

Perceptions and Implications of Road Use Charges

Prepared for the Michigan Department of Transportation

August 2025



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16. ABSTRACT Michigan’s gas tax currently supports the construction and maintenance of most of the state’s transportation infrastructure, as well as the operation of public transit systems around the state. The revenue generated by gas tax is expected to fall in the coming years, while the gap between available funding and required upkeep costs is expected to rise. The Michigan Department of Transportation (MDOT) is exploring Road Usage Charges (RUC) as an alternative funding source. With RUC, drivers pay a flat fee per mile they drive, regardless of the way their vehicle is powered. In this study, MDOT demonstrates the technical feasibility of using vehicle telematics data to administer a RUC program. Approximately 799,000 miles were securely and accurately recorded across 208 participants during a live demonstration period. Telematics data was obtained through a third-party connection service, and directly from manufacturers where possible. After the demonstration, participants were measurably more positive about the idea of switching to RUC from the gas tax. MDOT also assessed the circumstances that could induce mode shift from driving to transit, in anticipation of drivers having clearer understanding of per-trip costs in the future. Trip incentives and short walking distance to stops were shown to be key predictors of transit mode shift, but more investment is needed to improve travel times relative to driving.			
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List of Acronyms

Acronym	Description
API	Application Programming Interface
EV	Electric Vehicle
FTC	United States Federal Trade Commission
GPS	Global Positioning System
IFTA	International Fuel Tax Association
MDOT	Michigan Department of Transportation
MY	Vehicle Model Year
OEM	Original Equipment Manufacturer
RUC	Road Usage Charges
SMART	Suburban Mobility Authority for Regional Transportation
STSFA	Surface Transportation System Funding Alternatives Grant Program
USDOT	United States Department of Transportation
VMT	Vehicle Miles Travelled
VTTS	Value of Travel Time Savings

Executive Summary

Michigan's gas tax currently supports the construction and maintenance of most of the state's transportation infrastructure — roads, bridges, and tunnels — as well as the operation of public transit systems around the state. The amount of revenue generated by gas tax is expected to fall in the coming years, while the gap between available funding and required upkeep costs is expected to rise.¹ The Michigan Department of Transportation (MDOT) is interested in exploring Road Usage Charges (RUC) as an alternative funding source. With RUC, drivers pay a flat fee per mile they drive, regardless of the way their vehicle is powered.

Study Background

MDOT engaged Via — a firm specializing in using new technologies to develop and operate public mobility systems — to complete a two-part investigation of how RUC could work in Michigan. A survey completed in 2024 acted as the first phase in this process. More than 19,000 Michiganders completed the survey, helping MDOT understand current perceptions of the technology. The second phase of MDOT's investigation focused on two focus areas: a **live demonstration of RUC technology** and a **review into the factors influencing mode shift** to transit.

- The live demonstration evaluated two innovative models of collecting and processing the data required to administer a RUC program.
- The mode shift review studied the relationship between public transit usage, travel time competitiveness, and incentives. Understanding this relationship is an important step in preparing Michigan to take advantage of RUC in the future. If implemented at scale, RUC could help reduce roadway congestion and total vehicle miles travelled (VMT) by allowing drivers to compare RUC fees against other travel modes on a per-trip basis. These comparisons are currently difficult to make, since the tax paid to use public roadways is abstracted into part of the cost of fuel.

This research is funded through a grant from the Federal Highway Administration (FHWA). The grant was provided through the *Surface Transportation System Funding Alternatives* (STSFA) program, which supports evaluations of user-pays models to maintain the long-term solvency of the Highway Trust Fund.

¹ The magnitude of revenue loss varies by state, but the trend of declining revenue produced by the gas tax is consistent between states. A [2023 report](#) from the California Legislative Analyst's Office forecasts that the revenue generated by the state's gasoline excise tax will drop by 64% by 2023. Meanwhile, a [2021 analysis](#) from the West Virginia Department of Transportation forecasts a 20% drop in the state's fuel excise tax revenue by 2031.

Performance Against Study Goals

The Project Team (MDOT and Via) looked to accomplish four goals through the Study:

Study Goal	Outcome
Evaluate the technical feasibility of using telematics data to administer a RUC program via a live demonstration.	Achieved. More than 200 vehicles were successfully connected, with a total of 799,000 miles recorded during the live demonstration.
Test two emerging models for obtaining vehicle telematics data: sourcing data directly from manufacturers and using a third-party data provider.	Achieved. Both models proved to be a viable way of collecting data, although connections established directly through a manufacturer were more stable.
Understand if joining in the live demonstration made participants more or less likely to support future RUC programs in Michigan.	Achieved. Measurable sentiment improvements were recorded among participants relative to the pre-demonstration baseline.
Assess which circumstances could induce mode shift from driving to transit, in anticipation of drivers having clearer understanding of per-trip costs in the future.	Achieved, but few drivers will switch to transit without investment to improve transit travel times. Incentive level and walking distance to stops were shown to be key predictors of transit use. However, the median transit trip took 4.5x as long as the equivalent drive — an extra 40 minutes each way on average.

Methodology: RUC Demonstration

The demonstration was structured into four phases, which cumulatively ran from May 2024 to May 2025. Data was only collected during the Live Demonstration phase. For more information, refer to [2. Methodology: RUC Demonstration](#).

1. Participant Identification

Potential demonstration participants were identified from the list of respondents who provided optional information about their vehicle in MDOT's spring 2024 *Public Perceptions of RUC* survey. The vehicle information received was compared against eligibility information from Smartcar and Mobilisights to establish an initial list of invitees to the Demonstration.

2. Participant Onboarding

Email invitations were extended in batches to the invitees identified during the first stage. Invitations included a personalized link to the demonstration sign-up website, where invitees confirmed their participation. All participants who connected their vehicle, stayed connected during the live demonstration, and completed a post-demonstration closeout survey were eligible for a \$75 gift card incentive.

3. Live Demonstration

Vehicles were connected for the demonstration for up to six (6) months. During this period, odometer data was collected from connected vehicles and displayed to participants via an online dashboard. Participants also received monthly email updates showing the total number of miles they had driven during the demonstration period.

4. Demonstration Closeout

Data collection was suspended for all vehicles on May 1, 2025, and all vehicles were subsequently disconnected from Smartcar and Mobilisights. Participants were surveyed about their experience in the demonstration from May 1 to May 15, 2025. Incentives were distributed to participants after they completed the closeout survey.

Findings: RUC Demonstration

Three key findings emerged from the Demonstration results, speaking towards the Study's overall goals. For a more detailed discussion of this topic, refer to [3. Findings: RUC Demonstration](#).

01 | Direct telematics data offers reliable mileage tracking anywhere in Michigan.

During the Demonstration, a total of 799,000 miles were tracked between 208 enrolled participants. There is an evident relationship between average daily recorded vehicle miles travelled (VMT) and the level of urbanization in the surrounding area. Participants in the Detroit area drove about 31 miles per day on average, 35% less than the average participant on Michigan's Upper Peninsula (48 miles per day).

02 | Direct telematics data usage offers a strong user experience, with measurable sentiment improvements post-Demonstration.

More than 80% of participants reported that they found the sign-up and vehicle connection processes to be "simple" or "very simple". This positive onboarding experience continued through the Demonstration, with about 65% of participants indicating direct telematics to be their preferred way of reporting RUC data in the closeout survey. Only 40% of this same group preferred direct telematics prior to the Demonstration. When asked questions about the future of transportation funding in Michigan after the Demonstration, sentiments around RUC relative to the gas tax improved relative to the pre-Demonstration baseline.

03 | Significant hurdles remain prior to widespread adoption of direct telematics for RUC programs.

Three primary hurdles were observed during the Demonstration:

- **Limited vehicle eligibility:** Even in the most recent vehicle model year available, only half of vehicles reviewed could establish a connection.
- **Driver familiarity and comfort with telematics data:** Unless drivers have used their manufacturer's app, they likely do not have direct experience with telematics data.
- **Industry uncertainty:** Automakers have not yet coalesced on a best-practice approach to collecting and using telematics data.

Lessons Learned: RUC Demonstration

Three key lessons were learned during the administration of the Demonstration. These lessons can be used to improve the design and implementation of future RUC research. For a more detailed discussion of this topic, refer to [4. Lessons Learned: RUC Demonstration](#).

01 Invitees had to complete multiple steps to participate, increasing the share who dropped out during the signup process.

Only 8% of Demonstration invitees using the Smartcar platform ultimately confirmed their participation. At an 18% invitee conversion rate, Mobilisights was better, but still below desired levels. Future work should try to minimize the number of sign-up steps wherever possible and ensure participants have clear guidance about what they will need to do during the sign-up process before beginning. Greater manufacturer app adoption among drivers will also help organically improve conversion rates over time.

02 OEM data monetization emerged as a major barrier to participant engagement with telematics data.

Most vehicle manufacturers lock access to telematics data behind a paywall. To access this data, drivers may be required to subscribe to a package that includes other services (for example, remote start or roadside assistance). Ultimately, the feasibility of using direct telematics for RUC programs at scale will be limited without an industry-wide telematics data standard or mandated no-cost connection authorization process.

03 Relying on a third-party data provider increased eligibility but made vehicle connections less stable.

Four types of vehicle connection instability were observed during the Demonstration:

- Smartcar can be unexpectedly barred from accessing telematics data.
- Established connections can be broken by automaker security updates.
- The model years supported by data providers are subject to change.
- GPS data can be lost during connection downtimes.

Future RUC inquiries should look to develop policies for addressing potential data loss and communicating with drivers during connection downtimes. Platform reliability is expected to improve in the coming years as providers become more accustomed to addressing the RUC use case, and as telematics data platforms mature overall.

Methodology: Mode Shift Study

The study was structured into four phases, which cumulatively ran from May 2024 to May 2025. Data was only collected during the Live Study Period phase. For more information, refer to [5. Methodology: Transit Mode Shift Study](#).

1. Participant Identification

Potential demonstration participants were identified from the list of respondents who provided optional information about their most common trip in MDOT's spring 2024 *Public Perceptions of RUC* survey. This information was compared against study criteria and transit coverage data to establish an initial list of invitees.

2. Participant Onboarding

Email invitations were extended in batches to the invitees identified during the first stage. Invitations included a personalized link to the demonstration sign-up website, where invitees confirmed their participation. Participants who signed up for the Study, recorded transit trips, and completed a post-demonstration closeout survey were eligible for a variable gift card incentive (up to \$500) based on the number of trips they recorded.

3. Live Study Period

Participants could record transit trips for up to six (6) months. During this time period, participants received monthly email updates showing the total number of eligible transit trips they had recorded in the Study.

4. Study Closeout

Data collection for all participants was suspended on May 1, 2025. No data was collected after that date. Participants were surveyed about their experience in the Study between May 1 and May 15, 2025. Incentives were distributed to participants after they completed the closeout survey.

Findings: Mode Shift Study

Three key findings were learned during the Mode Shift Study. Results from the Study show that certain factors can help predict mode shift to transit, but long travel times relative to driving will limit the number of drivers who start taking transit if a future RUC system is implemented. These findings are discussed in more detail as part of [6. Findings: Transit Mode Shift Study](#).

01 | Most Study participants did not have a viable transit alternative to driving.

The median transit trip among registered participants took 4.5x as long as driving, equating to an average of 40 minutes of added travel time each way. Analysis comparing the incentive value gained by recording trips against the time value lost from longer travel times suggests that only 15% of participants had a transit option likely to be perceived as a viable alternative to driving.

02 | Incentive level and walking distance to bus stops can help predict mode shift to transit.

The participants most likely to record a trip met these three criteria:

- Were randomly **assigned to the highest (\$9.00) incentive tier**. Participants in this tier recorded 45% more trips than the average participant.
- Had a **walk no longer than 0.4 miles on either end of their trip**. No trips were recorded by participants needing to walk more than 0.6 miles to or from a bus stop.
- Had a transit **travel time within 40 minutes** of the associated driving duration.

03 | Incompatibility with respondent schedules and long travel times emerged as key barriers to transit use.

More than half of active participants noted a lack of transit trips that worked with their schedules as a participation barrier in a survey conducted after the live study period concluded. Poor transit options was also the most-selected reason when inactive participants and unconverted invitees were asked why they did not record any trips. About 60% of this group selected slow travel times relative to driving as the reason they felt their transit option to be of poor quality.

Recommendations for Future Research

Although the Demonstration proved the technical feasibility of using direct telematics data for RUC, several aspects of a future program remain open to further investigation. Namely, these include:

- **Accounting for miles driven out-of-state** and out-of-Country.
- **Limited vehicle eligibility**, even for recently produced models.
- **Industry uncertainty on best practices** for collecting and using telematics data.

Recommendations for future MDOT research that could help address these obstacles include:

1. Develop an approach for tracking miles travelled outside Michigan.

MDOT could develop methods for identifying out-of-state travel while respecting driver privacy, potentially in the context of regional partnerships with adjacent states.

2. Investigate reciprocal mileage tracking programs with adjacent states.

MDOT could look to engage adjacent DOTs to evaluate the feasibility of regional RUC fee collaboration.

3. Model the revenue generation potential of different RUC rates against anticipated funding needs.

If directed by the Legislature, MDOT could investigate an appropriate range for per-mile RUC fees. This investigation should also include a review of how RUC fees might vary by vehicle type, vehicle weight, time of travel, and other factors as appropriate.

4. Analyze the relative costs and benefits of RUC programs with different levels of eligibility.

MDOT could work with state policymakers to evaluate the financial benefits of a broad-coverage RUC program against the increased administrative costs and complexity generated by a program that includes multiple data collection methods.

5. Investigate the feasibility of a unified, interoperable RUC data sharing standard across manufacturers.

MDOT could look to partner with automakers, state DOTs, and the Federal government to develop a unified RUC telematics data standard.

1. Introduction

Michigan’s gas tax currently supports the construction and maintenance of most of the state’s transportation infrastructure — roads, bridges, and tunnels — as well as the operation of public transit systems around the state. As of January 2025, the state gas tax is \$0.31 per gallon. After factoring separate state sales taxes, Michigan residents pay about \$0.48 in state taxes per gallon of gasoline.²

The amount of revenue generated by gas tax is expected to fall in the coming years as internal-combustion vehicles continue to become more fuel efficient and electric vehicles become more prevalent. At the same time, the gap between available funding and required upkeep costs is expected to rise.

The Michigan Department of Transportation (MDOT) is interested in exploring Road Usage Charges (RUC) as an alternative funding source that could potentially replace or supplement the gas tax in the medium to long term. With RUC, drivers pay a flat fee per mile they drive, regardless of the way their vehicle is powered.



This research is funded through a FHWA grant provided as part of the *Surface Transportation System Funding Alternatives* (STSFA) program. This program supports evaluations of user-pays models to maintain the long-term solvency of the Highway Trust Fund.

1.1. Previous Work

To begin evaluating how RUC could work in Michigan, MDOT engaged Via — a firm specializing in using new technologies to develop and operate public mobility systems — to conduct a statewide RUC opinion survey and lead a live demonstration of the technology. The first phase of this investigation was completed in 2024, with feedback from more than 19,000 Michiganders gathered for the *Public Perceptions of Road Usage Charges* survey.³

² United States Energy Information Administration, State-by-state fuel tax data (January 2025). <https://www.eia.gov/petroleum/marketing/monthly/xls/fueltaxes.xlsx>

³ Michigan Department of Transportation, Public Perceptions Survey Results (August 2024) <https://www.michigan.gov/mdot/-/media/Project/Websites/MDOT/Travel/Mobility/Mobility-Initiatives/RUC/Michigan-RUC-Study-Public-Perception-Survey-Results.pdf>

1.2. Study Approach

The second phase of MDOT’s investigation (“the Study”) explores the potential of RUC as an alternative funding source for surface transportation systems. The long-term viability of the current transportation funding system, which relies heavily on motor fuel taxes, is expected to decline in the future as the on-road vehicle fleet becomes more efficient and EVs become more prevalent. Meanwhile, the hurdles to implementing a RUC program at scale decrease year-over-year as vehicle telematics technology improves. To understand the current state of RUC technology, the Study **evaluates two emerging data collection and processing models**.

Beyond the underlying technology, the development of RUC also presents an opportunity to create new tools that help optimize the performance of transportation networks. RUC reframes the tax paid to use public roadways — currently abstracted as part of the cost of fuel — into a clear user-pays model, where drivers see how much a specific trip cost them after travelling. RUC could thus help reduce roadway congestion and total vehicle miles travelled (VMT) by facilitating comparisons of RUC fees against other travel modes. To begin identifying what the magnitude of these network performance optimizations may be, the Study also investigates the relationship between **public transit usage, travel time competitiveness, and incentives**.

1.3. Study Goals



To properly address all Study goals, the Project Team’s research was divided into two focus areas: a **live demonstration of RUC technology** (detailed in Chapters 2, 3, and 4) and an **investigation into the factors influencing mode shift to transit** (detailed in Chapters 5 and 6)

With the Study, the Project Team (MDOT and Via) looked to accomplish four goals:

- Evaluate the technical **feasibility of using telematics data to administer a RUC program** via a live demonstration.
- Test **two emerging models for obtaining vehicle telematics data**: sourcing data directly from manufacturers and using a third-party data provider.
- Understand if joining in the live demonstration made participants **more or less likely to support** future RUC programs in Michigan.
- Assess which circumstances could **induce mode shift from driving to transit**, in anticipation of drivers having clearer understanding of per-trip costs in the future.

2. Methodology: RUC Demonstration

The Demonstration was designed to evaluate two emerging models for collecting and processing the telematics data required to administer a RUC program: partnering directly with a vehicle manufacturer and partnering with a third-party that sources data from multiple manufacturers.

2.1. Demonstration Concept

Both of the models included in the Demonstration use telematics equipment included in newer vehicles to collect and transmit the data required for RUC without any ongoing user intervention. This “direct telematics” model is the newest — and least studied — approach of administering a RUC program. This model is compared to other approaches in **Table 1**.

Table 1. Summary of Current RUC Technology Landscape

Method	Manual Data Collection	Mobile Application	Onboard Device	Study Focus: Direct Telematics
Concept	RUC data is collected from odometer photos or during annual safety inspections.	RUC data is collected using an app on a driver’s cellphone.	RUC data is collected using a device plugged into a vehicle’s diagnostic (OBDII) port.	RUC data is collected directly from vehicles using built-in equipment.
Strengths	• Works with all vehicles. • Previous research has developed photo reporting methods that minimize fraud risk. • Easy to implement in states with annual safety inspections.	• Works with all vehicles, as long as the driver has a cellphone. • Data is received regularly, so fees can be paid in any cadence.	• Works with all vehicles made in or after 1996. • Once connections are established, data is reported automatically. • Data is received regularly, so fees can be paid in any cadence.	• Does not require any hardware or reporting apps. • Once connections are established, data is reported automatically. • Data is received regularly, so fees can be paid in any cadence.
Concerns	• No way to account for miles traveled out-of-state, or by multiple drivers. • Michigan does not require safety inspections.	• Unresolved concerns about tracking accuracy and data privacy. • Requires manual driver intervention at times.	• Expensive to run (hardware must be distributed to all enrolled drivers).	• Only recent vehicles are equipped with the required telematics equipment.

Selected Data Partners

The Study evaluated the potential of two distinct methods for sourcing telematics data directly from vehicles. One partner was selected for each model under review:

- **Mobilisights:** Mobilisights was the selected partner for sourcing telematics data **directly from a manufacturer**. The company is a data-focused subsidiary of Stellantis, one of the world's largest automakers.⁴
- **Smartcar:** Smartcar was the selected partner for sourcing telematics data **from several manufacturers via a third-party platform**. The company's software is primarily used by the insurance and logistics industries for risk management and fleet operations.

Key information about each partner — including vehicle coverage, strengths, and challenges — is summarized in **Table 2**.



⁴ In the US market, Stellantis is best known for the Chrysler, Dodge, Jeep, and RAM brands. In global markets, the company also owns the Alfa Romeo, Fiat, Citroën, and Peugeot brands (among others).

Table 2. Summary of Selected Telematics Data Providers

Partner	Mobilisights	Smartcar
Connection Technology	Onboard telematics data received directly from OEM.	Onboard telematics data received via a passthrough from OEM applications.
Eligible Brands	• Alfa Romeo • Chrysler • Dodge • Jeep • RAM	• BMW (including MINI) • General Motors (including Buick, Cadillac, Chevrolet, and GMC) • Hyundai (including Kia) • Jaguar Land Rover • Mazda • Nissan (includes Infiniti) • Rivian • Stellantis (including Chrysler, Dodge, Jeep, and RAM) • Subaru • Tesla • Toyota (including Lexus) • Volkswagen (including Audi and Porsche) • Volvo
Eligible Model Years	Varies by model, but generally post-2021 .	Varies by model, but generally post-2019 .
Platform Strengths	• Simple connection process. Users can be connected without additional steps after accepting terms and conditions. • Connection stability. Once established, vehicle connections are generally very stable. • No cost to users. No user-paid subscriptions are required to establish connections.	• Broad coverage. Connections can be established to most recent vehicles. • Works across a wide range of brands. Vehicle eligibility is not restricted to a single manufacturer, reducing overhead expenses in a statewide RUC program.

Partner	Mobilisights	Smartcar
Platform Challenges	• Narrow coverage. The equipment required to transmit telematics data is typically only added to recently-redesigned models. • Complex eligibility. On some models, eligibility is restricted to select trim levels only. This is confusing to communicate to participants. • Restricted to one manufacturer. All eligible brands are owned by Stellantis, meaning a statewide RUC program would need different solutions for vehicles from other manufacturers.	• Complex connection process and potential user cost barriers. Users are required to log in with the same credentials used to access their OEM's application. Most OEMs charge for access to these services after an initial trial period. • Connections can be broken by security updates. Since Smartcar does not have partnerships with all OEMs they source data from, app updates can break vehicle connections. • Changing eligibility requirements. Support for model year 2018 vehicles was dropped during the Study.

2.2. Demonstration Structure

The demonstration was structured into four phases, which cumulatively ran from May 2024 to May 2025. Data was only collected during the Live Demonstration phase (which ran from October 2024 to April 2025).

1. **Participant Identification (May 2024 to August 2024):** Potential demonstration participants were identified from the list of respondents to MDOT's spring 2024 *Public Perceptions of Road Usage Charging* survey. Respondents to that survey had the option to provide information about their vehicle (make, model, model year, and license plate) if they wanted to be considered for upcoming phases of the Study. The vehicle information received was compared against eligibility information from Smartcar and Mobilisights to establish an initial list of invitees to the Demonstration. For more information on this process, refer to [2.1.3 Participant Identification](#).
2. **Participant Onboarding (September 2024 to December 2024):** Email invitations were extended in batches to the invitees identified during the first stage. Invitations included a personalized link to the demonstration sign-up website, where invitees:
 - a. Confirmed that the vehicle information provided during the *Public Perception Survey* was still correct.
 - b. Reviewed terms and conditions for the demonstration.
 - c. Connected their vehicle to the demonstration.
 - d. Viewed the online dashboard where their odometer data would appear during the demonstration.

For more information on this process, refer to [2.1.4. Participant Onboarding](#). All participants who connected their vehicle, stayed connected during the live demonstration, and completed a post-demonstration closeout survey were eligible for a \$75 gift card incentive.

3. **Live Demonstration (October 2024 to April 2025):** Vehicles were connected for the demonstration for up to six (6) months. During this time period, odometer data was collected from connected vehicles and displayed to participants via an online dashboard. Participants also received monthly email updates showing the total number of miles they had driven during the demonstration period. For more information on this process, refer to [2.1.5 Live Demonstration](#).
4. **Demonstration Closeout (May 2025):** Data collection was suspended for all vehicles on May 1, 2025, and all vehicles were subsequently disconnected from Smartcar and

Mobilisights. Participants were surveyed about their experience in the demonstration from May 1 to May 15, 2025. Incentives were distributed to participants after they completed the closeout survey. For more information on this process, refer to [2.1.6 Demonstration Closeout](#).

2.3. Participant Identification

Participants were identified exclusively from the respondent list to the 2024 statewide *Public Perception Survey*. After completing the main portion of that survey, respondents were asked to answer additional optional questions that could make them eligible for later stages of the study. Two key data points were collected and used to determine eligibility:

- **Vehicle information:** The make (brand), model, and model year of the vehicle typically driven by the respondent.
- **License plate:** Michigan license plate numbers were used to confirm vehicle information and trim level.

One-third (6,400 of 19,160) of *Public Perception Survey* respondents provided these data points.

Filtering to Eligible Participants

Smartcar and Mobilisights both provided vehicle eligibility tables illustrating the models (and model years) data connections could be established with. This information was cross-referenced with the vehicle information provided by *Public Perception Survey* respondents to identify an initial list of Study invitees.

Before invites were sent to potential participants, the provided license plate was used to verify the make, model, and model year of each vehicle. Respondents whose license plate did not return the same vehicle information as provided in the *Public Perception Survey* were given an opportunity to update their information via a brief online survey. Eligibility was re-evaluated for each of the 105 initial invitees who responded to this survey. After this process was completed, a Study invite list of 2,320 persons was finalized.

2.4. Participant Onboarding

Invitees were enrolled in the Study using a five-step process. A **total of 208 participants** were confirmed for the RUC demonstration. Screenshots of the website used to onboard participants are provided as [Appendix A: RUC Demonstration Sign-Up Process](#).

1. Email Invitation



Emails were extended in batches to the invitees identified from the *Public Perception Survey*. Invitees who did not join the demonstration from the initial invite were sent up to two reminder emails. All emails contained a link to the Study website, where invitees could confirm their participation.

2. Study Introduction



Invitees visiting the website landed on an introductory page outlining the steps they would need to complete to participate, as well as the incentives available for participating.

3. Participant Details



After viewing introductory information, invitees were taken to a page to confirm that the vehicle details they provided in the *Public Perception Survey* were still correct. The Project Team reevaluated eligibility for invitees with updated vehicle information on a case-by-case basis. Invitees also reviewed and accepted the Study terms and conditions during this step.

4. Vehicle Connection



After confirming their details and accepting the Study terms, invitees using Smartcar were routed to the Smartcar site to connect their vehicle. To do this, invitees had to log in to Smartcar with the same credentials they used to log in to their OEM app (myChevy, Kia Connect, etc.). Once they logged in to Smartcar, invitees were routed back to the Study website. Invitees using Mobilisights skipped this step, as the vehicle connection could be established automatically once the Study terms were accepted.

5. Confirmation



After the Study terms were accepted and their vehicle was connected, invitees were officially enrolled in the Study. After seeing a confirmation message, participants were taken to the online dashboard where their mileage data would appear during the live demonstration period.

2.5. Live Demonstration

The live period for the demonstration began on October 1, 2024 and lasted until April 30, 2025. Invites were extended on a rolling basis during the opening months of the demonstration to allow for any issues that emerged in the smaller initial batches to be addressed before the later larger batches were sent.

During the live period, participants could view their odometer information at any time on the Study website. A view of the participant-facing dashboard is reproduced here as **Figure 1**. Participants were also sent email updates notifying them of how many miles that had driven over the preceding month.

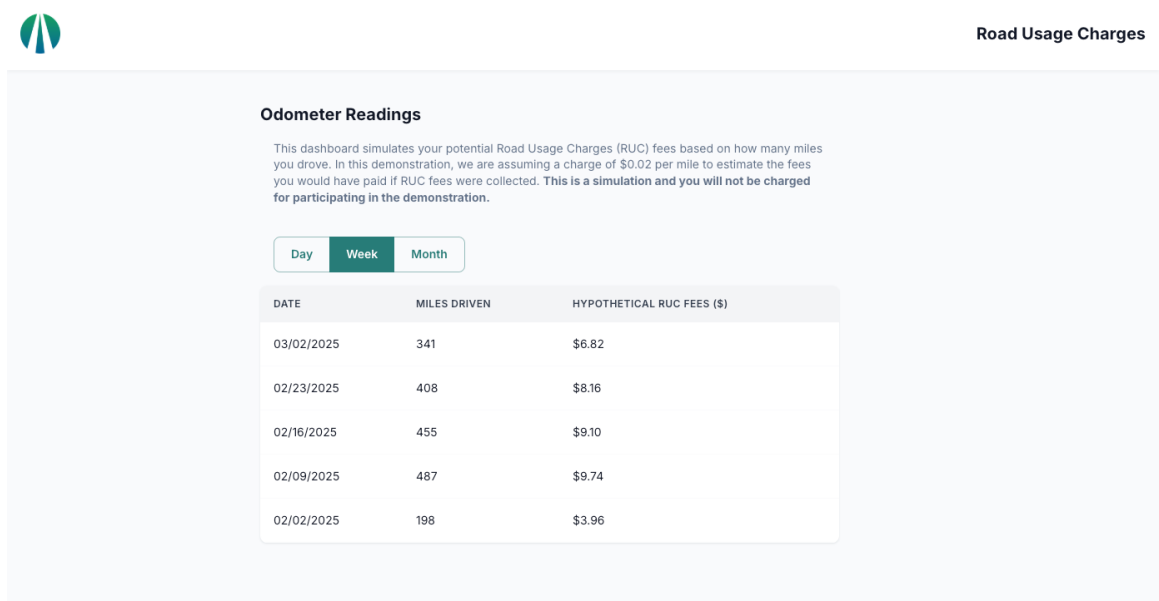


Figure 1. Online Participant Dashboard (Source: *MiRUCStudy.com*)

2.6. Demonstration Closeout

Data collection was suspended for all vehicles on May 1, 2025, and all vehicles were subsequently disconnected from Smartcar and Mobilisights. Participants were surveyed about their experience in the demonstration from May 1 to May 15, 2025. During the same period, survey invitations were also sent to demonstration invitees who did not ultimately participate. This survey was intended to identify the barriers that prevented invitees from joining the Study. Key findings from both surveys are presented in [3. Findings: RUC Demonstration](#). Unabridged survey results for both participants and unconverted invitees are reproduced in [Appendix B: RUC Demonstration Closeout Survey Results](#). Participants were required to complete the closeout survey before receiving their \$75 incentive. All incentives due to participants were issued within 14 days of survey completion.

3. Findings: RUC Demonstration

Findings from each phase of the Demonstration — participant onboarding, live demonstration, and closeout — are detailed in this chapter. Findings are grouped into three major themes:

3.1 | Direct telematics data offers reliable mileage tracking anywhere in Michigan.

During the Demonstration, a total of 799,000 miles were tracked between 208 enrolled participants. There is an evident relationship between average daily recorded vehicle miles travelled (VMT) and the level of urbanization in the surrounding area.

Participants in the Detroit area drove about 31 miles per day on average, 35% less than the average participant on Michigan's Upper Peninsula (48 miles per day).

3.2 | Direct telematics data usage offers a strong user experience, with measurable sentiment improvements post-Demonstration.

More than 80% of participants reported that they found the sign-up and vehicle connection processes to be “simple” or “very simple”. This positive onboarding experience continued through the Demonstration, with about 65% of participants indicating direct telematics to be their preferred way of reporting RUC data in the closeout survey. Only 40% of this same group preferred direct telematics prior to the Demonstration. When asked questions about the future of transportation funding in Michigan after the Demonstration, sentiments around RUC relative to the gas tax improved relative to the pre-Demonstration baseline.

3.3 | Significant hurdles remain prior to widespread adoption of direct telematics for RUC programs.

Three primary hurdles were observed during the Demonstration:

- **Limited vehicle eligibility:** Even in the most recent vehicle model year available, only half of vehicles reviewed could establish a connection.
- **Driver familiarity and comfort with telematics data:** Unless drivers have used their manufacturer's app, they likely do not have direct experience with telematics data.
- **Industry uncertainty:** Automakers have not yet coalesced on a best-practice approach to collecting and using telematics data.

3.1. Direct telematics data offers reliable mileage tracking anywhere in Michigan.

Once vehicle connections were established, the Project Team recorded odometer information from participant vehicles at least once daily. The results of this process are reported in this section.

3.1.1. Aggregated Mileage Results

Between October 2024 and April 2025, the Project Team recorded nearly 800,000 miles travelled by participants.



During the Demonstration, **a total of 799,000 miles were tracked** between the 208 enrolled participants. The **average participant travelled about 37 miles per day** during the live portion of the demonstration.

The distribution of average daily vehicle miles travelled (VMT) by participant is shown in **Figure 2**. One-quarter of participants travelled less than 20 miles per day on average, while one-quarter of participants travelled more than 55 miles per day.

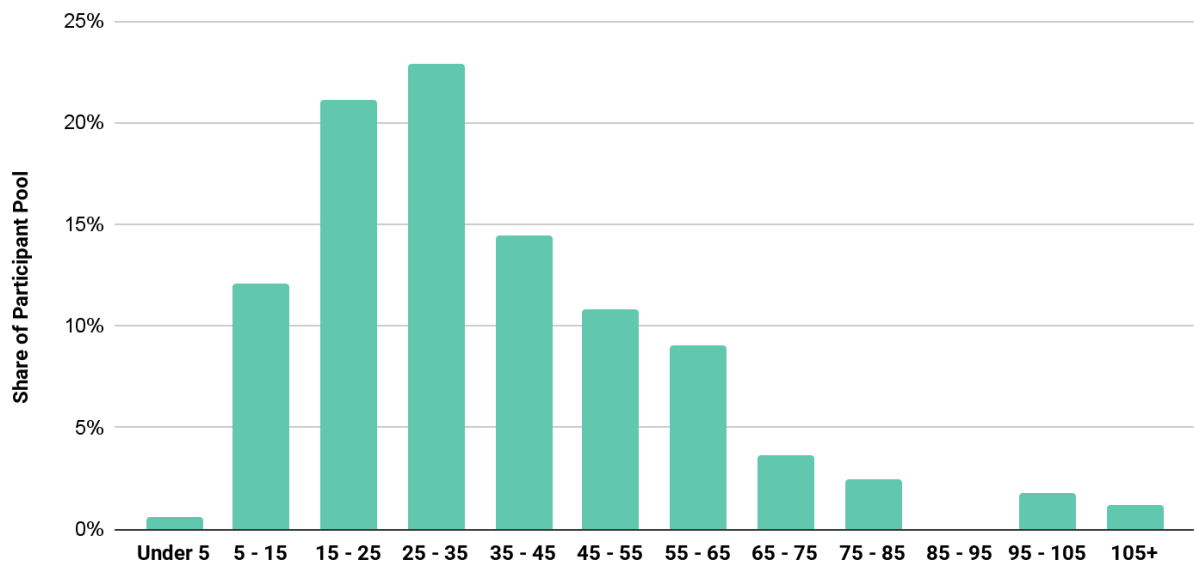


Figure 2. Distribution of Average Daily VMT During Demonstration Period

3.1.2. Results by MDOT Region

The Demonstration was open to all Michigan residents with an eligible vehicle, regardless of their home location. The resulting participant pool contained participants from all seven (7) MDOT service regions, as shown in **Table 3**. The number of enrollees from each region was generally proportional to each region’s population, although the Metro region was underrepresented in the enrollee pool. Most of this underrepresentation was filled by participants from the Grand region, who were overrepresented in the participant pool. This trend was also observed in the respondent set for the 2024 *Public Perceptions Survey*. To enroll as many participants in the Demonstration as possible, no regional quotas were set — any interested invitee could register and participate.

Table 3. Regional Distribution of Demonstration Participants

Region	Population Centers in MDOT Region	Target Share of Participant Pool ⁵	Actual Share of Participant Pool ⁶
Bay	Flint, Midland, Bay City	14%	15%
Grand	Grand Rapids	16%	23%
Metro	Detroit	39%	29%
North	Traverse City, Mackinaw City	5%	7%
Southwest	Kalamazoo	8%	7%
Superior	Marquette	3%	3%
University	Lansing, Ann Arbor	15%	16%

⁵ Includes 208 persons who confirmed their participation in the Demonstration.

⁶ Includes 208 persons who confirmed their participation in the Demonstration.

Mileage results are provided by MDOT region in **Table 4**. The average daily VMT metric shown in the table was calculated as the difference between the first and last recorded odometer value for each participant, divided by the number of days between the readings.

Table 4. Mileage Totals and Average Daily VMT by MDOT Region

Region	Population Centers in Region	Total VMT <i>All Vehicles in Region</i>	Average Daily VMT <i>Per Vehicle</i>
Bay	Flint, Midland, Bay City	114,000	39
Grand	Grand Rapids	189,000	41
Metro	Detroit	204,000	31
North	Traverse City, Mackinaw City	22,000	29
Southwest	Kalamazoo	65,000	42
Superior	Marquette	56,000	48
University	Lansing, Ann Arbor	147,000	36
Michigan	Statewide	799,000	37

There is an evident, but imperfect, relationship between average daily VMT and the level of urbanization in each region. Generally, amenities in predominantly rural regions are more dispersed than in urbanized regions, leading to longer trip lengths in rural areas. This relationship is quantified in **Figure 3** using population density as a proxy for level of urbanization. The North region, which saw the lowest total VMT of all regions, appears to be an outlier result.

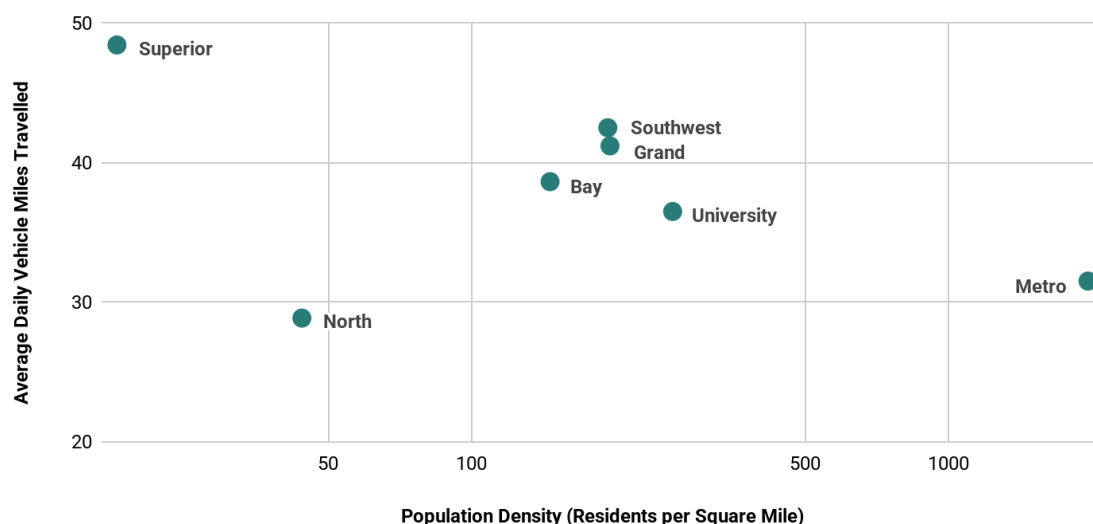


Figure 3. MDOT Regions by Average Daily Mileage and Population Density

3.2. Direct telematics data usage offers a strong user experience, with measurable sentiment improvements post-Demonstration.

Demonstration enrollees were among the first in Michigan to directly experience a RUC program. To measure how this experience influenced their perceptions of RUC, the Project Team evaluated three areas:

- **Participant Onboarding:** In the post-Demonstration survey, enrollees reported high levels of satisfaction with the sign-up and vehicle connection processes, which replicated a real RUC program as closely as possible.
- **Post-Demonstration Preference Changes:** When asked specifically about how they prefer to report RUC data, participant answers shifted notably towards a direct telematics model when compared to the pre-Demonstration baseline.
- **Post-Demonstration Opinion Changes:** When asked general questions about the future of transportation funding in Michigan, sentiments around RUC relative to the gas tax improved noticeably.

The comparative analysis of participant preferences and opinions presented in this section relies on two surveys:

- **Pre-Demonstration:** MDOT's 2024 *Public Perceptions of Road Usage Charges* survey, completed by the Project Team in an earlier phase of this overall study. The full findings of this survey are available on the [MDOT website](#). All Demonstration invitees were sourced from the respondent pool for this survey.
- **Post-Demonstration:** Participants were surveyed in May 2025 after the end of the Live Demonstration period. The full results of this survey are provided in this document as [Appendix B: RUC Demonstration Closeout Survey Results](#).

3.2.1. Participant Onboarding

In the post-Demonstration survey, all participants were asked about their sign-up experience. As shown in **Figure 4**, 88% of participants described the sign-up process as “simple” or “very simple”. Less than 5% of the participant pool described the process as “complicated” or “very complicated”. Participants gave similarly positive responses when asked about the process of connecting their vehicle (**Figure 5**), with 82% considering the process to be “simple” or “very simple”.

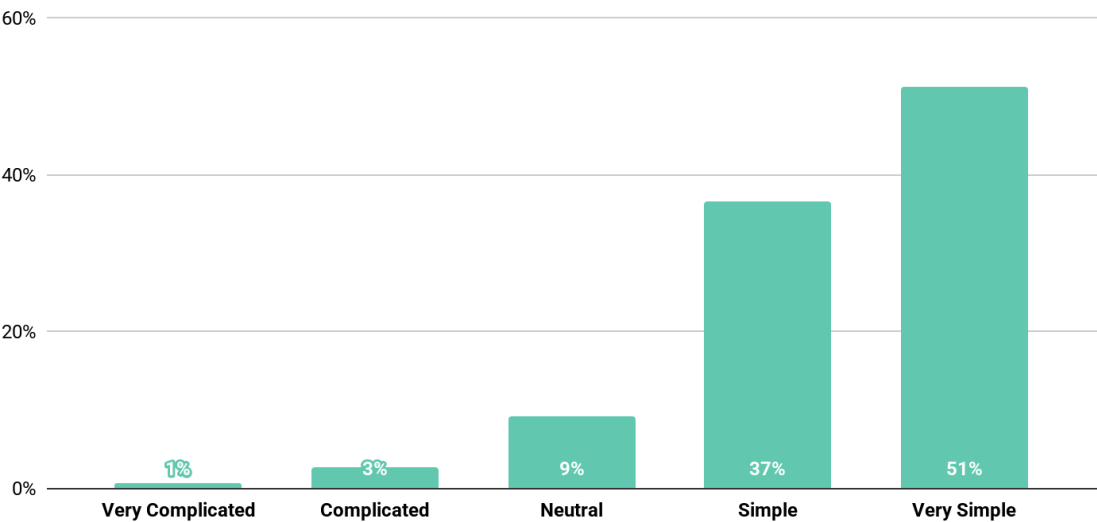


Figure 4. How difficult was the process of signing up to participate in this study?

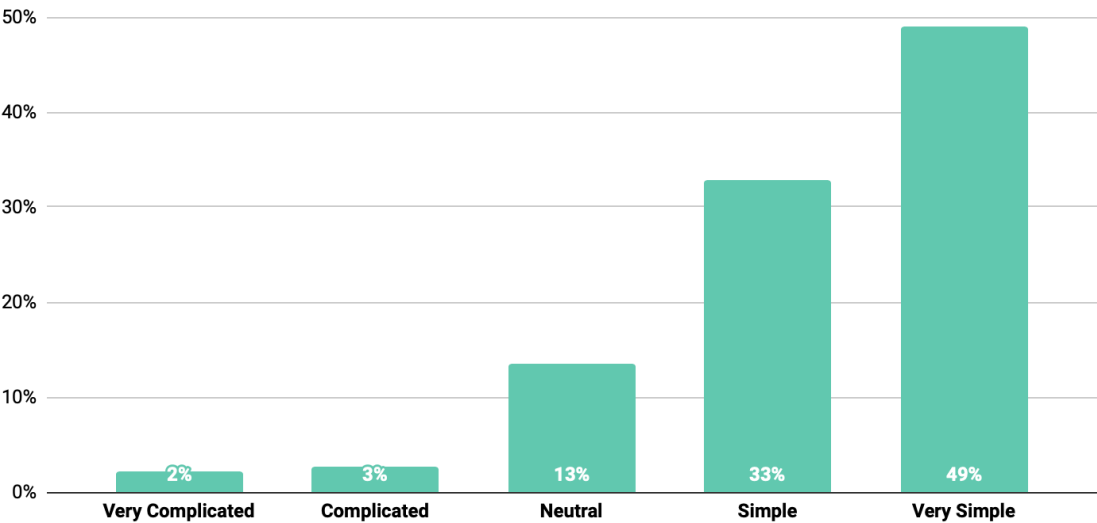


Figure 5. How difficult was the process of connecting your vehicle to share odometer data?

3.2.2. Post-Demonstration Preference Changes

The pre- and post-Demonstration surveys both asked respondents about their preferred model for collecting the mileage data underpinning a RUC program. As shown in **Figure 6**, the share of participants preferring a direct telematics approach (“my vehicle automatically provides the data for me”) grew by more than 50% between the two surveys, increasing from 40% of registered participants in the pre-Demonstration survey to 64% of registered participants in the post-Demonstration survey.⁷ Post-Demonstration, the share of participants preferring every option aside from direct telematics decreased.

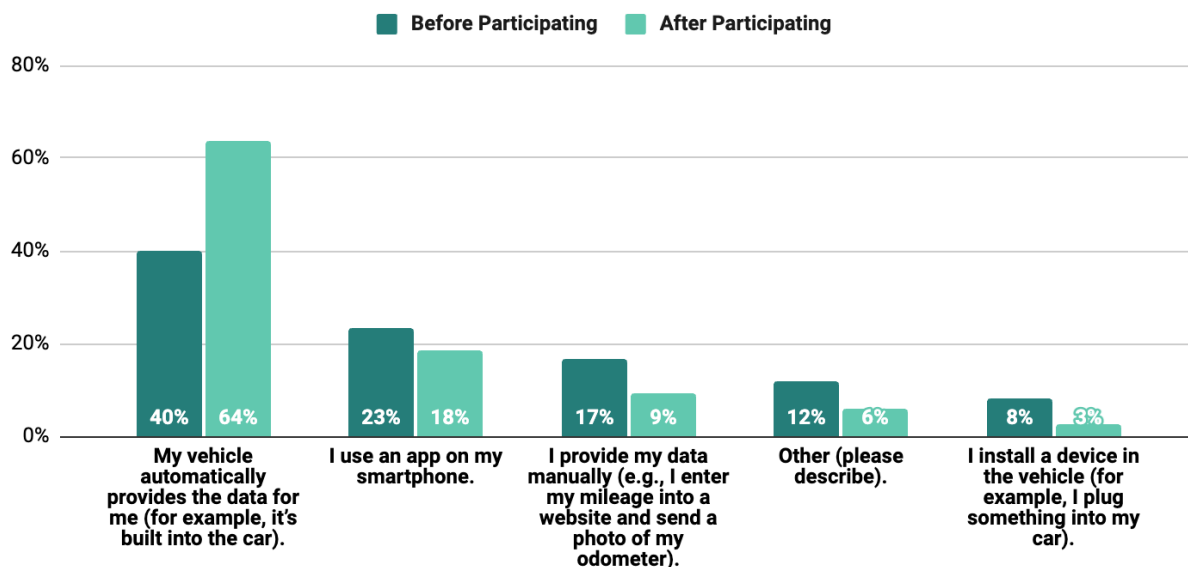


Figure 6. How would you prefer to report data (the number of miles you drove), if you needed to provide it?

⁷ Although this question was repeated in both surveys, respondents in the post-Demonstration survey were not shown their answer from the earlier *Public Perceptions* survey. This choice was made by the Project Team in consultation with MDOT to allow participants to approach this question without preconceived notions.

3.2.3. Post-Demonstration Opinion Changes

To measure how the Demonstration experience influenced participant perceptions of RUC, select opinion questions from the 2024 *Public Perceptions Survey* were repeated in the post-Demonstration survey.



When answering the questions highlighted in this section, participants were shown how they answered the same question in the 2024 *Public Perceptions Survey*. This approach allowed the Project Team to directly **measure how participation in the Demonstration changed opinions** about RUC.

Participant opinions on the idea of using RUC instead of the gas tax are shown in **Figure 7**. Prior to the Demonstration, about 23% of participants held negative or slightly negative opinions on this concept. After completing the Demonstration, only 15% of participants still had negative or slightly negative opinions on the idea (a decline of one-third). The majority of these participants moved into the “neutral” category.

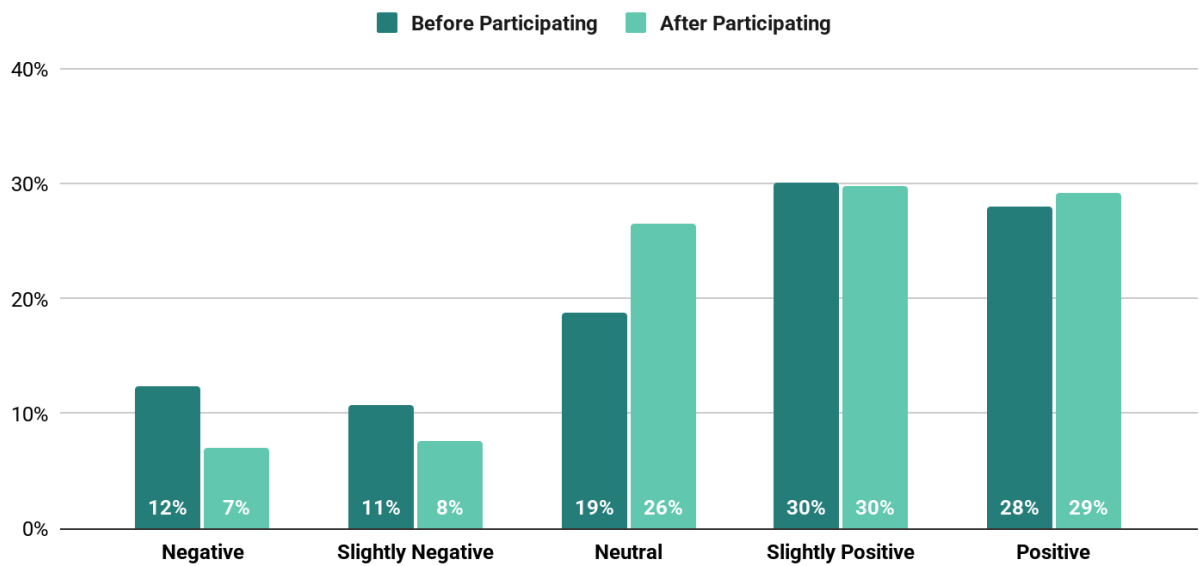


Figure 7. After participating, how do you feel about using Road Usage Charges instead of a gas tax?

The Demonstration experience also influenced opinions about the fairest way to fund transportation in Michigan. As shown in **Figure 8**, the share of participants preferring the gas tax and RUC both increased by five (5) percentage points. However, participants in the post-Demonstration survey still felt RUC was more fair than the gas tax by a three to one margin.

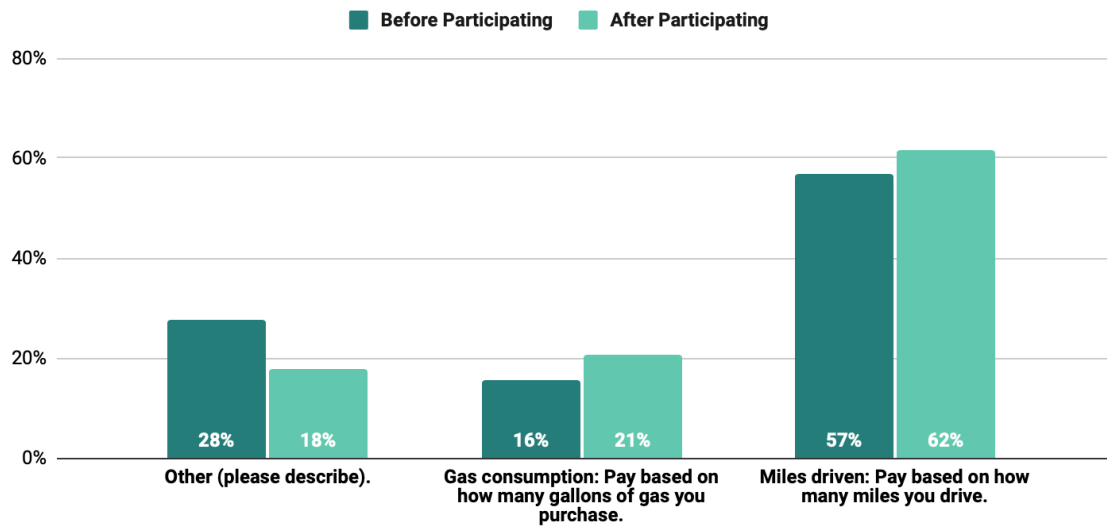


Figure 8. Which sounds more fair to you: gas taxes or Road Usage Charges?

To measure how more abstracted opinions mapped onto potential policy changes, participants were also asked about their reaction to changing to a RUC funding approach. As shown in **Figure 9**, the share of participants who were opposed or very opposed dropped from 22% to 16%, while the share who were supportive or very supportive grew from 55% to 57%.

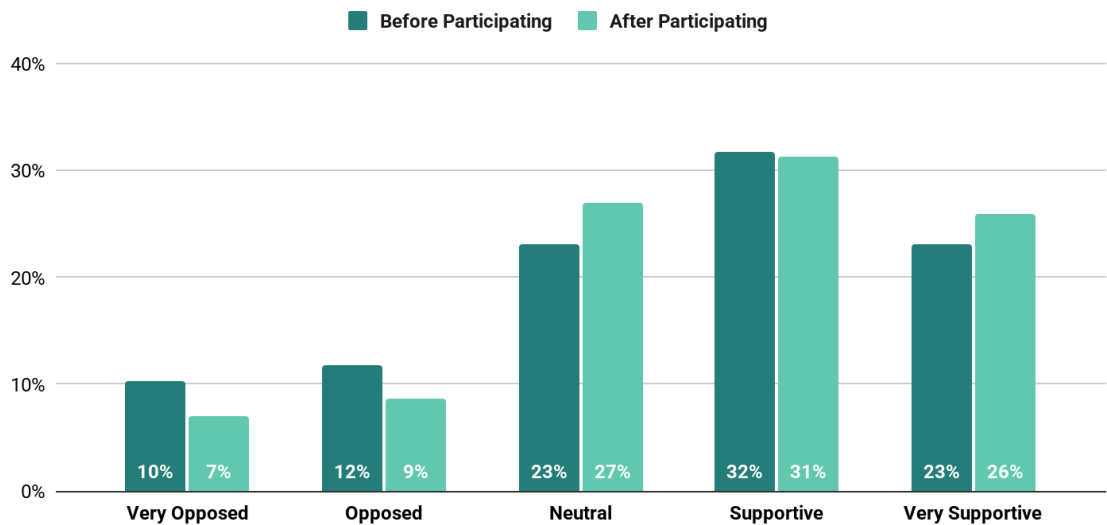


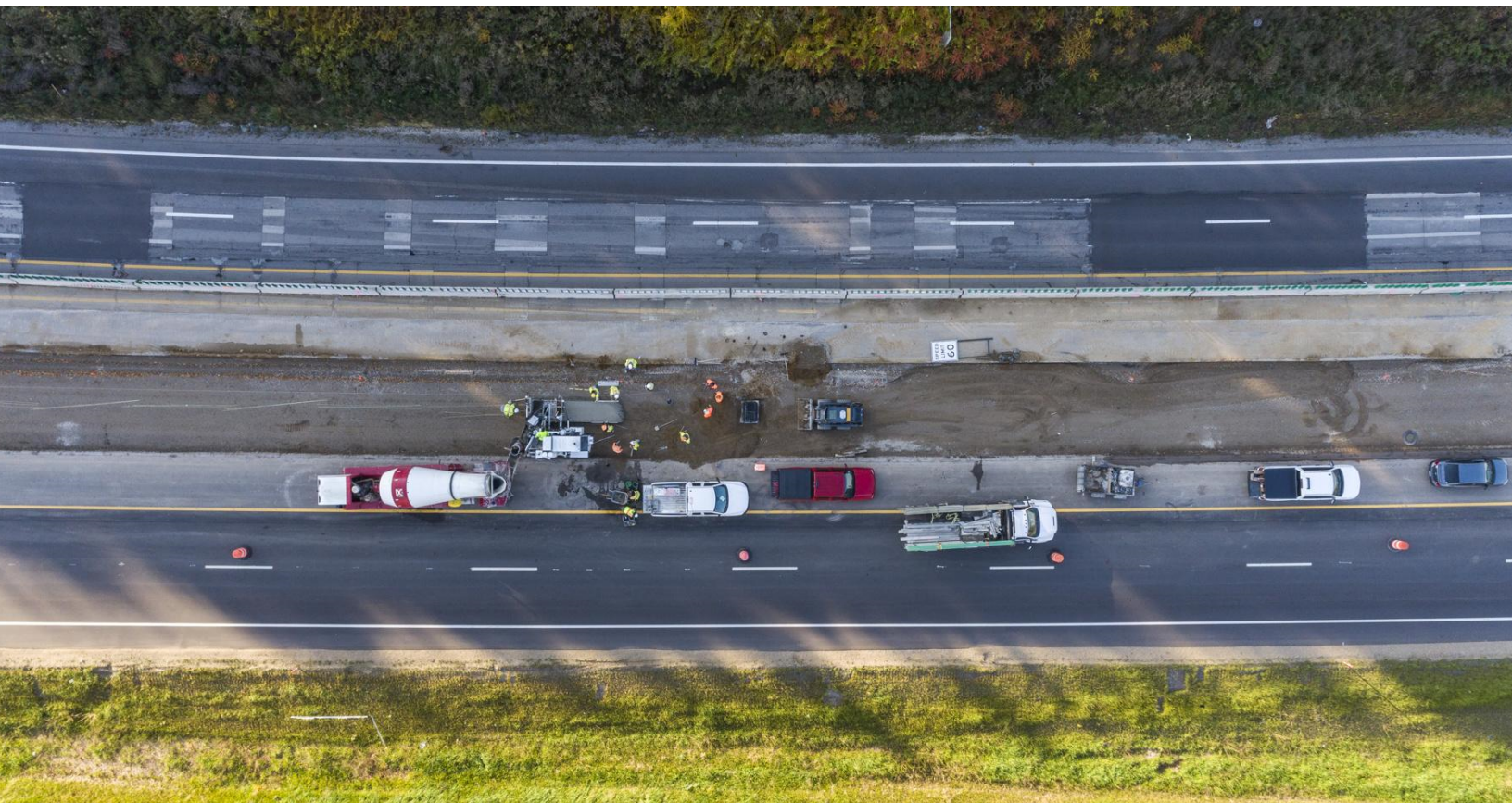
Figure 9. After participating, how do you feel about changing from the gas tax to Road Usage Charges?

3.3. Significant hurdles remain prior to widespread adoption of direct telematics for RUC programs.

Three primary obstacles to the usage of direct telematics data at scale were encountered:

- **Limited vehicle eligibility:** Even in the most recent vehicle model year available, only half of vehicles reviewed were eligible to establish a connection through Smartcar or Mobilisights.
- **Driver familiarity and comfort with telematics data:** Unless drivers have used their manufacturer's app, they likely do not have direct experience with telematics data. Participant sentiment also reveals a distrust of private companies managing the data required for RUC programs.
- **Industry uncertainty:** Automakers have not yet coalesced on a best-practice approach to collecting and using telematics data.

While not directly within the scope of this Demonstration, it should also be noted that **generating political buy-in for using RUC to grow transportation funding** is expected to be a future obstacle.



3.3.1. Limited Vehicle Eligibility

The primary obstacle to the widespread usage of direct telematics for RUC data sourcing remains incomplete and fragmented vehicle eligibility. No currently-available telematics solution can offer coverage for all vehicle makes, meaning that any RUC programs operating at scale would need to employ additional mileage reporting mechanisms. This increases program complexity for both drivers and administrators, in addition to increasing management costs.

Despite the lack of complete coverage, telematics equipment is coming installed in an increasingly large share of the vehicle fleet. **Figure 10** shows the final Demonstration eligibility status for all 6,400 vehicles submitted in the 2024 *Public Perceptions Survey*. Neither data provider engaged for the Demonstration was able to provide coverage for any MY2013 or earlier vehicles due to a lack of in-vehicle telematics equipment. From MY2014 onward, the share of eligible vehicles in each annual cohort generally increases year-over-year as more models are redesigned to include the appropriate equipment.

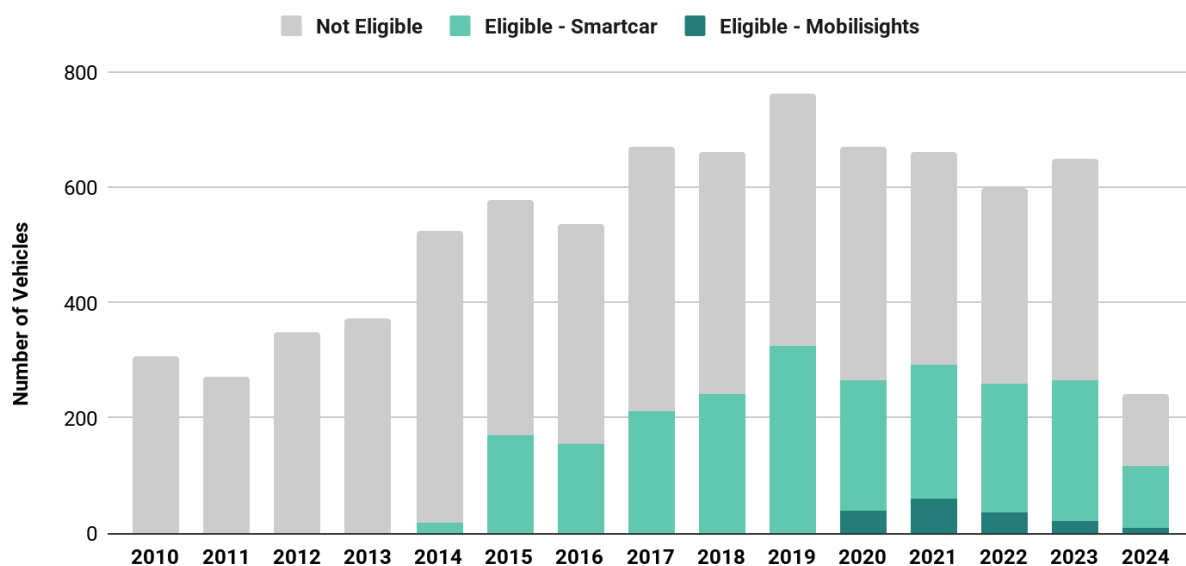


Figure 10. Vehicle Eligibility by Model Year, March 2024

The results in Figure 10 can also be used to analyze trends in vehicle age among the on-road fleet. The median model year among the vehicles reviewed is 2018, approximately 6-7 years old in March 2024 (the time data was collected). One-quarter of vehicles are 2021 models or newer (3-4 years old), while one-quarter of vehicles are 2015 models or older (9-10 years old). Although vehicles manufactured before model year 2010 were not counted in the *Public Perceptions Survey*, a long tail of older vehicles is likely.

The share of each model year eligible for the Demonstration in March 2024 is detailed in **Figure 11**. Eligibility improves year-over-year, growing from 29% of MY2015 vehicles to 48% of MY2024 vehicles.

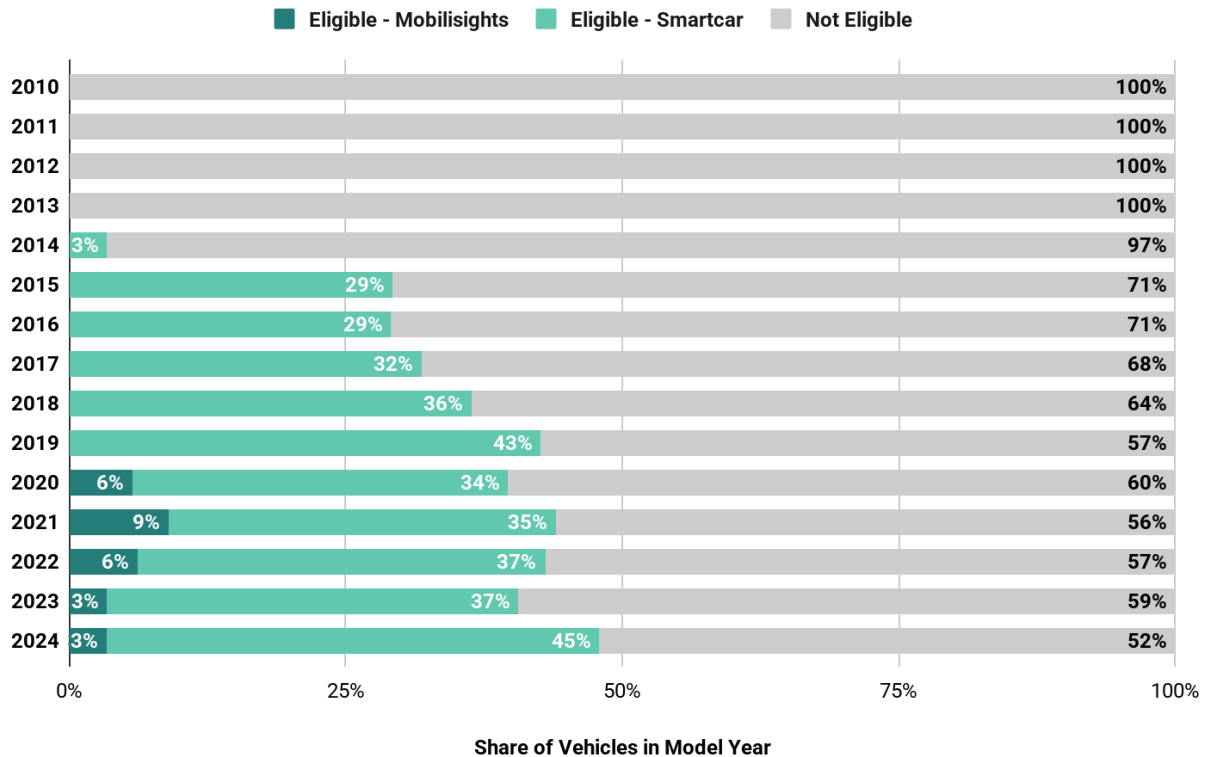


Figure 11. Share of Eligible Vehicles Over Time, March 2024

Due to limitations in the vehicle makes covered by the two data providers engaged for the Demonstration, the percentages in Figure 11 should only be interpreted as measures of relative growth. They do not directly represent the share of vehicles equipped with telematics equipment by year, since manufacturers that did not make telematics data available through the vendors selected for the Demonstration (notably, Ford and Honda) still install telematics equipment on their vehicles.

3.3.2. Driver Familiarity and Comfort with Telematics Data

More than 90% of Demonstration invitees had to establish a vehicle connection by signing in to their manufacturer's app or website. App adoption among this group is shown in **Figure 12**. About 50% of participants said that they used an app to connect their vehicle. The “no” and “not sure” responses to this question are likely from respondents who used a website to establish the vehicle connection.

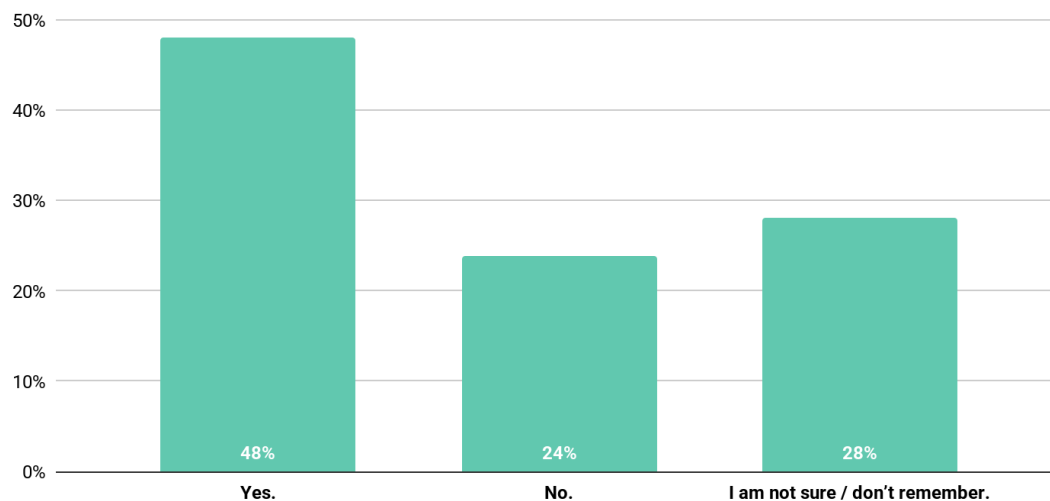


Figure 12. Did you use an app from your vehicle manufacturer to connect your car for this study?

A post-Demonstration survey of invitees who did not ultimately participate shows markedly lower manufacturer app usage than in the participant group. As shown in **Figure 13**, only 34% of unconverted invitees ever use their manufacturer’s app, while only 10% pay to access the app.

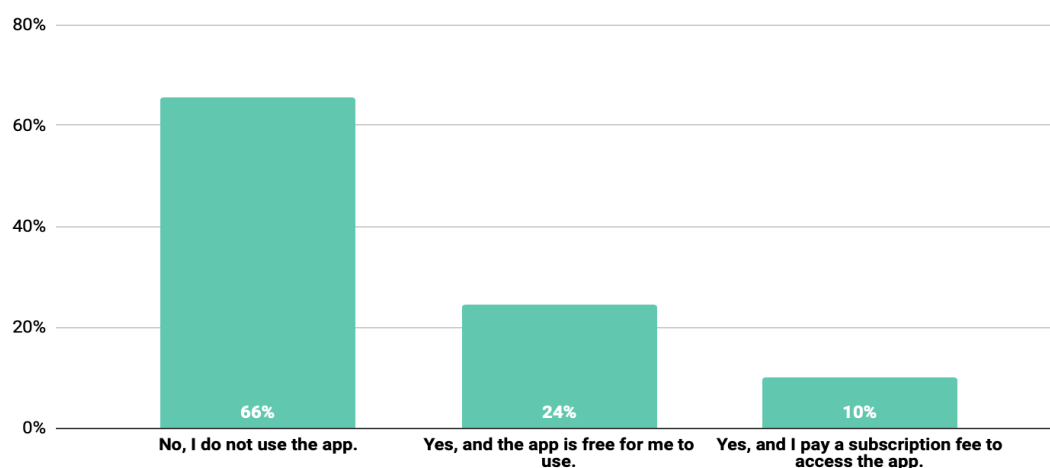


Figure 13. Some methods of collecting RUC data require drivers to use an application provided by their vehicle’s manufacturer. Do you ever use your manufacturer’s app?

3.3.3. Industry Uncertainty

The use of direct telematics data for RUC is a new application of a technology that is still emerging. While difficult to directly quantify, this leads to a relatively high degree of uncertainty around how data is collected and used. Specific themes noted by the Project Team during the Demonstration included:

- **Automakers have not coalesced around a standard approach to using telematics data.** The difference in business models between the two data providers used in this Demonstration illustrate the lack of an industry-standard approach towards sharing telematics data. Essentially, different manufacturers want to have different levels of control over the data pipeline used to collect and share the odometer and location data needed to administer a RUC program. Mobilisights gives Stellantis end-to-end control of telematics data, while the automakers who allow Smartcar access are approving the introduction of a third-party into the data pipeline. At the time this Demonstration was designed, some automakers did not have any way of externally sharing telematics data.
- **The lack of a uniform data standard between manufacturers raises the administration costs of RUC programs that use direct telematics.** Since there is no uniform data standard, RUC programs that wish to provide broad eligibility must partner with one or more data provider vendors. This model increases the complexity and cost of administering a RUC program, offsetting potential revenue generations benefits relative to the gas tax.
- **Ongoing litigation and evolving privacy laws will impact the telematics industry going forward.** Recent litigation between General Motors and the US Federal Trade Commission (FTC) has raised consumer awareness of how telematics data is collected and used.⁸ The litigation focuses on the way user consent to data sharing is collected and managed. To ensure similar issues were avoided in the Demonstration, the Project Team worked carefully to develop user consent agreements that clearly enumerated how data was collected and processed. Although Michigan had not enacted any state-specific data privacy legislation before the Demonstration ended, the user consent agreements allowed participants to manage and request their data from the Project Team.

⁸ FTC Takes Action Against General Motors for Sharing Drivers' Precise Location and Driving Behavior Data Without Consent (January 16, 2025). Retrieved from: <https://www.ftc.gov/news-events/news/press-releases/2025/01/ftc-takes-action-against-general-motors-sharing-drivers-precise-location-driving-behavior-data>

4. Lessons Learned: RUC Demonstration

In addition to the major outcomes described in [3. Findings: RUC Demonstration](#), the Project Team and MDOT noted several lessons learned regarding the administration of the Demonstration. These lessons can be used to improve the design and implementation of future RUC research:

4.1 | Invitees had to complete multiple steps to participate, increasing the share who dropped out during the signup process.

Only 8% of Demonstration invitees using the Smartcar platform ultimately confirmed their participation. At an 18% invitee conversion rate, Mobilisights was better, but still below desired levels. Future work should try to minimize the number of sign-up steps wherever possible and ensure participants have clear guidance about what they will need to do during the sign-up process before beginning. Greater manufacturer app adoption among drivers will also help organically improve conversion rates over time.

4.2 | OEM data monetization emerged as a major barrier to participant engagement with telematics data.

Most vehicle manufacturers lock access to telematics data behind a paywall. To access this data, drivers may be required to subscribe to a package that includes other services (for example, remote start or roadside assistance). Ultimately, the feasibility of using direct telematics for RUC programs at scale will be limited without an industry-wide telematics data standard or mandated no-cost connection authorization process.

4.3 | Relying on a third-party data provider increased eligibility but made vehicle connections less stable.

Four types of vehicle connection instability were observed during the Demonstration:

- Smartcar can be unexpectedly barred from accessing telematics data.
- Established connections can be broken by automaker security updates.
- The model years supported by data providers are subject to change.
- GPS data can be lost during connection downtimes.

Future RUC inquiries should look to develop policies for addressing potential data loss and communicating with drivers during connection downtimes. Platform reliability is expected to improve in the coming years as providers become more accustomed to addressing the RUC use case, and as telematics data platforms mature overall.

4.1. Invitees had to complete multiple steps to join the Demonstration, increasing the share who dropped out during the signup process.

Context: Although the participant onboarding process was designed to be as seamless and user-friendly as possible, it still included several steps. To sign up, invitees had to open an email, visit the Demonstration website, confirm their details, accept terms and conditions, and connect their vehicle. Each of these steps progressively reduced the number of invitees still in the onboarding flow.

Issue: Certain steps in the onboarding flow proved to be major attrition points. By volume, the largest invitee loss occurred in the first step — based on open rates tracked in the bulk emailing application used by the Project Team, more than 40% of invited participants never opened the initial invite (or follow-up reminders).

For Smartcar users, a second significant attrition point occurred during the vehicle connection authorization process. At this stage, invitees were required to log in to their vehicle manufacturer's website or app to authorize the third-party data connection. For additional information on this barrier, refer to [Chapter 4.1.2](#) of this document.

For Mobilisights users, the second attrition point was most likely to be after they had accepted the terms and conditions that authorized the vehicle connection. Mobilisights eligibility is determined at the trim level rather than the model level, so vehicles without the proper trim package (for example, an upgraded infotainment system) were not eligible even if the vehicle model (for example, a Jeep Grand Cherokee) was eligible.

Outcome: Only 8% of invitees (1 out of every 11) eligible through Smartcar were converted to a registered participant in the Demonstration. At 18% (1 out of every 5), the invitee to participant conversion rate for Mobilisights was higher, but still lower than expected.

Recommended Mitigation in Future Work: The sign-up attrition flow is reproduced with invitee end states estimated as closely as possible in **Figure 14** for Smartcar and **Figure 15** for Mobilisights. Future work should:

- Minimize the number of sign-up steps where possible.
- Provide clear communication about what users will need to do to establish vehicle connections before users are in the middle of the onboarding process.
- Clearly list the data users will be required to share.

It is also expected that manufacturer app usage rates will continue to increase in the coming years, helping overall conversion rates as drivers are more familiar with the process required to sign up.

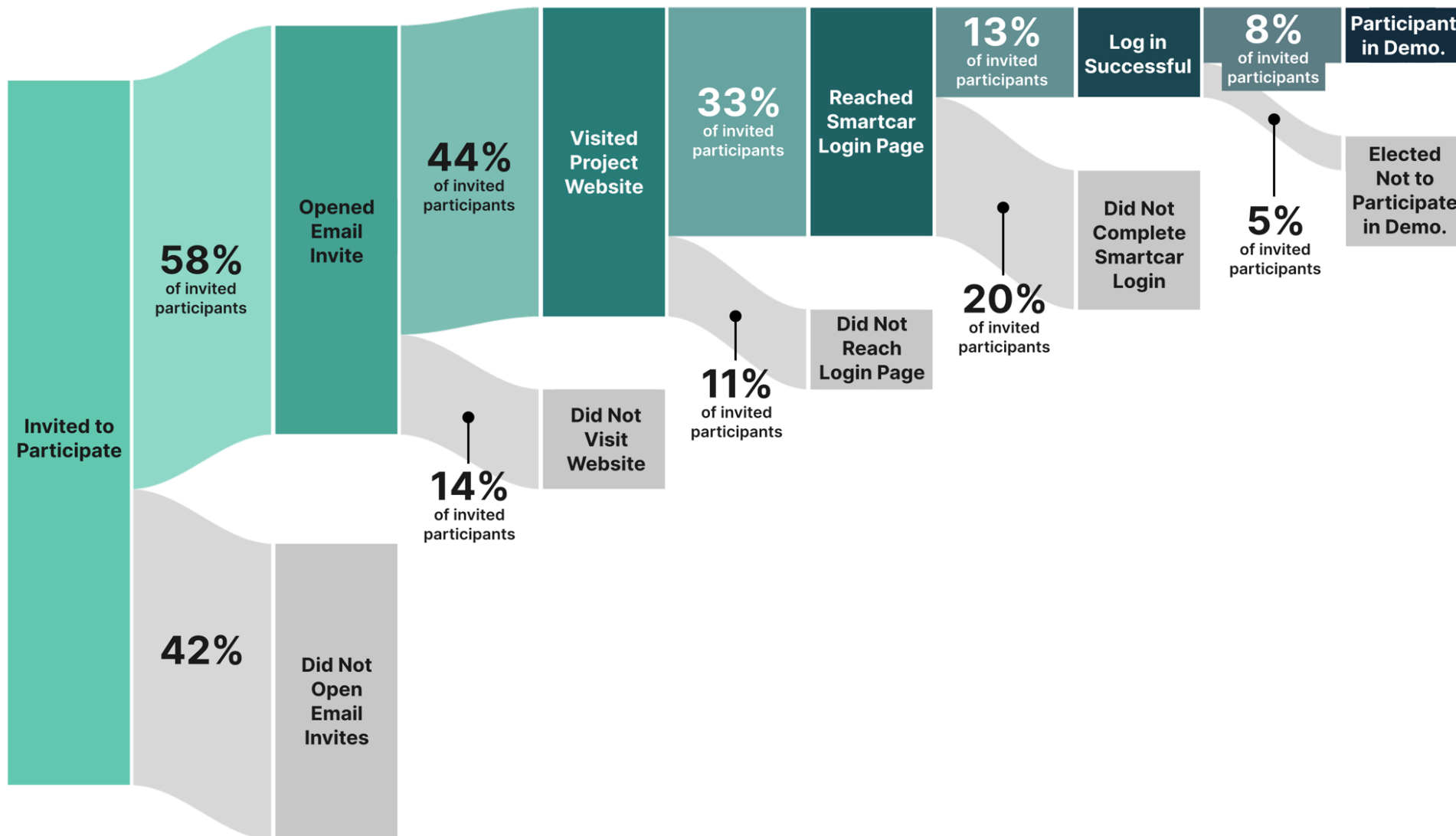


Figure 14. Estimated end state for invitees using Smartcar to participate in the Demonstration. Percentages in each step are based on the total number of invited participants. ^{9 10}

⁹ Email open rate generalized to all invitees using the actual open rate for bulk emails sent by the Project Team from November 1 to December 31, 2024.

¹⁰ Smartcar page visit and log in rate extrapolated from a two-week data sample for the period from November 15 to 30, 2024.

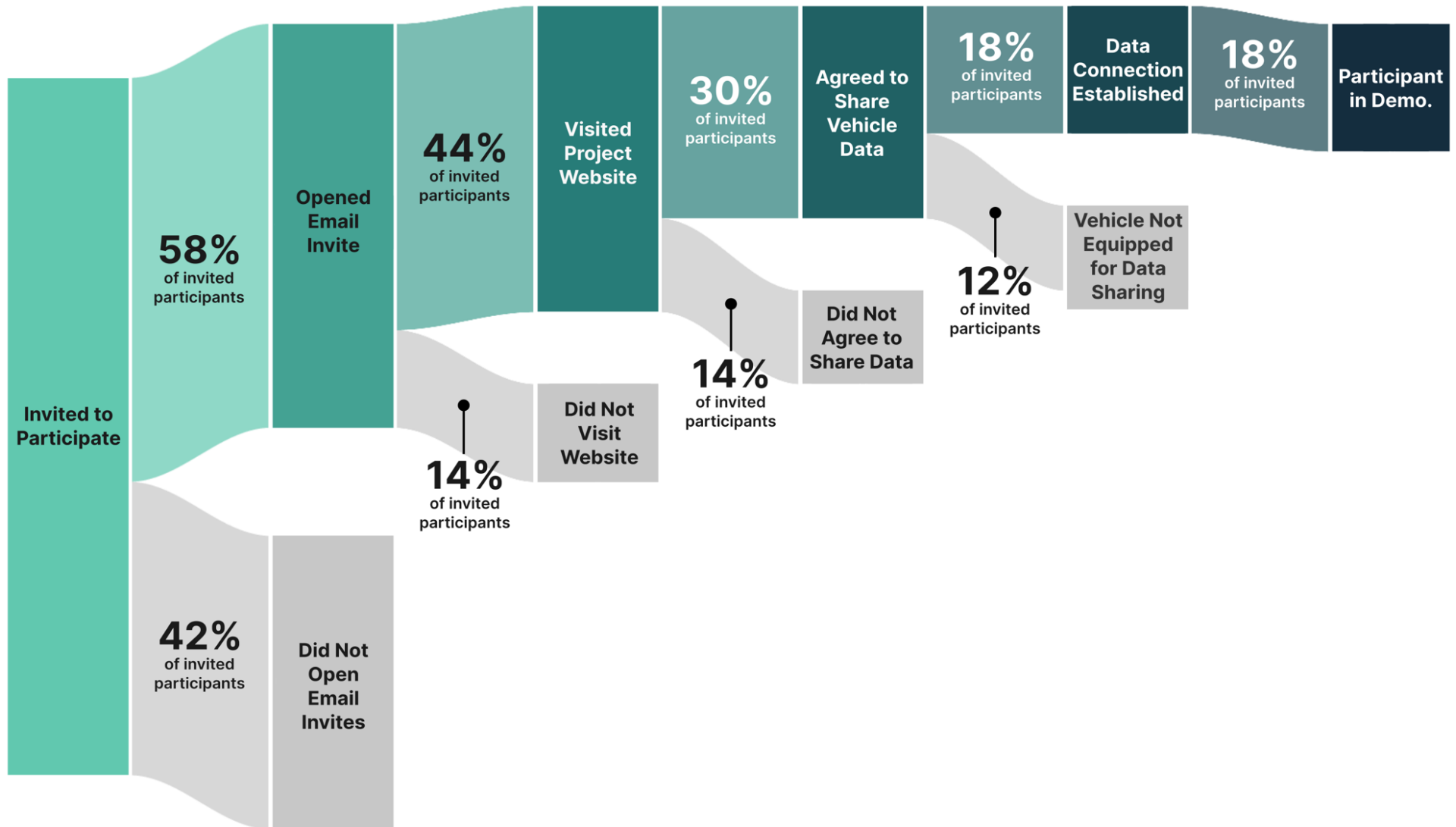


Figure 15. Estimated end state for invitees using Mobilisights to participate in the Demonstration. Percentages in each step are based on the total number of invited participants.¹¹

¹¹ Email open rate generalized to all invitees using the actual open rate for bulk emails sent by the Project Team from November 1 to December 31, 2024.

4.2. OEM data monetization emerged as a major barrier to participant engagement with telematics data.

Context: Since Smartcar is a third-party platform unaffiliated with any manufacturer, it is required by manufacturers to have users authorize each vehicle connection. No data can be collected and shared by Smartcar without this user authorization. The main step in the authorization process requires the user to log in to their vehicle manufacturer’s website or app and click “allow” on a connection.

Issue: Most vehicle manufacturers lock access to telematics data behind a paywall. To access this data, drivers are required to subscribe to a package that includes other services (for example, remote start or roadside assistance). Although some manufacturers allow users to log in and access the Smartcar authentication prompt without a subscription, this is not a standardized practice and is not apparent to users.

Online or app access is generally positioned as a subscription feature by manufacturers. Most brands offer a free trial before requiring a paid subscription, although trial lengths range from a few months to several years.

Outcome: An invited participant’s ability to join the Demonstration was heavily influenced by their OEM app subscription status. Participant survey data and anecdotal quotes received during the email support both support this finding. Quotes from invitees who were unable to join the Demonstration due to this subscription cost barrier include:

“As a retired citizen I really can’t afford \$14.99 per month for doing my civic duty.”

“I wanted to sign up for this study, but I believe I can’t connect to the MyMazda app because I don’t have the paid version anymore. My trial recently expired.”

Recommended Mitigation in Future Work: The cost and trial length of each manufacturer’s app is summarized in **Table 5**. Future work should benefit from increased driver adoption of manufacturer apps, although the ultimate feasibility of direct telematics for RUC programs will be limited so long as there is no industry-wide telematics data standard or mandated no-cost connection authorization process.

Table 5. Cost Barriers to Smartcar Enrollment

Manufacturer	Number of Invitees in Pool	Service Required for Smartcar Connection	Pricing Model for Access to Vehicle Telematics ¹²
Chevrolet	760	myChevrolet	3-month free trial, then \$14.99 per month
Toyota	205	Toyota App	1-year free trial, then \$8.00 per month
Jeep	170	Jeep App	3-month free trial, then \$149 annually
GMC	155	myGMC	3-month free trial, then \$14.99 per month
Buick	140	myBuick	3-month free trial, then \$14.99 per month
Subaru	120	MySubaru	6-month free trial, then \$4.95 per month
Kia	95	Kia Connect	7-year free trial, then \$59 annually
Hyundai	75	MyHyundai	3-year free trial, then \$99 annually
Tesla	55	Tesla App	No cost for app access
Chrysler	55	Chrysler App	3-month free trial, then \$149 annually
Dodge	50	Dodge App	3-month free trial, then \$149 annually
Cadillac	45	myCadillac	3-month free trial, then \$14.99 per month
Nissan	40	MyNISSAN	6-month free trial, then \$12.99 per month
BMW	35	My BMW	3-month free trial, then \$120 annually
Lexus	30	Lexus App	1-year free trial, then \$80 annually
Mazda	30	MyMazda	3-year free trial, then \$10.00 per month
Audi	25	myAudi	No cost for app access

¹² Pricing data reproduced from <https://connectyourcar.com/compatibility/makes/>, and is accurate as of May 2025. The Connect Your Car website is developed and maintained by Smartcar.

Manufacturer	Number of Invitees in Pool	Service Required for Smartcar Connection	Pricing Model for Access to Vehicle Telematics ¹²
RAM	20	RAM App	3-month free trial, then \$149 annually
Volkswagen	15	myVW	5-year free trial, then \$17.99 per month
Volvo	10	Volvo Cars	3-year free trial, then \$200 annually
Mini	5	MINI App	\$50 annually
Porsche	5	MyPorsche	1-year free trial, then \$155 annually
Rivian	5	Rivian App	No cost for app access
Land Rover	<5	Land Rover Remote	3-year free trial, then \$99 annually
Infiniti	<5	Infiniti InTouch	1-year free trial, then \$12.99 per month
Jaguar	<5	Jaguar Remote	3-year free trial, then \$99 annually

4.3. Relying on a third-party data provider unaffiliated with an automaker increased eligibility, but made vehicle connection less stable.

Context: The Demonstration relied on two data providers to source telematics data:

- **Smartcar** is a third-party company with broad brand coverage. Telematics data is available after a connection is established between Smartcar and an automaker's app or website. Connections proved to be relatively stable in day-to-day use, but were broken multiple times during the live demonstration period.
- **Mobilisights** is a direct subsidiary of Stellantis (the parent company of Chrysler, Dodge, Jeep, and RAM). Telematics data is available after a user consents to Mobilisights sharing the data on their behalf. Connections proved to be very stable in day-to-day use.

Issue: Four types of vehicle connection instability, primarily affecting Smartcar users, were noted during the Demonstration:

1. **Smartcar can be unexpectedly prevented from accessing telematics data due to changes in automaker policy.** Between the 2024 *Public Perceptions Survey* and the start of the Demonstration, Ford updated their website and app to prevent all third-party telematics data access. This change meant that Ford and Lincoln vehicles expected to be eligible through Smartcar were not able to be enrolled in the Demonstration.
2. **Established Smartcar connections can be broken by automaker security updates.** Since Smartcar is a third-party provider connecting to manufacturer applications for data, updates to manufacturer applications can break vehicle data connections until the Smartcar platform is updated in response. During the live demonstration period, General Motors and Tesla, among others, pushed security updates that temporarily broke vehicle connections.
3. **The model years supported by data providers are subject to change.** Smartcar routinely updates their list of supported vehicles and model years to focus on newer vehicles that are most common in the on-road fleet. Between the end of the *Public Perceptions Survey* in March 2024 and the start of participant onboarding in October 2024, support for most MY2017 and earlier vehicles was dropped. No eligibility changes for Mobilisights were noted during the Demonstration, but it is possible that the company will similarly optimize its list of supported vehicles in the future.
4. **GPS data can be lost during connection downtimes.** The Demonstration did not collect driver location data, although it is expected that future RUC programs will require this

information to properly account for out-of-state miles. In discussions with both Smartcar and Mobilisights, the Project Team confirmed that historical location data could not be recovered in the event vehicle connections are interrupted. Odometer data is not lost during connection lapses, since miles travelled during the connection interruption will be accounted for the next time a driver’s odometer is read.

Outcome: These connection issues lead to fewer vehicles than expected being enrolled in the Demonstration. Some participation invites were also temporarily withheld due to an ongoing disruption, but this delay did not ultimately reduce the number of enrolled vehicles. No odometer data was lost due to connection interruptions, but some location data would have been lost if it was collected during the Demonstration.

Examples of connection interruption messaging from Smartcar are reproduced in **Figure 16** and **Figure 17**. These were recorded from the Smartcar website (<https://brandreliability.smartcar.com/>) during the live demonstration period.

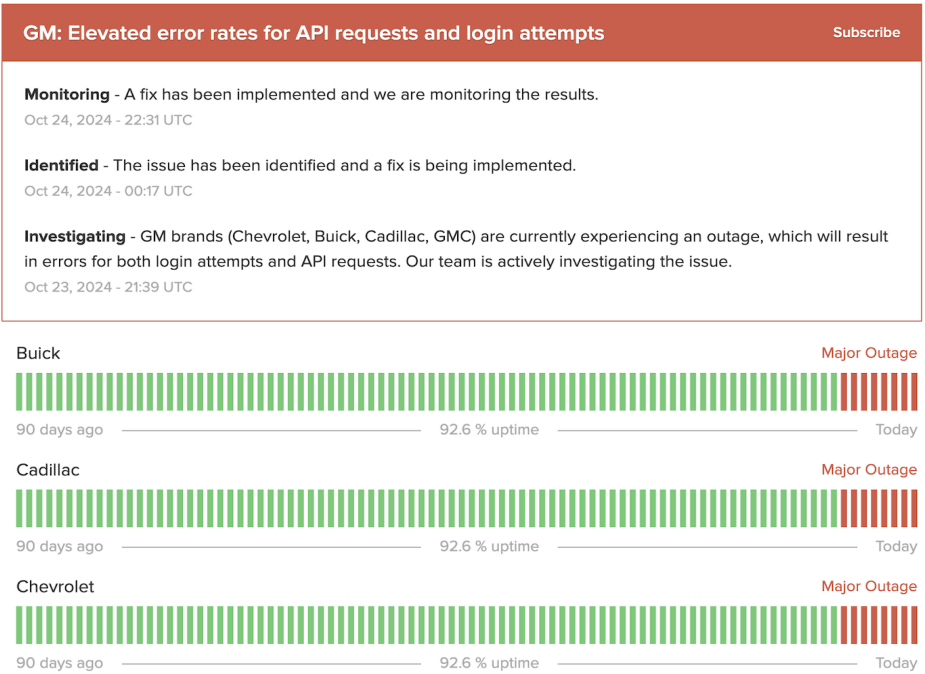


Figure 16. Temporary Smartcar Brand Outage after a Manufacturer Security Update

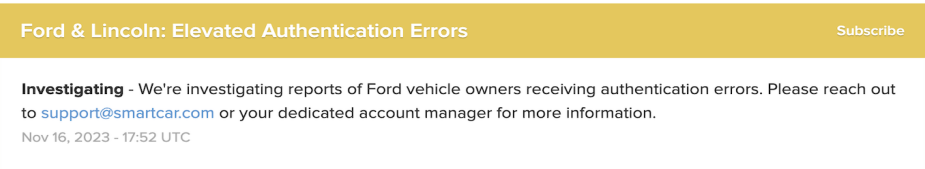


Figure 17. Ongoing Smartcar Brand Outage after a Manufacturer Access Policy Change

Recommended Mitigation in Future Work: Based only on the current state of each data provider platform, Mobilisights offers more reliable vehicle connections than Smartcar. However, a third-party platform like Smartcar is currently a practical requirement to cover a broad portion of the on-road vehicle fleet. Future RUC inquiries should look to develop policies for addressing potential data loss and communicating with drivers during connection downtimes.

It should also be noted that the use of direct telematics data for RUC is a new use case for most existing data providers, and is likely to require higher uptime rates than most current use cases. Platform reliability is expected to improve in the coming years as providers become more accustomed to addressing the RUC use case, and as telematics data platforms mature overall.



5. Methodology: Transit Mode Shift Study

The design of the transit mode shift study is detailed in this chapter. For this portion of the Study, the Project Team partnered with two large public transit agencies operating in Michigan:

- **SMART:** The Suburban Mobility Authority for Regional Transportation (SMART) is the transit agency serving the Detroit suburbs. The agency operates 39 routes across Macomb, Oakland, and Wayne Counties. Several routes travel into Detroit to provide connections to the Detroit Department of Transportation (DDOT) bus network. In 2023, the system delivered more than 4.8 million passenger trips.¹³
- **The Rapid:** The Rapid is the transit agency serving the Grand Rapids metropolitan area. The agency operates 27 across the City of Grand Rapids and nearby suburbs. In 2023, the system delivered more than 6.0 million passenger trips.¹⁴

Each partner agency supported the Study by giving each participant one month of free transit travel. Participants in the Detroit area received a 28-day regional transit pass from SMART, while those in the Grand Rapids area received a tap-to-pay card from The Rapid preloaded with the maximum monthly fare. These passes were distributed by the Project Team to confirmed Study participants.

5.1. Study Concept

The mode shift study was intended to review the relationship between public transit usage, travel time competitiveness, and incentives. Understanding this relationship is an important step in preparing Michigan to take advantage of RUC in the future. If implemented at scale, RUC could help reduce roadway congestion and total vehicle miles travelled (VMT) by allowing drivers to compare RUC fees against other travel modes on a per-trip basis. These comparisons are currently difficult to make, since the tax paid to use public roadways is abstracted into part of the cost of fuel.

¹³ Federal Transit Administration, 2023 Agency Profile for SMART:

https://www.transit.dot.gov/sites/fta.dot.gov/files/transit_agency_profile_doc/2023/50031.pdf

¹⁴ Federal Transit Administration, 2023 Agency Profile for the Interurban Transit Partnership (d.b.a. The Rapid):

https://www.transit.dot.gov/sites/fta.dot.gov/files/transit_agency_profile_doc/2023/50033.pdf

5.2. Study Structure

The demonstration was structured into four phases, which cumulatively ran from May 2024 to May 2025. Data was only collected during the Live Study Period (which ran from October 2024 to April 2025).

1. **Participant Identification (May 2024 to August 2024):** Potential demonstration participants were identified from the list of respondents to MDOT's spring 2024 *Public Perceptions of Road Usage Charging* survey. Respondents to that survey had the option to provide information about their most common trip (start and end points, mode of travel, time of travel, and number of travel companions) if they wanted to be considered for upcoming phases of the Study. This information was reviewed against Study criteria and transit coverage data to establish an initial list of invitees. For more information on this process, refer to [2.2.3 Participant Identification](#).
2. **Participant Onboarding (September 2024 to December 2024):** Email invitations were extended in batches to the invitees identified during the first stage. Invitations included a personalized link to the demonstration sign-up website, where invitees:
 - a. Confirmed that the trip information provided during the *Public Perception Survey* was still correct.
 - b. Reviewed terms and conditions for the demonstration.
 - c. Set up a Citymapper account to track their transit trips.

Participants who signed up for the Study, recorded transit trips, and completed a post-demonstration closeout survey were eligible for a variable gift card incentive based on the number of trips recorded. For more information on the Study's onboarding process and incentive structure, refer to [2.2.4. Participant Onboarding](#).

3. **Live Study Period (October 2024 to April 2025):** Participants could record transit trips for up to six (6) months. During this time period, participants received monthly email updates showing the total number of eligible transit trips they had recorded in the Study. For more information on this process, refer to [2.2.5 Live Study Period](#).
4. **Study Period Closeout (May 2025):** Data collection for all participants was suspended on May 1, 2025. No data was collected after that date. Participants were surveyed about their experience in the Study between May 1 and May 15, 2025. Incentives were distributed to participants after they completed the closeout survey. For more information on this process, refer to [2.2.6 Study Period Closeout](#).

5.3. Participant Identification

Participants were identified exclusively from the respondent set to the 2024 statewide *Public Perception Survey*. After completing the main portion of that survey, respondents were asked to answer additional optional questions that could make them eligible for later stages of the study. These questions were completed by slightly less than half (9,200 of 19,160) of respondents. Four key data points were collected and used to determine eligibility:

- **Addresses:** Home and most-frequently visited destination
- **Mode of travel:** The transportation mode (personal vehicle, bus, bicycle, etc.) used for trips between the home and destination address.
- **Time of travel:** The approximate (3-5 hour window) time when home-to-destination and destination-to-home trips typically occur.
- **Travel companions:** The number of persons typically accompanying the respondent on their home-to-destination and destination-to-home trips.

Filtering to Eligible Participants

1. **Current mode choice:** Since the Study is intended to measure the efficacy of incentivizing transit usage, respondents who indicated that they already use transit were removed from the dataset.
2. **Geographic region:** Eligible participants had to live in or adjacent to the service areas of the Study's two transit agency partners: SMART (suburban Detroit) and The Rapid (Grand Rapids). To identify this subset of participants, all transit stops in Detroit and Grand Rapids metro areas were mapped.¹⁵ The straight-line (aerial) distance from each participant's home address to the nearest transit stop was calculated. Participants residing more than five (5) miles from the nearest transit stop were removed from the dataset. The same process was repeated to remove participants with destination addresses more than five (5) miles from a transit stop. Respondents with home and destination addresses in different metro areas were also removed from the dataset. About 2,850 respondents remained in consideration for the Study after filtering for current mode choice and geographic region.
3. **Proximity to transit services:** Based on internal discussions with the MDOT team, respondents with home or destination address more than two (2) miles from a transit stop were excluded from the invite list due to a lack of bus coverage. About 2,090 respondents were invited to participate in the Study.

¹⁵ In Detroit, this included stops served by SMART buses, Detroit Department of Transportation (DDOT) buses, the QLINE streetcar, and the Detroit People Mover. In Grand Rapids, this included stops served by The Rapid only.

5.4. Participant Onboarding

Invitees were enrolled in the Study using a five-step process. A **total of 209 participants** were confirmed for the Mode Shift Study.

1. Email Invitation



Emails were extended in batches to the invitees identified from the *Public Perception Survey*. Invitees who did not join the demonstration from the initial invite were sent up to two reminder emails. All emails contained a link to the Study website, where invitees could confirm their participation.

2. Study Introduction



Invitees visiting the website landed on an introductory page outlining the steps they would need to complete to participate, as well as the incentives available for participating.

3. Participant Details



After viewing introductory information, invitees were taken to a page to confirm that the trip details they provided in the *Public Perception Survey* were still correct. The Project Team reevaluated eligibility for invitees with updated address information on a case-by-case basis. Invitees also reviewed and accepted the Study terms and conditions during this step.

4. Citymapper Setup



After confirming their details and accepting the Study terms, invitees were shown how to download and set up the Citymapper app. To be eligible for incentive credit, trips had to be between the home and destination address on file for the participant and tracked using Citymapper's "Go" feature. Credit could be earned for up to two trips per day.

5. Confirmation



After the Study terms were accepted and their vehicle was connected, invitees were officially enrolled in the Study. After seeing a confirmation message, participants were taken to the online dashboard where their mileage data would appear during the live demonstration period.

Study Website and Citymapper Setup

Mode Shift Study invitees confirmed their participation on the same website as invitees to the RUC Demonstration (MiRUCStudy.com). Instead of connecting a vehicle, Mode Shift Study invitees set up a Citymapper account after confirming their details and accepting the Study terms and conditions.

The process of setting up and using Citymapper is illustrated in **Figures 18 to 20**:

- **Figure 18** shows the process of setting up a Citymapper account. This account was required to create records of transit trips completed by Study participants. To match records against the participant database, the email address participants used for Citymapper had to match the one they signed up for the study with.
- **Figure 19** shows the process of saving a key address in Citymapper. Although not required, this step made it easier for participants to request transit trips (for example, from their saved “home” to their saved “destination”).
- **Figure 20** shows the process of finding a transit option in Citymapper and activating “Go”. “Go” mode stays active during the trip, helping riders navigate any transfers along their route.

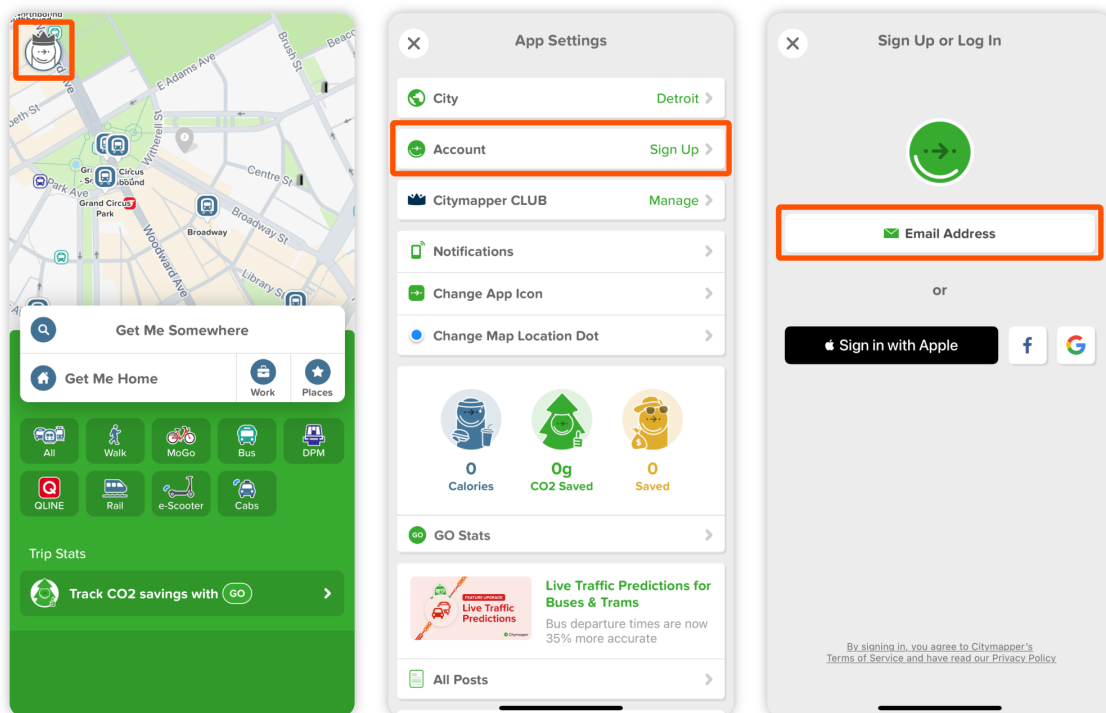


Figure 18. Creating an account in the Citymapper app.

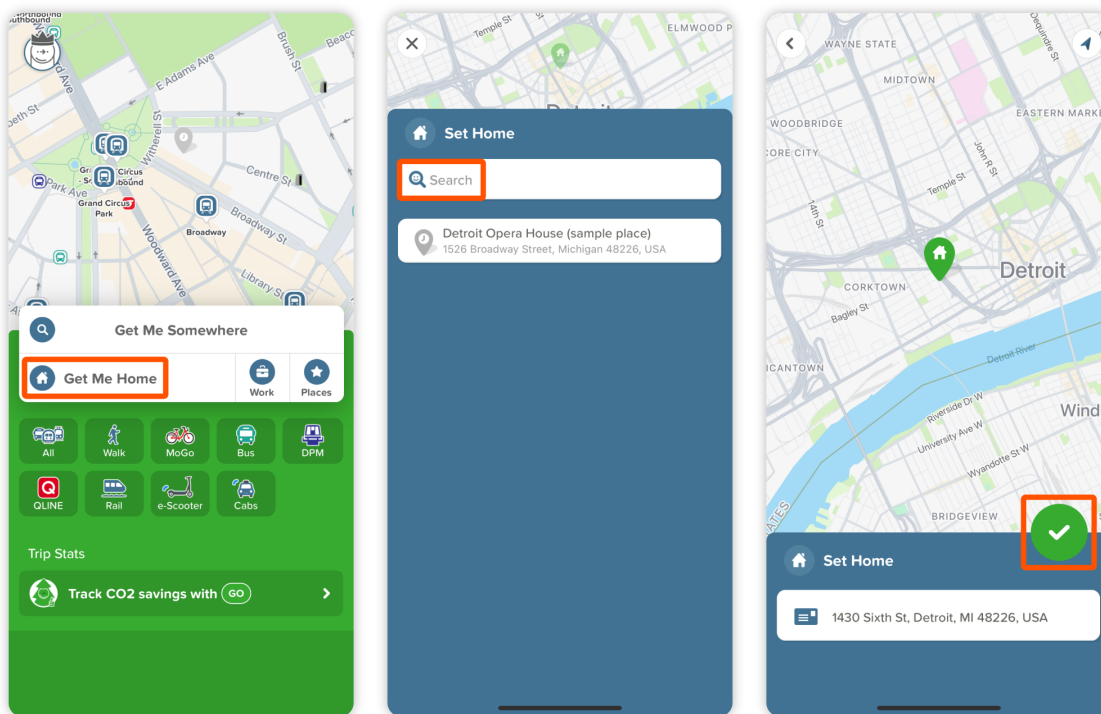


Figure 19. Saving a home address in the Citymapper app.

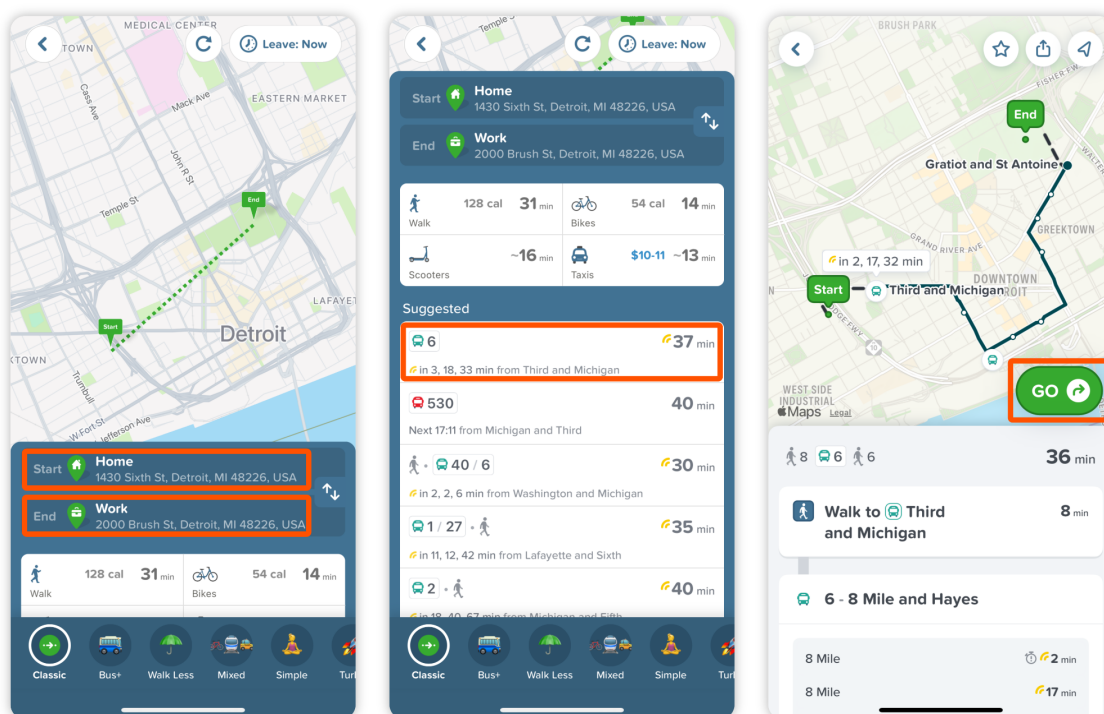


Figure 20. Finding a transit trip and activating “Go” mode in the Citymapper app.

Participation Incentives

Participants were eligible to earn up to \$500 by recording trips between their home and destination addresses that they shifted to transit while the Study was active. Earnings were distributed at the end of the Study by gift card. During the study, earnings were accrued in per-trip increments. To test the effectiveness of different levels of incentivization, a per-trip incentive value of \$3, \$6, or \$9 was randomly assigned to each participant. Participants were not told that different per-trip incentive values were being evaluated. No participant was able to earn more than \$500 during the study period.

To earn the per-trip incentive, participant trips had to be:

- **Between the registered home and destination addresses.** Trips had to be between the home and destination addresses confirmed by participants during the sign-up process. Trips could be in either direction (home-to-destination, or destination-to-home), but credit could only be earned twice per day.

Participants were able to change their home and/or destination addresses during the study to account for moves, job changes, and other travel pattern adjustments. If a new address was more than two miles from a transit stop, participants were removed from the Study.

- **Recorded in Citymapper.** Trips had to be tracked in Citymapper using the app's "Go" feature. This feature provides real-time directions and arrival information, while creating a record that the trip occurred in the Project Team's database. Prior to recording trips, participants had to create a Citymapper account using the same email address they used to sign up for the Study.
- **Taken on public transit, a bicycle, or by walking.** Trips tracked in Go using a personal vehicle, taxi, or rideshare service (such as Uber or Lyft) were ineligible for incentives.

5.5. Live Study Period

Participants could earn credit for trips taken between November 1, 2024 and April 30, 2025. Invites were extended on a rolling basis during the opening month of the demonstration to allow for any issues that emerged in the smaller initial batches to be addressed before the later larger batches were sent.

During the live period, participants received email updates notifying them of how many trips they had recorded over the preceding month. If participants felt that they took eligible trips that were not reflected in their total, they were able to reach out to the Project Team via a dedicated email support address. Decisions on adding trips to participant totals were handled on a case-by-case basis and made at the Project Team's sole discretion, but generally required participants to provide a screenshot of their Citymapper trip history for trips to be added.

5.6. Study Period Closeout

The last day for participants to earn credit for eligible trips was April 30, 2025. No credit was issued for trips taken after this date. Participants were surveyed about their experience in the study from May 1 to May 15, 2025. During the same period, survey invitations were also sent to invitees who did not ultimately participate (or signed up for the study but did not record a trip). This survey was intended to identify the barriers that prevented invitees from joining the Study and/or record any transit trips. Key findings from both surveys are presented in [4. Findings: Transit Mode Shift Study](#). Unabridged survey results for both participants and unconverted invitees are reproduced in [Appendix C: Transit Mode Shift Closeout Survey Results](#).

Participants were required to complete the closeout survey before receiving their gift card incentive. All incentives due to participants were issued within 14 days of survey completion.

6. Findings: Transit Mode Shift Study

Key findings from each phase of the Mode Shift Study are detailed in this chapter. Findings are grouped into three major themes:

6.1 | Most Study participants did not have a viable transit alternative to driving.

The median transit trip among registered participants took 4.5x as long as driving, equating to an average of 40 minutes of added travel time each way. Analysis comparing the incentive value gained by recording trips against the time value lost from longer travel times suggests that only 15% of participants had a transit option likely to be perceived as a viable alternative to driving.

6.2 | Incentive level and walking distance to bus stops can help predict mode shift to transit.

The participants most likely to record a trip met three criteria:

- Were randomly **assigned to the highest (\$9.00) incentive tier**. Participants in this tier recorded 45% more trips than the average participant.
- Had a **walk no longer than 0.4 miles on either end of their trip**. No trips were recorded by participants needing to walk more than 0.6 miles to or from a bus stop.
- Had a transit **travel time within 40 minutes** of the associated driving duration.

6.3 | Incompatibility with respondent schedules and long travel times emerged as key barriers to transit use.

More than half of active participants noted a lack of transit trips that worked with their schedules as a participation barrier in a survey conducted after the live study period concluded. Poor transit options was also the most-selected reason when inactive participants and unconverted invitees were asked why they did not record any trips. About 60% of this group selected slow travel times relative to driving as the reason they felt their transit option to be of poor quality.

6.1. Most participants did not have a viable transit alternative to driving.

Most Study participants struggled to find a transit trip that they considered to be a good replacement for driving, even with a per-trip incentive available. This low participation rate appears to be largely attributable to a lack of transit options that were time-competitive with driving:

- The median transit trip among participants **took 4.5x as long** as driving. This equates to an average of **40 minutes of added travel time each way**.
- Since all invitees indicated that they primarily drove in MDOT’s 2024 *Public Perceptions of RUC* survey, all participants were likely to continue driving if they did not have a reasonable transit alternative.
- Analysis comparing the incentive value gained by recording trips against the time value lost from longer travel times suggests that only **15% of participants had a transit option likely to be perceived as a viable alternative to driving**.

6.1.1. Trip Statistics

Baseline results for the Study are summarized in **Table 6**. A total of 337 valid trips were recorded during the Study.



Although broad conclusions can be developed from the set of recorded trips, **caution should be exercised in developing specific policy changes** from this data due to a small sample size.

Table 6. Baseline Participation Statistics for the Transit Mode Shift Study

Statistic	Detroit Region	Grand Rapids Region	Total
Invitees All persons eligible to participate in the Study.	1,215	470	1,685
Participants All persons who completed the sign-up process after being invited to join the Study.	140 12% invitee conversion rate	69 15% invitee conversion rate	209 12% invitee conversion rate
Active Participants All persons who recorded one or more transit trips in the Study.	16 11% of registered participants	10 14% of registered participants	26 12% of registered participants
Recorded Trips	184	153	337

6.1.2. Competitiveness of Transit Options

Even with an incentive, transit options need to meet a minimum baseline quality to encourage a driver to switch. The Project Team evaluated two metrics for trip quality: the **ratio of transit travel time to driving travel time**, and the **additional time required to take transit relative to driving**.



In addition to their home address and the address of their most-common destination, respondents to the *Public Perceptions Survey*, respondents were asked what 3-hour block of the day they usually travel in. **Google Maps was used to find the typical driving and transit travel times** within this block. Exact departure times were randomly assigned within the travel window.

Ratio of Transit Travel Time to Driving Duration

The distribution of participant transit travel times relative to driving travel times is shown in **Figure 21**. Transit travel times were generally much longer than driving travel times, limiting the number of participants who realistically could record transit trips.

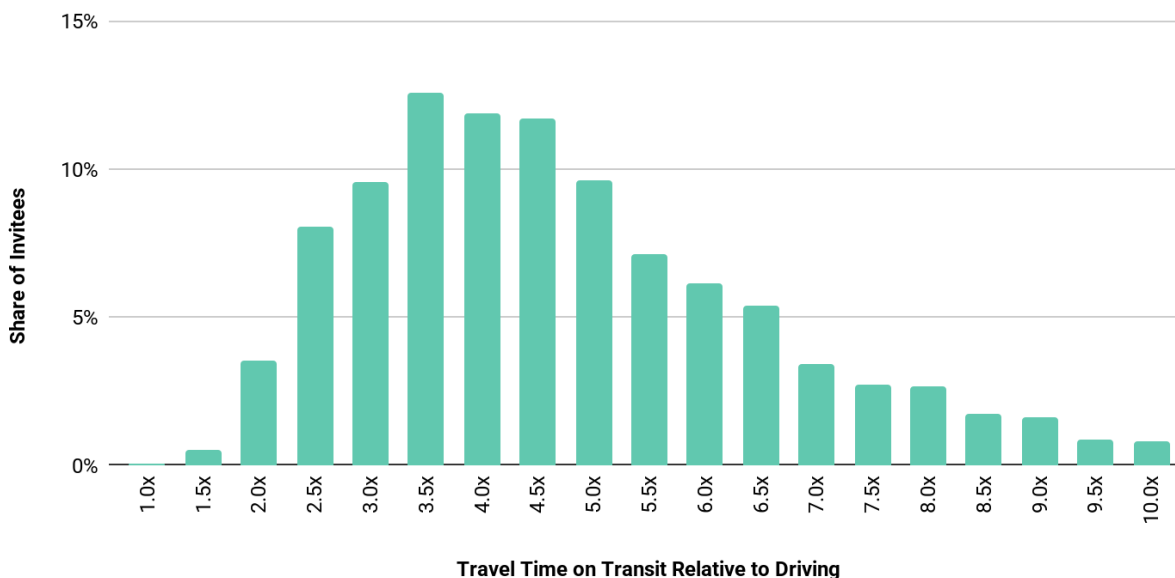


Figure 21. Relative Transit Travel Times for Confirmed Participants

The median confirmed participant had a transit travel time about **4.5x** the driving travel time. Fewer than 5% of participants had a transit travel time **2x** the driving travel time or better, while only one-fifth (22%) of confirmed participants had a transit travel time **3x** the driving travel time or better.

Additional Travel Time on Transit

Viewing travel time competitiveness exclusively through a relative lens can produce misleading results, especially for shorter trips. As an example, a 10-minute transit trip is likely perceived as viable relative to a 3-minute drive, even though the transit duration is more than 3x the driving duration. To address this concern, the Project Team also compared transit and driving travel times in absolute terms. The results of this comparison are shown in **Figure 22**. About one-quarter (23%) of participants had transit travel time that exceeded driving by no more than 20 minutes, with the median transit trip exceeding the associated driving duration by 40 minutes.

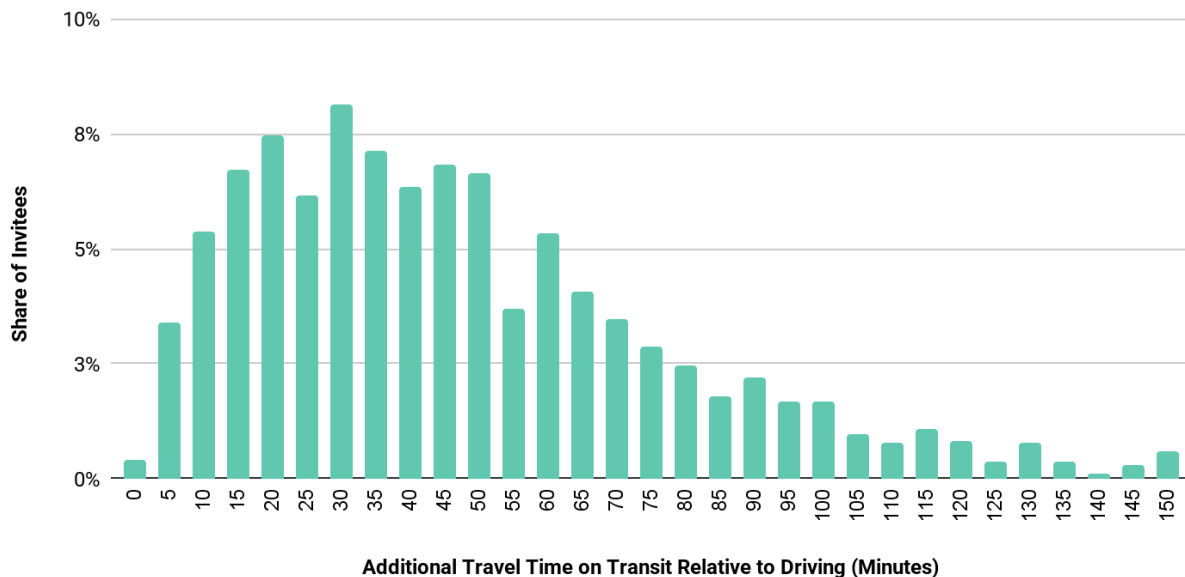


Figure 22. Comparison of Transit and Driving Durations

Table 7 separates results by metro area. A larger share of transit trips among participants in the Grand Rapids region were likely to be within 40 minutes of the driving times, although this is likely due to the larger coverage footprint of the transit network in the Detroit region allowing longer, less time-competitive transit trips to occur.

Table 7. Transit Travel Times Relative to Driving

Share of Transit Trips Within:	Detroit Region Participants	Grand Rapids Region Participants	All Participants
10 minutes of driving time	8%	12%	9%
20 minutes of driving time	20%	31%	23%
30 minutes of driving time	34%	46%	38%
40 minutes of driving time	47%	63%	51%

6.1.3. Transit Alternative Viability Analysis

It is difficult to pinpoint how much additional travel time a potential rider will accept before viewing transit as unviable, declining the available incentive, and continuing to drive. With 337 trips recorded, Study results show that the incentives were sufficient for some participants to choose transit, but most (183 of 209) participants never recorded a trip.

The exact internal calculus around mode choice is different for every participant, but can be approximated through a value of travel time savings (VTTs) analysis. This analysis assigns a monetary value to a participant's time, and compares the value lost from lengthened travel times against the value gained from available incentives. If the incentive value gained by taking a given transit trip exceeds the time value lost relative to driving, most participants would likely perceive the trip to be a good choice. On the other hand, few participants would opt for a trip where the time value lost exceeds the incentive value gained.

A VTTs analysis for Study participants was completed using a three-step process:

1. **Identify the value gained by switching from driving to transit.** Participants were eligible to receive a flat incentive of \$3.00, \$6.00, or \$9.00 for each transit trip they recorded during the Study. Participants were grouped randomly into these tiers prior to being invited to join the Study. As a simplifying assumption for this analysis, the value gained was set equal to the incentive offered to participants.
2. **Identify the value lost by switching from driving to transit.** Current USDOT guidance suggests using average hourly costs of \$21.10 for travel time spent in-motion, and \$38.80 for travel time spent without moving.^{16 17} These default values were combined to create a blended average hourly cost of \$24.60, which reflects a balance of 80% in-motion time and 20% stationary time. The blended hourly cost was used to convert each participant's additional travel time on transit to an approximate cost.
3. **Calculate each participant's ratio of incentive value gained to travel time value lost.** The per-trip incentive for each participant (step 1) was compared to the calculated travel time cost (step 2). "Viable" transit trips were classified as trips where the incentive value exceeded the travel time cost.

¹⁶ The higher cost assigned to stationary time reflects the fact that most people perceive the portion of their trips where they are not moving (waiting at a bus stop, transferring between bus routes, etc.) to be less desirable than time spent in-motion.

¹⁷ Federal Highway Administration, *Benefit-Cost Analysis Guide for Discretionary Grant Programs* (2025). Retrieved from: <https://www.transportation.gov/sites/dot.gov/files/2025-05/Benefit%20Cost%20Analysis%20Guidance%202025%20Update%20II%20%28Final%29.pdf>

The results of the VTTS analysis are shown by participant incentive tier in **Figure 23**. A total of 31 value-positive transit trips were identified, almost exclusively at the \$6.00 and \$9.00 incentive tiers. The other 178 participants who joined the Study did not have a “viable” transit alternative (where the incentive value exceeded the value lost from relatively longer travel times).

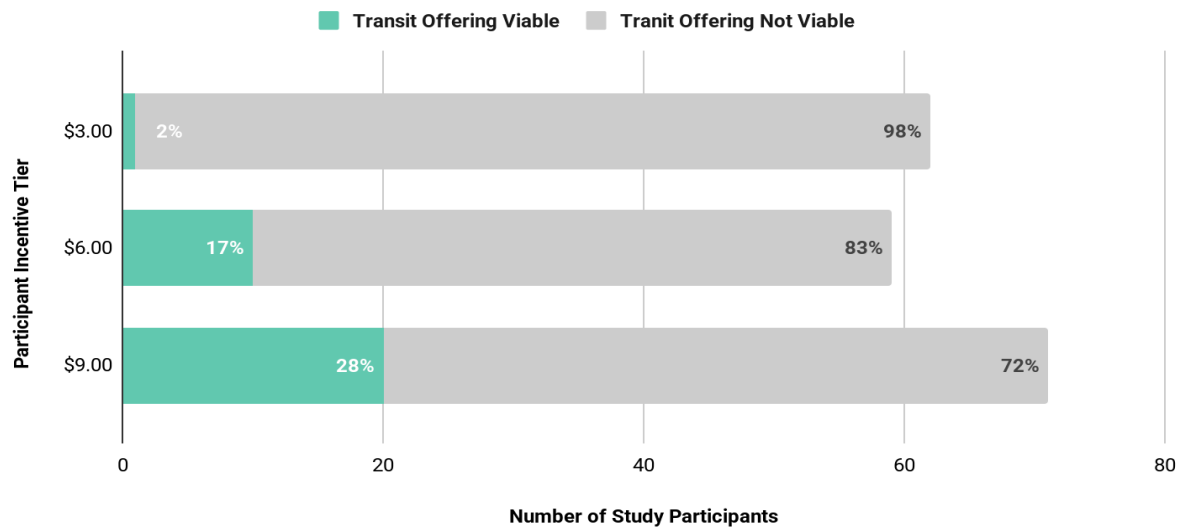


Figure 23. Transit Competitiveness Relative to Driving by Incentive Tier

This method proved to be largely predictive of actual participation in the Study: 26 of 209 participants actually recorded trips, compared to the 31 of 209 predicted by the VTTS analysis. VTTS modeling was substantially more accurate at predicting the aggregate behavior of Study participants than it was at predicting individual behavior: only 24% of the unique participants identified as having a value-positive transit alternative to driving actually recorded trips in the Study. This result is largely expected, since the hourly travel time cost used in the analysis is based on a USDOT default value — it does not capture an individual participant’s unique travel time cost.

6.2. Incentive level and walking distance to bus stops can help predict mode shift to transit.

During the Study, three predictive variables were tested to understand their relative influence on mode choice. The high-level impact of these variables is summarized in **Table 8**. The participants most likely to record a trip met three criteria:

- Were randomly **assigned to the \$9.00 incentive tier**.
- Had a **walk no longer than 0.4 miles** on either end of their trip.
- Had a transit travel time **less than 40 minutes longer** than the associated driving duration.

Table 8. Summary of Predictive Variables and Recorded Transit Trips

Variable	Description	Study Variation	Impact
Incentive Level	The per-trip incentive awarded for recording a trip in the Study.	Three tiers. One-way incentive of \$3, \$6, or \$9 assigned randomly to all invitees.	Higher incentives appear to be at least somewhat effective at inducing transit usage. Participants in the \$9 tier recorded 45% more trips than the median Study participant.
Walking Distance	The distance a participant had to travel on either end of their trip to reach the nearest bus stop.	Up to two (2) miles. Invites only extended when the walking distance on each end of the trip was less than two (2) miles.	Strong predictor of mode choice. No trips were recorded by participants needing to walk more than 0.6 miles to/from a bus stop.
Relative Travel Times	The travel time added by taking transit instead of driving.	Uncapped. Invites extended based only on stop proximity. As a result, some invitees had transit travel times up to 7x the driving time.	Weak predictor of mode choice. No trips were recorded by participants who had transit travel times more than 45 minutes longer than driving. Reviewing travel time ratios did not show a predictive pattern.

6.2.1. Impact of Trip Incentives

To approximate the impact of incentives on participant behavior, the total number of trips recorded in each incentive tier was analyzed. The results of this process are shown in **Table 9**. Participants in the \$9.00 incentive tier recorded trips at a significantly higher rate than those in the two lower categories. This result aligns with the Study findings in [5.1.3. Transit Alternatives Viability Analysis](#), where participants in the \$9.00 tier were more likely than their peers to have a viable transit option.

Table 9. Recorded Trips by Incentive Level

Incentive Value	Participants in Incentive Tier	Active Participants ¹⁸	Recorded Trips per Participant in Tier	Recorded Trips Rate Relative to Baseline
\$3.00	69	8	1.17	-27%
\$6.00	66	7	1.24	-23%
\$9.00	74	11	2.35	+46%
Baseline	209	26	1.61	0%

6.2.2. Impact of Walking Distances

The distribution of maximum walking distances in the total Study invite pool is shown in **Figure 24**. These values represent the longer of the two walks a participant would need to complete to take transit (home to bus stop and bus stop to destination). Slightly more than 60% of invitees had a maximum walk at or under 0.5 miles.

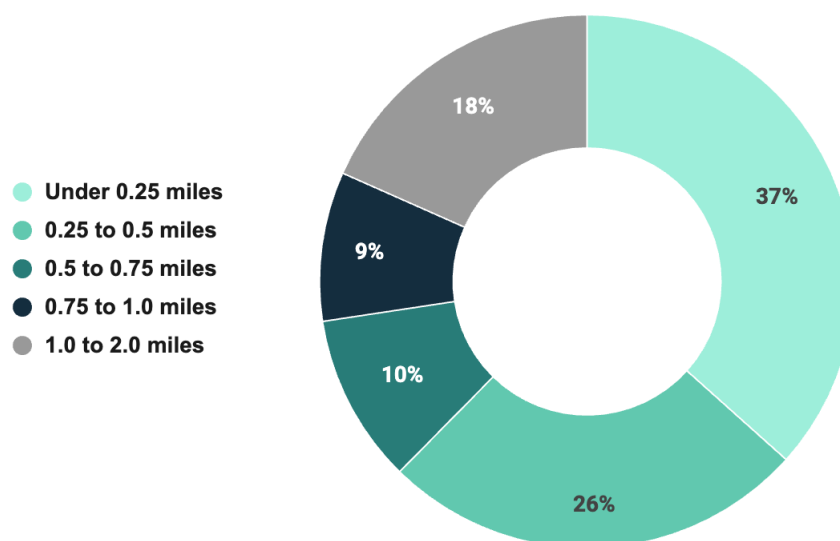


Figure 24. Maximum One-Way Walk Distances in Study Invite Pool

¹⁸ Active participants recorded at least one incentive-eligible trip during the study period.

A distance of 0.25 miles is generally accepted as the maximum distance a rider will walk to reach a bus stop.¹⁹ Study results largely match this assumption, as shown in **Figure 25**. More than 97% of all recorded trips were accrued by participants with a maximum walking distance at or under 0.4 miles, and no trips were recorded by participants with a maximum walking distance above 0.6 miles. It is likely that the ability of participants to earn incentives for their transit trips encouraged slightly longer than typical walks to and from bus stops.

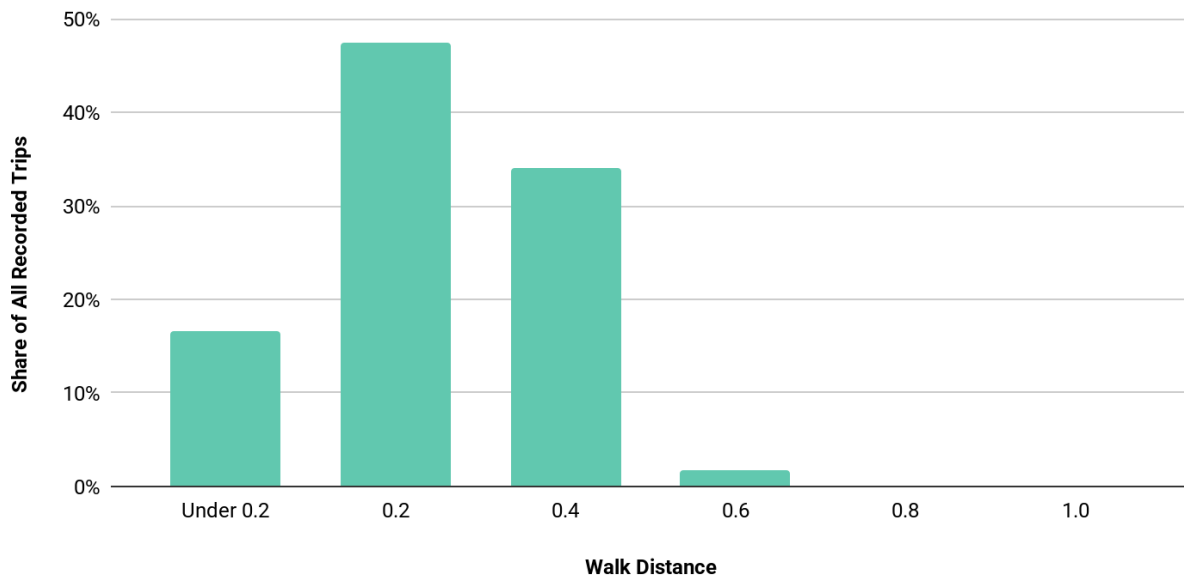


Figure 25. Effect of One-Way Walking Distance on Transit Usage

¹⁹ Federal Transit Administration, Title VI Requirements and Guidelines, p. IV-14 (2012). Retrieved from: https://www.transit.dot.gov/sites/fta.dot.gov/files/docs/FTA_Title_VI_FINAL.pdf

6.2.3. Impact of Relative Travel Times

Recorded trips are distributed by associated participant travel time ratio in **Figure 26**. The distribution of travel time ratios across the full invite pool (previously shown as Figure 21) is provided as a point of comparison. The distribution of recorded trips roughly matches the invite pool, indicating that travel time ratios are a poor predictor of participant outcomes in this dataset.

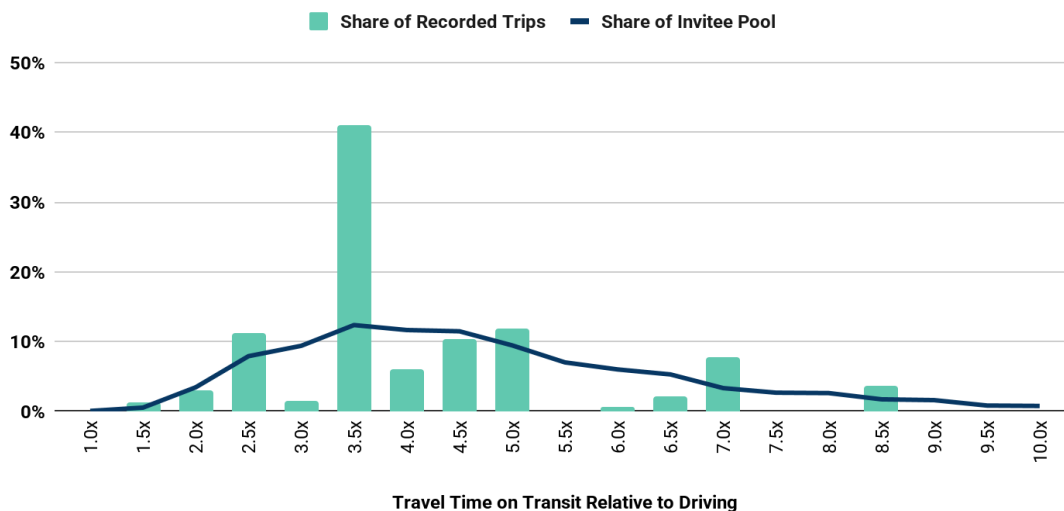


Figure 26. Invite Pool and Participant Results: Ratio of Transit Travel Time to Driving Duration

Recorded trips are distributed by additional transit travel time in **Figure 27**. The distribution of additional transit travel time across the full invite pool (previously shown as Figure 22) is provided as a point of comparison. More than 99% of recorded trips came from participants with an additional transit travel time of 40 minutes or less.

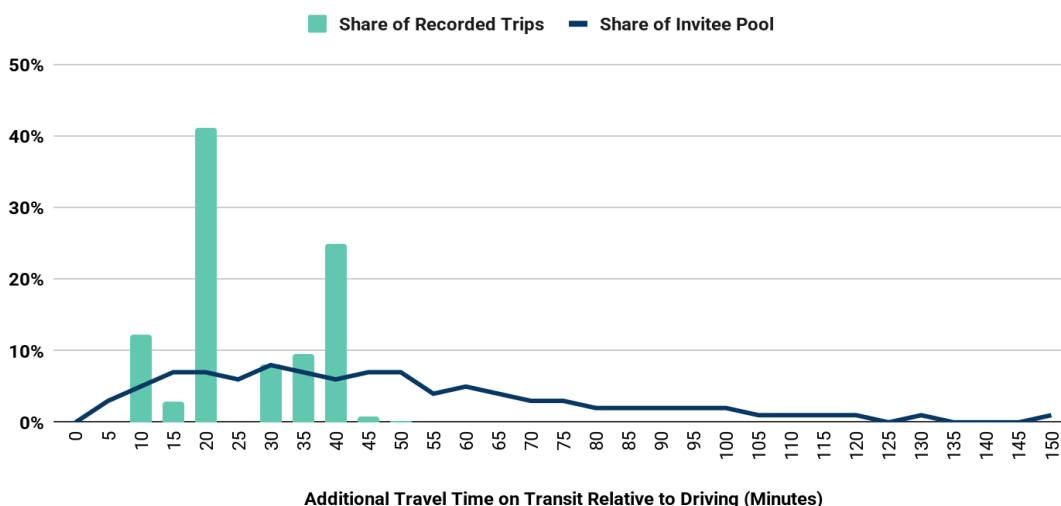


Figure 27. Invite Pool and Participant Results: Additional Transit Travel Time

6.3. Incompatibility with respondent schedules and long travel times emerged as key barriers to transit use.

At the end of the Study, the Project Team surveyed active participants (who recorded one or more transit trips) about their experience. A second survey was also sent to inactive participants (who registered but did not record a trip) and unconverted invitees (who were eligible, but never registered for the Study) to understand what prevented them from participating.



Active Study participants, inactive participants, and unconverted invitees all noted the quality of available transit options as a participation barrier. A **lack of trips that worked with respondent schedules** and **long travel times relative to driving** emerged as two key issues.

Full results from both surveys are reproduced as [Appendix C: Transit Mode Shift Closeout Survey Results](#). Transit access barriers noted in both surveys are discussed in this section.

6.3.1. Barriers for Active Study Participants

As shown in **Figure 28**, the two most-selected barriers to recording additional transit trips are both related to the quality of the available options. More than half of participants selected a lack of trips that worked with their schedule as a barrier to increased transit use. This category likely includes both concerns about frequency (e.g. “there isn’t a bus when I want to leave”) and service spans (e.g. “the bus doesn’t run when I need to travel”).

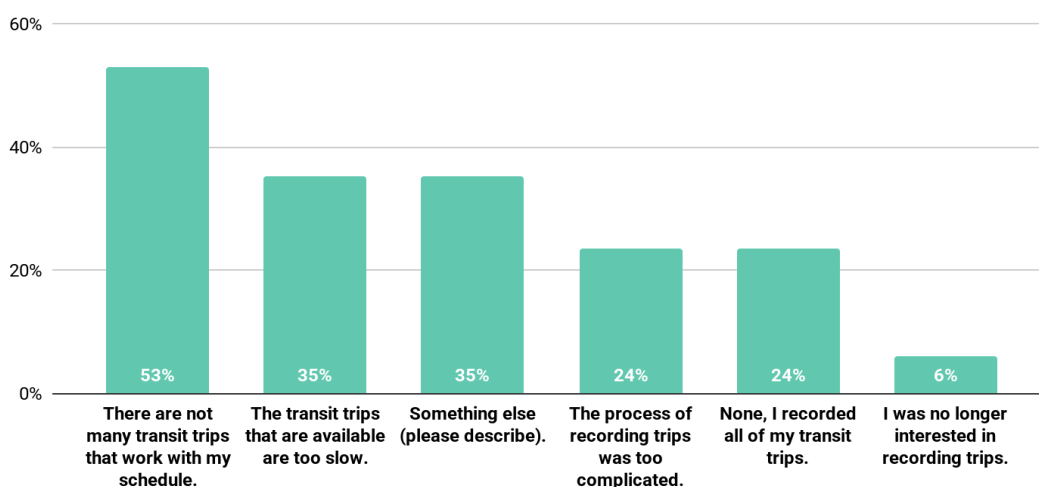


Figure 28. Aside from being limited to only one origin and destination pair, what barriers have prevented you from recording more transit trips? (Select all that apply)

6.3.2. Barriers for Inactive Participants and Unconverted Invitees

When asked what prevented them from joining the Study and recording transit trips, more than 40% of inactive participants and unconverted invitees named poor transit options as their main barrier. As shown in **Figure 29**, this is substantially more than any other reason.

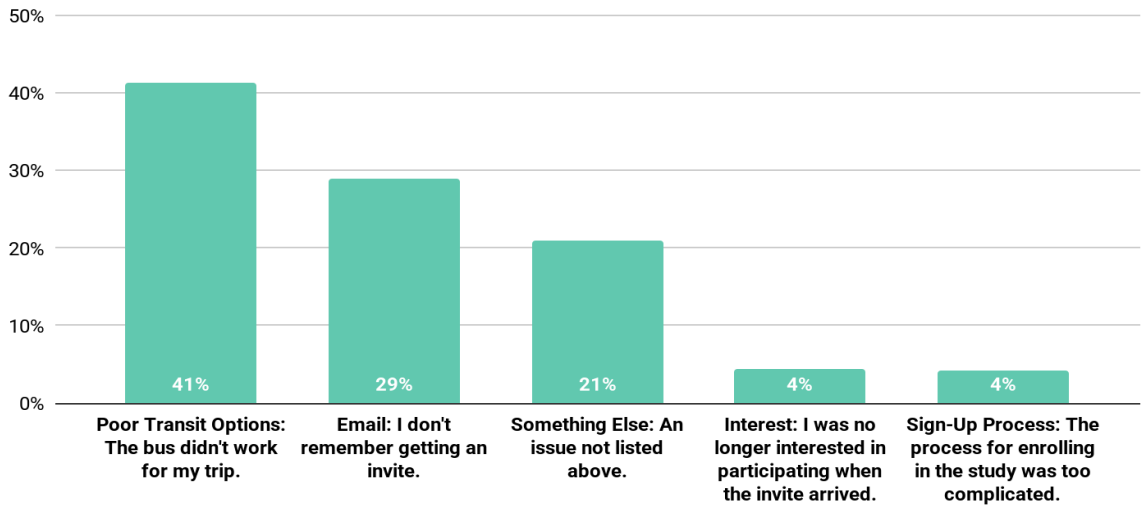


Figure 29. What was the main challenge that led to you not participating in the study? (Select one)

Respondents who selected poor transit options as a participation barrier were subsequently asked which issues made transit feel like a poor option for their trip. Respondents were able to select up to three issues from the list shown in **Figure 30**. Long journey times relative to driving emerged as a primary barrier, with this concern noted by twice as many respondents as any other option.

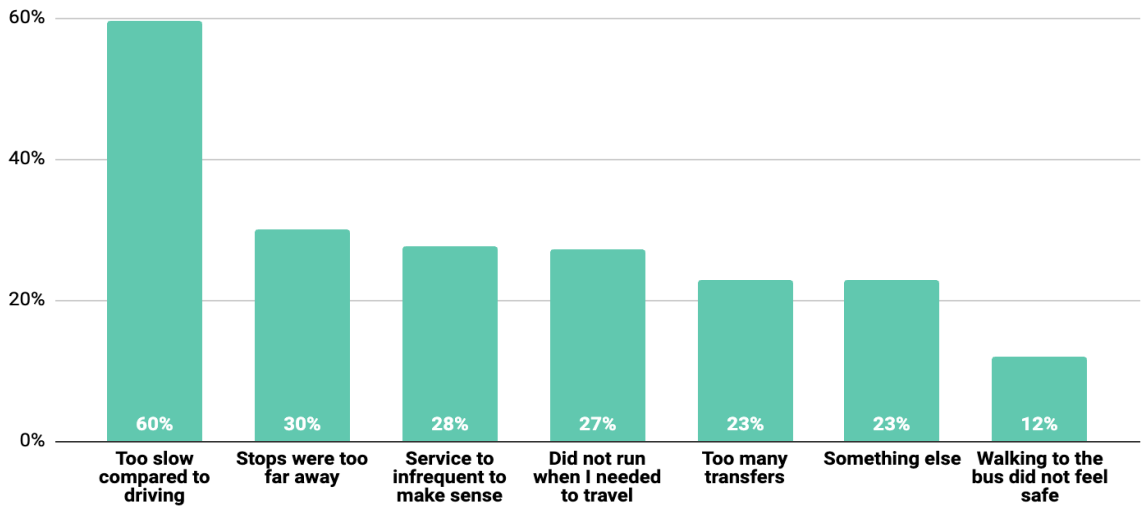


Figure 30. What issues did you see with the available transit options? (Select up to three)

Respondents were also asked which changes would have made them more likely to participate in the study. Results from this question are shown in **Figure 31**. The two most-selected options both speak to a desire to see improved transit travel times: adding stops so that a more direct routing was possible, and improving frequency so wait times were shorter. Notably, these changes were more desired than offering larger Study participation incentives.

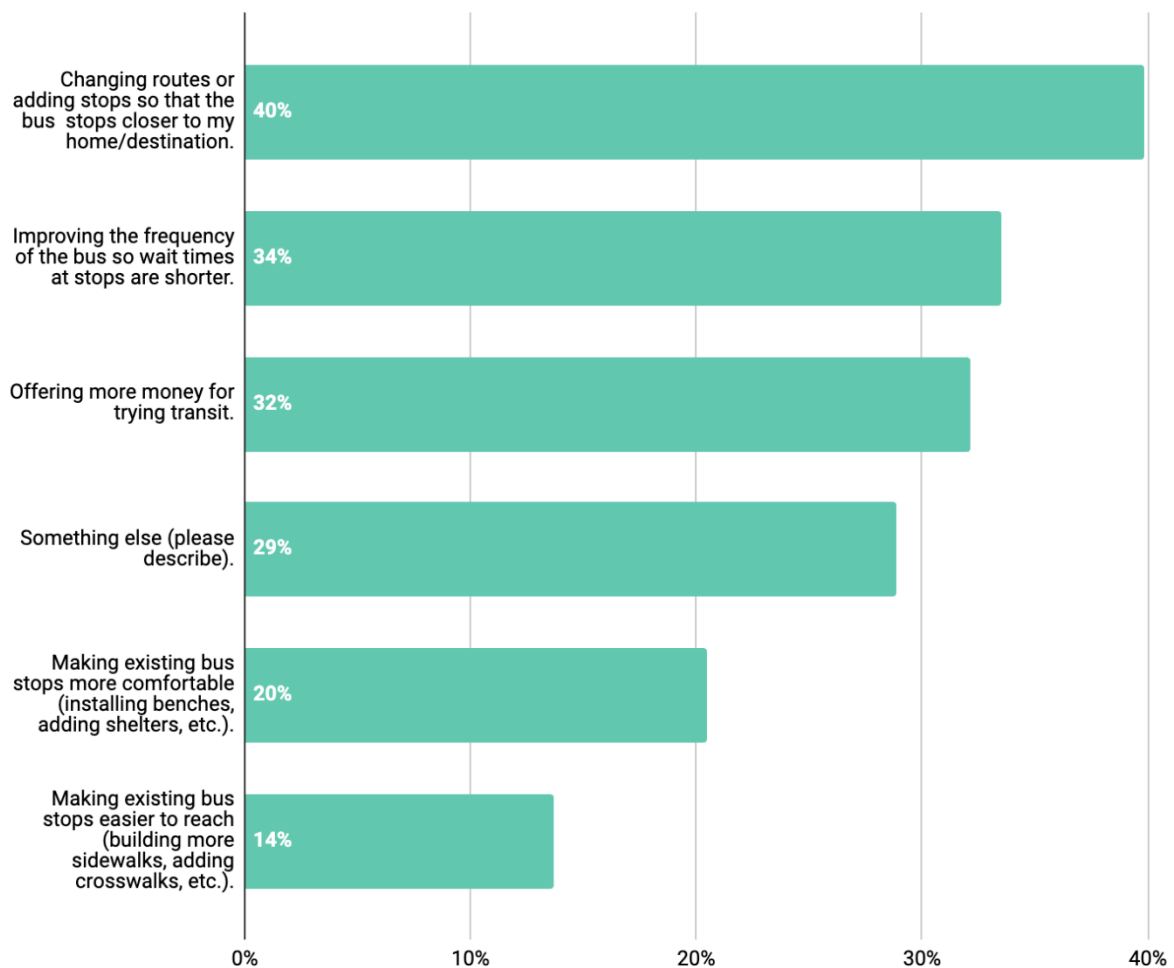


Figure 31. Would any of the following changes have made you more likely to participate in the study? (Select up to three)

7. Recommendations for Future Research

Although the Demonstration proved the technical feasibility of using direct telematics data for RUC, several aspects of a future program remain open to further investigation:

- **Accounting for out-of-state mileage:** Since the Demonstration did not process location data, no distinction was made between in-state and out-of-state mileage. This did not affect Demonstration results since the revenue generated by specific rate schemes was not evaluated, but will need to be accounted for prior to launching future RUC programs.
- **Limited vehicle eligibility:** Demonstration findings show that half of MY2024 were still not eligible to connect through Mobilisights or Smartcar. This percentage increases for older vehicles.
- **Industry uncertainty:** Automakers have not yet coalesced on a best-practice approach to collecting and using telematics data.

Recommendations for future MDOT research that could help address these obstacles include:

1. Develop an approach for tracking miles travelled outside Michigan.

Early RUC pilots relied primarily on odometer photo verification and periodic reporting to track driver mileage. These methods are generally incapable of differentiating out-of-state travel from in-state travel.

The vehicle location data available in direct telematics programs can be used to accurately isolate out-of-state travel on a continuous basis. MDOT could develop methods for identifying out-of-state travel while respecting driver privacy, potentially in the context of regional partnerships with nearby states.

Potential research partners: Peer DOTs in Indiana, Ohio, Illinois, and Wisconsin

2. Investigate the potential for reciprocal mileage tracking programs with adjacent states.

A substantial portion of traffic on Michigan roadways comes from out-of-state drivers. The state also sees a high amount of international freight traffic, particularly near the busy Detroit and Port Huron border crossings. Out-of-state and international drivers who stop to refuel while in Michigan currently contribute to the state's roads through the gas tax. However, a RUC program may not be able to collect per-mile fees from these drivers without cross-jurisdictional collaboration. MDOT could look to engage adjacent DOTs to evaluate the feasibility of regional RUC fee collaboration.

Potential research partners: Peer DOTs (Indiana, Ohio, Illinois, and Wisconsin), cross-border freight industry groups (e.g. IFTA), existing RUC consortiums (e.g. RUC America)

3. Model the revenue generation potential of different RUC rates against anticipated funding needs.

This Study was focused on evaluating the technical feasibility of using direct telematics data for RUC. Analysis of revenue generation potential was specifically excluded from the scope, as financial decisions will be made by the Michigan Legislature. If directed by the Legislature, MDOT could investigate an appropriate range for per-mile RUC fees. This investigation should also include a review of how RUC fees might vary by vehicle type, vehicle weight, time of travel, and other factors as appropriate.

4. Analyze the relative costs and benefits of a RUC program with different levels of eligibility.

Covering most, or all, of the current on-road vehicle fleet with a RUC program requires an agency to use multiple data collection methods. MDOT could work with state policymakers to evaluate the financial benefits of a broad-coverage RUC program against the increased administrative costs and complexity generated by a program that includes multiple data collection methods.

5. Investigate the feasibility of a unified, interoperable RUC data sharing standard across manufacturers.

There is no current industry standard for sharing telematics data in a way that can be processed by governments for RUC programs. This is likely to continue being the largest barrier to widespread use of direct telematics data for RUC going forward. MDOT could look to partner with automakers, state DOTs, and the Federal government to develop a unified RUC telematics data standard.

Potential research partners: USDOT and other state DOTs, automakers and auto industry trade groups

Appendix A:

RUC Demonstration Sign-Up Process

The Study website was MiRUCStudy.com. Screenshots of the website onboarding flow are provided in this Appendix. The website landing page is reproduced as **Figure A-1**. This page provided invitees routed from the invitation emails with an overview of what participating in the Study entailed, as well as the incentives participants would receive at the end of the Study.

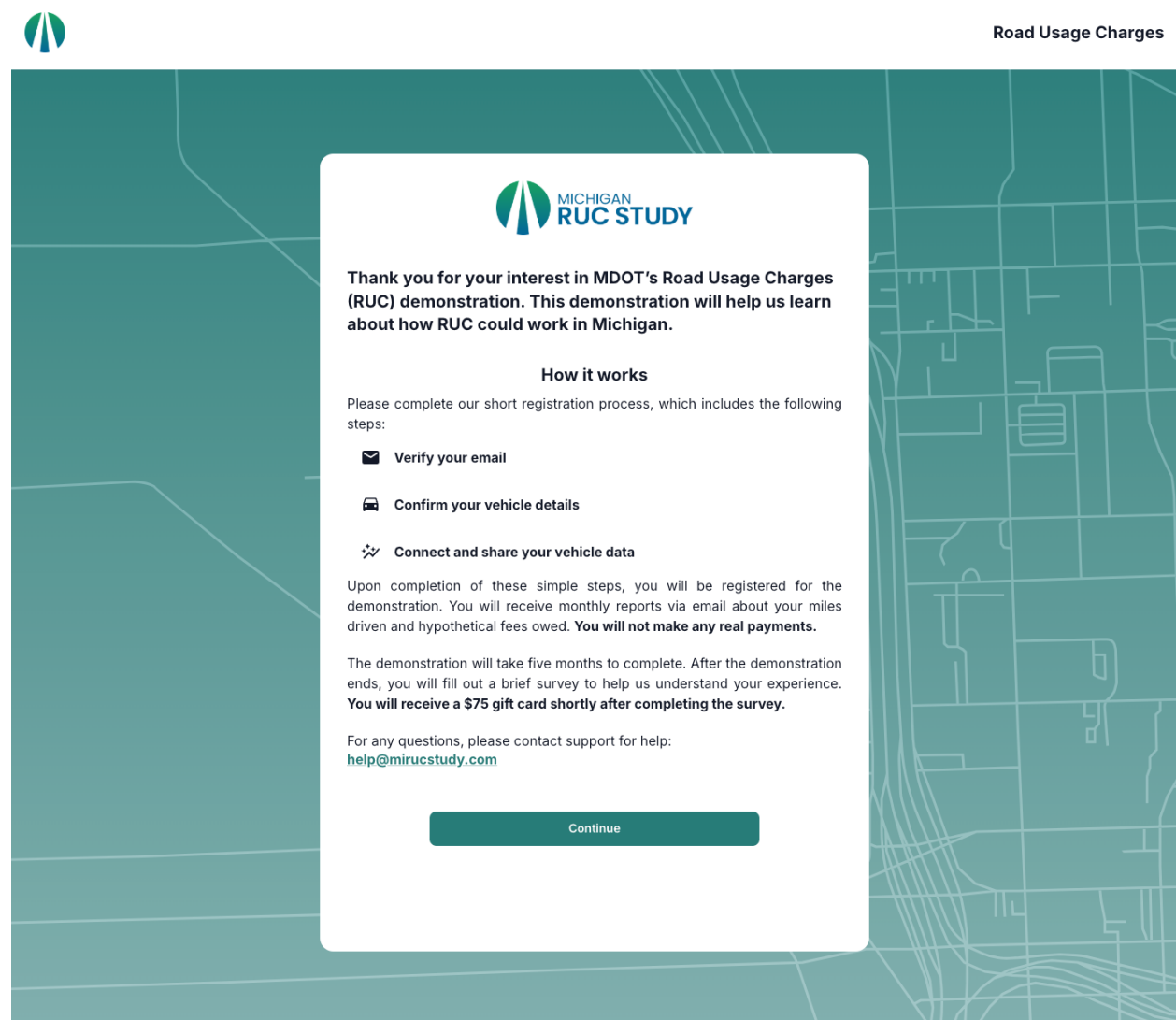
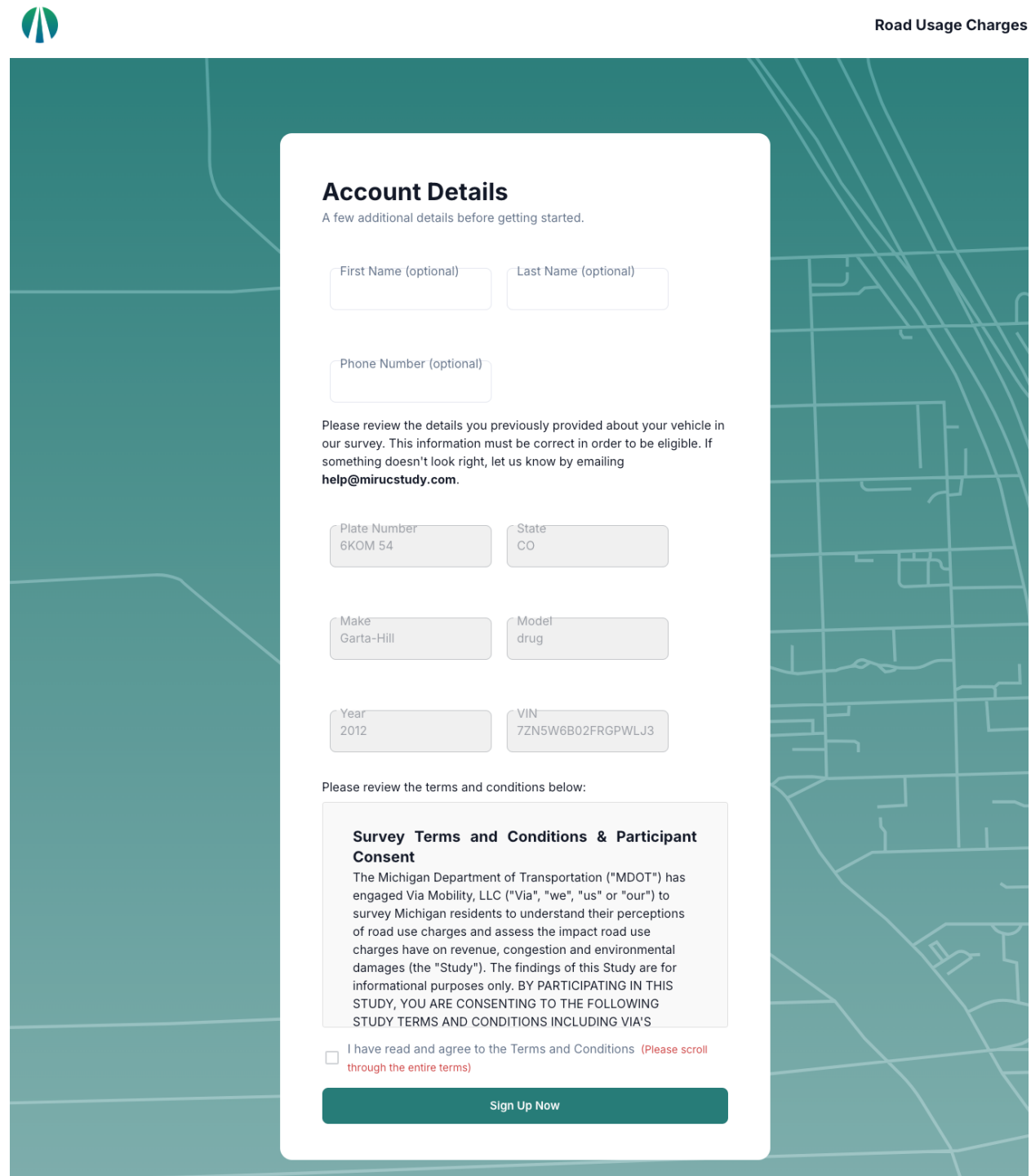


Figure A-1. Landing Page (Source: *MiRUCStudy.com*)

After clicking “Continue” on the landing page, invitees were taken to an Account Details page to confirm that the vehicle information they provided in the *Public Perception Survey* was still accurate. Invitees also reviewed and accepted the Study’s terms and conditions during this step. The Account Details page is reproduced here as **Figure A-2**.



 **Road Usage Charges**

Account Details

A few additional details before getting started.

First Name (optional) Last Name (optional)

Phone Number (optional)

Please review the details you previously provided about your vehicle in our survey. This information must be correct in order to be eligible. If something doesn't look right, let us know by emailing help@mirucstudy.com.

Plate Number 6KOM 54 State CO

Make Garta-Hill Model drug

Year 2012 VIN 7ZN5W6B02FRGPWLJ3

Please review the terms and conditions below:

Survey Terms and Conditions & Participant Consent

The Michigan Department of Transportation ("MDOT") has engaged Via Mobility, LLC ("Via", "we", "us" or "our") to survey Michigan residents to understand their perceptions of road use charges and assess the impact road use charges have on revenue, congestion and environmental damages (the "Study"). The findings of this Study are for informational purposes only. BY PARTICIPATING IN THIS STUDY, YOU ARE CONSENTING TO THE FOLLOWING STUDY TERMS AND CONDITIONS INCLUDING VIA'S

☐ I have read and agree to the Terms and Conditions (Please scroll through the entire terms)

Sign Up Now

Figure A-2. Account Details Page (Source: *MiRUCStudy.com*)

After confirming their details and accepting the Study terms, invitees using Smartcar were routed to the Smartcar site to connect their vehicle. To do this, invitees had to log in to Smartcar with the same credentials they used to log in to their OEM app (myChevy, Kia Connect, etc.). Once they logged in to Smartcar, invitees were routed back to the Study website. Invitees using Mobilisights skipped this step, as the vehicle connection could be established automatically once the Study terms were accepted. After the connection process was complete, invitees were shown a page confirming that they had successfully enrolled in the Study. This page is reproduced as **Figure A-3**.

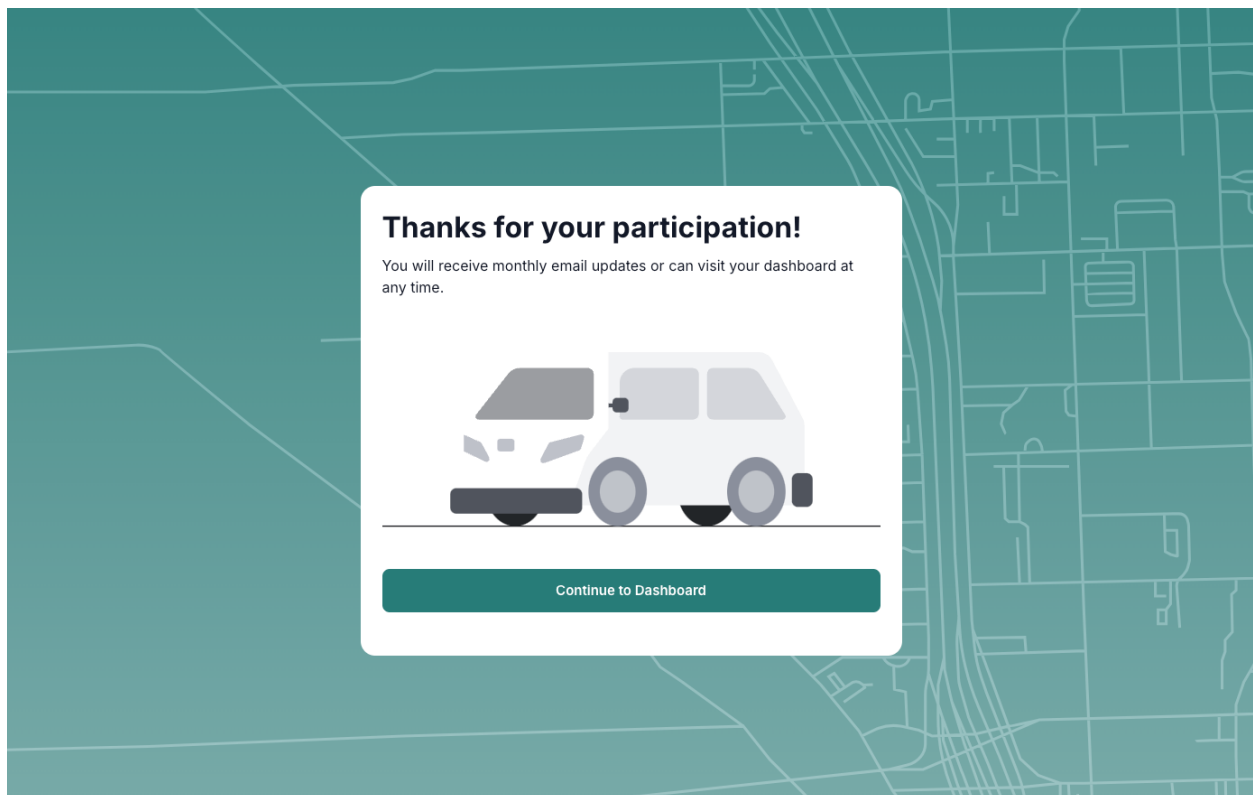


Figure A-3. Connection Successful Page (Source: *MiRUCStudy.com*)

Appendix B:

RUC Demonstration Closeout Survey Results

The live study period concluded on April 30, 2025. Between May 1 and May 15, 2025, two groups were surveyed about their experience with the Demonstration:

- **Registered Participants:** Survey invites were sent to the 208 persons who confirmed their participation in the Demonstration. The survey opened with questions about the participant experience, including the sign-up process, monthly email updates, online dashboard, and usage of companion OEM applications. The second half of the survey used repeat questions from the 2024 *Public Perceptions* survey to identify changes in participant sentiments around RUC after participating in a mock program.

Participants were required to complete this survey before receiving their \$75 gift card incentive for joining the Demonstration. A total of 186 responses were received, for an overall response rate of 89%.

- **Unconverted Invitees:** Survey invites were sent to the 2,108 persons who were eligible for the Demonstration but never confirmed their participation. This survey looked to identify the barriers preventing the invitees from joining the Demonstration, as well as any design changes that would have made them more likely to join. Respondents to this survey received a \$10 gift card incentive. A total of 770 responses were received, for an overall response rate of 37%.



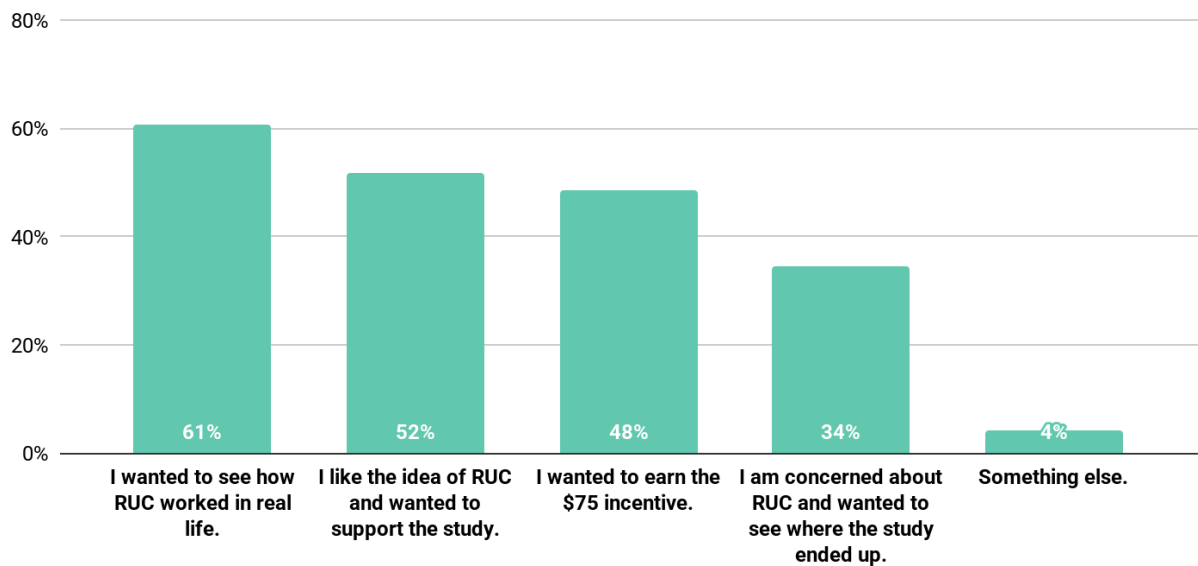
RUC Demonstration: Registered Participants

Results are reported using the same question order shown to respondents during the survey. In cases where a question was only shown to a subset of respondents, the condition(s) requiring the question to be shown are listed. Due to rounding, totals for questions that only allowed one answer selection may not sum to 100%.

What motivated you to sign up for this study? Please select up to three options.

Responses Recorded: 186

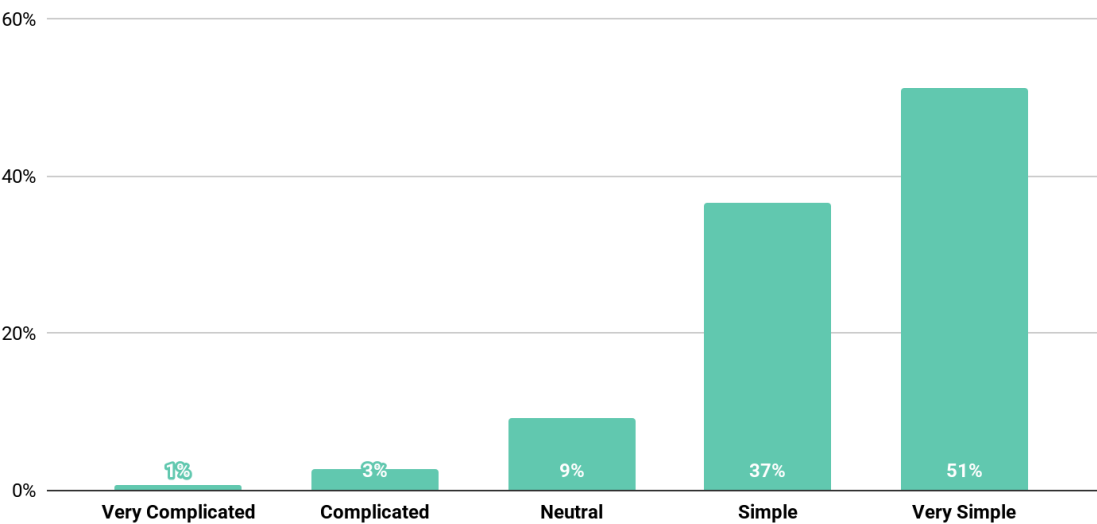
Slightly more than 60% of participants said they joined Demonstration at least in part due to curiosity about how RUC would work in real life. About 50% of participants liked the idea of RUC and wished to support MDOT’s study, with a similar share reporting that they were motivated by the \$75 incentive. Finally, about one-third of participants joined because they were concerned about RUC and wanted to track the study’s progress. About 4% of participants selected “something else” as a motivation, with most in this category reporting that they wanted to better understand RUC as an idea.



How difficult was the process of signing up to participate in this study?

Responses Recorded: 186

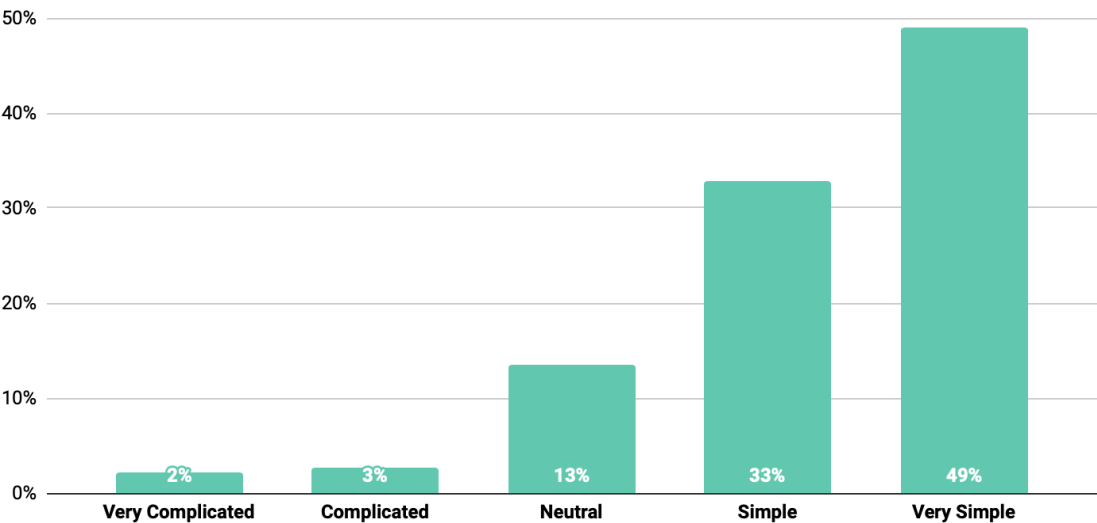
Almost 90% of participants reported that they found the sign-up process to be “simple” or “very simple”. Only 4% found the process to be “complicated” or “very complicated”.



How difficult was the process of connecting your vehicle to share odometer data with MDOT?

Responses Recorded: 186

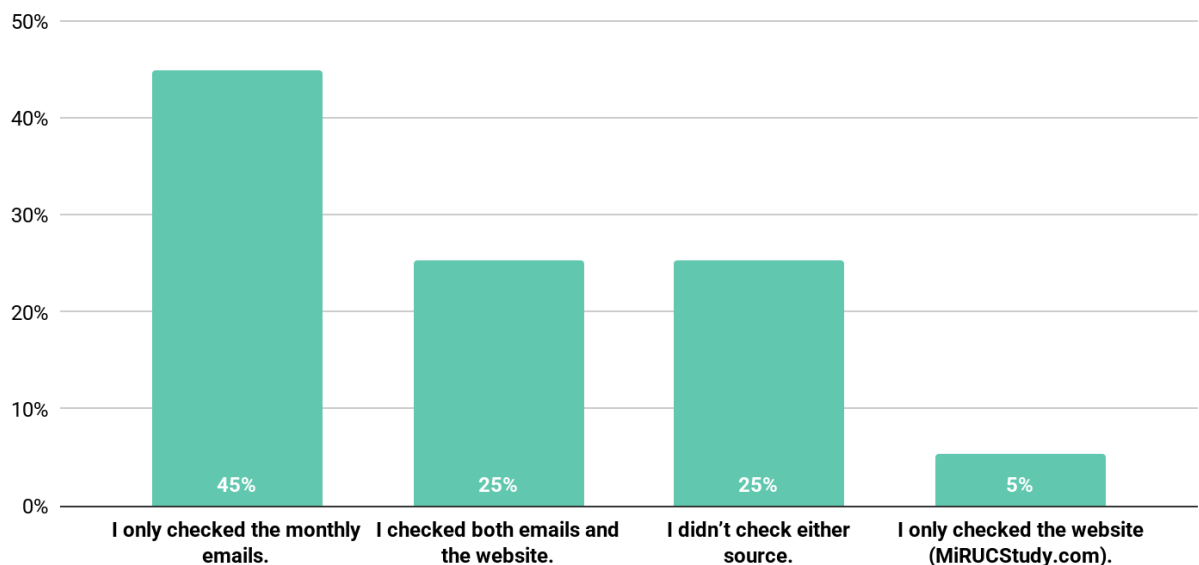
Slightly more than 80% of participants reported that they found the process of connecting their vehicle to share telematics data to be “simple” or “very simple”. About 5% found the process to be “complicated” or “very complicated”.



Did you use the monthly emails or online dashboard to check the number of miles you drove during the study? Please only select one answer.

Responses Recorded: 186

About 75% of participants checked their reported mileage total during the Demonstration, with most of this group (about 45% of all participants) only checking via email recaps. The online dashboard was less used, with only 5% of participants using it exclusively to check mileage totals. About 25% of participants reported that they did not check their reported mileage total during the Demonstration.

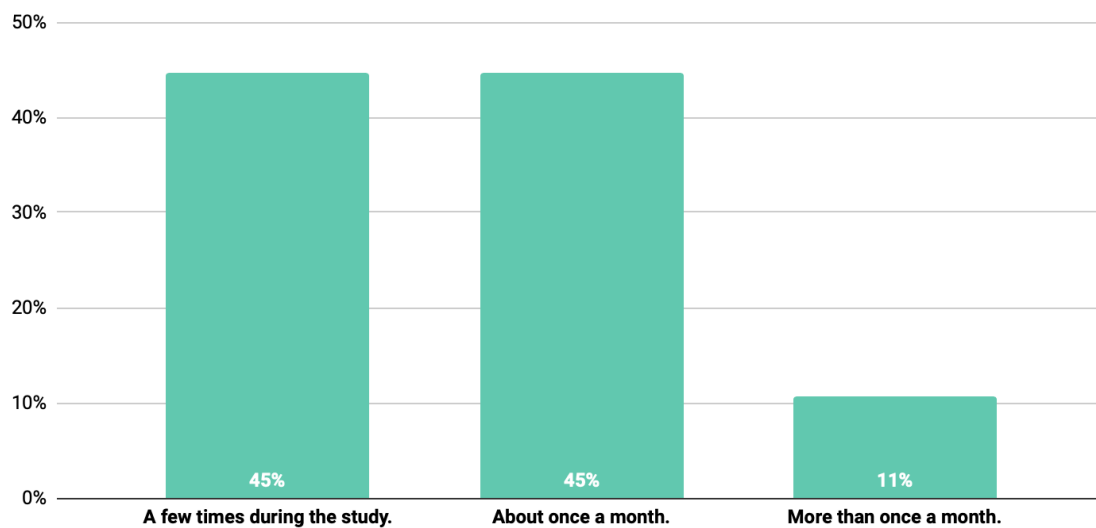


How often did you check the online dashboard (MiRUCStudy.com) during the study?

Responses Recorded: 56

Display Condition: Only shown to respondents who said they used the online dashboard.

About 90% of respondents reported checking the dashboard once a month or less. Half of this group (45% of all respondents) reported checking only a few times during the Demonstration.

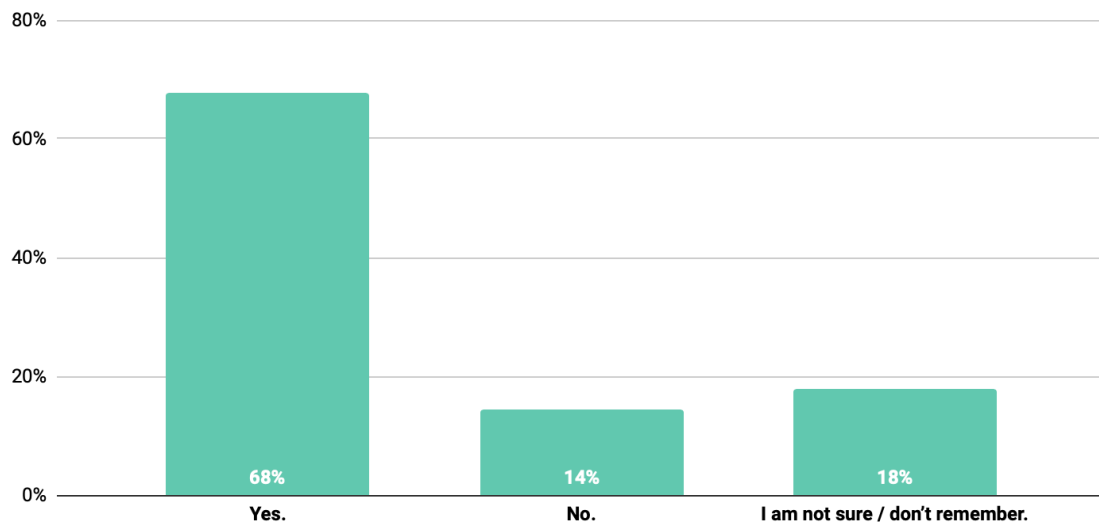


Did you feel like the online dashboard (MiRUCStudy.com) was accurate when reporting the number of miles you drove?

Responses Recorded: 56

Display Condition: Only shown to respondents who said they used the online dashboard.

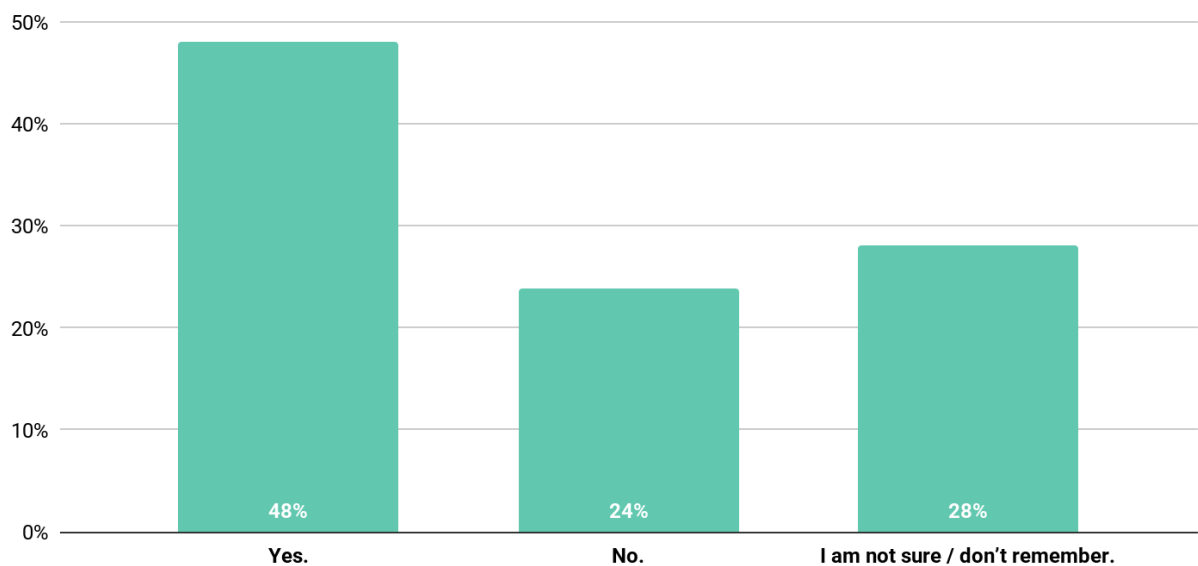
About 70% of respondents felt that their reported mileage total was accurate. About 10% of respondents did not feel it was accurate, while the remaining 20% were not sure.



Did you use an app from your vehicle manufacturer (like myChevrolet or Kia Connect) to connect your car for this study?

Responses Recorded: 185

Almost half of respondents (48%) reported using an app from their vehicle manufacturer to connect their vehicle to the Demonstration. Slightly less than 25% reported not using an app to connect their vehicle. These participants likely authorized their vehicle connection via an online website, or were part of the cohort using Mobilisights (who did not have to manually authenticate a data connection). The remaining respondent share did not remember if they used an app during the connection process.

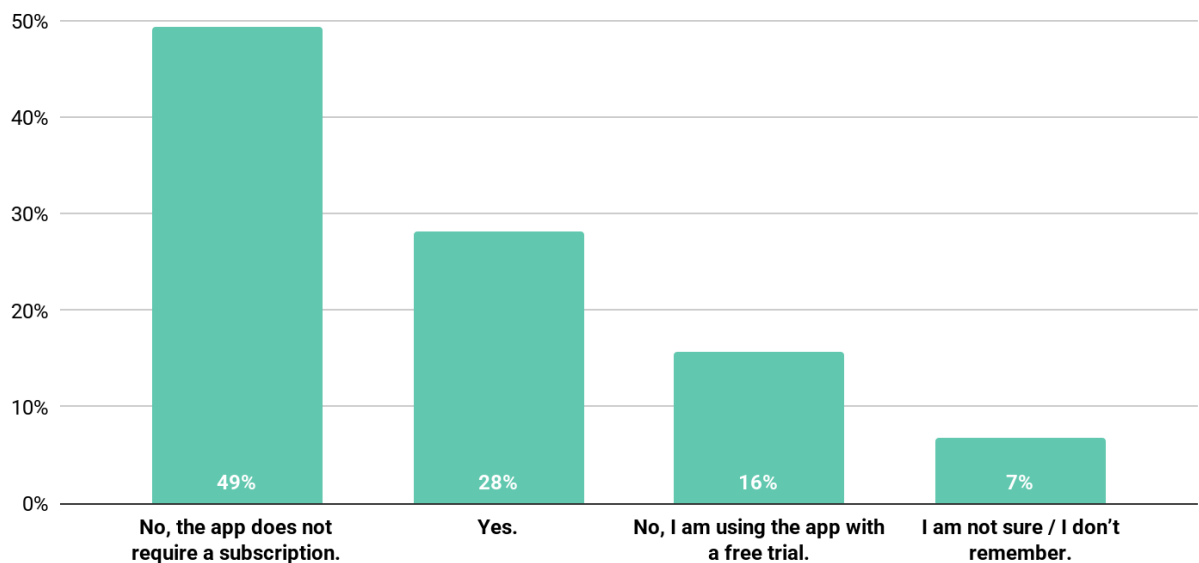


Do you pay a monthly or yearly subscription fee to access your vehicle manufacturer’s app?

Responses Recorded: 89

Display Condition: Only shown to respondents who said they used an app from their vehicle manufacturer during the vehicle connection process.

Slightly less than 30% of respondents report that they pay to access their vehicle OEM’s app. About 65% of respondents use the app but are not currently paying for it, with most of this group (50% of respondents) reporting that they do not believe the app requires a subscription. The remaining share of participants were not sure if they pay to access the vehicle OEM’s app.

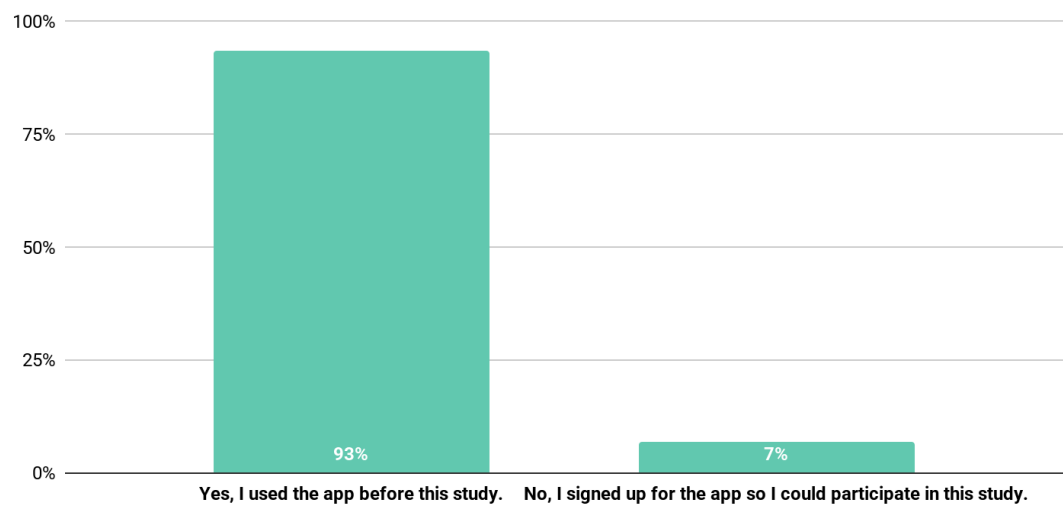


Did you use your vehicle manufacturer’s app prior to joining this study?

Responses Recorded: 89

Display Condition: Only shown to respondents who said they used an app from their vehicle manufacturer during the vehicle connection process.

Less than 10% of respondents reported signing up for their OEM app to participate in the study.

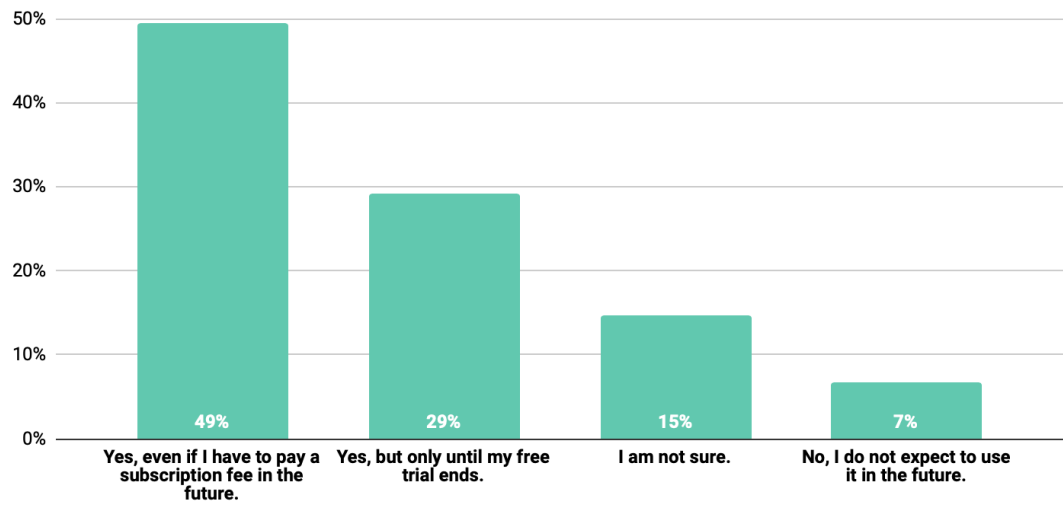


Will you continue using your vehicle manufacturer’s app now that this study has ended?

Responses Recorded: 89

Display Condition: Only shown to respondents who said they used an app from their vehicle manufacturer during the vehicle connection process.

About 80% of respondents expected to continue using their OEM’s app in the future, with most of the group (50% of respondents) expecting to keep using it even if a subscription fee is charged.

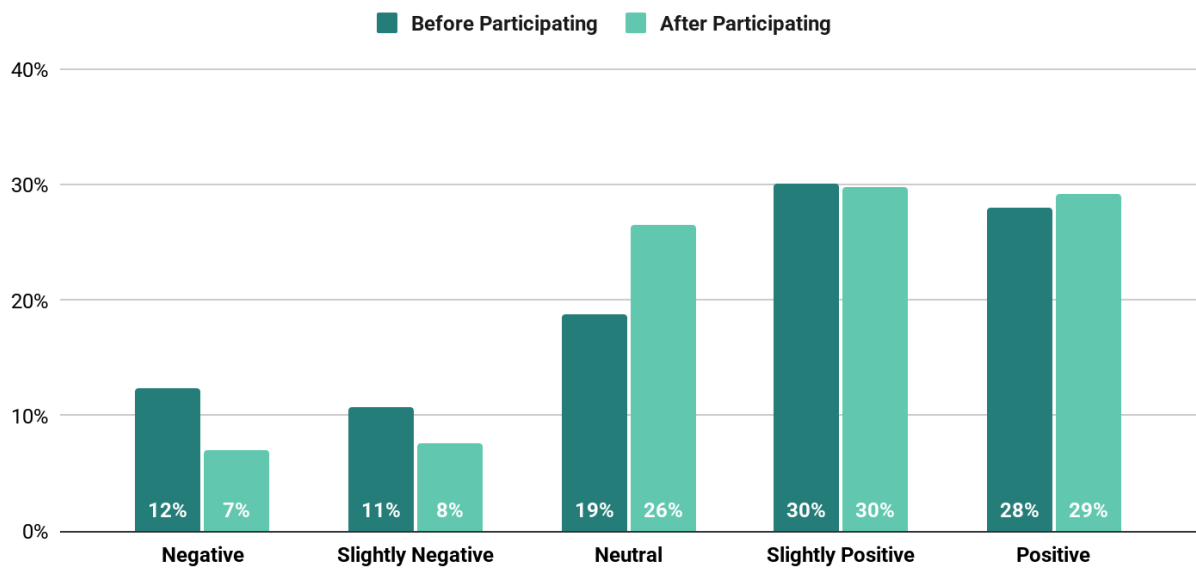


In the survey last year, you said you felt [sentiment] about using Road Usage Charges instead of a gas tax. How do you feel about this idea after participating in the demonstration?

Responses Recorded: 185

Input Variable: Respondents were shown their answer from the 2024 Public Perceptions survey.

Prior to participating in the Demonstration, about 23% of participants held “negative” or “slightly negative” opinions on this concept. After completing the Demonstration, about 15% of participants still held “negative” or “slightly negative” opinions on the idea (a decline of one-third). The majority of these participants moved into the “neutral” category, which grew from 19% to 26% of respondents post-Demonstration. At just under 60% of all respondents, the combined total of respondents with a “positive” or “slightly positive” sentiment was essentially unchanged.



Which sounds more fair to you: gas taxes or Road Usage Charges? In the survey last year, you picked [preference]. Please select only your most preferred option.

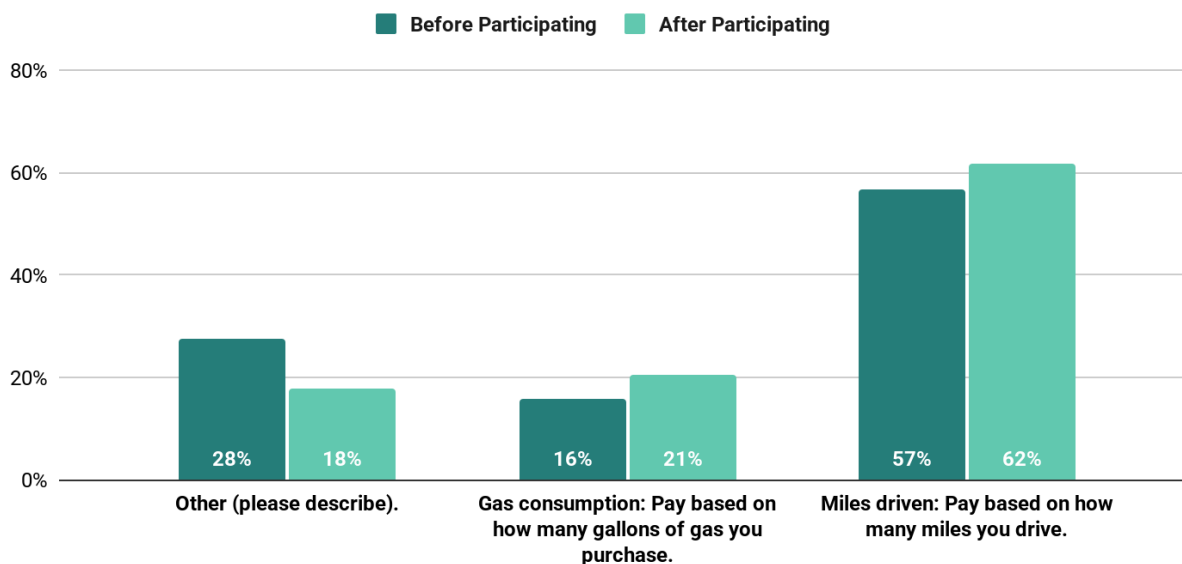
Responses Recorded: 185

Input Variable: Respondents were shown their answer from the 2024 Public Perceptions survey.

After participating in the RUC demonstration, the share of respondents preferring RUC to the gas tax rose from 57% to 62%. The share preferring the gas tax to RUC also rose, growing from 16% to 21% of respondents. Gains for both of these options came at the expense of the “Other” category, which dropped from 28% of pre-Demonstration responses to 18% post-Demonstration.

Respondents who selected “other” described several potential concerns with RUC, including:

- Michiganders could be charged for miles driven out-of-state unless a RUC program took driver location into account.
- Visitors to Michigan may not be charged for their miles driven unless they were required to sign up for any future RUC programs.
- A flat RUC fee would not properly penalize heavier, more polluting vehicles for their increased rates of damage to Michigan roadways and negative air quality impacts relative to smaller vehicles.

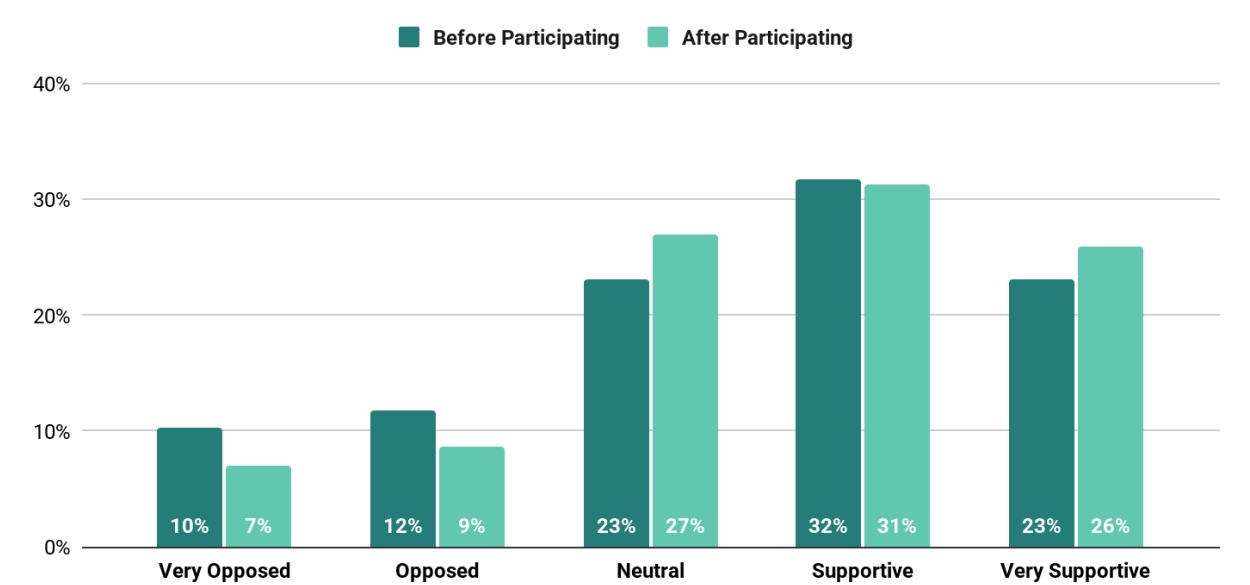


Last year, you said you were [sentiment] about changing from the current system (a gas tax) to Road Usage Charges (a tax based on how many miles you drive). How do you feel about this idea after participating in the demonstration?

Responses Recorded: 185

Input Variable: Respondents were shown their answer from the 2024 Public Perceptions survey.

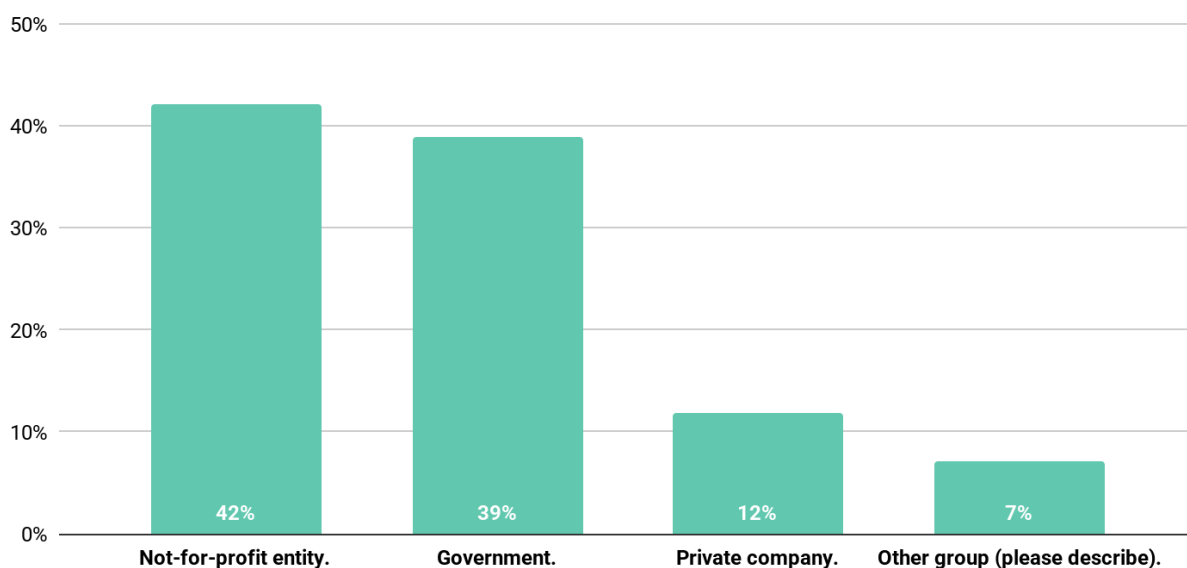
Prior to participating in the Demonstration, about 22% of participants were opposed or very opposed to transitioning towards RUC from the gas tax. After completing the Demonstration, this share dropped to 16% of participants. The majority of these participants moved into the “neutral” category, which grew from 23% to 27% of respondents post-Demonstration. The share of respondents who were supportive or very supportive of a switch to RUC grew slightly, rising from 55% to 57% of respondents post-Demonstration.



Road Usage Charges may require data to be collected (for example, how far you have driven). Now that you have participated in the study, who are you more comfortable with collecting this data? Please select only your most preferred option.

Responses Recorded: 185

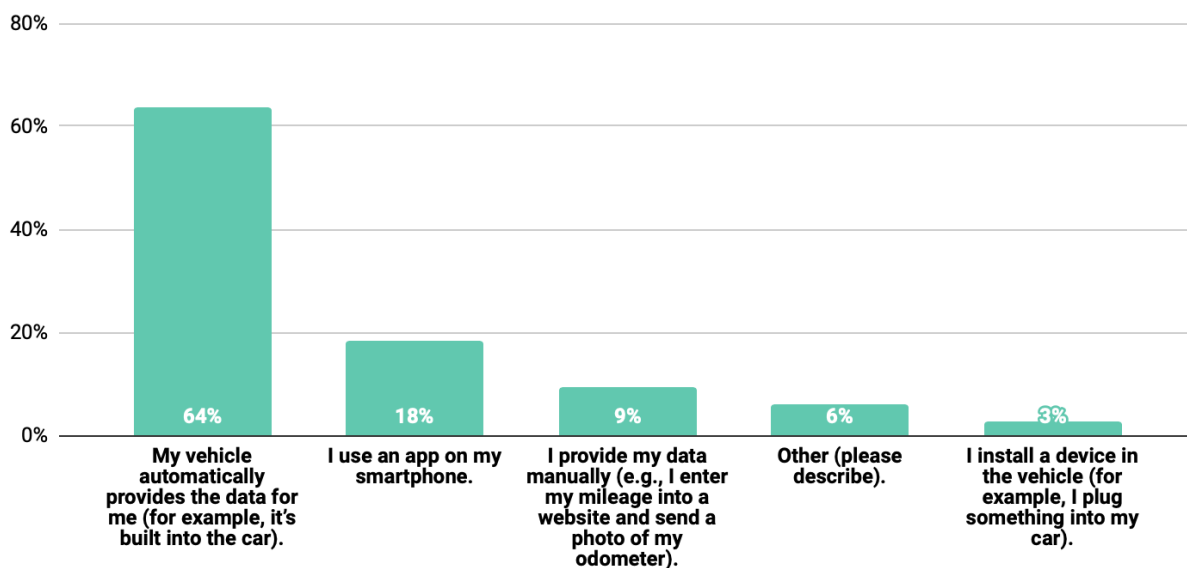
Approximately 40% of respondents wanted a nonprofit to be the entity collecting RUC data, with a similar share preferring that the data be collected directly by a government agency. Only 12% of respondents preferred a private company as the collecting entity. About 7% of respondents selected “Other”, with these respondents typically expressing a general opposition to any group — public or private — collecting the data required to administer a RUC program.



If you needed to provide data (like how many miles you have driven), how would you prefer to report it? Please select only your most preferred option.

Responses Recorded: 185

Almost two-thirds of all respondents (64%) preferred the direct telematics approach tested in the Demonstration. A smartphone app was the second-most preferred option, accounting for 18% of respondents. Respondents who selected “Other” expressed concerns about accounting for out-of-state driving and equity for drivers without connected cars and/or internet access.

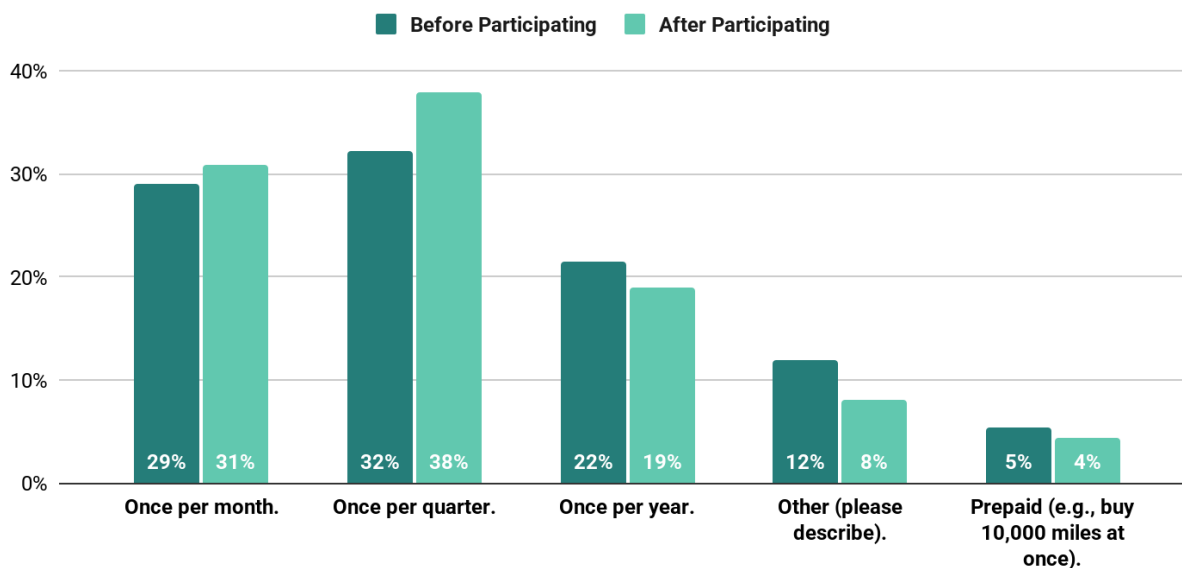


To avoid having a lot of small bills to pay, your Road Usage Charges could be added up into larger invoices. Based on what you know now, how often would you like to pay for your Road Usage Charges? Last year, you selected [\[payment frequency\]](#). Please select only your most preferred option.

Responses Recorded: 185

Input Variable: Respondents were shown their answer from the 2024 Public Perceptions survey.

After participating in the RUC demonstration, 69% of respondents preferred paying at least once per quarter, up from 61% in the pre-Demonstration baseline. About 8% of respondents selected “other”, with this group suggesting alternative approaches like incorporating RUC payments into state tax filings or vehicle registrations, or billing more than once a month so invoices are not burdensome to pay.

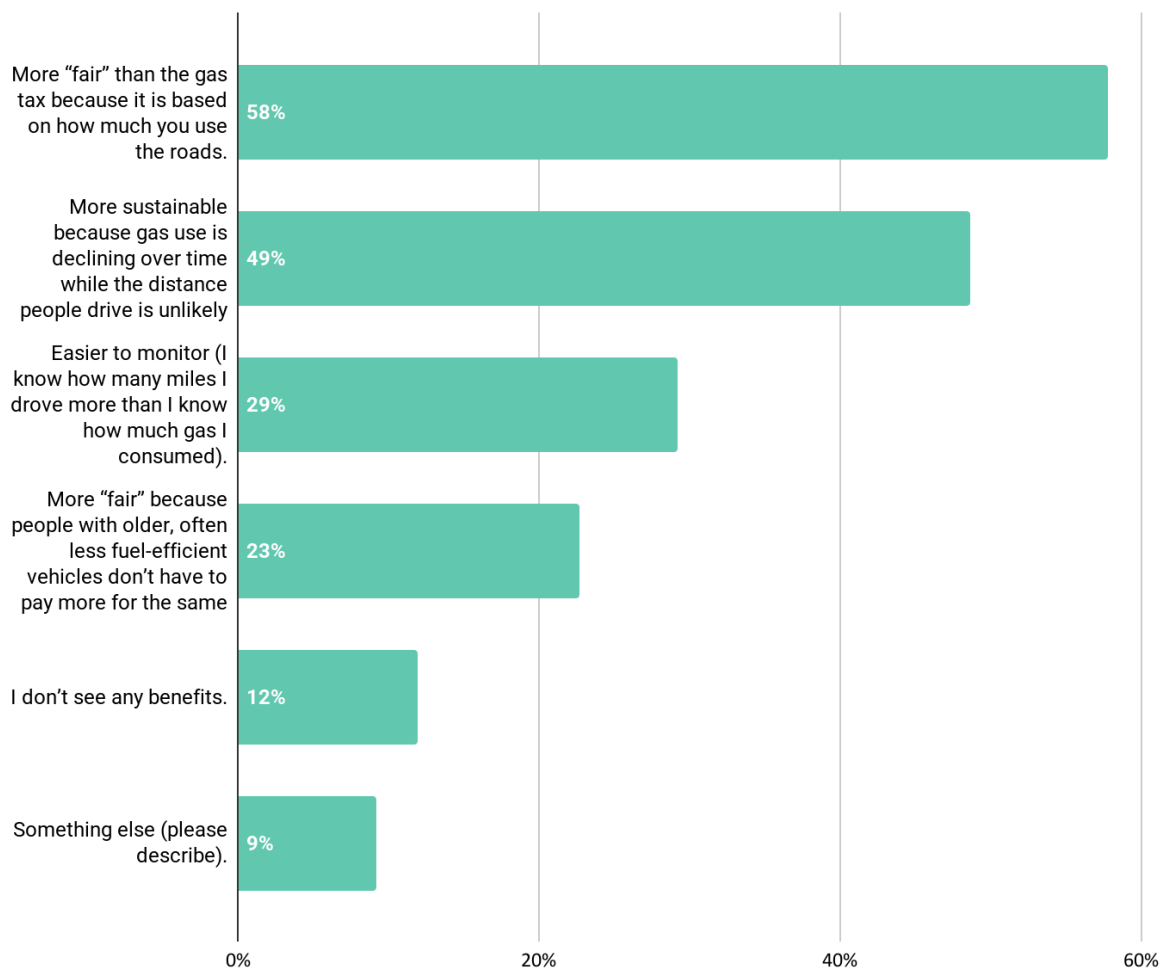


After participating in the RUC demonstration, what do you see as the greatest benefits of Road Usage Charges? Please select up to three options.

Responses Recorded: 185

The two most-selected benefits were a perception that RUC is more fair because it is based on how much an individual drives (picked by 58% of respondents) and a perception that RUC is a more sustainable funding method because gas use is declining over time (picked by 49% of respondents). The next most-selected message, the RUC is easier for drivers to monitor, was only selected by 29% of respondents. The top two choices stand out as messages likely to resonate with drivers if MDOT works to promote RUC in the future.

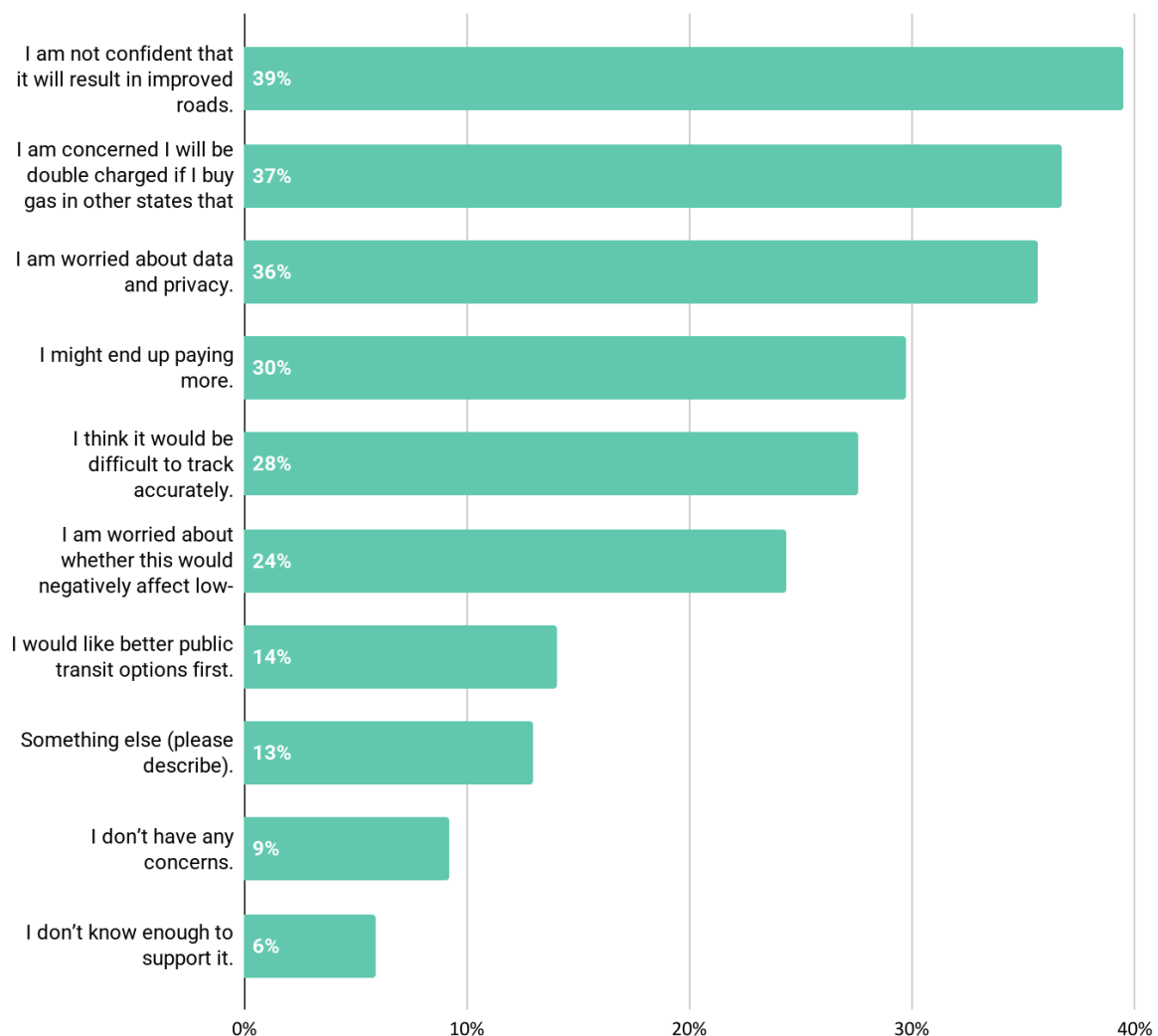
About 10% of respondents picked “something else” as a benefit of RUC. Themes in these responses included a perception that RUC is fair because electric vehicles and internal combustion vehicles can be taxed in the same manner, and some complaints that RUC does not offer any benefits.



After participating in the RUC demonstration, what are your main concerns regarding Road Usage Charges? Please select up to three options.

Responses Recorded: 185

About 90% of respondents had at least one concern about RUC. Several of the most-selected concerns involved fears of increased costs (i.e. being double-charged) and logistical concerns (i.e. data and privacy, difficulty tracking accurately). Respondents who selected “something else” expressed concerns about Michiganders being charged for miles driven out-of-state, visitors not being charged for miles driven in-state, and small fuel-efficient vehicles being disincentivized by flat-fee RUC programs not accounting vehicle weight.



RUC Demonstration: Unconverted Invitees

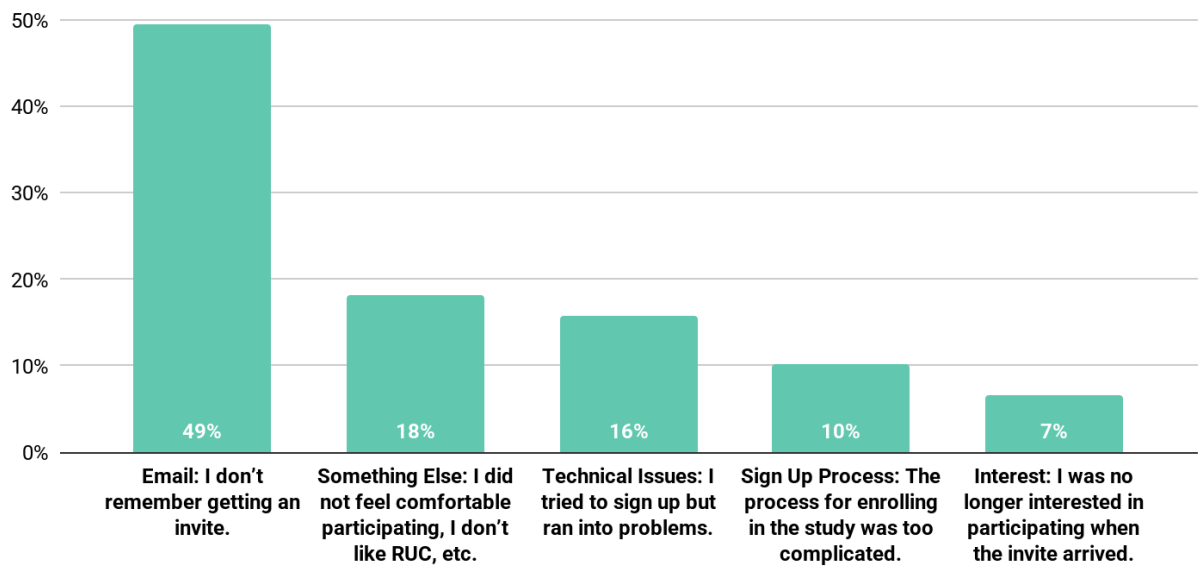
Results are reported using the same question order shown to respondents during the survey. In cases where a question was only shown to a subset of respondents, the condition(s) requiring the question to be shown are listed. Due to rounding, totals for questions that only allowed one answer selection may not sum to 100%.

What was the main challenge that led to you not participating in the study? Please select only one option.

Responses Recorded: 769

About half (49%) of respondents reported that they did not remember receiving an invite to participate in the RUC demonstration. If one of three options was selected, respondents were shown an additional question to better understand their issue:

- **Sign-Up Process:** Selected by 7% of respondents
- **Technical Issue:** Selected by 16% of respondents
- **Something Else:** Selected by 18% of respondents

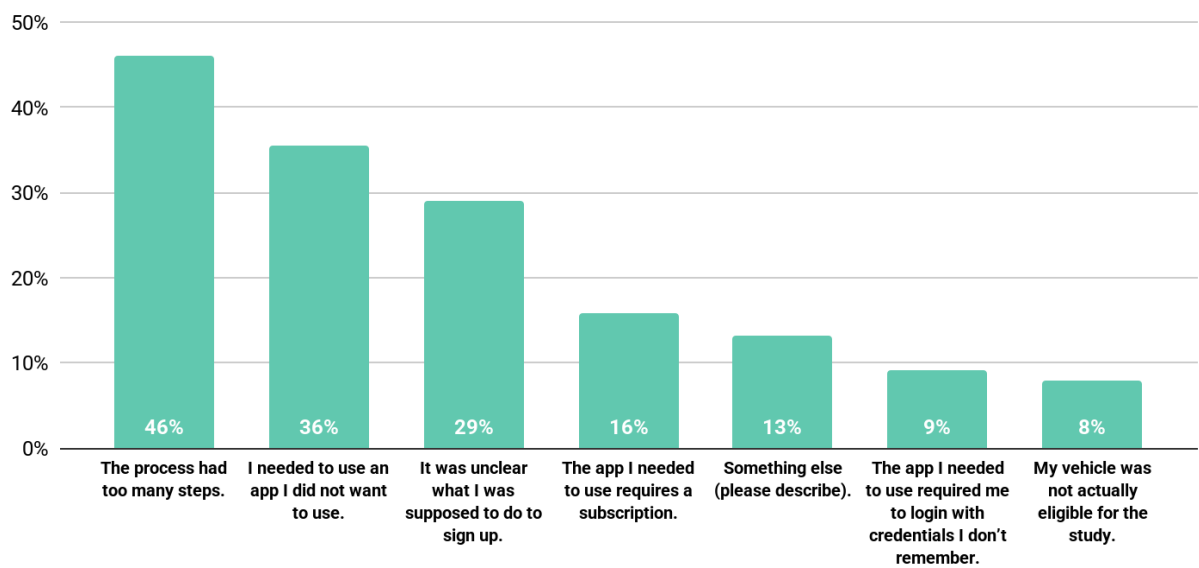


Got it — we’re sorry to hear that the sign-up process felt too complex. Which of the following issues did you experience? Please select up to three options.

Responses Recorded: 76

Display Condition: Only shown to respondents who said the sign-up process was their main barrier to participation.

About 7% of all survey respondents found the Demonstration sign-up process to be too complicated. Nearly half (46%) of these respondents thought the process had too many steps, while 36% needed to use an app they did not want to use to sign up. A further 29% of respondents found the process unclear. Respondents who selected “something else” described concerns about moving out of state, the length of the study, and changing cars that prevented them from participating in the Demonstration.



**Got it — we’re sorry to hear that you ran into a technical issue. Where did you see the issue?
Please select up to three options.**

Responses Recorded: 120

Display Condition: Only shown to respondents who said a technical issue was their main barrier to participation.

About 16% of respondents said that they ran into a technical issue. About half (47%) of these respondents selected “something else”, with most describing concerns about having to subscribe to a manufacturer service they did not want to use. Other respondents noted issues with changing eligibility requirements and poor cellular service in their area. Technical issues with the Smartcar and demonstration websites were each selected by 32% of respondents.

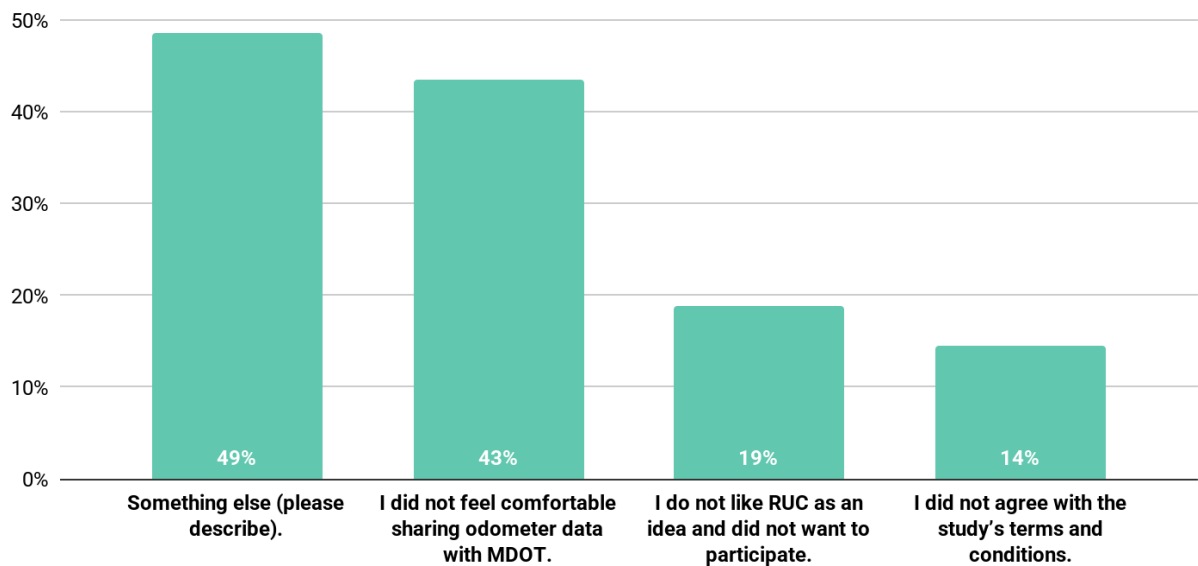


Please let us know let us know a bit more about the issue(s) you encountered. You may select up to three options.

Responses Recorded: 138

Display Condition: Only shown to respondents who said “something else” was their main barrier to participation.

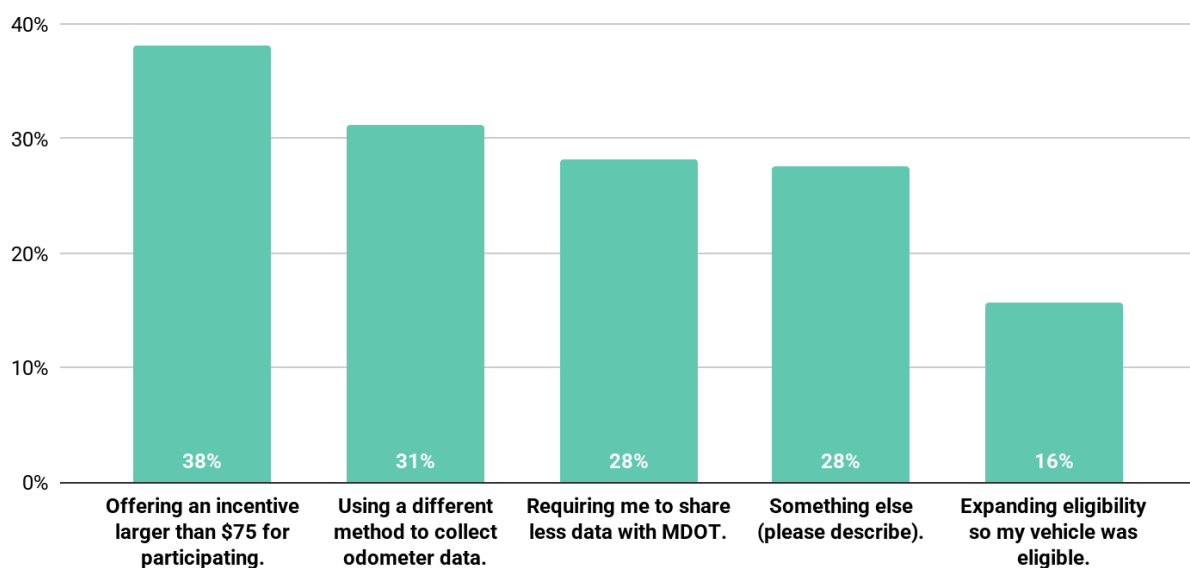
More than 40% of respondents reported that they were not comfortable sharing odometer data with MDOT, more than twice the share reporting any other single issue. About half (49%) of respondents selected “something else”. Common themes among these respondents including not having enough time to participate, wanting to participate but not being physically present in Michigan during the study period, and concerns about the data that MDOT would collect during the study.



**Would any of the following changes have made you more likely to participate in the study?
Please select up to three options.**

Responses Recorded: 736

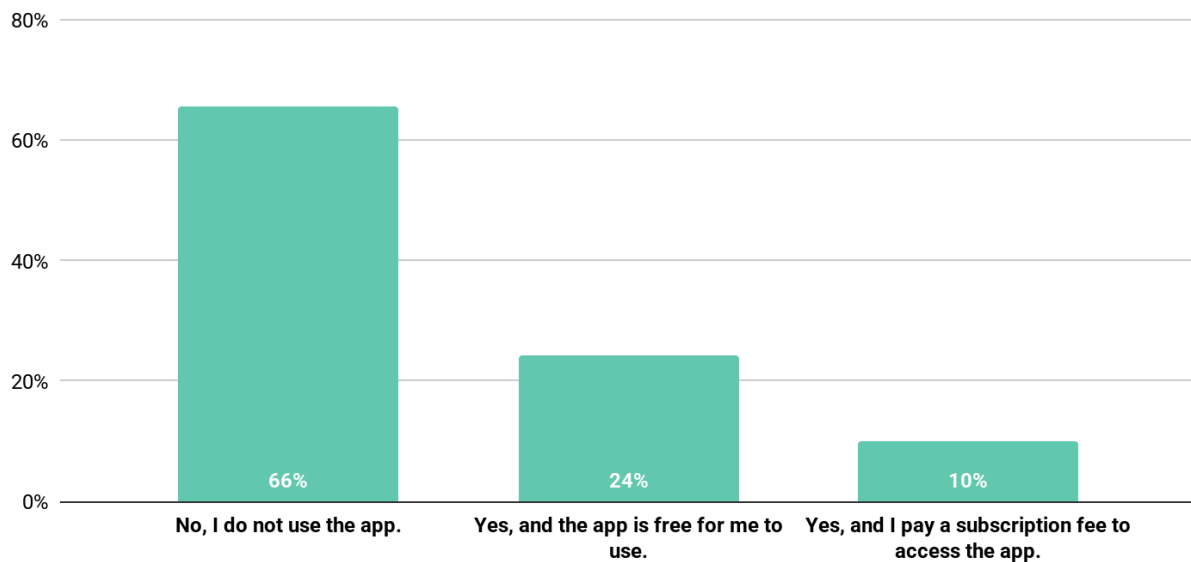
No option was selected by more than 50% of respondents. The most-commonly selected changes were increasing the incentive to more than \$75 (selected by 38% of respondents), followed by using a different data collection method (31% of respondents) and requiring less data to be shared (28% of respondents). About 28% of respondents selected “something else”. Changes commonly requested among this group included additional participation invite emails, additional clarification to ensure the invites were not perceived as spam, and using text messages to send invites.



Some methods of collecting RUC data require drivers to use an application provided by their vehicle’s manufacturer (like myChevrolet or Kia Connect). Do you ever use your manufacturer’s app?

Responses Recorded: 735

Only 10% of respondents said that they paid a fee to use their vehicle OEM’s application, with another quarter (24%) of respondents saying they used the app without paying any fees. About two-thirds (66%) of respondents said they did not use their OEM’s app.



Appendix C:

Transit Mode Shift Closeout Survey Results

The live study period concluded on April 30, 2025. Between May 1 and May 15, 2025, two groups were surveyed about their experience with the Demonstration:

- **Registered Participants:** Survey invites were sent to the 26 persons who confirmed their participation in the study and recorded one or more valid transit trips. The survey opened with questions about the participant experience, and then asked which barriers (if any) prevented participants from recording more transit trips. Participants were required to complete this survey before receiving their gift card incentive. A total of 17 responses were received, for an overall response rate of 65%.
- **Unconverted Invitees:** Survey invites were sent to the 1,723 persons who were eligible for the study, but never recorded a trip. This pool included both confirmed participants who never recorded a trip and invitees who never confirmed their participation in the study. This survey looked to identify the barriers preventing respondents from recording any transit trips, as well as any design changes that would have made them more likely to record trips. Respondents to this survey received a \$10 gift card incentive. A total of 516 responses were received, for an overall response rate of 30%.



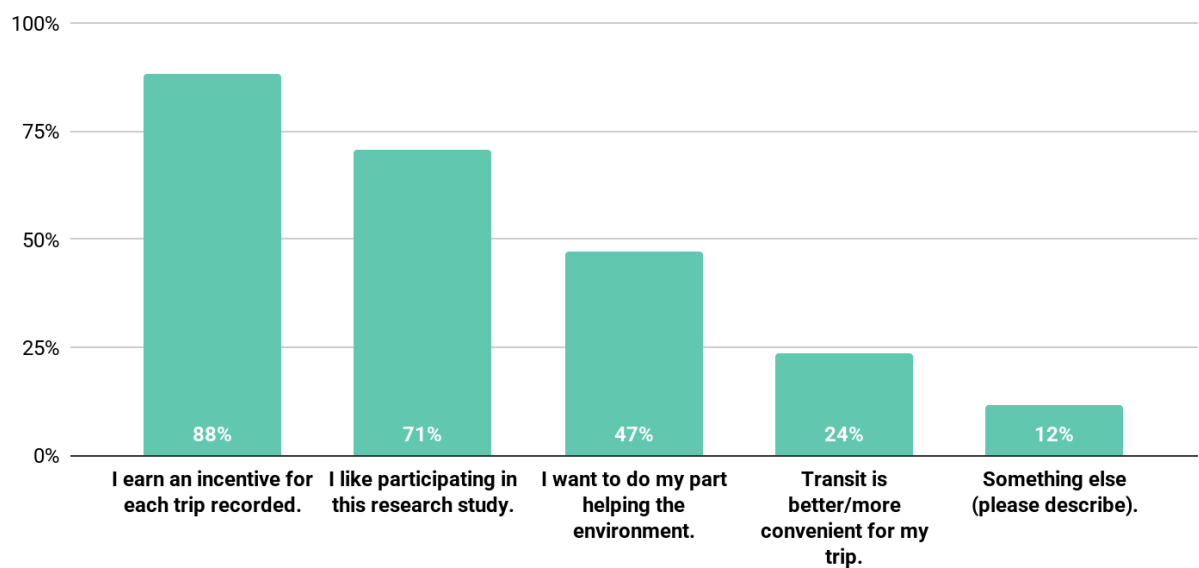
Mode Shift Study: Registered Participants

Results are reported using the same question order shown to respondents during the survey. In cases where a question was only shown to a subset of respondents, the condition(s) requiring the question to be shown are listed. Due to rounding, totals for questions that only allowed one answer selection may not sum to 100%.

What encouraged you to record your transit trip(s) in Citymapper? Please select as many reasons as you feel apply.

Responses Recorded: 17

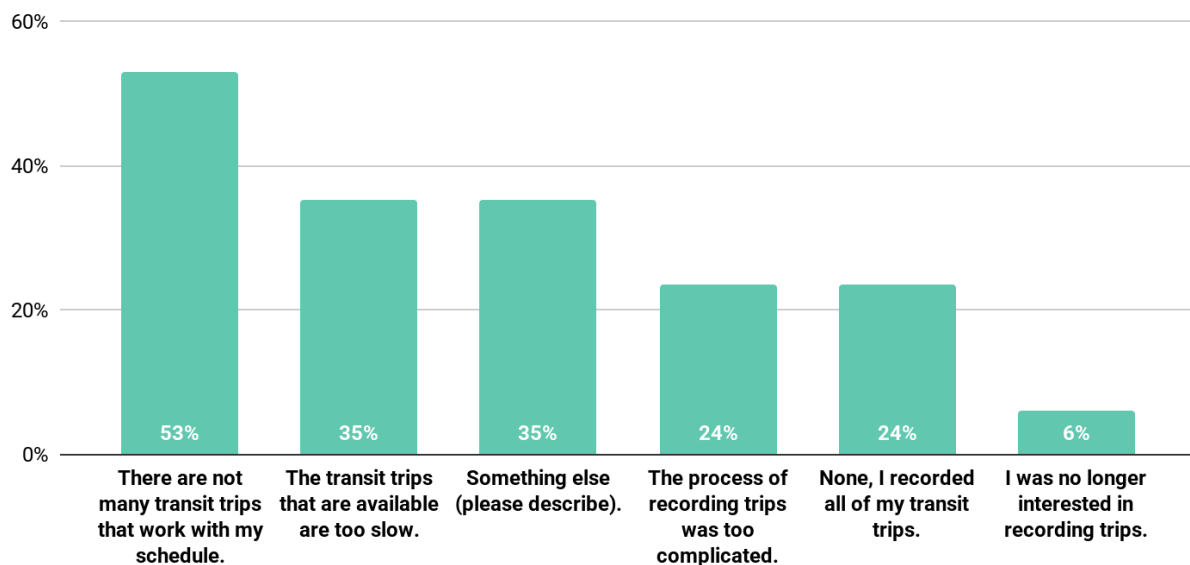
Convenience was not a primary driver of transit usage, with only 24% of respondents reporting that transit was better for their trip. Frequently cited motivations included per-trip incentives (almost 90% of participants), enjoying participating in the study (about 70% of participants), and a desire to help the environment (slightly less than 50% of participants).



Aside from being limited to only one origin and destination pair, what barriers have prevented you from recording more transit trips? Please select as many reasons as you feel apply.

Responses Recorded: 17

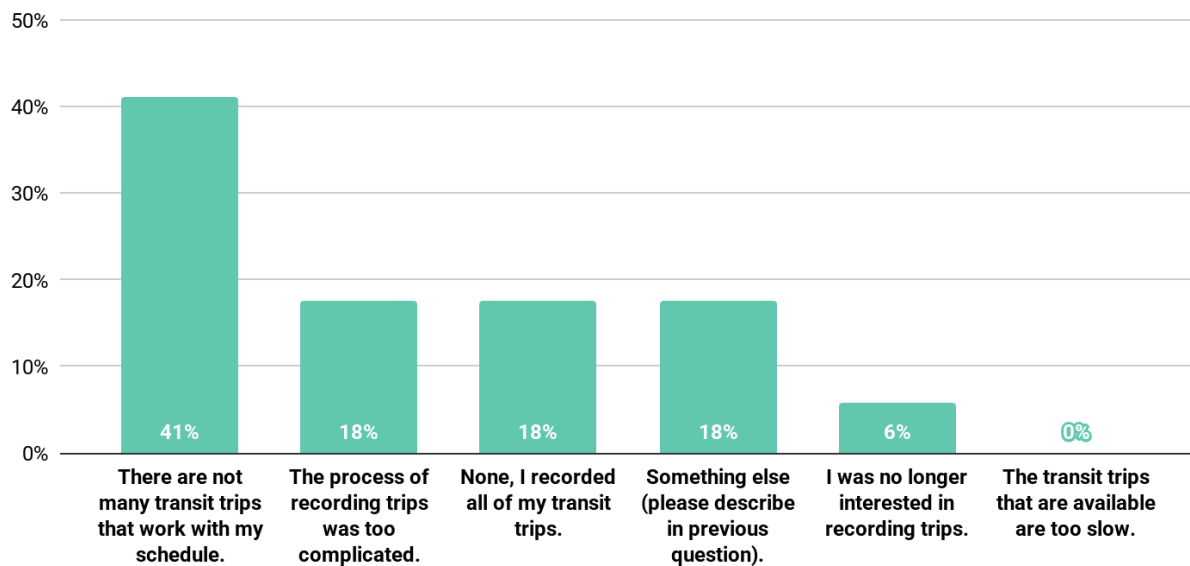
Slightly more than half (53%) of participants cited a lack of transit trips that worked with their schedule as a barrier to additional usage. About 35% of participants indicated that the transit trips available to them were too slow when compared to driving. A similar share (35%) selected “something else” as a barrier, with this group describing technical issues around reporting transit, complexity in the sign-up process, and an unwillingness to share location data.



Which of the barriers listed above was the main reason you did not end up recording more trips? Please select only one option.

Responses Recorded: 17

A lack of trips that worked with participant schedules emerged as the most common barrier facing respondents. This option was selected more than twice as often (41% of respondents) as any other choice (all 18% of respondents or less). About one-fifth (18%) of participants said that they did not face any barriers that led to them not recording transit trips.

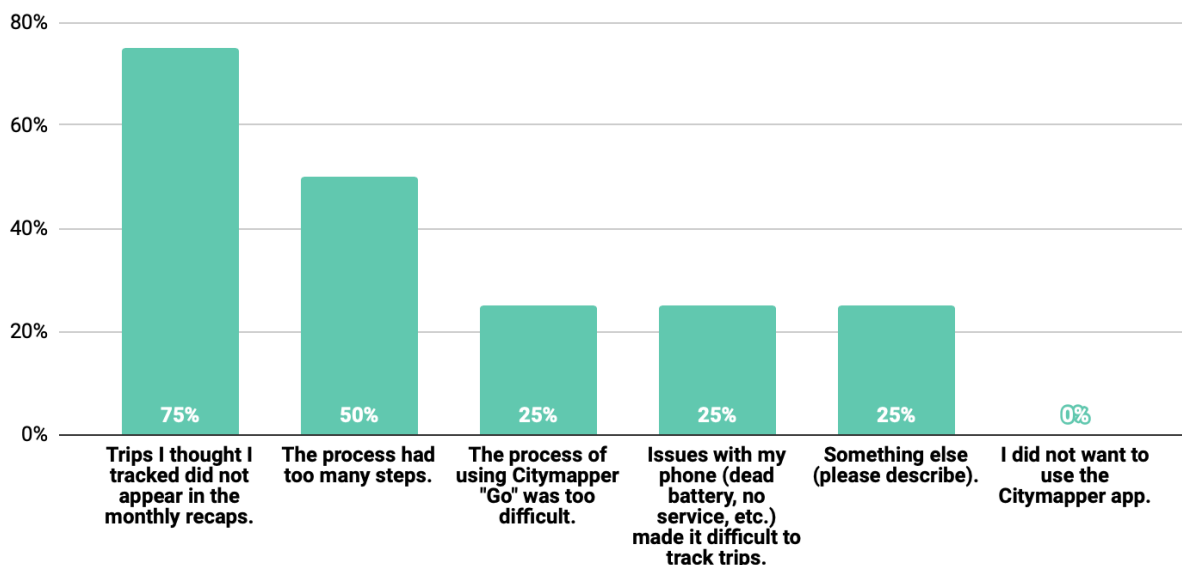


Got it, we're sorry to hear that the process of recording trips felt too complex. Which of the following issues did you experience? Please select up to three options.

Responses Recorded: 4

Display Condition: Only shown to respondents who said process complexity was their main barrier to recording more trips.

Four respondents said that the recording process was too complex to record more transit trips. Three of the four respondents in this group said that trips they thought they tracked did not appear in the monthly email recaps.

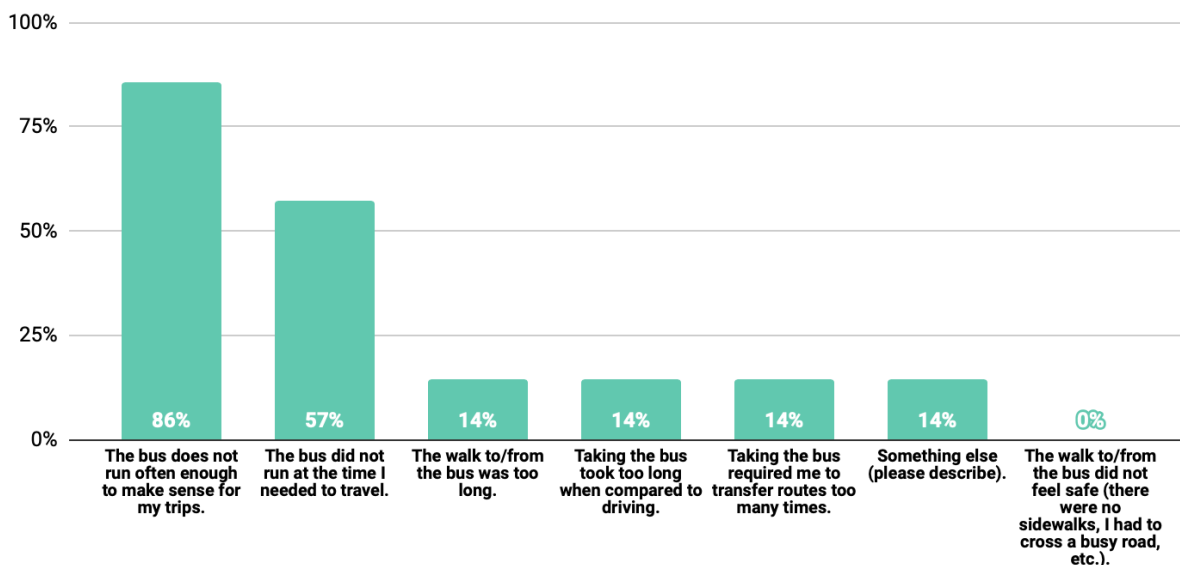


Got it, we're sorry to hear that the transit options available did not feel useful. What issues did you see with the available transit options? Please select up to three options.

Responses Recorded: 7

Display Condition: Only shown to respondents who said a lack of transit trips that work with their schedules was their main barrier to recording more trips.

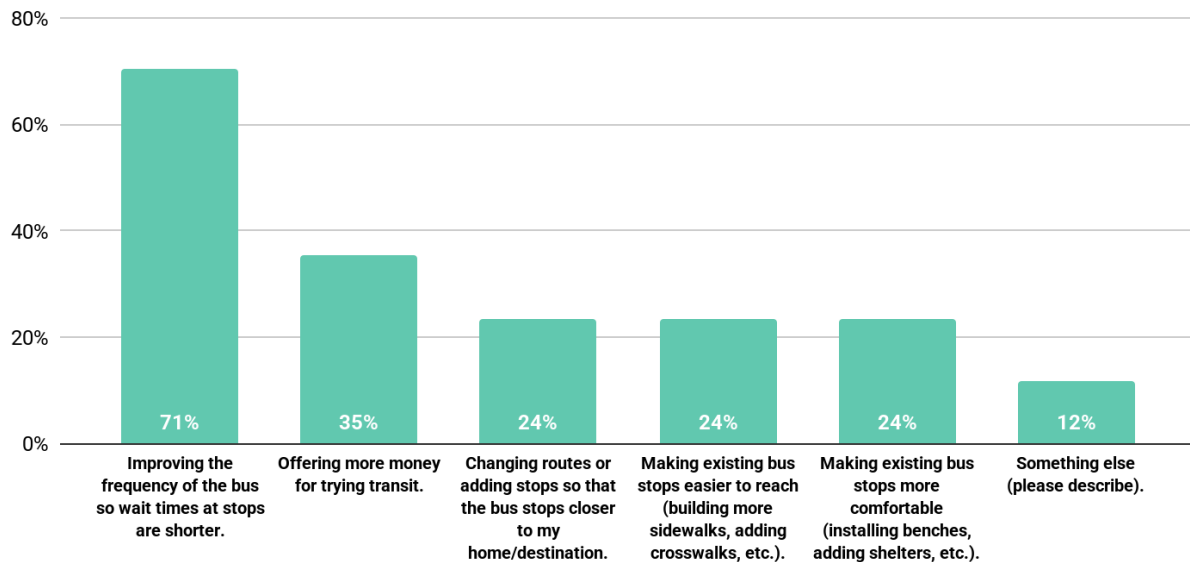
Seven respondents said that a lack of useful transit options stopped them from recording more trips. Six of the seven respondents in this group said that the bus did not run often enough to make sense for their trip, and four of the seven said that the bus did not run when they needed to travel.



**Would any of the following changes have made you more likely to participate in the study?
Please select up to three options.**

Responses Recorded: 17

More than 70% of respondents said that improving frequency would encourage them to use transit more often. This option was selected by twice as many respondents as increasing the incentives offered (35% of respondents).



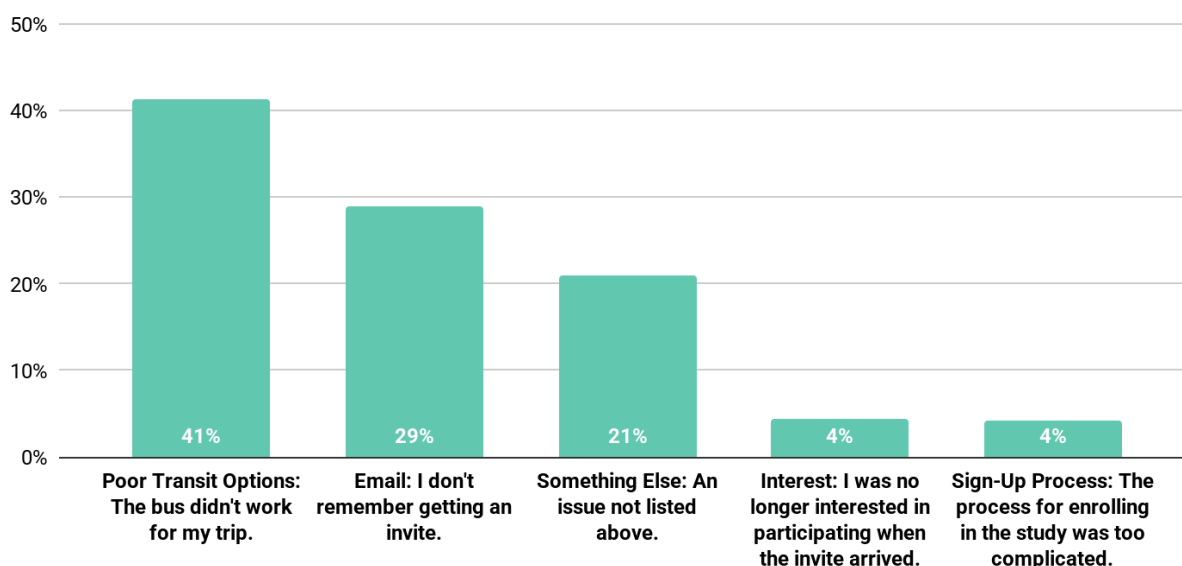
Mode Shift Study: Unconverted Invitees

Results are reported using the same question order shown to respondents during the survey. In cases where a question was only shown to a subset of respondents, the condition(s) requiring the question to be shown are listed. Due to rounding, totals for questions that only allowed one answer selection may not sum to 100%.

What was the main challenge that led to you not participating in the study? Please select only one option.

Responses Recorded: 513

Slightly more than 40% of respondents said that poor transit options were the main barrier stopping them from participating in the study, the largest share among the included answer choices. About 30% of respondents said that they did not remember receiving a participation invite via email. Slightly more than 20% of respondents selected “something else”, indicating that an unlisted reason was the main barrier stopping them from participating in the study.

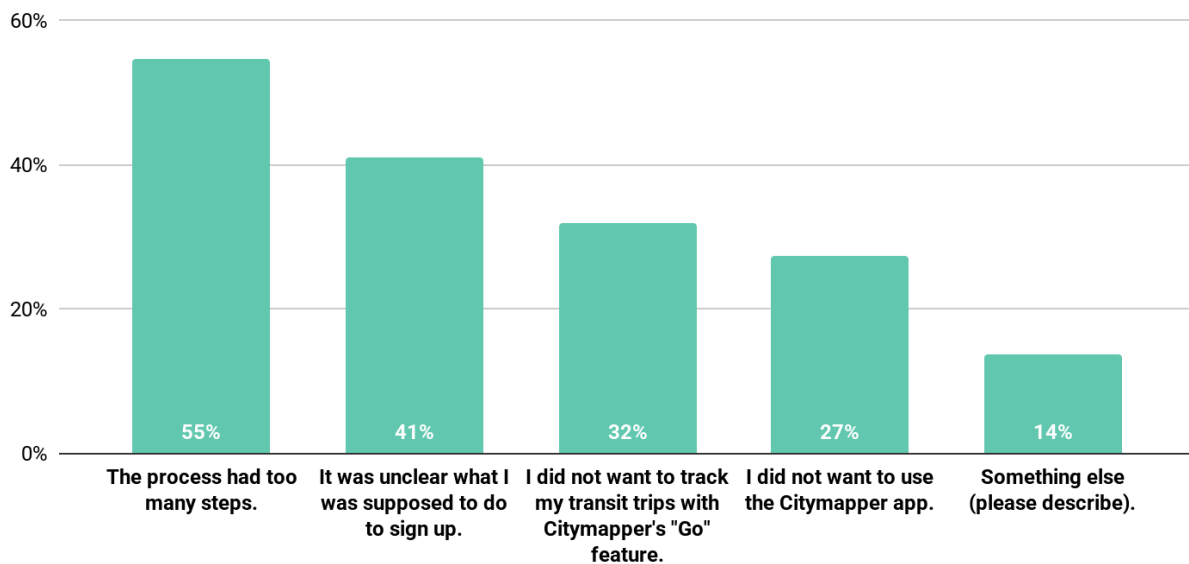


Got it, we're sorry to hear that the sign-up process felt too complex. Which of the following issues did you experience? Please select up to three options.

Responses Recorded: 22

Display Condition: Only shown to respondents who said the sign-up process was their main barrier to participation.

About 4% of respondents to the barrier survey said that a complex sign-up process was the main issue stopping them from participating. Among this group, more than half of respondents (55%) said that the process had too many steps. About 40% said that the sign-up process was unclear, while 32% said that they did not want to use the Citymapper app to track their trips. About 14% of respondents selected “something else”, citing privacy concerns and confusion around the Citymapper app as barriers.

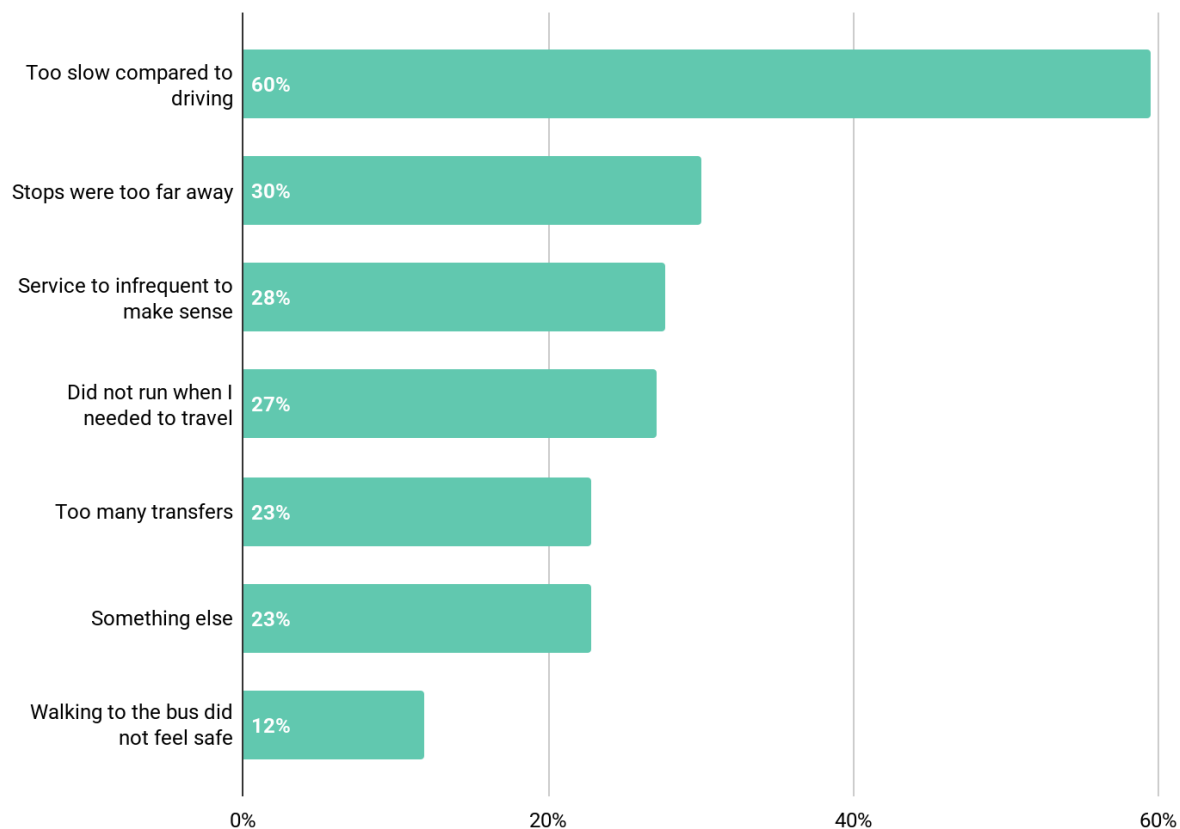


Got it, we're sorry to hear that the transit options available did not feel useful. What issues did you see with the available transit options? Please select up to three options.

Responses Recorded: 210

Display Condition: Only shown to respondents who said that poor transit options were their main barrier to participation.

About 41% of respondents to the barrier survey said that poor transit options were the main issue stopping them from participating. Among this group, 60% of respondents said that the bus took too long when compared to driving — double the share selecting any other answer choice. About 30% of respondents said that they had to walk too far to reach a bus stop, with 28% saying that the bus did not run often enough to make sense for their trips. About 23% of respondents selected “something else”, citing cold weather, sidewalk coverage gaps, and the need to chain trips together (i.e. drop off kids at school on the way to work) as barriers.

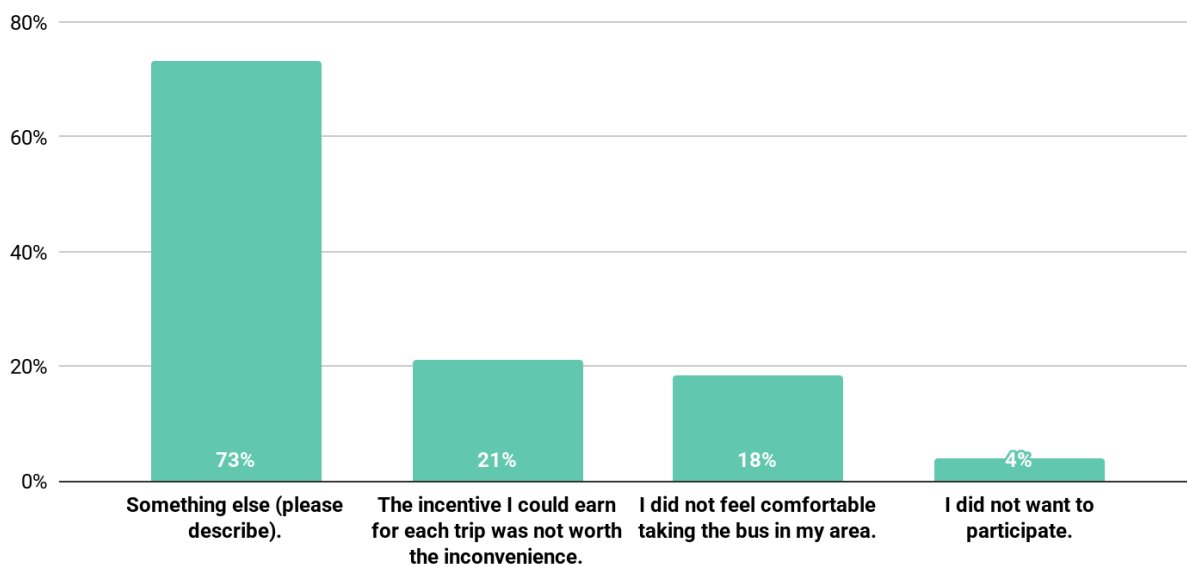


Please let us know a bit more about the issue(s) you encountered. You may select up to three options.

Responses Recorded: 104

Display Condition: Only shown to respondents who said “something else” was their main barrier to participation.

About 21% of respondents to the barrier survey said that “something else” was the main issue stopping them from participating. About one-fifth (21%) of this group said that the incentive offered was not enough to convince them to take transit, while 18% said that they did not feel comfortable taking the bus in the area where they lived. Most of the group (73%) selected “something else” and opted to describe their issue individually, with commonly-cited themes including mobility limitations stopping them from walking to the bus and preferences for driving over public transportation.



**Would any of the following changes have made you more likely to participate in the study?
Please select up to three options.**

Responses Recorded: 489

Expanding bus service to reduce walk distances was the change most likely to encourage respondents to participate in the study (selected by 40% of respondents). About one-third (34%) of respondents said that improving bus frequencies would have made them more likely to participate, similar to the share who selected higher participation incentives (32%).

About 30% of respondents selected “something else” to describe a specific change. Changes commonly suggested by this group included conducting the study when the weather was warmer and adding more transit service in the early morning and late evening periods. A number of respondents reiterated their preference for driving over public transportation in lieu of suggesting a change.

