

2014-2015 Valley Metro Onboard Survey FINAL REPORT



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

Developed by:
ETC Institute



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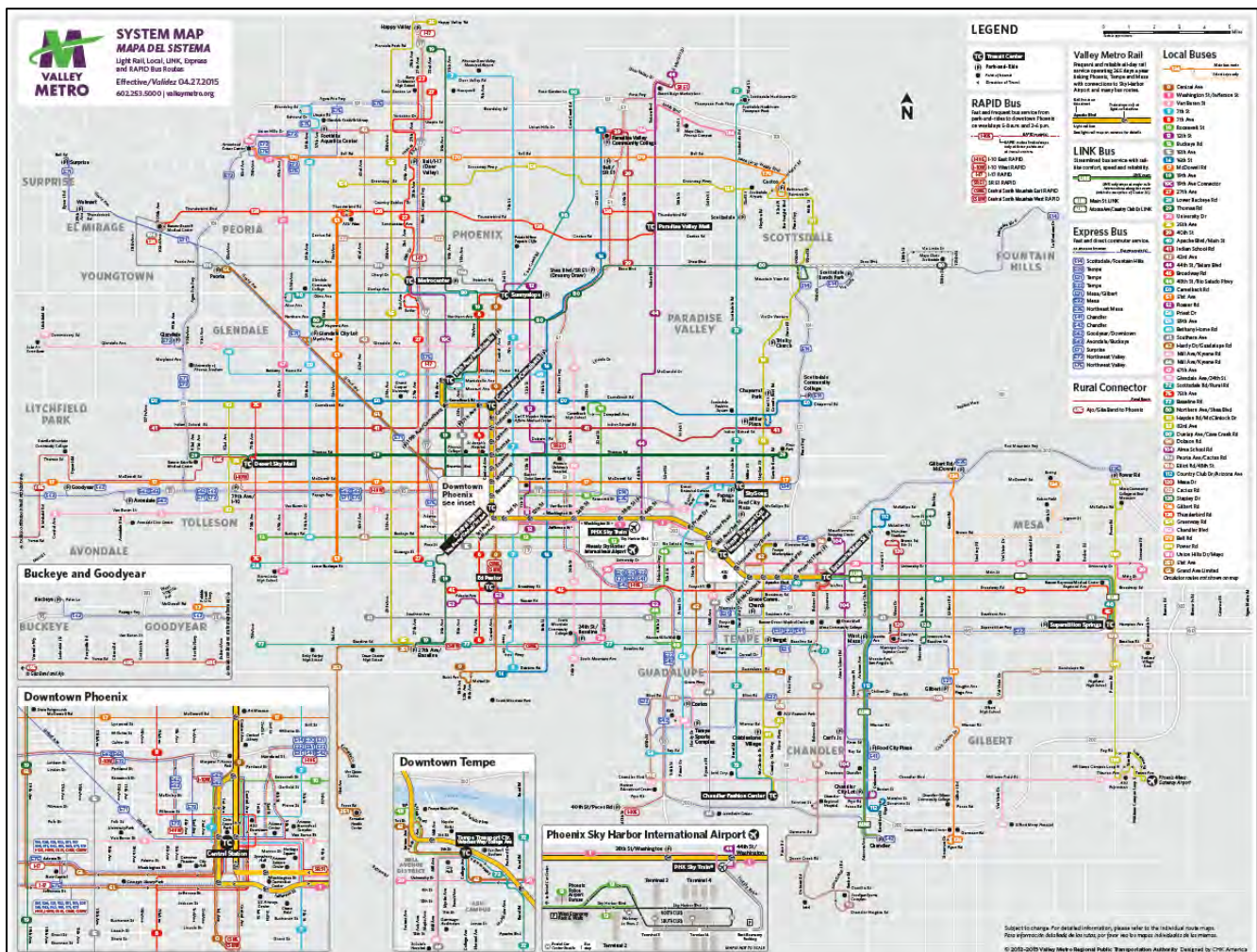
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ACRONYMS AND ABBREVIATIONS

APC	Automatic Passenger Counter
FTA	Federal Transit Administration
MAG	Maricopa Association of Governments
Project	Valley Metro On-Board Survey
QA/QC	Quality Assurance/Quality Control
RTD	Route, Time of Day, and Direction
SRRT	Survey Records Review Team
VSEP	Visual Survey Editor Program



EXECUTIVE SUMMARY

Valley Metro conducted a transit on-board survey during the Spring of 2015. The purpose of this project was to gather updated travel behavior data from transit users that encompasses all rail and bus fixed route services in the Phoenix metropolitan planning area. The data will be used for the following reasons:

1. Compile statistically accurate information about transit customers and how they use the transit system;
2. Generate reliable linked origin-destination data needed by Valley Metro and the Phoenix metropolitan area to support computerized travel demand modeling and transportation network simulation activities for purposes of regional air quality forecasting and long-range transportation planning;
3. Assess changes in trip characteristics and ridership profiles of transit passengers by comparing the 2014-2015 Transit Passenger Survey results with those from previous surveys;
4. Assist in fulfilling Valley Metro's commitment to the Federal Transit Administration (FTA) to conduct a thorough *Before and After Study* of the effects on transit ridership resulting from Central Mesa Extension. Valley Metro is also interested in understanding the effects on transit ridership on the locally funded Northwest Extension (Phase 1);
5. Meet the Title VI Civil Right Requirements per the latest Federal Transit Administration (FTA) guidance; and,
6. Survey results will be utilized for NTD reporting.

The goal was to obtain 15,621 completed surveys. Of those, 12,150 were to be completed with bus passengers and 3,471 were to be completed with rail passengers. The actual number of completed surveys was 21,803. Of these, 12,453 were completed with bus passengers and 9,350 were completed with rail passengers.

The magnitude of the survey will allow regional planners to better understand the needs and travel patterns of many specialized populations. For example, the final database contains responses from:

- Nearly 11,800 people who do not have cars
- More than 2,300 people under age 18 and
- More than 2,900 people age 55 or older
- More than 5,300 people with Hispanic/Latino ethnicity
- More than 5,500 students, including nearly than 3,600 college/university students and more than 1,700 students in grades K-12

- Nearly 4,500 people living in households with incomes of less than \$15,000 per year
- More than 15,200 people who were employed full or part time
- Nearly 2,400 people who were not employed but were seeking work

SOME IMPORTANT FINDINGS FROM THE ANALYSIS OF THE VALLEY METRO RIDERS ARE THE FOLLOWING:

- Sixty percent of all transit riders (60.3%) are between the ages of 19 and 34
- Over fifty percent of all Valley Metro transit riders (53.8%) don't have a valid driver's license
- Walking is the dominant access and egress mode for all riders, on average 88.0%
- About sixty-six percent (65.9%) of Valley Metro transit riders use only one route to complete their one-way trip
- Almost one-fourth (23.7%) of all Valley Metro transit riders speak another language besides English at home

Chapter 1 SURVEY DESIGN

1.1 Survey Development Process

The survey development process began by having representatives from MAG and Valley Metro in cooperation with ETC Institute review the data requirements for the transit on-board survey. Since the primary objective for the project was to improve the regional transit ridership forecasts produced by MAG's travel demand model, many of the questions focused on collecting data that will support current and future transportation forecasting efforts. After multiple iterations of input and review, the survey instrument was shared with representatives of the FTA to ensure all Federal requirements and expectations for the design of the survey were met. All of the suggestions from the FTA staff were incorporated into the final version of the survey. The final version of the paper questionnaire is included in Appendix A.

The purpose of this project is to gather updated travel behavior data from transit users that encompasses all rail and bus fixed route services in the Phoenix metropolitan planning area. The data will be used to (1) compile statistically accurate information about transit customers and how they use the transit system, (2) generate reliable linked origin-destination data needed by Valley Metro and the Maricopa Association of Governments (MAG) to support computerized travel demand modeling and transportation network simulation activities for purposes of regional air quality forecasting and long-range transportation planning, (3) assess changes in trip characteristics and ridership profiles of transit passengers by comparing the 2014/2015 Transit Passenger Survey results with those from previous surveys, (4) assist in fulfilling Valley Metro's commitment to the Federal Transit Administration (FTA) to conduct a thorough *Before and After Study* of the effects on transit ridership resulting from Central Mesa Extension. Valley Metro is also interested in understanding the effects on transit ridership on the locally funded Northwest Extension (Phase 1), (5) meet the Title VI Civil Right Requirements per the latest Federal Transit Administration (FTA) guidance, and (6) survey results will be utilized for NTD reporting.

1.2 Types of Data Collected

To ensure the length of the survey did not negatively affect the response rate, the survey questions were divided into two categories: "required" and "desired" data as described below.

1.2.1 Required data

Required data involved questions for which a response from a respondent was required in order for the survey to be considered complete. At a minimum, the full intercept survey was designed to gather the following information:

- Origin address
- Destination address
- Boarding location
- Alighting location
- Home address
- Access mode
- Egress mode
- Trip purpose/type of place at the origin
- Trip purpose/type of place at the destination
- Number of transfers
- Transfer routes
- Rail Transfer Stations
- Time of Day Trip was completed
- Direction of travel
- Access location to transit
- Egress location from transit
- Method of payment
- Number of vehicles available to the household
- Number of household occupants
- Student status
- Employment status
- Driver's licenses status
- Age
- Disability status
- Race/Ethnicity
- Gender
- Income
- English language ability

1.2.2 Desired data

Desired data involved questions for which a response from a respondent was desired, but was not required in order for the survey to be considered complete. The data that were considered to be “desired” are listed below:

- Distance walked from the origin to the transit system (if applicable)
- Distance walked from the transit system to the destination (if applicable)
- Park and ride location (if applicable) on either end of the trip
- Veteran Status
- How respondents get transit schedule information
- Name of the school where the respondent attends college or school (if applicable)

1.2.3 Additional Data Added

Other data was added after the survey was administered. The most important type of data that was added following the administration of the survey involved the purpose of the respondent's trip. The purpose of the trip was determined by the types of

destinations that were visited by the respondent. The purpose of the trip was classified as one of eight trip purposes that are used by the region's travel demand model:

Home-Based Work (HBW): trips that began at home and ended at work or began at work and ended at home.

Home-Based Shopping (HBS): trips that began at home and ended at a shopping area or began at a shopping area and ended at home. If the respondent worked at a shopping area, the trip was classified as a HBW trip.

Home-Based College (HBC): trips that began at home and ended at a college/university or began at a college/university and ended at home. If the respondent worked at a college/university, the trip was classified as a HBW trip

Home-Based School (HSL) trips that began at home and ended at a K-12 school or began at a K-12 school and ended at home. If the respondent worked at a K-12 school, the trip was classified as a HBW trip

Home-Based Medical (HBM): trips that began at home and ended at a medical facility (hospital/doctor's office) or began at a medical facility and ended at home. If the respondent worked at a medical facility, the trip was classified as a HBW trip

Home-Based Airport (HBA): trips that began at home and ended at an airport or began at an airport and ended at home. If the respondent worked at an airport, the trip was classified as a HBW trip

Home-Based Other (HBO): trips that began at home and ended at any other location not previously listed or began at any location not previously listed and ended at home.

Non-Home-Based (NHB): trips that did not begin or end at home.

1.3 Descriptions of the Survey Instruments

The survey instrument was designed to be administered as a face-to-face interview using tablet personal computers (PCs) and printed surveys. Tablet PCs were the primary method and paper surveys, which were printed on heavy card stock for easy distribution and completion, were only used on some express route buses.

The tablet PCs were the preferred method as the tablet PC's have an on-screen mapping features that allows for real-time geocoding of addresses and places based off of either address, intersection or place searches based on feedback from respondents. The respondents can then confirm the geocoded location based on the on-screen map that shows the searched address/location via a Google Map indicator icon. In addition to using the mapping feature to collect the GPS coordinates of major survey locations

(home address, origin address, destination address, boarding location, and alighting location), the tablet PC also allows the surveyor to walk through each question with the respondent to answer any questions as well as to ensure the quality of the data collected. The respondent can also press the answers to the questions directly on the tablet PC during the demographic section in order to allow for more privacy. The Tablet Version Survey can be found in Appendix B.

- For express routes, the respondent generally has a longer ride time and the routes often serve employed travelers with higher education levels. The combination of higher education levels, longer ride time, and the ease of distributing the paper surveys to a higher number of passengers often led to a much higher percentage of surveys being captured than would have been possible by using tablet PCs alone while still maintaining a high level of accuracy. Each paper survey contained a serial number that was used by ETC Institute to track the route and sequence in which surveys were completed. While most respondents completed the survey during their trips, postage-paid return envelopes were available for riders who did not have time to complete the survey while onboard the express buses. The paper version of the survey is provided in Appendix A.

Respondents who did not have time to complete the survey during their bus trip were also given the option of providing their phone numbers for follow-up. Those who provided their phone numbers were then contacted by ETC Institute's call center within three days of the original attempt to survey the rider to gather the remaining information needed to create a complete survey record.

Bilingual interviewers were also hired to administer the surveys on tablet PCs in Spanish. Paper surveys were also available in Spanish. ETC Institute's Call Center was also able to follow-up in both Spanish and Chinese.

Chapter 2 SAMPLING PROCEDURES

2.1 On-to-Off Sampling Goals

An on-to-off survey is meant to capture the ridership flow of the bus route. In other words, the On-to-Off Survey captures where the individual rider boarded the bus and the corresponding location where the rider alighted. This allows for a more comprehensive understanding of the true ridership flow of the route, which then allows the main survey data to be more accurately expanded. The on-to-off survey was conducted on routes that had a daily ridership of 500 or more passengers. For all other routes, boarding and alighting location information collected during the main full intercept survey data collection process was used in place of the on-to-off surveys. During the collection, the survey team collected samples from 25% of the bus runs. The goal was to collect over 44,000 completed on-to-off surveys, with goals of collecting 20% of the estimated weekday ridership by time period and direction for each route. Table 2-1 series shows the original sampling goals and the actual number of completed on-to-off surveys that were obtained by route and direction.

Table 2-1a: Sampling Goals and On-to-Off Surveys Completed by Time of Day and Direction (Bus Only)

Valley Metro 2015 Origin-Destination Survey Preliminary Sampling Plan for BUS ROUTES			SAMPLING GOALS FOR ON-TO-OFF SURVEY						ON-TO-OFF SURVEY Completed				
Route Number	Route Name	Direction	SAMPLING RATE	AM PEAK 6AM-859AM	MIDDAY 9AM-259PM	PM PEAK 3PM-559PM	NIGHT 6PM-559AM	TOTAL	AM PEAK 6AM-859AM	MIDDAY 9AM-259PM	PM PEAK 3PM-559PM	NIGHT 6PM-559AM	TOTAL
Zero	Central	Northbound	20%	97	193	119	82	491	141	340	147	92	720
Zero	Central	Southbound	20%	104	203	135	80	523	116	343	166	99	724
3	Van Buren	Eastbound	20%	105	197	134	84	520	124	415	160	160	859
3	Van Buren	Westbound	20%	103	239	152	96	590	218	245	255	96	814
7	7th Street	Northbound	20%	101	188	111	69	469	197	261	190	71	719
7	7th Street	Southbound	20%	97	162	115	65	440	97	377	173	73	720
8	7th Ave	Northbound	20%	43	82	43	30	198	43	276	92	30	441
8	7th Ave	Southbound	20%	37	92	45	25	200	57	311	194	37	599
10	Roosevelt/Grant	Northbound	20%	112	90	46	32	280	72	283	136	19	510
10	Roosevelt/Grant	Southbound	20%	45	110	119	57	332	15	168	188	71	442
12	12th St	Northbound	20%	30	41	30	19	120	90	63	62	20	235
12	12th St	Southbound	20%	25	50	26	9	110	70	52	26	12	160
13	Buckeye	Eastbound	20%	19	30	18	14	81	33	89	12	16	150
13	Buckeye	Westbound	20%	19	28	18	11	75	48	55	42	22	167
15	15th Ave	Northbound	20%	19	46	29	21	116	23	74	41	22	160
15	15th Ave	Southbound	20%	27	44	20	13	103	57	97	51	20	225
16	16th St	Northbound	20%	80	184	91	62	417	153	204	151	62	570
16	16th St	Southbound	20%	65	169	108	66	407	137	174	124	88	523
17	McDowell	Eastbound	20%	138	245	141	95	618	161	411	143	79	794
17	McDowell	Westbound	20%	136	249	168	97	649	178	277	223	124	802
19	19th Ave	Northbound	20%	113	235	153	97	598	198	236	200	119	753
19	19th Ave	Southbound	20%	117	199	156	100	572	138	321	157	167	783
27	27th Ave	Northbound	20%	97	170	106	86	459	357	175	257	110	899
27	27th Ave	Southbound	20%	85	162	92	62	402	103	396	132	78	709
29	Thomas Rd	Eastbound	20%	177	307	198	127	809	180	416	241	168	1005
29	Thomas Rd	Westbound	20%	153	294	206	121	774	266	307	240	121	934
30	University	Eastbound	20%	44	96	78	66	285	90	125	148	68	431
30	University	Westbound	20%	58	86	50	58	253	98	119	106	66	389
35	35th Ave	Northbound	20%	126	226	172	108	632	363	355	284	270	1272
35	35th Ave	Southbound	20%	118	244	166	122	650	125	537	209	125	996
40	Apache/Main St	Eastbound	20%	33	100	50	31	213	77	143	151	62	433
40	Apache/Main St	Westbound	20%	35	69	36	41	181	46	201	112	63	422
41	Indian School	Eastbound	20%	178	300	168	90	737	242	346	255	175	1018
41	Indian School	Westbound	20%	104	277	141	75	598	163	278	326	138	905
43	43rd Ave	Northbound	20%	51	104	80	58	292	131	115	193	68	507
43	43rd Ave	Southbound	20%	52	87	44	32	215	60	179	44	92	375
44	44th St/Tatum	Northbound	20%	46	75	55	39	216	140	84	81	55	360
44	44th St/Tatum	Southbound	20%	35	73	49	33	190	63	154	70	73	360
45	Broadway	Eastbound	20%	85	126	96	79	386	144	156	131	103	534
45	Broadway	Westbound	20%	69	127	91	65	352	77	220	129	95	521
48	48th Street/Rio Salado	Northbound	20%	30	51	40	46	167	34	61	121	87	303
48	48th Street/Rio Salado	Southbound	20%	23	44	36	43	146	35	88	88	47	258
50	Camelback	Eastbound	20%	183	214	151	91	639	184	436	172	114	906
50	Camelback	Westbound	20%	119	228	221	113	680	159	405	233	181	978
51	51st Ave	Northbound	20%	26	67	37	26	157	63	93	121	45	322
51	51st Ave	Southbound	20%	26	51	35	24	136	37	105	86	41	269
52	Roeser	Eastbound	20%	14	21	16	8	58	40	40	53	17	150
52	Roeser	Westbound	20%	22	19	17	10	68	29	61	63	12	165
56	Priest Drive	Northbound	20%	40	68	71	52	230	46	63	94	56	259
56	Priest Drive	Southbound	20%	47	53	46	40	186	93	149	130	41	413
59	59th Ave	Northbound	20%	60	109	65	45	280	209	168	174	45	596
59	59th Ave	Southbound	20%	60	140	83	56	339	65	285	95	130	575
60	Bethany Home	Eastbound	20%	63	82	55	33	233	100	156	57	47	360
60	Bethany Home	Westbound	20%	43	85	85	44	258	84	107	112	42	345
61	Southern	Eastbound	20%	135	228	159	122	645	226	318	395	146	1085
61	Southern	Westbound	20%	124	212	147	114	598	136	437	163	205	941
62	Hardy/Guadalupe	Northbound	20%	18	32	25	32	107	63	63	85	32	243
62	Hardy/Guadalupe	Southbound	20%	15	26	24	20	85	92	43	110	34	279
65	Mill/Kyrene	Northbound	20%	26	30	21	15	92	42	33	54	9	138
65	Mill/Kyrene	Southbound	20%	17	28	31	8	83	29	45	49	12	135
66	Mill/Kyrene	Northbound	20%	10	22	14	10	56	12	26	37	19	94
66	Mill/Kyrene	Southbound	20%	4	16	12	12	45	38	19	29	15	101
67	67th Ave	Northbound	20%	53	105	74	44	276	137	122	108	50	417
67	67th Ave	Southbound	20%	39	85	56	42	223	58	149	126	49	382

Table 2-1a: Sampling Goals and On-to-Off Surveys Completed by Time of Day and Direction (Bus Only) (Continued)

Valley Metro 2015 Origin-Destination Survey Preliminary Sampling Plan for BUS ROUTES			SAMPLING GOALS FOR ON-TO-OFF SURVEY						ON-TO-OFF SURVEY Completed				
Route Number	Route Name	Direction	SAMPLING RATE	AM PEAK 6AM-859AM	MIDDAY 9AM-259PM	PM PEAK 3PM-559PM	NIGHT 6PM-559AM	TOTAL	AM PEAK 6AM-859AM	MIDDAY 9AM-259PM	PM PEAK 3PM-559PM	NIGHT 6PM-559AM	TOTAL
70	Glendale Ave/24th St	Eastbound	20%	149	214	176	120	659	152	387	183	199	921
70	Glendale Ave/24th St	Westbound	20%	117	225	155	94	591	199	260	281	182	922
72	Scottsdale Rd/Rural	Northbound	20%	89	143	106	67	405	188	191	127	115	621
72	Scottsdale Rd/Rural	Southbound	20%	61	123	111	76	371	65	172	225	151	613
77	Baseline	Eastbound	20%	77	144	85	56	362	85	145	122	15	367
77	Baseline	Westbound	20%	60	115	104	48	327	89	122	102	128	441
80	Northern/Shea	Eastbound	20%	58	77	32	25	192	123	148	57	60	388
80	Northern/Shea	Westbound	20%	39	96	67	37	239	47	104	140	51	342
81	Hayden/McClintock	Northbound	20%	65	103	92	76	337	92	211	94	82	479
81	Hayden/McClintock	Southbound	20%	48	70	46	41	205	62	234	137	42	475
90	Dunlap/Cave Creek	Eastbound	20%	51	114	56	50	271	106	149	82	62	399
90	Dunlap/Cave Creek	Westbound	20%	43	102	67	45	258	68	102	93	70	333
96	Dobson	Northbound	20%	27	65	49	36	178	27	211	104	109	451
96	Dobson	Southbound	20%	52	94	59	64	269	85	151	69	73	378
104	Alma School	Northbound	20%	16	37	37	16	106	47	46	64	7	164
104	Alma School	Southbound	20%	21	30	14	9	74	31	78	43	29	181
106	Peoria/Shea	Eastbound	20%	54	117	53	39	262	40	252	107	100	499
106	Peoria/Shea	Westbound	20%	42	87	58	42	229	78	136	163	84	461
108	Elliot Rd	Eastbound	20%	24	44	40	24	131	25	82	66	24	197
108	Elliot Rd	Westbound	20%	27	40	23	18	108	27	91	83	25	226
112	Country Club/Arizona Ave	Northbound	20%	34	101	60	51	245	37	134	69	64	304
112	Country Club/Arizona Ave	Southbound	20%	40	78	40	26	183	55	122	66	30	273
136	Gilbert Rd	Northbound	20%	15	42	34	12	103	28	47	32	5	112
136	Gilbert Rd	Southbound	20%	24	33	18	11	87	25	79	20	7	131
138	Thunderbird	Eastbound	20%	21	49	28	23	121	25	98	78	23	224
138	Thunderbird	Westbound	20%	23	39	25	19	106	27	66	79	43	215
154	Greenway	Eastbound	20%	46	40	24	17	127	69	65	39	6	179
154	Greenway	Westbound	20%	16	31	28	17	91	29	39	58	29	155
156	Chandler Blvd/Williams Field Rd	Eastbound	20%	15	33	25	16	89	26	71	30	20	147
156	Chandler Blvd/Williams Field Rd	Westbound	20%	17	26	17	12	72	25	33	32	27	112
170	Bell	Eastbound	20%	54	125	84	62	324	86	206	186	42	520
170	Bell	Westbound	20%	37	103	65	52	257	67	138	149	99	453
184	Power Rd	Northbound	20%	22	37	24	17	99	21	40	25	9	95
184	Power Rd	Southbound	20%	24	25	21	13	83	8	37	22	25	92
186	Union Hills	Eastbound	20%	45	70	31	30	176	109	78	80	17	284
186	Union Hills	Westbound	20%	33	59	42	23	157	38	83	54	31	206
640	Main St Link	Eastbound	20%	29	37	32	45	143	47	39	122	11	219
640	Main St Link	Westbound	20%	32	41	38	30	141	41	98	41	58	238
641	AZ Ave Link	Northbound	20%	22	48	22	15	108	26	121	79	60	286
641	AZ Ave Link	Southbound	20%	22	39	37	14	112	44	121	92	33	290
ALEX	ALEX	Circular	20%		130			130		135			135
DASH	DASH	Circular	20%		395			395		523			523
SMRT	SCOTTSDALE MILLER RD TROLLEY	Circular	20%		477			477		577			577
SNT	SCOTTSDALE NEIGHBORHOOD TROLLEY	Circular	20%		560			560		786			786
EARTH	EARTH	Circular	20%		286			286		357			357
FLASH	FLASH	Circular	20%		253			253		336			336
JUPITER	JUPITER	Circular	20%		349			349		312			312
MARS	MARS	Circular	20%		249			249		286			286
MARY	MARY	Circular	20%		324			324		343			343
MERCURY	MERCURY	Circular	20%		434			434		429			429
METS 19C	METS 19C	Circular	20%		829			829		1015			1015
SMART	SMART	Circular	20%		167			167		178			178
VENUS	VENUS	Circular	20%		322			322		334			334
ZOOM	ZOOM	Circular	20%		144			144		161			161
GRAND TOTAL BUS ROUTES				11010	11110	7577	5063	34760	10757	18597	13622	8399	51375

Table 2-1b: Sampling Goals and On-to-Off Surveys Completed by Time of Day and Direction (Rail Only)

Valley Metro 2015 Origin-Destination Survey Preliminary Sampling Plan for RAIL		SAMPLING GOALS FOR ON-TO-OFF SURVEY (20% Sampling on All Stations)						ON-TO-OFF SURVEY Completed				
Route Number	Direction	SAMPLING RATE	AM PEAK 6AM- 859AM	MIDDAY 9AM- 259PM	PM PEAK 3PM- 559PM	NIGHT 6PM- 559AM	TOTAL	AM PEAK 6AM- 859AM	MIDDAY 9AM- 259PM	PM PEAK 3PM- 559PM	NIGHT 6PM- 559AM	TOTAL
19th Ave / Camelback	Eastbound	20%	108	106	50	66	330	153	184	98	89	524
19th Ave / Camelback	Westbound	20%	9	37	24	27	97	18	38	31	31	118
38th St / Washington	Eastbound	20%	2	4	2	4	12	36	45	37	10	128
38th St / Washington	Westbound	20%	14	24	14	14	65	30	35	32	21	118
44th St / Washington	Eastbound	20%	24	43	26	38	131	52	105	66	40	263
44th St / Washington	Westbound	20%	26	61	45	54	186	40	79	99	73	291
7th Ave / Camelback	Eastbound	20%	33	53	28	34	149	65	69	68	48	250
7th Ave / Camelback	Westbound	20%	8	30	28	23	89	9	31	38	24	102
Campbell / Central Ave	Eastbound	20%	18	38	75	20	151	31	43	95	27	196
Campbell / Central Ave	Westbound	20%	5	22	67	15	109	8	23	124	17	172
Center Pkwy / Washington St	Eastbound	20%	12	15	7	12	46	13	26	14	16	69
Center Pkwy / Washington St	Westbound	20%	6	8	5	10	28	7	20	25	11	63
Central Ave / Camelback	Eastbound	20%	42	49	29	31	152	92	88	64	42	286
Central Ave / Camelback	Westbound	20%	5	15	19	15	55	6	16	46	15	83

Table 2-1b: Sampling Goals and On-to-Off Surveys Completed by Time of Day and Direction (Rail Only)

Valley Metro 2015 Origin-Destination Survey Preliminary Sampling Plan for RAIL		SAMPLING GOALS FOR ON-TO-OFF SURVEY (20% Sampling on All Stations)						ON-TO-OFF SURVEY Completed				
Route Number	Direction	SAMPLING RATE	AM PEAK 6AM- 859AM	MIDDAY 9AM- 259PM	PM PEAK 3PM- 559PM	NIGHT 6PM- 559AM	TOTAL	AM PEAK 6AM- 859AM	MIDDAY 9AM- 259PM	PM PEAK 3PM- 559PM	NIGHT 6PM- 559AM	TOTAL
Dorsey Ln / Apache Blvd	Eastbound	20%	7	17	18	25	68	11	18	19	25	73
Dorsey Ln / Apache Blvd	Westbound	20%	31	46	21	26	125	38	52	24	35	149
EB 12th St / Jefferson	Eastbound	20%	17	21	13	17	67	19	35	34	27	115
EB 12th St / Jefferson	Westbound	20%	0	0	0	0	0	0	0	0	0	0
EB 24th St / Jefferson	Eastbound	20%	27	37	24	30	118	52	65	38	43	198
EB 24th St / Jefferson	Westbound	20%	0	0	0	0	0	0	0	0	0	0
EB 3rd St / Jefferson	Eastbound	20%	7	40	55	107	209	23	49	109	134	315
EB 3rd St / Jefferson	Westbound	20%	0	0	0	0	0	0	0	0	0	0
EB Jefferson / 1st Ave	Eastbound	20%	24	51	63	39	177	44	69	82	56	251
EB Jefferson / 1st Ave	Westbound	20%	0	0	0	0	0	0	0	0	0	0
EB Van Buren / 1st Ave	Eastbound	20%	45	116	84	71	316	92	142	170	92	496
EB Van Buren / 1st Ave	Westbound	20%	0	0	0	0	0	0	0	0	0	0
Encanto / Central Ave	Eastbound	20%	10	24	21	16	70	18	28	39	18	103
Encanto / Central Ave	Westbound	20%	6	14	11	10	41	12	16	15	13	56
Indian School / Central Ave	Eastbound	20%	52	100	62	41	255	103	140	124	51	418
Indian School / Central Ave	Westbound	20%	20	39	39	23	121	20	39	50	31	140
McClintock Dr / Apache Blvd	Eastbound	20%	6	17	16	20	59	9	17	19	20	65
McClintock Dr / Apache Blvd	Westbound	20%	81	107	46	52	285	108	151	62	58	379
McDowell / Central Ave	Eastbound	20%	30	84	57	41	212	59	86	66	48	259
McDowell / Central Ave	Westbound	20%	23	68	51	37	179	33	75	78	43	229
Mill Ave / Third St	Eastbound	20%	5	22	23	35	86	14	32	37	36	119
Mill Ave / Third St	Westbound	20%	21	47	47	85	199	37	82	69	85	273
Montebello / 19th Ave	Eastbound	20%	163	275	147	183	769	315	398	377	263	1353
Montebello / 19th Ave	Westbound	20%	0	0	0	0	0	0	0	0	0	0
Osborn / Central Ave	Eastbound	20%	21	44	38	28	132	36	47	64	43	190
Osborn / Central Ave	Westbound	20%	9	26	23	18	76	13	31	35	25	104
Price-101 / Apache Blvd	Eastbound	20%	3	8	5	9	24	4	11	5	11	31
Price-101 / Apache Blvd	Westbound	20%	66	101	30	33	231	96	119	53	46	314
Priest Dr / Washington St	Eastbound	20%	42	85	70	91	288	58	91	87	126	362
Priest Dr / Washington St	Westbound	20%	19	31	43	34	126	35	34	54	47	170
Roosevelt / Central Ave	Eastbound	20%	17	33	22	20	91	31	46	31	38	146
Roosevelt / Central Ave	Westbound	20%	16	35	22	26	99	31	49	43	37	160
Smith-Martin / Apache Blvd	Eastbound	20%	9	17	12	15	53	10	22	16	15	63
Smith-Martin / Apache Blvd	Westbound	20%	14	26	13	16	69	31	29	21	19	100
Sycamore / Main St	Eastbound	20%	0	0	0	0	0	0	0	0	0	0
Sycamore / Main St	Westbound	20%	172	282	151	181	786	333	482	327	224	1366
Thomas / Central Ave	Eastbound	20%	28	78	70	43	220	61	106	89	69	325
Thomas / Central Ave	Westbound	20%	24	47	45	29	145	28	47	61	31	167
University Dr / Rural Rd	Eastbound	20%	8	104	109	98	319	16	106	108	101	331
University Dr / Rural Rd	Westbound	20%	33	74	57	65	230	76	150	113	91	430
Veterans Way / College Ave	Eastbound	20%	12	56	57	56	181	25	62	57	60	204
Veterans Way / College Ave	Westbound	20%	27	85	77	68	257	53	85	126	96	360
WB 12th St / Washington	Eastbound	20%	0	0	0	0	0	0	0	0	0	0
WB 12th St / Washington	Westbound	20%	15	33	17	20	85	18	41	38	21	118
WB 24th St / Washington	Eastbound	20%	0	0	0	0	0	0	0	0	0	0
WB 24th St / Washington	Westbound	20%	18	39	26	27	111	23	64	45	27	159
WB 3rd St / Washington	Eastbound	20%	0	0	0	0	0	0	0	0	0	0
WB 3rd St / Washington	Westbound	20%	5	23	33	56	118	12	31	56	100	199
WB Van Buren / Central Ave	Eastbound	20%	0	0	0	0	0	0	0	0	0	0
WB Van Buren / Central Ave	Westbound	20%	96	169	106	73	444	121	164	166	81	532
WB Washington / Central Ave	Eastbound	20%	0	0	0	0	0	0	0	0	0	0
WB Washington / Central Ave	Westbound	20%	26	74	73	42	215	35	75	92	48	250
GRAND TOTAL For RAIL			1568	3102	2316	2270	9257	2713	4188	3936	2898	13735

2.1.1 Assessment of Valley Metro On-to-Off Survey

Overall, the total number of surveys exceeded the contractual requirements by more than 4,000 rail surveys and 16,500 bus surveys. More information on the on-to-off procedures and QA/QC process can be found in Chapter 4 and Chapter 5.

2.1.2 Methods for Selecting On-to-Off Survey Participants

On bus routes, the card scanning technology described in Chapter 4 allows for essentially everyone who boards the bus to be surveyed by two surveyors. The surveyor at the front will scan a card with a unique bar code that records the current GPS location in real-time, then they hand the card to the boarding passenger. When the passenger alights, another surveyor can take the card from the passenger and scan the barcode again, which will then record the current GPS location of the alighting location. The technology works so quickly that everyone boarding the bus can be surveyed.

For rail lines, a tablet survey was used that allowed an interviewer to ask rail users which station they boarded their current train and which station they would alight. This was used in place of the scanning technology used on buses because unlike bus users, essentially all rail users know the name of the stations at which they board and alight. The shortness of this two question survey, and the high level of knowledge regarding the boarding and alighting location by the rail users, allowed for one surveyor to survey essentially every rider per train car. One surveyor per car, per train could effectively administer the on-to-off survey to each rail rider.

2.1.3 Timing of the On-to-Off Survey

The on-to-off survey was administered during weekdays (Tuesday through Thursday) with the exceptions of holidays and breaks for colleges/schools.

The on-to-off Survey was administered during all the time-of-day periods that coincided with the hours that each route was operational. This was to ensure that the on-to-off data would provide the main survey with an accurate sampling plan for administration and for the data expansion. Most of the on-to-off surveys were administered between the hours of 6 a.m. and 10 p.m.

2.2 Main Intercept Survey Sampling Goals

In order to ensure that the distribution of completed surveys mirrored the actual distribution of riders who use the region's transit system, Valley Metro created Variable Sampling Rates for each bus route and light rail station as shown below in Table 2-2 Series. The sampling goals for the survey were set by applying the sampling rates average weekday ridership for each bus route/light rail station. During the collection, the survey team collected sample from 25% of the Bus Runs to reach their goals. The goals and the actual number of "complete and useable surveys" are also provided in Table 2-2 Series (see below and on the following pages).

Table 2-2 a: Sampling Goals and Main Surveys Completed by Time of Day and Direction (Bus Only)

Valley Metro 2015 Origin-Destination Survey Sampling Plan for BUS ROUTES			GOALS					COMPLETED				
Route Number	Direction	SAMPLING RATE	AM PEAK 6AM-859AM	MIDDAY 9AM-259PM	PM PEAK 3PM-559PM	NIGHT 6PM-559AM	DIRECTION TOTAL	AM PEAK 6AM-859AM	MIDDAY 9AM-259PM	PM PEAK 3PM-559PM	NIGHT 6PM-559AM	DIRECTIONAL TOTAL
Zero	Northbound	10.00%	67	72	68	48	256	58	96	60	45	259
Zero	Southbound	10.00%	60	77	63	48	247	64	88	67	36	255
1	Eastbound	10.00%	9	5	5	4	23	5	4	2	2	13
1	Westbound	10.00%	5	5	12	3	25	3	4	4	4	15
3	Eastbound	4.75%	24	44	30	19	117	26	51	33	23	133
3	Westbound	4.75%	28	64	41	26	159	37	54	36	16	143
7	Northbound	4.75%	22	40	24	15	101	30	41	24	15	110
7	Southbound	4.75%	27	46	33	18	124	23	42	25	14	104
8	Northbound	5.51%	25	16	20	10	72	16	28	17	9	70
8	Southbound	5.50%	19	18	21	12	69	12	27	18	14	71
10	Northbound	4.75%	29	14	19	9	71	28	27	25	7	87
10	Southbound	4.75%	11	10	17	8	45	13	29	27	14	83
12	Northbound	5.80%	8	11	8	5	32	9	23	13	10	55
12	Southbound	5.84%	8	12	8	5	33	15	18	14	8	55
13	Eastbound	5.95%	8	8	7	5	28	7	15	6	5	33
13	Westbound	5.97%	7	6	9	6	28	6	9	5	3	23
15	Northbound	5.82%	4	10	6	4	25	6	15	11	7	39
15	Southbound	5.86%	9	13	7	4	33	13	15	8	7	43
16	Northbound	4.75%	28	22	28	21	98	30	39	22	12	103
16	Southbound	4.75%	23	32	31	15	102	13	46	26	16	101
17	Eastbound	4.75%	55	57	72	43	227	34	61	41	26	162
17	Westbound	4.75%	36	35	44	27	144	42	43	43	28	156
19	Northbound	10.00%	99	81	99	49	328	69	120	73	56	318
19	Southbound	10.00%	78	63	89	89	318	56	91	78	48	273
27	Northbound	4.75%	18	32	20	16	86	28	39	27	22	116
27	Southbound	4.75%	30	56	32	22	140	20	39	26	19	104
28	Eastbound	10.00%	2	3	1	2	9	2	4	3	1	10
28	Westbound	10.00%	2	3	2	2	9	1	7	4	3	15
29	Eastbound	4.75%	61	96	77	69	303	46	72	42	37	197
29	Westbound	4.75%	45	46	70	30	190	39	64	55	31	189
30	Eastbound	10.00%	39	36	46	37	158	29	49	36	30	144
30	Westbound	10.00%	41	29	36	24	130	27	49	27	29	132
35	Northbound	4.75%	45	37	40	22	144	35	55	46	25	161
35	Southbound	4.75%	41	30	42	65	178	32	59	38	36	165
39	Northbound	10.00%	2	5	3	2	13	5	9	3	2	19
39	Southbound	10.00%	4	5	3	2	14	3	8	3	2	16
40	Eastbound	10.00%	18	17	20	18	72	23	44	24	14	105
40	Westbound	10.00%	24	29	23	14	90	19	44	27	24	114
41	Eastbound	4.75%	63	66	67	49	245	43	69	36	26	174
41	Westbound	4.75%	36	45	50	30	161	43	63	36	22	164
43	Northbound	4.75%	23	14	20	13	71	18	23	18	10	69
43	Southbound	4.75%	20	20	19	11	69	18	21	18	9	66
44	Northbound	4.75%	18	12	16	10	56	22	23	15	8	68
44	Southbound	5.54%	18	12	18	10	57	11	26	13	10	60
45	Eastbound	10.00%	48	45	59	37	188	50	69	48	36	203
45	Westbound	10.00%	75	50	71	49	245	41	74	48	38	201
48	Northbound	5.80%	7	4	6	5	22	8	13	11	13	45
48	Southbound	5.70%	8	5	7	4	24	15	19	12	9	55
50	Eastbound	4.75%	49	57	40	24	170	44	52	35	23	154
50	Westbound	4.75%	29	55	53	27	164	30	56	55	31	172
51	Northbound	6.60%	14	14	15	10	52	12	16	15	10	53
51	Southbound	5.74%	14	13	15	9	50	12	16	10	6	44
52	Eastbound	6.03%	8	10	4	2	24	4	6	4	2	16
52	Westbound	6.00%	7	3	3	3	16	7	7	8	3	25

**Table 2-2a: Sampling Goals and Main Surveys Completed by Time of Day and Direction (Bus Only)
(Continued)**

Valley Metro 2015 Origin-Destination Survey Sampling Plan for BUS ROUTES			GOALS					COMPLETED				
Route Number	Direction	SAMPLING RATE	AM PEAK 6AM-859AM	MIDDAY 9AM- 259PM	PM PEAK 3PM-559PM	NIGHT 6PM- 559AM	DIRECTION TOTAL	AM PEAK 6AM-859AM	MIDDAY 9AM- 259PM	PM PEAK 3PM-559PM	NIGHT 6PM- 559AM	DIRECTIONAL TOTAL
56	Northbound	4.75%	13	9	14	12	48	15	16	17	8	56
56	Southbound	5.55%	20	12	15	14	61	21	25	13	8	67
59	Northbound	4.75%	30	15	17	12	75	18	30	15	9	72
59	Southbound	4.75%	16	21	20	11	68	17	32	20	13	82
60	Eastbound	10.00%	43	38	32	23	136	37	43	30	33	143
60	Westbound	10.00%	23	37	42	22	123	35	54	45	19	153
61	Eastbound	4.75%	33	45	34	52	165	38	55	39	29	161
61	Westbound	4.75%	29	54	51	28	163	33	51	36	31	151
62	Northbound	5.85%	11	10	13	6	41	10	18	9	7	44
62	Southbound	5.93%	9	7	12	4	31	13	20	11	6	50
65	Northbound	5.91%	9	11	8	5	33	7	8	7	4	26
65	Southbound	5.94%	12	13	10	4	38	9	9	10	4	32
66	Northbound	6.04%	10	5	8	5	30	5	10	4	3	22
66	Southbound	6.08%	13	9	10	8	39	6	13	5	5	29
67	Northbound	4.75%	20	16	20	12	67	15	31	16	7	69
67	Southbound	4.75%	19	15	22	11	67	14	22	16	11	63
70	Eastbound	10.00%	95	91	94	70	349	73	118	96	62	349
70	Westbound	10.00%	101	109	95	57	362	93	109	85	54	341
72	Northbound	4.75%	36	35	33	21	124	24	32	26	16	98
72	Southbound	4.75%	21	25	27	19	92	22	34	24	17	97
75	Northbound	10.00%	6	8	5	3	21	3	5	8	2	18
75	Southbound	10.00%	4	9	9	3	25	4	7	4	2	17
77	Eastbound	4.75%	22	17	21	12	71	18	38	21	13	90
77	Westbound	4.75%	20	23	31	15	89	35	37	29	9	110
80	Eastbound	10.00%	34	27	26	26	113	37	37	24	21	119
80	Westbound	10.00%	19	28	39	30	117	24	48	33	19	124
81	Northbound	4.75%	23	22	21	18	84	18	25	24	15	82
81	Southbound	4.75%	15	12	20	12	59	18	38	20	12	88
83	Northbound	10.00%	4	9	4	2	18	4	6	4	3	17
83	Southbound	10.00%	3	7	3	2	15	5	5	8	3	21
90	Eastbound	10.00%	44	39	41	30	154	32	50	31	26	139
90	Westbound	10.00%	36	32	44	26	139	24	53	34	23	134
96	Northbound	5.58%	18	22	22	20	82	9	18	14	12	53
96	Southbound	4.75%	8	9	9	7	33	17	24	14	10	65
104	Northbound	10.00%	21	20	21	23	84	11	17	17	8	53
104	Southbound	10.00%	13	12	12	8	46	15	14	9	6	44
106	Eastbound	4.75%	21	20	20	21	83	15	27	15	12	69
106	Westbound	4.75%	13	11	12	7	43	24	27	28	14	93
108	Eastbound	5.76%	11	7	14	8	40	13	13	11	4	41
108	Westbound	5.85%	10	13	7	9	39	9	19	8	7	43
112	Northbound	10.00%	28	21	35	31	115	18	49	30	21	118
112	Southbound	10.00%	26	22	13	16	78	33	44	26	10	113
120	Northbound	10.00%	4	8	5	4	21	4	14	9	5	32
120	Southbound	10.00%	3	9	3	3	18	5	14	6	5	30
122	Eastbound	15.00%	2	4	2	1	10	5	8	13	7	33
122	Westbound	15.00%	2	3	3	2	10	5	10	8	4	27
128	Northbound	20.00%	6	11	9	8	33	9	14	16	3	42
128	Southbound	20.00%	11	12	13	7	44	11	14	9	2	36
136	Northbound	5.86%	4	11	9	3	26	5	14	10	4	33
136	Southbound	5.92%	8	11	6	4	28	9	9	5	3	26
138	Eastbound	5.80%	15	14	15	10	54	7	12	9	6	34
138	Westbound	5.85%	14	12	14	9	49	8	15	8	7	38
154	Eastbound	5.78%	15	7	7	5	34	14	15	8	5	42
154	Westbound	5.91%	6	7	13	5	32	4	20	10	5	39
156	Eastbound	5.92%	11	9	9	6	35	8	13	8	5	34
156	Westbound	5.96%	14	8	8	14	44	11	18	9	6	44
170	Eastbound	4.75%	26	21	20	13	80	16	29	22	15	82
170	Westbound	4.75%	18	21	26	13	78	10	23	18	13	64
184	Northbound	5.88%	4	4	4	3	15	6	10	7	5	28
184	Southbound	5.94%	6	5	6	4	20	8	7	9	5	29
186	Eastbound	5.59%	17	11	11	7	46	14	15	24	10	63
186	Westbound	5.66%	6	6	8	6	26	7	21	23	16	67
251	Northbound	15.00%	6	11	6	8	32	3	8	4	5	20
251	Southbound	15.00%	4	10	7	7	29	2	6	5	4	17
400-SR51	Inbound	15.00%	64	0	0	26	90	25	0	0	13	38
400-SR51	Outbound	6.03%	0	0	7	0	7	0	0	15	1	16
450-110East	Inbound	6.07%	8	0	0	12	20	17	0	0	11	28
450-110East	Outbound	10.00%	0	0	26	10	36	0	0	16	9	25
451-CSM	Inbound	10.00%	3	0	0	0	3	6	0	0	0	6
451-CSM	Outbound	10.00%	0	0	4	0	4	0	0	11	0	11
460-110West	Inbound	10.00%	26	0	0	11	37	16	0	0	9	25
460-110West	Outbound	10.00%	0	0	9	0	9	0	0	10	1	11
480-117	Inbound	10.00%	50	0	0	0	50	18	0	0	0	18
480-117	Outbound	5.97%	0	0	52	0	52	0	0	24	0	24

**Table 2-2a: Sampling Goals and Main Surveys Completed by Time of Day and Direction (Bus Only)
(Continued)**

Valley Metro 2015 Origin-Destination Survey Sampling Plan for BUS ROUTES			GOALS					COMPLETED				
Route Number	Direction	SAMPLING RATE	AM PEAK 6AM-859AM	MIDDAY 9AM- 259PM	PM PEAK 3PM-559PM	NIGHT 6PM- 559AM	DIRECTION TOTAL	AM PEAK 6AM-859AM	MIDDAY 9AM- 259PM	PM PEAK 3PM-559PM	NIGHT 6PM- 559AM	DIRECTIONAL TOTAL
514	Inbound	10.00%	3	0	0	0	3	3	0	0	0	3
514	Outbound	10.00%	0	0	2	0	2	0	0	2	0	2
520	Inbound	10.00%	3	0	0	0	3	5	0	0	0	5
520	Outbound	10.00%	0	0	3	0	3	0	0	6	0	6
521	Inbound	10.00%	5	0	0	0	5	10	0	0	0	10
521	Outbound	10.00%	0	0	5	0	5	0	0	6	0	6
522	Inbound	10.00%	5	0	0	0	5	7	0	0	0	7
522	Outbound	10.00%	0	0	7	0	7	0	0	9	0	9
531	Inbound	10.00%	13	0	0	0	13	10	0	0	0	10
531	Outbound	10.00%	0	0	12	0	12	0	0	7	0	7
533	Inbound	10.00%	19	0	0	0	19	13	0	0	0	13
533	Outbound	10.00%	0	0	24	0	24	0	0	14	0	14
535	Inbound	10.00%	16	0	0	0	16	29	0	0	0	29
535	Outbound	10.00%	0	0	15	0	15	0	0	12	0	12
541	Inbound	10.00%	9	0	0	0	9	15	0	0	0	15
541	Outbound	6.03%	0	0	5	0	5	0	0	16	0	16
542	Inbound	10.00%	14	0	0	0	14	14	0	0	0	14
542	Outbound	5.96%	0	0	10	0	10	0	0	21	0	21
562	Inbound	10.00%	9	0	0	0	9	16	0	0	0	16
562	Outbound	10.00%	0	0	12	0	12	0	0	4	0	4
563	Inbound	10.00%	7	0	0	0	7	4	0	0	0	4
563	Outbound	10.00%	0	0	8	0	8	0	0	5	0	5
571	Inbound	10.00%	8	0	0	0	8	7	0	0	0	7
571	Outbound	10.00%	0	0	10	0	10	0	0	5	0	5
573	Inbound	10.00%	9	0	0	0	9	8	0	0	0	8
573	Outbound	10.00%	0	0	8	0	8	0	0	9	0	9
575	Inbound	10.00%	7	0	0	0	7	15	0	0	0	15
575	Outbound	10.00%	0	0	6	0	6	0	0	6	0	6
601-GAL	Inbound	10.00%	3	0	0	0	3	8	0	0	0	8
601-GAL	Outbound	10.00%	0	0	2	0	2	0	0	8	0	8
640-MAIN	Eastbound	5.72%	5	11	9	10	34	8	21	8	8	45
640-MAIN	Westbound	5.72%	8	14	10	14	46	6	20	8	11	45
641-AZAV	Northbound	5.85%	4	11	15	8	39	6	14	11	12	43
641-AZAV	Southbound	5.83%	10	8	13	10	41	11	10	15	5	41
ALEX	Circular	5.76%		28			28		34			34
BUZZ	Circular	10.00%		33			33		46			46
DASH	Circular	4.75%		96			96		92			92
SCOTTSDALE DOWNTOWN TROLLEY	Circular	20.00%		58			58		55			55
SCOTTSDALE MILLER RD TROLLEY	Circular	4.75%		58			58		114			114
SCOTTSDALE NEIGHBORHOOD TROLLEY	Circular	4.75%		66			66		148			148
EARTH	Circular	4.75%		57			57		70			70
FLASH	Circular	4.75%		46			46		56			56
GUS	Circular	10.00%		31			31		39			39
JUPITER	Circular	5.25%		84			84		87			87
MARS	Circular	4.75%		70			70		72			72
MARY	Circular	5.70%		59			59		124			124
MERCURY	Circular	4.75%		98			98		101			101
METS 19C	Circular	4.75%		213			213		199			199
SMART	Circular	4.75%		39			39		41			41
VENUS	Circular	5.75%		70			70		94			94
ZOOM	Circular	4.75%		40			40		35			35
GRAND TOTAL For BUS				12150					12453			

Table 2-2b: Sampling Goals and Main Surveys Completed by Time of Day and Direction (Rail Only)

Valley Metro 2015 Origin-Destination Survey Sampling Plan for RAIL STATIONS			SAMPLING GOALS FOR MAIN SURVEY					MAIN SURVEY COMPLETED				
STATION	Direction	SAMPLING RATE	AM PEAK 6AM-859AM	MIDDAY 9AM- 259PM	PM PEAK 3PM-559PM	NIGHT 6PM- 559AM	TOTAL	AM PEAK 6AM-859AM	MIDDAY 9AM- 259PM	PM PEAK 3PM-559PM	NIGHT 6PM- 559AM	TOTAL
19th Ave / Camelback	Eastbound	10%	54	53	25	33	165	106	122	51	55	334
19th Ave / Camelback	Westbound	10%	5	19	12	13	49	5	19	14	11	49
38th St / Washington	Eastbound	10%	1	2	1	2	6	17	15	7	12	51
38th St / Washington	Westbound	10%	7	12	7	7	33	26	42	18	22	108
44th St / Washington	Eastbound	10%	12	22	13	19	66	36	56	27	33	152
44th St / Washington	Westbound	10%	13	30	23	27	93	25	72	65	47	209
7th Ave / Camelback	Eastbound	10%	17	27	14	17	74	33	59	23	28	143
7th Ave / Camelback	Westbound	10%	4	15	14	12	45	2	19	10	13	44
Campbell / Central Ave	Eastbound	10%	9	19	37	10	76	28	39	55	17	139
Campbell / Central Ave	Westbound	10%	3	11	33	8	55	6	17	35	4	62
Center Pkwy / Washington St	Eastbound	10%	6	8	3	6	23	7	15	2	4	28
Center Pkwy / Washington St	Westbound	10%	3	4	2	5	14	5	8	6	9	28
Central Ave / Camelback	Eastbound	10%	21	25	14	16	76	39	58	27	30	154
Central Ave / Camelback	Westbound	10%	3	8	10	7	28	5	12	8	8	33
Dorsey Ln / Apache Blvd	Eastbound	10%	4	9	9	12	34	12	16	10	11	49
Dorsey Ln / Apache Blvd	Westbound	10%	15	23	10	13	62	30	49	18	15	112

Table 2-2b: Sampling Goals and Main Surveys Completed by Time of Day and Direction (Rail Only) (Continued)

Valley Metro 2015 Origin-Destination Survey Sampling Plan for RAIL STATIONS			SAMPLING GOALS FOR MAIN SURVEY					MAIN SURVEY COMPLETED				
STATION	Direction	SAMPLING RATE	AM PEAK 6AM-859AM	MIDDAY 9AM-259PM	PM PEAK 3PM-559PM	NIGHT 6PM-559AM	TOTAL	AM PEAK 6AM-859AM	MIDDAY 9AM-259PM	PM PEAK 3PM-559PM	NIGHT 6PM-559AM	TOTAL
EB 12th St / Jefferson	Eastbound	10%	8	10	6	8	34	24	30	13	5	72
EB 12th St / Jefferson	Westbound	10%	0	0	0	0	0	0	0	0	0	0
EB 24th St / Jefferson	Eastbound	10%	14	19	12	15	59	33	34	23	21	111
EB 24th St / Jefferson	Westbound	10%	0	0	0	0	0	0	0	0	0	0
EB 3rd St / Jefferson	Eastbound	10%	4	20	28	53	104	21	46	48	63	178
EB 3rd St / Jefferson	Westbound	10%	0	0	0	0	0	0	0	0	0	0
EB Jefferson / 1st Ave	Eastbound	10%	12	25	32	19	88	42	58	68	20	188
EB Jefferson / 1st Ave	Westbound	10%	0	0	0	0	0	0	0	0	0	0
EB Van Buren / 1st Ave	Eastbound	10%	22	58	42	36	158	137	215	131	68	551
EB Van Buren / 1st Ave	Westbound	10%	0	0	0	0	0	0	0	0	0	0
Encanto / Central Ave	Eastbound	10%	5	12	10	8	35	8	20	15	14	57
Encanto / Central Ave	Westbound	10%	3	7	6	5	21	7	12	18	13	50
Indian School / Central Ave	Eastbound	10%	26	50	31	21	128	51	96	60	39	246
Indian School / Central Ave	Westbound	10%	10	20	19	11	60	24	26	24	13	87
McClintock Dr / Apache Blvd	Eastbound	10%	3	8	8	10	29	5	13	10	10	38
McClintock Dr / Apache Blvd	Westbound	10%	40	53	23	26	143	47	83	45	41	216
McDowell / Central Ave	Eastbound	10%	15	42	29	20	106	55	81	46	38	220
McDowell / Central Ave	Westbound	10%	12	34	25	19	90	22	64	51	31	168
Mill Ave / Third St	Eastbound	10%	3	11	11	18	43	15	23	16	27	81
Mill Ave / Third St	Westbound	10%	10	23	23	42	100	25	76	47	61	209
Montebello / 19th Ave	Eastbound	10%	82	138	74	92	385	224	355	209	184	972
Montebello / 19th Ave	Westbound	10%	0	0	0	0	0	0	0	0	0	0
Osborn / Central Ave	Eastbound	10%	11	22	19	14	66	28	65	35	22	150
Osborn / Central Ave	Westbound	10%	5	13	11	9	38	10	22	21	20	73
Price-101 / Apache Blvd	Eastbound	10%	1	4	3	4	12	2	2	3	4	11
Price-101 / Apache Blvd	Westbound	10%	33	51	15	17	115	36	95	27	23	181
Priest Dr / Washington St	Eastbound	10%	21	42	35	46	144	33	45	56	35	169
Priest Dr / Washington St	Westbound	10%	9	15	21	17	63	24	49	54	28	155
Roosevelt / Central Ave	Eastbound	10%	8	16	11	10	46	25	37	16	23	101
Roosevelt / Central Ave	Westbound	10%	8	17	11	13	49	18	30	21	13	82
Smith-Martin / Apache Blvd	Eastbound	10%	4	8	6	7	26	4	8	8	5	25
Smith-Martin / Apache Blvd	Westbound	10%	7	13	6	8	35	14	22	7	13	56
Sycamore / Main St	Eastbound	10%	0	0	0	0	0	0	0	0	0	0
Sycamore / Main St	Westbound	10%	86	141	75	91	393	234	284	200	168	886
Thomas / Central Ave	Eastbound	10%	14	39	35	21	110	46	83	72	44	245
Thomas / Central Ave	Westbound	10%	12	23	22	14	72	25	41	21	26	113
University Dr / Rural Rd	Eastbound	10%	4	52	55	49	159	27	92	67	51	237
University Dr / Rural Rd	Westbound	10%	16	37	29	33	115	37	97	59	44	237
Veterans Way / College Ave	Eastbound	10%	6	28	29	28	91	23	48	32	34	137
Veterans Way / College Ave	Westbound	10%	14	42	38	34	128	48	115	92	65	320
WB 12th St / Washington	Eastbound	10%	0	0	0	0	0	0	0	0	0	0
WB 12th St / Washington	Westbound	10%	7	16	9	10	42	18	34	13	16	81
WB 24th St / Washington	Eastbound	10%	0	0	0	0	0	0	0	0	0	0
WB 24th St / Washington	Westbound	10%	9	20	13	14	56	20	33	32	21	106
WB 3rd St / Washington	Eastbound	10%	0	0	0	0	0	0	0	0	0	0
WB 3rd St / Washington	Westbound	10%	3	12	17	28	59	11	29	39	43	122
WB Van Buren / Central Ave	Eastbound	10%	0	0	0	0	0	0	0	0	0	0
WB Van Buren / Central Ave	Westbound	10%	48	84	53	36	222	129	197	100	62	488
WB Washington / Central Ave	Eastbound	10%	0	0	0	0	0	0	0	0	0	0
WB Washington / Central Ave	Westbound	10%	13	37	37	21	108	29	89	70	48	236
GRAND TOTAL For RAIL			784	1551	1158	1135	4628	1963	3367	2245	1775	9350

2.2.1 Assessment of Valley Metro Main Intercept Survey

Overall, the total number of surveys exceeded the contractual requirements by more than 4,500 rail surveys and 300 bus surveys. More information on the main intercept survey procedures and QA/QC process can be found Chapter 4 and Chapter 6.

2.2.2 Methods for Selecting Main Intercept Survey Participants

On bus routes, a random number generator was used to determine which passengers were asked to participate in the survey after boarding a bus at a particular stop. If four or more people boarded the bus, the surveyor would enter the number four into the tablet and the tablet PC randomly generated a number from one to four. If the answer was two, the second person who boarded the bus was asked to participate in the survey. If the answer was one, the first person was asked to participate in the survey, and so forth. The selection was limited to the first four people who boarded a bus at any given stop to ensure the interviewer could keep track of the passengers as they

boarded. The process was very similar for the rail line, with the exception of the placement of the surveyors. For example if there were three trains with three cars each for a particular rail line, then one surveyor would be placed in the first car of the first train, another surveyor would be placed in the second car of the second train, and a third surveyor would be placed in the third car of the third train. If multiple surveyors were placed on the train, then they were separated and placed into different cars. The surveyor then would focus on the door of the car they were assigned and used the random number generator previously described to determine which boarding passenger to survey.

There was also a contingency plan such that the interviewer would proceed sequentially through the boarders he tracked if a refusal occurred. For example, if four people boarded the route/rail, and the random number generator specified two, and if the second passenger refused to be interviewed, then the surveyor would approach the third passenger.

2.2.3 Timing of the Main Survey Administration

The main survey was administered at the time of day that coincided with the hours that each route was operational. This was to ensure that the administration of the survey began prior to peak ridership levels in the morning and continued after peak ridership levels in the evening. Most of the surveys were administered between the hours of 5 a.m. and 10 p.m.

The bulk of the main survey was administered during weekdays (Tuesday through Thursday) with the exceptions of national holidays, and school breaks observed by local colleges/schools from late March to late May 2015. Additional clean-up was conducted during November 2015. The data collected in November was only 0.7% of the total database.

2.3 Other Techniques that Were Used to Manage the Sample

2.3.1 Daily Reviews of Interviewer Performance

During each day, the research team evaluated the performance of each interviewer. This included a review of the characteristics of the passengers who were interviewed with regard to age, gender, race, the number of reported transfers, the number of required data fields that were completed, the number of desired data fields that were completed, and the average length of each interview. These reviews are completed while the surveyor is on the bus or train and the findings are discussed with that surveyor when they check in. This allowed the research team to provide immediate feedback to interviewers to improve their overall performance. It also allowed the research team to quickly identify and remove interviewers who were not conducting the survey properly.

2.3.2 Management of the Sample by Time of Day

In addition to managing the total number of surveys that were completed for each route/station, ETC Institute also managed the number of surveys that were completed during each of the following four time periods: 6:00 a.m. to 9:00 a.m.; 9:00 a.m. to 3:00 p.m.; 3:00 p.m. to 6:00 p.m.; and 6:00 p.m. to 6:00 a.m. These four time periods correspond to time periods that are used for regional travel demand forecasting. This was done to ensure that the number of completed surveys for each time period would adequately support data expansion requirements for travel demand modeling. The data expansion process is described in Chapter 7 of this report.

Chapter 3 PILOT TEST

ETC Institute conducted a pilot test of the Valley Metro Regional On-Board Transit Survey during the week of December 15-18, 2014. The purpose of the pilot test was to assess all aspects of the survey including: survey design, sampling methodology, implementation, and data processing tasks.

- The overall goal was to complete 200 on-to-off surveys and 200 full intercept surveys. The actual number of on-to-off surveys that were completed in the field was 724 (621 rail on-to-off surveys and 103 bus on-to-off surveys). Of these 702 we classified as useable (97% recovery rate).
- The actual number of full intercept surveys that were completed in the field was 221. Of these 208 were classified as useable (94% recovery rate).

3.1 Routes/Stations Involved

The pilot test was administered to transit riders on four bus routes and the light rail system between the hours of 8 a.m. and 6 p.m. on December 15 to 18, 2014. The services that were included in the pilot test are listed below:

On-to-Off Bus Routes

- Route 7
- Route 30
- Route 72

On-to-Off Rail Line

- Light Rail

Main Survey Bus Routes

- Route 7
- Route 30
- Route 62
- Route 72

Main Survey Rail Line

- Light Rail

3.2 Personnel and Training

A total of eight personnel participated in the pilot test. This included the project manager and one assistant project manager.

The specific positions and number of personnel who participated in the pilot test is listed below:

Position	Number of Personnel
Project Manager (on-site)	1
Assistant PM (on-site)	1
Survey Team Leaders (on-site)	4
Interviewers (on-site)	2
Total Personnel	8

3.3 Training

All interviewers who participated in the pilot test participated in one day of training prior to the pilot test. The training activities that were covered included:

- An introduction to the project (purpose, scope, etc.) and training to use the tablet PCs.
- On-site reconnaissance of the routes and rail lines that were included in the pilot test. Team members rode each bus route that was included in the pilot test multiple times.
- Extensive training on survey administration and sampling procedures.
- Practical exercise to ensure that all interviewers were technically competent to perform all tasks that would be required in the field.

3.4 Assessment of Survey Length

The time it took survey participants to fully complete the survey on a tablet PC ranged from minimum of 4.91 minutes to a maximum of 10.62 minutes. The average time was 5.89 minutes.

3.5 Assessment of Survey Design

Overall, the survey design was very good. Interviewers did not have any difficulty administering the survey, and respondents did not seem to have difficulty understanding the questions. Although there were no major problems with the survey, our team is recommending the following changes:

3.5.1 DESIGN CHANGES FOR ADMINISTRATION AND TABLET PC PROGRAMMING

- On-to-off cards need to be in English and Spanish.
- Need to purchase new on-to-off cards.
- The pull down list for schools needs to be enhanced. Many key schools were missing.

- The trip summary review screen was not properly linked to the original sections of the survey, which made it hard to make corrections if the initial information that was recorded was not correct.
- We need to have a SPANISH screen with instructions in Spanish to get phone numbers of Spanish speaking interviewers so the survey can be conducted by phone.

3.5.2 SPECIFIC SURVEY DESIGN FOR THE QUESTIONNAIRE

- Need a decline or refused option for annual household income question. A small percentage of respondents did not want to reply to this question.
RECOMMEND ADDING DECLINE TO ANSWER OPTION
- Revise list of schools so that interviewer can find school quickly.
RECOMMEND USING ABBREVIATIONS I.E. ASU INSTEAD OF ARIZONA STATE UNIVERSITY.
- Update skip logic so that if a student is coming from their school, the interviewer does not have to find the location of the school further down the survey since the location was captured during the destination identification.
RECOMMEND IMPROVING ALL SKIP PATTERNS TO IMPROVE OVERALL FLOW OF SURVEY.
- Many riders stated that they used fares other than answer/options currently listed in the survey. **RECOMMEND REVIEWING POSSIBLE FARES AND UPDATING ANSWER CHOICES AND OPTIONS.**

3.6 Assessment of Sampling Procedures

There were no problems with the sampling procedures. The process for randomly selecting riders on buses and trains that is described in the work plan worked very well. No changes to the sampling procedures are recommended.

3.7 Assessment of Survey Participation and Usability of Surveys

3.7.1 On-to-Off Survey

The goal was to obtain 200 completed on-to-off surveys. The table below shows a breakout of the number of completed surveys by route.

Table 3.1: Completed On-to-Off Surveys by Route (Pilot Test)

On-to Off Survey						
Transit Agency	Route/Rail	GOAL for Completed Surveys	ACTUAL Number of Completed Surveys	Response Rate	Usable Surveys	% Useable
VM	Light Rail	105	621	98%	602	97%
VM	Route 7	35	36	99%	36	100%
VM	Route 30	25	28	97%	27	96%
VM	Route 72	35	39	97%	37	95%
TOTAL		200	724	98%	702	97%

When averaged by route, 98% of those who were asked to participate, agreed to participate. The highest rates of participation were on the light rail system and Route 7. Both had participation rates of over 98%. The lowest rate of participation was on Route 30 and 72 (97%).

The on-to-off survey on the light rail system was very productive. Over 600 useable surveys were collected by a team of just 3 people on one day (200 surveys per person).

There were a few minor difficulties with Spanish language riders, so the on-to-off cards will need to have instructions in both English and Spanish.

Overall, 97% of the surveys that were completed were matched and plotted on the routes on which the survey was conducted. A match rate of 97% is the highest rate recorded during any of our pilot tests since the introduction of barcode scanning technology by ETC Institute. So the quality of the data was very good.

3.7.2 MAIN INTERCEPT SURVEY

The goal was to complete 200 main intercept surveys. The table below shows a breakout of the number of completed surveys by route.

Table 3.1: Completed Main Intercept Surveys by Route (Pilot Test)

Main Survey						
Transit Agency	Route/Rail	GOAL for Completed Surveys	ACTUAL Number of Completed Surveys	Response Rate	Usable Surveys	% Useable
VM	Light Rail	110	118	95%	114	97%
VM	Route 7	20	22	91%	20	91%
VM	Route 30	20	24	94%	22	92%
VM	Route 62	20	22	93%	20	91%
VM	Route 72	30	35	91%	32	91%
TOTAL		200	221	93%	208	94%

When averaged by route, 93% of those who were asked to participate agreed to participate. The highest rate of participation was on the light rail system. The lowest rate of participation was on Route 72 and 7.

3.8 Short Trip Participation

Among those who agreed to complete the survey, 14 indicated that they did not have time to complete the full version of the survey. All 14 people provided their name and phone number so ETC Institute could call them later to conduct the survey by phone. ETC Institute's call center was able to successfully complete the survey with 12 of the 14 individuals who had a trip that was too short to complete on-board.

3.9 Assessment of Refusals

A total of 17 refused to complete the survey. Of these:

Reasons for Refusals

- Ten did not give a reason
- Two did not participate because the respondent did not speak English
- Five were busy doing something else

Profile of Refusals

- Nine were men and six were women
- Nine were African American, two were White, and six were Hispanic

3.10 Spanish Surveys

A total of five surveys were administered in Spanish. Of these, one did not speak English at all and four spoke some English.

Of the five Spanish surveys, four were completed as face-to-face interviews and one were completed by phone. Several Spanish surveys were handed out with a postage paid envelope marked for return. None of these Spanish surveys were returned by mail.

3.11 Assessment of Survey Quality

A total of 238 passengers were asked to participate in the pilot test. Of these, 221 agreed to participate (93%).

Of the 221 surveys that were completed, 208 passed the first two phases of ETC Institute QA/QC review, which are conducted in the field and immediately after the data is retrieved. This means that 94% (208 of 221) of the data collected for the pilot test has been deemed “usable”.

3.12 Conclusions

Based on the results of the pilot test, ETC Institute recommended to proceed with the administration of the survey as scheduled with the minor modifications to the survey instrument described in section 3.5.

Chapter 4 SURVEY ADMINISTRATION

The following sections describe the survey administration methodology used for the 2014-2015 on-board study. This methodology includes recruiting and training of interviewers, organization of the survey teams, and procedures used for the surveys.

4.1 Recruiting and Training Interviewers

Assembling a team of high-quality surveyors was one of the most important steps in any administration process. For this project, ETC Institute complemented its team of supervisors with temporary surveyors who were local to the area. Surveyors recruited by the staffing agency were required to have a familiarity with the service areas, a solid work history, ability to work with the public, a professional attitude and appearance, and an ability to operate a tablet PC and become proficient with both ETC Institute's software program and procedures.

Each surveyor was required to attend ETC Institute's training session for both the on-to-off survey and main intercept survey. During this training session, surveyors were taught how to operate the tablet PCs and the suitable software, execute the suitable surveying procedures, and deal with various situations that could be encountered during their surveying period.

The surveyor training was conducted in a classroom style setting at a local hotel meeting room. The classroom provided ETC Institute a quiet and convenient location to train its team efficiently. The training was provided to all personnel who participated in the administration of both the on-to-off Survey and main intercept survey to ensure that they were fully prepared for the project; the content included:

- Overview of the on-board survey objectives
- Either main intercept or on-to-off equipment/software overview and training
- Either main intercept or on-to-off barcode administrating procedures
- One-on-one tutoring/ mock interview with an ETC Institute supervisor
- Overview of rules and procedures and a code of conduct to be followed while representing Valley Metro and ETC in the field.

Once the training was completed, and an ETC Institute supervisor approved of each surveyor's abilities in the classroom, the surveyors then spent several days in the field under the supervision of an ETC field supervisor who assessed each surveyor's ability to properly conduct the surveying procedures. Surveyors who did not demonstrate proficiency in all of the required tasks were released.

4.2 Organization of the Survey Team

The organizational structure of each type of survey is described in the following sections:

4.2.1 Organization of the On-to-Off Survey Team

The on-to-off survey was administered by teams that were directly managed by an ETC Institute supervisor. The supervisors were responsible for reviewing the performance of each team and ensuring that all parts of the on-to-off procedure were being followed and the sampling goals for each route were met. The supervisors operated from centralized locations, such as transit centers, so that the performance of all teams could be evaluated.

The on-to-off survey team sizes for buses were determined by route ridership levels and bus size (articulated [3+ doors] or standard [1-2 doors]). A typical team consisted of two members, based on a medium to high-ridership level and a standard size bus. On-to-off teams were typically deployed on at least two buses running in opposite directions. For high-volume routes, teams may have been deployed on up to four buses on a route. On low-volume routes, teams may have been deployed on just one bus serving the route. The responsibilities of each of the positions on the on-to-off teams are described:

- The **team leader** was responsible for route and direction selection for on-to-off software, offering riders an opportunity to participate in the survey, scanning barcode cards for boarding riders, answering rider questions, and overseeing on-to-off operations of his/her bus.
- The **support surveyor** was responsible for collecting and scanning barcode cards for alighting riders, reminding riders to keep their cards ready to hand in to a surveyor when they exited at their bus stop, and answering rider questions.

For rail lines, an online tablet survey was used in place of the scanning technology that allowed an interviewer to ask rail users which station they boarded their current train and which station they would alight. The shortness of this two question survey, and the high level of knowledge regarding the boarding and alighting location by the rail users, allowed for one surveyor to survey essentially every rider per train car. One surveyor per car, per train could effectively administer the on-to-off survey to each rail rider.

4.2.2 Organization of the Main Intercept Survey Team

The main survey was administered by teams who were directly supervised by an ETC Institute supervisor. The supervisors were responsible for reviewing the performance of each interviewer ensuring that all parts of the surveying procedure were being followed and the sampling goals for each route were met. The supervisors operated from

centralized locations, such as transit centers, so that the performance of all interviewers could be evaluated.

Interviewers were typically deployed on at least two buses of the same route running in opposite directions. On high-volume routes, interviewers may have been deployed on up to six buses on a route. On low-volume routes, interviewers may have been deployed on just one bus serving the route. For the rail, the number of surveyors placed on each route was dependent on how many rail cars and trains there were for each line. For example if there were three trains with three cars each for a particular rail line, then one surveyor would be placed in the first car of the first train, another surveyor would be placed in the second car of the second train, and a third surveyor would be placed in the third car of the third train.

The responsibilities for each of the positions on the Main Survey team are the following:

- The **Field Supervisor** was responsible for ensuring that interviewers were properly trained, equipping interviewers to conduct surveys, scheduling interviewers, inspecting work, and reviewing the data collected.
- The **Main Intercept Surveyor** was responsible for administering surveys while following surveying procedures.

4.3 Survey Administration Procedures

The Administration Procedures of each type of survey is described in the following sections:

4.3.1 On-to-Off Program Procedure

The purpose of the on-to-off survey is to identify ridership patterns based on an individual's boarding and alighting locations which are used to help develop the sampling plan for the Main Survey.

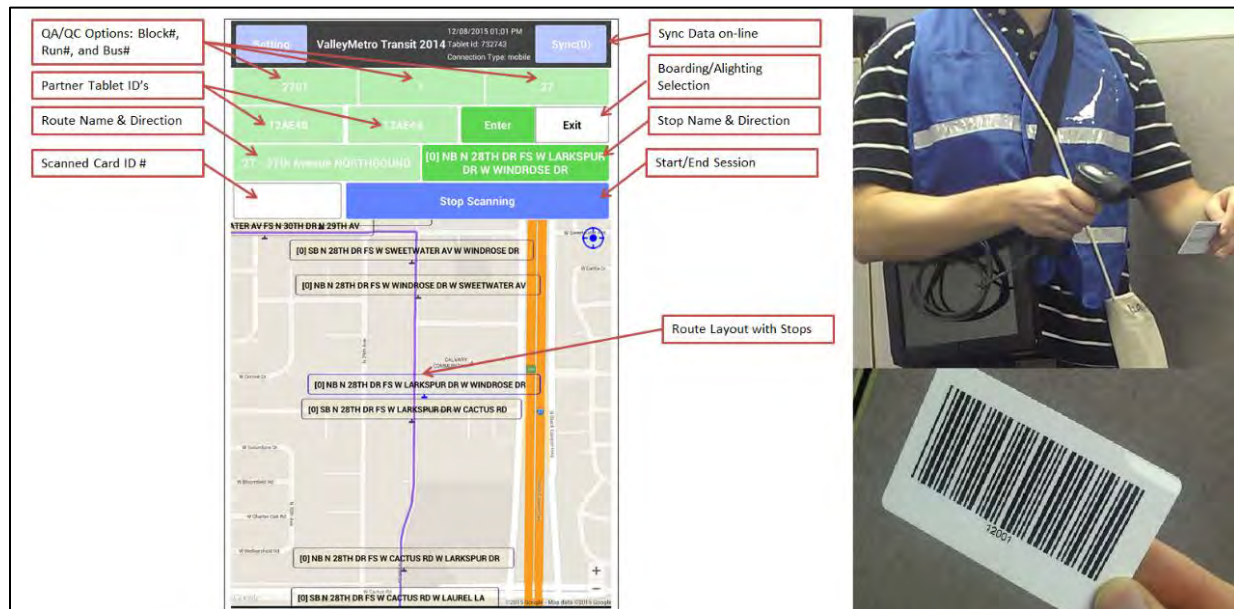
The on-to-off bus surveying team used the on-to-off software with a GPS-equipped tablet PC to record the rider's boarding latitude/longitude, alighting latitude/longitude, time of usage, route used, and inbound/outbound direction. The on-to-off software was complemented with a barcode scanning system method as described:

- Riders were asked to participate in the on-to-off ridership pattern survey as they entered the bus.
- Riders who agreed to participate were handed a barcode card which was scanned by a surveyor.
- Riders were told to keep the barcode card for the duration of their trip.
- Riders were reminded to hand their cards back to the surveyor as they exited the bus.

- When riders' bus stops were approached, the surveyor took their barcode cards before they exited. The surveyor scanned riders' barcode cards as they departed the bus.
- The software then paired the boarding and the alighting location of each rider based on the unique barcode card each was handed.

A screen shot of the interface of the on-to-off boarding/alighting software that was used to record the information and a picture of a barcode card is shown in Figure 4-1.

Figure 4-1. On-to-Off Survey Scan Card Screenshot (BUS)



For rail lines, a tablet survey was used that allowed an interviewer to ask rail users which station they boarded their current train and which station they would alight. This was used in place of the scanning technology used on buses because unlike bus users, essentially all rail users know the name of the locations at which they board and alight. After the surveyor entered the route and direction, the time of usage was recorded automatically during the survey. A screen shot of the interface of the rail on-to-off survey that was used to record the information is shown in Figure 4-2.

Figure 4-2. On-to-Off Survey Tablet Version Screenshot (RAIL)

The screenshot shows a tablet interface for the Valley Metro Rail survey. At the top, there is a purple header with the Valley Metro logo and the text "Valley Metro Rail". Below the header, the survey questions are displayed on a white background. Question 1 asks "Where did you board the Valley Metro Rail?" with a dropdown menu showing "ENCANTO/ CENTRAL". Question 2 asks "Where did you/will you exit the Valley Metro Rail?" with a dropdown menu showing "UNIVERSITY DR/ RURAL". A purple "Done" button is located at the bottom center of the survey area.

4.3.2 Main Intercept Survey Administration Procedure

PRIOR TO ADMINISTRATION OF THE MAIN INTERCEPT SURVEY

Prior to administration of the main survey, the results of the on-to-off survey were reviewed to ensure the survey team fully understood the trip patterns along each route. Some of the specific aspects of the on-to-off survey data that were reviewed included:

- Whether any pairs of stops along a route account for at least 10% of the one-way trips that were completed on the route during a particular time period.
 - If a high percentage of trips along a given route involved the same set of boarding and alighting pairs, ETC Institute placed additional interviewers on buses to be sure these trips were captured. Without the on-to-off data, these trips may have been underrepresented using traditional sampling techniques.
- The percentage of boarding/alighting pairs along each route that were “short trips”, which means the distance between the boarding and alighting locations was less than one mile.
 - If more than 10% of the records from the on-to-off survey for a given route involved boarding/alighting pairs that were less than one mile apart, additional interviewers were staffed on the route and interviewers were told to conduct the full interview even if the rider said that he/she did not have enough time to complete the survey. Two options were available to finish the survey: callback option or the interviewer would get off the bus with the rider and complete the survey after getting off the bus.

DURING THE ADMINISTRATION OF THE MAIN INTERCEPT SURVEY

Local bus routes are routes that provide regular/continuous service throughout the day. Local bus routes and rail lines were surveyed using the tablet PCs, as described in Section. Since local routes have more frequent stops than express routes and shorter ride times for the passenger, an interviewer conducting the survey via tablet PC was deemed necessary in order to achieve the desired response rates.

Once an interviewer had selected a person for the survey, the interviewer did the following:

- 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/she had at least five minutes to complete the survey.
- If the person did not have at least five minutes on the bus, the interviewer asked the person to provide his/her home address, boarding location, alighting location, name, and phone number. Within 24 hours, a phone interviewer from ETC Institute'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.
- If the person had at least five minutes on the bus, the interviewer began administering the survey to the respondent as a face-to-face interview using a tablet PC. After all of the required questions had been answered, the interviewer asked the respondent if he or she had two to three more minutes to complete the desired questions. If the respondent agreed, the interviewer then asked the remaining questions on the survey. Interviewers working in ETC Institute's call center then called respondents who did not have the two to three minutes to complete the desired questions at a later date.

An express service routes is a bus service type that is intended to run faster than normal bus services between the same destination points. This type of bus service usually runs with limited stops and during peak hours only. The surveyed bus routes classified as express service routes were the Valley Metro 500 series and majority of the Rapid Bus routes. Routes that were classified as express routes were surveyed by interviewers using the self-administered, printed questionnaires, as described in Chapter 1. Interviewers distributed the printed surveys and pencils to boarding riders.

Once a rider finished a survey, an interviewer conducted a short-version interview with the rider to ensure that all questions were answered properly and then made corrections/additions to the survey as necessary. After corrections/additions were made, the interviewer initialed the printed survey for submittal.

AFTER THE ADMINISTRATION OF THE MAIN INTERCEPT SURVEY

Surveys submitted with tablet PCs went under a pre-approval phase by an ETC Supervisor in real-time using ETC Institute's survey program's on-line database to ensure that the following information had been provided:

- Type of place where the trip began/ended
- Complete address where the trip began/ended
- Mode of access to the transit system
- Boarding location/Alighting location
- Mode of egress from the transit system
- Respondent's home address
- Respondent's employment status
- Respondent's student status
- Respondent's driver's license status
- Respondent's age
- Number of operating vehicles available in the household
- Number of occupants in the respondent's household
- Number of workers (employed persons) in the respondent's household
- Annual household income
- Time of day the survey was completed

If any information was missing or incomplete, the supervisor flagged the record for reviewing. ETC Institute's Project Manager then forwarded all flagged survey records and the corresponding name and phone number to ETC Institute's call center. Interviewers working in ETC Institute's call center then called respondents who had provided their names and phone numbers to retrieve the missing information by phone.

Express route surveys were physically reviewed by an ETC manager to ensure that the same information had been provided. The printed surveys were then sent to ETC Institute's data entry department to be entered. Those surveyed on express routes were sometimes called by ETC Institute's call center to retrieve any missing information by phone.

Once survey records were classified as complete, meaning all of the required information had been collected, the records were forwarded to ETC Institute's geocoding manager, who then finalize the home, origin, boarding, alighting, and destination geocoded locations. Afterwards, ETC Managers and SRRT (Survey Records Review Team) were also able to check survey trip logic by being able to review the main survey's origin-boarding-alighting-destination on a single screen to begin the quality control data review process. See Chapter 5 and Chapter 6 for more information about SRRT and the quality control data review process.

Chapter 5 GEOCODING PROCESS

5.1 Process for Geocoding Address Records

Each transit survey record conveys information about five physical locations: trip origin, trip destination, boarding stop (where the transit user boarded the transit vehicle on which he/she was surveyed), alighting stop (where the transit user exited the bus or train on which he/she was surveyed), and the home/residence location of the transit user. Because the vast majority of the data collection occurred on the tablets using real time geocoding, converting the data into a consistent format for street names, street numbers, zip codes, and landmarks was an automated process.

5.1.1 Boarding and Alighting Geocoding

Effective route geocoding depends mainly on the initial quality of the stop data. These pre-configured lists contained bus route numbers, bus stop names, and train station names. Figure 5-1 (below) shows a screen shot from the tablet PC that allowed interviewers to precisely record boarding and alighting locations while the survey was being administered.

Figure 5-1: Tablet PC Boarding and Alighting Locations

Where did you **GET ON** this bus or train (27 - 27th Avenue NORTHBOUND) for the current one-way trip?

Street Address: NB N 27TH AV FS W GRISWOLD

Stop ID: 138695 ☐ User Stop

Latitude: 33.557193

Longitude: -112.116806

Enter a location here

Address ☐ Place ☐ Clear Me

Current trip from (origin) to your Destination.

Exit and clear survey Previous Callback Next

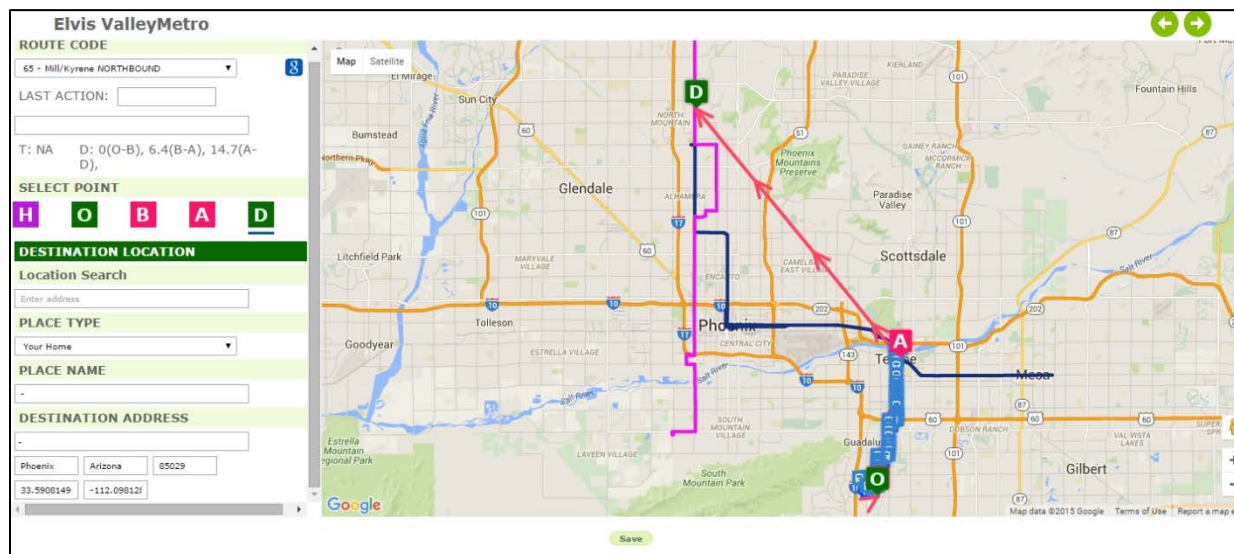
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5.1.2 Origin and Destination Geocoding

The survey's mapping feature via Google Maps allows the surveyor to tag addresses remotely. If the surveyor is unable to find any location; they are able to provide descriptive building names, street names, and city names for later geocoding.

All of these types of records were pulled aside and manually corrected and geocoded using ETC Institute's Visual Survey Editor Program (VSEP), depicted in Figure 5-2. This program connects in real-time to an online mapping system and provides address auto-complete and instant map preview of candidate locations to help identify and fix addresses. VSEP allows the editor to view all five points concurrently and to manually adjust point positions on the map to better match their physical locations. This program helps to significantly speed up the survey record review and editing process and helps reduce error rates.

Figure 5-2: Visual Survey Editor Program (VSEP)



5.1.3 Post-Field Geocoding

All geocoded results were checked for errors recursively, until all five locations within a record were completely geocoded or until a record was declared unfit for further processing. Error checks included comparing attributes derived from the geocoded coordinates to those recorded during the field survey, e.g. city name. Quality checks also comprised proximity tests between the geocoded boarding or alighting locations and the known bus stop locations or line segment representing the bus route. Some of the proximity tests and corrections were performed within TransCAD using custom scripts developed for this project in Geographic Information System Developer's Kit (GISDK). Distances between each consecutive pair of trip points were also computed as a basis of logic checks used to flag records for further (typically manual) verification and correction.

Chapter 6 DATA REVIEW PROCESS (QA/QC)

Many of the processes described in the first six chapters of this report were essential elements of the overall quality assurance/quality control (QA/QC) process that was implemented throughout the survey administration process. The establishment of specific sampling goals and procedures for managing the goals ensured that a representative sample was obtained from each bus route and rail line. Training of interviewers and the high levels of oversight provided by team leaders and the project manager ensured that the survey was administered properly. Also, the use of the latest geocoding tools contributed to the high quality of geocoding accuracy that was achieved. The following sections describe the QA/QC processes that were implemented after the data was collected.

6.1 Process for Identifying Completed Records

To classify a survey as being completed, the record must contain all required data. Required data involved questions for which a response from a respondent was required in order for the survey to be considered complete. At a minimum, the full intercept survey was designed to gather the following information:

- Origin/Destination address
- Boarding/Alighting location
- Home address
- Access/Egress mode
- Trip purpose/type of place at the origin
- Trip purpose/type of place at the destination
- Number of transfers
- Transfer routes
- Rail Transfer Stations
- Time of Day Trip was completed
- Direction of travel
- Access location to transit
- Egress location from transit
- Method of payment
- Number of vehicles available to the household
- Number of household occupants
- Student status
- Employment status
- Driver's licenses status
- Age
- Disability status
- Race/Ethnicity
- Gender
- Income
- English language ability

A completed survey must also contain answers to at least 90% of the desired questions which include:

- Distance walked from the origin to the transit system (if applicable)
- Distance walked from the transit system to the destination (if applicable)
- Park and ride location (if applicable) on either end of the trip
- Veteran Status
- How respondents get transit schedule information
- Name of the school where the respondent attends college or school (if applicable)

6.2 Process for Identifying Useable Surveys

Once a survey had been classified as being complete, the next phase of the QA/QC process was to determine the usability of each survey record. The term useable was used to identify records that passed all of the QA/QC tests after it was classified as being complete. In this section, the QA/QC tests conducted are described.

6.2.1 Pre-processing Tests

The first step in this process involved the application of a series of QA/QC tests that were conducted before the address fields were processed for geocoding. Some of the specific checks that were conducted during the pre-processing phase included the following:

- Checking that *home* street names, city names, and zip codes can be geocoded;
- Checking that *origin* street names, city names, and zip codes can be geocoded;
- Checking that *destination* street names, city names, and zip codes can be geocoded;
- Checking for *origin* place names that could be matched to a pre-existing list of major destinations that had been previously geocoded;
- Checking for *destination* place names that could be matched to a pre-existing list of major destinations that had been previously geocoded;
- Ensuring the number of household occupants was greater than or equal to the number of employed members of the household;
- Ensuring the respondents who indicated that they were employed also reported that at least one member of their household was employed;
- Ensuring that bus route names were consistently spelled and coded correctly;

- Ensuring that transfers to a bus route were possible;
- Ensuring that transfers from a bus route were possible;
- Ensuring that the number of vehicles available to a respondent's household were consistent with the respondent's reported annual household income. Low income families who reported owning many vehicles and high income families that reported no vehicles were flagged;
- Ensuring the time of day a survey was completed was reasonable given the published operating schedule for the route;
- Ensuring the origin type of place code matched the type of place reported by the respondent; and,
- Ensuring the destination type of place code matched the type of place reported by the respondent.

Records that did not pass all of the tests were sent to ETC Institute's Survey Records Review Team (SRRT) for further review. Based on the type of issues found with the record, the SRRT members then took one of the following actions:

- They corrected the deficiency in the record.
- They directed ETC Institute's Call Center to contact the respondent by phone (if a phone number was available) to retrieve additional information or to confirm whether or not their responses were correct.
- They reclassified the record as ***incomplete*** by assigning a value of "3" for the record's quality control flag. This assignment removed the record from further inclusion in the final survey database.

Records that passed all the pre-processing QA/QC tests were forwarded to ETC Institute's geocoding team. See Chapter 5 for Geocoding Process.

6.2.2 Post-processing Tests

After all five addresses were successfully geocoded; the next step in this process involved the application of a series of QA/QC tests:

- Ensuring the origin and destination addresses were not the same
- Ensuring the boarding and alighting addresses were not the same
- Ensuring that the respondent did not list the same route as both a "transfer from" and a "transfer to" during their one-way trip
- Checking to be sure the access mode was appropriate given the distance of travel from the trip origin to the place where the respondent initially accessed transit. For example, if a rider reported that he/she accessed transit by car but the distance from his/her origin to the entry point for transit was less than 0.25 mile, the record would have been flagged for further review. Similarly, if a respondent reported that he/she walked to transit but the distance from the

origin to transit was more than two miles, the record would have been flagged to check for a missing transfer since two miles or more is well beyond typical walk distance.

- Checking to ensure that the egress mode was appropriate given the distance of travel from place where the respondent exited the transit system to his/her destination
- Reviewing the total distance the respondent traveled on transit compared to the distance the respondent traveled from the origin to the destination for his/her trip. For example, if a respondent reported traveling six miles on transit in order to travel 0.5 mile from the origin to the destination for his/her trip, the record would have been flagged for further review. Similarly, if a respondent reported traveling just one mile on transit to complete a 10-mile trip, the records would have been flagged to check for a missing transfer.

Records that were flagged for further review were forwarded to the appropriate section based on the nature of the flag.

- Issues that involved address geocoding assignments were referred to ETC Institute's geocoding team.
- Issues that needed clarification of data were directed to ETC Institute's Call Center (if a phone number was available). The Call Center then contacted the respondent to retrieve additional information as needed. If respondent was unable to be contacted, final assessment of the records were approved by Senior Management.
- All other issues were directed to ETC Institute's SRRT.

Records that passed all the post-processing QA/QC tests or that were corrected were then forwarded to ETC Institute's SRRT for a final visual inspection of the trip using the Visual Survey Editor Program (VSEP), which is described in the following section.

Records that were complete but could have problems with the trip logic or other attributes of the trip were reclassified as **problematic** by assigning a value of "2" as the record's Quality Control Flag. This assignment removed the record from further consideration for the final survey database.

6.2.3 Visual Inspection

The final step of the QA/QC data review process involved a visual inspection of the trip record using the VSEP. The key tasks that were conducted as part of this visual inspection included the sensibility of results for the following areas:

- Key variables of survey trips with very short distances (less than one mile for local bus trips and less than four miles for express trips). The key variables reviewed were the four major geocoded points (origin, destination, boarding, alighting) of the trip. If the review of the trip indicated an illogical pattern, it wasn't included in the final expanded database.

- Trips with zero transfers given location of boarding and alighting locations relative to the origin and destination
- Trips that reported three or more transfers
- Drive access/egress trips given the distance traveled by car relative to the distance traveled by bus or light rail
- Drive access/egress trips with more than one transfer
- Looking at the origin-to-destination to ensure that it was appropriate for the survey route that was used for the trip
- Finalize trip logic by reviewing the origin-boarding-alighting-destination locations on a single screen.

If a record passed all the visual checks listed, the record was classified as **useable** and tagged for inclusion in the final survey database by assigning a value of “1” as the record’s Quality Control Flag.

If a record did not pass all the visual checks, the record was sent back to the SRRT for further review. If the SRRT was not able to resolve the problem that was identified, the record was reclassified as problematic by assigning a value of “2” as the record’s Quality Control Flag. This assignment removed the record from further consideration for the final survey database.

Chapter 7 DATA EXPANSION PROCESS

This chapter describes the data sources and data expansion process used for the transit survey. The surveys of the light rail were expanded by route, time of day, and direction, and the boarding station and corresponding alighting station of the rider. A second expansion was performed for the light rail by route, time of day, direction, and a cluster of boarding stations and corresponding cluster of alighting stations of the rider. For the bus surveys in the project, the surveys were expanded by route, time of day, and direction, and by the boarding segment and corresponding alighting segment of the rider. The data expansion process is explained in more detail in the following sections.

7.1 Sources of Ridership Data

The source of the APC and fare box counts data came from Valley Metro. The APC data used to fine tune the collection and conduct the expansion was from April 2015.

7.2 Unlinked Trip Weighting Factors for Light Rail

While the number of passengers that board and alight at each station is important, the next step is learning flows so we know where a passenger boards and then where that same passenger alights and can expand the data using it. In order to estimate actual ridership between stops along the rail system, an on-to-off survey was administered with the goal of obtaining a sample of approximately 20% of the rail passengers.

Figure 7-1 shows the results for the on-to-off survey that was administered on the light rail eastbound during the *midday* time period. Each row in the table identifies the station where passengers boarded the train. The columns in the table identify the stations where people alight the train. The lines on the table define how stations were sorted into boarding station groups and alighting station groups for this particular route, direction, and time of day. From Figure 7-1, one can see that 230 people from the on-to-off survey boarded at 19th Ave/Camelback, 7th Ave/Camelback, or Central Ave/Camelback. Of those 230 people, 50 people from the on-to-off survey alighted at either Campbell/Camelback, Indian School/Central, Osborn/Central, Thomas/Central, or Encanto/Central.

Figure 7-1: Valley Metro Rail Data Expansion Table Results of On-to-Off Survey (Cluster Version)

TABLE 1: RESULTS OF THE ON-TO-OFF SURVEY										
3pm to 6pm East										
ACTUAL RIDERSHIP COUNTS FROM THE ON/OFF SURVEY										
Stop Name	Total	Montebello / 19th Ave	19th Ave / Camelback	7th Ave / Camelback	Central Ave / Camelback	Campbell / Central Ave	Indian School / Central Ave	Osborn / Central Ave	Thomas / Central Ave	Encanto / Central Ave
Montebello / 19th Ave	377			95				74		
19th Ave / Camelback										
7th Ave / Camelback										
Central Ave / Camelback	230			8				50		
Campbell / Central Ave										
Indian School / Central Ave										
Osborn / Central Ave										
Thomas / Central Ave										
Encanto / Central Ave	411							39		

Figure 7-2 shows the distribution of the data in Figure 7-1 as a percentage of all boardings for the light rail line for that direction and time period. Since there are a total of 2,013 on-to-off surveys, one can calculate that 2.48% (50/2013) of all trips during the eastbound *midday* time period board at either 19th Ave/Camelback, 7th Ave/Camelback, or Central Ave/Camelback and alight at either Campbell/Camelback, Indian School/Central, Osborn/Central, Thomas/Central, or Encanto/Central.

Figure 7-2: Valley Metro Rail Expansion Table Distribution of On-to-Off Survey (Cluster Version)

TABLE 2: DISTRIBUTION OF THE ON-TO-OFF SURVEY										
3pm to 6pm East										
PERCENTAGE DISTRIBUTION OF RIDERSHIP COUNTS FROM THE ON/OFF SURVEY										
Stop Name	Total	Montebello / 19th Ave	19th Ave / Camelback	7th Ave / Camelback	Central Ave / Camelback	Campbell / Central Ave	Indian School / Central Ave	Osborn / Central Ave	Thomas / Central Ave	Encanto / Central Ave
Montebello / 19th Ave	18.73%	0.00%		4.72%				3.68%		
19th Ave / Camelback										
7th Ave / Camelback										
Central Ave / Camelback	11.43%	0.00%		0.45%				2.48%		
Campbell / Central Ave										
Indian School / Central Ave										
Osborn / Central Ave										
Thomas / Central Ave										
Encanto / Central Ave	20.42%	0.00%		0.00%				1.94%		

The actual light rail Line total ridership for this time period and direction (5,920) was applied to the on-to-off survey distribution shown in Figure 7-2. This calculation develops an initial estimate of the ridership flow based on the station-on to the station-off for the light rail Line eastbound *midday* ridership as shown in Figure 7-3. Based on this estimate, 147 trips (calculated by multiplying 5,920 by 2.48%) during the light rail eastbound *midday* time period board at either 19th Ave/Camelback, 7th Ave/Camelback, or Central Ave/Camelback and alight at either Campbell/Camelback, Indian School/Central, Osborn/Central, Thomas/Central, or Encanto/Central.

Figure 7-3: Valley Metro Rail Expansion Table Initial Estimate of Ridership Flows Between Stations (Cluster Version)

TABLE 3: INITIAL ESTIMATE OF RIDERSHIP FLOWS BETWEEN STATION (percentages in table 2 were applied to the total boardings for this time period in this direction) 3pm to 6pm East										
PROJECTED RIDERSHIP BASED ON THE ON-TO-OFF SURVEY										
STATION	Total	Montebello / 19th Ave	19th Ave / Camelback	7th Ave / Camelback	Central Ave / Camelback	Campbell / Central Ave	Indian School / Central Ave	Osborn / Central Ave	Thomas / Central Ave	Encanto / Central Ave
Montebello / 19th Ave	1109	0		279				218		
19th Ave / Camelback										
7th Ave / Camelback										
Central Ave / Camelback	676	0		25				147		
Campbell / Central Ave										
Indian School / Central Ave										
Osborn / Central Ave										
Thomas / Central Ave										
Encanto / Central Ave	1209	0		0				115		

Since the on-to-off survey did not cover 100 percent of the light rail boardings and alightings, the distribution in Figure 7-3 was compared to the actual boardings and alightings collected for each major station. The top portion of Figure 7-4 shows the actual average boarding and alighting counts for each station group on the route which was provided by the transit agency. The bottom portion of Figure 7-4 shows the difference between the initial estimate boardings and alightings at each station (From Figure 7-3) and the actual boarding and alighting counts. In the tables provided, the actual boardings and initial estimate of boardings for 19th Ave/Camelback, 7th Ave/Camelback, or Central Ave/Camelback are 578 and 479 respectively; the difference between these numbers is 98 as shown in Figure 7-4.

Figure 7-4: Valley Metro Rail Expansion Table Actual Boardings and Alightings by Station (Cluster Version)

TABLE 4: ACTUAL BOARDINGS and ALIGHTINGS BY STATION 3pm to 6pm East										
Average Weekday Ridership	Total	Montebello / 19th Ave	19th Ave / Camelback	7th Ave / Camelback	Central Ave / Camelback	Campbell / Central Ave	Indian School / Central Ave	Osborn / Central Ave	Thomas / Central Ave	Encanto / Central Ave
Calculated BOARDINGS	5920	737		538				1327		
Adjusted ALIGHTINGS to match Boardings	5920	0		270				578		
DIFFERENCE FROM PROJECTED										
ACTUAL BOARDINGS	0	-372		-139				118		
ADJUSTED ALIGHTINGS	0	0		-35				98		

In order to develop a more accurate estimate of the ridership flow between major stations on each route, ETC Institute developed an iterative proportional fitting algorithm to balance the differences between the initial estimate ridership from the on-to-off Survey (shown in Figure 7-3) and the actual counts at each station (shown in Figure 7-4).

The key steps to the iterative process are described here. This process was conducted separately for time of day, and direction.

Step 1: Correction for the Boardings. For each boarding station group, the initial estimated ridership from the on-to-off data (shown in Figure 7-4) was multiplied by the ratio of the actual boardings from light rail counts to the estimated boardings. For

example, if the actual boardings for Boarding Station Group A were 120 and the estimated boardings were 100, each cell associated with Boarding Station Group A 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 have equaled the actual boardings. However, the adjustment to the boardings total may have changed the alighting estimates. In order to correct the alighting estimate for each alighting station group, the new values calculated in Step 1 were adjusted by multiplying the ratio of the actual alightings to the estimated alightings from Step 1. For example, if the actual alightings for Alighting Station Group B were 220 and the estimated alightings from Step 1 were 200, each cell associated with Alighting Station Group B 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 both the actual boardings and estimated boardings, and actual alightings and estimated alightings were zero. After four balancing iterations in this algorithm, there were no differences between the projected distribution and the actual boardings and alightings for the light rail eastbound *midday* time period. The total amount of balancing iterations depends on the number of route segments based on time of day, and direction. More variation among these factors can cause a greater amount of balancing.

After the iterative proportional fitting algorithm was applied, the final estimate for ridership flows was developed and is shown in Figure 7-5.

Figure 7-5: Final Estimate of Ridership Flows Between Stations (Valley Metro Light Rail)

Stop Name	Total	Montebello / 19th Ave	19th Ave / Camelback	7th Ave / Camelback	Central Ave / Camelback	Campbell / Central Ave	Indian School / Central Ave	Osborn / Central Ave	Thomas / Central Ave	Encanto / Central Ave
Montebello / 19th Ave	737	0	240		196					
19th Ave / Camelback	538	0	29		171					
7th Ave / Camelback										
Central Ave / Camelback										
Campbell / Central Ave	1327	0	0		209					
Indian School / Central Ave										
Osborn / Central Ave										
Thomas / Central Ave										
Encanto / Central Ave										

The actual number of main surveys that were completed by boarding station group and alighting station group is shown in Figure 7-6. To calculate the expansion weight factors for each boarding station group and alighting station group pair that is shown Figure 7-7, the final estimate of ridership shown in Figure 7-5 was divided by the actual number of main surveys shown in Figure 7-6. For example, the final weight for those people

boarding at either 19th Ave/Camelback, 7th Ave/Camelback, or Central Ave/Camelback and alight at either Campbell/Camelback, Indian School/Central, Osborn/Central, Thomas/Central, or Encanto/Central is $170.9/25.37 = 6.74$.

Figure 7-6: Number of Completed main surveys (Valley Metro Light Rail)

Stop Name	Total	Montebello / 19th Ave	19th Ave / Camelback	7th Ave / Camelback	Central Ave / Camelback	Campbell / Central Ave	Indian School / Central Ave	Osborn / Central Ave	Thomas / Central Ave	Encanto / Central Ave
Montebello / 19th Ave	231	0		37				46		
19th Ave / Camelback										
7th Ave / Camelback										
Central Ave / Camelback	112	0		2				25		
Campbell / Central Ave										
Indian School / Central Ave										
Osborn / Central Ave										
Thomas / Central Ave										
Encanto / Central Ave	268	0		0				26		

Figure 7-7: Weight Factors (Valley Metro Light Rail)

Stop Name	Total	Montebello / 19th Ave	19th Ave / Camelback	7th Ave / Camelback	Central Ave / Camelback	Campbell / Central Ave	Indian School / Central Ave	Osborn / Central Ave	Thomas / Central Ave	Encanto / Central Ave
Montebello / 19th Ave	3.19	0.00		6.58				4.29		
19th Ave / Camelback										
7th Ave / Camelback										
Central Ave / Camelback	4.82	0.00		12.79				6.74		
Campbell / Central Ave										
Indian School / Central Ave										
Osborn / Central Ave										
Thomas / Central Ave										
Encanto / Central Ave	4.94	0.00		0.00				8.07		

Once all the weight factors are calculated, each weight factor is applied to all surveys with the same route, direction, time of day, boarding station group, and alighting station group.

7.3 Validating the Expansion for Rail Lines

After all the rail line expansion factors were added into the main survey database, the weighting factors were summed by route, direction, and time period. Those summed weighting factors by route, direction, and time period were then compared to the revised overall ridership numbers for the same route, direction, and time period in order to make sure they were the same.

7.4 Assessment of Valley Metro Expansion Factor Values (Rail Only)

The following assesses each type of Valley Metro rail expansion that was conducted:

NON-CLUSTERED EXPANSION FACTOR ASSESSMENT

With a 7.5% sampling plan, the goal was to keep weight factors less than or equal to 20. Since ETC collected more surveys system-wide than required, the average value of all Valley Metro Rail unlinked expansion factors (non-clustered) in the database is 4.96. Of

the 9,350 rail records in the database, 8,433 (90.2% of the sample) have an expansion factor below 10 and 9,306 rail records (99.5% of the sample) have a weight factor value less than 20. Only 44 rail records in the database have an expansion factor greater than 20.

CLUSTERED EXPANSION FACTOR ASSESSMENT

With a 7.5% sampling plan, the goal was to keep weight factors less than or equal to 20. The average value of all Valley Metro Rail unlinked expansion factors (clustered) in the database is 4.96. Of the 9,350 rail records in the database, 8,986 (96.1% of the sample) have an expansion factor below 10 and 9,348 rail records (99.9% of the sample) have a weight factor value less than 20. Only 2 rail records in the database have an expansion factor greater than 20.

7.5 Unlinked Trip Weighting Factors for Bus Routes

Stops along each bus route were aggregated into 3 segments (named A, B, and C) based on surrounding land use and the ridership distribution on the route. This was done by direction and for each of the 4 time periods to ensure that reasonable expansion factors could be developed based on the path taken by riders as a function of their boarding and alighting locations. The process for how the bus route data was expanded is explained in this section.

Figure 7-8 shows the segmented results for the on-to-off survey that was administered during the 3 *p.m.* to 6 *p.m.* time period, heading north on Route Zero. Each row in the table identifies the segment where passengers boarded the bus. The columns in the table identify the segments where people alighted the bus. For example, during the 3 *p.m.* to 6 *p.m.* time period heading north on Route Zero, 29 of the on-to-off surveys had riders board on segment B and alight at segment C.

Figure 7-8: Bus Data Expansion Table Results of On-to-Off Survey

TABLE 1: RESULTS OF THE ON-TO-OFF SURVEY				
<u>3pm to 6pm North</u>	ACTUAL RIDERSHIP COUNTS FROM THE ON/OFF SURVEY			
Stop Name	Total	A-1	B-2	C-3
A-1	51	5	36	10
B-2	42		13	29
C-3	54			54
Total	147	5	49	93

Figure 7-9 shows the distribution of the data in Figure 7-8 as a percentage of all boardings for the route. Figure 7-9 was created by dividing each on-to-off cell in Figure 7-8 by the sum of all on-to-off surveys in Figure 7-8, which is 147. For example, during

the 3 p.m. to 6 p.m. time period heading north on Route Zero, 29/147 (19.7%) of all trips board on segment B and alight at segment C as shown in Figure 7-9.

Figure 7-9: Bus Data Expansion Table Distribution of On-to-Off Survey

TABLE 2: DISTRIBUTION OF THE ON-TO-OFF SURVEY				
<u>3pm to 6pm North</u>	PERCENTAGE DISTRIBUTION OF RIDERSHIP COUNTS FROM THE ON/OFF SURVEY			
Stop Name	Total	A-1	B-2	C-3
A-1	34.7%	3.4%	24.5%	6.8%
B-2	28.6%	0.0%	8.8%	19.7%
C-3	36.7%	0.0%	0.0%	36.7%
Total	100.0%	3.4%	33.3%	63.3%

The total ridership for the route, time period and direction was applied to the on-to-off distribution shown in Figure 7-9. This produces an estimate of the ridership flow on each route based on the segment-on to the segment-off as shown in Figure 7-10. Applying the actual ridership of 685 to the distribution, one can calculate that 135 trips (19.7% x 685) board on segment B and alight at segment C during the 3 p.m. to 6 p.m. time period, heading northbound on Route Zero.

Figure 7-10: Bus Data Expansion Table Initial Estimate of Ridership Flows Between Segments

TABLE 3: INITIAL ESTIMATE OF RIDERSHIP FLOWS BETWEEN STATION				
(percentages in table 2 were applied to the total boardings for this time period in this direction)				
<u>3pm to 6pm North</u>	PROJECTED RIDERSHIP BASED ON THE ON-TO-OFF SURVEY			
STATION	Total	A-1	B-2	C-3
A-1	238	23	168	47
B-2	196	0	61	135
C-3	251	0	0	251
Total	685	23	228	433

The actual number of main surveys that were completed for each boarding-alighting segment pair is shown in Figure 7-11. To calculate the expansion factors, the estimate of ridership between segments shown in Figure 7-10 was divided by the actual number of main surveys that were completed between segments shown in Figure 7-11. This calculation produces the expansion weights shown in Figure 7-12. So, the 135 estimated riders were divided by the 13 completed surveys to produce a weight of 14.25 to be applied to northbound riders on Route Zero who board at segment B and alighting at segment C as shown in Figure 7-11.

Figure 7-11: Number of Completed Surveys (Bus)

TABLE 7: NUMBER OF COMPLETED SURVEYS				
<u>3pm to 6pm North</u>				
STATION	Total	A-1	B-2	C-3
A-1	14	2	8	4
B-2	17		4	13
C-3	29			29
Total	60	2	12	46

Figure 7-12: Weighting Factors (Bus)

TABLE 9: Final Weight Factors for Expansion				
<u>3pm to 6pm North</u>				
		Paste Final Expansion Numbers Here		
STATION	Total	A-1	B-2	C-3
A-1	13.19	14.21	15.48	8.13
B-2	16.06		21.96	14.25
C-3	7.82			7.82
Total	11.41	14.21	17.64	9.66

Once all the weight factors are calculated, each weight factor is applied to all surveys with the same route, direction, time of day, boarding segment, and alighting segment.

7.6 Validating the Expansion for Valley Metro Buses

After all the Valley Metro bus expansion factors were added into the main survey database, the weighting factors were summed by route, time period and direction. Those summed weighting factors by route, time period and direction were then compared to the overall ridership numbers for the route, time period and direction in order to make sure they were the same.

7.7 Assessment of Valley Metro Expansion Factor Values (Bus Only)

The average value of all Valley Metro bus unlinked expansion factors in the database is 15.60. Of the 12,453 bus records in the database, 10,312 (82.8% of the sample) have an unlinked expansion factor below 25 and 11,699 bus records (93.9% of the sample) have a weight factor value less than 35.

7.8 Linked Trip Weighting Factors for All Records

The linked trip weighting factor adjusts the total number of boardings to one-way trips by accounting for the number of transfers that were completed by each passenger.

The equation that was used to calculate the linked trip weighting factor is shown below:

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

If a passenger did not make a transfer, the linked trip weighting factor would be 1.0 because the person would have only boarded one vehicle. If a person made two transfers, the linked trip weighting factor would be 0.33 because the person would have boarded three transit vehicle during his/her one-way trip. An example of how the linked trip weighting were calculated is provided in Figure 7-13 below.

Figure 7-13: Sample Calculations of Linked Trip Weighting Factors

Number of Transfers	Calculation	Linked Trip Weighting Factor
None	$[1/(1+0)]$	1
One	$[1/(1+1)]$	0.5
Two	$[1/(1+2)]$	0.33
Three	$[1/(1+3)]$	0.25

Chapter 8 SELECTED FINDINGS

This section highlights selected demographic and trip-related findings from the survey. The results for all questions on the survey based on the service type of travel (bus only vs. rail only vs. bus/rail vs. Sky Train users) are provided in Appendix C. The results for all questions on the survey based on the type of service (local, express, circulator, etc.) are provided in Appendix D. The results for all questions on the survey based on mode (bus riders vs. rail riders) are provided in Appendix E.

The database used for the tables in this chapter and all chapters were expanded based on weekday linked weight factors created during the data expansion process.

UNLINKED TRIPS VS. LINKED TRIPS

An unlinked passenger trip measures a trip as every time a rider boards and alights a bus/train. A linked passenger trip is the entire trip from origin to destination on the transit system. Even if a rider makes several transfers during a one-way trip, the trip is counted as one linked trip on the system. For example, a rider making a single trip with a transfer in the middle counts as two unlinked trips versus one linked trip. See section 7.8 for Linked Trip weight factor details.

SERVICE TYPE OF TRAVEL

Bus Only: Riders that only used bus routes during their one-way trip.

Rail Only: Riders that only used the rail line during their one-way trip.

Bus/Rail: Riders that used bus routes and the rail line during their one-way trip.

Sky Train Users: Riders that reported using the Sky Train during their one-way trip.

8.1 Demographic Characteristics

This section highlights selected demographic-related findings from the survey.

8.1.1 Vehicle Availability

The Table 8-1 Series shows the number of household vehicles and vehicle availability for Valley Metro riders by service type. Fifty-four percent (54.3%) of all transit passengers indicated that they do not have a vehicle available to their household. Rail passengers were significantly more likely to have at least one vehicle available to their household than bus passengers (54.2% rail only vs. 44.9% bus only). Rail passengers were also more likely to have their vehicle available to use for their one-way trip compared to bus only passengers (66.8% rail only vs. 34.4% bus only) as shown in Table 8-1b.

Table 8-1a: Number of Vehicles in the Household

Vehicles	BUS ONLY	RAIL ONLY	BUS/RAIL	SKY TRAIN USERS	GRAND TOTAL
None (0)	55.1%	61.0%	45.8%	50.3%	54.3%
One (1)	24.7%	24.7%	31.9%	24.3%	25.8%
Two (2)	14.5%	9.9%	15.6%	13.3%	14.2%
Three (3)	3.9%	2.7%	4.6%	11.0%	3.9%
Four or more (4+)	1.8%	1.7%	2.2%	1.1%	1.8%
Grand Total	100.0%	100.0%	100.0%	100.0%	100.0%

Table 8-1b: Vehicle Availability

Vehicles Availability	BUS ONLY	RAIL ONLY	BUS/RAIL	SKY TRAIN USERS	GRAND TOTAL
No	65.6%	61.1%	33.2%	55.5%	59.6%
Yes	34.4%	38.9%	66.8%	44.5%	40.4%
Grand Total	100.0%	100.0%	100.0%	100.0%	100.0%

Notes: Riders that indicated they have at least one working vehicle in the household.

8.1.2 Household Size

Table 8-2 shows the number of household members. Thirty-Three percent (33.1%) of all transit passengers indicated that they live in households with at least four occupants; 23.1% reported that they live alone. Bus passengers were significantly more likely to live in households with four or more occupants than rail passengers (35.2% bus only vs. 24.6% rail only).

Table 8-2: Number of People Living in the Household

Persons	BUS ONLY	RAIL ONLY	BUS/RAIL	SKY TRAIN USERS	GRAND TOTAL
One (1)	21.7%	26.8%	28.3%	26.6%	23.1%
Two (2)	23.9%	30.8%	24.2%	30.6%	24.9%
Three (3)	19.3%	17.8%	17.2%	11.6%	18.8%
Four (4)	16.3%	13.2%	13.7%	12.8%	15.6%
Five (5)	9.2%	5.9%	8.3%	12.9%	8.7%
Six (6)	5.0%	2.9%	3.9%	3.3%	4.6%
Seven (7)	2.1%	1.2%	1.9%	1.2%	1.9%
Eight (8)	0.9%	0.6%	1.0%	0.6%	0.9%
Nine (9)	0.4%	0.1%	0.4%	0.0%	0.4%
Ten or More (10+)	1.1%	0.6%	1.0%	0.4%	1.1%
Grand Total	100.0%	100.0%	100.0%	100.0%	100.0%

8.1.3 Employed Persons per Household

Table 8-3 shows the number of employed household members by service type. Most (87.5%) transit passengers reported that they live in households where at least one person is employed. There were no significant differences in the number of employed persons per household based on the mode of travel as shown in Table 8-3 below.

Table 8-3: Number of Employed Persons in the Household

Employed Persons	BUS ONLY	RAIL ONLY	BUS/RAIL	SKY TRAIN USERS	GRAND TOTAL
None (0)	11.7%	15.2%	14.5%	7.9%	12.5%
One (1)	36.5%	34.7%	39.7%	34.0%	36.6%
Two (2)	33.5%	33.8%	30.3%	36.6%	33.2%
Three (3)	12.3%	11.2%	9.9%	16.2%	11.9%
Four (4)	4.0%	4.0%	3.7%	3.7%	4.0%
Five (5)	1.0%	0.7%	1.0%	0.6%	1.0%
Six (6)	0.4%	0.2%	0.3%	0.6%	0.4%
Seven (7)	0.1%	0.1%	0.1%	0.0%	0.1%
Eight (8)	0.1%	0.1%	0.1%	0.0%	0.1%
Nine (9)	0.0%	0.0%	0.0%	0.0%	0.0%
Ten or More (10+)	0.4%	0.0%	0.3%	0.4%	0.3%
Grand Total	100.0%	100.0%	100.0%	100.0%	100.0%

8.1.4 Employment Status

Table 8-4 shows the employment status of riders by service type. Eighty-percent (80.0%) of all transit passengers indicated that they were employed or seeking work. Rail passengers were slightly more likely to be employed at least part-time than bus passengers (71.0% bus only vs. 68.5% bus only).

Table 8-4: Employment Status

Employment Status	BUS ONLY	RAIL ONLY	BUS/RAIL	SKY TRAIN USERS	GRAND TOTAL
Employed full-time (at least 35 hrs per week)	53.7%	52.5%	56.4%	79.4%	53.9%
Employed part-time (less than 35 hrs per week)	14.7%	18.5%	13.3%	9.8%	15.1%
Not currently employed but seeking work	11.1%	10.1%	12.0%	1.3%	11.0%
Not currently employed and not seeking work	15.2%	12.9%	13.2%	4.8%	14.7%
Homemaker	0.6%	0.4%	0.4%	0.2%	0.6%
Retired	4.6%	5.7%	4.7%	4.6%	4.8%
Grand Total	100.0%	100.0%	100.0%	100.0%	100.0%

8.1.5 Student Status

Table 8-5 shows the student status of riders by service type. Twenty-seven percent (27.2%) of all transit passengers indicated that they were students. Rail passengers were more likely to be enrolled in a college or university than bus passengers (30.4% rail only vs. 13.2% bus only). Bus passengers were twice more likely to be students in grades K-12 than rail passengers (11.9% bus only vs. 5.1% rail only).

Table 8-5: Student Status

Student Status	BUS ONLY	RAIL ONLY	BUS/RAIL	SKY TRAIN USERS	GRAND TOTAL
Not a student	73.8%	63.8%	77.5%	90.0%	72.8%
Yes - Full Time college/university	11.2%	28.0%	12.2%	7.3%	13.8%
Yes - Part Time college/university	2.0%	2.7%	1.8%	0.7%	2.1%
Yes - vocational/technical/trade school	0.9%	0.4%	0.9%	0.0%	0.8%
Yes - K-12th grade	11.9%	5.2%	7.7%	2.1%	10.5%
Other	0.2%	0.0%	0.1%	0.0%	0.1%
Grand Total	100.0%	100.0%	100.0%	100.0%	100.0%

8.1.6 Driver's License

Table 8-6 displays whether riders have a valid driver's license by service type. More than half (53.8%) of all transit passengers indicated that they do not have a driver's license. Rail passengers were significantly more likely to have a driver's license than bus passengers (66.5% rail only vs. 42.0% bus only) as shown in Table 8-6 below.

Table 8-6: Driver's License Status

Driver's License Status	BUS ONLY	RAIL ONLY	BUS/RAIL	SKY TRAIN USERS	GRAND TOTAL
No	58.0%	33.5%	53.3%	26.6%	53.8%
Yes	42.0%	66.5%	46.7%	73.4%	46.2%
Grand Total	100.0%	100.0%	100.0%	100.0%	100.0%

8.1.7 Age

Table 8-7 shows the age of transit rider by service type. Sixty-percent (60.3%) of all transit riders indicated that they were between the ages of 19 and 44; 13.5% were 18 and younger, and 26.2% were age 45 or older. Bus passengers were more likely to be 18 and younger than rail passengers (15.0% bus only vs. 8.3% rail only). Bus

passengers were also slightly more likely to be age 45 or older (26.1% bus only vs. 23.9% rail only). Rail users were more likely to be between the ages of 19-34 than bus passengers (53.7% rail only vs. 44.2% bus only).

Table 8-7: Ages of Transit Users

Age of Respondent	BUS ONLY	RAIL ONLY	BUS/RAIL	SKY TRAIN USERS	GRAND TOTAL
Under 16	2.6%	1.5%	1.9%	0.0%	2.4%
16-18	12.3%	6.9%	8.4%	2.2%	11.1%
19-24	22.2%	30.3%	20.3%	19.3%	23.2%
25-34	22.0%	23.4%	23.0%	28.4%	22.4%
35-44	14.7%	14.1%	16.6%	17.9%	14.8%
45-54	13.4%	12.2%	16.3%	16.2%	13.5%
55-64	9.2%	8.0%	9.9%	10.4%	9.1%
65+	3.5%	3.8%	3.6%	5.6%	3.5%
Grand Total	100.0%	100.0%	100.0%	100.0%	100.0%

8.1.8 Income

Total household income by service type is shown in Table 8-8 series below. Excluding refusals, nearly twenty-eight percent (27.7%) of all transit passengers reported annual household incomes below \$15,000. Seventeen percent (17.0%) indicated they had an annual household income of \$50,000 or more, and only 3.5% reported an annual household income of \$100,000 or more.

Table 8-8a: Annual Household Income

Annual Household Income	BUS ONLY	RAIL ONLY	BUS/RAIL	SKY TRAIN USERS	GRAND TOTAL
Below \$5,000	9.3%	9.2%	10.4%	4.1%	9.4%
\$5,000-\$9,999	3.7%	4.1%	4.3%	3.7%	3.8%
\$10,000-\$14,999	6.2%	5.9%	7.3%	5.7%	6.2%
\$15,000-\$19,999	8.0%	5.9%	6.4%	5.7%	7.6%
\$20,000-\$24,999	8.3%	6.3%	7.6%	6.9%	7.9%
\$25,000-\$29,999	8.0%	4.8%	8.7%	5.3%	7.6%
\$30,000-\$34,999	6.1%	6.1%	6.3%	6.3%	6.1%
\$35,000-\$39,999	4.6%	4.9%	4.7%	3.5%	4.7%
\$40,000-\$49,999	4.8%	5.2%	5.1%	5.5%	4.9%
\$50,000-\$59,999	3.2%	4.9%	3.6%	7.4%	3.5%
\$60,000-\$69,999	2.2%	3.1%	1.9%	6.3%	2.4%
\$70,000-\$79,999	1.5%	2.5%	2.1%	4.0%	1.7%
\$80,000-\$89,999	1.1%	2.0%	1.0%	1.6%	1.2%
\$90,000-\$99,999	0.5%	1.7%	0.6%	2.0%	0.7%
\$100,000-\$119,999	1.0%	2.5%	0.9%	1.4%	1.2%
\$120,000 or more	1.0%	2.4%	1.1%	5.0%	1.2%
Refusal	30.5%	28.3%	28.0%	25.5%	29.9%
Grand Total	100.0%	100.0%	100.0%	100.0%	100.0%

Table 8-9b: Annual Household Income (Excluding Refusals)

Annual Household Income	BUS ONLY	RAIL ONLY	BUS/RAIL	SKY TRAIN USERS	GRAND TOTAL
Below \$5,000	13.3%	14.4%	12.9%	5.6%	13.3%
\$5,000-\$9,999	5.3%	6.0%	5.7%	5.0%	5.4%
\$10,000-\$14,999	8.9%	10.1%	8.2%	7.7%	8.9%
\$15,000-\$19,999	11.6%	8.9%	8.3%	7.6%	10.8%
\$20,000-\$24,999	11.9%	10.6%	8.8%	9.3%	11.3%
\$25,000-\$29,999	11.5%	12.0%	6.7%	7.1%	10.8%
\$30,000-\$34,999	8.7%	8.7%	8.5%	8.5%	8.7%
\$35,000-\$39,999	6.7%	6.6%	6.8%	4.6%	6.7%
\$40,000-\$49,999	6.9%	7.1%	7.3%	7.4%	7.0%
\$50,000-\$59,999	4.6%	5.1%	6.8%	10.0%	5.0%
\$60,000-\$69,999	3.2%	2.7%	4.4%	8.5%	3.4%
\$70,000-\$79,999	2.1%	2.9%	3.6%	5.3%	2.4%
\$80,000-\$89,999	1.6%	1.4%	2.8%	2.2%	1.8%
\$90,000-\$99,999	0.7%	0.9%	2.3%	2.6%	1.0%
\$100,000-\$119,999	1.4%	1.2%	3.6%	1.8%	1.7%
\$120,000 or more	1.4%	1.5%	3.4%	6.7%	1.8%
Grand Total	100.0%	100.0%	100.0%	100.0%	100.0%

8.1.9 Gender

The gender of riders by service type is presented in Table 8-10. Fifty-five percent (55.2%) of all transit passengers were male; 44.8% were female. There were no significant differences with regard to gender based on the mode of travel as shown in Table 8-10 below.

Table 8-10: Gender

Gender	BUS ONLY	RAIL ONLY	BUS/RAIL	SKY TRAIN USERS	GRAND TOTAL
Female	45.2%	44.5%	42.3%	37.0%	44.8%
Male	54.8%	55.5%	57.7%	63.0%	55.2%
Grand Total	100.0%	100.0%	100.0%	100.0%	100.0%

8.1.10 Race/Ethnicity

Table 8-11 shows the race/ethnicity of riders by service type. Forty-three percent (43.2%) of transit riders identified themselves as White; 27.3% identified themselves as Hispanic or Latino, and 18.9% identified themselves as Black or African American. Bus passengers were more likely to be Hispanic than rail passengers (29.1% bus only vs. 20.2% rail only).

Table 8-11: Race/Ethnicity

Race/Ethnicity	BUS ONLY	RAIL ONLY	BUS/RAIL	SKY TRAIN USERS	GRAND TOTAL
American Indian / Alaska Native	4.2%	4.4%	7.7%	2.1%	4.6%
Asian	3.0%	5.7%	2.3%	2.5%	3.3%
Black / African American	19.7%	13.2%	21.3%	24.9%	18.9%
Hispanic / Latino	29.1%	20.2%	24.3%	13.4%	27.3%
Native Hawaiian / Pacific Islander	0.8%	0.7%	0.7%	0.7%	0.8%
White	41.7%	51.9%	41.4%	55.0%	43.2%
Other	1.6%	3.8%	2.2%	1.5%	2.0%
Grand Total	100.0%	100.0%	100.0%	100.0%	100.0%

8.1.11 How Transit Riders Typically Get Transit Schedule Information

Table 8-12 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: the Valley Metro website (27.5%), the transit book (21.5%) and mobile site (20.6%). Bus passengers were significantly more likely to use the transit schedule book than rail passengers (23.1% bus only vs. 13.0% rail only). Rail passengers were significantly more likely to used posted schedules (22.1% rail only vs. 9.9% bus only).

Table 8-12: How Transit Riders Get Transit Schedule Information

Source of Information	BUS ONLY	RAIL ONLY	BUS/RAIL	SKY TRAIN USERS	GRAND TOTAL
Customer service	7.9%	4.4%	6.8%	2.4%	7.3%
Mobile site	20.2%	20.1%	23.7%	29.3%	20.6%
NextRide	9.0%	8.0%	8.5%	9.6%	8.8%
Posted schedule at bus stop	9.9%	22.1%	10.9%	19.8%	11.8%
Transit Book	23.1%	13.0%	21.8%	8.0%	21.5%
Valley Metro website	27.6%	28.5%	25.4%	28.5%	27.5%
Other	2.2%	3.8%	3.0%	2.4%	2.5%
Grand Total	100.0%	100.0%	100.0%	100.0%	100.0%

8.1.12 Veterans Status

Table 8-13 shows the veterans' status by service type. Six percent (6.0%) of all transit passengers indicated that they are a veteran. There is no significant different between rail passengers and bus passengers.

Table 8-13: Veterans Status

Veteran Status	BUS ONLY	RAIL ONLY	BUS/RAIL	SKY TRAIN USERS	GRAND TOTAL
YES	5.6%	6.8%	8.0%	5.0%	6.0%
NO	93.7%	92.6%	91.8%	94.4%	93.4%
No answer	0.7%	0.6%	0.2%	0.6%	0.6%
Grand Total	100.0%	100.0%	100.0%	100.0%	100.0%

8.1.13 Visitor Status

Table 8-14 shows the visitor's status by service type. Ninety-eight percent (98.6%) of all transit passengers indicated that they are local residents. Visitors were significantly more likely to use rail than bus (5.1% rail only vs. 0.6% bus only).

Table 8-14: Visitor Status

Visitor Status	BUS ONLY	RAIL ONLY	BUS/RAIL	SKY TRAIN USERS	GRAND TOTAL
No	99.4%	94.9%	98.6%	83.5%	98.6%
Yes	0.6%	5.1%	1.4%	16.5%	1.4%
Grand Total	100.0%	100.0%	100.0%	100.0%	100.0%

8.2 Travel Characteristics

This section highlights selected trip-related findings from the survey. The database used for the tables in this section and all chapters was expanded based on weekday linked weight factors created during the data expansion process.

8.2.1 Trip Purpose

Table 8-15 displays the trip purpose of riders by agency service types. Home-based work trips accounted for nearly forty-percent (38.8%) of all trips completed on public transit. Nearly twenty percent (19.2%) of all trips were home-based other trips, 12.4% were non-home based trips, and 9.5% were home based-shopping trips.

Rail passengers were significantly more likely to complete home-based college trips than bus passengers (17.4% rail only vs. 7.6% bus only). Bus passengers were significantly more likely to use public transit to complete home-based work trips (40.8% bus only vs. 26.9% rail only).

Table 8-15: Trip Purpose

Trip Purpose	BUS ONLY	RAIL ONLY	BUS/RAIL	SKY TRAIN USERS	GRAND TOTAL
Home-Based Airport Trip	0.0%	0.4%	0.3%	34.1%	0.2%
Home-Based College Trip	7.6%	17.4%	6.6%	0.0%	8.9%
Home-Based Medical Trip	3.0%	1.4%	3.4%	0.0%	2.8%
Home-Based Other Trip	18.7%	18.5%	23.5%	5.7%	19.2%
Home-Based School Trip	9.6%	2.5%	6.0%	0.0%	8.2%
Home-Based Shopping Trip	9.7%	10.9%	6.7%	0.1%	9.5%
Home-Based Work Trip	40.8%	26.9%	40.4%	40.6%	38.8%
Non-Home Based Trip	10.5%	21.9%	13.1%	19.6%	12.4%
Grand Total	100.0%	100.0%	100.0%	100.0%	100.0%

8.2.2 How Passengers Access Public Transit

How passengers first access public transit for their one-way trip by service type is shown in Table 8-16 series. Most (87.2%) transit passengers indicated that they accessed public transit by walking all the way. Bus passengers were significantly more likely to report walking to public transit than rail passengers (89.2% bus only vs. 74.7% rail only). Rail passengers were more likely than bus passengers to access public transit by driving alone and parking (7.5% rail only vs. 2.3% bus only). Rail passengers were also significantly more likely to access public transit by being dropped off by someone else (5.4% rail only vs. 3.1% bus only).

Table 8-16a: Access Mode to Transit System

Access Mode	BUS ONLY	RAIL ONLY	BUS/RAIL	SKY TRAIN USERS	GRAND TOTAL
Walked all the way	89.2%	74.7%	90.3%	91.7%	87.2%
Walked part of the way (got dropped off and then walked)	0.4%	0.3%	0.4%	0.2%	0.4%
Bike	3.6%	9.5%	4.6%	0.2%	4.6%
Drove alone and parked	2.3%	7.5%	1.2%	3.2%	2.9%
Drove or rode with others and parked	0.1%	1.4%	0.1%	1.0%	0.3%
Was dropped off by someone	3.1%	5.4%	2.2%	3.7%	3.4%
Wheelchair/scooter	0.9%	0.6%	0.9%	0.0%	0.9%
Other	0.4%	0.5%	0.3%	0.0%	0.4%
Grand Total	100.0%	100.0%	100.0%	100.0%	100.0%

Riders who indicated that they had walked all the way to the transit system were asked how far they had to walk. Eighty-three percent (83.0%) of those who walked indicated that they walked up to two blocks to get to transit. Thirteen percent (13.3%) reported that they walked between three to five blocks. Only 3.7% indicated that they would walk six or more blocks. Rail passengers were significantly more likely to report walking between three to five blocks to access transit compared to bus passengers (16.4% rail only vs. 12.9% bus only).

Table 8-15b: Access Mode to Transit System (Walk Distance)

Walk Distance	BUS ONLY	RAIL ONLY	BUS/RAIL	SKY TRAIN USERS	GRAND TOTAL
Less than a block	49.6%	39.7%	47.2%	48.1%	48.1%
One (1)	20.9%	21.9%	21.7%	27.7%	21.1%
Two (2)	13.1%	17.5%	13.8%	13.2%	13.7%
Three (3)	6.4%	8.5%	7.4%	5.1%	6.7%
Four (4)	4.3%	5.5%	3.8%	2.3%	4.3%
Five (5)	2.3%	2.4%	1.6%	0.2%	2.2%
Six (6)	0.8%	1.1%	1.4%	1.6%	0.9%
Seven (7)	0.4%	1.2%	0.5%	0.1%	0.5%
Eight (8)	0.9%	0.9%	0.9%	0.5%	0.9%
Nine (9)	0.1%	0.4%	0.2%	0.4%	0.2%
Ten or more (10+)	1.2%	1.0%	1.5%	0.8%	1.2%
Grand Total	100.0%	100.0%	100.0%	100.0%	100.0%

Notes: Based on riders who indicated that they had walked all the way.

8.2.3 How Passengers Traveled From Transit to Their Final Destination

Table 8-17 series shows how passengers traveled from public transit to their final destination. The majority of transit passengers (88.8%) indicated that they walk all the way to their final destination after using public transit. Bus passengers were more likely to walk than rail passengers (91.0% bus only vs. 76.3% rail only). Rail passengers were more likely than bus passengers to drive alone to their destination (7.7% rail only

vs. 2.1% bus only). Rail passengers were more likely to be picked up by someone else (3.6% rail only vs. 1.6% bus only).

Table 8-17a: Egress Mode to Destination

Egress Mode	BUS ONLY	RAIL ONLY	BUS/RAIL	SKY TRAIN USERS	GRAND TOTAL
Walk all the way	91.0%	76.3%	90.4%	91.5%	88.8%
Walk part of the way (will walk then get picked up)	0.3%	0.6%	0.5%	1.3%	0.3%
Bike	3.7%	10.0%	4.7%	0.2%	4.7%
Get in a parked vehicle & drive alone	2.1%	7.7%	1.2%	1.2%	2.8%
Get in a parked vehicle & drive/ride with others	0.1%	0.7%	0.1%	0.7%	0.2%
Be picked up by someone	1.6%	3.6%	1.8%	5.2%	1.9%
Wheelchair/scooter	1.0%	0.6%	1.0%	0.0%	0.9%
Other	0.4%	0.5%	0.3%	0.0%	0.4%
Grand Total	100.0%	100.0%	100.0%	100.0%	100.0%

Riders who indicated that they would walk all the way to their destination were asked how far they would walk. Over eighty percent (82.7%) of those who would walk to their destination indicated that they would walk up to two blocks. Nearly fourteen percent (13.7%) reported that they would walk between three to five blocks. Only 3.7% indicated that they would walk six or more blocks. Rail passengers were significantly more likely to report walking between three to five blocks to destination compared to bus passengers (19.7% rail only vs. 12.5% bus only).

Table 8-18b: Egress Mode to Destination (Walk Distance)

Walk Distance	BUS ONLY	RAIL ONLY	BUS/RAIL	SKY TRAIN USERS	GRAND TOTAL
Less than a block	48.9%	37.7%	43.1%	58.0%	46.9%
One (1)	21.0%	21.6%	22.1%	19.8%	21.2%
Two (2)	14.2%	16.0%	15.6%	8.8%	14.6%
Three (3)	6.7%	11.2%	7.7%	6.8%	7.4%
Four (4)	4.0%	5.6%	5.0%	0.5%	4.3%
Five (5)	1.9%	3.0%	2.1%	2.0%	2.0%
Six (6)	1.0%	1.4%	0.9%	3.0%	1.0%
Seven (7)	0.6%	1.0%	0.9%	0.4%	0.6%
Eight (8)	0.8%	1.1%	1.1%	0.3%	0.8%
Nine (9)	0.2%	0.3%	0.3%	0.0%	0.2%
Ten or more (10+)	0.8%	1.3%	1.2%	0.4%	0.9%
Grand Total	100.0%	100.0%	100.0%	100.0%	100.0%

Notes: Based on riders who indicated that they had walked all the way.

8.2.4 Transfers

Table 8-19 shows the number of transfers used by service type. More than thirty percent (34.1%) of public transit users made at least one transfer during their trip. Nearly six percent (5.8%) made two or more transfers. Passengers who used both bus and rail were more likely to make two or more transfers during their trip compared to bus-only users (26.1% bus/rail vs. 4.0% bus only).

Table 8-19: Total Transfers

Number of Transfers	BUS ONLY	RAIL ONLY	BUS/RAIL	SKY TRAIN USERS	GRAND TOTAL
None	68.7%	100.0%	0.0%	0.0%	65.9%
One	27.3%	0.0%	73.9%	67.9%	28.3%
Two	3.7%	0.0%	22.6%	26.6%	5.2%
Three or More	0.3%	0.0%	3.5%	5.6%	0.6%
Grand Total	100.0%	100.0%	100.0%	100.0%	100.0%

8.2.5 Type of Pass

The Table 8-20 illustrates the pass type by service type. More than thirty percent (32.7%) of public transit users used an all-day pass for their current one-way trip. Fifteen percent (15.5%) used a 31-day pass for their current one-way trip. Rail passengers were more likely to use an Arizona State University U-Pass for their trip compared to bus only users (17.8% rail only vs. 1.5% bus only).

Table 8-20: Pass Type

Pass Type	BUS ONLY	RAIL ONLY	BUS/RAIL	SKY TRAIN USERS	GRAND TOTAL
All-Day pass	31.7%	35.5%	35.6%	49.6%	32.7%
7-Day Pass	5.4%	4.2%	5.6%	3.3%	5.3%
15-Day	3.7%	2.1%	4.8%	0.7%	3.6%
31-Day Pass	15.6%	11.8%	20.5%	15.9%	15.5%
Semester Pass	2.4%	1.9%	2.3%	0.0%	2.3%
Full Fare	11.0%	8.1%	5.2%	17.2%	10.0%
Employer Subsidized Pass (Platinum Pass)	8.7%	10.6%	9.2%	8.6%	9.0%
FREE	10.5%	1.4%	3.4%	0.3%	8.4%
ASU U-Pass	1.5%	17.8%	4.4%	1.5%	4.2%
Courtesy Pass	0.1%	0.4%	0.1%	0.0%	0.1%
Dial A Ride ID Card	0.0%	0.0%	0.0%	0.0%	0.0%
Field Trip Pass	0.0%	0.1%	0.1%	0.2%	0.0%
Person with Disability Fare	0.9%	0.6%	1.2%	0.1%	0.9%
Reduced Fare Card ID	5.8%	4.1%	6.3%	2.0%	5.6%
Youth Fare	1.8%	0.6%	1.0%	0.0%	1.6%
Senior Fare	0.9%	0.7%	0.5%	0.5%	0.8%
Grand Total	100.0%	100.0%	100.0%	100.0%	100.0%

8.2.6 Trip Distance by Trip Purpose

Table 8-21 shows the trip distances by trip purpose. The mean trip distance (in miles) was calculated in GIS using the straight line distance between the trip origin and destination. Nearly half (48.1%) of all transit trips were less than five miles. One third (32.1%) of all trips were between five and ten miles.

The types of trips with the longest trip distance were: home-based work trips (8.90) and home-based airport trips (8.52). Home-based shopping trips (5.44) and home-based school trips (5.38) had the shortest trip distances.

Table 8-21: Trip Distance by Purpose

Trip Distance	HBA	HBC	HBM	HBO	HBS	HBW	HSL	NHB	GRAND TOTAL
<.5 Mile	0.0%	0.2%	1.0%	0.1%	0.8%	0.1%	0.0%	1.3%	0.4%
0.50-0.99	0.0%	2.4%	2.4%	4.7%	7.9%	0.9%	1.6%	4.2%	2.9%
1.00-4.99	28.0%	48.8%	47.5%	44.9%	64.0%	33.8%	59.8%	51.5%	44.8%
5.00-9.99	34.9%	30.0%	33.3%	31.7%	20.1%	37.0%	28.9%	29.9%	32.1%
10.00-15.99	31.6%	14.0%	12.0%	13.1%	5.8%	19.5%	8.2%	10.5%	14.3%
16.00-19.99	4.1%	2.5%	2.5%	3.1%	0.6%	4.5%	0.8%	1.7%	3.0%
20.00-24.99	1.2%	1.2%	0.9%	1.4%	0.6%	2.8%	0.3%	0.6%	1.7%
>24.99 Miles	0.2%	0.9%	0.4%	1.0%	0.4%	1.2%	0.3%	0.3%	0.9%
Grand Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Mean Trip Distance (Miles)	8.52	7.93	7.50	8.22	5.44	8.90	5.38	6.69	7.83

Notes: HBW=Home-Based Work Trip; HBS=Home-Based Shopping Trip; HBC=Home-Based College Trip; HSL=Home-Based School Trip; HBM=Home-Based Medical Trip; HBA=Home-Based Airport Trip; HBO=Home-Based Other Trip; NHB= Non-Home Based Trip.

8.2.7 Trip Distance by Travel Mode

The types of travel with the longest trip distance were: Bus/Rail passengers (10.16 miles), Rail only passengers (7.22 miles). Bus only passenger (6.94 miles) had the shortest average trip distance.

Table 8-22 shows the trip distances by travel mode. The mean trip distance (in miles) was calculated in GIS using the straight line distance between the trip origin and destination. The types of travel with the longest trip distance were: Bus/Rail passengers (10.16 miles), Rail only passengers (7.22 miles). Bus only passenger (6.94 miles) had the shortest average trip distance.

Table 8-22: Trip Distance by Travel Mode

Trip Distance	BUS ONLY	RAIL ONLY	BUS/RAIL	SKY TRAIN USERS	GRAND TOTAL
<.5 Mile	0.2%	0.0%	1.1%	0.0%	0.4%
0.50-0.99	2.8%	0.3%	5.7%	0.2%	2.9%
1.00-4.99	45.9%	28.2%	51.5%	36.7%	44.8%
5.00-9.99	32.9%	37.4%	24.2%	34.5%	32.1%
10.00-15.99	13.6%	22.5%	11.8%	24.4%	14.3%
16.00-19.99	2.6%	6.4%	2.4%	2.9%	3.0%
20.00-24.99	1.3%	3.7%	1.9%	0.4%	1.7%
>24.99 Miles	0.7%	1.4%	1.3%	0.9%	0.9%
Grand Total	100.0%	100.0%	100.0%	100.0%	100.0%
Mean Trip Distance (Miles)	6.93	7.22	10.18	7.86	7.83

8.2.8 Where Transit Users Live

Table 8-23 (below) shows the top 10 zip codes where the greatest number of surveyed transit users live. Zip codes 85281, 85015 and 85008 were home to the greatest number of transit users in the region. Eight percent (7.4%) of all transit users in the region live in zip code 85281, 4.6% of all transit users in the region live in zip code 85015 and 3.3% live in zip code 85008.

The map in Table 8-23 **Error! Reference source not found.** shows where transit users in the region live. The home addresses are plotted as black dots on the map.

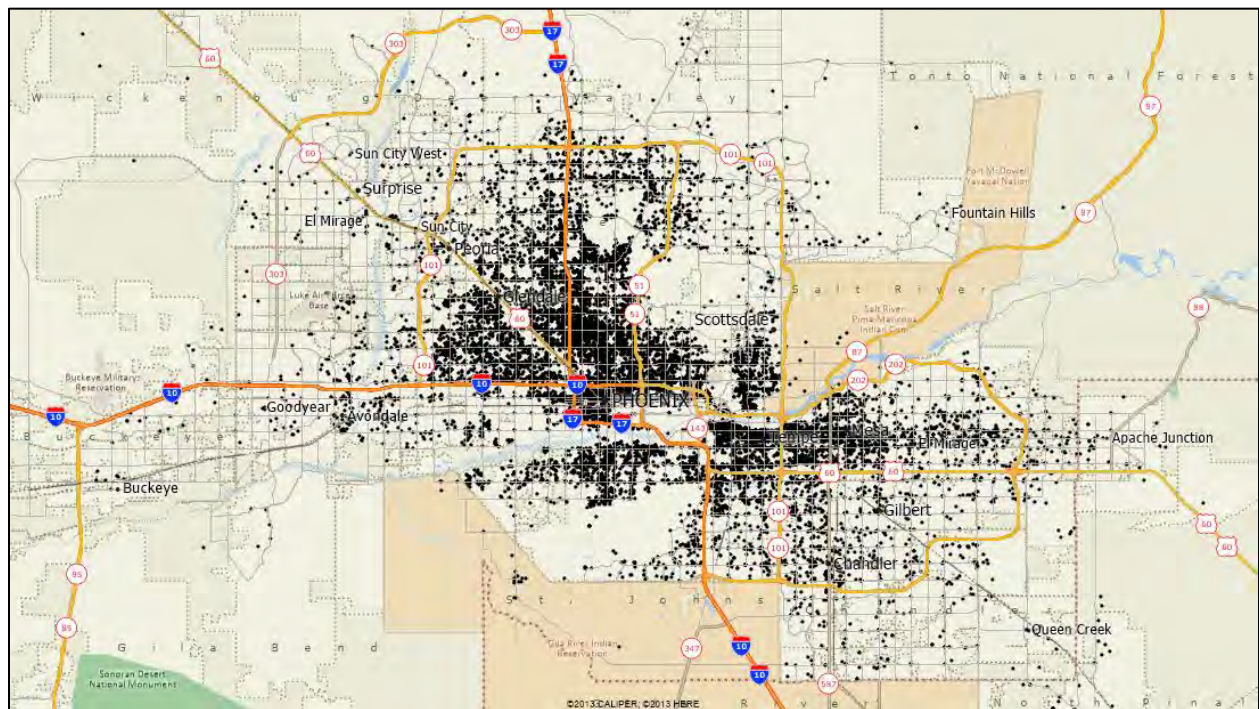
The map in Notes: *The dots on this map show the HOME address of respondents to the survey.*

Figure 8-2 shows the density of home address by zip code. Zip codes that are home to the most transit users are shaded in dark blue.

Table 8-23: Where Transit Users Live

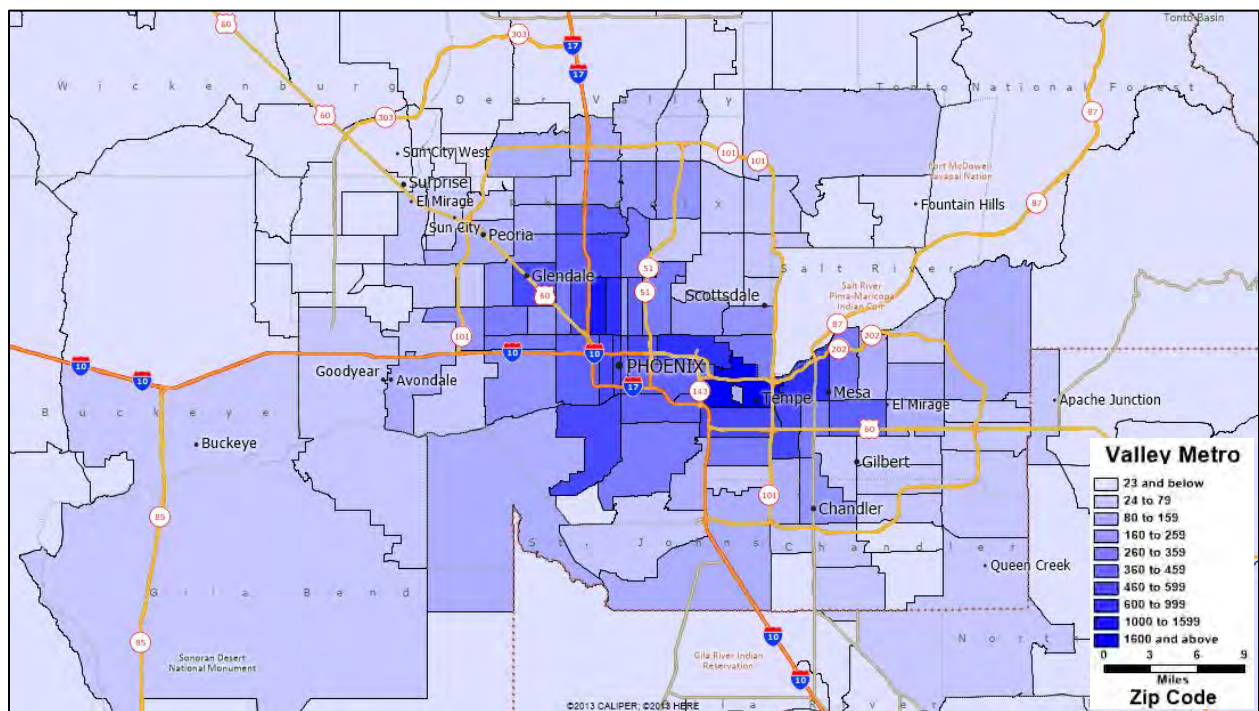
Home Zip Code	Overall
85281	7.4%
85015	4.6%
85008	3.3%
85282	3.1%
85041	3.0%
85013	2.9%
85007	2.4%
85301	2.4%
85017	2.4%
85201	2.3%

Figure 8-1: Where Transit Users Live (Respondent Map)



Notes: The dots on this map show the HOME address of respondents to the survey.

Figure 8-2: Where Transit Users Live (Zip Code Density Map)



Notes: The shading on this map shows the number of respondents to the survey by HOME zip code.

8.2.9 Where Transit Trips Began

Table 8-24 (below) shows the top 10 zip codes where the greatest number of transit trips began. Zip code 85281 had the most trip origins for transit in the region. Six percent (6.4%) of all transit trips in the region began in zip code 85281. Some of the other prominent zip codes where transit trips began were: 85015 (4.7%), 85004 (4.5%), 85003 (3.6%) and 85287 (3.5%).

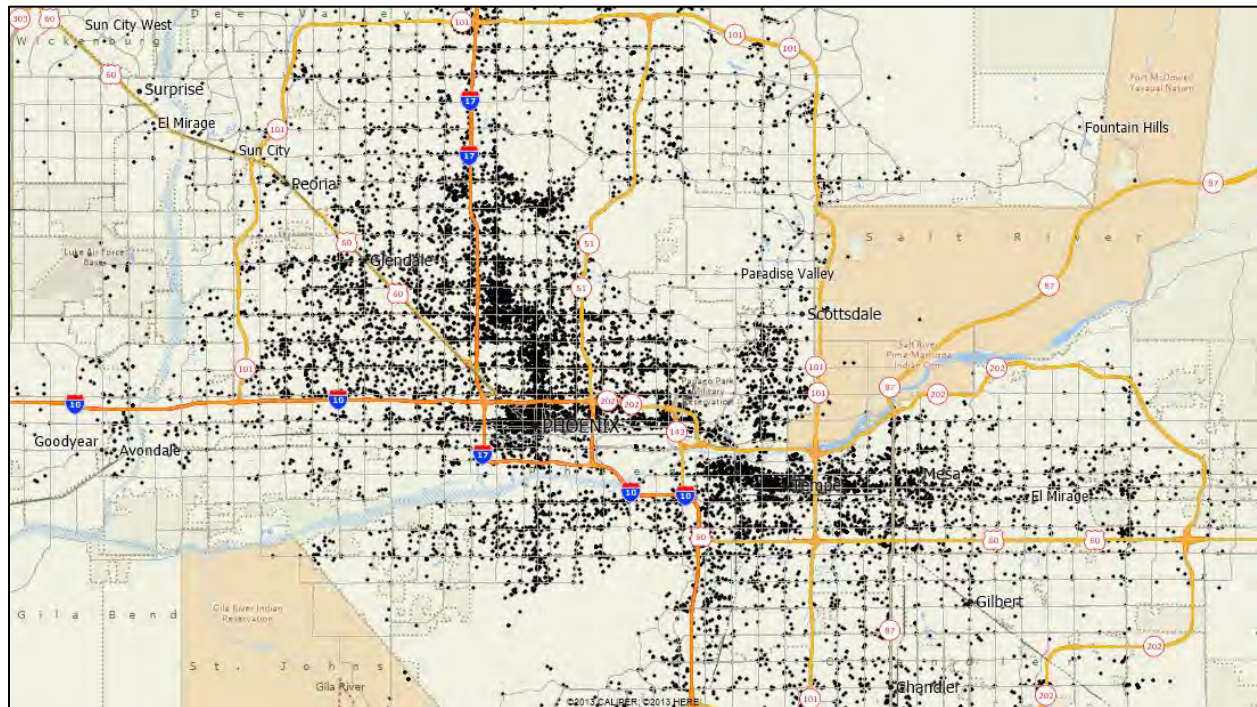
The map in Figure 8-3 shows where all transit trips in the region began. The origin addresses are plotted as black dots on the map.

The map in Figure 8-4 shows the density of trip origins by zip code. Zip codes with the most trip origins are shaded in dark blue.

Table 8-24: Where Transit Trips Began

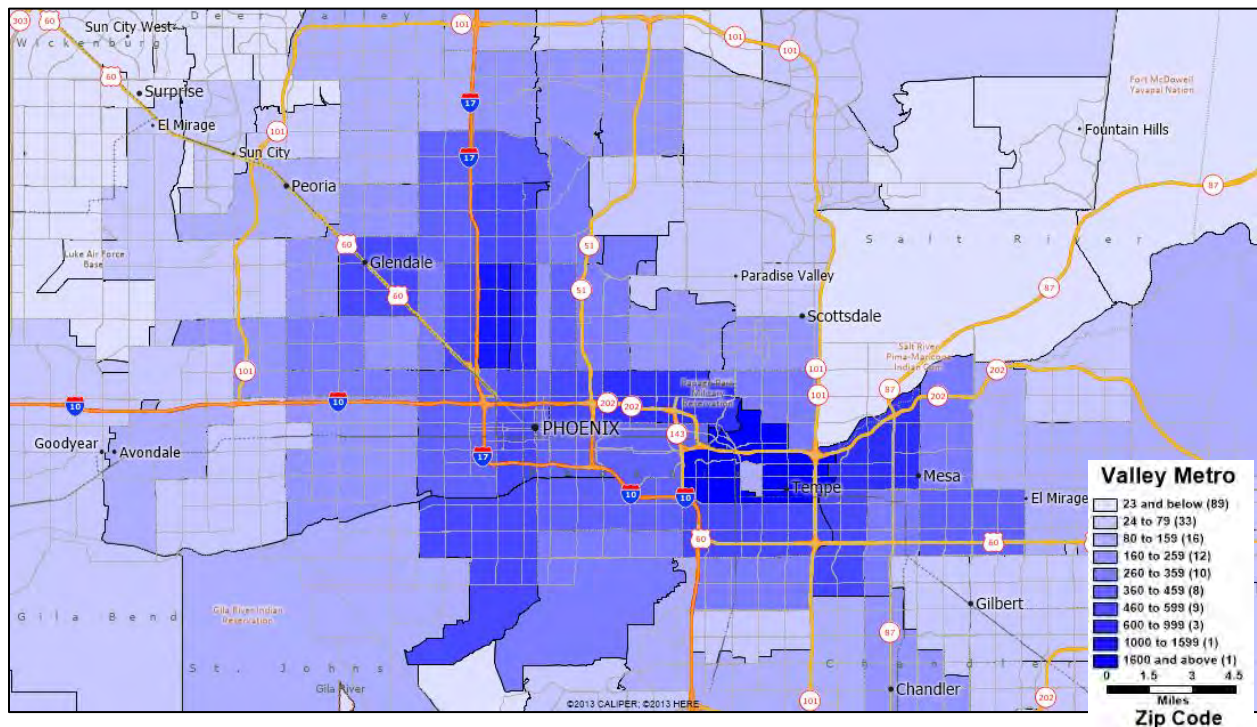
Origin Zip Code	Overall
85281	6.4%
85015	4.7%
85004	4.5%
85003	3.6%
85287	3.5%
85013	3.1%
85282	2.9%
85008	2.5%
85009	2.4%
85034	2.2%

Figure 8-3 Where Transit Trips Begin (Respondent Map)



Notes: The dots on this map show the ORIGIN address of respondents to the survey.

Figure 8-4 Where Transit Trip Begin (Zip Code Density Map)



Notes: The shading on this map shows the number of respondents to the survey by ORIGIN zip code.

8.2.10 Where Transit Trips Ended

Table 8-25 (below) shows the top 10 zip codes where the greatest number of transit trips ended. Zip codes 85281, 85004 and 85015 had the most trip destinations for transit in the region. Six percent (6.5%) of all transit trips in the region ended in zip code 85281. Four percent (4.4%) of all transit trips in the region ended in zip code 85004 and 5% ended in zip code 85287.

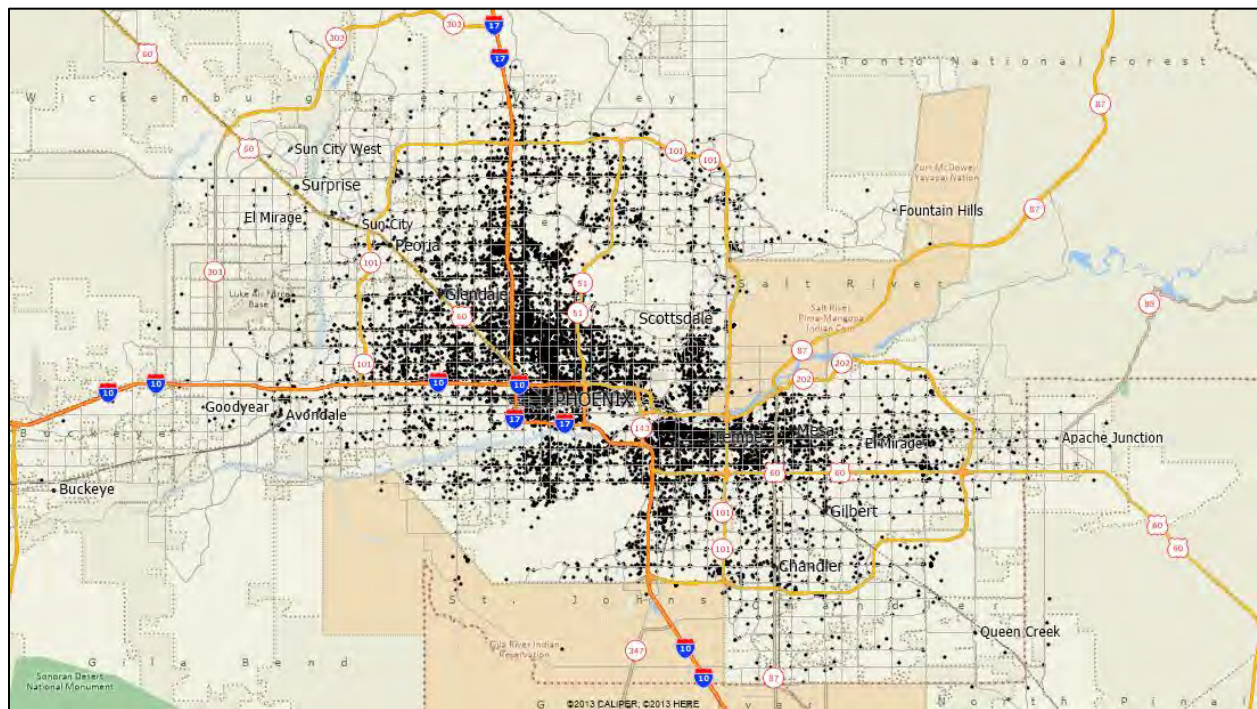
The map in Figure 8-5 shows where all transit trips in the region ended. The destination addresses are plotted as black dots on the map.

The map in Figure 8-6 shows the density of trip destinations by zip code. Zip codes with the most trip destinations are shaded in dark blue.

Table 8-25: Where Transit Trips Ended

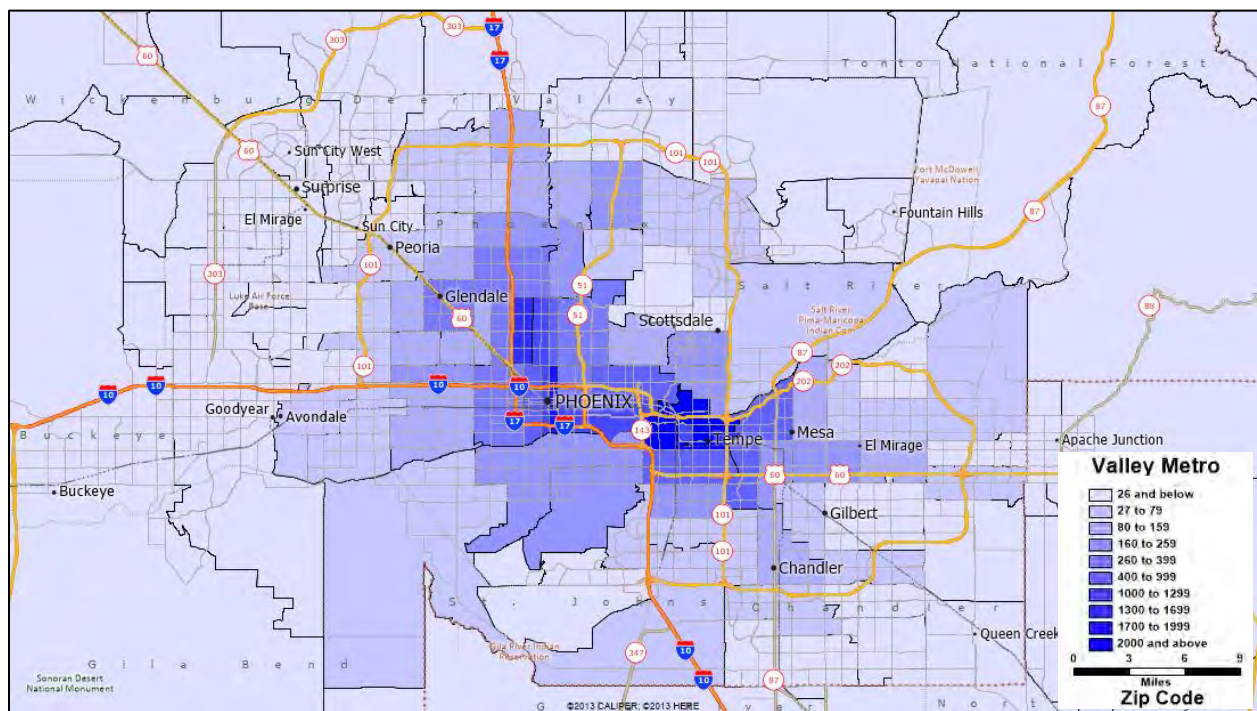
Destination Zip Code	Overall
85281	6.5%
85004	4.4%
85015	4.2%
85287	3.9%
85003	3.6%
85013	3.1%
85282	2.7%
85008	2.6%
85034	2.3%
85007	2.3%

Figure 8-5 Where Transit Trips Ended (Respondent Map)



Notes: The dots on this map show the DESTINATION address of respondents to the survey.

Figure 8-6 Where Transit Trip Ended (Zip Code Density Map)



Notes: The shading on this map shows the number of respondents to the survey by DESTINATION zip code.

8.2.11 Where Transit Riders Boarded

Table 8-26 (below) shows the top 10 zip codes where the greatest number of transit boardings occurred. Zip codes 85003, 85281, and 85015 had the most transit boardings in the region. Seven percent (7.1%) of all transit boardings in the region occurred in zip code 85003. Seven percent (6.8%) of all transit boardings in the region occurred in zip code 85281 and six percent (5.6%) of all transit boardings occurred in zip code 85015.

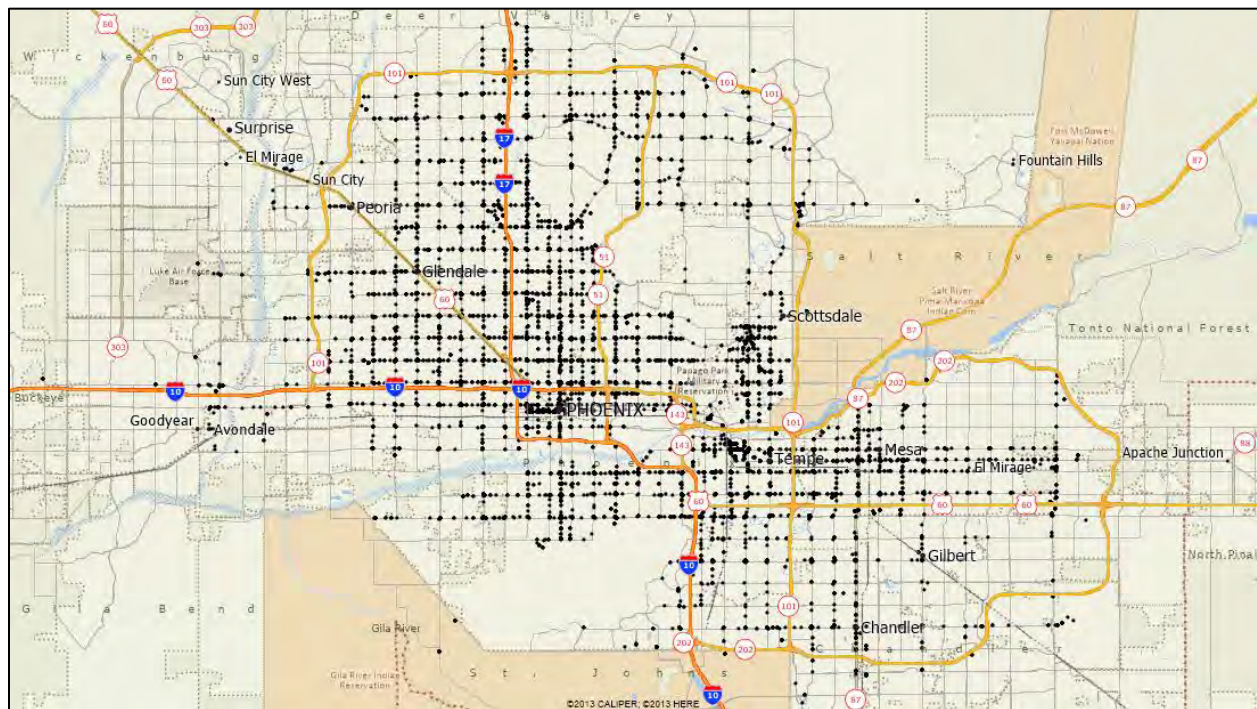
The map in Figure 8-7 shows where all transit boardings in the region occurred. The boarding locations are plotted as black dots on the map.

The map in Figure 8-8 shows the density of trip boardings by zip code. Zip codes with the most boardings are shaded in dark blue.

Table 8-26: Where Transit Riders Boarded

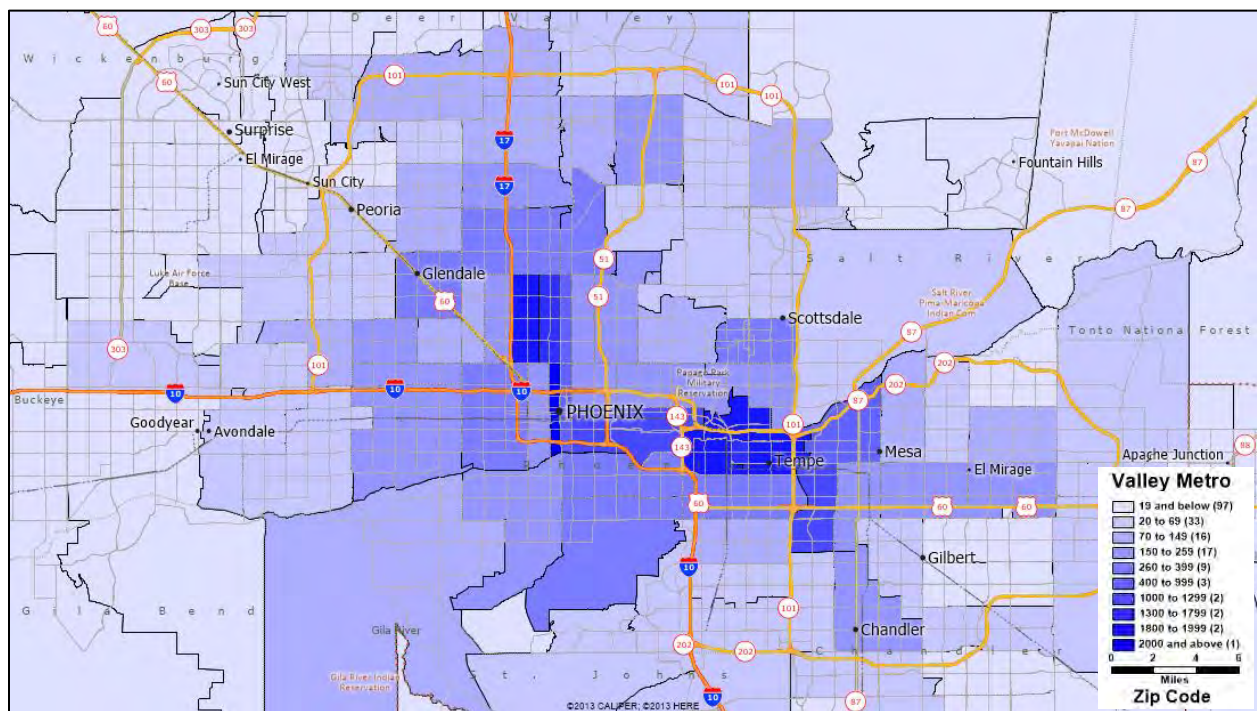
Boarding Zip Code	Overall
85003	7.1%
85281	6.8%
85015	5.6%
85287	5.2%
85013	4.2%
85282	2.9%
85004	2.7%
85202	2.6%
85051	2.5%
85034	2.4%

Figure 8-7 Where Transit Users Boarded Transit (Respondent Map)



Notes: The dots on this map show the BOARDING address of respondents to the survey.

Figure 8-8 Where Transit Users Boarded Transit (Zip Code Density Map)



Notes: The shading on this map shows the number of respondents to the survey by BOARDING zip code.

8.2.12 Where Transit Riders Alighted

Table 8-27 (below) shows the top 10 zip codes where the greatest number of transit alightings occurred. Zip codes 85281, 85003, and 85287 had the most alightings in the region. Seven percent (6.6%) of all transit alightings in the region occurred in zip code 85281. Six percent (6.0%) of all transit alightings in the region occurred in zip code 85003 and five percent (5.2%) of all transit alightings occurred in zip code 85287.

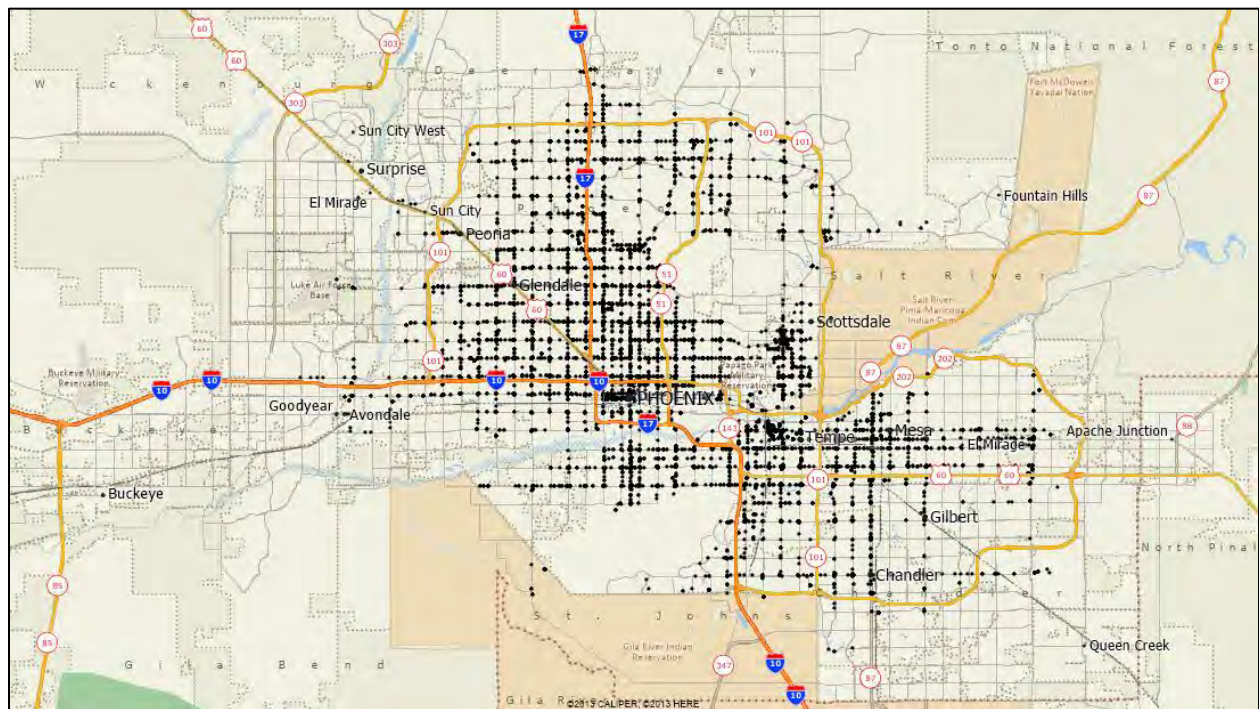
The map in Figure 8-9 shows where all transit alightings in the region occurred. The alighting locations are plotted as black dots on the map.

The map in Figure 8-10 shows the density of trip alightings by zip code. Zip codes with the most alighting are shaded in dark blue.

Table 8-27: Where Transit Riders Alighted

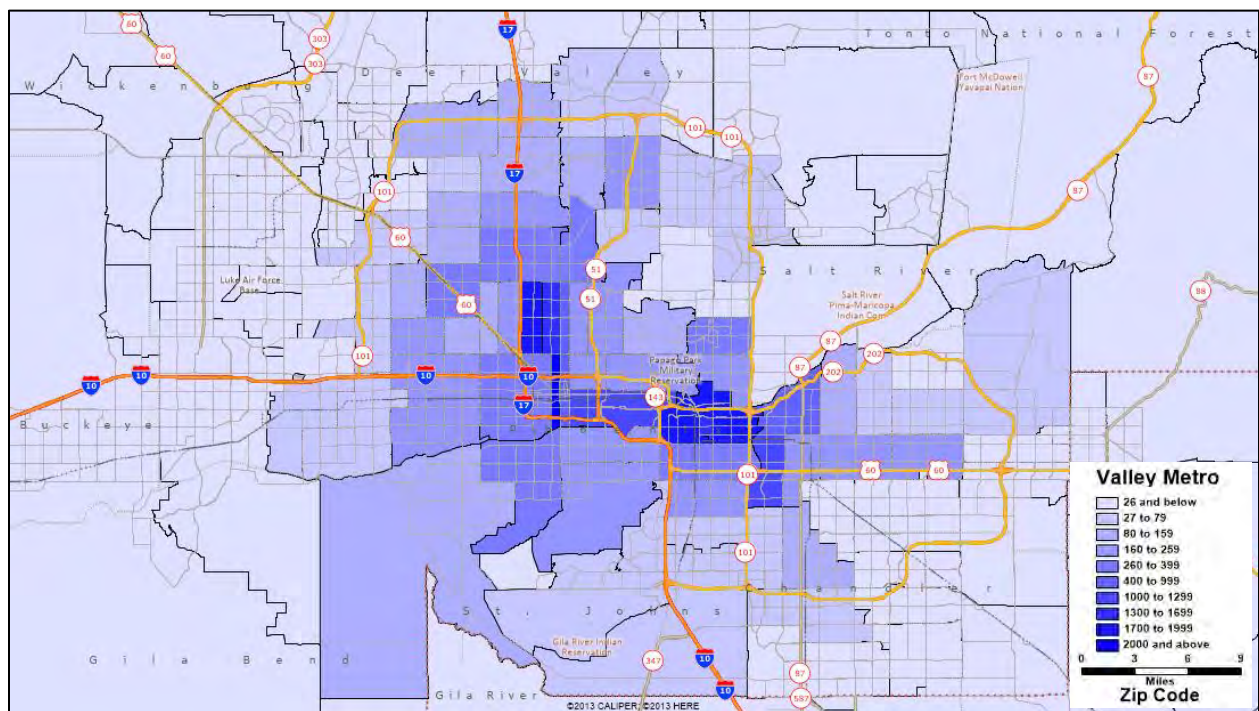
Alighting Zip Code	Overall
85281	6.6%
85003	6.0%
85287	5.2%
85015	5.0%
85013	4.2%
85004	2.9%
85202	2.7%
85034	2.7%
85051	2.6%
85009	2.3%

Figure 8-9 Where Transit Users Alighted Transit (Respondent Map)



Notes: The dots on this map show the ALIGHTING address of respondents to the survey.

Figure 8-10 Where Transit Users Alighted Transit (Zip Code Density Map)



Notes: The shading on this map shows the number of respondents to the survey by ALIGHTING zip code.

Chapter 9 ANALYSIS OF TRENDS (2011 & 2015)

This section of the report presents a comparative analysis of the data collected in the 2015 on-board transit survey with the data collected in the 2011 on-board transit survey.

9.1 Comparison of the 2011 Survey to the 2015 Survey

While most of the survey questions and answer options were the same in 2011 and 2015, there were some differences in the sample size and survey administration methodology. Some of these differences are noted below:

- **Sample Size.** In 2011, the survey goal was to obtain 13,750 completed surveys. Of these, 9,635 were to be completed with bus passengers and 4,115 were to be completed with rail passengers. The actual number of completed surveys was 14,655. Of these, 10,422 were completed with bus passengers and 4,213 were completed with rail passengers.

In 2015, based on the final goals and using a variable sampling rate, the survey goals were to obtain 15,621 completed surveys. Of those, 12,150 were to be completed with bus passengers and 3,471 were to be completed with rail passengers. The actual number of completed surveys was 21,803. Of these, 12,453 completed with bus passengers and 9,350 were completed with rail passengers.

- **Method of Administration.** Both the 2011 and 2015 surveys were conducted as a face-to-face interview, and tablet PCs were the primary method of collecting the data.
- **Timing of Survey Administration.** In 2011 surveys were administered in the fall season. In 2015, surveys were administered in the spring season. In addition, neither the 2011 nor the 2015 survey was administered on weekends and holidays.
- **Participant Selection.** Both in 2011 and 2015, riders were selected at random to participate using the sampling procedure described in Chapter 4.
- **Incentives.** Both the 2011 and 2015, incentives were distributed to survey participants in the form of a registered drawing. In 2011 \$5,000 were distributed to winners and in 2015 two \$1,000 cash prizes were handed out.

Demographic Characteristics

9.1.1 Household Size

The total number of household members by year is shown in Table 9-1 below. Thirty-eight percent (38.4%) of the transit users in the 2011 survey lived in households with four or more occupants compared to 33.1% of all households in 2015.

Table 9-1: Number of People Living in the Household

Persons	2015	2011
One (1)	23.1%	17.8%
Two (2)	24.9%	25.3%
Three (3)	18.8%	18.5%
Four (4)	15.6%	16.5%
Five (5)	8.7%	9.6%
Six or More (6+)	8.9%	12.4%
Grand Total	100.0%	100.0%

9.1.2 Vehicle Availability

Table 9-2 displays the number of working vehicles in household by year. The percentage of transit users that reported having at least one vehicle available to their household decreased from 2011 to 2015. In 2011, 55.1% of transit users indicated that they had one or more vehicles in their household. In 2015, 45.7% indicated that they had one or more vehicles. The percentage with zero vehicles increased from 44.9% in 2011 to 54.3% in 2015.

Table 9-2: Number of Vehicles in the Household

Vehicles	2015	2011
None (0)	54.3%	44.9%
One (1)	25.8%	29.6%
Two (2)	14.2%	16.7%
Three (3)	3.9%	6.2%
Four or more (4+)	1.8%	2.7%
Grand Total	100.0%	100.0%

9.1.3 Household Income

Total household income by year is shown in the Table 9-3 below excluding those who refused or did not know. The percentage of transit users living in households earning \$50,000 or more per year decreased from 2011 to 2015. In 2011, about one in five transit users (19.4%) had an annual household income of \$50,000 or more. In 2015, seventeen (17.0%) transit users had an annual household income of \$50,000 or more. The percentage of transit users earning less than \$15,000 per year also declined from 34.1% in 2011 to 27.7% in 2015.

Table 9-3: Annual Household Income (excluding don't know)

Annual Income Range	2015	2011
Below \$5,000	13.3%	15.1%
\$5,000-\$9,999	5.4%	9.0%
\$10,000-\$14,999	8.9%	10.0%
\$15,000-\$19,999	10.8%	7.4%
\$20,000-\$24,999	11.3%	10.3%
\$25,000-\$29,999	10.8%	8.2%
\$30,000-\$34,999	8.7%	7.5%
\$35,000-\$39,999	6.7%	6.2%
\$40,000-\$49,999	7.0%	7.0%
\$50,000-\$59,999	5.0%	6.1%
\$60,000-\$69,999	3.4%	3.9%
\$70,000-\$79,999	2.4%	2.6%
\$80,000-\$89,999	1.8%	2.1%
\$90,000-\$99,999	1.0%	1.3%
\$100,000-\$119,999	1.7%	1.6%
\$120,000 or more	1.8%	1.8%
Grand Total	100.0%	100.0%

Notes: Refusal option for the tablet survey was created for the 2015 survey.

9.1.4 Age

Table 9-4 shows the age of transit riders by year. The percentage of transit users who are under age 25 decreased from 2011 to 2015. In 2011, 42.5% of transit users were under age 25. In 2015, 36.6% were under age 25. The percentage of transit users who are over the age of 55 increased slightly from 2011 to 2015. In 2011, 9.5% of transit users were 55 and above. In 2015, 12.7% were 55 and above.

Table 9-4: Age of Transit Users

Age Range	2015	2011
Under 16	2.4%	3.1%
16-18	11.1%	15.3%
19-24	23.2%	24.0%
25-34	22.4%	21.1%
35-44	14.8%	14.3%
45-54	13.5%	12.7%
55-64	9.1%	6.7%
65+	3.5%	2.8%
Grand Total	100.0%	100.0%

9.1.5 Employment Status

Table 9-5 shows the employment status of transit riders by year. The percentage of transit users who are employed either part-time or full-time increased from 2011 to 2015. In 2011, 56.7% of transit users were either employed part-time or full-time. In 2015, 69.0% were either employed part-time or full-time.

Table 9-5: Employment Status

Employment Status	2015	2011
Employed full-time (at least 35 hrs per week)	53.9%	36.7%
Employed part-time (less than 35 hrs per week)	15.1%	20.0%
Not currently employed but seeking work	11.0%	20.6%
Not currently employed and not seeking work	14.7%	19.4%
Retired	4.8%	3.3%
Homemaker	0.6%	Not Provided
Grand Total	100.0%	100.0%

9.1.6 Employed Persons per Household

Table 9-6 shows the number of employed household members by year. The percentage of households with employed members did not change much from 2011 to 2015.

Table 9-6: Employed Persons per Household

Employed Persons	2015	2011
None (0)	12.5%	14.7%
One (1)	36.6%	38.7%
Two (2)	33.2%	30.9%
Three (3)	11.9%	10.6%
Four (4)	4.0%	3.8%
Five (5)	1.0%	0.9%
Six or More (6+)	0.9%	0.5%
I Don't Know	0.0%	0.0%
Grand Total	100.0%	100.0%

9.1.7 Student Status

Table 9-7 shows the student status of riders by year. The percentage of non-student riders increased from 2011 to 2015. The percentage of college or university students decreased from 24.5% in 2011 to 15.8% in 2015.

Table 9-7: Student Status

Student Status	2015	2011
Not a student	72.8%	59.9%
Yes - college or university	15.8%	24.5%
Yes - student through 12th grade	10.5%	14.4%
Yes - other	0.9%	1.3%
Grand Total	100.0%	100.0%

Notes: Student Housing developed Downtown after 2011 Survey

9.2 Travel Characteristics

In addition to reviewing changes in demographics, changes in travel characteristics from 2011 to 2015 were also assessed, including the types of places where trips began, trip purpose, modes of access and egress, and sources of bus schedule information.

9.2.1 Types of Places Where Transit Trips Began

Table 9-8 shows the type of place where transit riders began their trip by year. Although the percentage of trips that began at home did not change much from 2011 to 2015, the percentage of trips that began at work increased from 15.8% in 2011 to 20.3% in 2015.

Table 9-8: Where Transit Trips Began

Origin Type	2015	2011
Airport	0.2%	0.1%
College or University	4.8%	9.8%
Elementary School (grades K-5)	0.1%	0.3%
High School (grades 9-12)	4.3%	6.7%
Hotel	0.3%	0.2%
Medical appointment or doctor visit	1.7%	2.2%
Middle School (grades 6-8)	0.2%	0.1%
Recreation or Sightseeing	1.8%	1.3%
Shopping	6.2%	6.4%
Social visit or church or personal	5.1%	7.0%
Your HOME	46.4%	45.8%
Your WORKPLACE	20.3%	15.8%
Other	8.7%	4.5%
Grand Total	100.0%	100.0%

Notes: Student Housing developed Downtown after 2011 Survey

9.2.2 Types of Places Where Transit Trips End

Table 9-9 shows the type of place where transit riders end their trip by year. Although the percentage of trips that began at home did not change much from 2011 to 2015, the percentage of trips that began at work increased slightly from 17.9% in 2011 to 20.2% in 2015.

Table 9-9: Where Transit Trips End

Destination Type	2015	2011
Airport	0.2%	0.2%
College or University	5.5%	8.8%
Elementary School (grades K-5)	0.1%	0.4%
High School (grades 9-12)	4.2%	5.1%
Hotel	0.2%	0.1%
Medical appointment or doctor visit	2.0%	2.2%
Middle School (grades 6-8)	0.2%	0.2%
Recreation or Sightseeing	2.8%	1.5%
Shopping	5.3%	6.9%
Social visit or church or personal	7.0%	10.0%
Your HOME	41.2%	41.2%
Your WORKPLACE	20.3%	17.9%
Other	11.1%	5.6%
Grand Total	100.0%	100.0%

Notes: Student Housing developed Downtown after 2011 Survey

9.2.3 Trip Purpose

Table 9-10 displays the trip purpose of riders by year. There was a significant increase in the portion of passengers who used public transit to make home-based work trips up from 29.4% in 2011 to 38.7% in 2015. There was a significant decrease in the percent of passengers who used public transit to make home-based college trips from down from 15.0% in 2011 to 8.9% in 2015.

Table 9-10: Trip Purpose

Trip Purpose	2015	2011
Home-Based Airport Trip	0.2%	0.1%
Home-Based College Trip	8.9%	15.0%
Home-Based Medical Trip	2.8%	3.5%
Home-Based Other Trip	19.2%	18.9%
Home-Based Shopping Trip	9.5%	8.9%
Home-Based Work Trip	38.8%	29.4%
Home-Based School Trip	8.2%	10.9%
Non-Home Based Trip	12.4%	13.2%
Grand Total	100.0%	100.0%

Notes: Student Housing developed Downtown after 2011 Survey

9.2.4 Mode of Access to Transit

The difference in how passengers first access public transit for their one-way trip is shown in Table 9-11. There were no significant differences in the modes of access to transit from 2011 to 2015. In 2011, 87.4% of transit users accessed transit by walking. In 2015, 87.4% indicated that they accessed transit by walking. The percentage who drove alone or biked did not change.

Table 9-11: Access Mode to Transit System

Access Mode	2015	2011
Walk	87.2%	87.4%
Was dropped off by someone going someplace else	3.7%	4.6%
Bike	4.6%	4.5%
Drove alone	2.9%	2.9%
Carpooled or vanpooled with others	0.3%	0.3%
Other	1.3%	0.4%
Grand Total	100.0%	100.0%

9.2.5 Mode of Egress from Transit

Table 9-12 shows how passengers traveled from public transit to their final destination. There were no significant differences in the modes of egress from 2011 to 2015. In 2011, 90.0% of transit users egressed transit by walking to their destination. In 2015, 88.8% indicated that they egressed transit by walking to their destination.

Table 9-12: Egress Mode to Transit System

Egress Mode	2015	2011
Walk	88.8%	90.0%
Be picked up by someone	2.2%	2.9%
Bike	4.7%	4.4%
Drive alone	2.8%	2.5%
Carpool or vanpool with others	0.2%	0.1%
Other	1.3%	0.2%
Grand Total	100.0%	100.0%

Notes: Few options were combined to compare yearly trends.

9.2.6 Source of Bus Schedule Information

Table 9-13 shows the preferred tools for transit schedules by year. The percentage of transit users who rely on the Valley Metro transit book has declined significantly since 2011. In 2011, 31.7% of transit users relied on the transit book as their primary source of schedule information. In 2015, 21.5% indicated that they relied on the transit schedule book. Few changes were made to this question. The introduction of an assortment of mobile sites and Valley Metro's NextRide has decreased the use of a few prior options from 2011 to 2015.

Table 9-13: Where Transit Users Get Schedule Information

Source of Information	2015	2011
Customer service	7.3%	14.4%
Posted schedule at bus stop	11.8%	6.8%
Transit Book	21.5%	31.7%
Valley Metro website	27.5%	29.6%
Mobile site	20.6%	Not Provided
NextRide	8.8%	Not Provided
Other	2.5%	2.6%
I Don't get schedule info	Not Provided	7.2%
I Don't Know	Not Provided	7.7%
Grand Total	100.0%	100.0%

Chapter 10 LESSONS LEARNED AND OPPORTUNITIES FOR IMPROVEMENT

Although the number of completed surveys and the quality of the survey data exceeded the contractual requirements for the project, the research team identified a few opportunities for improvement to enhance the quality of future surveys based on lessons learned from the 2014-2015 Valley Metro On-Board Transit Survey. The opportunities are briefly described below.

- **Additional focus on stop list** Since this issue was not identified until after the administration of the survey began, manual geocoding of some bus stops was required on routes for which the stop inventory was not completed prior to the start of survey. If a stop inventory had been completed before the survey began, the location of all bus stops on each route could have been included in the tablet PC survey program, which would have minimized the number of boarding and alighting locations that had to be manually geocoded after the survey was administered.
- **Coordination of ridership information prior to collection.** If ridership information had been finalized before the survey collection ended, additional surveys would not have been needed to be collected during Fall 2015. Better adjustments to sampling management could have been made during the spring 2015 collection as well.

APPENDIX A: VALLEY METRO 2015 ON-BOARD SURVEY (PAPER VERSION)



(for office use only) Route Code: Time: Interviewer: Serial #:

Please take a few moments to help plan for your transit needs by filling out this survey.

All personal information will be kept strictly confidential and **WILL NOT** be shared or sold.

What is your **HOME ADDRESS**: (please be specific, ex: 123 W. Main St);
(If you are visiting the Phoenix area, please list the address where you are staying)

Street Address

City

State

Zip Code

COMING FROM?

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

- | | |
|--|---|
| <input type="radio"/> Your usual WORKPLACE | <input type="radio"/> Shopping |
| <input type="radio"/> Other work related | <input type="radio"/> Eating/Dining Out |
| <input type="radio"/> College / University (students only) | <input type="radio"/> School (K-5) |
| <input type="radio"/> Airport (as an air passenger) | <input type="radio"/> School (6-8) |
| <input type="radio"/> Recreation (movies, fishing, etc.) | <input type="radio"/> School (9-12) |
| <input type="radio"/> Medical appointment/doctor's visit | <input type="radio"/> Sightseeing |
| <input type="radio"/> Social visits (friends/relatives) | <input type="radio"/> Hotel |
| <input type="radio"/> Personal business (bank, post office) | <input type="radio"/> Sporting event |
| <input type="radio"/> Pick up/drop off someone (daycare, school) | |
| <input type="radio"/> Your HOME → Go to Question #4 | |
| <input type="radio"/> Other: <input type="text"/> | |

2. What is the **NAME** of the place you are coming from now?

3. What is the **EXACT ADDRESS** of this place? (OR Intersection if you do not know the exact address:)

City: State: Zip:

4. How did you **GET FROM** the place in Question #1 TO THE VERY **FIRST** bus or train you used for this one-way trip?

☐ Walked all the way: how far did you walk? blocks

☐ Walked part of the way (got dropped off and then walked)

☐ Bike

☐ Wheelchair / Scooter

☐ Was dropped off by someone (answer 4a)

☐ Drove alone and parked (answer 4a)

☐ Drove or rode with others and parked (answer 4a)

4a. Where did you get **ON** the first bus or train you used for this one-way trip (Write the nearest intersection / park-and-ride lot / rail station below):

5. Where did you **get ON** this bus/train?
Please provide the nearest intersection / station name / park-and-ride lot:

GOING TO?

6. What type of place are you
GOING TO NOW?
(the ending place for your one-way trip)

- | | |
|--|---|
| <input type="radio"/> Your usual WORKPLACE | <input type="radio"/> Shopping |
| <input type="radio"/> Other work related | <input type="radio"/> Eating/Dining Out |
| <input type="radio"/> College / University (students only) | <input type="radio"/> School (K-5) |
| <input type="radio"/> Airport (as an air passenger) | <input type="radio"/> School (6-8) |
| <input type="radio"/> Recreation (movies, fishing, etc.) | <input type="radio"/> School (9-12) |
| <input type="radio"/> Medical appointment/doctor's visit | <input type="radio"/> Sightseeing |
| <input type="radio"/> Social visits (friends/relatives) | <input type="radio"/> Hotel |
| <input type="radio"/> Personal business (bank, post office) | <input type="radio"/> Sporting event |
| <input type="radio"/> Pick up/drop off someone (daycare, school) | |
| <input type="radio"/> Your HOME → Go to Question #4 | |
| <input type="radio"/> Other: <input type="text"/> | |

7. What is the **NAME** of the place you are going to now?

8. What is the **EXACT ADDRESS** of this place? (OR Intersection if you do not know the exact address:)

City: State: Zip:

9. How will you **GET TO** your destination (listed in Question #6) after you get off the **LAST** bus or train you will use for this one-way trip?

- ☐ Walk all the way: how far will you walk? blocks
- ☐ Walk part of the way (will walk then get picked up)
- ☐ Bike
- ☐ Wheelchair / Scooter
- ☐ Be picked up by someone (answer 9a)
- ☐ Get in a parked vehicle & drive alone (answer 9a)
- ☐ Get in a parked vehicle & drive/ride w/others (answer 9a)

9a. Where will you get off the last bus or train you are using for this one-way trip (Write the nearest intersection / park-and-ride lot / rail station below):

10. Where will you **get OFF** this bus/train?
Please provide the nearest intersection / station name / park-and-ride lot:

11. **INCLUDING THIS BUS/TRAIN**, how many **TOTAL BUSES/TRAINS** will you use to make **THIS ONE-WAY TRIP**?

☐ One, only this bus/train ☐ Two ☐ Three ☐ Four or more

11a. Please list the routes and/or rail stations in the exact order you use them for this one-way trip.

START → → → → → → **END**

1st route/rail station

2nd route/rail station

3rd route/rail station

4th route/rail station

5th route/rail station



OTHER INFORMATION ABOUT THIS TRIP(S)

12. What time did you BOARD this bus/train? _____ : _____ am / pm (circle one)
13. Will you (or did you) make this same trip on exactly the same routes in the opposite direction today?
☐ No ☐ Yes - At what time did/will you leave for this trip in the opposite direction? _____ am/pm (circle one)

Other Information

14. What kind of fare did you use for this trip?
- | | | | | |
|---------------------------------------|--|-------------------------------------|---|----------------------------|
| <input type="radio"/> All-Day Pass | <input type="radio"/> 7-Day Pass | <input type="radio"/> 15-Day Pass | <input type="radio"/> 31-Day Pass | <input type="radio"/> FREE |
| <input type="radio"/> ASU U-Pass | <input type="radio"/> Employer Subsidized Pass (Platinum Pass) | <input type="radio"/> Semester Pass | <input type="radio"/> Courtesy Pass | |
| <input type="radio"/> Full Fare | <input type="radio"/> Youth Fare | <input type="radio"/> Senior Fare | <input type="radio"/> Person with Disability Fare | |
| <input type="radio"/> Field Trip Pass | <input type="radio"/> Dial A Ride ID Card | <input type="radio"/> Reduced Fare | <input type="radio"/> Other: _____ | |
15. How do you usually get transit schedule information?
- | | | | |
|------------------------------------|--|---|---|
| <input type="radio"/> Transit Book | <input type="radio"/> Valley Metro website | <input type="radio"/> Customer service | <input type="radio"/> Posted schedule at bus stop |
| <input type="radio"/> Mobile site | <input type="radio"/> NextRide | <input type="radio"/> Other (specify) _____ | |

ABOUT YOU AND YOUR HOUSEHOLD

16. How many vehicles (cars, trucks, or motorcycles) are available to your household? _____ vehicles
17. [If #16 is more than NONE] Could you have used one of these vehicles for this trip? ☐ Yes ☐ No
18. Including YOU, how many people live in your household? _____ people
19. Including YOU, how many adults (age 16 and older) live in your household? _____ people
20. Including YOU, how many people in your household are employed full/part-time outside the home? _____ people
21. Are you: (check the one response that BEST describes you)
- | | |
|--|---|
| <input type="radio"/> Employed full-time (at least 35hrs per week) | <input type="radio"/> Employed part-time (less than 35hrs per week) |
| <input type="radio"/> Not currently employed but seeking work | <input type="radio"/> Not currently employed and not seeking work |
| <input type="radio"/> Retired | <input type="radio"/> Homemaker |
22. Are you a student? (check the one response that BEST describes you)
- | | | |
|--|---|--|
| <input type="radio"/> Not a student | <input type="radio"/> Yes - Full Time college/university | <input type="radio"/> Yes - K - 12th grade |
| <input type="radio"/> Yes - Part Time college/university | <input type="radio"/> Yes - vocational/technical/trade school | <input type="radio"/> Yes - other |
- 22a. [If #22 is Yes] Please specify your college/university/school name: _____
23. Do you have a valid driver's license? ☐ Yes ☐ No
24. Are you a United States Veteran? ☐ Yes ☐ No
25. Are you a visitor to the Phoenix area? ☐ Yes ☐ No 25a What is the duration of your stay? _____ days
26. Are you a person with a disability? ☐ Yes ☐ No
- 26a. If #26 is Yes] Which of the following types of disabilities apply, if any?
- | | | | |
|----------------------------------|---|--|-----------------------------------|
| <input type="radio"/> Low vision | <input type="radio"/> Deaf/hard of hearing | <input type="radio"/> Mobility problem-use a wheelchair | <input type="radio"/> declined |
| <input type="radio"/> Blindness | <input type="radio"/> Mental/cognitive impairment | <input type="radio"/> Mobility problem-do not use wheelchair | <input type="radio"/> Other _____ |
27. What is your AGE? ☐ Under 16 ☐ 16-18 ☐ 19-24 ☐ 25-34 ☐ 35-44 ☐ 45-54 ☐ 55-64 ☐ 65+
28. Are you? (check all that apply)
- | | | | |
|--|-----------------------------|--|---------------------------------------|
| <input type="radio"/> American Indian / Alaska Native | <input type="radio"/> Asian | <input type="radio"/> Black/African American | <input type="radio"/> Hispanic/Latino |
| <input type="radio"/> Native Hawaiian / Pacific Islander | <input type="radio"/> White | <input type="radio"/> Other: _____ | |
29. What is your gender? ☐ Male ☐ Female
30. Which of the following BEST describes your TOTAL ANNUAL HOUSEHOLD INCOME in 2014 before taxes?
- | | | | |
|---|---|---|---|
| <input type="radio"/> Below \$5,000 | <input type="radio"/> \$20,000 - \$24,999 | <input type="radio"/> \$40,000 - \$49,999 | <input type="radio"/> \$80,000 - \$89,999 |
| <input type="radio"/> \$5,000-\$9,999 | <input type="radio"/> \$25,000 - \$29,999 | <input type="radio"/> \$50,000 - \$59,999 | <input type="radio"/> \$90,000 - \$99,999 |
| <input type="radio"/> \$10,000-\$14,999 | <input type="radio"/> \$30,000 - \$34,999 | <input type="radio"/> \$60,000 - \$69,999 | <input type="radio"/> \$100,000 - \$119,999 |
| <input type="radio"/> \$15,000-\$19,999 | <input type="radio"/> \$35,000 - \$39,999 | <input type="radio"/> \$70,000 - \$79,999 | <input type="radio"/> \$120,000 or more |
31. Do you speak a language other than English at home? ☐ No ☐ Yes - Which language? _____
- IF YES: How well do you speak English? ☐ Very Well ☐ Well ☐ Less than well ☐ Not at all

REGISTER TO WIN \$1000

People who submit an accurately completed survey will be entered in a random drawing for one of TWO \$1000 cash prizes. You must provide your home address at the beginning of the survey to be eligible.

Name: _____

Phone Number: (____) _____

E-mail address: _____

APPENDIX B: VALLEY METRO 2015 ON-BOARD SURVEY (TABLET VERSION)

Figure B-1. On-Board Transit Survey: Start-up Page (Tablet Version)

The screenshot shows a tablet interface for a LimeSurvey survey. At the top, a blue header bar contains the text "LimeSurvey - ValleyMetro2014". Below this, a white rectangular box with a subtle drop shadow contains the following elements: the text "The following surveys are available:"; a single orange button labeled "_ (current)_ Valley Metro On-Board Transit Survey (20150207)"; a language selection dropdown menu currently showing "English"; the text "Please contact Administrator (support@etcinstitute.com) for further assistance."; and the copyright notice "© ETC Institute 2015".

Figure B-2. On-Board Transit Survey: Interviewer's Initial (Tablet Version)

The screenshot shows the interviewer's initial screen on a tablet. A blue header bar at the top displays the survey title "_ (current)_ Valley Metro On-Board Transit Survey (20150207)". Below the header, a white box with a drop shadow contains a text input field with the placeholder "Enter YOUR (interviewer's) Initials". At the bottom of this box are three buttons: a red "Exit and clear survey" button on the left, a light blue "Callback" button in the center, and a green "Next" button on the right. The copyright notice "© ETC Institute 2015" is centered at the very bottom of the white box.

Figure B-3. On-Board Transit Survey: Select a Route (Tablet Version)

_(current)_Valley Metro On-Board Transit Survey (20150207)

Select the [ROUTE] you are working:
Choose one of the following answers

Valley Metro Rail EASTBOUND	122 - Cactus WESTBOUND
Valley Metro Rail WESTBOUND	128 - Stapley NORTHBOUND
0 - Central Avenue NORTHBOUND	128 - Stapley SOUTHBOUND
0 - Central Avenue SOUTHBOUND	136 - Gilbert Rd SOUTHBOUND
1 - Washington/Jefferson EASTBOUND	136 - Gilbert Rd NORTHBOUND
1 - Washington/Jefferson WESTBOUND	138 - Thunderbird EASTBOUND
3 - Van Buren EASTBOUND	138 - Thunderbird WESTBOUND
3 - Van Buren WESTBOUND	154 - Greenway EASTBOUND
7 - 7th Street NORTHBOUND	154 - Greenway WESTBOUND
7 - 7th Street SOUTHBOUND	156 - Greenway WESTBOUND

Figure B-4. On-Board Transit Survey: Random Surveyor Selection (Tablet Version)

_(current)_Valley Metro On-Board Transit Survey (20150207)

Please choose a number between 1 and 6:

1 2 3 4 5 6

Exit and clear survey Previous Callback Next

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Figure B-5. On-Board Transit Survey: Survey Opening Page (Tablet Version)

_(current)_Valley Metro On-Board Transit Survey (20150207)

Hi. My name is Example

We are doing a short survey to improve public transportation services in the Valley.

Would you be willing to answer a few questions?

The survey takes about 4-5 minutes.

Choose one of the following answers

Yes (have 5 min +)

Yes (no time for full survey)

No

Do not speak the interviewer's language

Exit and clear survey

Previous

Callback

Next

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Figure B-6. On-Board Transit Survey: Home Address (Tablet Version)

_(current)_Valley Metro On-Board Transit Survey (20150207)

What is your HOME address? If you are visiting the this area, please list the address where you are staying (ex: 123 W. Main St):

Place Name (optional)	City	Zip Code	Longitude
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Street Address	State	Latitude	
<input type="text"/>	<input type="text"/>	<input type="text"/>	

Enter a location here
☒ Address
 ☐ Place
 Clear
Me

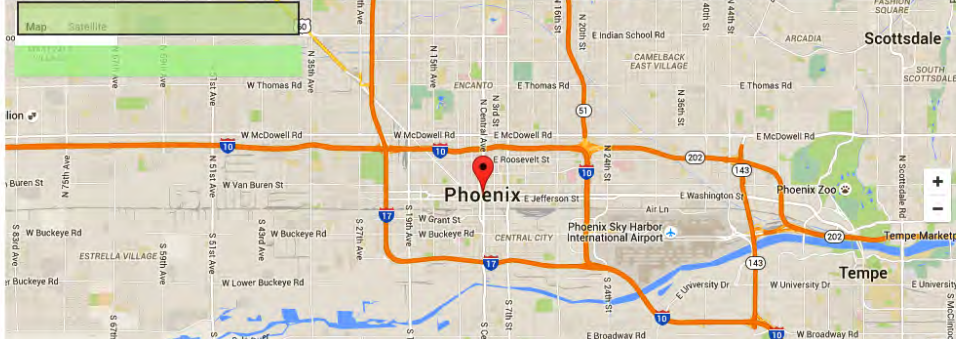


Figure B-7. On-Board Transit Survey: Origin Type (Tablet Version)

_(current)_Valley Metro On-Board Transit Survey (20150207)

What type of place are you COMING FROM NOW (the starting place for your one-way trip)?
Choose one of the following answers

Your Home	Social visits (friends/relatives)
Your usual WORKPLACE	Personal business (bank, post office, etc)
Other work related	Pick up/drop off someone (daycare, school, etc)
College/University (student only)	Shopping
School (grades K-5)	Eating/Dining Out
School (grades 6-8)	Hotel
School (grades 9-12)	Sporting event
Airport (as an air passenger)	Sightseeing
Recreation (movies, fishing, etc)	Other:

Figure B-8. On-Board Transit Survey: Origin Location (Tablet Version)

_(current)_Valley Metro On-Board Transit Survey (20150207)

What is the EXACT STREET ADDRESS of this place?

Hotel or Place Name City Zip Code Longitude

Street Address State Latitude

Address Place Clear Me

Figure B-9. On-Board Transit Survey: Access Mode (Tablet Version)

_(current)_Valley Metro On-Board Transit Survey (20150207)

How did you GET FROM the Your usual WORKPLACE TO THE VERY FIRST bus or Light Rail you used for this one-way trip?

Place name: Test-

Choose one of the following answers

Walked all the way	Was dropped off by someone
Walked part of the way (got dropped off and then walked)	Drove alone and parked
Bike	Drove or rode with others and parked
Wheelchair/scooter	Other: <input type="text"/>

Exit and clear survey Previous Callback Next

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Figure B-10. On-Board Transit Survey: Vehicle Location (Tablet Version)

_(current)_Valley Metro On-Board Transit Survey (20150207)

Did you park your vehicle (or was dropped off) at a park-n-ride location?

Choose one of the following answers

Yes
No

Exit and clear survey Previous Callback Next

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Figure B-11. On-Board Transit Survey: Vehicle Location (Park-n-ride) (Tablet Version)

_(current)_Valley Metro On-Board Transit Survey (20150207)

At which park-n-ride did you park your vehicle (or were dropped off)?
Choose one of the following answers

19th Ave and Camelback PNR - Phoenix	Home Depot - Glendale
19th Ave and Montebello PNR - Phoenix	Loop 101 & Apache Blvd. PNR - Tempe
27th Ave & Baseline PNR - Phoenix	Main St. & Sycamore PNR - Mesa
40th St and Pecos Rd PNR - Phoenix	McClintock Dr. & Apache Blvd. PNR - Tempe
79th Ave PNR - Phoenix	Metrocenter Transit Center - Phoenix
7th Ave & Camelback Rd PNR - Phoenix	Miller Plaza - Scottsdale
Apache & Dorsey PNR - Tempe	Papago Plaza - Scottsdale
Avondale PNR - Avondale	Paradise Valley Community College - Phoenix
Bell Rd/SR 51 PNR - Phoenix	Parking Lot (City Lot) - Chandler

Figure B-12. On-Board Transit Survey: Boarding Location (Tablet Version)

Street Address:

Latitude:

Longitude:

☐ User Stop

☒ Address ☐ Place

Enter a location here

2201 N Central Ave, Phoenix, AZ 85004, USA

Current trip from Your usual WORKPLACE (origin) to your Destination.

Figure B-13. On-Board Transit Survey: Destination Type (Tablet Version)

_(current)_Valley Metro On-Board Transit Survey (20150207)

What type of place are you GOING TO NOW (the ending place for your one-way trip)?
Choose one of the following answers

Your Home	Social visits (friends/relatives)
Your usual WORKPLACE	Personal business (bank, post office, etc)
Other work related	Pick up/drop off someone (daycare, school, etc)
College/University (student only)	Shopping
School (grades K-5)	Eating/Dining Out
School (grades 6-8)	Hotel
School (grades 9-12)	Sporting event
Airport (as an air passenger)	Sightseeing
Recreation (movies, fishing, etc)	Other:
Medical appointment/doctor's visit	

Figure B-14. On-Board Transit Survey: Destination Name (Tablet Version)

_(current)_Valley Metro On-Board Transit Survey (20150207)

What is the NAME of the COLLEGE or UNIVERSITY you are going to now?
(Type XX for "Other")
Choose one of the following answers

Other Recorded Value:

Scottsdale community

Scottsdale Community College @ 9000 E Chaparral Rd Scottsdale AZ

Exit and clear survey Previous Callback Next

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Figure B-15. On-Board Transit Survey: Egress Location (Tablet Version)

_(current)_Valley Metro On-Board Transit Survey (20150207)

How will you GET TO your destination (College/University (student only)) after you get off the LAST bus or Light Rail you will use for this one-way trip?
 Place name: Scottsdale Community College @ 9000 E Chaparral Rd Scottsdale AZ
 Choose one of the following answers

Walk <u>all the way</u>	Be picked up by someone
Walk <u>part of the way</u> (will walk then get picked up)	Get in a parked vehicle & drive alone
Bike	Get in a parked vehicle & drive/ride with others
Wheelchair/scooter	Other: <input type="text"/>

Exit and clear survey Previous Callback Next

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Figure B-16. On-Board Transit Survey: Blocks Walked (Tablet Version)

_(current)_Valley Metro On-Board Transit Survey (20150207)

How many blocks will you walk?
 Choose one of the following answers

Less than a block	Four (4)	Eight (8)
One (1)	Five (5)	Nine (9)
Two (2)	Six (6)	Ten or more (10+)
Three (3)	Seven (7)	

Exit and clear survey Previous Callback Next

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Figure B-17. On-Board Transit Survey: Alighting Location (Tablet Version)

Street Address: NB N CENTRAL AV FS E MISSOURI

Stop ID: 138162 ☐ User Stop

Latitude: 33.517006

Longitude: -112.07357300000001

Enter a location here

☒ Address ☐ Place

Current trip from Your usual WORKPLACE (origin) to College/University (student only) (destination)

Figure B-18. On-Board Transit Survey: Transfer before (Tablet Version)

_(current)_Valley Metro On-Board Transit Survey (20150207)

How many bus / Light Rail transfers did you make BEFORE you boarded this bus/train since leaving the place you are COMING FROM (Your usual WORKPLACE)?

Choose one of the following answers:

☐ (0) None

☐ (1) One

☐ (2) Two

☐ (3) Three

☐ (4+) Four or more

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Figure B-19. On-Board Transit Survey: Transfer Options (Tablet Version)

_(current)_Valley Metro On-Board Transit Survey (20150207)

Which bus route or Light Rail line did you board **FIRST** on this one-way trip?
Choose one of the following answers

Valley Metro Rail	136 - Gilbert Rd
0 - Central Avenue	138 - Thunderbird
1 - Washington/Jefferson	154 - Greenway
3 - Van Buren	156 - Chandler Blvd/Williams Field Rd
7 - 7th Street	170 - Bell
8 - 7th Avenue	184 - Power Rd
10 - Roosevelt/Lower Buckeye	186 - Union Hills/Mayo
12 - 12th Street	251 - 51st Avenue
13 - Buckeye	514 - Scottsdale Express
15 - 15th Avenue	550 - Tonto Express

Figure B-20. On-Board Transit Survey: Transfers after (Tablet Version)

_(current)_Valley Metro On-Board Transit Survey (20150207)

How many bus or Light Rail transfers will you make **AFTER** you get off this bus/train on your way to the place you are GOING TO (College/University (student only))?
Choose one of the following answers

(0) None

(1) One

(2) Two

(3) Three

(4+) Four or more

Exit and clear survey Previous Callback Next

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Figure B-21. On-Board Transit Survey: Summary Screen (Tablet Version)

_(current)_Valley Metro On-Board Transit Survey (20150207)

You LIVE OR are currently staying at: 733 East Pierce Street , Phoenix , Arizona
 You began this trip at [Your usual WORKPLACE] called [Test], located at: - ,2-32 North 17th Avenue ,Arizona]
 You Was dropped off by someone from there to THE VERY FIRST bus or Light Rail station YOU USED FOR THIS ONE-WAY TRIP

Before getting ON THIS bus/Light Rail you used these routes/rail lines:
 [3 - Van Buren]
 and then
 []
 and then
 []
 and then
 []

You boarded this bus/train WHICH IS THE [0 - Central Avenue NORTHBOUND]
 at [NB N CENTRAL AV FS E MCDOWELL RD E CORONADO RD] and will get off at [NB N CENTRAL AV FS E MISSOURI AV E MARSHALL AV]

After THIS bus/train 0 - Central Avenue NORTHBOUND you will transfer to
 []
 and then to
 []
 and then to
 []

Figure B-22. On-Board Transit Survey: Boarding Time (Tablet Version)

_(current)_Valley Metro On-Board Transit Survey (20150207)

What time did you BOARD this bus or Light Rail?
 Choose one of the following answers

Before 6 a.m.	9 - 10 a.m.	1 - 2 p.m.	5 - 6 p.m.
6 - 7 a.m.	10 - 11 a.m.	2 - 3 p.m.	6 - 7 p.m.
7 - 8 a.m.	11 a.m. - 12 p.m.	3 - 4 p.m.	After 7 p.m.
8 - 9 a.m.	12 - 1 p.m.	4 - 5 p.m.	

Current trip from Your usual WORKPLACE (origin) to College/University (student only) (destination)

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Figure B-23. On-Board Transit Survey: Trip in Opposite Direction (Tablet Version)

(current) Valley Metro On-Board Transit Survey (20150207)

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

Choose one of the following answers

☐ Yes

☐ No

Current trip from Your usual WORKPLACE (origin) to College/University (student only) (destination)

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Figure B-24. On-Board Transit Survey: Time of Opposite Direction Trip (Tablet Version)

(current) Valley Metro On-Board Transit Survey (20150207)

At what time did/will you leave for this trip in the opposite direction?

Choose one of the following answers

Before 6:30 a.m.	9 - 10 a.m.	1 - 2 p.m.	5 - 6 p.m.
6:30 - 7:30 a.m.	10 - 11 a.m.	2 - 3 p.m.	6 - 7 p.m.
7:30 - 8:30 a.m.	11 a.m. - 12 p.m.	3 - 4 p.m.	After 7 p.m.
8:30 - 9 a.m.	12 - 1 p.m.	4 - 5 p.m.	

Current trip from Your usual WORKPLACE (origin) to College/University (student only) (destination)

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Figure B-25. On-Board Transit Survey: Pass Type (Tablet Version)

_(current)_Valley Metro On-Board Transit Survey (20150207)

What kind of fare did you use for this trip?
Choose one of the following answers

7-Day Pass	Field Trip Pass
15-Day	FREE
31-Day Pass	Full Fare
All-Day pass	Person with Disability Fare
ASU U-Pass	Reduced Fare Card ID
Courtesy Pass	Semester Pass
Dial A Ride ID Card	Senior Fare
Employer Subsidized Pass (Platinum Pass)	Youth Fare

Exit and clear survey Previous Callback Next

Figure B-26. On-Board Transit Survey: Trip Schedule Tools (Tablet Version)

_(current)_Valley Metro On-Board Transit Survey (20150207)

How do you usually get transit schedule information?
Choose one of the following answers

Transit Book	Mobile site
Valley Metro website	NextRide
Customer service	Other:
Posted schedule at bus stop	<input type="text"/>

Exit and clear survey Previous Callback Next

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Figure B-27. On-Board Transit Survey: Working Vehicle in Household (Tablet Version)

_(current)_Valley Metro On-Board Transit Survey (20150207)

How many vehicles (cars, trucks, or motorcycles) are available to your household?
Choose one of the following answers

None (0)
One (1)
Two (2)
Three (3)
Four or more (4+)

Exit and clear survey Previous Callback Next

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Figure B-28. On-Board Transit Survey: Number of People in Household (Tablet Version)

_(current)_Valley Metro On-Board Transit Survey (20150207)

Including YOU, how many people live in your household?
Choose one of the following answers

One (1)	Four (4)	Seven (7)	Ten or More (10+)
Two (2)	Five (5)	Eight (8)	
Three (3)	Six (6)	Nine (9)	

Exit and clear survey Previous Callback Next

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Figure B-29. On-Board Transit Survey: How many people adults in Household (Tablet Version)

_(current)_Valley Metro On-Board Transit Survey (20150207)

Including YOU, how many adults (age 18 and older) live in your household?

Choose one of the following answers

One (1)	Four (4)	Seven (7)	Ten or More (10+)
Two (2)	Five (5)	Eight (8)	
Three (3)	Six (6)	Nine (9)	

[Exit and clear survey](#)
[Previous](#)
[Callback](#)
[Next](#)

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Figure B-30. On-Board Transit Survey: How many people employed in Household (Tablet Version)

_(current)_Valley Metro On-Board Transit Survey (20150207)

Including YOU, how many people in your household are employed full/part-time outside the home?

Choose one of the following answers

None (0)	Three (3)	Six (6)	Nine (9)
One (1)	Four (4)	Seven (7)	Ten or More (10+)
Two (2)	Five (5)	Eight (8)	

[Exit and clear survey](#)
[Previous](#)
[Callback](#)
[Next](#)

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Figure B-31. On-Board Transit Survey: Employment Status (Tablet Version)

_(current)_Valley Metro On-Board Transit Survey (20150207)

Are you ?

Choose one of the following answers

Employed full-time (at least 35 hrs per week)	Not currently employed and <u>not seeking</u> work
Employed part-time (less than 35 hrs per week)	Retired
Not currently employed but <u>seeking</u> work	Homemaker

(select the one response that BEST describes you)

Exit and clear survey Previous Callback Next

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Figure B-32. On-Board Transit Survey: Student Status (Tablet Version)

_(current)_Valley Metro On-Board Transit Survey (20150207)

Are you a student?

Choose one of the following answers

Not a student	Yes – Part Time college/university
Yes – Full Time college/university	Yes – vocational/technical/trade school
Yes – K-12th grade	Yes - Other <input type="text"/>

(Check the one response that BEST describes you)

Exit and clear survey Previous Callback Next

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Figure B-33. On-Board Transit Survey: Driver's License (Tablet Version)

_(current)_Valley Metro On-Board Transit Survey (20150207)

Do you have a valid driver's license?
Choose one of the following answers

Yes

No

Exit and clear survey Previous Callback Next

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Figure B-34. On-Board Transit Survey: Veteran Status (Tablet Version)

_(current)_Valley Metro On-Board Transit Survey (20150207)

Are you a United States Veteran?
Choose one of the following answers

YES

NO

No answer

Exit and clear survey Previous Callback Next

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Figure B-35. On-Board Transit Survey: Visitor Status (Tablet Version)

_(current)_Valley Metro On-Board Transit Survey (20150207)

Are you a visitor to the Phoenix area?

Yes

No

Exit and clear survey Previous Callback Next

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Figure B-36. On-Board Transit Survey: Disability Status (Tablet Version)

_(current)_Valley Metro On-Board Transit Survey (20150207)

Which of the following disabilities apply, if any?
Choose one of the following answers

Not disabled	Mobility problem – do not use wheelchair
Low vision	Mental or cognitive impairment
Blindness	Declined to answer
Deaf / Hard of hearing	Other:
Mobility problem – use wheelchair	

Exit and clear survey Previous Callback Next

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Figure B-37. On-Board Transit Survey: Age of Rider (Tablet Version)

_(current)_Valley Metro On-Board Transit Survey (20150207)

What is your AGE?
Choose one of the following answers

Under 16	25-34	55-64
16-18	35-44	65+
19-24	45-54	

Exit and clear survey Previous Callback Next

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Figure B-38. On-Board Transit Survey: Ethnic Background of Rider (Tablet Version)

_(current)_Valley Metro On-Board Transit Survey (20150207)

Are you?
Choose one of the following answers

American Indian / Alaska Native	Native Hawaiian / Pacific Islander
Asian	White
Black / African American	Other:
Hispanic / Latino	

Exit and clear survey Previous Callback Next

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Figure B-39. On-Board Transit Survey: Household Income (Tablet Version)

_(current)_Valley Metro On-Board Transit Survey (20150207)

Which of the following BEST describes your TOTAL ANNUAL HOUSEHOLD INCOME in 2014 before taxes?
Choose one of the following answers

Below \$5,000	\$30,000-\$34,999	\$80,000-\$89,999
\$5,000-\$9,999	\$35,000-\$39,999	\$90,000-\$99,999
\$10,000-\$14,999	\$40,000-\$49,999	\$100,000-\$119,999
\$15,000-\$19,999	\$50,000-\$59,999	120,000 or more
\$20,000-\$24,999	\$60,000-\$69,999	Refusal
\$25,000-\$29,999	\$70,000-\$79,999	

Exit and clear survey Previous Callback Next

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Figure B-40. On-Board Transit Survey: Language other than English (Tablet Version)

_(current)_Valley Metro On-Board Transit Survey (20150207)

Do you speak a language other than English at home?
Choose one of the following answers

Yes

No

Exit and clear survey Previous Callback Next

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Figure B-41. On-Board Transit Survey: Gender of Rider (Tablet Version)

_(current)_Valley Metro On-Board Transit Survey (20150207)

Gender of the respondent
Choose one of the following answers

Male

Female

Exit and clear survey Previous Callback Next

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Figure B-42. On-Board Transit Survey: Incentive Question (Tablet Version)

_(current)_Valley Metro On-Board Transit Survey (20150207)

REGISTER TO WIN \$1000
People who submit an accurately completed survey will be entered in a random drawing for one of TWO \$1000 cash prizes. You must provide your home address at the beginning of the survey to be eligible.

Choose one of the following answers

Yes

No

Exit and clear survey Previous Callback Next

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Figure B-43. On-Board Transit Survey: Participation Info (Tablet Version)

_(current)_Valley Metro On-Board Transit Survey (20150207)

Please provide the following information:

Your Name

Phone Number

Email

[Exit and clear survey](#) [Previous](#) [Callback](#) [Next](#)

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Figure B-44. On-Board Transit Survey: Interviewer Initials (Tablet Version)

_(current)_Valley Metro On-Board Transit Survey (20150207)

Enter YOUR (interviewer's) Initials

[Exit and clear survey](#) [Callback](#) [Next](#)

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APPENDIX C: RESULTS BY SERVICE TYPE (BUS ONLY VS. LIGHT RAIL ONLY VS. BUS/LIGHT RAIL VS. SKY TRAIN USERS)

SERVICE TYPE OF TRAVEL

Bus Only: Riders that only used bus routes during their one-way trip.

Rail Only: Riders that only used the rail line during their one-way trip.

Bus/Rail: Riders that used bus routes and the rail line during their one-way trip.

Sky Train Users: Riders that reported using the Sky Train during their one-way trip.

Figure C- 1. Pass Type

Pass Type	BUS ONLY	RAIL ONLY	BUS/RAIL	SKY TRAIN USERS	GRAND TOTAL
All-Day pass	31.7%	35.5%	35.6%	49.6%	32.7%
7-Day Pass	5.4%	4.2%	5.6%	3.3%	5.3%
15-Day	3.7%	2.1%	4.8%	0.7%	3.6%
31-Day Pass	15.6%	11.8%	20.5%	15.9%	15.5%
Semester Pass	2.4%	1.9%	2.3%	0.0%	2.3%
Full Fare	11.0%	8.1%	5.2%	17.2%	10.0%
Employer Subsidized Pass (Platinum Pass)	8.7%	10.6%	9.2%	8.6%	9.0%
FREE	10.5%	1.4%	3.4%	0.3%	8.4%
ASU U-Pass	1.5%	17.8%	4.4%	1.5%	4.2%
Courtesy Pass	0.1%	0.4%	0.1%	0.0%	0.1%
Dial A Ride ID Card	0.0%	0.0%	0.0%	0.0%	0.0%
Field Trip Pass	0.0%	0.1%	0.1%	0.2%	0.0%
Person with Disability Fare	0.9%	0.6%	1.2%	0.1%	0.9%
Reduced Fare Card ID	5.8%	4.1%	6.3%	2.0%	5.6%
Youth Fare	1.8%	0.6%	1.0%	0.0%	1.6%
Senior Fare	0.9%	0.7%	0.5%	0.5%	0.8%
Grand Total	100.0%	100.0%	100.0%	100.0%	100.0%

Figure C- 2. How Transit Riders Get Transit Schedule Information

Source of Information	BUS ONLY	RAIL ONLY	BUS/RAIL	SKY TRAIN USERS	GRAND TOTAL
Customer service	7.9%	4.4%	6.8%	2.4%	7.3%
Mobile site	20.2%	20.1%	23.7%	29.3%	20.6%
NextRide	9.0%	8.0%	8.5%	9.6%	8.8%
Posted schedule at bus stop	9.9%	22.1%	10.9%	19.8%	11.8%
Transit Book	23.1%	13.0%	21.8%	8.0%	21.5%
Valley Metro website	27.6%	28.5%	25.4%	28.5%	27.5%
Other	2.2%	3.8%	3.0%	2.4%	2.5%
Grand Total	100.0%	100.0%	100.0%	100.0%	100.0%

Figure C- 3. Number of Vehicles in the Household

Vehicles	BUS ONLY	RAIL ONLY	BUS/RAIL	SKY TRAIN USERS	GRAND TOTAL
None (0)	55.1%	45.8%	61.0%	50.3%	54.3%
One (1)	24.7%	31.9%	24.7%	24.3%	25.8%
Two (2)	14.5%	15.6%	9.9%	13.3%	14.2%
Three (3)	3.9%	4.6%	2.7%	11.0%	3.9%
Four or more (4+)	1.8%	2.2%	1.7%	1.1%	1.8%
Grand Total	100.0%	100.0%	100.0%	100.0%	100.0%

Figure C- 4. Vehicles Availability (Those with one or more vehicles in Household)

Vehicles Availability	BUS ONLY	RAIL ONLY	BUS/RAIL	SKY TRAIN USERS	GRAND TOTAL
No	65.6%	33.2%	61.1%	55.5%	59.6%
Yes	34.4%	66.8%	38.9%	44.5%	40.4%
Grand Total	100.0%	100.0%	100.0%	100.0%	100.0%

Figure C- 5. Number of People Living in the Household

Persons	BUS ONLY	RAIL ONLY	BUS/RAIL	SKY TRAIN USERS	GRAND TOTAL
One (1)	21.7%	26.8%	28.3%	26.6%	23.1%
Two (2)	23.9%	30.8%	24.2%	30.6%	24.9%
Three (3)	19.3%	17.8%	17.2%	11.6%	18.8%
Four (4)	16.3%	13.2%	13.7%	12.8%	15.6%
Five (5)	9.2%	5.9%	8.3%	12.9%	8.7%
Six (6)	5.0%	2.9%	3.9%	3.3%	4.6%
Seven (7)	2.1%	1.2%	1.9%	1.2%	1.9%
Eight (8)	0.9%	0.6%	1.0%	0.6%	0.9%
Nine (9)	0.4%	0.1%	0.4%	0.0%	0.4%
Ten or More (10+)	1.1%	0.6%	1.0%	0.4%	1.1%
Grand Total	100.0%	100.0%	100.0%	100.0%	100.0%

Figure C- 6. Number of Adults in the Household

Persons	BUS ONLY	RAIL ONLY	BUS/RAIL	SKY TRAIN USERS	GRAND TOTAL
One (1)	27.9%	30.8%	34.7%	28.4%	29.1%
Two (2)	39.4%	40.4%	35.6%	41.3%	39.2%
Three (3)	19.8%	17.5%	17.8%	19.1%	19.2%
Four (4)	8.7%	8.3%	7.6%	8.7%	8.5%
Five (5)	2.4%	1.8%	2.3%	1.1%	2.3%
Six (6)	0.9%	0.6%	0.8%	0.7%	0.8%
Seven (7)	0.3%	0.3%	0.2%	0.0%	0.3%
Eight (8)	0.1%	0.1%	0.2%	0.4%	0.1%
Nine (9)	0.1%	0.0%	0.0%	0.0%	0.1%
Ten or More (10+)	0.5%	0.3%	0.8%	0.4%	0.5%
Grand Total	100.0%	100.0%	100.0%	100.0%	100.0%

Figure C- 7. Number of Employed Persons in the Household

Employed Persons	BUS ONLY	RAIL ONLY	BUS/RAIL	SKY TRAIN USERS	GRAND TOTAL
None (0)	11.7%	15.2%	14.5%	7.9%	12.5%
One (1)	36.5%	34.7%	39.7%	34.0%	36.6%
Two (2)	33.5%	33.8%	30.3%	36.6%	33.2%
Three (3)	12.3%	11.2%	9.9%	16.2%	11.9%
Four (4)	4.0%	4.0%	3.7%	3.7%	4.0%
Five (5)	1.0%	0.7%	1.0%	0.6%	1.0%
Six (6)	0.4%	0.2%	0.3%	0.6%	0.4%
Seven (7)	0.1%	0.1%	0.1%	0.0%	0.1%
Eight (8)	0.1%	0.1%	0.1%	0.0%	0.1%
Nine (9)	0.0%	0.0%	0.0%	0.0%	0.0%
Ten or More (10+)	0.4%	0.0%	0.3%	0.4%	0.3%
Grand Total	100.0%	100.0%	100.0%	100.0%	100.0%

Figure C- 8. Employment Status

Employment Status	BUS ONLY	RAIL ONLY	BUS/RAIL	SKY TRAIN USERS	GRAND TOTAL
Employed full-time (at least 35 hrs per week)	53.7%	52.5%	56.4%	79.4%	53.9%
Employed part-time (less than 35 hrs per week)	14.7%	18.5%	13.3%	9.8%	15.1%
Not currently employed but seeking work	11.1%	10.1%	12.0%	1.3%	11.0%
Not currently employed and not seeking work	15.2%	12.9%	13.2%	4.8%	14.7%
Homemaker	0.6%	0.4%	0.4%	0.2%	0.6%
Retired	4.6%	5.7%	4.7%	4.6%	4.8%
Grand Total	100.0%	100.0%	100.0%	100.0%	100.0%

Figure C- 9. Student Status

Student Status	BUS ONLY	RAIL ONLY	BUS/RAIL	SKY TRAIN USERS	GRAND TOTAL
Not a student	73.8%	63.8%	77.5%	90.0%	72.8%
Yes - Full Time college/university	11.2%	28.0%	12.2%	7.3%	13.8%
Yes - Part Time college/university	2.0%	2.7%	1.8%	0.7%	2.1%
Yes - vocational/technical/trade school	0.9%	0.4%	0.9%	0.0%	0.8%
Yes - K-12th grade	11.9%	5.2%	7.7%	2.1%	10.5%
Other	0.2%	0.0%	0.1%	0.0%	0.1%
Grand Total	100.0%	100.0%	100.0%	100.0%	100.0%

Figure C- 10. Driver's License Status

Driver's License Status	BUS ONLY	RAIL ONLY	BUS/RAIL	SKY TRAIN USERS	GRAND TOTAL
No	58.0%	33.5%	53.3%	26.6%	53.8%
Yes	42.0%	66.5%	46.7%	73.4%	46.2%
Grand Total	100.0%	100.0%	100.0%	100.0%	100.0%

Figure C- 11. Veterans Status

Veteran Status	BUS ONLY	RAIL ONLY	BUS/RAIL	SKY TRAIN USERS	GRAND TOTAL
YES	5.6%	6.8%	8.0%	5.0%	6.0%
NO	93.7%	92.6%	91.8%	94.4%	93.4%
No answer	0.7%	0.6%	0.2%	0.6%	0.6%
Grand Total	100.0%	100.0%	100.0%	100.0%	100.0%

Figure C- 12. Visitor Status

Visitor Status	BUS ONLY	RAIL ONLY	BUS/RAIL	SKY TRAIN USERS	GRAND TOTAL
No	99.4%	94.9%	98.6%	83.5%	98.6%
Yes	0.6%	5.1%	1.4%	16.5%	1.4%
Grand Total	100.0%	100.0%	100.0%	100.0%	100.0%

Figure C- 13. Disability Status

Disability Status	BUS ONLY	RAIL ONLY	BUS/RAIL	SKY TRAIN USERS	GRAND TOTAL
Not disabled	89.1%	91.1%	86.8%	93.2%	89.2%
Blindness	0.3%	0.1%	0.2%	1.7%	0.2%
Deaf / Hard of hearing	0.5%	0.4%	0.4%	0.7%	0.5%
Declined to answer	1.0%	0.9%	1.3%	1.1%	1.0%
Low vision	1.1%	0.8%	1.6%	2.1%	1.1%
Mental or cognitive impairment	2.9%	2.4%	3.4%	0.6%	2.9%
Mobility problem - do not use wheelchair	2.8%	2.8%	3.8%	0.2%	2.9%
Mobility problem - use wheelchair	1.2%	0.7%	1.2%	0.3%	1.1%
Other	1.1%	0.6%	1.2%	0.0%	1.1%
Grand Total	100.0%	100.0%	100.0%	100.0%	100.0%

Figure C- 14. Age of Respondent

Age of Respondent	BUS ONLY	RAIL ONLY	BUS/RAIL	SKY TRAIN USERS	GRAND TOTAL
Under 16	2.6%	1.5%	1.9%	0.0%	2.4%
16-18	12.3%	6.9%	8.4%	2.2%	11.1%
19-24	22.2%	30.3%	20.3%	19.3%	23.2%
25-34	22.0%	23.4%	23.0%	28.4%	22.4%
35-44	14.7%	14.1%	16.6%	17.9%	14.8%
45-54	13.4%	12.2%	16.3%	16.2%	13.5%
55-64	9.2%	8.0%	9.9%	10.4%	9.1%
65+	3.5%	3.8%	3.6%	5.6%	3.5%
Grand Total	100.0%	100.0%	100.0%	100.0%	100.0%

Figure C- 15. Race/Ethnicity of Respondent

Race/Ethnicity	BUS ONLY	RAIL ONLY	BUS/RAIL	SKY TRAIN USERS	GRAND TOTAL
American Indian / Alaska Native	4.2%	4.4%	7.7%	2.1%	4.6%
Asian	3.0%	5.7%	2.3%	2.5%	3.3%
Black / African American	19.7%	13.2%	21.3%	24.9%	18.9%
Hispanic / Latino	29.1%	20.2%	24.3%	13.4%	27.3%
Native Hawaiian / Pacific Islander	0.8%	0.7%	0.7%	0.7%	0.8%
White	41.7%	51.9%	41.4%	55.0%	43.2%
Other	1.6%	3.8%	2.2%	1.5%	2.0%
Grand Total	100.0%	100.0%	100.0%	100.0%	100.0%

Figure C- 16a. Annual Income Range

Annual Household Income	BUS ONLY	RAIL ONLY	BUS/RAIL	SKY TRAIN USERS	GRAND TOTAL
Below \$5,000	9.3%	9.2%	10.4%	4.1%	9.4%
\$5,000-\$9,999	3.7%	4.1%	4.3%	3.7%	3.8%
\$10,000-\$14,999	6.2%	5.9%	7.3%	5.7%	6.2%
\$15,000-\$19,999	8.0%	5.9%	6.4%	5.7%	7.6%
\$20,000-\$24,999	8.3%	6.3%	7.6%	6.9%	7.9%
\$25,000-\$29,999	8.0%	4.8%	8.7%	5.3%	7.6%
\$30,000-\$34,999	6.1%	6.1%	6.3%	6.3%	6.1%
\$35,000-\$39,999	4.6%	4.9%	4.7%	3.5%	4.7%
\$40,000-\$49,999	4.8%	5.2%	5.1%	5.5%	4.9%
\$50,000-\$59,999	3.2%	4.9%	3.6%	7.4%	3.5%
\$60,000-\$69,999	2.2%	3.1%	1.9%	6.3%	2.4%
\$70,000-\$79,999	1.5%	2.5%	2.1%	4.0%	1.7%
\$80,000-\$89,999	1.1%	2.0%	1.0%	1.6%	1.2%
\$90,000-\$99,999	0.5%	1.7%	0.6%	2.0%	0.7%
\$100,000-\$119,999	1.0%	2.5%	0.9%	1.4%	1.2%
\$120,000 or more	1.0%	2.4%	1.1%	5.0%	1.2%
Refusal	30.5%	28.3%	28.0%	25.5%	29.9%
Grand Total	100.0%	100.0%	100.0%	100.0%	100.0%

Figure C- 17b. Annual Income Range (Excluding Refusals)

Annual Household Income	BUS ONLY	RAIL ONLY	BUS/RAIL	SKY TRAIN USERS	GRAND TOTAL
Below \$5,000	13.3%	14.4%	12.9%	5.6%	13.3%
\$5,000-\$9,999	5.3%	6.0%	5.7%	5.0%	5.4%
\$10,000-\$14,999	8.9%	10.1%	8.2%	7.7%	8.9%
\$15,000-\$19,999	11.6%	8.9%	8.3%	7.6%	10.8%
\$20,000-\$24,999	11.9%	10.6%	8.8%	9.3%	11.3%
\$25,000-\$29,999	11.5%	12.0%	6.7%	7.1%	10.8%
\$30,000-\$34,999	8.7%	8.7%	8.5%	8.5%	8.7%
\$35,000-\$39,999	6.7%	6.6%	6.8%	4.6%	6.7%
\$40,000-\$49,999	6.9%	7.1%	7.3%	7.4%	7.0%
\$50,000-\$59,999	4.6%	5.1%	6.8%	10.0%	5.0%
\$60,000-\$69,999	3.2%	2.7%	4.4%	8.5%	3.4%
\$70,000-\$79,999	2.1%	2.9%	3.6%	5.3%	2.4%
\$80,000-\$89,999	1.6%	1.4%	2.8%	2.2%	1.8%
\$90,000-\$99,999	0.7%	0.9%	2.3%	2.6%	1.0%
\$100,000-\$119,999	1.4%	1.2%	3.6%	1.8%	1.7%
\$120,000 or more	1.4%	1.5%	3.4%	6.7%	1.8%
Grand Total	100.0%	100.0%	100.0%	100.0%	100.0%

Figure C- 18. Speak a Language Other than English at Home

Language Other than English	BUS ONLY	RAIL ONLY	BUS/RAIL	SKY TRAIN USERS	GRAND TOTAL
No	76.0%	77.0%	77.0%	84.0%	76.3%
Yes	24.0%	23.0%	23.0%	16.0%	23.7%
Grand Total	100.0%	100.0%	100.0%	100.0%	100.0%

Figure C- 19. Other Language Spoken at Home (Top 10)

Other Language	BUS ONLY	RAIL ONLY	BUS/RAIL	SKY TRAIN USERS	GRAND TOTAL
Spanish	78.8%	57.5%	74.0%	53.5%	75.2%
Navajo	2.6%	3.0%	4.7%	0.7%	2.9%
Other	2.6%	2.6%	3.6%	3.2%	2.7%
French	1.8%	3.2%	2.3%	13.2%	2.1%
Arabic, Standard	1.0%	6.3%	0.7%	4.0%	1.7%
German	1.4%	3.5%	1.5%	0.0%	1.7%
Hindi	1.4%	1.9%	1.5%	1.2%	1.5%
Chinese	0.9%	3.4%	0.5%	0.2%	1.2%
AMERICAN SIGN LANGUAGE (ASL)	1.1%	1.4%	1.2%	0.3%	1.2%
Chinese, Mandarin	0.8%	2.7%	1.1%	0.0%	1.1%

Figure C- 20. English Ability (Those that speak a language other than English)

English Ability	BUS ONLY	RAIL ONLY	BUS/RAIL	SKY TRAIN USERS	GRAND TOTAL
Not at all	2.9%	0.5%	1.4%	1.8%	2.4%
Grand Total	7.1%	5.3%	2.1%	2.8%	6.3%
Well	13.0%	14.7%	12.1%	19.8%	13.2%
Very well	77.0%	79.5%	84.3%	75.7%	78.1%
Grand Total	100.0%	100.0%	100.0%	100.0%	100.0%

Figure C- 21. Gender of Respondent

Gender	BUS ONLY	RAIL ONLY	BUS/RAIL	SKY TRAIN USERS	GRAND TOTAL
Female	45.2%	44.5%	42.3%	37.0%	44.8%
Male	54.8%	55.5%	57.7%	63.0%	55.2%
Grand Total	100.0%	100.0%	100.0%	100.0%	100.0%

Figure C- 22. Trip Purpose

Trip Purpose	BUS ONLY	RAIL ONLY	BUS/RAIL	SKY TRAIN USERS	GRAND TOTAL
Home-Based Airport Trip	0.0%	0.4%	0.3%	34.1%	0.2%
Home-Based College Trip	7.6%	17.4%	6.6%	0.0%	8.9%
Home-Based Medical Trip	3.0%	1.4%	3.4%	0.0%	2.8%
Home-Based Other Trip	18.7%	18.5%	23.5%	5.7%	19.2%
Home-Based School Trip	9.6%	2.5%	6.0%	0.0%	8.2%
Home-Based Shopping Trip	9.7%	10.9%	6.7%	0.1%	9.5%
Home-Based Work Trip	40.8%	26.9%	40.4%	40.6%	38.8%
Non-Home Based Trip	10.5%	21.9%	13.1%	19.6%	12.4%
Grand Total	100.0%	100.0%	100.0%	100.0%	100.0%

Figure C- 23. Number of Transfers

Number of Transfers	BUS ONLY	RAIL ONLY	BUS/RAIL	SKY TRAIN USERS	GRAND TOTAL
None	68.7%	100.0%	0.0%	0.0%	65.9%
One	27.3%	0.0%	73.9%	67.9%	28.3%
Two	3.7%	0.0%	22.6%	26.6%	5.2%
Three or more	0.3%	0.0%	3.5%	5.6%	0.6%
Grand Total	100.0%	100.0%	100.0%	100.0%	100.0%

Figure C- 24. Where Transit Trips Began

Origin Type	BUS ONLY	RAIL ONLY	BUS/RAIL	SKY TRAIN USERS	GRAND TOTAL
Airport (as an air passenger)	0.0%	0.5%	0.2%	16.9%	0.2%
College/University (student only)	3.9%	10.4%	4.0%	0.0%	4.8%
Eating/Dining Out	1.1%	4.0%	1.1%	0.7%	1.5%
Hotel	0.1%	1.3%	0.4%	1.8%	0.3%
Medical appointment/doctor's visit	1.8%	1.3%	2.1%	0.6%	1.7%
Other work related	1.2%	2.4%	1.7%	2.1%	1.5%
Personal business (bank, post office, etc)	4.7%	5.8%	7.4%	0.4%	5.1%
Pick up/drop off someone (daycare, school, etc)	0.6%	0.3%	0.3%	1.3%	0.5%
Recreation (movies, fishing, etc)	1.3%	2.8%	2.2%	0.3%	1.6%
School (grades 6-8)	0.3%	0.0%	0.1%	0.0%	0.2%
School (grades 9-12)	4.9%	1.7%	3.7%	0.0%	4.3%
School (grades K-5)	0.1%	0.0%	0.0%	0.0%	0.1%
Shopping	6.4%	6.0%	4.6%	0.5%	6.2%
Sightseeing	0.1%	0.7%	0.3%	0.4%	0.2%
Social visits (friends/relatives)	5.0%	4.7%	6.8%	2.6%	5.1%
Sporting event	0.0%	0.1%	0.2%	0.0%	0.0%
Your Home	47.9%	40.8%	43.5%	50.7%	46.4%
Your usual WORKPLACE	20.7%	17.3%	21.4%	21.7%	20.3%
Grand Total	100.0%	100.0%	100.0%	100.0%	100.0%

Figure C- 25. Where Transit Trips End

Destination Type	BUS ONLY	RAIL ONLY	BUS/RAIL	SKY TRAIN USERS	GRAND TOTAL
Airport (as an air passenger)	0.0%	0.5%	0.1%	30.3%	0.2%
College/University (student only)	4.8%	10.7%	4.0%	0.0%	5.5%
Eating/Dining Out	1.1%	4.7%	1.8%	0.4%	1.7%
Hotel	0.1%	0.9%	0.1%	3.8%	0.2%
Medical appointment/doctor's visit	2.1%	1.0%	2.3%	0.0%	2.0%
Other work related	1.5%	1.8%	1.9%	2.5%	1.6%
Personal business (bank, post office, etc)	6.7%	7.4%	8.0%	2.5%	7.0%
Pick up/drop off someone (daycare, school, etc)	0.8%	0.6%	0.3%	2.7%	0.7%
Recreation (movies, fishing, etc)	1.8%	5.3%	2.1%	1.2%	2.4%
School (grades 6-8)	0.2%	0.0%	0.0%	0.0%	0.2%
School (grades 9-12)	5.0%	1.7%	2.6%	0.0%	4.2%
School (grades K-5)	0.1%	0.0%	0.0%	0.0%	0.1%
Shopping	5.4%	5.9%	3.8%	0.0%	5.3%
Sightseeing	0.3%	1.0%	0.4%	0.8%	0.4%
Social visits (friends/relatives)	6.9%	6.4%	8.6%	1.5%	7.0%
Sporting event	0.1%	0.8%	0.3%	0.0%	0.2%
Your Home	41.7%	37.4%	43.4%	29.7%	41.2%
Your usual WORKPLACE	21.5%	13.9%	20.2%	24.6%	20.3%
Grand Total	100.0%	100.0%	100.0%	100.0%	100.0%

Figure C- 26. Access Mode to Transit System

Access Mode	BUS ONLY	RAIL ONLY	BUS/RAIL	SKY TRAIN USERS	GRAND TOTAL
Walked all the way	89.2%	74.7%	90.3%	91.7%	87.2%
Walked part of the way (got dropped off and then walked)	0.4%	0.3%	0.4%	0.2%	0.4%
Bike	3.6%	9.5%	4.6%	0.2%	4.6%
Drove alone and parked	2.3%	7.5%	1.2%	3.2%	2.9%
Drove or rode with others and parked	0.1%	1.4%	0.1%	1.0%	0.3%
Was dropped off by someone	3.1%	5.4%	2.2%	3.7%	3.4%
Wheelchair/scooter	0.9%	0.6%	0.9%	0.0%	0.9%
Other	0.4%	0.5%	0.3%	0.0%	0.4%
Grand Total	100.0%	100.0%	100.0%	100.0%	100.0%

Figure C- 27. Access Mode to Transit System (Walk Distance)

Walk Distance	BUS ONLY	RAIL ONLY	BUS/RAIL	SKY TRAIN USERS	GRAND TOTAL
Less than a block	49.6%	39.7%	47.2%	48.1%	48.1%
One (1)	20.9%	21.9%	21.7%	27.7%	21.1%
Two (2)	13.1%	17.5%	13.8%	13.2%	13.7%
Three (3)	6.4%	8.5%	7.4%	5.1%	6.7%
Four (4)	4.3%	5.5%	3.8%	2.3%	4.3%
Five (5)	2.3%	2.4%	1.6%	0.2%	2.2%
Six (6)	0.8%	1.1%	1.4%	1.6%	0.9%
Seven (7)	0.4%	1.2%	0.5%	0.1%	0.5%
Eight (8)	0.9%	0.9%	0.9%	0.5%	0.9%
Nine (9)	0.1%	0.4%	0.2%	0.4%	0.2%
Ten or more (10+)	1.2%	1.0%	1.5%	0.8%	1.2%
Grand Total	100.0%	100.0%	100.0%	100.0%	100.0%

Figure C- 28. Egress Mode to Destination

Egress Mode	BUS ONLY	RAIL ONLY	BUS/RAIL	SKY TRAIN USERS	GRAND TOTAL
Walk all the way	91.0%	76.3%	90.4%	91.5%	88.8%
Walk part of the way (will walk then get picked up)	0.3%	0.6%	0.5%	1.3%	0.3%
Bike	3.7%	10.0%	4.7%	0.2%	4.7%
Get in a parked vehicle & drive alone	2.1%	7.7%	1.2%	1.2%	2.8%
Get in a parked vehicle & drive/ride with others	0.1%	0.7%	0.1%	0.7%	0.2%
Be picked up by someone	1.6%	3.6%	1.8%	5.2%	1.9%
Wheelchair/scooter	1.0%	0.6%	1.0%	0.0%	0.9%
Other	0.4%	0.5%	0.3%	0.0%	0.4%
Grand Total	100.0%	100.0%	100.0%	100.0%	100.0%

Figure C- 29. Egress Mode to Destination (Walk Distance)

Walk Distance	BUS ONLY	RAIL ONLY	BUS/RAIL	SKY TRAIN USERS	GRAND TOTAL
Less than a block	48.9%	37.7%	43.1%	58.0%	46.9%
One (1)	21.0%	21.6%	22.1%	19.8%	21.2%
Two (2)	14.2%	16.0%	15.6%	8.8%	14.6%
Three (3)	6.7%	11.2%	7.7%	6.8%	7.4%
Four (4)	4.0%	5.6%	5.0%	0.5%	4.3%
Five (5)	1.9%	3.0%	2.1%	2.0%	2.0%
Six (6)	1.0%	1.4%	0.9%	3.0%	1.0%
Seven (7)	0.6%	1.0%	0.9%	0.4%	0.6%
Eight (8)	0.8%	1.1%	1.1%	0.3%	0.8%
Nine (9)	0.2%	0.3%	0.3%	0.0%	0.2%
Ten or more (10+)	0.8%	1.3%	1.2%	0.4%	0.9%
Grand Total	100.0%	100.0%	100.0%	100.0%	100.0%

APPENDIX D: RESULTS BY TYPE OF MODE (LOCAL, EXPRESS, CIRCULATOR, ETC.)

TYPE OF MODE

Circulator: Bus serving an area confined to a specific locale, such as a downtown area or suburban neighborhood with connections to major traffic corridors

Express: Bus that operates a portion of the route without stops or with a limited number of stops.

Limited: Bus service that operates with less number of stops compared to Local/Fixed routes.

Local: Service provided on a repetitive, fixed-schedule basis along a specific route with vehicles stopping to pick up and deliver passengers to specific locations.

Rail: An electric railway which operates at a higher capacity and often on an exclusive right-of-way.

Rapid: Hybrid between bus and rail which aims to combine the capacity and speed of rail with the flexibility, lower cost and simplicity of a bus system.

Route Name	Circulator	EXPRESS	LIMITED	LINK	LOCAL	RAIL	RAPID	Route Name	Circulator	EXPRESS	LIMITED	LINK	LOCAL	RAIL	RAPID
0					X			128					X		
1					X			136					X		
3					X			138					X		
7					X			154					X		
8					X			156					X		
10					X			170					X		
12					X			184					X		
13					X			186					X		
15					X			251					X		
16					X			514		X					
17					X			520		X					
19					X			521		X					
27					X			522		X					
28					X			531		X					
29					X			533		X					
30					X			535		X					
35					X			541		X					
39					X			542		X					
40					X			562		X					
41					X			563		X					
43					X			571		X					
44					X			573		X					
45					X			575		X					
48					X			19C					X		
50					X			ALEX	X						
51					X			BUZZ	X						
52					X			CSM							X
56					X			DASH	X						
59					X			EARTH	X						
60					X			FLASA	X						
61					X			FLASH	X						
62					X			GAL			X				
65					X			GUS	X						
66					X			I10E							X
67					X			I10W							X
70					X			I17							X
72					X			JUPITER	X						
75					X			LINKAZ				X			
77					X			MAIN				X			
80					X			MARS	X						
81					X			MARY	X						
83					X			MERCURY	X						
90					X			METRO RAIL						X	
96					X			SCDT							X
104					X			SCNT	X						
106					X			SCTMT	X						
108					X			SMART	X						
112					X			SR51							X
120					X			VENUS	X						
122					X			ZOOM	X						

Figure D- 1. Pass Type

Pass Type	CIRCULATOR	EXPRESS	LIMITED	LINK	LOCAL	RAIL	RAPID	Grand Total
All-Day pass	3.6%	4.7%	0.0%	43.6%	36.4%	36.8%	3.6%	32.7%
7-Day Pass	0.7%	0.0%	0.0%	5.6%	6.3%	4.4%	0.2%	5.3%
15-Day	0.5%	0.0%	0.0%	3.9%	4.4%	2.7%	0.0%	3.6%
31-Day Pass	2.2%	15.3%	12.5%	26.3%	17.6%	13.6%	16.1%	15.5%
Semester Pass	0.2%	0.0%	0.0%	1.4%	2.8%	2.0%	0.0%	2.3%
Full Fare	6.5%	1.6%	0.0%	9.7%	11.5%	7.8%	4.0%	10.0%
Employer Subsidized Pass (Platinum Pass)	0.7%	71.4%	76.3%	3.1%	6.7%	10.3%	67.0%	9.0%
FREE	83.1%	2.9%	0.0%	0.8%	1.6%	1.2%	7.2%	8.4%
ASU U-Pass	0.8%	2.8%	0.0%	1.3%	1.8%	14.0%	1.9%	4.2%
Courtesy Pass	0.0%	0.2%	0.0%	0.0%	0.1%	0.3%	0.2%	0.1%
Dial A Ride ID Card	0.0%	0.5%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Field Trip Pass	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%
Person with Disability Fare	0.5%	0.0%	0.0%	1.3%	1.0%	0.8%	0.0%	0.9%
Reduced Fare Card ID	0.3%	0.6%	11.2%	3.0%	6.8%	4.7%	0.0%	5.6%
Youth Fare	0.3%	0.0%	0.0%	0.0%	2.1%	0.7%	0.0%	1.6%
Senior Fare	0.6%	0.0%	0.0%	0.0%	1.0%	0.7%	0.0%	0.8%
Grand Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Figure D- 2. How Transit Riders Get Transit Schedule Information

Source of Information	CIRCULATOR	EXPRESS	LIMITED	LINK	LOCAL	RAIL	RAPID	Grand Total
Customer service	7.4%	0.5%	5.6%	9.1%	8.2%	4.9%	1.6%	7.3%
Mobile site	18.6%	12.3%	0.0%	31.8%	21.3%	20.6%	4.5%	20.6%
NextRide	10.0%	1.1%	0.0%	11.2%	9.3%	7.9%	0.4%	8.8%
Posted schedule at bus stop	19.6%	0.2%	0.0%	13.8%	8.9%	19.9%	4.6%	11.8%
Transit Book	14.2%	9.8%	26.3%	16.5%	25.0%	15.2%	9.0%	21.5%
Valley Metro website	26.3%	75.7%	68.1%	17.5%	25.2%	27.8%	79.8%	27.5%
Other	3.9%	0.4%	0.0%	0.0%	2.2%	3.7%	0.2%	2.5%
Grand Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Figure D- 3. Number of Vehicles in the Household

Vehicles	CIRCULATOR	EXPRESS	LIMITED	LINK	LOCAL	RAIL	RAPID	Grand Total
None (0)	54.1%	2.1%	0.0%	61.2%	58.4%	49.0%	6.0%	54.3%
One (1)	27.1%	30.0%	43.1%	18.6%	24.1%	30.5%	28.3%	25.8%
Two (2)	14.4%	44.9%	44.4%	10.5%	12.5%	14.1%	50.0%	14.2%
Three (3)	3.0%	17.3%	6.9%	6.1%	3.2%	4.4%	12.7%	3.9%
Four or more (4+)	1.4%	5.6%	5.6%	3.7%	1.7%	2.0%	2.9%	1.8%
Grand Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Figure D- 4. Vehicle Availability (Those with one or more vehicles in Household)

Vehicles Availability	CIRCULATOR	EXPRESS	LIMITED	LINK	LOCAL	RAIL	RAPID	Grand Total
No	54.0%	5.9%	12.5%	76.2%	74.4%	38.2%	5.0%	59.6%
Yes	46.0%	94.1%	87.5%	23.8%	25.6%	61.8%	95.0%	40.4%
Grand Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Figure D- 5. Number of People Living in the Household

Persons	CIRCULATOR	EXPRESS	LIMITED	LINK	LOCAL	RAIL	RAPID	Grand Total
One (1)	23.5%	15.1%	6.9%	30.1%	22.4%	26.3%	18.1%	23.1%
Two (2)	25.9%	31.3%	37.5%	20.8%	22.8%	29.6%	40.5%	24.9%
Three (3)	19.4%	23.6%	25.0%	15.2%	19.2%	17.7%	15.7%	18.8%
Four (4)	16.7%	21.6%	12.5%	17.2%	16.0%	13.2%	17.3%	15.6%
Five (5)	7.4%	6.2%	12.5%	6.2%	9.6%	6.8%	5.1%	8.7%
Six (6)	4.4%	0.9%	5.6%	5.1%	5.2%	3.2%	3.1%	4.6%
Seven (7)	1.3%	0.0%	0.0%	3.4%	2.2%	1.4%	0.0%	1.9%
Eight (8)	0.4%	0.8%	0.0%	0.5%	1.0%	0.7%	0.1%	0.9%
Nine (9)	0.2%	0.0%	0.0%	0.8%	0.4%	0.2%	0.1%	0.4%
Ten or More (10+)	0.8%	0.3%	0.0%	0.6%	1.2%	0.8%	0.0%	1.1%
Grand Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Figure D- 6. Number of Adults Living in the Household

Persons	CIRCULATOR	EXPRESS	LIMITED	LINK	LOCAL	RAIL	RAPID	Grand Total
One (1)	28.5%	18.3%	12.5%	31.2%	29.1%	30.9%	18.8%	29.1%
Two (2)	39.2%	51.9%	48.7%	33.8%	38.2%	40.1%	55.4%	39.2%
Three (3)	18.3%	19.7%	26.3%	19.0%	19.9%	17.5%	18.5%	19.2%
Four (4)	10.2%	9.8%	12.5%	9.2%	8.4%	8.1%	6.4%	8.5%
Five (5)	2.5%	0.4%	0.0%	4.7%	2.4%	2.0%	0.3%	2.3%
Six (6)	0.7%	0.0%	0.0%	1.5%	0.9%	0.6%	0.6%	0.8%
Seven (7)	0.3%	0.0%	0.0%	0.0%	0.3%	0.2%	0.0%	0.3%
Eight (8)	0.0%	0.0%	0.0%	0.0%	0.2%	0.1%	0.0%	0.1%
Nine (9)	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.1%
Ten or More (10+)	0.3%	0.0%	0.0%	0.6%	0.6%	0.5%	0.0%	0.5%
Grand Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Figure D- 7. Number of Employed Persons in the Household

Employed Persons	CIRCULATOR	EXPRESS	LIMITED	LINK	LOCAL	RAIL	RAPID	Grand Total
None (0)	21.4%	0.5%	0.0%	12.1%	11.2%	14.9%	1.8%	12.5%
One (1)	28.9%	47.2%	38.8%	35.1%	37.4%	35.4%	44.2%	36.6%
Two (2)	32.0%	38.8%	48.7%	31.1%	33.1%	33.3%	38.5%	33.2%
Three (3)	11.9%	11.2%	12.5%	15.5%	12.1%	11.1%	13.7%	11.9%
Four (4)	4.2%	2.3%	0.0%	4.4%	4.1%	3.9%	1.5%	4.0%
Five (5)	1.2%	0.0%	0.0%	0.9%	1.0%	0.8%	0.3%	1.0%
Six (6)	0.1%	0.0%	0.0%	0.7%	0.4%	0.2%	0.0%	0.4%
Seven (7)	0.1%	0.0%	0.0%	0.0%	0.1%	0.1%	0.0%	0.1%
Eight (8)	0.1%	0.0%	0.0%	0.0%	0.1%	0.1%	0.0%	0.1%
Nine (9)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Ten or More (10+)	0.1%	0.0%	0.0%	0.0%	0.4%	0.1%	0.0%	0.3%
Grand Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Figure D- 8. Employment Status

Employment Status	CIRCULATOR	EXPRESS	LIMITED	LINK	LOCAL	RAIL	RAPID	Grand Total
Employed full-time (at least 35 hrs per week)	36.7%	98.8%	86.2%	57.5%	53.9%	53.5%	95.4%	53.9%
Employed part-time (less than 35 hrs per week)	21.5%	0.2%	13.8%	17.7%	14.4%	17.1%	1.9%	15.1%
Not currently employed but seeking work	14.5%	0.5%	0.0%	8.1%	11.3%	10.7%	0.3%	11.0%
Not currently employed and not seeking work	19.9%	0.4%	0.0%	13.2%	15.3%	13.0%	0.2%	14.7%
Homemaker	1.5%	0.0%	0.0%	0.0%	0.5%	0.4%	0.3%	0.6%
Retired	5.8%	0.0%	0.0%	3.6%	4.7%	5.3%	1.9%	4.8%
Grand Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Figure D- 9. Student Status

Student Status	CIRCULATOR	EXPRESS	LIMITED	LINK	LOCAL	RAIL	RAPID	Grand Total
Not a student	58.3%	98.2%	100.0%	83.7%	74.8%	67.7%	93.2%	72.8%
Yes - Full Time college/university	28.5%	0.4%	0.0%	6.1%	9.8%	23.3%	3.4%	13.8%
Yes - Part Time college/university	2.1%	1.5%	0.0%	1.0%	1.9%	2.5%	3.2%	2.1%
Yes - vocational/technical/trade school	0.4%	0.0%	0.0%	0.2%	1.0%	0.5%	0.2%	0.8%
Yes - K-12th grade	10.7%	0.0%	0.0%	9.0%	12.4%	5.9%	0.1%	10.5%
Other	0.0%	0.0%	0.0%	0.0%	0.2%	0.0%	0.0%	0.1%
Grand Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Figure D- 10. Driver's License Status

Driver's License Status	CIRCULATOR	EXPRESS	LIMITED	LINK	LOCAL	RAIL	RAPID	Grand Total
No	53.0%	1.8%	11.2%	55.3%	61.1%	38.3%	4.7%	53.8%
Yes	47.0%	98.2%	88.8%	44.7%	38.9%	61.7%	95.3%	46.2%
Grand Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Figure D- 11. Veterans Status

Veteran Status	CIRCULATOR	EXPRESS	LIMITED	LINK	LOCAL	RAIL	RAPID	Grand Total
YES	4.1%	7.7%	0.0%	7.9%	5.8%	7.1%	8.8%	6.0%
NO	95.6%	92.3%	100.0%	91.3%	93.5%	92.5%	91.2%	93.4%
No answer	0.3%	0.0%	0.0%	0.8%	0.7%	0.5%	0.0%	0.6%
Grand Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Figure D- 12. Visitors Status

Visitor Status	CIRCULATOR	EXPRESS	LIMITED	LINK	LOCAL	RAIL	RAPID	Grand Total
No	99.0%	100.0%	100.0%	99.9%	99.4%	95.6%	98.0%	98.6%
Yes	1.0%	0.0%	0.0%	0.1%	0.6%	4.4%	2.0%	1.4%
Grand Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Figure D- 13. Disability Status

Disability Status	CIRCULATOR	EXPRESS	LIMITED	LINK	LOCAL	RAIL	RAPID	Grand Total
Not disabled	89.5%	96.4%	93.1%	79.4%	88.7%	90.0%	95.1%	89.2%
Blindness	0.3%	0.0%	0.0%	0.0%	0.3%	0.2%	0.0%	0.2%
Deaf / Hard of hearing	0.1%	0.7%	0.0%	3.6%	0.5%	0.5%	0.7%	0.5%
Declined to answer	1.1%	1.1%	6.9%	1.7%	1.0%	1.0%	0.9%	1.0%
Low vision	1.3%	0.4%	0.0%	3.5%	1.2%	1.0%	0.1%	1.1%
Mental or cognitive impairment	3.0%	0.0%	0.0%	4.6%	3.0%	2.9%	0.4%	2.9%
Mobility problem - do not use wheelchair	2.4%	0.7%	0.0%	5.6%	3.0%	2.9%	1.5%	2.9%
Mobility problem - use wheelchair	0.7%	0.0%	0.0%	1.3%	1.2%	0.8%	1.2%	1.1%
Other	1.6%	0.7%	0.0%	0.3%	1.1%	0.8%	0.2%	1.1%
Grand Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Figure D- 14. Age of Respondent

Age of Respondent	CIRCULATOR	EXPRESS	LIMITED	LINK	LOCAL	RAIL	RAPID	Grand Total
Under 16	2.6%	0.0%	0.0%	0.3%	2.8%	1.5%	0.1%	2.4%
16-18	10.6%	0.0%	0.0%	6.7%	12.8%	7.5%	0.2%	11.1%
19-24	33.4%	1.8%	6.9%	15.9%	21.6%	27.6%	5.3%	23.2%
25-34	20.8%	14.2%	11.2%	30.4%	22.6%	23.6%	8.0%	22.4%
35-44	12.6%	30.0%	11.2%	15.1%	14.7%	14.7%	19.1%	14.8%
45-54	8.4%	23.8%	30.6%	13.7%	13.7%	13.0%	29.3%	13.5%
55-64	7.7%	25.1%	33.2%	14.5%	8.4%	8.4%	31.8%	9.1%
65+	3.9%	5.2%	6.9%	3.5%	3.3%	3.7%	6.3%	3.5%
Grand Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Figure D- 15. Race/Ethnicity of Respondent

Race/Ethnicity	CIRCULATOR	EXPRESS	LIMITED	LINK	LOCAL	RAIL	RAPID	Grand Total
American Indian / Alaska Native	4.9%	2.6%	0.0%	2.2%	4.6%	5.3%	0.9%	4.6%
Asian	6.2%	5.8%	6.9%	2.6%	2.4%	4.7%	4.6%	3.3%
Black / African American	17.4%	8.2%	5.6%	20.0%	20.8%	15.4%	6.1%	18.9%
Hispanic / Latino	22.6%	14.6%	25.0%	22.7%	30.3%	21.4%	16.2%	27.3%
Native Hawaiian / Pacific Islander	1.1%	0.0%	0.0%	0.0%	0.8%	0.7%	0.1%	0.8%
White	44.8%	67.9%	62.5%	50.8%	39.7%	49.0%	71.3%	43.2%
Other	3.0%	0.9%	0.0%	1.7%	1.4%	3.5%	0.7%	2.0%
Grand Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Figure D- 16. Annual Household Income

Annual Household Income	CIRCULATOR	EXPRESS	LIMITED	LINK	LOCAL	RAIL	RAPID	Grand Total
Below \$5,000	15.2%	0.3%	0.0%	5.9%	9.0%	9.8%	0.2%	9.4%
\$5,000-\$9,999	4.0%	0.0%	0.0%	7.9%	3.7%	4.3%	1.4%	3.8%
\$10,000-\$14,999	5.2%	0.0%	0.0%	10.9%	6.7%	6.0%	0.8%	6.2%
\$15,000-\$19,999	7.1%	0.0%	0.0%	7.5%	8.5%	6.1%	0.2%	7.6%
\$20,000-\$24,999	7.8%	2.2%	6.9%	9.9%	8.6%	6.6%	1.3%	7.9%
\$25,000-\$29,999	8.1%	0.7%	5.6%	14.1%	8.3%	5.5%	4.4%	7.6%
\$30,000-\$34,999	4.1%	2.2%	0.0%	7.3%	6.5%	6.1%	2.3%	6.1%
\$35,000-\$39,999	4.1%	4.7%	31.9%	1.7%	4.6%	4.9%	7.7%	4.7%
\$40,000-\$49,999	3.6%	10.4%	13.8%	4.1%	4.7%	5.3%	9.6%	4.9%
\$50,000-\$59,999	2.8%	11.3%	0.0%	4.1%	2.8%	4.4%	13.3%	3.5%
\$60,000-\$69,999	2.3%	7.0%	6.9%	6.3%	1.8%	3.0%	7.8%	2.4%
\$70,000-\$79,999	0.6%	10.4%	5.6%	3.7%	1.2%	2.4%	8.4%	1.7%
\$80,000-\$89,999	0.6%	11.3%	0.0%	1.6%	0.8%	1.8%	6.0%	1.2%
\$90,000-\$99,999	0.0%	4.8%	0.0%	0.8%	0.3%	1.4%	6.8%	0.7%
\$100,000-\$119,999	0.4%	9.4%	12.5%	0.1%	0.7%	2.2%	7.8%	1.2%
120,000 or more	0.1%	13.0%	5.6%	0.5%	0.6%	2.1%	10.5%	1.2%
Refusal	33.9%	12.4%	11.2%	13.5%	31.2%	28.1%	11.3%	29.9%
Grand Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Figure D- 17. Speak a Language Other than English at Home

Language Other than English	CIRCULATOR	EXPRESS	LIMITED	LINK	LOCAL	RAIL	RAPID	Grand Total
No	75.3%	86.0%	93.1%	81.1%	75.8%	76.6%	84.8%	76.3%
Yes	24.7%	14.0%	6.9%	18.9%	24.2%	23.4%	15.2%	23.7%
Grand Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Figure D- 18. Other Language Spoken at Home (Top 10)

Other Language	CIRCULATOR	EXPRESS	LIMITED	LINK	LOCAL	RAIL	RAPID	Grand Total
Spanish	63.2%	63.8%	100.0%	66.6%	81.0%	61.9%	69.0%	75.2%
Navajo	4.4%	2.7%	0.0%	5.9%	2.5%	3.4%	1.8%	2.9%
Other	2.3%	4.3%	0.0%	0.0%	2.7%	2.9%	6.8%	2.7%
French	2.1%	1.4%	0.0%	1.9%	1.8%	3.1%	0.0%	2.1%
Arabic, Standard	3.8%	1.4%	0.0%	0.0%	0.6%	4.8%	0.0%	1.7%
German	1.2%	0.8%	0.0%	0.0%	1.5%	2.9%	0.5%	1.7%
Hindi	5.3%	1.7%	0.0%	0.0%	0.8%	1.7%	5.5%	1.5%
Chinese	2.8%	4.8%	0.0%	2.7%	0.6%	2.5%	1.0%	1.2%
AMERICAN SIGN LANGUAGE (ASL)	0.4%	0.0%	0.0%	1.4%	1.2%	1.4%	2.4%	1.2%
Chinese, Mandarin	4.2%	0.0%	0.0%	0.0%	0.4%	2.1%	3.6%	1.1%

Figure D- 19. English Ability (Those that speak a language other than English)

English Ability	CIRCULATOR	EXPRESS	LIMITED	LINK	LOCAL	RAIL	RAPID	Grand Total
Not at all	2.8%	0.0%	0.0%	0.0%	2.9%	1.0%	1.0%	2.4%
Less than well	6.4%	0.0%	0.0%	7.4%	7.0%	4.7%	0.0%	6.3%
Well	21.8%	24.2%	0.0%	12.8%	11.8%	14.0%	10.1%	13.2%
Very well	69.0%	75.8%	100.0%	79.9%	78.4%	80.4%	88.9%	78.1%
Grand Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Figure D- 20. Gender of Respondent

Gender	CIRCULATOR	EXPRESS	LIMITED	LINK	LOCAL	RAIL	RAPID	Grand Total
Female	45.8%	58.2%	76.3%	34.3%	44.0%	44.6%	64.3%	44.8%
Male	54.2%	41.8%	23.7%	65.7%	56.0%	55.4%	35.7%	55.2%
Grand Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Figure D- 21. Trip Purpose

Trip Purpose	CIRCULATOR	EXPRESS	LIMITED	LINK	LOCAL	RAIL	RAPID	Grand Total
Home-Based Airport Trip	0.0%	0.0%	0.0%	0.3%	0.1%	0.8%	0.0%	0.2%
Home-Based College Trip	21.6%	0.6%	0.0%	2.6%	6.3%	14.1%	0.0%	8.9%
Home-Based Medical Trip	2.2%	0.0%	0.0%	2.1%	3.3%	1.9%	0.0%	2.8%
Home-Based Other Trip	22.7%	0.2%	0.0%	21.9%	19.3%	20.2%	0.9%	19.2%
Home-Based School Trip	6.4%	0.0%	0.0%	4.5%	10.3%	3.4%	0.0%	8.2%
Home-Based Shopping Trip	13.1%	0.2%	0.0%	7.6%	9.4%	10.0%	2.3%	9.5%
Home-Based Work Trip	21.5%	98.7%	100.0%	46.2%	40.5%	29.9%	92.8%	38.8%
Non-Home Based Trip	12.6%	0.3%	0.0%	14.8%	10.7%	19.7%	4.1%	12.4%
Grand Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Figure D- 22. Total Transfers Used

Number of Transfers	CIRCULATOR	EXPRESS	LIMITED	LINK	LOCAL	RAIL	RAPID	Grand Total
None	84.0%	96.4%	100.0%	52.0%	60.4%	72.4%	92.8%	65.9%
One	12.8%	3.6%	0.0%	36.3%	33.3%	21.6%	6.9%	28.3%
Two	2.9%	0.0%	0.0%	9.3%	5.6%	5.2%	0.2%	5.2%
Three or more	0.3%	0.0%	0.0%	2.4%	0.6%	0.8%	0.1%	0.6%
Grand Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Figure D- 23. Where Transit Trips Began

Origin Type	CIRCULATOR	EXPRESS	LIMITED	LINK	LOCAL	RAIL	RAPID	Grand Total
Airport (as an air passenger)	0.0%	0.0%	0.0%	0.9%	0.0%	0.6%	0.0%	0.2%
College/University (student only)	11.9%	0.6%	0.0%	1.0%	3.2%	8.3%	0.0%	4.8%
Eating/Dining Out	2.2%	0.2%	0.0%	4.0%	0.9%	3.3%	0.4%	1.5%
Hotel	0.2%	0.0%	0.0%	0.0%	0.1%	1.1%	0.2%	0.3%
Medical appointment/doctor's visit	0.9%	0.0%	0.0%	1.9%	2.0%	1.5%	0.0%	1.7%
Other work related	0.7%	0.8%	0.0%	2.2%	1.4%	2.2%	0.1%	1.5%
Personal business (bank, post office, etc)	5.6%	0.0%	0.0%	5.2%	4.9%	6.4%	0.3%	5.1%
Pick up/drop off someone (daycare, school, etc)	0.6%	0.0%	0.0%	0.0%	0.6%	0.4%	0.7%	0.5%
Recreation (movies, fishing, etc)	3.8%	0.0%	0.0%	1.7%	1.1%	2.7%	0.5%	1.6%
School (grades 6-8)	0.3%	0.0%	0.0%	0.0%	0.3%	0.0%	0.0%	0.2%
School (grades 9-12)	3.2%	0.0%	0.0%	1.7%	5.3%	2.1%	0.0%	4.3%
School (grades K-5)	0.1%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.1%
Shopping	7.2%	0.0%	0.0%	3.5%	6.5%	5.7%	2.1%	6.2%
Sightseeing	0.1%	0.0%	0.0%	0.0%	0.1%	0.6%	0.0%	0.2%
Social visits (friends/relatives)	3.7%	0.0%	0.0%	7.8%	5.5%	5.3%	0.2%	5.1%
Sporting event	0.0%	0.0%	0.0%	0.0%	0.0%	0.2%	0.0%	0.0%
Your Home	47.6%	48.5%	55.2%	33.5%	47.8%	41.1%	53.3%	46.4%
Your usual WORKPLACE	11.7%	50.0%	44.8%	36.6%	20.3%	18.5%	42.3%	20.3%
Grand Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Figure D- 24. Where Transit Trips End

Destination Type	CIRCULATOR	EXPRESS	LIMITED	LINK	LOCAL	RAIL	RAPID	Grand Total
Airport (as an air passenger)	0.0%	0.0%	0.0%	0.0%	0.1%	0.8%	0.0%	0.2%
College/University (student only)	12.6%	0.0%	0.0%	1.6%	4.0%	8.8%	0.0%	5.5%
Eating/Dining Out	1.6%	0.0%	0.0%	1.4%	1.1%	3.9%	0.2%	1.7%
Hotel	0.0%	0.0%	0.0%	0.0%	0.1%	0.8%	0.2%	0.2%
Medical appointment/doctor's visit	1.8%	0.0%	0.0%	0.9%	2.3%	1.3%	0.0%	2.0%
Other work related	1.3%	0.0%	0.0%	0.3%	1.6%	1.8%	0.0%	1.6%
Personal business (bank, post office, etc)	10.0%	0.0%	0.0%	8.9%	6.7%	7.7%	0.2%	7.0%
Pick up/drop off someone (daycare, school, etc)	0.8%	0.0%	0.0%	0.5%	0.8%	0.5%	0.2%	0.7%
Recreation (movies, fishing, etc)	4.2%	0.3%	0.0%	3.2%	1.6%	4.4%	1.5%	2.4%
School (grades 6-8)	0.2%	0.0%	0.0%	0.0%	0.2%	0.0%	0.0%	0.2%
School (grades 9-12)	3.3%	0.0%	0.0%	3.4%	5.3%	1.9%	0.0%	4.2%
School (grades K-5)	0.3%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.1%
Shopping	6.2%	0.0%	0.0%	4.2%	5.4%	5.4%	2.2%	5.3%
Sightseeing	0.7%	0.2%	0.0%	0.0%	0.2%	0.9%	0.7%	0.4%
Social visits (friends/relatives)	5.5%	0.0%	0.0%	7.6%	7.5%	6.8%	0.2%	7.0%
Sporting event	0.1%	0.0%	0.0%	0.1%	0.1%	0.6%	0.0%	0.2%
Your Home	39.8%	51.2%	44.8%	51.7%	41.5%	39.2%	42.6%	41.2%
Your usual WORKPLACE	11.7%	48.3%	55.2%	16.1%	21.4%	15.1%	52.2%	20.3%
Grand Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Figure D- 25. Access Mode to Transit System

Access Mode	CIRCULATOR	EXPRESS	LIMITED	LINK	LOCAL	RAIL	RAPID	Grand Total
Walked all the way	90.2%	58.6%	44.8%	81.9%	91.2%	78.8%	48.3%	87.2%
Walked part of the way (got dropped off and then walked)	1.3%	0.2%	0.0%	0.0%	0.2%	0.3%	1.2%	0.4%
Bike	2.6%	0.2%	6.9%	10.4%	3.8%	8.3%	1.0%	4.6%
Drove alone and parked	2.9%	34.8%	20.7%	0.7%	0.3%	5.8%	41.8%	2.9%
Drove or rode with others and parked	0.1%	1.6%	6.9%	0.0%	0.1%	1.1%	1.6%	0.3%
Was dropped off by someone	2.0%	4.6%	20.7%	7.0%	3.0%	4.5%	6.0%	3.4%
Wheelchair/scooter	0.5%	0.0%	0.0%	0.0%	1.0%	0.7%	0.2%	0.9%
Other	0.4%	0.0%	0.0%	0.0%	0.4%	0.5%	0.0%	0.4%
Grand Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Figure D- 26. Access Mode to Transit System (Walk Distance)

Walk Distance	CIRCULATOR	EXPRESS	LIMITED	LINK	LOCAL	RAIL	RAPID	Grand Total
Less than a block	58.8%	15.2%	37.5%	41.5%	49.5%	41.3%	21.6%	48.1%
One (1)	19.4%	43.1%	37.5%	29.5%	20.5%	21.6%	40.4%	21.1%
Two (2)	9.8%	20.2%	25.0%	11.1%	13.2%	16.7%	25.9%	13.7%
Three (3)	4.9%	8.9%	0.0%	9.4%	6.5%	8.4%	7.2%	6.7%
Four (4)	2.6%	6.7%	0.0%	3.8%	4.4%	4.9%	1.2%	4.3%
Five (5)	0.8%	3.9%	0.0%	1.0%	2.3%	2.3%	2.6%	2.2%
Six (6)	0.7%	1.6%	0.0%	0.8%	0.9%	1.2%	0.3%	0.9%
Seven (7)	0.2%	0.0%	0.0%	0.0%	0.4%	1.0%	0.0%	0.5%
Eight (8)	1.2%	0.0%	0.0%	1.6%	0.9%	0.9%	0.0%	0.9%
Nine (9)	0.2%	0.0%	0.0%	0.0%	0.1%	0.4%	0.0%	0.2%
Ten or more (10+)	1.3%	0.4%	0.0%	1.4%	1.2%	1.4%	0.8%	1.2%
Grand Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Figure D- 27. Egress Mode from Transit System

Egress Mode	CIRCULATOR	EXPRESS	LIMITED	LINK	LOCAL	RAIL	RAPID	Grand Total
Walk all the way	93.0%	51.4%	53.9%	84.1%	92.7%	80.1%	57.9%	88.8%
Walk part of the way (will walk then get picked up)	0.7%	0.5%	0.0%	0.0%	0.2%	0.6%	0.0%	0.3%
Bike	2.4%	0.4%	6.9%	12.5%	3.9%	8.5%	0.5%	4.7%
Get in a parked vehicle & drive alone	2.9%	37.2%	22.4%	1.0%	0.2%	6.0%	35.3%	2.8%
Get in a parked vehicle & drive/ride with others	0.0%	1.9%	11.2%	0.0%	0.1%	0.6%	0.5%	0.2%
Be picked up by someone	0.2%	8.6%	5.6%	2.4%	1.5%	3.1%	5.6%	1.9%
Wheelchair/scooter	0.5%	0.0%	0.0%	0.0%	1.1%	0.7%	0.2%	0.9%
Other	0.4%	0.0%	0.0%	0.0%	0.4%	0.5%	0.0%	0.4%
Grand Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Figure D- 28. Egress Mode from Transit System (Walk Distance)

Walk Distance	CIRCULATOR	EXPRESS	LIMITED	LINK	LOCAL	RAIL	RAPID	Grand Total
Less than a block	60.3%	19.4%	51.2%	34.9%	48.3%	39.0%	17.0%	46.9%
One (1)	20.6%	39.5%	38.4%	23.5%	20.6%	21.6%	38.4%	21.2%
Two (2)	8.7%	22.6%	0.0%	13.4%	14.6%	15.9%	28.4%	14.6%
Three (3)	5.1%	4.8%	0.0%	5.2%	6.9%	10.3%	9.0%	7.4%
Four (4)	2.0%	6.1%	0.0%	8.6%	4.1%	5.7%	3.6%	4.3%
Five (5)	1.1%	3.3%	0.0%	3.3%	1.9%	2.8%	1.0%	2.0%
Six (6)	0.8%	2.5%	0.0%	2.0%	1.0%	1.2%	1.5%	1.0%
Seven (7)	0.2%	0.4%	0.0%	1.5%	0.6%	1.0%	0.0%	0.6%
Eight (8)	0.5%	0.0%	0.0%	3.6%	0.8%	1.0%	0.4%	0.8%
Nine (9)	0.0%	1.0%	10.4%	2.3%	0.2%	0.3%	0.0%	0.2%
Ten or more (10+)	0.7%	0.6%	0.0%	1.6%	0.9%	1.3%	0.7%	0.9%
Grand Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

APPENDIX E: RESULTS BY MODE (BUS RIDERS & RAIL RIDERS)

SERVICE TYPE OF TRAVEL

Bus Riders: Riders that only used bus routes only during their one-way trip.

Rail Riders: Riders that used at least the rail line during their one-way trip.

Figure E- 29. Pass Type

Pass Type	Bus Riders	Rail Riders	Grand Total
All-Day pass	32.2%	35.6%	32.7%
7-Day Pass	5.5%	4.8%	5.3%
15-Day	3.8%	3.2%	3.6%
31-Day Pass	16.2%	15.4%	15.5%
Semester Pass	2.4%	2.1%	2.3%
Full Fare	10.3%	7.1%	10.0%
Employer Subsidized Pass (Platinum Pass)	8.8%	10.0%	9.0%
FREE	9.6%	2.2%	8.4%
ASU U-Pass	1.8%	12.1%	4.2%
Courtesy Pass	0.1%	0.2%	0.1%
Dial A Ride ID Card	0.0%	0.0%	0.0%
Field Trip Pass	0.0%	0.1%	0.0%
Person with Disability Fare	0.9%	0.9%	0.9%
Reduced Fare Card ID	5.8%	5.0%	5.6%
Youth Fare	1.7%	0.7%	1.6%
Senior Fare	0.8%	0.6%	0.8%
Grand Total	100.0%	100.0%	100.0%

Figure E- 30. How Transit Riders Get Transit Schedule Information

Source of Information	Bus Riders	Rail Riders	Grand Total
Customer service	7.7%	5.4%	7.3%
Mobile site	20.6%	21.7%	20.6%
NextRide	9.0%	8.2%	8.8%
Posted schedule at bus stop	10.0%	17.5%	11.8%
Transit Book	23.0%	16.6%	21.5%
Valley Metro website	27.3%	27.2%	27.5%
Other	2.3%	3.4%	2.5%
Grand Total	100.0%	100.0%	100.0%

Figure E- 31. Number of Vehicles in the Household

Vehicles	Bus Riders	Rail Riders	Grand Total
None (0)	55.8%	52.1%	54.3%
One (1)	24.7%	28.8%	25.8%
Two (2)	13.9%	13.3%	14.2%
Three (3)	3.7%	3.8%	3.9%
Four or more (4+)	1.8%	2.0%	1.8%
Grand Total	100.0%	100.0%	100.0%

Figure E- 32. Vehicle Availability (Those with one or more vehicles in Household)

Vehicles Availability	Bus Riders	Rail Riders	Grand Total
No	65.2%	42.7%	59.6%
Yes	34.8%	57.3%	40.4%
Grand Total	100.0%	100.0%	100.0%

Figure E- 33. Number of People Living in the Household

Persons	Bus Riders	Rail Riders	Grand Total
One (1)	22.5%	27.4%	23.1%
Two (2)	23.9%	28.1%	24.9%
Three (3)	19.0%	17.5%	18.8%
Four (4)	16.0%	13.4%	15.6%
Five (5)	9.1%	6.9%	8.7%
Six (6)	4.9%	3.3%	4.6%
Seven (7)	2.1%	1.5%	1.9%
Eight (8)	0.9%	0.8%	0.9%
Nine (9)	0.4%	0.2%	0.4%
Ten or More (10+)	1.1%	0.8%	1.1%
Grand Total	100.0%	100.0%	100.0%

Figure E- 34. Number of Adults Living in the Household

Persons	Bus Riders	Rail Riders	Grand Total
One (1)	28.8%	32.4%	29.1%
Two (2)	38.9%	38.5%	39.2%
Three (3)	19.5%	17.6%	19.2%
Four (4)	8.5%	8.0%	8.5%
Five (5)	2.3%	2.0%	2.3%
Six (6)	0.9%	0.7%	0.8%
Seven (7)	0.3%	0.2%	0.3%
Eight (8)	0.1%	0.1%	0.1%
Nine (9)	0.1%	0.0%	0.1%
Ten or More (10+)	0.6%	0.5%	0.5%
Grand Total	100.0%	100.0%	100.0%

Figure E- 35. Number of Employed Persons in the Household

Employed Persons	Bus Riders	Rail Riders	Grand Total
None (0)	12.0%	14.8%	12.5%
One (1)	36.9%	36.8%	36.6%
Two (2)	33.1%	32.4%	33.2%
Three (3)	12.0%	10.7%	11.9%
Four (4)	4.0%	3.9%	4.0%
Five (5)	1.0%	0.8%	1.0%
Six (6)	0.4%	0.2%	0.4%
Seven (7)	0.1%	0.1%	0.1%
Eight (8)	0.1%	0.1%	0.1%
Nine (9)	0.0%	0.0%	0.0%
Ten or More (10+)	0.4%	0.2%	0.3%
Grand Total	100.0%	100.0%	100.0%

Figure E- 36. Employment Status

Employment Status	Bus Riders	Rail Riders	Grand Total
Employed full-time (at least 35 hrs per week)	54.1%	54.4%	53.9%
Employed part-time (less than 35 hrs per week)	14.6%	16.3%	15.1%
Not currently employed but seeking work	11.2%	10.8%	11.0%
Not currently employed and not seeking work	15.0%	12.9%	14.7%
Homemaker	0.6%	0.4%	0.6%
Retired	4.6%	5.3%	4.8%
Grand Total	100.0%	100.0%	100.0%

Figure E- 37. Student Status

Student Status	Bus Riders	Rail Riders	Grand Total
Not a student	74.3%	69.7%	72.8%
Yes - Full Time college/university	11.3%	21.3%	13.8%
Yes - Part Time college/university	2.0%	2.3%	2.1%
Yes - vocational/technical/trade school	0.9%	0.6%	0.8%
Yes - K-12th grade	11.4%	6.2%	10.5%
Other	0.1%	0.0%	0.1%
Grand Total	100.0%	100.0%	100.0%

Figure E- 38. Driver's License Status

Driver's License Status	Bus Riders	Rail Riders	Grand Total
No	57.3%	41.6%	53.8%
Yes	42.7%	58.4%	46.2%
Grand Total	100.0%	100.0%	100.0%

Figure E- 39. Veterans Status

Veteran Status	Bus Riders	Rail Riders	Grand Total
YES	5.9%	7.3%	6.0%
NO	93.5%	92.3%	93.4%
No answer	0.6%	0.4%	0.6%
Grand Total	100.0%	100.0%	100.0%

Figure E- 40. Visitors Status

Visitor Status	Bus Riders	Rail Riders	Grand Total
No	99.3%	96.3%	98.6%
Yes	0.7%	3.7%	1.4%
Grand Total	100.0%	100.0%	100.0%

Figure E- 41. Disability Status

Disability Status	Bus Riders	Rail Riders	Grand Total
Not disabled	88.9%	89.4%	89.2%
Blindness	0.2%	0.2%	0.2%
Deaf / Hard of hearing	0.5%	0.4%	0.5%
Declined to answer	1.0%	1.1%	1.0%
Low vision	1.2%	1.1%	1.1%
Mental or cognitive impairment	3.0%	2.8%	2.9%
Mobility problem - do not use wheelchair	2.9%	3.2%	2.9%
Mobility problem - use wheelchair	1.2%	0.9%	1.1%
Other	1.1%	0.8%	1.1%
Grand Total	100.0%	100.0%	100.0%

Figure E- 42. Age of Respondent

Age of Respondent	Bus Riders	Rail Riders	Grand Total
Under 16	2.5%	1.6%	2.4%
16-18	11.8%	7.4%	11.1%
19-24	21.9%	26.0%	23.2%
25-34	22.2%	23.3%	22.4%
35-44	15.0%	15.1%	14.8%
45-54	13.8%	13.9%	13.5%
55-64	9.3%	8.8%	9.1%
65+	3.5%	3.7%	3.5%
Grand Total	100.0%	100.0%	100.0%

Figure E- 43. Race/Ethnicity of Respondent

Race/Ethnicity	Bus Riders	Rail Riders	Grand Total
American Indian / Alaska Native	4.6%	5.8%	4.6%
Asian	2.9%	4.2%	3.3%
Black / African American	19.9%	16.6%	18.9%
Hispanic / Latino	28.5%	21.8%	27.3%
Native Hawaiian / Pacific Islander	0.8%	0.7%	0.8%
White	41.6%	47.7%	43.2%
Other	1.6%	3.2%	2.0%
Grand Total	100.0%	100.0%	100.0%

Figure E- 44a. Annual Household Income

Annual Household Income	Bus Riders	Rail Riders	Grand Total
Below \$5,000	9.4%	9.7%	9.4%
\$5,000-\$9,999	3.8%	4.2%	3.8%
\$10,000-\$14,999	6.3%	6.4%	6.2%
\$15,000-\$19,999	7.8%	6.1%	7.6%
\$20,000-\$24,999	8.2%	6.9%	7.9%
\$25,000-\$29,999	8.1%	6.4%	7.6%
\$30,000-\$34,999	6.1%	6.2%	6.1%
\$35,000-\$39,999	4.6%	4.8%	4.7%
\$40,000-\$49,999	4.9%	5.2%	4.9%
\$50,000-\$59,999	3.2%	4.4%	3.5%
\$60,000-\$69,999	2.2%	2.7%	2.4%
\$70,000-\$79,999	1.6%	2.4%	1.7%
\$80,000-\$89,999	1.1%	1.6%	1.2%
\$90,000-\$99,999	0.5%	1.2%	0.7%
\$100,000-\$119,999	1.0%	1.8%	1.2%
120,000 or more	1.0%	1.9%	1.2%
Refusal	30.2%	28.2%	29.9%
Grand Total	100.0%	100.0%	100.0%

Figure E- 45b. Annual Household Income (Excluding Refusals)

Annual Household Income	Bus Riders	Rail Riders	Grand Total
Below \$5,000	13.4%	13.5%	13.3%
\$5,000-\$9,999	5.4%	5.8%	5.4%
\$10,000-\$14,999	9.0%	9.0%	8.9%
\$15,000-\$19,999	11.2%	8.5%	10.8%
\$20,000-\$24,999	11.7%	9.5%	11.3%
\$25,000-\$29,999	11.5%	8.9%	10.8%
\$30,000-\$34,999	8.7%	8.6%	8.7%
\$35,000-\$39,999	6.7%	6.7%	6.7%
\$40,000-\$49,999	7.0%	7.2%	7.0%
\$50,000-\$59,999	4.6%	6.1%	5.0%
\$60,000-\$69,999	3.2%	3.7%	3.4%
\$70,000-\$79,999	2.2%	3.3%	2.4%
\$80,000-\$89,999	1.6%	2.2%	1.8%
\$90,000-\$99,999	0.8%	1.7%	1.0%
\$100,000-\$119,999	1.4%	2.6%	1.7%
120,000 or more	1.5%	2.6%	1.8%
Grand Total	100.0%	100.0%	100.0%

Figure E- 46. Speak a Language Other than English at Home

Language Other than English	Bus Riders	Rail Riders	Grand Total
No	76.2%	77.0%	76.3%
Yes	23.8%	23.0%	23.7%
Grand Total	100.0%	100.0%	100.0%

Figure E- 47. Other Language Spoken at Home (Top 10)

Other Language	Bus Riders	Rail Riders	Grand Total
Spanish	78.2%	64.2%	75.2%
Navajo	2.8%	3.7%	2.9%
Other	2.7%	3.0%	2.7%
French	1.9%	2.9%	2.1%
Arabic, Standard	1.0%	4.0%	1.7%
German	1.5%	2.7%	1.7%
Hindi	1.4%	1.7%	1.5%
Chinese	0.9%	2.2%	1.2%
AMERICAN SIGN LANGUAGE (ASL)	1.1%	1.3%	1.2%
Chinese, Mandarin	0.8%	2.0%	1.1%

Figure E- 48. English Ability (Those that speak a language other than English)

English Ability	Bus Riders	Rail Riders	Grand Total
Not at all	2.7%	0.9%	2.4%
Grand Total	6.5%	4.0%	6.3%
Well	12.9%	13.7%	13.2%
Very well	77.9%	81.5%	78.1%
Grand Total	100.0%	100.0%	100.0%

Figure E- 49. Gender of Respondent

Gender	Bus Riders	Rail Riders	Grand Total
Female	44.8%	43.5%	44.8%
Male	55.2%	56.5%	55.2%
Grand Total	100.0%	100.0%	100.0%

Figure E- 50. Trip Purpose

Trip Purpose	Bus Riders	Rail Riders	Grand Total
Home-Based Airport Trip	0.1%	0.7%	0.2%
Home-Based College Trip	7.5%	12.8%	8.9%
Home-Based Medical Trip	3.0%	2.2%	2.8%
Home-Based Other Trip	19.3%	20.5%	19.2%
Home-Based School Trip	9.2%	3.9%	8.2%
Home-Based Shopping Trip	9.3%	9.1%	9.5%
Home-Based Work Trip	40.8%	32.6%	38.8%
Non-Home Based Trip	10.8%	18.3%	12.4%
Grand Total	100.0%	100.0%	100.0%

Figure E- 51. Total Transfers Used

Number of Transfers	Bus Riders	Rail Riders	Grand Total
None	60.2%	57.9%	65.9%
One	33.0%	31.0%	28.3%
Two	6.1%	9.6%	5.2%
Three or more	0.7%	1.5%	0.6%
Grand Total	100.0%	100.0%	100.0%

Figure E- 52. Where Transit Trips Began

Origin Type	Bus Riders	Rail Riders	Grand Total
Airport (as an air passenger)	0.1%	0.6%	0.2%
College/University (student only)	3.9%	7.7%	4.8%
Eating/Dining Out	1.1%	2.8%	1.5%
Hotel	0.1%	0.9%	0.3%
Medical appointment/doctor's visit	1.8%	1.6%	1.7%
Other work related	1.3%	2.1%	1.5%
Personal business (bank, post office, etc)	5.0%	6.4%	5.1%
Pick up/drop off someone (daycare, school, etc)	0.5%	0.3%	0.5%
Recreation (movies, fishing, etc)	1.4%	2.5%	1.6%
School (grades 6-8)	0.2%	0.0%	0.2%
School (grades 9-12)	4.7%	2.5%	4.3%
School (grades K-5)	0.1%	0.0%	0.1%
Shopping	6.2%	5.4%	6.2%
Sightseeing	0.1%	0.5%	0.2%
Social visits (friends/relatives)	5.2%	5.6%	5.1%
Sporting event	0.0%	0.1%	0.0%
Your Home	47.4%	41.9%	46.4%
Your usual WORKPLACE	20.8%	19.0%	20.3%
Grand Total	100.0%	100.0%	100.0%

Figure E- 53. Where Transit Trips End

Destination Type	Bus Riders	Rail Riders	Grand Total
Airport (as an air passenger)	0.1%	0.6%	0.2%
College/University (student only)	4.7%	7.8%	5.5%
Eating/Dining Out	1.2%	3.4%	1.7%
Hotel	0.1%	0.6%	0.2%
Medical appointment/doctor's visit	2.1%	1.5%	2.0%
Other work related	1.5%	1.8%	1.6%
Personal business (bank, post office, etc)	6.9%	7.6%	7.0%
Pick up/drop off someone (daycare, school, etc)	0.7%	0.5%	0.7%
Recreation (movies, fishing, etc)	1.9%	3.9%	2.4%
School (grades 6-8)	0.2%	0.0%	0.2%
School (grades 9-12)	4.7%	2.0%	4.2%
School (grades K-5)	0.1%	0.0%	0.1%
Shopping	5.2%	5.0%	5.3%
Sightseeing	0.3%	0.8%	0.4%
Social visits (friends/relatives)	7.1%	7.3%	7.0%
Sporting event	0.1%	0.6%	0.2%
Your Home	41.9%	39.8%	41.2%
Your usual WORKPLACE	21.4%	16.6%	20.3%
Grand Total	100.0%	100.0%	100.0%

Figure E- 54. Access Mode to Transit System

Access Mode	Bus Riders	Rail Riders	Grand Total
Walked all the way	89.3%	81.2%	87.2%
Walked part of the way (got dropped off and then walked)	0.4%	0.3%	0.4%
Bike	3.8%	7.4%	4.6%
Drove alone and parked	2.1%	4.9%	2.9%
Drove or rode with others and parked	0.1%	0.9%	0.3%
Was dropped off by someone	3.0%	4.1%	3.4%
Wheelchair/scooter	0.9%	0.7%	0.9%
Other	0.4%	0.4%	0.4%
Grand Total	100.0%	100.0%	100.0%

Figure E- 55. Access Mode to Transit System (Walk Distance)

Walk Distance	Bus Riders	Rail Riders	Grand Total
Less than a block	49.3%	43.3%	48.1%
One (1)	21.0%	21.8%	21.1%
Two (2)	13.2%	15.8%	13.7%
Three (3)	6.5%	7.9%	6.7%
Four (4)	4.2%	4.6%	4.3%
Five (5)	2.2%	2.0%	2.2%
Six (6)	0.9%	1.2%	0.9%
Seven (7)	0.4%	0.9%	0.5%
Eight (8)	0.9%	0.9%	0.9%
Nine (9)	0.1%	0.3%	0.2%
Ten or more (10+)	1.3%	1.2%	1.2%
Grand Total	100.0%	100.0%	100.0%

Figure E- 56. Egress Mode from Transit System

Egress Mode	Bus Riders	Rail Riders	Grand Total
Walk all the way	90.9%	82.2%	88.8%
Walk part of the way (will walk then get picked up)	0.3%	0.6%	0.3%
Bike	3.8%	7.7%	4.7%
Get in a parked vehicle & drive alone	2.0%	5.0%	2.8%
Get in a parked vehicle & drive/ride with others	0.1%	0.5%	0.2%
Be picked up by someone	1.6%	2.9%	1.9%
Wheelchair/scooter	1.0%	0.7%	0.9%
Other	0.4%	0.4%	0.4%
Grand Total	100.0%	100.0%	100.0%

Figure E- 57. Egress Mode from Transit System (Walk Distance)

Walk Distance	Bus Riders	Rail Riders	Grand Total
Less than a block	48.2%	40.4%	46.9%
One (1)	21.2%	21.8%	21.2%
Two (2)	14.4%	15.8%	14.6%
Three (3)	6.8%	9.6%	7.4%
Four (4)	4.1%	5.2%	4.3%
Five (5)	1.9%	2.6%	2.0%
Six (6)	1.0%	1.2%	1.0%
Seven (7)	0.6%	0.9%	0.6%
Eight (8)	0.8%	1.1%	0.8%
Nine (9)	0.2%	0.3%	0.2%
Ten or more (10+)	0.9%	1.3%	0.9%
Grand Total	100.0%	100.0%	100.0%