

## Advancing Equity and Congestion Relief: An Investigation of On-Demand Shared Rides for Underserved Populations

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### BACKGROUND AND OBJECTIVES

Emerging mobility options are causing major disruptions in the transportation system, with the popularity of on-demand transportation services, such as transportation network companies (TNCs) and microtransit, skyrocketing in recent years. These services can be flexible and convenient for users, but if they are to have any future in a sustainable world, consumers must abandon single-occupancy vehicle use in favor of shared rides.

While these services do offer increased access to vehicles, particularly for marginalized groups with limited personal vehicle ownership, this access is not equal—racial and gender minorities, low-income households, and individuals with disabilities, among others, are at risk of being left behind. Because these services are not equally available to everyone, they may exacerbate rather than alleviate (as initially hoped) much of the current inequity in the transportation system of the United States.

This report is part of a larger study focused on on-demand transportation, with a particular emphasis on shared-ride services. The first phase of the study (Phase 1) centered on improving pooling rates across all on-demand services to mitigate some of the environmental, economic, and traffic concerns related to those services. This subsequent phase of the study (Phase 2) focused instead on identifying differences in usage of on-demand and shared-ride mobility options across different sociodemographic groups, classifying populations as possibly marginalized or underserved, pinpointing the causes of these differences, and establishing a framework to address these differences through policies aimed at reducing inequity.

### METHODOLOGY

Building upon the results from Phase 1 of this study, we began Phase 2 with a series of shared mobility interviews. Semi-structured, personalized interviews were conducted with 35 mostly older, lower-income individuals with at least one legally defined disability. Women and ethnic minorities were overrepresented to intentionally target sociodemographic groups believed to be marginalized or underserved in their transportation needs, with a particular focus on on-demand services. The long-form, detailed descriptions of transportation experiences obtained from the interviewees helped guide the development of a broader shared mobility survey.

An online survey similar to the survey used in Phase 1 but enriched and expanded to a national scale was administered between February and April 2023. Quotas were established to ensure sufficient sample sizes for potentially underserved groups (e.g., gender and racial minorities, the elderly, low-income individuals, and people with disabilities) and met or nearly met in most instances using oversampling techniques. A final, usable sample of 2,950 participants was used in this study, with racial minorities, the elderly, low-income individuals, and people with disabilities being overrepresented.

Bivariate and univariate descriptive statistics were calculated and statistical inferential methods were applied to explore the data. Pearson's chi-squared tests (with Yates' continuity correction) were used to confirm statistically significant differences in the proportions of respondents indicating that they had access to certain services, were concerned about certain issues, and would favor certain policies. Kruskal-Wallis tests were also used to determine whether attitudes toward pooled services differed across groups. Random utility-based discrete choice models of sharing behavior were subsequently developed to examine factors influencing the decision to share or pool rides while using on-demand services.

## RESEARCH FINDINGS

Younger survey respondents reported having much greater access to new mobility services compared to older respondents, possibly due to the certain degree of tech savviness required to use many of these services. Likewise, respondents in the highest income brackets reported having greater access to these modes; cost may present a barrier for people with low incomes. No significant or consistent differences in access were confirmed across gender or race. People with disabilities more frequently reported having access to on-demand transit (such as microtransit); people with disabilities may be much more aware of alternative transportation modes out of necessity. Affordability factors were found to be substantially less impactful than access factors. No statistically significant differences in affordability (i.e., respondents indicating that the cost of services was too high) were confirmed across any of the variables of interest. With respect to safety, perception, and use behavior, female and younger respondents more frequently reported a hesitancy to interact with strangers. Females and people with disabilities were also much more aware of and concerned by safety issues associated with pooled services, such as unpleasant and/or hostile passengers. People with disabilities more frequently reported that either the vehicle or the infrastructure surrounding pickup and drop-off locations did not meet their needs. The personal identity factor that caused the most concern among respondents was race; Native American respondents, and to a lesser extent Asian and Black respondents, reported being worried about hostility from drivers or other passengers. These findings can help determine interactions among intersections of marginalization, identify equity priorities, and guide the deployment of new or existing shared-ride services.

## POLICY AND PRACTICE RECOMMENDATIONS

As part of this Phase 2 study, survey respondents were presented with various operational improvements, government policies, and employer programs intended to improve shared-ride services and encourage their use. Those policies that were particularly popular among underserved communities are highlighted here to aid in reducing transportation inequity.

Primary concerns identified by respondents about pooled services related to convenience and access rather than affordability. Unreliable travel times, unsafe drop-off locations, and inadequate infrastructure were the most common complaints. Efforts to curb these effects, such as guaranteed time windows, were popular among all respondents. Transportation providers face a significant challenge in accommodating an increased number of riders per vehicle and optimizing more complex travel routes to reduce inefficiency, while also avoiding inconveniencing customers. People with disabilities preferred designated boarding zones and options to request help from drivers and fellow passengers. Asian respondents consistently responded more favorably to cost-reducing policies; however, this population group also reported having the most access to services, which raises questions about the efficacy of cost-related policies in reducing overall inequity. Service providers should focus on effectively communicating the viability of their services to low-income and marginalized travelers, while also assessing the unique barriers for different groups and exploring alternative strategies to encourage greater adoption among these populations. Females were consistently more likely to favor policies to improve safety, such as onboard video surveillance; the ability to select the gender of other passengers; and pooling from a known network of friends, family, coworkers, and so on.

Perceptions regarding these new mobility options—real or not real—substantially impact consumer behavior, with a lack of awareness about the services contributing to their underuse. Many respondents, across various segments of the sample, reported being unsure whether a service existed in their area, particularly in reference to microtransit. An effective policy would involve outreach to key populations of interest that showcases the benefits of these services while acknowledging that steps are being taken to improve them. As a positive takeaway from both the interviews and the survey, effective marketing can have positive impacts on consumer behavior, with individuals who are highly familiar with and regularly use these services typically having positive opinions of and experiences with them. These individuals, in turn, are much more likely to share positive news and feedback regarding the service with their friends and family, unlike news and social media that tend to focus on more negative stories.

Determining how to prioritize efforts, how these efforts should be led, and who should be targeted is easier with a complete understanding of needs. A variety of concerns may impact a consumer's decision to use these transport modes. As such, no one-size-fits-all solution will address the current inequity in on-demand and shared-ride services. Addressing inequity requires listening to and taking seriously the concerns of users (particularly the disadvantaged), while acknowledging the combination of factors affecting consumer behavior. New technology does not always guarantee better results; left unregulated, these budding industries may worsen existing problems. Public policy should avoid repeating past mistakes and ensure equitable benefits for all—not just the privileged few.

*This publication was produced by the National Institute for Congestion Reduction. The contents of this brief reflect the views of the authors, who are responsible for the facts and accuracy of the information presented herein. This document is disseminated under the program management of USDOT, Office of Research and Innovative Technology Administration in the interest of information exchange. The U.S. Government assumes no liability for the contents or use thereof.*

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