Final Report

2024 Regional Transportation Commission of Washoe County Nevada (RTC) On-Board Transit Survey

Prepared for: The Regional Transportation Commission of Washoe County Nevada (RTC)

ETC Institute

4/15/2024

FINAL REPORT

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EXECUTIVE SUMMARY

Background

In the fall of 2023 the Regional Transportation Commission of Washoe County Nevada (RTC), with consultant support from ETC Institute, conducted a system-wide on-board Origin Destination (OD) survey of all RTC fixed routes. The study was conducted in the Reno - Sparks area along with unincorporated areas of Washoe County Nevada. The survey was conducted in order to gather updated travel behavior data from transit users to gain a better understanding of today's transit riders. In addition, the data collected will be used to improve transit forecasts by updating RTC's regional travel demand model.

Survey tasks included developing a sampling plan, designing the survey instrument, data collection, processing, expansion, analyzing, and reporting the results. The 2023 OD data collection was performed from November 20, 2023, through December 15, 2023. The 2024 OD data collection was performed from January 8, 2024, through January 12, 2024. Surveys were not conducted over Thanksgiving and Christmas breaks when schools were out of session.

Survey Design and Administration

The survey design process consisted of RTC and ETC Institute collaborating to design the survey questionnaire and develop a sampling plan that would ensure adequate data collection to perform analysis. The goal was to obtain at least 810 weekday OD surveys which is a 5 percent sample size of RTC's average weekday ridership (ADR). A total of 861 surveys were collected.

Survey Results

ETC Institute created sets of statistics at the system-wide level. These statistics focused on passengers' transit traveler demographics, transit travel patterns, and trip purposes..

Trip Profiles

- The most common origin and destination place type for RTC riders is home with 44% of trips originating at home and 42% of trips ending at home. The second most common rider place type for both origin and destination are work with 19% of riders coming from work and 15% of riders traveling to work.
- Most RTC riders walk to get to their first bus (93% of riders) and walk from their last bus to their destination (95% of riders). Riders do not use personal automobiles for access and egress mode often as personal automobile for access is 3% and egress 1%.
- Over half (55%) of RTC riders take more than one bus to make their trips meaning over half of riders must transfer to another bus to get to their destination.
- Half (50%) of RTC riders pay fare with a day pass and 66% of fares are regular fares.
- Sixty-nine percent of RTC riders use RTC at least five days per week which is an increase since pre covid with only 41% of riders using RTC at least five days per week.

Passenger Profiles

- The majority (98%) of RTC riders are residents of the Reno-Sparks region, 89% of riders are not students, and 56% are employed either full or part time.
- Sixty-three percent of RTC riders do not have a valid drivers' license and 74% do not have an automobile available to their household.
- Over half (52%) of RTC riders are over the age of 45, 65% are White, and 60% are Male.

- Thirty-nine percent of RTC riders live in households that make less than $20,000.00 a year, 37% live in single person households, and 28% live in households in which no one is employed.

1. Introduction

The 2023 Regional Transportation Commission of Washoe County Nevada (RTC) Project involved an Origin and Destination (OD) onboard passenger survey interviewing bus riders and an On-to-Off (O2O) counts to capture riders boarding and alighting location pairs for all RTC routes in the Reno - Sparks area. Overall, the goals were to collect over 3,239 O2O pairs and 810 OD surveys. Ultimately, 6,692 O2O pairs were captured, and 861 OD surveys were completed. The RTC system is illustrated in the following map.

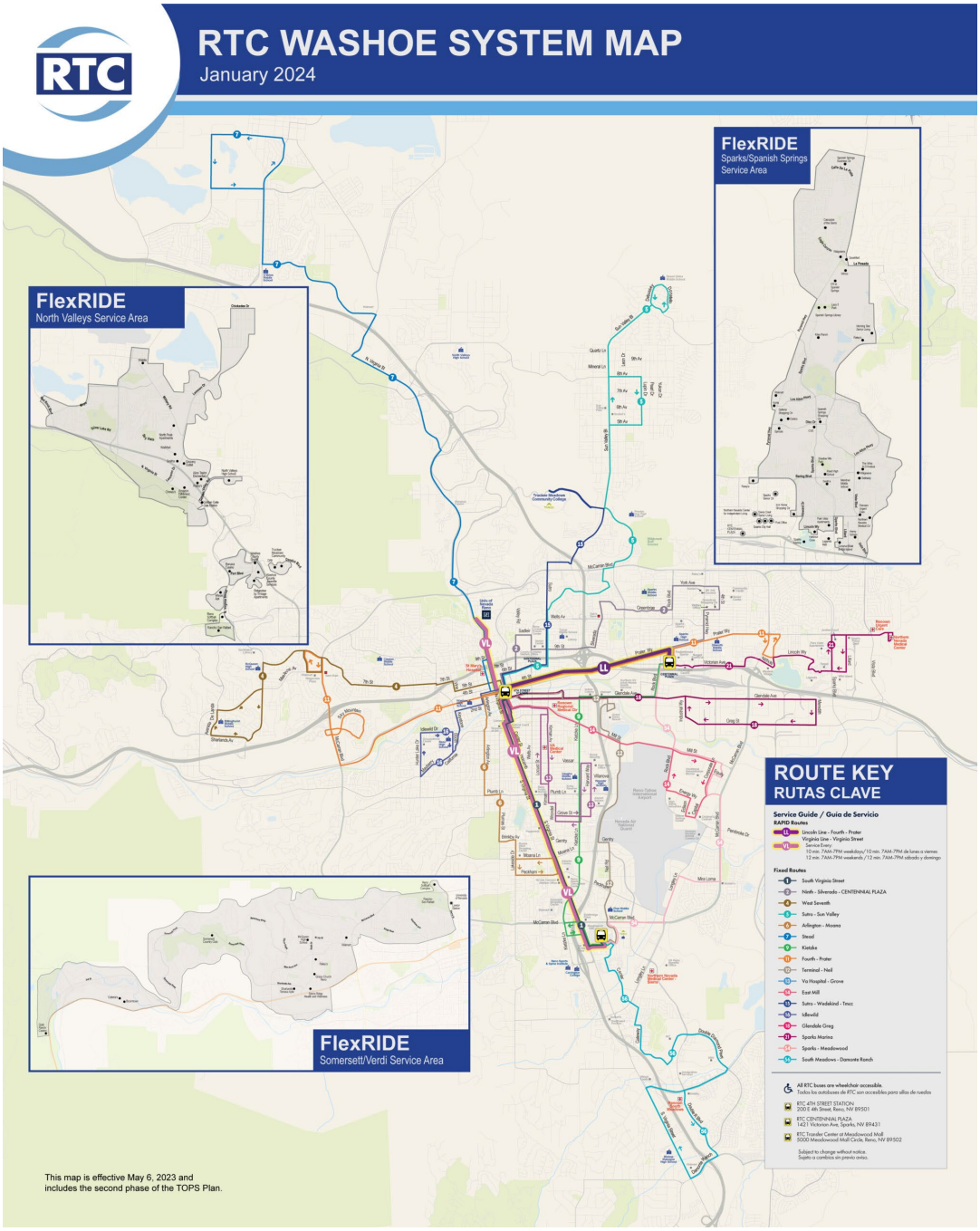


Table 1: Overall Survey Goals

Survey Type	Goal	Completed
On-to-Off Pairs	3,239	6,692
OD Surveys	810	861

Purpose and Objectives

The purpose of the project was to gather updated travel behavior data from transit users in the Reno – Sparks metropolitan area that encompasses all fixed bus route services in the RTC area. The data collected will be used to:

- Improve transit forecasts by updating RTC's regional travel demand model.
- Compile statistically accurate information about transit customers and how they use the transit system for RTC planning purposes.
- Support RTC with the development of a Title VI plan that is submitted to the Federal Transit Administration (FTA) for approval every three years.

This report summarizes the survey methods and findings. Chapter 2 provides a description of the sampling approach, survey instrument and procedures, and survey administration. Chapter 3 provides survey weighting and expansion procedures, expansion types, and decomposition analysis. Chapter 4 provides detailed information for the variables collected during the OD survey, summarizes the data. Included in the appendices are the Survey Sampling Plans (Appendix A) and Survey Questionnaire (Appendix B).

2. Survey Administration

2.1 OD Sampling Plans

To ensure the distribution of completed surveys mirrors the distribution of RTC passengers, ETC Institute and RTC established proportional sampling goals for the Origin-Destination survey. The project time periods are listed below along with survey percentages collected compared to ridership percentages by time-of-day.

Table 2: Project Time Periods and Ridership % to Collected

Time Period	Time Range
AM Peak	Before 9:00am
Midday	9:00 a.m. to 3:00 p.m.
PM Peak	3:00 to 6:00 p.m.
Evening	After 6:00 p.m.

SURVEYS COLLECTED BY TIME-OF-DAY PERIOD IN COMPARISON TO RIDERSHIP	% SURVEYS COLLECTED	% RIDERSHIP
AM PEAK	20.1%	19.0%
MIDDAY	41.3%	40.3%
PM PEAK	23.2%	23.4%
EVE	15.5%	17.4%

Sources of Ridership Data

The source of the ridership used to plan for the survey was the average weekday ridership (AWR) from September 9 through October 31, 2023. This data source was summarized by ETC, and then ETC created cell level (route/direction/time-of-day) ridership data by normalizing the daily ridership totals. These cell level sample sizes created by ETC were used to fine tune the collection and conduct the expansion.

OD Survey Sample Size

ETC Institute developed a sampling plan that would ensure the completion of the OD survey by at least 810 surveys. The sampling plan for the Origin-Destination survey was designed to obtain completed surveys from a minimum of 5% of the ridership on each RTC fixed route. Overall, 861 surveys were collected.

Sampling goals were created to guide the collection by route, time period, and direction. Appendix A contains the sample plans which show the OD survey sampling goals and number of total surveyed trips collected by time-of-day and direction.

2.2 On-to-Off Sampling Plans

The sampling plan for the O2O counts was designed to obtain completed passenger boarding and alighting pairs of 20% of the daily ridership on every RTC fixed route. In total, 6,692 (41% of RTC total ridership) boarding and alighting pairs were collected. Appendix A contains the sample plans which show the O2O number of total boarding and alighting pairs collected by time-of-day and direction.

2.3 Survey Design

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 OD survey is included as Appendix B. The survey was created to ensure Title VI requirements were met and to provide additional information on riders.

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 would then confirm 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 directly on the tablet to allow for more privacy, e.g., household income, gender.

2.4 Survey Field Administration

ETC used experienced staff from previous survey efforts to conduct the interviews. Interviewers boarded their assigned vehicle and selected passengers at random to participate in the survey. The majority of assignments began and ended at the RTC 4th Street Station.

OD Survey Procedures

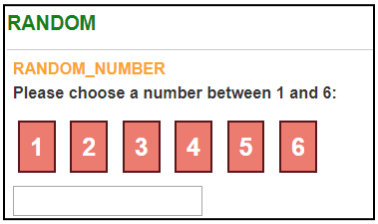
For the OD survey, interviewers boarded their assigned bus and selected riders at random to participate in the survey. While conducting the interview, interviewers asked the respondent each question from the survey tablet and recorded each response provided to them by the passenger.

Selection of OD Participants

For the OD interview the tablet generated a random number (shown in Figure 1) to determine which passengers were asked to participate in the survey after boarding the vehicle.

If four people boarded a bus, the tablet randomly generated a number from 1 to 6. If the tablet responded 2, the second person who boarded the bus was asked to participate in the survey. If the tablet responded 1, the first person was asked to participate in the survey, and so forth. The selection was limited to the first six people who boarded a bus or train at any given stop to ensure the interviewer could keep track of the passengers as they boarded.

Figure 1 - OD Survey Random Number Generator



For example, if 20 people boarded a vehicle, the tablet program would randomly pick one of the first six people for the survey. If the interview was refused by the randomly selected passenger, then the passenger who boarded before the passenger selected would be attempted.

Respondents who did not have time to complete the survey during their bus trip, or who spoke a language different from the interviewer, were given the option of providing their phone numbers to conduct the survey at another time. Those who provided their phone numbers for callbacks were then contacted by ETC Institute's call center to complete the survey. Interviewers that spoke the foreign language of the passenger translated the English tablet version during the interview and

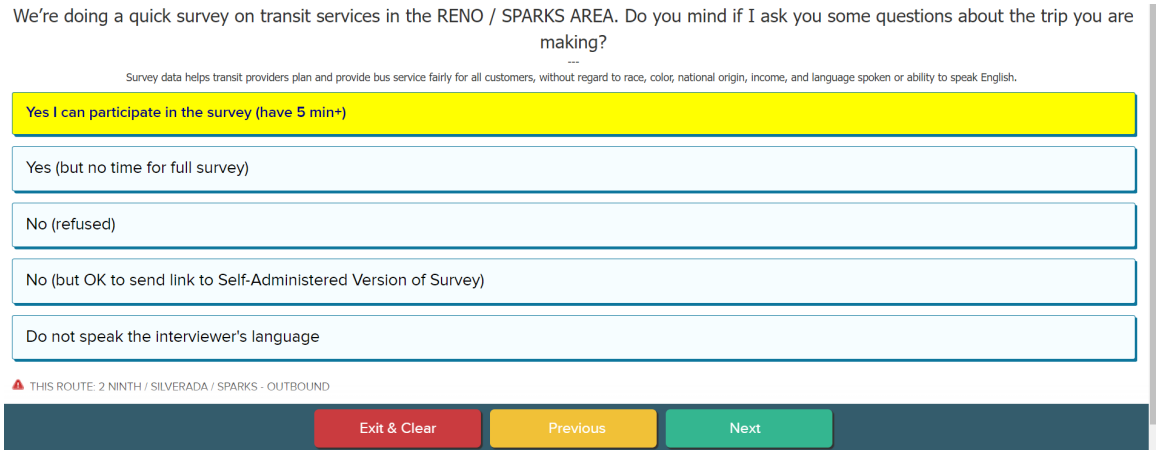
indicated in which language the interview was conducted. Additionally, interviewers carried paper surveys in Spanish that could be distributed for self-administration.

Interviewers selected passengers in accordance with the sampling procedures previously described. The interviewer then:

- Approached the passenger identified and asked him/her/them to participate in the survey.
- If the passenger refused, the interviewers ended the survey, excused themselves and completed three observational questions (age, race, and gender).
- If the passenger agreed to participate, the interviewer asked the passenger if he/she/they had at least 5 minutes to complete the survey.
- If the person did not have at least 5 minutes on the bus, the interviewer asked the person to provide his/her name and mobile phone number or e-mail in order to send a link to a self-administered on-line version. This methodology ensured that people who completed short trips on public transit were well represented. The vast majority of records were able to be completed onboard.
- If the person had at least 5 minutes on the bus, the interviewer completed the survey on the vehicle.

Options for the surveyor to select are listed in the figure below.

Figure 2 – Start Up Screen



2.5 On-to-Off Count Administration

On-to-Off Collection Method

ETC Institute implemented a new method of capturing passenger boarding and alighting pairs (On-to-Off pairs) using video recording devices that capture pictures of passengers from the knee down. By capturing from the knee down the passenger's identity remained unknown. Utilizing the devices eliminated using survey staff on board vehicles thus lowering labor costs and human error and allowed for nearly a 100 percent pair count.

The devices provided a stable and accurate GPS record with a refresh rate of 1 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. Figure

3 below shows the device used and Figure 4 shows the installation of the device on-board of vehicles in different locations (doors).

Figure 3 – On-to-Off Recording Device

Figure 4 – On-to-Off Recording Device Installation

On-to-Off Collection Administration

Blocks were pre-selected by ETC for all routes selected for the O2O counts. O2O collection staff reported to the bus garage from 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
- Devices were installed for each door on the bus.
- Leave a RTC letter in the operator's seat in order 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.

On-to-Off Processing

Video recordings were uploaded by field staff which went into ETC's secure filing system. The videos were reviewed for completeness and then sent to ETC's O2O video review team (VRT). The VRT would screenshot each boarding and alighting (bottom half of passenger) that included the tagged GPS location and GPS time. These screenshots were then paired by the VRT for individual passengers boarding and alighting locations, times, route, and direction. Once paired, a secondary review was conducted to ensure accuracy.

2.6 OD Data Review Process

The establishment of specific sampling goals and procedures for managing the goals ensured that a representative sample was obtained. The geocoding tools embedded in Google map searches, ETC Institute Visual Review program, and Caliper® Maptitude geographic information system (GIS) software, allowed for the geocoding accuracy that was achieved. The following subsections describe the QA/QC processes that were implemented after the data were collected.

Process For Identifying Complete Records

To classify a survey as being completed, the record must contain all elements of the one-way trip. ETC Institute has classified required trip data as containing complete answers to the following:

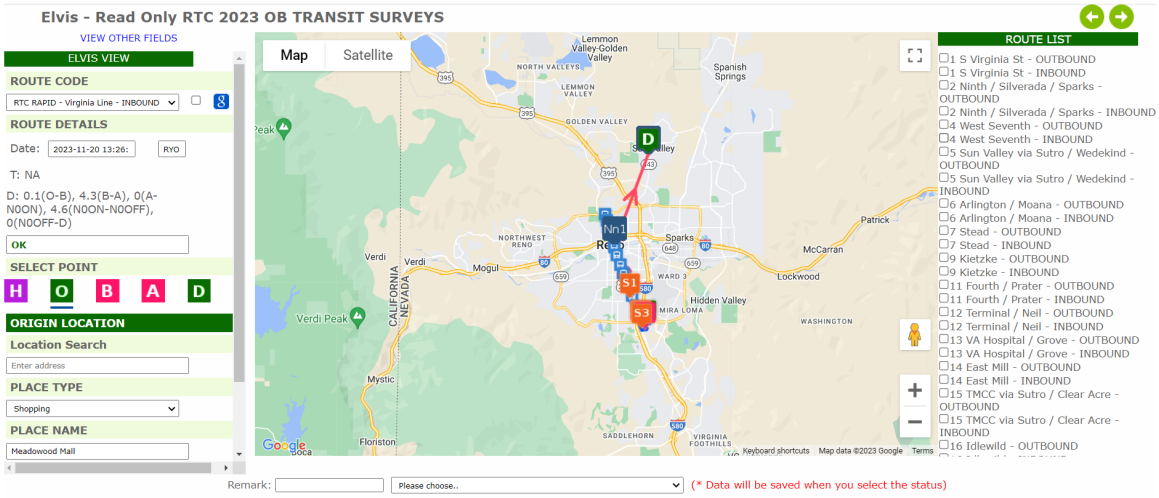
- Route/Direction
- Time of trip
- Transfers made
- Home address
- Origin address
- Destination address
- Origin place type
- Destination place type
- Access mode
- Egress mode
- Boarding location
- Alighting location

In addition to the required trip-data questions, an interview must be considered complete by the online survey program. This occurs if the interviewer navigates through all questions from the survey, including demographics.

Online Visual Review Tool

ETC Institute online visual review tool allowed for the review of all completed records. The tool displayed all elements of the one-way trip, as well as a series of distance ratio checks. After directions were finalized, each record went through speed/distance/time checks. Figure 5 shows an example of the online visual review tool.

Figure 5 - Online Visual Review Tool (Editable Version)



Pre-Distance Checks

The series of distance and ratio checks were contained in the online visual review tool for ETC Institute's Transit Review Team (TRT) to systematically approach the reviewing of completed records. The TRT process for editing surveys is described later in this section. *Note: The distance and ratio checks described are meant to alert the reviewer that closer evaluation may be needed. However, this does not indicate the record was inaccurate or unusable.*

The distances for the checks are created using the great-circle distance formula that is based on a straight line from point A to point B that considers the curvature of the earth. After all transfer reviews were conducted, three QA/QC ratio checks were conducted. First, the distance between the boarding and alighting location was divided by the distance between origin and destination. Second, the distance between origin and boarding location was divided by the distance between origin and destination. Third, the distance between the alighting location and destination was divided by the distance between origin and destination.

Transit Review Team

The TRT reviewed all completed records, paying special attention to records that were flagged by the previously described checks. Typically, around 10 percent of all records receive an automatic flag. The issues listed in Table 6 result in actions that allow about 50 percent of those records that are flagged to be retained.

Table 3 - General Issues

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

Post-Processing Additional Checks

After records were reviewed by the TRT, the next step involves the application of QA/QC non-trip checks. Non-trip related checks included:

- Ensuring the respondents who indicated they were employed reported that at least one member of the household was employed.
- Ensuring the time-of-day a survey was completed was reasonable given the published operating schedule for the route.
- Ensuring that the appropriate fare type was used given the age of respondent.
- Removing personal information to protect the anonymity of the respondents.

Once all records complete the pre-processing and post-processing QA/QC checks, those deemed complete and usable are appended to the completion report to ensure that goals are met. After the final review is completed, a data dictionary was created to describe the data in the database.

3. Survey Weighting and Expansion

When survey goals are created, they are typically based off a percentage of the average weekday ridership for the routes in the system. That is further broken down by time periods and directions. The time periods that are created (9:00am to 3:00pm for example) are based off the specific needs of the client. Once a sample percentage is agreed upon, the goals for the survey collection are based off the ridership for each route by time period and direction, and then multiplied by the sampling percentage. For “Circular” or “Loop” routes, the ridership is typically only broken down into time period as there are many riders that will board going in one direction but alight going the

other direction due to the functionality of the route. This typically is also the case if there are directional routes where many riders travel through the terminus and alight going the opposite direction of initial boarding.

The purpose of developing survey goals is to collect an appropriate number of survey records that will be “expanded” to represent the total average weekday ridership of each route by time period and direction. To further increase the specificity of the expansion process, segments were created for each route. Stops were grouped into segments along that route so that boarding segments could be paired with alighting segments when creating the expansion factor. Segmentation occurs on bus routes because it is unrealistic to expand bus survey data at the stop level. Stop, or station, level expansion is generally reserved for rail lines.

ETC expanded the OD survey data using on-to-off data collected. On-to Off count data is utilized for routes where O2O counts are collected but Stop-Level Ridership/APC Data is not available. These segments were then appended to the O2O and OD Survey databases. The expansion method is less complex than expansion using APC data.

3.1 Decomposition Analysis

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

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

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

Table 4: Decomposition Analysis by Route

ALL ROUTES						
route_name	Route Surveyed	Transfer Route	Total Summed Linked	Observed Boardings	Total Difference	% Difference
1 S Virginia St	819.77	188.38	1008.16	1130.00	121.84	10.8%
11 Fourth / Prater	1195.42	441.34	1636.76	1583.00	-53.76	-3.4%
12 Terminal / Neil	585.72	229.78	815.50	874.00	58.50	6.7%
13 VA Hospital / Grove	332.89	60.88	393.76	499.00	105.24	21.1%
14 East Mill	259.10	127.99	387.09	348.00	-39.09	-11.2%
15 TMCC via Sutro / Clear Acre	311.38	213.86	525.24	504.00	-21.24	-4.2%
16 Idlewild	109.44	50.04	159.48	177.00	17.52	9.9%
18 Glendale / Greg	513.90	95.70	609.60	757.00	147.40	19.5%
2 Ninth / Silverada / Sparks	810.79	317.12	1127.91	1081.00	-46.91	-4.3%
21 Sparks Marina / Legends / NNMC	272.22	218.42	490.64	473.00	-17.64	-3.7%
4 West Seventh	307.98	231.06	539.04	426.00	-113.04	-26.5%
5 Sun Valley via Sutro / Wedekind	837.92	220.58	1058.51	1027.00	-31.51	-3.1%
54 Mira Loma	141.40	106.95	248.35	206.00	-42.35	-20.6%
56 South Meadows / Damonte Ranch	253.95	262.73	516.68	460.00	-56.68	-12.3%
6 Arlington / Moana	186.85	58.65	245.50	246.00	0.50	0.2%
7 Stead	684.96	380.89	1065.86	955.00	-110.86	-11.6%
9 Kietzke	423.15	126.78	549.93	526.00	-23.93	-4.5%
RTC RAPID - Lincoln Line	806.51	424.62	1231.13	1248.00	16.87	1.4%
RTC RAPID - Virginia Line	2107.18	642.49	2749.67	2840.00	90.33	3.2%
RTC REGIONAL CONNECTOR	63.11	9.09	72.20	71.00	-1.20	-1.7%
	11023.65	4407.35	15431.00	15431.00	0.00	0.0%

4. Survey Findings

The fully weighted and expanded RTC data were used to create the following analyses which include trip analyses and demographic analysis. The results are based off the survey instrument which is provided in Appendix B. All tables were created using linked expansion factors other than system transfers which used unlinked expansion factors.

4.1 Trip Level Analysis

The key origin place type for riders is home (44%), the second most common origin place type is work (19%), and the third most common origin place type is shopping (10%). The table below shows riders origin place type.

Table 5: Trip Origin

ORIGIN PLACE TYPE	%
Your HOME / HOTEL	43.9%
Place of Work	19.1%
Shopping	9.7%
Social (visit friends/family, church, clubs, etc.)	8.8%
Errands (laundry, barber, bank, etc.)	7.2%
Gaming	3.0%
Medical / Hospital (non-work)	2.8%
Convention Center attendee (non-work) / Entertainment / Recreation / Sports / Sightseeing	1.9%
College / University (students only)	1.4%
Eating Out / Dining	1.1%
Other work related	0.6%
School (K-12) (students only)	0.6%
Airport (passengers only)	0.0%

The key destination place type for riders is home (42%), the second most common destination place type is work (15%), and the third most common destination place type is social purposes such as visiting friends or family/church/clubs/etc. (12%). The table below shows riders destination place type.

Table 6: Trip Destination

DESTINATION PLACE TYPE	%
Your HOME / HOTEL	41.8%
Place of Work	14.8%
Social (visit friends/family, church, clubs, etc.)	11.6%
Errands (laundry, barber, bank, etc.)	10.1%
Shopping	8.6%
Gaming	2.9%
Medical / Hospital (non-work)	2.8%
Convention Center attendee (non-work) / Entertainment / Recreation / Sports / Sightseeing	2.8%
Other work related	1.5%
School (K-12) (students only)	1.1%
Eating Out / Dining	1.0%
College / University (students only)	0.8%
Airport (passengers only)	0.1%

Ninety-three percent of RTC riders walk to get to their bus from their origin, 3% of riders get dropped off at their first bus, and 2% use a wheelchair or walker to get to their first bus. The table below shows riders access mode.

Table 7: Access Mode

ACCESS MODE	%
Walk	93.4%
Was dropped off by someone	2.9%
Wheelchair / Walker	1.6%
Other	0.8%
Bike	0.7%
Drove or rode with others and parked	0.2%
Personal E-Scooter / One Wheel	0.2%
Uber, Lyft, etc.	0.2%

Ninety-five percent of riders walk from their last bus to get to their destination, 2% use a wheelchair or walker, and 1% are picked up by someone. The table below shows riders egress mode.

Table 8: Egress Mode

EGRESS MODE	%
Walk	95.2%
Wheelchair / Walker	1.8%
Be picked up by someone	1.0%
Bike	0.8%
Other	0.8%
Get in a parked vehicle & drive alone	0.2%
Uber, Lyft, etc.	0.1%
Personal E-Scooter / One Wheel	0.1%

Forty-five percent of RTC riders only use one bus to make their one-way trip. Six percent of riders use three buses making two transfers. The table below shows the number of buses riders use to get from their origin to their destination.

Table 9: Total Routes Used

TOTAL TRANSFERS (Unlinked_Weight_Factor)	%
0 (None)	44.9%
1 (One)	49.0%
2 (Two)	6.1%

Eighty-eight percent of riders travel alone while 11% rider with one other person. The table below shows travel party size.

Table 10: Travel Party Size

TRAVEL PARTY SIZE	%
One (1)	88.0%
Two (2)	10.8%
Three (3)	0.9%
Four (4)	0.0%
Five (5)	0.1%
Six (6)	0.0%
Seven (7)	0.0%
Eight (8)	0.0%
Nine (9)	0.1%
Ten or more (10+)	0.2%

Half (50%) of RTC riders fare method is a day pass, 21% of riders fare method is a 7-day pass, and 17% is a 31-day pass. Twenty-three percent of riders use the Token App. The following tables show riders fare methods and use of the Token App.

Table 11: Fare Method

FARE METHOD	%
Day Pass	50.1%
7-Day Pass	21.0%
31-Day Pass	16.7%
Free, Student ID	5.7%
Single Ride	2.4%
Onboard Single Ride Cash	2.1%
Free, Employee ID	1.2%
Onboard Day Pass Cash	0.3%
Single Ride w/ Transfer	0.2%
10-Ride Pass	0.1%
Other	0.1%
2-Ride ticket	0.1%

USE TOKEN APP FOR FARE	%
No	76.8%
Yes	23.2%

Sixty-six percent or riders pay full fare, while 21% pay Senior fare, and 10% pay disabled fare. The following table shows fare discounts.

Table 12: Fare Type

FARE TYPE	%
Regular	66.4%
Senior Citizens	20.5%
Disabled	9.7%
Youth/Students (6-18/K-12 with ID)	1.8%
Military Veteran	1.6%

Eleven percent of riders have employers that cover some of their transit fare while 5% of riders have employers that cover all their transit fare. The following table shows if riders have their fare paid by employers.

Table 13: Employer Fare Subsidy

FARE PAID BY EMPLOYER	%
All	5.3%
None	83.5%
Some	11.1%

Sixty-nine percent of riders use transit at least 5 days a week. Four percent of riders use transit 3 days a month or less. The following table shows passengers ride frequency.

Table 14: Ride Frequency in Past Year

TRANSIT USE FREQUENCY CURRENT	%
This is my first time	1.1%
1-11 days/year	1.1%
1-3 days/month	1.5%
1-2 days/week	8.0%
3-4 days/week	19.4%
5-7 days/week	68.9%

Prior to Covid 19, 39% of riders did not use RTC services. Forty-one percent of riders rode 5-7 days a week and 12% rode 3-4 days a week prior to Covid. The following table shows ride frequency prior to Covid.

Table 15: Ride Frequency Prior to Covid

TRANSIT USE FREQUENCY PRIOR TO COVID	%
Never	39.2%
1-11 days/year	1.5%
1-3 days/month	1.5%
1-2 days/week	5.0%
3-4 days/week	11.8%
5-7 days/week	41.1%

4.2 Rider Analysis

Twenty eight percent of RTC riders have a disability. The following table shows riders disability status.

Table 16: Disability Status

DISABILITY STATUS	%
No	70.7%
Yes	28.7%
Prefer not to answer	0.7%

The majority (97%) of RTC riders own a smartphone. The following table shows if riders own a smartphone.

Table 17: Smart Phone Ownership

OWN SMART PHONE	%
No	3.2%
Yes	96.8%

The majority (97%) of RTC riders have a bank account. The following table shows if riders have a bank account.

Table 18: Bank Account / Credit Card Ownership

HAVE BANK ACCOUNT	%
No	2.7%
Yes	97.3%

The majority (98%) of RTC riders live in the Reno-Sparks region. The following table shows riders visitor status.

Table 19: Visitor Status

VISITOR STATUS	%
No	97.6%
Yes	2.4%

Over half (56%) of RTC riders are employed either full or part time. Twelve percent of riders are retired. The following table shows riders employment status.

Table 20: Employment Status

EMPLOYMENT STATUS	%
Employed full-time	41.1%
Employed part-time	15.0%
Not currently employed, but seeking work	11.6%
Not currently employed, and not seeking work	18.4%
Homemaker	1.1%
Retired	12.8%

Eleven percent of RTC riders are students and 7% are college students. The following table shows riders student status.

Table 21: Student Status

STUDENT STATUS	%
Not a student	89.4%
Yes - Full-time College / University	5.7%
Yes - Part-time College / University	1.4%
Yes - Vocational / Technical / Trade School	0.6%
Yes - K-12th grade	2.6%
Yes - Other	0.4%

Sixty-three percent of RTC riders do not have a valid driver's license. The following table shows riders drivers license status.

Table 22: Drivers' License Status

DRIVERS' LICENSE STATUS	%
No	62.8%
Yes	37.2%

Twenty-three percent of RTC riders speak another language other than English at home. Spanish is the most other language with 13% of riders speaking Spanish at home. The following table shows percentages of riders who speak other languages at home.

Table 23: Other Language Spoken at Home

SPEAK ANOTHER LANGUAGE AT HOME	%
No	77.2%
Yes	22.8%

Riders who answered yes to speaking another language at home were then asked how well they speak English. Less than one percent of RTC riders speak English less than well. The following table shows riders English proficiency.

Table 24: English Proficiency

ENGLISH PROFICEINCY	%
Very well	22.3%
Well	0.1%
Less than well	0.3%
Only Speak English	77.2%

The most common age for RTC riders is 55-64 (19%) , the second most common is 25-34 (18%), and the third most common is 45-54 (17%). The following table shows riders age.

Table 25: Age

AGE	%
Under 18	2.3%
18 - 24	11.9%
25 - 34	18.4%

35 - 44	15.7%
45 - 54	17.3%
55 - 64	18.8%
65+	15.6%

Sixty-fiver percent of RTC riders are White. The second highest race is Black, and the third highest is Hispanic. The table below shows riders race / ethnicity.

Table 26: Race Ethnicity

RACE / ETHNICITY	%
White	64.9%
Hispanic / Latino	15.3%
Black / African American	13.0%
Asian	5.8%
American Indian / Alaska Native	3.7%
Native Hawaiian / Pacific Islander	1.4%

Sixty percent of RTC riders are Male. The following table shows rider's Gender.

Table 27: Gender

GENDER	%
Male	59.9%
Female	39.7%
Other	0.5%

4.3 Household Analysis

Almost three-quarters (74%) of riders live in zero vehicle households and only 5% of riders could have used a household vehicle to make their trip. Table 28 shows how many vehicles riders households have and table 28 shows how many riders could have used a household vehicle to make their trip.

Table 28: Household Vehicle Availability

HOUSEHOLD VEHICLES	%
None (0)	74.2%
One (1)	17.9%
Two (2)	5.4%
Three (3)	1.9%
Four (4)	0.5%
Five (5)	0.0%
Six (6)	0.1%

Table 29: Could Have Used Household Vehicle to Make Current Trip

COULD HAVE USED HOUSEHOLD VEHICLE FOR TRIP	%
No	21.2%
Yes	4.6%
ZERO / NO HOUSEHOLD VEHICLES	74.2%

Thirty-six percent of riders live in single person households. Fourteen percent of riders live in households with five or more people. The following table shows riders household size.

Table 30: Household Size

HOUSEHOLD SIZE	%
One (1)	36.9%
Two (2)	24.0%

Three (3)	15.8%
Four (4)	8.2%
Five (5)	5.7%
Six (6)	1.7%
Seven (7)	1.2%
Eight (8)	0.7%
Nine (9)	0.2%
Ten or More (10+)	5.6%

Twenty-seven percent of riders live in households without anyone employed as shown on the following table.

Table 31: Household Employment

HOUSEHOLD EMPLOYEES	%
None (0)	27.8%
One (1)	33.5%
Two (2)	20.8%
Three (3)	8.1%
Four (4)	3.2%
Five (5)	0.8%
Six (6)	0.5%
Seven (7)	0.2%
Eight (8)	0.0%
Nine (9)	0.0%
Ten or More (10+)	5.2%

Twenty percent of riders live in households that make less than $10,000 annually. Thirty-one percent of riders live in households that make over $40,000 annually. The table below shows riders household income.

Table 32: Household Income

HOUSEHOLD INCOME	%
Less than $10,000	20.0%
$10,000 - $14,999	12.8%
$15,000 - $19,999	6.2%
$20,000 - $24,999	8.8%
$25,000 - $29,999	6.4%
$30,000 - $34,999	7.4%
$35,000 - $39,999	7.1%
$40,000 - $44,999	6.4%
$45,000 - $49,999	3.5%
$50,000 - $54,999	5.8%
$55,000 - $59,999	2.2%
$60,000 - $64,999	1.4%
$65,000 - $69,999	1.5%
$70,000 - $74,999	1.3%
$75,000 - $79,999	1.6%
$80,000 - $99,999	3.6%
$100,000 - $124,999	1.9%
$125,000 - $149,999	1.0%
$150,000 - $199,999	0.2%
More than $200,000	0.8%

APPENDIX A SURVEY SAMPLING PLANS

OD Survey Sample Plan

ROUTE_SURVEYED	Sample Goal					Surveys Collected				
	2 = AM [12:00a - 9:00a]	3 = MID [9:00a - 3:00p]	4 = PM [3:00p - 6:00p]	5 = EVE [6:00p - 12:00a]	ROUTE Total	2 = AM [12:00a - 9:00a]	3 = MID [9:00a - 3:00p]	4 = PM [3:00p - 6:00p]	5 = EVE [6:00p - 12:00a]	ROUTE Total
RTC RAPID - Lincoln Line - INBOUND	5	12	6	3	65	6	11	12	4	66
RTC RAPID - Lincoln Line - OUTBOUND	3	8	6	3		5	11	13	4	
RTC RAPID - Virginia Line - INBOUND	7	23	14	7	152	9	30	21	10	152
RTC RAPID - Virginia Line - OUTBOUND	7	23	16	9		12	36	24	10	
1 S Virginia St - INBOUND	4	6	4	7	59	4	15	5	6	60
1 S Virginia St - OUTBOUND	5	8	4	4		7	10	8	5	
2 Ninth / Silverada / Sparks - INBOUND	5	8	4	3	56	5	19	5	3	63
2 Ninth / Silverada / Sparks - OUTBOUND	3	8	5	3		3	17	7	4	
4 West Seventh - INBOUND	2	2	1	1	24	3	7	2	1	31
4 West Seventh - OUTBOUND	2	4	2	2		3	10	3	2	
5 Sun Valley via Sutro / Wedekind - INBOUND	4	9	3	2	55	5	14	9	2	58
5 Sun Valley via Sutro / Wedekind - OUTBOUND	4	9	5	3		5	14	5	4	
6 Arlington / Moana - INBOUND	1	1	1	0	13	2	1	2	0	14
6 Arlington / Moana - OUTBOUND	1	2	1	1		3	3	2	1	
7 Stead - INBOUND	4	5	3	2	55	4	5	12	2	59
7 Stead - OUTBOUND	7	7	6	5		7	16	8	5	
9 Kietzke - INBOUND	2	4	2	1	28	3	6	2	1	30
9 Kietzke - OUTBOUND	2	5	2	2		4	7	5	2	
11 Fourth / Prater - INBOUND	5	10	6	10	79	3	11	18	11	80
11 Fourth / Prater - OUTBOUND	5	8	5	8		7	15	8	7	
12 Terminal / Neil - INBOUND	3	6	4	3	45	3	9	8	4	45
12 Terminal / Neil - OUTBOUND	3	7	4	2		3	7	8	3	
13 VA Hospital / Grove - INBOUND	1	4	1	1	25	0	9	2	1	27
13 VA Hospital / Grove - OUTBOUND	1	5	2	2		2	8	3	2	
14 East Mill - INBOUND	1	2	2	1	18	2	4	4	1	29
14 East Mill - OUTBOUND	2	3	1	1		6	6	5	1	
15 TMCC via Sutro / Clear Acre - INBOUND	2	5	2	1	28	2	1	10	2	30
15 TMCC via Sutro / Clear Acre - OUTBOUND	2	4	2	2		2	4	7	2	
16 Idlewild - INBOUND	1	1	0	0	8	1	1	1	0	8
16 Idlewild - OUTBOUND	1	1	1	1		1	2	1	1	
18 Glendale / Greg - INBOUND	1	5	3	2	39	3	6	4	4	39
18 Glendale / Greg - OUTBOUND	5	7	2	2		6	9	5	2	
21 Sparks Marina / Legends / NNMC - INBOUND	1	2	2	1	24	1	4	4	1	24
21 Sparks Marina / Legends / NNMC - OUTBOUND	2	4	2	2		2	4	6	2	
54 Mira Loma - INBOUND	1	1	1	0	11	1	3	1	0	16
54 Mira Loma - OUTBOUND	1	2	1	0		4	6	1	0	
56 South Meadows / Damonte Ranch - INBOUND	1	3	2	1	24	1	5	4	1	24
56 South Meadows / Damonte Ranch - OUTBOUND	3	5	2	1		5	3	4	1	
RTC REGIONAL CONNECTOR - INBOUND	1	0	1	0	4	1	0	2	0	6
RTC REGIONAL CONNECTOR - OUTBOUND	1	0	1	0		1	0	2	0	
Totals	**108**	**228**	**133**	**98**	**812**	**147**	**349**	**253**	**112**	**861**

O2O Survey Sample Plan

Route #	Direction	Sample Goals						Pairs Collected					
		AM Peak (Before 9:00am)	Midday (9:00am-3:00pm)	PM Peak (3:00-6:00pm)	Evening (After 6:00pm)	Total	Total	AM Peak (Before 9:00am)	Midday (9:00am-3:00pm)	PM Peak (3:00-6:00pm)	Evening (After 6:00pm)	Total	Total Collected
RTC RAPID LINCOLN LINE	INBOUND	21	51	24	14	110		39	115	81	13	248	
	OUTBOUND	12	36	26	12	85	**259**	29	94	64	14	201	**449**
RTC RAPID Virginia LINE	INBOUND	30	99	62	31	221		67	229	158	45	499	
	OUTBOUND	29	97	69	39	234	**607**	55	294	197	22	568	**1067**
1	INBOUND	18	24	15	30	88		69	89	40	73	271	
	OUTBOUND	21	34	16	18	90	**237**	61	92	43	36	232	**503**
2	INBOUND	21	36	16	12	84		40	71	43	16	170	
	OUTBOUND	12	35	21	14	83	**222**	32	57	63	20	172	**342**
4	INBOUND	7	11	5	4	26		45	59	31	14	149	
	OUTBOUND	8	18	11	9	45	**95**	41	96	100	30	267	**416**
5	INBOUND	16	38	12	9	74		32	72	30	22	156	
	OUTBOUND	16	39	22	14	92	**221**	25	49	53	33	160	**316**
6	INBOUND	4	6	3	2	15		31	39	23	4	97	
	OUTBOUND	4	8	6	4	23	**51**	24	48	40	11	123	**220**
7	INBOUND	16	21	14	11	60		23	39	38	12	112	
	OUTBOUND	29	30	25	20	104	**219**	56	76	32	22	186	**298**
9	INBOUND	6	16	9	6	38		24	32	18	6	80	
	OUTBOUND	9	20	9	7	45	**110**	17	50	35	0	102	**182**
11	INBOUND	20	43	24	41	128		51	74	51	37	213	
	OUTBOUND	20	34	21	32	107	**314**	64	67	45	35	211	**424**
12	INBOUND	12	25	16	12	65		57	103	75	31	266	
	OUTBOUND	15	28	16	10	69	**179**	78	110	96	17	301	**567**
13	INBOUND	5	19	6	2	32		35	68	28	8	139	
	OUTBOUND	6	20	9	7	41	**98**	22	73	53	15	163	**302**
14	INBOUND	3	10	7	4	24		11	34	26	23	94	
	OUTBOUND	10	12	5	3	30	**72**	56	29	32	13	130	**224**
15	INBOUND	7	22	8	3	40		29	64	11	13	117	
	OUTBOUND	8	18	11	7	43	**111**	31	39	19	10	99	**216**
16	INBOUND	2	4	2	1	9		16	33	11	3	63	
	OUTBOUND	3	6	4	3	16	**33**	27	30	32	3	92	**155**
18	INBOUND	5	21	13	9	48		12	58	50	23	143	
	OUTBOUND	21	28	10	9	68	**155**	85	96	47	26	254	**397**
21	INBOUND	4	11	8	5	28		10	29	19	6	64	
	OUTBOUND	10	17	11	7	44	**96**	24	30	35	10	99	**163**
54	INBOUND	3	6	5	2	16		9	35	26		70	
	OUTBOUND	5	7	5	0	18	**45**	40	48	30		118	**188**
56	INBOUND	4	11	8	3	26		11	38	35	5	89	
	OUTBOUND	12	19	8	6	47	**96**	47	46	47	16	156	**245**
RTC Regional Connector	INBOUND	2	0	2	1	5		4		2	4	10	
	OUTBOUND	3	0	4	0	7	**16**	4		4		8	**18**
Totals		**461**	**978**	**568**	**422**	**2,429**	**3,239**	**1,433**	**2,705**	**1,863**	**691**	**6,692**	**6,692**

APPENDIX B SURVEY QUESTIONNAIRE

RTC 2023 On-Board Transit Survey

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 Reno area, please list the **hotel name** or address where you are staying)* *If you are unhoused select bubble O*

_____ _____ _____ _____
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)
O Place of Work O Other work related
O College / University (students only)
O School K-12 (students only)
O Medical / Hospital, non-work
O Gaming O Shopping
O Eating out / Dining O Airport (passengers only)
O Errands (laundry, barber, bank, etc.)
O Convention Center attendee *(non-work)* / Entertainment / Recreation / Sports / Sightseeing
O Social (visit friends / family, church, clubs, etc.)
O Your **HOME/HOTEL** → *Go to Question #4*
O Non-destination trip
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 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 you used for this one-way trip?**
O Walk O Wheelchair / Walker
O Bike O Bird E-Scooter
O Taxi O Uber, Lyft, etc.
O Personal E-Scooter / One wheel
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 bus you used for this one-way trip (Write the nearest intersection / park-and-ride lot below):
_____

5. **Where did you get ON this bus?**
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)
O Place of Work O Other work related
O College / University (students only)
O School K-12 (students only)
O Medical / Hospital, non-work
O Gaming O Shopping
O Eating out / Dining O Airport (passengers only)
O Errands (laundry, barber, bank, etc.)
O Convention Center attendee *(non-work)* / Entertainment / Recreation / Sports / Sightseeing
O Social (visit friends / family, church, clubs, etc.)
O Your **HOME/HOTEL** → *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 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 for this one-way trip?**
O Walk O Wheelchair / Walker
O Bike O Bird E-Scooter
O Taxi O Uber, Lyft, etc.
O Personal E-Scooter / One wheel
O Be picked up by someone (answer 9a)
O Get in a parked vehicle & drive alone (answer 9a)
O Get in a parked vehicle & drive/ride w/others (answer 9a)
O Other_____
9a. Where will you get off the last bus you are using for this one-way trip (Write the nearest intersection / park-and-ride lot below):
_____

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

11a. Did you transfer FROM another bus BEFORE getting on this bus? O Yes O No
11b. Will you transfer TO another bus AFTER getting off this bus? O Yes O No

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

START → [ ] → [ ] → [ ] → [ ] → **END**
1st Route 2nd Route 3rd Route 4th Route
Continue

OTHER INFORMATION ABOUT THIS TRIP

12. What time did you BOARD this bus? _____ : _____ **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 many people (including yourself) are traveling in your group for this one-way trip? _____people

15. What type of fare did you use for this one-way trip?
O Onboard Single ride cash O Onboard Day pass cash O Single ride O Day pass O 7-Day pass
O 31-Day pass O Free, Student ID O Free, Employee ID O Free, Under 6 O 2-ride ticket
O Other O Single ride O Single ride w transfer O 10-Ride pass

15a. Did you use the Token app for this trip? O Yes O No

15b. What type of fare is this? O Regular O Youth (6-18 or K-12 with ID) O Senior Citizens
O Disabled O Military Veteran

16. Do you identify as a person with a disability? O Yes O No O Prefer not to answer

17a. Do you own a working Smart Phone? O Yes O No

17b. Do you have a credit card, debit card, or bank account? O Yes O No

18a. In the past year, how often did you use RTC public transportation services?
O 5-7 days/week O 3-4 days/week O 1-2 days/week O 1-3 days/month O 1-11 days/year O This is my first time

18b. Prior to COVID-19, how often did you use RTC public transportation services?
O Never O 5-7 days/week O 3-4 days/week O 1-2 days/week O 1-3 days/month O 1-11 days/year

ABOUT YOU AND YOUR HOUSEHOLD

19. Are you a visitor to the Reno / Sparks area? O No O Yes

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

20a. [If #20 is more than NONE] Could you have used one of these vehicles for this trip? OYes ONo

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

22. Including YOU, how many people (over age 15) in your household are employed full/part-time? ____ people

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

IF YOU ARE EMPLOYED:
23a. How much does your employer pay for your transit fare? O All O Some O None

24. Are you a student? *(check the one response that BEST describes you)*
O Not a student O Yes – Full Time college/university O Yes – K - 12th grade
O Yes – Part Time college/university O Yes – vocational/technical/trade school O Yes – other

21a. [If #24 is Yes] Please specify your college/university/school name:_____

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

26. What is your AGE? O Under 18 O 18-24 O 25-34 O 35-44 O 45-54 O 55-64 O 65+

27. What is your race / ethnicity? *(check all that apply)*
O American Indian / Alaska Native O Asian O Black/African American O Hispanic/Latino
O Native Hawaiian / Pacific Islander O White O Other: _____

28. What is your gender? O Male O Female O Other

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

29a. [If #29 is Yes] How well do you speak English? O Very Well O Well O Less than well O Not at all

30. Which of the following BEST describes your TOTAL ANNUAL HOUSEHOLD INCOME in 2022 before taxes?

O Less than $10,000	O $30,000 - $34,999	O $55,000 - $59,999	O $80,000 - $99,999
O $10,000 - $14,999	O $35,000 - $39,999	O $60,000 - $64,999	O $100,000 - $124,999
O $15,000 - $19,999	O $40,000 - $44,999	O $65,000 - $69,999	O $125,000 - $149,999
O $20,000 - $24,999	O $45,000 - $49,999	O $70,000 - $74,999	O $150,000 - $199,999
O $25,000 - $29,999	O $50,000 - $54,999	O $75,000 - $79,999	O More than $200,000

REGISTER TO WIN A MONTHLY PASS

People who submit an accurately completed survey will be entered in a random drawing for a monthly pass. You must provide your home address at the beginning of the survey to be eligible.

Your Name: _____

Phone Number: (_____) _____

E-mail address: _____

Are you willing to participate in future RTC research / communication and may we email/text you? O Yes O No

Thank you for your help!