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Origin and Destination Survey

FINAL REPORT



Prepared for: Valley Metro® and
Maricopa Association of Governments (MAG)

Developed by ETC Institute


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EXECUTIVE SUMMARY

The Valley Metro AZ Transit (VM) conducted the 2023 Regional Transit Onboard Origin-Destination (OD) Survey in partnership with the Maricopa Association of Governments (MAG). VM contracted ETC Institute to conduct the onboard survey of passengers riding six major transit service categories across the eight-county regional transportation planning area on weekdays and weekends:

- Local bus
- Rapid bus
- Express bus
- Circulator bus
- Streetcar
- Light rail

Objectives

The primary objectives for the survey were as follows:

- Compile statistically accurate information about transit passengers and how they use transit in the region.
- Generate reliable linked OD data needed by VM and MAG to support travel demand modeling and transportation network simulation activities used for regional long-range transportation planning.
- Assess changes in trip characteristics and ridership profiles of transit riders by comparing the 2023 survey results with data from previous surveys by MAG and VM.
- Meet the Title VI Civil Right Requirements per the latest FTA guidance.

COVID-19 Effects

There was a little impact on survey collection methodology due to the 2020 Pandemic. All interview personnel was equipped with a mask and hand sanitizer. Any instance that an individual wearing a mask was approached to complete an interview, the interviewer was instructed to equip his or her mask.

Surveys Collected

The target sample size for the survey was 18,425 completed surveys across all transit services and modes. This was split between 16,409 Weekday and 2,016 Weekend. The actual number of completed surveys was 22,326. The following table documents the ridership, target sample size, and actual number of surveys collected for each transit agency.

TABLE 1: WEEKDAY SURVEYS BY SERVICE TYPE

Service Type	Target Sample Size	Surveys Collected
Local Bus	9,159	12,118
Rapid Bus	80	47
Express Bus	64	94
Circulator Bus	1,075	1,140
Streetcar	459	514
Light Rail	5,537	5,782
Total	16,374	19,695

Survey Methodology

ETC interviewers conducted the survey on bus, streetcar, and rail by intercept interviews of passengers. Interviewers randomly selected passengers to participate in the interview while making a trip. If the passenger agreed, the interviewer conducted the survey using a tablet personal computer (tablet), recording responses in real-time. The tablet computers had on-screen mapping features that allowed for geocoding of addresses based on feedback from the passenger. The interviewer was available to answer any passenger questions to ensure the accuracy of the data collected. The passenger could also select the response to the demographic questions directly on the tablet, thus allowing for more privacy.

Per the Scope of Work, ETC maintained a 50% Spanish bilingual staffing level for the duration of the project. If an interviewer did not speak the same language as the rider that was approached, they were instructed to turn the tablet and ask the rider to select their native language. This led to the option for the rider to provide their contact information and take a phone survey at a later time in their native language.

Some of the surveys on Express and Rapid routes were collected using self-administered paper surveys. Interviewers distributed the paper surveys as passengers boarded the bus for the morning in-bound and evening out-bound trips. The interviewer then rode the bus trip to be available to answer questions and collect completed surveys.

The final survey database of 22,326 completed surveys provides a 95% confidence interval (CI) with less than a 1% margin of error (ME) for the regional service as a whole.

Regional Transit Rider Profile

The following transit rider profile at the regional level was created from the survey.

- Nearly three-quarters (73.4%) of transit riders in the region are employed either full time (56.7%) or part time (16.7%).
- Less than one-quarter (20.1%) of transit riders in the region are students at a college or university (13.9%), a vocational/technical school (0.4%), a kindergarten through 12th grade school (5.6%), or other form of education (.2%).
- Over half (57.3%) of transit riders in the region are between 25 and 54 years of age.
- The race/ethnicity of transit riders in the region are 40.0% White, 26.6% Hispanic/Latino, 23.5% Black/African American, 6.9% American Indian/Alaskan Native, 6.7% Asian, and 1.1% Native Hawaiian/Pacific Islander.
- Over one-quarter (32.0%) of transit riders in the region report an annual household income of less than \$20,000; 7.0% report an annual household income of \$80,000 or more.
- Nearly three-quarters (72.4%) of transit riders make at least 6 one-way trips per week.

Nearly half (49.1%) of transit riders make at least 10 one-way trips per week.

Regional Transit Trip Characteristics

These statistics focused on transit trip characteristics.

- Over half (46.5%) of all passenger trips came from home, 20.8% came from their usual workplace, and 8.1% came from recreational/social activities.
- Over three-quarters (91.8%) of passengers walked from their origin to their first transit stop.
- The main destination location for passengers was home (43.0%), 20.7% headed to their usual workplace, and 9.1% headed to recreational/social activities.
- Nearly all (92.5%) of passengers walked to their destination from their last transit stop.
- Over half (53.2%) of all passenger trips surveyed did not require a transfer, 35.5% required one transfer, and 12.8% required two or more transfers.

Other Key Findings

- The region's transit systems have a positive impact on traffic and air quality by reducing the number of trips that may otherwise have been completed by driving. Of the respondents that have at least one working vehicle available to their household, 37% of them could have used it for their trip.
- Public transit in the region increases mobility and independence for those who cannot drive or have a vehicle. Nearly half (49.0%) of passengers do not possess a valid drivers' license and 55.9% of passengers have zero household vehicles.
- A high amount (40.0%) of passengers in the region live in households that make less than \$25,000.00. By taking public transportation, individuals can eliminate a significant amount of spending each month in avoided gas costs, maintenance, and other expenses (insurance, registration, etc.).

CHAPTER 1: SURVEY METHODOLOGY

Sampling Plan

In coordination with the VM and MAG, ETC established sampling goals for each bus route and light rail station to ensure that the distribution of completed surveys mirrored the population distribution of riders on the region’s transit systems which are shown in Appendix C. Table 2 shows the time periods for the weekday collection of this survey. Weekend survey collection did not have official goals by time period, but this was regularly documented to ensure adequate distribution.

TABLE 2: PROJECT TIME PERIODS

Time Period	Time Range
AM Peak	6:00 a.m. to 8:59 a.m.
Midday	9:00 a.m. to 2:59 p.m.
PM Peak	3:00 p.m. to 5:59 p.m.
Night	6:00 p.m. to 5:59 a.m.

Sources of Ridership Data

The source of the ridership used to both plan for and expand the survey came from VM, MAG, and other regional providers. The ridership used to draw the final sample and create a data collection plan was from Fall 2022. This data source was summarized by ETC by route, time-of-day, and direction in order to create cell level percentages (Route/Direction/Time-of-day). Using the route level sample sizes from the request for proposal, ETC created cell level (route/direction/time-of-day) ridership data by normalizing the daily ridership totals. The ridership used for the data expansion was the average weekday ridership from February to May 2023, the period during which the survey was conducted.

Sampling Plan for O2O Counts

On-to-Off (O2O) counts were collected on the VM rail line and the streetcar in order to capture passenger boarding and alighting pairs (stops individual passengers board and alight the rail line). This was done to expand the rail and streetcar data by segmenting station on and offs. The sampling plan for the O2O counts was designed to obtain completed pairs from a minimum of 20% of the daily ridership on both systems operated by VM. The total rail goal was 5,573, and 6,926 pairs were collected. The total Streetcar goal was 460, and 1,249 pairs were collected.

Sampling Goals for OD Survey

VM established route level and rail station level sample sizes using sampling strata shown in Table 3 using the average Fall 2022 ridership. The strata were created for VM Rail, Local Bus, Express Bus, Rapid Bus, and Streetcar. Each strata (i.e., VM Rail, Local Bus, etc.) contains average weekday daily ridership categories from high to low ridership. For example, there is one route (route 82) with a higher daily ridership than 7,500 weekday boardings. Using the sample strata shown in Table 3, route 82 was assigned a route level target sample of 367 which is a 95% confidence interval with a 5% margin of error.

ETC developed an OD sample plan from the VM route level strata ensuring the completion of at least 15,583 OD surveys across all VM services and the regional providers. Route level goals were provided by VM which used the forementioned strata. Cell level goals were created by route, direction, and time-of-day by utilizing VM ridership data from Fall 2023. The cell level goals were created off a combination of cell level (route/direction/time-of-day) boarding percentages.

ETC collected 22,326 surveys across VM services. Table 3 shows the sample sizes by Service Type. Appendix C shows all OD Sample Plans by route, direction, time-of-day, and OD completed surveys.

TABLE 3: WEEKDAY SURVEYS BY SERVICE TYPE

Service Type	Target Sample Size	Surveys Collected
Local Bus	9,159	12,118
Rapid Bus	80	47
Express Bus	64	94
Circulator Bus	1,075	1,140
Streetcar	459	514
Light Rail	5,537	5,782
Total	16,374	19,695

Survey goals were set toward 10% of APC daily ridership numbers. As this survey collection effort was a part of a Before and After Study, ETC conducted oversampling a number of specified routes. Sample goals for these routes were increased to 20% of daily ridership. Several routes that were sampled at the 20% level include Scottsdale Express, Miller/Hayden, Gus 1, Gus 2, and Gus 3.

Pilot Test

ETC conducted an OD Survey pilot test from February 20 through February 23, 2023. The purpose of the pilot test was to assess all aspects of the survey including survey design, the random passenger selection, implementation, and data processing tasks. The overall goal was to complete 200 OD interviews. A total of 238 usable interviews were collected. 112 Surveys were collected on the Rail, and 126 were collected across the four bus routes. Completed records were defined as a trip that made logistical sense and all other variables answered.

Routes Involved

The pilot test was administered to transit riders on a mixture of routes between the hours of 6:00am and 10:00pm. The mixture of VM routes included local bus routes, local LEP routes, and VM rail. Routes surveyed for the pilot were:

- Route 29 – Thomas Rd (Scottsdale & Phoenix)
- Route 19 – 19th Ave (Phoenix)

- Route 48 – 48th St/Rio Salado (Spanish LEP route)
- Route 1 – Washington/Jefferson (Spanish LEP route)
- Valley Metro Rail

ETC tested the survey on the VM Rail to evaluate effectiveness on the light rail system and on VM Bus Routes to evaluate how the survey program performed on bus routes of low, high, and limited English proficient ridership. Additionally, the On-to-Off (O2O) survey tool was tested on three full Light Rail Transit (Rail) trips. The specific goals for the pilot test were as follows:

- (1) Assess the full sampling and survey methodology using tablet interview using ETC’s smart programming and built in Quality Assurance Quality Control (QAQC)-logic
- (2) Evaluate the process for selecting respondents and data collection procedures
- (3) Evaluate methods used to ensure that customers selected for the survey can participate regardless of disability or English language proficiency
- (4) Evaluate response rates and factors that contribute to non-response
- (5) Assess real-time geocoding procedures as well as transfer feasibility, distance ratio checks, and all other QAQC, both in field and post-survey
- (6) Assess the questions included in the survey instrument and make recommendations for streamlining/modifying questions to improve the clarity and ability to administer the survey in a timely manner
- (7) Assess survey length and make recommendations on shortening or lengthening the survey by service type, etc.
- (8) Assess differences in data accuracy between temporary staff and supervisors
- (9) Check that all the responses are making it successfully into the database file of the instrument and no data is lost

Pilot Test Results

Assessment of Survey Design

Overall, the survey design was good. Passengers were willing to participate in the survey and respondents did not seem to have difficulty understanding the questions. The average survey took 7.4 minutes to complete with the shortest amount of time being 4.75 minutes and the longest being 10.75 minutes.

Assessment of Survey Participation and Usability of Surveys

Limited English Proficient (LEP) Passengers

In total, 33 interviews were conducted in Spanish. Additionally, four Spanish-only speaking passengers refused to provide contact information in order to receive a callback to conduct the survey in Spanish. A total of three bilingual (English/Spanish) interviewers conducted interviews in the pilot survey spread out among all pilot routes.

It was determined that for the full survey, LEP routes would only be surveyed by bilingual staff, while the rest would be spread out across the VM system.

Refusals

A total of 126 passengers refused to participate in the survey out of the 405 passengers approached. Interviewers logged each respondent that refused to participate in the survey and observed of the rider's age, race, and gender.

Key Profile of Refusals

- 53% of the passengers that refused were observed as male while 47% were observed as female.
- Majority appeared to be less than 24 years old.
- 43% of the refusals were observed as Black/African American, while 17% were observed as Hispanic/Latino.

Survey Instrument

The tablet version was the preferred survey method due to having on-screen mapping that allows for real-time geocoding of addresses and locations. The respondents would then confirm the geocoded location based on the on-screen map. In addition to using the mapping feature to collect the global positioning system (GPS) coordinates of major survey locations (home address, origin address, destination address, boarding location, and alighting location). The respondent could also select the answers to the questions directly on the tablet during the demographic section to allow for more privacy.

Respondents who did not have time to complete the survey during their bus or rail trip were also given the option of providing their phone numbers or e-mail address for an online self-administered survey or call back. Those who provided their phone numbers or e-mail were then texted or e-mailed a link to the self-administered survey or contacted by ETC’s call center to complete the survey. Overall, two passengers completed the survey through these methods.

Figure 1 to Figure 4 show examples from the tablet survey.

FIGURE 1: TABLET SCREENSHOT FOR QUESTION: “WHAT TYPE OF PLACE ARE YOU COMING FROM NOW?”

Q. What type of place are you **COMING FROM NOW?** (the starting place for your one-way trip)

Your usual WORKPLACE	Personal business (bank, post office)
Other work related	Pick up / Drop off someone (daycare, school)
Your HOME	Shopping
College / University (students only)	Eating / Dining Out
School (K-12) (students only)	Hotel (visitors only)
Airport (as an air passenger)	Other: <input type="text"/>
Recreation / Social (movies, sports, park, gym, etc.)	

FIGURE 2: TABLET SCREENSHOT FOR QUESTION: "HOW DID YOU GET FROM YOUR ORIGIN TO YOUR VERY FIRST BUS/TRAIN ON THIS ONE-WAY TRIP?"

Q. How did you GET FROM your origin [Your usual WORKPLACE] TO [59 59th Ave] on this one- way trip?

Walked all the way	On-Demand Transit
Rode Bike (Your own)	Took a Dial-a-Ride or Paratransit service
Rode Bike (Shared)	Was dropped off by someone (not a paid service)
Electric scooter (Your own)	Drove alone and parked
Electric scooter (Shared)	Drove or rode with others and parked
Wheelchair / Mobility Scooter	Other (skateboard, private/courtesy shuttle, etc): <input type="text"/>
Use Uber, Lyft, Waymo, taxi or similar service	

FIGURE 3: TABLET SCREENSHOT FOR QUESTION: "WHERE DID YOU GET ON THIS BUS?"

Q. Where did you GET ON [70 24th St/Glendale Ave WB (Toward Glendale PNR or Luke AFB Lightning Gate)] for this one-way trip?

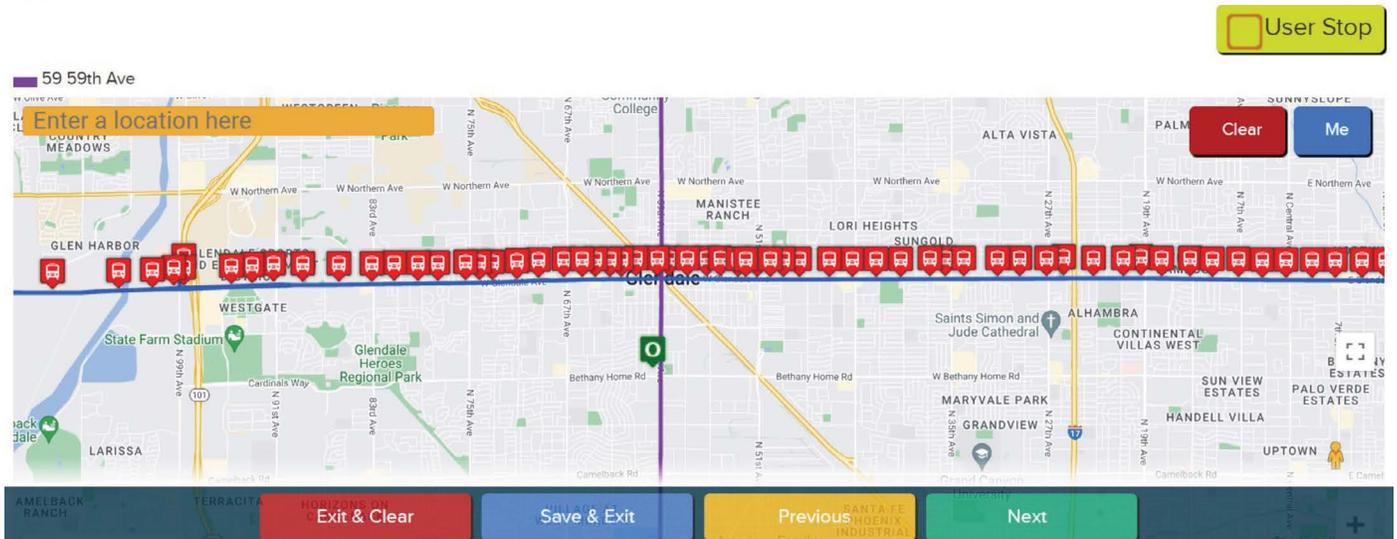


FIGURE 4: TABLET SCREENSHOT FOR QUESTIONS ABOUT TRANSIT INFORMATION

Q. How do you usually get transit information?

Valley Metro website (Computer)	VM Twitter
Valley Metro website (Mobile device)	VM Instagram
Call customer service	Other mobile apps (Google Maps, Transit)
Posted schedule at bus stop/station	Text NextRide
VM Mobile App	Did not do any trip planning
VM Facebook	Other (specify) <input type="text"/>

For Express and Rapid routes, the respondent generally has a longer ride time and fewer transfers, allowing for the use of paper surveys. The distribution of paper surveys to all passengers on these trips allowed a greater number of passengers to participate without sacrificing data quality. For the PNR routes, interviewers distributed the

surveys, assisted riders as needed, and collected the paper questionnaire. The paper surveys that were collected on these routes were then entered into the online database with the tablet surveys. The paper questionnaire is provided in Appendix B. The questions on the paper survey were the same as for the tablet surveys.

CHAPTER 2: SURVEY ADMINISTRATION

Data Collection Activities

Labor Recruitment and Training

Assembling a team of high-quality survey staff was one of the most important steps in both the O2O and OD administration process. ETC collaborated with the staffing firm ANIK to provide interviewers for the both the O2O and OD surveys.

ETC conducted two major training sessions for data collection. The first major training session was for the O2O counts, and the second major training session was for the OD survey. There were additional training sessions conducted throughout the data collection process on an as-needed basis with smaller groups.

Training sessions focused on the study's purpose and objectives, the survey instruments, scripts on how to respond to passengers' questions, how to use data collection tools, instructions on how to conduct themselves when working with the public, and safety training. The survey staff were instructed to understand that while they were not VM, MAG, or any of the other transit systems employees, they were representing all agencies while on transit vehicles or property and they needed to act in a manner that reflected positively.

Maximizing participation and legitimizing the survey among passengers depended on the public response to the survey staff. To support a good public image, ETC imposed strict dress code standards that required survey staff to wear clean appropriate clothing to present a casual, yet neat, appearance that ensured professionalism and comfort. Survey staff were provided with surveyor badges and vests, identifying interviewers to VM staff and passengers. The badge and dress code standards promoted a professional appearance and reinforced survey legitimacy, which increased passengers' trust in the interviewers and the process.

ETC provided an in-depth project-specific training

to ensure a successful data collection. The training reviewed project specifics and field procedures and provided training on how to actively engage customers (passengers). Key highlights in the training included courtesy, professionalism, and person-to-person interactions.

Training O2O Surveyors

The ETC field manager created the necessary training materials and conducted the O2O training. The primary tool that was used for the training session was a PowerPoint presentation. The training discussed the following topics:

- Equipment use and set up
- Methodologies for collecting rail boarding and alighting pairs
- How to approach passengers
- How to manage refusals
- How to react in various situations that may be encountered
- Safety training

Surveyors were evaluated on their proficiency and were provided with additional coaching if needed. If the surveyor was deemed unable to perform the O2O count, they were replaced.

Training OD Interviewers

The ETC field manager created the necessary training materials and conducted the OD training. The classroom training session included a PowerPoint presentation to explain the purpose and objectives of the survey, questionnaire content, interviewer procedures and requirements, survey logistics, how to maximize response rates (including hard-to-survey passengers), and the data collection process in a step-by-step format. Other goals of the training included building interview staff confidence, helping interview staff feel that they are an important part of the survey's success, and helping them understand the importance of the survey and its benefits to the community.

ETC ensures that the training addressed the following details:

- Tips on intercepting/interacting with passengers with disabilities
- Tips on intercepting/interacting with limited English proficiency passengers
- Cultural sensitivity
- Importance of understanding the intent of the questions
- Importance of random selection and properly recording all refusals
- Importance of data confidentiality
- Overview of the participating transit systems
- Overview of the topics covered in tablet questionnaire
- How to manage passenger comments and complaints
- Instructions on conveying the purpose of the survey to passengers
- Safety training

Toward the end of training, interviewers conducted mock interviews using the tablets. This exercise allowed ETC staff to gauge each interviewer's comprehension of the survey instrument and provide feedback as needed. Following classroom training, interviewers conducted live interviews with passengers under the supervision of ETC supervisory staff. Supervisors oversaw interviewers and provided feedback on performance throughout the remainder of the training day.

Interviewers who were conducting the survey properly began field training. Interviewers who needed more help, but showed promise, were asked to spend a second day in the field under direct supervision. During this period, the interviewer's productivity and data quality were assessed by ETC staff.

Organization of Survey Team

O2O Surveyors Roles

The O2O surveyors were responsible for the collection of the O2O counts using the tablet program. Surveyors asked the riders at which stop they entered (if not observed) and at what stop they will exit the train.

OD Survey Interviewer Roles

For the OD Survey, interviewers boarded their assigned bus/train and selected riders at random to participate in the survey. While conducting the interview, interviewers asked the respondent each question from the survey tablet and recorded each response provided to them by the passenger.

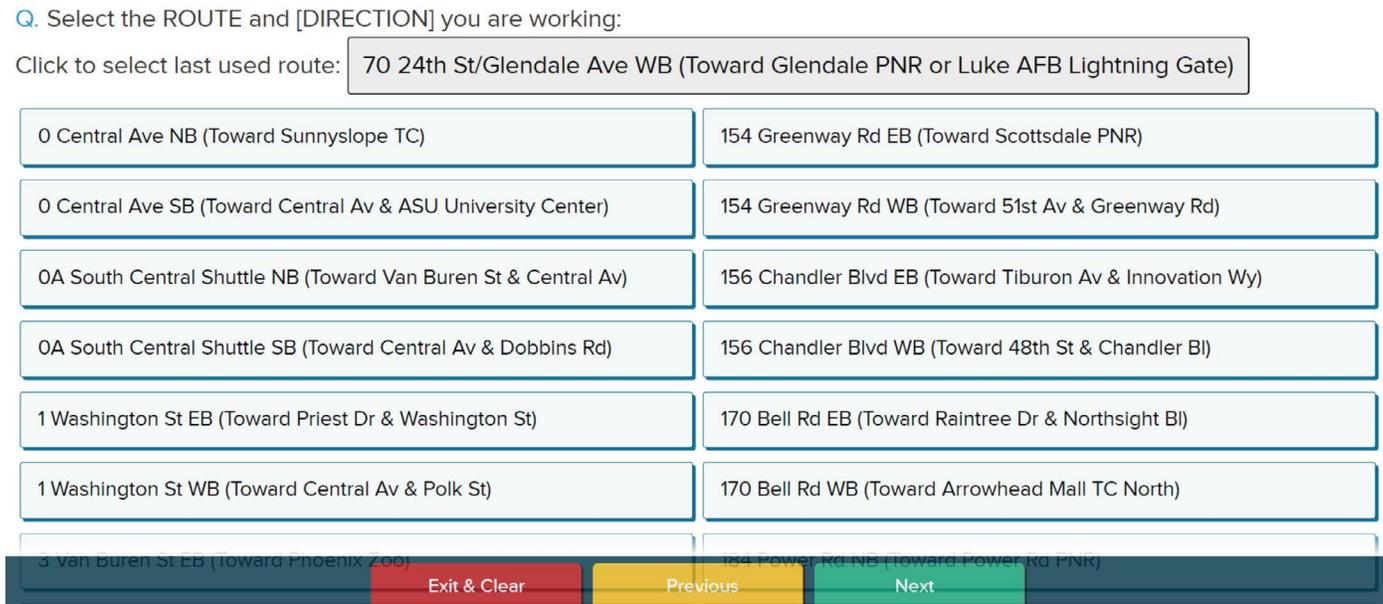
O2O Program Procedure

The O2O counts were collected using tablets equipped with a survey program consisting of two questions: "Where did you get on this rail line?" and "Where will you get off this rail line?". The riders' route, direction, boarding and alighting information, and time were captured with high degree of accuracy via the following process:

- Transit riders were asked to participate as they entered the rail vehicle.
- Each rider entering the rail line was asked where they got on that line (if not observed from the surveyor) and where they will get off the same rail line by a surveyor.
- The surveyor would select the boarding and alighting stops from a programmed drop-down menu, which was associated with rail line they were collecting O2Os.

The O2O software sent the entered data to the O2O server where a server-side processing system stored the data for review. Before any collection took place, surveyor staff were trained on every aspect of the onboard process. An example screenshot of the O2O software is shown in Figure 5.

FIGURE 5: O2O SOFTWARE INTERFACE SCREENSHOT



OD Survey Administration

Selection of Participants

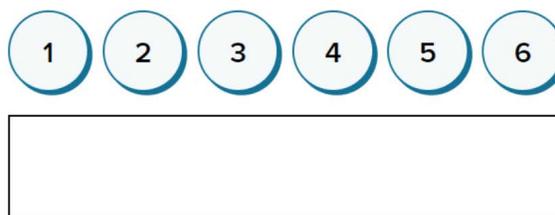
For the OD tablet surveys, a random number generator was used to determine which passengers were asked to participate in the survey after boarding the surveying bus as shown in Figure 6.

If four people boarded a bus, the tablet randomly generated a number from 1 to 4. If the answer was 2, the second person who boarded the bus was asked to participate in the survey. If the answer was 1, the first person was asked to participate in the survey, and so forth. The selection was limited to the first six people who boarded a bus or train at any given stop to ensure the interviewer could keep track of the passengers as they boarded.

For example, if 20 people boarded a bus or train, the tablet program would randomly pick one of the first six people for the survey. If the interview is refused by the randomly selected rider, then the rider who boarded before the rider selected would be approached. For the express and rapid routes, a hard copy questionnaire was administered to all boarding passengers to maximize the number of returned complete surveys.

FIGURE 6: OD SURVEY RANDOM NUMBER GENERATOR

Q. Please choose a number between 1 and 6:



THIS ROUTE: 70 24TH ST/GLENDALE AVE WB (TOWARD GLENDALE PNR OR LUK

Respondents who did not have time to complete the survey during their trip or spoke a language other than the interviewers were given the option of providing their contact information to conduct the survey at another time. Those who provided their phone numbers for call back ability were then contacted by ETC's call center to complete the survey. Only 12 surveys were completed by phone. Those interviewers that did speak the foreign language of the rider translated the English tablet version and indicated which language the interview was conducted in.

OD Survey Procedure

Local Bus Routes, Circulator Routes, and Light Rail

All routes that were classified as local, circulator, or light rail were surveyed using tablets. Interviewers selected people for the survey in accordance with the sampling procedures described earlier in this subsection. Once an interviewer had selected a person for the survey, the interviewer did the following tasks:

- Approached the person who was selected and asked him or her to participate in the survey.
- If the person refused, the interviewer ended the survey.
- If the person agreed to participate, the interviewer asked the respondent if he or she had at least 5 minutes to complete the survey.
- If the person did not have at least 5 minutes on the bus, the interviewer asked the person to provide his/her name and contact information to send a link to a self-administered online version. A link was emailed or texted after the interviewer collected the passenger's information. If the passenger did not complete the survey, a phone interviewer from ETC's call center contacted the respondent and asked him/her to provide the information by phone. This methodology ensured that people who completed short trips on public transit were well represented. The vast majority of passengers were able to complete the surveys onboard.
- If the person had at least 5 minutes on the bus or rail, the interviewer began administering the survey to the respondent as a face-to-face interview using a tablet computer to record the answers.

Express and Rapid Route Procedure

As previously described, on Express and Rapid routes the respondent generally has a longer ride time and less complicated trips. The combination of a simpler trip, longer ride time, and the ease of distributing the paper surveys to a larger number of passengers leads to more riders being able to participate than by selecting random passengers and doing interviews. Therefore, survey staff

boarded these routes from their trip starting point and handed out self-administered paper surveys to each boarding passenger. When the passenger completed the survey, the surveyor would then collect the survey back and conduct a quick review of the returned survey to check for completeness. If the paper survey was missing fields, the surveyor would then ask the passenger to fill in the missing field. All paper surveys were entered into the survey program after being collected.

In-Field Quality Assurance/Quality Control

Each day, ETC's field supervisors reviewed interviewer's data for the following issues to assess whether the employee was conducting the survey properly:

- Distribution of surveys by demographics
- Distribution of surveys by trip characteristics
- Length of each survey in minutes
- Percentage of refusals
- Percentage of short trips

ETC's field supervisors also conducted checks on the locations where the interviews took place by viewing the surveys in real time using mapping visualization tool. The survey is programmed to project the location of where five of the survey's questions are asked which populates an "S" in the survey when viewing the mapping visualization tool. These checks ensured data integrity and identified if an interviewer was not onboard their vehicle conducting interviews.

Data Collection Dashboard

ETC created a dashboard for VM to view both collection productivity and demographics collected. ETC Supervisors monitored data collection with a similar dashboard to monitor collection goals and conduct quality control on interviewers' data.

Data Quality Assurance and Processing

Many of the processes described in previous sections of this report were elements of the overall quality assurance/quality control (QA/QC) process that was implemented throughout survey administration. The establishment of sampling goals and procedures for managing the goals ensured that a representative sample was obtained from each bus/rail route. Training of interviewers and the high levels of oversight provided by the field manager and the field supervisors ensured that the survey was administered properly. Also, the use of the latest geocoding tools such as ETC's tablet survey with an embedded Google map search, ETC Elvis program, and Caliper® Maptitude Geographic Information System (GIS) software all contributed to the high quality of geocoding accuracy that was achieved.

The following subsections describe the QA/QC processes that were implemented after the data were collected.

O2O QA/QC Plan

Pre-Processing QA/QC

An analysis of the rail station stop list within the study area is conducted by ETC's GIS analyst before the survey. Effective stop geocoding depends on the initial quality of the stop data. Some of the specific checks that are conducted during the pre-processing phase include sorting and deleting low confidence records that were created. Confidence levels are created based on the O2O software's QA/QC algorithm.

Post-Processing QA/QC

After boardings/alightings were successfully geocoded, the next step in this process involved the application of a QA/QC check for direction.

Process for Identifying Complete Records

To classify a survey as being completed, the record must contain all elements of the one-way trip, including complete answers to the following:

- Route/direction
- Time of trip
- All transfer routes used
- Home address
- Origin address
- Destination address
- Origin place type
- Destination place type
- Access mode
- Egress mode
- Boarding location
- Alighting location

In addition to the required trip data questions, a survey must be marked as complete by the online survey program, which occurs only if the interviewer has navigated through every required question on the online survey instrument including demographic questions.

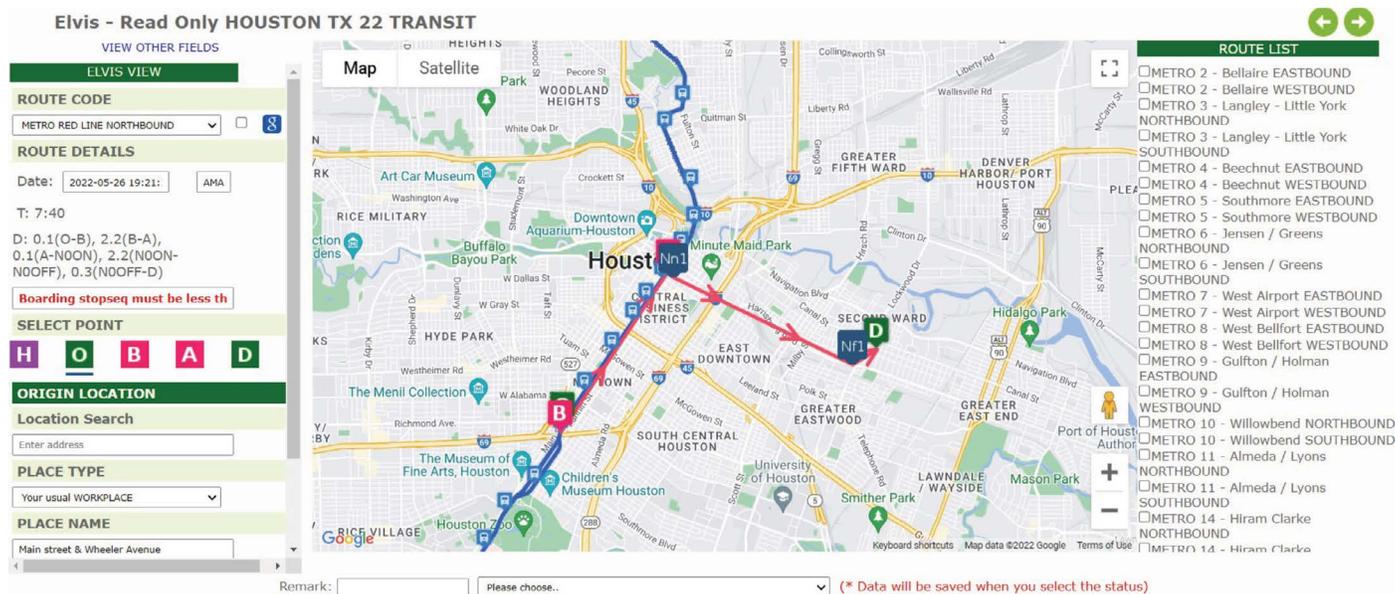
Online Visual Review Tool

ETC created an online visual review tool that allows for the review of all completed records within the database. This tool shows all components of each individual trip as well as a series of preprogrammed distance and ratio checks as

described on subsequent pages. After directions were finalized, the next step was to run each record through the speed/distance/time checks.

Figure 7 shows an example of the online visual review tool.

FIGURE 7: ONLINE VISUAL REVIEW TOOL (EDITABLE VERSION)



Pre-Distance Checks

A series of distance and ratio checks are preprogrammed into the online visual review tool to allow for ETC’s Transit Review Team (TRT) to take a more systematic approach in reviewing complete records. The TRT process for editing surveys is described later in this section. **Note: The distance and ratio checks described were meant to alert the reviewer that closer evaluation was needed. It did not necessarily indicate that the record was inaccurate or unusable.**

The distances used for the checks were created using the great-circle distance formula that is based on a straight line from point A to point B that considers the curvature of the earth. Some of the distance checks ran are listed below:

- Access/Egress Mode Distance Check (distances from origin to boarding and alighting to destination)
- Origin to Destination Check (distance from origin to destination)
- Boarding and Alighting Distance Check (distance checks from boarding to alighting location)

Pre-Ratio Checks

After all transfer checks were completed, the next step in this process involved the application of a series of QA/QC ratio checks.

Three ratio checks were conducted for each record. First, the distance between boarding and alighting was divided by the distance between origin and destination. If the rider had a high ratio, then the rider was on the bus for an extensive time compared to the origin to destination distance. If the check created an extremely low ratio, the use of transit seemed unnecessary.

Second, the distance between origin and boarding was divided by the distance between origin and destination. If the rider had a high ratio, the origin to boarding distance was excessive compared to the origin to destination.

Third, the distance between alighting and destination was divided by the distance between origin and destination. If the rider had a high ratio, the alighting to destination distance was excessive compared to the origin to destination.

Transit Review Team

ETC has a dedicated team whose priority is reviewing and editing completed records using an online visual review tool. The TRT reviewed all completed records collected for the survey, paying special attention to records that were automatically flagged automated distance checks. Typically, around 10% of all records receive an automatic flag. Table 4 is used which generally results in actions that allow about 30% of those records that are automatically flagged to be retained, or approximately 3% of all completed surveys.

TABLE 4: GENERAL ISSUES

Issue	Description of Issue	Action
Origin/Destination Condition 1	Origin/Destination appears incorrect because the wrong location of a multiple-location organization was selected	If for example, an Origin/Destination appears illogical based on the college campus that was selected, but an appropriate campus of the same college does appear logical given the other points and answer choices of the trip, then the appropriate campus will be selected.
Origin/Destination Condition 2	Origin/Destination appears to have been geocoded to the incorrect city/state	If for example, an Origin/Destination appears illogical based on the city/state that was geocoded, but the address/intersection is logical within the trip if the city/state are changed. This occurs occasionally because the interviewer selects the wrong choice from the list of possible address choices that appear in the online survey instrument, then the appropriate address information will be inserted.
Access/Egress Mode	Access/Egress Mode seems illogical based on trip	If the access/egress mode involves the use of a vehicle and the distance from either origin to boarding or alighting to destination is less than 0.2 miles, then the access/egress mode is recoded to walk/walked and that change will be reflected in the database.
Directionality of Record	Boarding and alighting locations indicate that the trip is going in the opposite direction of what was selected by the interviewer	Change direction of route selected and if necessary update boarding and alighting locations based on appropriate direction.

Post-Processing Additional Checks

After all records were reviewed by the TRT, the next step in this process involved the application of a series of QA/QC non-trip checks. Non-trip checks are described as anything not pertaining to the respondent's actual trip (i.e., demographic information).

Non-trip related checks included:

- Ensuring the time of day a survey was completed was reasonable given the published operating schedule for the route. If the time of day was collected by the interviewer was incorrect, the correct time of day was attributed using the time stamp on the survey.
- Ensuring that the appropriate fare type was used in response to the age of respondent. If the fare type was incorrect, the record was researched further in order to provide a correct fare type, if there was no logical explanation, the fare type was left how it was originally answered.
- Removing any personal contact information used for quality control purposes during the data collection portion of the project to protect the anonymity of the respondents. All responses containing the passengers name and phone number for the contest entry was removed.

Once all records had gone through the pre-processing and post-processing QA/QC checks, those that were deemed complete and usable were then used to update the completion report used by the field staff to ensure that all contractual goals had been met. After the final high-level review was completed, a codebook or data dictionary (contained in Appendix C) was created to suitably explain the data in the database.

CHAPTER 3: SURVEY WEIGHTING AND EXPANSION

VM transit interviews were expanded by route, direction, time-of-day, and by segments containing the boarding and corresponding alighting location of the rider. The following sections describe the methodology that was used to develop the unlinked expansion factors. Unlinked expansion factors are weights, when summed up, match the daily ridership of the system.

Data Expansion Overview

When survey quantity goals are created, they are typically based upon a percentage of the average weekday ridership for the routes in the system and desired confidence levels. These are further broken down by time periods and directions. If the route has been deemed a circular or loop route, the ridership is broken down into time periods only, as directional components cannot be obtained accurately. These routes are deemed circular or loop routes because many riders that will board going in one “direction” but alight going the other “direction” due to the functionality of the route. The time periods that are created (e.g., 6 a.m. to 9 a.m.) are based off the specific needs of VM. Once a sample percentage is agreed upon, the goals for the survey collection are based off the ridership for each route by time period and direction then multiplied by the sampling percentage.

The purpose of developing survey quantity goals is to collect an appropriate number of survey records that will be expanded to represent the total average weekday ridership of each route by time period and direction. To further increase the specificity of the expansion process, segments were created for each route. Stops were grouped into segments along that route so that boarding segments could be paired with alighting segments when creating the expansion factor.

Routes with stop-level ridership data were separated based on direction then divided into two segments based on the total boardings. After approximately half of the route’s total ridership was accounted for, a new segment was created. Table 5 is a simplified example of segmentation with stop-level ridership. The reason for that is you can only accurately determine the flows between two segments when you only have APC data. Those routes are segmented similarly to the process above with the main difference being that the second segment begins after approximately half of the route’s total APC ridership has boarded. When a route is segmented in half, you have the possibility of three boarding to alighting cell combinations: board segment 1 to alight segment 1, board segment 1 to alight segment 2, board segment 2 to alight segment 2.

(Note: Iterative Proportional Fitting [IPF] is used in multiple types of expansion discussed later in this document. For IPF to work properly, the boarding totals must match the alighting totals. For this reason, through the process of normalization, ridership alightings are adjusted using a multiplying factor (% of alighting per station/stop) to make sure their totals match the boarding totals. These are typically nominal alterations; however, if there are significant differences in boarding and alighting totals by direction of a route, it may require additional review of the functionality of the route (removing directional components and deeming the route circular or loop) to ensure that the surveys are both collected and expanded appropriately).

TABLE 5: SEGMENTATION WITH STOP-LEVEL RIDERSHIP EXAMPLE

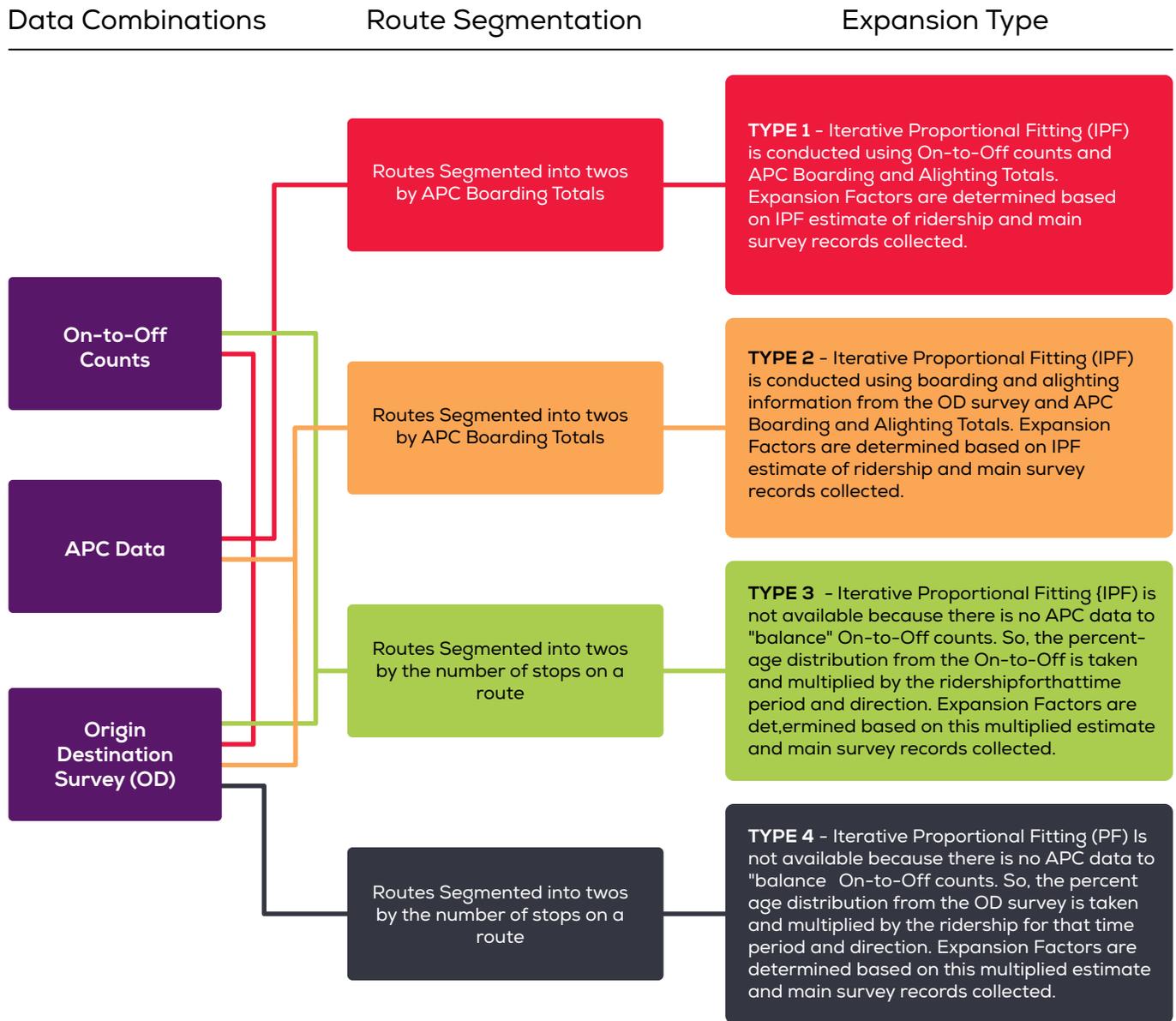
Segmentation with APC Example					
Direction: Eastbound	APC DATA		Segmentation		
Stops	Boardings	Alightings	Running Total of Boardings	Running Percentage of Total Boardings	Segment
Stop 1	35	0	35	23.0%	1
Stop 2	5	10	40	26.3%	1
Stop 3	4	5	44	28.9%	1
Stop 4	19	10	63	41.4%	1
Stop 5	12	12	75	49.3%	1
Stop 6	20	4	95	62.5%	2
Stop 7	20	4	115	75.7%	2
Stop 8	15	3	130	85.5%	2
Stop 9	15	5	145	95.4%	2
Stop 10	3	10	148	97.4%	2
Stop 11	2	15	150	98.7%	2
Stop 12	2	11	152	100.0%	2
Stop 13	0	10	152	100.0%	2
Stop 14	0	15	152	100.0%	2
Stop 15	0	38	152	100.0%	2
	152	152			

Types of Data Expansion

The type of data expansion conducted depended on the data available for the specific route. There were three types of data that created the combinations that guided the type of expansion used:

Stop-Level Ridership/APC Data (from VM), O2O counts data (collected by ETC), and OD Survey Data (collected by ETC). Figure 8 shows the data combinations, the corresponding route segmentation, and type of expansion used.

FIGURE 8: TYPES OF DATA EXPANSION

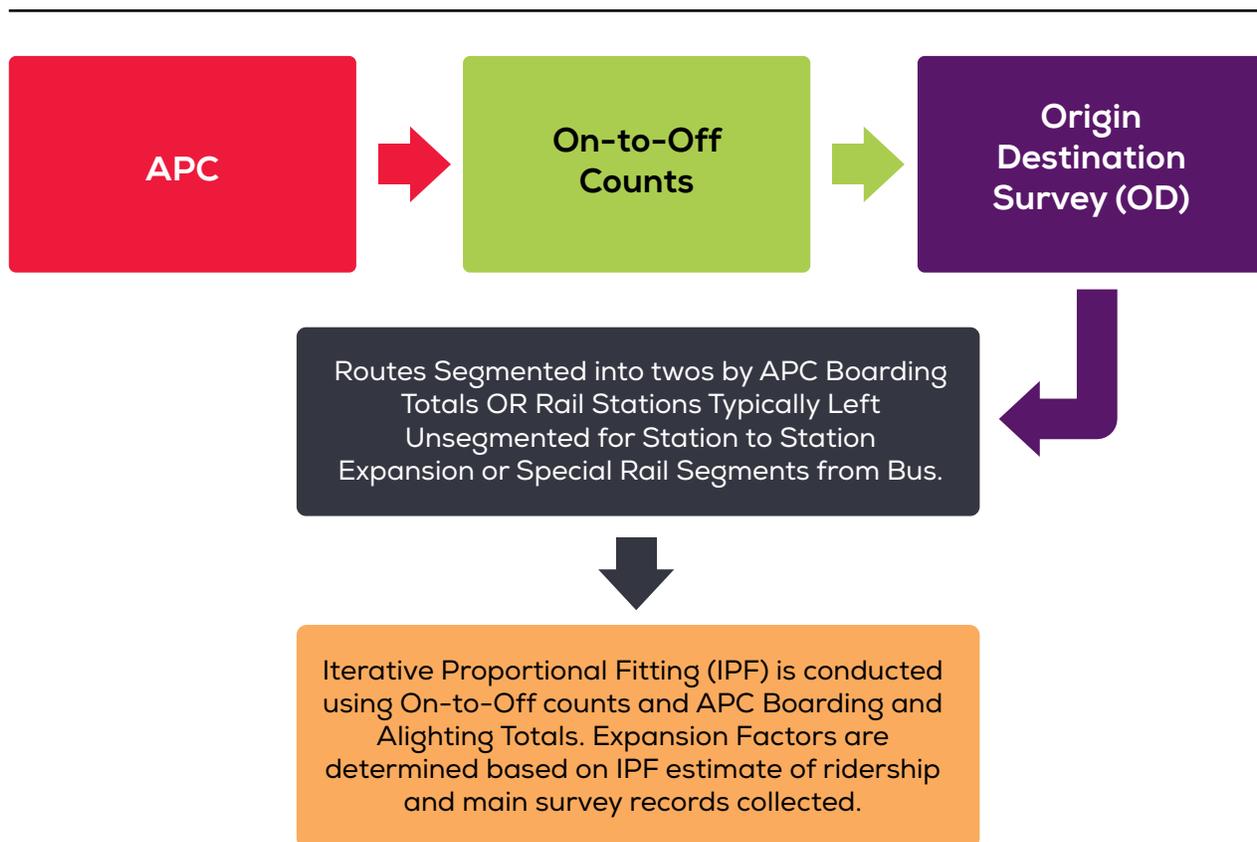


Type 1 Expansion: Rail Routes with APC Data, O2O Counts, and OD Survey Data

Of the four types of bus expansion discussed, Type 1 Expansion is the preferred method as it incorporates all three types of data that were available. Type 1 expansion was used for VM rail. The rail segments were then appended to both the O2O and OD data based on the boarding and alighting locations. Figure 9 explains the methodology for Type 1 expansion.

FIGURE 9: TYPE 1 EXPANSION/RAIL EXPANSION

Type 1 Expansion/Rail Expansion



The process for how the data was expanded in Type 1 Expansion is explained below.

Table 7 shows Table 1 expansion process, the segmented results for the O2O counts that were administered for a route, station/stop, direction, and time period. Each row in the table identifies the segment where passengers boarded the route. The columns in the table identify the segments where people alighted the route. Table 6 shows an example of the boarding and alighting segment location of the tables within the expansion process.

TABLE 6: TABLE EXAMPLE FOR BOARDING/ALIGHTING SEGMENT LOCATIONS

	Segment	Total	Alighting Segments	
			1	2
Boarding Segments	1	X	X	15
	2	X	X	X
	Total	X	X	X

For example, 15 of the O2O counts had riders board in segment 1 and alight in segment 2.

TABLE 7: RAIL DATA EXPANSION TABLE RESULTS OF O2O COUNTS

Route: Example Eastbound (6am-9am)		ACTUAL RIDERSHIP FROM ON/OFF SURVEY	
Segment	Total	1	2
1	20	5	15
2	25		25
Total	45	5	40

Table 8 shows the Table 2 expansion process, the distribution of the data in Table 7 [Table 1 Expansion Process] expressed as a percentage of all boardings for the specific time period and direction. Table 10 was created by dividing each O2O cell in Table 7 [Table 1 Expansion Process] by the sum of all O2O counts in Table 7 [Table 1 Expansion Process], which is 45. For example, 15/45 (33.3% of all trips boarded in segment 1 and alighted in segment 2 is shown in Table 8 [Table 2 Expansion Process].

TABLE 8: RAIL DATA EXPANSION TABLE DISTRIBUTION OF O2O COUNTS

Route: Example Eastbound (6am-9am)		PERCENTAGE OF THE DISTRIBUTION OF RIDERSHIP COUNTS FROM ON/OFF SURVEY	
Segment	Total	1	2
1	44.4%	11.1%	33.3%
2	55.6%		55.6%
Total	100.0%	11.1%	88.9%

The total ridership for the route, time period, and direction was applied to the O2O distribution percentages shown in Table 8 [Table 2 Expansion Process].

This produces an estimate of the ridership flow for the boarding segment to the alighting segment as shown in Table 9 [Table 3 Expansion Process]. Applying the actual ridership of 320, obtained from the APC data, creates an initial estimate of 107 trips (33.3% x 320) boarding in segment 1 and alighting in segment 2.

TABLE 9: RAIL DATA EXPANSION TABLE INITIAL ESTIMATE OF RIDERSHIP FLOWS BETWEEN SEGMENTS

(PERCENTAGES IN TABLE 8 WERE APPLIED TO THE TOTAL BOARDINGS FOR THIS TIME PERIOD FOR THIS DIRECTION)			
Route: Example Eastbound (6am-9am)		PROJECTED RIDERSHIP BASED ON THE ON/OFF SURVEY	
Segment	Total	1	2
1	142	36	107
2	178		178
Total	320	36	248

In order to develop a more accurate estimate of the ridership flows between segments on each route, ETC developed an IPF algorithm to balance the differences between the ridership projected from the O2O counts (shown in Table 9 [Table 3 Expansion Process]) and the APC ridership for each segment (shown in Table 10 [Table 4 Expansion Process]). The IPF process is described below.

TABLE 10: STOP-LEVEL RIDERSHIP/APC DATA

BOARDINGS AND ALIGHTINGS BY STATION			
Route: Example Eastbound (6am-9am)			
Average Weekday Ridership	Total	1	2
BOARDINGS	320	100	220
ALIGHTINGS	320	20	300
DIFFERENCE FROM PROJECTED			
BOARDINGS	0	-42	42
ALIGHTINGS	0	-16	16

Step 1: Correction for the Boardings. The estimated ridership from the O2O counts for each route (as shown in Table 10 [Table 4 Expansion Process]) was multiplied by the ratio of the actual boardings from Stop-Level Ridership/APC Data for each segment by the estimated boardings for each segment. For example, if the actual boardings for segment 1 were 120 and the estimated boardings were 100, each cell associated with segment 1 would have been multiplied by 1.2 (120/100) to adjust the estimated boardings to actual boardings.

Step 2: Correction for the Alightings. Once the correction in Step 1 was applied, the estimated boardings would be equal to the actual boardings. However, the adjustment to the boardings total may have changed the alighting estimates. To correct the alighting estimates, the new values calculated in Step 1 were adjusted by multiplying the ratio of the actual alightings from the Stop-Level Ridership/APC Data for each stop by the estimated alightings for each segment from Step 1. For example, if the actual alightings for segment 2 were 220 and the estimated alightings from Step 1 were 200, each cell associated with Segment 2 would have been multiplied by 1.1 (220/200) to adjust the estimated alightings from Step 1 to actual alightings.

The processes described in Steps 1 and Steps 2 were repeated sequentially until the difference between the actual and estimated boardings and alightings was zero. Table 11 [Table 5 Expansion Process] shows that after seven balancing iterations in this algorithm, there were no differences between the projected distribution and the actual boardings and alightings.

TABLE 11: ITERATIVE BALANCE PROCESS

4th STEP OF ITERATIVE BALANCING TO CORRECT DISTRIBUTION OF RIDERSHIP BY ALIGHTING LOCATION				
Stop Name	Total	DIFFERENCE FROM ACTUAL BOARDINGS	1	2
1	100	0	20	80
2	220	0	0	220
Total	320	0	20	300
DIFFERENCE FROM ACTUAL ALIGHTINGS	0		0	0

4th STEP OF ITERATIVE BALANCING TO CORRECT DISTRIBUTION OF RIDERSHIP BY ALIGHTING LOCATION				
Stop Name	Total	DIFFERENCE FROM ACTUAL BOARDINGS	1	2
1	100	0	20	80
2	220	0	0	220
Total	320	0	20	300
DIFFERENCE FROM ACTUAL ALIGHTINGS	0		0	0

The final estimate for ridership flows is shown in Table 12 [Table 6 Expansion Process].

TABLE 12: FINAL ESTIMATE OF RIDERSHIP FLOWS BETWEEN STATIONS

Route: Example Eastbound (6am-9am)			
Segment	Total	1	2
1	100	20	80
2	220		220
Total	320	20	300

The actual number of OD records completed for each boarding to alighting segment pair is shown in Table 9 [Table 3 Expansion Process]. To calculate the expansion factors, the final estimate of ridership between segments shown in Table 12 [Table 6 Expansion Process] was divided by the actual number of OD records collected, as shown in Table 13 [Table 7 Expansion Process]. This calculation produces the expansion factors shown in Table 14 [Table 8 Expansion Process]. For example, the 80 estimated riders projected to board in segment 1 and alight in segment 2 were divided by the 9 OD records to produce an expansion factor of 8.89 to be applied to records who board in segment 1 and alighting in segment 2 during the example Eastbound (6–9 a.m.) Time Period as shown in Table 14 [Table 8 Expansion Process].

TABLE 13: NUMBER OF COMPLETED SURVEYS

Route: Example Eastbound (6am-9am)			
Segment	Total	1	2
1	11	2	9
2	23		23
Total	34	2	32

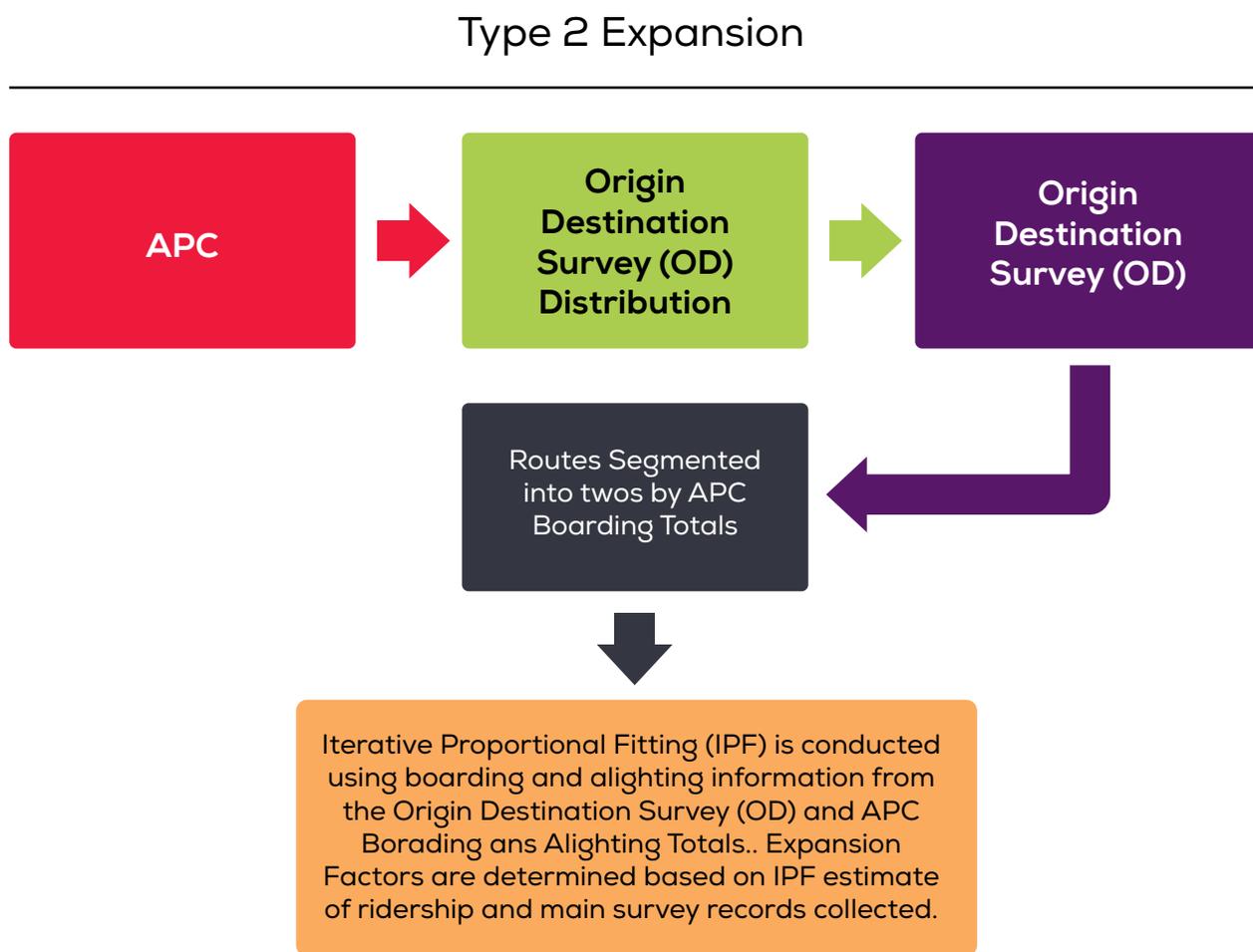
TABLE 14: WEIGHTING FACTORS

Route: Example Eastbound (6am-9am)			
Segment	Total	1	2
1	19	10.00	8.89
2	10		9.57
Total	28	10	18

Type 2 Expansion: Bus Routes with APC Data, OD Survey Data, but No O2O Counts Data

Bus routes with no O2O counts but with APC data were expanding with Type 2 expansion. This type of expansion also divided stops into two segments based on total boarding distribution by direction. These segments were then appended to the OD records based on the boarding and alighting locations. The expansion method is exactly like Type 1 expansion, the only difference being that the distribution of OD records was substituted for the O2O counts data. The VM Bus expansion was conducted this way. The figure below explains the methodology for Type 2 expansion.

FIGURE 10: TYPE 2 EXPANSION/RAIL EXPANSION



Type 3 Expansion: Bus Routes with O2O Counts and OD Survey Data, but without Stop-Level Ridership/APC Data

Expansion Type 3 is used for routes where O2O counts are collected but Stop-Level Ridership/APC Data is not available. Routes without Stop-Level Ridership/APC Data are segmented into three segments based on number of stops along a route. These segments were then appended to the O2O and OD Survey databases. The expansion method is less complex than the two previously discussed types of expansion. **Type 3 expansion was not used for this project.**

Type 4 Expansion: Bus Routes with OD Survey Data, without O2O Counts Data or Stop-Level Ridership/APC Data

For routes that only have OD Survey data, Type 4 expansion is used. These routes were expanded at the route level based on daily ridership reported by the agency.

Types of Data Expansion Breakdown

The table below shows the type of expansion used project routes. Appendix C contains a list containing each route and the type of expansion used.

TABLE 15: TYPES OF DATA EXPANSION

Expansion Type	Routes	(%) Route
EXPANSION #1	3	1.9%
EXPANSION #2	112	71.8%
EXPANSION #3	0	0.0%
EXPANSION #4	41	26.3%
Grand Total	156	100.0%

General Rule for Expansion Factors

While there are no specific guidelines for the expansion factor values, ETC tries to keep expansion factors below three times the average expansion factor. This adjustment is made to keep any one record from representing a markedly high number of riders in the system. The formula for determining this guideline is:

Guideline Weight Factor = 1/(Sampling percent) × 3

If the expansion factor for a boarding segment to alighting segment pair is greater than three times the average expansion factor, then it is aggregated into the adjacent boarding-to-alighting segment where it will have the least impact on the previously existing expansion factors. This guideline is used for all the expansion types.

Linked Trip Expansion Factors for All Records

The unlinked weight factor (unlinked passenger trips count each boarding as a separate trip regardless of transfers) matches the daily ridership on the system. The linked-trip expansion factor (transfers are included in the trip) helps to account for the number of transfers that were made by each passenger reducing the daily ridership because a single passenger can account for multiple unlinked ridership. Linked expansion factors are generated after the unlinked expansion factors are created. The equation to create the Multiplying Factor that is used to calculate the linked trip expansion factor is shown below:

Linked Trip Multiplying Factor = $[1/(1 + \# \text{ of transfers})]$

If a passenger did not make a transfer, the linked trip multiplying factor would be 1.0 because the person would have only boarded one vehicle. If a person made two transfers, the linked trip expansion factor would be 0.33 because the person would have boarded three transit vehicles during his/her one-way trip. An example of how the linked trip expansion factors were calculated is provided in Figure 11.

FIGURE 11: SAMPLE CALCULATIONS OF LINKED TRIP MULTIPLYING FACTORS

Number of Transfers	Calculation [1/(1+Number of Transfers)]	Linked Trip Multiplying Factor
0	[1/(1+0)]	1
1	[1/(1+1)]	0.5
2	[1/(1+2)]	0.33
3	[1/(1+3)]	0.25

Once the linked trip multiplier is created, it is multiplied by the unlinked expansion factor to create the linked expansion factor.

Decomposition Analysis

Decomposition analysis measures the overall representativeness of the survey records relative to linked and unlinked trips on an individual route basis. Self-enumeration surveys, the action of the completion of survey questionnaires by the respondents themselves, have historically suffered from substantial errors in route level boarding levels when linked trips were determined by simply dividing the boarding factor by one plus the number of transfers.

The advent of the personal interview conducted by a trained surveyor, coupled with tablet technology obtaining more accurate locations, and more effective management of interviewers to provide a superior distribution of riders has reduced this issue. The decomposition analysis examines each record and the recorded sequence of routes and tabulates boardings for each route using this information. After all records have been examined, total boardings by route are summarized and compared with the observed level of boardings. The result of this analysis will help to determine the relationship between observed and estimated boardings by route.



The decomposition analysis below and on the following pages shows the summed link factors for the routes on which the survey was conducted. The findings from the decomposition analysis show that the overall results for the on-board survey do an excellent job of representing the system. In fact, at the overall level, there is 0.00% difference between the total boardings calculated from the summed linked weight factors and the observed ridership. The routes that deviate the farthest from the summed linked factors compared to the observed counts are typically low volume ridership routes and therefore have a higher error of probability.

CHAPTER 4: SURVEY FINDINGS

This section highlights demographic and trip-related findings from the project. The results for all questions on the survey were compared using route type (bus only, rail only, and bus & rail). Two major categories of survey findings are presented: (1) rider profile and (2) trip profile.

Service Ridership

FIGURE 13: PERCENTAGE OF ROUTE TYPE RIDERSHIP

Ridership	Bus	VM Rail	Total
Average Weekday Ridership	90,045	27,865	117,910
Average Weekday Ridership %	76.37%	23.63%	100%

Rider Profile

Gender

The gender of riders by service type is presented in Table 16. Sixty-two percent (62.10%) of all transit passengers were male. Thirty-seven percent (37.24%) of all transit passengers were female. There were no significant differences with regard to gender based on the mode of travel. Interestingly male ridership increased from 56.94% in 2019 to 62.10% in 2023. Female ridership on the contrary decreased from 42.23% in 2019 to 37.24% in 2023.

TABLE 16: GENDER

What is your gender?	Bus Only	Bus/Rail	Rail Only	Grand Total
Female	37.7%	36.04%	36.43%	37.24%
Male	61.63%	62.99%	62.99%	62.10%
Non-binary/third gender	0.58%	0.88%	0.55%	0.60%
Other	0.03%	0.00%	0.00%	0.02%
Refused/No Answer	0.03%	0.08%	0.03%	0.03%
Grand Total	100.00%	100.00%	100.00%	100.00%

Age

Table 17 shows the age of transit rider by service type. Just shy of two-thirds of all transit riders indicated that they were between the ages of 19 and 44 (62.46%); 7.89% were 18 and younger, and 29.1% were 45 or older. Bus and rail passengers 45 years or older showed very little difference (28.79% bus only vs. 28.67% rail only). Rail users were more likely to be between the ages of 19-34 than bus passengers (47.06% rail only vs. 43.19% bus only).

TABLE 17: AGES OF TRANSIT USERS

What is your age?	Bus Only	Bus/Rail	Rail Only	Grand Total
Under 16	2.44%	1.22%	0.98%	1.96%
16-18	6.71%	4.13%	4.63%	5.93%
19-24	19.54%	18.83%	22.43%	20.17%
25-34	23.65%	23.89%	24.62%	23.91%
35-44	18.30%	19.72%	18.01%	18.38%
45-54	13.77%	14.76%	13.83%	13.89%
55-64	7.47%	9.92%	6.40%	7.47%
65+	7.54%	7.36%	8.44%	7.74%
Prefer not to answer	0.58%	0.17%	0.65%	0.55%
Grand Total	100.00%	100.00%	100.00%	100.00%

Race/Ethnicity

Table 18 shows the race/ethnicity of riders by service type. Thirty-nine percent (40.57%) of transit riders identified themselves as White (39.15% in 2019); 26.47% identified themselves as Hispanic/Latino (23.21% in 2019), and 22.44% identified themselves as Black/African American (21.60% in 2019). Bus passengers were more likely to be Hispanic/Latino than rail passengers (28.75% bus only vs. 21.61% rail only).

TABLE 18: RACE/ETHNICITY

Race/Ethnicity	Bus Only	Bus/Rail	Rail Only	Grand Total
American Indian/Alaskan Native	6.37%	7.21%	6.59%	6.51%
Asian	8.63%	4.65%	6.58%	7.71%
Black/African American	22.26%	27.29%	20.85%	22.44%
Hispanic/Latino	28.75%	23.59%	21.61%	26.47%
Native Hawaiian/Pacific Islander	0.85%	2.09%	0.80%	0.97%
White	38.33%	39.50%	46.97%	40.57%

Income

Total household income by service type is shown in Tables 19-20 below. Excluding refusals, nearly twenty eight percent (27.66%) of all transit passengers reported annual household incomes below \$15,000. This was a significant 10% increase from 2019 (17.66%). Twenty-three percent (23.34%) indicated they had an annual household income of \$50,000 or more (25.40% in 2019), and only 3.70% (3.40% in 2019) reported an annual household income of \$100,000 or more.

TABLE 19: ANNUAL HOUSEHOLD INCOME

Annual Household Income	Bus Only	Bus/Rail	Rail Only	Grand Total
Below \$5,000	15.23%	11.29%	9.87%	13.51%
\$5,000 - \$9,999	3.84%	3.23%	3.46%	3.69%
\$10,000 - \$14,999	3.78%	5.49%	4.10%	4.04%
\$15,000 - \$19,999	3.86%	4.07%	3.80%	3.87%
\$20,000 - \$24,999	5.68%	5.42%	6.68%	5.90%
\$25,000 - \$29,999	6.22%	6.12%	7.52%	6.53%
\$30,000 - \$34,999	7.07%	10.46%	8.70%	7.82%
\$35,000 - \$39,999	6.10%	9.05%	6.56%	6.52%
\$40,000 - \$49,999	6.62%	7.88%	7.57%	6.98%
\$50,000 - \$59,999	6.77%	7.13%	5.74%	6.56%
\$60,000 - \$69,999	3.65%	4.26%	3.98%	3.80%
\$70,000 - \$79,999	2.04%	2.53%	2.75%	2.27%
\$80,000 - \$89,999	1.33%	1.79%	1.76%	1.48%
\$90,000 - \$99,999	0.78%	0.98%	1.51%	0.98%
\$100,000 - \$119,999	0.93%	1.23%	1.97%	1.21%
\$120,000 or more	1.29%	1.66%	2.52%	1.63%
Refused/No Answer	24.82%	17.41%	21.50%	23.23%
Grand Total	100.00%	100.00%	100.00%	100.00%

TABLE 20: ANNUAL HOUSEHOLD INCOME (EXCLUDING REFUSALS)

Annual Household Income	Bus Only	Bus/Rail	Rail Only	Grand Total
Below \$5,000	20.26%	13.66%	12.57%	17.59%
\$5,000 - \$9,999	5.11%	3.91%	4.41%	4.80%
\$10,000 - \$14,999	5.03%	6.65%	5.22%	5.26%
\$15,000 - \$19,999	5.13%	4.93%	4.84%	5.04%
\$20,000 - \$24,999	7.55%	6.57%	8.51%	7.68%
\$25,000 - \$29,999	8.27%	7.41%	9.58%	8.50%
\$30,000 - \$34,999	9.40%	12.67%	11.08%	10.19%
\$35,000 - \$39,999	8.11%	10.95%	8.36%	8.49%
\$40,000 - \$49,999	8.80%	9.54%	9.65%	9.10%
\$50,000 - \$59,999	9.01%	8.63%	7.31%	8.54%
\$60,000 - \$69,999	4.86%	5.15%	5.08%	4.94%
\$70,000 - \$79,999	2.71%	3.07%	3.51%	2.95%
\$80,000 - \$89,999	1.76%	2.16%	2.24%	1.93%
\$90,000 - \$99,999	1.03%	1.18%	1.93%	1.27%
\$100,000 - \$119,999	1.23%	1.50%	2.51%	1.58%
\$120,000 or more	1.71%	2.01%	3.21%	2.12%
Grand Total	100.00%	100.00%	100.00%	100.00%

Household Size

Table 21 shows the number of household members. Sixteen percent (16.59%) of all transit passengers indicated that they live in households with at least four occupants, which is nearly identical to 2019 (16.37%). In 2023 24.83% of all transit passengers reported that they live alone vs 21.74% in 2019. Bus passengers were slightly more likely to live in households with four or more occupants than rail passengers (32.18% bus only vs. 30.59% rail only). This trend has remained consistent since 2019 (31.56% bus only vs. 26.03% rail only).

TABLE 21: HOUSEHOLD SIZE

Including YOU, how many people live in your household?	Bus Only	Bus/Rail	Rail Only	Grand Total
One (1)	23.91%	27.80%	26.00%	24.83%
Two (2)	22.31%	23.02%	24.79%	22.99%
Three (3)	21.60%	21.03%	18.61%	20.81%
Four (4)	17.23%	14.00%	16.01%	16.59%
Five (5)	8.15%	6.63%	7.84%	7.91%
Six (6)	3.75%	3.28%	3.47%	3.63%
Seven (7)	1.42%	1.36%	1.24%	1.37%
Eight (8)	0.67%	1.23%	0.59%	0.71%
Nine (9)	0.20%	0.43%	0.35%	0.26%
Ten or More (10+)	0.76%	1.22%	1.10%	0.89%
Grand Total	100.00%	100.00%	100.00%	100.00%

Employed Persons per Household

Table 22 shows the number of employed household members by service type. Almost one third (31.34%) of transit passengers reported that they live in households where at least one person is employed. In 2019, 30.33% of transit passengers reported they lived in households with at least one employed person.

TABLE 22: NUMBER OF EMPLOYED PERSONS IN THE HOUSEHOLD

Including YOU, how many adults (age 16 and older) in your household are employed full or part time?	Bus Only	Bus/Rail	Rail Only	Grand Total
None (0)	13.88%	12.78%	13.42%	13.65%
One (1)	31.18%	33.72%	30.76%	31.34%
Two (2)	32.22%	33.24%	31.42%	32.13%
Three (3)	14.52%	12.52%	13.92%	14.16%
Four (4)	5.61%	5.38%	7.11%	5.95%
Five (5)	1.27%	0.92%	1.69%	1.34%
Six (6)	0.58%	0.26%	0.38%	0.50%
Seven (7)	0.15%	0.18%	0.16%	0.16%
Eight (8)	0.19%	0.05%	0.45%	0.24%
Nine (9)	0.08%	0.29%	0.08%	0.11%
Ten or More (10+)	0.31%	0.65%	0.62%	0.42%
Grand Total	100.00%	100.00%	100.00%	100.00%

Employment Status

Table 23 shows the employment status of riders by service type. Fifty-four percent (54.42%) of all transit passengers indicated that they were employed full time. In 2019, 61.64% of passengers were employed full-time. Rail passengers were slightly more likely to be employed either part-time or full-time than bus only passengers (72.52% rail only vs. 71.44% bus only). On the contrary, rail passengers from 2019 were less likely to be employed either part- or full-time (73.89% rail only vs. 75.30% bus only).

TABLE 23: EMPLOYMENT STATUS

What is your employment status? (Check the one response that BEST describes you)	Bus Only	Bus/Rail	Rail Only	Grand Total
Employed full-time (at least 35 hours/week)	54.13%	58.66%	53.39%	54.42%
Employed part-time (less than 35 hours/week)	17.31%	15.71%	19.12%	17.59%
Not currently employed, and not seeking work	13.53%	8.15%	10.37%	12.19%
Not currently employed, but seeking work	8.66%	11.08%	10.58%	9.38%
Retired	5.58%	6.02%	5.81%	5.69%
Stay-at-home spouse/partner	0.79%	0.38%	0.73%	0.73%
Grand Total	100.00%	100.00%	100.00%	100.00%

Student Status

Table 24 shows the student status of riders by service type. Twenty-two percent (22.12%) of all transit passengers indicated that they were a student of some type vs. 17.38% in 2019. There was not a noticeable difference in the student statuses of bus and rail passengers (22.31% rail only vs. 22.87% bus only).

TABLE 24: STUDENT STATUS

Are you a student? (Check the one response that BEST describes you)	Bus Only	Bus/Rail	Rail Only	Grand Total
Not a student	77.13%	82.96%	77.69%	77.88%
Yes – Full-time College/University	12.35%	8.28%	14.65%	12.49%
Yes – K-12th grade	7.51%	4.47%	4.32%	6.41%
Yes – Part-time College/University	2.53%	3.79%	2.69%	2.70%
Yes – Vocational/Technical/Trade School	0.33%	0.40%	0.45%	0.37%
Yes – Other	0.16%	0.10%	0.19%	0.16%
Grand Total	100.00%	100.00%	100.00%	100.00%

Vehicle Availability

Table 25-26 shows the number of household vehicles for Valley Metro riders by service type. Fifty-four percent (54.82%) of all transit passengers indicated that they do not have a vehicle available to their household, which is over a 3% increase from 2019 (51.09%). Today’s rail only passengers (27.99%) were more likely to have at least one vehicle available to their household than bus only passengers (24.63%). This is a notable difference as compared to 2019 household vehicles per service type (36.10% rail only vs. 27.57% bus only). Table 26 shows the number of vehicles available for use for their one-way trip. As in 2019 (57.89% rail only vs. 31.76% bus only), rail passengers are more likely to have their vehicle available to use for their one-way trip compared to bus only passengers (49.29% rail only vs. 31.61% bus only).

TABLE 25: NUMBER OF VEHICLES IN THE HOUSEHOLD (WEEKDAY)

How many working vehicles (cars, trucks or motorcycles) are available to your household?	Bus Only	Bus/Rail	Rail Only	Grand Total
None (0)	55.96%	57.97%	50.47%	54.82%
One (1)	24.63%	25.33%	27.99%	25.53%
Two (2)	13.94%	12.21%	15.66%	14.18%
Three (3)	4.01%	3.21%	4.06%	3.94%
Four (4)	0.89%	0.61%	1.21%	0.94%
Five (5)	0.34%	0.25%	0.37%	0.34%
Six (6)	0.14%	0.13%	0.13%	0.13%
Seven (7)	0.04%	0.11%	0.07%	0.06%
Eight (8)	0.01%	0.05%	0.00%	0.01%
Nine (9)	0.02%	0.00%	0.00%	0.01%
Ten or More (10+)	0.02%	0.14%	0.03%	0.04%
Grand Total	100.00%	100.00%	100.00%	100.00%

TABLE 26: VEHICLE AVAILABILITY

Could you have used one of these vehicles for this trip?	Bus Only	Bus/Rail	Rail Only	Grand Total
No	68.39%	59.14%	50.71%	62.75%
Yes	31.61%	40.86%	49.29%	37.25%
Grand Total	100.00%	100.00%	100.00%	100.00%

NOTES: RIDERS INDICATED THEY HAVE AT LEAST ONE WORKING VEHICLE IN THE HOUSEHOLD.

Driver’s License

Table 27 displays whether riders have a valid driver’s license by service type. More than half (51.05%) of all transit passengers indicated that they do have a driver’s license, which is a noticeable 6% drop from 2019 (57.44%). Rail passengers were more likely to have a driver’s license than bus passengers (57.61% rail only vs. 48.20% bus only).

TABLE 27: DRIVER’S LICENSE STATUS

Do you have a valid driver’s license?	Bus Only	Bus/Rail	Rail Only	Grand Total
No	51.80%	46.52%	42.39%	48.95%
Yes	48.20%	53.48%	57.61%	51.05%
Grand Total	100.00%	100.00%	100.00%	100.00%

Veterans Status

Table 28 shows passenger’s veteran status by service type. Five percent (5.26%) of all transit passengers indicated they are veterans; a 3% drop from 2019 (8.88%). There is no significant difference between rail passengers and bus passengers.

TABLE 28: VETERANS STATUS

Are you a United States Veteran?	Bus Only	Bus/Rail	Rail Only	Grand Total
No	94.83%	94.59%	94.57%	94.74%
Yes	5.17%	5.41%	5.43%	5.26%
Grand Total	100.00%	100.00%	100.00%	100.00%

Resident or Visitor

Table 29 shows whether the respondent is a resident or a visitor to the area by service type. Ninety-seven percent (97.35%) of all transit passengers indicated that they are local residents. Visitors were significantly more likely to use rail than bus (5.46% rail only vs. 1.46% bus only). None of these cells changed by a full percentage from 2019.

TABLE 29: RESIDENT OR VISITOR

Resident or Visitor	Bus Only	Bus/Rail	Rail Only	Grand Total
Resident	98.54%	96.56%	94.54%	97.35%
Visitor	1.46%	3.44%	5.46%	2.65%
Grand Total	100.00%	100.00%	100.00%	100.00%

How Transit Riders Typically Get Transit Schedule Information

Table 30 shows the preferred tools for transit schedules by service type. The most common ways that all transit riders indicated that they get transit schedule information were: Other mobile apps (Google Maps, Transit) (33.02%), the VM App (21.44%) and the Valley Metro website (mobile device) (14.1%). Bus passengers were more likely to use the VM App than rail passengers (22.4% bus only vs. 18.02% rail only). Rail passengers were more likely to use the Valley Metro website (mobile device) (15.55% rail only vs. 13.52% bus only). While Other mobile apps was still the highest selected choice, it decreased by over 2% (35.24%) from the 2019 study. VM Mobile App (21.44%) was 12.05% higher than Ridekick Mobile App (9.39%) from the 2019 study.

TABLE 30: HOW TRANSIT RIDERS GET TRANSIT SCHEDULE INFORMATION

Source of Information	Bus Only	Bus/Rail	Rail Only	Grand Total
Other mobile apps (Google Maps, Transit)	33.24%	30.59%	33.49%	33.02%
Valley Metro Mobile App	22.44%	23.22%	18.02%	21.44%
Did not do any trip planning	15.44%	14.46%	15.89%	15.45%
Valley Metro website (Mobile device)	13.52%	14.34%	15.55%	14.10%
Call customer service	4.67%	5.16%	3.50%	4.43%
Valley Metro website (Computer)	3.75%	5.32%	5.49%	4.34%
Posted schedule at bus stop/station	3.46%	2.30%	2.59%	3.13%
Text NextRide	2.12%	2.43%	3.56%	2.51%
Other	1.11%	1.94%	1.54%	1.30%
Valley Metro Instagram	0.10%	0.17%	0.20%	0.13%
Valley Metro Facebook	0.08%	0.06%	0.07%	0.07%
Valley Metro Twitter	0.08%	0.00%	0.08%	0.07%
Grand Total	100.00%	100.00%	100.00%	100.00%

Disabilities

Table 31 shows the percentage by route type of riders that stated they had a disability. Eighty-eight per cent (87.82%) of respondents indicated that they have a disability. This was relatively even between bus and rail passengers.

TABLE 31: PERCENTAGE OF RIDERS WITH A DISABILITY

Source of Information	Bus Only	Bus/Rail	Rail Only	Grand Total
No	87.75%	87.66%	88.08%	87.82%
Yes	10.57%	10.68%	10.02%	10.45%
Prefer not to answer	1.68%	1.66%	1.90%	1.73%
Grand Total	100.00%	100.00%	100.00%	100.00%

Trip Profile

Trip Purpose

Table 32 displays the trip purpose of riders by agency service types. Home-based work trips accounted for nearly eighteen percent (17.78%) of all trips completed on public transit compared to 21.75% in 2019. 7.11% of trips were home-based school trips (college or K-12). 54.25% of trips were non-home based compared to 55.55% in 2019.

Rail passengers were more likely to complete home-based college trips than bus passengers (5.98% rail only vs. 4.13% bus only). Bus passengers were significantly more likely to use public transit to complete home-based work trips (19.08% bus only vs. 13.78% rail only).

TABLE 32: TRIP PURPOSE

Trip Purpose	Bus Only	Bus/Rail	Rail Only	Grand Total
Home to Your usual WORKPLACE	19.08%	19.04%	13.78%	17.78%
Home to Personal business (bank, post office)	6.47%	4.90%	3.35%	5.54%
Home to Shopping	5.58%	2.95%	5.59%	5.31%
Home to Recreation/Social (movies, sports, park, gym, etc.)	4.58%	6.47%	6.07%	5.14%
Home to College/University (students only)	4.13%	3.01%	5.98%	4.46%
Home to School (K-12) (students only)	3.01%	1.62%	2.10%	2.64%
Home to Eating/Dining Out	1.91%	0.86%	2.16%	1.86%
Home to Medical appointment/doctor's visit	1.64%	1.88%	1.50%	1.63%
Home to Other work related	0.64%	0.55%	0.63%	0.63%
Home to Airport (as an air passenger)	0.07%	0.88%	1.06%	0.40%
Home to Pick up/Drop off someone (daycare, school)	0.40%	0.24%	0.13%	0.32%
Home to Hotel (visitors only)	0.00%	0.12%	0.02%	0.01%
Home to Other	0.01%	0.00%	0.02%	0.01%
Non-Home based trips	52.48%	57.45%	57.59%	54.25%
Grand Total	100.00%	100.00%	100.00%	100.00%

How Passengers Access Public Transit

How passengers first access public transit for their one-way trip by service type is shown in Table 33. Most (90.39%) transit passengers indicated that they accessed public transit by walking all the way compared to 86.41% in 2019. Bus passengers were significantly more likely to report walking to public transit than rail passengers (91.85% bus only vs. 83.82% rail only). Rail passengers were slightly more likely than bus passengers to access public transit by driving alone and parking (2.49% rail only vs. 1.20% bus only). Rail passengers were significantly more likely to ride their bike (6.89% rail only vs. 3.30% bus only), but this is significantly lower than bike to rail in 2019 (13.77%). Rail passengers were also significantly more likely to use Bike Share (.29% rail only vs. .05% bus only).

TABLE 33: ACCESS MODE TO TRANSIT SYSTEM

Access Mode	Bus Only	Bus/Rail	Rail Only	Grand Total
Walked all the way	91.85%	96.65%	83.82%	90.39%
Rode bike (your own)	3.30%	0.97%	6.89%	3.94%
Was dropped off by someone (not a paid service)	1.75%	0.97%	6.89%	3.94%
Drove alone and parked	1.20%	0.28%	2.49%	1.42%
Electric scooter (your own)	0.72%	0.00%	1.14%	0.75%
Wheelchair/Mobility scooter	0.61%	0.42%	0.33%	0.52%
Use Uber, Lyft, Waymo, taxi or similar service	0.24%	0.19%	0.94%	0.41%
Drove or rode with others and parked	0.05%	0.16%	0.75%	0.23%
On-Demand Transit	0.13%	0.21%	0.23%	0.16%
Rode bike (shared)	0.05%	0.02%	0.29%	0.10%
Electric scooter (shared)	0.05%	0.01%	0.20%	0.08%
Other	0.03%	0.05%	0.04%	0.04%
Took a Dial-a-Ride or Paratransit service	0.02%	0.07%	0.06%	0.03%
Grand Total	100.00%	100.00%	100.00%	100.00%

How Passengers Traveled from Transit to Their Final Destination

Table 34 shows how passengers traveled from public transit to their final destination. The majority of transit passengers (90.84%) indicated that they walk all the way to their final destination after using public transit. This increased from 87.12% in 2019. Bus passengers were more likely to walk than rail passengers (92.43% bus only vs. 83.72% rail only). Rail passengers were more likely than bus passengers to drive alone to their destination (2.06% rail only vs. .82% bus only). Rail passengers were also more likely to be picked up by someone else (2.61% rail only vs. 1.30% bus only).

TABLE 34: EGRESS MODE TO DESTINATION

Egress Mode	Bus Only	Bus/Rail	Rail Only	Grand Total
Walked all the way	92.43%	97.60%	83.72%	90.84%
Rode bike (your own)	3.30%	0.84%	7.00%	3.95%
Was dropped off by someone (not a paid service)	1.30%	0.57%	2.61%	1.54%
Drove alone and parked	0.82%	0.23%	2.06%	1.06%
Electric scooter (your own)	0.69%	0.00%	1.15%	0.73%
Wheelchair/Mobility scooter	0.65%	0.42%	0.32%	0.54%
Use Uber, Lyft, Waymo, taxi or similar service	0.26%	0.05%	1.28%	0.49%
Drove or rode with others and parked	0.09%	0.11%	0.88%	0.29%
On-Demand Transit	0.16%	0.14%	0.31%	0.19%
Rode bike (shared)	0.14%	0.02%	0.28%	0.16%
Electric scooter (shared)	0.12%	0.01%	0.29%	0.15%
Other	0.02%	0.00%	0.07%	0.03%
Took a Dial-a-Ride or Paratransit service	0.03%	0.00%	0.03%	0.03%
Grand Total	100.00%	100.00%	100.00%	100.00%

Transfers

Table 35 shows the number of transfers used by service type. More than thirty percent (35.35%) of public transit users made at least one transfer during their trip. More than eleven percent (11.31%) made two or more transfers. Passengers who used both bus and rail were significantly more likely to make two or more transfers during their trip compared to bus-only users (29.20% bus/rail vs. 9.16% bus only). Passengers in 2023 were slightly more likely (46.66%) to make at least one transfer than in 2019 (45.83%).

TABLE 35: TOTAL TRANSFERS

Number of Transfers	Bus Only	Bus/Rail	Rail Only	Grand Total
None	55.67%	0.00%	100.00%	53.34%
One	35.17%	70.80%	0.00%	35.35%
Two	8.03%	24.83%	0.00%	9.76%
Three or More	1.13%	4.37%	0.00%	1.55%
Grand Total	100.00%	100.00%	100.00%	100.00%

Type of Pass

The Table 36 illustrates the pass type by service type. Seventy percent (70.73%) of public transit users pay the regular/full fare. Nearly five percent (4.88%) used an Express/RAPID pass. Rail passengers were more likely to pay regular/full fare compared to bus only users (77.61% rail only vs. 67.30% bus only).

TABLE 36: PASS TYPE

Fare Type	Bus Only	Bus/Rail	Rail Only	Grand Total
Regular/Full Fare	67.30%	75.96%	77.61%	70.73%
None	12.16%	4.60%	3.35%	9.21%
Senior 65+	4.82%	5.48%	5.86%	5.14%
Express/RAPID	4.83%	5.57%	4.72%	4.88%
Ages 6-18	4.42%	1.87%	1.94%	3.55%
Special Event Fare	3.05%	2.56%	3.67%	3.15%
Person with Disabilities	2.44%	2.59%	1.89%	2.32%
Medicare cardholder	0.97%	1.38%	0.97%	1.01%
Grand Total	100.00%	100.00%	100.00%	100.00%

APPENDIX A: SURVEY INSTRUMENT

We're doing a quick survey on transit services in the PHOENIX area. Do you mind if I ask you some questions about the trip you are making?

Survey data helps transit providers plan and provide bus service fairly for all customers, without regard to race, color, national origin, income, and language spoken or ability to speak English.

Yes I can participate in the survey (have 5 min+)

Yes (but no time for full survey)

No (refused)

No (but OK to send link to Self-Administered Version of Survey)

Do not speak the interviewer's language

No (rider indicates homelessness or appears to be experiencing homelessness)

THIS ROUTE: 70 24TH ST/GLENDALE AVE WB (TOWARD GLENDALE PNR OR LUKE AFB LIGHTNING GATE)

Exit & Clear

Previous

Next

Q. Select your language • Selecciona su idioma • Néídidoo'ááł bizaad • Seleziona o seu idioma • 选择您的语言 • 選擇你的語言 • Chwazi lang ou • Seleziona la tua lingua • اختر لغتك • Sélectionnez votre langue • ជ្រើស ភាសា របស់ អ្នក • Chọn ngôn ngữ của bạn

ESPAÑOL (SPANISH)

العربية (ARABIC)

Diné bizaad (NAVAJO)

Français (FRENCH)

Portuguese (PORTUGUESE)

ខ្មែរ (KHMER)

廣東話 (CHINESE - CANTONESE)

Tiếng Việt (VIETNAMESE)

普通话 (CHINESE - MANDARIN)

REFUSED

KREYOL AYISYEN (HAITIAN CREOLE)

Other:

Italiano (ITALIAN)

THIS ROUTE: 70 24TH ST/GLENDALE AVE WB (TOWARD GLENDALE PNR OR LUKE AFB LIGHTNING GATE)

Exit & Clear

Save & Exit

Previous

Next

Q. Estamos haciendo una breve encuesta para Valley Metro transit para ayudar a planificar mejoras en el transporte. ¿Desea realizar la encuesta por teléfono más tarde?

We're doing a short survey for Valley Metro transit today in order to help plan transportation improvements. Would you like do the survey over the phone later?

Telefono (PHONE)

Sí, quisiera responder la encuesta en papel en ESPAÑOL (YES, PAPER SURVEY)

Sí, quisiera responder la encuesta en línea. (YES, ONLINE SURVEY)

No acepta hacer la encuesta (NO, DOES NOT WISH TO DO THE SURVEY)

THIS ROUTE: 70 24TH ST/GLENDALE AVE WB (TOWARD GLENDALE PNR OR LUKE AFB LIGHTNING GATE)

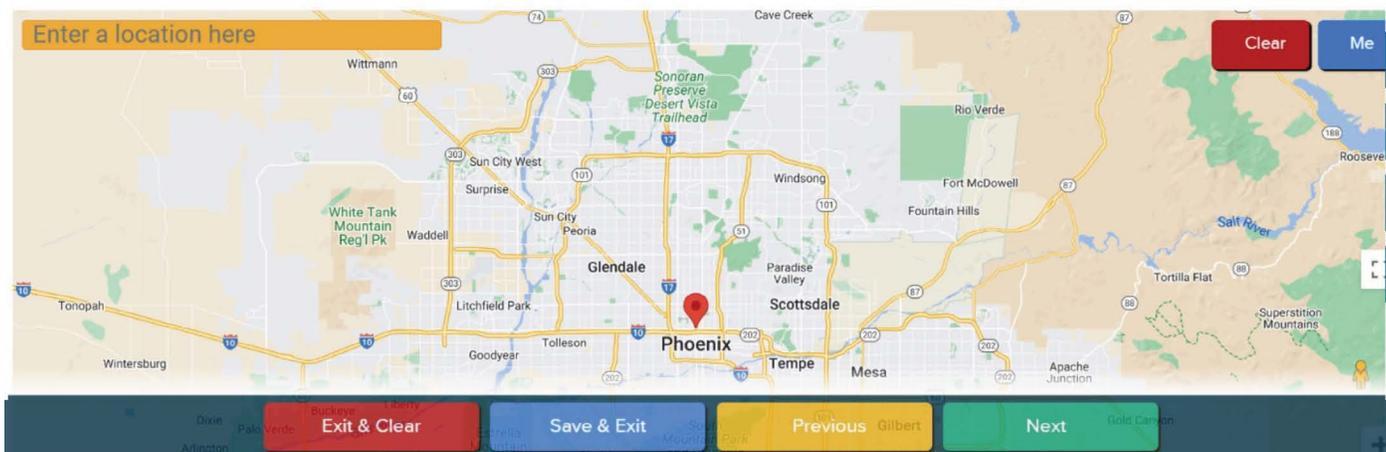
Exit & Clear Save & Exit Previous Next

Q. What is your home address? (please be specific, ex: 123 W Main St)
 (If you are visiting the Phoenix area, please list the **hotel name** or address where you are staying)

Homeless Homeless

-

Enter a location here



Clear Me

Exit & Clear Save & Exit Previous Next

Q. What type of place are you **COMING FROM NOW?** (the starting place for your one-way trip)

Your usual WORKPLACE	Personal business (bank, post office)
Other work related	Pick up / Drop off someone (daycare, school)
Your HOME	Shopping
College / University (students only)	Eating / Dining Out
School (K-12) (students only)	Hotel (visitors only)
Airport (as an air passenger)	Other: <input type="text"/>
Recreation / Social (movies, sports, park, gym, etc.)	

Q. How many buses/trains did you travel on BEFORE you boarded [**70 24th St/Glendale Ave WB (Toward Glendale PNR or Luke AFB Lightning Gate)**] since leaving [**Your usual WORKPLACE**]?

(0) None	(1) One	(2) Two	(3) Three	(4+) Four or more
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Q. Which bus or train did you board FIRST on this one-way trip?

(Type XX for routes other than listed)

Other: Clear

Q. Which bus or train did you board SECOND on this one-way trip?

(Type XX for routes other than listed)

Other: Clear

Exit & Clear	Save & Exit	Previous	Next
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Q. How did you GET FROM your origin [Your usual WORKPLACE] TO [59 59th Ave] on this one- way trip?

Walked all the way	On-Demand Transit
Rode Bike (Your own)	Took a Dial-a-Ride or Paratransit service
Rode Bike (Shared)	Was dropped off by someone (not a paid service)
Electric scooter (Your own)	Drove alone and parked
Electric scooter (Shared)	Drove or rode with others and parked
Wheelchair / Mobility Scooter	Other (skateboard, private/courtesy shuttle, etc): <input type="text"/>
Use Uber, Lyft, Waymo, taxi or similar service	

Q. How far did you walk? (in minutes)

1	6	11	16-20
2	7	12	21-25
3	8	13	26-30
4	9	14	Greater than 30
5	10	15	

Exit & Clear	Save & Exit	Previous	Next
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Q. What type of place are you **GOING TO NOW?** (the ending_place for your one-way trip)

Other work related	Personal business (bank, post office)
Your HOME	Pick up / Drop off someone (daycare, school)
College / University (students only)	Shopping
School (K-12) (students only)	Eating / Dining Out
Airport (as an air passenger)	Hotel (visitors only)
Recreation / Social (movies, sports, park, gym, etc.)	Non-destination Trip
Medical appointment / doctor's visit	Other: <input type="text"/>

THIS ROUTE: 70 24TH ST/GLENDALE AVE WB (TOWARD GLENDALE PNR OR LUKE AFB LIGHTNING GATE)
Exit & Clear
Save & Exit
Previous
Next

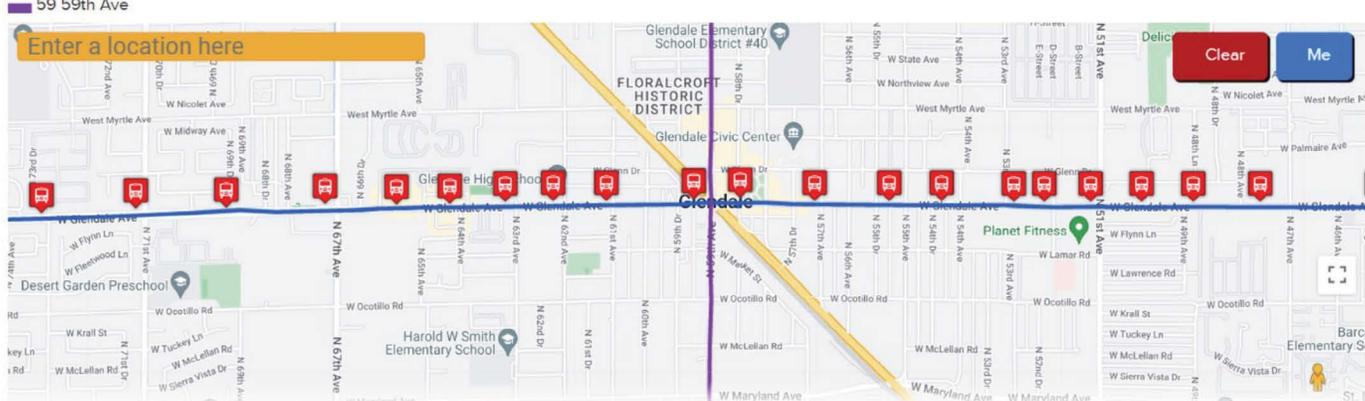
Q. Where did you **GET ON** [70 24th St/Glendale Ave WB (Toward Glendale PNR or Luke AFB Lightning Gate)] for this one-way trip?

User Stop

59 59th Ave

Enter a location here

Clear
Me



Q. How many buses/trains will you ride AFTER you get off [70 24th St/Glendale Ave WB (Toward Glendale PNR or Luke AFB Lightning Gate)] on your way to [Your HOME]?

(0) None	(1) One	(2) Two	(3) Three	(4+) Four or more
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Q. Which bus or train will you board NEXT on this one-way trip?

(Type XX for routes other than listed)

Other : Clear

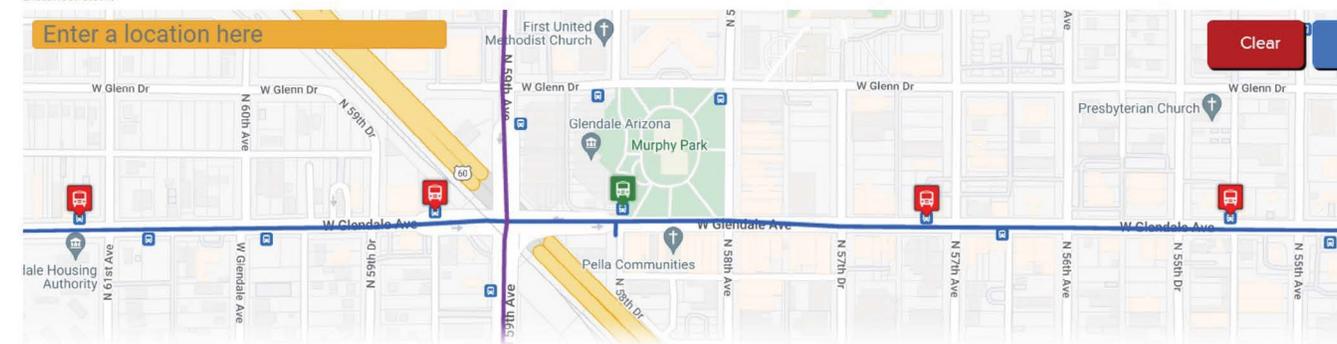
Q. Where did you GET ON [70 24th St/Glendale Ave WB (Toward Glendale PNR or Luke AFB Lightning Gate)] for this one-trip?



Glendale Av & 59th Av

59 59th Ave
Distance: 0.9mi

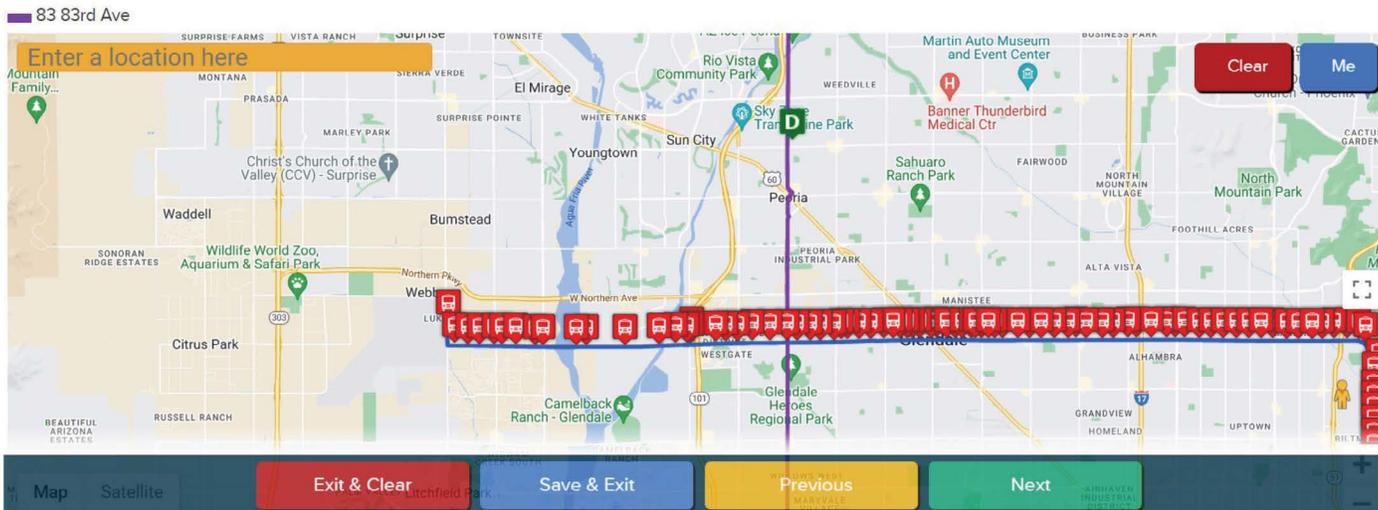
Enter a location here



Map interface showing the intersection of Glendale Ave and 59th Ave. A purple line indicates the selected route. A search bar at the top left contains the text 'Enter a location here'. A 'Clear' button is visible in the top right. At the bottom, there are four buttons: 'Exit & Clear' (red), 'Save & Exit' (blue), 'Previous' (yellow), and 'Next' (green).

Q. Where will you GET OFF [70 24th St/Glendale Ave WB (Toward Glendale PNR or Luke AFB Lightning Gate)] on this one-way trip?

User Stop

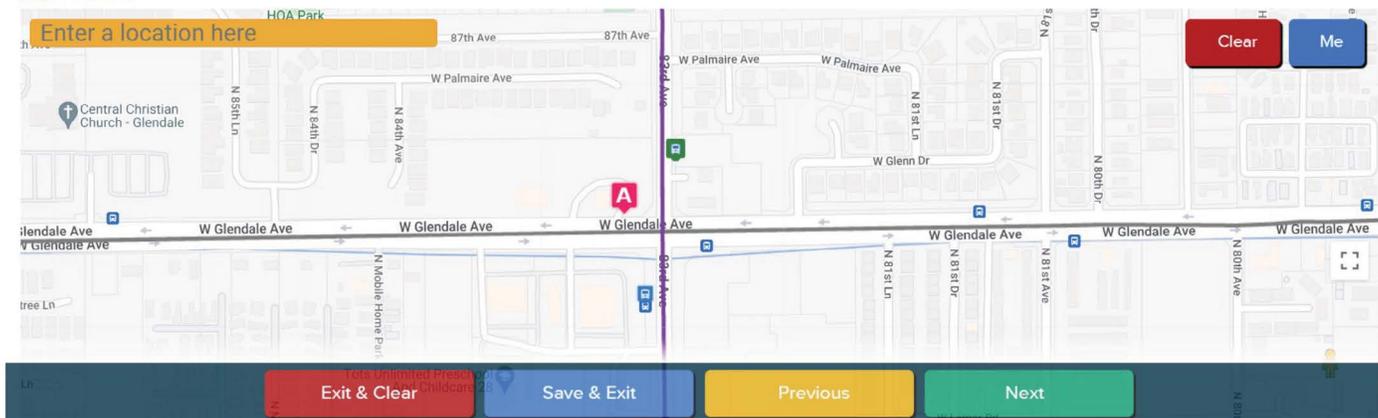


Q. Where will you GET ON [83 83rd Ave] on this one-way trip? (at which bus stop, rail station, nearest intersection, or nearby landmark)

User Stop

83rd Av & Glendale Av

70 24th St/Glendale Ave WB (Toward Glendale PNR or Luke AFB Lightning Gate)
83 83rd Ave





Q. What time did you BOARD this bus? [70 24th St/Glendale Ave WB (Toward Glendale PNR or Luke AFB Lightning Gate)]

Before 6:00 am	2:00 pm - 2:59 pm			
6:00 am - 6:59 am	3:00 pm - 3:59 pm			
7:00 am - 7:59 am	4:00 pm - 4:59 pm			
8:00 am - 8:59 am	5:00 pm - 5:59 pm			
9:00 am - 9:59 am	6:00 pm - 6:59 pm			
10:00 am - 10:59 am	7:00 pm - 7:59 pm			
11:00 am - 11:59 am	8:00 pm - 8:59 pm			
12:00 pm - 12:59 pm	Exit & Clear	Save & Exit	After 9:00 pm Previous	Next

Distance from ORIGIN to 1ST TRANSIT 0.1mi.

Distance from LAST TRANSIT to DESTINATION 0.13mi.

After that, you will [Walked all the way] from THE VERY LAST bus/train YOU ARE USING FOR THIS TRIP to get to your destination which is [Your HOME] called [], located at: [, ,]

Q.

Exit & Clear	Save & Exit	Previous	Next
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Q. How long did you wait before boarding the very first bus or train on this one-way trip? [59 59th Ave]

5 minutes or less	35-44 minutes
6-14 minutes	45-54 minutes
15-24 minutes	55+ minutes
25-34 minutes	Did not transfer

Q. Will you (or did you) make this same trip on exactly the same routes in opposite direction today?

Yes	No
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 CURRENT TRIP FROM YOUR USUAL WORKPLACE (ORIGIN) TO YOUR HOME (DESTINATION)

Exit & Clear	Save & Exit	Previous	Next
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APPENDIX B: DATA DICTIONARY

FIELD NAME	DESCRIPTION	CODE VALUES
ID	Unique Identifier for each record	Actual Value
DATE_COMPLETED	Date survey was marked completed on	Actual Value
DAY_TYPE	Date type was marked completed on	Actual Value
ROUTE_DIRECTION	Route survey was conducted on	Actual Value
RESIDENT_VISITOR	Are you a visitor to the Phoenix area?	1 = No
RESIDENT_VISITOR	Are you a visitor to the Phoenix area?	2 = Yes
RESIDENT_VISITOR	Are you a visitor to the Phoenix area?	98 = Other
RESIDENT_VISITOR	Are you a visitor to the Phoenix area?	99 = Refused/No Answer
HOME_ADDRESS [LAT]	Respondent's home latitude, which could be a nearby intersection.	Approximate Value
HOME_ADDRESS [LONG]	Respondent's home longitude, which could be a nearby intersection.	Approximate Value
ORIGIN_PLACE_TYPE	What type of place are you COMING FROM NOW? (the starting place for your one-way trip)	1 = Your usual WORKPLACE
ORIGIN_PLACE_TYPE	What type of place are you COMING FROM NOW? (the starting place for your one-way trip)	2 = Your HOME
ORIGIN_PLACE_TYPE	What type of place are you COMING FROM NOW? (the starting place for your one-way trip)	3 = Hotel (visitors only)
ORIGIN_PLACE_TYPE	What type of place are you COMING FROM NOW? (the starting place for your one-way trip)	4 = Other work related
ORIGIN_PLACE_TYPE	What type of place are you COMING FROM NOW? (the starting place for your one-way trip)	5 = College/University (students only)
ORIGIN_PLACE_TYPE	What type of place are you COMING FROM NOW? (the starting place for your one-way trip)	6 = School (K-12) (students only)
ORIGIN_PLACE_TYPE	What type of place are you COMING FROM NOW? (the starting place for your one-way trip)	7 = Recreation/Social (movies, sports, park, gym, etc.)
ORIGIN_PLACE_TYPE	What type of place are you COMING FROM NOW? (the starting place for your one-way trip)	8 = Medical appointment/ doctor's visit
ORIGIN_PLACE_TYPE	What type of place are you COMING FROM NOW? (the starting place for your one-way trip)	9 = Personal business (bank, post office)
ORIGIN_PLACE_TYPE	What type of place are you COMING FROM NOW? (the starting place for your one-way trip)	10 = Pick up/Drop off someone (daycare, school)
ORIGIN_PLACE_TYPE	What type of place are you COMING FROM NOW? (the starting place for your one-way trip)	11 = Shopping

FIELD NAME	DESCRIPTION	CODE VALUES
ORIGIN_PLACE_TYPE	What type of place are you COMING FROM NOW? (the starting place for your one-way trip)	12 = Airport (as an air passenger)
ORIGIN_PLACE_TYPE	What type of place are you COMING FROM NOW? (the starting place for your one-way trip)	13 = Eating/Dining Out
ORIGIN_PLACE_TYPE	What type of place are you COMING FROM NOW? (the starting place for your one-way trip)	15 = Shelter
ORIGIN_PLACE_TYPE	What type of place are you COMING FROM NOW? (the starting place for your one-way trip)	16 = Where you typically stay
ORIGIN_PLACE_TYPE	What type of place are you COMING FROM NOW? (the starting place for your one-way trip)	98 = Other
ORIGIN_PLACE_TYPE	What type of place are you COMING FROM NOW? (the starting place for your one-way trip)	99 = Refused/No Answer
ORIGIN_ADDRESS [LAT]	Respondent's origin latitude, which could be a nearby intersection.	Approximate Value
ORIGIN_ADDRESS [LONG]	Respondent's origin longitude, which could be a nearby intersection.	Approximate Value
PREV_TRANSFERS	How many buses/trains did you travel on BEFORE you boarded	0 = (0) None
PREV_TRANSFERS	How many buses/trains did you travel on BEFORE you boarded	1 = (1) One
PREV_TRANSFERS	How many buses/trains did you travel on BEFORE you boarded	2 = (2) Two
PREV_TRANSFERS	How many buses/trains did you travel on BEFORE you boarded	3 = (3) Three
PREV_TRANSFERS	How many buses/trains did you travel on BEFORE you boarded	4 = (4+) Four or more
PREV_TRANSFERS	How many buses/trains did you travel on BEFORE you boarded	98 = Other
PREV_TRANSFERS	How many buses/trains did you travel on BEFORE you boarded	99 = Refused/No Answer
TRIP_FIRST_ROUTE	First transfer respondent took from origin	Actual Value
TRIP_SECOND_ROUTE	Second transfer respondent took from origin	Actual Value
TRIP_THIRD_ROUTE	Third transfer respondent took from origin	Actual Value
TRIP_FOURTH_ROUTE	Fourth transfer respondent took from origin	Actual Value
ORIGIN_TRANSPORT	How did you GET FROM your origin	1 = Walked all the way
ORIGIN_TRANSPORT	How did you GET FROM your origin	2 = Rode Bike (Your own)
ORIGIN_TRANSPORT	How did you GET FROM your origin	3 = Rode Bike (Shared)
ORIGIN_TRANSPORT	How did you GET FROM your origin	4 = Electric scooter (Your own)
ORIGIN_TRANSPORT	How did you GET FROM your origin	5 = Electric scooter (Shared)

FIELD NAME	DESCRIPTION	CODE VALUES
ORIGIN_TRANSPORT	How did you GET FROM your origin	6 = Wheelchair/Mobility Scooter
ORIGIN_TRANSPORT	How did you GET FROM your origin	7 = Use Uber, Lyft, Waymo, taxi or similar service
ORIGIN_TRANSPORT	How did you GET FROM your origin	8 = On-Demand Transit
ORIGIN_TRANSPORT	How did you GET FROM your origin	9 = Took a Dial-a-Ride or Paratransit service
ORIGIN_TRANSPORT	How did you GET FROM your origin	10 = Was dropped off by someone (not a paid service)
ORIGIN_TRANSPORT	How did you GET FROM your origin	11 = Drove alone and parked
ORIGIN_TRANSPORT	How did you GET FROM your origin	12 = Drove or rode with others and parked
ORIGIN_TRANSPORT	How did you GET FROM your origin	98 = Other
ORIGIN_TRANSPORT	How did you GET FROM your origin	99 = Refused/No Answer
DESTIN_PLACE_TYPE	What type of place are you GOING TO NOW? (the ending place for your one-way trip)	1 = Your usual WORKPLACE
DESTIN_PLACE_TYPE	What type of place are you GOING TO NOW? (the ending place for your one-way trip)	2 = Your HOME
DESTIN_PLACE_TYPE	What type of place are you GOING TO NOW? (the ending place for your one-way trip)	3 = Hotel (visitors only)
DESTIN_PLACE_TYPE	What type of place are you GOING TO NOW? (the ending place for your one-way trip)	4 = Other work related
DESTIN_PLACE_TYPE	What type of place are you GOING TO NOW? (the ending place for your one-way trip)	5 = College/University (students only)
DESTIN_PLACE_TYPE	What type of place are you GOING TO NOW? (the ending place for your one-way trip)	6 = School (K-12) (students only)
DESTIN_PLACE_TYPE	What type of place are you GOING TO NOW? (the ending place for your one-way trip)	7 = Recreation/Social (movies, sports, park, gym, etc.)
DESTIN_PLACE_TYPE	What type of place are you GOING TO NOW? (the ending place for your one-way trip)	8 = Medical appointment/ doctor's visit
DESTIN_PLACE_TYPE	What type of place are you GOING TO NOW? (the ending place for your one-way trip)	9 = Personal business (bank, post office)
DESTIN_PLACE_TYPE	What type of place are you GOING TO NOW? (the ending place for your one-way trip)	10 = Pick up/Drop off someone (daycare, school)
DESTIN_PLACE_TYPE	What type of place are you GOING TO NOW? (the ending place for your one-way trip)	11 = Shopping
DESTIN_PLACE_TYPE	What type of place are you GOING TO NOW? (the ending place for your one-way trip)	12 = Airport (as an air passenger)
DESTIN_PLACE_TYPE	What type of place are you GOING TO NOW? (the ending place for your one-way trip)	13 = Eating/Dining Out



VALLEY METRO 2023 ORIGIN AND DESTINATION SURVEY FINAL REPORT

FIELD NAME	DESCRIPTION	CODE VALUES
DESTIN_PLACE_TYPE	What type of place are you GOING TO NOW? (the ending place for your one-way trip)	22 = Non-destination Trip
DESTIN_PLACE_TYPE	What type of place are you GOING TO NOW? (the ending place for your one-way trip)	98 = Other
DESTIN_PLACE_TYPE	What type of place are you GOING TO NOW? (the ending place for your one-way trip)	99 = Refused/No Answer
DESTIN_ADDRESS [LAT]	Respondent's destination latitude, which could be a nearby intersection.	Approximate Value
DESTIN_ADDRESS [LONG]	Respondent's destination longitude, which could be a nearby intersection.	Approximate Value
NEXT_TRANSFERS	How many buses/trains will you ride AFTER you get off	0 = (0) None
NEXT_TRANSFERS	How many buses/trains will you ride AFTER you get off	1 = (1) One
NEXT_TRANSFERS	How many buses/trains will you ride AFTER you get off	2 = (2) Two
NEXT_TRANSFERS	How many buses/trains will you ride AFTER you get off	3 = (3) Three
NEXT_TRANSFERS	How many buses/trains will you ride AFTER you get off	4 = (4+) Four or more
NEXT_TRANSFERS	How many buses/trains will you ride AFTER you get off	98 = Other
NEXT_TRANSFERS	How many buses/trains will you ride AFTER you get off	99 = Refused/No Answer
TRIP_NEXT_ROUTE	First transfer respondent took to destination	Actual Value
TRIP_AFTER_ROUTE	Second transfer respondent took to destination	Actual Value
TRIP_3RD_ROUTE	Third transfer respondent took to destination	Actual Value
TRIP_LAST4TH_RTE	Fourth transfer respondent took to destination	Actual Value
DESTIN_TRANSPORT	How will you GET TO your destination	1 = Walked all the way
DESTIN_TRANSPORT	How will you GET TO your destination	2 = Rode Bike (Your own)
DESTIN_TRANSPORT	How will you GET TO your destination	3 = Rode Bike (Shared)
DESTIN_TRANSPORT	How will you GET TO your destination	4 = Electric scooter (Your own)
DESTIN_TRANSPORT	How will you GET TO your destination	5 = Electric scooter (Shared)
DESTIN_TRANSPORT	How will you GET TO your destination	6 = Wheelchair/Mobility Scooter
DESTIN_TRANSPORT	How will you GET TO your destination	7 = Use Uber, Lyft, Waymo, taxi or similar service
DESTIN_TRANSPORT	How will you GET TO your destination	8 = On-Demand Transit

FIELD NAME	DESCRIPTION	CODE VALUES
DESTIN_TRANSPORT	How will you GET TO your destination	9 = Took a Dial-a-Ride or Paratransit service
DESTIN_TRANSPORT	How will you GET TO your destination	10 = Be picked up by someone (not a paid service)
DESTIN_TRANSPORT	How will you GET TO your destination	11 = Get in a parked vehicle & drive alone
DESTIN_TRANSPORT	How will you GET TO your destination	12 = Get in a parked vehicle & drive/ride w/others
DESTIN_TRANSPORT	How will you GET TO your destination	98 = Other
DESTIN_TRANSPORT	How will you GET TO your destination	99 = Refused/No Answer
STOP_ON [ADDR]	Respondent's boarding address	Actual Value
STOP_ON [CLNTID]	Stop ID of respondent's boarding address	Actual Value
STOP_ON [LAT]	Latitude for respondent's boarding address	Actual Value
STOP_ON [LONG]	Longitude for respondent's boarding address	Actual Value
STOP_OFF [ADDR]	Respondent's alighting address	Actual Value
STOP_OFF [CLNTID]	Stop ID of respondent's alighting address	Actual Value
STOP_OFF [LAT]	Latitude for respondent's alighting address	Actual Value
STOP_OFF [LONG]	Longitude for respondent's alighting address	Actual Value
PREV_TRAN_1_ON_BUS [LAT]	Latitude of respondent's boarding location for their first transfer from origin	Actual Value
PREV_TRAN_1_ON_BUS [LONG]	Longitude of respondent's boarding location for their first transfer from origin	Actual Value
PREV_TRAN_1_OFF_BUS [LAT]	Latitude of respondent's alighting location for their first transfer from origin	Actual Value
PREV_TRAN_1_OFF_BUS [LONG]	Longitude of respondent's alighting location for their first transfer from origin	Actual Value
PREV_TRAN_2_ON_BUS [LAT]	Latitude of respondent's boarding location for their second transfer from origin	Actual Value
PREV_TRAN_2_ON_BUS [LONG]	Longitude of respondent's boarding location for their second transfer from origin	Actual Value
PREV_TRAN_2_OFF_BUS [LAT]	Latitude of respondent's alighting location for their second transfer from origin	Actual Value
PREV_TRAN_2_OFF_BUS [LONG]	Longitude of respondent's alighting location for their second transfer from origin	Actual Value
PREV_TRAN_3_ON_BUS [LAT]	Latitude of respondent's boarding location for their third transfer from origin	Actual Value
PREV_TRAN_3_ON_BUS [LONG]	Longitude of respondent's boarding location for their third transfer from origin	Actual Value



FIELD NAME	DESCRIPTION	CODE VALUES
PREV_TRAN_3_OFF_BUS [LAT]	Latitude of respondent's alighting location for their third transfer from origin	Actual Value
PREV_TRAN_3_OFF_BUS [LONG]	Longitude of respondent's alighting location for their third transfer from origin	Actual Value
PREV_TRAN_4_ON_BUS [LAT]	Latitude of respondent's boarding location for their fourth transfer from origin	Actual Value
PREV_TRAN_4_ON_BUS [LONG]	Longitude of respondent's boarding location for their fourth transfer from origin	Actual Value
PREV_TRAN_4_OFF_BUS [LAT]	Latitude of respondent's alighting location for their fourth transfer from origin	Actual Value
PREV_TRAN_4_OFF_BUS [LONG]	Longitude of respondent's alighting location for their fourth transfer from origin	Actual Value
NEXT_TRAN_1_ON_BUS [LAT]	Latitude of respondent's boarding location for their first transfer to destination	Actual Value
NEXT_TRAN_1_ON_BUS [LONG]	Longitude of respondent's boarding location for their first transfer to destination	Actual Value
NEXT_TRAN_1_OFF_BUS [LAT]	Latitude of respondent's alighting location for their first transfer to destination	Actual Value
NEXT_TRAN_1_OFF_BUS [LONG]	Longitude of respondent's alighting location for their first transfer to destination	Actual Value
NEXT_TRAN_2_ON_BUS [LAT]	Latitude of respondent's boarding location for their second transfer to destination	Actual Value
NEXT_TRAN_2_ON_BUS [LONG]	Longitude of respondent's boarding location for their second transfer to destination	Actual Value
NEXT_TRAN_2_OFF_BUS [LAT]	Latitude of respondent's alighting location for their second transfer to destination	Actual Value
NEXT_TRAN_2_OFF_BUS [LONG]	Longitude of respondent's alighting location for their second transfer to destination	Actual Value
NEXT_TRAN_3_ON_BUS [LAT]	Latitude of respondent's boarding location for their third transfer to destination	Actual Value
NEXT_TRAN_3_ON_BUS [LONG]	Longitude of respondent's boarding location for their third transfer to destination	Actual Value
NEXT_TRAN_3_OFF_BUS [LAT]	Latitude of respondent's alighting location for their third transfer to destination	Actual Value
NEXT_TRAN_3_OFF_BUS [LONG]	Longitude of respondent's alighting location for their third transfer to destination	Actual Value
NEXT_TRAN_4_ON_BUS [LAT]	Latitude of respondent's boarding location for their fourth transfer to destination	Actual Value
NEXT_TRAN_4_ON_BUS [LONG]	Longitude of respondent's boarding location for their fourth transfer to destination	Actual Value
NEXT_TRAN_4_OFF_BUS [LAT]	Latitude of respondent's alighting location for their fourth transfer to destination	Actual Value

FIELD NAME	DESCRIPTION	CODE VALUES
NEXT_TRAN_4_OFF_BUS [LONG]	Longitude of respondent's alighting location for their fourth transfer to destination	Actual Value
TIME_ON	What time did you BOARD this bus?	98 = Other
TIME_ON	What time did you BOARD this bus?	99 = Refused/No Answer
TIME_ON	What time did you BOARD this bus?	MID1 = 9:00 am - 9:59 am
TIME_ON	What time did you BOARD this bus?	MID2 = 10:00 am - 10:59 am
TIME_ON	What time did you BOARD this bus?	MID3 = 11:00 am - 11:59 am
TIME_ON	What time did you BOARD this bus?	MID4 = 12:00 pm - 12:59 pm
TIME_ON	What time did you BOARD this bus?	MID6 = 2:00 pm - 2:59 pm
TIME_ON	What time did you BOARD this bus?	PM1 = 3:00 pm - 3:59 pm
TIME_ON	What time did you BOARD this bus?	PM2 = 4:00 pm - 4:59 pm
TIME_ON	What time did you BOARD this bus?	PM3 = 5:00 pm - 5:59 pm
TIME_ON	What time did you BOARD this bus?	PM4 = 6:00 pm - 6:59 pm
TIME_ON	What time did you BOARD this bus?	PM5 = 7:00 pm - 7:59 pm
TIME_ON	What time did you BOARD this bus?	PM6 = 8:00 pm - 8:59 pm
TIME_ON	What time did you BOARD this bus?	PM7 = After 9:00 pm
TIME_ON	What time did you BOARD this bus?	MID5 = 1:00 pm - 1:59 pm
TIME_ON	What time did you BOARD this bus?	AM1 = Before 6:00 am
TIME_ON	What time did you BOARD this bus?	AM2 = 6:00 am - 6:59 am
TIME_ON	What time did you BOARD this bus?	AM3 = 7:00 am - 7:59 am
TIME_ON	What time did you BOARD this bus?	AM4 = 8:00 am - 8:59 am
TIME_PERIOD	Time period respondent boarded this bus/rail	98 = Other
TIME_PERIOD	Time period respondent boarded this bus/rail	99 = Refused/No Answer
TIME_PERIOD	Time period respondent boarded this bus/rail	Actual Value
HOW_LONG_WAIT	How long did you wait before boarding this bus or train on this one-way trip?	98 = Other
HOW_LONG_WAIT	How long did you wait before boarding this bus or train on this one-way trip?	99 = Refused/No Answer
HOW_LONG_WAIT	How long did you wait before boarding this bus or train on this one-way trip?	A7 = 55+ minutes
HOW_LONG_WAIT	How long did you wait before boarding this bus or train on this one-way trip?	A1 = 5 minutes or less
HOW_LONG_WAIT	How long did you wait before boarding this bus or train on this one-way trip?	A2 = 6-14 minutes

FIELD NAME	DESCRIPTION	CODE VALUES
HOW_LONG_WAIT	How long did you wait before boarding this bus or train on this one-way trip?	A3 = 15-24 minutes
HOW_LONG_WAIT	How long did you wait before boarding this bus or train on this one-way trip?	A4 = 25-34 minutes
HOW_LONG_WAIT	How long did you wait before boarding this bus or train on this one-way trip?	A5 = 35-44 minutes
HOW_LONG_WAIT	How long did you wait before boarding this bus or train on this one-way trip?	A6 = 45-54 minutes
HOW_LONG_PREVIOUS	How long did you wait before boarding the very first bus or train on this one-way trip?	98 = Other
HOW_LONG_PREVIOUS	How long did you wait before boarding the very first bus or train on this one-way trip?	99 = Refused/No Answer
HOW_LONG_PREVIOUS	How long did you wait before boarding the very first bus or train on this one-way trip?	A3 = 15-24 minutes
HOW_LONG_PREVIOUS	How long did you wait before boarding the very first bus or train on this one-way trip?	A4 = 25-34 minutes
HOW_LONG_PREVIOUS	How long did you wait before boarding the very first bus or train on this one-way trip?	A5 = 35-44 minutes
HOW_LONG_PREVIOUS	How long did you wait before boarding the very first bus or train on this one-way trip?	A6 = 45-54 minutes
HOW_LONG_PREVIOUS	How long did you wait before boarding the very first bus or train on this one-way trip?	A7 = 55+ minutes
HOW_LONG_PREVIOUS	How long did you wait before boarding the very first bus or train on this one-way trip?	A8 = Did not transfer
HOW_LONG_PREVIOUS	How long did you wait before boarding the very first bus or train on this one-way trip?	A1 = 5 minutes or less
HOW_LONG_PREVIOUS	How long did you wait before boarding the very first bus or train on this one-way trip?	A2 = 6-14 minutes
TRIP_IN_OPPO_DIR	Will you (or did you) make this same trip on exactly the same routes in opposite direction today?	1 = Yes
TRIP_IN_OPPO_DIR	Will you (or did you) make this same trip on exactly the same routes in opposite direction today?	2 = No
TRIP_IN_OPPO_DIR	Will you (or did you) make this same trip on exactly the same routes in opposite direction today?	98 = Other
TRIP_IN_OPPO_DIR	Will you (or did you) make this same trip on exactly the same routes in opposite direction today?	99 = Refused/No Answer
OPPO_DIR_TRIP_TIME	At what time did/will you leave for this trip in the opposite direction?	98 = Other



FIELD NAME	DESCRIPTION	CODE VALUES
OPPO_DIR_TRIP_TIME	At what time did/will you leave for this trip in the opposite direction?	99 = Refused/No Answer
OPPO_DIR_TRIP_TIME	At what time did/will you leave for this trip in the opposite direction?	PM7 = After 9:00 pm
OPPO_DIR_TRIP_TIME	At what time did/will you leave for this trip in the opposite direction?	PM3 = 5:00 pm - 5:59 pm
OPPO_DIR_TRIP_TIME	At what time did/will you leave for this trip in the opposite direction?	AM1 = Before 6:00 am
OPPO_DIR_TRIP_TIME	At what time did/will you leave for this trip in the opposite direction?	AM2 = 6:00 am - 6:59 am
OPPO_DIR_TRIP_TIME	At what time did/will you leave for this trip in the opposite direction?	AM3 = 7:00 am - 7:59 am
OPPO_DIR_TRIP_TIME	At what time did/will you leave for this trip in the opposite direction?	AM4 = 8:00 am - 8:59 am
OPPO_DIR_TRIP_TIME	At what time did/will you leave for this trip in the opposite direction?	MID1 = 9:00 am - 9:59 am
OPPO_DIR_TRIP_TIME	At what time did/will you leave for this trip in the opposite direction?	MID2 = 10:00 am - 10:59 am
OPPO_DIR_TRIP_TIME	At what time did/will you leave for this trip in the opposite direction?	MID3 = 11:00 am - 11:59 am
OPPO_DIR_TRIP_TIME	At what time did/will you leave for this trip in the opposite direction?	MID4 = 12:00 pm - 12:59 pm
OPPO_DIR_TRIP_TIME	At what time did/will you leave for this trip in the opposite direction?	MID5 = 1:00 pm - 1:59 pm
OPPO_DIR_TRIP_TIME	At what time did/will you leave for this trip in the opposite direction?	MID6 = 2:00 pm - 2:59 pm
OPPO_DIR_TRIP_TIME	At what time did/will you leave for this trip in the opposite direction?	PM1 = 3:00 pm - 3:59 pm
TYPE_OF_FARE	What fare category did you pay?	4 = Person with Disabilities
TYPE_OF_FARE	What fare category did you pay?	5 = Medicare cardholder
TYPE_OF_FARE	What fare category did you pay?	6 = Express/RAPID
TYPE_OF_FARE	What fare category did you pay?	7 = Special Event Fare
TYPE_OF_FARE	What fare category did you pay?	8 = None
TYPE_OF_FARE	What fare category did you pay?	98 = Other
TYPE_OF_FARE	What fare category did you pay?	99 = Refused/No Answer
TRANSIT_INFO	How do you usually get transit information?	1 = Valley Metro website (Computer)
TRANSIT_INFO	How do you usually get transit information?	2 = Valley Metro website (Mobile device)
TRANSIT_INFO	How do you usually get transit information?	3 = Call customer service

FIELD NAME	DESCRIPTION	CODE VALUES
TRANSIT_INFO	How do you usually get transit information?	4 = Posted schedule at bus stop/station
TRANSIT_INFO	How do you usually get transit information?	5 = VM Mobile App
TRANSIT_INFO	How do you usually get transit information?	6 = VM Facebook
TRANSIT_INFO	How do you usually get transit information?	7 = VM Twitter
TRANSIT_INFO	How do you usually get transit information?	8 = VM Instagram
TRANSIT_INFO	How do you usually get transit information?	9 = Other mobile apps (Google Maps, Transit)
TRANSIT_INFO	How do you usually get transit information?	10 = Text NextRide
TRANSIT_INFO	How do you usually get transit information?	11 = Did not do any trip planning
TRANSIT_INFO	How do you usually get transit information?	98 = Other
TRANSIT_INFO	How do you usually get transit information?	99 = Refused/No Answer
COUNT_VH_HH	How many working vehicles (cars, trucks, or motorcycles) are available to your household?	0 = None (0)
COUNT_VH_HH	How many working vehicles (cars, trucks, or motorcycles) are available to your household?	1 = One (1)
COUNT_VH_HH	How many working vehicles (cars, trucks, or motorcycles) are available to your household?	2 = Two (2)
COUNT_VH_HH	How many working vehicles (cars, trucks, or motorcycles) are available to your household?	3 = Three (3)
COUNT_VH_HH	How many working vehicles (cars, trucks, or motorcycles) are available to your household?	4 = Four (4)
COUNT_VH_HH	How many working vehicles (cars, trucks, or motorcycles) are available to your household?	5 = Five (5)
COUNT_VH_HH	How many working vehicles (cars, trucks, or motorcycles) are available to your household?	6 = Six (6)
COUNT_VH_HH	How many working vehicles (cars, trucks, or motorcycles) are available to your household?	7 = Seven (7)
COUNT_VH_HH	How many working vehicles (cars, trucks, or motorcycles) are available to your household?	8 = Eight (8)
COUNT_VH_HH	How many working vehicles (cars, trucks, or motorcycles) are available to your household?	9 = Nine (9)
COUNT_VH_HH	How many working vehicles (cars, trucks, or motorcycles) are available to your household?	10 = Ten or more (10+)
COUNT_VH_HH	How many working vehicles (cars, trucks, or motorcycles) are available to your household?	98 = Other
COUNT_VH_HH	How many working vehicles (cars, trucks, or motorcycles) are available to your household?	99 = Refused/No Answer

FIELD NAME	DESCRIPTION	CODE VALUES
USED_VEH_TRIP	Could you have used one of these vehicles for this trip?	98 = Other
USED_VEH_TRIP	Could you have used one of these vehicles for this trip?	99 = Refused/No Answer
USED_VEH_TRIP	Could you have used one of these vehicles for this trip?	YES = Yes
USED_VEH_TRIP	Could you have used one of these vehicles for this trip?	NO = No
HH_SIZE	Including YOU, how many people live in your household?	1 = One (1)
HH_SIZE	Including YOU, how many people live in your household?	2 = Two (2)
HH_SIZE	Including YOU, how many people live in your household?	3 = Three (3)
HH_SIZE	Including YOU, how many people live in your household?	4 = Four (4)
HH_SIZE	Including YOU, how many people live in your household?	5 = Five (5)
HH_SIZE	Including YOU, how many people live in your household?	6 = Six (6)
HH_SIZE	Including YOU, how many people live in your household?	7 = Seven (7)
HH_SIZE	Including YOU, how many people live in your household?	8 = Eight (8)
HH_SIZE	Including YOU, how many people live in your household?	9 = Nine (9)
HH_SIZE	Including YOU, how many people live in your household?	10 = Ten or more (10+)
HH_SIZE	Including YOU, how many people live in your household?	98 = Other
HH_SIZE	Including YOU, how many people live in your household?	99 = Refused/No Answer
EMPLOYED_IN_HH	Including YOU, how many adults (age 16 and older) in your household are employed full or part-time?	0 = None (0)
EMPLOYED_IN_HH	Including YOU, how many adults (age 16 and older) in your household are employed full or part-time?	1 = One (1)
EMPLOYED_IN_HH	Including YOU, how many adults (age 16 and older) in your household are employed full or part-time?	2 = Two (2)

FIELD NAME	DESCRIPTION	CODE VALUES
EMPLOYED_IN_HH	Including YOU, how many adults (age 16 and older) in your household are employed full or part-time?	3 = Three (3)
EMPLOYED_IN_HH	Including YOU, how many adults (age 16 and older) in your household are employed full or part-time?	4 = Four (4)
EMPLOYED_IN_HH	Including YOU, how many adults (age 16 and older) in your household are employed full or part-time?	5 = Five (5)
EMPLOYED_IN_HH	Including YOU, how many adults (age 16 and older) in your household are employed full or part-time?	6 = Six (6)
EMPLOYED_IN_HH	Including YOU, how many adults (age 16 and older) in your household are employed full or part-time?	7 = Seven (7)
EMPLOYED_IN_HH	Including YOU, how many adults (age 16 and older) in your household are employed full or part-time?	8 = Eight (8)
EMPLOYED_IN_HH	Including YOU, how many adults (age 16 and older) in your household are employed full or part-time?	9 = Nine (9)
EMPLOYED_IN_HH	Including YOU, how many adults (age 16 and older) in your household are employed full or part-time?	10 = Ten or more (10+)
EMPLOYED_IN_HH	Including YOU, how many adults (age 16 and older) in your household are employed full or part-time?	98 = Other
EMPLOYED_IN_HH	Including YOU, how many adults (age 16 and older) in your household are employed full or part-time?	99 = Refused/No Answer
EMPLOYMENT_STATUS	What is your employment status? (Check the one response that BEST describes you)	1 = Employed full-time (at least 35 hours/week)
EMPLOYMENT_STATUS	What is your employment status? (Check the one response that BEST describes you)	2 = Employed part-time (less than 35 hours/week)
EMPLOYMENT_STATUS	What is your employment status? (Check the one response that BEST describes you)	3 = Not currently employed, but seeking work
EMPLOYMENT_STATUS	What is your employment status? (Check the one response that BEST describes you)	4 = Not currently employed, and not seeking work
EMPLOYMENT_STATUS	What is your employment status? (Check the one response that BEST describes you)	5 = Retired
EMPLOYMENT_STATUS	What is your employment status? (Check the one response that BEST describes you)	6 = Stay-at-home spouse/partner
EMPLOYMENT_STATUS	What is your employment status? (Check the one response that BEST describes you)	98 = Other



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FIELD NAME	DESCRIPTION	CODE VALUES
EMPLOYMENT_STATUS	What is your employment status? (Check the one response that BEST describes you)	99 = Refused/No Answer
IS_YOUR_WORK	Is your work:	98 = Other
IS_YOUR_WORK	Is your work:	99 = Refused/No Answer
IS_YOUR_WORK	Is your work:	A1 = Fully Remote
IS_YOUR_WORK	Is your work:	A2 = Partially remote/Hybrid
IS_YOUR_WORK	Is your work:	A3 = Not Remote
STUDENT_STATUS	Are you a student? (Check the one response that BEST describes you)	1 = Not a student
STUDENT_STATUS	Are you a student? (Check the one response that BEST describes you)	2 = Yes - Full-time College/ University
STUDENT_STATUS	Are you a student? (Check the one response that BEST describes you)	3 = Yes - Part-time College/ University
STUDENT_STATUS	Are you a student? (Check the one response that BEST describes you)	4 = Yes - Vocational/ Technical/Trade School
STUDENT_STATUS	Are you a student? (Check the one response that BEST describes you)	5 = Yes - K-12th grade
STUDENT_STATUS	Are you a student? (Check the one response that BEST describes you)	6 = Yes - Other
STUDENT_STATUS	Are you a student? (Check the one response that BEST describes you)	98 = Other
STUDENT_STATUS	Are you a student? (Check the one response that BEST describes you)	99 = Refused/No Answer
HAVE_DL	Do you have a valid driver's license?	1 = Yes
HAVE_DL	Do you have a valid driver's license?	2 = No
HAVE_DL	Do you have a valid driver's license?	98 = Other
HAVE_DL	Do you have a valid driver's license?	99 = Refused/No Answer
PHONE_DATA_PLAN	Do you have a smartphone with a data plan?	98 = Other
PHONE_DATA_PLAN	Do you have a smartphone with a data plan?	99 = Refused/No Answer
PHONE_DATA_PLAN	Do you have a smartphone with a data plan?	A1 = Yes
PHONE_DATA_PLAN	Do you have a smartphone with a data plan?	A2 = No, no smartphone
PHONE_DATA_PLAN	Do you have a smartphone with a data plan?	A3 = No, I have a smartphone with no data plan
US_VETERAN	Are you a United States Veteran?	98 = Other
US_VETERAN	Are you a United States Veteran?	99 = Refused/No Answer
US_VETERAN	Are you a United States Veteran?	A1 = Yes
US_VETERAN	Are you a United States Veteran?	A2 = No

FIELD NAME	DESCRIPTION	CODE VALUES
VISIT_DURATION	What is the duration of your stay?	98 = Other
VISIT_DURATION	What is the duration of your stay?	99 = Refused/No Answer
HAVE_DISABILITY	Are you a person with a disability?	98 = Other
HAVE_DISABILITY	Are you a person with a disability?	99 = Refused/No Answer
HAVE_DISABILITY	Are you a person with a disability?	A1 = Yes
HAVE_DISABILITY	Are you a person with a disability?	A2 = No
HAVE_DISABILITY	Are you a person with a disability?	A3 = Prefer not to answer
TYPE_DISABILITY [SQ001]	Which of the following types of disabilities apply, if any? (select all that apply)...Low vision	Actual Value
TYPE_DISABILITY [SQ002]	Which of the following types of disabilities apply, if any? (select all that apply)...Blindness	Actual Value
TYPE_DISABILITY [SQ003]	Which of the following types of disabilities apply, if any? (select all that apply)...Dead/Hard of hearing	Actual Value
TYPE_DISABILITY [SQ004]	Which of the following types of disabilities apply, if any? (select all that apply)...Mental health/ neurocognitive disability	Actual Value
TYPE_DISABILITY [SQ005]	Which of the following types of disabilities apply, if any? (select all that apply)...Mobility need - use a wheelchair	Actual Value
TYPE_DISABILITY [SQ006]	Which of the following types of disabilities apply, if any? (select all that apply)...Mobility need - do NOT use wheelchair	Actual Value
TYPE_DISABILITY [SQ007]	Which of the following types of disabilities apply, if any? (select all that apply)...Declined	Actual Value
YOUR_AGE	What is your age?	1 = Under 16
YOUR_AGE	What is your age?	2 = 16 - 18
YOUR_AGE	What is your age?	3 = 19 - 24
YOUR_AGE	What is your age?	4 = 25 - 34
YOUR_AGE	What is your age?	5 = 35 - 44
YOUR_AGE	What is your age?	6 = 45 - 54
YOUR_AGE	What is your age?	7 = 55 - 64
YOUR_AGE	What is your age?	8 = 65+
YOUR_AGE	What is your age?	11 = Prefer not to answer
YOUR_AGE	What is your age?	98 = Other
YOUR_AGE	What is your age?	99 = Refused/No Answer

FIELD NAME	DESCRIPTION	CODE VALUES
RACE [1]	What is your race/ethnicity? (check all that apply)...American Indian/Alaska Native	Actual Value
RACE [3]	What is your race/ethnicity? (check all that apply)...Asian	Actual Value
RACE [2]	What is your race/ethnicity? (check all that apply)...Black/African American	Actual Value
RACE [6]	What is your race/ethnicity? (check all that apply)...Hispanic/Latino	Actual Value
RACE [5]	What is your race/ethnicity? (check all that apply)...Native Hawaiian/Pacific Islander	Actual Value
RACE [4]	What is your race/ethnicity? (check all that apply)...White	Actual Value
YOUR_GENDER	What is your gender?	1 = Male
YOUR_GENDER	What is your gender?	2 = Female
YOUR_GENDER	What is your gender?	3 = Non-binary/third gender
YOUR_GENDER	What is your gender?	98 = Other
YOUR_GENDER	What is your gender?	99 = Refused/No Answer
INCOME	Which of the following BEST describes your TOTAL ANNUAL HOUSEHOLD INCOME in 2022 before taxes?	1 = Below \$5,000
INCOME	Which of the following BEST describes your TOTAL ANNUAL HOUSEHOLD INCOME in 2022 before taxes?	2 = \$5,000 - \$9,999
INCOME	Which of the following BEST describes your TOTAL ANNUAL HOUSEHOLD INCOME in 2022 before taxes?	3 = \$10,000 - \$14,999
INCOME	Which of the following BEST describes your TOTAL ANNUAL HOUSEHOLD INCOME in 2022 before taxes?	4 = \$15,000 - \$19,999
INCOME	Which of the following BEST describes your TOTAL ANNUAL HOUSEHOLD INCOME in 2022 before taxes?	5 = \$20,000 - \$24,999
INCOME	Which of the following BEST describes your TOTAL ANNUAL HOUSEHOLD INCOME in 2022 before taxes?	6 = \$25,000 - \$29,999
INCOME	Which of the following BEST describes your TOTAL ANNUAL HOUSEHOLD INCOME in 2022 before taxes?	7 = \$30,000 - \$34,999
INCOME	Which of the following BEST describes your TOTAL ANNUAL HOUSEHOLD INCOME in 2022 before taxes?	8 = \$35,000 - \$39,999



FIELD NAME	DESCRIPTION	CODE VALUES
INCOME	Which of the following BEST describes your TOTAL ANNUAL HOUSEHOLD INCOME in 2022 before taxes?	9 = \$40,000 - \$49,999
INCOME	Which of the following BEST describes your TOTAL ANNUAL HOUSEHOLD INCOME in 2022 before taxes?	10 = \$50,000 - \$59,999
INCOME	Which of the following BEST describes your TOTAL ANNUAL HOUSEHOLD INCOME in 2022 before taxes?	11 = \$60,000 - \$69,999
INCOME	Which of the following BEST describes your TOTAL ANNUAL HOUSEHOLD INCOME in 2022 before taxes?	12 = \$70,000 - \$79,999
INCOME	Which of the following BEST describes your TOTAL ANNUAL HOUSEHOLD INCOME in 2022 before taxes?	13 = \$80,000 - \$89,999
INCOME	Which of the following BEST describes your TOTAL ANNUAL HOUSEHOLD INCOME in 2022 before taxes?	14 = \$90,000 - \$99,999
INCOME	Which of the following BEST describes your TOTAL ANNUAL HOUSEHOLD INCOME in 2022 before taxes?	15 = \$100,000 - \$119,999
INCOME	Which of the following BEST describes your TOTAL ANNUAL HOUSEHOLD INCOME in 2022 before taxes?	16 = \$120,000 or more
INCOME	Which of the following BEST describes your TOTAL ANNUAL HOUSEHOLD INCOME in 2022 before taxes?	98 = Other
INCOME	Which of the following BEST describes your TOTAL ANNUAL HOUSEHOLD INCOME in 2022 before taxes?	99 = Refused/No Answer
INCOME	Which of the following BEST describes your TOTAL ANNUAL HOUSEHOLD INCOME in 2022 before taxes?	REFUSED = -----
REFUSED_INCOME	Is your annual household income more than	98 = Other
REFUSED_INCOME	Is your annual household income more than	99 = Refused/No Answer
REFUSED_INCOME	Is your annual household income more than	A1 = Yes
REFUSED_INCOME	Is your annual household income more than	A2 = No
HOME_LANG_OTHER	Do you speak a language other than English at home?	1 = Yes
HOME_LANG_OTHER	Do you speak a language other than English at home?	2 = No
HOME_LANG_OTHER	Do you speak a language other than English at home?	98 = Other

FIELD NAME	DESCRIPTION	CODE VALUES
HOME_LANG_OTHER	Do you speak a language other than English at home?	99 = Refused/No Answer
HOME_OTHER_LANG	Language respondent speaks at home other than English	Actual Value
ENGLISH_ABILITY	How well do you speak English?	1 = Very well
ENGLISH_ABILITY	How well do you speak English?	2 = Well
ENGLISH_ABILITY	How well do you speak English?	3 = Less than well
ENGLISH_ABILITY	How well do you speak English?	4 = Not at all
ENGLISH_ABILITY	How well do you speak English?	98 = Other
ENGLISH_ABILITY	How well do you speak English?	99 = Refused/No Answer
ROUTE_DIR_TIME_CODE	ID given for specific route/direction/time period	Actual Value
UNLINKED_WGHT_FCTR	Weight factor given to each record based off expansion	Actual Value
SYSTEM_TRANSFERS	Total number of in-system transfers	Actual Value
LINKED_MULTP	Multiplier used to get the linked weight factor	Actual Value
LINKED_WGHT_FCTR	Linked weight factor given to each record based off unlinked weight factor and multiplier	Actual Value

APPENDIX C: SAMPLE PLANS

OD Sample Spreadsheet by Station Level Boardings

VM Rail Station level

Rail Station	Direction	Over Sampling Needs	AM PEAK 6AM- 859AM	MIDDAY 9AM- 259PM	PM PEAK 3PM- 559PM	NIGHT 6PM- 559AM	Direction TOTAL	Station TOTALS
Dunlap/19th Ave	Eastbound		69	122	58	103	351	351
Dunlap/19th Ave	Westbound		0	0	0	0	0	
Northern/19th Ave	Eastbound		22	41	20	31	114	147
Northern/19th Ave	Westbound		5	11	6	12	33	
Glendale/19th Ave	Eastbound		27	45	23	38	133	189
Glendale/19th Ave	Westbound		8	19	11	19	56	
Montebello/19th Ave	Eastbound		26	58	33	47	163	265
Montebello/19th Ave	Westbound		8	31	23	40	102	
19th Ave/Camelback	Eastbound		39	44	21	34	139	230
19th Ave/Camelback	Westbound		10	30	21	31	91	
7th Ave/Camelback	Eastbound		15	21	11	15	62	119
7th Ave/Camelback	Westbound		6	19	16	16	57	
Central Ave/Camelback	Eastbound		13	18	11	15	56	90
Central Ave/Camelback	Westbound		3	11	10	10	34	
Campbell/Central Ave	Eastbound		7	20	23	8	58	116
Campbell/Central Ave	Westbound		4	19	31	5	58	
Indian School/Central Ave	Eastbound		18	35	21	22	97	156
Indian School/Central Ave	Westbound		11	19	14	14	58	
Osborn/Central Ave	Eastbound		8	18	10	10	46	82
Osborn/Central Ave	Westbound		5	13	10	8	36	
Thomas/Central Ave	Eastbound		17	37	22	21	97	171
Thomas/Central Ave	Westbound		10	26	20	18	74	
Encanto/Central Ave	Eastbound		5	9	7	7	28	47
Encanto/Central Ave	Westbound		3	6	5	5	19	
McDowell/Central Ave	Eastbound		16	33	21	21	91	170
McDowell/Central Ave	Westbound		11	28	21	18	79	



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Rail Station	Direction	Over Sampling Needs	AM PEAK 6AM- 859AM	MIDDAY 9AM- 259PM	PM PEAK 3PM- 559PM	NIGHT 6PM- 559AM	Direction TOTAL	Station TOTALS
Roosevelt/Central Ave	Eastbound		8	15	10	15	48	118
Roosevelt/Central Ave	Westbound		11	23	14	22	70	
Van Buren/1st Ave	Eastbound		24	56	40	46	166	166
Van Buren/Central Ave	Westbound		17	42	27	24	111	111
Jefferson/1st Ave	Eastbound		11	37	35	29	112	112
Washington/Central Ave	Westbound		6	25	20	17	69	69
3rd St/Jefferson	Eastbound		5	20	17	28	71	71
3rd St/Washington	Westbound		5	15	13	19	52	52
12th St/Jefferson	Eastbound		7	14	8	10	39	39
12th St/Washington	Westbound		6	14	7	7	33	33
24th St/Jefferson	Eastbound		9	16	11	16	52	52
24th St/Washington	Westbound		11	23	13	20	67	67
38th St/Washington	Eastbound		9	14	7	9	40	83
38th St/Washington	Westbound		7	16	9	11	43	
44th St/Washington	Eastbound		13	33	20	39	106	215
44th St/Washington	Westbound		13	35	22	39	109	
50th/Washington	Eastbound		6	10	6	5	26	55
50th/Washington	Westbound		5	10	6	8	29	
Priest Dr/Washington St	Eastbound		6	11	9	13	39	105
Priest Dr/Washington St	Westbound		8	15	14	29	65	
Center Pkwy/Washington St	Eastbound		4	7	3	5	18	35
Center Pkwy/Washington St	Westbound		3	5	2	6	16	
Mill Ave/Third St	Eastbound		6	19	13	21	58	133
Mill Ave/Third St	Westbound		9	20	20	27	75	
Veterans Way/College Ave	Eastbound		9	28	27	24	88	185
Veterans Way/College Ave	Westbound		12	33	25	27	97	
University Dr/Rural Rd	Eastbound		5	16	12	20	54	106
University Dr/Rural Rd	Westbound		13	20	8	12	52	
Dorsey Ln/Apache Blvd	Eastbound		10	51	52	46	159	266
Dorsey Ln/Apache Blvd	Westbound		15	35	25	31	107	
McClintock Dr/Apache Blvd	Eastbound		6	19	14	21	60	200
McClintock Dr/Apache Blvd	Westbound		30	58	21	30	139	
Smith-Martin/Apache Blvd	Eastbound		4	9	5	7	25	68



VALLEY METRO 2023 ORIGIN AND DESTINATION SURVEY FINAL REPORT

Rail Station	Direction	Over Sampling Needs	AM PEAK 6AM- 859AM	MIDDAY 9AM- 259PM	PM PEAK 3PM- 559PM	NIGHT 6PM- 559AM	Direction TOTAL	Station TOTALS
Smith-Martin/Apache Blvd	Westbound		8	19	7	10	43	
Price-101/Apache Blvd	Eastbound		6	11	5	10	32	103
Price-101/Apache Blvd	Westbound		18	30	10	13	71	
Sycamore/Main St	Eastbound		9	24	15	21	69	167
Sycamore/Main St	Westbound		17	35	18	28	98	
Alma School Rd/Main St	Eastbound		9	22	13	22	65	161
Alma School Rd/Main St	Westbound		18	34	17	27	96	
Country Club Dr/Main St	Eastbound		6	15	9	12	42	142
Country Club Dr/Main St	Westbound		18	35	19	28	100	
Center St/Main St	Eastbound		2	8	3	5	19	70
Center St/Main St	Westbound		8	19	11	13	51	
Mesa Dr/Main St	Eastbound		4	9	6	12	30	115
Mesa Dr/Main St	Westbound		16	28	16	25	85	
Stapley Dr/Main St	Eastbound		2	6	2	5	16	75
Stapley Dr/Main St	Westbound		11	21	12	16	60	
Gilbert Rd/Main St	Eastbound		0	0	0	0	0	270
Gilbert Rd/Main St	Westbound		57	93	43	77	270	
	GRAND TOTAL FOR RAIL		888	1,899	1,211	1,575	5,573	5,573

OD Sample Plans by Time of Day and Direction

VM Bus OD Sampling Plan by Time of Day and Direction

FINAL ROUTE DIRECTION	Service Type	SAMPLE GOALS					Route TOTAL
		1 = PRE 9A	2 = 900A - 300P	3 = 300P - 600P	4 = Aft 600P	Direction TOTAL	
0 Central Ave [North]	Local	8	14	8	8	37	73
0 Central Ave [South]	Local	8	14	8	8	37	
1 Washington St [East]	Local	2	4	2	3	12	25
1 Washington St [West]	Local	2	5	2	4	13	
3 Van Buren St [East]	Key Local	22	49	28	27	127	259
3 Van Buren St [West]	Key Local	23	51	29	28	132	
7 7th St [North]	Key Local	26	52	27	26	131	262
7 7th St [South]	Key Local	26	52	27	26	131	
8 7th Ave [North]	Local	11	24	13	13	62	128
8 7th Ave [South]	Local	12	26	14	14	66	
10 Roosevelt St [East]	Local	3	7	4	4	17	36
10 Roosevelt St [West]	Local	3	7	4	4	19	
12 12th St [North]	Local	7	12	7	7	33	70
12 12th St [South]	Local	7	14	7	8	37	
13 Buckeye Rd [East]	Local	6	12	8	11	37	74
13 Buckeye Rd [West]	Local	7	13	10	13	43	
15 15th Ave [North]	Local	5	12	7	8	33	80
15 15th Ave [South]	Local	7	15	9	10	41	
16 16th St [North]	Local	20	37	23	21	101	210
16 16th St [South]	Local	22	40	25	23	109	
17 McDowell Rd [East]	Local	39	82	49	44	214	444
17 McDowell Rd [West]	Local	42	88	53	47	230	
19 19th Ave [North]	Key Local	40	88	52	55	236	458
19 19th Ave [South]	Key Local	38	83	49	52	222	
27 27th Ave [North]	Local	18	44	24	30	116	233
27 27th Ave [South]	Local	19	44	24	31	118	
28 Lower Buckeye Rd [East]	Local	1	3	2	3	9	19
28 Lower Buckeye Rd [West]	Local	1	3	3	3	10	
29 Thomas Rd [East]	Key Local	54	105	56	47	263	531
29 Thomas Rd [West]	Key Local	55	107	57	48	268	



VALLEY METRO 2023 ORIGIN AND DESTINATION SURVEY FINAL REPORT

FINAL ROUTE DIRECTION	Service Type	SAMPLE GOALS					Direction TOTAL	Route TOTAL
		1 = PRE 9A	2 = 900A - 300P	3 = 300P - 600P	4 = Aft 600P			
30 University Dr [East]	Local	12	23	14	15	64	131	
30 University Dr [West]	Local	13	24	14	16	67		
32 32nd St/40th St [North]	Local	13	20	14	13	60	113	
32 32nd St/40th St [South]	Local	11	17	12	12	53		
35 35th Ave [North]	Local	31	62	35	39	167	329	
35 35th Ave [South]	Local	30	61	34	38	162		
39 North 40th St [North]	Local	1	3	1	2	7	13	
39 North 40th St [South]	Local	1	2	1	1	6		
40 Main St [East]	Key Local	7	19	10	11	47	93	
40 Main St [West]	Key Local	7	18	10	11	46		
41 Indian School Rd [East]	Key Local	39	91	51	45	225	464	
41 Indian School Rd [West]	Key Local	42	96	54	48	239		
43 43rd Ave [North]	Local	11	22	13	14	59	119	
43 43rd Ave [South]	Local	11	22	13	14	61		
44 44th St/Tatum Blvd [North]	Local	11	22	14	16	64	130	
44 44th St/Tatum Blvd [South]	Local	12	23	15	17	66		
45 Broadway Rd [East]	Local	14	27	17	16	74	159	
45 Broadway Rd [West]	Local	16	31	20	18	85		
48 48th St [North]	Local	2	5	3	4	14	33	
48 48th St [South]	Local	3	7	4	5	19		
50 Camelback Rd [East]	Key Local	52	101	51	56	259	516	
50 Camelback Rd [West]	Key Local	51	100	51	55	256		
51 51st Ave [North]	Local	12	32	20	25	89	189	
51 51st Ave [South]	Local	14	36	22	28	100		
52 Roeser Rd [East]	Local	5	6	4	4	18	35	
52 Roeser Rd [West]	Local	5	5	3	3	17		
56 Priest Dr [North]	Local	5	12	8	7	32	64	
56 Priest Dr [South]	Local	5	12	8	7	31		
59 59th Ave [North]	Local	17	33	16	14	80	162	
59 59th Ave [South]	Local	17	34	16	14	81		
60 Bethany Home Rd [East]	Local	15	36	23	18	93	184	
60 Bethany Home Rd [West]	Local	15	35	23	18	91		



VALLEY METRO 2023 ORIGIN AND DESTINATION SURVEY FINAL REPORT

FINAL ROUTE DIRECTION	Service Type	SAMPLE GOALS					Direction TOTAL	Route TOTAL
		1 = PRE 9A	2 = 900A - 300P	3 = 300P - 600P	4 = Aft 600P			
61 Southern Ave [East]	Local	21	45	22	26	114	228	
61 Southern Ave [West]	Local	21	45	22	26	114		
62 Hardy Dr [North]	Local	4	10	7	8	30	61	
62 Hardy Dr [South]	Local	4	11	8	8	32		
66 Mill Ave/Kyrene Rd [North]	Local	7	12	8	7	34	73	
66 Mill Ave/Kyrene Rd [South]	Local	8	14	9	8	40		
67 67th Ave [North]	Local	12	24	15	13	63	126	
67 67th Ave [South]	Local	12	24	15	13	63		
70 24th St/Glendale Ave [East]	Local	46	89	53	52	239	475	
70 24th St/Glendale Ave [West]	Local	45	88	52	51	236		
72 Scottsdale Rd/Rural Rd [North]	Local	28	56	32	34	149	286	
72 Scottsdale Rd/Rural Rd [South]	Local	26	51	29	31	137		
75 75th Ave [North]	Local	3	7	5	5	21	41	
75 75th Ave [South]	Local	3	7	5	5	20		
77 Baseline Rd [East]	Local	14	27	13	18	72	144	
77 Baseline Rd [West]	Local	14	26	13	18	71		
80 Northern Ave/Shea Blvd [East]	Local	10	21	12	13	55	112	
80 Northern Ave/Shea Blvd [West]	Local	10	21	12	13	56		
81 Hayden Rd/McClintock Dr [North]	Local	13	27	17	18	74	154	
81 Hayden Rd/McClintock Dr [South]	Local	14	29	18	19	80		
83 83rd Ave [North]	Local	4	9	6	6	26	54	
83 83rd Ave [South]	Local	5	10	6	7	28		
90 Dunlap Ave/Cave Creek Rd [East]	Local	14	32	19	19	85	165	
90 Dunlap Ave/Cave Creek Rd [West]	Local	14	31	18	18	80		
96 Dobson Rd [North]	Local	8	18	12	10	48	93	
96 Dobson Rd [South]	Local	8	17	11	9	45		
104 Alma School Rd [North]	Local	5	11	7	5	28	52	
104 Alma School Rd [South]	Local	5	9	6	4	24		
106 Peoria Ave [East]	Local	10	26	15	14	64	129	
106 Peoria Ave [West]	Local	10	26	15	14	65		



VALLEY METRO 2023 ORIGIN AND DESTINATION SURVEY FINAL REPORT

FINAL ROUTE DIRECTION	Service Type	SAMPLE GOALS					Direction TOTAL	Route TOTAL
		1 = PRE 9A	2 = 900A - 300P	3 = 300P - 600P	4 = Aft 600P			
108 Elliot Rd/48th St [East]	Local	5	10	7	6	28	58	
108 Elliot Rd/48th St [West]	Local	6	11	7	6	30		
112 Country Club Dr/Arizona Ave [North]	Key Local	16	34	20	18	88	172	
112 Country Club Dr/Arizona Ave [South]	Key Local	15	33	19	17	84		
120 Mesa Dr [North]	Local	2	7	4	3	16	29	
120 Mesa Dr [South]	Local	2	5	3	3	13		
122 Cactus Rd [East]	Local	4	9	5	8	26	46	
122 Cactus Rd [West]	Local	3	7	4	6	21		
128 Stapley Dr [North]	Local	2	5	3	2	12	24	
128 Stapley Dr [South]	Local	2	5	3	2	12		
136 Gilbert Rd [North]	Local	5	11	6	5	27	61	
136 Gilbert Rd [South]	Local	5	14	8	7	34		
138 Thunderbird Rd [East]	Local	10	20	11	13	55	104	
138 Thunderbird Rd [West]	Local	9	18	10	12	49		
140 Ray Rd [East]	Local	3	5	3	2	13	26	
140 Ray Rd [West]	Local	2	5	3	2	13		
154 Greenway Rd [East]	Local	9	13	9	10	41	76	
154 Greenway Rd [West]	Local	8	11	8	8	35		
156 Chandler Blvd [East]	Local	9	20	12	11	52	110	
156 Chandler Blvd [West]	Local	10	23	13	12	58		
170 Bell Rd [East]	Local	18	47	27	30	121	246	
170 Bell Rd [West]	Local	18	48	27	31	125		
184 Power Rd [North]	Local	3	6	4	3	16	35	
184 Power Rd [South]	Local	4	7	4	4	19		
186 Union Hills Dr/Mayo Blvd [East]	Local	7	12	7	8	34	65	
186 Union Hills Dr/Mayo Blvd [West]	Local	6	11	6	7	31		
514 Scottsdale Express [Inbound]	Express	0	0	0	0	1	1	
514 Scottsdale Express [Outbound]	Express	0	0	0	0	0		
515 FH-Mesa Connector [Inbound]	Express	0	0	0	0	0	0	
515 FH-Mesa Connector [Outbound]	Express	0	0	0	0	0		



VALLEY METRO 2023 ORIGIN AND DESTINATION SURVEY FINAL REPORT

FINAL ROUTE DIRECTION	Service Type	SAMPLE GOALS					
		1 = PRE 9A	2 = 900A - 300P	3 = 300P - 600P	4 = Aft 600P	Direction TOTAL	Route TOTAL
521 Central Tempe Express [Inbound]	Express	1	0	1	0	1	3
521 Central Tempe Express [Outbound]	Express	1	0	1	0	1	
522 South Tempe Express [Inbound]	Express	1	0	1	0	1	2
522 South Tempe Express [Outbound]	Express	1	0	0	0	1	
531 Mesa/Gilbert Express [Inbound]	Express	1	0	1	0	2	4
531 Mesa/Gilbert Express [Outbound]	Express	1	0	1	0	2	
533 Mesa Express [Inbound]	Express	2	0	2	1	5	10
533 Mesa Express [Outbound]	Express	2	0	2	1	5	
535 Northeast Mesa Express [Inbound]	Express	1	0	2	0	3	8
535 Northeast Mesa Express [Outbound]	Express	2	0	3	1	5	
542 Chandler Express [Inbound]	Express	4	0	4	0	8	15
542 Chandler Express [Outbound]	Express	4	0	3	0	7	
562 Goodyear Express [Inbound]	Express	1	0	1	0	3	6
562 Goodyear Express [Outbound]	Express	1	0	1	0	3	
563 Avondale/Buckeye Express [Inbound]	Express	1	0	1	0	2	5
563 Avondale/Buckeye Express [Outbound]	Express	1	0	2	0	3	
571 Surprise Express [Inbound]	Express	0	0	1	1	2	3
571 Surprise Express [Outbound]	Express	0	0	0	1	1	
573 West Glendale Express [Inbound]	Express	0	0	1	2	3	4
573 West Glendale Express [Outbound]	Express	0	0	0	1	1	
575 North Glendale Express [Inbound]	Express	2	0	0	0	2	3
575 North Glendale Express [Outbound]	Express	0	0	0	0	0	
685 Ajo/Gila Bend [North]		-	-	-	-	0	0
685 Ajo/Gila Bend [South]		-	-	-	-	0	



VALLEY METRO 2023 ORIGIN AND DESTINATION SURVEY FINAL REPORT

FINAL ROUTE DIRECTION	Service Type	SAMPLE GOALS					
		1 = PRE 9A	2 = 900A - 300P	3 = 300P - 600P	4 = Aft 600P	Direction TOTAL	Route TOTAL
0A South Central Shuttle [North]	Key Local	17	37	20	16	90	202
0A South Central Shuttle [South]	Key Local	21	46	24	20	112	
16s 16th St [South]	Local	-	-	-	-	0	0
17s McDowell Rd [East]	Local	-	-	-	-	0	0
32s 32nd St/40th St [North]	Local	-	-	-	-	0	0
32s 32nd St/40th St [South]	Local	-	-	-	-	0	0
52s Roeser Rd [East]	Local	-	-	-	-	0	0
59s 59th Ave [North]	Local	-	-	-	-	0	0
59s 59th Ave [South]	Local	-	-	-	-	0	0
61s Southern Ave [West]	Local	-	-	-	-	0	0
62s Hardy Dr [North]	Local	-	-	-	-	0	0
68CM 68th St/Camelback Rd [North]	Key Local	10	16	8	1	35	76
68CM 68th St/Camelback Rd [South]	Key Local	12	19	9	1	41	
81s Hayden Rd/McClintock Dr [North]		-	-	-	-	0	0
ALEX ALEX Circulator [East]	Circulator	2	3	2	0	7	12
ALEX ALEX Circulator [West]	Circulator	2	2	1	0	5	
DASH Downtown DASH [East]	Circulator	6	17	6	1	29	43
DASH Downtown DASH [West]	Circulator	3	8	3	0	14	
DBUZ Downtown BUZZ [East]	Circulator	2	4	3	2	11	21
DBUZ Downtown BUZZ [West]	Circulator	2	3	3	2	10	
EART Orbit Earth [East]	Circulator	7	18	12	10	48	89
EART Orbit Earth [West]	Circulator	6	15	11	9	41	
FBUZ Fiesta BUZZ [North]	Circulator	2	5	3	3	13	28
FBUZ Fiesta BUZZ [South]	Circulator	2	5	4	4	15	
FLSH FLASH [North]	Circulator	1	3	2	1	7	18
FLSH FLASH [South]	Circulator	1	5	2	2	11	
GAL Grand Ave Limited [East]	Local	0	0	0	0	1	1
GAL Grand Ave Limited [West]	Local	0	0	0	0	1	



VALLEY METRO 2023 ORIGIN AND DESTINATION SURVEY FINAL REPORT

FINAL ROUTE DIRECTION	Service Type	SAMPLE GOALS					Direction TOTAL	Route TOTAL
		1 = PRE 9A	2 = 900A - 300P	3 = 300P - 600P	4 = Aft 600P			
GUS1 GUS 1 [Counterclockwise]	Circulator	18	0	0	0	18	54	
GUS2 GUS 2 [Clockwise]	Circulator	18	0	0	0	18		
GUS3 GUS 3 [Counterclockwise]	Circulator	18	0	0	0	18		
I10E I-10 East RAPID [Inbound]	Rapid	6	0	3	0	9	15	
I10E I-10 East RAPID [Outbound]	Rapid	3	0	2	0	5		
I10W I-10 West RAPID [Inbound]	Rapid	5	0	2	1	8	12	
I10W I-10 West RAPID [Outbound]	Rapid	3	0	1	0	4		
I17 I-17 RAPID [Inbound]	Rapid	7	0	9	1	17	36	
I17 I-17 RAPID [Outbound]	Rapid	8	0	9	1	18		
JUPI Orbit Jupiter [North]	Circulator	9	20	16	10	54	120	
JUPI Orbit Jupiter [South]	Circulator	10	24	19	12	66		
MARS Orbit Mars [North]	Circulator	14	39	24	26	103	215	
MARS Orbit Mars [South]	Circulator	16	42	26	28	112		
MARY MARY Circulator [Clockwise]	Circulator	0	3	1	0	4	10	
MARY MARY Circulator [Counterclockwise]	Circulator	1	3	1	0	6		
MARz Orbit Mars [North]	Circulator	-	-	-	-	0	0	
MERC Orbit Mercury [East]	Circulator	9	33	21	18	81	155	
MERC Orbit Mercury [West]	Circulator	9	30	19	16	73		
MLHD Miller Rd/Hayden Rd [North]	Circulator	5	13	7	1	26	80	
MLHD Miller Rd/Hayden Rd [South]	Circulator	10	26	15	2	54		
MSTG Mustang [North]	Circulator	3	6	3	1	13	30	
MSTG Mustang [South]	Circulator	4	8	4	1	17		
PGOB Peoria POGO Blue Route [North]	Circulator	0	0	0	0	0	0	
PGOB Peoria POGO Blue Route [South]	Circulator	0	0	0	0	0		
PGOG Peoria POGO Green Route [North]	Circulator	0	0	0	0	0	1	
PGOG Peoria POGO Green Route [South]	Circulator	0	0	0	0	0		
PGOR Peoria POGO Red Route [North]	Circulator	0	0	0	0	0	0	
PGOR Peoria POGO Red Route [South]	Circulator	0	0	0	0	0		



VALLEY METRO 2023 ORIGIN AND DESTINATION SURVEY FINAL REPORT

FINAL ROUTE DIRECTION	Service Type	SAMPLE GOALS					Direction TOTAL	Route TOTAL
		1 = PRE 9A	2 = 900A - 300P	3 = 300P - 600P	4 = Aft 600P			
RAIL Valley Metro Rail [East]	Express	461	968	625	814	2868	5573	
RAIL Valley Metro Rail [West]	Express	426	931	586	761	2705		
S Valley Metro Streetcar [North]	Express	21	89	58	79	247	459	
S Valley Metro Streetcar [South]	Express	30	84	40	59	213		
SKYT PHX Sky Train [West]		-	-	-	-	0	0	
SKYT PHX Sky Train [East]		-	-	-	-	0		
SME South Mountain East RAPID [Inbound]	Rapid	0	0	0	0	0	0	
SME South Mountain East RAPID [Outbound]	Rapid	0	0	0	0	0		
SMRT SMART Circulator [East]	Circulator	3	7	4	0	13	27	
SMRT SMART Circulator [West]	Circulator	3	7	4	0	14		
SMW South Mountain West RAPID [Inbound]	Rapid	1	0	0	0	1	2	
SMW South Mountain West RAPID [Outbound]	Rapid	0	0	0	0	1		
SR51 SR 51 RAPID [Inbound]	Rapid	6	0	3	1	10	16	
SR51 SR 51 RAPID [Outbound]	Rapid	3	0	2	1	5		
STRN Orbit Saturn [East]	Circulator	2	4	3	2	11	23	
STRN Orbit Saturn [West]	Circulator	2	5	4	2	12		
VENU Orbit Venus [Clockwise]	Circulator	10	19	16	15	59	121	
VENU Orbit Venus [Counterclockwise]	Circulator	10	20	16	15	62		
ZOOM Avondale Circulator [North]	Circulator	3	8	3	2	15	28	
ZOOM Avondale Circulator [South]	Circulator	2	6	2	2	13		

OD Survey Completed by Time of Day and Direction

VM Bus OD Surveys Completed By Time Of Day And Direction

FINAL ROUTE DIRECTION	Service Type	COLLECTION					Direction TOTAL	ROUTE TOTAL
		1 = PRE 9A	2 = 900A - 300P	3 = 300P - 600P	4 = Aft 600P			
0 Central Ave [North]	Local	19	16	12	19	66	120	
0 Central Ave [South]	Local	17	21	11	5	54		
1 Washington St [East]	Local	1	5	6	4	16	41	
1 Washington St [West]	Local	3	10	7	5	25		
3 Van Buren St [East]	Key Local	28	76	32	43	179	367	
3 Van Buren St [West]	Key Local	46	63	41	38	188		
7 7th St [North]	Key Local	35	73	32	26	166	327	
7 7th St [South]	Key Local	42	56	35	28	161		
8 7th Ave [North]	Local	19	27	12	11	69	149	
8 7th Ave [South]	Local	18	29	22	11	80		
10 Roosevelt St [East]	Local	3	10	3	3	19	38	
10 Roosevelt St [West]	Local	9	8	2	0	19		
12 12th St [North]	Local	24	30	11	14	79	160	
12 12th St [South]	Local	22	34	12	13	81		
13 Buckeye Rd [East]	Local	9	18	13	17	57	116	
13 Buckeye Rd [West]	Local	13	19	12	15	59		
15 15th Ave [North]	Local	8	21	11	9	49	88	
15 15th Ave [South]	Local	10	15	6	8	39		
16 16th St [North]	Local	27	46	39	22	134	259	
16 16th St [South]	Local	33	45	23	24	125		
17 McDowell Rd [East]	Local	53	101	61	70	285	601	
17 McDowell Rd [West]	Local	54	123	72	67	316		
19 19th Ave [North]	Key Local	50	120	89	65	324	623	
19 19th Ave [South]	Key Local	57	105	70	67	299		
27 27th Ave [North]	Local	25	48	29	34	136	270	
27 27th Ave [South]	Local	28	42	27	37	134		
28 Lower Buckeye Rd [East]	Local	1	4	5	5	15	30	
28 Lower Buckeye Rd [West]	Local	2	4	3	6	15		



VALLEY METRO 2023 ORIGIN AND DESTINATION SURVEY FINAL REPORT

FINAL ROUTE DIRECTION	Service Type	COLLECTION					ROUTE TOTAL
		1 = PRE 9A	2 = 900A - 300P	3 = 300P - 600P	4 = Aft 600P	Direction TOTAL	
29 Thomas Rd [East]	Key Local	70	133	67	67	337	662
29 Thomas Rd [West]	Key Local	57	126	82	60	325	
30 University Dr [East]	Local	20	37	19	25	101	198
30 University Dr [West]	Local	22	21	28	26	97	
32 32nd St/40th St [North]	Local	16	30	19	20	85	172
32 32nd St/40th St [South]	Local	14	35	16	22	87	
35 35th Ave [North]	Local	38	81	39	50	208	416
35 35th Ave [South]	Local	41	81	37	49	208	
39 North 40th St [North]	Local	3	2	3	0	8	18
39 North 40th St [South]	Local	3	3	3	1	10	
40 Main St [East]	Key Local	14	31	17	16	78	155
40 Main St [West]	Key Local	15	29	15	18	77	
41 Indian School Rd [East]	Key Local	71	115	65	59	310	621
41 Indian School Rd [West]	Key Local	50	124	73	64	311	
43 43rd Ave [North]	Local	17	29	19	13	78	154
43 43rd Ave [South]	Local	15	28	15	18	76	
44 44th St/Tatum Blvd [North]	Local	17	41	20	22	100	179
44 44th St/Tatum Blvd [South]	Local	8	31	21	19	79	
45 Broadway Rd [East]	Local	22	48	25	24	119	241
45 Broadway Rd [West]	Local	23	43	30	26	122	
48 48th St [North]	Local	0	8	5	17	30	59
48 48th St [South]	Local	5	7	7	10	29	
50 Camelback Rd [East]	Key Local	81	115	70	67	333	640
50 Camelback Rd [West]	Key Local	57	109	64	77	307	
51 51st Ave [North]	Local	15	31	20	29	95	203
51 51st Ave [South]	Local	16	45	20	27	108	
52 Roeser Rd [East]	Local	10	5	3	1	19	48
52 Roeser Rd [West]	Local	4	14	5	6	29	
56 Priest Dr [North]	Local	15	13	12	26	66	133
56 Priest Dr [South]	Local	8	23	15	21	67	
59 59th Ave [North]	Local	23	32	19	18	92	173
59 59th Ave [South]	Local	17	34	20	10	81	



VALLEY METRO 2023 ORIGIN AND DESTINATION SURVEY FINAL REPORT

FINAL ROUTE DIRECTION	Service Type	COLLECTION				Direction TOTAL	ROUTE TOTAL
		1 = PRE 9A	2 = 900A - 300P	3 = 300P - 600P	4 = Aft 600P		
60 Bethany Home Rd [East]	Local	20	42	25	26	113	222
60 Bethany Home Rd [West]	Local	16	43	28	22	109	
61 Southern Ave [East]	Local	38	70	27	30	165	328
61 Southern Ave [West]	Local	24	74	31	34	163	
62 Hardy Dr [North]	Local	13	22	12	16	63	114
62 Hardy Dr [South]	Local	6	23	12	10	51	
66 Mill Ave/Kyrene Rd [North]	Local	10	16	21	16	63	121
66 Mill Ave/Kyrene Rd [South]	Local	10	19	14	15	58	
67 67th Ave [North]	Local	14	30	13	17	74	158
67 67th Ave [South]	Local	17	37	13	17	84	
70 24th St/Glendale Ave [East]	Local	58	98	78	72	306	607
70 24th St/Glendale Ave [West]	Local	39	110	75	77	301	
72 Scottsdale Rd/Rural Rd [North]	Local	38	83	42	46	209	389
72 Scottsdale Rd/Rural Rd [South]	Local	36	60	44	40	180	
75 75th Ave [North]	Local	9	11	4	8	32	60
75 75th Ave [South]	Local	5	8	7	8	28	
77 Baseline Rd [East]	Local	15	22	20	13	70	164
77 Baseline Rd [West]	Local	14	33	22	25	94	
80 Northern Ave/Shea Blvd [East]	Local	25	40	15	18	98	196
80 Northern Ave/Shea Blvd [West]	Local	17	34	27	20	98	
81 Hayden Rd/McClintock Dr [North]	Local	18	26	30	23	97	206
81 Hayden Rd/McClintock Dr [South]	Local	24	40	21	24	109	
83 83rd Ave [North]	Local	5	14	7	11	37	77
83 83rd Ave [South]	Local	5	13	13	9	40	
90 Dunlap Ave/Cave Creek Rd [East]	Local	24	38	28	34	124	242
90 Dunlap Ave/Cave Creek Rd [West]	Local	23	39	32	24	118	
96 Dobson Rd [North]	Local	6	28	18	13	65	141
96 Dobson Rd [South]	Local	16	26	18	16	76	
104 Alma School Rd [North]	Local	8	15	11	8	42	86
104 Alma School Rd [South]	Local	9	20	9	6	44	



VALLEY METRO 2023 ORIGIN AND DESTINATION SURVEY FINAL REPORT

FINAL ROUTE DIRECTION	Service Type	COLLECTION					Direction TOTAL	ROUTE TOTAL
		1 = PRE 9A	2 = 900A - 300P	3 = 300P - 600P	4 = Aft 600P			
106 Peoria Ave [East]	Local	15	32	21	18	86	176	
106 Peoria Ave [West]	Local	14	34	20	22	90		
108 Elliot Rd/48th St [East]	Local	9	16	12	8	45	95	
108 Elliot Rd/48th St [West]	Local	8	15	13	14	50		
112 Country Club Dr/Arizona Ave [North]	Key Local	16	49	41	40	146	251	
112 Country Club Dr/Arizona Ave [South]	Key Local	23	46	17	19	105		
120 Mesa Dr [North]	Local	8	11	9	3	31	56	
120 Mesa Dr [South]	Local	9	11	3	2	25		
122 Cactus Rd [East]	Local	4	14	15	11	44	83	
122 Cactus Rd [West]	Local	4	8	11	16	39		
128 Stapley Dr [North]	Local	0	9	4	10	23	40	
128 Stapley Dr [South]	Local	0	7	6	4	17		
136 Gilbert Rd [North]	Local	11	16	16	11	54	120	
136 Gilbert Rd [South]	Local	19	19	15	13	66		
138 Thunderbird Rd [East]	Local	11	26	16	19	72	150	
138 Thunderbird Rd [West]	Local	11	31	13	23	78		
140 Ray Rd [East]	Local	4	5	4	2	15	28	
140 Ray Rd [West]	Local	4	6	3	0	13		
154 Greenway Rd [East]	Local	11	16	6	9	42	85	
154 Greenway Rd [West]	Local	8	16	10	9	43		
156 Chandler Blvd [East]	Local	12	34	18	16	80	151	
156 Chandler Blvd [West]	Local	17	25	14	15	71		
170 Bell Rd [East]	Local	27	43	26	31	127	262	
170 Bell Rd [West]	Local	23	53	26	33	135		
184 Power Rd [North]	Local	5	12	8	2	27	58	
184 Power Rd [South]	Local	8	10	4	9	31		
186 Union Hills Dr/Mayo Blvd [East]	Local	8	12	11	6	37	73	
186 Union Hills Dr/Mayo Blvd [West]	Local	6	15	7	8	36		
514 Scottsdale Express [Inbound]	Express	0	1	0	0	1	1	
514 Scottsdale Express [Outbound]	Express	0	0	0	0	0		



VALLEY METRO 2023 ORIGIN AND DESTINATION SURVEY FINAL REPORT

FINAL ROUTE DIRECTION	Service Type	COLLECTION					Direction TOTAL	ROUTE TOTAL
		1 = PRE 9A	2 = 900A - 300P	3 = 300P - 600P	4 = Aft 600P			
515 FH-Mesa Connector [Inbound]	Express	0	0	0	0	0	0	
515 FH-Mesa Connector [Outbound]	Express	0	0	0	0	0		
521 Central Tempe Express [Inbound]	Express	0	1	0	0	1	7	
521 Central Tempe Express [Outbound]	Express	0	0	5	1	6		
522 South Tempe Express [Inbound]	Express	1	0	0	0	1	8	
522 South Tempe Express [Outbound]	Express	0	0	7	0	7		
531 Mesa/Gilbert Express [Inbound]	Express	3	0	0	1	4	11	
531 Mesa/Gilbert Express [Outbound]	Express	0	1	5	1	7		
533 Mesa Express [Inbound]	Express	3	0	0	1	4	11	
533 Mesa Express [Outbound]	Express	0	0	7	0	7		
535 Northeast Mesa Express [Inbound]	Express	4	0	1	0	5	15	
535 Northeast Mesa Express [Outbound]	Express	0	1	9	0	10		
542 Chandler Express [Inbound]	Express	2	0	0	5	7	23	
542 Chandler Express [Outbound]	Express	0	0	16	0	16		
562 Goodyear Express [Inbound]	Express	1	0	0	1	2	4	
562 Goodyear Express [Outbound]	Express	0	0	2	0	2		
563 Avondale/Buckeye Express [Inbound]	Express	1	0	0	0	1	2	
563 Avondale/Buckeye Express [Outbound]	Express	0	0	1	0	1		
571 Surprise Express [Inbound]	Express	0	1	0	2	3	6	
571 Surprise Express [Outbound]	Express	0	1	1	1	3		
573 West Glendale Express [Inbound]	Express	2	0	0	0	2	4	
573 West Glendale Express [Outbound]	Express	0	0	2	0	2		
575 North Glendale Express [Inbound]	Express	0	0	0	0	0	2	
575 North Glendale Express [Outbound]	Express	0	0	2	0	2		
685 Ajo/Gila Bend [North]		0	0	0	0	0	1	
685 Ajo/Gila Bend [South]		0	0	1	0	1		



VALLEY METRO 2023 ORIGIN AND DESTINATION SURVEY FINAL REPORT

FINAL ROUTE DIRECTION	Service Type	COLLECTION					Direction TOTAL	ROUTE TOTAL
		1 = PRE 9A	2 = 900A - 300P	3 = 300P - 600P	4 = Aft 600P			
0A South Central Shuttle [North]	Key Local	13	33	27	25	98	206	
0A South Central Shuttle [South]	Key Local	25	37	24	22	108		
16s 16th St [South]	Local	0	0	0	0	0	0	
17s McDowell Rd [East]	Local	0	0	0	0	0	0	
32s 32nd St/40th St [North]	Local	0	0	0	0	0	0	
32s 32nd St/40th St [South]	Local	0	0	0	0	0	0	
52s Roeser Rd [East]	Local	0	0	0	0	0	0	
59s 59th Ave [North]	Local	0	0	0	0	0	0	
59s 59th Ave [South]	Local	0	0	0	0	0	0	
61s Southern Ave [West]	Local	0	0	0	0	0	0	
62s Hardy Dr [North]	Local	0	0	0	0	0	0	
68CM 68th St/Camelback Rd [North]	Key Local	4	8	3	1	16	32	
68CM 68th St/Camelback Rd [South]	Key Local	4	7	2	3	16		
81s Hayden Rd/McClintock Dr [North]		0	0	0	0	0	0	
ALEX ALEX Circulator [East]	Circulator	2	5	4	0	11	21	
ALEX ALEX Circulator [West]	Circulator	2	3	4	1	10		
DASH Downtown DASH [East]	Circulator	5	15	4	1	25	48	
DASH Downtown DASH [West]	Circulator	2	12	8	1	23		
DBUZ Downtown BUZZ [East]	Circulator	1	7	5	2	15	24	
DBUZ Downtown BUZZ [West]	Circulator	2	4	0	3	9		
EART Orbit Earth [East]	Circulator	6	19	11	11	47	100	
EART Orbit Earth [West]	Circulator	11	20	13	9	53		
FBUZ Fiesta BUZZ [North]	Circulator	3	9	1	1	14	31	
FBUZ Fiesta BUZZ [South]	Circulator	0	15	1	1	17		
FLSH FLASH [North]	Circulator	0	2	1	0	3	7	
FLSH FLASH [South]	Circulator	1	2	1	0	4		
GAL Grand Ave Limited [East]	Local	0	0	0	0	0	0	
GAL Grand Ave Limited [West]	Local	0	0	0	0	0		
GUS1 GUS 1 [Counterclockwise]	Circulator	7	10	1	0	18	56	
GUS2 GUS 2 [Clockwise]	Circulator	0	11	7	0	18		
GUS3 GUS 3 [Counterclockwise]	Circulator	0	18	2	0	20		



VALLEY METRO 2023 ORIGIN AND DESTINATION SURVEY FINAL REPORT

FINAL ROUTE DIRECTION	Service Type	COLLECTION					ROUTE TOTAL
		1 = PRE 9A	2 = 900A - 300P	3 = 300P - 600P	4 = Aft 600P	Direction TOTAL	
I10E I-10 East RAPID [Inbound]	Rapid	4	0	0	0	4	8
I10E I-10 East RAPID [Outbound]	Rapid	0	0	4	0	4	
I10W I-10 West RAPID [Inbound]	Rapid	3	0	0	0	3	3
I10W I-10 West RAPID [Outbound]	Rapid	0	0	0	0	0	
I17 I-17 RAPID [Inbound]	Rapid	10	0	0	2	12	24
I17 I-17 RAPID [Outbound]	Rapid	0	0	12	0	12	
JUPI Orbit Jupiter [North]	Circulator	14	27	19	14	74	147
JUPI Orbit Jupiter [South]	Circulator	17	20	19	17	73	
MARS Orbit Mars [North]	Circulator	15	57	25	14	111	218
MARS Orbit Mars [South]	Circulator	14	38	22	33	107	
MARY MARY Circulator [Clockwise]	Circulator	0	9	1	0	10	12
MARY MARY Circulator [Counterclockwise]	Circulator	0	1	1	0	2	
MARz Orbit Mars [North]	Circulator	0	0	0	0	0	0
MERC Orbit Mercury [East]	Circulator	6	33	28	24	91	170
MERC Orbit Mercury [West]	Circulator	19	38	13	9	79	
MLHD Miller Rd/Hayden Rd [North]	Circulator	3	16	7	2	28	52
MLHD Miller Rd/Hayden Rd [South]	Circulator	4	10	5	5	24	
MSTG Mustang [North]	Circulator	2	9	2	4	17	40
MSTG Mustang [South]	Circulator	4	12	5	2	23	
PGOB Peoria POGO Blue Route [North]	Circulator	0	1	0	0	1	2
PGOB Peoria POGO Blue Route [South]	Circulator	0	0	0	1	1	
PGOG Peoria POGO Green Route [North]	Circulator	0	0	0	0	0	0
PGOG Peoria POGO Green Route [South]	Circulator	0	0	0	0	0	
PGOR Peoria POGO Red Route [North]	Circulator	0	0	0	0	0	0
PGOR Peoria POGO Red Route [South]	Circulator	0	0	0	0	0	
RAIL Valley Metro Rail [East]	Express	506	1032	618	752	2908	5782
RAIL Valley Metro Rail [West]	Express	495	955	683	741	2874	



VALLEY METRO 2023 ORIGIN AND DESTINATION SURVEY FINAL REPORT

FINAL ROUTE DIRECTION	Service Type	COLLECTION					Direction TOTAL	ROUTE TOTAL
		1 = PRE 9A	2 = 900A - 300P	3 = 300P - 600P	4 = Aft 600P			
S Valley Metro Streetcar [North]	Express	52	120	59	41	272	514	
S Valley Metro Streetcar [South]	Express	21	104	49	68	242		
SKYT PHX Sky Train [West]		1	4	3	8	16	31	
SKYT PHX Sky Train [East]		5	3	0	7	15		
SME South Mountain East RAPID [Inbound]	Rapid	0	0	0	0	0	0	
SME South Mountain East RAPID [Outbound]	Rapid	0	0	0	0	0		
SMRT SMART Circulator [East]	Circulator	1	10	1	1	13	28	
SMRT SMART Circulator [West]	Circulator	4	8	1	2	15		
SMW South Mountain West RAPID [Inbound]	Rapid	3	0	0	0	3	3	
SMW South Mountain West RAPID [Outbound]	Rapid	0	0	0	0	0		
SR51 SR 51 RAPID [Inbound]	Rapid	6	0	0	0	6	9	
SR51 SR 51 RAPID [Outbound]	Rapid	0	0	2	1	3		
STRN Orbit Saturn [East]	Circulator	0	2	0	0	2	6	
STRN Orbit Saturn [West]	Circulator	0	1	2	1	4		
VENU Orbit Venus [Clockwise]	Circulator	7	26	27	12	72	149	
VENU Orbit Venus [Counterclockwise]	Circulator	13	35	15	14	77		
ZOOM Avondale Circulator [North]	Circulator	0	6	4	3	13	29	
ZOOM Avondale Circulator [South]	Circulator	1	11	2	2	16		

O2O Sample Plans By Time Of Day And Direction

VM Rail O2O Sampling Plan By Station, Time Of Day, and Direction

		O2O Goals (20%) See Row 83 and 83					
Rail Station	Direction	AM PEAK 6AM- 8:59AM	MIDDAY 9AM- 2:59PM	PM PEAK 3PM- 5:59PM	NIGHT 6PM- 5:59AM	Direction TOTAL	Station TOTALS
Dunlap/19th Ave	Eastbound	69	122	58	103	351	351
Dunlap/19th Ave	Westbound	0	0	0	0	0	
Northern/19th Ave	Eastbound	22	41	20	31	114	147
Northern/19th Ave	Westbound	5	11	6	12	33	
Glendale/19th Ave	Eastbound	27	45	23	38	133	189
Glendale/19th Ave	Westbound	8	19	11	19	56	
Montebello/19th Ave	Eastbound	26	58	33	47	163	265
Montebello/19th Ave	Westbound	8	31	23	40	102	
19th Ave/Camelback	Eastbound	39	44	21	34	139	230
19th Ave/Camelback	Westbound	10	30	21	31	91	
7th Ave/Camelback	Eastbound	15	21	11	15	62	119
7th Ave/Camelback	Westbound	6	19	16	16	57	
Central Ave/Camelback	Eastbound	13	18	11	15	56	90
Central Ave/Camelback	Westbound	3	11	10	10	34	
Campbell/Central Ave	Eastbound	7	20	23	8	58	116
Campbell/Central Ave	Westbound	4	19	31	5	58	
Indian School/Central Ave	Eastbound	18	35	21	22	97	156
Indian School/Central Ave	Westbound	11	19	14	14	58	
Osborn/Central Ave	Eastbound	8	18	10	10	46	82
Osborn/Central Ave	Westbound	5	13	10	8	36	
Thomas/Central Ave	Eastbound	17	37	22	21	97	171
Thomas/Central Ave	Westbound	10	26	20	18	74	
Encanto/Central Ave	Eastbound	5	9	7	7	28	47
Encanto/Central Ave	Westbound	3	6	5	5	19	
McDowell/Central Ave	Eastbound	16	33	21	21	91	170
McDowell/Central Ave	Westbound	11	28	21	18	79	
Roosevelt/Central Ave	Eastbound	8	15	10	15	48	118
Roosevelt/Central Ave	Westbound	11	23	14	22	70	
Van Buren/1st Ave	Eastbound	24	56	40	46	166	166



VALLEY METRO 2023 ORIGIN AND DESTINATION SURVEY FINAL REPORT

		O2O Goals (20%) See Row 83 and 83					
Rail Station	Direction	AM PEAK 6AM- 8:59AM	MIDDAY 9AM- 2:59PM	PM PEAK 3PM- 5:59PM	NIGHT 6PM- 5:59AM	Direction TOTAL	Station TOTALS
Van Buren/Central Ave	Westbound	17	42	27	24	111	111
Jefferson/1st Ave	Eastbound	11	37	35	29	112	112
Washington/Central Ave	Westbound	6	25	20	17	69	69
3rd St/Jefferson	Eastbound	5	20	17	28	71	71
3rd St/Washington	Westbound	5	15	13	19	52	52
12th St/Jefferson	Eastbound	7	14	8	10	39	39
12th St/Washington	Westbound	6	14	7	7	33	33
24th St/Jefferson	Eastbound	9	16	11	16	52	52
24th St/Washington	Westbound	11	23	13	20	67	67
38th St/Washington	Eastbound	9	14	7	9	40	83
38th St/Washington	Westbound	7	16	9	11	43	
44th St/Washington	Eastbound	13	33	20	39	106	215
44th St/Washington	Westbound	13	35	22	39	109	
50th/Washington	Eastbound	6	10	6	5	26	55
50th/Washington	Westbound	5	10	6	8	29	
Priest Dr/Washington St	Eastbound	6	11	9	13	39	105
Priest Dr/Washington St	Westbound	8	15	14	29	65	
Center Pkwy/Washington St	Eastbound	4	7	3	5	18	35
Center Pkwy/Washington St	Westbound	3	5	2	6	16	
Mill Ave/Third St	Eastbound	6	19	13	21	58	133
Mill Ave/Third St	Westbound	9	20	20	27	75	
Veterans Way/College Ave	Eastbound	9	28	27	24	88	185
Veterans Way/College Ave	Westbound	12	33	25	27	97	
University Dr/Rural Rd	Eastbound	5	16	12	20	54	106
University Dr/Rural Rd	Westbound	13	20	8	12	52	
Dorsey Ln/Apache Blvd	Eastbound	10	51	52	46	159	266
Dorsey Ln/Apache Blvd	Westbound	15	35	25	31	107	
McClintock Dr/Apache Blvd	Eastbound	6	19	14	21	60	200
McClintock Dr/Apache Blvd	Westbound	30	58	21	30	139	
Smith-Martin/Apache Blvd	Eastbound	4	9	5	7	25	68
Smith-Martin/Apache Blvd	Westbound	8	19	7	10	43	



VALLEY METRO 2023 ORIGIN AND DESTINATION SURVEY FINAL REPORT

		O2O Goals (20%) See Row 83 and 83					
Rail Station	Direction	AM PEAK 6AM- 8:59AM	MIDDAY 9AM- 2:59PM	PM PEAK 3PM- 5:59PM	NIGHT 6PM- 5:59AM	Direction TOTAL	Station TOTALS
Price-101/Apache Blvd	Eastbound	6	11	5	10	32	103
Price-101/Apache Blvd	Westbound	18	30	10	13	71	
Sycamore/Main St	Eastbound	9	24	15	21	69	167
Sycamore/Main St	Westbound	17	35	18	28	98	
Alma School Rd/Main St	Eastbound	9	22	13	22	65	161
Alma School Rd/Main St	Westbound	18	34	17	27	96	
Country Club Dr/Main St	Eastbound	6	15	9	12	42	142
Country Club Dr/Main St	Westbound	18	35	19	28	100	
Center St/Main St	Eastbound	2	8	3	5	19	70
Center St/Main St	Westbound	8	19	11	13	51	
Mesa Dr/Main St	Eastbound	4	9	6	12	30	115
Mesa Dr/Main St	Westbound	16	28	16	25	85	
Stapley Dr/Main St	Eastbound	2	6	2	5	16	75
Stapley Dr/Main St	Westbound	11	21	12	16	60	
Gilbert Rd/Main St	Eastbound	0	0	0	0	0	270
Gilbert Rd/Main St	Westbound	57	93	43	77	270	
GRAND TOTAL FOR RAIL		888	1,899	1,211	1,575	5,573	5,573



O2O Sample Plans by Time of Day and Direction

VM Rail O2O Sampling Plan by Station, Time of Day, and Direction

		O2O Goals (20%) See Row 83 and 83					
Rail Station	Direction	AM PEAK 6AM- 8:59AM	MIDDAY 9AM- 2:59PM	PM PEAK 3PM- 5:59PM	NIGHT 6PM- 5:59AM	Direction TOTAL	Station TOTALS
Dunlap/19th Ave	Eastbound	69	122	58	103	351	351
Dunlap/19th Ave	Westbound	0	0	0	0	0	
Northern/19th Ave	Eastbound	22	41	20	31	114	147
Northern/19th Ave	Westbound	5	11	6	12	33	
Glendale/19th Ave	Eastbound	27	45	23	38	133	189
Glendale/19th Ave	Westbound	8	19	11	19	56	
Montebello/19th Ave	Eastbound	26	58	33	47	163	265
Montebello/19th Ave	Westbound	8	31	23	40	102	
19th Ave/Camelback	Eastbound	39	44	21	34	139	230
19th Ave/Camelback	Westbound	10	30	21	31	91	
7th Ave/Camelback	Eastbound	15	21	11	15	62	119
7th Ave/Camelback	Westbound	6	19	16	16	57	
Central Ave/Camelback	Eastbound	13	18	11	15	56	90
Central Ave/Camelback	Westbound	3	11	10	10	34	
Campbell/Central Ave	Eastbound	7	20	23	8	58	116
Campbell/Central Ave	Westbound	4	19	31	5	58	
Indian School/Central Ave	Eastbound	18	35	21	22	97	156
Indian School/Central Ave	Westbound	11	19	14	14	58	
Osborn/Central Ave	Eastbound	8	18	10	10	46	82
Osborn/Central Ave	Westbound	5	13	10	8	36	
Thomas/Central Ave	Eastbound	17	37	22	21	97	171
Thomas/Central Ave	Westbound	10	26	20	18	74	
Encanto/Central Ave	Eastbound	5	9	7	7	28	47
Encanto/Central Ave	Westbound	3	6	5	5	19	
McDowell/Central Ave	Eastbound	16	33	21	21	91	170
McDowell/Central Ave	Westbound	11	28	21	18	79	
Roosevelt/Central Ave	Eastbound	8	15	10	15	48	118
Roosevelt/Central Ave	Westbound	11	23	14	22	70	
Van Buren/1st Ave	Eastbound	24	56	40	46	166	166



VALLEY METRO 2023 ORIGIN AND DESTINATION SURVEY FINAL REPORT

		O2O Goals (20%) See Row 83 and 83					
Rail Station	Direction	AM PEAK 6AM- 8:59AM	MIDDAY 9AM- 2:59PM	PM PEAK 3PM- 5:59PM	NIGHT 6PM- 5:59AM	Direction TOTAL	Station TOTALS
Van Buren/Central Ave	Westbound	17	42	27	24	111	111
Jefferson/1st Ave	Eastbound	11	37	35	29	112	112
Washington/Central Ave	Westbound	6	25	20	17	69	69
3rd St/Jefferson	Eastbound	5	20	17	28	71	71
3rd St/Washington	Westbound	5	15	13	19	52	52
12th St/Jefferson	Eastbound	7	14	8	10	39	39
12th St/Washington	Westbound	6	14	7	7	33	33
24th St/Jefferson	Eastbound	9	16	11	16	52	52
24th St/Washington	Westbound	11	23	13	20	67	67
38th St/Washington	Eastbound	9	14	7	9	40	83
38th St/Washington	Westbound	7	16	9	11	43	
44th St/Washington	Eastbound	13	33	20	39	106	215
44th St/Washington	Westbound	13	35	22	39	109	
50th/Washington	Eastbound	6	10	6	5	26	55
50th/Washington	Westbound	5	10	6	8	29	
Priest Dr/Washington St	Eastbound	6	11	9	13	39	105
Priest Dr/Washington St	Westbound	8	15	14	29	65	
Center Pkwy/Washington St	Eastbound	4	7	3	5	18	35
Center Pkwy/Washington St	Westbound	3	5	2	6	16	
Mill Ave/Third St	Eastbound	6	19	13	21	58	133
Mill Ave/Third St	Westbound	9	20	20	27	75	
Veterans Way/College Ave	Eastbound	9	28	27	24	88	185
Veterans Way/College Ave	Westbound	12	33	25	27	97	
University Dr/Rural Rd	Eastbound	5	16	12	20	54	106
University Dr/Rural Rd	Westbound	13	20	8	12	52	
Dorsey Ln/Apache Blvd	Eastbound	10	51	52	46	159	266
Dorsey Ln/Apache Blvd	Westbound	15	35	25	31	107	
McClintock Dr/Apache Blvd	Eastbound	6	19	14	21	60	200
McClintock Dr/Apache Blvd	Westbound	30	58	21	30	139	
Smith-Martin/Apache Blvd	Eastbound	4	9	5	7	25	68
Smith-Martin/Apache Blvd	Westbound	8	19	7	10	43	



VALLEY METRO 2023 ORIGIN AND DESTINATION SURVEY FINAL REPORT

		O2O Goals (20%) See Row 83 and 83					
Rail Station	Direction	AM PEAK 6AM- 8:59AM	MIDDAY 9AM- 2:59PM	PM PEAK 3PM- 5:59PM	NIGHT 6PM- 5:59AM	Direction TOTAL	Station TOTALS
Price-101/Apache Blvd	Eastbound	6	11	5	10	32	103
Price-101/Apache Blvd	Westbound	18	30	10	13	71	
Sycamore/Main St	Eastbound	9	24	15	21	69	167
Sycamore/Main St	Westbound	17	35	18	28	98	
Alma School Rd/Main St	Eastbound	9	22	13	22	65	161
Alma School Rd/Main St	Westbound	18	34	17	27	96	
Country Club Dr/Main St	Eastbound	6	15	9	12	42	142
Country Club Dr/Main St	Westbound	18	35	19	28	100	
Center St/Main St	Eastbound	2	8	3	5	19	70
Center St/Main St	Westbound	8	19	11	13	51	
Mesa Dr/Main St	Eastbound	4	9	6	12	30	115
Mesa Dr/Main St	Westbound	16	28	16	25	85	
Stapley Dr/Main St	Eastbound	2	6	2	5	16	75
Stapley Dr/Main St	Westbound	11	21	12	16	60	
Gilbert Rd/Main St	Eastbound	0	0	0	0	0	270
Gilbert Rd/Main St	Westbound	57	93	43	77	270	
GRAND TOTAL FOR RAIL		888	1,899	1,211	1,575	5,573	5,573

O2O Survey Completed by Time of Day and Direction

VM Rail O2O Surveys Completed by Station, Time of Day, and Direction

Rail Station	Direction	O2O Surveys Collected				Direction TOTAL	Station TOTALS
		AM PEAK 6AM- 8:59AM	MIDDAY 9AM- 2:59PM	PM PEAK 3PM- 5:59PM	NIGHT 6PM- 5:59AM		
Dunlap/19th Ave	Eastbound	86	168	68	142	464	464
Dunlap/19th Ave	Westbound	0	0	0	0	0	
Northern/19th Ave	Eastbound	35	67	25	35	162	198
Northern/19th Ave	Westbound	1	8	9	18	36	
Glendale/19th Ave	Eastbound	30	60	19	40	149	189
Glendale/19th Ave	Westbound	3	13	13	11	40	
Montebello/19th Ave	Eastbound	27	71	58	32	188	237
Montebello/19th Ave	Westbound	5	11	11	22	49	
19th Ave/Camelback	Eastbound	60	66	46	30	202	253
19th Ave/Camelback	Westbound	5	16	19	11	51	
7th Ave/Camelback	Eastbound	21	25	13	13	72	109
7th Ave/Camelback	Westbound	6	16	8	7	37	
Central Ave/Camelback	Eastbound	28	29	9	22	88	130
Central Ave/Camelback	Westbound	7	8	15	12	42	
Campbell/Central Ave	Eastbound	7	23	10	3	43	74
Campbell/Central Ave	Westbound	3	6	13	9	31	
Indian School/Central Ave	Eastbound	22	56	20	21	119	191
Indian School/Central Ave	Westbound	9	11	37	15	72	
Osborn/Central Ave	Eastbound	13	25	14	9	61	106
Osborn/Central Ave	Westbound	11	5	14	15	45	
Thomas/Central Ave	Eastbound	6	45	15	29	95	160
Thomas/Central Ave	Westbound	3	20	27	15	65	
Encanto/Central Ave	Eastbound	3	16	10	3	32	51
Encanto/Central Ave	Westbound		6	9	4	19	
McDowell/Central Ave	Eastbound	13	28	17	18	76	124
McDowell/Central Ave	Westbound	8	13	19	8	48	
Roosevelt/Central Ave	Eastbound	9	21	10	10	50	103
Roosevelt/Central Ave	Westbound	8	9	17	19	53	
Van Buren/1st Ave	Eastbound	23	24	43	21	111	200



VALLEY METRO 2023 ORIGIN AND DESTINATION SURVEY FINAL REPORT

Rail Station	Direction	O2O Surveys Collected				Direction TOTAL	Station TOTALS
		AM PEAK 6AM- 8:59AM	MIDDAY 9AM- 2:59PM	PM PEAK 3PM- 5:59PM	NIGHT 6PM- 5:59AM		
Van Buren/Central Ave	Westbound	18	22	27	22	89	
Jefferson/1st Ave	Eastbound	11	29	26	18	84	168
Washington/Central Ave	Westbound	4	24	35	21	84	
3rd St/Jefferson	Eastbound	14	56	80	58	208	327
3rd St/Washington	Westbound	9	14	33	63	119	
12th St/Jefferson	Eastbound	16	16	11	11	54	112
12th St/Washington	Westbound	12	13	16	17	58	
24th St/Jefferson	Eastbound	14	21	17	9	61	118
24th St/Washington	Westbound	9	19	16	13	57	
38th St/Washington	Eastbound	7	17	6	2	32	81
38th St/Washington	Westbound	12	13	15	9	49	
44th St/Washington	Eastbound	25	20	23	35	103	216
44th St/Washington	Westbound	11	23	30	49	113	
50th/Washington	Eastbound	10	7	5	3	25	64
50th/Washington	Westbound	13	10	13	3	39	
Priest Dr/Washington St	Eastbound	12	8	13	4	37	104
Priest Dr/Washington St	Westbound	8	16	23	20	67	
Center Pkwy/Washington St	Eastbound	8	4	7	5	24	66
Center Pkwy/Washington St	Westbound	3	11	18	10	42	
Mill Ave/Third St	Eastbound	6	7	23	20	56	192
Mill Ave/Third St	Westbound	14	41	39	42	136	
Veterans Way/College Ave	Eastbound	10	13	25	16	64	187
Veterans Way/College Ave	Westbound	22	22	53	26	123	
University Dr/Rural Rd	Eastbound	18	29	55	46	148	288
University Dr/Rural Rd	Westbound	24	41	44	31	140	
Dorsey Ln/Apache Blvd	Eastbound	25	28	12	6	71	179
Dorsey Ln/Apache Blvd	Westbound	33	45	22	8	108	
McClintock Dr/Apache Blvd	Eastbound	14	12	18	8	52	206
McClintock Dr/Apache Blvd	Westbound	48	55	29	22	154	
Smith-Martin/Apache Blvd	Eastbound	8	7	7	9	31	91
Smith-Martin/Apache Blvd	Westbound	12	19	17	12	60	



VALLEY METRO 2023 ORIGIN AND DESTINATION SURVEY FINAL REPORT

		O2O Surveys Collected					
Rail Station	Direction	AM PEAK 6AM- 8:59AM	MIDDAY 9AM- 2:59PM	PM PEAK 3PM- 5:59PM	NIGHT 6PM- 5:59AM	Direction TOTAL	Station TOTALS
Price-101/Apache Blvd	Eastbound	11	5	7	5	28	129
Price-101/Apache Blvd	Westbound	42	29	11	19	101	
Sycamore/Main St	Eastbound	7	22	14	6	49	162
Sycamore/Main St	Westbound	22	30	34	27	113	
Alma School Rd/Main St	Eastbound	6	18	10	8	42	148
Alma School Rd/Main St	Westbound	31	36	24	15	106	
Country Club Dr/Main St	Eastbound	4	13	8	3	28	130
Country Club Dr/Main St	Westbound	20	42	22	18	102	
Center St/Main St	Eastbound	1	9	3	8	21	72
Center St/Main St	Westbound	5	24	10	12	51	
Mesa Dr/Main St	Eastbound	2	8	1	3	14	141
Mesa Dr/Main St	Westbound	30	40	31	26	127	
Stapley Dr/Main St	Eastbound	6	6	3	1	16	89
Stapley Dr/Main St	Westbound	18	34	15	6	73	
Gilbert Rd/Main St	Eastbound	0	0	0	0	0	326
GRAND TOTAL FOR RAIL		1199	1977	1599	1410		6185