

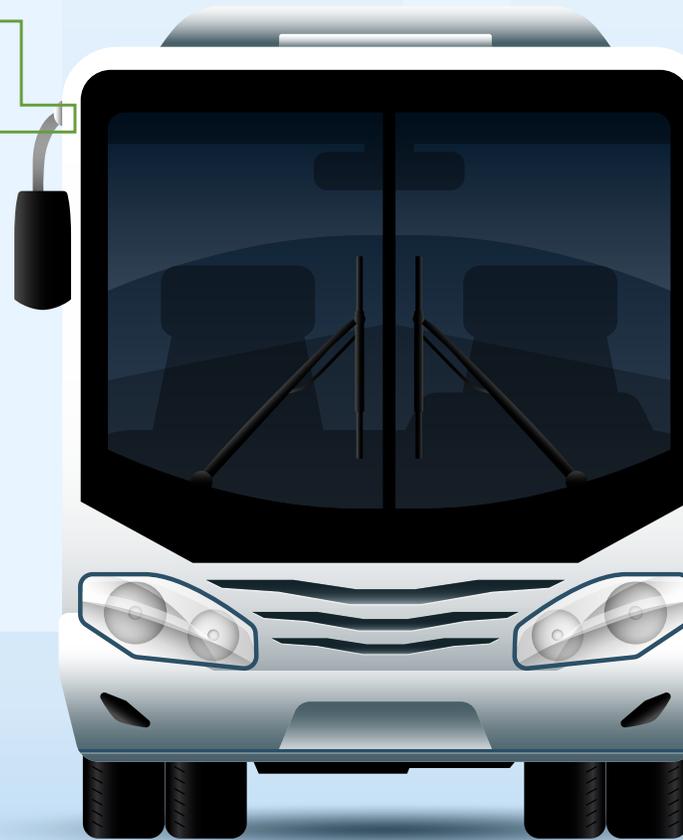
PREPARED FOR



FEBRUARY 2024

## All Systems Report

# TRIANGLE REGIONAL TRANSIT SURVEY



PREPARED BY



# Executive Summary

Transit serves many users in communities across the Raleigh-Durham-Chapel Hill metropolitan area, also known as “the Triangle”. Driven by a diverse economy, temperate climate and skilled workforce the Triangle is among the fastest-growing places in the U.S.. Investments in Wake Transit Plan (WTP) initiatives such as Bus Rapid Transit will continue to influence county, regional, and university-based fixed route services, and shape both transportation and land use decisions. Understanding transit trip-making, travel patterns, and characteristics within this context is critical for agencies to determine where to invest and how to keep pace with user demand.

This “All Systems” report highlights the findings of an inaugural, system-wide survey of 112 fixed routes operated by nine transit agencies in the region<sup>1</sup>. Conducted in the fall of 2023, this tablet based survey collected data on user demographics, ridership, and origin-destination trip-making. This survey expanded on the 2015/2016 survey, which only collected data on Wake County transit systems (i.e., GoRaleigh, GoTriangle, GoCary and NCSU). An interlocal agreement between the City of Raleigh and GoTriangle facilitated participation of transit agencies within Wake, Durham, and Orange counties. . Representatives of the local agencies participated in Interagency meetings throughout this study.

The survey was conducted from October 2 to December 1, 2023. Survey methodology established route-specific sampling targets, collected On-to-Off (O2O) trips, and supported insights from user participation and perspectives. Survey results provide:

- Snapshot comparison of demographic, ridership and origin-destination information by agency, along with information about transfers and cross-system travel.
- Travel characteristics for 112 individual routes. Route details are provided in separate reports, memos, and fact sheets focused on each agency.
- Transit trip end location and time of day data for use in updating the Triangle Regional Travel Demand Model (Gen 2), the platform to assess and forecast future transportation demand in the region.
- Data to inform the Capital Area Metropolitan Planning Organization (CAMPO) and Durham-Chapel Hill-Carrboro MPO (DCHC-MPO) Metropolitan Transportation Plans (MTPs). The regional MTPs meet necessary federal requirements to prioritize projects on both local and regional scales.
- Insights for agency staff and county and regional transit leaders to inform short- and long-range transit planning.

The survey findings and data will support Title VI and equity evaluations, allow for analysis of trends in relation to past surveys, and provide an updated baseline for future analysis and surveys. This All Systems report is structured to present high-level, comparative survey findings across the region and across agencies by demographic and ridership categories. The survey results can be found in an interactive, online dashboard (<https://etcinstitute.com/triangle-wake-county-nc-transit-portal/>).

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<sup>1</sup>Exclusive of Duke Transit

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# Introduction

## Survey Purpose/Overview

Transit agencies serving Wake, Orange, Durham, Guilford, and Alamance Counties including: GoRaleigh, GoTriangle, GoDurham, GoCary, GoApex, Orange County Transportation Services (OCTS), Chapel Hill Transit (CHT), Wolfline (NCSU), and Piedmont Authority for Regional Transportation (PART) – collaborated to conduct the Triangle Regional Transit Survey in the fall of 2023.

This system-wide tablet-based survey collected data on fixed route user demographics, ridership, and origin-destination data.

Information obtained from the surveys will be used to:

- Support the long range and metropolitan transportation plans for Capital Area Metropolitan Planning Organization (CAMPO) and Durham-Chapel Hill-Carrboro MPO (DCHC-MPO);
- Support county transit plans, future rail and BRT corridors, and other initiatives;
- Inform Triangle regional travel demand (TRM) and STOPS model updates;
- Meet Federal requirements that Federally-funded or regionally significant transportation projects must be identified in a transportation plan that demonstrates conformity with National Ambient Air Quality Standards (NAAQS); and
- Inform long-range multimodal transportation network plans across the region.

## Background and History

This survey builds on past surveying efforts in the region.

Transit providers throughout the region were surveyed in 2006, including Capital Area Transit (now GoRaleigh), Durham Area Transit Authority (now GoDurham), CHT, Cary Transit (CTRAN, now GoCary), Triangle Transit (now GoTriangle), NCSU and Duke University Transit.

In Fall of 2010, a paper-based ridership survey was administered to four transit agencies in the CAMPO region: GoRaleigh, GoTriangle, GoCary, and NCSU.

In Fall of 2014, GoTriangle conducted a limited onboard survey to support research and model validation for the Durham-Orange Light Rail Transit (D-O LRT) corridor.

In Fall of 2015, the tablet-based Wake County Transit Customer Survey was conducted on GoRaleigh, GoTriangle, GoCary, and NCSU services, building on research conducted in 2010. In addition to collecting information on origins and destinations, trip characteristics, and rider demographics, this survey also examined customer satisfaction and branding.

Since the adoption of the Wake Transit Plan in 2016, customer satisfaction surveys have been carried out by individual agencies separately from origin-destination (OD) surveys. Customer service surveys were conducted on CHT in 2016 and 2019, GoDurham in 2018, and on GoRaleigh, GoTriangle, GoCary, and CHT in both 2018 and 2019. CHT also conducted Community Non-Rider surveys in 2016 and 2018.

In early Spring 2020, the transit agencies in the Triangle Region coordinated to initiate the Triangle Regional Transit Survey. The survey was suspended in 2020 due to the COVID-19 pandemic. The agencies restarted the survey the following year, but it was canceled in Summer 2021. After a suspension of all surveys in the region for several years, in 2023 GoTriangle led a customer service survey on GoDurham, GoRaleigh, GoTriangle, and GoCary, building on the aforementioned customer service surveys.

Planning for the current survey began in Spring 2023.

# Methodology Overview

The survey methodology was coordinated among participating agencies and detailed in a memo dated August 22, 2023.

## Surveyed Systems

The survey was conducted by onboard interviewers on buses for the transit agencies serving Wake, Orange, Durham, Guilford, and Alamance Counties – GoRaleigh, GoTriangle, GoDurham, GoCary, GoApex, OCTS, CHT, NCSU, and PART. These agencies serve the City of Raleigh, Wake County, the Research Triangle Region, City of Durham / Durham County, Town of Cary, Town of Apex, Orange County, Town of Chapel Hill / UNC Chapel Hill, North Carolina State University, and the Piedmont Triad Region. The survey was conducted as a two-part process: first, an On-to-Off (O2O) survey was conducted on higher volume or regional priority transit corridors (select GoDurham, GoRaleigh, CHT, GoTriangle, and NCSU systems and routes), then a full onboard OD survey was conducted of all agencies and systems.

## On-to-off Survey

The O2O survey collected the boarding and alighting locations of riders on each transit route. This survey was conducted to develop a more detailed plan for expanding and weighting OD survey data for selected routes. For the O2O survey, video and GPS equipment was temporarily installed on select routes. This method captures more than 98 percent of all boardings (on) and alightings (off) by capturing photos of the shoes of riders when they board and alight the bus – no identifiable detail is captured by the equipment, so riders remain anonymous. Included with each photo, is data regarding the time, direction, and location of the vehicle..

O2O routes were selected based on a combination of factors, including ridership, regional priorities, and agency input. Routes with average weekday ridership greater than 1,000, as well as routes along the proposed commuter rail project and

Bus Rapid Transit (BRT) corridors were prioritized. Input from the regional transit agencies was also incorporated to finalize which routes received O2O surveying. The complete list of O2O routes is shown in Appendix B - Final Oversampling Plan and Percentages by Agency.

## Origin-Destination Survey

### SURVEY INSTRUMENT

The OD survey consisted of questions about trip characteristics and rider demographics. It included questions necessary to meet data requirements of the regional travel demand model and Metropolitan Transportation Plan (MTP) updates and incorporated or updated questions from previous on-board surveys as appropriate. While the core survey questions were consistent for all agencies, questions regarding fare-free service and fare payments were different for the Piedmont Authority for Regional Transportation (PART), as it was the only system charging fares during the survey period. The survey instrument was developed in a tablet (electronic) format and a printed (paper) version for use if needed. Survey questions captured data on:

- Direction of travel
- Any other transit routes used and number of transfers
- Origin/destination
- Boarding/alighting location and coordinates for each location

- Access and egress modes
- Trip purpose
- Rider perception of fare free transit service (all systems except PART)
- Fare payment (PART only)
- Gender/race and other demographic information of respondent

### **SURVEY SAMPLING PLAN**

The sampling plan was developed for weekday travel using historic average weekday ridership by route and mirrors the methodology used in the 2015 ridership survey. Ridership was also evaluated by time of day to determine surveying goals for peak periods (AM, midday, and PM peaks) and non-peak periods. This plan includes data collection targets by transit system, specifically, the percentage of trips to be obtained on fixed transit routes.

General guidance and past experience with the FTA process informed the development of the sampling plan. At a minimum, 10 percent of each system’s average weekday ridership was to be surveyed during the survey, this percentage was determined based off funding availability for the this project.

Additionally, a set of tiered priority corridors was developed for the region for which oversampling is desired, with at least a 20 percent target for surveying. Similar to the O2O routes, these tiered priority routes for OD surveying reflect existing ridership and future plans for fixed-route bus or rail services.

The full sampling plan is included in Appendix B - Final Oversampling Plan and Percentages by Agency.

### **TRAINING AND TESTING**

Training was conducted from October 3 through October 12, 2023. All surveyors were trained in the classroom and in the field prior to the on-board survey administration. Each surveyor was required to demonstrate that they could proficiently conduct the survey. Surveyors unable to demonstrate proficiency in all tasks related to the administration of the survey were replaced. Surveyors were also reviewed throughout the data collection effort and were retrained if issues were encountered.

A pilot test of the survey instrument conducted from September 18, 2023 to September 21, 2023. The pilot test addressed survey design, length, and response rate. Results of the pilot test were used to make changes to the survey instrument and methodology prior to survey administration.

### **AGENCY STAFF AND RIDER NOTIFICATIONS**

Agencies were provided with templates for Survey Authorization Letters for the O2O and OD surveys, which could be customized and distributed to bus operators informing them of the survey.

Riders were informed via onboard notifications. GoRaleigh developed an onboard notification which was displayed inside screens on buses and provided it to other agencies to use the same way or as a printed placard.

### **SURVEY PERIOD AND ADMINISTRATION**

Surveys were administered during weekdays (Monday-Thursday) when schools were in session from October 2 through December 1, and avoided blackout dates. The surveys were administered from 5:00 am - 9:00 pm or during the hours for which the route is operating. Blackout dates, where no survey collection occurred, were based on holidays and school schedules. Ridership was expected to be outside the norm on these days. Blackout dates were: October 2, October 6, October 13, October 27, November 22, November 23, November 24, and December 1, 2023.

The survey team used an interview technique aided by tablets that integrates geographic information system (GIS) software to allow for accurate geocoding of most survey data as the survey is taken. Spanish-speaking surveyors and copies of surveys in Spanish were made available. For riders who were not fluent in either English or Spanish, surveyors asked riders to select from a list of languages at the

start of the survey; if the rider selected a language that the surveyor cannot speak, they were prompted to take a self-administered survey via text or email, or to contact the surveyor's call center which is equipped with interviewers fluent in approximately 20 languages.

Riders were selected at random to participate in the survey based on the sampling goals established for each route. After the surveys were administered on board, survey records were reviewed to ensure all necessary information was provided. If any information was missing, survey respondents were called to complete the survey by phone.

## **Data Processing**

To analyze survey results, sample data was expanded to the full ridership using O2O survey data and automated passenger counter (APC) data for each agency, route, time of day, and day of survey. The number of completed surveys for each route was compared to the average daily ridership during the survey period. This ratio was used to develop unlinked weight factors for each route that were used to weight each individual completed survey. The total number of transfers was also recorded for the riders that helped to create linked weight factors.

Unlinked weighted survey data was used for all results and analysis presented in subsequent sections of this report. Details on completed surveys and the sample expansion are included as Appendix C - Sample Expansion / Data Weighting and Expansion.

# Interagency Coordination

The regional survey effort required extensive coordination among regional partners. This included coordination between the two MPOs representing the three-county region and participation by the nine transit agencies involved in the survey. The Institute for Transportation Research and Education (ITRE) team that oversees the Triangle Regional Model was also engaged as a member of the regional interagency team. GoRaleigh served as the lead agency in coordinating the overall survey and worked in cooperation with GoTriangle for participation of agencies in Durham and Orange Counties.

## Interagency Team Meetings

Four regional interagency team meetings were held with representatives from all surveyed agencies, CAMPO, DCHC-MPO, and ITRE. Additional meetings and phone calls were conducted with individual transit agencies to coordinate data collection and other issues at various points throughout the process.

Meeting	Date	Meeting objectives
Kick-off Meeting	July 19, 2023	<ul style="list-style-type: none"> <li>• Describe the background and history of the survey</li> <li>• Confirm key survey goals and priority transit routes</li> <li>• Present approach and methodology, along with survey schedule</li> <li>• Follow up on data collection efforts</li> <li>• Collect general feedback from agency partners on the survey</li> </ul>
Review Meeting	August 23, 2023	<ul style="list-style-type: none"> <li>• Share feedback received from regional partners on Survey Instrument and Methodology Memo</li> <li>• Provide an update on data collection and final information items needed</li> <li>• Present and obtain input on Sampling Plans and Survey Management Plan</li> <li>• Present updated O2O preferred and OD tiered routes</li> <li>• Provide overview of implementation of the O2O and Onboard Surveys</li> <li>• Review updated schedule</li> </ul>
Agency Briefing	September 26, 2023	<ul style="list-style-type: none"> <li>• Share response highlights for the pilot survey</li> <li>• Provide updates on the pending O2O and OD surveys</li> <li>• Present and collect feedback from agency partners on adjustments made to the survey based on the pilot, as well as final O2O routes</li> <li>• Preview potential dashboard options</li> <li>• Review updated schedule</li> </ul>
Final Interagency Meeting	January 31, 2024	<ul style="list-style-type: none"> <li>• Share highlights of key survey findings of OD Survey</li> <li>• Present an overview of the enhanced dashboard</li> <li>• Preview schedule to deliverables and next steps for individual agencies</li> </ul>

# Key Findings

This section highlights the key findings of the weighted results of the OD survey for all systems as well as individual agencies. Characteristics such as individual demographics, household characteristics, employment status, trip purpose, and origin-destination are included below. The weighting relates the number of surveys to the total number of boardings to better reflect the characteristics of all riders. More detailed findings from the survey are presented in the subsequent sections.

- **Many riders are dependent on transit**, with only 26.9 percent reporting they own a car which they could have used to complete this trip. Moreover, 42 percent of riders reported that they don't have a license.
  - Across the systems, GoDurham, GoRaleigh, and GoCary/GoApex had more than 50 percent of riders who don't own a car. Furthermore, about 70 percent of riders in GoDurham and GoCary/GoApex reported that they don't have a driver's license
  - Those without the option to drive were more likely to make trips that were not for work or school, more likely to not be a worker or student, more likely to go further to get to stops, more likely to walk, more likely to transfer, and less likely to do telework.
- Correspondingly, **most riders are from low-income households** – an estimated 65 percent have incomes below the regional median. The number of riders with an income lower than \$10,000 was high at 18.0 percent systemwide.
  - For various reasons respondents here and in other regions often refuse to provide their household income: about 30 percent of riders across all systems refused to disclose their income, with the highest percentage on the GoCary/GoApex system at about 60 percent.
- **The majority of riders** (62.6 percent) **are between 18 and 34 years old**. The 18-24 segment was high (39.9 percent), especially in the systems which focus on universities, NCSU (84.1 percent) and Chapel Hill (54.7 percent). On GoTriangle, GoDurham, GoRaleigh, and GoCary/GoApex, 45-55 percent of riders were younger than 35. GoCary/GoApex had higher youth ridership, with 10.2 percent of riders under 18.
- **Ridership across the system is diverse.**
  - 77.5 percent of the riders speak English at home with the remaining speaking Spanish (10.5 percent), Hindi (2.1 percent), Chinese (1.9 percent), French (1.3 percent), and many other languages (6.7 percent).
  - 42.6 percent of riders overall identified as Black/African American and 30.4 percent as white. Around 9.8 percent of riders were Hispanic/Latino. The ratio of Black/African American riders was higher in GoDurham and NCSU transit systems.
- **Most trips had home as one end of the trip** and second most prominent origin/destination was school/college.
- **The majority of transit riders are workers, students, or both.** The employment and student statuses of riders showed that 42.7 percent were (non-student) workers, 23.4 percent were students, 21.2 percent were students who were also employed, and the remaining 12.6 percent were neither workers nor students.
  - The student population, including both employed and unemployed students, was higher in the CHT and NCSU systems, 68.8 percent and 97.1 percent respectively.
  - 54 percent of trips by the employed (but not student) group were home to work (or the reverse), but for the non-employed students, nearly three quarters were home to school.

- People who neither worked nor went to school took the buses for shopping, medical appointments, recreation, and other errands.
- Around 19.1 percent of riders' households did not include any employed persons.
- **By and large, people walk** (90-plus percent) **less than 6 minutes** (75 percent) **to reach their bus stop.**
  - Biking to or from the bus is limited, less than 1 percent, and use of a car by either driving or drop off was just under 5% percent.
  - The longest access/egress times were on GoCary/GoApex at 15-20 percent over 10 minutes compared to 10-14 percent for the other Go agencies and less than 10 percent overall.
  - 7 percent of respondents said that they had used a bikeshare or scooter share service in the past 30 days, but less than 1 percent of bus trips involved bikeshare or scooter share.
- **73.8 percent of riders did not make any transfer from one bus to another.** More than 90 percent of riders made no transfer in the CHT, OCTS, NCSU, and PART systems.
- **The time distribution of boardings does not have distinct peaks except for 7-8 am for work trips.** Other trip types are spread over the day with the highest number in midday.
- **39 percent of riders used some type of trip planning like an app** (27 percent) **or agency website** (7 percent). Students were more likely to use trip planning than other groups, but trip planning otherwise did not vary by purpose or agency.

# On-to-Off Survey Results

The on-to-off survey complemented and supplemented the main onboard survey with information on the boarding and alighting locations of riders. Unlike the main survey, no further information – demographics, trip purpose, trip origin, etc. – was collected beyond route, direction, and time. The simple nature allowed many responses, with nearly 12 thousand received. Table 2 shows the breakdown of surveys by agency and time of day.

**Table 2: Breakdown of O2O surveys by the agency and time of day**

Agency	Early AM (Before 6:00 AM)	AM (6:00 AM to 8:59 AM)	Midday (9:00 AM to 3:29 PM)	PM (3:30 PM to 6:29 PM)	Evening (After 6:30 PM)	Total
GoTriangle	4	188	448	182	31	853
GoDurham	25	363	1,212	607	345	2,552
GoRaleigh	57	469	1,444	686	253	2,909
Chapel Hill	38	772	1,492	855	167	3,324
NCSU	17	224	1,178	537	381	2,337
<b>Total</b>	<b>141</b>	<b>2,016</b>	<b>5,774</b>	<b>2,867</b>	<b>1,177</b>	<b>11,975</b>

This effort was focused on the highest ridership routes, whereas the OD Survey collected a sample of nearly ten thousand on a much broader set of routes. The number of surveyed routes is shown by agency in the table below. OD data is valuable for understanding the route segments traveled. Boarding and alighting counts give the number of people getting on and off, but not the link between those activities.

**Table 3: Breakdown of O2O surveys by the agency and time of day**

Agency	O2O Routes	OD Routes
Chapel Hill	5	19
GoDurham	11	19
GoRaleigh	22	38
GoTriangle	8	13
NCSU	2	10
GoCary/GoApex	0	9
Orange County	0	3
Piedmont Triad	0	1
<b>Total</b>	<b>48</b>	<b>112</b>

# Origin-Destination Survey Results

This effort collected 9,892 surveys over all agencies' buses (Table 4). These sample data were weighted using the full ridership data from O2O survey and APC. Thus, this section features analysis and descriptions of the breakdown of answers using the weighted, unlinked totals. By applying the weights to the sample, the numbers represent the total daily ridership of the system by number of boardings. The data also contains a linked weight which divides the unlinked weight by one plus number of transfers to approximate unique trips that include one or more boardings. While the latter is useful, survey results are presented as unlinked values.

**Table 4: Total number of unweighted and weighted surveys**

<b>Transit System</b>	<b>Unweighted Surveys Collected</b>	<b>Weighted-Unlinked Expanded Surveys</b>
<b>GoTriangle</b>	1,352	5,912
<b>GoDurham</b>	2,819	16,769
<b>GoRaleigh</b>	2,032	14,104
<b>GoCary/GoApex</b>	177	1,087
<b>CHT</b>	1,669	11,833
<b>OCTS</b>	22	241
<b>NCSU</b>	1,799	14,976
<b>PART</b>	22	124
<b>Total</b>	<b>9,892</b>	<b>65,046</b>

Note that the number of surveys on OCTS and PART is (proportionally) small. As a result, readers should consider when examining the results below that shares of answers for these individual agencies will be represented by only a few responses. In some cases, OCTS and PART look vastly different from other agencies.

## Rider and Household Characteristics

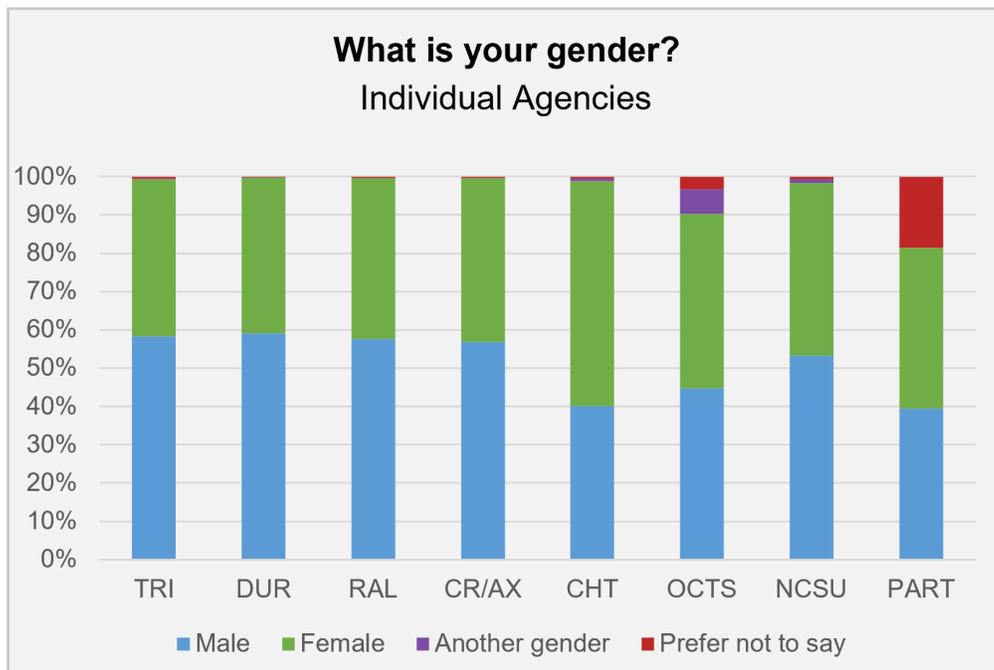
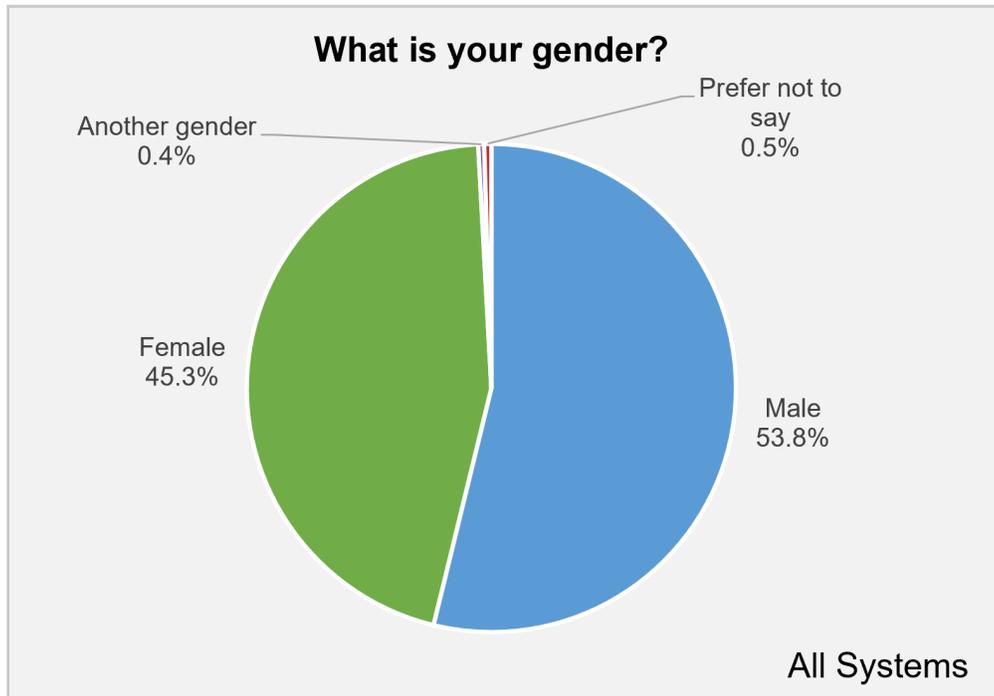
This section discusses the data that describe the demographic characteristics of fixed route transit riders including gender, age, race and ethnicity, number of people in the household, household income, number of available vehicles in the household, and employment status. The responses to these questions will help agencies understand the populations they serve and deliver services that meet their needs.

### INDIVIDUAL DEMOGRAPHICS

The following section summarizes the individual demographic characteristics of survey respondents. The combined weighted and unlinked results for all systems and individual agencies for characteristics such as gender, race and ethnicity, and age are presented.

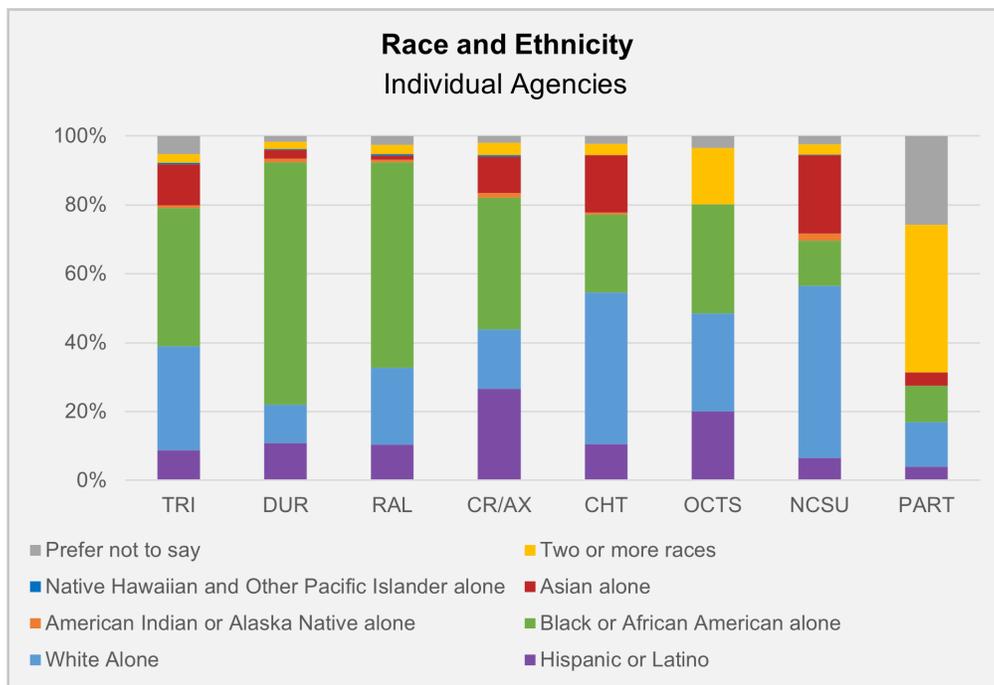
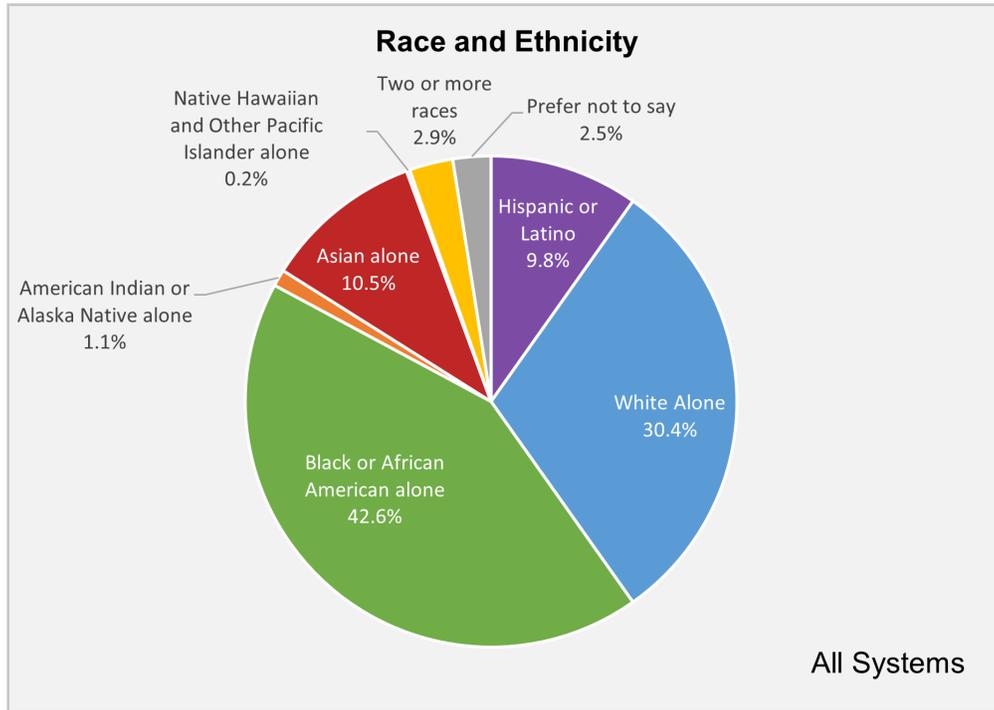
## Gender

Per the US Census 2020 data, 48.5 percent of Wake County’s total population, 47.6 percent of Durham County’s total population, and 47.5 percent of Orange County’s total population identifies as male. In contrast, the results for all systems show that the percentage of male riders (53.8 percent) was higher than the percentage identifying as female (45.3 percent). This difference may be due to rider composition or how they respond (or refuse to respond) to the survey. Across the agencies, CHT had the highest number of female riders (58.8 percent) and there was a higher number of riders (6.4 percent) on OCTS who responded that their gender was other than male or female. Additionally, 18.6 percent of riders on PART didn’t disclose their gender.



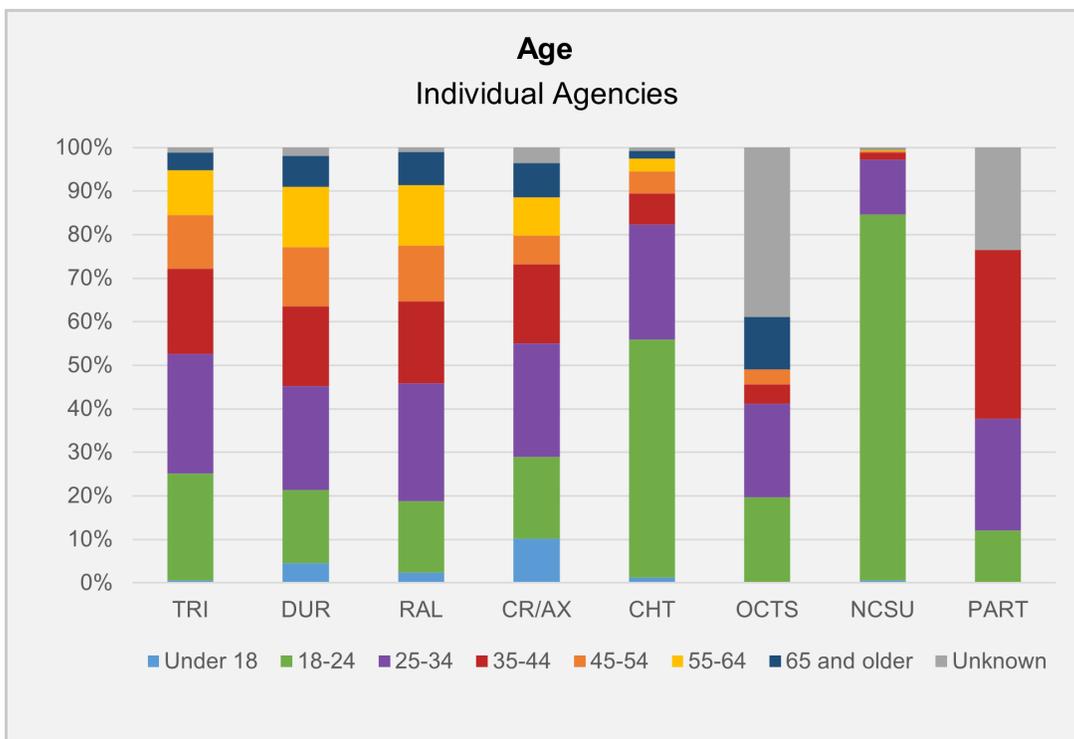
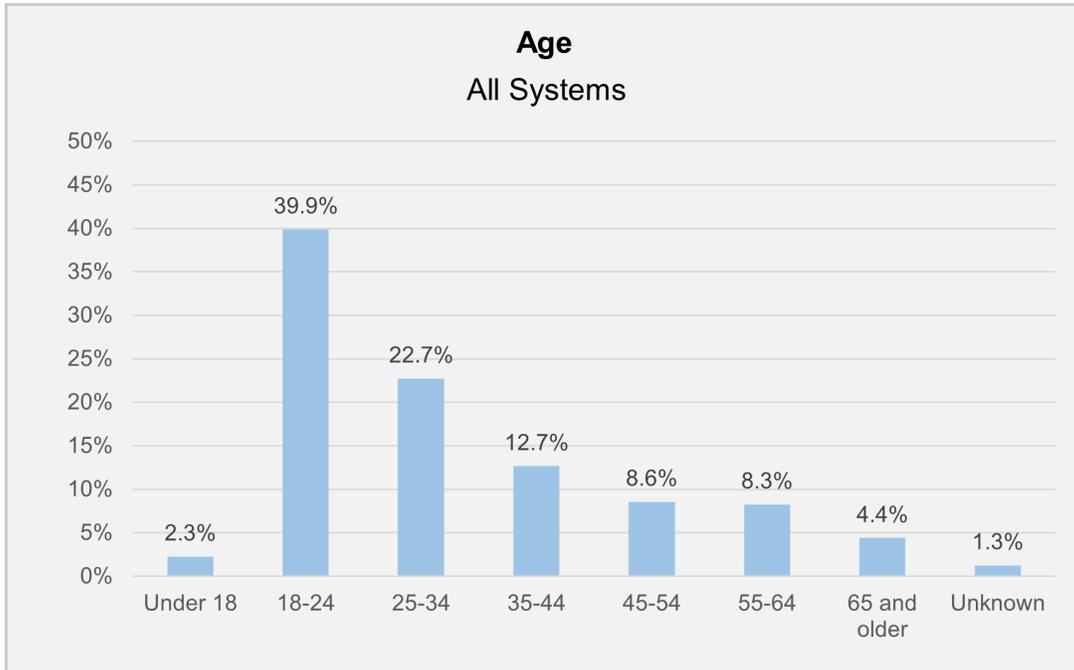
## Race and Ethnicity

Respondents were asked to select all the races/ethnicities with which they identified. This showed strong representation among those identifying as Hispanic or Latino (9.8 percent) and Black/African American (42.6 percent) along with White (30.4 percent), Asian (10.5 percent) and two or more races (2.9 percent). This is contrast with the US Census 2020 data, where all three counties combined – Wake County, Durham County, and Orange County – have only a 20.0 percent Black/African American population and 54.6 percent White population. On the GoDurham system, there were 70.4 percent Black/African American riders, compared to 33.6 percent for the general population of Durham County.



## Age

The analysis for all systems data shows that most of the riders were adults below the age of 35 with 39.9 percent between 18 and 24 years and 22.7 percent between 25 and 34 years of age. This group mostly comprises young students and young workers, thus, many riders were using the transit system to get to their schools, universities, or workplaces. For all systems, around 4.4 percent of riders were over the age of 65. The agencies serving large universities had the highest share between 18 and 24 years old – NCSU at 84.1 percent and CHT at 54.7 percent. Alamance County served more senior riders (65 and older), ranging from 6.0 to 8.0 percent on the GoTriangle, GoDurham, GoRaleigh, and GoCary/GoApex systems. As per 2018-2022 ACS data, 17 percent of the population of Alamance County is over age 65.

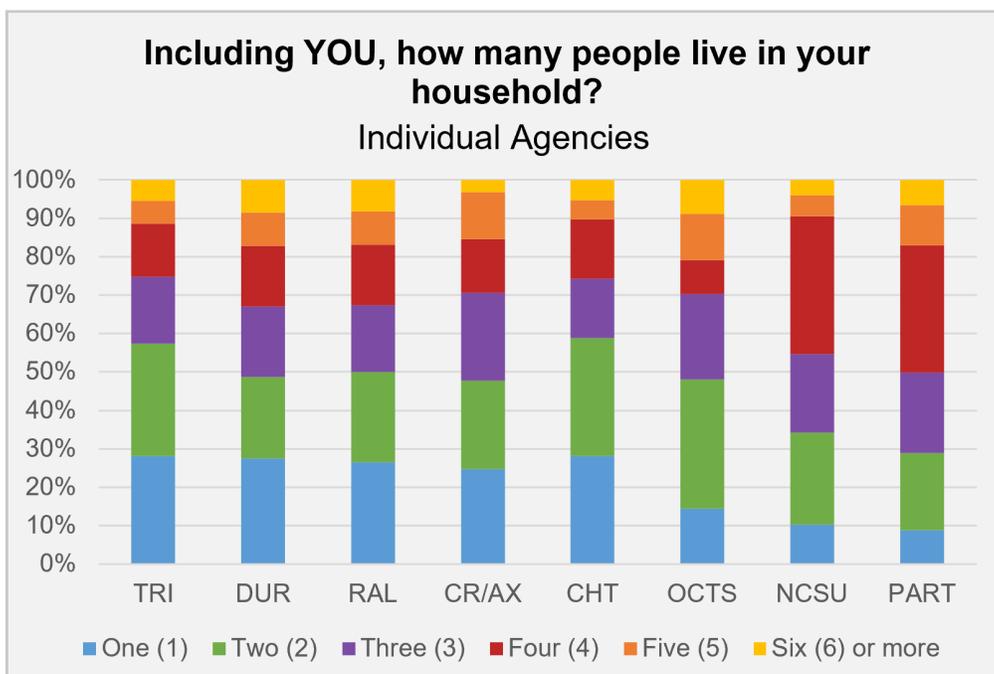
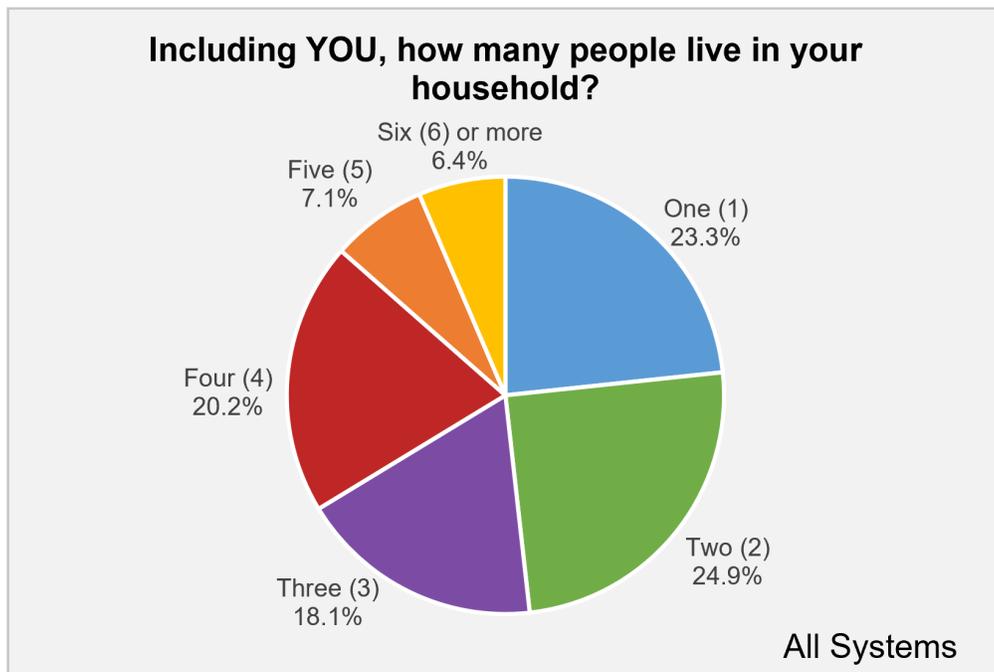


## HOUSEHOLD CHARACTERISTICS

The following section talks about the household characteristics of the respondents. The combined weighted and unlinked results for all systems and individual agencies for characteristics such as household size, household income, and vehicle ownership are presented.

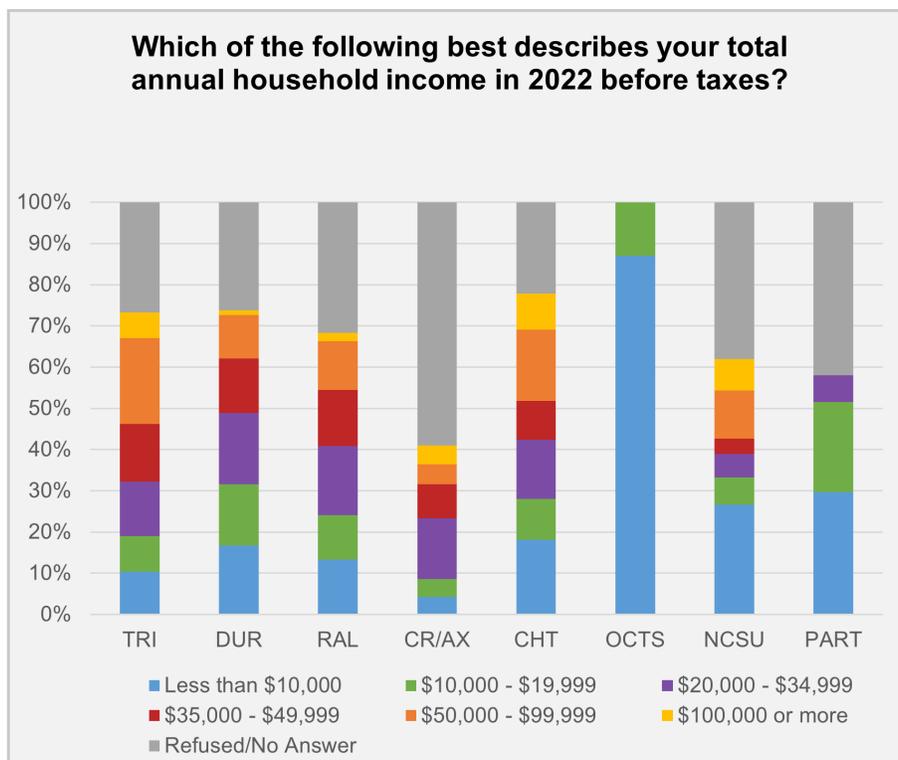
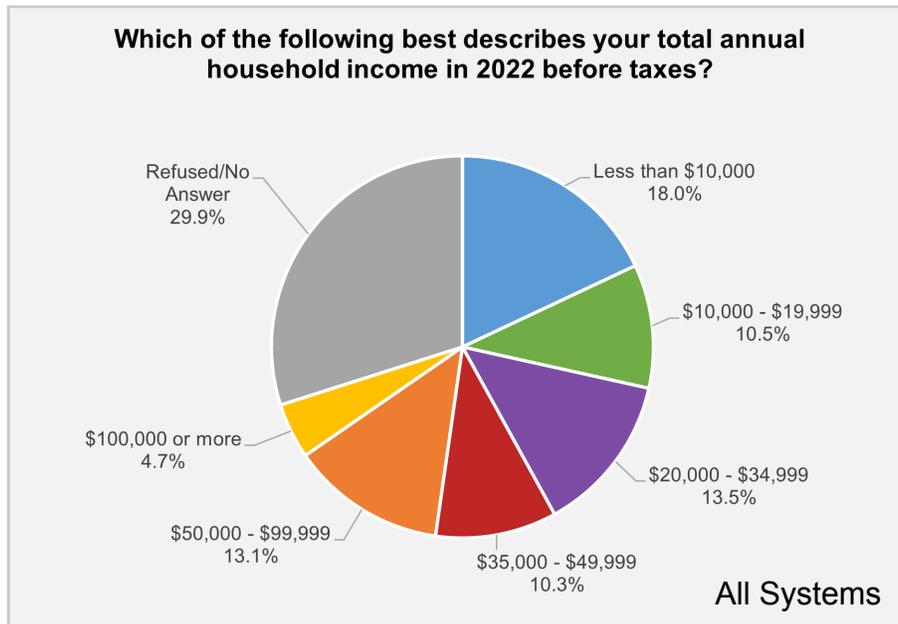
### Household Size

The results for all systems show a nearly 50-50 split between riders in households with one to two people and households with three or more people, with 23.3 percent single person, 24.9 percent two-person, 18.1 percent three-person, 20.2 percent four-person, and 7.1 percent five-or-more-person households. Across the agencies, 65-75 percent of riders in GoTriangle, GoDurham, GoRaleigh, GoCary/GoApex, CHT, and OCTS systems had up to three people in their households whereas almost 50 percent of households using the NCSU and PART systems had more than four people in their households.



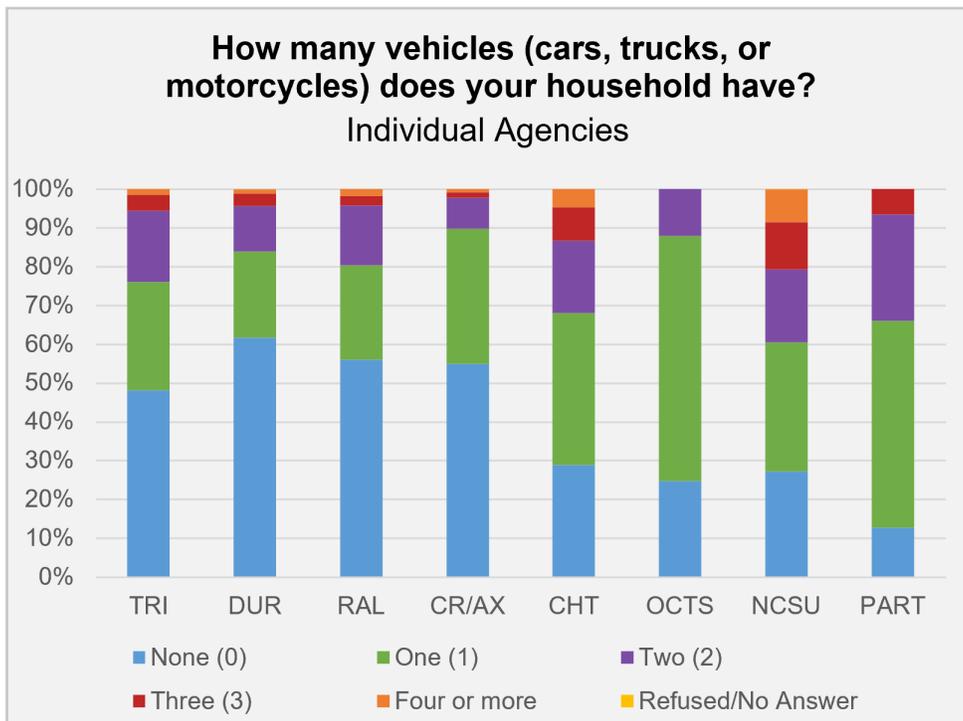
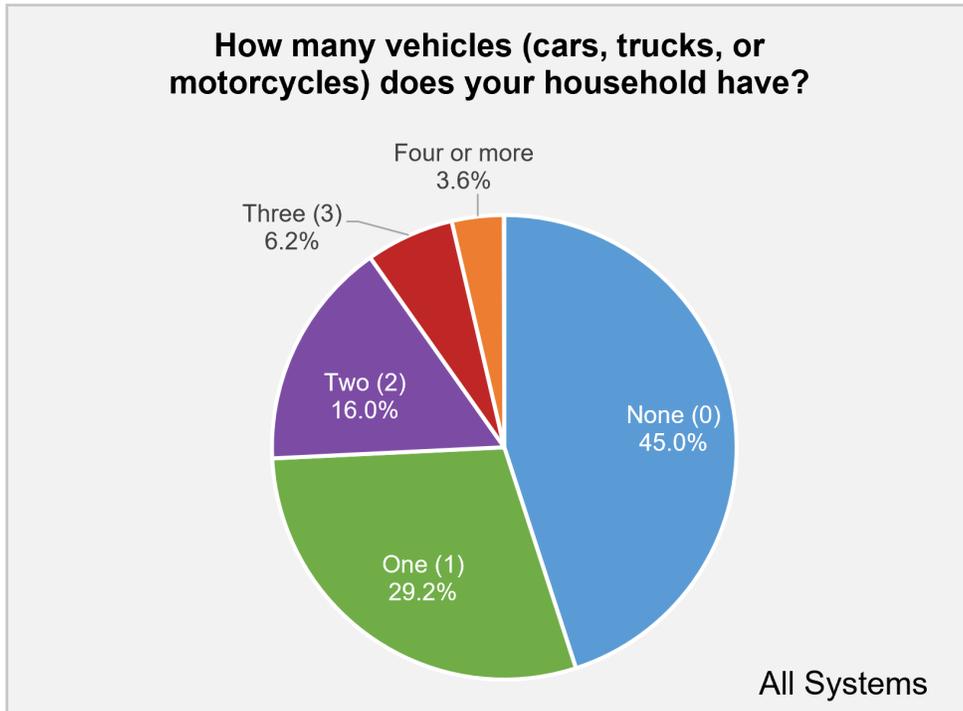
## Income

Per 2018-2022 American Community Survey (ACS) 5-year estimates, the combined percentage of households with income below \$10,000 in Wake County, Durham County, and Orange County is 3.8 percent whereas the ridership data shows that 18.0 percent of riders have a household income less than \$10,000. These results indicate a strong reliance on transit among those with very low incomes. On the other hand, riders with a household income of more than \$100,000 represented 4.7 percent for all systems compared to 45.7 percent of the population. The trend generally shows that transit usage and income are inversely correlated. Across the agencies, GoTriangle and CHT systems had the highest ratio of riders, 27.1 percent and 26.1 percent respectively, who belong to household with an income of more than \$50,000.. The 29.9 percent of respondents refusing to answer this question is typical for these types of surveys and lower than many, though it was particularly high on GoCary/GoApex (59 percent).



## Vehicle Ownership

The 2018-2022 ACS 5-year estimates show that there were only 4.7 percent of households with no vehicle. The ridership data shows that 45.0 percent of riders did not own a vehicle. Another 29.2 percent of riders have only one vehicle in their household. This indicates that most of the riders are using the transit system because of a lack of vehicles in their household. Looking at the ridership data of individual agencies, it was found that more than 50.0 percent of riders on the GoDurham, GoRaleigh, and GoCary/GoApex systems had no vehicles.



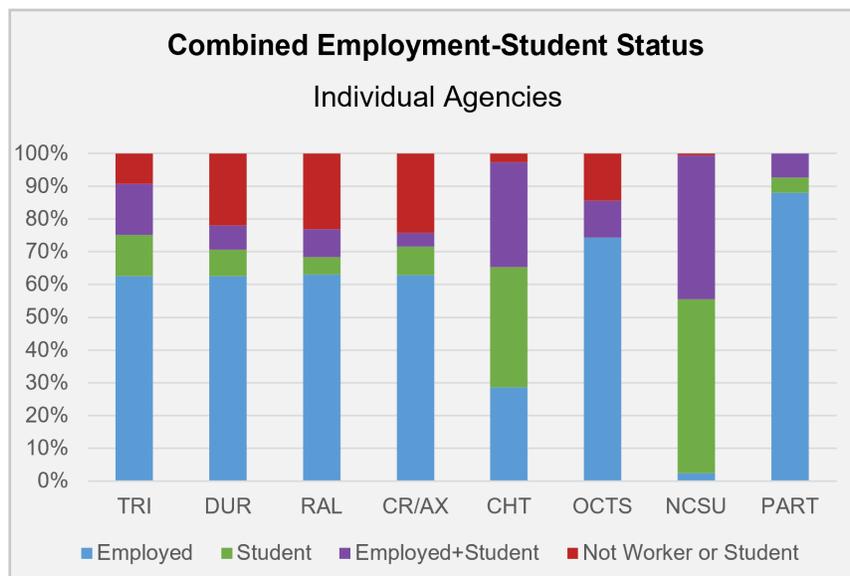
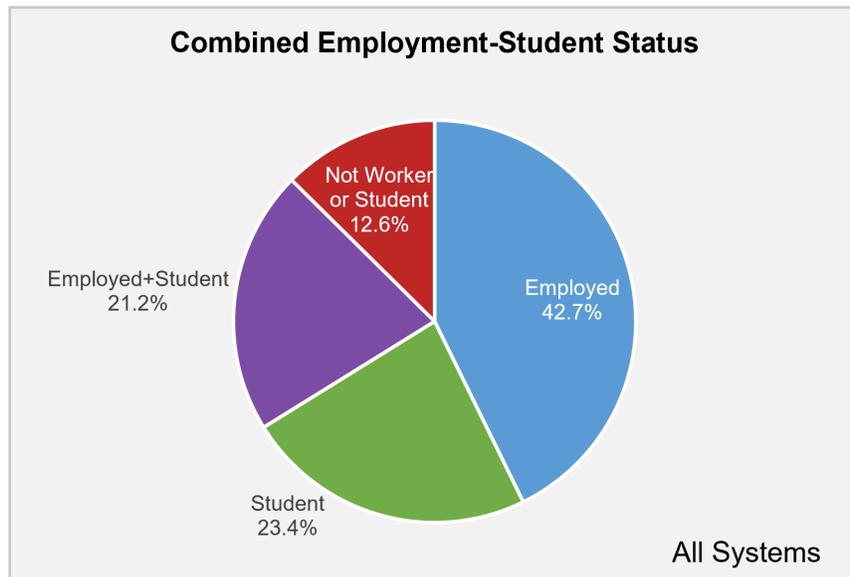
## EMPLOYMENT CHARACTERISTICS

The following section summarizes employment characteristics of the riders. The combined weighted and unlinked results for all systems and individual agencies for characteristics such as employment status, student status, number of people employed in household, and work location are presented. The student and employment status answers were combined in this analysis to create a variable with four categories – employed only, student only, employed and student, and not employed or student.

### Employment-Student Status

The results for all systems show that 42.7 percent of total riders were employed (only), 23.4 percent were students (only), 21.2 percent were students who were employed, and the remaining 12.6 percent of riders were neither workers nor students.

Most of the riders who were neither employed nor a student were traveling the transit system for shopping or personal business. Almost 75 percent of riders who were neither employed nor a student were traveling using the transit system because they did not own any vehicles. When comparing the individual agencies' results, it was observed that the student population, including both employed and unemployed students, was higher in the CHT and NCSU systems, 68.8 percent and 97.1 percent respectively.



### Employment Status

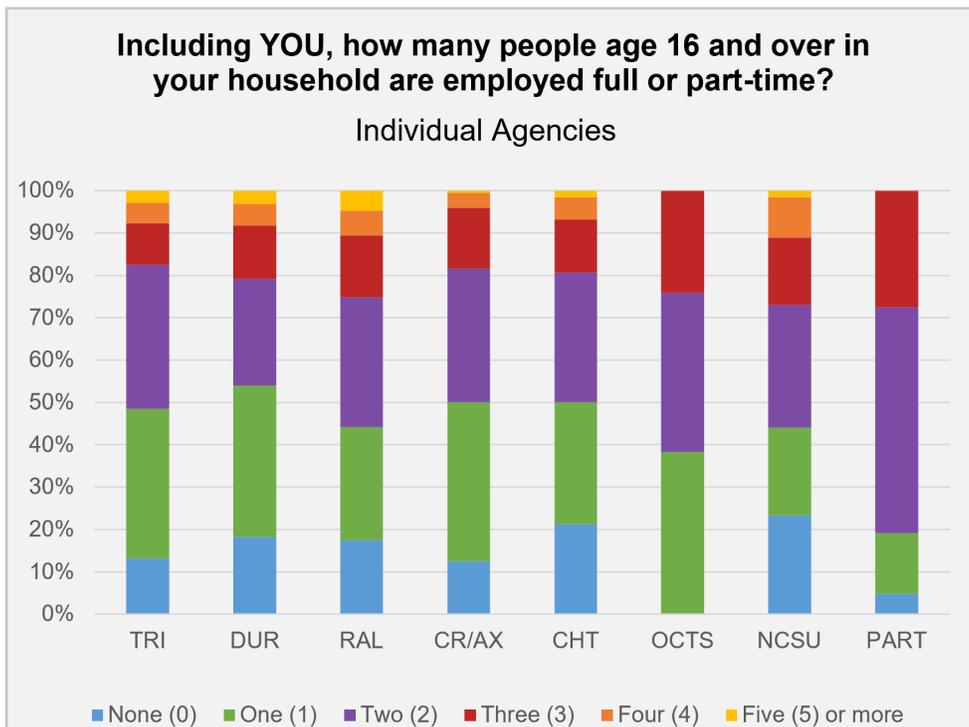
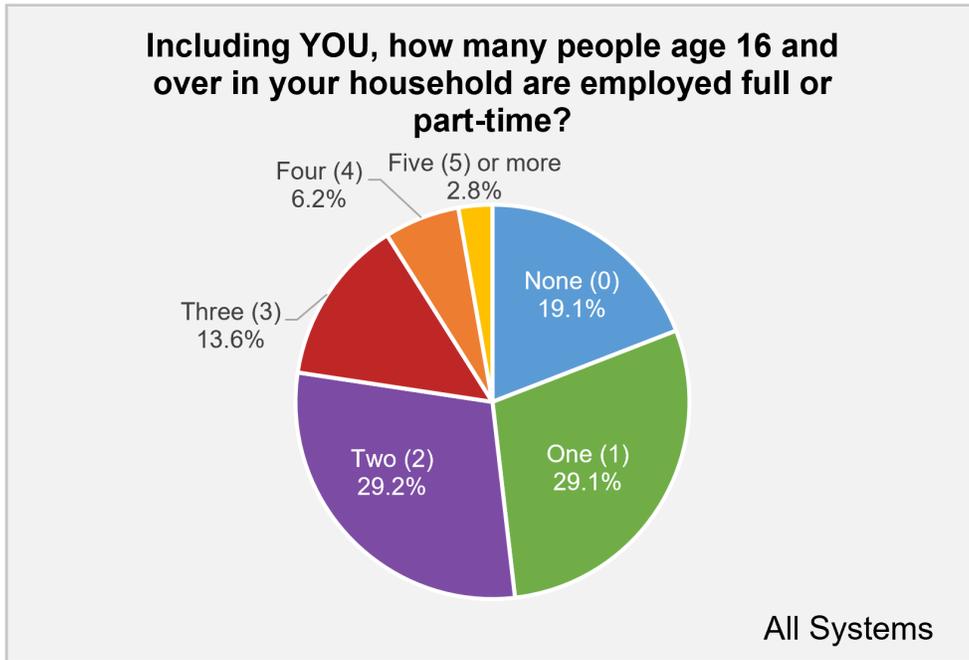
The analysis of data for all systems shows that 36.7 percent of the total riders were employed full-time, 27.2 percent were employed part-time, and the remaining were unemployed, including 4.7 percent retired.

**Table 5: Employment Status for All Systems**

<b>EMPLOYMENT STATUS</b>	<b>Total</b>
<b>Employed full-time (at least 35 hrs/wk)</b>	36.7%
<b>Employed part-time (less than 35 hrs/wk)</b>	27.2%
<b>Not currently employed, but seeking work</b>	6.1%
<b>Not currently employed, and not seeking work</b>	24.9%
<b>Retired</b>	4.7%
<b>Homemaker</b>	0.4%
<b>Total</b>	<b>100.0%</b>

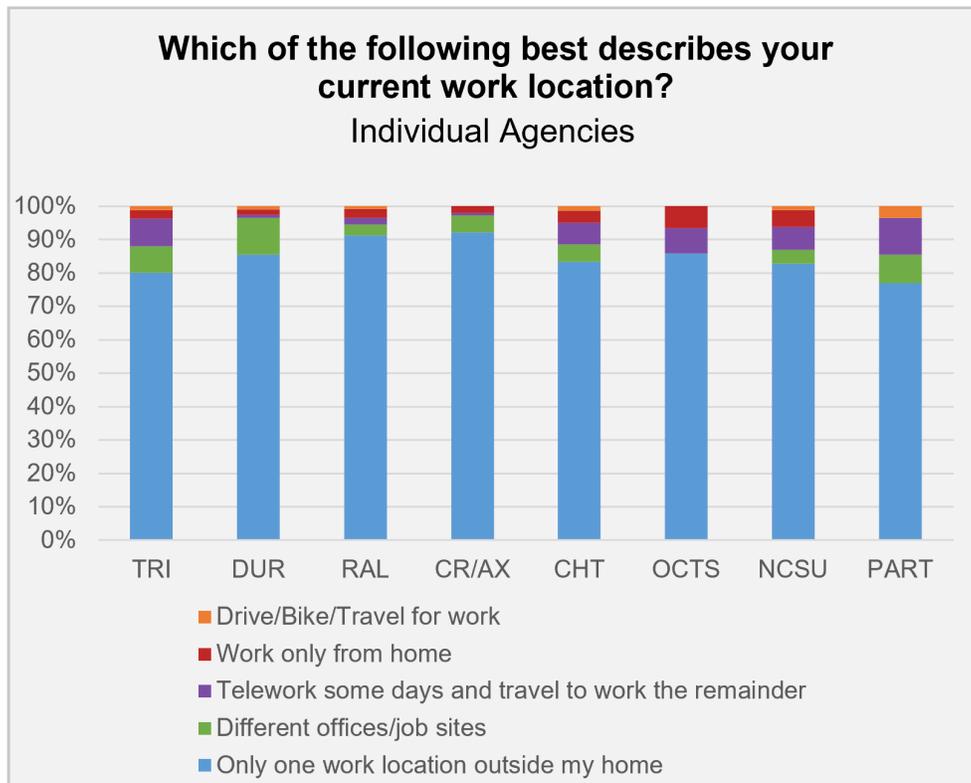
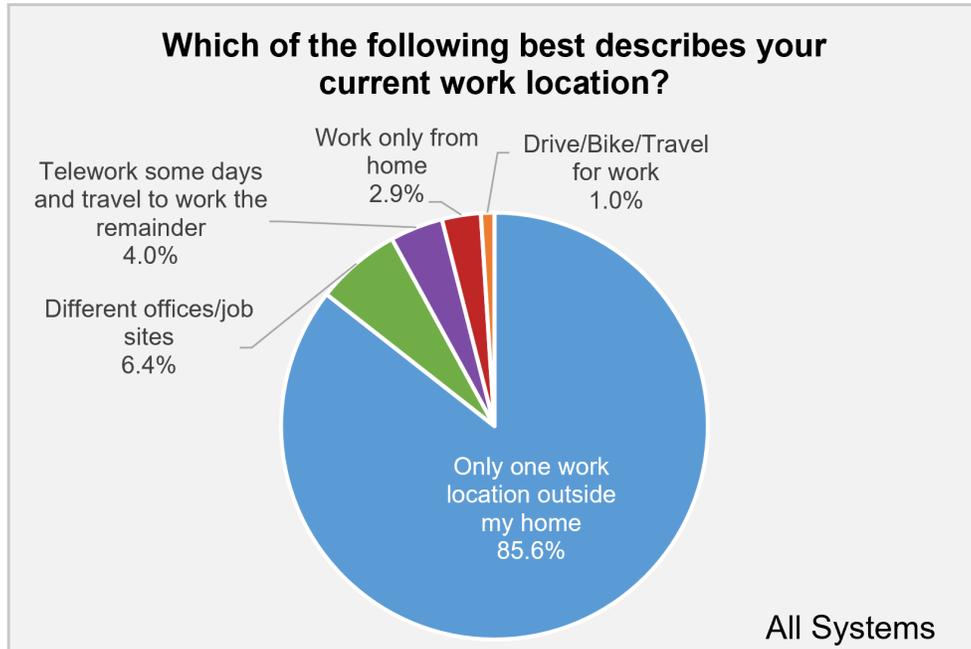
**Number of people employed in household**

As per the ridership data, around 60 percent of riders had either one or two people employed full-time or part-time in their household and 19.1 percent of households didn't have any employed person in their household – this could be the riders themselves or others. CHT and NCSU riders had a higher percentage of riders compared to other agencies, 21.2 percent and 23.3 percent respectively, who did not have any employed person in their household.



## Work Location

The results for all systems show that 85.6 percent of the employed riders reported that they only have one work location outside their home, 2.9 percent of riders responded they work from home and 4.0 percent reported they telework on some days and travel to work on other days. This indicates that people reliant on transit are less likely to have the option to work from home. Around 1.0 percent of riders said they drive/bike/travel for work, which means they are involved in jobs that involve moving from one place to another daily, such as a driver, a salesperson, or a delivery person. Looking at the ridership data for individual agencies, it was observed that more than 75 percent of the respondents across all agencies have only one work location outside their homes.

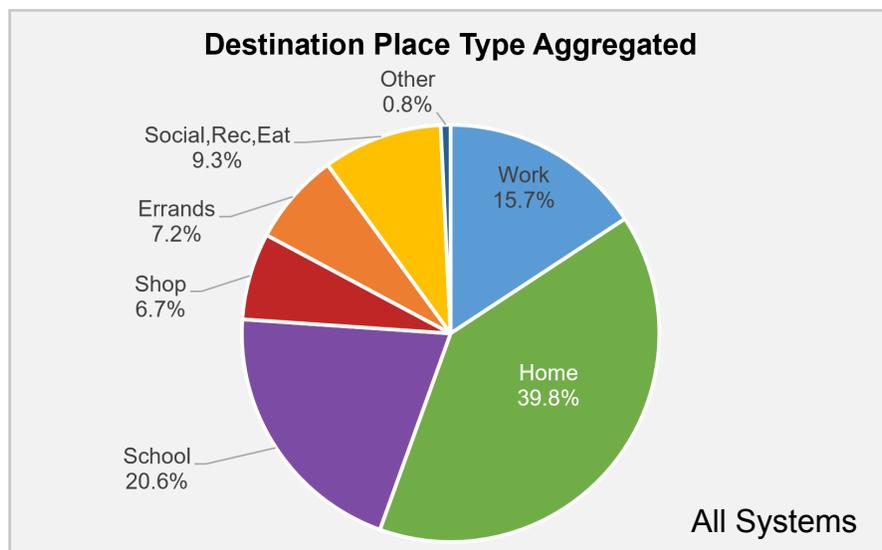
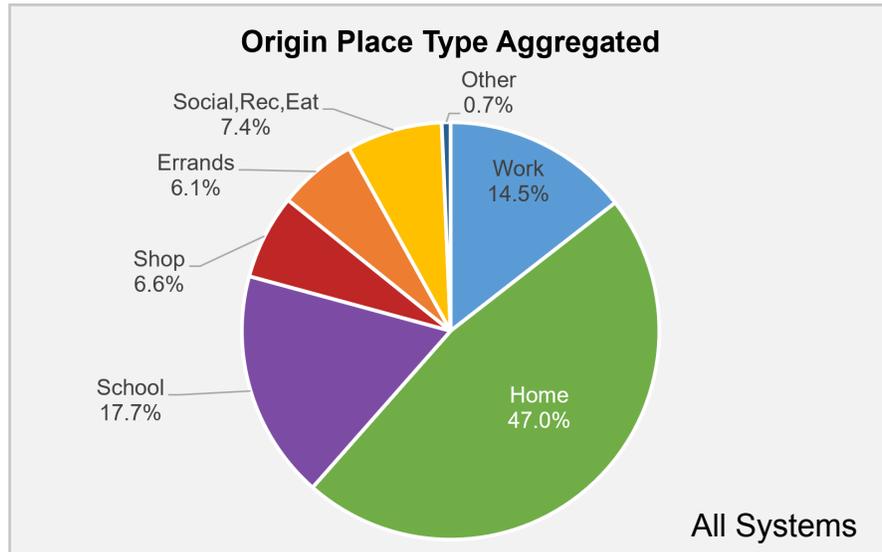


## TRIP PURPOSE AND ORIGIN/DESTINATION CHARACTERISTICS

This section characterizes the fixed route transit trip characteristics including the origin and destination of the trips, mode of transportation used to get to the buses and final destinations, time taken to get to the buses and final destinations, intercity travel, and number of transfers. Trip information will help each transit agency understand how their systems are being used by their customers and can help determine enhancements to services. In this analysis, new variables were created from results to describe the combination of origin and destination types.

### Origin and Destination Place Types

The weighted and unlinked results for origin and destination place types for all systems and individual agencies are shown in the charts and tables below. Ridership data shows that the majority of the riders were traveling between work and home. Home to school/university was the second most prominent trip purpose. Around 6-7 percent of the riders had shopping as their origin or destination, while 6-8 percent of the riders reported that they were running errands such as going for medical/hospital services or some personal business. Around 7-10 percent of riders were traveling to the restaurant/dining place, recreation/sightseeing/sporting event, or making a social visit to their friends/relatives. Only 1 percent of riders were going to a Hotel/Convention Center, Airport, train/bus station to board Amtrak/Greyhound/etc. or any other trip.



Across the agencies, the majority of CHT and NCSU riders, 49.2 percent and 69.3 percent respectively, were making home-based school trips; GoDurham, GoRaleigh, and GoCary/GoApex riders (45 percent to 52 percent) mostly carried out other home-based trips, which means they traveled to locations other than work or school such as shopping, errands or social trips, and these trips included beginning a trip from home or ending a trip at home.

**Table 6: Distribution of trip purpose across individual agencies**

Trip Purpose	TRI	DUR	RAL	CR/AX	CHT	OCTS	NCSU	PART	Total
Home-Based Work	46.6%	34.8%	31.9%	34.2%	24.6%	57.0%	4.5%	76.7%	<b>26.6%</b>
Home-Based School	14.1%	6.7%	5.8%	8.0%	49.2%	5.6%	69.3%	7.3%	<b>29.3%</b>
Home-Based Other	25.8%	46.1%	49.5%	52.0%	14.5%	37.4%	9.8%	16.0%	<b>30.9%</b>
Work-based Other	4.4%	4.5%	4.3%	2.6%	2.1%	0.0%	1.5%	0.0%	<b>3.3%</b>
Other-based Other	9.1%	7.9%	8.5%	3.3%	9.6%	0.0%	14.9%	0.0%	<b>9.9%</b>

The following table shows the distribution of origins and destinations for all riders. The highest number of trips were from home to work, home to school, and vice versa. Home was the most occurring trip purpose for both, origin and destination, types.

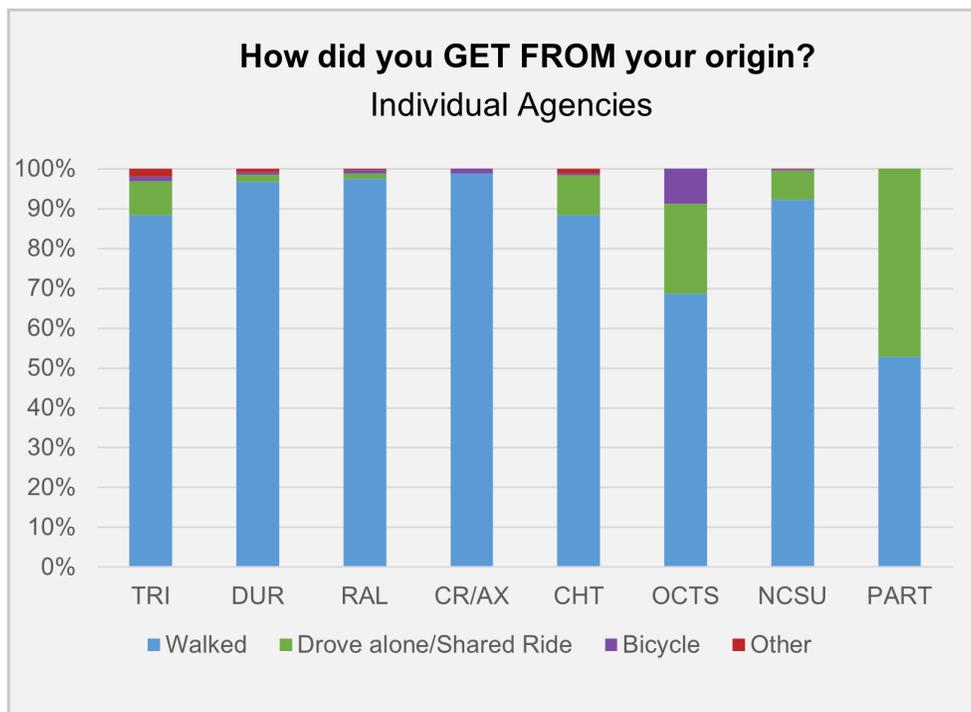
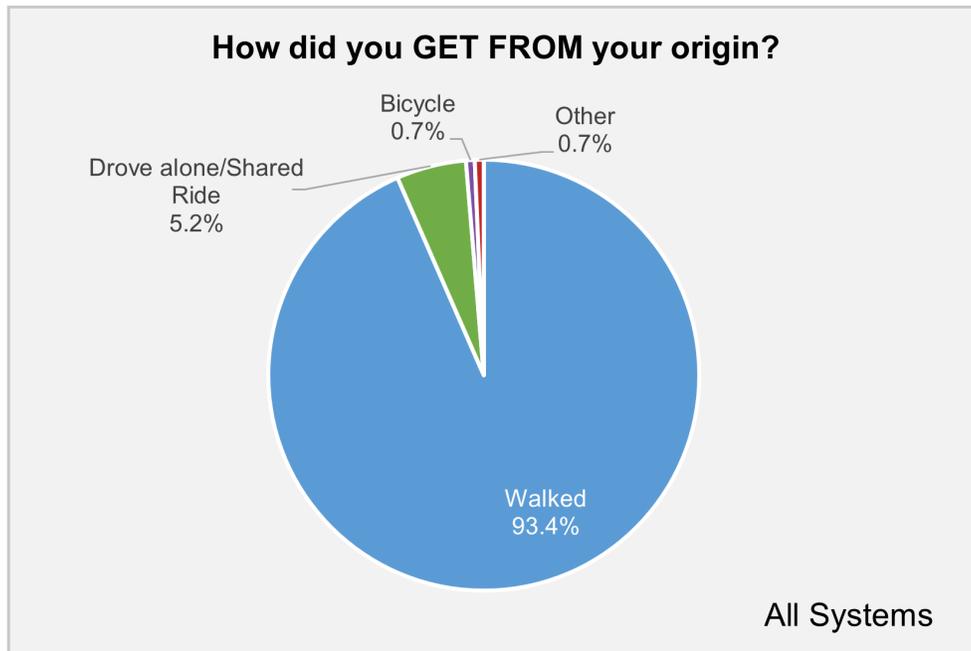
**Table 7: Interaction between Origin and Destination Place Type for All Systems**

Origin \ Destination	Destination							Total
	Home	Work	School	Shop	Errands	Social, Rec, Eat	Other	
Home	0.0%	14.1%	16.6%	4.6%	5.2%	6.0%	0.5%	<b>47.0%</b>
Work	12.5%	0.4%	0.2%	0.4%	0.5%	0.5%	0.0%	<b>14.5%</b>
School	12.7%	0.3%	2.9%	0.4%	0.2%	1.0%	0.0%	<b>17.7%</b>
Shop	4.9%	0.2%	0.2%	0.4%	0.4%	0.4%	0.1%	<b>6.6%</b>
Errands	4.2%	0.2%	0.1%	0.4%	0.6%	0.4%	0.1%	<b>6.1%</b>
Social, Rec, Eat	5.1%	0.4%	0.4%	0.4%	0.3%	0.8%	0.0%	<b>7.4%</b>
Other	0.3%	0.1%	0.0%	0.1%	0.1%	0.1%	0.0%	<b>0.7%</b>
<b>Total</b>	<b>39.8%</b>	<b>15.7%</b>	<b>20.6%</b>	<b>6.7%</b>	<b>7.2%</b>	<b>9.3%</b>	<b>0.8%</b>	<b>100.0%</b>

Note: Errands category includes Medical/Hospital Services and Personal Business. Shopping category includes all trips to a store to buy products, including groceries. School category includes College/ University (students only) and K-12 School (students only). Social, Recreational, Eating (Social, Rec, Eat) category includes Restaurant/Dining, Recreation/ Sightseeing/Sporting Event, and Social Visit (friends/relatives). Other includes Hotel/ Convention Center, Airport (passengers only), Greyhound/Amtrak/etc. (travelers only), Non-destination Trip, and other.

### Origin transport - how did you get to the bus stop?

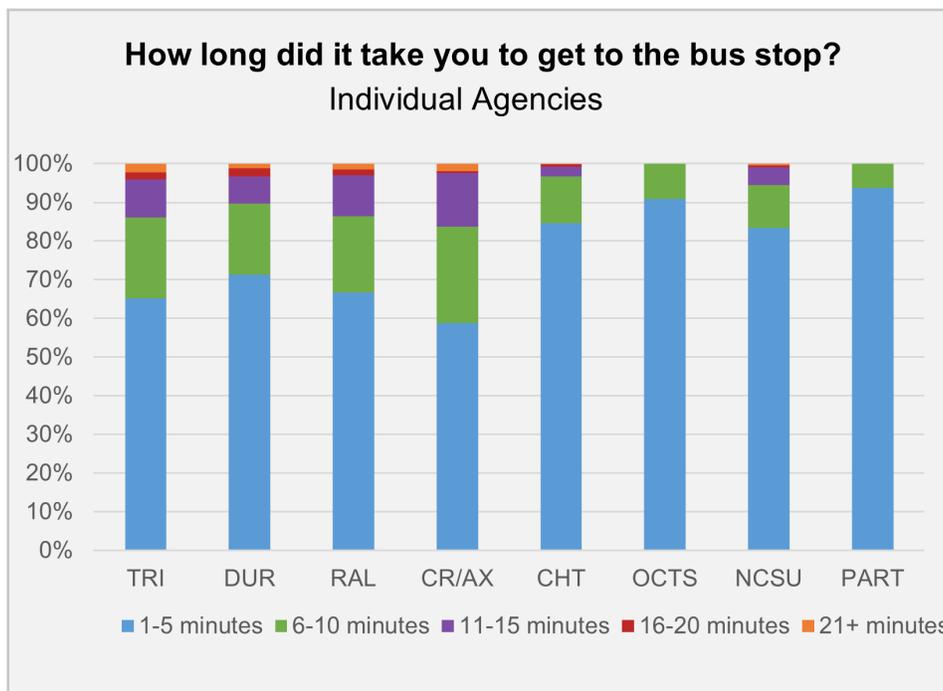
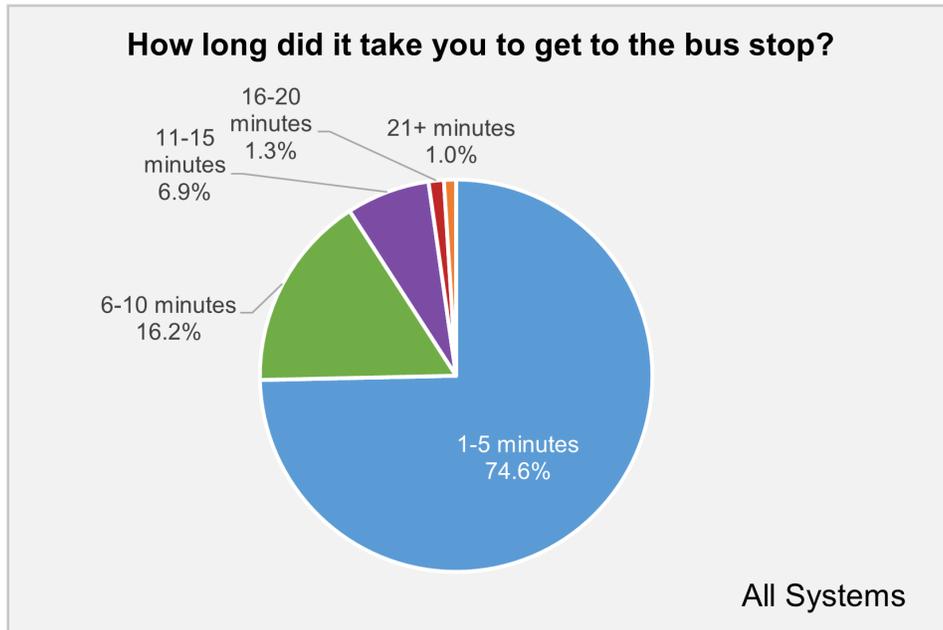
This section highlights the responses from riders when asked how they got to the bus for the start of their one-way trip. Overall, more than 90 percent of riders walked to cover the distance between the bus stop and their origin, 5.2 percent drove alone/shared a ride, 0.7 percent used a bicycle and 0.7 percent used other means of transportation such as a scooter, Uber/Lyft/taxi, or any other mode.



Note: Other mode of transport includes scooter and Uber/Lyft/taxi ride.

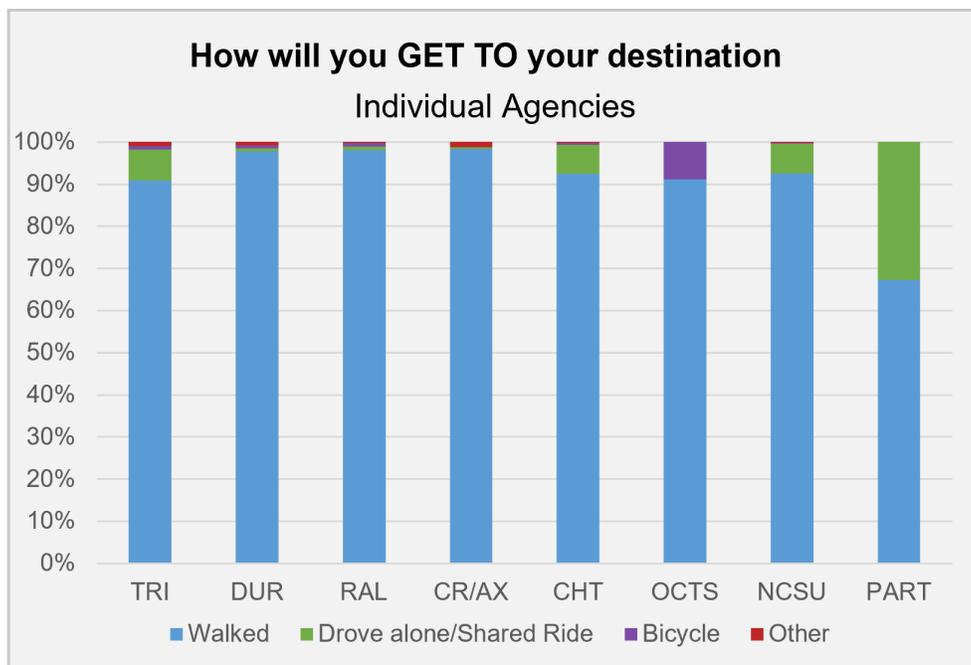
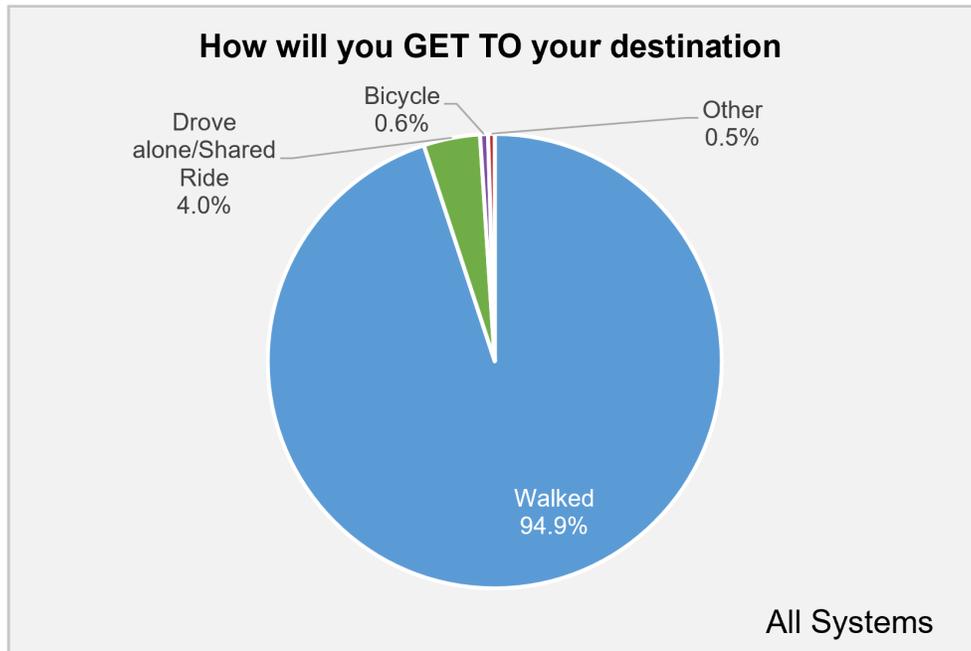
**Time to origin - how long did it take you to get to the bus stop?**

The weighted and unlinked results for the time taken by riders to reach their bus stop from the origin for all systems and individual agencies are shown in the charts below. Ridership data shows that 74.6 percent of the riders reported that it took only 1-5 minutes to reach the bus stop from their origin and over 90 percent of this group used walking as a mode of transportation while remaining 10 percent used the bikes or scooters. Interestingly, the ridership data shows that riders who drove alone, shared a ride, or took an Uber/Lyft/other vehicle did not answer this question, though they represented only a small fraction of the responses. Across the agencies, 41.1 percent of riders on GoCary/GoApex system took more than five minutes to reach the bus stop from their origin. Moreover, GoTriangle, GoDurham, GoRaleigh, and GoCary/GoApex systems had a higher ratio of riders (up to 17 percent) who were traveling more than 11 minutes to reach the nearest bus stop from their origin.



### Destination mode - How will you GET TO your destination?

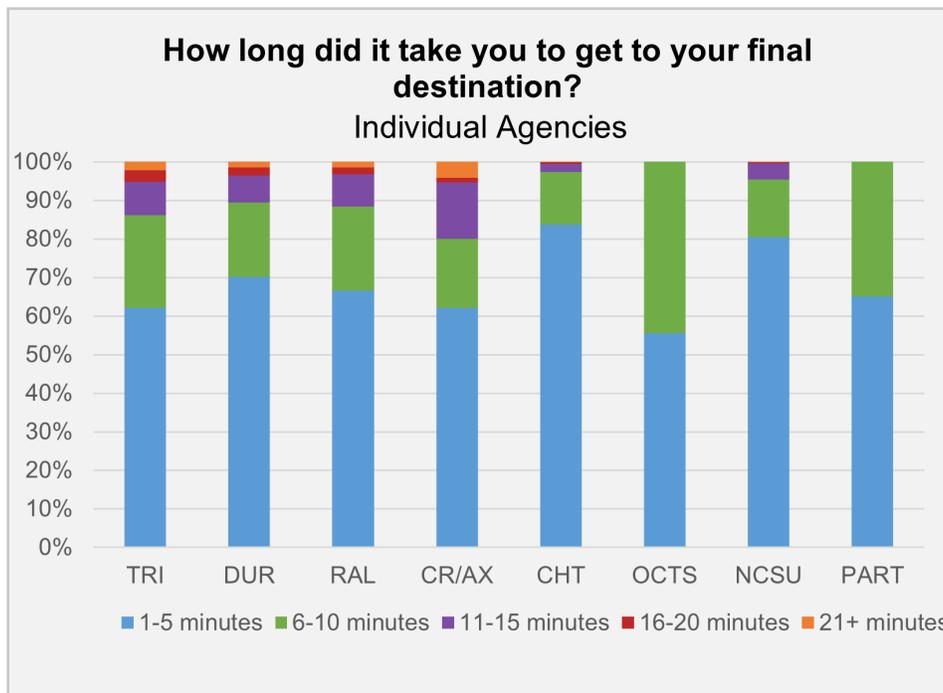
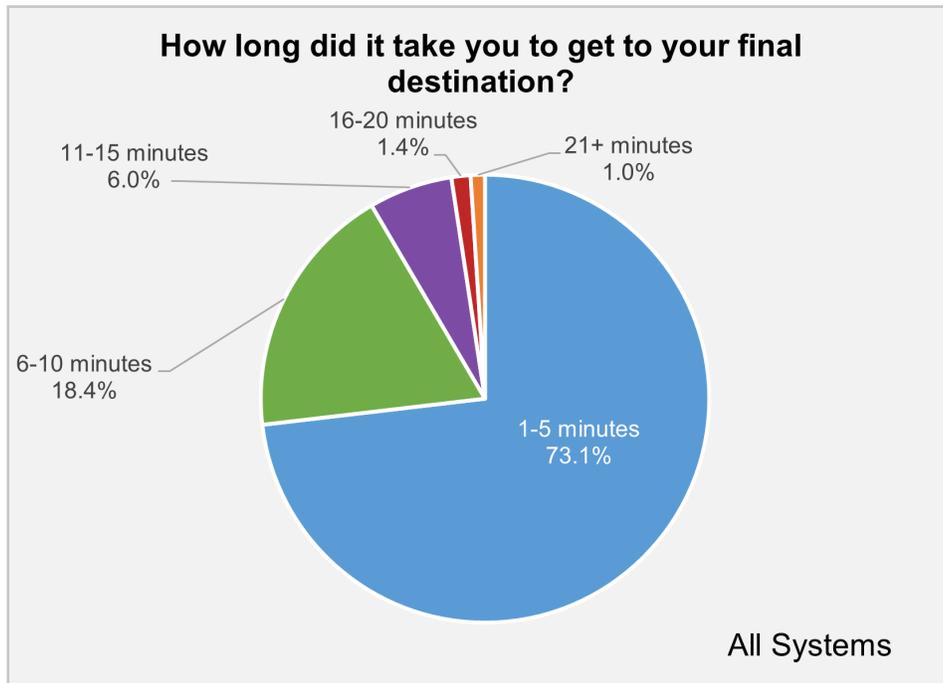
This section highlights the responses from riders when asked how they reached their destination from the bus stop. Overall, 94.9 percent of riders walked to cover the distance between the bus stop and their destination, 4.0 percent drove alone/shared a ride, 0.6 percent used a bicycle and 0.5 percent used other means of transportation such as a scooter, Uber/Lyft/taxi, or any other mode. Across all the agencies, except PART, more than 90 percent of the respondents walked to their destination from the bus stop.



Note: Other mode of transport includes scooter and Uber/Lyft/taxi ride.

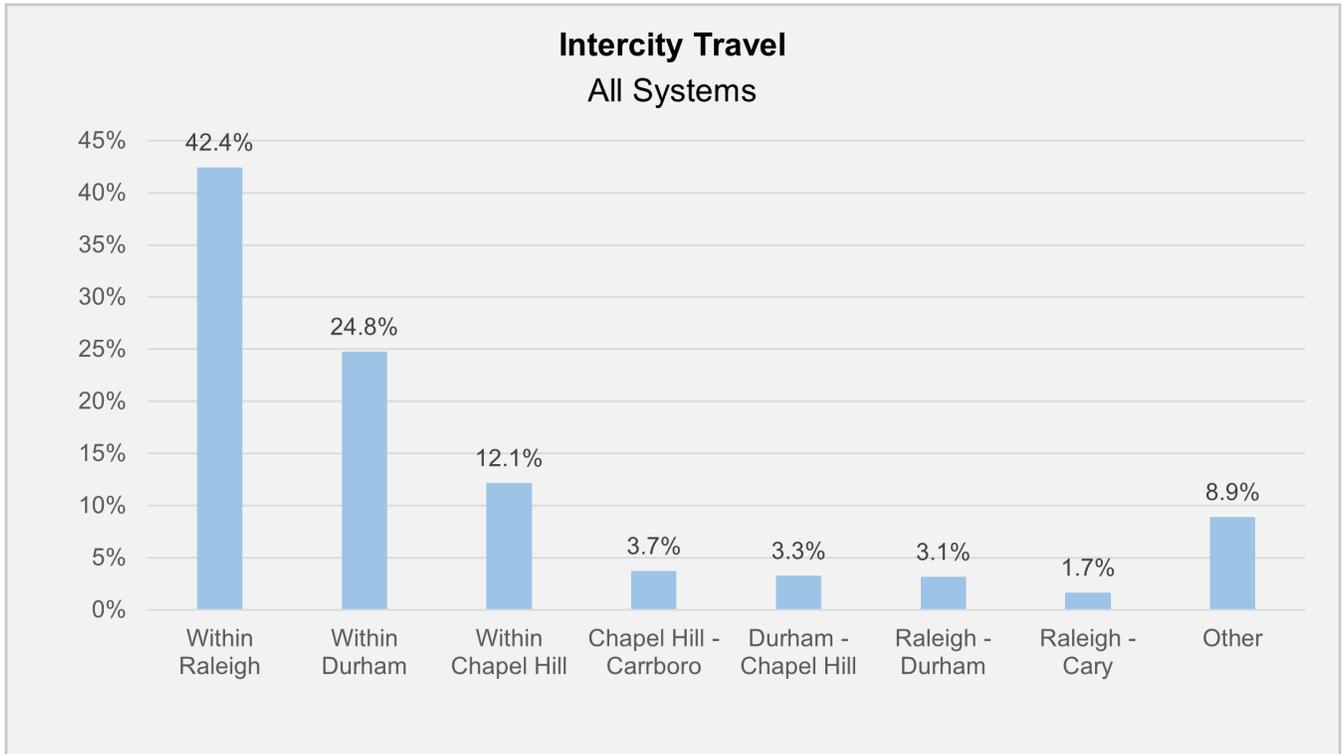
**Time to destination - how long did it take you to get to your final destination?**

The results for all systems for the time taken by riders to reach their destination from the bus stop for all systems and individual agencies are shown in the charts below. Similar to the results for the time taken to reach the bus stop from the origin, the ridership data shows that 73.1 percent of the riders reported that it took only 1-5 minutes to reach their destination from the bus stop. The majority of the riders (above 90 percent) who took only 1-5 minutes to reach their destination from the bus stop had used walking as a mode of transportation, while remaining used bikes or scooters. Interestingly, the ridership data shows that riders who drove alone shared a ride, or took an Uber/Lyft/other vehicle did not answer this question. Across the agencies, GoTriangle, GoDurham, GoRaleigh, and GoCary/GoApex systems had a higher ratio of riders (up to 20 percent) who were traveling more than 10 minutes to reach their destination from the bus stop.



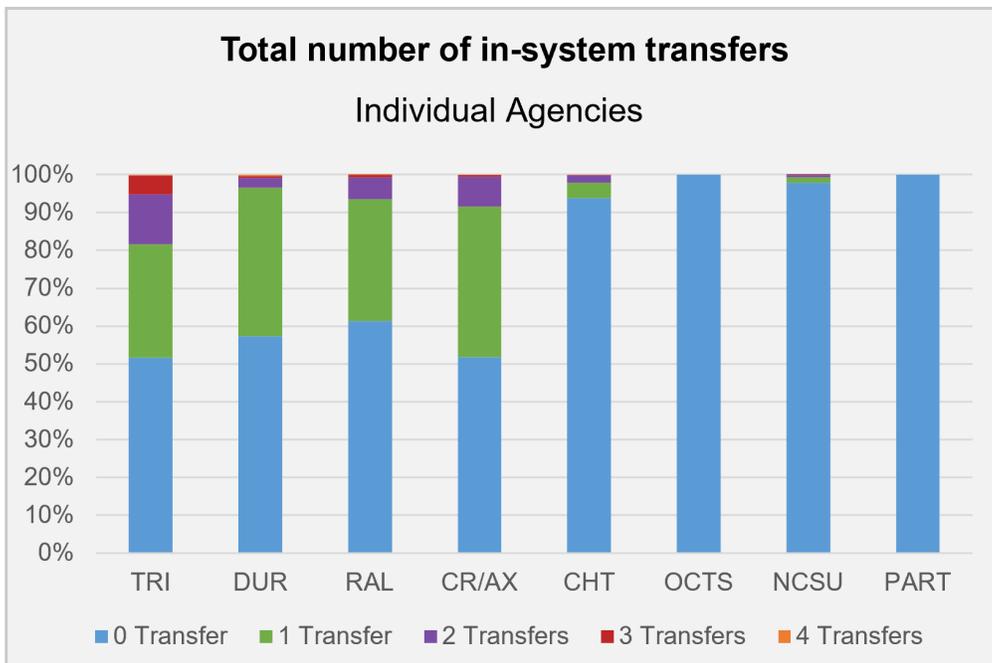
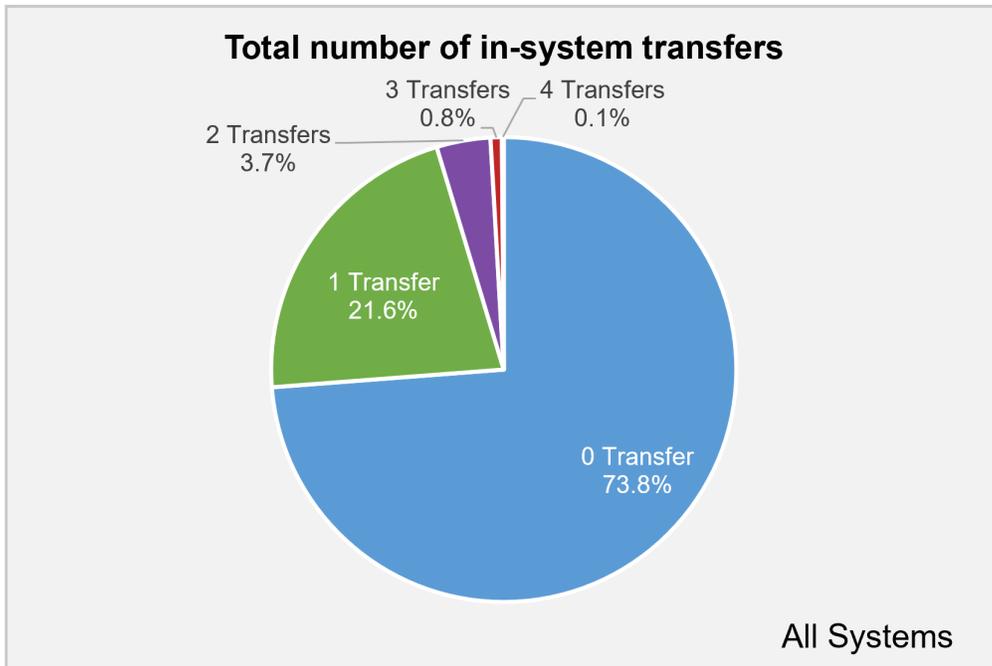
## Intercity Travel

The ridership data captures the riders' origin city and destination city to determine the intercity travel characteristics. Ridership data showed that almost 80 percent of riders were traveling within Raleigh, Durham, or Chapel Hill. Around 3.7 percent of total riders were traveling between Chapel Hill and Carrboro, and 3.3 percent between Chapel Hill and Durham. The remaining percentage of riders were traveling within or to other cities such as Cary, Apex, Burlington, Morrisville, and many others.



**Total number of in-system transfers**

The riders were asked to report how many bus transfers they took before boarding the bus on which the survey was conducted and how many buses they would ride after they got off this bus. These questions helped in determining the total number of transfers riders made during their one-way trip. 73.8 percent of riders said they were not making any transfers and would reach their destination from the origin. 21.6 percent of riders reported that they made one transfer during their one-way trip. Very few riders, just 0.1 percent, said they made a total of four transfers during their trip. Across the agencies, on the GoTriangle, GoDurham, GoRaleigh, and GoCary/GoApex systems, about half of the total riders made one or more transfers whereas, for the CHT, OCTS, NCSU, and PART systems, more than 90 percent of riders reported they didn't make any transfers.

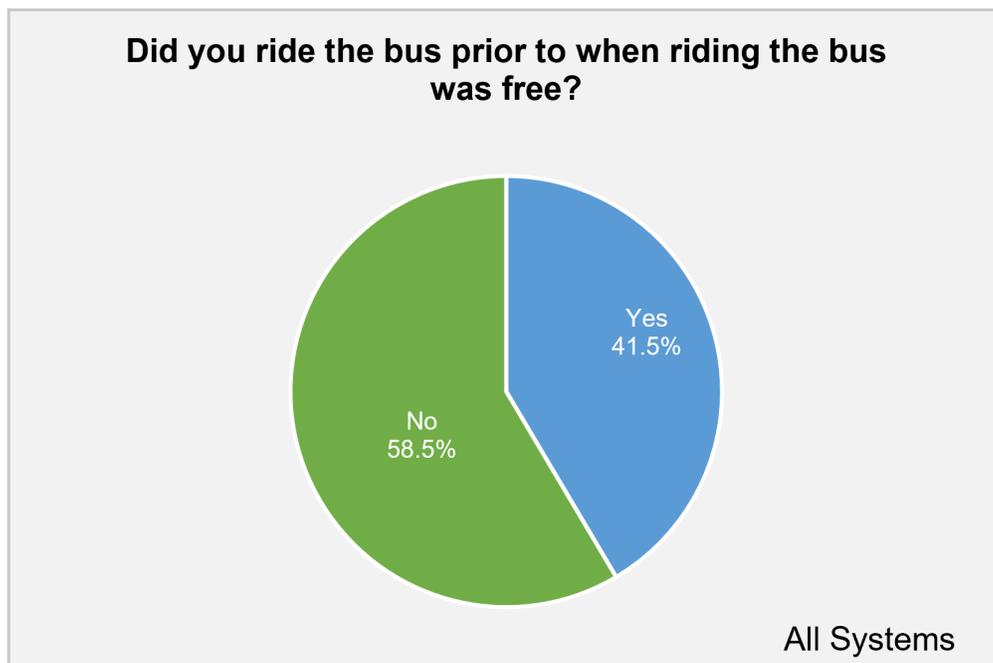


## OTHER CHARACTERISTICS

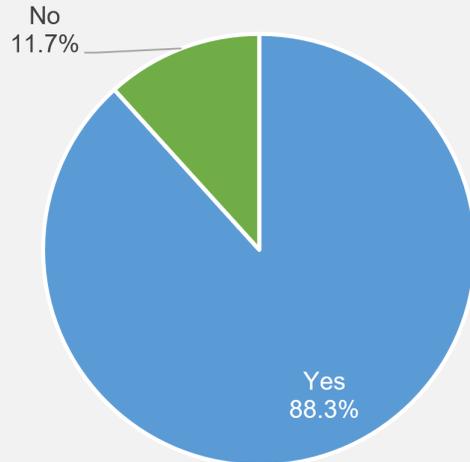
This section discusses some other characteristics such as use of transit system during free fare service and use of rideshare and bikeshare services. The responses to these questions will help agencies in understanding the impact of these services on the populations they serve and delivering services that meets their needs.

### Use of transit system during free fare service

Many of the transit systems such as the GoRaleigh, GoDurham, GoTriangle, and GoCary systems provided free bus rides to the public during COVID-19. Thus, to understand the impact of free bus rides on the travel pattern of the riders, riders were asked if they rode the bus prior to free service and if they will continue to ride the bus if it is no longer free. The ridership data showed that 58.5 percent of riders reported that they did not ride the bus before it was free. Of the 41.5 percent of riders who said they used the bus prior to when it was free, 44.8 percent said the free rides didn't influence their bus travel and 38.0 percent reported that they completed many more trips when the bus was free. Moreover, 43.4 percent of riders who said they used the bus before it was free, 88.3 percent of riders said they would continue to ride the bus even if it is no longer free. 21.4 percent of riders from CHT system, however, said they will not continue to ride the bus if it is no longer free.



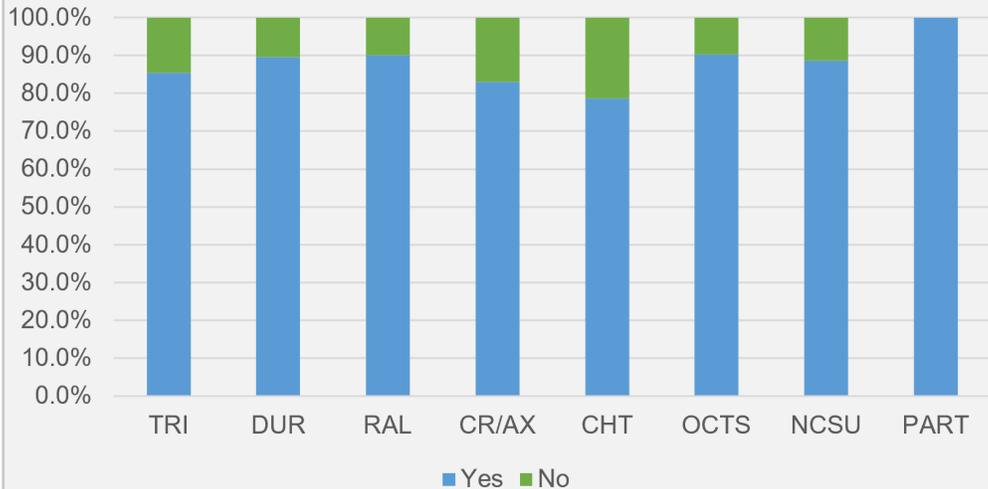
### Will you continue to ride the bus if it is no longer free?



All Systems

### Will you continue to ride the bus if it is no longer free?

#### Individual Agencies

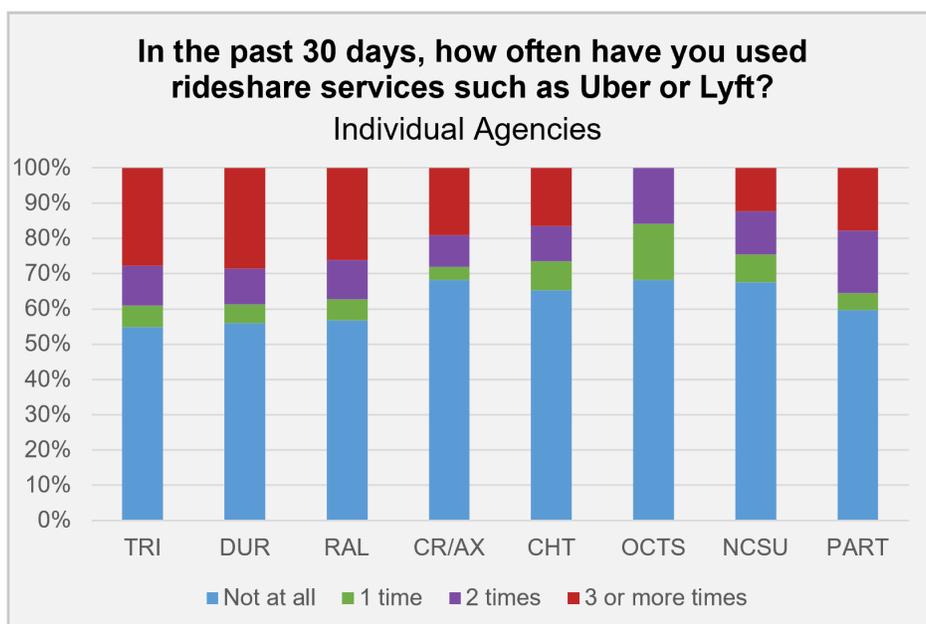
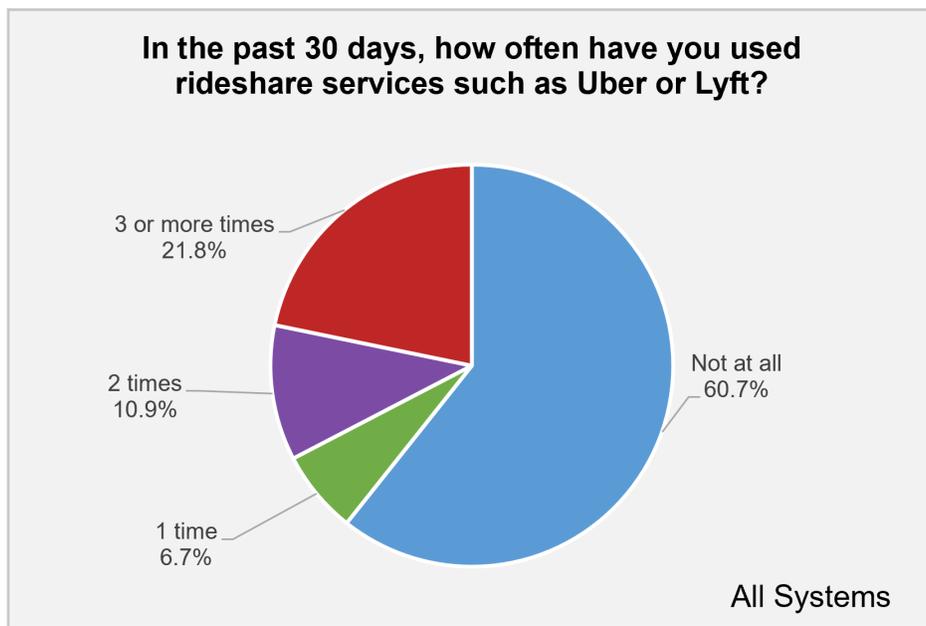


## USE OF RIDESHARE AND BIKESHARE SERVICES

To understand the usage of rideshare and bikeshare services by the riders, the riders were asked during the survey if they have used rideshare services such as Uber/Lyft and bikeshare or scooter share services such as Cardinal (formerly Citrix), Spin, or Lime in the past 30 days.

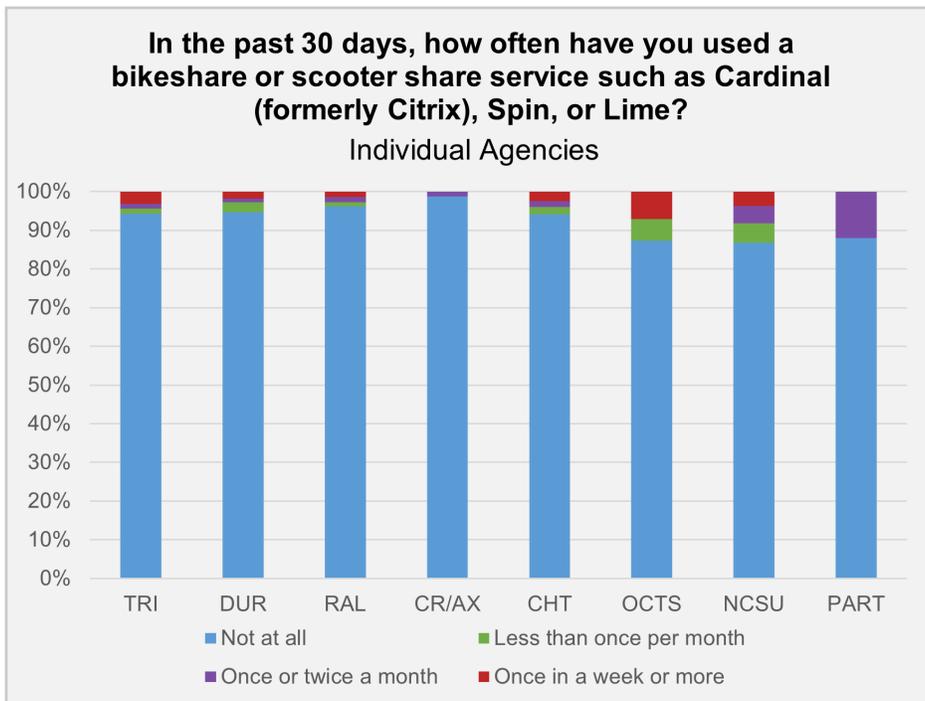
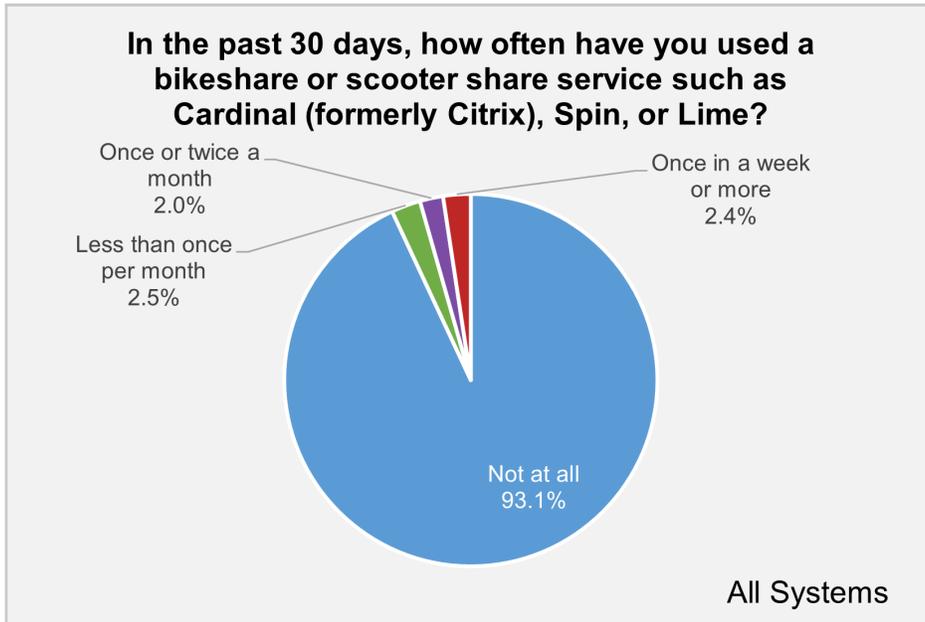
### Use of rideshare services

The weighted and unlinked results for usage of rideshare services such as Uber or Lyft for all systems and individual agencies are shown in the charts below. 60.7 percent of all riders reported that they did not use rideshare services at all in the past 30 days, while 21.8 percent of riders reported that they used it three or more times in the past 30 days. Across the agencies, GoTriangle, GoRaleigh, and GoDurham systems had more than 40 percent of riders who used rideshare services at least once. 65-70 percent of riders on GoCary/GoApex, CHT, OCTS, and NCSU systems reported not having used rideshare service at all in the past 30 days.



**Use of bikeshare services**

The weighted and unlinked results for the usage of bikeshare services such as Cardinal, Spin, or Lime for all systems and individual agencies are shown in the charts below. 93.1 percent of all riders reported that they did not use bikeshare services at all in the past 30 days. Across the agencies, more than 94 percent of riders on GoTriangle, GoRaleigh, GoDurham, GoCary/GoApex, and CHT systems did not use bikeshare services at all.



## Analysis of Trends

This survey effort builds upon past efforts in the region, this section examines notable trends for the three Wake County-based agencies (GoRaleigh, GoCary/GoApex, and NCSU) between this survey and the 2015 survey. Compelling shifts in survey responses that were observed in at least two of the three Wake County agencies are highlighted below.

Notable trends were observed in trip purpose, race and ethnicity, and household income.

For trip purpose, both GoRaleigh and GoCary showed a decline in work and work-related trips: in 2015, combined work and work-related trips accounted for approximately 20 percent of trip origins and 29 percent of trip destinations for GoRaleigh and 24 percent of trip origins and 36 percent of trip destinations for GoCary. In 2023, work and work-related trips accounted for approximately 18 percent of trip origins (a decrease of 2 percent) and 19 percent of trip destinations (a decrease of 10 percent) for GoRaleigh and 10 percent of trip origins (a decrease of 14 percent) and 28 percent of trip destinations (a decrease of 8 percent) for GoCary.

All three systems showed a decrease in the percentage of respondents who reported their race as Black / African American. For GoRaleigh, the percentage of respondents who reported their race as Black / African American was approximately 68 percent in 2015 versus 60 percent in 2023, a decrease of 8 percent. For GoCary the percentage of respondents who reported their race as Black / African American was approximately 44 percent in 2015 versus 38 percent in 2023, a decrease of 6 percent. For NCSU, the percentage of respondents who reported their race as Black / African American was approximately 18 percent in 2015 versus 13 percent in 2023, a decrease of 5 percent. The reasons for this shift differ for the three agencies. GoRaleigh showed a modest increase in White, non-Hispanic riders (22 percent to 23 percent, an increase of 1 percent) and a notable percentage in riders of two or more races (this value was not reported in the 2015 survey, but represents over 3 percent of riders in 2023). GoCary showed a large increase in Hispanic / Latino riders (14 percent in 2015 versus 28 percent in 2023, an increase of 14 percent) and a modest increase in Asian American non-Hispanic riders (4 percent in 2015 versus 11 percent in 2023, an increase of 7 percent). NCSU showed a large increase in Asian American non-Hispanic riders (14 percent in 2015 versus 23 percent in 2023, an increase of 9 percent) and a modest increase in Hispanic / Latino riders (4 percent in 2015 versus 7 percent in 2023, an increase of 3 percent).

The most dramatic change was observed in household income, especially the number of respondents who refused to answer, which increased for all three agencies. For GoRaleigh, approximately 13 percent of respondents in 2015 did not provide their household income versus 32 percent in 2023, an increase of 19 percent. For GoCary, approximately 7 percent of respondents in 2015 did not provide their household income versus 59 percent in 2023, an increase of 52 percent. For NCSU, approximately 13 percent of respondents in 2015 did not provide their household income versus 38 percent in 2023, an increase of 25 percent. The survey results appear to show a smaller percentage of low-income riders (those with a household income of \$25,000 or less), although household income values are reported in their respective year and not adjusted for inflation, and more importantly the findings are uncertain due to the large number of respondents who did not answer. For GoRaleigh, approximately 50 percent of respondents in 2015 reported a household income of \$25,000 or less versus 30 percent in 2023, a decrease of 20 percent. For GoCary, approximately 44 percent of respondents in 2015 reported a household income of \$25,000 or less versus 19 percent in 2023, a decrease of 25 percent. For NCSU, approximately 65 percent of respondents in 2015 reported a household income of \$25,000 or less versus 36 percent in 2023, a decrease of 29 percent.

# Conclusion

The survey of 112 fixed route transit systems was conducted in the fall of 2023 to compare the ridership and origin-destination information by agency, along with information about transfers and cross-system travel. A total of nine agencies participated in this survey- GoTriangle, GoDurham, GoRaleigh, GoCary/GoApex, CHT, OCTS, NCSU, and PART. By understanding the characteristics of their riders and their trips, these providers can make informed decisions that will continue to enhance the short and long-range agency transit planning in the Triangle region. Some of the key findings of the All Systems survey results are as follows:

- **Many riders are dependent on transit**, with only 26.9 percent reporting they own a car which they could have used to complete this trip.
- **18.0 percent of riders have a household income less than \$10,000 indicating a strong reliance on transit among those with very low incomes.**
- **62.6 percent of the riders were between 18 and 34 years old.** The 18-24 segment was high (39.9 percent), especially in the systems that focus on universities, NCSU (84.1 percent), and CHT (54.7 percent).
- For all systems, **42.6 percent of riders identified as Black/African American and 30.4 percent as white.** Around 9.8 percent of riders were Hispanic/Latino.
- **The vast majority of trips had home as their origin or destination and the second most prominent origin/destination was school/college.**
- **More than 90 percent of riders were walking to cover the distance between the bus stop and origin/destination** and more than 70 percent of riders were able to cover that distance between 1 to 5 minutes.

The survey results will play a critical role in coordination among the agencies, CAMPO, and DCHC-MPO in developing an update to the regional transit model. This update will help provide the framework for future transportation planning initiatives. Survey data will be an important factor in understanding how transit is operating currently, and what the needs will be moving forward.

The survey was made possible by the collective and coordinated effort of each agency, and the rider participants. Continuing this collaborative effort among the agencies and their riders will be key to developing a strong future for transit in the Triangle region.

# Appendix A – Final Survey Instrument

## 2023 On-Board Transit Survey

(for office use only) Route Code:  Dir: N S E W Time:  am / pm Interviewer:  Serial #:

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

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

Please provide the city, state, and ZIP code of **your personal residence** (even if you do not live in Wake County) below.

Address/Intersection: \_\_\_\_\_ City: \_\_\_\_\_ State: \_\_\_\_\_ ZIP Code: \_\_\_\_\_

### COMING FROM?

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

- Your usual Workplace/Place of Employment
- Other work-related place
- Social Visit (friends/relatives)
- Personal Business (bank, post office)
- College / University (students **only**)
- K-12 school (students **only**)
- Medical/Hospital Services
- Hotel/Convention Center
- Shopping
- Restaurant/Dining
- Recreation/Site Seeing/Sporting Event
- Airport (passengers only)
- Greyhound / Amtrak / etc. (travelers **only**)
- Your **HOME**
- Other: \_\_\_\_\_

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

\_\_\_\_\_

3. What is the **EXACT STREET ADDRESS** of this place? (**OR nearest intersection**)

\_\_\_\_\_

City: \_\_\_\_\_ State: \_\_\_\_\_ ZIP: \_\_\_\_\_

4. How did you **GET FROM** the place described in Questions #1-3 **TO THE VERY FIRST bus / train you used for this one-way trip?**

- Walked - How many minutes? \_\_\_\_\_
- Used personal bike – How many minutes? \_\_\_\_\_
- Scooter – How many minutes? \_\_\_\_\_
- Rode in an Uber / Lyft / Taxi / etc. vehicle (answer 4a)
- Rode with others and was dropped off (answer 4a)
- Drove or rode with others and parked (answer 4a)
- Drove alone and parked (answer 4a)
- Other (specify): \_\_\_\_\_

4a. Where did you park/get dropped off **before the FIRST bus you used for this one-way trip**  
(Nearest intersection / Park & Ride lot below):

\_\_\_\_\_

### GOING TO?

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

- Your usual Workplace/Place of Employment
- Other work-related place
- Social Visit (friends/relatives)
- Personal Business (bank, post office)
- College / University (students **only**)
- K-12 school (students **only**)
- Medical/Hospital Services
- Hotel/Convention Center
- Shopping
- Restaurant/Dining
- Recreation/Site Seeing/Sporting Event
- Airport (passengers only)
- Greyhound / Amtrak / etc. (travelers **only**)
- Your **HOME**
- Other: \_\_\_\_\_

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

\_\_\_\_\_

7. What is the **EXACT STREET ADDRESS** of this place? (**OR nearest intersection**)

\_\_\_\_\_

City: \_\_\_\_\_ State: \_\_\_\_\_ ZIP: \_\_\_\_\_

8. How will you **GET TO** the place described in Questions #5-7 after you get off the **VERY LAST bus / train you will use for this one-way trip?**

- Walked - How many minutes? \_\_\_\_\_
- Used personal bike – How many minutes? \_\_\_\_\_
- Scooter – How many minutes? \_\_\_\_\_
- Rode in an Uber / Lyft / Taxi / etc. vehicle (answer 8a)
- Rode with others and was dropped off (answer 8a)
- Drove or rode with others and parked (answer 8a)
- Drove alone and parked (answer 8a)
- Other (specify): \_\_\_\_\_

8a. Where will you **get your car/get picked up after the LAST bus you are using for this one-way trip** (nearest intersection / Park & Ride lot below):

\_\_\_\_\_

9. Did you transfer FROM another bus **BEFORE** getting on this bus?

Yes  No

10. Where did you GET ON **THIS** bus? Please provide the nearest intersection / Park & Ride lot:

\_\_\_\_\_

11. Where will you GET OFF **THIS** bus? Please provide the nearest intersection / Park & Ride lot:

\_\_\_\_\_

12. Will you transfer TO another bus **AFTER** getting off this bus?

Yes  No

13. Please list the public transit route(s) in the **exact order** needed to complete this one-way trip.

START OF MY TRANSIT TRIP  →  →  →  END OF MY TRANSIT TRIP

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

14. What time did you GET ON this bus? \_\_\_\_\_ a.m. / p.m. (circle one) (programming time breaks: before 6:00am, every 30 minutes until end of AM peak (6:00 AM until 9:00 AM), hourly from 9:00AM to beginning of afternoon peak (3:30 PM), every 30 minutes from 3:30PM until end of PM peak (6:30 PM), hourly until end of service)
15. Will you (or did you) make this same trip in exactly the opposite direction today?  
 Yes - At what time did/will you leave for this trip in the opposite direction? \_\_\_\_\_ am/pm  No
16. Did you ride the bus prior to when riding the bus was free?  
 Yes > How did free rides influence your travel on buses  I completed many more trips  I completed slightly more trips  
 No (skip to Q18)  No change  I completed fewer trips
17. Will you continue to ride the bus if it is no longer free?  Yes  No
18. In the past 30 days, how often have you used rideshare services such as Uber or Lyft?  not at all  1  2  3 or more
19. In the past 30 days, how often have you used a bikeshare or scooter share service such as Citrix, Spin, or Lime?  
 not at all  less than once per month  once or twice a month  1 to 2 days per week  3 to 4 days per week  5 to 7 days per week

## Demographics

20. How many vehicles (cars, trucks, or motorcycles) are available to your household? \_\_\_\_ vehicles  
 23a. [If #23 is ONE OR MORE] Could you have used one of these vehicles to complete this trip?  Yes  No
21. Including YOU, how many people live in your household? \_\_\_\_\_ people
22. Including YOU, how many people age 16 and over live in your household? \_\_\_\_\_ people
23. Including YOU, how many people age 16 and over in your household are employed full/part-time? \_\_\_\_\_ people
24. What is your employment status? (check the one response that BEST describes you)  
 Employed full-time (at least 35 hrs/wk)  Employed part-time (less than 35 hrs/wk)  
 Not currently employed, but seeking work  Not currently employed, and not seeking work  
 Retired  Homemaker
25. [IF Employed in #27] Which of the following best describes your current work location?  
 work only from home  telework some days and travel to work the remainder  only one work location outside my home  
 drive/bike/travel for work (driver, sales, deliveries)  work location is outside the home and regularly varies (different offices/job sites)
- IF YOU ARE EMPLOYED:**
- 25a. Did you make a trip to work since you left home?  Yes  No
- 25b. Will you make a trip to work before you arrive home?  Yes  No
- 25c. [If #25a or #25b is YES] Provide work name /address \_\_\_\_\_
26. What is your student status? (check the one response that BEST describes you)  
 Not a student  Yes – Full-time college/university  Yes – Part-time college/university  Yes - Other  
 Yes – K - 8th grade  Yes – 9th-12th grade  Yes – Vocational/technical/tradeschool
- IF A STUDENT:**
- 26a. Did you make a trip to school (students ONLY) since you left home?  Yes  No
- 26b. Will you make a trip to school (students ONLY) before you will arrive home?  Yes  No
- 26c. [If #26a or #26b is YES] Provide school name \_\_\_\_\_
27. Do you have a valid driver's license?  Yes  No
28. In what year were you born? \_\_\_\_\_ year
29. What is your Race / Ethnicity? (check all that apply)  
 American Indian / Alaska Native  Asian  Black / African American  Hispanic/Latino  Prefer Not to Say  
 Native Hawaiian / Pacific Islander  White  Other: \_\_\_\_\_
30. What is your gender?  Male  Female  Another gender : Write in Optional \_\_\_\_\_  Prefer Not to Say
31. Which of the following BEST describes your TOTAL ANNUAL HOUSEHOLD INCOME in 2022 before taxes?  
 less than \$10,000  \$20,000 - \$24,999  \$35,000 - \$39,999  \$50,000 - \$74,999  \$100,000 - \$149,999  
 \$10,000 - \$14,999  \$25,000 - \$29,999  \$40,000 - \$44,999  \$75,000 - \$99,999  \$150,000 or more  
 \$15,000 - \$19,999  \$30,000 - \$34,999  \$45,000 - \$49,999
32. Do you speak a language other than English at home?  No  Yes - Which language? \_\_\_\_\_  
 32a. [If #32 = Yes] How well do you speak English?  Very well  Well  Not very well  Not at all
33. What did you use to plan this trip?  
 Used paper schedules  Called Customer Service  Google Maps  Apple Maps  
 Mobile app (please list): \_\_\_\_\_  Transit Agency On-line Trip Planner  
 Did not do any trip planning  Other \_\_\_\_\_
34. Would you be willing to participate in future transportation surveys?  No  Yes > Your Name: \_\_\_\_\_  
 Phone Number: (\_\_\_\_) \_\_\_\_\_ E-mail address: \_\_\_\_\_

### ENTER TO WIN \$500

People who submit an accurately completed survey will be entered in a random drawing for one of FIVE \$500 cash prizes. You must provide your home address to be eligible.

Your Name: \_\_\_\_\_ Phone Number: (\_\_\_\_) \_\_\_\_\_ E-mail address: \_\_\_\_\_

Home Street Address: \_\_\_\_\_ City: \_\_\_\_\_ State: \_\_\_\_\_ ZIP Code: \_\_\_\_\_

# 2023 PART On-Board Transit Survey

(for office use only) Route Code:  Dir: N S E W Time:  am / pm Interviewer:  Serial #:

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

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

Please provide the city, state, and ZIP code of **your personal residence** (even if you do not live in Wake County) below.

Address/Intersection: \_\_\_\_\_ City: \_\_\_\_\_ State: \_\_\_\_\_ ZIP Code: \_\_\_\_\_

## COMING FROM?

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

- Your usual Workplace/Place of Employment
- Other work-related place
- Social Visit (friends/relatives)
- Personal Business (bank, post office)
- College / University (students **only**)
- K-12 school (students **only**)
- Medical/Hospital Services
- Hotel/Convention Center
- Shopping
- Restaurant/Dining
- Recreation/Site Seeing/Sporting Event
- Airport (passengers only)
- Greyhound / Amtrak / etc. (travelers **only**)
- Your **HOME**
- Other: \_\_\_\_\_

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

\_\_\_\_\_

3. What is the **EXACT STREET ADDRESS** of this place? (**OR nearest intersection**)

\_\_\_\_\_

City: \_\_\_\_\_ State: \_\_\_\_\_ ZIP: \_\_\_\_\_

4. How did you **GET FROM** the place described in Questions #1-3 **TO THE VERY FIRST bus / train** you used for this one-way trip?

- Walked - How many minutes? \_\_\_\_\_
- Used personal bike - How many minutes? \_\_\_\_\_
- Scooter - How many minutes? \_\_\_\_\_
- Rode in an Uber / Lyft / Taxi / etc. vehicle (answer 4a)
- Rode with others and was dropped off (answer 4a)
- Drove or rode with others and parked (answer 4a)
- Drove alone and parked (answer 4a)
- Other (specify): \_\_\_\_\_

4a. Where did you park/get dropped off **before the FIRST bus** you used for this one-way trip (Nearest intersection / Park & Ride lot below):

\_\_\_\_\_

## GOING TO?

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

- Your usual Workplace/Place of Employment
- Other work-related place
- Social Visit (friends/relatives)
- Personal Business (bank, post office)
- College / University (students **only**)
- K-12 school (students **only**)
- Medical/Hospital Services
- Hotel/Convention Center
- Shopping
- Restaurant/Dining
- Recreation/Site Seeing/Sporting Event
- Airport (passengers only)
- Greyhound / Amtrak / etc. (travelers **only**)
- Your **HOME**
- Other: \_\_\_\_\_

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

\_\_\_\_\_

7. What is the **EXACT STREET ADDRESS** of this place? (**OR nearest intersection**)

\_\_\_\_\_

City: \_\_\_\_\_ State: \_\_\_\_\_ ZIP: \_\_\_\_\_

8. How will you **GET TO** the place described in Questions #5-7 after you get off the **VERY LAST bus / train** you will use for this one-way trip?

- Walked - How many minutes? \_\_\_\_\_
- Used personal bike - How many minutes? \_\_\_\_\_
- Scooter - How many minutes? \_\_\_\_\_
- Rode in an Uber / Lyft / Taxi / etc. vehicle (answer 8a)
- Rode with others and was dropped off (answer 8a)
- Drove or rode with others and parked (answer 8a)
- Drove alone and parked (answer 8a)
- Other (specify): \_\_\_\_\_

8a. Where will you **get your car/get picked up after the LAST bus** you are using for this one-way trip (nearest intersection / Park & Ride lot below):

\_\_\_\_\_

9. Did you transfer FROM another bus **BEFORE** getting on this bus?

Yes  No

10. Where did you **GET ON THIS bus?** Please provide the nearest intersection / Park & Ride lot:

\_\_\_\_\_

11. Where will you **GET OFF THIS bus?** Please provide the nearest intersection / Park & Ride lot:

\_\_\_\_\_

12. Will you transfer TO another bus **AFTER** getting off this bus?

Yes  No

13. Please list the public transit route(s) in the **exact order** needed to complete this one-way trip.

**START OF MY TRANSIT TRIP**  →  →  →  **END OF MY TRANSIT TRIP**

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

14. What time did you GET ON this bus? \_\_\_\_\_; \_\_\_\_\_ a.m. / p.m. (circle one) (programming time breaks: before 6:00am, every 30 minutes until end of AM peak (6:00 AM until 9:00 AM), hourly from 9:00AM to beginning of afternoon peak (3:30 PM), every 30 minutes from 3:30PM until end of PM peak (6:30 PM), hourly until end of service )

15. Will you (or did you) make this same trip in exactly the opposite direction today?  
 Yes - At what time did/will you leave for this trip in the opposite direction? \_\_\_\_\_ am/pm  No

16. How did you pay for your fare? Cash \_\_\_ UMO \_\_\_  
If you don't use UMO what is the main reason?  
I only use cash \_\_\_ I don't want to create an online account \_\_\_  
I don't have a convenient way to buy tickets or load stored value on the account \_\_\_

17. In the past 30 days, how often have you used rideshare services such as Uber or Lyft?  not at all  1  2  3 or more

18. In the past 30 days, how often have you used a bikeshare or scooter share service such as Blue Duck, Citrix, Spin, or Lime?  
 not at all  less than once per month  once or twice a month  1 to 2 days per week  3 to 4 days per week  5 to 7 days per week

### Demographics

19. How many vehicles (cars, trucks, or motorcycles) are available to your household? \_\_\_ vehicles

19a. [If #19 is ONE OR MORE] Could you have used one of these vehicles to complete this trip?  Yes  No

20. Including YOU, how many people live in your household? \_\_\_\_\_ people

21. Including YOU, how many people age 16 and over live in your household? \_\_\_\_\_ people

22. Including YOU, how many people age 16 and over in your household are employed full/part-time? \_\_\_\_\_ people

23. What is your employment status? (check the one response that BEST describes you)

- Employed full-time (at least 35 hrs/wk)  Employed part-time (less than 35 hrs/wk)  
 Not currently employed, but seeking work  Not currently employed, and not seeking work  
 Retired  Homemaker

24. [IF Employed in #27] Which of the following best describes your current work location?

- work only from home  telework some days and travel to work the remainder  only one work location outside my home  
 drive/bike/travel for work (driver, sales, deliveries)  work location is outside the home and regularly varies (different offices/job sites)

#### IF YOU ARE EMPLOYED:

25a. Did you make a trip to work since you left home?  Yes  No

25b. Will you make a trip to work before you arrive home?  Yes  No

25c. [If #25a or #25b is YES] Provide work name / address \_\_\_\_\_

25. What is your student status? (check the one response that BEST describes you)

- Not a student  Yes - Full-time college/university  Yes - Part-time college/university  Yes - Other  
 Yes - K - 8th grade  Yes - 9th-12th grade  Yes - Vocational/technical/tradeschool

#### IF A STUDENT:

26a. Did you make a trip to school (students ONLY) since you left home?  Yes  No

26b. Will you make a trip to school (students ONLY) before you will arrive home?  Yes  No

26c. [If #26a or #26b is YES] Provide school name \_\_\_\_\_

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

27. In what year were you born? \_\_\_\_\_ year

28. What is your Race / Ethnicity? (check all that apply)

- American Indian / Alaska Native  Asian  Black / African American  Hispanic/Latino  Prefer Not to Say  
 Native Hawaiian / Pacific Islander  White  Other: \_\_\_\_\_

29. What is your gender?  Male  Female  Another gender : Write in Optional \_\_\_\_\_  Prefer Not to Say

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

- less than \$10,000  \$20,000 - \$24,999  \$35,000 - \$39,999  \$50,000 - \$74,999  \$100,000 - \$149,999  
 \$10,000 - \$14,999  \$25,000 - \$29,999  \$40,000 - \$44,999  \$75,000 - \$99,999  \$150,000 or more  
 \$15,000 - \$19,999  \$30,000 - \$34,999  \$45,000 - \$49,999

31. Do you speak a language other than English at home?  No  Yes - Which language? \_\_\_\_\_

32a. [If #32 = Yes] How well do you speak English?  Very well  Well  Not very well  Not at all

32. What did you use to plan this trip?

- Used paper schedules  Called Customer Service  Google Maps  Apple Maps  
 Mobile app (please list): \_\_\_\_\_  Transit Agency On-line Trip Planner  
 Did not do any trip planning  Other \_\_\_\_\_

34. Would you be willing to participate in future transportation surveys?  No  Yes > Your Name: \_\_\_\_\_

Phone Number: (\_\_\_\_) \_\_\_\_\_ E-mail address: \_\_\_\_\_

#### ENTER TO WIN \$500

People who submit an accurately completed survey will be entered in a random drawing for one of FIVE \$500 cash prizes. You must provide your home address to be eligible.

Your Name: \_\_\_\_\_ Phone Number: (\_\_\_\_) \_\_\_\_\_ E-mail address: \_\_\_\_\_

Home Street Address: \_\_\_\_\_ City: \_\_\_\_\_ State: \_\_\_\_\_ ZIP Code: \_\_\_\_\_

# Appendix B – Final Sampling Plan and Percentages by Agency

## GO DURHAM OD SURVEY COLLECTION

Sort	Start	System	RTE #	RTE Name	Pub RTE #	OVER SAMPLE	OZO	LEP	Average Daily Ridership	Survey Collection Goals	Surveys Collected	Completion Percentage
	10.02	GoDurham	1	Northgate – Horton Rd/Guess Rd	1	N	Y	LEP	963	96	116	120%
	10.02	GoDurham	2	E. Main St – Angier Ave – Briar Creek	2	Y	N		1533	307	332	108%
	10.02	GoDurham	3	Holloway St – The Village – Glenn View Station	3	Y	Y		1699	340	347	102%
	10.02	GoDurham	3B	Holloway St – The Village – Southern High School	3B	Y	N		644	129	126	98%
	10.02	GoDurham	3C	Holloway St – The Village – Alston Ave	3C	Y	Y		296	59	60	101%
	10.02	GoDurham	4	N. Roxboro Rd – Duke Regional	4	N	Y		1069	107	105	98%
	10.02	GoDurham	5	Fayetteville St – NCCU – Southpoint	5	N	Y		2697	270	307	114%
	10.02	GoDurham	6	Chapel Hill St – Duke/VA – Crest St	6	Y	N		459	92	91	99%
	10.02	GoDurham	7	S. Roxboro St – MLK Pkwy	7	N	N		635	63	97	153%
	10.02	GoDurham	8	Lawson St – NCCU – Durham Tech	8	Y	N	LEP	602	120	134	111%
	10.02	GoDurham	9	Dearborn Dr – North Durham - Riverview (evening/Sunday)	9	N	N	LEP	180	18	18	100%
	10.02	GoDurham	9A	Dearborn Dr – North Durham - Riverside High School	9A	N	N	LEP	664	66	83	125%
	10.02	GoDurham	9B	Dearborn Dr – North Durham - Northern High School	9B	N	N	LEP	609	61	63	103%
	10.02	GoDurham	10	Chapel Hill Rd – South Square – New Hope Commons	10	N	Y	LEP	1676	168	188	112%
	10.02	GoDurham	10B	Chapel Hill Rd – South Square – Shannon Rd	10B	N	Y	LEP	215	21	29	135%
	10.02	GoDurham	11	W. Main St – Duke/VA – Hillsborough Rd	11	Y	Y	LEP	603	121	127	105%
	10.02	GoDurham	11B	W. Main St – Duke/VA – Constitution Dr	11B	Y	Y	LEP	814	163	208	128%
	10.02	GoDurham	12	E. Main St – NCCU – Highway 55 – Southpoint	12	Y	Y		1016	203	248	122%
	10.02	GoDurham	12B	E. Main St – NCCU – Highway 55 – Regional Transit Center	12B	Y	Y		396	79	140	177%
<b>GoDurham TOTALS:</b>									<b>16769</b>	<b>2483</b>	<b>2819</b>	<b>114%</b>

## CHAPEL HILL TRANSIT OD SURVEY COLLECTION

Sort	Start	System	RTE #	RTE Name	Pub RTE #	OVER SAMPLE	OZO	LEP	Average Daily Ridership	Survey Collection Goals	Surveys Collected	Completion Percentage
	10.23	Chapel Hill Transit	A	A		N	N		223	22	66	296%
	10.23	Chapel Hill Transit	CL	CL		N	N		429	43	71	166%
	10.23	Chapel Hill Transit	CM	CM		N	N		382	38	58	152%
	10.23	Carolina Livery	B	B		N	N		158	16	17	108%
	10.23	Chapel Hill Transit	CW	CW		N	N		350	35	53	151%
	10.23	Chapel Hill Transit	D	D		N	N		568	57	74	130%
	10.23	Carolina Livery	F	F		N	N		0	0	3	#DIV/0!
	10.23	Chapel Hill Transit	FCX	FCX		N	Y		1278	128	174	136%
	10.23	Chapel Hill Transit	G	G		N	N		34	3	4	118%
	10.23	Chapel Hill Transit	HS	HS		N	N		117	12	18	154%
	10.23	Chapel Hill Transit	J	J		N	Y		1639	164	310	189%
	10.23	Carolina Livery	JFX	JFX		N	N		469	47	22	47%
	10.23	Chapel Hill Transit	N	N		N	N		262	26	89	340%
	10.23	Chapel Hill Transit	NS	NS		N	Y		2344	234	288	123%
	10.23	Chapel Hill Transit	NU	NU		N	N		634	63	79	125%
	10.23	Chapel Hill Transit	RU	RU		N	Y		1078	108	126	117%
	10.23	Chapel Hill Transit	S	S		N	N		421	42	76	181%
	10.23	Chapel Hill Transit	T	T		N	N		132	13	18	136%
	10.23	Chapel Hill Transit	U	U		N	Y		1204	120	123	102%
	10.23	Carolina Livery	CCX	CCX		N	N		143	14	0	0%
<b>Chapel Hill Transit TOTALS:</b>									<b>11865</b>	<b>1181</b>	<b>1669</b>	<b>141%</b>

## PART OD SURVEY COLLECTION

Sort	Start	System	RTE #	RTE Name	Pub RTE #	OVER SAMPLE	OZO	LEP	Average Daily Ridership	Survey Collection Goals	Surveys Collected	Completion Percentage
	10.23	PART	4	Alamance Burlington Express	4	N	N		124	12	22	178%
<b>PART TOTALS:</b>									<b>124</b>	<b>12</b>	<b>22</b>	<b>178%</b>

## OCTS OD SURVEY COLLECTION

Sort	Start	System	RTE #	RTE Name	Pub RTE #	OVER SAMPLE	OZO	LEP	Average Daily Ridership	Survey Collection Goals	Surveys Collected	Completion Percentage
	10.23	OCTS	FR1	Hillsborough - Circulator	FR1	N	N		204	20	18	88%
	10.23	OCTS	FR2	Hillsborough - Chapel Hill Connector	FR2	N	N		51	5	3	59%
	10.23	OCTS	FR 4/5	Orange - Alamance Connector	FR 4/5	N	N		10	1	1	100%
<b>OCTS TOTALS:</b>									<b>265</b>	<b>27</b>	<b>22</b>	<b>83%</b>

## GO TRIANGLE OD SURVEY COLLECTION - Includes oversampling of RDU, 400, 405, 700, 800, 805

Sort	Start	System	RTE #	RTE Name	Pub RTE #	OVER SAMPLE	OZO	LEP	Average Daily Ridership	Survey Collection Goals	Surveys Collected	Completion Percentage
	10.30	GoTriangle	100		100	Y	Y		945	189	251	133%
	10.30	GoTriangle	300		300	Y	Y		682	136	142	104%
	10.30	GoTriangle	310		310	Y	N		163	33	39	120%
	10.30	GoTriangle	400		400	Y	Y	CW	1128	226	218	97%
	10.30	GoTriangle	700		700	Y	Y		680	136	158	116%
	10.30	GoTriangle	800		800	Y	N		783	157	228	146%
	10.30	GoTriangle	RDU		RDU	Y	N		159	32	43	135%
	10.30	GoTriangle	305		305	N	Y		97	10	10	103%
	10.30	GoTriangle	405		405	Y	Y		487	97	88	90%
	10.30	GoTriangle	805		805	Y	Y		216	43	45	104%
	10.30	GoTriangle	ODX		ODX	Y	Y		53	11	10	94%
	10.30	GoTriangle	CRX		CRX	Y	N		212	42	42	99%
	10.30	GoTriangle	DRX		DRX	Y	N		307	61	78	127%
<b>GoTriangle TOTALS:</b>									<b>5912</b>	<b>1173</b>	<b>1352</b>	<b>115%</b>

GO RALEIGH OD SURVEY COLLECTION

Sort	Start	System	RTE #	RTE Name	Pub RTE #	OVER SAMPLE	O2O	LEP	Average Daily Ridership	Survey Collection Goals	Surveys Collected	Completion Percentage
	11.06	GoRaleigh	1	Capital	1	N	Y		2045	204	221	108%
	11.06	GoRaleigh	2	Falls of Neuse	2	N	Y	LEP - HIGH	730	73	94	129%
	11.06	GoRaleigh	3	Glascocok	3	N	Y		170	17	31	182%
	11.06	GoRaleigh	4	Rex Hospital	4	Y	Y		501	100	102	102%
	11.06	GoRaleigh	5	Biltmore Hills	5	N	Y	LEP - VERY HIGH	436	44	78	179%
	11.06	GoRaleigh	6	Crabtree	6	N	Y		525	53	63	120%
	11.06	GoRaleigh	7	South Saunders	7	Y	Y	LEP - VERY HIGH	1251	250	262	105%
	11.06	GoRaleigh	8	Six Forks	8	N	Y		436	44	53	121%
	11.06	GoRaleigh	10	Longview	10	N	Y		170	17	17	100%
	11.06	GoRaleigh	11	Avent Ferry	11	N	Y		714	71	101	142%
	11.06	GoRaleigh	12	Method	12	N	N		393	39	46	117%
	11.06	GoRaleigh	13	Chavis Heights	13	N	Y	LEP - HIGH	185	18	23	124%
	11.06	GoRaleigh	15	WakeMed	15	N	Y	LEP - VERY HIGH	1552	155	191	123%
	11.06	GoRaleigh	16	Oberlin	16	N	Y		381	38	47	123%
	11.06	GoRaleigh	17	Rock Quarry		N	Y		307	31	36	117%
	11.06	GoRaleigh	18	Poole/Barwell	18	N	Y		366	37	48	131%
	11.06	GoRaleigh	19	MLK/Sunnybrook	19	N	Y	LEP - HIGH	796	80	87	109%
	11.06	GoRaleigh	20	Garner	102	Y	Y		417	83	93	112%
	11.06	GoRaleigh	21	Caraleigh	21	N	Y	LEP - MED	472	47	53	112%
	11.06	GoRaleigh	22	State Street	22	N	Y	LEP - MED	249	25	33	133%
	11.06	GoRaleigh	23	Millbrook Crosstown	23L	N	N	LEP - VERY HIGH	146	15	26	179%
	11.06	GoRaleigh	24	North Crosstown	24L	N	N	LEP - HIGH	224	22	30	134%
	11.06	GoRaleigh	25	Triangle Town Center	25L	N	N		231	23	42	182%
	11.06	GoRaleigh	26	Edward Mills		N	N		48	5	6	125%
	11.06	GoRaleigh	27	Blue Ridge		N	N		70	7	8	114%
	11.06	GoRaleigh	33	Knightdale		N	N		129	13	23	179%
	11.06	GoRaleigh	36	Creedmoor		N	N		94	9	10	106%
	11.06	GoRaleigh	40	Wake Tech Express		N	N		62	6	14	228%
	11.06	GoRaleigh	55	Poole Road Express	55	N	N		36	4	4	112%
	11.06	GoRaleigh	60	Wake Forest Express	WRX	N	N		31	3	3	98%
	11.06	GoRaleigh	62	Wake Forest Loop		N	N		95	9	21	222%
	11.06	GoRaleigh	64	Zebulon/ Wendell Express	ZWX	N	Y		48	5	6	125%
	11.06	GoRaleigh	70	Brier Creek Express	70X	N	N		109	11	11	101%
	11.06	GoRaleigh	78	Fuquay Varina Express	FRX	N	Y		31	3	6	192%
	11.06	GoRaleigh	107	Carolina Pines	7L	N	N		274	27	70	256%
	11.06	GoRaleigh	111	Buck Jones	11L	N	N		189	19	28	148%
	11.06	GoRaleigh	115	Trawick	15L	N	N	LEP - HIGH	195	19	45	231%
<b>GO RALEIGH TOTALS:</b>									<b>14104</b>	<b>1627</b>	<b>2032</b>	<b>125%</b>

WOLFLINE OD SURVEY COLLECTION

Sort	Start	System	RTE #	RTE Name	Pub RTE #	OVER SAMPLE	O2O	LEP	Average Daily Ridership	Survey Collection Goals	Surveys Collected	Completion Percentage
	11.06	Wofline	20	Route 20	20	N	N	No	982	98	135	137%
	11.06	Wofline	30	Route 30	30	N	Y	No	2253	225	284	126%
	11.06	Wofline	40	Route 40	40	N	N	No	3250	325	308	95%
	11.06	Wofline	41	Route 41	41	N	N	No	2418	242	261	108%
	11.06	Wofline	42	Route 42	42	N	N	Low	1089	109	125	115%
	11.06	Wofline	43	Route 43	43	N	N	No	754	75	114	151%
	11.06	Wofline	50	Route 50	50	N	N	Low	990	99	108	109%
	11.06	Wofline	51	Route 51	51	N	N	No	911	91	115	126%
	11.06	Wofline	52	Route 52	52	N	Y	Low	1828	183	245	134%
	11.06	Wofline	60	Route 60	60	Y	N	No	501	100	104	104%
<b>Wofline TOTALS:</b>									<b>14976</b>	<b>1548</b>	<b>1799</b>	<b>116%</b>

GO CARY/GO APEX OD SURVEY COLLECTION

Sort	Start	System	RTE #	RTE Name	Pub RTE #	OVER SAMPLE	O2O	LEP	Average Daily Ridership	Survey Collection Goals	Surveys Collected	Completion Percentage
	11.06	GoCary/GoApex	1	Crossroads	1	N	N	HIGH	196	20	32	164%
	11.06	GoCary/GoApex	3	Harrison	3	N	N		118	12	21	178%
	11.06	GoCary/GoApex	4	High House	4	N	N		181	18	23	127%
	11.06	GoCary/GoApex	5	Kildaire Farm	5	N	N		159	16	22	138%
	11.06	GoCary/GoApex	6	Buck Jones	6	N	N	HIGH	239	24	36	151%
	11.06	GoCary/GoApex	7	Weston	7	N	N		148	15	30	203%
	11.06	GoCary/GoApex	8	Cary Parkway	8	N	N		1	0	7	7000%
	11.06	GoCary/GoApex	GA1	GoApex Route 1	GA1	N	N		43	4	5	115%
	11.06	GoCary/GoApex	ACX	Apex-Cary Express	ACX	N	N		2	0	1	417%
<b>GoCary/GoApex TOTALS:</b>									<b>1087</b>	<b>109</b>	<b>177</b>	<b>163%</b>

Average Daily Ridership	Survey Collection Goals	Surveys Collected	Completion Percentage
<b>65102</b>	<b>8159</b>	<b>9892</b>	<b>121%</b>

TRTS PROJECT TOTAL:

# Appendix C - Sample Expansion / Data Weighting and Expansion

## Sample Expansion / Data Weighting and Expansion

Data expansion refers to how the survey results from a representative sample of riders are expanded and applied to the full ridership numbers for analysis. The same sample data may be expanded by different methods for different purposes; for this report, the survey sample data was expanded based on total daily ridership.

Each participating transit agency provided the average daily ridership for each route. These numbers serve as the totals that the sample represents. For each route, the number of completed surveys was compared to the average daily ridership to create an expansion factor used to weight each individual completed survey for the route.

For example, if Route A has an average daily ridership of 115 people, and 25 surveys were completed, the ratio of completed surveys to the total ridership is 21.7%. The expansion factor is calculated by dividing the total ridership by the number of completed surveys; for Route A, 115 divided by 25 results in an expansion factor of 4.60.

Details on the sample expansion are included below.

### GoDurham

Route	Average Daily Ridership	Completed Surveys	Survey % Daily Ridership	Expansion Factor
1	963	116	12.0%	8.30
2	1,533	332	21.7%	4.62
3	1,699	347	20.4%	4.90
3B	644	126	19.6%	5.11
3C	296	60	20.3%	4.94
4	1,069	105	9.8%	10.18
5	2,697	307	11.4%	8.79
6	459	91	19.8%	5.05
7	635	97	15.3%	6.54
8	602	134	22.3%	4.49
9	180	18	10.0%	9.99
9A	664	83	12.5%	8.00
9B	609	63	10.3%	9.67
10	1,676	188	11.2%	8.91
10B	215	29	13.5%	7.40
11	603	127	21.1%	4.75
11B	814	208	25.5%	3.92
12	1,016	248	24.4%	4.10
12B	396	140	35.4%	2.83
<b>System Total</b>	<b>16,769</b>	<b>2,819</b>	<b>16.8%</b>	<b>5.95</b>

### Chapel Hill Transit

Route	Average Daily Ridership	Completed Surveys	Survey % Daily Ridership	Expansion Factor
A	223	66	29.6%	3.38
CL	429	71	16.6%	6.04
CM	382	58	15.2%	6.59
B	158	17	10.8%	9.29
CW	350	53	15.1%	6.60
D	568	74	13.0%	7.68
F	-	3	-	0.00
FCX	1,278	174	13.6%	7.34
G	34	4	11.8%	8.50
HS	117	18	15.4%	6.50
J	1,639	310	18.9%	5.29
JFX	469	22	4.7%	21.32
N	262	89	34.0%	2.94
NS	2,344	288	12.3%	8.14
NU	634	79	12.5%	8.03
RU	1,078	126	11.7%	8.56
S	421	76	18.1%	5.54
T	132	18	13.6%	7.33
U	1,204	123	10.2%	9.79
CCX	143	-	0.0%	-
<b>System Total</b>	<b>11,865</b>	<b>1,669</b>	<b>14.1%</b>	<b>7.11</b>

### Piedmont Authority for Regional Transportation (PART)

Route	Average Daily Ridership	Completed Surveys	Survey % Daily Ridership	Expansion Factor
4	124	22	17.7%	5.64
<b>System Total</b>	<b>124</b>	<b>22</b>	<b>17.7%</b>	<b>5.64</b>

### Orange County Transportation Services

Route	Average Daily Ridership	Completed Surveys	Survey % Daily Ridership	Expansion Factor
FR1	204	18	8.8%	11.33
FR2	51	3	5.9%	17.00
FR 4/5	10	1	10.0%	10.00
<b>System Total</b>	<b>265</b>	<b>22</b>	<b>8.3%</b>	<b>12.05</b>

### GoTriangle

Route	Average Daily Ridership	Completed Surveys	Survey % Daily Ridership	Expansion Factor
100	945	251	26.6%	3.76
300	682	142	20.8%	4.80
310	163	39	23.9%	4.18
400	1,128	218	19.3%	5.17
700	680	158	23.2%	4.30
800	783	228	29.1%	3.43
RDU	159	43	27.0%	3.70
305	97	10	10.3%	9.70
405	487	88	18.1%	5.53
805	216	45	20.8%	4.80
ODX	53	10	18.9%	5.30
CRX	212	42	19.8%	5.05
DRX	307	78	25.4%	3.94
<b>System Total</b>	<b>5,912</b>	<b>1,352</b>	<b>22.9%</b>	<b>4.37</b>

## GoRaleigh

Route	Average Daily Ridership	Completed Surveys	Survey % Daily Ridership	Expansion Factor
1	2,045	221	10.8%	9.25
2	730	94	12.9%	7.77
3	170	31	18.2%	5.48
4	501	102	20.4%	4.91
5	436	78	17.9%	5.59
6	525	63	12.0%	8.33
7	1,251	262	20.9%	4.77
8	436	53	12.2%	8.23
10	170	17	10.0%	10.00
11	714	101	14.1%	7.07
12	393	46	11.7%	8.54
13	185	23	12.4%	8.04
15	1,552	191	12.3%	8.13
16	381	47	12.3%	8.11
17	307	36	11.7%	8.53
18	366	48	13.1%	7.63
19	796	87	10.9%	9.15
20	417	93	22.3%	4.48
21	472	53	11.2%	8.91
22	249	33	13.3%	7.55
23	146	26	17.8%	5.62
24	224	30	13.4%	7.47
25	231	42	18.2%	5.50
26	48	6	12.5%	8.00
27	70	8	11.4%	8.75
33	129	23	17.8%	5.61
36	94	10	10.6%	9.40
40	62	14	22.6%	4.43
55	36	4	11.1%	9.00
60	31	3	9.7%	10.33
62	95	21	22.1%	4.52
64	48	6	12.5%	8.00
70	109	11	10.1%	9.91
78	31	6	19.4%	5.17
107	274	70	25.5%	3.91
111	189	28	14.8%	6.75
115	195	45	23.1%	4.33
<b>System Total</b>	<b>14,108</b>	<b>2,032</b>	<b>14.4%</b>	<b>6.94</b>

### Wofline

Route	Average Daily Ridership	Completed Surveys	Survey % Daily Ridership	Expansion Factor
20	982	135	13.7%	7.27
30	2,253	284	12.6%	7.93
40	3,250	308	9.5%	10.55
41	2,418	261	10.8%	9.26
42	1,089	125	11.5%	8.71
43	754	114	15.1%	6.61
50	990	108	10.9%	9.17
51	911	115	12.6%	7.92
52	1,828	245	13.4%	7.46
60	501	104	20.8%	4.82
<b>System Total</b>	<b>14,976</b>	<b>1,799</b>	<b>12.0%</b>	<b>8.32</b>

### GoCary / GoApex

Route	Average Daily Ridership	Completed Surveys	Survey % Daily Ridership	Expansion Factor
1	196	32	16.3%	6.13
3	118	21	17.8%	5.62
4	181	23	12.7%	7.87
5	159	22	13.8%	7.23
6	239	36	15.1%	6.64
7	148	30	20.3%	4.93
8	1	7	700.0%	0.14
GA1	43	5	11.6%	8.60
ACX	2	1	50.0%	2.00
<b>System Total</b>	<b>1,087</b>	<b>177</b>	<b>16.3%</b>	<b>6.14</b>

# Appendix D - Fixed-Route Survey Methodology Memo

## MEMORANDUM

**To:** Melanie Rausch, GoRaleigh  
**From:** James Farrell, Planning Communities, LLC  
**CC:** Ann Steedly, Planning Communities, LLC  
Alpesh Patel, Cambridge Systematics  
Monika Pal, Cambridge Systematics  
**Date:** August 22, 2023  
**Subject:** Fixed-Route Survey Methodology Memo

## INTRODUCTION

The following methodology describes the survey efforts for transit agencies serving Wake, Orange, Durham, Guilford, and Alamance Counties – GoRaleigh, GoTriangle, GoDurham, GoCary, GoApex, Orange County Transportation Services, Duke Transit, Chapel Hill Transit, Wolfline, and Piedmont Authority for Regional Transportation; these agencies serve City of Raleigh, Wake County, the Research Triangle Region, City of Durham / Durham County, Town of Cary, Town of Apex, Orange County, Duke University, Town of Chapel Hill / UNC Chapel Hill, North Carolina State University, and the Piedmont Triad.

The effort will be a system-wide tablet-based survey of fixed-route riders for partner agency routes serving the Triangle Region to obtain demographic, ridership, and origin-destination data. Information obtained from the surveys will be used to support the long range and metropolitan transportation plans for Capital Area Metropolitan Planning Organization (CAMPO) and Durham-Chapel Hill-Carrboro MPO (DCHC-MPO), to inform Triangle regional travel demand (TRM) and STOPS model updates, to meet air quality requirements, and to inform other long range multimodal transportation network plans across the region.

The approach to coordinate and conduct activities is consistent with past surveying efforts in the region. The methodology mirrors the plan used in the 2015 Wake County Transit Customer Survey and as updated in the 2021 Fixed Route Survey Methodology Memo. Efforts to conduct the survey under the 2021 Memo were ultimately suspended upon direction of the Federal Transit Administration. To capture up-to-date survey input the methodology described here includes survey elements to capture the influence of emerging transit technologies and service options – such as micromobility – on fixed route rider behavior.

Go Raleigh will manage the administration, synthesis and dissemination of survey results supported by Planning Communities (PC), Cambridge Systematics (CS) and the ETC Institute (ETC). The consultant team will support ongoing coordination and briefing activities to update and inform regional agencies throughout the process.

## SURVEY PLANNING

### Survey Design

The survey will be administered by ETC who conduct similar surveys across the country and is utilized by the FTA, providing leading edge practice to this project. The survey team will use an interview technique common to survey practice in the industry aided by tablets. The survey will also integrate GIS software to allow for accurate geocoding of survey data. Interview elements will include the ability to appropriately approach interviews with younger riders and those with limited English proficiency as follows:

If a passenger does not appear to be at least 16 years old, the interviewer will ask the rider if he/she is at least 16. If the rider is not at least 16 years old and the rider is accompanied by an adult, the interviewer will ask the adult for permission to interview the younger rider OR the interviewer will ask the adult to answer the questions for the younger rider. The interviewer will record the demographic characteristics of the younger rider if the adult respondent answers for the younger rider. Children in strollers and being carried will be counted as passengers, and they will have an equal probability of being selected for the interview. For purposes of consistency, all children in strollers and being carried will be counted first before the accompanying adult (e.g., if an adult carrying a baby is waiting on the platform, the baby is counted before the adult). At least one bilingual Spanish-speaking interviewer will be present on all routes listed as high percentage Spanish-speaking rider routes. Bilingual interviewers will wear stickers showing language spoken (e.g., Yo hablo espanol). Staffing for bilingual interviewers for languages other than Spanish may be provided upon agency request in cases where there is a demonstrated need on a given route. The survey script will ask the rider to select from a list of languages at the start of the survey; if the rider selects a language that the surveyor cannot speak, they will be prompted to contact ETC's call center which is equipped with interviewers fluent in approximately 20 languages.

The survey instrument questions are provided in Attachment A. The data to be collected for the on-board Survey includes:

Route surveyed on and time of trip

- Direction of travel
- Any other transit routes used and number of transfers
- Origin/destination
- Boarding/alighting location and latitude and longitude for each location
- Access and egress modes
- Trip purpose
- Method of payment
- Gender/race and other demographic information of respondent

Select routes will include a boarding-to-alighting (B2A) effort, also known as an on-to-off (O2O) survey. In B2A, surveyors will record the number of riders getting on and off at each stop.

### Sampling Plan

The study team, transit agencies, ITRE, CAMPO and DCHC-MPO will develop a sampling plan, pending complete, detailed data from participating agencies, for weekday travel using historic average weekday ridership by route. This will mirror the methodology used in the 2015 ridership survey. The sampling plan

will include survey dates, times, and bus routes. It will also include data collection targets by transit system, specifically, the percentage of trips that to be obtained on fixed transit routes.

The FTA process for data collection and accuracy of travel forecasts includes ridership information that can be compared to service types, travel characteristics, and socioeconomic classifications. The FTA goal is to use the on-board and origin-destination survey data to validate performance of local travel demand models.

The FTA process informed the development of the sampling plan and available funding for the project was discussed when considering the sample size. At a minimum, 10%+ of each system's average weekday ridership will be surveyed during the survey. Additionally, a set of tiered priority corridors has been developed for the region for which oversampling is desired, with an approximately 20-50% target depending on priority (high, medium, and low) and route. These tiered priority routes reflect recent and relevant existing and/or new fixed route services as provided by agency operators across the region.

## Schedule

The anticipated schedule for the survey is outlined in Table 1.

**Table 1 – Anticipated Survey Schedule**

Task	Responsibility	Date(s)
Distribute regional transit agency data requests	GoRaleigh	April 28, 2023
Respond to agency data requests	GoRaleigh / Regional Transit Agencies	May – June 2023
Interagency kick off meeting	Consultant Team	July 19, 2023
Update survey memorandum	Consultant Team	July 21, 2023
Update survey instrument	Consultant Team	July 21, 2023
Wrap up / supplemental data collection	GoRaleigh / Regional Transit Agencies	July 2023
Partner agencies review of survey memo and instrument	GoRaleigh / Regional Transit Agencies	July 24 - August 4, 2023
Interagency methodology, instrument, and sampling plan review meeting	Consultant Team	August 23, 2023 (TBD)
Revise survey memorandum, sampling plan, and instrument	Consultant Team	August 25, 2023
Prepare for Boarding to Alighting Survey and train surveyors	Consultant Team	Late August 2023
Conduct Boarding to Alighting Survey (includes survey test)	Consultant Team	Early September 2023
Interagency test results and final survey preparations and materials meeting	Consultant Team	Early September 2023
Final modifications to OD survey instrument, survey management plan, and sampling plans	Consultant Team	September 2023
Finalize training materials	Consultant Team	Late September 2023
Conduct OD survey	Consultant Team	October 2023
Data weighting and expansion	Consultant Team	November 2023
Analyze survey results	Consultant Team	December 2023
Draft All Systems Summary Report	Consultant Team	Late December 2023
Interagency survey report review meeting	Consultant Team	January 2024
Draft other agency individual survey reports	Consultant Team	January 2024
Review draft survey reports	GoRaleigh / Regional Transit Agencies	February 2024
Finalize survey reports & materials	Consultant Team	February 2024
Assigned agency presentations	Consultant Team	January - March 2024

## SURVEY MANAGEMENT

### Staffing Plan

The staffing plan includes an organizational structure as follows:

- Designated Field Project Manager
- QA/QC Coordinator
- Field Supervisors
- Data Collectors (including collectors fluent in Spanish, when necessary)
- Data Editors

A detailed Survey Management Plan is included as Attachment D and addresses both a staffing plan and training.

### Training Plan

ETC will conduct training prior to the on-board survey administration. Training will include classroom training and in-field training. ETC will be responsible for preparing all training materials including the Surveyor's Manual, securing a facility for conducting the training, and providing moderators to conduct the training; Planning Communities will review all training materials.

Each interviewer will be required to demonstrate that they can proficiently conduct the survey before they will be allowed to administer the survey. Interviewers who cannot demonstrate proficiency in all tasks related to the administration of the survey will be replaced. Surveyors will also be reviewed throughout the data collection effort and will be retrained if issues are encountered. If the surveyor continues to perform below standards, the surveyor will be dismissed.

### Pilot Study

ETC will conduct a pilot test for the survey efforts. The pilot test will be administered by survey supervisors. The pilot test will address survey design, length, and response rate and will be simultaneous with training sessions.

ETC will document the results of the pilot test in an informal memo, along with any needed changes to the survey instrument or survey methodology as a result of the test.

PC will update the written survey instrument (and Spanish translation). ETC will also update the tablet programming as needed to ensure that any problems identified during the pre-test are corrected.

A detailed Survey Management Plan will be developed including to coordinate/align survey outputs to inform the TRM and STOPS models.

## SURVEY ADMINISTRATION

The survey will be administered by ETC Supervisory staff. Two groups of surveyors will be present during the field efforts.

### Leadership Team

The leadership team will consist of the project advisor, project manager, and 2-3 support personnel. The leadership group will be responsible for reviewing the performance of each surveyor and ensuring that the sampling goals for each route are met.

- QA/QC ride and communication procedure monitoring
- Verification of data collection
- Visual inspection of survey records
- Methods for reducing non-response bias

After the surveys are administered, the field team leaders will review the survey data collected by their team and present the data to the Leadership Team. They will then review the survey records to ensure all necessary information has been provided. If any information is missing, they will forward the survey record and the name and phone number of the survey respondent to ETC Institute’s call center. Interviewers working in the call center will then call respondents to retrieve missing information by phone.

## SURVEY DATA PROCESSING AND ANALYSIS

The quality assurance/quality control and data cleaning/processing procedures will be fully detailed in the QA/QC Plan. The draft database will have locations geocoded to the latitude/longitude at the address level and assigned to the appropriate transportation analysis zone (TAZ), trips verified, and a flag for what is considered a “complete/ usable” or “incomplete/unusable” record. The QA/QC plan will define what is a “complete/ usable” or “incomplete/unusable” record.

The project team will expand the dataset using B2A data collected and APC data for each agency, route, time of day, and day of survey. The final data files will be provided to each transit agency electronically, as well as a full data dictionary.

### Implementation Schedule

The implementation schedule will be added once sampling plans have been completed.

## Field Teams

The ETC Supervisory staff will focus their efforts on the administration of surveys on several bus routes per week. The staff will supervise a group of approximately 15-20 interviewers per day. On high volume routes, up to six interviewers may be deployed per route. On low volume routes, just one interviewer may be deployed on a route.

## Timing of the Survey

The surveys will be administered during weekdays (Monday-Thursday) when schools are in session, and will avoid blackout dates. The surveys will be administered from 5:00am-9:00pm or during the hours for which the route is operating.

## Process of Conducting Survey

Interviewers will select riders at random to participate in the survey based on the sampling goals established for each route. Once an interviewer has selected a rider for the survey, the interviewer will do the following:

- The interviewer will approach the person selected and ask them to participate in the survey.
- If the person refuses, the interviewer will end the survey, but the refusal will be recorded on the tablet to help assess the overall response rate to the survey.
- If the rider agrees to participate, the interviewer will ask if he/she has at least five to seven minutes to complete the survey.
- If the rider does NOT have at least five to seven minutes, the surveyor will ask the rider to provide his/her boarding location, alighting location, name, and phone number. ETC Institute's call center will contact the respondent within 24 hours and ask him/her to complete the survey by phone. If a respondent does not have a phone number, then a printed copy of the survey with a postage-paid return will be provided. This will ensure "short-trips" are well represented. This method has been used successfully by ETC in previous studies.
- If a rider has at least five to seven minutes, the surveyor will administer the full survey to the respondent as a face-to-face interview using a tablet computer.
- ETC will provide weekly progress reports during the data collection effort detailing the survey effort.

## Post Survey Administration

After the surveys are administered, the field team leaders will review the survey data collected via ETC's real time dashboards. In addition to ensuring the interviewer's record passes all of our auto "flags" (logic tests, time duration, interviewer comparisons, etc), field supervisors will also review the survey records to ensure all necessary information has been provided. If any information is missing, they will forward the survey record and the name and phone number of the survey respondent to ETC Institute's call center. Interviewers working in the call center will then call respondents to retrieve missing information by phone.

## Quality Assurance / Quality Control (QA/QC)

Quality assurance/quality control (QA/QC) occurs throughout the data collection process to ensure high quality and usable data. The QA/QC effort will include the following:

- Real-time data review
- Real-time geocoding
- Interview tracker

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