVs expands. It also identifies strategies to reduce barriers to access and promote the use of shared AVs among underserved populations.

The primary tasks of TCRP Project B-47 included the following:

- A literature review was conducted and included (a) historical analysis of transportation inequities and barriers faced by underserved populations; (b) examination of new mobility options and factors preventing access and use; and (c) examination of inclusion-focused policies, infrastructure improvements, and their impact on enhancing inclusivity in new

mobility.

- Stakeholder interviews were conducted with transportation agencies, advocacy and social service organizations, and technology providers to identify barriers, adaptations, and strategies for underserved populations in accessing new mobility services.
- Online focus groups were conducted to elicit information that aided in finalizing online survey questions. The input provided keen insights into the travel behaviors and preferences of underserved populations.
- An online survey was conducted to gather information from members of underserved populations about their use of new mobility services, existing barriers to use, and potential solutions.

The primary tasks of NCHRP Project 20-102(30) included the following:

- A literature review was conducted to examine the impact of AVs and shared AVs on the equitable deployment of transportation systems and to identify critical policy actions that can result in the more equitable deployment of shared AVs. Although the focus of the project was on shared AVs, the research team conducted a broader review of the literature to identify differences between AVs and shared AVs and capture nuances that might be important in studying shared AVs. Policy actions informed by these findings were also identified.
- Stakeholder interviews were conducted to better understand how current or future shared AV deployments incorporate equity considerations with agencies and organizations that have deployed shared AVs in the past, are in the process of deploying shared AVs, or are planning to deploy shared AVs. These deployments include formal deployments, pilot events, and demonstrations.
- Online focus groups were conducted to discuss shared AVs, learn more about how participants perceived such services, and further examine barriers and opportunities regarding the potential use of shared AVs.

The development of the playbook focused on addressing the needs of underserved populations, with a particular emphasis on the following population segments: older adults, people who speak little or no English, people with disabilities (including hearing, ambulatory, vision, and cognitive disabilities), people with low incomes, and people residing in rural areas or on tribal reservations. Although the playbook focuses on these five population segments, the information, tools, and strategies developed in the playbook can be applied and expanded to other underserved groups.

These projects aimed to address the critical need to ensure that transformative technologies do not further widen the gap between the haves and have-nots. Exclusion from new mobility is not a given and can be avoided with strategic implementation. Each of the mobility services investigated can benefit from programs to improve availability, technology access, awareness, accessibility, safety and security, and affordability. Policies and legislation at the local, regional, state, tribal, and national levels can encourage private-sector service providers to reduce barriers to their services as well as generate potential sources of revenue to fund improvements, such as accessible vehicle fleets or service subsidies.

The playbook provides actionable guidelines, data-driven insights, and metrics to inform decision-making processes for achieving equitable transportation and enhanced access to technology-enabled

mobility services. The playbook was informed by an understanding of the historical exclusion and marginalization of mobility options and emphasizes current initiatives and strategic plans. The focus is on how to include historically underserved populations in mobility enhancements, such as smartphone apps, vehicle automation, and shared on-demand mobility services. Through this research, public and private entities can actively work toward transportation equity and ensure that the benefits of transformative technologies are accessible to all members of society.