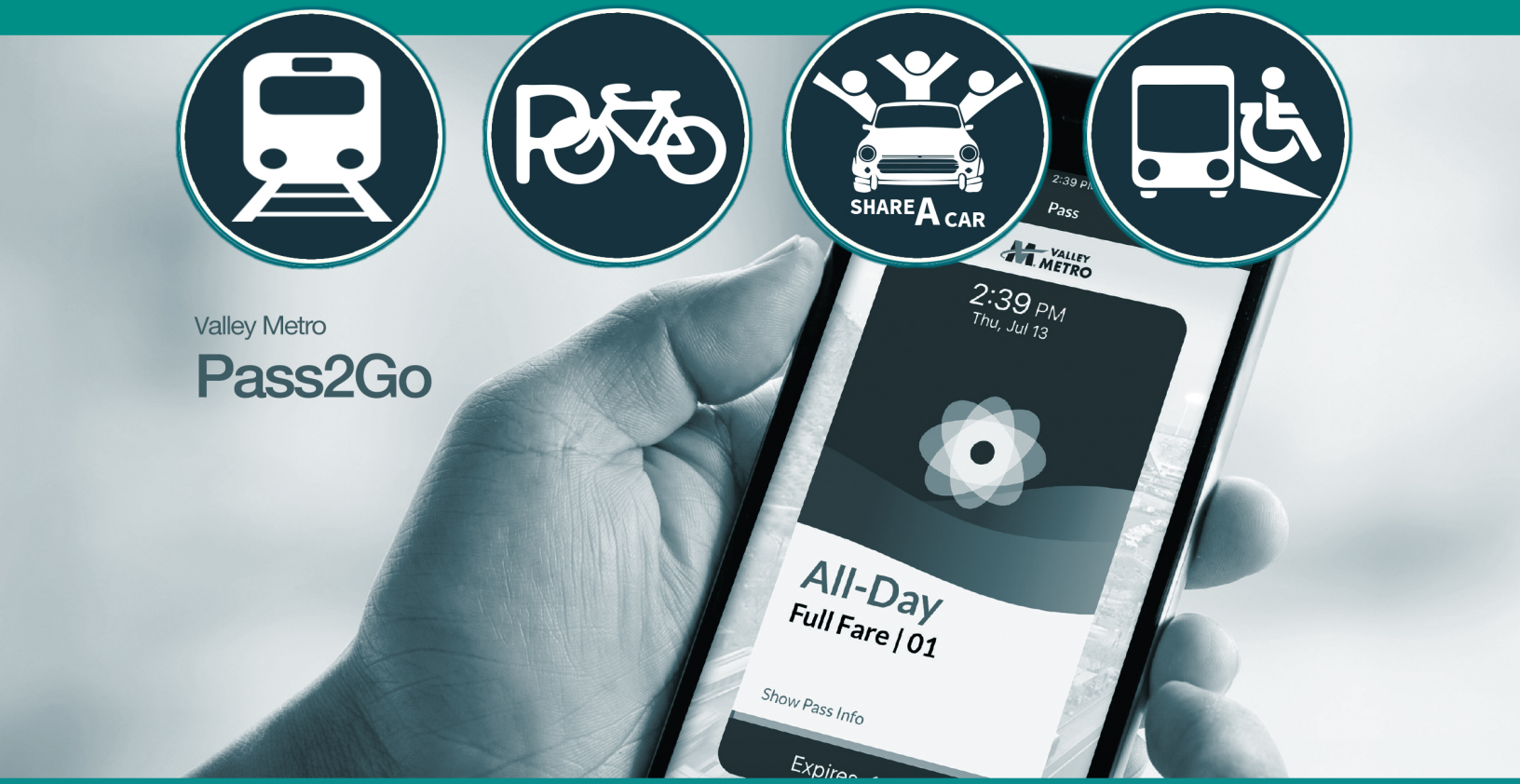
MOD

MOBILITY ON DEMAND

MOD SANDBOX DEMONSTRATIONS INDEPENDENT EVALUATION

VALLEY METRO MOBILITY PLATFORM PROJECT EVALUATION PLAN



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16. Abstract

The Mobility on Demand (MOD) Sandbox Demonstration Program provides a venue through which integrated MOD concepts and solutions—supported through local partnerships—are demonstrated in real-world settings. For each of the 11 MOD Sandbox Demonstration projects, the MOD Sandbox Independent Evaluation includes an analysis of project impacts from performance measures provided by the project partners, as well as an assessment of the business models used.

This report constitutes the Evaluation Plan for the Valley Metro Mobility Platform Project. It includes the following chapters: project overview; evaluation approach and process; evaluation schedule and management; data collection and analysis plan; and documentation and reporting.

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Chapter 1. Project Overview

This chapter gives a brief introduction to the Valley Metro Mobility On Demand (MOD) Sandbox demonstration that will be evaluated through this independent evaluation.

Introduction

The Valley Metro (AZ) currently provides a Valley Metro Ridekick™ mobile application for its users that features trip planning for light rail and buses. Their MOD Sandbox demonstration aims to develop new trip planning features and integrated payment for public and private transportation options. These new features will be developed and tested within a pilot app environment called “Pass2Go Pilot.”

Project Scope

The proposed Valley Metro Mobility Platform will build on Ridekick™’s current functionality by developing and testing features not currently available to users. The envisioned Mobility Platform will enable users to receive real-time travel information, purchase tickets for both public and private transportation modes, and utilize an optimized trip planning service through the integration of non-Valley Metro operated services such as Lyft. With the formation of public-private partnerships (P3s), the mobile application will let riders choose specific travel itineraries based on travel time, mobility preferences, and proximity to transit options, as well as trip cost estimates. The enhanced integration will improve the level of connectivity throughout the transit network, thereby decreasing the first/last mile challenge facing public transportation users and allowing users to smoothly complete their trip from their point of origin to destination. This mobile application will allow Valley Metro and private transportation services to utilize technology to provide a multimodal travel planning service with the simplicity of a mobile interface and single payment system.

Total project funding is $1,000,001 in U.S. Department of Transportation (USDOT) funds and $399,000 in local matching funds.

Key Partners

Valley Metro is partnering with Lyft, Route Match, West Group, and the City of Phoenix.

Project Timeline

The main project milestones are captured in the following timeline. Note that the timeline of the evaluation is provided in a later chapter of this report. The demonstration start and end dates depict the period over which demonstration data collection is expected to occur. This data would be shared with the Independent Evaluation (IE) team for evaluation purposes.

1. January 25th, 2017 – Execution date
2. March 15, 2018 – Phase I goes live
3. January 1st, 2019 – Phase II goes live
4. March 31st, 2019 – Demonstration completion.

The Valley Metro team will collect data relevant to this MOD Sandbox Demonstration (as outlined in this Evaluation Plan) between March 2018 to March 2019 and share the data with the IE team for conducting the evaluation. Chapters 3 and 4 of this report provide more details on the data collection planning.

Chapter 2. Evaluation Approach and Process

Project Goals

The project goals denote what Valley Metro aims to achieve through the MOD Sandbox demonstration. These project goals include the following:

1. Reduce the travel time of users with the improvements to Pass2Go Pilot.
2. Reduce the wait time of users with the improvements to Pass2Go Pilot.
3. Reduce the trip planning time of users with the improvements to Pass2Go Pilot.
4. Improve adoption of mobile-based technology.
5. Improve accessibility of the mobile application to a broader audience.
6. Improve user-perceived connectivity throughout the transit network.
7. Improve first-mile and last-mile connectivity.
8. Provide a single payment system for public/private transportation modes.
9. Enhance the customer experience by providing improved traveler information and traveler-centric service.
10. Enhance trip planning methods for persons with disabilities.
11. Open data platform allows transit agencies to view and exchange travel information.
12. Produce lessons learned through stakeholder interviews.

The project goals set the foundation for the evaluation hypotheses.

Evaluation Hypotheses

The evaluation hypotheses are derived from the project-specific goals and denote what should happen if each project goal is met. These evaluation hypotheses include the following:

1. The average travel time of Pass2Go Pilot users declines to a degree that is statistically significant.
2. The average wait time of Pass2Go Pilot users declines to a degree that is statistically significant.
3. The average time to plan a trip ahead of time declines to a degree that is statistically significant.
4. The number of downloads increases month over month.

5. The number of persons with disabilities using Pass2Go Pilot increases.
6. Users report greater connectivity with public transportation using information augmented in Pass2Go Pilot.
7. User behavior shows greater use of connecting modes through measured activity.
8. Users pay for multiple different transportation modes using the Pass2Go Pilot app.
9. Pass2Go Pilot users consider the travel experience to be enhanced with real-time travel information and routing.
10. Pass2Go Pilot users who are also persons with disabilities find that trip planning methods are improved with the app.
11. Transit agencies are able to view and exchange travel information.
12. The process of deploying the project produces lessons learned and recommendations for future research and deployment.

The success of each evaluation hypothesis is measured by the following performance metrics.

Performance Metrics

The performance metrics are used to measure impact inline with the evaluation hypotheses for the Valley Metro IE. These performance metrics include the following:

- Before and after travel times of Pass2Go Pilot users
- Before and after wait times of Pass2Go Pilot users
- Before and after trip planning times of Pass2Go Pilot users
- Before and after application download rates
- Before and after number of active users
- Before and after Web Content Accessibility Guidelines 2.0 (WCAG 2.0) compliance
- Before and after satisfaction rating of ADA beta testing group
- Before and after application download rates among community with disabilities
- User-reported perception of public transport connectivity as a result of the Pass2Go Pilot app enhancements
- Before and after number of first-mile/last-mile trips made by Pass2Go Pilot users
- Number of multimodal trips paid for by Pass2Go Pilot users, including average number of modes used per trip
- Reported perception of near real-time traveler information and routing capabilities within the augmented Pass2Go Pilot app
- Reported perception among persons with disabilities that trip planning is better with the enhanced Pass2Go Pilot app
- Evaluation score of open data platform
- Qualitative documentation from stakeholder interviews.

The performance metrics will draw from a set of data sources that are specific to the project.

Data Types, Elements, and Sources

The following data sources are used for the performance metrics that are defined for the Valley Metro MOD Sandbox IE:

Data Types and Elements:

1. Survey Data
    - Socioeconomic data
    - Demographics of Pass2Go Pilot users
    - Perceived connectivity of public transportation
    - Perceived pre-travel planning time
    - Perceived traveler information and routing capabilities of the app
    - Perceived trip-planning capabilities for respondents with disabilities
2. Ridership and Activity Data
    - Trip travel times
    - Trip wait times
    - Trip planning times
    - Average number of modes used per trip
    - Average number designated modes for first-mile and last-mile use
3. Pass2Go Pilot App Data
    - Download frequency
    - Number of active users
    - Platform Accessibility Score (Scoring criteria is found here: https://www.w3.org/WAI/WCAG20/quickref/?showtechniques=211)
4. Payment Data
    - Total electronic payment transactions
5. Stakeholder Interview Data
    - Qualitative documentation from stakeholder interviews.

Data Sources

1. Valley Metro
    - Source for ridership and activity, Pass2Go Pilot app, and payment data
    - Responsible for conducting surveys and facilitating stakeholder interviews to collect qualitative and quantitative data
2. Project Partners (Lyft)
    - To be decided once the partnership is finalized.

Methods of Evaluation

The quantitative and qualitative evaluation methods used in the Valley Metro IE include the following:

- T-test of measured travel times (may be paired or unpaired)
- T-test or sign test of estimated travel times by survey respondents (depending on question design)
- T-test of measured wait times (may be paired or unpaired)
- T-test of measured planning times (may be paired or unpaired)
- T-test of average modes per user paid for overtime
- Time series analysis of listed data sources
- Analysis of feedback from Americans with Disabilities Act (ADA) beta test group and WCAG 2.0 Group
- Analysis of ordinal scale response to survey questions
- Analysis of trends in number of modes paid for by users over time
- Analysis of ordinal scale response
- Stakeholder interview and inspection
- Summary of expert interviews.

Chapter 4 provides further details about the analysis methods by evaluation hypothesis.

Evaluation Logic Model

Table 1 represents an extract from the final Valley Metro evaluation logic model. Building on the project goals, the logic model lists evaluation hypotheses, performance metrics, and data sources for the Valley Metro project.

Table 1. Project Goals, Evaluation Hypotheses, Performance Metrics, and Data Types and Sources for the Valley Metro Sandbox Project

Project Goals	Evaluation Hypothesis	Performance Metric	Data Types	Data Sources
1. Reduce the travel time of users with the improvements to Pass2Go Pilot	1. The average travel time of Pass2Go Pilot users declines to a degree that is statistically significant	Before and after travel times of Pass2Go Pilot users	Ridership and Activity Data Survey Data	Valley Metro
2. Reduce the wait time of users with the improvements to Pass2Go Pilot	2. The average wait time of Pass2Go Pilot users declines to a degree that is statistically significant	Before and after wait times of Pass2Go Pilot users	Ridership and Activity Data Survey Data	Valley Metro
3. Reduce the trip planning time of users with the improvements to Pass2Go Pilot	3. The average time to plan a trip ahead of time declines to a degree that is statistically significant	Before and after trip planning times of Pass2Go Pilot users	Survey Data Pass2Go Pilot App Data	Valley Metro
4. Improve adoption of mobile-based technology	4. The number of downloads increases month over month	Before and after application download rates Before and after number of active users	Pass2Go Pilot App Data	Valley Metro

Project Goals	Evaluation Hypothesis	Performance Metric	Data Types	Data Sources
5. Improve accessibility of the mobile application to a broader audience	5. The number of persons with disabilities using Pass2Go Pilot increases	Before and after WCAG2.0 compliance Before and after Satisfaction rating of ADA beta testing group Before and after application download rates among accessibility community	Pass2Go Pilot App Data Survey Data	Valley Metro
6. Improve user-perceived connectivity throughout the transit network	6. Users report greater connectivity with public transportation using information augmented in Pass2Go Pilot	User reported perception of connectivity as a result of the Pass2Go Pilot app enhancements	Survey Data	Valley Metro
7. Improve first-mile and last-mile connectivity	7. User behavior shows greater use of connecting modes through measured activity	Before and after number of first-mile/last-mile trips made by Pass2Go Pilot users	Survey Data Ridership and Activity Data	Valley Metro
8. Provide a single payment system for public/private transportation modes	8. Users pay for multiple transportation modes using the Pass2Go Pilot app	Number of multimodal trips paid for by Pass2Go Pilot users, including average number of modes used per trip	Pass2Go Pilot App Data Payment Data	Valley Metro
9. Enhance the customer experience by providing improved traveler information and traveler-centric service	9. Pass2Go Pilot users consider the travel experience to be enhanced with real-time travel information and routing	Reported perception of near real-time traveler information and routing capabilities within the augmented Pass2Go Pilot app	Survey Data	Valley Metro

Project Goals	Evaluation Hypothesis	Performance Metric	Data Types	Data Sources
10. Enhance trip planning methods for persons with disabilities	10. Pass2Go Pilot users who are also persons with disabilities find that trip planning methods are improved with the app	Reported perception among persons with disabilities that trip planning is better with the enhanced Pass2Go Pilot app	Survey Data	Valley Metro
11. Open data platform allows transit agencies to view and exchange travel information	11. Transit agencies are able to view and exchange travel information	Evaluation of open data platform	Open Data Access and Download Logs	Valley Metro
12. Produce lessons learned through stakeholder interviews	12. The process of deploying the project produces lessons learned and recommendations for future research and deployment	Qualitative documentation from stakeholder interviews	Stakeholder Interview Data	Valley Metro and Project partners

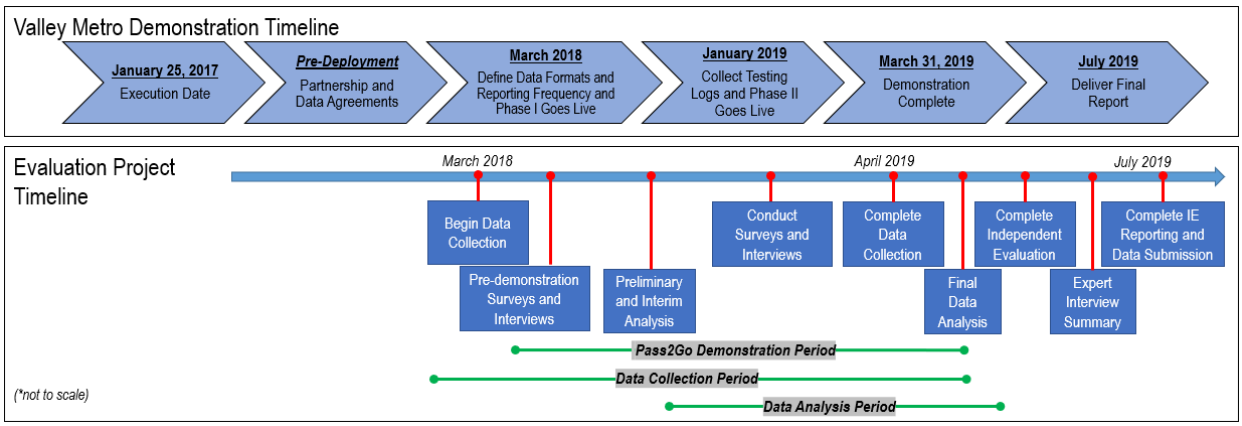
Documentation and Reporting

The IE team will develop an evaluation report for this MOD Sandbox demonstration project. The report will include a summary of major findings of the project in an Executive Summary section, followed by multiple sections providing details of the demonstration, evaluation hypotheses, data collected, analysis performed, findings, and results. The results will be reported through a mix of exhibits including tables, graphs, and charts.

Chapter 3. Evaluation Schedule and Management

Evaluation Schedule

Figure 1 shows the IE schedule from the beginning of quantitative and qualitative data collection that spans throughout the demonstration period and leads to the analysis, the results of which are included in the site-specific evaluation report. Note that interim data spot checks and sample analyses will be performed during the demonstration period to proactively mitigate data-related risks. The figure provides specific dates for the milestones of the Valley Metro Sandbox project.



Source: Booz Allen Hamilton, October 2018

Figure 1. MOD Sandbox Evaluation Schedule

The demonstration start and end dates depict the period over which demonstration data collection is expected to occur (between March 2018 and March 2019). This data would be shared with the IE team for evaluation purposes.

Roles and Responsibilities

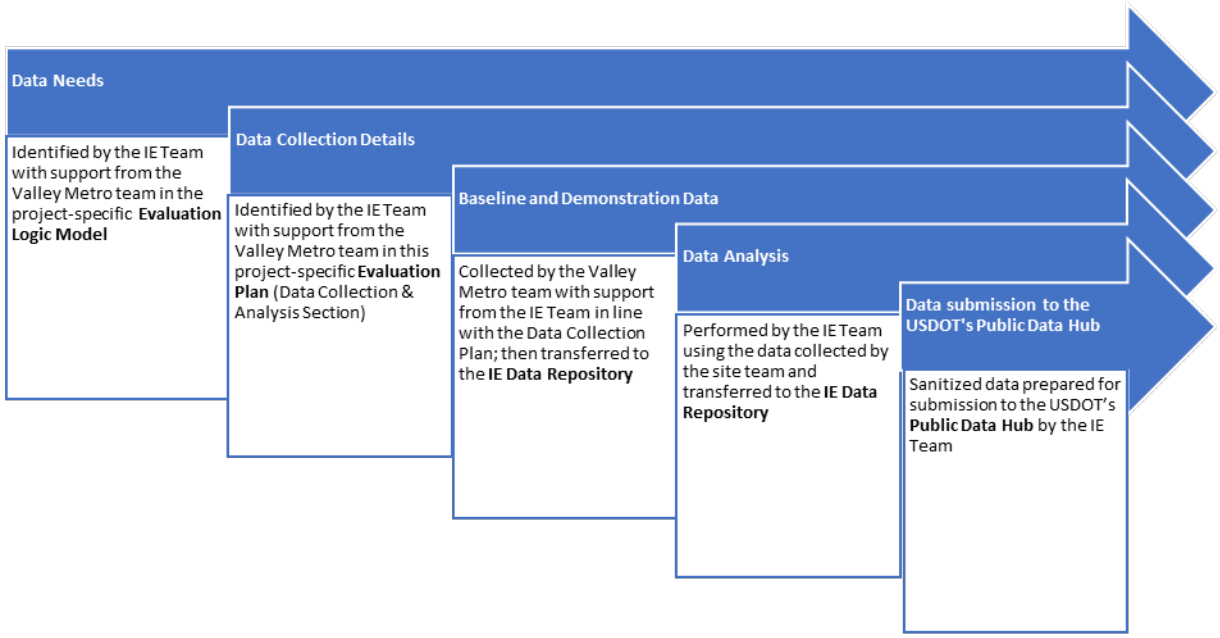
The three main entities involved in the evaluation and their corresponding high-level roles are as follows:

- **The site team** coordinates the collection of the requested evaluation data from the various project partners throughout the demonstration period and transfers the data to the IE team.
- **The IE team** supports the site team in the definition of the requested data elements and performs the analysis using the data provided by the site team.

- **The USDOT team** supervises the work and provides support for topics that encompass more than one site (e.g., coordination with transportation network companies [TNCs] who are partnering with several Sandbox sites).

Data Transfer and Storage

Various types of qualitative and quantitative data sources are involved in the evaluation, as specified in Chapter 2. Figure 2 shows the overall data collection framework, including the steps and parties involved in data design, collection, transfer, and storage.



Source: Booz Allen Hamilton, October 2018

Figure 2. Valley Metro Data Collection Framework

Data Collection Responsibilities

For the various data types required for the evaluation, Table 2 denotes the corresponding data collection responsibilities.

Table 2. Data Type and Data Collection Responsibilities for Valley Metro Sandbox Evaluation

Data Type	Data Collection Responsibilities
Survey Data	• Survey questions are developed by the IE team in collaboration with the Valley Metro team • Surveys are administered by the Valley Metro team • Survey responses are transferred by the Valley Metro team to the IE team after the demonstration

Data Type	Data Collection Responsibilities
Ridership and Activity Data	• Collected by the Valley Metro team and transferred to the IE team
Pass2Go Pilot App Data	• Collected by the Valley Metro team and transferred to the IE team • The Valley Metro team will conduct a screening of the Pass2Go Pilot app accessibility using the WCAG 2.0 • The Valley Metro team will transfer the technical scoring per the WCAG 2.0 requirements to the IE team • The IE team will review the submitted technical scoring against the Pass2Go Pilot app per the WCAG 2.0 requirements • The Valley Metro team will assess the open data platform for data transferability
Payment Data	• Collected by the Valley Metro team and transferred to the IE team
Stakeholder Interview Data	• Interviewees are identified by the IE team in collaboration with the Valley Metro team • The IE team is connected to the interviewees by the Valley Metro team • The IE team conducts the expert interviews via phone or in person

Risk Management

The IE team will continually monitor risk in an ongoing process throughout the demonstration period and identify the best resources within the team to address each risk. Some of the main risks involved in the evaluation are included below.

Schedule: The IE team will maintain a demonstration tracking schedule to track and contact the demonstration teams for data and documentation. The team will keep an up-to-date integrated schedule that reflects updates from the site teams on a constant basis. Components of the evaluation reports will be created throughout the demonstration period, as the data and documentation for the project becomes available. The site team should inform the IE team of any changes in schedule that could affect the overall evaluation schedule (e.g., delays in the demonstration schedule).

Data Quality Assurance: The IE team will perform spot checks on the data as it is being collected throughout the demonstration period to proactively manage risks related to data quality. This will allow the following:

- Avoiding insufficient data on performance of MOD demonstration to reliably estimate impacts and/or benefits
- Addressing challenges in empirical data including lack of consistency, biases, and incompleteness
- Identifying and controlling sources of error
- Consideration of quality and quantity issues in data collection
- Ensuring data privacy and proprietary protections in line with human subjects' protections
- Consideration of confounding factors.

Table 3 includes assumptions made to ensure the availability of the requested data types for the evaluation.

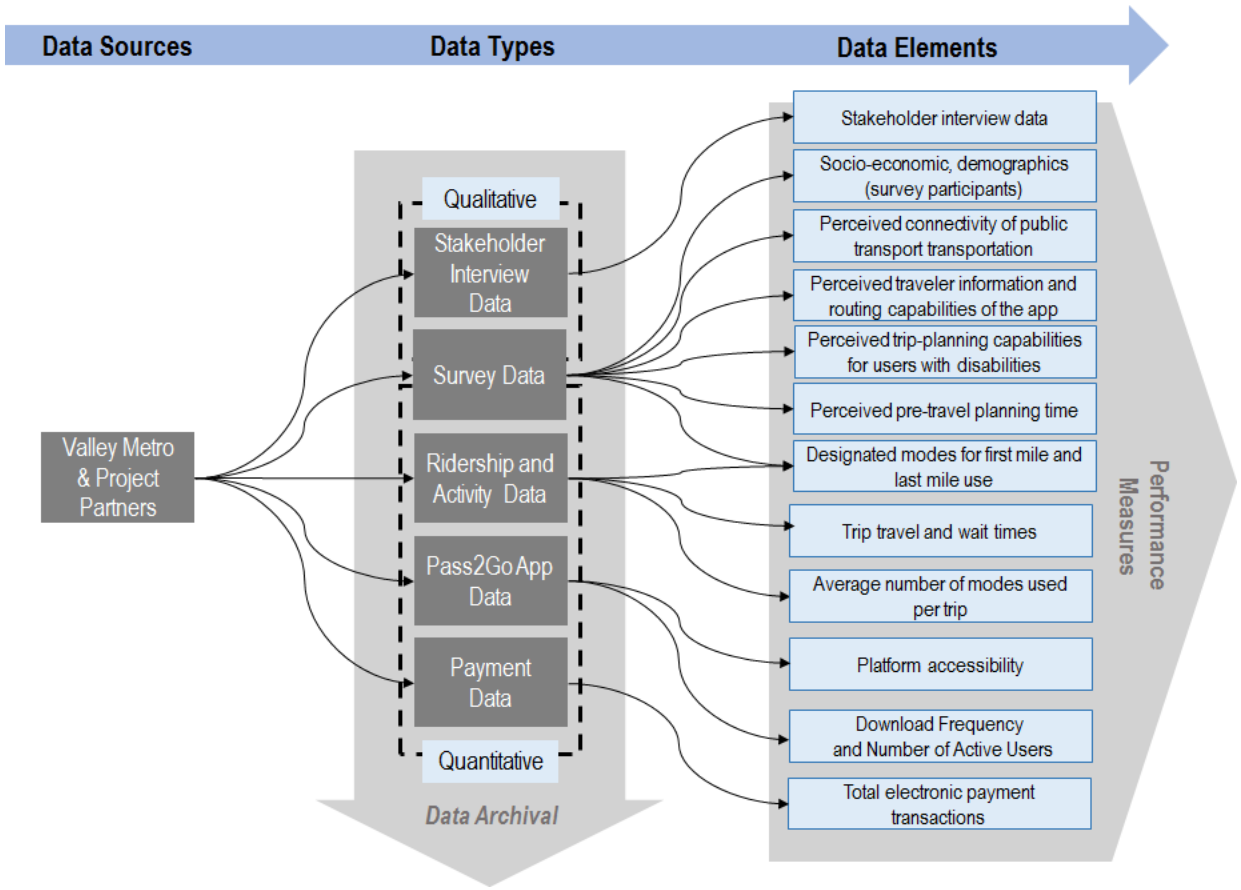
Table 3. Data Type and Assumptions for Valley Metro MOD Sandbox Evaluation

Data Type	Assumptions
Survey Data	• The Valley Metro team will ensure that participants in the pilot are willing to take the surveys.
Ridership and Activity Data	• The Valley Metro team has access to the logged user ridership and activity data through the Pass2Go Pilot app. Ridership and activity data will only be available in Phase 2 of the app and only for trips that are booked through the app. Only trips that involve a TNC mode in the overall trip plan are booked. Transit-only trips are not logged in the app at all. • All data shall be de-identified using an ID that does not contain personally identifiable information (PII) or connection to user identity.
Pass2Go Pilot App Data	• The Valley Metro team has access to the logged trip query data. • The Valley Metro team has access to the Pass2Go Pilot source code to perform further WCAG 2.0 compliance screening if required. • The Valley Metro team has access to the Pass2Go Pilot source code to perform further data transfer environment assessment if required. • Lat/long location data will be truncated or rounded to scramble locations, but retain usability for transportation analysis. • The timestamp and truncated or rounded lat/long data will only include the time and location of the user when they booked their trip, not the actual origin or destination of the trip. This only applies to trips that are booked and involve a TNC mode. • All data shall be de-identified using an ID that does not contain PII or connection to user identity.
Payment Data	• The Valley Metro team has access to the payment transaction data through Pass2Go Pilot and can provide these to the IE team.
Stakeholder Interview Data	• The Valley Metro team will ensure that engaged stakeholders in the pilot are willing to take the interview.

Chapter 4. Data Collection and Analysis Plan

This chapter describes the plan for data collection for the Valley Metro MOD Sandbox Project evaluation. It summarizes the data that needs to be collected, and how that data should be processed and delivered to the IE team. Where possible, the IE team will help the Sandbox Project team with processing the data to get the requested data format to conduct calculations necessary for the evaluation. Any PII will need to be removed, when present in the data.

The data collection plan follows the Evaluation logic model, with each data field discussed in association with a hypothesis and performance metrics. Certain types of data collected address multiple hypotheses. In cases where the data structure is the same for more than one hypothesis, the plan refers to the data structure for a hypothesis already described. Figure 3 provides the high-level data sources, data types, and data elements mapping for this evaluation. The performance measures and data elements for each hypothesis are provided later in the chapter.



Source: Booz Allen Hamilton, November 2018

Figure 3. High-level Data Sources, Data Types, and Data Elements Mapping for this Evaluation

Table 4 summarizes the data types, data elements, collection periods, and hypothesis alignment for the Valley Metro Sandbox project evaluation. The table is followed by a more detailed data collection plan for each evaluation hypothesis.

Table 4. Data Type, Data Elements, Period of Collection, and Hypothesis Alignment for the Valley Metro Sandbox Project Evaluation

Data Type	Data Elements	Period of Collection	Collection Responsibility and Mechanisms	Hypothesis Alignment
Survey Data	Survey questions addressing: • Socioeconomic data • Demographics data • Key destinations users travel to using Pass2Go Pilot app • Trip planning time with and without the Pass2Go Pilot app • Perceptions of connectivity to public transportation • Perceptions of Pass2Go Pilot app trip real-time information and routing capabilities • Use of modes connecting to public transit • Attributional impact questions (After Survey only) ○ These questions probe user response on how Pass2Go Pilot has influenced their travel behavior • Vehicle ownership • General location information of home and work • User demographics and disability status • Feedback on the testing of the app from ADA users	For app users (all users with an e-mail address): The **Before** Survey to be ideally launched right before the Pass2Go Pilot app augmentations are released to the public, or soon after this release. The **After** Survey should be launched at least 6 months after the release of the augmentation.	• Survey questions are developed by the IE team in collaboration with the Valley Metro team • Surveys are administered by the Valley Metro team • Survey responses are transferred by the Valley Metro team to the IE team after the demonstration	1, 2, 3, 5, 6, 7, 9, 10
Ridership and Activity Data	• De-identified User ID • Trip Query Time • Origin Location • Departure Time	6 months before the launch of the app augmentation (if available), and at least 6	• Collected by the Valley Metro team and transferred to the IE team	1, 2, 3

Data Type	Data Elements	Period of Collection	Collection Responsibility and Mechanisms	Hypothesis Alignment
	• Departure Location • Arrival Time • Arrival Location • Destination Location	months after the augmentation	• See notes about ridership activity data in Table 3	
Pass2Go Pilot App Data	Application User Statistics • De-identified User ID • Date and Time Stamp • Latitude • Longitude • Pass2Go Pilot App in Use • Pass2Go Pilot App Fare Payment • Pass2Go Pilot App Content Visited • Type of Trip Request Made • Vehicle Type Requested • Vehicle Type Arrived	6 months before the launch of the app augmentation (if available), and at least 6 months after the augmentation	• Collected by the Valley Metro team and transferred to the IE team • The Valley Metro team will conduct a screening of the Pass2Go Pilot app accessibility using the WCAG 2.0 • The Valley Metro team will transfer the technical scoring per the WCAG 2.0 requirements to the IE team • The IE team will review the submitted technical scoring against the Pass2Go Pilot app per the WCAG 2.0 requirements	1, 2, 3, 8
	Application Usage Statistics • Pass2Go Pilot download frequency • Pass2Go Pilot number of active users • Downloads of the Pass2Go Pilot app among persons with disabilities	Data is requested from the *original launch* date of the Pass2Go Pilot app to at least 6 months after the release of the Pass2Go Pilot *augmentation*		4, 5
	Pass2Go Pilot App Platform • Review of open data platform • WCAG 2.0 compliance measurements	When the open data platform is ready for review		5, 11
Payment Data	• Valley Metro ridership data by route • Payment transactions through Pass2Go app	Data is requested from the launch date of the Pass2Go Pilot app until the end of the demonstration period	• Collected by the Valley Metro team and transferred to the IE team	8

Data Type	Data Elements	Period of Collection	Collection Responsibility and Mechanisms	Hypothesis Alignment
Stakeholder Interview Data	Qualitative documentation from stakeholder interviews	Conducted 6 months after the launch of the augmentation, but it may be conducted later	• Stakeholder interview questions are developed by the IE team in collaboration with the Valley Metro team • Stakeholder interview are administered by the Valley Metro team • Stakeholder interview responses are transferred by the Valley Metro team to the IE team after the demonstration	12

Detailed Data Collection and Analysis Plan by Evaluation Hypothesis

Hypothesis 1: The average travel time of Pass2Go Pilot users declines to a degree that is statistically significant.

Performance Metric: Before and after travel times of Pass2Go Pilot users.

Data Sources:

App Data

To measure travel times, the IE team proposes using app-based data on travel activity to evaluate changes in travel times from common origins and destinations. The structure of this data, where each row of data contains the following fields of data, is proposed as follows:

- ***De-identified User ID:*** This is a User ID that is associated with the app user but has no PII within it.
- ***Date and Time Stamp:*** This is the date and time stamp of the location observation.
- ***Latitude:*** The latitude of the user at the time of the Date and Time Stamp
- ***Longitude:*** The longitude of the user at the time of the Date and Time Stamp
- ***Pass2Go Pilot App in Use:*** This is a Boolean variable that describes if the Pass2Go Pilot app was being used at the time of the observation. It takes on a value of 1 if it was, and 0, if it was not.
- ***Pass2Go Pilot App Fare Payment:*** This describes whether a fare payment was made through the Pass2Go Pilot app and for what mode. As it is listed with the above timestamp, the approximate timestamp of fare payment will be known.
- ***Pass2Go Pilot App Content Visited (General Categories):*** The IE team would benefit from categorical data that can define which pages or applications are visited by the user at the time of the time stamp. That is, it would describe what content is queried at this particular time. This may be represented in a number of different ways. It would describe what the user is doing at the time in very general terms (trip planning, etc.). It would not capture any inputs from the user. This data field would be useful to determine whether trip planning time declines with the Pass2Go Pilot augmentation (Hypothesis 3), but the challenges associated with rendering it are unknown.

Each row of the data is an observation of the position of a user as defined by the De-Identified User ID and a given time. The time resolution of the data is preferred to be as high as 10 seconds, but one observation per 1 minute would be acceptable. The higher the time resolution, the more likely any travel time changes associated with Pass2Go Pilot app can be measured.

Data Collection Period for App Data: Six months before the launch of the app augmentation (if available), and at least six months after the augmentation.

Survey Data

The survey will serve as a secondary approach to measuring changes in travel time. This includes a Before Survey and an After Survey. The Before Survey and After Survey will ask similar questions that cover the following topics:

1) Use frequency of the Pass2Go Pilot app
2) Key destinations that users travel to using the Pass2Go Pilot app
3) Travel times to those destinations
4) Wait times to those destinations
5) Trip planning time with and without the Pass2Go Pilot app
6) Perceptions of connectivity to public transportation
7) Perceptions of Pass2Go Pilot app trip real-time information and routing capabilities
8) Use of modes connecting to public transit
9) Attributional impact questions (After Survey only)
    a. These questions probe user response on how Pass2Go Pilot has influenced their travel behavior
10) Vehicle ownership
11) General location information of home and work
12) User demographics and disability status.

Survey Mechanisms:

The survey will be deployed online in collaboration with the project team. The project team and the IE team will coordinate to append the De-Identified User ID (defined above) to the survey link, so that the IE team can link survey responses from the Before and After Surveys.

The survey effort will be set up in four 3-month waves. Participants will be asked to use the app four times per month for 3 months, and to complete a pre- and post-study survey for a one-time incentive of $150, which will be paid after the study elements are fully completed.

Target Users:

The project team will distribute the survey to all Pass2Go Pilot users who have an email associated with their account. At this time, it would be best if all users are invited to take both the Before Survey and the After Survey (even those users who did not take the Before Survey would be invited to take the After Survey).

Data Collection Period for Before Survey:

The Before Survey should ideally be launched right before the Pass2Go Pilot app augmentations are released to the public. If the launch occurs soon after this release, this is also acceptable since it is unlikely that the app's impact will be immediate, and respondents can use recent recall to answer some questions. Anyone who newly downloads the app after the release of the augmentation should also be invited to take the Before Survey within a week of downloading the app.

Data Collection Period for After Survey:

As mentioned above, the surveys will be set up in four 3-month waves. Participants will be asked to use the app four times per month for 3 months, and to complete a pre- and post-study survey. The post-study survey, or After Survey, will be launched 3 months after the release of the augmentation.

Analysis Procedure:

Using the timestamps and locations provided by the app data, the IE team will derive travel times with associated origins and destinations. The travel times with similar origins and destinations will be compared against each other using app data from before and after the app augmentation. The IE team will use statistical tests (t-tests) to determine whether there is a significant difference in travel times from before and after.

To supplement this analysis, the IE team will further use statistical tests (t-tests or sign tests depending on question design) that compare the estimated travel times of survey respondents with similar origins and destinations. Similarly, these will be used to determine whether there is a significant difference in user perceived travel times from the Before and After Surveys.

Hypothesis 2: The average wait time of Pass2Go Pilot users declines to a degree that is statistically significant.

Performance Metric: Before and after wait times of Pass2Go Pilot users.

Data Sources:

App-based user data before and after Pass2Go Pilot augmentation.

Survey of Pass2Go Pilot users before and after augmentation.

The data needs for this hypothesis are the same as those for Hypothesis 1. The same data will be used to address this hypothesis. See Hypothesis 1 for appropriate data structure and data collection plan.

Analysis Procedure:

Using the timestamps and locations provided by the app data, the IE team will derive wait times with associated locations. The wait times will be compared against each other using app data from before and after the app augmentation. This may use separate analyses that compare all wait times (regardless of location) as well as wait times confined to specific locations or regions. The IE team will use statistical tests (t-tests) to determine whether there is a significant difference in wait times from before and after.

To supplement this analysis, the IE team will further use statistical tests (t-tests or sign tests depending on question design) that compare the estimated wait times of survey respondents. This may also use separate analyses that compare all estimated wait times (regardless of location) as well as estimated wait times confined to specific locations or regions as reported by the respondent. Similarly, these will be used to determine whether there is a significant difference in user perceived wait times from the Before and After Surveys.

Hypothesis 3: The average time to plan a trip ahead of time declines to a degree that is statistically significant.

Performance Metric: Before and after trip planning times of Pass2Go Pilot users.

Data Sources:

App-based user data before and after Pass2Go Pilot augmentation.

Survey of Pass2Go Pilot users before and after augmentation.

The data needs of this hypothesis are the same as those for Hypothesis 1. The same data will be used to address this hypothesis. See Hypothesis 1 for appropriate data structure and data collection plan.

Analysis Procedure:

Using the last field of the app data (App Content Visited (General Categories)), the IE team will derive trip planning times. The trip planning times will be compared against each other using app data from before and after the app augmentation. The IE team will use statistical tests (t-tests) to determine whether there is a significant difference in trip planning times from before and after.

To supplement this analysis, the IE team will further use statistical tests (t-tests or sign tests depending on question design) that compare the estimated trip planning times of survey respondents. Similarly, these will be used to determine whether there is a significant difference in user perceived trip planning times from the Before and After Surveys.

Hypothesis 4: The number of downloads increases month over month.

Performance Metric: Before and after application download rates.

Data Sources:

Pass2Go Pilot downloads

This captures the number of Pass2Go Pilot downloads per day

Pass2Go Pilot number of active users

This is the number of active users on Pass2Go Pilot per day. Note that the activity data as defined in Hypothesis 1 would contain the information necessary to render this information. If the data structure in Hypothesis 1 can be met, the IE team can extract it from that.

Data Collection Period for Download Data:

The data is requested from the *original launch* date of the Pass2Go Pilot app to at least 6 months after the release of the Pass2Go Pilot *augmentation*.

Analysis Procedure:

The IE team will create two time series plots with downloads and active users (dependent variables) versus day (independent variable). The IE team will consider the trends from before and after app augmentation to determine if there was a significant change in any of these metrics.

Hypothesis 5: The number of persons with disabilities using Pass2Go Pilot increases.

Performance Metric: Before and after WCAG 2.0 Compliance.
Before and after satisfaction rating of ADA beta testing group.
Before and after application download rates among accessibility community.

Data Sources:

Pass2Go Pilot ADA beta testing group feedback

The project team will recruit a group of ADA travelers as a beta test to provide testing feedback. This group will be given a short survey to assess their feedback on the testing of the app. The primary purpose of the survey is to gather feedback on the ADA components of Pass2Go Pilot. But the survey can include Likert scale questions assessing whether the participants believe the app is an improvement.

WCAG 2.0 compliance measurements

The project team will collect appropriate WCAG 2.0 compliance measurements and transmit them to the IE team. The project team will confirm that the app meets appropriate WCAG 2.0 compliance features, and state those features in accordance with WCAG 2.0 standards. Note that WCAG 2.1 is expected to be released in 2018. Further information can be found here: https://www.w3.org/WAI/intro/wcag

Downloads of the Pass2Go Pilot app among persons with disabilities

The De-Identified User ID associated with each Pass2Go Pilot app may have an indicator collected as to whether the user is an ADA traveler. If the Pass2Go Pilot app allows users to report that they are an ADA traveler, then this list of user IDs would be the most effective data source for evaluating this hypothesis. The list of users can be matched with the activity data in Hypothesis 1 to evaluate the degree to which usage by ADA travelers changed over time.

Analysis Procedure:

There are three different components to the evaluation of this hypothesis. First, the IE will consider the survey responses from the ADA beta test group and aggregate responses by relevant metrics, such as the percentage of users that experienced improved mobility due to the ADA components of the augmented app. Second, the IE team will directly test the augmented app to determine whether it meets the relevant WCAG 2.0 (or WCAG 2.1) standards.

Finally, the IE team will identify those downloads (by De-Identified User ID) that correspond to users with disabilities (if possible). Using the list of De-Identified User IDs, the IE team will link to the app data to derive the subset of active users from this population and may engineer additional metrics that capture usage based on the linked app data. The IE team will use time series plots to compare trends in

downloads and active users, as well as any other usage metrics that are engineered, from before and after the app augmentation to determine if there was a significant change in any of these metrics.

Hypothesis 6: Users report greater connectivity with public transportation using information augmented in Pass2Go Pilot.

Performance Metric: User-reported perception of connectivity as a result of the Pass2Go Pilot app enhancements.

Data Sources:

Survey of Pass2Go Pilot users before and after augmentation

The data needs of this hypothesis are the same as the survey needs defined in Hypothesis 1. See Hypothesis 1 survey data for details.

Analysis Procedure:

The IE team will consider the survey responses and aggregate responses by relevant metrics, such as the percentage of users that experienced improved connectivity due to the augmented app. Furthermore, the surveys ask respondents to rate their ability to get to/from public transit on a scale of 1 to 10. The IE team will use statistical tests (paired t-tests) to determine whether there is a significant difference in these ratings from the Before and After Surveys.

Hypothesis 7: User behavior shows greater use of connecting modes through measured activity.

Performance Metric: Before and after number of first-mile/last-mile trips made by Pass2Go Pilot users

Data Sources:

Survey of Pass2Go Pilot users before and after augmentation

The data needs for this hypothesis are the same as the survey needs defined in Hypothesis 1. See Hypothesis 1 survey data for details.

Analysis Procedure:

The IE team will consider the survey responses and aggregate responses by relevant metrics, such as the mode share of users from the Before and After Surveys. Specifically, the surveys ask respondents about their recent trips to/from public transit, so the IE team can derive the mode share of users based on their recent trips. Furthermore, the surveys probe how often they use certain modes to connect to/from public transit and which mode they use most often broken out by to/from and bus/rail. Using the responses to these questions, the IE can develop a full profile of mode share from the Before and After Surveys.

Hypothesis 8: Users pay for multiple different transportation modes using the Pass2Go Pilot app.

Performance Metric: Distribution of the frequency of modes paid for by Pass2Go Pilot users, including average number of modes used per trip.

Data Sources:

App-based user data before and after Pass2Go Pilot augmentation

The data needs for this hypothesis are the same as activity data needs defined in Hypothesis 1. See Hypothesis 1 activity data structure for details.

Analysis Procedure:

Using the second-to-last field of the app data (App Fare Payment), which identifies the mode paid for, the IE team will derive the mode share of users based on their app activity. This might include plotting the distributions of mode use by frequency and computing the average number of modes used per trip, and comparing these results from before and after the app augmentation. Additionally, the IE team might consider the time series plot of the number of modes used over time, or conduct statistical tests (t-tests) where observations of the number of modes used per trip are compared from before and after the app augmentation. Payment data (transactions) could also help with the analysis.

Hypothesis 9: Pass2Go Pilot users consider the travel experience to be enhanced with real-time travel information and routing.

Performance Metric: Reported perception of real-time traveler information and routing capabilities within the augmented Pass2Go Pilot app.

Data Sources:

Survey of Pass2Go Pilot users before and after augmentation

The data needs for this hypothesis are the same as the survey needs defined in Hypothesis 1. See Hypothesis 1 survey data for details.

Analysis Procedure:

The IE team will consider the survey responses and aggregate responses by relevant metrics, such as the percentage of users that feel their access to real-time traveler information has improved due to the augmented app. Furthermore, the surveys ask respondents to rate their access to real-time traveler information, as well as the trip planning functionality and their overall opinion of the app, on a scale of 1 to 10. The IE team will use statistical tests (paired t-tests) to determine whether there is a significant difference in these ratings from the Before and After Surveys.

Hypothesis 10: Pass2Go Pilot users who are also persons with disabilities find that trip planning methods are improved with the app.

Performance Metric: Reported perception among persons with disabilities that trip planning is better with the enhanced Pass2Go Pilot app.

Data Sources:

Survey of Pass2Go Pilot users before and after augmentation

The data needs for this hypothesis are the same as the activity data needs defined in Hypothesis 1. See Hypothesis 1 activity data structure for details. The responses of those who identify themselves as ADA travelers will be evaluated separately in support of this hypothesis.

Analysis Procedure:

The IE team will consider the survey responses specific to those respondents who identify themselves as disabled through the demographics section of the Before Survey. The IE will aggregate the responses from this sub-population, particularly focusing on those questions specific to trip planning. Similar to previous analyses, the IE team will use statistical tests (paired t-tests) to determine whether there is a significant difference in trip planning ratings from the Before and After Surveys.

Hypothesis 11: Transit agencies are able to view and exchange travel information

Performance Metric: Evaluation of open data platform

Data Sources:

Review of open data platform

This data is qualitative in nature. When the open data platform is ready, Valley Metro can share it with the IE team. The IE team will review the platform and produce a written summary of its capabilities, performance, and benefits.

Data Collection Period:

This data collection will be conducted when the open data platform is ready for review at Valley Metro's discretion.

Analysis Procedure:

In addition to the IE team's review of the open data platform described above, the IE team will further conduct expert interviews (details explained under Hypothesis 12). One focus of these interviews will be the development of this open data platform and their opinions of it.

Hypothesis 12: The process of deploying the project produces lessons learned and recommendations for future research and deployment

Data Sources:

Qualitative documentation from stakeholder interviews

This data is also qualitative in nature. The project team will identify members that can be available to interview with the IE team. The project team should specify at least three people with enough knowledge on the project to talk candidly about its successes and challenges. The IE team will interview these candidates to understand the lessons learned from project implementation.

Suggested entities to be interviewed are listed below (specific interviewees to be determined):

- Valley Metro
- City of Phoenix
- Route Match
- West Group
- Lyft
- Super User(s)/Unique User(s).

Data Collection Period:

This data collection will be conducted 6 months after the launch of the augmentation, but it may be conducted later. It will be conducted as late as possible such that all implementation lessons learned are captured during the interviews.

Analysis Procedure:

An expert interview protocol will be developed. The interviews will be conducted and synthesized from notes and recordings into a summary describing key insights from experts directly involved in the project.

Appendix A. Selected Survey Questions: Before and After Surveys

This section presents the Before Survey and After Survey for the IE of the Valley Metro MOD Sandbox Project.

Before Survey – Final Version

The current design of the survey aims primarily to address the following evaluation hypotheses with supporting information:

- The average travel time of Pass2Go Pilot users declines to a degree that is statistically significant
- The average wait time of Pass2Go Pilot users declines to a degree that is statistically significant
- The average time to plan a trip ahead of time declines to a degree that is statistically significant
- Users report greater connectivity with public transportation using information augmented in Pass2Go Pilot
- User behavior shows greater use of connecting modes through measured activity
- Pass2Go Pilot users consider the travel experience to be enhanced with real-time travel information and routing
- Pass2Go Pilot users who are also persons with disabilities find that trip planning methods are improved with the app
- Pass2Go Pilot users feel safer due to the safety reporting capability of the Pass2Go Pilot app.

OPENING PAGE: Thank you for participating in this important research project. You must complete this survey before you begin using the Pass2Go app and to be eligible to receive the e-gift card.

1. Including yourself, how many people live in your current household?
    - 1
    - 2
    - 3
    - 4
    - 5
    - 6
    - More than 6

>>>>>>>>>>>>>>>>>>>>>>>>**Branch Rule: HOUSEHOLD**>>>>>>>>>>>>>>>>>>**START**

IF (Response > 1) THEN NEXT

>>>

2. What describes your relation to the other people in your current household? (e.g., if you live with your mother, select "Parent/Guardian(s)")

   Please check all that apply.

   - Parent/Guardian(s)
   - Relatives (e.g., siblings, etc.)
   - Housemates/Roommates
   - Spouse/Partner/Significant Other
   - Children (who are under your guardianship)

>>>>>>>>>>>>>>>**Branch Rule: HOUSEHOLD**>>>>>>>>>>>>>>>**END**

3. How many vehicles do < **you / your household** > **currently** own or lease?

   - 0
   - 1
   - 2
   - 3
   - 4
   - 5 or more

>>>>>>>>>>**Branch Rule: CURRENTLY_OWNS_VEHICLES>>>>>**>>>>**START**

If Response /= 0 THEN NEXT

>>

4. Please list the year, make, and model of the vehicle(s) that **< you / your household > currently** own or lease as well as your best estimate of the miles driven on each during the last 12 months (e.g., 2008 Honda Civic, 2000 miles per year).

   Please list the vehicle you drive most first.

   <Show only number of vehicles selected in Q3>

	Year	Make	Model	Approximate Miles Driven in the Last 12 Months
Vehicle 1				
Vehicle 2				
Vehicle 3				
Vehicle 4				
Vehicle 5				

Now, we'd like to learn about you've traveled around the Phoenix area over the past 12-months.

5. Which of the following modes of transportation have you used **in the Phoenix area during the last 12 months**? (Please check all that apply.)

   NOTE: This question defines the universe modes that get used by the respondent. From here, the number of modes that they see reduces to only those relevant as questions proceed.

   - Drive alone (automobile or motorcycle)
   - Drive/ride with family/friend (carpool)
   - Valley Metro light rail service
   - Valley Metro bus service (includes local bus, Express bus, RAPID bus)
   - Valley Metro neighborhood circulator service (Avondale ZOOM, Glendale Urban Shuttle, Mesa Downtown BUZZ, DASH, Phoenix Neighborhood Circulator, Scottsdale Trolley, Tempe Flash, or Tempe Orbit)
   - Valley Metro ADA Paratransit or RideChoice service
   - Valley Metro Vanpool
   - Walk (to a destination)
   - Uber/ Lyft or other ride-hail service
   - Bike share (GRID, Lime, Ofo bikes)
   - Taxi
   - Personally-owned bicycle
   - Employer shuttle
   - Arizona State University student shuttle

- Car rental within Phoenix
- Other, please specify:___________

6. Please indicate how frequently you currently use the following modes. **(RESPONSE REQUIRED)**

	Almost Never	Less than once a month	Once a month	Every other week	1 to 3 days per week	4 to 6 days per week	Once a day	2 to 4 times a day	More than 4 times a day
<Mode that was selected in Q5>									
<Mode that was selected in Q5>									
<Mode that was selected in Q5>									
<…>									

>>>>>>>>>>>>>>>>> Branch Rule: TAKES THE BUS >>>>>>>>>>>>START
IF (Person takes Valley Metro Bus service (includes local bus, Express bus, RAPID bus) in the Phoenix area)
>>
Please consider your travel with Valley Metro Bus service (includes local bus, Express bus, RAPID bus) within the Phoenix area.

7. Thinking about the entire trip (including walking to or from the stop, waiting, etc.) on average, **how long is your total travel time** when you take the bus?

   <Can be drop down menu>

   - Less than 5 minutes
   - 5 minutes
   - 10 minutes
   - 15 minutes
   - 20 minutes

- 25 minutes
- 30 minutes
- 35 minutes
- 40 minutes
- 45 minutes
- 50 minutes
- 55 minutes
- 60 minutes
- 1 hour and 5 minutes
- 1 hour and 10 minutes
- 1 hour and 15 minutes
- 1 hour and 20 minutes
- 1 hour and 25 minutes
- 1 hour and 30 minutes
- 1 hour and 35 minutes
- 1 hour and 40 minutes
- 1 hour and 45 minutes
- 1 hour and 50 minutes
- 1 hour and 55 minutes
- 2 hours
- More than 2 hours
- I do not know

8. On average, about how long do you **wait** for the bus at the bus stop?

   <Can be drop down menu>

   - 30 seconds or less
   - 1 minute
   - 2 minutes
   - 3 minutes
   - 4 minutes
   - 5 minutes
   - 6 minutes
   - 7 minutes
   - 8 minutes
   - 9 minutes
   - 10 minutes
   - 11 minutes
   - 12 minutes
   - 13 minutes
   - 14 minutes
   - 15 minutes
   - 16 minutes
   - 17 minutes
   - 18 minutes
   - 19 minutes
   - 20 minutes
   - 21 minutes
   - 22 minutes
   - 23 minutes

- 24 minutes
- 25 minutes
- 26 minutes
- 27 minutes
- 28 minutes
- 29 minutes
- 30 minutes
- More than 30 minutes
- I do not know

Now think about your most recent trip when you last took the bus.

9. What was the origin of your trip?

   - Home
   - Work
   - Work-related meeting
   - School/College
   - Retail/Shopping
   - Family or friends house
   - Recreation/Social
   - Medical appointment
   - Personal errand
   - Library
   - Other, please specify:_____

10. What was the destination of your trip?

    - Home
    - Work
    - Work-related meeting
    - School/College
    - Retail/Shopping
    - Family or friends house
    - Recreation/Social
    - Medical appointment
    - Personal errand
    - Library
    - Other, please specify:_____

11. About how long did it take you to plan that trip (e.g., figure out when the bus was arriving, which route you'd take, etc.)?

    - I did not plan it, I knew the schedule
    - 30 seconds or less
    - 1 minute
    - 2 minutes
    - 3 minutes
    - 4 minutes
    - 5 minutes

- 6 minutes
- 7 minutes
- 8 minutes
- 9 minutes
- 10 minutes
- More than 10 minutes
- I do not know

>>>>>>> Branch Rule: TOOK SOME TIME TO PLAN THE BUS TRIP>>>>>>>>>>>>START
IF (Plans the bus trip – Q11= 30 seconds or less or more time/Skip if selected "Did not plan")
>>

12. How did you plan that trip?

    - I did not plan the trip with any type of planner
    - Transit Book
    - Station and stop timetables
    - Google Maps
    - Ridekick App
    - NextRide
    - Valley Metro Online Trip Planner (website)
    - Valley Metro Customer Service Call Center
    - Other, please specify:______________________

>>>>>>>>>> Branch Rule: TOOK SOME TIME TO PLAN THE BUS TRIP>>>>>>>>>>>>END

13. If you can recall, what was the approximate location of the bus stop where you GOT ON the bus? Please consider the location where you FIRST got on the bus, if you transferred buses during the same trip, do not consider the location where you transferred busses. Please list two streets that cross near that location.

    If it was a rail transit station, you can just list that station

    Street 1: ________________________________

    Street 2: ________________________________

14. If you can recall, about how long did you **wait** for the bus at this bus stop?

    <Can be drop down menu>

    - 30 seconds or less
    - 1 minute
    - 2 minutes
    - 3 minutes

- 4 minutes
- 5 minutes
- 6 minutes
- 7 minutes
- 8 minutes
- 9 minutes
- 10 minutes
- 11 minutes
- 12 minutes
- 13 minutes
- 14 minutes
- 15 minutes
- 16 minutes
- 17 minutes
- 18 minutes
- 19 minutes
- 20 minutes
- 21 minutes
- 22 minutes
- 23 minutes
- 24 minutes
- 25 minutes
- 26 minutes
- 27 minutes
- 28 minutes
- 29 minutes
- 30 minutes
- More than 30 minutes
- I do not know

15. What mode did you use to GET TO this bus stop from your origin?

    - Walk
    - Personal bicycle
    - Bike share
    - Valley Metro rail
    - Valley Metro neighborhood circulator
    - Drive alone
    - Dropped off by family or friend
    - Uber/Lyft or other ride hail service
    - Taxi
    - Other, please specify:_____

16. If you can recall, what was the approximate location of the bus stop where you GOT OFF the bus? If you transferred buses during this trip, please do not consider the location of your bus transfer, just the location of the last bus stop where you stopped riding the bus. Please list two streets that cross near that location.

    Street 1: _____

    Street 2: _____

17. What mode did you use to GET FROM this bus stop to your final destination?

    - o Walk
    - o Personal bicycle
    - o Bike share
    - o Valley Metro rail
    - o Valley Metro bus
    - o Valley Metro neighborhood circulator
    - o Drive alone
    - o Dropped off by family or friend
    - o Uber/Lyft or other ride hail service
    - o Taxi
    - o Other, please specify:_____

18. Thinking about the entire trip (everything from origin to destination), **about how long was your total travel time for this trip**?

    <Can be drop down menu>

    - o Less than 5 minutes
    - o 5 minutes
    - o 10 minutes
    - o 15 minutes
    - o 20 minutes
    - o 25 minutes
    - o 30 minutes
    - o 35 minutes
    - o 40 minutes
    - o 45 minutes
    - o 50 minutes
    - o 55 minutes
    - o 60 minutes
    - o 1 hour and 5 minutes
    - o 1 hour and 10 minutes
    - o 1 hour and 15 minutes
    - o 1 hour and 20 minutes
    - o 1 hour and 25 minutes
    - o 1 hour and 30 minutes
    - o 1 hour and 35 minutes
    - o 1 hour and 40 minutes
    - o 1 hour and 45 minutes
    - o 1 hour and 50 minutes
    - o 1 hour and 55 minutes
    - o 2 hours
    - o More than 2 hours
    - o I do not know

19. Did this trip involve a transfer from one bus to another?

    - o No
    - o Yes, 1 transfer
    - o Yes, 2 transfers

- Yes, 3 transfers
- I do not know

>>>>>>>>>>>>>>>>> Branch Rule: THEY TRANSFERRED>>>>>>>>>>>>START

IF (Yes, more than one transfer)

>>>

20. Approximately how long did you wait for the next bus when you transferred each time?

<Apply skip logic to not show columns of irrelevant transfers>

Wait time	1st transfer	2nd transfer	3rd transfer
30 seconds or less	☐	☐	☐
1 minute	☐	☐	☐
2 minutes	☐	☐	☐
3 minutes	☐	☐	☐
4 minutes	☐	☐	☐
5 minutes	☐	☐	☐
6 minutes	☐	☐	☐
7 minutes	☐	☐	☐
8 minutes	☐	☐	☐
9 minutes	☐	☐	☐
10 minutes	☐	☐	☐
11 minutes	☐	☐	☐
12 minutes	☐	☐	☐
13 minutes	☐	☐	☐
14 minutes	☐	☐	☐
15 minutes	☐	☐	☐
16 minutes	☐	☐	☐
17 minutes	☐	☐	☐
18 minutes	☐	☐	☐
19 minutes	☐	☐	☐
20 minutes	☐	☐	☐
21 minutes	☐	☐	☐
22 minutes	☐	☐	☐
23 minutes	☐	☐	☐
24 minutes	☐	☐	☐
25 minutes	☐	☐	☐
26 minutes	☐	☐	☐

Wait time	1st transfer	2nd transfer	3rd transfer
27 minutes	☐	☐	☐
28 minutes	☐	☐	☐
29 minutes	☐	☐	☐
30 minutes	☐	☐	☐
More than 30 minutes	☐	☐	☐
I do not know	☐	☐	☐

>>>>>>>>>>>>>>>>> Branch Rule: THEY TRANSFERRED>>>>>>>>>>>>>END

21. What is the most common mode you use to GET TO the bus?
    - o Walk
    - o Personal bicycle
    - o Bike share
    - o Valley Metro rail
    - o Valley Metro neighborhood circulator
    - o Drive alone
    - o Dropped off by family or friend
    - o Uber/Lyft or other ride hail service
    - o Taxi/Other, please specify:_______________________________

22. What is the most common mode you use to GET FROM the bus?
    - o Walk
    - o Personal bicycle
    - o Bike share
    - o Valley Metro rail
    - o Valley Metro neighborhood circulator
    - o Drive alone
    - o Dropped off by family or friend
    - o Uber/Lyft or other ride hail service
    - o Taxi/Other, please specify:_______________________________

>>>>>>>>>>>>>>>>> Branch Rule: TAKES THE BUS >>>>>>>>>>>>>END

>>>>>>>>>>>>>>>>> Branch Rule: TAKES VALLEY METRO RAIL>>>>>>>>>>>>>START

IF (Person takes Valley Metro Rail in the Phoenix area)

>>>

Please consider your travel with Valley Metro Rail service within the Phoenix area.

23. Thinking about the entire trip (including walking, waiting, etc.) on average, **how long is your total travel time** when you take Valley Metro Rail service?

    <Can be drop down menu>

    - Less than 5 minutes
    - 5 minutes
    - 10 minutes
    - 15 minutes
    - 20 minutes
    - 25 minutes
    - 30 minutes
    - 35 minutes
    - 40 minutes
    - 45 minutes
    - 50 minutes
    - 55 minutes
    - 60 minutes
    - 1 hour and 5 minutes
    - 1 hour and 10 minutes
    - 1 hour and 15 minutes
    - 1 hour and 20 minutes
    - 1 hour and 25 minutes
    - 1 hour and 30 minutes
    - 1 hour and 35 minutes
    - 1 hour and 40 minutes
    - 1 hour and 45 minutes
    - 1 hour and 50 minutes
    - 1 hour and 55 minutes
    - 2 hours
    - More than 2 hours
    - I do not know

24. On average, about how long do you **wait** for the train at the Valley Metro rail station?

    <Can be drop down menu>

    - 30 seconds or less
    - 1 minute
    - 2 minutes
    - 3 minutes
    - 4 minutes
    - 5 minutes
    - 6 minutes
    - 7 minutes
    - 8 minutes
    - 9 minutes
    - 10 minutes
    - 11 minutes

- 12 minutes
- 13 minutes
- 14 minutes
- 15 minutes
- 16 minutes
- 17 minutes
- 18 minutes
- 19 minutes
- 20 minutes
- 21 minutes
- 22 minutes
- 23 minutes
- 24 minutes
- 25 minutes
- 26 minutes
- 27 minutes
- 28 minutes
- 29 minutes
- 30 minutes
- More than 30 minutes
- I do not know

Now think about your most recent trip when you last took Valley Metro Rail.

25. What was the origin of your trip?

- Home
- Work
- Work-related meeting
- School/College
- Retail/Shopping
- Family or friends house
- Recreation/Social
- Medical appointment
- Personal errand
- Library
- Other, please specify:_____

26. What was the Destination of your trip?

- Home
- Work
- Work-related meeting
- School/College
- Retail/Shopping
- Family or friends house
- Recreation/Social
- Medical appointment

- Personal errand
- Library
- Other, please specify:_______________________________________

27. About how long did it take you to plan that trip (e.g., figure out when the train was arriving, which station you would use, etc.)?

    - I did not plan it, I knew the schedule
    - 30 seconds or less
    - 1 minute
    - 2 minutes
    - 3 minutes
    - 4 minutes
    - 5 minutes
    - 6 minutes
    - 7 minutes
    - 8 minutes
    - 9 minutes
    - 10 minutes
    - More than 10 minutes
    - I do not know

>>>>>>>> Branch Rule: TOOK SOME TIME TO PLAN THE RAIL TRIP>>>>>>>>>>>>START
IF (Plans the rail trip – Q27 =30 seconds or less or more time/Skip if selected "Did not plan"))
>>

28. How did you plan that trip?

    - I did not plan the trip with any type of planner
    - Transit Book
    - Station and stop timetables
    - Google Maps
    - Ridekick App
    - NextRide
    - Valley Metro Online Trip Planner (website)
    - Valley Metro Customer Service Call Center
    - Other, please specify:_________________________

>>>>>>>>> Branch Rule: TOOK SOME TIME TO PLAN THE RAIL TRIP>>>>>>>>>>>>END

29. Which light rail stop did you start at?

    <List of Valley Metro Rail Stops>

30. If you can recall, about how long did you **wait** for the train?
<Can be drop down menu>

- o I cannot recall
- o 30 seconds or less
- o 1 minute
- o 2 minutes
- o 3 minutes
- o 4 minutes
- o 5 minutes
- o 6 minutes
- o 7 minutes
- o 8 minutes
- o 9 minutes
- o 10 minutes
- o 11 minutes
- o 12 minutes
- o 13 minutes
- o 14 minutes
- o 15 minutes
- o 16 minutes
- o 17 minutes
- o 18 minutes
- o 19 minutes
- o 20 minutes
- o 21 minutes
- o 22 minutes
- o 23 minutes
- o 24 minutes
- o 25 minutes
- o 26 minutes
- o 27 minutes
- o 28 minutes
- o 29 minutes
- o 30 minutes
- o More than 30 minutes

31. What mode did you use to GET TO this station from your origin?
Select all that apply.

- o Walk
- o Personal bicycle
- o Bike share
- o Valley Metro bus
- o Valley Metro neighborhood circulator
- o Drive alone
- o Dropped off by family or friend
- o Uber/Lyft or other ride hail service
- o Taxi
- o Other, please specify:_____

32. Which light rail stop did you end at did you end at?

    <List of Valley Metro Light Rail Stops >

33. What mode did you use to GET FROM this station to your final destination? Select all that apply.
    - o Walk
    - o Personal bicycle
    - o Bike share
    - o Valley Metro bus
    - o Valley Metro neighborhood circulator
    - o Drive alone
    - o Dropped off by family or friend
    - o Uber/Lyft or other ride hail service
    - o Taxi
    - o Other, please specify:_____

34. Thinking about the entire trip (from origin to destination), **about how long was your total travel time for this trip**?

    <Can be drop down menu>

    - o Less than 5 minutes
    - o 5 minutes
    - o 10 minutes
    - o 15 minutes
    - o 20 minutes
    - o 25 minutes
    - o 30 minutes
    - o 35 minutes
    - o 40 minutes
    - o 45 minutes
    - o 50 minutes
    - o 55 minutes
    - o 60 minutes
    - o 1 hour and 5 minutes
    - o 1 hour and 10 minutes
    - o 1 hour and 15 minutes
    - o 1 hour and 20 minutes
    - o 1 hour and 25 minutes
    - o 1 hour and 30 minutes
    - o 1 hour and 35 minutes
    - o 1 hour and 40 minutes
    - o 1 hour and 45 minutes
    - o 1 hour and 50 minutes
    - o 1 hour and 55 minutes
    - o 2 hours
    - o More than 2 hours

35. What is most common mode you use to GET TO Valley Metro Rail?

- o Walk
- o Personal bicycle
- o Bike share
- o Valley Metro rail
- o Valley Metro bus
- o Valley Metro neighborhood circulator
- o Drive alone
- o Dropped off by family or friend
- o Uber/Lyft or other ride hail service
- o Taxi
- o Other, please specify:_____

36. What is the most common mode you use to GET FROM Valley Metro Rail?

- o Walk
- o Personal bicycle
- o Bike share
- o Valley Metro rail
- o Valley Metro bus
- o Valley Metro neighborhood circulator
- o Drive alone
- o Dropped off by family or friend
- o Uber/Lyft or other ride hail service
- o Taxi
- o Other, please specify:_____

>>>>>>>>>>>>>>>>> Branch Rule: TAKES THE VALLEY METRO RAIL>>>>>>>>>>>>END

ASK ALL:

Please think about your ability to access Valley Metro bus or light rail services. Even if you do not ride the light rail or bus very much, or at all, please rate what you believe your ability is to get TO or FROM these public transit services.

37. Overall, how would you rate your ability to GET TO Valley Metro BUS SERVICES from your home/starting point? Please rate on a scale of 1 to 10, where 10 is Excellent, and 1 is Very poor.

- o 1 Very Poor
- o 2
- o 3
- o 4

- 5
- 6
- 7
- 8
- 9
- 10 Excellent
- No opinion/Do not ride

38. How would you rate your ability to GET FROM Valley Metro BUS SERVICES to your final destination)? Please rate on a scale of 1 to 10, where 10 is Excellent, and 1 is Very poor.

- 1 Very Poor
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10 Excellent
- No opinion/Do not ride

39. Overall, how would you rate your ability to GET TO the Valley Metro RAIL LINE from your home/starting point? Please rate on a scale of 1 to 10, where 10 is Excellent, and 1 is Very poor.
    - 1 Very Poor
    - 2
    - 3
    - 4
    - 5
    - 6
    - 7
    - 8
    - 9
    - 10 Excellent
    - No opinion/Do not ride

40. Overall, how would you rate your ability to GET FROM the Valley Metro RAIL line to your final destination? Please rate on a scale of 1 to 10, where 10 is Excellent, and 1 is Very poor.
    - 1 Very Poor
    - 2
    - 3
    - 4
    - 5
    - 6
    - 7
    - 8
    - 9

- 10 Excellent
- No opinion/Do not ride

41. In general, how would you rate your ability to GET TO AND FROM public transit in the Phoenix area? Please rate on a scale of 1 to 10, where 10 is Excellent, and 1 is Very poor.

    - 1 Very Poor
    - 2
    - 3
    - 4
    - 5
    - 6
    - 7
    - 8
    - 9
    - 10 Excellent
    - Not sure/Don't know

42. Finally, about how often do you use the modes below **to connect TO or FROM Valley Metro public transit** (e.g., light rail or bus)?

	Never /NA	**Almost Never**	**Less than once a month**	**Once a month**	**Every other week**	**1 to 3 days per week**	**4 to 6 days per week**	**Once a day**	**2 to 4 times a day**	**More than 4 times a day**
<Mode that was selected in Q5>										
<Mode that was selected in Q5>										
<Mode that was selected in Q5>										
<…>										

43. Currently, how would you rate your access to the NextRide real-time traveler information for public transit in the Phoenix area? Please rate on a scale of 1 to 10, where 10 is Excellent, and 1 is Very Poor.

    - Not familiar/No opinion
    - 1 Very Poor
    - 2
    - 3
    - 4
    - 5
    - 6
    - 7
    - 8
    - 9
    - 10 Excellent

44. Other than NextRide, what are your preferred ways to access real-time traveler information?
    - None, I do not use real-time traveler information
    - Google
    - Apple Maps
    - Waze
    - Bing Maps
    - Other, please specify:____________________________

45. Have you previously used the Ridekick App?
    - Yes
    - No

>>>>>>>>>>>>>>>>>> Branch Rule: HAS USED THE RIDEKICK APP>>>>>>>>>>>>>START

IF (Yes, previously used Ridekick)

>>

46. Currently, how would you rate the Ridekick App overall? Please rate on a scale of 1 to 10, where 10 is Excellent, and 1 is Very poor.

    - I do not know
    - 1 Very Poor
    - 2
    - 3
    - 4
    - 5
    - 6
    - 7
    - 8
    - 9
    - 10 Excellent

47. Currently, how would you rate trip planning with the Ridekick App? Please rate on a scale of 1 to 10, where 10 is Excellent, and 1 is Very poor.

    - I do not know
    - 1 Very Poor
    - 2
    - 3
    - 4
    - 5
    - 6
    - 7
    - 8
    - 9
    - 10 Excellent

>>>>>>>>>>>>>>>>> Branch Rule: RATES APPS POORLY>>>>>>>>>>>>START

IF Q46 Or Q47 have a rating of 1,2 or 3 – ask Q48

>>>

48. If you can, please describe why you provided a low rating to the Ridekick app. You may offer any suggestions on how to improve the app. Please try to convey any feedback kindly, thoughtfully, and constructively. Your input will be read by Valley Metro.

    <Comment Box>

>>>>>>>>>>>>>>>>> Branch Rule: RATES APPS POORLY >>>>>>>>>>>>END

49. Currently, how would you rate your access to the NextRide real-time traveler information for public transit with the Ridekick App? Please rate on a scale of 1 to 10, where 10 is Excellent, and 1 is Very poor.

    - I do not know
    - 1 Very Poor
    - 2
    - 3
    - 4
    - 5
    - 6
    - 7
    - 8
    - 9
    - 10 Excellent

>>>>>>>>>>>>>>>>> Branch Rule: RATES NEXTRIDE POORLY>>>>>>>>>>>>START

IF Q49 rating is 1-3, as Q50.

>>

50. As best you can, please describe why you provided a low rating to NextRide. Please offer any suggestions on how to improve NextRide. Please try to convey any feedback thoughtfully and constructively, your input will be read and used to improve traveler information for Valley Metro.

    <Comment Box>

>>>>>>>>>>>>>>>>> Branch Rule: RATES NEXTRIDE POORLY >>>>>>>>>>>>END

>>>>>>>>>>>>>>>>> Branch Rule: HAS USED RIDEKICK>>>>>>>>>>>>END

ASK ALL Q51-Q63 (All remaining questions)

51. Currently, how safe and secure do you feel taking the bus with Valley Metro?

    Please rate on a scale of 1 to 10, where 10 is “Very Safe”, and 1 is “Very Unsafe”.

    - 1 Very Unsafe
    - 2
    - 3
    - 4
    - 5
    - 6
    - 7
    - 8
    - 9
    - 10 Very Safe
    - I do not know/Do not ride

52. Currently, how safe and secure do you feel taking Valley Metro Rail?

    Please rate on a scale of 1 to 10, where 10 is “Very Safe”, and 1 is “Very Unsafe”.

    - 1 Very Unsafe
    - 2
    - 3
    - 4
    - 5
    - 6
    - 7
    - 8
    - 9

- 10 Very Safe
- I do not know/Do not ride

53. What is your gender?

    - Male
    - Female
    - Prefer not to answer

54. In what year were you born?

    Drop-down <years- start with 2000>

55. Do you use a wheelchair?

    - Yes
    - No

56. Do you have other disabilities that require specialized accommodations for transportation?

    - Yes
    - No

57. Do you require ADA accessible vehicles and infrastructure to get around?

    - Yes
    - No

58. What is the highest level of education you have completed?
    - Less than high school
    - Currently in high school
    - High school/GED
    - Currently in 2-year college
    - 2-year college degree
    - Currently in 4-year college
    - 4-year college degree
    - Currently in post-graduate degree
    - Post-graduate degree (MA, MS, PhD, MD, JD, etc.)
    - Prefer not to answer

59. What is your race or ethnicity? (Please check all that apply.)
    - o African American
    - o American Indian or Alaskan Native
    - o Asian
    - o Caucasian/White
    - o Hispanic or Latino
    - o Middle-Eastern
    - o Native Hawaiian or Pacific Islander
    - o South Asian (e.g., Indian, Pakistani, etc.)
    - o Southeast Asian
    - o Prefer not to answer

60. What kind of housing do you currently live in?
    - o Detached single-family home
    - o Attached single-family home
    - o Building with more than 100 units
    - o Building with between 10 and 100 units
    - o Building/house with fewer than 10 units
    - o Mobile home/RV/Trailer

61. Approximately what was your gross (pre-tax) household income in 2017? (Your household includes the people who live with you with whom you share income)
    - o Less than $10,000
    - o $10,000 to $14,999
    - o $15,000 to $24,999
    - o $25,000 to $34,999
    - o $35,000 to $49,999
    - o $50,000 to $74,999
    - o $75,000 to $99,999
    - o $100,000 to $149,999
    - o $150,000 to $199,999
    - o $200,000 or more
    - o Prefer not to answer

Q62 and Q63 are not required.

62. Please indicate two streets that cross near your HOME location as well as the city.

    City:_____

    Street #1:_____

    Street #2:_____

63. Please indicate two streets that cross near your WORK location as well as the city.

    City:_____

    Street #1:_____

    Street #2:_____

Ending Message:

Thank you for completing this survey! The next step is begin using the Pass2Go Pilot app. If you need assistance downloading the app or at any time, please call 602-495-8282 or email Pass2Go@ValleyMetro.org

After Survey – Final Version

This document presents a draft version of the *After* Survey for the IE of the Valley Metro MOD Sandbox Project. The current design of the survey aims primarily to address the following evaluation hypotheses with supporting information:

- The average travel time of Pass2Go Pilot users declines to a degree that is statistically significant
- The average wait time of Pass2Go Pilot users declines to a degree that is statistically significant
- The average time to plan a trip ahead of time declines to a degree that is statistically significant
- Users report greater connectivity with public transportation using information augmented in Pass2Go Pilot
- User behavior shows greater use of connecting modes through measured activity
- Pass2Go Pilot users consider the travel experience to be enhanced with real-time travel information and routing
- Pass2Go Pilot users who are also persons with disabilities find that trip planning methods are improved with the app
- Pass2Go Pilot users will feel safer due to the safety reporting capability of the Pass2Go Pilot app.

Questions followed by an asterisk (*) are questions not in the Before Survey. We have removed unnecessary questions from this survey (such as demographics) since they are already in the Before Survey.

The survey time length (with branching and skip logic) is targeted to be between 10 to 15 minutes.

1. Including yourself, how many people live in your current household?

    - 1
    - 2
    - 3
    - 4
    - 5
    - 6
    - More than 6

>>>>>>>>>>>>>>>>>>>>>>>>**Branch Rule: HOUSEHOLD**>>>>>>>>>>>>>>>>>**START**

IF (Response > 1) THEN NEXT

>>>

2. What describes your relation to the other people in your current household? (e.g., if you live with your mother, select "Parent/Guardian(s)")

   Please check all that apply.

   - ○ Parent/Guardian(s)
   - ○ Relatives (e.g., siblings, etc.)
   - ○ Housemates/Roommates
   - ○ Spouse/Partner/Significant Other
   - ○ Children (who are under your guardianship)

3. Please indicate the number of household members (including yourself) that fall into the different age groups listed below. *

	0 people	1 person	2 people	3 people	4 people	5 people	More than 5 people
0 - 5	□	□	□	□	□	□	□
6 - 15	□	□	□	□	□	□	□
16 - 18	□	□	□	□	□	□	□
19 - 65	□	□	□	□	□	□	□
66 or older	□	□	□	□	□	□	□

4. Please select the option that best describes your relationship to the other people in your household. This question helps us correctly categorize your responses in terms of either being a household or an individual. *

   - ○ We only share expenses, like rent and utilities.
   - ○ We share expenses and income, and make financial decisions together, like buying a car.
   - ○ Other, please specify: _____

>>>>>>>>>>>>>>>**Branch Rule: HOUSEHOLD**>>>>>>>>>>>>>>>**END**

5. How many vehicles do **< you / your household > currently** own or lease?

   - ○ 0
   - ○ 1

- 2
- 3
- 4
- 5 or more

>>>>>>>>>>**Branch Rule: CURRENTLY_OWNS_VEHICLES>>>>>**>>>>**START**

If Response /= 0 THEN NEXT

>>

6. Please list the year, make, and model of the vehicle(s) that **< you / your household > currently** own or lease as well as your best estimate of the miles driven on each during the last 12 months (e.g., 2008 Honda Civic, 2000 miles per year).

   Please list the vehicle you drive most first.

   <Show only number of vehicles selected in Q5>

	Year	Make	Model	Approximate Miles Driven in the Last 12 Months
Vehicle 1				
Vehicle 2				
Vehicle 3				
Vehicle 4				
Vehicle 5				

7. Has your use of the new Pass2Go Pilot app impacted the amount you drive these vehicles? *

   - Definitely
   - Probably
   - Probably not
   - Definitely not

>>>>>>>>>>**Branch Rule: IMPACTED DRIVING>>>>>**>>>>**START**

If Response = Definitely or Probably THEN NEXT

>>>

8. To the best of your ability, please try to estimate **the change in how many miles per month** you have driven **< your / your household >** vehicle(s) as a result of using the new Pass2Go Pilot app.*

   For example, if using the new Pass2Go Pilot app has caused about 100 fewer miles of driving per month on vehicle 1, select "less" and then select that value. If it has caused you to drive 100 more miles, then select “more” and that value.

   If you have not changed your driving of a vehicle due to the new Pass2Go Pilot app, just select "no change due to the new Pass2Go Pilot app."

   <Show only number of vehicles selected in Q5>
   <Note to operator: There are two drop down menus for each vehicle. One is to indicate the change driving, and the other is the monthly miles>

Piped Vehicle 1:	<Drop down menu of change: “more”, “less”, “no change”> <Drop down menu of miles, if “no change” selected, only miles option should be zero>
Piped Vehicle 2:	<Drop down menu of change: “more”, “less”, “no change”> <Drop down menu of miles, if “no change” selected, only miles option should be zero>
Piped Vehicle 3:	<Drop down menu of change: “more”, “less”, “no change”> <Drop down menu of miles, if “no change” selected, only miles option should be zero>
Piped Vehicle 4:	<Drop down menu of change: “more”, “less”, “no change”> <Drop down menu of miles, if “no change” selected, only miles option should be zero>
Piped Vehicle 5:	<Drop down menu of change: “more”, “less”, “no change”> <Drop down menu of miles, if “no change” selected, only miles option should be zero>

>>>>>>>>>>>>>>>**Branch Rule: IMPACTED DRIVING** >>>>>>>>>>>>>>**END**

9. As a result of using the new Pass2Go Pilot app, I drive overall (in terms of distance, with all vehicles). (Please select one response.) *

- Much more than I did before
- More than I did before
- About the same as I did before (the new Pass2Go Pilot app had little to no impact on how much I drive)
- Less than I did before
- Much less than I did before
- I have changed how much I drive, but not because of the new Pass2Go Pilot app

>>>>>>>>>>**Branch Rule: DRIVE MORE OR LESS>>>>>**>>>>**START**

If Response = Much more, More, Less, or Much Less THEN NEXT

>>

10. How important has the new Pass2Go Pilot app been in contributing to your **< increase / decrease >** in driving? (Please select one response.) *

    - Extremely important
    - Very important
    - Moderately important
    - Slightly important
    - Not at all important

>>>>>>>>>>>>>>>**Branch Rule: DRIVE MORE OR LESS** >>>>>>>>>>>>>>>**END**

>>>>>>>>>>>>>>>**Branch Rule: CURRENTLY_OWNS_VEHICLES** >>>>>>>>>>>>>>>**END**

Now, we will ask about how you've traveled in Phoenix over the past 3 months.

11. Which of the following modes of transportation have you used **in the Phoenix area during the last 3 months**? (Please check all that apply.)

    NOTE: This question defines the universe modes that get used by the respondent. From here, the number of modes that they see reduces to only those relevant as questions proceed.

    - Drive alone (automobile or motorcycle)
    - Drive/ride with family/friend (carpool)
    - Valley Metro light rail service
    - Valley Metro bus service (includes local bus, Express bus, RAPID bus)
    - Valley Metro neighborhood circulator service (Avondale ZOOM, Glendale Urban Shuttle, Mesa Downtown BUZZ, DASH, Phoenix Neighborhood Circulator, Scottsdale Trolley, Tempe Flash, or Tempe Orbit)
    - Valley Metro ADA Paratransit or RideChoice service
    - Valley Metro Vanpool
    - Walk (to a destination)

- Uber/ Lyft or other ride-hail service
- Bike share (GRID, Lime, Ofo bikes)
- Taxi
- Personally-owned bicycle
- Employer shuttle
- Arizona State University student shuttle
- Car rental within Phoenix
- Other, please specify:___________

12. Over the last three months, how frequently have you used the following modes**?**

	Almost Never	**Less than once a month**	**Once a month**	**Every other week**	**1 to 3 days per week**	**4 to 6 days per week**	**Once a day**	**2 to 4 times a day**	**More than 4 times a day**
<Mode that was selected in Q11>									
<Mode that was selected in Q11>									
<Mode that was selected in Q11>									
<…>									

>>>>>>>>>>>>>>>>> Branch Rule: TAKES THE BUS >>>>>>>>>>>>>START
IF (Person takes Valley Metro Bus service (includes local bus, Express bus, RAPID bus) in the Phoenix area)
>>

Please consider your travel with Valley Metro Bus service (includes local bus, Express bus, RAPID bus) within the Phoenix area during the last 3 months.

13. Thinking about the entire trip (including walking to or from the stop, waiting, etc.), on average, how long is your **total travel time** when you take the bus?

    <Can be drop down menu>

    - Less than 5 minutes
    - 5 minutes
    - 10 minutes
    - 15 minutes
    - 20 minutes
    - 25 minutes
    - 30 minutes
    - 35 minutes
    - 40 minutes
    - 45 minutes
    - 50 minutes
    - 55 minutes
    - 60 minutes
    - 1 hour and 5 minutes
    - 1 hour and 10 minutes
    - 1 hour and 15 minutes
    - 1 hour and 20 minutes
    - 1 hour and 25 minutes
    - 1 hour and 30 minutes
    - 1 hour and 35 minutes
    - 1 hour and 40 minutes
    - 1 hour and 45 minutes
    - 1 hour and 50 minutes
    - 1 hour and 55 minutes
    - 2 hours
    - More than 2 hours
    - I do not know

14. On average, about how long do you **wait** for the bus at the bus stop?

    <Can be drop down menu>

    - 30 seconds or less
    - 1 minute
    - 2 minutes
    - 3 minutes
    - 4 minutes
    - 5 minutes
    - 6 minutes
    - 7 minutes
    - 8 minutes
    - 9 minutes
    - 10 minutes
    - 11 minutes
    - 12 minutes
    - 13 minutes

- 14 minutes
- 15 minutes
- 16 minutes
- 17 minutes
- 18 minutes
- 19 minutes
- 20 minutes
- 21 minutes
- 22 minutes
- 23 minutes
- 24 minutes
- 25 minutes
- 26 minutes
- 27 minutes
- 28 minutes
- 29 minutes
- 30 minutes
- More than 30 minutes
- I do not know

Now think about your most recent trip when you last took the bus.

15. What was the origin of your trip?

- Home
- Work
- Work-related meeting
- School/College
- Retail/Shopping
- Family or friends house
- Recreation/Social
- Medical appointment
- Personal errand
- Library
- Other, please specify:_____

16. What was the destination of your trip?

- Home
- Work
- Work-related meeting
- School/College
- Retail/Shopping
- Family or friends house
- Recreation/Social
- Medical appointment
- Personal errand
- Library
- Other, please specify:_____

17. At what time did you start this trip (from your origin)? *

<Can be drop down menu>

- 4:00 AM
- 4:30 AM
- 5:00 AM
- 5:30 AM
- 6:00 AM
- 6:30 AM
- 7:00 AM
- 7:30 AM
- 8:00 AM
- 8:30 AM
- 9:00 AM
- 9:30 AM
- 10:00 AM
- 10:30 AM
- 11:00 AM
- 11:30 AM
- 12:00 PM
- 12:30 PM
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- 8:00 PM
- 8:30 PM
- 9:00 PM
- 9:30 PM
- 10:00 PM
- 10:30 PM
- 11:00 PM
- 11:30 PM
- 12:00 AM
- 12:30 AM
- 1:00 AM
- 1:30 AM
- 2:00 AM
- 2:30 AM
- 3:00 AM
- 3:30 AM

18. What day was this trip? *

   - Monday
   - Tuesday
   - Wednesday
   - Thursday
   - Friday
   - Saturday
   - Sunday

19. About how long did it take you to plan your trip (e.g., figure out when the bus was arriving, which route you'd take, etc.)?

   <Can be drop down menu>

   - I did not plan it, I knew the schedule
   - 30 seconds or less
   - 1 minute
   - 2 minutes
   - 3 minutes
   - 4 minutes
   - 5 minutes
   - 6 minutes
   - 7 minutes
   - 8 minutes
   - 9 minutes
   - 10 minutes
   - More than 10 minutes
   - I do not know

>>>>>>> Branch Rule: TOOK SOME TIME TO PLAN THE BUS TRIP>>>>>>>>>>>>START IF (Plans the bus trip) >>>

20. How did you plan that trip?

   - I did not plan the trip with any type of planner
   - Transit Book
   - Station and stop timetables
   - Google Maps
   - Ridekick App
   - NextRide
   - Pass2Go Pilot app
   - Valley Metro Online Trip Planner (website)
   - Valley Metro Customer Service Call Center
   - Other, please specify:______________________

>>>>>>>>>> Branch Rule: TOOK SOME TIME TO PLAN THE BUS TRIP>>>>>>>>>>>>>END

21. What mode did you use to GET TO this bus stop from your origin?

    - o Walk
    - o Personal bicycle
    - o Bike share
    - o Valley Metro rail
    - o Valley Metro neighborhood circulator
    - o Drive alone
    - o Dropped off by family or friend
    - o Uber/Lyft or other ride hail service
    - o Taxi
    - o Other, please specify:_____

22. About how long did it take you to get from your origin to the bus stop using this mode? *

    <Can be drop down menu>

    - o Less than 5 minutes
    - o 5 minutes
    - o 10 minutes
    - o 15 minutes
    - o 20 minutes
    - o 25 minutes
    - o 30 minutes
    - o 35 minutes
    - o 40 minutes
    - o 45 minutes
    - o 50 minutes
    - o 55 minutes
    - o 1 hour
    - o More than 1 hour
    - o I do not know

23. If you can recall, what was the approximate location of the bus stop where you GOT ON the bus? Please consider the location where you FIRST got on the bus, if you transferred buses during the same trip, do not consider the location where you transferred busses. Please list two streets that cross near that location.

    If it was a rail transit station, you can just list that station

    Street 1: _____

    Street 2: _____

24. If you can recall, about how long did you **wait** for the bus at this bus stop?

    <Can be drop down menu>

    - o 30 seconds or less
    - o 1 minute
    - o 2 minutes
    - o 3 minutes
    - o 4 minutes
    - o 5 minutes
    - o 6 minutes
    - o 7 minutes
    - o 8 minutes
    - o 9 minutes
    - o 10 minutes
    - o 11 minutes
    - o 12 minutes
    - o 13 minutes
    - o 14 minutes
    - o 15 minutes
    - o 16 minutes
    - o 17 minutes
    - o 18 minutes
    - o 19 minutes
    - o 20 minutes
    - o 21 minutes
    - o 22 minutes
    - o 23 minutes
    - o 24 minutes
    - o 25 minutes
    - o 26 minutes
    - o 27 minutes
    - o 28 minutes
    - o 29 minutes
    - o 30 minutes
    - o More than 30 minutes
    - o I do not know

25. If you can recall, what was the approximate location of the bus stop where you GOT OFF the bus? If you transferred buses during this trip, please do not consider the location of your bus transfer, just the location of the last bus stop where you stopped riding the bus. Please list two streets that cross near that location.

    If it was a rail transit station, you can just list that station.

    Street 1: _____

    Street 2: _____

26. What mode did you use to **GET FROM** this bus stop to your final destination?

    - o Walk
    - o Personal bicycle
    - o Bike share
    - o Valley Metro rail
    - o Valley Metro neighborhood circulator
    - o Drive alone
    - o Picked up/dropped off by family or friend
    - o Uber/Lyft or other ride hail service
    - o Taxi
    - o Other, please specify:_____

27. About how long did it take you to **get from** this bus stop to your final destination using this mode? *

    <Can be drop down menu>

    - o Less than 5 minutes
    - o 5 minutes
    - o 10 minutes
    - o 15 minutes
    - o 20 minutes
    - o 25 minutes
    - o 30 minutes
    - o 35 minutes
    - o 40 minutes
    - o 45 minutes
    - o 50 minutes
    - o 55 minutes
    - o 1 hour
    - o More than 1 hour
    - o I do not know

28. Thinking about the entire trip (from origin to destination), about how long was your **total travel time** for this trip?

    <Can be drop down menu>

    - o Less than 5 minutes
    - o 5 minutes
    - o 10 minutes
    - o 15 minutes
    - o 20 minutes
    - o 25 minutes
    - o 30 minutes
    - o 35 minutes
    - o 40 minutes
    - o 45 minutes
    - o 50 minutes
    - o 55 minutes

- ○ 60 minutes
- ○ 1 hour and 5 minutes
- ○ 1 hour and 10 minutes
- ○ 1 hour and 15 minutes
- ○ 1 hour and 20 minutes
- ○ 1 hour and 25 minutes
- ○ 1 hour and 30 minutes
- ○ 1 hour and 35 minutes
- ○ 1 hour and 40 minutes
- ○ 1 hour and 45 minutes
- ○ 1 hour and 50 minutes
- ○ 1 hour and 55 minutes
- ○ 2 hours
- ○ More than 2 hours
- ○ I do not know

29. Did this trip involve a transfer from one bus to another?

- ○ No
- ○ Yes, 1 transfer
- ○ Yes, 2 transfers
- ○ Yes, 3 transfers
- ○ I do not know

>>>>>>>>>>>>>>>>> Branch Rule: THEY TRANSFERRED>>>>>>>>>>>>START

IF (Yes, at least one transfer)

>>

30. Approximately, how long did you wait for the next bus when you transferred each time?

<Apply skip logic to not show columns of irrelevant transfers>

Wait time	1st transfer	2nd transfer	3rd transfer
30 seconds or less	□	□	□
1 minute	□	□	□
2 minutes	□	□	□
3 minutes	□	□	□
4 minutes	□	□	□
5 minutes	□	□	□
6 minutes	□	□	□
7 minutes	□	□	□

Wait time	1st transfer	2nd transfer	3rd transfer
8 minutes	☐	☐	☐
9 minutes	☐	☐	☐
10 minutes	☐	☐	☐
11 minutes	☐	☐	☐
12 minutes	☐	☐	☐
13 minutes	☐	☐	☐
14 minutes	☐	☐	☐
15 minutes	☐	☐	☐
16 minutes	☐	☐	☐
17 minutes	☐	☐	☐
18 minutes	☐	☐	☐
19 minutes	☐	☐	☐
20 minutes	☐	☐	☐
21 minutes	☐	☐	☐
22 minutes	☐	☐	☐
23 minutes	☐	☐	☐
24 minutes	☐	☐	☐
25 minutes	☐	☐	☐
26 minutes	☐	☐	☐
27 minutes	☐	☐	☐
28 minutes	☐	☐	☐
29 minutes	☐	☐	☐
30 minutes	☐	☐	☐
More than 30 minutes	☐	☐	☐
I do not know	☐	☐	☐

>>>>>>>>>>>>>>>>> Branch Rule: THEY TRANSFERRED>>>>>>>>>>>>END

>>>>>>>>>>>>>>>>> Branch Rule: TAKES THE BUS >>>>>>>>>>>>END

>>>>>>>>>>>>>>>>> Branch Rule: TAKES VALLEY METRO RAIL>>>>>>>>>>>>START

IF (Person takes Valley Metro Rail in the Phoenix area)

>>

Please consider your travel with Valley Metro Rail within the Phoenix area during the last 3 months.

31. Thinking about the entire trip (including walking, waiting, etc.), on average, how long is your **total travel time** when you take Valley Metro Rail service?

    <Can be drop down menu>

    - Less than 5 minutes
    - 5 minutes
    - 10 minutes
    - 15 minutes
    - 20 minutes
    - 25 minutes
    - 30 minutes
    - 35 minutes
    - 40 minutes
    - 45 minutes
    - 50 minutes
    - 55 minutes
    - 60 minutes
    - 1 hour and 5 minutes
    - 1 hour and 10 minutes
    - 1 hour and 15 minutes
    - 1 hour and 20 minutes
    - 1 hour and 25 minutes
    - 1 hour and 30 minutes
    - 1 hour and 35 minutes
    - 1 hour and 40 minutes
    - 1 hour and 45 minutes
    - 1 hour and 50 minutes
    - 1 hour and 55 minutes
    - 2 hours
    - More than 2 hours
    - I do not know

32. On average, about how long do you **wait** for the train at the Valley Metro rail station?

    <Can be drop down menu>

    - 30 seconds or less
    - 1 minute
    - 2 minutes
    - 3 minutes
    - 4 minutes
    - 5 minutes
    - 6 minutes
    - 7 minutes
    - 8 minutes
    - 9 minutes
    - 10 minutes
    - 11 minutes
    - 12 minutes

- 13 minutes
- 14 minutes
- 15 minutes
- 16 minutes
- 17 minutes
- 18 minutes
- 19 minutes
- 20 minutes
- 21 minutes
- 22 minutes
- 23 minutes
- 24 minutes
- 25 minutes
- 26 minutes
- 27 minutes
- 28 minutes
- 29 minutes
- 30 minutes
- More than 30 minutes
- I do not know

Now think about your most recent trip when you last took the Valley Metro Rail.

33. What was the origin of your trip?

- Home
- Work
- Work-related meeting
- School/College
- Retail/Shopping
- Family or friends house
- Recreation/Social
- Medical appointment
- Personal errand
- Library
- Other, please specify:_____

34. What was the destination of your trip?

- Home
- Work
- Work-related meeting
- School/College
- Retail/Shopping
- Family or friends house
- Recreation/Social
- Medical appointment
- Personal errand
- Library
- Other, please specify:_____

35. At what time did you start this trip (from your origin)? *

<Can be drop down menu>

- 4:00 AM
- 4:30 AM
- 5:00 AM
- 5:30 AM
- 6:00 AM
- 6:30 AM
- 7:00 AM
- 7:30 AM
- 8:00 AM
- 8:30 AM
- 9:00 AM
- 9:30 AM
- 10:00 AM
- 10:30 AM
- 11:00 AM
- 11:30 AM
- 12:00 PM
- 12:30 PM
- 1:00 PM
- 1:30 PM
- 2:00 PM
- 2:30 PM
- 3:00 PM
- 3:30 PM
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- 8:00 PM
- 8:30 PM
- 9:00 PM
- 9:30 PM
- 10:00 PM
- 10:30 PM
- 11:00 PM
- 11:30 PM
- 12:00 AM
- 12:30 AM
- 1:00 AM
- 1:30 AM
- 2:00 AM
- 2:30 AM
- 3:00 AM

- 3:30 AM

36. What day was this trip? *

- Monday
- Tuesday
- Wednesday
- Thursday
- Friday
- Saturday
- Sunday

37. About how long did it take you to plan your trip (e.g., figure out when the train was arriving, which station you would use, etc.)?

<Can be drop down menu>

- I did not plan it, I knew the schedule
- 30 seconds or less
- 1 minute
- 2 minutes
- 3 minutes
- 4 minutes
- 5 minutes
- 6 minutes
- 7 minutes
- 8 minutes
- 9 minutes
- 10 minutes
- More than 10 minutes
- I do not know

>>>>>>>> Branch Rule: TOOK SOME TIME TO PLAN THE RAIL TRIP>>>>>>>>>>>>START IF (Plans the rail trip) >>

38. How did you plan that trip?

- I did not plan the trip with any type of planner
- Transit Book
- Station and stop timetables
- Google Maps
- Ridekick App
- NextRide
- Pass2Go Pilot app
- Valley Metro Online Trip Planner (website)
- Valley Metro Customer Service Call Center
- Other, please specify:______________________

>>>>>>>>> Branch Rule: TOOK SOME TIME TO PLAN THE RAIL TRIP>>>>>>>>>>>>END

39. What mode did you use to **get to** this rail station from your origin?

    - o Walk
    - o Personal bicycle
    - o Bike share
    - o Valley Metro bus
    - o Valley Metro neighborhood circulator
    - o Drive alone
    - o Dropped off by family or friend
    - o Uber/Lyft or other ride hail service
    - o Taxi
    - o Other, please specify:_____

40. About how long did it take you to get from your origin to the rail station using this mode? *

    <Can be drop down menu>

    - o Less than 5 minutes
    - o 5 minutes
    - o 10 minutes
    - o 15 minutes
    - o 20 minutes
    - o 25 minutes
    - o 30 minutes
    - o 35 minutes
    - o 40 minutes
    - o 45 minutes
    - o 50 minutes
    - o 55 minutes
    - o 1 hour
    - o More than 1 hour
    - o I do not know

41. Which light rail stop did you start at?

    <List of Valley Metro Rail Stops>

42. If you can recall, about how long did you **wait** for the train?

    <Can be drop down menu>

    - o I cannot recall
    - o 30 seconds or less
    - o 1 minute
    - o 2 minutes
    - o 3 minutes
    - o 4 minutes
    - o 5 minutes
    - o 6 minutes
    - o 7 minutes

- 8 minutes
- 9 minutes
- 10 minutes
- 11 minutes
- 12 minutes
- 13 minutes
- 14 minutes
- 15 minutes
- 16 minutes
- 17 minutes
- 18 minutes
- 19 minutes
- 20 minutes
- 21 minutes
- 22 minutes
- 23 minutes
- 24 minutes
- 25 minutes
- 26 minutes
- 27 minutes
- 28 minutes
- 29 minutes
- 30 minutes
- More than 30 minutes

43. Which light rail stop did you end at?

    <List of Valley Metro Light Rail Stops >

44. What mode did you use to GET FROM this station to your final destination?

    - Walk
    - Personal bicycle
    - Bike share
    - Valley Metro bus
    - Valley Metro neighborhood circulator
    - Drive alone
    - Picked up/dropped off by family or friend
    - Uber/Lyft or other ride hail service
    - Taxi
    - Other, please specify:_____

45. About how long did it take you to **get from** this rail station to your final destination using this mode? *

    <Can be drop down menu>

    - Less than 5 minutes
    - 5 minutes
    - 10 minutes

- 15 minutes
- 20 minutes
- 25 minutes
- 30 minutes
- 35 minutes
- 40 minutes
- 45 minutes
- 50 minutes
- 55 minutes
- 1 hour
- More than 1 hour
- I do not know

46. Thinking about the entire trip (from origin to destination), about how long was your **total travel time** for this trip?

    <Can be drop down menu>

    - Less than 5 minutes
    - 5 minutes
    - 10 minutes
    - 15 minutes
    - 20 minutes
    - 25 minutes
    - 30 minutes
    - 35 minutes
    - 40 minutes
    - 45 minutes
    - 50 minutes
    - 55 minutes
    - 60 minutes
    - 1 hour and 5 minutes
    - 1 hour and 10 minutes
    - 1 hour and 15 minutes
    - 1 hour and 20 minutes
    - 1 hour and 25 minutes
    - 1 hour and 30 minutes
    - 1 hour and 35 minutes
    - 1 hour and 40 minutes
    - 1 hour and 45 minutes
    - 1 hour and 50 minutes
    - 1 hour and 55 minutes
    - 2 hours
    - More than 2 hours
    - I do not know

>>>>>>>>>>>>>>>>> Branch Rule: TAKES THE VALLEY METRO RAIL>>>>>>>>>>>>END

Please think about your ability to access Valley Metro bus or light rail services. Even if you do not ride the light rail or bus very much, or at all, please rate what you believe your ability is to get to or from these public transit services.

47. Overall, how would you rate your ability to GET TO Valley Metro BUS SERVICES from your home/starting point? Please rate on a scale of 1 to 10, where 10 is Excellent, and 1 is Very poor.

    - 1 Very Poor
    - 2
    - 3
    - 4
    - 5
    - 6
    - 7
    - 8
    - 9
    - 10 Excellent
    - No opinion/Do not ride

48. How would you rate your ability to GET FROM Valley Metro BUS SERVICES to your final destination)? Please rate on a scale of 1 to 10, where 10 is Excellent, and 1 is Very poor.

    - 1 Very Poor
    - 2
    - 3
    - 4
    - 5
    - 6
    - 7
    - 8
    - 9
    - 10 Excellent
    - No opinion/Do not ride

49. Overall, how would you rate your ability to GET TO the Valley Metro RAIL LINE from your home/starting point? Please rate on a scale of 1 to 10, where 10 is Excellent, and 1 is Very poor.
    - 1 Very Poor
    - 2
    - 3
    - 4
    - 5
    - 6
    - 7
    - 8
    - 9
    - 10 Excellent

- No opinion/Do not ride

50. Overall, how would you rate your ability to GET FROM the Valley Metro RAIL line to your final destination? Please rate on a scale of 1 to 10, where 10 is Excellent, and 1 is Very poor.
    - 1 Very Poor
    - 2
    - 3
    - 4
    - 5
    - 6
    - 7
    - 8
    - 9
    - 10 Excellent
    - No opinion/Do not ride

51. In general, how would you rate your ability to GET TO AND FROM public transit in the Phoenix area? Please rate on a scale of 1 to 10, where 10 is Excellent, and 1 is Very poor.
    - 1 Very Poor
    - 2
    - 3
    - 4
    - 5
    - 6
    - 7
    - 8
    - 9
    - 10 Excellent
    - Not sure/Don't know

52. Please pick the most common mode you use to **get to and from** Valley Metro bus stops and rail stations? Please choose the most common mode for each direction.

	Get to bus stop	Get from bus stop	Get to rail station	Get from rail station
Walk	□	□	□	□
Personal bicycle	□	□	□	□
Bike share	□	□	□	□
Valley Metro rail	□	□	□	□
Valley Metro bus	□	□	□	□
Valley Metro neighborhood circulator	□	□	□	□
Drive alone	□	□	□	□
Picked up/dropped off by family or friend	□	□	□	□
Taxi	□	□	□	□
Not applicable (I don't use this mode)	□	□	□	□

53. Finally, about how often do you use the modes below **to connect TO or FROM Valley Metro public transit** (e.g., light rail or bus)?

	Never /NA	Almost Never	Less than once a month	Once a month	Every other week	1 to 3 days per week	4 to 6 days per week	Once a day	2 to 4 times a day	More than 4 times a day
<Mode that was selected in Q11>										
<Mode that was selected in Q11>										
<Mode that was selected in Q11>										
<…>										

54. Have you used the new Pass2Go Pilot app?

   - Yes
   - No

>>>>>>>>>>>>>>>>> Branch Rule: HAS USED PASS 2 GO APP>>>>>>>>>>>>START

IF (Yes, used PASS 2 GO app)

>>

55. Currently, how would you rate the new Pass2Go Pilot app overall? Please rate on a scale of 1 to 10, where 10 is Excellent, and 1 is Very Poor.

   - I do not know
   - 1 Very Poor
   - 2
   - 3
   - 4
   - 5
   - 6
   - 7
   - 8
   - 9
   - 10 Excellent

56. Currently, how would you rate trip planning with the new Pass2Go Pilot app? Please rate on a scale of 1 to 10, where 10 is Excellent, and 1 is Very Poor.

    - o I do not know
    - o 1 Very Poor
    - o 2
    - o 3
    - o 4
    - o 5
    - o 6
    - o 7
    - o 8
    - o 9
    - o 10 Excellent

57. Currently, how would you rate your access to the real-time traveler information for public transit with the new Pass2Go Pilot app? Please rate on a scale of 1 to 10, where 10 is Excellent, and 1 is Very Poor.

    - o I do not know
    - o 1 Very Poor
    - o 2
    - o 3
    - o 4
    - o 5
    - o 6
    - o 7
    - o 8
    - o 9
    - o 10 Excellent

>>>>>>>>>>>>>>>>> Branch Rule: HAS USED PASS 2 GO APP>>>>>>>>>>>>END

ASK ALL Q51-Q63 (All remaining questions)

58. Currently, how safe and secure do you feel taking the bus with Valley Metro?

    Please rate on a scale of 1 to 10, where 10 is “Very Safe”, and 1 is “Very Unsafe”.

    - o 1 Very Unsafe
    - o 2
    - o 3
    - o 4
    - o 5
    - o 6
    - o 7
    - o 8
    - o 9
    - o 10 Very Safe
    - o I do not know

59. Currently, how safe and secure do you feel taking Valley Metro Rail?

    Please rate on a scale of 1 to 10, where 10 is “Very Safe”, and 1 is “Very Unsafe”.

    - 1 Very Unsafe
    - 2
    - 3
    - 4
    - 5
    - 6
    - 7
    - 8
    - 9
    - 10 Very Safe
    - I do not know

For the following questions, consider how the Pass2Go Pilot app has influenced your travel over the last 3 months. *

60. Overall, as a result of using the new Pass2Go Pilot app, *

	Much longer	Longer	About the same	Shorter	Much shorter	Changed, but not because of the Pass2Go Pilot app
My travel times are…	□	□	□	□	□	□
My wait times are…	□	□	□	□	□	□
The time it takes to plan a trip ahead of time is…	□	□	□	□	□	□

61. Overall, as a result of using the new Pass2Go Pilot app, I have traveled by…*

	Much more often	More often	About the same	Less often	Much less often	Changed, but not because of the Pass2Go Pilot app
Valley Metro Bus	□	□	□	□	□	□
Valley Metro Rail	□	□	□	□	□	□
Walking	□	□	□	□	□	□
Bicycle	□	□	□	□	□	□
Uber/Lyft	□	□	□	□	□	□
Taxi	□	□	□	□	□	□

62. Overall, as a result of the new Pass2Go Pilot app, my access to public transit over the last 3 months has …. *

- o Greatly improved
- o Somewhat improved
- o Not changed
- o Somewhat worsened
- o Greatly worsened
- o I did not use the app enough to have an impact
- o I did not use the app in a way that would influence my access to public transit

63. As a result of the Pass2Go Pilot app, the number if first or last mile trips (connecting to/from public transit) over the last 3 months has…*

- o Greatly increased
- o Somewhat increased
- o Not changed
- o Somewhat decreased
- o Greatly decreased
- o I did not use the app enough to have an impact
- o Has changed, but not due to the Pass2Go Pilot app

64. As a result of Pass2Go Pilot app, the real-time traveler information and routing capabilities that I can access are…*

- Greatly improved
- Somewhat improved
- Not changed
- Somewhat worsened
- Greatly worsened
- I did not use the app enough to have an impact
- Changed, but not due to the Pass2Go Pilot app

65. As a result of the Pass2Go Pilot app, my trip planning methods have…*

- Greatly improved
- Somewhat improved
- Not changed
- Somewhat worsened
- Greatly worsened
- I did not use the app enough to have an impact
- Changed, but not due to the Pass2Go Pilot app

66. As a result of the safety reporting capability within the new Pass2Go Pilot app, I feel (in terms of safety)? *

- Much safer on Valley Metro Transit
- Somewhat safer on Valley Metro Transit
- About the same as before
- Somewhat less safe on Valley Metro Transit
- Much less safe on Valley Metro Transit
- I have felt safer on Valley Metro Transit, but not because of the Pass2Go Pilot
- I have felt less safe on Valley Metro Transit, but not because of the Pass2Go Pilot

67. This survey asked you a lot of questions about your travel patterns over the last three months and your use of the Pass2Go Pilot app. Naturally, some important aspects of your use of the app, and how it has impacted your travel, may have been in these questions. In the text box below, feel free to write any additional comments that describe how the app HAS IMPACTED your travel. *

    You may write as much as you like or skip this question. Please aim to be constructive and helpful in your comments, anything you write will be read as part of the evaluation of this project.

    <Open Comment Box>

68. If you have any suggested improvements for the Pass2Go Pilot, feel free to offer them in the comment box below. As above, please aim to be constructive and helpful in your comments, anything you write will be reviewed by Valley Metro and the app developers. *

<Open Comment Box>

This completes the survey. Thank you for your time participating in this study.

Addendum. Documentation of Evaluation Plan Variance Following Demonstration Deployment

The evaluation plans for the MOD Sandbox Demonstration projects were developed in the planning phase of the project, prior to the execution of the demonstration. As part of this process, data structures and data availability were anticipated. As project implementation proceeded, certain elements of the project and data availability changed.

This addendum presents differences between the planned and executed analyses for the independent evaluation of the Valley Metro Mobility Platform project. Due to changes to pilot operations, data availability issues, and other unforeseen circumstances, some of the hypotheses proposed as part of the original scope of work were modified or their analyses were adjusted to better encompass these changes. In this addendum, changes that were made to each hypothesis (if any) and the key reasons why study methods may have differed from what was planned are identified and discussed. Many hypotheses and their proposed analytical approaches did not change significantly or at all. In these cases, it is noted that there were no differences between the proposed and executed analyses.

Hypothesis 1:	The average travel time of Pass2Go Pilot users declines to a degree that is statistically significant.

Proposed analysis: The analysis outlined in the evaluation plan proposed using timestamps and locations provided by the app activity data to compare travel times with similar origins and destinations before and after the pilot. Also, the planned analysis proposed analyzing survey responses that evaluate perceptions and estimations of travel times before and after the pilot.

Executed analysis: The executed analysis did not compare actual measures of trip travel times before and after the pilot due to the lack of app travel data. Instead, the analysis evaluated before and after survey responses of user estimations and perceptions of travel times to evaluate the effect of the pilot on them.

Hypothesis 2:	The average wait time of Pass2Go Pilot users declines to a degree that is statistically significant.

Proposed analysis: The analysis outlined in the evaluation plan proposed using timestamps and locations provided by the app activity data to compare wait times, both regardless of location and within specific locations, before and after the pilot. Also, the planned analysis proposed analyzing survey responses that evaluate perceptions and estimations of wait times before and after the pilot.

Executed analysis: The executed analysis did not compare actual measures of wait times before and after the pilot due to the lack of app travel data. Instead, the analysis evaluated before and after survey responses of user estimations and perceptions of wait times to evaluate the effect of the pilot on them.

Hypothesis 3:	The average time to plan a trip ahead of time declines to a degree that is statistically significant.

Proposed analysis: The analysis outlined in the evaluation plan proposed analyzing app usage data to derive trip planning times and compare them before and after the pilot. Also, the planned analysis proposed analyzing survey responses that evaluate perceptions and estimations of trip planning times before and after the pilot.

Executed analysis: The executed analysis did not derive measures of trip planning times before and after the pilot due to the lack of app usage data. Instead, the analysis evaluated before and after survey responses of user estimations, ratings, and perceptions of trip planning times to evaluate the effect of the pilot on them.

Hypothesis 4:	The number of downloads increases month over month.

There were no differences between the proposed and executed analyses for Hypothesis 4. The number of app downloads and active devices were analyzed to evaluate the effect of the pilot on them.

Hypothesis 5:	The number of persons with disabilities using the Pass2Go Pilot increases.

Proposed analysis: The analysis outlined in the evaluation plan proposed analyzing survey responses, by travelers with disabilities, that evaluate perceptions of mobility and relevant metrics before and after the pilot. Also, the planned analysis proposed that the IE team would directly test the augmented app to determine whether it meets the relevant Web Content Accessibility Guidelines (WCAG) 2.0 (or WCAG 2.1) standards. Finally, the analysis proposed analyzing the number of app downloads and active devices for users with disabilities, if possible, to evaluate the effect of the pilot on them.

Executed analysis: The executed analysis evaluated before and after survey responses, by travelers with disabilities, of user ratings of the app and its different accessibility features and user perceptions of their ability to access Valley Metro bus and rail services. The IE team did not directly test the augmented app to determine whether it meets the relevant WCAG 2.0 (or WCAG 2.1) standards, since this was a functional requirement verified by the project partners. Also, the executed analysis did not analyze the

number of app downloads and active devices for users with disabilities due to the lack of a disability indicator in the data.

Hypothesis 6:	Users report greater connectivity with public transportation using information augmented in the Pass2Go Pilot.

There were no differences between the proposed and executed analyses for Hypothesis 6. Before and after survey questions gauged user ratings and perceptions of their ability to access Valley Metro public transportation.

Hypothesis 7:	User behavior shows greater use of connecting modes through measured activity.

There were no differences between the proposed and executed analyses for Hypothesis 7. Before and after survey questions gauged user mode share and use frequency to connect to/from public transit.

Hypothesis 8:	Users pay for multiple different transportation modes using the Pass2Go Pilot app.

Proposed analysis: The analysis outlined in the evaluation plan proposed analyzing app fare payment data to derive the mode share of users based on their app activity before and after the pilot.

Executed analysis: The executed analysis did not derive the mode share of users based on their app activity before and after the pilot due to the lack of required attributes that define which mode was being purchased in the app fare payment data. This hypothesis was not testable as originally intended. Instead, app payment data was analyzed to evaluate the number of passes purchased and activated per user throughout the pilot.

Hypothesis 9:	Pass2Go Pilot users consider the travel experience to be enhanced with real-time travel information and routing.

There were no differences between the proposed and executed analyses for Hypothesis 9. Before and after survey questions gauged user ratings and perceptions of their access to real-time traveler information and of the app and its trip planning functionality.

Hypothesis 10:	Pass2Go Pilot users with disabilities find that trip planning methods are improved with the app.

There were no differences between the proposed and executed analyses for Hypothesis 10. Before and after survey questions gauged travelers with disabilities' ratings and perceptions of access to real-time traveler information and of the app's trip planning functionality.

Hypothesis 11:	Transit agencies are able to view and exchange travel information.

There were no differences between the proposed and executed analyses for Hypothesis 11. The pilot's open data platform was inspected whether it was able to deliver travel information related to app performance and activity.

Hypothesis 12:	The process of deploying the project produces lessons learned and recommendations for future research and deployment.

There were no differences between the proposed and executed analyses for Hypothesis 12. Expert (stakeholder / project partner) interviews were conducted and summarized to describe key insights about the pilot.

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