

UC Davis

Research Reports

Title

Exploring Microtransit Adoption and its Impacts on Transportation Access for Underserved Populations

Permalink

<https://escholarship.org/uc/item/9863j1fz>

Authors

Xing, Yan

Pike, Susan

Waechter, Maxwell

et al.

Publication Date

2024-10-01

DOI

10.7922/G2QR4VG

Data Availability

The data associated with this publication are available at:

<https://doi.org/10.5061/dryad.r7sqv9smh>

Exploring Microtransit Adoption and its Impacts on Transportation Access for Underserved Populations

October 2024

A Research Report from the National Center
for Sustainable Transportation

Yan Xing, University of California, Davis

Susan Pike, University of California, Davis

Maxwell Waechter, University of California, Davis

Graham DeLeon, University of California, Davis

Liubov Lipatova, University of California, Davis

Susan Handy, University of California, Davis

Yunshi Wang, University of California, Davis



TECHNICAL REPORT DOCUMENTATION PAGE

1. Report No. NCST-UCD-RR-24-25	2. Government Accession No. N/A	3. Recipient's Catalog No. N/A	
4. Title and Subtitle Exploring Microtransit Adoption and Its Impacts on Transportation Access for Underserved Populations		5. Report Date October 2024	
		6. Performing Organization Code N/A	
7. Author(s) Yan Xing, Ph.D., https://orcid.org/0000-0003-1173-1872 Susan Pike, Ph.D., https://orcid.org/0000-0001-6558-3479 Maxwell Waechter, M.S., https://orcid.org/0009-0004-8497-5055 Graham DeLeon, B.S., https://orcid.org/0009-0002-6975-7151 Liubov Lipatova, https://orcid.org/0009-0001-3589-5970 Susan Handy, Ph.D., https://orcid.org/0000-0002-4141-1290 Yunshi Wang, Ph.D., https://orcid.org/0000-0001-5224-3408		8. Performing Organization Report No. UCD-ITS-RR-24-44	
		9. Performing Organization Name and Address University of California, Davis Institute of Transportation Studies 1605 Tilia Street, Suite 100 Davis, CA 95616	
11. Contract or Grant No. Caltrans 65A0686 Task Order 080 USDOT Grants 69A3552348319 and 69A3552344814			
12. Sponsoring Agency Name and Address U.S. Department of Transportation Office of the Assistant Secretary for Research and Technology 1200 New Jersey Avenue, SE, Washington, DC 20590 California Department of Transportation Division of Research, Innovation and System Information, MS-83 1727 30th Street, Sacramento, CA 95816		13. Type of Report and Period Covered Final Research Report (June 2023 – June 2024)	
		14. Sponsoring Agency Code USDOT OST-R Caltrans DRISI	
15. Supplementary Notes DOI: https://doi.org/10.7922/G2QR4VG Dataset DOI: https://doi.org/10.5061/dryad.r7sqv9smh			
16. Abstract Transportation-disadvantaged populations often face significant challenges in meeting their basic travel needs. Microtransit, a technology-enabled transit mobility solution, has the potential to address these issues by providing on-demand, affordable, and flexible services with multi-passenger vehicles. The ways in which microtransit supports underserved populations and the factors influencing its adoption are not well-studied, however. This research examines SmARt Ride, a microtransit pilot program in the Sacramento, California, area operated by Sacramento Regional Transit. The project evaluates a broad range of factors influencing microtransit adoption and travel behavior among underserved populations using original revealed choice survey data collected from February – May 2024 with online and intercept surveys. A descriptive analysis revealed that SmARt Ride has improved transportation access for these communities, complements the transit system by connecting fixed-route transit, and offers a cost-effective alternative to other transportation modes. A binary logistic regression was employed to explore differences between microtransit users and non-users with microtransit awareness. The results indicate that homeownership, employment status, frequency of public transit service use, and attitude towards transit significantly affect microtransit use. Homeowners are more likely to use microtransit, while households without employed members are less likely. In contrast, part-time employees show a higher inclination to use microtransit. Regular public transit users are also more likely to incorporate microtransit into their routines, with a positive attitude toward public transit further increasing the likelihood of its use. The nuanced understanding of microtransit adoption presented here can inform targeted strategies to promote its use among transportation-disadvantaged groups. The results suggest that integrating microtransit with existing transit, outreach programs, discounted or free access, extended service hours, and supporting homeownership and affordable housing in transit-rich areas can encourage microtransit adoption by low-income and/or underserved individuals.			
17. Key Words Underserved populations, SmARt Ride, Microtransit adoption, transportation access			18. Distribution Statement No restrictions.
19. Security Classif. (of this report) Unclassified	20. Security Classif. (of this page) Unclassified	21. No. of Pages 102	22. Price N/A

About the National Center for Sustainable Transportation

The National Center for Sustainable Transportation is a consortium of leading universities committed to advancing an environmentally sustainable transportation system through cutting-edge research, direct policy engagement, and education of our future leaders. Consortium members include: the University of California, Davis; California State University, Long Beach; Georgia Institute of Technology; Texas Southern University; the University of California, Riverside; the University of Southern California; and the University of Vermont. More information can be found at: ncst.ucdavis.edu.

Disclaimer

The contents of this report reflect the views of the authors, who are responsible for the facts and the accuracy of the information presented herein. This document is disseminated in the interest of information exchange. The report is funded, partially or entirely, by a grant from the U.S. Department of Transportation's University Transportation Centers Program and, partially or entirely, by a grant from the State of California. However, the U.S. Government and the State of California assume no liability for the contents or use thereof. Nor does the content necessarily reflect the official views or policies of the U.S. Government or the State of California. This report does not constitute a standard, specification, or regulation. This report does not constitute an endorsement by the California Department of Transportation of any product described herein.

The U.S. Department of Transportation and the State of California require that all University Transportation Center reports be published publicly. To fulfill this requirement, the National Center for Sustainable Transportation publishes reports on the University of California open access publication repository, eScholarship. The authors may copyright any books, publications, or other copyrightable materials developed in the course of, or under, or as a result of the funding grant; however, the U.S. Department of Transportation reserves a royalty-free, nonexclusive and irrevocable license to reproduce, publish, or otherwise use and to authorize others to use the work for government purposes.

Acknowledgments

This study was funded, partially or entirely, by a grant from the National Center for Sustainable Transportation (NCST), supported by the U.S. Department of Transportation (USDOT) and the California Department of Transportation (Caltrans) through the University Transportation Centers program. The authors would like to thank the NCST, the USDOT, and Caltrans for their support of university-based research in transportation, and especially for the funding provided in support of this project. The authors would also like to give deepest thank you to Kevin Spiker, Tyler Monson, Chad J. Riding, Andrew Furillo from the Caltrans, Collin Weigel from California Air Resource Board (CARB), and James Drake, Carmen Alba, Richard Mitchell, Rowan Brandt from the Sacramento Regional Transit (SacRT) for the numerous ways they have each helped with this project. We also thank the pre-testers, and survey participants for their help and patience with this project.

Exploring Microtransit Adoption and Impacts on Transportation Access of Underserved Populations

A National Center for Sustainable Transportation Research Report

October 2024

Yan Xing, Susan Pike, Maxwell Waechter, Graham DeLeon, Liubov Lipatova, Susan Handy, and Yunshi Wang

Institute of Transportation Studies, University of California, Davis

[page intentionally left blank]

TABLE OF CONTENTS

EXECUTIVE SUMMARY	iv
1. Introduction	1
2. Literature Review	3
3. Research Design and Implementation	6
3.1 Conceptual model	6
3.2 Contents of the survey	8
3.3 Pre-testing the survey	14
3.4 Survey methodology	14
4. Survey Data Description	19
4.1 Survey data cleaning	19
4.2 Survey data about the impact of SmarT Ride on transportation access for underserved individuals	20
4.3 Survey data on SmarT Ride adoption	24
5. Explore Microtransit Adoption	29
5.1 Model selection	29
5.2 Model results	30
6. Discussion and Conclusions	33
6.1 Summary of the findings	33
6.2 Conclusion and policy implications	34
References	36
Data Summary	41
Appendix A. Sacramento Smart Ride Survey	43

List of Tables

Table 1. Variables in model ride-hailing	11
Table 2. Use of SmarT Ride by minority, age, and people with disabilities captured in the survey.....	17
Table 3. Perceived usefulness, perceived ease of use, compatibility, subject norms, self-efficacy, and attitude toward other modes	27
Table 4. Individual and household characteristics.....	28
Table 5. Binary logistic regression model of adoption vs. non-adoption among underserved individuals with SmarT Ride awareness.....	31

List of Figures

Figure 1. Theory of planned behavior hypothesized conceptual model decomposition.....	7
Figure 2. Survey design flow chart.....	9
Figure 3. Distribution of income levels of respondents.....	16
Figure 4. SmaRT Ride service zone distribution.....	20
Figure 5. Responses to “Has using SmaRT Ride improved your ability to get to the places you want to go?”	21
Figure 6. Means of transportation to and from SmaRT Ride pick-up and drop-off locations.....	22
Figure 7. Trip purpose	23
Figure 8. Responses to “At what price would you consider a single trip on SmaRT Ride to be so expensive that you would not consider using it?”	24
Figure 9. Actual SmaRT Ride adoption among underserved individuals who had heard of it	25
Figure 10. Willingness to adopt SmaRT Ride among underserved individuals	26

Exploring Microtransit Adoption and Impacts on Transportation Access of Underserved Populations

EXECUTIVE SUMMARY

Microtransit is a “technology-enabled transit service that typically uses multi-passenger/pooled shuttles or vans to provide on-demand or fixed-schedule services with either dynamic or fixed routing” (SAE. JA3163, 2018). Microtransit services offer on-demand solutions that have the potential to address societal challenges. They can meet the travel needs of transportation-disadvantaged populations such as low-income individuals who cannot afford a car and those unable to drive due to physical limitations or age. Microtransit can complement the transit system by solving issues related to inadequate and inefficient transit services, particularly in low-population or low-job-density areas, and by addressing the first and last-mile problem in transportation networks.

Despite the growing number of microtransit pilot programs across the nation, key questions remain unanswered. These include: how, and to what extent, does microtransit support and improve the well-being of underserved populations? How can barriers to, and facilitators of, microtransit adoption be identified and leveraged to better meet the needs of underserved populations? This research provides insights on these topics by exploring microtransit use and adoption among underserved populations.

This study focuses on underserved populations, including individuals with low income, people with disabilities, older adults, people of color, and non-English speaking immigrants. We examine their opinions, daily travel patterns, and use of SmaRT Ride, a microtransit pilot program operated by the Sacramento Regional Transit (SacRT) in the Sacramento area. From February through May 2024, survey responses were solicited. Sampling methods used to reach underserved communities included obtaining email addresses from existing datasets for online surveys and conducting intercept surveys at food distribution sites associated with food banks, busy transit stops, and other locations recommended by stakeholders such as SacRT. Reaching underserved communities is challenging due to socioeconomic and language barriers. We achieved a sample size of 180 individuals after data cleaning.

Descriptive analysis was employed in this study to examine how underserved individuals benefit from microtransit. Survey responses show that SmaRT Ride has significantly improved transportation access for underserved communities. Over 80% of users said that SmaRT Ride has enhanced their ability to reach desired destinations, with more than a quarter noting significant improvements. This expansion in travel coverage addresses the first mile/last mile challenge, as highlighted by the 27.9% of users who connect to fixed-route transit through SmaRT Ride. Moreover, SmaRT Ride supports access to crucial services and employment opportunities. One-third of users use it to travel to work, 12.6% for school, and 32% access medical services and shopping facilities. SmaRT Ride offers a cost-effective alternative to traditional transportation options with 84.4% of SmaRT ride users indicating that they would be

willing to pay more than the current fare of \$2.50. Additionally, SmaRT Ride promotes ride sharing with 76.1% of users sharing their trip with at least one other passenger, thereby reducing vehicle emissions and supporting environmental sustainability goals. These findings underscore how SmaRT Ride enhances mobility and fosters social inclusion and environmental responsibility within underserved communities.

Factors influencing SmaRT Ride adoption were explored using the theory of planned behavior (TPB) decomposition conceptual model (Taylor and Todd 1995). New technology adoption behavior by users and non-users among transportation disadvantaged individuals who are aware of microtransit options were evaluated. Homeownership, employment status, and frequency of using public transit services were found to significantly affect microtransit use. Homeowners and individuals with part-time employment are more likely to use microtransit while households without employed members are less inclined, possibly due to financial constraints. Regular users of paratransit and bus services show higher microtransit adoption rates, suggesting it has a role as a complementary or alternative transportation option. A positive attitude towards traditional transit services also correlates with higher microtransit adoption, indicating potential synergies between microtransit and existing public transportation systems.

This study contributes to the literature by examining factors influencing microtransit use and adoption among underserved populations with original revealed preference survey data. This study is limited by its small sample size, cross-sectional design, and neglect of potential inter-relationships between variables. Even so, it offers insights for developing more sophisticated models and/or longitudinal studies and it clarifies how SmaRT Ride and similar microtransit initiatives can meet the needs of underserved populations. Further, the findings shed lights on strategies for promoting microtransit adoption in transportation disadvantaged communities.

1. Introduction

Transportation provides access to employment, services, and social relationships. It is essential to one's welfare. However, rapid urban sprawl in the US has resulted in larger distances between residential locations and important destinations and services—such as employment—resulting in automobile dependency (Cowell, 2011). As a result, our society is challenged to meet the basic travel needs of transportation-disadvantaged populations, who are often from low-income households, individuals with disabilities, or older adults. This includes people who cannot afford a car and those who are unable to drive due to physical limitations or age. Despite efforts by policymakers to promote equity in public transit, low levels of mixed-use development, urban sprawl, and dominant cul-de-sac street designs have led to inadequate and inefficient transit services. This is especially the case in rural areas or regions with limited job opportunities. The first and last-mile problem further hinders the use of public transit for people with disabilities and older adults. These difficulties illustrate the importance of analyzing barriers and identifying new services to ease transportation challenges faced by transportation-disadvantaged populations.

Microtransit is one possible strategy for addressing transportation challenges to underserved populations. This technology-enabled on-demand service model can fill gaps where fixed-route services are inefficient or cost-effective, such as in low-density areas or at off-peak hours. Microtransit enhances the rider experience with features like real-time scheduling, flexible routes, and low-cost services. This makes it a better mobility option for underserved individuals compared to traditional fixed-route transit systems. The attractiveness of microtransit to underserved populations has been evidenced by several previous research efforts. A study by Bills and others (2021) indicates that people in suburban areas showed low use of microtransit while people in urban areas, which primarily consist of underserved populations, had the highest usage. Shaheen and others (2017) noted that shared mobility options, including microtransit, carpooling, vanpooling, and ride-splitting, are frequently used by lower-income individuals, minoritized groups, and former public transit riders. This is further supported by a survey from Via, a microtransit provider in Wilson, North Carolina, where 86% of riders do not own a car, 57% have annual incomes below \$25,000, and 62% identify as Black (Bardaka et al., 2024).

Despite its appeal to underserved populations and the growing number of microtransit pilot and longer-running programs across the nation, unaddressed research questions remain. For example, it would be helpful to know how microtransit improves mobility for underserved populations and which transportation modes are utilized by underserved people to access essential services and employment before and after microtransit pilot program implementation. Factors influencing microtransit adoption by—and benefits for—underserved populations have not been adequately represented in previous literature. Few studies have employed inferential analysis to explore microtransit adoption, particularly using revealed choice rather than stated preference data.

Funding sources for microtransit are not always sustainable. To make the case for continued funding, it is crucial to assess mobility benefits to underserved communities and to document the ways that transit access improves well-being. This study aims to address these questions by surveying underserved populations including individuals with low income, people with disabilities, and older adults. Our study area is in the Sacramento, California region. Participants shared information about their attitudes toward, and choice of, SmaRT Ride, a microtransit service operated by SacRT.

The theory of planned behavior (TPB) decomposition model was used as the conceptual basis for this study to guide both survey question design and model development. To reach underserved populations, we drew on data from a previous study on SmaRT Ride adoption in the Sacramento area. We identified those survey participants who are disadvantaged in one or more of the ways noted above and then conducted an online survey among them. Additionally, we administered intercept surveys at key locations serving disadvantaged groups in the Sacramento area, including food banks and transit stops. In this research, descriptive analysis was employed to examine how underserved individuals benefit from microtransit. Binary logistic regression was employed with a broad spectrum of explanatory variables to explore microtransit adoption among underserved individuals. By providing a comprehensive analysis of the impact of microtransit services, this work contributes valuable insights into how these services benefit underserved populations and how to enhance its adoption among underserved individuals.

The results of our research improve our understanding of underserved populations' use of microtransit, identify facilitators of and barriers to its adoption, and assess its benefits through pilot projects in underserved communities. Study findings aim to address Caltrans research needs including Best Practices for Organizational Change in Multimodal Project Development and Delivery and identifying low-income and minority riders' transportation needs. When applied, this information can support transportation equity by ensuring full and fair consideration of underserved populations in transportation planning. This insight into the transportation needs of disadvantaged communities will inform planners by promoting accessibility across a wide range of socio-demographic groups.

2. Literature Review

Literature on microtransit adoption among underserved individuals is limited. To mitigate this, we expanded our search to include studies on factors influencing adoption of mobility on demand services, including microtransit, among transportation-disadvantaged populations. This scope allows for a comprehensive assessment of adoption factors across various innovative transportation modes.

Most previous research highlights potential factors influencing microtransit adoption among the overall population rather than focusing on underserved communities. For example, the socio-demographic and household characteristics were found to be significant in microtransit adoption. Factors like age, physical disabilities, and education level influence the likelihood of using microtransit. Macfarlane and others (2021) found that younger individuals in larger households are more inclined to adopt microtransit, while Wang and others (2015) noted that people with disabilities are less likely to use the service. Another study shows that males, youth, the highly educated, and people already riding transit are more likely to be interested in microtransit (Rossetti et al. 2023). Individual attitudes and level of satisfaction with various travel modes and facilities (e.g., travel time, cost, distance, accessibility, availability, flexibility, comfort, wait time, walk time) are associated with microtransit adoption (Mavrouli, 2020). Additionally, personal habits and commute patterns may hinder adoption, potentially relating to incompatibility of peoples' lifestyles with microtransit (Franco et al. 2020; Mavrouli, 2020). Several studies highlight service availability, ease of app use, and convenient pickup and drop-off locations as key influences on microtransit use. They found that common barriers include limited areas served, inconvenient operating hours, long wait times, and challenges with app functionality or payment systems (Miah et al., 2020; Rudloff and Straub, 2021).

To our knowledge, only a few studies have examined the adoption and use of microtransit among underserved populations. One study shows that, among low-income individuals, males, college graduates, car owners, people with a mobile data plan, and people living in areas with poor transit access have a stronger preference for mobility on demand transit services (Wang et al., 2022). Other studies have explored barriers to microtransit adoption among underserved populations, including its heavy reliance on technology (Shaheen et al., 2017).

Microtransit competes directly with ride-hailing or transportation network companies (TNCs) as shown in a study in Salt Lake County, Utah (Macfarlane et al., 2021). TNCs like Uber and Lyft have almost the same function as microtransit, but have a greater range and passengers are not required to travel with strangers (shared rides). However, TNCs tend to cost more than microtransit. In some instances, transit agencies have partnered with TNCs to provide subsidized first/last mile service or fill other gaps (e.g., Schweiterman and Smith, 2018; Pike and Kazemian 2020).

Microtransit and ride-hailing have the potential to replace one another, so previous research on factors influencing ride-hailing adoption was examined, particularly among underserved populations. According to a study by Correa and others (2017) in New York City, higher taxi/Uber demand is associated with shorter transit access times, longer roadway length, lower

vehicle ownership, higher income, and more job opportunities. White individuals and those from higher-income households are more likely to be frequent users of ridehailing services (Malik et al. 2021). Highly educated individuals and households without children are also more inclined to adopt ridehailing (Alemi et al. 2019). Other research shows that ridehailing services primarily attract people with higher household incomes (Barajas and Brown, 2021; Cats et al., 2022). Jin and others (2019) further cautioned that Uber's impact on improving transportation equity is minimal. Only one analysis in metro Boston found that some low-income individuals will choose TNC trips instead of transit due to faster travel times (Gehrke et al., 2018). Additionally, Pan and Shaheen indicated that lack of cash payment options, high cost, and older adults' discomfort with using smartphone technology are barriers for using ridehailing services (Pan and Shaheen, 2021).

Microtransit not only affects ride-hailing, but it also influences paratransit services, which support citizens with disabilities and mobility challenges and are associated with mobility programs under the Americans with Disabilities Act of 1990 (ADA). Microtransit and paratransit have similar functions in that they typically transport riders closer to their preferred destination than bus routes and can accommodate riders that do not have the ability to drive a car or use active transportation (e.g., those who are unable to walk to access transit). Although paratransit may be an option, the real-time adjustment of microtransit routes and schedules based on demand makes it more appealing. People who are physically limited in their driving ability were found to be more inclined to use microtransit (Xing et al., 2022). Additionally, the Yolo Transportation District requires paratransit services to operate primarily within a three-quarter mile boundary around fixed-route bus services (YoloTD, 2021). Due to this policy, paratransit services are being considered for elimination in areas where microtransit has replaced fixed-route services. However, microtransit may not serve every paratransit rider, particularly elderly riders who may frequently visit healthcare facilities. Additionally, some microtransit pickup locations are at street corners, which may require a short walk that could be challenging for some riders (Miah et al., 2020).

Although microtransit it is not a complete replacement for paratransit, it could still be appealing to certain riders in unpredictable or unplanned situations. As paratransit users are a subpopulation within disadvantaged groups, we reviewed literature to understand what drives these riders' willingness to adopt microtransit. A study exploring factors affecting who would adopt paratransit with real-time information (RTI) technology found that access to a computer with internet, having an annual household income higher than \$25,000, and familiarity with technology were associated with increased interest in RTI technology on paratransit. Access to a personal vehicle decreased interest. Metropolitan areas showed the greatest potential for paratransit growth via RTI technologies (LaMondia et al., 2018). Another study examining the barriers and opportunities for paratransit users revealed that individuals who are not disabled, do not use assistive devices, over age 54, and make frequent healthcare and discretionary trips are more likely to adopt on-demand microtransit services (Miah et al., 2020).

As this research aims to examine a wide range of aspects of microtransit, from accessibility and cost to comparisons with other modes, it was important to review the conclusions others have

drawn with microtransit, ride-hailing, and paratransit research. Although literature on microtransit adoption among underserved populations is sparse, studies on other mobility options shed light on potential factors influencing its adoption.

These studies reveal that individual socio-demographics significantly influence microtransit adoption among underserved populations. Key factors include income, gender, education level, car ownership, physical disability, age, having a bank account, and technology accessibility such as having access to a computer with internet and a smartphone. Additionally, living environment factors such as residing in transit-accessible or metropolitan areas are associated with microtransit adoption. Trip characteristics, including travel time and trip cost, play a role in explaining the choice of microtransit.

In this research, we consider a wide range of potential factors influencing microtransit adoption among underserved populations including attitudes that encompass beliefs, subjective norms, and perceived behavioral control (self-efficacy). Our analysis is based on revealed data which reflects respondents' actual behavior or choices—specifically whether they have adopted microtransit. In contrast, previous studies on microtransit adoption have primarily relied on stated data gathered through respondents' expressed preferences or hypothetical choices (e.g., Wang et al., 2022; LaMondia et al., 2018). This paper aims to address this gap in the literature.

3. Research Design and Implementation

This section covers the design of our survey questions and the methods used to reach potential respondents. We begin by presenting the conceptual model that provides the foundational support for the design of the survey questions and the analyses, followed by an overview of the survey contents. Next, we describe the strategies employed to reach underserved populations and our efforts to distribute the surveys.

3.1 Conceptual model

To model microtransit adoption, the theory of planned behavior (TPB) is an essential starting point. Proposed by Ajzen in 1985, TPB extends the theory of reasoned action (TRA) to address behavioral intention more comprehensively. TPB posits that *attitude, subjective norm, and perceived behavioral control* are determinants of behavior intention. *Attitude* toward behavior refers to how positively or negatively an individual values performing the behavior, shaped by beliefs about the outcomes and attributes associated with the behavior. *Subjective norm*, indicates perceived social pressure to engage or not engage in the behavior, influenced by beliefs about the expectations of important referents. *Perceived behavioral control*, similar to self-efficacy, refers to an individual's perception of their ability to perform the behavior, determined by beliefs about factors that may facilitate or impede the behavior (Ajzen, 1985). TPB also suggests that actual behavior adoption is determined by the behavioral intention.

Given that microtransit is an innovation with new technology in the transit system, an important influential extension of TPB—the Technology Acceptance Model (TAM) is a valuable framework for exploring its adoption among underserved populations (Davis, 1989). TAM is an information systems theory, and it denotes significant relationships between *perceived usefulness, perceived ease of use*, intention and use behavior. *Perceived usefulness* is an individual's perception of how much they can benefit from using a new technology, while *perceived ease of use* is the degree to which an individual believes that using a particular technology requires minimal effort. According to this theory, the adoption of a new technology is determined by evaluating the trade-off between its perceived usefulness and the perceived difficulty of using it (Davis, 1989). Although perceived ease of use does not directly impact actual use behavior, it influences perceived usefulness and the intention to use (Davis, 1993). TAM extends TPB by adding two primary external factors, perceived usefulness and perceived ease of use of technology, as the determinants of the internal attitudes toward the behavior. TAM has been extensively applied in technology adoption studies and to some extent in studies of transportation, especially on autonomous vehicle adoption (e.g., Zhang et al., 2019; Yuen et al., 2021).

Furthermore, Taylor and Todd (1995) proposed a TPB decomposition model, which states that the beliefs including attitudes, subjective norms, and accepted behavioral control are the three most important factors that explain new technology adoption behavior. It further decomposes attitude into three constructs which include relative advantages (i.e., its perceived usefulness, the degree to which an innovation provides benefits), assessments of a product's complexity (,

i.e., its perceived ease of use, the degree to which an innovation is perceived to be difficult to understand, learn, or operate), and *compatibility* with innovation (the degree to which the innovation fits with the potential adopter's existing values, previous experiences, and current needs). In other words, this TPB decomposition model integrates TAM and TRB by decomposing attitude in TPB into a multi-component construct. Figure 1 below illustrates the interactions between these factors in TPB decomposition model as proposed by Taylor and Todd (1995).

This integration of TAM and TRB model was use in this study to provide a more comprehensive theoretical framework for exploring microtransit acceptance. Note that this research is limited by its cross-sectional design and small sample size. Figure 1 presents interactions between the determinants of behavioral intention and behavior. For example, perceived ease of use may directly impact perceived usefulness; attitude is decomposed into three constructs, which influence attitude directly; external factors such as individual socio-demographics exert impacts on behavioral intention by influencing its determinants, e.g., attitude and subjective norm. However, these interactions (presented by dotted links) were not examined in this research, due to the cross-sectional analysis design and small sample size. In this study, perceived usefulness, perceived ease of use, compatibility, attitude, subjective norm, self-efficacy, and individual and household characteristics—including socio-demographics, and transportation disadvantage status—are hypothesized to impact the intention and actual use of microtransit directly. The survey questions (Table 1) were based on this conceptual model and adapted for this research. Additionally, this theory guides the further development of modeling the intention to adopt and the actual adoption of microtransit.

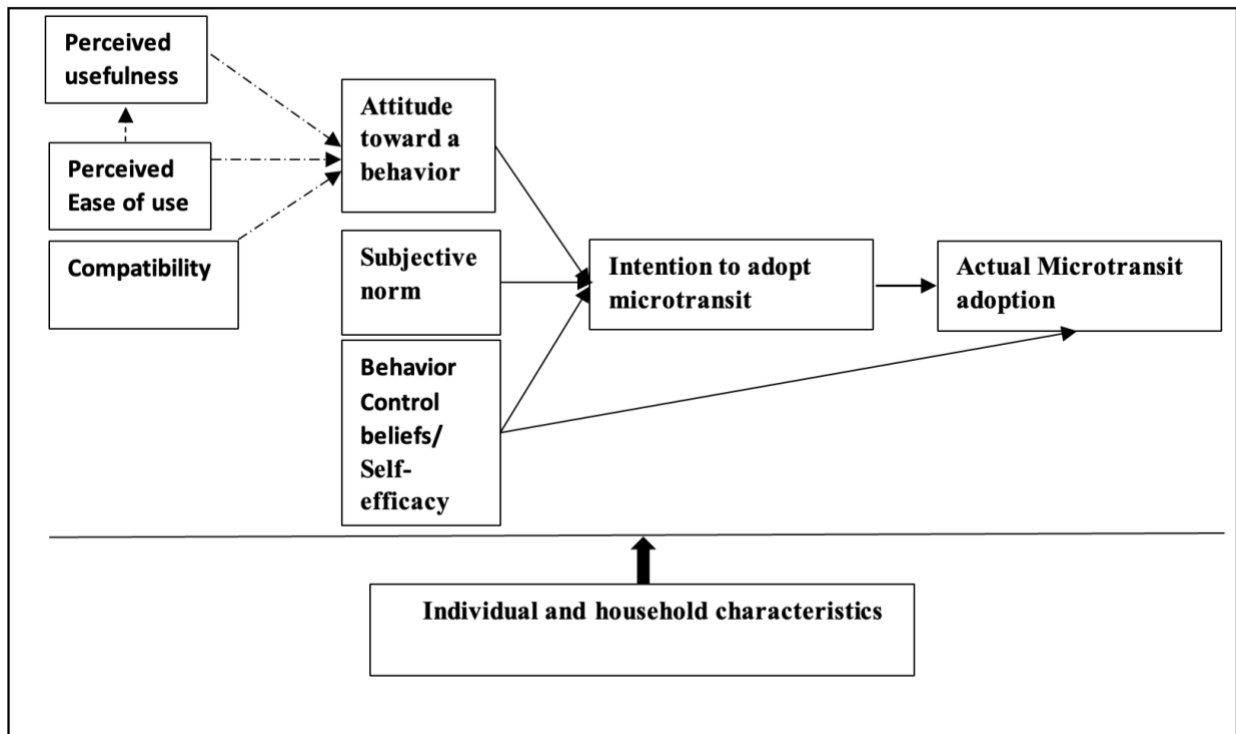


Figure 1. Theory of planned behavior hypothesized conceptual model decomposition.

3.2 Contents of the survey

The details of the survey, including how we planned the logical flow of the survey questions and what specific questions we designed, are introduced in this section. The survey questions focus on SmaRT Ride, a microtransit service operated by SacRT in the Sacramento area. Launched in February 2018, SmaRT Ride currently serves nine zones and is by far the largest microtransit program in the U.S. The survey is available in Appendix A. Sacramento Smart Ride Survey.

3.2.1 Survey Design

We planned the logical flow of the survey questions by deciding on the order of questions and the branching logic and by grouping questions into blocks. The survey flow chart below depicts how respondents progress through the survey.

Due to the focus on transportation behavior of underserved populations in this research, we started by asking some questions to identify how transportation-disadvantaged an individual might be.

Next, we asked screening questions to categorize the respondents into groups: those who had never heard of microtransit, those who had heard of it but never used it, and those who had used it before taking the survey. To reduce barriers from a lack of knowledge about microtransit, a detailed introduction was provided to people who had never used it in the "Introduction and willingness to use SmaRT Ride" block. Questions about attitude toward microtransit and behavioral intentions were asked under the assumption that microtransit services were available at the needed time and location.

We defined the group of people who had used microtransit before taking the survey as SmaRT ride users. For these respondents, we created the "SmaRT Ride User Questions" block, which asked for their attitude and, particularly, detailed information about their most recent SmaRT Ride trips, such as the origin and destination of the trip, the means of transportation they used, and the time taken from the trip origin to the pick-up location and from the drop-off location to the destination. Additionally, we collected information on the trip purpose, in-vehicle time, and other relevant details.

For SmaRT Ride users, we further categorized them into bus, paratransit, and ride-hailing users to compare SmaRT Ride with other transportation modes. Questions about individual and household characteristics were placed at the end of the survey.

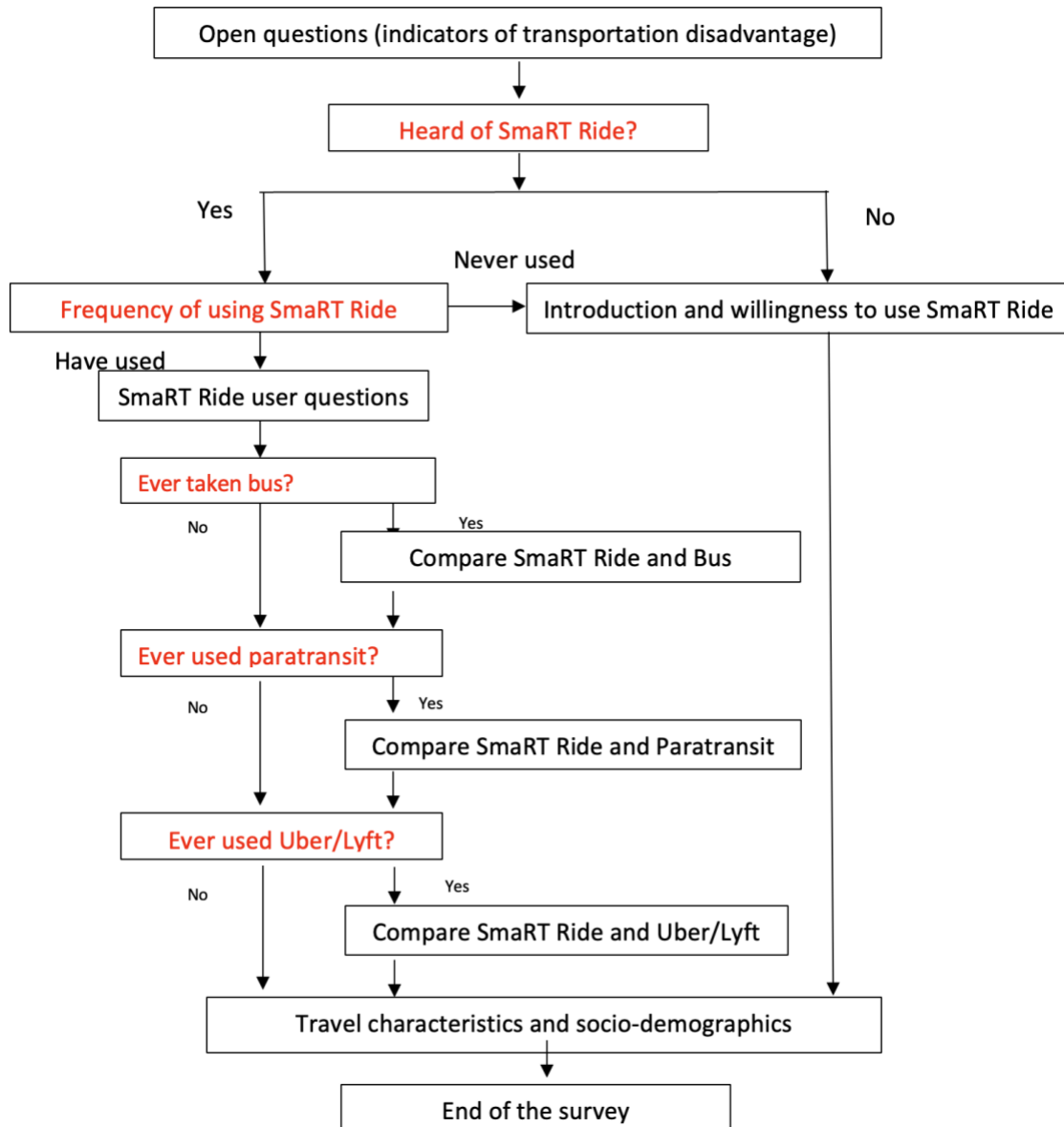


Figure 2. Survey design flow chart.

3.2.2 Important survey questions

The conceptual model guides the survey questions for this research, which are organized into seven groups. The first group focuses on microtransit behaviors, including both the intention to adopt microtransit and actual microtransit adoption. The determinants of behavior (explanatory variables) fall into six additional groups: perceived usefulness, perceived ease of use, social norm, self-efficacy, attitude, and individual and household characteristics. Detailed survey questions for each group are documented in Table 1.

SmaRT Ride behavior

The respondents were asked if they had heard of SmaRT Ride. Those who had were then asked if they had used it before taking the survey. Additionally, SmaRT Ride behavior questions included non-users' intentions to use SmaRT Ride in the future and users' intentions to continue using it.

Perceived usefulness

Different aspects of the perceived usefulness of microtransit were measured, including improved transportation convenience, reduced stress, good value for the cost, and the likelihood of recommending SmaRT Ride to others. The statement "I will recommend/have recommended SmaRT Ride to other people" typically reflects the user's positive evaluation of the technology's usefulness. If users find the technology significantly beneficial, they are more likely to share this positive experience with others.

Perceived ease of use

Perceived ease of use was assessed by measuring agreement with the statement "Using this service will require a lot of mental effort." The higher the score is, the lower the perceived ease of use.

Compatibility

Compatibility was designed to reflect individuals' travel patterns by measuring their daily use of various transportation modes within the last week. We expect alignment of microtransit with adopters' previous experiences and transportation needs would be associated with microtransit adoption.

Subjective norm

Subjective norms were measured by assessing two factors: individuals' agreement with the statements "SmaRT Ride services are good for the environment" and "People I know would have a positive opinion of SmaRT Ride." These two questions aim to measure individuals' perceptions of environmental benefits associated with SmaRT Ride and the social support they anticipate from their peers regarding the service.

Self-efficacy

Self-efficacy was measured by assessing agreement with the statement "I feel confident using SmaRT Ride."

Attitude

Questions about attitude include feelings toward microtransit, such as agreement with the statement, "I like the concept of SmaRT Ride," as well as attitudes toward other transportation modes, such as driving, ride-hailing, transit, biking, and walking. Additionally, we assessed opinions about travel time and travel cost, which relate to an individual's perceptions of the use of SmaRT Ride.

Individual and household characteristics

These questions covered an individual's socio-demographics, such as age, gender, education level, race, and annual household income. Importantly, to assess how transportation-disadvantaged an individual is, we designed survey questions to measure various underlying indicators, following the US Department of Transportation's methodology for defining Transportation Disadvantaged Census Tracts (Historically Disadvantaged Communities). The Transportation Insecurity indicators include primary earners in the household with a commuting time greater than 30 minutes, having no cars, home locations not supportive of walking, and other factors. (US Department of Transportation, 2023).

Table 1. Variables in model ride-hailing.

Variable name	%/mean (standard deviation)*	Description
<i>Intention to adopt microtransit or actual microtransit adoption</i>		
SmaRT Ride use	69.40%	1=I have used SmaRT Ride in the past; 0= I have never used SmaRT Ride.
<i>Perceived Usefulness</i>		
Improve Transportation	3.9 (1.2)	Average agreement that "SmaRT Ride will improve/improved my ability to get around conveniently" on a 5-point scale.**
Reduce Stress	3.8 (1.2)	Average agreement that "SmaRT Ride will reduce/reduced my transportation stress." Same scale as above.
Good Value	3.9 (1.2)	Agreement that "SmaRT Ride provides good value for the cost." Same scale as above.
Recommend	3.8 (1.1)	Agreement that "I will recommend/have recommended SmaRT Ride to other people." Same scale as above.
<i>Perceived Ease of Use</i>		
Mental Effort	3.1 (1.3)	Agreement that "Using this service will require/requires a lot of mental effort." Same scale as above.

Variable name	%/mean (standard deviation)*	Description
<i>Compatibility</i>		
Drive Frequency	2.1 (1.4)	Thinking back to last week, and the places you went and how you got there; how often did you drive alone? 1=Never; 2=Less than once last week; 3=1-2 days last week; 4=3-4 days last week; 5=5 or more days last week.
Lyft/Uber Frequency	2.2 (1.3)	Thinking back to last week, and the places you went and how you got there; how often did you use Lyft/Uber? Same scale as above.
Bus Frequency	3.5 (1.9)	Thinking back to last week, and the places you went and how you got there; how often did you take bus? Same scale as above.
Light rail Frequency	2.1(1.4)	Thinking back to last week, and the places you went and how you got there; how often did you take light rail? Same scale as above.
Paratransit Frequency	1.8 (1.4)	Thinking back to last week, and the places you went and how you got there; how often did you use paratransit? Same scale as above.
Bike frequency	2.1 (1.4)	Thinking back to last week, and the places you went and how you got there; how often did you bike? Same scale as above.
Walk Frequency	3.2 (1.5)	Thinking back to last week, and the places you went and how you got there; how often did you walk? Same scale as above.
<i>Subjective Norms</i>		
Good Environment	4.0 (1.1)	Agreement that “SmaRT Ride services are good for the environment.” Same scale as above.
Social Support	3.7 (1.2)	Agreement that “People I know would have a positive opinion of SmaRT Ride.” Same scale as above.
<i>Self-efficacy</i>		
Feel Confident	3.9 (1.2)	Agreement that “I feel confident using SmaRT Ride.” Same scale as above.
<i>Attitude toward the concept of microtransit, travel, and other means of transportation mode</i>		
Like SmaRT Ride	4.1 (1.1)	Agreement that “I like the concept of SmaRT Ride services,” on a 5-point scale.**
Travel Waste Time	3.1 (1.1)	Agreement that “Travel time is wasted time,” on a 5-point scale.**
Travel Cost	3.9 (1.1)	Agreement that “The cost of travel affects the choices I make about my daily travel,” on a 5-point scale.**
Like Driving	3.2 (1.4)	Agreement that “I like driving,” on a 5-point scale.**
Like Ride-hailing	3.3 (1.2)	Agreement that “I like ride-hailing services (e.g., Uber/Lyft),” on a 5-point scale.**
Like Transit	3.6 (1.2)	Agreement that “I like taking buses, light rail, or trains,” on a 5-point scale.**
Like Biking	3.4 (1.3)	Agreement that “I like riding a bike,” on a 5-point scale.**
Like Walking	3.6 (1.3)	Agreement that “I like walking,” on a 5-point scale.**

Variable name	%/mean (standard deviation)*	Description
<i>Individual and household characteristics</i>		
Age	43.9 (16.8)	Age in years
Female	54.0%	1=Female, 0=Male.
Education Level	3.7 (1.9)	The highest level of education. 1= Less than grade/high school; 2= High school diploma or equivalent, 3= Some college or trade/technical/vocational training, 4= Bachelor's degree(s), 5= Graduate degree(s), e.g., MS, PhD, MBA or professional degree(s), e.g., JD, MD, DDS.
White	54.1%	1=white, not of Hispanic origin, 0=all other races.
Household Size	2.9 (2.4)	The number of persons living in the household.
Kids Transit Frequency	1.6 (2.5)	How often do your children aged 18 or under ride any of the SacRT transit, including buses, light rail, and SmarT Ride for FREE through RydeFreeRT Program? 0= Household without children aged 18 or under; 1=Never; 2=They/She/He used in the past but do/does not use it now; 3=Less than once per month; 4=Less than once per week; 5=1-2 days per week; 6= 3-4 days per week; 7=5 or more days per week.
Paratransit Certify	24.4%	Have you been certified to use paratransit (i.e., SacRT Go)? 1=Yes, for my age or because of my disability; 0=No.
Income	3.6 (2.1)	The annual household income level. 1= Less than \$10,000; 2= \$10,000-14,999; 3=15,000-24,999; 4=\$25,000-34,999; 5=\$35,000-49,999; 6=\$50,000-74,999; 7=\$75,000-99,999; 8=\$100,000-124,999; 9=\$125,000-149,999; 10= \$150,000-174,999; 11=\$175,000-199,999; 12=\$200,000 and up.
No One Works	20.9%	1= No one works in my household. 0=No.
Employed	64.1%	1=Full time/part time employment/Intern/ Self-employment; 0=Unemployed / Retired / Unable work.
Part Time Employment	13.9%	1=Part time employment; 0=Full-time employment, self-employment, or not employed, etc.
Bank Account	56.1%	Do you have a bank account? 1=Yes; 0=No.
Driver License	59.1%	Do you have a Driver's license? 1=Yes; 0=No.
Transportation Disadvantage	3.7 (2.1)	How often are you unable to get to where you need to go because of a lack of transportation options / choices to get there? 1=Never; 2=Rarely or infrequently; 3=Several times a year; 4=About once a month; 5= More than once a month; 6=About once a week; 7=Several times a week; 8=Once a day or more often.
Primary Earner Commute Time	2.7 (0.9)	About how much time does the primary earner in your household spend on a one-way trip to the place of employment? 1=Less than 10 minutes; 2=10-29 minutes; 3= 30-60 minutes; 4=More than an hour.

Variable name	%/mean (standard deviation)*	Description
Have Car	37.10%	Do you have access to a car for your transportation needs? 1= Yes; 0=No.
Have Health Insurance	78.9%	Do you have health insurance? 1=Yes; 0=No.
Own Home	27.1%	Do you own your home? 1=Yes; 0=No.
Walk Time to Grocery	2.9 (1.4)	On average, how long would it take you to walk to your preferred grocery store. 1= Within 10 minutes; 2=10-19 minutes; 3=20-29 minutes; 4=30minutes-1 hour; 5=More than 1 hour.
Walk Time to Transit Stop	2.2 (1.3)	On average, how long would it take you to walk to the closest bus or light rail stop. Same scale as above.
Walk Time to Post Office	3.3 (1.3)	On average, how long would it take you to walk to Post office. Same scale as above.
Walk Time to Pharmacy	3.1(1.4)	On average, how long would it take you to walk to pharmacy. Same scale as above.
Walk Time to Gym	3.3(1.5)	On average, how long would it take you to walk to Gym. Same scale as above.
Walk Time to Park	2.7 (1.5)	On average, how long would it take you to walk to Park/Recreation Area, Same scale as above.

Note: *% represents the binary variables with a value of 1; mean (standard deviation) indicates the mean and standard deviation for continuous variables. Note that categorical variables are treated as continuous in this table. **1=Strongly disagree, 2=Disagree, 3=Neutral, 4=Agree, 5=Strongly agree.

3.3 Pre-testing the survey

To pretest our survey questions, we followed a comprehensive approach to ensure their quality and relevance. First, we consulted with stakeholders, including managers from SacRT, CARB, and Caltrans, as well as experts and insiders in the field, to gather their insights and recommendations for the survey. Second, we sought feedback from previous focus group participants, both SmaRT Ride users and non-users and gave them a \$10 Amazon gift card as incentive. Their practical experiences provided valuable perspectives on the survey content. Finally, we engaged academic researchers from the Transit Research Center at the UC Davis Institute of Transportation Studies to review and critique the survey. This multifaceted pretesting helped us refine the survey questions, ensuring they were clear, effective, and aligned with the research objectives.

3.4 Survey methodology

Reaching underserved communities, especially with surveys, is challenging due to socioeconomic and language barriers. To improve our sample and gather maximize responses, we used contacts from existing datasets, worked with local food banks, and identified transit stops and other intercept survey site recommendations from stakeholders such as SacRT. We

also used multiple communication channels for recruitment, including online, in-person, and telephone/text messaging.

3.4.1 Online survey, phone/text message survey based on existing dataset

To reach underserved populations, the research relied on data collected in 2021, through an online survey of transit users. This dataset was compiled with help from SacRT, which did the following to recruit respondents:

- sent a Center Pop-Up message through the SmarT Ride phone app when riders entered the app;
- pushed it through social media such as Facebook, Twitter, and the Nextdoor Neighborhood platform;
- emailed the survey information (brief introduction, the links, and the QR code) to all riders who have registered in SacRT; and
- placed the survey information on the SacRT website, and provided information about it in SacRT's September 2021 riders' newsletter (print, email, and online).

Incentives were offered to increase the survey response rate and people were asked to leave their contact information for the chance of winning a raffle. The final sample included 997 respondents, 79.5% of whom had used SmarT Ride (Xing et al., 2022). In this survey, socio-demographics such as age, gender, education level, race, language spoken at home, and individual's physical conditions that limit his/her/their ability to walk, bicycle, drive, and/or take transit were self-reported.

Based on the responses to the previous survey, individuals from underserved groups were identified in the sample and were contacted to participate in the present study. The following section describes the characteristics used in determining which respondents to the previous survey are likely underserved.

Given the definition of underserved populations, which includes low-income and minority, as well as other demographic groups that face mobility challenges such as the elderly and people with disabilities, the research team contacted four categories of people: low-income people, minorities, people with disabilities, and older adults. Note that minorities refer to people of color and people from non-English speaking households as well to capture various ethnicities that encompass culture, nationality, and religion. The team first set up criteria to identify individuals in each category. For instance, according to the 2021 State Income Limits published by the Department of Housing and Community Development (HCD 2021) for a single family, the area annual median household income of Sacramento County is \$63,750 and a household income less than \$50,750 is categorized as low-income. Therefore, the annual household income level of \$50,000 serves as the criteria used to select low-income people from the dataset (Figure 3).

An individual is identified as a minority if they fall into one or more of the following categories: Black or African America, Hispanic or Latino, Asian America, American Indian and Alaskan

Native, or Native Hawaiian and Other Pacific Islander (Federal Highway Administration, 2015). In the existing survey, some respondents reported their race, which fall in these categories for minorities (Table 2). Additionally, people from non-English speaking households were captured: 10% of the respondents in the existing data reported that the primary language they speak at home was non-English such as Spanish, Chinese, Russian, Vietnamese, Hmong, and Nepali. Although the sample sizes for these groups are very small, they are complementary to the category of minority. The other two categories, older adults and people with disabilities, were also captured in the existing sample (Table 2) and were reached by the contact information they provided.

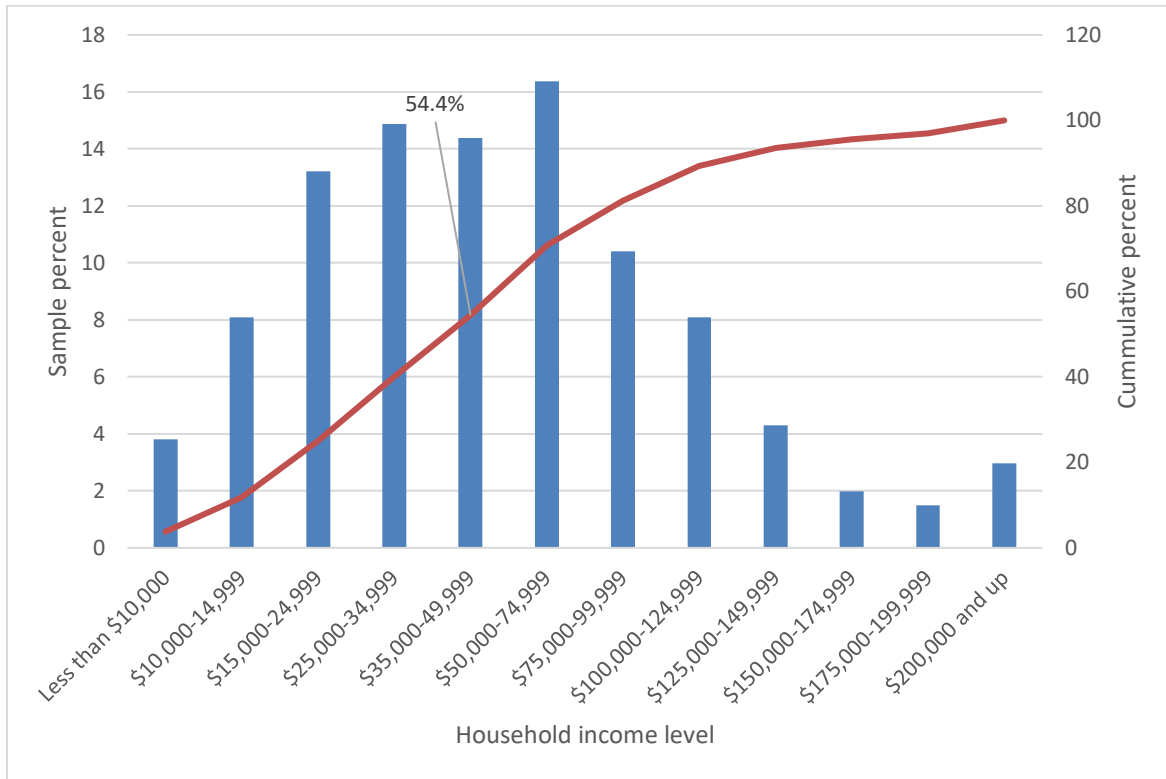


Figure 3. Distribution of income levels of respondents.

Table 2. Use of SmarT Ride by minority, age, and people with disabilities captured in the survey.

	Total	Non-users	Users	Phone number provided*	Email address provide
<i>Minority: People of color</i>				78	200
Hispanic American/Latino	59	13	42		
Black/African American	76	14	57		
Asian/Pacific Islander	67	19	43		
American Indian/Alaskan native	84	7	75		
<i>Minority: Primary language spoken at home</i>					
Spanish	12	1	11		
Chinese	6	0	3		
Russian	7	1	3		
Vietnamese	6	0	3		
Hmong	3	1	2		
Nepali	2	0	2		
<i>Users with annual income <=\$50,000</i>	393	69	324	172	371
<i>Age 65 and over (older adults)</i>	63	24	36	13	63
<i>Having physical conditions that limit ability to walk, bike, drive, or use public transit</i>	289	53	232	117	289

*Some respondents provided both phone number and email address.

Based on the criteria above, our final email recruitment list included a total of 446 low-income individuals, minorities, older adults, and people with disabilities who provided their contact information. We sent out the survey invitation emails with the online survey link through Qualtrics, which allows us to keep track of responses. However, 118 email addresses bounced back and failed to be delivered. We accepted responses from February until the end of May 2024. Only 40 valid previous participants who received our survey invitation responded to the survey, resulting in a response rate of about 12%. Additionally, approximately 50 other participants were referred by these respondents.

We also attempted phone call surveys based on a list of previous contacts, including low-income individuals, minorities, older adults, and people with physical conditions limiting their ability to walk, bike, drive, or use public transit. None of the people we called responded to the phone calls. Text messages were also tried to reach more people, but the response rate was very low, achieving less than 1%.

3.4.2 Intercept survey

To ensure a sufficient and a representative sample, we conducted intercept surveys to recruit more respondents. To determine the locations to use, we consulted our stakeholders about potential sites where we might encounter more underserved populations. For example, SacRT

recommended transit stops such as the 16th Street Station in Downtown Sacramento and Florin Town Centre in the Florin/Gerber area. The 16th St Light Rail is a pivotal connection for riders transferring between the Gold and Blue Lines, while Florin Town Centre is a hub for many South Sacramento bus routes. We also did intercept surveys at sites of service organizations, such as the downtown branch of the Sacramento Public Library and grocery stores in low-income communities (e.g., Rancho San Miguel Markets). Second, we searched for food banks through CalFresh, known federally as the Supplemental Nutrition Assistance Program (SNAP) and previously as Food Stamps, which helps many older adults and young families in California pay for food. CalFresh provides a website with the locations and schedules for food distribution by various organizations in every county throughout the state. We focused on SmarT Ride service zones with higher percentages of underserved communities, specifically downtown Sacramento, Gerber, and Franklin. Initial efforts included contacting local food banks including River City Food Bank, Promise Land Ministers, and Bridge Network, and conducting site visits during food distribution times.

This multi-faceted approach aimed to accommodate different preferences and access levels within the underserved populations. It is notable that we conducted intercept surveys with students working in pairs at these locations at different times on weekdays to ensure we captured a diverse range of underserved individuals. For example, two students conducted intercept surveys at the River City Food Bank during food distribution time from 10 AM to 12 PM on Thursday (5/9/2024). Additionally, two students went to Rancho San Miguel Markets and the 16th Street stop to conduct intercept surveys from 6 PM to 8 PM on Tuesday (5/28/2024). We prioritized food distribution events over transit stops or other sites due to higher efficiency in gathering responses. As a result, we achieved 76 responses from the intercept surveys conducted at various sites, with an additional 12 participants responding online as referrals from those surveyed.

4. Survey Data Description

For text message recruitment, we sent survey information via text, with links to the online survey. For intercept surveys, we provided a QR code or a direct online survey link to those willing to respond, assisting them in accessing the survey and waiting for their responses without interruption. Although data collected through different methods may vary in quality—intercept surveys often yield higher quality data as respondents are engaged on the spot and can clarify any questions. However, the way people completed the surveys were similar, whether recruited by intercept, text, or email: only a few respondents to intercept recruitment asked questions while completing the survey and most used the online survey. Therefore, we combined the data from the different survey methods, as the overall methodology and approach were consistent across the groups.

4.1 Survey data cleaning

We cleaned the survey data to prepare it for further analysis. After removing suspicious responses by survey bots, incomplete records, and responses by speeders who rush to finish survey questions with little effort, we achieved a valid sample size of 180 after all data cleaning. Even so, this sample still includes observations with missing data because we kept as many answers as possible for each respondent.

4.1.1 Suspicious responses

After sending out the email invitations, we received many suspicious responses that may have come from survey bots. For example, nonexistent home locations were provided to the question of “Where do you live? Or please tell us the closest intersection to your home location.” Some records present identical start and end times for completing the survey. Despite a survey question that was designed to identify survey bots, we continued to receive suspicious responses. Although the initial dataset presented over 900 responses at the end of May, after data cleaning, only 180 of them were valid.

4.1.2 Incomplete records

Some respondents skipped answers to certain survey questions. We removed respondents who left more than 30% of the survey questions unanswered. However, we retained responses with some missing data to keep as many records as possible and increase the sample size.

4.1.3 Respondents speeding through survey

A variable that recorded the time that a respondent took to finish the survey was used to identify speeders, or respondents who rush to finish the survey with minimal effort in answering questions. Our researchers pretested the survey and found that a respondent in the simplest situation, i.e., someone who has never heard of SmarT Ride, takes about 2-15 minutes to complete the survey. In contrast, respondents who are SmarT Ride users take more than 20 minutes. Therefore, we screened out speeders who completed the survey in less than 2 minutes.

4.2 Survey data about the impact of SmaRT Ride on transportation access for underserved individuals

The final dataset includes 84 SmaRT Ride users. This small sample size reflects the challenges of reaching underserved populations. While there are no census data to validate the representativeness of the sample, the descriptive analysis of these individuals provides valuable information about this specific underrepresented subpopulation, helping to guide further research.

The survey began by asking respondents general questions about their use of SmaRT Ride. It then focused on the most recent SmaRT Ride trip reported by the respondents to capture a random instance of microtransit use by these underserved individuals. The details of the most recent trip included the service zone where the trip occurred, the transportation mode and amount of time a user took to get to the SmaRT Ride pick-up location, wait time, in-vehicle time, whether someone accompanied the respondent, whether the ride was shared with other passengers, and the transportation mode and amount of time a user took to get to their destination from the drop-off location. For example, the following figure shows the service zone where the most recent SmaRT Ride trip occurred. Higher percentages of users rode SmaRT Ride in the Sacramento Downtown and Franklin-South Sacramento service zones, primarily because intercept surveys were conducted in these areas with higher concentrations of low-income communities.

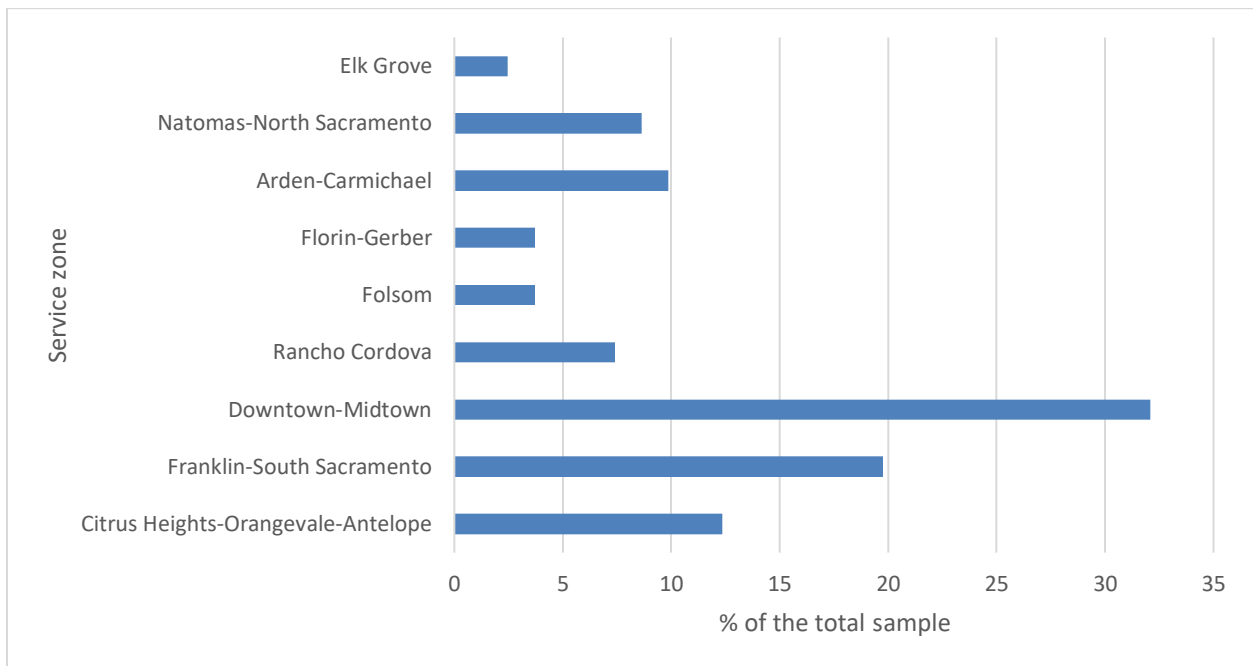


Figure 4. SmaRT Ride service zone distribution (n=81).

4.2.1 *SmaRT Ride improved access to transportation*

When evaluating responses to our survey questions, we focused on the influence of SmaRT Ride on access to transportation. To assess the impact of SmaRT Ride use, we included a question asking, “Has using SmaRT Ride improved your ability to get to the places you want to go?” The figure shows that over 80% of respondents agree SmaRT Ride has slightly, moderately, or significantly improved their transportation. Notably, 26% of respondents believe it has significantly improved their transportation.

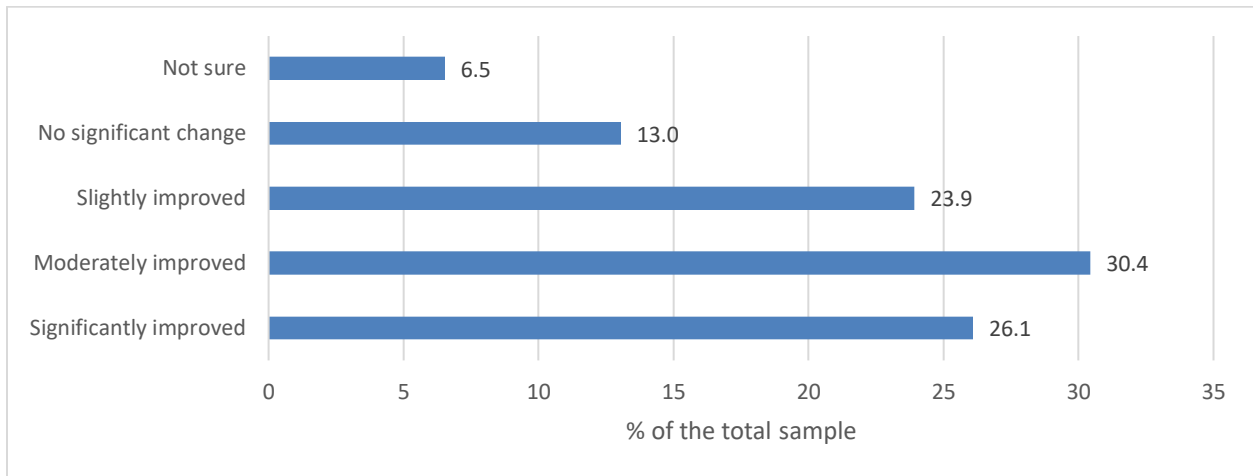


Figure 5. Responses to “Has using SmaRT Ride improved your ability to get to the places you want to go?” (n=110).

Users were asked about their means of transportation to the SmaRT Ride pick-up locations and from the drop-off locations to their destinations for their most recent SmaRT Ride trip. The data show that, while most people walked to these locations, about 20% of users took a bus or light rail to the pick-up locations and 15% used transit to get to their destinations.

Combining responses to the two questions above, we found that 27.9% of users either took transit to pick-up locations or from drop-off locations to their destinations. This indicates that more than one-fourth of SmaRT Riders use SmaRT Ride to connect to fixed-route transit. For these users, microtransit addresses the first- and last-mile problem, making it easier to connect to fixed-route transit services and enhancing overall accessibility.

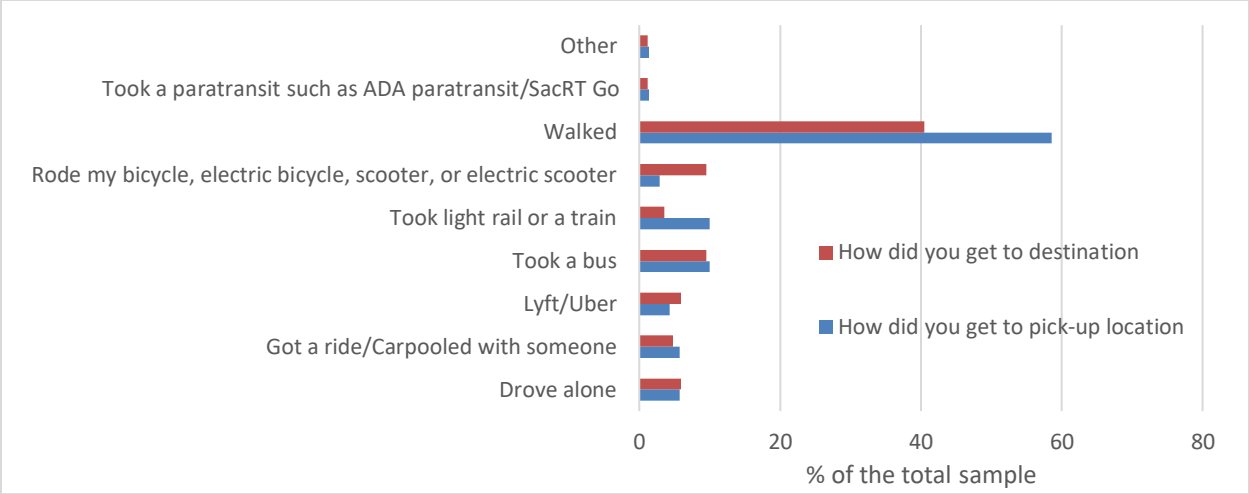


Figure 6. Means of transportation to and from SmART Ride pick-up and drop-off locations (n=66).

4.2.2 SmART Ride helps access to jobs and services

Improved transportation access can significantly connect underserved populations to job opportunities and essential services thereby contributing to overall wellbeing and promoting enhanced social inclusion. Based on the responses regarding their trip purposes, one-third of the respondents used SmART Ride for work, with an additional 12.6% using it for education purposes. Additionally, over 10% of users accessed medical services via SmART Ride, and 20% used it for shopping.

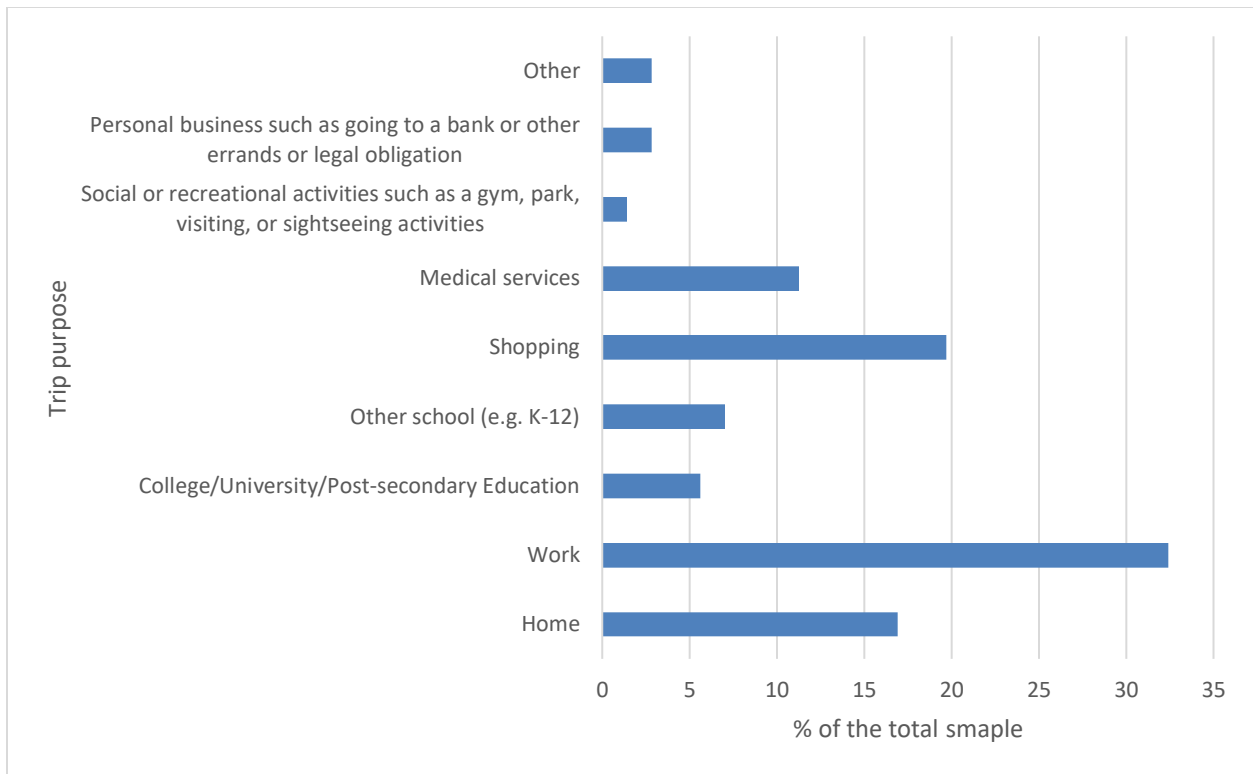


Figure 7. Trip purpose (n=71).

4.2.3 SmarT Ride offers affordable options to underserved populations

The question, “At what price would you consider a single trip on SmarT Ride to be so expensive that you would not consider using it?” was designed to gauge willingness to pay for SmarT Ride among underserved individuals. Their responses indicate that 84.4% of users would be willing to pay a price higher than the current fare, which is \$2.50 USD. Therefore, SmarT Ride can offer cost-effective alternatives to car ownership or traditional taxi/ride-hailing services, which can be a significant expense for low-income individuals.

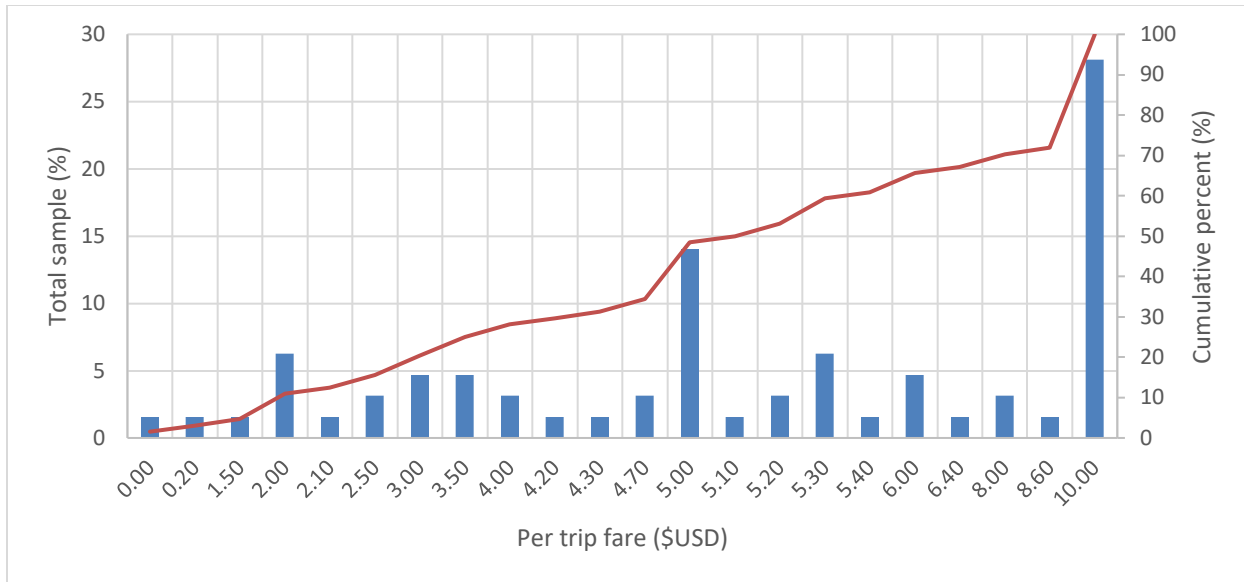


Figure 8. Responses to “At what price would you consider a single trip on SmarT Ride to be so expensive that you would not consider using it?” (n=64).

4.2.4 SmarT Ride facilitates ride sharing

According to the responses to the survey question, "How many passengers (excluding yourself) did you share the SmarT Ride shuttle with during the trip?" 76.1% of users reported that they shared the SmarT Ride shuttle with at least one other passenger during their most recent ride. This implies that ride sharing is a common practice among SmarT Ride users. In contrast, a high percentage of one-passenger trips in other microtransit pilots were found. About half of the trips were one-passenger trips for the microtransit pilot program operated by the Los Angeles County Metropolitan Transportation Authority (Linton, 2023).

Microtransit trips having two or more passengers only accounted for about 10% of total trips in Montgomery County, Maryland (Montgomery County Department of Transportation, 2021). The higher percentage of microtransit trips with two or more passengers in the Sacramento area may be attributed to policies such as free rides for youth (grades TK-12) with a valid RydeFreeRT pass and for groups of five or more.

In summary, survey responses indicate that SmarT Ride has made a significant impact on improving transportation access for underserved individuals by expanding travel coverage. It complements the transit system by connecting fixed-route transit. Further, SmarT Ride plays an important role in providing access to essential services and job opportunities. Economically, the service offers a cost-effective alternative to other transportation modes.

4.3 Survey data on SmarT Ride adoption

In this section, we present survey data related to behavioral intention, actual microtransit adoption and factors that may influence the adoption of SmarT Ride. These factors include perceived usefulness, perceived ease of use, subjective norms, social support, and individual

and household characteristics. This descriptive analysis will be used for further exploration through modeling in this paper.

4.3.1 Behavior intention and actual microtransit adoption

To measure underserved individuals' intention to adopt microtransit and compare this to their actual adoption of it, we asked them to report whether they had heard about SmaRT Ride prior to taking the survey. Individuals who had never heard of SmaRT Ride were screened out by this question. Those who had heard of it were then asked if they had used it before taking the survey. Based on this screening question, respondents were separated into two groups: "users" who had used SmaRT Ride and "non-users" who had never used it.

To explore actual microtransit adoption among underserved individuals who had heard of SmaRT Ride, a dichotomous dependent variable was defined as having used SmaRT Ride in the past versus never using SmaRT Ride for those who had heard of it before taking the survey. Our survey data show that, despite being aware of SmaRT Ride, about one-third of these transportation-underserved individuals had never used it before (Figure 9).

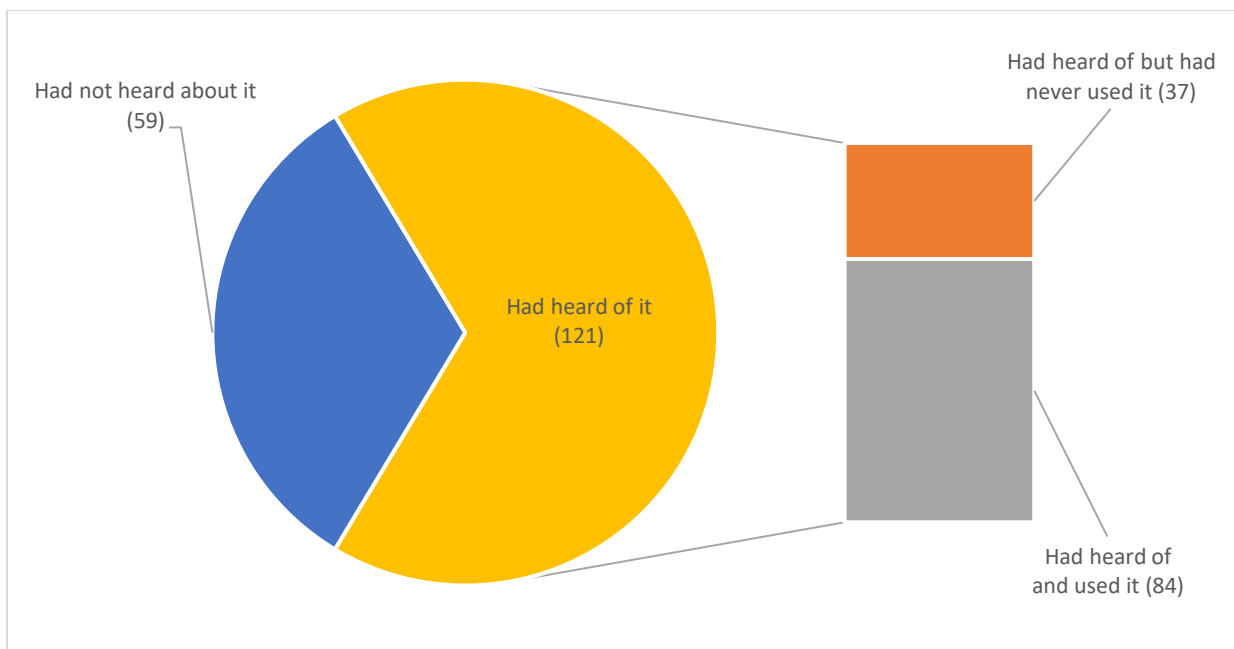


Figure 9. Actual SmaRT Ride adoption among underserved individuals who had heard of it (n=180).

We then focused on individuals who had not heard of, or who had never used, SmaRT Ride. Recognizing their potential lack of knowledge about microtransit, we provided them with detailed information about SmaRT Ride. We then assessed their willingness to use it in the future based on their responses, categorized into five levels: 1 = Definitely not, 2 = Probably not, 3 = Might or might not, 4 = Probably yes, and 5 = Definitely yes. The data show that about two-thirds of individuals in our sample indicated they would probably or definitely try it in the future (Figure 10).

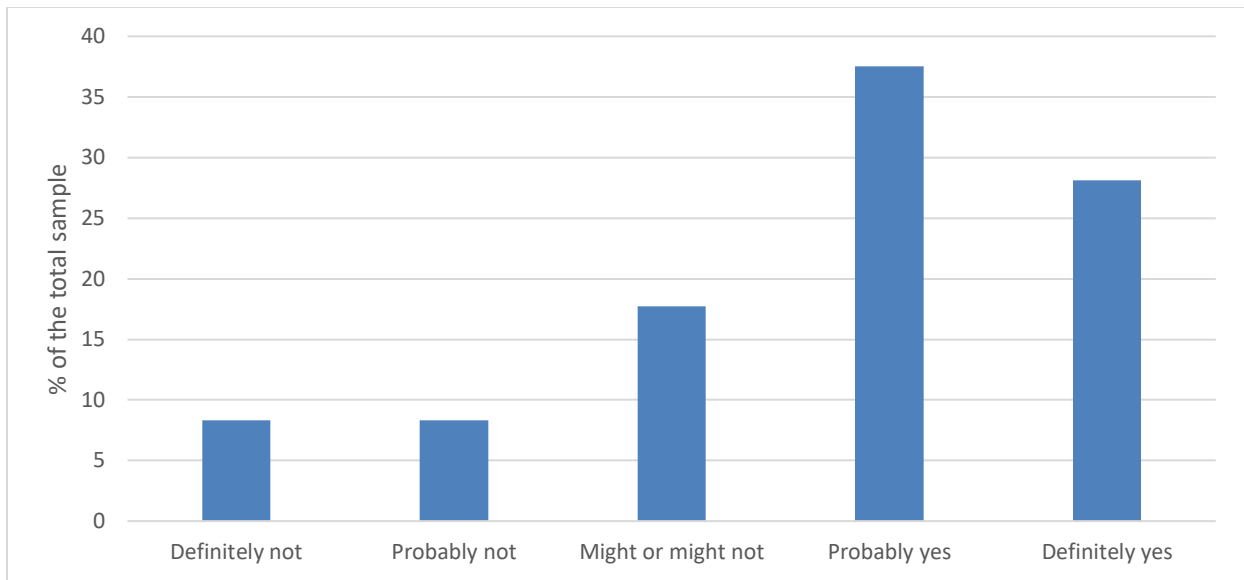


Figure 10. Willingness to adopt Smart Ride among underserved individuals (n=96).

4.3.2 Perceived usefulness, perceived ease of use, compatibility, subject norms, self-efficacy and attitude

The attitudes that may influence Smart Ride adoption include a generally positive perception of its usefulness in improving the convenience of daily transportation (64.8%), reducing stress (62.9%), being a good value for the cost (65.4%), and would recommend it (64.5%). Ease of use is favorable, with only 39.8% agreeing or strongly agreeing that “Using this service will require a lot of mental effort.” Social factors play a role, with 70.0% believing Smart Ride is good for the environment and 56.0% feeling social support for using it. Confidence in using Smart Ride is moderate, with 60.7% feeling confident. Respondents’ travel patterns, which measure the compatibility of microtransit with lifestyle, show that many microtransit riders are frequent bus and light rail users, with 37.95% and 29.2% of them taking buses and light rails five days or more, respectively, within the last week. Similarly, the percentages of people who bike or walk frequently are also high, reflecting the most often-used transportation modes among underserved individuals.

Regarding attitudes toward various transportation modes, 47.9% like the concept of Smart Ride. Concerns about travel time and cost are evident, with 39.0% seeing travel as a waste of time and 75.5% are concerned about travel costs. For these underserved individuals, it appears that more people have a favorable attitude towards transit and walking. Specifically, 60.1% like transit and 61.0% like walking. This indicates a higher preference for these modes of transportation compared to other means of transportation such as driving (45.6%) and ride-hailing (47.2%).

Table 3. Perceived usefulness, perceived ease of use, compatibility, subject norms, self-efficacy, and attitude toward other modes.

	Value	Percent	N
<i>Perceived Usefulness</i>			
Improve Transportation	Agree or strongly agree	64.8	162
Reduce Stress	Agree or strongly agree	62.9	162
Good Value	Agree or strongly agree	65.4	162
Recommend	Agree or strongly agree	64.5	158
<i>Perceived Ease of Use</i>			
Mental Effort	Agree or strongly agree	39.8	161
<i>Subjective Norms</i>			
Good Environment	Agree or strongly agree	70.0	167
Social Support	Agree or strongly agree	56.0	159
<i>Self-efficacy</i>			
Feel Confident	Agree or strongly agree	60.7	158
<i>Compatibility</i>			
Drive Frequency	5 or more days last week	6.8	176
Lyft/Uber Frequency	5 or more days last week	8.4	167
Bus Frequency	5 or more days last week	37.9	161
Light rail Frequency	5 or more days last week	29.2	89
Paratransit Frequency	5 or more days last week	3.2	157
Bike frequency	5 or more days last week	11.4	88
Walk Frequency	5 or more days last week	31.8	88
<i>Attitude toward the concept of microtransit, travel, and other means of transportation mode</i>			
Like SmaRT Ride	Agree or strongly agree	47.9	148
Travel Waste Time	Agree or strongly agree	39.0	154
Travel Cost	Agree or strongly agree	75.5	151
Like Driving	Agree or strongly agree	45.6	155
Like Ride-hailing	Agree or strongly agree	47.2	142
Like Transit	Agree or strongly agree	60.1	148
Like Biking	Agree or strongly agree	54.3	140
Like Walking	Agree or strongly agree	61.0	149

4.3.3 Overview of individual and household characteristics and transportation disadvantaged status

Individuals surveyed in our study are primarily low-income. A significant portion of households do not own a car or home and a high percentage of respondents lack higher education and employment, relative to census data for Sacramento County.

Many respondents face transportation disadvantages. These include limited car ownership and long commute times for primary earners in their households. Access to essential amenities like grocery stores, transit stops, and parks is relatively better, as many respondents can reach these within 30 minutes on foot. It's possible that lack of car ownership has influenced these individuals to live closer to essential amenities. Since only 37.1% of surveyed individuals own a car, those without cars might choose to reside in areas where they can easily access grocery stores, transit stops, and parks by walking. This proximity reduces their dependence on personal vehicles and helps them meet their daily needs more conveniently.

Table 4. Individual and household characteristics.

Category	Value	Percent	N	Census data (%)
Gender	Female	54.0	130	51.0*
Age range	18-64	86.0	157	58.1
	65+	14.0		15.4
Household income	Less than \$50,000	81.9	160	28.3
Race	American Indian or Alaskan Native	6.1	148	4.7
	Asian or Pacific Islander	6.8		17.9
	Black or African American	17.6		9.2
	Hispanic	7.4		23.6
	White or Caucasian	54.1		41.0
	Multiple ethnicity	8.1		6.5
	Education level	Below Bachelor's degree	73.1	160
Employment status	Employed	35.9	153	60.2
Transportation Disadvantage	Never/Rarely/Infrequently	38.2	178	
Primary Earner Commute Time	>30minutes	48.5	101	
Have Car	Yes	37.1	178	91.7**
Have Health Insurance	Yes	78.9	175	94.8***
Own Home	Yes	27.1	177	58.5****
Walk Time to Grocery	within 30 minutes	63.1	176	
Walk Time to Transit Stop	within 30 minutes	81.3	176	
Walk Time to Post Office	within 30 minutes	53.8	173	
Walk Time to Pharmacy	within 30 minutes	56.9	174	
Walk Time to Gym	within 30 minutes	51.5	171	
Walk Time to Park	within 30 minutes	67.3	171	

Source: [For the items without stars, the data source was Sacramento County, California, Census Bureau Profile](#)

*Source: [Sacramento County, California Gender Ratios \(states101.com\)](#)

** [Car Ownership Statistics 2024 – Forbes Advisor](#)

*** Sacramento County, CA | Data USA

**** [Sacramento County, CA Household Income, Population and Demographics | Point2 \(point2homes.com\)](#)

The sources above were all accessed on 8/26/2024.

5. Explore Microtransit Adoption

Underserved individuals often face significant mobility barriers due to limited access to reliable and affordable transportation. Enhancing mobility for underserved communities is a common goal of public transit agencies providing microtransit services. Understanding barriers to, and facilitators of, microtransit adoption helps in effectively addressing these challenges. Therefore, in this section, we focused on individuals who are knowledgeable about, or familiar with, microtransit services. These individuals may understand what microtransit is and generally know how it functions, while their preferences for using such services may vary. We explored the factors that contribute to these differences with a binary logistic regression.

5.1 Model selection

The survey respondents who had heard of SmaRT Ride before participating were divided into two groups—SmaRT Ride users and non-users—based on a screening question that distinguished between those who had used the service and those who had not. To investigate factors associated with the actual adoption of microtransit, binary logistic regression was employed to compare the choice of using SmaRT Ride versus not in this study. Binary logistic regression is a predictive modeling method that examines the relationship between a set of independent variables and a dichotomous dependent variable. It is suitable for analyzing adoption decisions where outcomes are binary (Tranmer and Elliot, 2008). The formula for the logistic function, which represents the probability of the dependent variable being 1, is introduced below. In this study, the binary logistic model explores the actual use of microtransit by analyzing the factors associated with users versus non-users. This type of model helps identify the characteristics and conditions that distinguish those who adopt and regularly use microtransit from those who do not. By doing so, it provides insights into the determinants of actual behavior rather than intention to adopt microtransit.

Based on maximum utility theory, an individual n chooses the alternative that maximizes his/her utility. Let $P_n(i)$ represent the probability that an individual n chooses an alternative i , then the probability of individual n chooses its complement is $1 - P_n(i)$.

The binary logistic regression can be written in terms of odds, the ratio of the probability of choosing alternative i and its complement (e.g., the ratio of the probabilities of an individual adopts microtransit versus not), as follows,

$$\frac{P_n(i)}{1 - P_n(i)} = \exp(\beta_0 + \beta_1 X_1 + \beta_2 X_2 + \dots + \beta_n X_n)$$

X indicates a vector of explanatory variables and β is a vector of the coefficients.

Then we can take the logarithms of the odds (i.e., logit) and the binary logistic model can be written as:

$$\text{logit} = \text{Log} \left(\frac{P_n(i)}{1-P_n(i)} \right) = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \dots + \beta_n X_n$$

The method of maximum likelihood is used to estimate the parameters of binary logistic regressions. A positive coefficient indicates that an increase in the corresponding explanatory variable leads to higher odds of the outcome occurring. A negative coefficient suggests a decrease in the odds. The exponentiated coefficient, known as the odds ratio (OR), represents the change in the odds of the outcome for a one-unit increase in the explanatory variable. If the OR is less than 1, it indicates that the reference outcome becomes more likely as the explanatory variable increases. To avoid a significantly reduced sample size owing to our small sample size and missing data for many variables, stepwise regression was employed to select important explanatory variables for this multiple regression model based on their statistical significance (p-value) (Hayes, 2022). Practically, we adhered to the theoretical framework of TAM. The explanatory variables were introduced into the model in sequential sets. At each step, we only kept the statistically significant ($p < 0.1$) variables and insignificant variables were dropped using a backward process. Following the conception model of TAM, we first entered individual and household characteristics as control variables. Then, we entered a second set of variables. Perceived usefulness, perceived ease of use, compatibility, subjective norm, and social support were the second set of variables tested for significance after controlling for the individual and household level factors. Last, variables representing attitudes toward the concept of microtransit, travel, and other transportation modes were entered and used to examine influences on microtransit adoption after other variables were controlled for.

5.2 Model results

A binary logistic regression examined factors influencing the adoption of SmarT Ride among underserved individuals who were awareness of the service. Model results suggest that individual and household characteristics, attitude, and compatibility significantly influence the likelihood of adopting microtransit services (Table 5). Overall, the model shows a good fit for explaining the factors influencing microtransit adoption among underserved individuals. As an analogue to the R^2 of linear regression models, the McFadden pseudo- R^2 is 0.355. McFadden pseudo- R^2 measures the goodness-of-fit of the model and their values from 0.2 to 0.4 indicate very good model fit for logistic models (McFadden 1977). About 36% of the information contained in the data has been explained by this model relative to the model that contains the constant term only (Ben-Akiva and Lerman, 1985). Similarly, analogously to the adjusted R-square of linear regression models, the adjusted pseudo- R^2 corrects for the number of estimated parameters, indicating a reasonable model fit (Adjusted Pseudo- $R^2 = 0.254$).

Table 5. Binary logistic regression model of adoption vs. non-adoption among underserved individuals with SmarT Ride awareness.

Variable	Coefficient	Significance	OR
Constant	1.797	***	6.032
<i>individual and household characteristics</i>			
Own home	1.760	**	5.814
No One Works	-1.542	*	.214
Part Time employment	.864	*	2.373
<i>Compatibility</i>			
Paratransit Frequency	1.922	**	6.832
Bus Frequency	.791	***	2.205
<i>Attitude</i>			
Like Transit	.598	*	1.818
N			83
LL(MS)			-29.707
LL ($\hat{\beta}$)			-19.167
McFadden Pseudo- R ² MS base			0.355
Adjusted Pseudo- R ²			0.254

*10% significance level, ** 5% significance level, *** 1% significance level

The model results show that individual and household characteristics are dominant in explaining why some underserved individuals adopted SmarT Ride, whereas others did not. Individuals who **own their home** are significantly more likely to use microtransit. It is possible that homeowners tend to stay in their homes longer than renters, which means they can become more familiar with the local microtransit options and develop a routine use of it. Conversely, **households where no one works** are less likely to adopt microtransit. This may be due to financial constraints or different lifestyle patterns that deter microtransit use. **Part-time employment** correlates positively with actual microtransit adoption. It may indicate flexibility of part-time employees in both schedule and travel time choices, making SmarT Ride a suitable option for these individuals.

Frequent paratransit and bus users are more likely to use microtransit compared to less frequent users. The regular use of these transit services shapes the travel patterns of this group of people, implying that their usual travel habits and routes often align with the routes and schedules provided by microtransit services. They are more likely to adopt microtransit when their travel patterns, along with their previous experiences and transportation needs, match well with what microtransit offers. It is also possible that a high frequency of paratransit and bus use indicates a reliance on public transit, making these individuals more inclined to use microtransit as a supplementary or alternative option for their daily transportation needs.

Only one attitudinal factor, **liking transit**, is positively associated with microtransit use. This may indicate that a positive attitude toward transit generally correlates with openness to new transit options such as microtransit. It also implies that SmarT Ride may serve as a substitute or complementary option for connecting buses or light rail for individuals who favor transit.

It is notable that perceived usefulness, perceived ease of use, subjective norm, and social support are not significant in explaining differences in microtransit use among these transportation-disadvantaged individuals. This could be because these individuals prioritize practical considerations like cost, availability, and convenience over perceptions and social influences when choosing transportation options. Additionally, it may be caused by less variation in the data due to the small sample size.

6. Discussion and Conclusions

This study reveals that SmaRT Ride improves transportation access for underserved communities. Survey data show that most users find it effective, with many reporting improvements in reaching destinations including work, school, and medical services. The cost-effectiveness and environmental friendliness of microtransit are demonstrated by the survey data. The study uses inferential analysis to explore factors influencing microtransit adoption among underserved populations already aware of it. Key determinants include individual and household characteristics, compatibility, and attitude.

6.1 Summary of the findings

In this study, descriptive analysis based on the survey data indicates that microtransit significantly improves transportation access for underserved communities. A large majority of users report that SmaRT Ride has helped them reach their destinations more effectively, with many noting substantial improvements. Data show that nearly 28% of users use SmaRT Ride to connect to fixed-route transit. A significant portion of SmaRT Ride users were found to rely on it for work, education, medical visits, and shopping trips. Economically, a strong majority of users are willing to pay more than the current fare, showing that SmaRT Ride offers a cost-effective alternative to other transportation options for underserved individuals. Additionally, 76.1% of SmaRT Ride users reported sharing their trip with at least one other passenger, highlighting its ride sharing practices. Overall, SmaRT Ride improves mobility, promotes social inclusion, and reduces environmental impact within underserved communities (MaRS Discovery District, 2016; Werckmeister García, 2018).

Given the benefits of microtransit for underserved individuals in the Sacramento area, inferential analysis was employed to explore factors influencing the revealed choice of SmaRT Ride among underserved populations who have had heard of it. This analysis drew from firsthand survey data in the Sacramento area of California. The analysis highlighted travel pattern compatibility, attitude, individual characteristics, household characteristics, and microtransit adoption. Results underscored the significance of positive attitudes toward transit, stable living conditions, flexible travel schedules, and the compatibility of travel patterns in adopting microtransit. The findings reveal distinct subgroups within transportation disadvantaged individuals. Practical and attitudinal elements were found to drive microtransit use. This study fills gaps in previous literature by providing a nuanced understanding of factors influencing microtransit use and identifying strategies likely to enhance adoption among underserved communities.

A binary logistic model explored microtransit use by examining factors associated with users and non-users among transportation disadvantaged individuals with microtransit awareness. The analysis showed that some individual and household characteristics such as homeownership, employment status, and compatibility of travel patterns are significantly associated with microtransit use. Homeowners were more likely to use microtransit. This may have been due to longer residency and thus more familiarity with local options. Households with no employed members were less likely to use microtransit, potentially due to financial

constraints or lifestyle patterns. Part-time employment positively correlated with microtransit adoption, suggesting that SmarT Ride is a suitable option for people with flexible schedules. Frequent users of paratransit and bus services were more inclined to use microtransit. This highlights the importance of the compatibility of travel patterns with microtransit in its adoption.

This study shows that individuals with a positive attitude toward traditional transit services were more likely to adopt SmarT Ride. This suggests that SmarT Ride may be viewed as a complementary or alternative option for connecting origins and destinations with buses or light rail, particularly for those who already favor public transportation. These findings provide a comprehensive understanding of the factors driving microtransit use.

6.2 Conclusion and policy implications

This study reveals that lifestyle stability factors such as homeownership and employment status had a significant positive correlation with microtransit adoption while factors related to instability had a negative correlation. It also shows that regular users of public transit were more inclined to incorporate microtransit into their daily routines, and positive attitudes toward public transit can increase the likelihood of using microtransit.

Findings from previous literature on microtransit adoption were not consistently observed in this study. One possible reason is that many earlier studies relied on stated data, whereas this study is based on revealed data. This distinction highlights the gap between intention and actual choice. Nevertheless, insights from this study provide a nuanced understanding of microtransit adoption that can inform targeted strategies to promote its use among transportation-disadvantaged groups.

- Strategic approaches for promoting microtransit adoption may include enhancing the integration of microtransit with existing transit services by coordinating service schedules with other transit and/or offering combined fare packages within the transit system.
- Outreach programs designed to educate underserved populations about the availability and benefits of microtransit are likely to boost ridership. Focusing attention on communities with positive attitudes toward public transit may be fruitful, as they are more likely to be open to new transit options.
- Subsidies or financial support to reduce the cost burden of using microtransit in low-income households is critical. This may include programs that offer discounted or free microtransit services.
- Extending service hours of microtransit to accommodate the travel needs of underserved individuals, such as shift workers with irregular hours, may help increase microtransit adoption.
- Supporting homeownership and affordable housing in transit-rich areas may help establish long-term residency and stable travel patterns that are compatible with microtransit use.

By focusing on these areas, microtransit services can effectively meet diverse transportation needs and foster broader adoption among target populations. Comprehensive approaches that combine (1) enhancing practical accessibility, (2) leveraging existing transit behaviors, and (3) fostering positive transit attitudes are essential for promoting microtransit adoption among underserved individuals.

This research offers new and potentially significant documentation of factors affecting actual choice of microtransit and it highlights several areas for further investigation. The study's cross-sectional design, coupled with a single-equation approach, limits its ability to establish causal relationships between the factors and microtransit adoption, making our findings more indicative of associations rather than causality.

This analysis was limited by its small sample size. For observational studies involving large populations and logistic regression analysis, a minimum sample size of 500 has typically been recommended to derive reliable statistics that accurately represent the parameters in the targeted population (Bujang et al., 2018). Although we initially aimed for at least 500 valid cases at the outset, barriers to reaching underserved individuals made this difficult to achieve. However, the sample size of this study meets the basic guideline for multinomial logistic regression, which indicates a minimum of 10 cases per independent variable (Schwab, 2002).

The associations explored in this study are relevant to policy and evaluation. They can help policymakers and practitioners pinpoint areas where interventions might be effective, guide resource allocation, and inform the development of targeted programs, even in the absence of definitive causal evidence.

Future longitudinal studies exploring causal relationships would build on the analysis presented here. Multi-equation models could examine interactions between factors influencing microtransit adoption, such as how users' experiences shape perceptions of usefulness and ease of use, which were not evaluated in this research. This could be augmented by a comprehensive cost-benefit analysis of microtransit, including its impact on job and service accessibility, particularly in underserved communities. The environmental implications of microtransit are, as yet, unexplored.

References

- Ajzen, I. From Intentions to Actions: A Theory of Planned Behavior, Action-Control: From Cognition to Behavior, J. Kuhl and J. Beckmann, Eds., Heidelberg: Springer, 1985, pp. 11–39.
- Ajzen, Icek. (2015). *Belief, Attitude, Intention and Behaviour: An Introduction to Theory and Research*. Boston: Addison-Wesley.
- Alemi, F., Circella, G., Mokhtarian, P., and Handy, S. (2019). What drives the use of ride-hailing in California? Ordered probit models of the usage frequency of Uber and Lyft. *Transportation Research Part C: Emerging Technologies*, 102, 233-248.
- Correa, D. Xie, K, Ozbay, K (2017). Exploring the taxi and Uber demands in New York City: An empirical analysis and spatial modeling. *Available at SSRN 4229042*.
- Anne Brown, Alice Grossman, and Lucy Noble. "Via2G Microtransit Pilot Evaluation" *Mineta Transportation Institute* (2021). <https://doi.org/10.31979/mti.2021.2002>
- Barajas, J. M., and Brown, A. (2021). Not minding the gap: Does ride-hailing serve transit deserts?. *Journal of Transport Geography*, 90, 102918.
- Bardaka, E., Van Hentenryck, P., Lee, C. C., Mayhorn, C. B., Monast, K., Samaranayake, S., and Singh, M. P. (2024, August). Empathy and AI: Achieving Equitable Microtransit for Underserved Communities. International Joint Conferences on Artificial Intelligence Organization.
- Ben-Akiva, M., and Lerman, S. R., 1985. *Discrete Choice Analysis: Theory and Application to Travel Demand*. MIT Press, Cambridge, Mass.
- Bills, T. S., Twumasi-Boakye, R., Broaddus, A., and Fishelson, J. (2022). Towards transit equity in Detroit: An assessment of microtransit and its impact on employment accessibility. *Transportation Research Part D: Transport and Environment*, 109, 103341.
- Bujang, M. A., Sa'at, N., Bakar, T. M. I. T. A., and Joo, L. C. (2018). Sample size guidelines for logistic regression from observational studies with large population: emphasis on the accuracy between statistics and parameters based on real life clinical data. *The Malaysian journal of medical sciences: MJMS*, 25(4), 122.
- Cats, O., Kucharski, R., Danda, S. R., and Yap, M. (2022). Beyond the dichotomy: How ride-hailing competes with and complements public transport. *Plos one*, 17(1), e0262496.
- Cheng ,Y.M., Lou, S.J., Kuo, S.H., Shih, R.C. (2013). Investigating elementary school students' technology acceptance by applying digital game-based learning to environmental education *Australas. J. Educ. Technol.*, 29 (2013), pp. 96-110, 10.14742/ajet.65.
- Cowell, C.N., "Influencing factors behind urban sprawl in the United States" (2011). Honors Program Theses. 39. <https://scholarworks.uni.edu/hpt/39>
- Davis, F. D. (1989), "Perceived usefulness, perceived ease of use, and user acceptance of information technology", *MIS Quarterly*, 13 (3): 319–340, doi:10.2307/249008

- Ermagun, A., and Tilahun, N. (2020). Equity of transit accessibility across Chicago. *Transportation Research Part D: Transport and Environment*, 86, 102461.
- Franco, P., Johnston, R., and McCormick, E. (2020). Demand responsive transport: Generation of activity patterns from mobile phone network data to support the operation of new mobility services. *Transportation Research Part A: Policy and Practice*, 131, 244-266.
- Gehrke, S. R., Felix, A., and Reardon, T. (2018). *Fare Choices: A Survey of Ride-Hailing Passengers in Metro Boston*. Metropolitan Area Planning Council.
- Hayes, A. (2022). Stepwise Regression: Definition, Uses, Example, and Limitations. Retrieved May 30. <https://www.investopedia.com/terms/s/stepwise-regression.asp#:~:text=Stepwise%20regression%20is%20the%20step,statistical%20significance%20after%20each%20iteration>
- Huang, Y. (2019). Exploring students' acceptance of educational computer games from the perspective of learning strategy. *Australas. J. Educ. Technol.*, 35, pp. 132-149.
- Jin, S. T., Kong, H., and Sui, D. Z. (2019). Uber, public transit, and urban transportation equity: a case study in New York City. *The Professional Geographer*, 71(2), 315-330.
- Kang, S., and Hamidi, S. (20209). *On-Demand Microtransit for Better Transit Station and Job Accessibility*. Center for Transportation Equity, Decisions; Dollars (CTEDD).
- LaMondia, J. J., Gajkowski, T., and Ramirez, V. (2018). Are Small- and Medium-Sized Community Paratransit Riders Ready to Adopt Real-Time Information (RTI) Technology? *Transportation Research Record*, 2672(51), 56-67. <https://doi.org/10.1177/0361198118796019>
- Linton, J. (2023, March 21). *Metro poised to waste \$8 million More on costly "Metro Micro" MicroTransit pilot*. *Streetsblog Los Angeles*. <https://la.streetsblog.org/2023/03/21/metro-poised-to-waste-8-million-more-on-costly-metro-micro-microtransit-pilot>
- Macfarlane, G. S., Hunter, C., Martinez, A., and Smith, E. (2021). Rider perceptions of an on-demand microtransit service in Salt Lake County, Utah. *Smart Cities*, 4(2), 717-727.
- Marikyan, D. and Papagiannidis, S. (2023) *Technology Acceptance Model: A review*. In S. Papagiannidis (Ed), TheoryHub Book. Available at <https://open.ncl.ac.uk> / ISBN: 9781739604400
- McFadden, Daniel, "Quantitative Methods for Analyzing Travel Behaviour of Individuals: Some Recent Developments" (1977). *Cowles Foundation Discussion Papers*. 707. <https://elischolar.library.yale.edu/cowles-discussion-paper-series/707>
- Malik, J., Alemi, F., and Circella, G. (2021). Exploring the factors that affect the frequency of use of ride-hailing and the adoption of shared ride-hailing in California. *Transportation Research Record*, 2675(5), 120-135.
- MaRS Discovery District, (2016). Microtransit: An assessment of potential to drive greenhouse gas reductions. *The Atmospheric Fund & Coop Carbone*.

- Mavrouli, S. M. (2020). *Assessment of factors affecting adoption of a micro-transit service by commuters* (Master's thesis, The Ohio State University).
- Miah, M. M., Naz, F., Hyun, K. K., Mattingly, S. P., Cronley, C., and Fields, N. (2020). Barriers and opportunities for paratransit users to adopt on-demand micro transit. *Research in transportation economics*, 84, 101001.
- Montgomery County Department of Transportation. (February 2021). *Ride On Flex Microtransit Performance Assessment*. https://www.montgomerycountymd.gov/DOT-Transit/Resources/Files/timetables/Flex%20Microtransit%20Performance%20Assessment%20-%20Final%20Report%20-%20Updated%202_11_2021.pdf
- Pan, A., and Shaheen, S. (2021). Strategies to Overcome Transportation Barriers for Rent Burdened Oakland Residents. Transportation Sustainability Research Center, UC Berkeley. <https://doi.org/10.7922/G237771N>.
- Pike, S., and Kazemian, S. (2020). Influential factors in the formation of partnerships between ridehail companies and public transportation.
- Rossetti, T., Broaddus, A., Ruhl, M., and Daziano, R. (2023). Commuter preferences for a first-mile/last-mile microtransit service in the United States. *Transportation research part A: policy and practice*, 167, 103549.
- Rudloff, C., and Straub, M. (2021). Preprint: Mobility surveys beyond stated preference: Introducing MyTrips, an SP-off-RP survey tool, and results of two case studies. *ScienceOpen Preprints*.
- SAE. J3163: *Taxonomy and Definitions for Terms Related to Shared Mobility and Enabling Technologies*. SAE International, Warrendale, PA, 2018. https://www.sae.org/standards/content/j3163_201809/.
- Safeena, R., Date, H., Hundewale, N., and Kammani, A. (2013). Combination of TAM and TPB in Internet Banking Adoption. *International Journal of Computer Theory and Engineering*, Vol. 5, No. 1, February 2013.
- Schwab, J. A. (2002). Multinomial logistic regression: Basic relationships and complete problems. <http://www.utexas.edu/courses/schwab/sw388r7/SolvingProblems/>
- Schwieterman, J., and Smith, C. S. (2018). Sharing the ride: A paired-trip analysis of UberPool and Chicago Transit Authority services in Chicago, Illinois. *Research in Transportation Economics*, 71, 9-16.
- Shaheen, S., Bell, C., Cohen, A., Yelchuru, B. (2017). Travel behavior: Shared mobility and transportation equity. (No. PL-18-007). Retrieved from https://www.fhwa.dot.gov/policy/otps/shared_use_mobility_equity_final.pdf.
- Shiue, Y.M., Hsu, Y.C. (2017). Understanding Factors that Affecting Continuance Usage Intention of Game-Based Learning in the Context of Collaborative Learning. *EURASIA J. Math. Sci. Technol. Educ.* 8223, 6445–6455. 10.12973/ejmste/77949.

- Taylor, S. and Todd, P. (1995) 'Decomposition and crossover effects in the theory of planned behavior: a study of consumer adoption intentions', *International Journal of Research in Marketing*, Vol. 12, No. 2, pp.137–156.
- The Department of Housing and Community Development (HCD), (2021). Revised 2021 State Income Limits Briefing Materials California Code of Regulations, Title 25, Section 6932. Retrieved March 30, 2024, from <https://www.hcd.ca.gov/grants-funding/income-limits/state-and-federal-income-limits/docs/income-limits-2021.pdf>.
- Tranmer, M., and Elliot, M. (2008). Binary logistic regression. *Cathie Marsh for census and survey research, paper, 20*, 90033-9.
- US Department of Transportation. (2023). ETC Explorer. Retrieved May 30, 2024, from <https://www.transportation.gov/priorities/equity/justice40/etc>
- Venkatesh, V. and Davis, F.D. (2000). A Theoretical Extension of the Technology Acceptance Model: Four Longitudinal Field Studies. *Management Science*, 46 (2), 186-204.
- Venkatesh, V., Morris, M.G., Davis, G.B., and Davis, F.D. (2003). User acceptance of information technology: toward a unified view. *Source MIS Q.*, 27 (2003), pp. 425-478, 10.2307/30036540
- Venkatesh, V., James Y. L. Thong, and Xin, X. (2012). Consumer Acceptance and Use of Information Technology: Extending the Unified Theory of Acceptance and Use of Technology. *MIS Quarterly: Management Information Systems* 36: 157–78.
- Wang, X., Yan, X., Zhao, X., and Cao, Z. (2022). Identifying latent shared mobility preference segments in low-income communities: Ride-hailing, fixed-route bus, and mobility-on-demand transit. *Travel Behaviour and Society*, 26, 134-142.
- Wang, C., Quddus, M., Enoch, M., Ryley, T., and Davison, L. (2015). Exploring the propensity to travel by demand responsive transport in the rural area of Lincolnshire in England. *Case Studies on Transport Policy*, 3(2), 129-136.
- Werckmeister García, N. (2018). *Microtransit for urban mobility: analysis, case study proposal and potential environmental impacts* (Master's thesis, Universitat Politècnica de Catalunya).
- Xing, Y., Pike, S., Pourrahmani, E., Handy, S., and Wang, Y. (2022). Exploring the Consumer Market of Microtransit Services in the Sacramento Area, California.
- Yuen, K.F., Cai, L., Qi, G., and Wang, X. (2021). Factors influencing autonomous vehicle adoption: an application of the technology acceptance model and innovation diffusion theory. *Technology Analysis and Strategic Management*, vol. 33, no. 5, pp. 505–519, 2021, doi: 10.1080/09537325.2020.1826423.
- Yolo Transportation District. (2021). *Comprehensive Operational Analysis of YCTD* https://yolobus.com/wp-content/uploads/2022/04/YoloGo_Final_Report_Web.pdf.

Zhang, T., Tao, D., Qu, X., Zhang, X., Lin, R., and Zhang, W. (2019). The roles of initial trust and perceived risk in public acceptance of automated vehicles. *Transportation Research Part C: Emerging Technologies*, 98, 207–220.

Data Summary

Products of Research

Data used for this study were collected with a survey. Variables measuring SmaRT Ride behaviors and explanatory variables were derived from survey questions. These data were entered into a model as dependent and independent variables to explore factors associated with microtransit adoption.

SmaRT Ride behavior

The respondents were asked if they had heard of SmaRT Ride. Those who had were then asked if they had used it before taking the survey. Additionally, SmaRT Ride behavior questions included non-users' intentions to use SmaRT Ride in the future and users' intentions to continue using it.

Individual and household characteristics

These questions characterized an individual's socio-demographics. Factors such as age, gender, education level, race, and annual household income were recorded. Importantly, to assess how transportation-disadvantaged an individual was, we designed survey questions to measure various underlying indicators. We followed the US Department of Transportation's methodology for defining Transportation Disadvantaged Census Tracts (Historically Disadvantaged Communities). The indicators included primary earners in the household with a commuting time greater than 30 minutes, having no cars, and home locations not supportive of walking, etc.

Perceived usefulness

Different aspects of the perceived usefulness of microtransit were measured, including improved transportation convenience, reduced stress, good value for the cost, and the likelihood of recommending SmaRT Ride to others. The statement "I will recommend/have recommended SmaRT Ride to other people" typically reflects the user's positive evaluation of the technology's usefulness. If users find the technology significantly beneficial, they are more likely to share this positive experience with others.

Perceived ease of use

Perceived ease of use was assessed by measuring agreement with the statement "Using this service will require a lot of mental effort." The higher the score is, the lower the perceived ease of use.

Compatibility

Compatibility was designed to reflect individuals' travel patterns by measuring their daily use of various transportation modes within the past week. It is expected that the alignment of microtransit with adopters' previous experiences and transportation needs is associated with microtransit adoption.

Subjective norm

Subjective norms were measured by assessing two factors: individuals' agreement with the statements "SmaRT Ride services are good for the environment" and "People I know would have a positive opinion of SmaRT Ride." These two questions aim to measure individuals' perceptions of environmental benefits associated with SmaRT Ride and the social support they anticipate from their peers regarding the service.

Perceived behavioral control

Perceived behavioral control was reflected by Self-efficacy, which was measured by assessing agreement with the statement "I feel confident using SmaRT Ride."

Attitude

Attitude questions include assessments of feelings about microtransit, such as agreement with the statement, "I like the concept of SmaRT Ride," as well as attitudes toward other transportation modes like driving, ride-hailing, transit, biking, and walking. Additionally, we assessed opinions about travel time and travel cost, which relate to an individual's perceptions of the use of SmaRT Ride.

Data Format and Content

The data is in the format of an IBM SPSS file. The file contains 180 cases collected from a large survey published online which was open for participation from February 1 through May 31, 2024. Another MS Word file provides a dictionary to describe the meaning of each variable and its corresponding scales.

Data Access and Sharing

The data are available through the Dryad data repository. The general public can access the dataset at <https://doi.org/10.5061/dryad.r7sqv9smh>.

Reuse and Redistribution

There are no restrictions for reuse of the data. They are published on Dryad and only require attribution. The following citation should be used:

Xing, Yan; Pike, Susan; Handy, Susan; Wang, Yunshi (2024). Dataset of underserved microtransit users in the Sacramento area, California [Dataset]. Dryad.
<https://doi.org/10.5061/dryad.r7sqv9smh>

Appendix A. Sacramento Smart Ride Survey

Welcome to the **Sacramento SmaRT Ride Survey!**

SmaRT Ride is a form of on-demand transportation that allows users to request a ride via a smartphone app, phone call, or online. Your response to this survey will help planners at Sacramento RT ensure that SmaRT Ride meets the needs of all travelers. Your input is important to ensuring SmaRT Ride benefits the communities it serves.

The survey should take 10-20 minutes to complete. You must be 18 years or older to participate. Participation is entirely voluntary and will be completely confidential. In appreciation for your time, the first 500 participants will receive a **\$5 Amazon gift card as a prize**. You will receive the gift card by no later than June 1st. Find award instructions at the end of the survey!

If you have any questions about the survey, please contact Dr. Susan Pike at scpike@ucdavis.edu or Dr. Yan Xing at yxing@ucdavis.edu

Thank you for participating in this important study!

Let us know you are human by answering this question. Please select B on this question.

- A
 - B
 - C
 - D
-



We'll start by asking you a few questions about the transportation options available to you.

How often are you **unable** to get to where you need to go because of a **lack** of transportation options / choices to get there?

- Never
 - Rarely or infrequently
 - Several times a year
 - About once a month
 - More than once a month
 - About once a week
 - Several times a week
 - Once a day or more often
-



For these questions we are interested in trips to get to work for the **primary earner** in your household: that is the *person who earns the largest share of your household income*. A household is defined as all the people who live together and share at least some financial resources.

How many days does the **primary earner** in your household commute to work per week?

- He/She works from home.
 - 1
 - 2
 - 3
 - 4
 - 5
 - More than 5
 - No one works in my household.
-

Display This Question:

If For these questions we are interested in trips to get to work for the primary earner in your hous... = 3

Or For these questions we are interested in trips to get to work for the primary earner in your hous... = 4

Or For these questions we are interested in trips to get to work for the primary earner in your hous... = 5

Or For these questions we are interested in trips to get to work for the primary earner in your hous... = More than 5

About how much time does the primary earner in your household spend on a one-way trip to the place of employment?

- Less than 10 minutes
 - 10-29 minutes
 - 30-60 minutes
 - More than an hour
 - Not sure
-



Do you have access to a car for your transportation needs?

- Yes
 - No
-

Display This Question:

If Do you have access to a car for your transportation needs? = Yes



How many vehicles currently in working condition are owned by your household?

- 0
 - 1
 - 2
 - 3
 - 4
 - 5
 - More than 5
-



How much do you estimate your monthly household spending on transportation (including gasoline, public Transportation fares, car maintenance, etc.). Your best guess is good enough.

- 0-\$19.99
 - \$20-\$49.99
 - \$50-\$99.99
 - \$100-\$199.99
 - \$200-\$499.99
 - \$500 or more
 - I don't know.
-



Do you have health insurance?

- Yes
- No
- I prefer not to say.



Do you own your home?

- Yes
- No
- I prefer not to say.

On average, how long would it take you to **walk** to the following destinations? Please provide your approximate **one-way walking time**.

	Within 10 minutes	10-19 minutes	20-29 minutes	30minutes-1 hour	More than 1 hour	I don't know
Your preferred grocery store	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The closest bus or light rail stop	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Post office	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Pharmacy	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Gym	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Park/Recreation Area	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Where do you live? Or please tell us the closest intersection to your home location:

Street 1:
Street 2:
Zip code:



Had you heard about SmarT Ride before taking this survey?

- Yes
- No

End of Block: Opening and Screening

Start of Block: Introduction and willingness to take Smart Ride



Thinking back to last week, and the places you went and how you got there; how often did you use the following means of transportation? (Multiple choice)

Do not select any walk/bike for leisure or physical exercise.

	Never	Less than once last week	1-2 days last week	3-4 days last week	5 or more days last week
Driving alone	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Driving with others	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Lyft/Uber	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Bus	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Light rail	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Bike, electric bike, scooter or electric scooter	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Walk	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
ADA paratransit service (for example: SacRT Go Paratransit Services)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other modes you used	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

SmaRT Ride is a transit service that works like Uber/Lyft but shared with other passengers. It currently provides corner-to-corner service within small areas in the Sacramento area of California. The service operates on weekdays from 7 a.m. to 7 p.m. The basic fare is \$2.50 for a single ride unless you are eligible for SacRT discounted fares.

Given the information above and how you might use SmaRT Ride, do you agree or disagree with the following statements?

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree	Unapplicable/ Not sure
a. I am attracted to the novelty of this service.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
b. SmaRT Ride is good for the environment.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
c. People I know would have a positive opinion of SmaRT Ride.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
d. SmaRT Ride will improve my ability to get around conveniently.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
e. SmaRT Ride will reduce my transportation stress.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
f. SmaRT Ride provides good value for the cost.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
g. Using this service will require a lot of mental effort.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
h. I feel confident using SmaRT Ride.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
i. I will recommend/have recommended SmaRT Ride to other people.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



If SmarT Ride were available in your area, how much would you be willing and able to pay per ride (one-way trip)?

- \$0
- \$1 or less
- \$1.01 - \$2
- \$2.01 - \$3
- \$3.01 - \$4
- \$4.01 - \$5
- \$5.01-\$10
- More than \$10

Display This Question:

If Where do you live? Or please tell us the closest intersection to your home location: Text Response Is Empty
And And Where do you live? Or please tell us the closest intersection to your home location: Text Response Is Empty
And And Where do you live? Or please tell us the closest intersection to your home location: Text Response Is Empty

Which SmarT Ride service zone is your home located in or closest to?

- Citrus Heights-Orangevale-Antelope
- Franklin-South Sacramento
- Downtown-Midtown
- Rancho Cordova
- Folsom
- Florin-Gerber
- Arden-Carmichael
- Natomas-North Sacramento
- Elk Grove

Will you use Smart Ride in the future?

- Definitely not
- Probably not
- Might or might not
- Probably yes
- Definitely yes

Skip To: Q3.4 If Will you use Smart Ride in the future? = Might or might not

Skip To: Q3.4 If Will you use Smart Ride in the future? = Probably yes

Skip To: Q3.4 If Will you use Smart Ride in the future? = Definitely yes



What are your primary reasons for not using SmarT Ride in the future?

- It doesn't serve my neighborhood.
- It doesn't go where I need to go.
- It doesn't run early or late enough.
- It doesn't run at weekends.
- I don't know how.
- I have physical limitations that make it difficult for me to use SmarT Ride.
- I don't have a smartphone.
- I have a smartphone, but unreliable mobile internet connection.
- I don't like sharing rides with others.
- Too expensive.
- Unsafe
- Other, please specify

Skip To: End of Block If Condition: Selected Count Is Greater Than or Equal to 0. Skip To: End of Block.



If you were going to use SmaRT Ride, what is the one most likely place you would take it?
Please select only one option.

- Work
 - College/University//Post-secondary Education
 - Home
 - Other school(e.g. K-12)
 - Shopping
 - Medical services
 - Social or recreational activities such as a gym, park, visiting a friend, or sightseeing activities
 - Personal business such as going to bank or other errands or legal obligation
 - Other _____
-



What mode of transportation are you using now for the type of trip you just mentioned? If you use multiple modes, please report the one mode you use for **the longest** part of the journey.

- Driving alone
- Getting a ride /Carpooling with someone
- Lyft/Uber
- Bus
- Light rail
- Bike, electric bike, or scooter
- Walk
- SacRT Go Paratransit Services
- I have never made the trip before.
- Other _____

Page Break

How many minutes does it typically take when (using/taking) `#{Q3.5/ChoiceGroup/SelectedChoicesTextEntry}` for that trip?

0 10 20 30 40 50 60 70 80 90 100





Recalling your most recent trip where you would use SmaRT Ride for $\{Q3.4/ChoiceGroup/SelectedChoicesTextEntry\}$, how would you use it?

- SmaRT Ride would take me the entire way to my destination.
 - I would use SmaRT Ride to connect to a bus.
 - I would use SmaRT Ride to connect to light rail or a train.
 - I would use SmaRT Ride as a connection to a car or Uber/Lyft.
 - I would use SmaRT Ride as a connection to micromobility options, such as biking, electric bikes, or scooters.
 - Other (Please specify): _____
-



If you were going to use SmaRT Ride for this trip, how often do you think you would take SmaRT Ride?

- Less than once per month
 - Less than once per week
 - 1-2 days per week
 - 3-4 days per week
 - 5 or more days per week
-

For this specific trip you have in mind, please indicate the maximum amount of money you would be willing to pay for transportation.

	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
\$																					

End of Block: Introduction and willingness to take Smart Ride

Start of Block: Common Questions

common questions

please choose the response that most closely fits your agreement with each of the following statements.

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree	Unapplicable/Not sure
a. Travel time is wasted time.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
b. The cost of travel affects the choices I make about my daily travel.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
c. Environmental and energy concerns affect my choice of transportation modes.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
d. I like driving.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
e. I like ride-hailing services (e.g. Uber/Lyft).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
f. I like taking buses, light rail, or trains.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
g. I like bicycling.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
h. I like walking.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
i. I like the concept of SmaRT Ride services.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

What is your gender?

- Female
 - Male
 - Non-binary / third gender
 - Prefer not to say
 - Other _____
-

What year were you born?

Year

▼ 1924 ... 2006



Have you been certified to use paratransit (i.e., SacRT Go) ?

- Yes, for my age.
 - Yes, because of my disability.
 - No
-

Page Break

Display This Question:

If Have you been certified to use paratransit (i.e., SacRT Go) ? != No



Please indicate any type of disability you have (check all that apply).

- Visual
- Hearing
- Mental
- Physical
- Other (please specify):

- Prefer not to say



What is your race?

- American Indian or Alaskan Native
- Asian / Pacific Islander
- Black or African American
- Hispanic
- White / Caucasian
- Multiple ethnicity
- Other (please specify)

- Prefer not to say

Do you speak English?

- Fluent
 - Some English
 - No English
-

What is the main language you speak at home?

- English
 - Español
 - 中文
 - русский
 - Tiếng Việt
 - Hmong
 - नेपाली
 - Other (Please specify): _____
-



What is your highest level of education?

- Less than high school
 - High school diploma or equivalent
 - Associate's degree
 - Some college/Current undergraduate student
 - Trade/technical/vocational training
 - Bachelor's degree(s)
 - Graduate degree(s), e.g. MS, PhD, MBA
 - Professional degree(s), e.g. JD, MD, DDS
-



Which of the following categories best describe your employment status?

- Full-time employment
 - Part-time employment
 - Temporary or contract employment
 - An internship or apprenticeship
 - Self-employed
 - Not employed
 - Retired
 - Unable to work
 - Other _____
-



What is your approximate annual household income? Recall that a household is defined as all the people who live together and share at least some financial resources.

- Less than \$10,000
 - \$10,000-\$14,999
 - \$15,000-\$24,999
 - \$25,000-\$34,999
 - \$35,000-\$49,999
 - \$50,000-\$74,999
 - \$75,000-\$99,999
 - \$100,000-\$124,999
 - \$125,000-\$149,999
 - \$150,000-\$174,999
 - \$175,000-\$199,999
 - \$200,000 and up
-



Do you have a bank account, or other financial tools such as Venmo, Zelle, PayPal, etc?

- Yes, I have a bank account.
 - Yes, I have financial tools such as Venmo, Zelle, PayPal, etc.
 - No, I have none of them.
-



Do you have a California driver's license?

- Yes
- No

How many family members in your household? Make sure to include yourself.

Household size

▼ 0 ... 15 ~ 15 ~ 15 ~ 15 ~ 15



Do you have children younger than 18?

- Yes
- No

Display This Question:

If Do you have children younger than 18? = Yes

How often do they (does she/he) ride any of the SacRT transit, including buses, light rail, and SmaRT Ride for FREE through RydeFreeRT Program? Report the total number of days they use during a typical week if you have more than one child.

- Never
- They/She/He used in the past but do/does not use it now.
- Less than once per month
- Less than once per week
- 1-2 days per week
- 3-4 days per week
- 5 or more days per week

If SmarT Ride made one change, what change would you most like to see? Or, what change would make it more likely for you to use SmarT Ride (or use it more than you do now)?

Or, what transportation improvement could be made in your community would you most like to see?



Would you like to recommend someone you know to take this survey? (QR code, share email address with us to send the link, or just type the link, or forward the email we sent to you)
Thank you! (at the end of the survey)

Yes

No

How were you invited to participate in this survey?

Through email

Through a text message

By a friend

Through an in-person survey.

Other (Please specify:) _____

Congratulations! You have completed the survey!

If you have any questions, comments, or suggestions, please include them here. Thanks.

Page Break

Thank you for your time. To receive a \$5 Amazon gift card as a prize, please provide your preferred method of contact:

- Telephone _____
- Email _____
- Mail _____
- Other _____

End of Block: Common Questions

Start of Block: Screen question for SmarT Ride Users



How often do you use SmarT Ride?

- I have never used SmarT Ride.
- I used SmarT Ride in the past but I don't use it now.
- Less than once per **month**
- Less than once per **week**
- 1-2 days per **week**
- 3-4 days per **week**
- 5 or more days per **week**

End of Block: Screen question for SmarT Ride Users

Start of Block: SmarT Ride Users

Display This Question:

If We'll start by asking you a few questions about the transportation options available to you. How... = Several times a year

Or We'll start by asking you a few questions about the transportation options available to you. How... = About once a month

Or We'll start by asking you a few questions about the transportation options available to you. How... = More than once a month

Or We'll start by asking you a few questions about the transportation options available to you. How... = About once a week

Or We'll start by asking you a few questions about the transportation options available to you. How... = Several times a week

Or We'll start by asking you a few questions about the transportation options available to you. How... = Once a day or more often



SmaRT Ride Users

Has using SmaRT ride improved your ability to get to the places you want to go?

- Significantly improved
- Moderately improved
- Slightly improved
- No significant change
- Not sure

Display This Question:

If If Where do you live? Or please tell us the closest intersection to your home location: Text Response Is Empty

And And Where do you live? Or please tell us the closest intersection to your home location: Text Response Is Empty

And And Where do you live? Or please tell us the closest intersection to your home location: Text Response Is Empty

SmaRT Ride Users

Which SmaRT Ride service zone is your home located in or closest to?

- Citrus Heights-Orangevale-Antelope
 - Franklin-South Sacramento
 - Downtown-Midtown
 - Rancho Cordova
 - Folsom
 - Florin-Gerber
 - Arden-Carmichael
 - Natomas-North Sacramento
 - Elk Grove
 - I don't know.
-

Display This Question:

*If *SmaRT Ride Users* Which SmaRT Ride service zone is your home located in or closest to? = I don't know.*

Which SmaRT Ride service zone is your home located in or closest to?

- Citrus Heights-Orangevale-Antelope
 - Franklin-South Sacramento
 - Downtown-Midtown
 - Rancho Cordova
 - Folsom
 - Florin-Gerber
 - Arden-Carmichael
 - Natomas-North Sacramento
 - Elk Grove
-

Which SmarT Ride service zone do you use most often? if you use two or more zones regularly, select the one you use for the longest distances of travel or the longest trips.

- Citrus Heights-Orangevale-Antelope
- Franklin-South Sacramento
- Downtown-Midtown
- Rancho Cordova
- Folsom
- Florin-Gerber
- Arden-Carmichael
- Natomas-North Sacramento
- Elk Grove



Thinking back to last week, and the places you went and how you got there; how often did you use the following means of transportation?

	Never	Less than once last week	1-2 days last week	3-4 days last week	5 or more days last week
Driving alone	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Driving with others	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Lyft/Uber	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



How has your use of the following means of transportation changed since you started using SmaRT Ride? (Multiple choice)

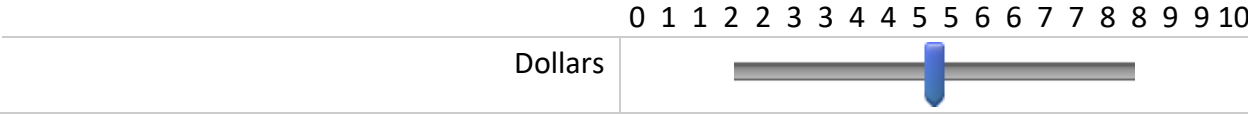
	A great deal less than before	Less than before	The same as before	More than before	A great deal more than before	Not sure
Driving alone	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Driving with others	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Lyft/Uber	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Bus	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Light rail	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Bike, electric bike, scooter or electric scooter	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Walk	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
ADA paratransit service (For example, SacRT Go Paratransit Services)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other modes you used	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



Did you know that Smart Ride can be booked over the phone?

- Yes, I am aware of the phone option.
- No, I was not aware that a phone option exists.

At what price would you consider a single trip on Smart Ride to be so expensive that you would not consider using it?



Do you agree or disagree with the following statements about SmaRT Ride?

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree	Unapplicable/Not sure
a. I am attracted to the novelty of this service.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
b. SmaRT Ride is good for the environment.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
c. People I know would have a positive opinion of SmaRT Ride.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
d. SmaRT Ride improved my ability to get around conveniently.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
e. SmaRT Ride reduced my transportation stress.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
f. SmaRT Ride service provides good value for the cost.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
g. Using this service requires a lot of mental effort.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
h. I feel confident using SmaRT Ride.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
i. I will recommend/have recommended SmaRT Ride to other people.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



Thinking back to your trips on SmaRT Ride in the past month, have you ever canceled a requested trip or has your requested trip been canceled by the app?

- Yes, I have canceled a requested trip.
- Yes, my requested trip has been canceled by the app.
- No

Skip To: Q618 If Thinking back to your trips on SmaRT Ride in the past month, have you ever canceled a requested t... = No

Display This Question:

If Thinking back to your trips on SmaRT Ride in the past month, have you ever canceled a requested t... = Yes, I have canceled a requested trip.

How many times have you canceled a requested SmaRT Ride trip in the past month?

Number of your cancellations

▼ 0 ... 50

Display This Question:

If Thinking back to your trips on SmaRT Ride in the past month, have you ever canceled a requested t... = Yes, my requested trip has been canceled by the app.

How many times has your requested trip been canceled in the past month?

Number of requested trips canceled by the app

▼ 0 ... 50

Display This Question:

If Thinking back to your trips on SmART Ride in the past month, have you ever canceled a requested t... = Yes, I have canceled a requested trip.

Thinking about the most recent cancellation. Why did you cancel it?

- Change in plans
- Delays
- Incorrect pickup location
- Found an alternative means of transportation
- Emergency
- Technical issues
- Other _____

Page Break



Did you start to use Smart Ride after August 28, 2023?

- Yes
- No

Skip To: Q10.10 If Did you start to use Smart Ride after August 28, 2023? = Yes



Since the **recent changes to zone sizes and schedules** of smart ride (In August 2023, the Citrus Heights-Antelope-Orangevale and Downtown-Midtown-East Sacramento service zones were reduced in size and the Florin-Gerber zone expanded slightly; The hours for all the Smart Ride zones are now from 7am to 7pm), has there been a difference in the **average wait times** for your rides?

Wait times have become...

- Much shorter (More than 30 minutes shorter)
 - Shorter (16-30 minutes shorter)
 - Slightly shorter (1-15 minutes shorter)
 - No Change/I haven't noticed a change
 - Slight longer (1-15 minutes longer)
 - Longer (16-30 minutes longer)
 - Much longer (More than 30 minutes longer)
 - Extremely longer (More than 1 hour)
 - Not Applicable/There were no changes in my usual zone.
-



Have the recent changes in smart ride affect how easy it is to get to your pick-up or drop-off locations?

- Much easier
 - Easier
 - No change
 - Harder
 - Much harder
 - Not Applicable/I haven't noticed a change.
-

For the following questions, please tell us about **the most recent time** you traveled with **SmaRT Ride**.

How did you book your most recent trip on SmaRT Ride?

- SmaRT Ride app through a smart phone
 - Through a computer or a laptop
 - By phone call
 - Other (Please specify): _____
-



Did you book your ride in advance of your trip?

- No, I requested a ride at the time I needed to go somewhere
 - Yes, I reserved the ride one hour or more on the same day as my ride
 - Yes, I reserved the ride the day before my ride
 - Other (Please specify): _____
-



How did you pay the fare?

- Mobile app (i.e., Zip Pass)
 - Cash or Transfer
 - Connect Card
 - RT Pass (Daily Pass, Monthly Pass, Ryde Free, School, etc.)
 - Other _____
-

Which zone did you use for **this most recent SmaRT Ride**?

- Citrus Heights-Orangevale-Antelope
 - Franklin-South Sacramento
 - Downtown-Midtown
 - Rancho Cordova
 - Folsom
 - Florin-Gerber
 - Arden-Carmichael
 - Natomas-North Sacramento
 - Elk Grove
-



In the last month, about how often have you made this same trip using SmaRT Ride?

- Less than once per month
 - Less than once per week
 - 1-2 days per week
 - 3-4 days per week
 - 5 or more days per week
 - First time riding
-



Where were you coming from before you got on SmaRT Ride?

- Home
 - Work
 - College/University/Post-secondary Education
 - Other school (e.g. K-12)
 - Shopping
 - Medical services
 - Social or recreational activities such as a gym, park, visiting a friend, or sightseeing activities
 - Personal business such as going to bank or other errands or legal obligation
 - Other _____
-

Please tell us the closest intersection where you were picked up by SmaRT Ride:

Street 1:
Street 2:
Area (e.g. Downtown Sacramento, Orangevale, or Arden)



How did you get to the SmaRT Ride pick-up location?

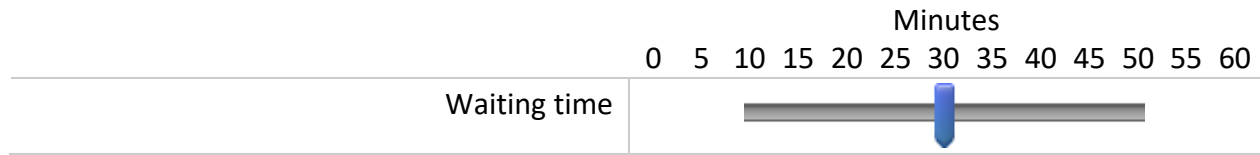
- Drove alone
- Got a ride/Carpooled with someone
- Lyft/Uber
- Took a bus
- Took light rail or a train
- Rode my bicycle, electric bicycle, scooter, or electric scooter
- Walked
- Took a paratransit such as ADA paratransit/SacRT Go
- Other _____

How long did it take you to get to the pick-up location
{Q592/ChoiceGroup/AllAnswers?displayLogic=0}? (In **minutes**)



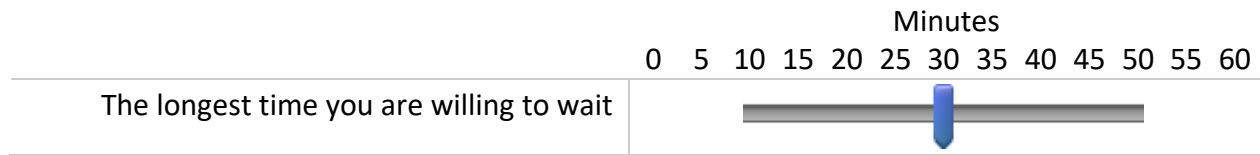
How long was your waiting time at the pick-up location?

(In minutes)



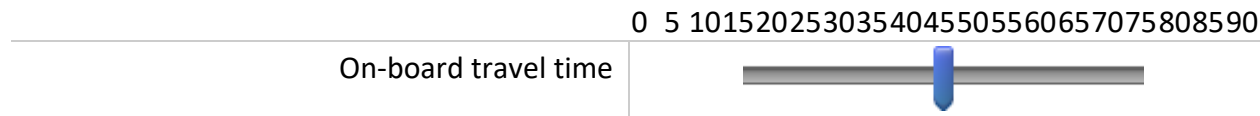
What is the longest time you are willing to wait?

(In minutes)



How long was the on-board travel time on SmaRT Ride?

(In minutes)



How many individuals (family members, friends, relatives, colleagues, etc.) accompanied you during this trip?

Number of people with you

▼ 0 ... More than 10

How many passengers (excluding yourself) did you share the SmaRT Ride shuttle with during the trip?

Passengers

▼ 0 ... More than 12



Where were you going to, on this most recent SmaRT Ride?

- Home
- Work
- College/University/Post-secondary Education
- Other school(e.g. K-12)
- Shopping
- Medical services
- Social or recreational activities such as a gym, park, visiting, or sightseeing activities
- Personal business such as going to a bank or other errands or legal obligation
- Other _____

Please tell us the closest intersection where you were dropped off:

Street 1:

Street 2:

Area (e.g. Downtown Sacramento, Orangevale, or Arden)



When you got off the SmaRT Ride shuttle, how did you get to your final destination? If you used more than one means of transportation, select the one you used for the longest distance.

- Drove alone
- Got a ride /Carpooled with someone
- Lyft/Uber
- Took a bus
- Took light rail or a train
- Rode my bicycle, electric bicycle, scooter, or electric scooter
- Walked
- Took a paratransit such as ADA paratransit/SacRT Go
- Other _____

How long did it take you to get from the drop-off location to your final destination? (In minutes)



Later on, did you use SmaRT Ride for the same trip to go back to where you had come from?

- Yes.
- No. I used another means of transportation for that trip to go back.
- No, it was a one-way trip and I did not go back.

How many times did you request a SmaRT Ride service on that day?

How many requests

▼ 1 ... More than 10 times



Thinking about this most recent trip using Smart Ride, do you at times make this trip with another means of transportation?

- Yes
- No

Display This Question:
If Thinking about this most recent trip using Smart Ride, do you at times make this trip with anothe... = Yes

What other means of transportation do you use for this trip at times?

	Less than once per month	1-3 times in the last month	1-2 days per week	3-4 days per week	5 or more days per week
Drove alone	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Got a ride /Carpooled with someone	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Lyft/Uber	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Took a bus	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Took light rail or a train	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Rode my bicycle, electric bicycle, scooter, or electric scooter	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Walked	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Took a paratransit such as ADA paratransit/SacRT Go	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>



For the most recent use of SmaRT Ride, if SmaRT Ride had not been available, what transportation mode would you have used **most often** for this trip?

- I would not have made this trip.
- Driving alone
- Getting a ride / Carpooling with someone
- Lyft/Uber
- Bus
- Light rail or a train
- Bicycle, electric bicycle, scooter, or electric scooter
- Walk
- Paratransit (For example, ADA paratransit/SacRT Go)
- Other _____

Skip To: Q554 If For the most recent use of SmaRT Ride, if SmaRT Ride had not been available, what transportation... != I would not have made this trip.



If SmaRT Ride were not available, why would you not make this trip?

- It would be too expensive.
- Other options are not comfortable.
- Other transportation options are limited.
- Other transportation options would take too long or unpredictable.
- There are no other direct and personalized routes.
- Other, please specify: _____

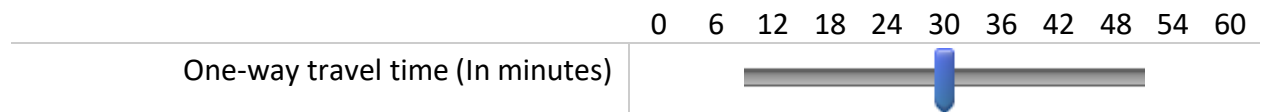
Skip To: Q10.27 If If SmaRT Ride were not available, why would you not make this trip? =
Skip To: Q10.27 If If SmaRT Ride were not available, why would you not make this trip? = Other options are not comfortable.
Skip To: Q10.27 If If SmaRT Ride were not available, why would you not make this trip? = Other transportation options are limited.
Skip To: Q10.27 If If SmaRT Ride were not available, why would you not make this trip? = There are no other direct and personalized routes.
Skip To: Q10.27 If If SmaRT Ride were not available, why would you not make this trip? = Other, please specify:



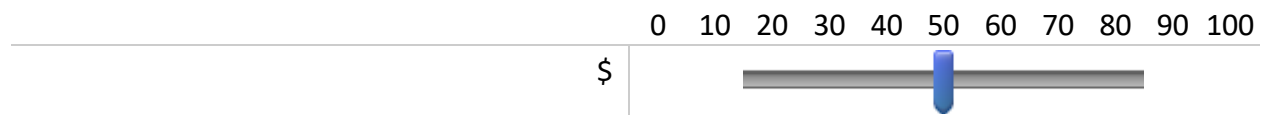
If SmaRT Ride had not been available, how often would you (take) $\{Q10.14/ChoiceGroup/SelectedChoicesTextEntry\}$ for this trip?

- Less than once per month
- Less than once per week
- 1-2 days per week
- 3-4 days per week
- 5 or more days per week

How long would it take for you to get your destination if you (use) $\{Q10.14/ChoiceGroup/SelectedChoices\}$ for this trip? Please report one-way travel time if it was a round trip. (In minutes)



If SmaRT Ride were not available, but you could use another service/alternative, how much would be **too much for you to pay** for the trip from the pick-up to drop off location?



Page Break

Do you expect to continue using SmaRT Ride?

- I will not use SmaRT Ride anymore.
- I will decrease my use of SmaRT Ride.
- I will use it about the same as now.
- I will increase my use of SmaRT Ride.
- I don't know.

Display This Question:

If Do you expect to continue using SmaRT Ride? = I will not use SmaRT Ride anymore.

Or Do you expect to continue using SmaRT Ride? = I will decrease my use of SmaRT Ride.



What are your primary reasons for not using or decreasing your use of SmaRT Ride in the future?

- Cost
 - Reliability
 - Changes in service coverage
 - Changes in service schedule
 - Changes of my travel patterns
 - Change of lifestyle or personal preferences
 - Availability of a more convenient transportation mode
 - Safety concern
 - Service quality
 - Other, please specify
-



Are there any improvements you would like to see in the SmarT Ride service area or times?
Check all that apply.

- Long distance
- After hours (before 7 a.m. and/or after 7 p.m.)
- At weekends
- Across service zones
- Other _____

End of Block: SmarT Ride Users

Start of Block: Screen Question for bus users



How often do you take the bus?

- I have never taken the bus.
- I had used the bus in the past but now I don't.
- Less than once per **month**
- Less than once per **week**
- 1-2 days per **week**
- 3-4 days per **week**
- 5 or more days per **week**

End of Block: Screen Question for bus users

Start of Block: Block Comparison between SmarT Ride and bus

Compared to bus services, using SmaRT Ride would be

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
SmaRT Ride provides quicker travel time.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
SmaRT Ride takes longer wait times.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
SmaRT Ride is more comfortable.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
SmaRT Ride is safer.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
SmaRT Ride is more flexible.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
SmaRT Ride is more relaxing.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
SmaRT Ride is less environmentally friendly.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
SmaRT Ride is more pleasant.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
SmaRT Ride is more social.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
SmaRT Ride is less time reliable	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

End of Block: Block Comparison between SmaRT Ride and bus

Start of Block: Screen Question for Paratransit Users



How often do you take paratransit services (ADA paratransit service / SacRT Go Paratransit Services **or** Folsom Stage Line-Dial-A-Ride services)?

- I have never taken paratransit.
- I had used paratransit in the past but now I don't.
- Less than once per **month**
- Less than once per **week**
- 1-2 days per **week**
- 3-4 days per **week**
- 5 or more days per **week**

End of Block: Screen Question for Paratransit Users

Start of Block: Block Comparison between SmarT Ride and paratransit

Compared to paratransit services, using SmaRT Ride would be

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
SmaRT Ride provides quicker travel time.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
SmaRT Ride takes longer wait times.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
SmaRT Ride is more comfortable.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
SmaRT Ride is safer.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
SmaRT Ride is more flexible.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
SmaRT Ride is more relaxing.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
SmaRT Ride is less environmentally friendly.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
SmaRT Ride is more pleasant.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
SmaRT Ride is more social.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
SmaRT Ride is less time reliable	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

End of Block: Block Comparison between SmaRT Ride and paratransit

Start of Block: Screen Question for Uber/Lyft Users



How often do you take Uber/Lyft?

- I have never taken Uber/Lyft.
- I had used Uber/Lyft in the past but now I don't.
- Less than once per **month**
- Less than once per **week**
- 1-2 times per **week**
- 3-4 times per **week**
- 5 or more times per **week**

End of Block: Screen Question for Uber/Lyft Users

Start of Block: Block Comparison between SmART Ride and Uber/Lyft

Compared to Uber/Lyft, using SmaRT Ride would be

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
SmaRT Ride provides quicker travel time.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
SmaRT Ride takes longer wait times.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
SmaRT Ride is more comfortable.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
SmaRT Ride is safer.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The SmaRT Ride app is more user-friendly.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
SmaRT Ride is more relaxing.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
SmaRT Ride is less environmentally friendly.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
SmaRT Ride is more pleasant.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
SmaRT Ride is more social.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
SmaRT Ride is less time reliable	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

End of Block: Block Comparison between SmaRT Ride and Uber/Lyft