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Resource Systems Group Inc.

2024 UTA ONBOARD SURVEY

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1.0 INTRODUCTION

The Utah Transit Authority (UTA) has made substantial expansions to its services over the past decade. As a result, understanding how travel patterns have evolved has become increasingly important. In compliance with Title VI regulations (49 CFR Part 21), transit providers are required to conduct passenger surveys at intervals they determine, with a maximum gap of five years between surveys. Building on the insights from the 2019 report, UTA recognizes the importance of collecting updated data to better understand the changes in travel behavior stemming from this service expansion.

The 2024 survey offers UTA and its partners a comprehensive overview of demographic profiles and travel patterns. It also includes valuable information on fare usage across various fare types and user demographics, particularly among minority and low-income populations. This data is crucial for assessing fare equity and ensuring fairness across all user groups.

The 2024 study utilized a tablet-based intercept survey to collect data. The Origin-Destination (OD) Survey collected a total of 13,795 responses, including 7,347 bus; 4,486 TRAX; 1,770 FrontRunner; 118 S-Line; and 74 On Demand surveys. An OD study tracks where passengers begin and end their trips, providing insights into travel patterns, demand, service needs, and rider demographic profiles.

In addition to the OD Survey, an On-to-Off Survey was conducted as part of the 2024 study, with a minimum target sample of approximately 20% of ridership for rail and bus routes serving more than 2,800 riders. Overall, 22,353 on-to-off pairs were collected, including 6,440 bus and 15,913 TRAX. This type of study records where passengers board and alight a transit vehicle, offering critical data for optimizing stop locations, capacity planning, and service efficiency.

2.0 SAMPLING PLANS

The study team developed sampling plans for each of UTA's weekday and weekend fixed routes. The sampling plans identified the number of surveys to be completed on each route by direction and time of day confirming an adequate number of surveys by boarding and alighting stop group pair. Surveying was conducted in the Spring of 2024. The Federal Transit Administration (FTA) best practices include conducting both an on/off survey and a full OD survey. It is typically recommended that about 10% of boardings be surveyed for the OD survey and about 20% of average weekday boardings for routes with over 2,500 average weekday riders for the on-to-off survey. The sampling plans were carefully designed to align with these industry standards.

OD

Weekday Sampling

Weekday surveying occurred during all days of the week except Fridays and focused on trips between 5:30 a.m. and 9:00 p.m. (FrontRunner), 6:00 a.m. and 9:00 p.m. (bus and TRAX), and 6:30 a.m. and 9:00 p.m. (S-Line). Specifically, the sampling plans and all survey efforts were constructed around the following four UTA-defined time periods:

- AM peak
    - FrontRunner: AM Peak (5:30 a.m. to 9:30 a.m.)
    - Bus and TRAX: AM Peak (6:00 a.m. to 9:30 a.m.)
    - S-Line Streetcar: AM Peak (6:30 a.m. to 9:30 a.m.)
- Midday (all): 9:31 a.m. to 3:30 p.m.
- PM Peak (all): 3:31 to 6:30 p.m.
- Evening (all): 6:31 to 9:00 p.m.

RSG and ETC Institute devised a weekday sampling plan, detailed in Table 1, to ensure the OD survey reached approximately 11,000 passengers across all bus and rail services. This plan utilized a 9% sampling rate at the route level, with additional samples collected to meet the system-wide weekday target of 11,000 completions. The On-Demand sample size calculations were not based on ridership, but were based on a total deemed appropriate by UTA in collaboration with RSG and ETC.

TABLE 1: WEEKDAY RIDERSHIP SUMMARY AND 2024 OD TARGETS

SERVICE TYPE	RIDERSHIP (AUGUST 2023)	% SAMPLE	OD SURVEY TARGETS
Bus	63,177	9%	5,685
TRAX	36,703	9%	3,303
FrontRunner	15,118	9%	1,361
S-Line	1,273	9%	115
On Demand	-	-	74
Total	**116,271**	**-**	**10,538**

Weekend Sampling

Weekend sampling goals targeted the collection of 1,700 surveys across all weekend services. A sampling rate of 1.5% was applied to weekend routes, with additional samples gathered to ensure the 1,700-survey goal was achieved. Table 2 presents the average daily ridership for Saturday along with the OD survey targets. A survey target of 1,141 was set for Saturday.

TABLE 2: SATURDAY RIDERSHIP SUMMARY AND 2024 OD TARGETS

SERVICE TYPE	RIDERSHIP (AUGUST 2023)	% SAMPLE	OD SURVEY TARGETS
Bus	35,984	1.5%	540
TRAX	30,851	1.5%	463
FrontRunner	8,229	1.5%	123
S-Line	1,011	1.5%	15
Total	***76,075***	**-**	***1,141***

Table 3 displays the average daily ridership for Sunday along with the corresponding OD survey targets. A target of 456 surveys was set for Sunday, excluding FrontRunner, as it does not operate on Sundays.

TABLE 3: SUNDAY RIDERSHIP SUMMARY AND 2024 OD TARGETS

SERVICE TYPE	RIDERSHIP (AUGUST 2023)	% SAMPLE	OD SURVEY TARGETS
Bus	15,772	1.5%	237
TRAX	14,093	1.5%	211
S-Line	519	1.5%	8
Total	***30,384***	**-**	***456***

On-to-Off

To ensure that the distribution of completed surveys mirrored the actual distribution of UTA passengers who use the system; the project team established proportional sampling goals for each UTA route/line for the On-to-Off counts.

The On-to-Off sample plan ensured the completion of On-to-Off counts for 14,662 of the selected routes passengers, including 10,570 from rail services and 4,093 from bus routes (Table 4). The On-to-Off counts were conducted to obtain completed surveys from a minimum of 20% of the average weekday ridership on each route with a minimum average weekday ridership of 2,800. On-to-Off collection took place on a total of five bus routes, all three TRAX lines, and the FrontRunner.

TABLE 4: RIDERSHIP SUMMARY AND 2024 ON-TO-OFF TARGETS

SERVICE TYPE	RIDERSHIP (AUGUST 2023)	% SAMPLE	ON-TO-OFF SURVEYS
Bus*	20,464	20%	4,093
TRAX and FrontRunner	52,848	20%	10,570
Total	**73,311**	**-**	**14,662**

**Note: Bus ridership includes 5 routes with more than 2,800 riders (35, 200, 217, 603X, and 830X).*

3.0 QUESTIONNAIRE DEVELOPMENT

The 2019 questionnaire formed the basis for the 2024 questionnaire, but updates were made where appropriate. The complete questionnaire can be seen in Appendix A: Questionnaire. The OD survey was administered by an interviewer with a tablet computer. The study team designed the OD survey as a tablet-administered personal interview, leveraging tablets integrated with GIS software to enable precise real-time geocoding of survey data. Table 5 outlines the data collected for the OD survey.

TABLE 5: 2024 OD SURVEY QUESTIONS

TRIP BEHAVIOR	DEMOGRAPHICS
Route surveyed on	Tourist or local resident
Direction of travel	Home address (at minimum ZIP Code)
Time of trip	Gender
Origin location and type	Age
Boarding location	Race and/or ethnicity
Alighting location	Household income
Destination location and type	Employment status
Access and egress modes	Student status
Transfer information	Household size
Reverse trip	Number of employed in household
Method of fare payment	Number of vehicles in household
Alternative to using UTA	Plan to purchase a vehicle
Car availability for trip	Driver's license status
Frequency of UTA use	Debit/credit card availability
	Smart phone availability
	Disability status
	Language spoken at home
	English ability

4.0 SURVEY ADMINISTRATION

4.1 ON-TO-OFF ADMINISTRATION

ETC Institute's DFPathway® service replaced traditional staff for On-to-Off counts with small cameras temporarily installed on selected buses and trains to record continuous video of passengers boarding and alighting. To protect privacy, the cameras captured only below the knee, taking high-resolution images of passengers' from the knee down tagged with location, time, and movement direction. This eliminated the need for ride checkers on every vehicle.

The devices provided a stable and accurate GPS record with a refresh rate of one second with a recording time up to 16 hours. The recording devices were placed in 3D printed shells and placed at each bus door positioned to capture passengers' images when they boarded and alighted.

On-to-Off collection staff reported to UTA Service Unit bus garages between the hours of 12am to 4am. The collection staff would then:

- Check in with dispatch and provide block numbers.
- Receive individual bus numbers for each block by dispatch.
- In order of bus pull-out time (earliest to latest), install the devices onboard the vehicles.
- Install devices for each door on the bus.
- Leave a UTA letter in the operator's seat to notify them that their vehicle was selected for the study and has devices installed at each door.
- Monitor video capture throughout the day to ensure no devices have turned off or have been removed.
- Return to the depot when buses return to uninstall the devices.
- Upload the device data to ETC's secure system.
- Delete data from the devices and charge for the following day.

The rail On-to-Off was collected using a two-question interview asking the rider at which station the rider boarded and would alight. The rail On-to-Off program included all stops by TRAX line and the FrontRunner.

4.2 OD SURVEY ADMINISTRATION

To conduct the OD survey, staff underwent comprehensive training and followed standardized procedures, with ETC providing continuous monitoring to ensure quality and consistency throughout the data collection process.

Staffing and Remediation

To support the OD data collection phase, ETC Institute worked with staffing firms Stat Team Staffing and ANIK International to recruit and train surveyors and interviewers. ETC maintained a survey team of 15 to 30 individuals to ensure consistent daily coverage. When staffing levels fell below 20, additional hiring and training sessions were promptly conducted to maintain sufficient capacity.

Field operations were managed from individual platforms, which provided significant flexibility. Most survey starting locations were strategically located near the light rail system, offering survey staff convenient access to their assignments while reducing deadhead travel times compared to deploying from bus garages.

Throughout data collection, field supervisors actively monitored surveyor performance, reviewed the quality of collected data, and gathered passenger feedback to evaluate individual interviewers. When needed, daily coaching sessions were conducted to provide surveyors with constructive feedback and targeted remediation. In cases of persistent poor performance or issues such as no-call/no-show absences, ETC documented the concerns and removed the surveyor from the project. This process ensured a well-trained team and reliable data collection throughout the study.

Training

ETC conducted an initial training session prior to data collection. This training was held on February 27, 2024, and focused on OD data collection. Additional training sessions were conducted throughout the data collection process on an as needed basis with smaller groups of surveyors.

Training sessions emphasized the study’s purpose and objectives, detailed instructions on the survey instruments, and the use of oral scripts to address passengers' questions effectively. Surveyors were also trained on the operation of data collection tools, guidelines for professional behavior when interacting with the public, and essential safety protocols. Staff were explicitly reminded that, while not employees of UTA, they represented the agency during their work on buses. As such, they were expected to conduct themselves professionally and in a manner that reflected positively on UTA.

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

As the survey staff were the key ingredient to the success of the project, ETC provided extensive project specific trainings to ensure the successful completion data collection target goals. These trainings involved learning about project specifics, field procedures and mechanisms to actively engage passengers. Key highlights in the training sessions focused on courtesy, professionalism, person-to-person interactions, and ensuring that passengers that spoke languages other than English were actively represented in the survey.

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

ETC ensured that the training addressed the following details:

- Tips on intercepting/interacting with passengers with disabilities
- Tips on intercepting/interacting with Limited English Proficient (LEP) passengers
- Cultural sensitivity
- Importance of understanding the intent of the questions
- Importance of random selection and properly recording all refusals
- Importance of data confidentiality

• Overview of the transit systems covering all topics in tablet questionnaire

- How to handle passenger comments and complaints
- Instructions on conveying the purpose of the survey to passengers
- Instructions on how to record/pass any unsolicited comments on to supervisors so they could be passed on to appropriate agency staff

At the end of training, interviewers conducted mock interviews using the survey tablets. This allowed ETC staff to gauge each interviewer's comprehension of the survey and instrument and provide feedback as needed. At the conclusion of the training, interviewers were tested on items discussed in training.

Following classroom training, interviewers received an opportunity to conduct interviews under the supervision of experienced supervisors in the field. The supervisors provided feedback on performance throughout the day. Interviewers who needed more help, but showed promise, were asked to spend a second day in the field under supervision. Once an interviewer demonstrated proficiency under supervision, the interviewer could conduct surveys on their own. During this period, the interviewer's productivity and data quality was remotely assessed by ETC's field staff.

Administration Procedure

The survey was designed to obtain information in three major categories: OD travel patterns, usage information, and rider demographics. Once the survey questionnaire was finalized, ETC designed a tablet-based intercept interview survey as the primary survey medium. The survey was created to ensure that all information pertaining to the passengers' one way trip was captured along with personal and household demographics.

The survey was conducted through interviews on board the transit vehicles. The tablet survey methodology utilized the tablet's on-screen mapping features allowing for real-time geocoding of addresses and locations using exact address, intersections, and/or place names. The riders then confirmed the geocoded location on the screen map via an indicator icon. The interviewers used the mapping feature to collect the global positioning system (GPS) coordinates of all survey locations (home address, origin address, destination address, boarding location(s), and alighting location(s). This allowed the interviewer to answer any questions as well as ensure the accuracy of the data collected. The respondent was allowed to select the answers to some demographic questions (e.g., household income, gender) directly on the tablet to allow for more privacy.

Respondents who did not have time to complete the interview during their transit trip were also given the option of providing their phone numbers or e-mail addresses in order to be provided with an online version sent via text or e-mail. For riders who did not speak English and the interviewer did not speak their language (e.g., Spanish), the tablet had instructions in the non-English language. The rider was able to be prompted to provide their name and phone number for further communication. In addition, a Spanish version paper survey was able to be distributed for those who wanted to complete a self-administered version on the vehicle. A total of 1,277 respondents took the survey in Spanish.

Limited English Proficiency (LEP) Procedures

ETC prioritized recruiting bilingual (Spanish/English) staff to accommodate UTA-designated routes with higher Spanish-speaking populations. On these routes, ETC exclusively placed bilingual staff to ensure accessibility and effective data collection. Bilingual staff were also deployed to other routes where needed. If a staff member did not speak Spanish, there were three options to address the language barrier:

1. The interviewer had a paper hard copy Spanish questionnaire and a pen they may provide the passenger to fill out and return.
2. The interviewer could also show the tablet with the translated version of the survey to the passenger, which allowed the passenger to complete it as a self-administered, online survey in Spanish.
3. The interviewer may collect the passenger's name and phone number in order for that passenger to receive a callback to complete the survey in the language they spoke over the phone.

Performance Monitoring

To ensure the collection of high-quality data and adherence to the study team’s standards, interviewers conducting the OD survey were monitored in real time and in person, as described below.

Real-Time Monitoring of Surveyor Performance

The tablet PC program was designed in a manner that allowed ETC Institute’s field supervisors to monitor the performance of individual interviewers in real time. Throughout the day, field supervisors evaluated the performance of each interviewer. This included a review of response rates and the characteristics of the passengers who were interviewed with regard to age, gender, race, and the average length of each interview. These daily reviews 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. Separately, spot checks were conducted on the location and transfer information to make sure the trips being captured were logical.

In-Person Monitoring

As part of the initial training, interviewers were monitored as they conducted interviews with passengers to ensure that surveying protocols were followed. As part of ongoing quality control checks interviewers were periodically monitored during the data collection phase. These checks were primarily conducted with interviewers who were struggling in some capacity.

Most quality checks occurred as the survey is being conducted. The tablet program has built in distance and logic checks including a screen that contains built in algorithms to detect errors. The training and coaching of interviewers ensured the survey questions were properly asked and the QA/QC check utilized.

Field Supervisors are responsible for: training, scheduling, and managing transit data collection efforts. They utilize ETC dashboards to immediately see the data collected in a variety of formats. In addition, supervisors review recorded trip logic throughout the day.

Sampling goals by route/station, direction, and time of day are instantly able to be viewed to support effective management of sampling goals. The dashboard also displays trip and demographic information collected, both overall and by individual interviewer. Individual interviewer data reviews are conducted throughout the day to ensure sampling procedures are being followed.

5.0 DATA PROCESSING

5.1 DATA CLEANING

Completeness of Data

To ensure that accurate and quality data were collected, completed surveys were reviewed by field supervisors upon receipt. Field supervisors then provided feedback and additional training to interviewers. Real-time review had the added benefit of calculating the number of surveys completed by time period. Additionally, it provided overall daily progress, the progress of each route, and the progress of the surveyors. This information was also used in the creation of the weekly progress reports.

Real-Time Geocoding

Because a web-based tablet survey was used to conduct and administer intercept interviews, addresses and intersections collected during field interviews were instantaneously geocoded with nearly 100% accuracy because the tablets were equipped with 4G service and interfaced with Google Maps in real-time. In addition, after addresses and intersections were geocoded, the survey software plotted the locations on a map, which served as a visual aid that interviewers used to confirm accurate information was gathered.

All data was automatically coded and geocoded in real-time with the tablet-based survey. Much of the data was cleaned in real-time as well, with interviewers double-checking whether a respondent's trip made sense while they took the survey. However, additional checking was done after surveys have been collected. Some of the specifics that were performed include the following:

- Checking for valid home, origin, and destination street names, city names, and zip codes;
- 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 transit route/line names and stops/stations were consistently spelled/coded
- Ensuring that transfers to/from other transit routes/lines were possible, with some leeway provided for riders who walk several blocks to reach their next route;

- Ensuring the time of day a survey was completed was reasonable given the published operating schedule for the route;
- Ensuring the origin and destination addresses were not the same;
- Ensuring that the boarding and alighting addresses were not the same;
- Ensuring the boarding and alighting addresses made sense for the route;
- Ensuring that the respondent did not list the same route twice;
- Checking to be sure the access/egress mode was appropriate given the distance of travel from the trip origin/destination to place where the respondent boarded/alighted transit; and
- Reviewing the total distance on transit compared to the total trip distance.

In addition, each trip was visually inspected. The key tasks that were conducted as part of this visual inspection included the following:

- Visually inspecting and examining key variables of survey trips with very short distances;
- Visually inspecting the sensibility of trips with zero transfers or three or more transfers;
- Visually inspecting the sensibility of drive access/egress trips given the distance traveled by car relative to the distance traveled by transit;
- Visually inspecting the sensibility of drive access/egress trips with more than one transfer;
- Visually inspecting sensibility of the origin-to-destination path with respect to the survey route that was used for the trip; and
- Visually inspecting the routes reported being used for the trip.

If a record passed all of the visual checks and verifications listed above, the record was classified as “useable” and tagged for inclusion in the final survey database.

5.2 DATA WEIGHTING/EXPANSION

Weekday

The OD survey data was weighted and expanded using an iterative proportional fit (IPF) process with the On-to-Off data (where available) used as the seed matrix. Survey data was weighted and expanded to match boarding and alighting counts by route, direction, time period, board location and alight location.

Stop-level Automated Passenger Counter (APC) data for the study period was obtained from UTA. For all routes, UTA provided average weekday boarding and alighting counts from the period between December 2023 and April 2024 (excluding holidays).

The following time periods were used:

- AM peak
    - FrontRunner: AM Peak (5:30 a.m. to 9:30 a.m.)
    - Bus and TRAX: AM Peak (6:00 a.m. to 9:30 a.m.)
    - S-Line Streetcar: AM Peak (6:30 a.m. to 9:30 a.m.)
- Midday (all): 9:31 a.m. to 3:30 p.m.
- PM Peak (all): 3:31 to 6:30 p.m.
- Evening (all): 6:31 to 9:00 p.m.

The study team weighted to stop location at the most disaggregate level possible, but aggregation of stops into “stop segments” was necessary to ensure sample sizes were adequate in each cell for the weighting process. Segments were assigned based on a combination of geography and the surveys that were collected from each route, so that there were boardings and alightings in each segment at each time period. Higher ridership routes were divided into multiple segments and lower ridership routes (under 3,000 daily riders) were divided into two segments.

The IPF technique assigns a weight to each joint board and alight pair by route, direction and time of day so that the sum of each dimension matches the targeted marginal totals of boardings and alightings. The process starts by using the On-to-Off flow data as a “seed” boarding and alighting matrix. This matrix is then adjusted so that a) the total number of boardings is equal to the corresponding number of APC boardings and then b) the total number of alightings is equal to the corresponding number of APC alightings. This adjustment is repeated, iteratively, until the matrix converges. This results in a board and alight matrix that has boarding and alighting totals that equal the APC data counts and boarding and alighting pair totals that are as close as possible to the data collected in the on-to-off survey. For routes without an On-to-Off Survey, the same process was used, but the unweighted OD survey counts themselves were used as the seed matrix.

The ridership targets, original sampling goals, unweighted survey counts and average weights for each service type are shown in Table 6.

TABLE 6: WEIGHTING AND AVERAGE WEEKDAY RIDERSHIP (WEEKDAY)

SERVICE TYPE	AVERAGE WEEKDAY RIDERSHIP (SPRING 2024)	SAMPLING GOAL	OD SURVEYS (UNWEIGHTED/ NOT EXPANDED)	% OF TARGET	AVERAGE WEIGHT
Bus	63,177	5,685	6,422	113%	9.55
Light Rail (TRAX and S-Line)	37,976	3,418	3,903	114%	10.36
FrontRunner	15,118	1,361	1,621	119%	7.98
Total	**116,271**	**10,538**	**11,946**	**113%**	**9.60**

Weekend

The study team weighted the weekend data using average weekend boarding and alighting counts from the period between December 2023 and April 2024 (excluding holidays). The weekend OD data was weighted to the most disaggregated level possible, covering direction, time period, and day of week (Saturday or Sunday).

Although some aggregation of time periods and directions was necessary to ensure adequate sample sizes for the weighting process, day of the week was preserved. Table 7 shows the overall number of completes by day of week (Saturday or Sunday) and service type (bus, light rail, or FrontRunner). The ridership targets, original sampling goals, unweighted survey counts and average weights for each service type are shown in Table 8.

TABLE 7: OD SURVEYS BY DAY OF WEEK AND SERVICE TYPE

SERVICE TYPE	SATURDAY OD SURVEYS (UNWEIGHTED/ NOT EXPANDED)	SUNDAY OD SURVEYS (UNWEIGHTED/ NOT EXPANDED)	TOTAL OD SURVEYS (UNWEIGHTED/ NOT EXPANDED)
Bus	666	259	925
Light Rail (TRAX and S-Line)	493	208	701
FrontRunner	149	0	149
Total	**1,308**	**467**	**1,775**

TABLE 8: WEIGHTING AND AVERAGE DAILY RIDERSHIP (WEEKEND)

SERVICE TYPE	AVERAGE DAILY RIDERSHIP (SPRING 2024)	SAMPLING GOAL	OD SURVEYS (UNWEIGHTED/ NOT EXPANDED)	% OF TARGET	AVERAGE WEIGHT (SATURDAY)	AVERAGE WEIGHT (SUNDAY)
Bus	51,755	766	925	121%	46.00	50.87
Light Rail (TRAX and S-Line)	46,474	697	701	101%	59.50	74.61
FrontRunner	8,229	123	149	121%	45.68	-
Total	**106,459**	**1,597**	**1,775**	**111%**	**39.80**	**61.45**

On Demand

The study team weighted the On Demand data using average weekend boarding counts from the period between February and April 2024 (excluding holidays).

All records were weighted based on the average weekday ridership for each Innovative Mobility Zone (IMZ) in which On Demand modes operate, surveying at the most disaggregated level possible. Altogether, there were four distinct weighting groups to represent the four distinct IMZs. The weight corresponding to each four distinct IMZs is shown in Table 9.

TABLE 9: WEIGHTING AND TOTAL RIDERSHIP (ON DEMAND)

INNOVATIVE MOBILITY ZONE (IMZ)	AVERAGE WEEKDAY RIDERSHIP	SURVEYS (UNWEIGHTED/ NOT EXPANDED)	WEIGHT
South Davis	229	20	11.4
Route SLC Westside	487	13	37.5
South Salt Lake County	966	31	31.2
Tooele	208	10	20.8
Total	**1,889**	**74**	**-**

Linked Trip Weight

The weights calculated in the IPF process are unlinked weights, meaning that they represent all boardings on UTA transit vehicles over an average weekday. A linked trip weight was calculated from the unlinked weight for all UTA routes in the system and represents the number of overall trips within the system on an average weekday. The linked weight accounts for transfers being

made on a single trip. A respondent making no transfers to another route would receive a linked trip weight equal to 1 time their unlinked weight, while a respondent who transferred to one other sampled route would have a weight of half their unlinked weight, and so on.

Analyses conducted using the linked trip weight represent individual passengers among the sampled routes and accounts for transfer activity between the routes. This weight should be applied when analyzing markets so that riders making transfers are not counted multiple times; unlinked weights should be applied when analyzing a single route.

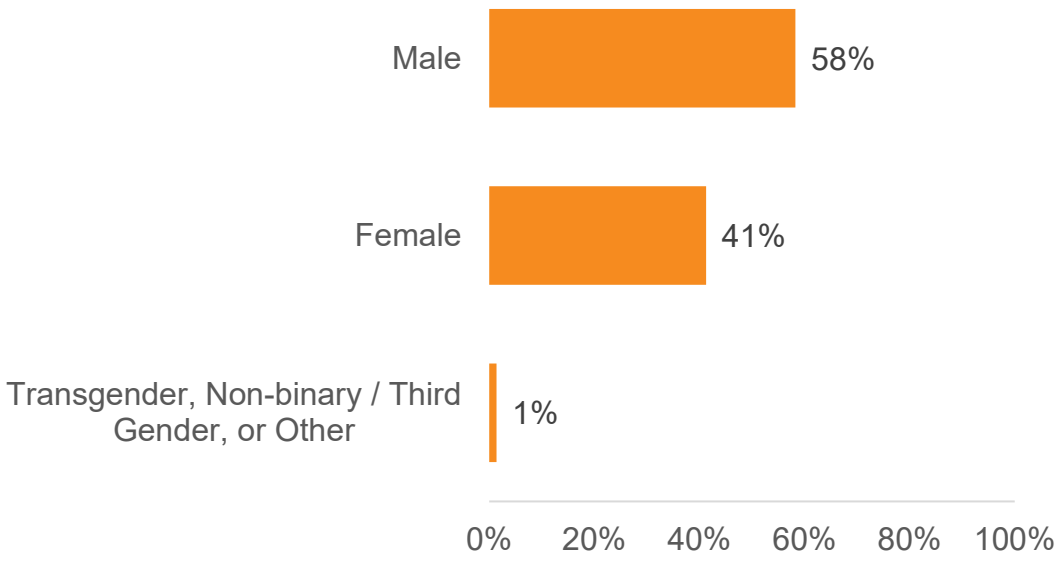
6.0 RIDER PROFILE

The demographic results presented below are weighted with the linked trip weight, since this accurately represents the entire UTA ridership population. This section also shows analysis of transit reliant ridership, that is, whether someone could have taken a car for their trip.

6.1 DEMOGRAPHICS

As shown in Figure 1 The majority of UTA ridership (58%) selected Male and 41% of UTA ridership selected Female.

FIGURE 1: GENDER

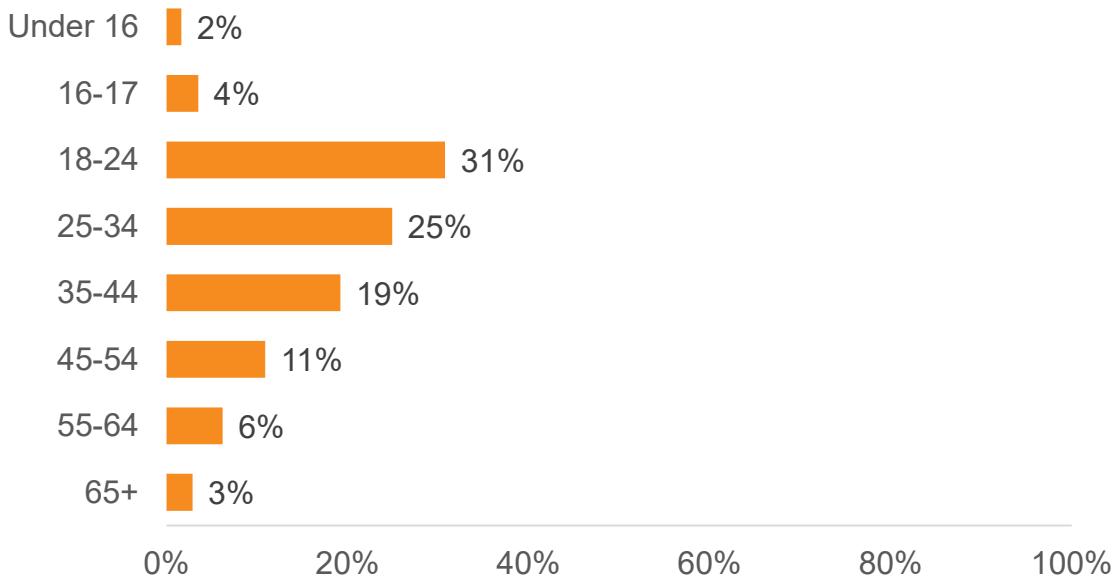


n = 12,016

Note: Respondents could select multiple responses and therefore the totals do not add to 100%.

A majority of riders, 62%, were younger than 35 years old (Figure 2).

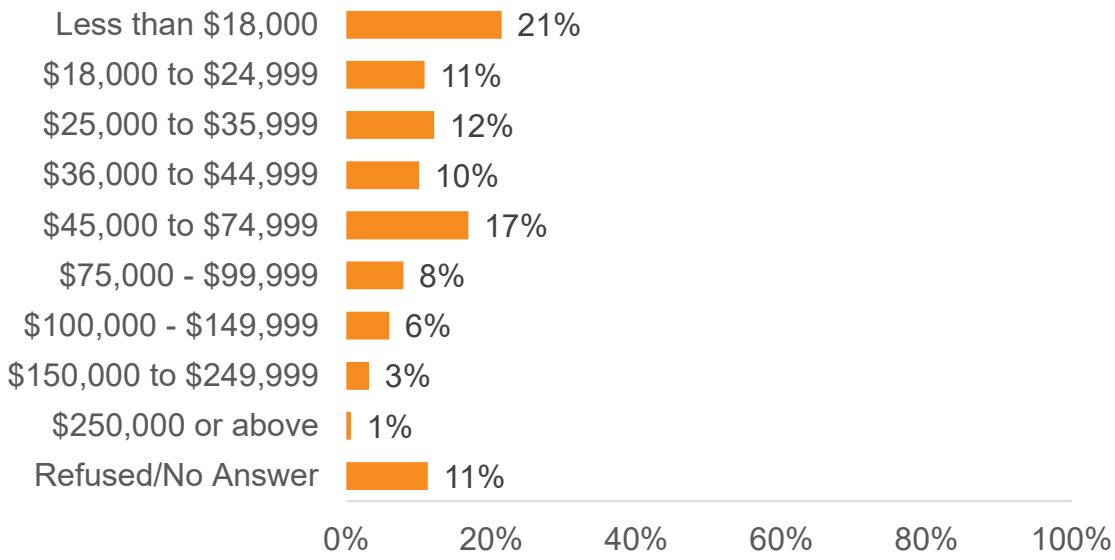
FIGURE 2: AGE



n = 12,016

As shown in Figure 3, more than half, 54%, reported annual household incomes under $45,000.

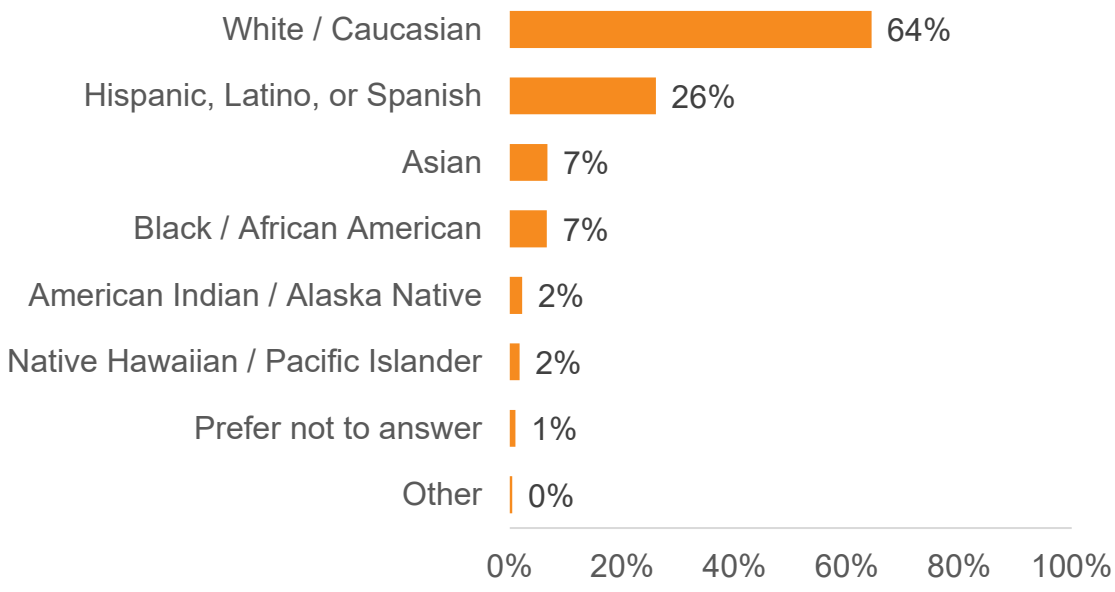
FIGURE 3: ANNUAL HOUSEHOLD INCOME



n = 12,016

As shown in Figure 4, the majority of UTA riders (64%) identify as White/Caucasian, and over a quarter (26%) identify as being of Hispanic, Latino, or Spanish origin.

FIGURE 4: RACE

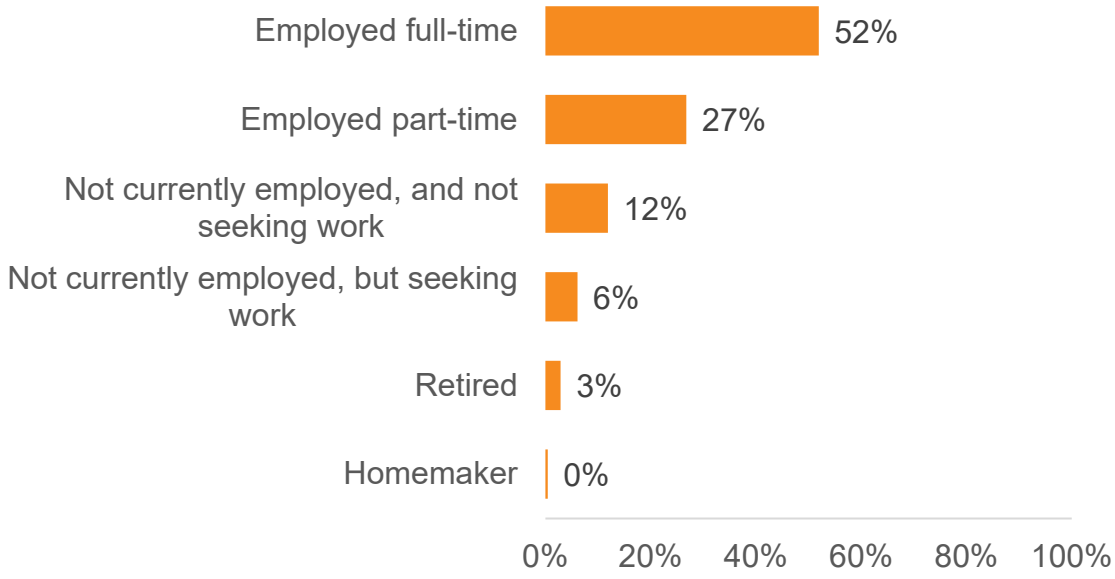


n = 12,016

Note: Respondents could select multiple responses and therefore the totals do not add to 100%.

A little over half of respondents (52%) reported working full-time, while 27% of respondents reported being employed part-time, and 21% of respondents are unemployed or retired (Figure 5).

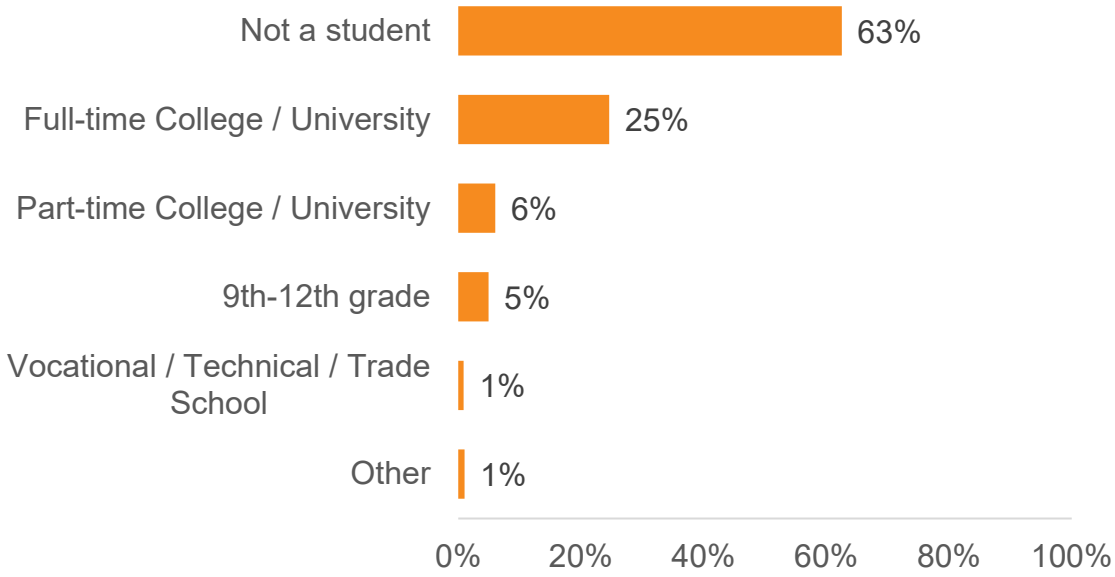
FIGURE 5: EMPLOYMENT STATUS



n = 12,016

Thirty-eight percent of respondents identified as full- or part-time students (Figure 6).

FIGURE 6: STUDENT STATUS



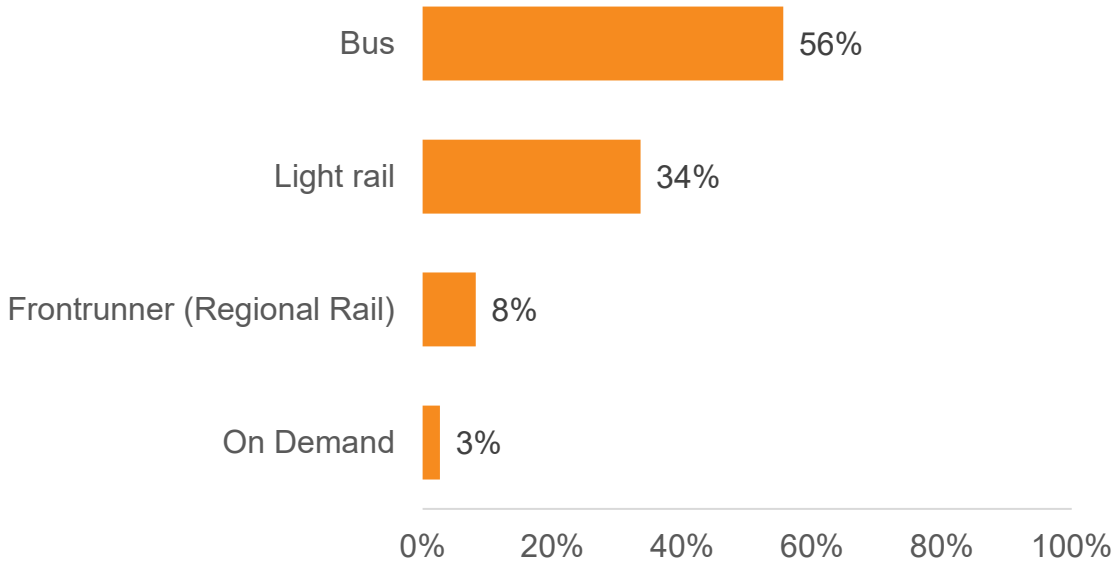
n = 12,016

Note: No respondents selected "K – 8th grade".

6.2 TRANSIT RELIANT RIDERSHIP

Overall, a slight majority of UTA riders are transit-reliant riders (51%), meaning that they do not own a personal vehicle. Among riders who rely on transit, more than half (56%) take the bus, while just over one-third (34%) use light rail (Figure 7).

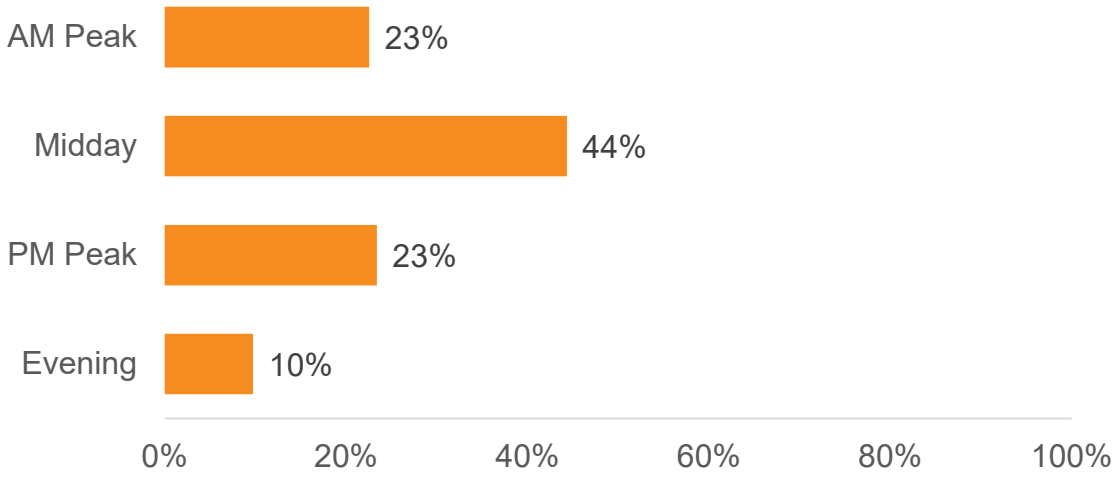
FIGURE 7: TRANSIT-RELIANT RIDERSHIP BY MODE



n = 4,119

Transit-reliant riders are most likely to ride in midday (44%, Figure 8).

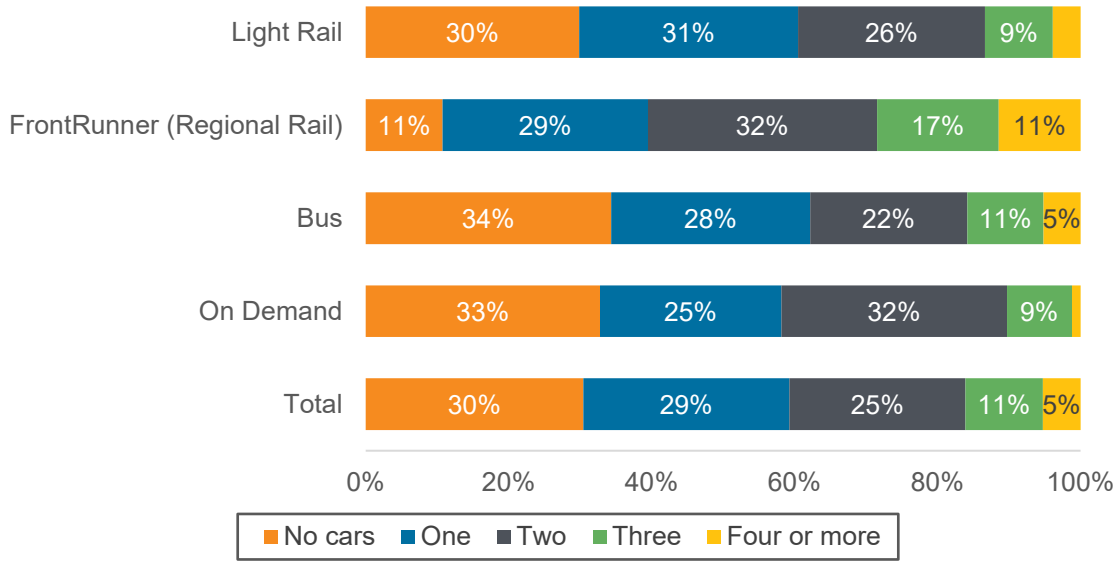
FIGURE 8: TRANSIT-RELIANT RIDERSHIP BY TIME PERIOD OF BOARDING



n = 4,119

Compared to light rail (30%), bus (34%), and On Demand (33%) riders, a smaller percentage of FrontRunner riders (11%) do not already possess a vehicle in the household (Figure 9).

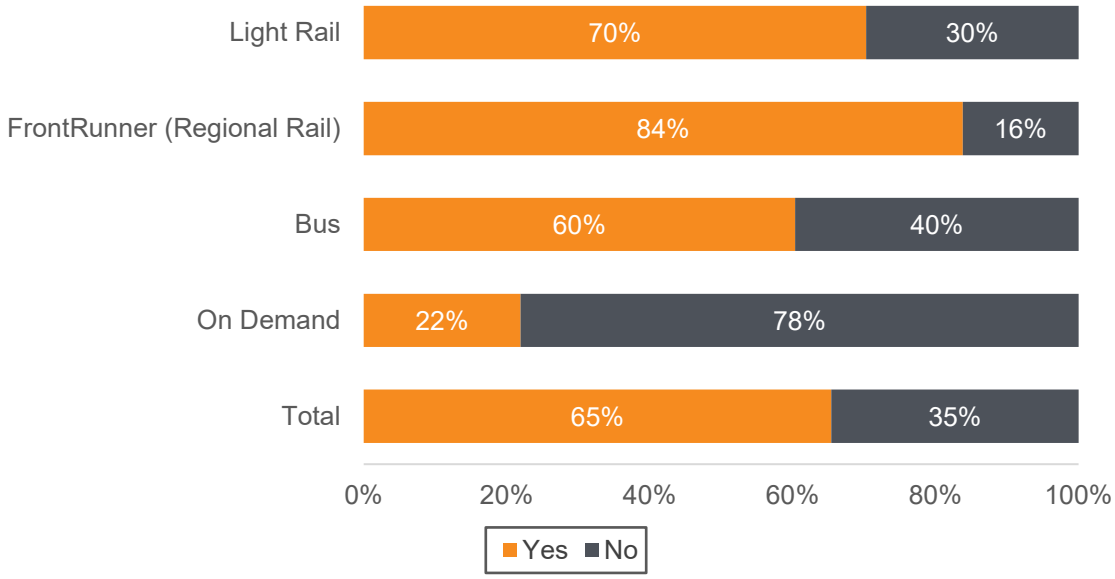
FIGURE 9: NUMBER OF VEHICLES IN HOUSEHOLD BY MODE



n = 12,016; Light Rail, n = 3,903; FrontRunner (Regional Rail), n = 1,621; Bus, n = 6,418; On Demand, n = 74

Similarly, FrontRunner riders (84%) are more likely to report having a driver's license compared to 70% of light rail riders, 60% of bus riders, and 22% of On Demand riders (Figure 10).

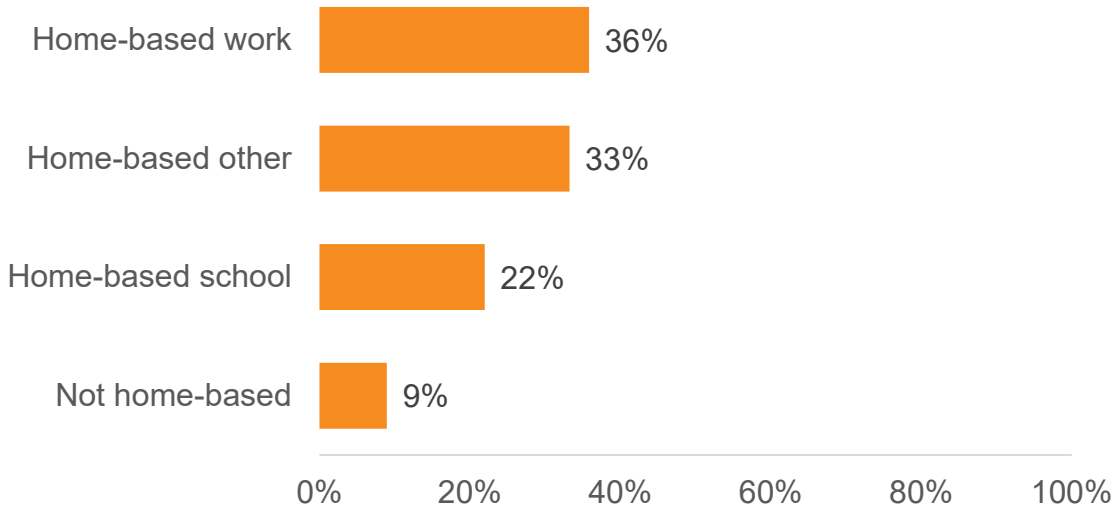
FIGURE 10: DRIVER'S LICENSE BY MODE



n = 12,016; Light Rail, n = 3,903; FrontRunner (Regional Rail), n = 1,621; Bus, n = 6,418; On Demand, n = 74

Among transit-reliant riders, home-based work trips were the most common (36%), with home-based other trips coming in as the second most frequent (33%, Figure 11).

FIGURE 11: TRANSIT-RELIANT RIDERSHIP BY TRIP PURPOSE



n = 4,119

7.0 TRIP PROFILE

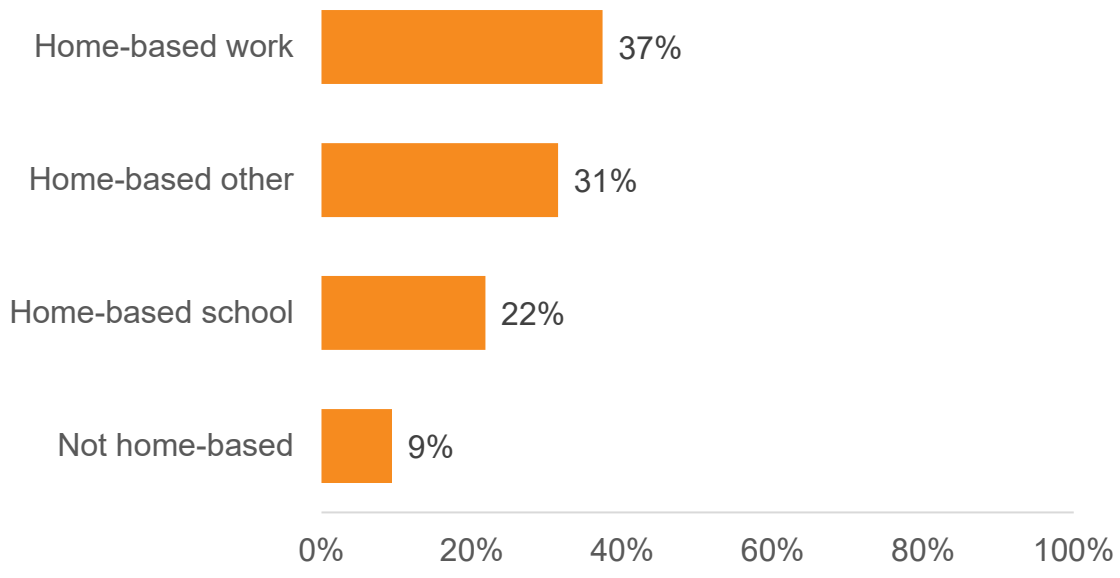
The following results focus on the nature of the trip rather than the characteristics of the riders themselves.

7.1 TRIP PURPOSE

Trip purpose was inferred by origin and destination type. In other words, in addition to the origin and destination addresses, riders were also asked about the type of the origin and destination, such as whether it was home, work, school, etc. From these answers, the trip purpose was inferred. Trip purpose was divided into four categories for the purposes of this report: home-based work trips (i.e., between home and work), home-based school trips (i.e., between home and a college or K-12 school), home-based non-work trips (i.e., between home and a place other than work or school), and trips that are not home-based (i.e., neither the origin nor destination is the respondent's home).

Thirty-seven percent of the sampled trips were home-based work trips, with an additional 31% trips were between home and another location outside of home or school. The vast majority of trips (91%) either begin or end at home (Figure 12).

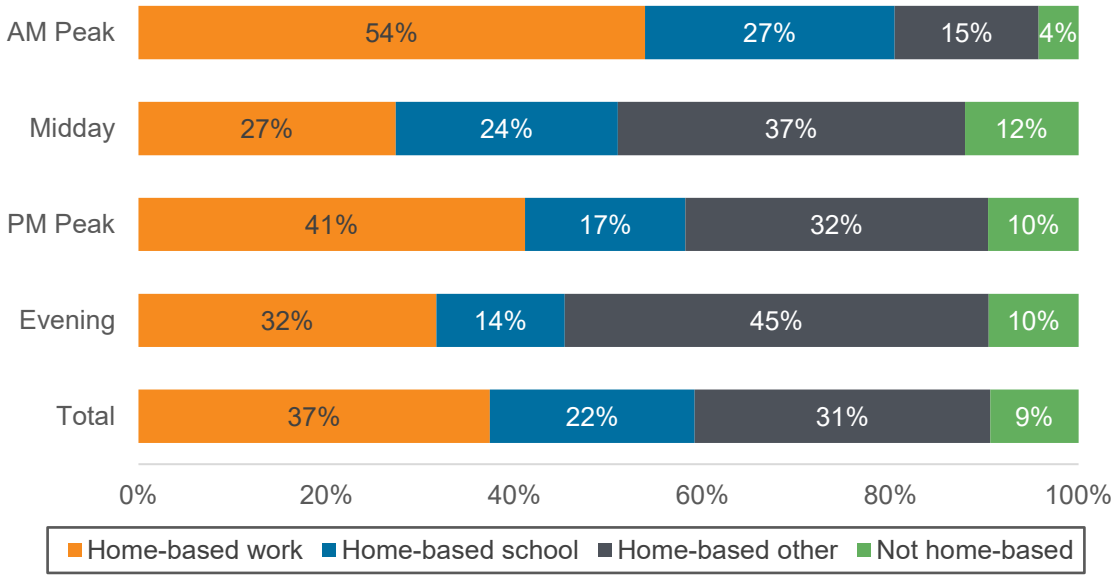
FIGURE 12: TRIP PURPOSE



n = 12,016

The majority of the trips taken in the AM peak travel period are to or from work. AM Peak and Midday time periods have a larger proportion of home-based school trips than the other time periods (Figure 13).

FIGURE 13: TIME PERIOD OF BOARDING BY TRIP PURPOSE

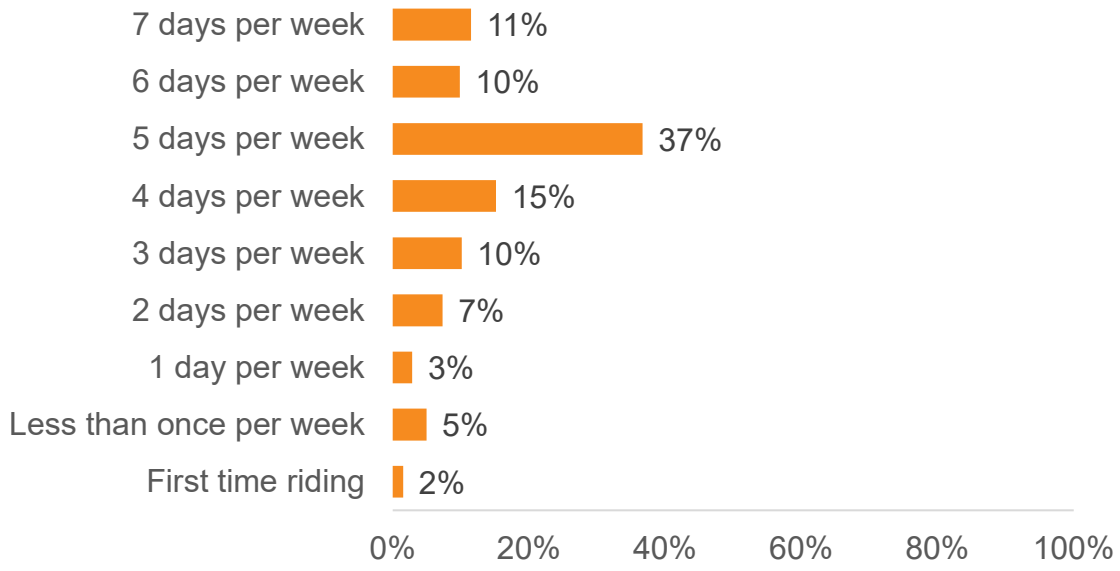


n = 12,016; AM Peak, n = 3029; Midday, n = 4459; PM Peak, n = 2884; Evening, n = 1644

7.2 TRIP FREQUENCY

With regards to trip frequency, a plurality of riders, 58%, use transit five days or more per week, and most riders (93%) use transit at least once per week (Figure 14).

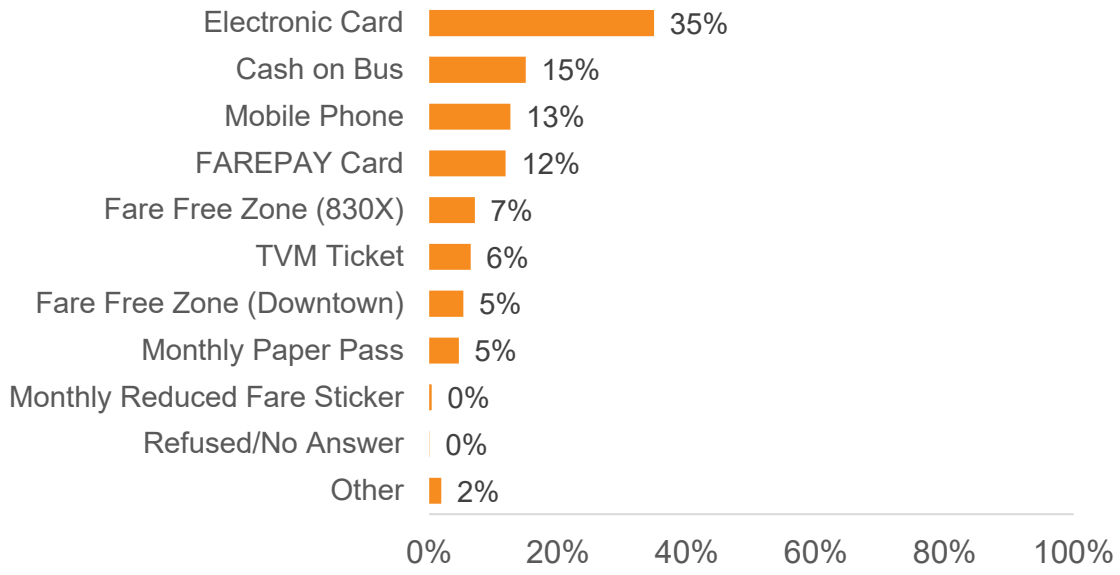
FIGURE 14: TRIP FREQUENCY



n = 12,016

Using an electronic card is the most popular (35%) method to pay fare among riders (Figure 15). Shortly after this survey was conducted free fares on 830X were discontinued.

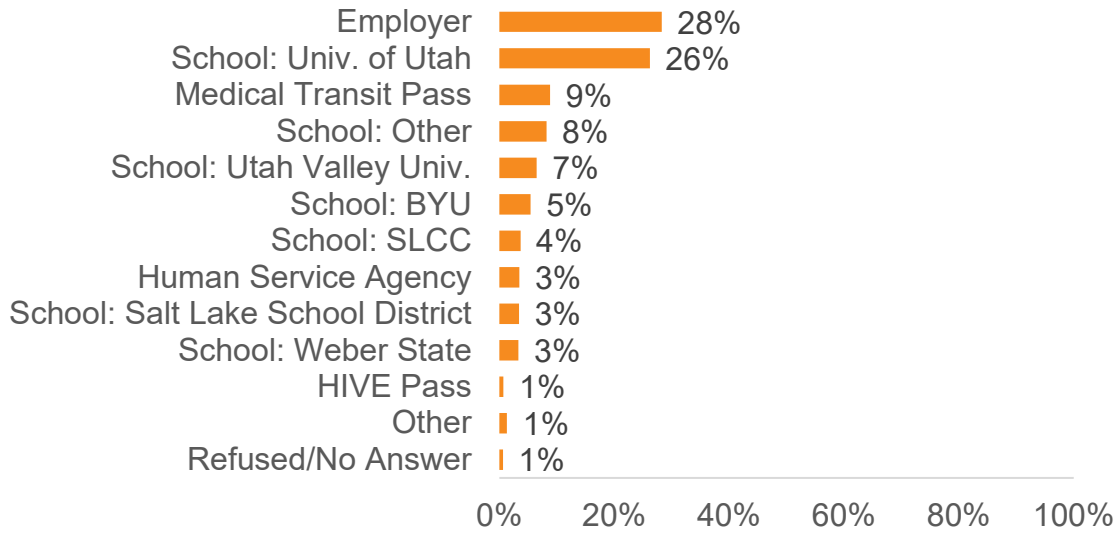
FIGURE 15: FARE PAYMENT



n = 12,016

Figure 16 shows how riders obtained their electronic cards. Riders most commonly obtained their electronic cards through an employer (28%) or as a student at the University of Utah (26%).

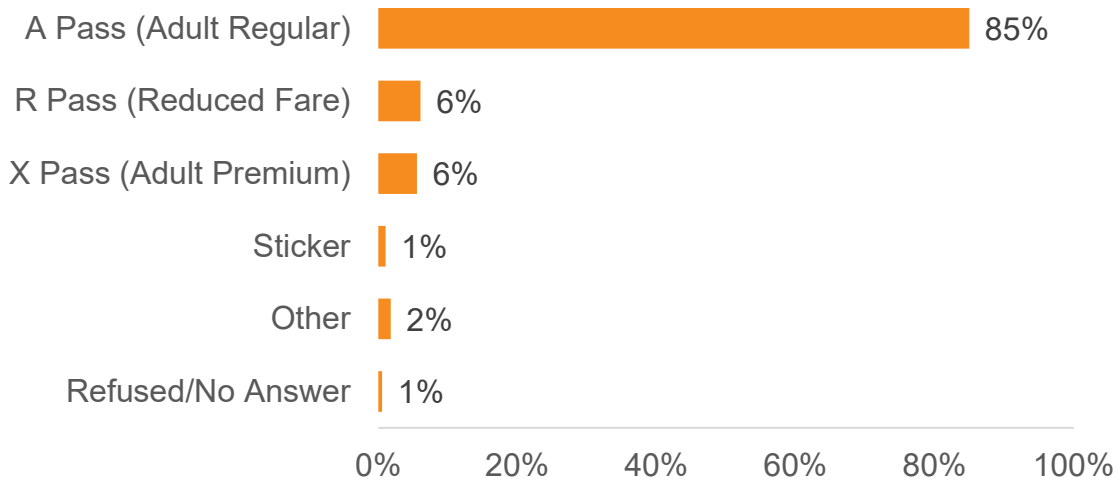
FIGURE 16: SOURCE OF ELECTRONIC CARD



n = 4,346

Among riders who use a monthly pass/sticker, 85% use an A Pass (Figure 17).

FIGURE 17: TYPE OF MONTHLY PASS/STICKER

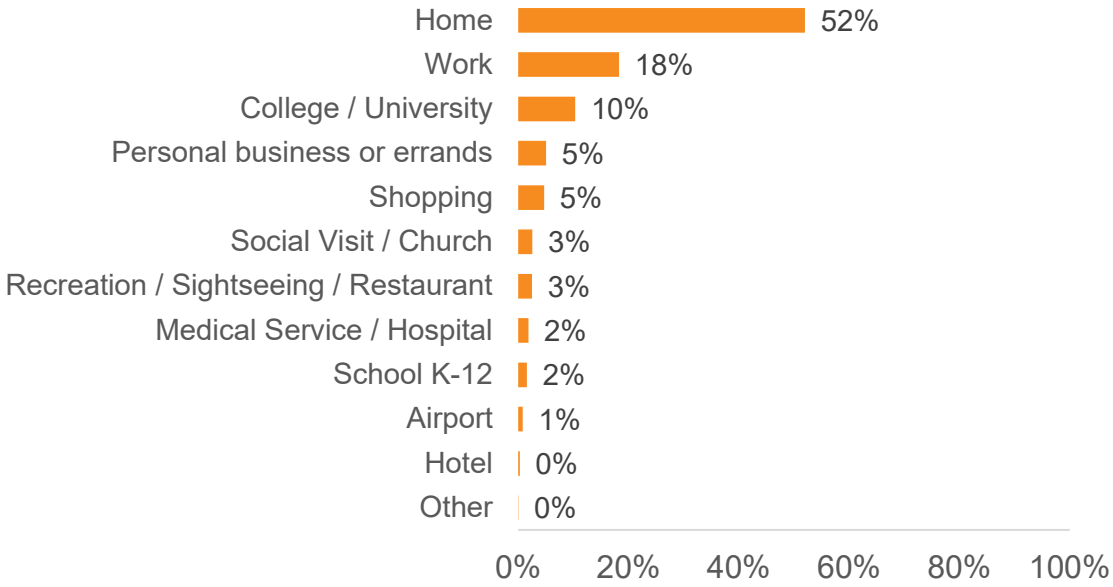


n = 555

7.3 ORIGIN AND DESTINATION TYPES

Regarding trip origins, over half (52%) of respondents are traveling from their home and 18% of respondents are traveling from work (Figure 18).

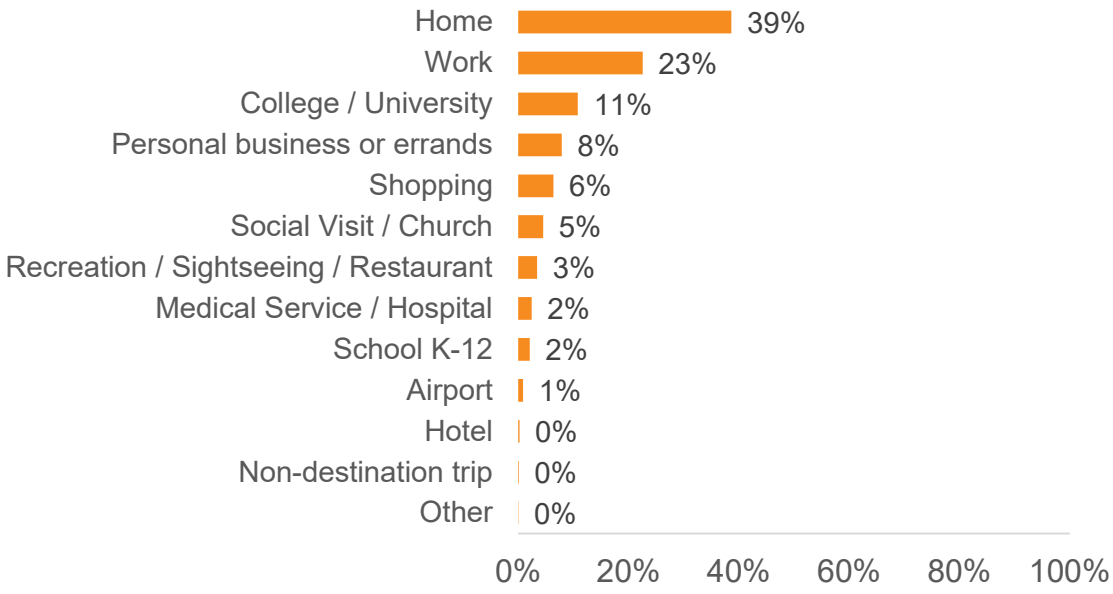
FIGURE 18: ORIGIN TYPE



n = 12,016

The most reported trip destination among respondents was home (39%) while nearly a quarter (23%) of respondents reported work as their destination (Figure 19).

FIGURE 19: DESTINATION TYPE

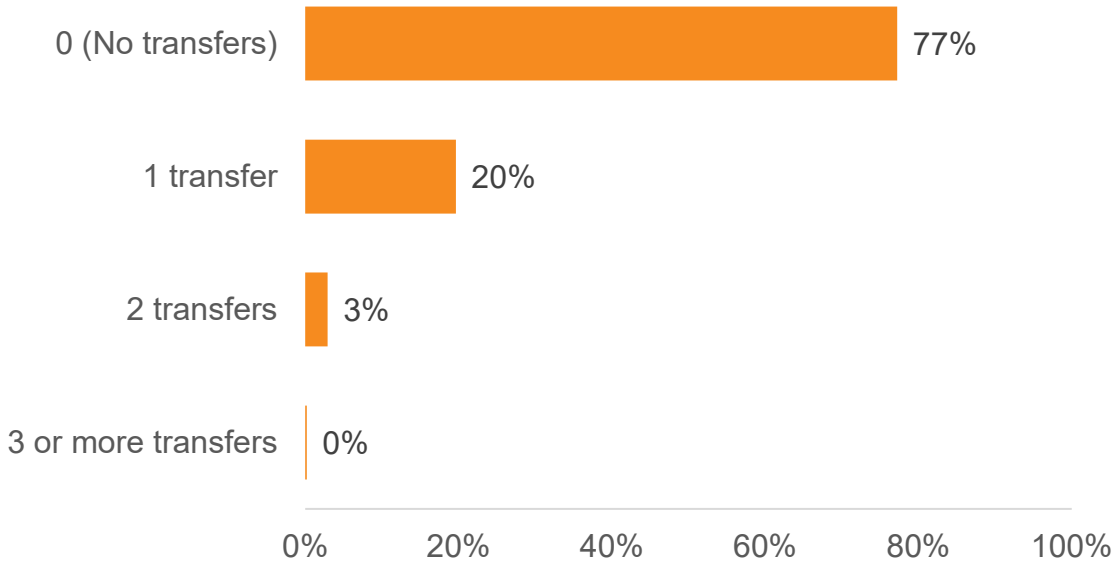


n = 12,016

7.4 TRANSFERS

More than three quarters (77%) of respondents required no transfer and less than 4% of riders required more than one transfer (Figure 20).

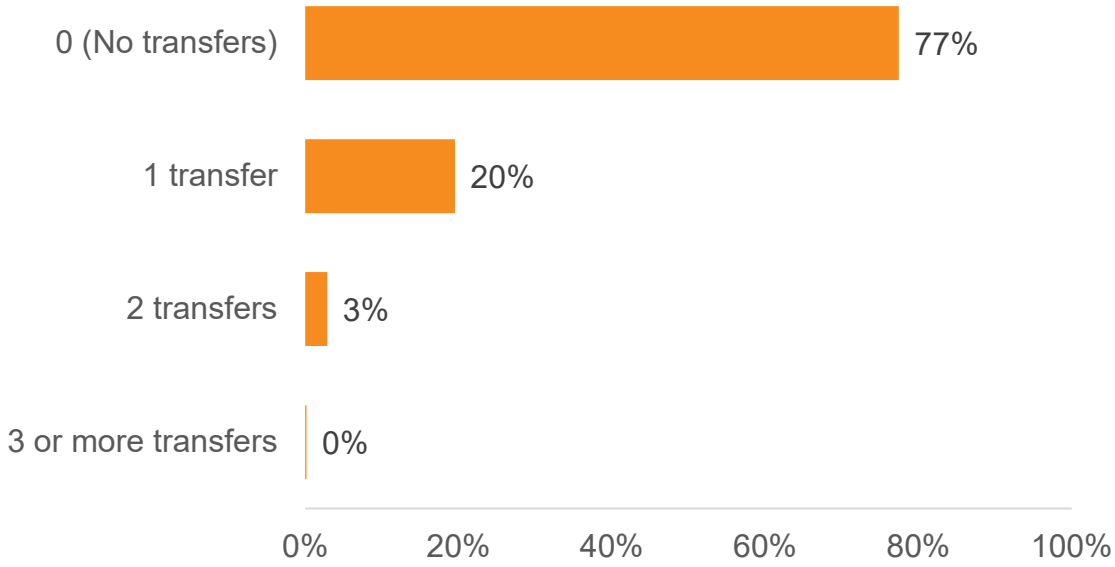
FIGURE 20: NUMBER OF TRANSFERS



n = 12,016

A majority, 77%, of transit reliant riders do not make a transfer during their trip (Figure 21).

FIGURE 21: NUMBER OF TRANSFERS BY TRANSIT RELIANT RIDERS

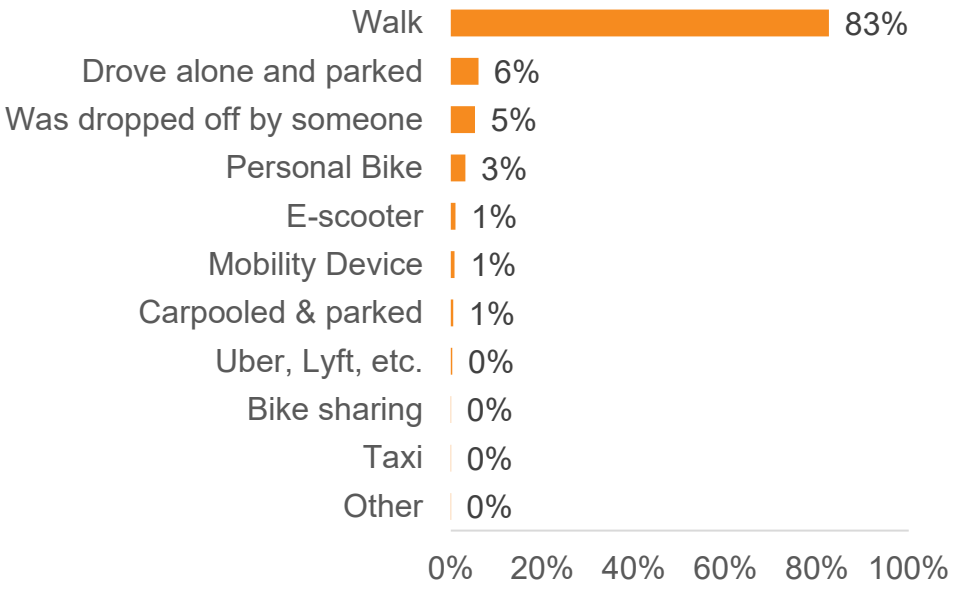


n = 8,517; 0 (No transfers), n = 5,302; 1 transfer, n = 2,648; 2 transfers, n = 524; 3 or more transfers, n = 43

7.5 ACCESS AND EGRESS MODE

Most respondents (83%) access transit by walking to the stop or station (Figure 22).

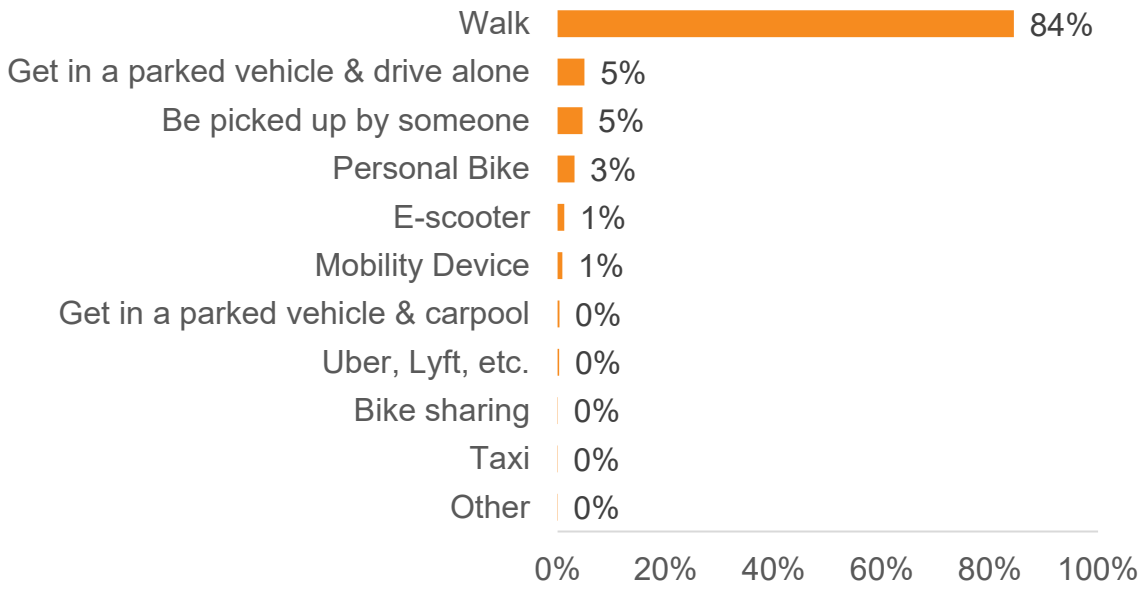
FIGURE 22: ACCESS MODE



n = 12,016

After alighting the bus or train, a slightly higher percentage of respondents (84%) walk to their destination (Figure 23).

FIGURE 23: EGRESS MODE



n = 12,016

The majority of respondents, regardless of trip purpose, access transit by walking. Respondents traveling from their home are most likely to report accessing transit by driving alone and parking at or near the station (Table 10).

TABLE 10: ORIGIN TYPE BY ACCESS MODE

	HOME	WORK	COLLEGE / UNIVERSITY	SHOPPING	PERSONAL BUSINESS / ERRANDS	OTHER
Walk	75%	89%	96%	95%	89%	91%
Drove alone and parked	11%	1%	0%	0%	0%	0%
Dropped off by someone	7%	5%	2%	1%	4%	4%
Personal bike	4%	3%	1%	3%	4%	3%
E-Scooter	1%	1%	1%	1%	0%	0%
Other	3%	1%	0%	1%	2%	1%

n = 12,016

Similar to access mode, the majority of respondents, regardless of trip purpose, reach their final destination by walking. Respondents traveling to their home are similarly the most likely to get in a parked vehicle and drive alone after alighting from a bus or train (Table 11).

TABLE 11: DESTINATION TYPE BY EGRESS MODE

	HOME	WORK	COLLEGE / UNIVERSITY	SHOPPING	PERSONAL BUSINESS / ERRANDS	OTHER
Walk	76%	90%	95%	95%	86%	86%
Got in a parked vehicle & drove alone	12%	1%	0%	0%	0%	0%
Picked up by someone	6%	3%	2%	1%	5%	6%
Personal bike	3%	4%	2%	2%	4%	3%
E-Scooter	1%	1%	1%	1%	2%	2%
Other	1%	1%	0%	2%	3%	3%

n = 12,016

8.0 YEAR-OVER-YEAR COMPARISON

The following section details comparisons to select questions from the 2019 OD survey.

8.1 TRIP PURPOSE

In both 2019 and 2024, the most popular trip purpose for UTA riders was home-based work trips (42% and 37%, respectively). Home-based other trips were more popular in the 2024 OD survey with 31% of UTA riders making these trips versus 24% of UTA riders in 2019 (Figure 24 and Figure 25).

FIGURE 24: 2019 TRIP PURPOSE

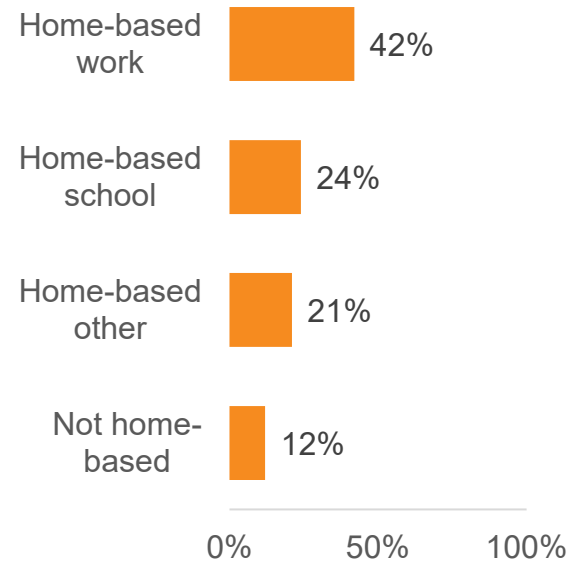
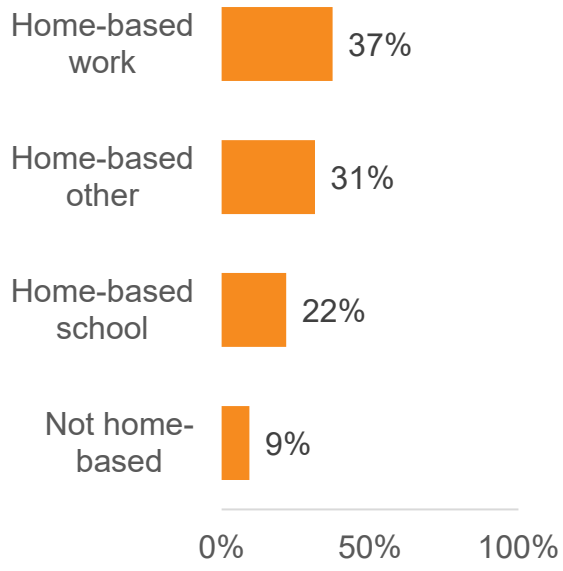


FIGURE 25: 2024 TRIP PURPOSE



8.2 TRANSFERS

In comparison to 2019, UTA riders were more likely to report not having to make a transfer in the 2024 OD Survey (72%, Figure 26 vs. 77%, Figure 27).

FIGURE 26: 2019 TRANSFERS

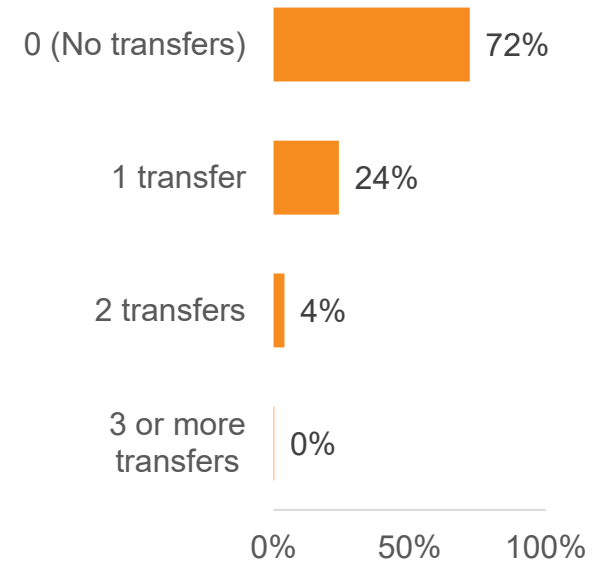
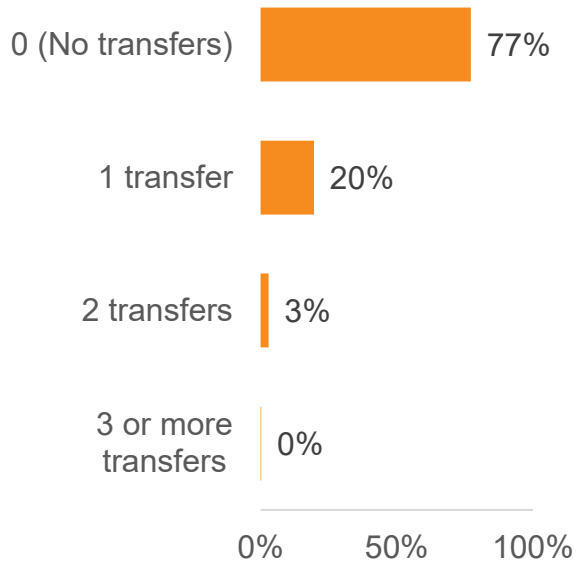


FIGURE 27: 2024 TRANSFERS



9.0 ORIGIN-DESTINATION ANALYSIS

The two maps below illustrate trip production and attraction by STOPS district. Figure 28 shows that trip production is observed at significant rates from districts throughout the UTA service area, with the highest rates observed in the population centers of Salt Lake City, Provo, Orem, and Ogden. Figure 29 shows that trip attractions are more confined to these core population and job centers in the region.

FIGURE 28: TRIP PRODUCTION MAP BY STOPS DISTRICT

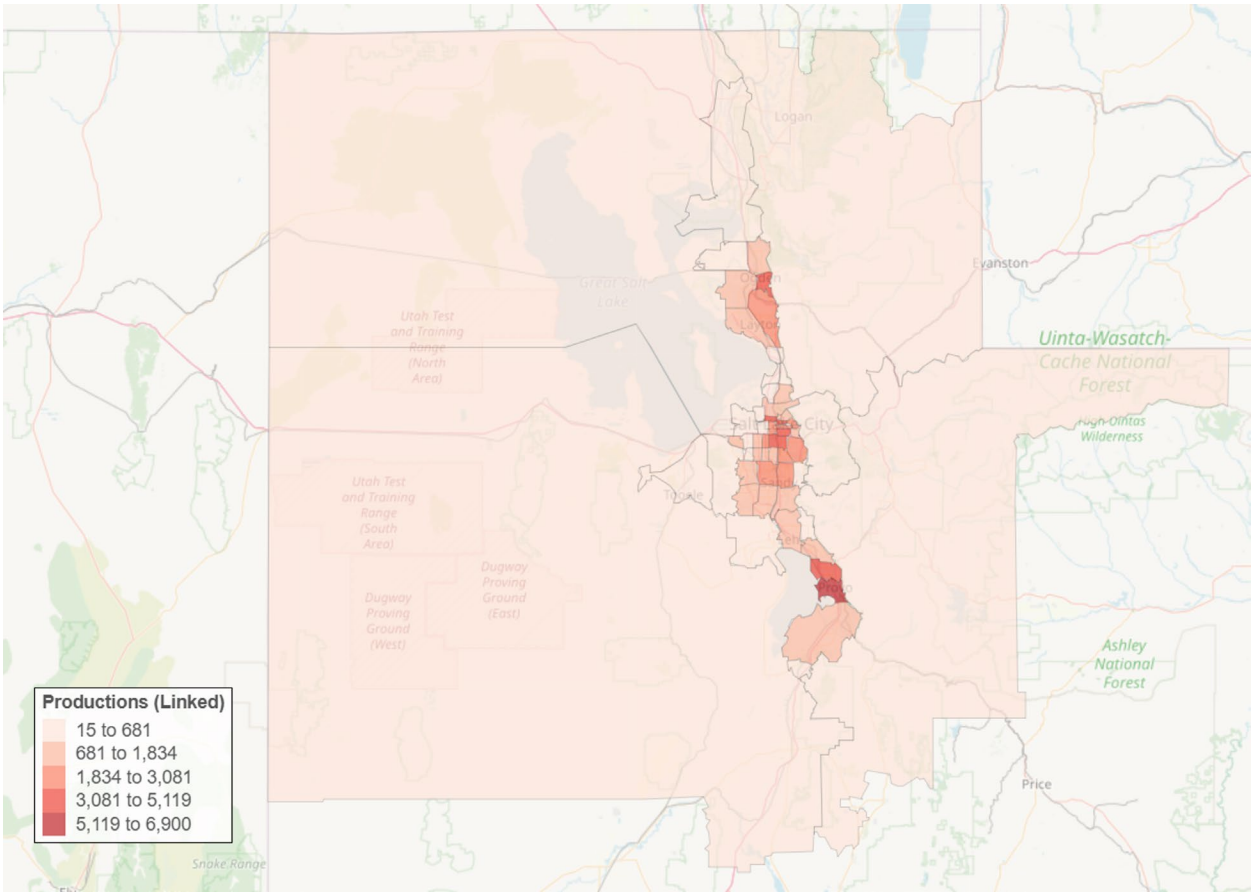
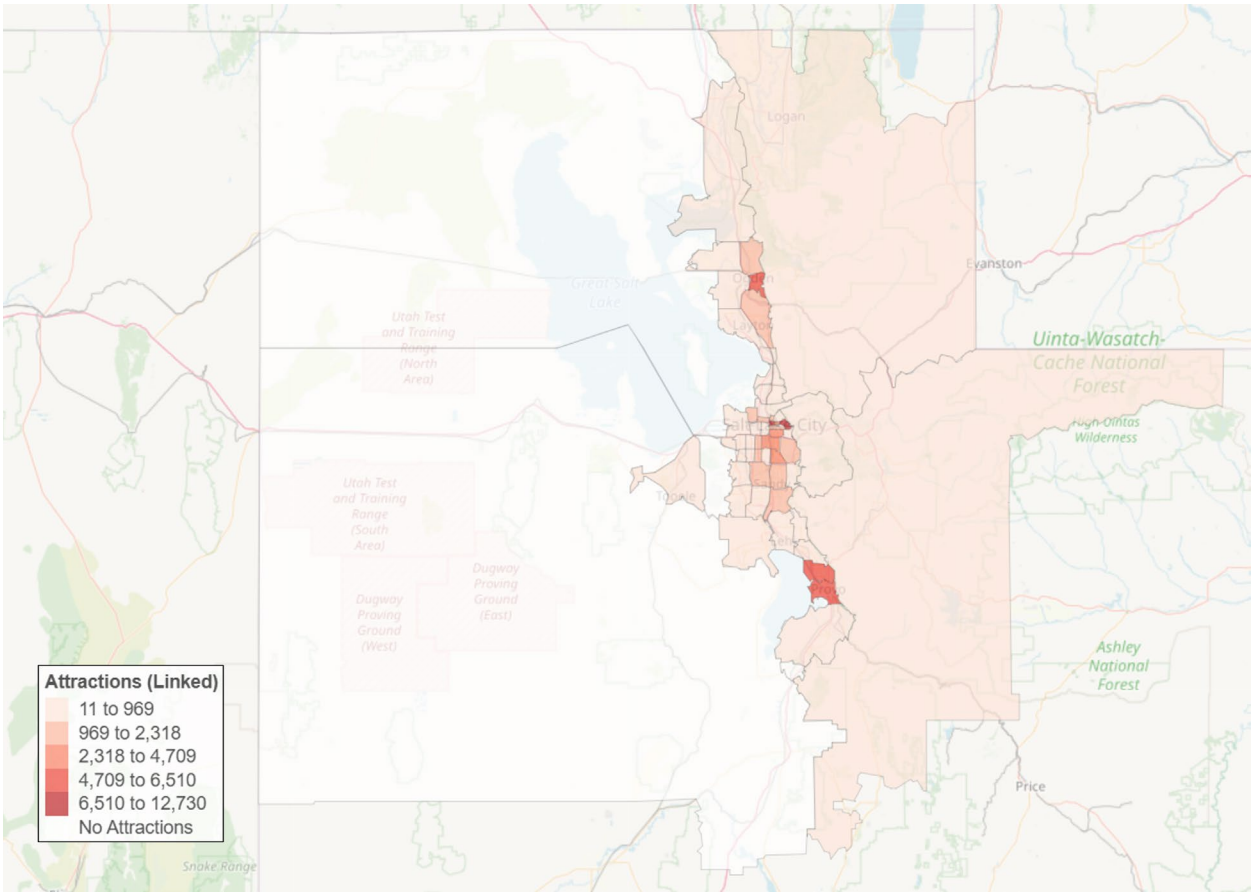


FIGURE 29: TRIP ATTRACTION MAP BY STOPS DISTRICT



The charts and table below detail trip production and attraction by STOPS districts. Figure 30 shows that Provo, South Salt Lake, and Orem are the largest production districts, while Figure 31 shows that the largest attraction districts are Downtown Salt Lake City, University of Utah, and Provo. Figure 32 shows the top ten production-attraction zone pairs, which together account for nearly 20% of all trips. The most popular travel occurs within Ogden and within Provo.

FIGURE 30: TRIP PRODUCTION BY STOPS DISTRICTS

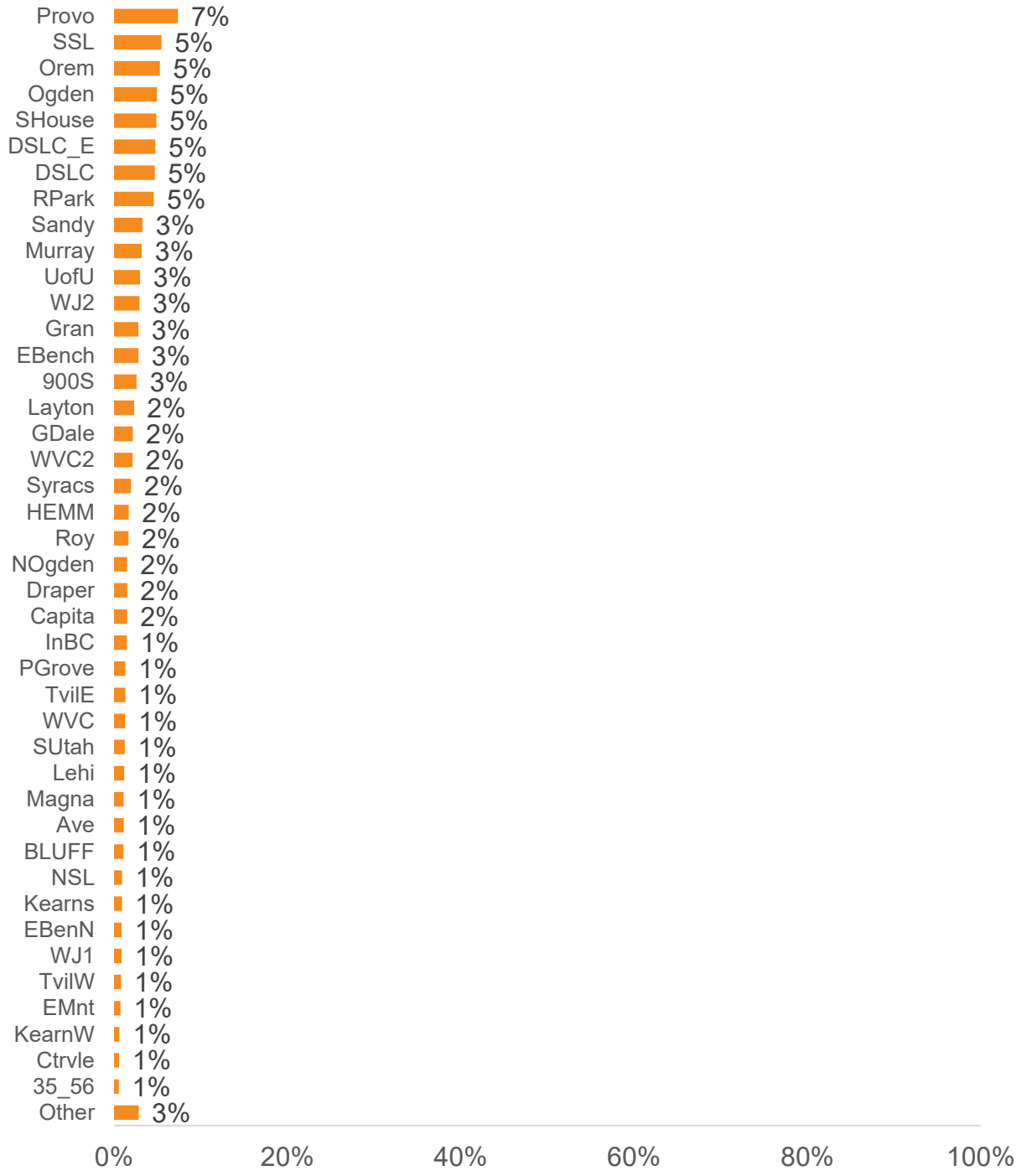


FIGURE 31: TRIP ATTRACTION BY STOPS DISTRICTS

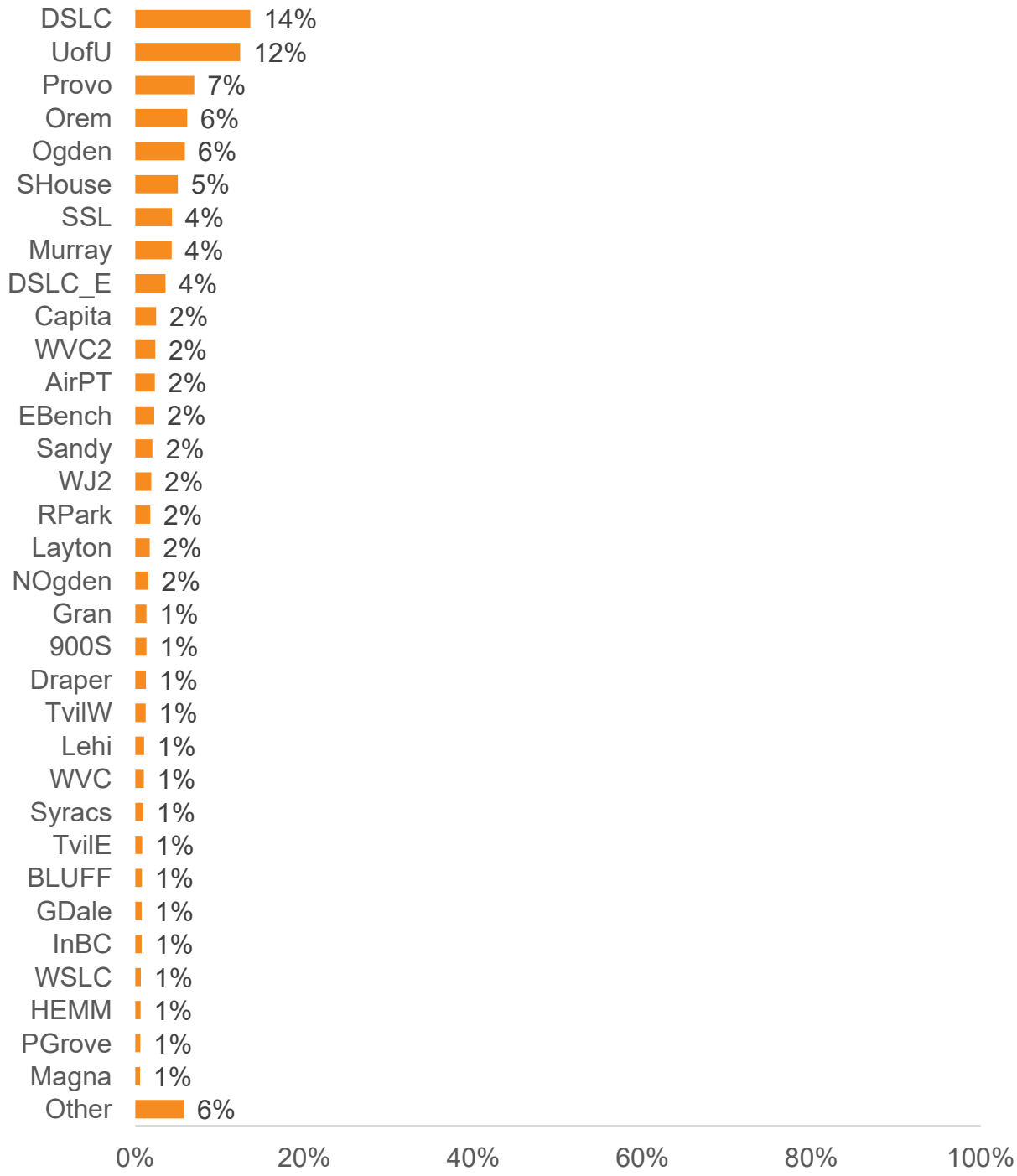
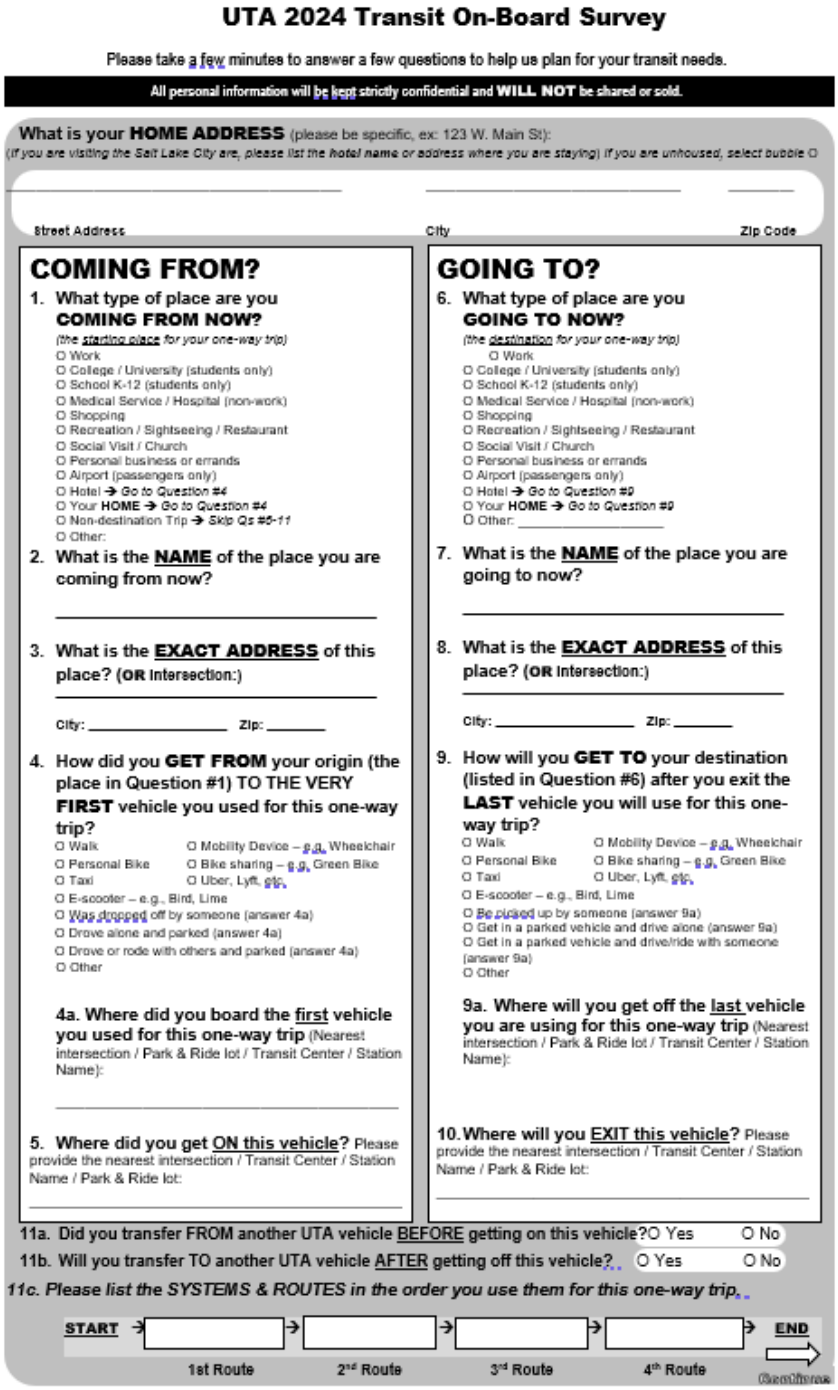


FIGURE 32: LARGEST PRODUCTION AND ATTRACTION STOPS DISTRICTS PAIRS

RANK	PRODUCTION ZONE	ATTRACTION ZONE	% OF ALL TRIPS
1	Provo	Provo	3.4%
2	Ogden	Ogden	2.5%
3	UofU	DSLC_E	2.1%
4	Orem	Provo	2.0%
5	Provo	Orem	1.9%
6	Orem	Orem	1.9%
7	DSLC	RPark	1.6%
8	DSLC	DSLC	1.3%
9	UofU	UofU	1.2%
10	DSLC	SHouse	1.0%

10.0 APPENDIX A: QUESTIONNAIRE



UTA 2024 Transit On-Board Survey

Please take a few minutes to answer a few questions to help us plan for your transit needs.

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 Salt Lake City are, please list the hotel name or address where you are staying) If you are unhoused, select bubble O

Street Address | City | Zip Code

COMING FROM?

1. What type of place are you **COMING FROM NOW?**
(the starting place for your one-way trip)
O Work
O College / University (students only)
O School K-12 (students only)
O Medical Service / Hospital (non-work)
O Shopping
O Recreation / Sightseeing / Restaurant
O Social Visit / Church
O Personal business or errands
O Airport (passengers only)
O Hotel → *Go to Question #4*
O Your **HOME** → *Go to Question #4*
O Non-destination Trip → *Skip Qs #5-11*
O Other:

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

3. What is the **EXACT ADDRESS** of this place? (**OR** Intersection:)

City: _____ Zip: _____

4. How did you **GET FROM** your origin (the place in Question #1) TO THE VERY **FIRST** vehicle you used for this one-way trip?
O Walk
O Mobility Device – e.g. Wheelchair
O Personal Bike
O Bike sharing – e.g. Green Bike
O Taxi
O Uber, Lyft, etc.
O E-scooter – e.g., Bird, Lime
O Was dropped off by someone (answer 4a)
O Drove alone and parked (answer 4a)
O Drove or rode with others and parked (answer 4a)
O Other

4a. Where did you board the first vehicle you used for this one-way trip (Nearest intersection / Park & Ride lot / Transit Center / Station Name):

5. Where did you get ON this vehicle? Please provide the nearest intersection / Transit Center / Station Name / Park & Ride lot:

GOING TO?

6. What type of place are you **GOING TO NOW?**
(the destination for your one-way trip)
O Work
O College / University (students only)
O School K-12 (students only)
O Medical Service / Hospital (non-work)
O Shopping
O Recreation / Sightseeing / Restaurant
O Social Visit / Church
O Personal business or errands
O Airport (passengers only)
O Hotel → *Go to Question #9*
O Your **HOME** → *Go to Question #9*
O Other: _____

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

8. What is the **EXACT ADDRESS** of this place? (**OR** Intersection:)

City: _____ Zip: _____

9. How will you **GET TO** your destination (listed in Question #6) after you exit the **LAST** vehicle you will use for this one-way trip?
O Walk
O Mobility Device – e.g. Wheelchair
O Personal Bike
O Bike sharing – e.g. Green Bike
O Taxi
O Uber, Lyft, etc.
O E-scooter – e.g., Bird, Lime
O Be picked up by someone (answer 9a)
O Get in a parked vehicle and drive alone (answer 9a)
O Get in a parked vehicle and drive/ride with someone (answer 9a)
O Other

9a. Where will you get off the last vehicle you are using for this one-way trip (Nearest intersection / Park & Ride lot / Transit Center / Station Name):

10. Where will you EXIT this vehicle? Please provide the nearest intersection / Transit Center / Station Name / Park & Ride lot:

11a. Did you transfer FROM another UTA vehicle BEFORE getting on this vehicle? O Yes O No

11b. Will you transfer TO another UTA vehicle AFTER getting off this vehicle? O Yes O No

11c. Please list the SYSTEMS & ROUTES in the order you use them for this one-way trip.

START → [ ] → [ ] → [ ] → [ ] → END

1st Route | 2nd Route | 3rd Route | 4th Route

OTHER INFORMATION ABOUT THIS TRIP

12. What time did you BOARD this vehicle? _____ : _____ am / pm (circle one)

13. Will you (or did you) make this same trip in exactly the opposite direction today?
O No O Yes - **At what time did / will you leave for this trip in the opposite direction?** _____:_____ am/pm (circle one)

14. How did you pay your fare today?
O Cash on Bus O Electronic Card O Mobile Phone O Monthly Paper Pass
O FAREPAY Card O Free Fare Zone O TVM Ticket O Monthly Reduced Fare Sticker
O Other_____

14a. Where did you get your Electronic Card?
O School/University O Employer O Human Service Agency
O Medical Transit Pass O Hive O Other_____

14b. What type of monthly pass/sticker?
O A Pass (Adult Regular) O X Pass (Adult Premium) O R Pass (Reduced Fare)
O Sticker

16. How often do you ride UTA?
O 7 days per week O 4 days per week O 1 day per week
O 6 days per week O 3 days per week O Less than once per week
O 5 days per week O 2 days per week O First time riding

17. Did you have another option to make this trip today?
O Yes - I could have driven, carpooled, biked, taxi, Uber, E-scooter, bike share, etc.
O No - Riding UTA or walking was my only option

18. Do you have a working smartphone? O Yes – with a data plan O Yes – limited or no data O No

19. Do you have a credit or debit card? O Yes O No

ABOUT YOU AND YOUR HOUSEHOLD

20. Are you a visitor to the Salt Lake City area? O No O Yes

21. How many working vehicles (cars, trucks, or motorcycles) are available to your household? _____ vehicles

21a. [If Q21 is more than NONE] Could you have used one of these vehicles for this trip? O Yes O No

21b. [If Q21 is NONE] Are you planning to buy a car as soon as you are able? O Yes O No

22. Including YOU, how many people live in your household? _____ people

23. Including YOU, how many people (over age 15) in your household are employed full or part-time? __# people

24. What is your employment status? (check the one response that BEST describes you)
O Employed full-time O Not currently employed, but seeking work O Retired
O Employed part-time O Not currently employed, and not seeking work O Homemaker

25. What is your student status? (check the one response that BEST describes you)
O Not a student O Yes – 9 - 12th grade O Yes – Full Time college / university O Yes, other
O Yes – K - 8th grade O Yes – Part Time college / university Yes – Vocational/technical/trade school

26. Do you have a disability? O Yes O No

26a. [If #26 is Yes] Have you experienced accessibility challenges on UTA due to your disability? O Yes O No
O Prefer not to answer

27. Do you have a valid driver's license? O Yes O No

28. What is your age? O Under 16 O 16-17 O 18-24 O 25-34 O 35-44 O 45-54 O 55-64 O 65+

29. Are you of Hispanic, Latino, or Spanish Origin? O Yes O No

30. What is your race? *(check all that apply)*
O American Indian / Alaska Native O Asian O Black/African American O White / Caucasian
O Prefer not to answer (or Hispanic) O Native Hawaiian / Pacific Islander O Other:

31. What is your gender? *(check all that apply)* O Male O Female O Transgender
O Non-binary / Third Gender O Other

32. Do you speak a language other than English at home? O No O Yes - **Which language?** _____

31a. [If #31 is Yes] How well do you speak English? O Very Well O Well O Less than well O Not at all

33. Which of the following BEST describes your TOTAL ANNUAL HOUSEHOLD INCOME in 2023 before taxes?
O Less than $18,000 O $32,000 - $35,999 O $60,000 - $74,999 O $150,000 - $199,999
O $18,000 - $19,999 O $36,000 - $39,999 O $75,000 - $99,999 O $200,000 - $249,999
O $20,000 - $24,999 O $40,000 - $44,999 O $100,000 - $149,999 O $250,000 or above
O $25,000 - $31,999 O $45,000 - $59,999

Please provide your contact info in the event that we need to contact you to better understand your answers.

Your Name: _____

Phone Number: (_____) _____

Thank you for your help!