

GoTriangle - Title VI

Limited English Proficiency (LEP) & Language Assistance Plan (LAP)

August 2020

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Introduction

Pursuant to FTA guidance, GoTriangle must take reasonable steps to ensure meaningful access to the benefits, services, information and other important portions of its programs and activities for individuals who are limited-English proficient (LEP). GoTriangle's 2020 Language Assistance Plan (LAP) Update details its language access policies and methods and incorporates the Department of Transportation's (DOT) LEP Guidance as required for providing language assistance for LEP individuals. The goal of the LAP is to provide language assistance to persons with limited-English proficiency in a competent and effective manner, to help ensure GoTriangle's services are safe, reliable, convenient and accessible to LEP customers.

Most individuals in the United States read, write, speak and understand English. However, there are many individuals whose primary language is not English. Individuals who do not speak English as their primary language and who have a limited ability to read, write, speak or understand English may be Limited English Proficient, or "LEP." This language barrier may prevent individuals from accessing services and benefits.

There are two pieces of legislation that establish the manner in which agencies which are recipients of federal funds must address the needs of LEP persons. Title VI of the Civil Rights Act of 1964 and Executive Order 13166 clarifies requirements for LEP persons under Title VI.

Title VI of the Civil Rights Act of 1964 and implementing regulations provide that no person shall be subjected to discrimination on the basis of race, color, or national origin under any program or activity that receives federal financial assistance.

Executive Order 13166 applies to all federal agencies and all programs and operations of entities that receive funding from the federal government, including state and local agencies, and governments, private and non-profit entities, and subrecipients. The purpose of this LEP guidance is to clarify the responsibilities of recipients of federal financial assistance from the U.S. Department of Transportation and assist them in fulfilling their responsibilities to LEP persons. The Executive Order also requires agencies to examine the services it provides and develop and implement a Language Implementation Plan which includes a system by which LEP persons can meaningfully access those services.

Program Objectives

- a. Ensure that the level and quality of public transportation service is provided in a nondiscriminatory manner;
- b. Promote full and fair participation in public transportation decision-making without regard to race, color, or national origin;
- c. Ensure meaningful access to transit-related programs and activities by persons with limited English proficiency.

Plan Summary

GoTriangle has developed this limited English proficiency Plan (LEP) to ensure that LEP persons will have meaningful access to its services as required by Executive Order 13166.

The plan details procedures on how to identify a person who may need language assistance, the ways in which assistance may be provided, the manner in which staff should be trained, how to notify LEP persons that assistance is available, and monitoring and updating future plan updates.

To develop its Plan, GoTriangle undertook the U.S. Department of Transportation four factor LEP analysis which considers: 1) The number or proportion of LEP persons eligible to be served or likely to encounter a program, activity or service of GoTriangle; 2) The frequency with which LEP individuals come in contact with the program; 3) the nature and importance of the program, activity or service provided by GoTriangle to people's lives; and 4) the resources available to GoTriangle and implementation costs. A brief description of the self-assessment undertaken in each of these areas follows.

Four-Factor Analysis

As part of Title VI general requirements and guidelines, a Four-Factor Analysis must be completed to ensure equal and meaningful access to programs and activities for persons with limited English proficiency. A Four-Factor Analysis assesses the following: the number or proportion of LEP persons in the service area; the frequency with which LEP individuals come into contact with the service; the nature and importance of the service to LEP persons; and the agency resources available and costs for outreach. The purpose of this process is to determine if language access is needed.

1. The number or proportion of LEP persons eligible to be served or likely to encounter a program, activity or service of GoTriangle. GoTriangle examined several data sources for demographic data of its service areas to assess whether there were any underserved LEP populations.

LEP persons interact with GoTriangle on a daily basis. GoTriangle is a regional public transportation agency that operates regional bus and shuttle service, paratransit services, ridematching, and vanpools in Durham, Orange and Wake counties. For FY 2019, GoTriangle's ridership on fixed-routes was 1,653,754 riders and trips on GoTriangle Access was 44,179. GoTriangle operates 7 days a week with 67 buses, 14 regional routes, 8 weekday Express routes and a Public Demand-Response system serving Research Triangle Park and surrounding areas. GoTriangle operates 77 vanpool vehicles and 20 paratransit vehicles.

GoTriangle's bilingual (English and Spanish) call center representatives interact daily with LEP customers, assisting them with planning transit trips, fare and schedule information, real-time bus status, paratransit trip scheduling and applications and several other services through our GoTriangit Regional Information Center. Additionally, GoTriangle's Regional Transit Center (RTC) provides customer service for window and pass sales, lost and found, route and informational brochure requests, transit agency policy information, trip planning, fare and schedule and other services to customers. The RTC is staffed with bilingual (English and Spanish) representative as well to assist LEP persons.

GoTriangle reviewed information from the U.S. Census Bureau; American Community Survey (ACS) for 2018 for each county served: Durham, Orange and Wake counties. *Attachment - Language Spoken at Home Chart.*

The 2018-ACS Survey estimated Language Spoken at Home for the Population 5 years and over for Durham County was 285,926. That total includes:

Speaks only English - 232,307 or 81.2%; speaks English only or very well- 261,092 or 91.3%; Speaks English less than very well- 24,834 or 8.7%; speaks a language other than English- 53,619 or 18.8%. The ACS indicates that Spanish speaking LEP persons are the most likely to be encountered, comprising 33,625 or 11.8% of LEP persons in Durham County.

The ACS estimates that Asian and Pacific Islanders speakers are the other most likely group to be encountered, comprising 8,022 persons or 2.8% of the population in Durham County. The ACS estimates that 5,084 or 63.4% of the Asian and Pacific Islanders groups speak English very well, while 2,938 or 36.6% speak English less than very well.

The 2018-ACS Survey estimated Language Spoken at Home for the Population 5 years and over for Orange County was 136,345. That total includes:

Speaks only English- 113,104 or 83.0%; speaks English only or very well- 128,324 or 94.1%; Speaks English less than very well- 8,021 or 5.9%; speaks a language other than

English- 23,241 or 17.0%. The ACS indicates that Spanish speaking LEP persons are the most likely to be encountered, comprising 10,138 or 7.4% of LEP persons in Orange County.

The ACS estimates that Asian and Pacific Islanders speakers are the other most likely group to be encountered, comprising 7,427 persons or 5.4% of the population in Orange County. The ACS estimates that 4,458 or 60.0% speak English very well, while 2,969 or 40.0% speak English less than very well.

The 2018-ACS Survey estimated Language Spoken at Home for the Population 5 years and over for Wake County was 980,169. That total includes:

Speaks only English- 814,515 or 83.1%; speaks English only or very well- 925,512 or 94.4%; Speaks English less than very well- 54,657 or 5.6%; speaks a language other than English- 165,654 or 16.9%. The ACS indicates that Spanish speaking LEP persons are the most likely to be encountered, comprising 80,445 or 8.2% of LEP persons in Wake County.

The ACS estimates that other Indo-European speakers are the other most likely group to be encountered, comprising 36,216 persons or 3.7% of the population in Wake County. The ACS estimates that 28,387 or 78.4% of the Indo-European groups speak English very well, while 11,270 or 32.2% speak English less than very well.

GoTriangle also reviewed Wake County Public School System (WCPSS) demographics for 2018-2019. WCPSS is the largest school district in North Carolina and the 15th largest in the United States. The 2018-2019, enrollment was 160,959 students. The race/ethnic composition of WCPSS follows: white, 76,668 or 45.8%; Black or African-American, 36,545 or 22.7%; American Indian or Alaska Native, 398 or 0.02%, and Two or More Races, 6,122 or 3.8%, while Hispanic/Latino, 29,031 or 18.0%, and Asian, 15,001 or 9.3%. The percentage of Pacific Islander, 194 or 0.1% students was unchanged.

WCPSS Limited English Proficiency (LEP) students totaled 13,988 or 8.6% of students classified as LEP for 2018-2019.

Durham Public Schools (DPS) demographics for 2019-20 were reviewed. DPS enrollment was 32,928, down slightly from 33,151 from 2016-17. DPS race/ethnicity makeup was comprised of: Black or African-American, 41.6% down from 46.0%; White 19.0%, up from 18.5%; Hispanic/Latino 32.8%, up by 3.1%, Asian 2.1% down slightly from 2.4%; Multiracial 4.3%, up from 2.9%; American Indian 0.2%, down 0.1% ; and Hawaiian/Pacific Islander 0.1%, unchanged.

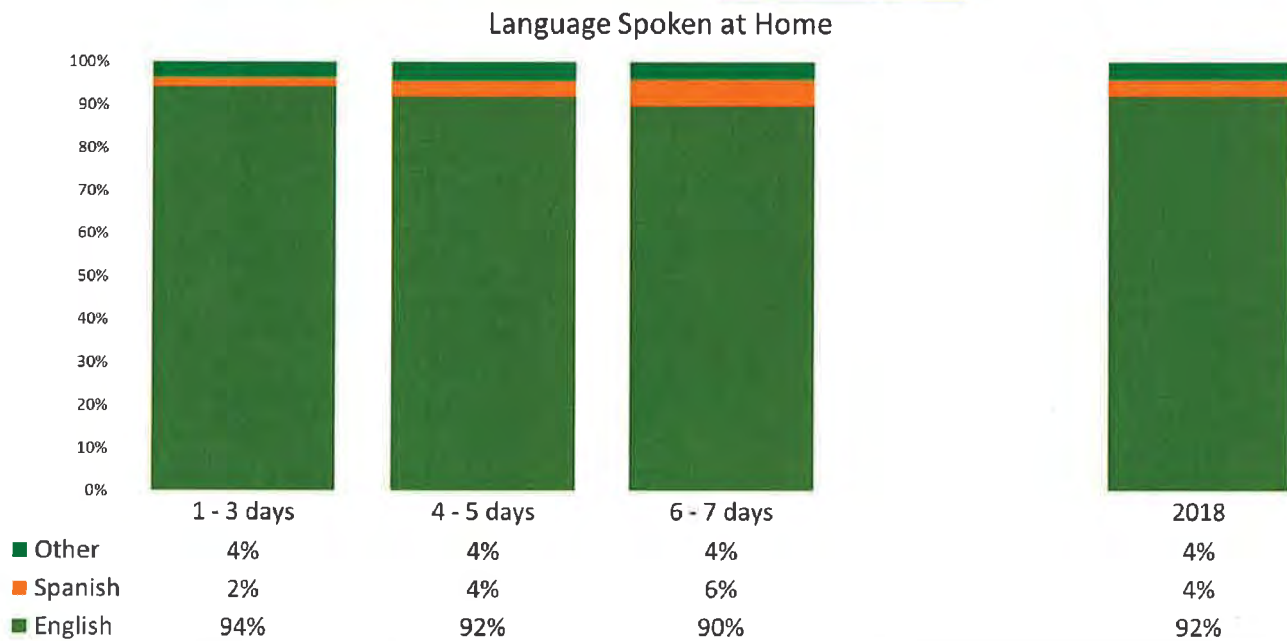
Orange County Schools demographics for 2018-19 were reviewed. Orange County enrollment was 7,429. The race/ethnicity makeup was comprised of: Black or African-American, 14%, White 56%, Hispanic/Latino 24%, Asian 1%, Multiracial 5%, Native American, <1%, and Hawaiian/Pacific Islander <1%. Male students comprise 52.42% and female 47.58% of students.

Orange County is the 50th largest school district in the state. There are 27 different languages spoken at home other than English.

Language Spoken Most Often at Home

The overwhelming majority (92%) of GoTriangle customers most often speak English at home while only 4% speak Spanish and 4% another language. The rider frequency segments do not vary significantly in this respect.

Figure 27 Language Spoken Most Often at Home



The Safe Harbor Provision

The Safe Harbor Provision stipulates that if a recipient provides written translation of vital of documents for each eligible LEP language group that constitutes five percent (5%) or 1,000 persons, whichever, is less, of the total population of persons to be served or likely to be affected or encountered. Translation of non-vital documents, if needed, can be provided orally. If there are fewer than 50 persons in a language group that reaches the five percent (5%) trigger, the recipient is not required to translate vital written materials but should provide written notice in the primary language of the LEP language group of the right to receive competent oral interpretation of those written materials, free of cost.

These safe harbor provisions apply to the translation of written documents only.

Based on GoTriangle's Onboard Passenger Survey feedback from its employees, requests for translated documents, etc., GoTriangle will continue to focus on translation of vital documents for Spanish LEP individuals. GoTriangle has not received any documented requests for any translated documents or language assistance other than Spanish. While GoTriangle's 2018 Onboard survey revealed that 13% of customers identify themselves as Asian and 6% Hispanic, a prior GoTriangle survey revealed that "Asian riders are the most likely, to say that while they do not speak English very well, they speak it well.

GoTriangle's 2018 Onboard Passenger Survey revealed that the overwhelming majority (92%) of customers most often speak English at home while only 4% speak Spanish and 4% another language.

2. The frequency with which LEP individuals come in contact with the program. GoTriangle accesses the frequency at which staff has or could possibly have contact with LEP persons. This includes reviewing GoTriangle's records of contact with customers from its GoTransit Regional Information Center; CJI's Onboard Passenger Survey; phone inquiries; requests for translated documents; and staff feedback.

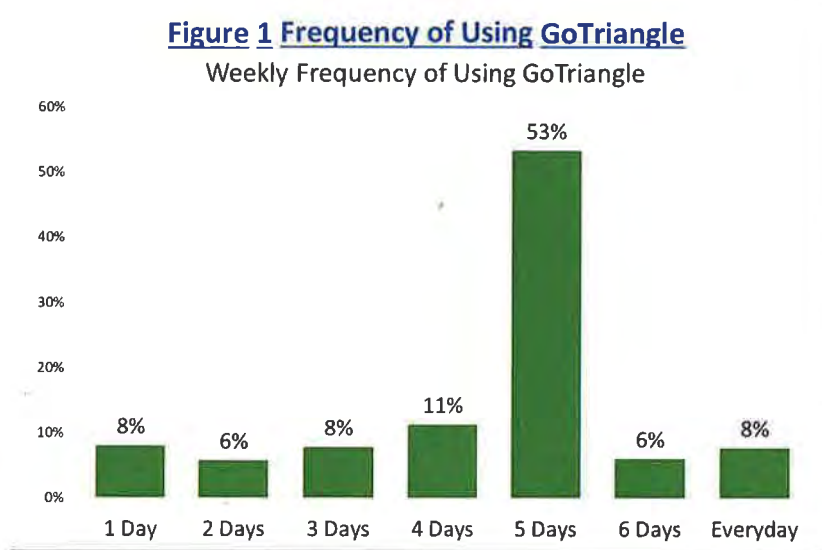
A past Onboard Passenger Survey noted that GoTriangle's communication with its riders was evolving as to how they preferred to obtain service change updates. Transit Systems are experiencing a transition from the use of printed materials to communicate with riders to electronic and increasingly mobile electronic modes.

CJI Research Corporation conducted an onboard survey of customers onboard GoTriangle buses starting from October 9 through 16, 2018. The survey asked riders about their frequency of using GoTriangle.

Frequency of Using GoTriangle

Riders were asked on how many days in a typical week they use GoTriangle. For purposes of further analysis, the customers are grouped into three sets, or "segments," depending upon how frequently they use GoTriangle. We refer to them as:

- One-to-three-day: Those who use GoTriangle one, two, or three-days a week (22%)
- Four-to-five-day: Those who use GoTriangle four or five days a week (65%)
- Six-to-seven-day: Those who use GoTriangle six or seven days a week (14%)



Why segment the sample in this manner? Understanding the ridership in groups rather than as a monolith is generally useful to those involved with planning or marketing. The frequency of using public transit is the most basic differentiating characteristic within the ridership.

Other breakdowns may also be of interest, and by request such breakdowns can be provided quickly because the survey data is maintained live to meet such requests. Such breakdowns might include level of dependency on transit, trip purpose, or demographics such as age or income. All are easily available on request.

*CJI Onboard Survey – GoTriangle 2018

Figure 2 Compressed Measure of Frequency of Using GoTriangle

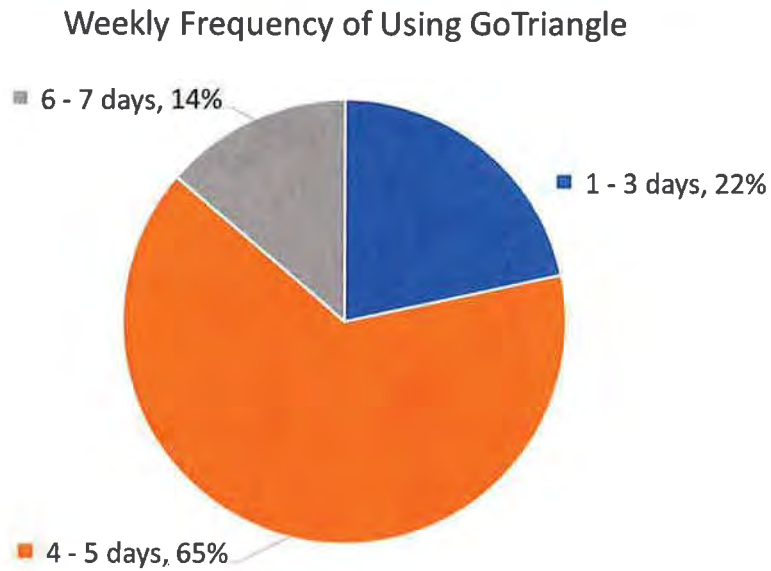
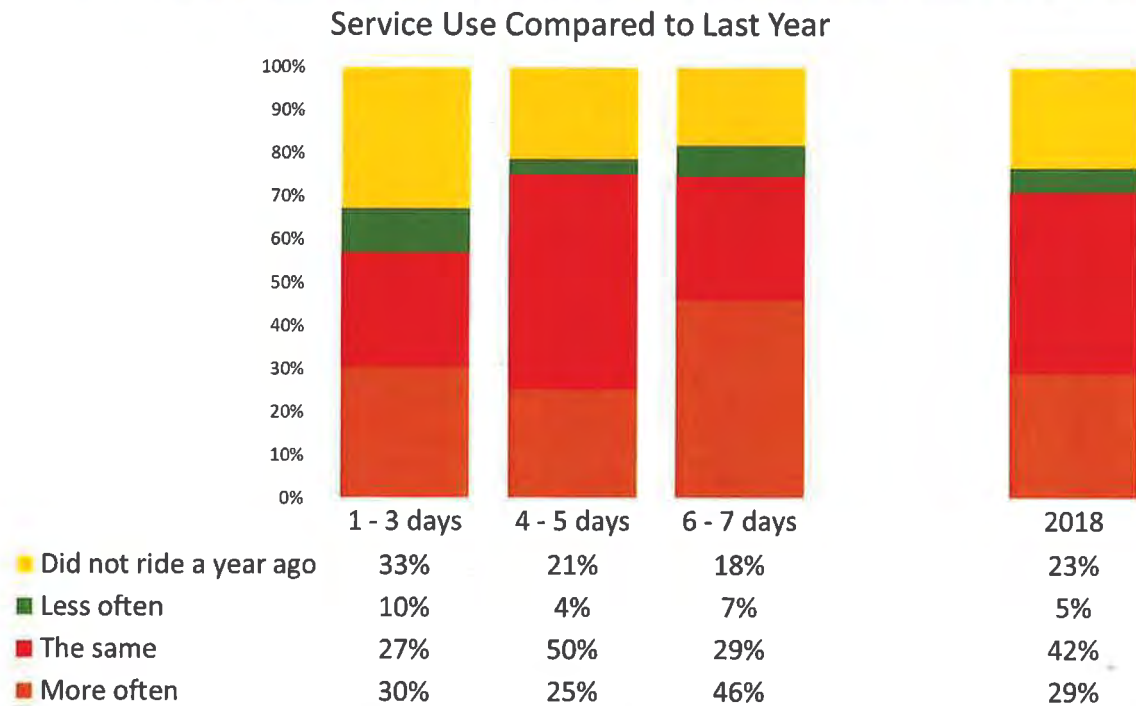


Figure 3 Compared to a Year Ago, Do You Ride More Often, Less Often or the Same?



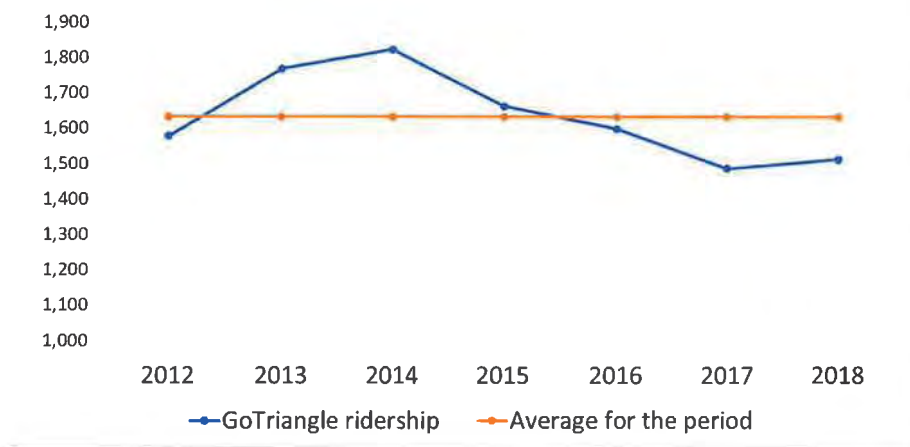
*CJI Onboard Survey – GoTriangle 2018

Compared to a Year Ago, Do You Ride More Often, Less Often or the Same?

Overwhelmingly, respondents say that they are riding either with same frequency (42%) or more often (29%) than a year ago, and 23% say they are new riders. Only 5% say they are riding less often. The one-to-three-day riders are the most likely to be new riders (33%), while the most frequent riders are more likely (46%) than the other segments to say they are riding more often. It is speculation, but this increase may be related to the tightening of the labor market and resulting increases in hours worked.

Figure 4 GoTriangle Ridership, 2012 to 2018

Trips per year (in thousands) on GoTriangle in Relation to Average for the Seven Year Period, 2012 through 2018
(Source: GoTriangle internal records from Planning Department)



Ridership and survey figures are not strictly comparable. Thus, the finding that 29% say they are riding more often may or may not be entirely consistent with the ridership data which show only a small growth (2%) although it was growth that reversed the trend in long term loss of 11% from 2014 through 2017. We do not know how much they may have increased their riding, for example. Their increased use may have been minimal.

*CJI Onboard Survey – GoTriangle 2018

3.The nature and importance of the program, activity or service provided by GoTriangle to people’s lives. GoTriangle’s role as a regional public transportation agency is critical in providing people access to employment, education opportunities, medical care, shopping, entertainment, recreational opportunities, and access to childcare to those who rely on public transportation.

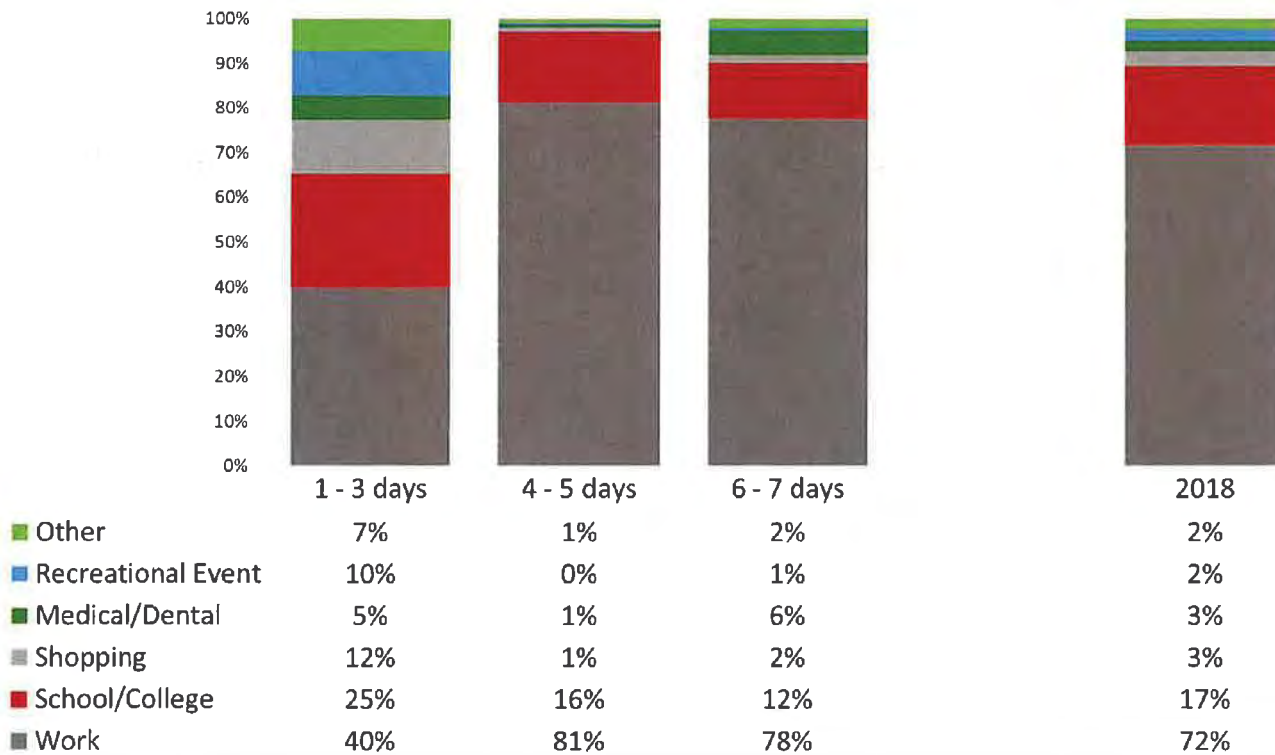
The CJI Onboard Passenger Survey indicated that of those purposes listed above the main purpose of GoTriangle’s riders specific trips are employment and school as shown in the chart below. GoTriangle is providing local labor force mobility.

- 72% use GoTriangle to get to and/or from work, an increase from 2016 when 70% reported making work-trips.
- Riders have used GoTriangle to get to and/or from school/college at 17% up from 13% in 2016.
- Other riders use GoTriangle to go shopping, 3% go to medical visits 3%, or for recreational events, 2%.

Trip Purpose: Use of GoTriangle for Various Purposes, by Segment

Customers were asked to name the single main purpose for which they use GoTriangle.

- Getting to or from work is the primary trip-purpose, with 72% of customers citing work as their most frequent trip purpose.
- School and college trips make up another 17% of trips. Thus, GoTriangle is carrying a large proportion of its customers (89%) either for work trips or for school trips, an indication of its economic impact through the labor force.
- Another 3% of the customers indicate that they use GoTriangle to make shopping trips, a set of trips with immediate economic impact.
- Medical (3%) and recreational (2%) trips account for 7%.

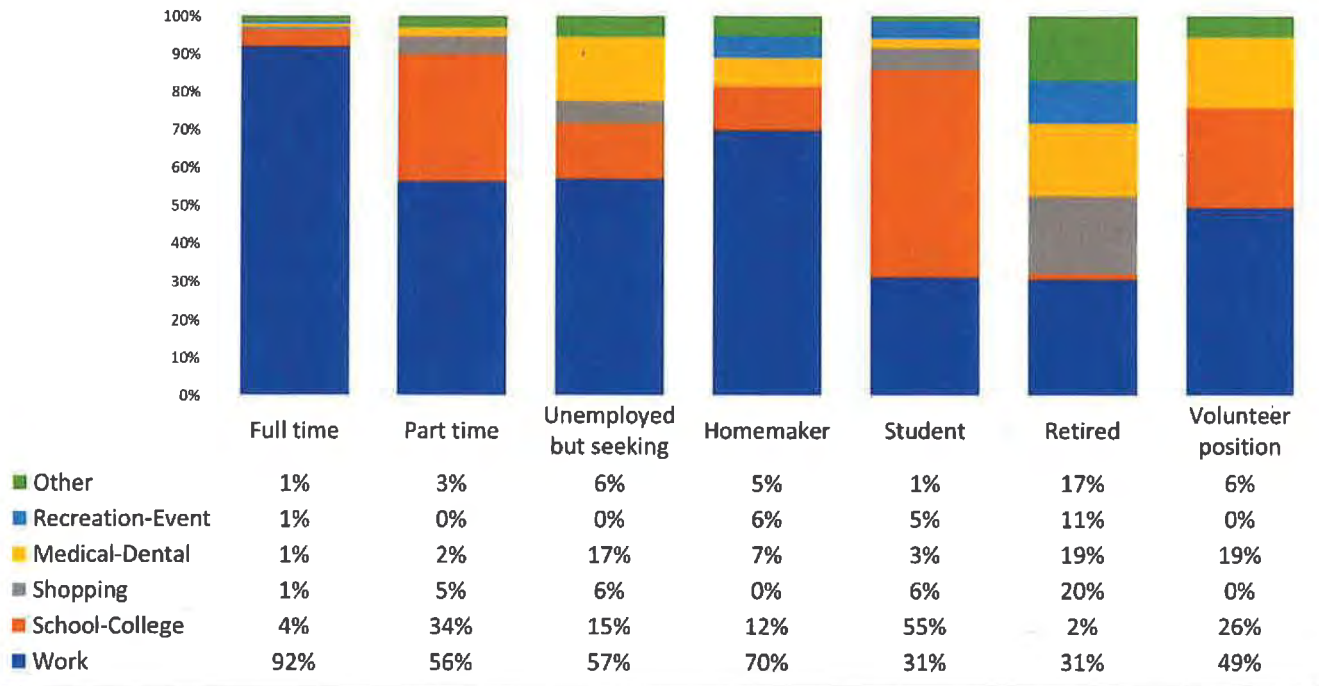
Figure 5 Trip Purpose**Main Trip Purpose for Using GoTriangle Buses**

A substantial majority of the four-to-five-day riders (81%) and six-to-seven-day riders (78%), but fewer of the one to three day riders (40%) had made work-trips. The one-to-three-day a week riders are more likely than the other segments to have used GoTriangle for each of the non-work purposes with the exception of Medical/Dental purposes. This is especially true for school/college trips (25%), shopping (12%), and recreation (10%).

*CJI Onboard Survey – GoTriangle 2018

Figure 6 Employment and Trip Purpose

Trip Purpose by Employment, GoTriangle



Employment and Trip Purpose

That employment would be closely related to trip purpose would appear self-evident. However, there are some variations. As expected, 92% of those employed full time use GoTriangle to go to or from work, while 56% of part-time workers are headed for work, and another 34% of those part-time workers are headed for school. These are as anticipated.

Less expected is that 57% of those who say they are unemployed say they are going to or coming from, work. One possibility is that they are in temporary jobs of some sort while looking for work and therefore consider themselves to be unemployed according to those conditions. Similarly, 31% of retirees say they are making a work trip, probably working part time but still considering themselves to be primarily retired. Nearly three-fourths of homemakers (70%) say they too are going to work. These individuals could be working part time but consider homemaker to be their main occupation. Students, as expected, are going either to school (55%) or to work (31%).

In short, a customer’s employment circumstances strongly influence, but do not determine trip purpose.

*CJI Onboard Survey – GoTriangle 2018

GoTriangle's fixed route, vanpool and paratransit services provide critical access to medical appointments, employment opportunities, pharmacies, grocery shopping, and a host of other quality of life events. All of GoTriangle's services are accessible by LEP persons. In order to serve our LEP customers several GoTriangle bus operators and staff in the Regional Information Center and the GoTriangle Regional Transfer Center representatives are bilingual (English and Spanish). Bilingual call center representative's assisted Spanish LEP customers who requested a Spanish speaking customer service representative. There were no documented requests from Asian customers for LEP assistance in FY 2019, nor any currently in 2020.

4. The resources available to the recipient and costs. GoTriangle is committed to assuring that resources are used to reduce the barriers that limit access to its services by LEP individuals. We will continue that commitment by continually assessing the available resources to provide LEP assistance. GoTriangle will make available bilingual staff, professional interpreters (upon request), and translation of vital documents and decide what level of staff training is needed. We have also established partnerships and work closely with community organizations that serve LEP populations.

Language Assistance Plan

After analyzing the four factors outlined in the U.S. DOT policy guidance, GoTriangle has used the results of the analyses to determine which language assistance services are appropriate. And developed an assistance plan to address the needs of the LEP population(s) we serve.

There are five areas that comprise GoTriangle's LAP plan:

1. Identifying LEP individuals who need language assistance
2. Language assistance measures
3. Training staff
4. Providing notice to LEP persons
5. Monitoring and updating the LEP plan

GoTriangle's website includes Google Translate so that LEP customers can view information in their preferred language.

1. Identifying LEP individuals that need language assistance. GoTriangle will review demographic data annually and solicit data from the LEP community to identify language assistance needs within its service areas.

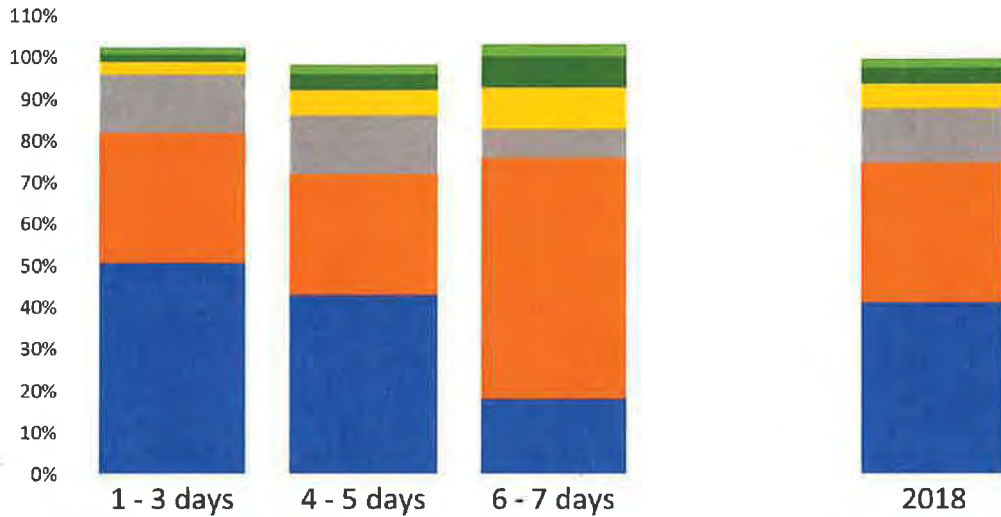
Based on the U.S. Census Bureau; American Community Survey (ACS) for 2018, GoTriangle's Onboard Passenger Survey, Wake County Public School System (WCPSS), Durham Public Schools (DPS), and Orange County Schools, demographic data, and documented calls to GoTriangle's Regional Information Center. Spanish speaking LEP persons are the primary group requiring language assistance in GoTriangle's service areas.

GoTriangle's Onboard Passenger identified relatively little change in the ethnicity of riders, although there was a small decrease in the percent of riders identifying with the two largest ethnic groups in the ridership (Caucasians, 41%) and African Americans (33%). The overall the makeup of GoTriangle's ridership comprised of; Caucasian 41%; African-American 33%; Asian 13% Hispanic 6%; Other 4%; and Native American 2%.

See figure 26 below: Ethnicity of customers

Figure 26 Ethnicity of Customers

Ethnic Background of Respondents



	1 - 3 days	4 - 5 days	6 - 7 days	2018
Native American Indian	2%	2%	3%	2%
Other	2%	4%	7%	4%
Hispanic	3%	6%	10%	6%
Asian	14%	14%	7%	13%
African American/Black	31%	29%	58%	33%
Caucasian/White	51%	43%	18%	41%

Ethnicity of Customers

In measuring ethnicity, it is important to focus on self-identification by asking "Which do you consider yourself...?" and asking that respondents note all descriptions that apply to them. In this way surveys usually capture some overlap among the several groups. In the case of GoTriangle customer, the overlap among ethnic identities is very small.

In 2018, 41% of the respondents identified themselves as Caucasian/White. Another 33% identified as African American/Black, 13% as Asian, 6% Hispanic and 2% Native American, for a total of 54% minority ridership.

The "Other" category (4%) allowed for a handwritten response. But the write-ins were predominantly expressions of nationality or cultural groups (Hawaiian, African, Middle Eastern, Turkish, Black Hebrew, etc.) or notations such as "biracial," or sardonic (e.g. Human) and in this context are not at all helpful.

*CJI Onboard Survey – GoTriangle 2018

The distribution of ethnicity differs somewhat among the rider segments, with one-to-three-day customers more likely (51%) to identify as Caucasian/White compared to four-to-five-day customers (43%) or six-to-seven-day customers (18%). The more frequently a customer uses GoTriangle in a typical week, the more likely he or she is to identify with a minority ethnic group. Of the one to three day riders, 47% identify as members of a minority racial / ethnic group (excluding "other"), while of the four to five day riders, the comparable percent is 57%, and for six to seven day riders, 75%.

We will continue to monitor and evaluate our agency's efforts based on requests for LEP assistance and make adjustments or changes as needed.

There are several measures that can be taken to identify persons who may need language assistance in our service area, with emphasis on our primary group requiring help:

- Send out notifications in Spanish of upcoming events/meeting(s).
- Select locations that may be more convenient for LEP persons; send out the notices in Spanish.
- Include a sign in Spanish and a Spanish speaking person at the desk.
- When open houses or public meetings are held, set-up a sign-in table and have a staff member greet and briefly speak to each attendee in order to informally gauge his/her ability to speak and understand English.
- Have the Census Bureau's "I Speak Cards" at various events. Although staff may not be able to provide translation assistance at the time, the cards are an excellent tool to identify language needs for future events/meetings. The cards are also available at the Regional Transit Center.
- Post a notice of available language assistance at open houses/public meetings to encourage LEP persons to self-identify.
- Examine record requests for language assistance from past meetings and events to anticipate the possible need for assistance at upcoming meetings.
- Survey bus operators periodically and other staff who have contact with LEP individuals to record language assistance requests.

2. Language Assistance Measures. GoTriangle has or will implement the following LEP procedures.

- Bilingual call center staff is available for Spanish LEP language assistance and to respond or interpret correspondence in Spanish. Call center staff are also responsible for recording complaints and forwarding them to the Customer Service Manager (CSM). Complaints that come under Title VI are forwarded by the CSM to the designated department for appropriate action.
- Census Bureau's "I Speak Cards" are located in the RTC to communicate with individuals with limited English proficiency.
- Notice on website that language assistance services are available upon request, free of charge.
- Interior bus poster displaying Title VI Notice to the Public in English and Spanish. The Title VI complaint form and complaint form and procedures, are translated into Spanish are available on GoTriangle's website.
- Provide translators for all public hearings & meetings (upon request) and translated press releases.
- Several bus operators speak Spanish. Operators are the most direct point of contact for LEP persons. However, if the operator is not bilingual, they are instructed to ask for assistance from a bilingual passenger. If there is no one on the bus who can offer language assistance, the operator contacts dispatch for assistance.
- Users of GoTriangle's website have online access to Google Translate, the online language translation service which allows users to translate to and from Spanish and other languages.
- GoTriangle's website to add feature to increase/decrease font size to view text in different sizes for the visually impaired.
- GoTriangle has an Interpretation Services contract CTS Language Link with the ability to access an interpreter as needed by telephone that supports more than 240 languages and dialects.

- The text on signs identifying the locations at which people must gather in the event of an emergency are located at the Administrative offices, Regional Transit Center, and the Bus Operations and Maintenance Facility is in both English and Spanish.

3. **Training Staff.** It is important that staff members, especially those having contact with the public know their obligation to provide timely, reasonable and meaningful language assistance to its LEP populations. Bus operators have the most frequent contact with LEP persons, through daily interaction with passengers. GoTriangle has implemented the following training program on its language assistance plan. Each employee in attendance reviews a "summary" copy of GoTriangle's LEP plan that summarizes their responsibilities and roles in interacting with and providing language assistance to LEP populations. The training includes:

- An overview of Title VI and GoTriangle's responsibilities.
- Discussion of Title VI Notice to Public poster, and complaint procedures.
- Language assistance services GoTriangle offers.
- Use of language identification cards or "I Speak Cards."
- Specific procedures to follow when encountering an LEP person;
- Document/report language assistance requests; and
- Reference, DVD "Understanding and Abiding by Title VI of the Civil Rights Act of 1964." The DVD "Breaking Down the Language Barrier: Translating Limited English Proficiency into Practice" is also available for training purposes.

4. **Providing Notice to LEP Persons.** GoTriangle has or will implement the following outreach efforts:

- A statement on its website in Spanish indicating that language assistance is available free of charge;
- Public meetings and open house announcements should include a tagline in

Spanish affirming that GoTriangle will make reasonable accommodations to translate any materials into Spanish, (or other language) or provide an interpreter, and posting signs in intake areas and other entry points in public meetings of available language assistance;

- Major service changes including fare changes that require legal notice in advertising are translated into Spanish. The translated notices are posted in public locations, major stops, vehicles and the RTC;
- Information tables at local events;
- Post notices to inform the public that Spanish speaking personnel are available to aid in translation at the RTC or by telephone;
- Include notices in local newspapers in Spanish;
- Consult with community-based organizations and other stakeholders to inform LEP individuals of GoTriangle's services, including the availability of language assistance services.

5. Monitoring and updating the LEP Plan. This plan is designed to be flexible, and should be viewed as a work in progress. As such, it is important to consider whether new documents and services need to be made accessible for LEP persons, and also to monitor changes in demographics and types of services, and to update the LEP Plan on an annual basis as needed. GoTriangle will also evaluate the LEP and Language Assistance Plan and propose revisions and updates based on the following:

- How many LEP persons were encountered?
- Is the existing language assistance meeting the needs of LEP persons?
- What is the current LEP population in GoTriangle's service area?
- Has there been a change in the types of languages where translation services are needed?
- Do staff members understand the LEP Plan policies and procedures?
- Were any complaints received?

There are several methods that can be used to assist in answering these questions. One method is to review customer comments and complaints to determine if services are accessible to the LEP community. Feedback from the LEP community will be sought through community outreach events and presentations to determine the effectiveness of the plan in reaching LEP persons. Census data will also be reviewed as it becomes available to determine changes in the LEP population.

Other evaluation criteria include:

- Feedback from Board members, customers, community members and staff.
- Review surveys and studies.
- Changes in regulations.

All proposed revisions to the LEP Plan and Language Assistance Plan will be presented to the Board of Trustees for consideration and approval.

Dissemination of the Limited English Proficiency Plan. GoTriangle will include the LEP Plan on its website at: www.gotriangle.org. Copies of the plan will be provided to any person or agency requesting a copy. In addition, LEP individuals may request translated copies of documents in an LEP identified language.

Questions or comments regarding this plan should be directed to:

Title VI Coordinator
 EEO/DBE Office
 GoTriangle
 4600 Emperor Blvd.
 Durham, NC 27703
 P: (919) 485-7433
 F: (919) 485-7491

ATTACHMENT A

Evacuation Rally Signage (English – Spanish)



ATTACHMENT B

Fares & Passes

Information

🇺🇸 Fares & Passes

Service	Product	Full Fare	Reduced Fare
Regional	Cash Fare	\$3.25	\$1.00
	Transfer to Express Route	\$0.75	\$0.25
	Day Pass*	\$4.50	\$1.00
	7-Day Pass*	\$18.75	\$7.50
	30-Day Pass*	\$48.00	\$14.00
District	Cash Fare	\$3.00	\$1.25
	Day Pass*	\$6.00	\$2.50
	7-Day Pass*	\$22.00	\$8.25
	30-Day Pass*	\$60.00	\$22.50
	Children Under 12	Free	Free
Value Cards	\$15 No-Money Value*	\$15.00	
	\$25 Stored Value*	\$25.00	
	\$50 Stored Value*	\$50.00	
	\$100 Stored Value*	\$100.00	

🇺🇸 Where to Buy

- 📍 In-person: Colangelo Regional Transit Center, 7:00 am - 6:30 pm, Monday - Friday, 8:00 am - 4:00 pm, Saturday, Sunday 8:15 am - 4:00 pm
- 📍 On Bus: Stage Ride or Regional Day Pass Link each change
- 📍 Online: www.colangelo.org

🇺🇸 Service Details

Service	100	105	400	700	800	900
Saturday	✗	✗	✗	✗	✗	✗
Sunday	✗	✗	✗	✗	✗	✗
Mon - Wed - Day	NO SERVICE	✗	✗	✗	✗	✗
Thu - Fri - Day	✗	✗	✗	✗	✗	✗
Cash Friday	✗	✗	✗	✗	✗	✗
Memorial Day	NO SERVICE	✗	✗	✗	✗	✗
Independence Day	NO SERVICE	✗	✗	✗	✗	✗
Labor Day	NO SERVICE	✗	✗	✗	✗	✗
Thanksgiving Day	NO SERVICE	✗	✗	✗	✗	✗
Friday after Thanksgiving	✗	✗	✗	✗	✗	✗
Christmas Eve	NO SERVICE	✗	✗	✗	✗	✗
Christmas Day	NO SERVICE	✗	✗	✗	✗	✗

Discounts apply to District and Link, academic calendar, State Aid, early-bird, No service to private during university recesses and holidays.

📞 At Other Routes: 715, 815, 915, 200, 400, 405, 410, 515, 615, 675, 815, 915, 920, 925, 930, 935, 940, 945, 950, 955, 960, 965, 970, 975, 980, 985, 990, 995

♿ Accessibility

♿ All Colangelo vehicles are subject to accessibility. For more information, call 919.485.7433.

♿ Reduced fares apply to all services. For more information, call 919.485.7433.

♿ Priority boarding is provided for seniors and persons with disabilities. For more information, call 919.485.7433.

♿ Off-Route Paratransit: Call 919.485.7433 for more information.

♿ All Colangelo vehicles are subject to accessibility. For more information, call 919.485.7433.

919.485.RIDE (7433)

Se puede encontrar más información en el sitio de Internet para los pasajeros.

ATTACHMENT C

I Speak Cards - US Census Bureau

2004
Census
Test

United States
Census
2010

LANGUAGE IDENTIFICATION FLASHCARD

- | | |
|---|------------------------|
| <input type="checkbox"/> <p>ضع علامة في هذا المربع إذا كنت تقرأ أو تتحدث العربية.</p> | 1. Arabic |
| <input type="checkbox"/> <p>Խորհրդով ենք նշում կատարեք այս քառակուսով, եթե խոսում կամ կարդում եք հայերեն:</p> | 2. Armenian |
| <input type="checkbox"/> <p>যদি আপনি বাংলা পড়েন বা বলেন তা হলে এই বাক্স দাগ দিন।</p> | 3. Bengali |
| <input type="checkbox"/> <p>លូមបញ្ជាក់ក្នុងប្រអប់នេះ បើអ្នកអាន ឬនិយាយភាសា ខ្មែរ ។</p> | 4. Cambodian |
| <input type="checkbox"/> <p>Motka i kahhon ya yangin ûntûngnu' manaitai pat ûntûngnu' kumentos Chamorro.</p> | 5. Chamorro |
| <input type="checkbox"/> <p>如果你能读中文或讲中文，请选择此框。</p> | 6. Simplified Chinese |
| <input type="checkbox"/> <p>如果你能讀中文或講中文，請選擇此框。</p> | 7. Traditional Chinese |
| <input type="checkbox"/> <p>Označite ovaj kvadratić ako čitate ili govorite hrvatski jezik.</p> | 8. Croatian |
| <input type="checkbox"/> <p>Zaškrtněte tuto kolonku, pokud čtete a hovoříte česky.</p> | 9. Czech |
| <input type="checkbox"/> <p>Kruis dit vakje aan als u Nederlands kunt lezen of spreken.</p> | 10. Dutch |
| <input type="checkbox"/> <p>Mark this box if you read or speak English.</p> | 11. English |
| <input type="checkbox"/> <p>اگر خواندن و نوشتن فارسي بلد هستيد، اين مربع را علامت بنيد.</p> | 12. Farsi |

- | | | |
|--------------------------|--|-----------------------|
| <input type="checkbox"/> | Cocher ici si vous lisez ou parlez le français. | 13. French |
| <input type="checkbox"/> | Kreuzen Sie dieses Kästchen an, wenn Sie Deutsch lesen oder sprechen. | 14. German |
| <input type="checkbox"/> | Σημειώστε αυτό το πλαίσιο αν διαβάζετε ή μιλάτε Ελληνικά. | 15. Greek |
| <input type="checkbox"/> | Make kazyè sa a si ou li oswa ou pale kreyòl ayisyen. | 16. Haitian
Creole |
| <input type="checkbox"/> | अगर आप हिन्दी बोलते या पढ़ सकते हैं तो इस बक्स पर चिह्न लगाएँ। | 17. Hindi |
| <input type="checkbox"/> | Kos lub voj no yog koj paub twm thiab hais lus Hmoob. | 18. Hmong |
| <input type="checkbox"/> | Jelölje meg ezt a kockát, ha megérti vagy beszéli a magyar nyelvet. | 19. Hungarian |
| <input type="checkbox"/> | Markaam daytoy nga kahon no makabasa wenno makasaoka iti Ilocano. | 20. Ilocano |
| <input type="checkbox"/> | Marchi questa casella se legge o parla italiano. | 21. Italian |
| <input type="checkbox"/> | 日本語を読んだり、話せる場合はここに印を付けてください。 | 22. Japanese |
| <input type="checkbox"/> | 한국어를 읽거나 말할 수 있으면 이 칸에 표시하십시오. | 23. Korean |
| <input type="checkbox"/> | ໃຫ້ໝາຍໃສ່ຊ່ອງນີ້ ຖ້າທ່ານອ່ານຫຼືປາກພາສາລາວ. | 24. Laotian |
| <input type="checkbox"/> | Prosimy o zaznaczenie tego kwadratu, jeżeli posługuje się Pan/Pani językiem polskim. | 25. Polish |

- Assinale este quadrado se você lê ou fala português. 26. Portuguese
- Însemnați această căsuță dacă citiți sau vorbiți românește. 27. Romanian
- Пометьте этот квадратик, если вы читаете или говорите по-русски. 28. Russian
- Обележите овај квадратић уколико читате или говорите српски језик. 29. Serbian
- Označte tento štvorček, ak viete čítať alebo hovoriť po slovensky. 30. Slovak
- Marque esta casilla si lee o habla español. 31. Spanish
- Markahan itong kuwadrado kung kayo ay marunong magbasa o magsalita ng Tagalog. 32. Tagalog
- ให้กาเครื่องหมายลงในช่องถ้าท่านอ่านหรือพูดภาษาไทย. 33. Thai
- Maaka 'i he puha ni kapau 'oku ke lau pe lea fakatonga. 34. Tongan
- Відмітьте цю клітинку, якщо ви читаете або говорите українською мовою. 35. Ukrainian
- اگر آپ اردو پڑھتے یا بولتے ہیں تو اس خانے میں نشان لگائیں۔ 36. Urdu
- Xin đánh dấu vào ô này nếu quý vị biết đọc và nói được Việt Ngữ. 37. Vietnamese
- באצייכנט דעם קעסטל אויב איר לייענט אדער רעדט אידיש 38. Yiddish

ATTACHMENT D

Language Spoken At Home – Durham, Orange, Wake County

Durham County, North Carolina						
Total	Percent	Percent of specified language speakers				
		Speak English only or speak English "very well"	Percent speak English only or speak English "very well"	Speak English less than "very well"	Percent speak English less than "very well"	
Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	
Population 5 years and over	285,926	(X)	261,092	91.3%	24,834	8.7%
Speak only English	232,307	81.2%	(X)	(X)	(X)	(X)
Speak a language other than English	53,619	18.8%	28,785	53.7%	24,834	46.3%
SPEAK A LANGUAGE OTHER THAN ENGLISH						
Spanish	33,625	11.8%	15,122	45.0%	18,503	55.0%
5 to 17 years old	9,378	3.3%	6,925	73.8%	2,453	26.2%
18 to 64 years old	23,255	8.1%	7,828	33.7%	15,427	66.3%
65 years old and over	992	0.3%	369	37.2%	623	62.8%
Other Indo-European languages	7,906	2.8%	5,923	74.9%	1,983	25.1%
5 to 17 years old	581	0.2%	379	65.2%	202	34.8%
18 to 64 years old	6,264	2.2%	4,887	78.0%	1,377	22.0%
65 years old and over	1,061	0.4%	657	61.9%	404	38.1%
Asian and Pacific Island languages	8,022	2.8%	5,084	63.4%	2,938	36.6%
5 to 17 years old	648	0.2%	452	69.8%	196	30.2%
18 to 64 years old	6,711	2.3%	4,346	64.8%	2,365	35.2%
65 years old and over	663	0.2%	286	43.1%	377	56.9%
Other languages	4,066	1.4%	2,656	65.3%	1,410	34.7%
5 to 17 years old	433	0.2%	310	71.6%	123	28.4%
18 to 64 years old	3,352	1.2%	2,238	66.8%	1,114	33.2%
65 years old and over	281	0.1%	108	38.4%	173	61.6%
CITIZENS 18 YEARS AND OVER						
All citizens 18 years and over	213,778	(X)	209,458	98.0%	4,320	2.0%
Speak only English	195,591	91.5%	(X)	(X)	(X)	(X)
Speak a language other than English	18,187	8.5%	13,867	76.2%	4,320	23.8%
Spanish	8,385	3.9%	6,285	75.0%	2,100	25.0%
Other languages	9,802	4.6%	7,582	77.4%	2,220	22.6%

	Orange County, North Carolina					
	Total	Percent	Percent of specified language speakers			
			Speak English only or speak English "very well"	Percent speak English only or speak English "very well"	Speak English less than "very well"	Percent speak English less than "very well"
Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	
Population 5 years and over	136,345	(X)	128,324	94.1%	8,021	5.9%
Speak only English	113,104	83.0%	(X)	(X)	(X)	(X)
Speak a language other than English	23,241	17.0%	15,220	65.5%	8,021	34.5%
SPEAK A LANGUAGE OTHER THAN ENGLISH						
Spanish	10,138	7.4%	5,924	58.4%	4,214	41.6%
5 to 17 years old	2,972	2.2%	2,418	81.4%	554	18.6%
18 to 64 years old	6,795	5.0%	3,273	48.2%	3,522	51.8%
65 years old and over	371	0.3%	233	62.8%	138	37.2%
Other Indo-European languages	4,966	3.6%	4,232	85.2%	734	14.8%
5 to 17 years old	622	0.5%	594	95.5%	28	4.5%
18 to 64 years old	3,591	2.6%	3,216	89.6%	375	10.4%
65 years old and over	753	0.6%	422	56.0%	331	44.0%
Asian and Pacific Islander languages	7,427	5.4%	4,458	60.0%	2,969	40.0%
5 to 17 years old	1,562	1.1%	1,177	75.4%	385	24.6%
18 to 64 years old	5,513	4.0%	3,164	57.4%	2,349	42.6%
65 years old and over	352	0.3%	117	33.2%	235	66.8%
Other languages	710	0.5%	606	85.4%	104	14.6%
5 to 17 years old	81	0.1%	81	100.0%	0	0.0%
18 to 64 years old	616	0.5%	512	83.1%	104	16.9%
65 years old and over	13	0.0%	13	100.0%	0	0.0%
CITIZENS 18 YEARS AND OVER						
All citizens 18 years old and over	104,618	(X)	102,395	97.9%	2,223	2.1%
Speak only English	95,160	91.0%	(X)	(X)	(X)	(X)
Speak a language other than English	9,458	9.0%	7,235	76.5%	2,223	23.5%
Spanish	3,169	3.0%	2,559	80.8%	610	19.2%
Other languages	6,289	6.0%	4,676	74.4%	1,613	25.6%

Wake County, North Carolina							
	Total	Percent	Percent of specified language speakers				
	Estimate	Estimate	Speak English only or speak English "very well"	Percent speak English only or speak English "very well"	Speak English less than "very well"	Percent speak English less than "very well"	
	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	
Population 5 years and over	980,169	(X)	925,512	94.4%	54,657	5.6%	
Speak only English	814,515	83.1%	(X)	(X)	(X)	(X)	
Speak a language other than English	165,654	16.9%	110,997	67.0%	54,657	33.0%	
SPEAK A LANGUAGE OTHER THAN ENGLISH							
Spanish	80,445	8.2%	49,331	61.3%	31,114	38.7%	
5 to 17 years old	21,472	2.2%	17,179	80.0%	4,293	20.0%	
18 to 64 years old	55,872	5.7%	30,598	54.8%	25,274	45.2%	
65 years old and over	3,101	0.3%	1,554	50.1%	1,547	49.9%	
Other Indo-European languages	36,216	3.7%	28,387	78.4%	7,829	21.6%	
5 to 17 years old	5,121	0.5%	4,476	87.4%	645	12.6%	
18 to 64 years old	27,230	2.8%	21,497	78.9%	5,733	21.1%	
65 years old and over	3,865	0.4%	2,414	62.5%	1,451	37.5%	
Asian and Pacific Island languages	34,988	3.6%	23,718	67.8%	11,270	32.2%	
5 to 17 years old	5,305	0.5%	4,441	83.7%	864	16.3%	
18 to 64 years old	26,684	2.7%	18,226	68.3%	8,458	31.7%	
65 years old and over	2,999	0.3%	1,051	35.0%	1,948	65.0%	
Other languages	14,005	1.4%	9,561	68.3%	4,444	31.7%	
5 to 17 years old	3,190	0.3%	2,231	69.9%	959	30.1%	
18 to 64 years old	9,878	1.0%	6,711	67.9%	3,167	32.1%	
65 years old and over	937	0.1%	619	66.1%	318	33.9%	
CITIZENS 18 YEARS AND OVER							
All citizens 18 years and over	719,849	(X)	702,271	97.6%	17,578	2.4%	
Speak only English	651,143	90.5%	(X)	(X)	(X)	(X)	
Speak a language other than English	68,706	9.5%	51,128	74.4%	17,578	25.6%	
Spanish	26,258	3.6%	19,993	76.1%	6,265	23.9%	
Other languages	42,448	5.9%	31,135	73.3%	11,313	26.7%	

6/18/2020



Note: This is a modified view of the original table produced by the U.S. Census Bureau.

Note: This download or printed version may have missing information from the original table.

LANGUAGE SPOKEN AT HOME

Survey/Program:

American Community Survey

Year:

2018

Estimates:

5-Year

Table ID:

S1601

Source: U.S. Census Bureau, 2018 American Community Survey 1-Year Estimates

Although the American Community Survey (ACS) produces population, demographic and housing unit estimates, it is the Census Bureau's Population Estimates Program that produces and disseminates the official estimates of the population for the nation, states, counties, cities, and towns and estimates of housing units for states and counties.

Data are based on a sample and are subject to sampling variability. The degree of uncertainty for an estimate arising from sampling variability is represented through the use of a margin of error. The value shown here is the 90 percent margin of error. The margin of error can be interpreted roughly as providing a 90 percent probability that the interval defined by the estimate minus the margin of error and the estimate plus the margin of error (the lower and upper confidence bounds) contains the true value. In addition to sampling variability, the ACS estimates are subject to nonsampling error (for a discussion of nonsampling variability, see ACS Technical Documentation). The effect of nonsampling error is not represented in these tables.

While the 2018 American Community Survey (ACS) data generally reflect the July 2015 Office of Management and Budget (OMB) delineations of metropolitan and micropolitan statistical areas, in certain instances the names, codes, and boundaries of the principal cities shown in ACS tables may differ from the OMB delineations due to differences in the effective dates of the geographic entities.

Estimates of urban and rural populations, housing units, and characteristics reflect boundaries of urban areas defined based on Census 2010 data. As a result, data for urban and rural areas from the ACS do not necessarily reflect the results of ongoing urbanization.

Explanation of Symbols:

An "***" entry in the margin of error column indicates that either no sample observations or too few sample observations were available to compute a standard error and thus the margin of error. A statistical test is not appropriate.

An "." entry in the estimate column indicates that either no sample observations or too few sample observations were available to compute an estimate, or a ratio of medians cannot be calculated because one or both of the median estimates falls in the lowest interval or upper interval of an open-ended distribution, or the margin of error associated with a median was larger than the median itself.

An "-" following a median estimate means the median falls in the lowest interval of an open-ended distribution.

An "+" following a median estimate means the median falls in the upper interval of an open-ended distribution.

An "***" entry in the margin of error column indicates that the median falls in the lowest interval or upper interval of an open-ended distribution. A statistical test is not appropriate.

An "*****" entry in the margin of error column indicates that the estimate is controlled. A statistical test for sampling variability is not appropriate.

An "N" entry in the estimate and margin of error columns indicates that data for this geographic area cannot be displayed because the number of sample cases is too small.

An "(X)" means that the estimate is not applicable or not available.

Supporting documentation on code lists, subject definitions, data accuracy, and statistical testing can be found on the American Community Survey website in the Technical Documentation section.

Sample size and data quality measures (including coverage rates, allocation rates, and response rates) can be found on the American Community Survey website in the Methodology section.

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APPENDICES

APPENDIX A Requirements of Transit Providers - Service Standards
 Vehicle Load
 Vehicle Headway
 On-Time Performance
 Service Availability
 Service Policies
 Transit Amenities
 Vehicle Assignment
 Service Monitoring Policy

APPENDIX B Demographic and Service Profile Maps & Charts
 Minority and Low-Income
 Route Profiles - CJI

APPENDIX C Demographic Ridership & Travel Patterns – CJI Survey

APPENDIX D Monitoring Program Results

APPENDIX A Requirements of Transit Providers - Service Standards

Requirements of Transit Providers – Chapter IV

Service Standards

Vehicle Load: As a predominately commuter bus operation, the average daily load factor for a GoTriangle route shall not exceed the seated capacity of its vehicles of 1.0.

Vehicle Headway: GoTriangle does not have policy headways, but rather matches headways with ridership demand. Vehicle headways range from 15 minutes to 60 minutes on GoTriangle routes during the peak periods. Peak period service in our major travel corridors is provided every 15 minutes, when multiple routes are considered together.

On-time performance: Each fiscal quarter, at least 85% of the trips provided for each route shall be completed no later than 5 minutes after the scheduled time at the final timepoint.

The percentage of on-time trips is measured through the Automatic Passenger Counter (APC) system and is analyzed every fiscal quarter. Any route that is not running on-time 85 percent of the time over the course of that quarter will be evaluated to see whether schedule or route adjustments can be made to address those issues the next time GoTriangle makes service changes.

In addition to measuring the percentage of trips completed on-time, GoTriangle also monitors the on-time performance of each route at every timepoint on a quarterly basis using the APC system. On-time for each timepoint is defined as departing between one minute early and five minutes late. Drop-off only timepoints can only be considered on-time or late. While GoTriangle does not have a specific standard for the on-time performance at each timepoint, this detailed information is vital to making specific schedule change recommendations and ensures that buses that are departing early or late from key points along the route are also addressed.

Service Availability: GoTriangle services shall be provided within the GoTriangle service jurisdiction in an equitable manner regardless of race, ethnicity or income. The GoTriangle service jurisdiction is defined as Orange, Durham and Wake counties. The population within the GoTriangle service area shall reflect the population of the service jurisdiction.

GoTriangle defines its service area differently according to the route design:

- Commuter routes (operates weekdays during peak hours only and serves a limited number of stops at the beginning and end of a route with a long portion of the route operating as express service)
 - 3 miles around park and ride stops (see median distance to stops from survey)
 - 1/2 mile around other stops
- Core routes (operates at all times and serves stops along the entire length of the route)
 - 1/2 mile around route line
- Regional routes (operates weekdays during peak hours only and serves stops along the entire length of the route; however some portions of the route may operate as express service)
 - Core segments – 1/2 mile buffer around route line
 - Commuter segments – 3 miles around park-and-ride stops, 1/2 mile around other stops

Service Policies

Transit Amenities: GoTriangle is implementing a prioritization process for the improvement of accessible bus stops and transit amenities. GoTriangle typically requires 20 boardings per day for a shelter to be installed at a stop and 10 boardings a day for a bench. GoTriangle is currently undertaking a system-wide field inventory of all of the bus stops to record existing conditions and amenities at each stop.¹ This inventory will be the basis for future prioritization of bus stop amenities improvements. Bus stops will be scored based on factors such as current amenities, ADA accessibility, street crossings, connecting sidewalks, and lighting. In selecting bus stops for improvements, factors such as access to destinations, demographics of surrounding communities, customer feedback, and ridership will be considered. This updated methodology is currently under development and will be completed within the calendar year.

For recent bus stop improvements, GoTriangle has prioritized stop improvements based on current conditions and amenities at the stops, ridership, customer input, and feasibility/cost of construction.

As a regional transit agency, it should be noted that GoTriangle relies heavily on the local transit agencies, municipalities, and large employment centers to help provide passenger amenities along our routes. Most high boarding stops along GoTriangle's routes are shared stops with other agencies, many of which have high-quality amenities such as shelters,

¹ Over 50 attributes are being inventoried at each stop, related to: stop location, agencies and routes serving the stop, pole flag condition, bus loading zone, edge of pavement, sidewalk connections and curb ramps, intersections and crosswalks, bike lanes, landing area, ADA pad, waiting area obstructions, shade, shelters, seating, lighting, trash cans, bike parking, real time signage, as well as general notes on accessibility, speed and reliability, and safety.

benches, canopies, public restrooms, etc. provided and maintained by the local transit agency/municipality.

Amenities Standards: It should be noted that a formal set of amenities standards will be amended within the next year. GoTriangle manages and plans GoDurham, Durham's local transit agency. Durham County is currently in the process of developing its County Transit Plan, which will include amenities standards for bus stops, such as updated ridership thresholds for shelters, benches, etc. One of the action items will be to create a consistent set of amenities standards for both agencies.

Vehicle Assignment: GoTriangle assigns vehicles based upon ridership demand and type of service. GoTriangle operates fixed-route and express service throughout the region and a shuttle service within the Research Triangle Park (RTP) and to/from Raleigh-Durham (RDU) International Airport. GoTriangle does not assign particular vehicles to individual routes, but assigns vehicles to drivers as they are available each morning, except for the 40-foot Orion vehicles. GoTriangle only assigns the Orion 40-foot buses on express routes due to their vehicle design. These vehicles are only designed with only one door for boarding and alighting and are not ideal for usage on routes with high frequency stops. Under extreme circumstances, these vehicles will be used on other routes. For routes that have longer runs in service, such as midday or evening routes that are out for 4 or more hours, GoTriangle tries to assign buses that have been more recently serviced in order to prevent breakdowns.

Service Monitoring Policy

On a daily basis, GoTriangle staff shall collect data on vehicle loads, on-time performance and vehicle assignments. On an annual basis, GoTriangle staff shall review this data to evaluate whether or not the standards and policies below are being met. On an annual basis, GoTriangle staff shall also evaluate the most recent data on vehicle headways, service availability, and transit amenities. In cases where the standards and policies are not being met, GoTriangle staff shall analyze why the discrepancies exist and take actions to reduce the potential effects.

Importantly, GoTriangle staff shall evaluate whether performance against these standards and policies differs according to whether the route is a minority or non-minority route. For the purposes of this monitoring policy, a minority route shall be defined as a route carrying a percentage of self-identified minority riders that is 10% or more greater than the system average, according to the most recent on-board customer survey.

If GoTriangle staff determines, based on these monitoring activities, that prior decisions have resulted in a disparate impact on the basis of race, color, or national origin, then staff

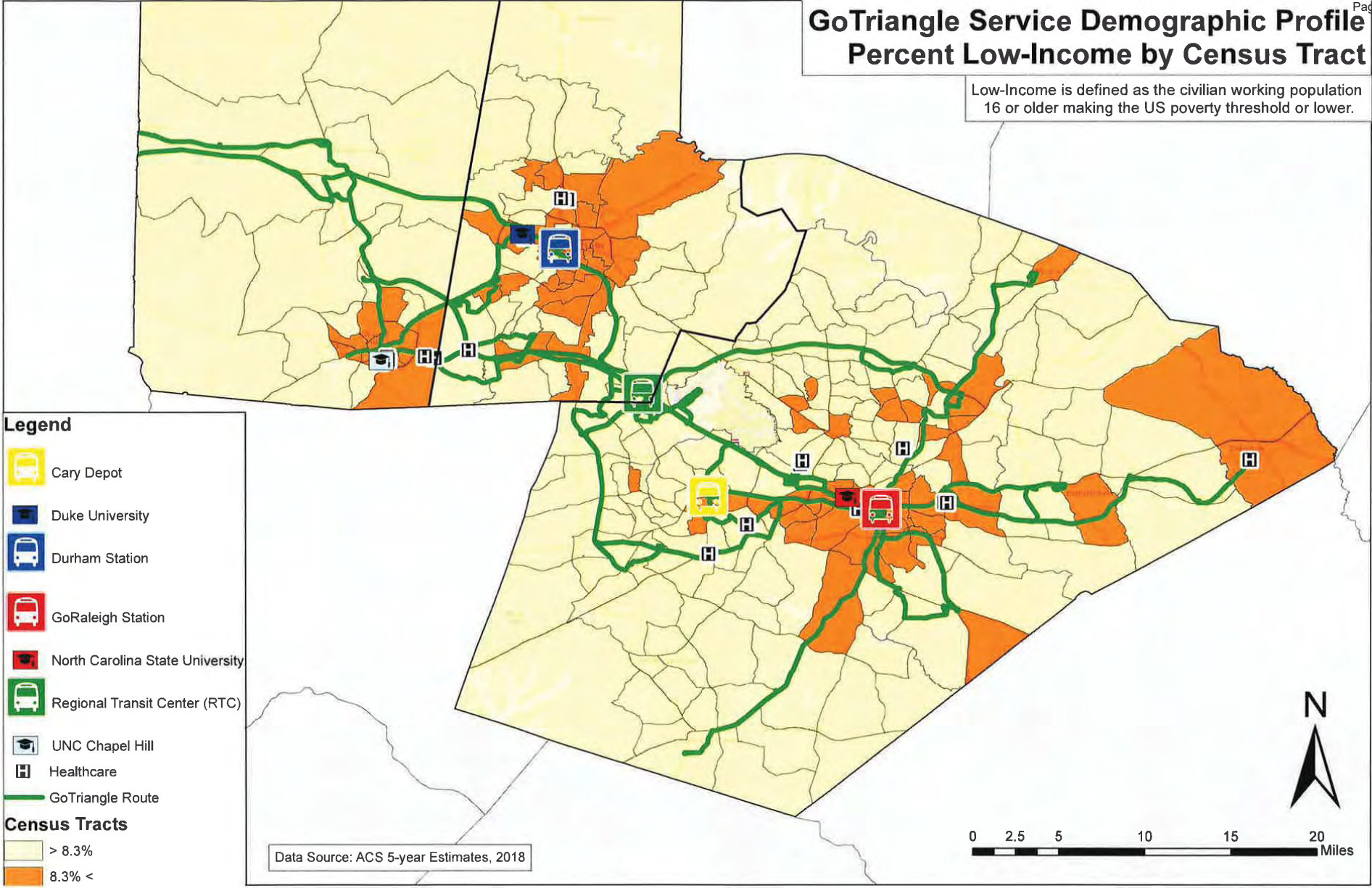
shall take corrective action to remedy the disparities to the greatest extent possible, and shall discuss in the Title VI Program these disparate impacts and actions taken to remedy the disparities.

APPENDIX B Demographic and Service Profile Maps & Charts

Demographic and Service Profile Maps

GoTriangle Service Demographic Profile Percent Low-Income by Census Tract

Low-Income is defined as the civilian working population 16 or older making the US poverty threshold or lower.



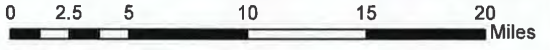
Legend

- Cary Depot
- Duke University
- Durham Station
- GoRaleigh Station
- North Carolina State University
- Regional Transit Center (RTC)
- UNC Chapel Hill
- Healthcare
- GoTriangle Route

Census Tracts

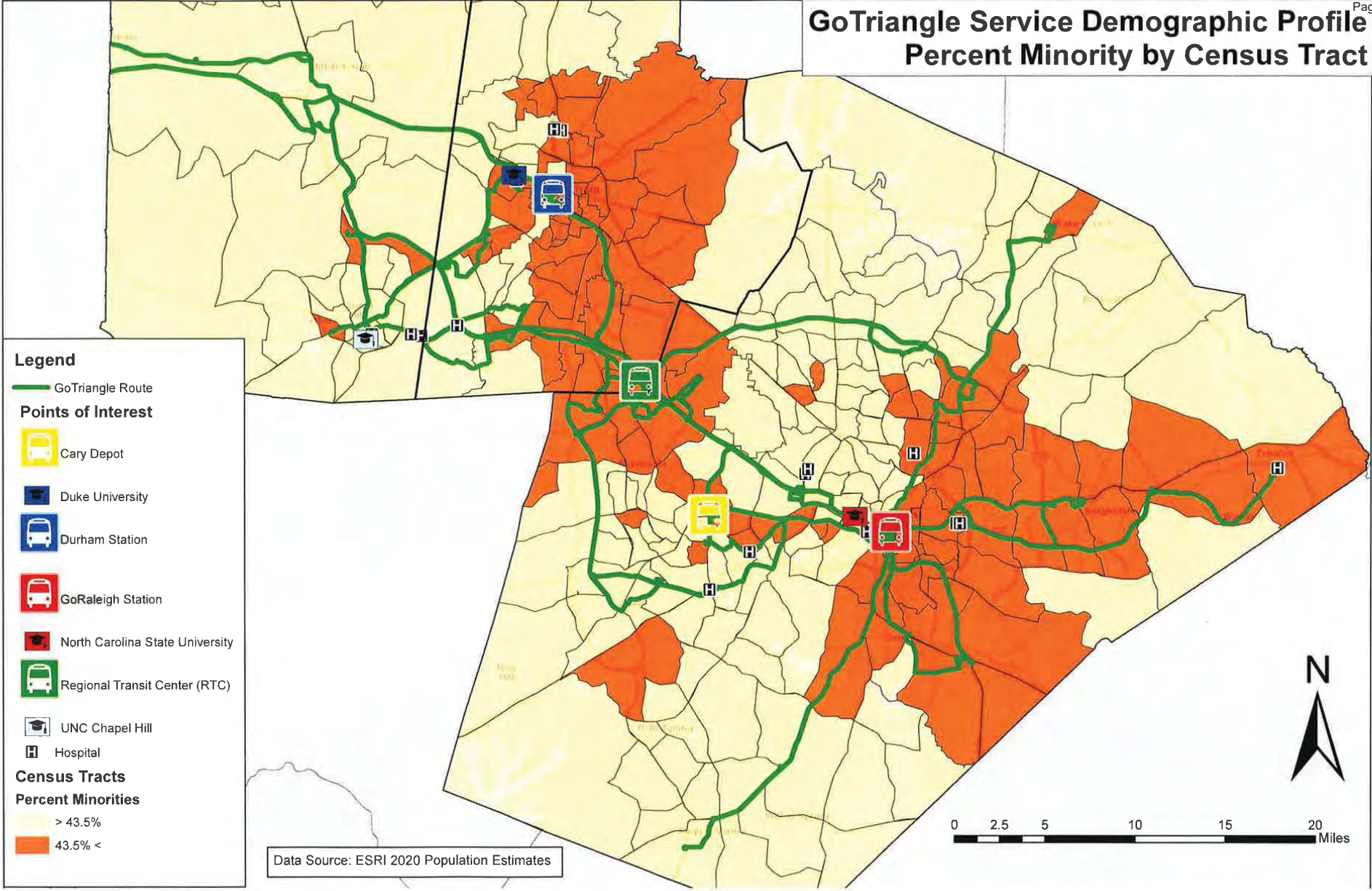
- > 8.3%
- 8.3% <

Data Source: ACS 5-year Estimates, 2018



GoTriangle Service Demographic Profile

Percent Minority by Census Tract



Legend

GoTriangle Route

Points of Interest

Cary Depot

Duke University

Durham Station

GoRaleigh Station

North Carolina State University

Regional Transit Center (RTC)

UNC Chapel Hill

Hospital

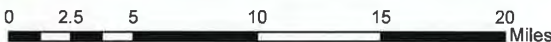
Census Tracts

Percent Minorities

> 43.5%

43.5% <

Data Source: ESRI 2020 Population Estimates





**Route Profiles Based
on an Onboard Survey of
GoTriangle Customers**

October 2019

A study conducted by:



In Conjunction with:



GoTriangle Route Profiles Based on Onboard Survey Conducted in October 2019

	2019 - All routes	100 Raleigh-Airport-RTC	105 Raleigh-RTC	300 RTC-Cary-Raleigh	301 Cary-Raleigh	305 Lake Pine-Cary-Raleigh	311 Apex-RTC	400 Durham-Chapel Hill	405 Durham-Chapel Hill - Carrboro	420 Hillsborough-Chapel Hill (CHT)	700 Durham RTC	800 Chapel Hill Southpoint RTC	805 Chapel Hill-Woodcroft RTC	CRX Chapel Hill-Raleigh Express	DRX Durham-Raleigh Express	ODX Orange-Durham Express	NRX (GT) and FRX, WRX, & ZWX (GR)	
Unweighted n	2504	303	75	240	35	54	22	378	162	66	202	380	139	146	221	41	40	
Language in which survey was completed																		
English	98%	98%	97%	93%	94%	98%	100%	95%	99%	100%	99%	98%	99%	100%	100%	100%	100%	98%
Spanish	2%	2%	1%	7%	0%	2%	0%	5%	1%	0%	1%	2%	1%	0%	0%	0%	0%	3%
Q1 Rate service: Buses on time																		
Very poor to poor (1,2)	5%	6%	3%	4%	3%	6%	14%	4%	2%	3%	3%	4%	6%	10%	5%	3%	5%	
Middle (2,4,5)	44%	36%	36%	43%	24%	44%	57%	47%	43%	52%	31%	48%	53%	48%	44%	54%	41%	
Very good to Excellent (6,7)	52%	58%	61%	53%	74%	50%	29%	48%	55%	45%	66%	47%	41%	41%	51%	44%	54%	
Q2 Rate service: Weekday service frequency																		
Very poor to poor (1,2)	4%	7%	3%	6%	0%	4%	16%	3%	3%	3%	4%	3%	5%	4%	5%	10%	5%	
Middle (2,4,5)	41%	36%	26%	35%	56%	44%	26%	42%	38%	46%	31%	41%	48%	54%	44%	49%	42%	
Very good to Excellent (6,7)	55%	57%	71%	59%	44%	52%	58%	55%	59%	51%	66%	56%	47%	42%	51%	41%	53%	
Q3 Rate service: Saturday service frequency																		
Very poor to poor (1,2)	15%	12%	8%	17%	10%	29%	38%	11%	12%	56%	8%	13%	24%	43%	31%	71%	40%	
Middle (2,4,5)	45%	46%	59%	45%	57%	58%	25%	44%	47%	22%	41%	47%	51%	40%	37%	14%	33%	
Very good to Excellent (6,7)	40%	41%	33%	38%	33%	13%	38%	45%	42%	22%	51%	40%	24%	17%	32%	14%	27%	
Q4 Rate service: Sunday service frequency																		
Very poor to poor (1,2)	22%	22%	26%	19%	24%	30%	43%	16%	21%	56%	15%	15%	31%	52%	34%	71%	40%	
Middle (2,4,5)	45%	42%	49%	48%	57%	50%	29%	50%	45%	22%	40%	52%	42%	31%	39%	14%	27%	
Very good to Excellent (6,7)	33%	36%	26%	33%	19%	20%	29%	34%	34%	22%	44%	32%	27%	17%	27%	14%	33%	

	2019 - All routes	100 Raleigh-Airport-RTC	105 Raleigh-RTC	300 RTC-Cary-Raleigh	301 Cary-Raleigh	305 Lake Pine-Cary-Raleigh	311 Apex-RTC	400 Durham-Chapel Hill	405 Durham-Chapel Hill - Carrboro	420 Hillsborough-Chapel Hill (CHT)	700 Durham RTC	800 Chapel Hill Southpoint RTC	805 Chapel Hill-Woodcroft RTC	CRX Chapel Hill-Raleigh Express	DRX Durham-Raleigh Express	ODX Orange-Durham Express	NRX (GT) and FRX, WRX, & ZWX (GR)
Q5 Rate service: Weekday bus hours																	
Very poor to poor (1,2)	5%	6%	0%	7%	3%	6%	10%	3%	3%	13%	5%	3%	6%	6%	5%	16%	6%
Middle (2,4,5)	41%	33%	28%	38%	37%	56%	60%	42%	41%	52%	34%	38%	48%	54%	48%	42%	42%
Very good to Excellent (6,7)	54%	61%	72%	54%	60%	38%	30%	55%	57%	36%	61%	58%	46%	40%	47%	42%	53%
Q6 Rate service: Saturday bus hours																	
Very poor to poor (1,2)	13%	13%	7%	12%	10%	29%	33%	7%	13%	67%	5%	9%	20%	29%	32%	63%	38%
Middle (2,4,5)	44%	42%	56%	47%	50%	50%	33%	43%	42%	22%	46%	45%	53%	46%	40%	25%	25%
Very good to Excellent (6,7)	43%	45%	37%	41%	40%	21%	33%	50%	44%	11%	49%	46%	27%	25%	28%	13%	38%
Q7 Rate service: Sunday bus hours																	
Very poor to poor (1,2)	19%	21%	21%	18%	17%	32%	43%	13%	24%	56%	14%	13%	19%	30%	34%	71%	35%
Middle (2,4,5)	46%	40%	54%	45%	56%	50%	29%	48%	48%	22%	46%	49%	60%	48%	39%	14%	35%
Very good to Excellent (6,7)	35%	39%	26%	37%	28%	18%	29%	40%	28%	22%	39%	38%	21%	22%	27%	14%	29%
Q8 Rate service: Total average trip time																	
Very poor to poor (1,2)	7%	11%	6%	11%	3%	6%	14%	5%	8%	2%	12%	6%	2%	3%	8%	8%	3%
Middle (2,4,5)	45%	47%	47%	43%	52%	43%	52%	44%	42%	56%	41%	45%	50%	42%	47%	26%	56%
Very good to Excellent (6,7)	48%	41%	47%	46%	45%	51%	33%	51%	50%	42%	48%	49%	48%	55%	45%	66%	42%
Q9 Rate service: Service to all destinations																	
Very poor to poor (1,2)	7%	10%	13%	9%	6%	8%	19%	6%	7%	3%	9%	5%	5%	6%	7%	11%	8%
Middle (2,4,5)	42%	48%	38%	46%	47%	40%	52%	45%	42%	51%	42%	34%	45%	42%	40%	27%	42%
Very good to Excellent (6,7)	50%	42%	50%	45%	47%	52%	29%	49%	52%	46%	49%	62%	50%	51%	54%	62%	50%

	2019 - All routes	100 Raleigh-Airport-RTC	105 Raleigh-RTC	300 RTC-Cary-Raleigh	301 Cary-Raleigh	305 Lake Pine-Cary-Raleigh	311 Apex-RTC	400 Durham-Chapel Hill	405 Durham-Chapel Hill - Carrboro	420 Hillsborough-Chapel Hill (CHT)	700 Durham RTC	800 Chapel Hill Southpoint RTC	805 Chapel Hill-Woodcroft RTC	CRX Chapel Hill-Raleigh Express	DRX Durham-Raleigh Express	ODX Orange-Durham Express	NRX (GT) and FRX, WRX, & ZWX (GR)
Q10 Rate service: Ease of transfer within system																	
Very poor to poor (1,2)	4%	4%	3%	6%	4%	5%	10%	2%	7%	0%	3%	2%	3%	6%	7%	7%	7%
Middle (2,4,5)	36%	38%	35%	36%	38%	43%	19%	36%	41%	42%	30%	30%	46%	44%	34%	40%	39%
Very good to Excellent (6,7)	60%	58%	62%	58%	58%	51%	71%	62%	53%	58%	67%	68%	51%	50%	59%	53%	54%
Q11 Rate service: Ease of transfer between systems																	
Very poor to poor (1,2)	6%	9%	5%	7%	4%	3%	13%	4%	4%	0%	4%	4%	6%	4%	11%	14%	8%
Middle (2,4,5)	38%	39%	33%	36%	44%	56%	13%	36%	47%	64%	31%	33%	41%	51%	36%	50%	56%
Very good to Excellent (6,7)	56%	53%	62%	57%	52%	41%	73%	60%	50%	36%	64%	63%	53%	45%	53%	36%	36%
Q12 Rate service: Bus interior cleanliness																	
Very poor to poor (1,2)	2%	4%	1%	2%	0%	2%	0%	1%	3%	0%	3%	1%	2%	1%	6%	0%	8%
Middle (2,4,5)	27%	25%	31%	28%	24%	20%	24%	26%	27%	35%	32%	24%	23%	26%	30%	33%	39%
Very good to Excellent (6,7)	71%	71%	68%	69%	76%	78%	76%	73%	70%	65%	65%	75%	75%	73%	64%	67%	53%
Q13 Rate service: Bus shelter/transit center cleanliness																	
Very poor to poor (1,2)	4%	4%	2%	3%	0%	2%	0%	6%	4%	7%	2%	4%	9%	2%	7%	3%	6%
Middle (2,4,5)	39%	35%	30%	33%	37%	41%	24%	41%	44%	51%	38%	35%	41%	41%	47%	45%	47%
Very good to Excellent (6,7)	57%	61%	68%	64%	63%	57%	76%	53%	52%	43%	60%	61%	50%	57%	46%	52%	47%
Q14 Rate service: Sense of safety on bus																	
Very poor to poor (1,2)	2%	3%	0%	1%	0%	0%	0%	2%	2%	0%	3%	1%	1%	1%	2%	0%	3%
Middle (2,4,5)	27%	29%	31%	30%	29%	20%	19%	30%	27%	33%	34%	23%	16%	19%	27%	15%	37%
Very good to Excellent (6,7)	72%	68%	69%	69%	71%	80%	81%	68%	71%	67%	62%	77%	83%	81%	70%	85%	61%

	2019 - All routes	100 Raleigh-Airport-RTC	105 Raleigh-RTC	300 RTC-Cary-Raleigh	301 Cary-Raleigh	305 Lake Pine-Cary-Raleigh	311 Apex-RTC	400 Durham-Chapel Hill	405 Durham-Chapel Hill - Carrboro	420 Hillsborough-Chapel Hill (CHT)	700 Durham RTC	800 Chapel Hill Southpoint RTC	805 Chapel Hill-Woodcroft RTC	CRX Chapel Hill-Raleigh Express	DRX Durham-Raleigh Express	ODX Orange-Durham Express	NRX (GT) and FRX, WRX, & ZWX (GR)
Q15 Rate service: Bus operator courtesy/helpfulness																	
Very poor to poor (1,2)	2%	3%	1%	2%	3%	0%	0%	1%	4%	0%	4%	1%	2%	3%	4%	2%	3%
Middle (2,4,5)	27%	24%	24%	30%	33%	20%	19%	28%	27%	21%	32%	26%	34%	21%	28%	32%	38%
Very good to Excellent (6,7)	71%	73%	75%	69%	64%	80%	81%	71%	69%	79%	64%	73%	64%	76%	69%	66%	59%
Q16 Rate service: Usefulness of telephone operators																	
Very poor to poor (1,2)	10%	11%	6%	7%	10%	12%	8%	6%	9%	5%	2%	10%	9%	30%	18%	5%	37%
Middle (2,4,5)	40%	34%	36%	32%	35%	40%	8%	42%	42%	62%	40%	42%	56%	44%	45%	50%	21%
Very good to Excellent (6,7)	50%	55%	58%	61%	55%	48%	83%	52%	49%	33%	58%	48%	35%	27%	37%	45%	42%
Q17 Rate service: Usefulness of printed information																	
Very poor to poor (1,2)	4%	8%	2%	5%	4%	3%	12%	2%	3%	0%	4%	4%	3%	3%	3%	3%	0%
Middle (2,4,5)	31%	31%	17%	32%	17%	48%	24%	31%	31%	35%	25%	32%	35%	33%	28%	38%	50%
Very good to Excellent (6,7)	65%	62%	81%	64%	78%	50%	65%	66%	66%	65%	71%	65%	62%	64%	69%	59%	50%
Q18 Rate service: Fare medium options																	
Very poor to poor (1,2)	6%	11%	4%	7%	6%	2%	5%	4%	7%	2%	6%	4%	7%	6%	8%	3%	3%
Middle (2,4,5)	33%	32%	22%	31%	29%	34%	24%	36%	27%	25%	33%	33%	40%	34%	37%	21%	51%
Very good to Excellent (6,7)	61%	57%	73%	61%	65%	64%	71%	59%	66%	73%	61%	63%	53%	60%	55%	76%	46%
Q19 Rate service: Quality of WiFi																	
Very poor to poor (1,2)	13%	11%	3%	10%	8%	8%	12%	12%	14%	32%	8%	17%	18%	21%	15%	6%	7%
Middle (2,4,5)	47%	37%	52%	49%	42%	33%	41%	46%	46%	45%	41%	47%	59%	55%	58%	35%	59%
Very good to Excellent (6,7)	40%	52%	45%	42%	50%	60%	47%	42%	40%	23%	51%	36%	23%	24%	26%	58%	33%
Q20 Rate service: Overall service																	
Very poor to poor (1,2)	2%	4%	0%	2%	0%	2%	0%	1%	2%	0%	2%	0%	1%	2%	1%	3%	0%
Middle (2,4,5)	38%	37%	32%	38%	33%	30%	52%	37%	33%	41%	36%	37%	45%	42%	42%	30%	43%
Very good to Excellent (6,7)	61%	59%	68%	60%	67%	68%	48%	62%	65%	59%	62%	62%	54%	56%	57%	68%	57%

	2019 - All routes	100 Raleigh-Airport-RTC	105 Raleigh-RTC	300 RTC-Cary-Raleigh	301 Cary-Raleigh	305 Lake Pine-Cary-Raleigh	311 Apex-RTC	400 Durham-Chapel Hill	405 Durham-Chapel Hill - Carrboro	420 Hillsborough-Chapel Hill (CHT)	700 Durham RTC	800 Chapel Hill Southpoint RTC	805 Chapel Hill-Woodcroft RTC	CRX Chapel Hill-Raleigh Express	DRX Durham-Raleigh Express	ODX Orange-Durham Express	NRX (GT) and FRX, WRX, & ZWX (GR)
Q21.A Most important service rating																	
Buses on time	36%	25%	31%	29%	25%	32%	50%	41%	37%	47%	25%	41%	30%	46%	37%	36%	44%
Weekday service frequency	14%	10%	13%	8%	21%	12%	11%	15%	18%	14%	9%	11%	21%	16%	19%	27%	3%
Saturday service frequency	4%	4%	5%	8%	0%	3%	0%	3%	5%	5%	5%	3%	3%	0%	2%	0%	3%
Sunday service frequency	3%	4%	3%	2%	0%	0%	6%	6%	2%	0%	5%	1%	1%	1%	1%	0%	3%
Weekday service hours	7%	4%	8%	8%	4%	9%	11%	5%	4%	16%	3%	6%	11%	16%	9%	9%	6%
Saturday service hours	2%	3%	3%	1%	4%	6%	6%	2%	1%	2%	6%	1%	3%	2%	1%	3%	0%
Sunday service hours	3%	7%	5%	4%	8%	0%	0%	3%	4%	0%	7%	2%	2%	0%	0%	0%	0%
Total average trip time	5%	7%	6%	6%	4%	9%	0%	3%	3%	2%	8%	5%	6%	6%	5%	3%	12%
Service to all destinations	7%	10%	10%	11%	8%	12%	6%	7%	7%	2%	11%	7%	4%	3%	7%	0%	9%
Ease of transfer within system	1%	0%	3%	3%	8%	6%	0%	1%	1%	0%	2%	0%	2%	0%	0%	0%	0%
Ease of transfer between systems	1%	2%	0%	1%	0%	0%	0%	1%	1%	0%	2%	2%	0%	2%	1%	3%	3%
Bus interior cleanliness	2%	3%	0%	2%	0%	3%	0%	1%	2%	4%	2%	2%	1%	2%	3%	0%	3%
Bus shelter/transit center cleanliness	1%	0%	0%	1%	0%	0%	6%	2%	3%	0%	0%	3%	1%	0%	2%	0%	0%
Sense of safety on bus	2%	3%	3%	3%	0%	6%	0%	5%	1%	4%	1%	1%	1%	0%	1%	6%	0%
Bus operator courtesy/helpfulness	2%	2%	0%	3%	4%	0%	6%	1%	3%	0%	6%	2%	3%	0%	2%	0%	3%
Usefulness of telephone operators	0%	0%	0%	1%	0%	0%	0%	1%	0%	0%	0%	1%	2%	0%	1%	0%	0%
Usefulness of printed information	1%	2%	0%	2%	0%	0%	0%	0%	2%	0%	1%	1%	1%	0%	0%	3%	3%
Fare medium options	3%	7%	3%	3%	0%	0%	0%	2%	2%	0%	3%	5%	3%	2%	2%	3%	6%
Quality of WiFi	4%	4%	5%	4%	8%	3%	0%	2%	5%	4%	3%	5%	5%	6%	7%	6%	3%
Overall service	1%	1%	2%	0%	4%	0%	0%	0%	1%	2%	1%	0%	0%	0%	1%	0%	0%

	2019 - All routes	100 Raleigh-Airport-RTC	105 Raleigh-RTC	300 RTC-Cary-Raleigh	301 Cary-Raleigh	305 Lake Pine-Cary- Raleigh	311 Apex-RTC	400 Durham-Chapel Hill	405 Durham-Chapel Hill - Carrboro	420 Hillsborough-Chapel Hill (CHT)	700 Durham RTC	800 Chapel Hill Southpoint RTC	805 Chapel Hill-Woodcroft RTC	CRX Chapel Hill-Raleigh Express	DRX Durham-Raleigh Express	ODX Orange-Durham Express	NRX (GT) and FRX, WRX, & ZWX (GR)
Q21.B 2nd most important service rating																	
Buses on time	10%	7%	7%	14%	5%	0%	12%	9%	11%	13%	12%	9%	12%	9%	14%	21%	10%
Weekday service frequency	16%	12%	3%	8%	23%	24%	6%	21%	18%	29%	11%	18%	21%	17%	19%	17%	7%
Saturday service frequency	4%	9%	3%	0%	9%	9%	0%	7%	4%	2%	2%	2%	2%	2%	3%	0%	7%
Sunday service frequency	5%	8%	3%	10%	0%	3%	0%	3%	7%	6%	6%	6%	6%	0%	1%	0%	7%
Weekday service hours	10%	7%	9%	10%	14%	15%	6%	11%	10%	17%	6%	9%	12%	15%	13%	17%	7%
Saturday service hours	3%	3%	3%	8%	9%	0%	6%	4%	3%	0%	6%	3%	1%	2%	1%	0%	3%
Sunday service hours	3%	5%	3%	3%	9%	3%	6%	4%	4%	0%	9%	2%	2%	2%	1%	3%	0%
Total average trip time	11%	10%	19%	9%	5%	6%	6%	8%	9%	12%	4%	14%	9%	15%	14%	3%	20%
Service to all destinations	8%	13%	16%	9%	9%	6%	29%	6%	10%	2%	10%	7%	6%	5%	2%	17%	3%
Ease of transfer within system	2%	3%	3%	5%	5%	0%	6%	1%	2%	0%	2%	3%	2%	1%	1%	0%	0%
Ease of transfer between systems	2%	3%	2%	1%	5%	3%	6%	2%	3%	0%	2%	2%	1%	2%	2%	3%	7%
Bus interior cleanliness	4%	3%	5%	7%	0%	9%	0%	3%	2%	0%	4%	3%	5%	5%	3%	3%	10%
Bus shelter/transit center cleanliness	2%	1%	3%	2%	0%	0%	0%	2%	4%	2%	3%	2%	6%	1%	5%	0%	7%
Sense of safety on bus	4%	3%	2%	2%	5%	6%	6%	6%	0%	8%	2%	6%	4%	3%	3%	3%	0%
Bus operator courtesy/helpfulness	4%	5%	3%	0%	0%	0%	0%	6%	5%	4%	4%	5%	4%	3%	2%	0%	0%
Usefulness of telephone operators	1%	1%	0%	2%	5%	0%	0%	0%	2%	0%	1%	0%	2%	1%	2%	3%	0%
Usefulness of printed information	1%	1%	0%	1%	0%	3%	0%	0%	1%	0%	1%	0%	1%	2%	1%	0%	3%
Fare medium options	3%	4%	2%	3%	0%	6%	0%	1%	2%	2%	8%	1%	2%	2%	5%	7%	3%
Quality of WiFi	6%	2%	10%	4%	0%	6%	12%	4%	4%	2%	6%	6%	3%	13%	9%	0%	7%
Overall service	0%	1%	2%	0%	0%	0%	0%	0%	0%	2%	1%	0%	0%	1%	0%	0%	0%

	2019 - All routes	100 Raleigh-Airport-RTC	105 Raleigh-RTC	300 RTC-Cary-Raleigh	301 Cary-Raleigh	305 Lake Pine-Cary-Raleigh	311 Apex-RTC	400 Durham-Chapel Hill	405 Durham-Chapel Hill - Carrboro	420 Hillsborough-Chapel Hill (CHT)	700 Durham RTC	800 Chapel Hill Southpoint RTC	805 Chapel Hill-Woodcroft RTC	CRX Chapel Hill-Raleigh Express	DRX Durham-Raleigh Express	ODX Orange-Durham Express	NRX (GT) and FRX, WRX, & ZWX (GR)
Q21.C 3rd most important service rating																	
Buses on time	8%	7%	10%	7%	11%	10%	20%	8%	6%	19%	6%	8%	8%	9%	4%	0%	7%
Weekday service frequency	8%	4%	10%	9%	0%	14%	7%	7%	5%	19%	2%	9%	5%	12%	11%	9%	10%
Saturday service frequency	3%	5%	0%	4%	0%	3%	7%	4%	3%	0%	3%	4%	3%	3%	1%	4%	3%
Sunday service frequency	3%	5%	2%	2%	6%	0%	0%	4%	1%	0%	3%	3%	2%	2%	1%	4%	3%
Weekday service hours	7%	5%	4%	5%	11%	10%	0%	5%	14%	17%	4%	7%	9%	12%	6%	17%	10%
Saturday service hours	3%	7%	4%	4%	11%	3%	0%	4%	3%	0%	2%	3%	3%	2%	3%	0%	0%
Sunday service hours	4%	5%	2%	10%	6%	0%	0%	5%	3%	0%	6%	2%	3%	2%	1%	0%	3%
Total average trip time	10%	12%	8%	8%	11%	7%	0%	7%	9%	2%	11%	11%	11%	14%	15%	9%	3%
Service to all destinations	10%	9%	16%	4%	6%	14%	13%	13%	9%	6%	14%	8%	8%	8%	9%	9%	14%
Ease of transfer within system	3%	4%	4%	5%	0%	0%	20%	3%	1%	0%	3%	2%	1%	2%	1%	4%	3%
Ease of transfer between systems	2%	2%	2%	6%	11%	0%	7%	4%	3%	0%	2%	1%	1%	2%	3%	0%	0%
Bus interior cleanliness	6%	4%	12%	1%	0%	0%	0%	6%	5%	9%	7%	8%	8%	3%	9%	0%	7%
Bus shelter/transit center cleanliness	3%	4%	0%	6%	0%	10%	7%	4%	8%	6%	1%	2%	4%	2%	3%	0%	0%
Sense of safety on bus	6%	5%	6%	5%	11%	10%	13%	8%	4%	9%	9%	4%	5%	3%	6%	9%	0%
Bus operator courtesy/helpfulness	6%	5%	4%	4%	0%	7%	7%	6%	9%	0%	6%	6%	12%	7%	6%	9%	10%
Usefulness of telephone operators	2%	3%	2%	1%	0%	3%	0%	3%	1%	2%	2%	2%	2%	4%	3%	0%	0%
Usefulness of printed information	2%	0%	2%	3%	0%	0%	0%	1%	1%	2%	0%	4%	1%	1%	1%	9%	3%
Fare medium options	4%	8%	4%	7%	11%	3%	0%	3%	4%	2%	5%	3%	3%	3%	4%	0%	7%
Quality of WiFi	8%	3%	6%	7%	6%	3%	0%	5%	6%	6%	13%	11%	11%	9%	12%	17%	14%
Overall service	1%	2%	0%	1%	0%	0%	0%	2%	1%	0%	3%	2%	0%	2%	3%	0%	0%

	2019 - All routes	100 Raleigh-Airport-RTC	105 Raleigh-RTC	300 RTC-Cary-Raleigh	301 Cary-Raleigh	305 Lake Pine-Cary-Raleigh	311 Apex-RTC	400 Durham-Chapel Hill	405 Durham-Chapel Hill - Carrboro	420 Hillsborough-Chapel Hill (CHT)	700 Durham RTC	800 Chapel Hill Southpoint RTC	805 Chapel Hill-Woodcroft RTC	CRX Chapel Hill-Raleigh Express	DRX Durham-Raleigh Express	ODX Orange-Durham Express	NRX (GT) and FRX, WRX, & ZWX (GR)
Q22 Days ridden per week																	
None - Not a regular GoTriangle rider	7%	20%	6%	4%	3%	4%	0%	6%	2%	2%	9%	10%	2%	2%	1%	5%	0%
1 Day	5%	8%	4%	5%	9%	0%	0%	6%	1%	0%	6%	8%	2%	1%	1%	3%	3%
2 Days	7%	11%	4%	8%	9%	10%	0%	8%	2%	6%	14%	9%	3%	6%	4%	0%	3%
3 Days	11%	15%	10%	12%	9%	12%	5%	8%	9%	2%	11%	9%	4%	10%	21%	8%	12%
4 Days	11%	7%	10%	10%	6%	12%	20%	11%	12%	13%	12%	8%	8%	19%	15%	21%	21%
5 Days	46%	22%	56%	39%	48%	53%	65%	46%	59%	75%	26%	47%	69%	59%	50%	62%	50%
6 Days	6%	9%	6%	10%	0%	6%	5%	7%	7%	0%	10%	6%	6%	3%	4%	3%	6%
Everyday	7%	8%	4%	12%	15%	2%	5%	8%	8%	3%	14%	5%	5%	0%	4%	0%	6%
Q22.Freq.Ride Weekly frequency of using GoTriangle																	
Less than 4 days	30%	53%	24%	29%	30%	27%	5%	28%	14%	9%	39%	35%	12%	19%	27%	15%	18%
4-5 days	57%	29%	66%	49%	55%	65%	85%	57%	71%	88%	38%	54%	77%	78%	65%	82%	71%
6 or 7 days	13%	17%	10%	22%	15%	8%	10%	15%	15%	3%	23%	10%	11%	3%	8%	3%	12%
Q23.Main.trip.purpose Main purpose of using GoTriangle buses																	
Work	70%	53%	77%	67%	76%	87%	77%	63%	83%	89%	65%	61%	73%	82%	86%	90%	74%
School/college	17%	20%	14%	13%	15%	13%	23%	23%	13%	6%	6%	24%	27%	16%	13%	5%	21%
Shopping	4%	4%	0%	8%	3%	0%	0%	5%	0%	2%	8%	6%	0%	0%	1%	0%	3%
Medical/dental	2%	1%	3%	3%	0%	0%	0%	4%	1%	2%	6%	2%	0%	1%	0%	3%	0%
Recreation/event	3%	6%	4%	3%	0%	0%	0%	4%	1%	0%	3%	4%	0%	1%	0%	0%	0%
Other	5%	17%	3%	6%	6%	0%	0%	1%	3%	2%	13%	3%	1%	1%	0%	3%	3%
Q24.Duration Tenure using transit																	
Less than 6 mo	28%	33%	35%	31%	12%	31%	41%	29%	28%	18%	22%	34%	26%	18%	24%	13%	31%
Less than 1 yr	12%	13%	9%	12%	15%	8%	5%	12%	10%	12%	15%	11%	12%	12%	12%	18%	21%
1-2 yrs	23%	26%	26%	27%	39%	25%	14%	23%	18%	17%	19%	22%	25%	19%	25%	33%	21%
3-4 yrs	15%	11%	12%	9%	9%	19%	18%	16%	15%	21%	14%	16%	15%	15%	15%	28%	18%
5 or more yrs	22%	17%	18%	21%	24%	17%	23%	20%	29%	32%	30%	16%	22%	37%	24%	10%	10%

	2019 - All routes	100 Raleigh-Airport-RTC	105 Raleigh-RTC	300 RTC-Cary-Raleigh	301 Cary-Raleigh	305 Lake Pine-Cary-Raleigh	311 Apex-RTC	400 Durham-Chapel Hill	405 Durham-Chapel Hill - Carrboro	420 Hillsborough-Chapel Hill (CHT)	700 Durham RTC	800 Chapel Hill-Southpoint RTC	805 Chapel Hill-Woodcroft RTC	CRX Chapel Hill-Raleigh Express	DRX Durham-Raleigh Express	ODX Orange-Durham Express	NRX (GT) and FRX, WRX, & ZWX (GR)	
Q25 Service use last year																		
More often	28%	31%	43%	34%	26%	24%	43%	28%	31%	20%	33%	21%	24%	26%	25%	25%	41%	
The same	41%	31%	29%	32%	58%	51%	19%	40%	42%	60%	39%	45%	42%	55%	47%	45%	31%	
Less often	5%	6%	3%	8%	10%	2%	5%	8%	3%	2%	10%	4%	6%	4%	4%	8%	3%	
Did not ride a year ago	25%	32%	25%	25%	6%	24%	33%	25%	24%	18%	19%	31%	27%	15%	24%	23%	26%	
Q26.1 Weekly system use: GoRaleigh/GoRaleigh Access																		
Yes	32%	69%	55%	69%	52%	52%	36%	11%	10%	0%	45%	17%	9%	16%	26%	0%	62%	
No	68%	31%	45%	31%	48%	48%	64%	89%	90%	100%	55%	83%	91%	84%	74%	100%	38%	
Q26.2 Weekly system use: GoDurham/GoDurham Access																		
Yes	29%	25%	12%	13%	0%	6%	14%	45%	57%	2%	74%	20%	22%	2%	29%	18%	3%	
No	71%	75%	88%	87%	100%	94%	86%	55%	43%	98%	26%	80%	78%	98%	71%	83%	97%	
Q26.3 Weekly system use: GoTriangle/GoTriangle Access																		
Yes	76%	65%	77%	70%	76%	85%	77%	73%	80%	62%	72%	79%	91%	88%	80%	90%	59%	
No	24%	35%	23%	30%	24%	15%	23%	27%	20%	38%	28%	21%	9%	12%	20%	10%	41%	
Q26.4 Weekly system use: GoCary/GoCary Door-to-door																		
Yes	10%	10%	5%	61%	36%	21%	41%	2%	1%	2%	11%	2%	1%	1%	1%	0%	5%	
No	90%	90%	95%	39%	64%	79%	59%	98%	99%	98%	89%	98%	99%	99%	99%	100%	95%	
Q26.5 Weekly system use: Chapel Hill Transit																		
Yes	23%	11%	11%	4%	0%	2%	0%	40%	42%	76%	12%	33%	32%	39%	5%	8%	3%	
No	77%	89%	89%	96%	100%	98%	100%	60%	58%	24%	88%	67%	68%	61%	95%	93%	97%	

	2019 - All routes	100 Raleigh-Airport-RTC	105 Raleigh-RTC	300 RTC-Cary-Raleigh	301 Cary-Raleigh	305 Lake Pine-Cary-Raleigh	311 Apex-RTC	400 Durham-Chapel Hill	405 Durham-Chapel Hill - Carrboro	420 Hillsborough-Chapel Hill (CHT)	700 Durham RTC	800 Chapel Hill Southpoint RTC	805 Chapel Hill-Woodcroft RTC	CRX Chapel Hill-Raleigh Express	DRX Durham-Raleigh Express	ODX Orange-Durham Express	NRX (GT) and FRX, WRX, & ZWX (GR)
Q26.6 Weekly system use: Duke Transit																	
Yes	4%	4%	1%	1%	0%	0%	0%	10%	8%	5%	8%	1%	0%	0%	7%	3%	0%
No	96%	96%	99%	99%	100%	100%	100%	90%	92%	95%	92%	99%	100%	100%	93%	98%	100%
Q26.7 Weekly system use: Wolfline																	
Yes	9%	27%	11%	20%	18%	17%	9%	0%	1%	0%	10%	6%	1%	3%	11%	0%	8%
No	91%	73%	89%	80%	82%	83%	91%	100%	99%	100%	90%	94%	99%	97%	89%	100%	92%
Q26.Uses.Multiple.Systems Use of at least one system besides GoTriangle during a typical week																	
Uses other system	66%	82%	64%	85%	69%	63%	68%	69%	75%	79%	85%	54%	48%	49%	50%	22%	65%
Does not use other system	34%	18%	36%	15%	31%	37%	32%	31%	25%	21%	15%	46%	52%	51%	50%	78%	35%
Q27.New_Transfers Transfers																	
No connections/transfers	51%	29%	46%	21%	58%	60%	5%	57%	51%	89%	11%	63%	76%	77%	74%	72%	43%
1 transfer	21%	30%	27%	29%	16%	26%	29%	19%	21%	5%	24%	18%	14%	15%	14%	13%	30%
2 transfers	17%	22%	18%	28%	13%	6%	57%	15%	18%	5%	33%	13%	8%	6%	7%	13%	16%
3 or more transfers	12%	18%	8%	21%	13%	9%	10%	10%	11%	2%	32%	6%	3%	2%	6%	3%	11%
Q28 Fare medium																	
Pay cash fare this trip only	19%	30%	19%	23%	21%	23%	18%	21%	15%	11%	28%	22%	10%	6%	9%	11%	13%
Buy a day pass on the bus	6%	9%	7%	12%	12%	6%	18%	5%	6%	0%	11%	4%	3%	1%	4%	0%	11%
Use a day pass bought ahead of time	6%	8%	8%	8%	3%	8%	14%	6%	7%	3%	15%	1%	4%	3%	2%	3%	8%
Use a 7 or 31 day pass	9%	12%	15%	19%	18%	8%	18%	6%	8%	2%	19%	4%	4%	5%	4%	8%	16%
Use a university or other ID	15%	11%	11%	11%	12%	6%	9%	21%	14%	20%	6%	19%	19%	23%	17%	16%	5%
Use a GoPass	42%	27%	40%	21%	30%	50%	23%	39%	48%	64%	18%	48%	57%	61%	61%	62%	39%
Use free senior fare & ID	3%	4%	0%	6%	3%	0%	0%	3%	1%	2%	4%	2%	2%	1%	2%	0%	8%

	2019 - All routes	100 Raleigh-Airport-RTC	105 Raleigh-RTC	300 RTC-Cary-Raleigh	301 Cary-Raleigh	305 Lake Pine-Cary- Raleigh	311 Apex-RTC	400 Durham-Chapel Hill	405 Durham-Chapel Hill - Carrboro	420 Hillsborough-Chapel Hill (CHT)	700 Durham RTC	800 Chapel Hill Southpoint RTC	805 Chapel Hill-Woodcroft RTC	CRX Chapel Hill-Raleigh Express	DRX Durham-Raleigh Express	ODX Orange-Durham Express	NRX (GT) and FRX, WRX, & ZWX (GR)
Q28.Fare.Grouped Fare medium																	
Cash	19%	30%	19%	23%	21%	23%	18%	21%	15%	11%	28%	22%	10%	6%	9%	11%	13%
Day pass	12%	17%	15%	20%	15%	13%	32%	10%	13%	3%	26%	5%	7%	5%	7%	3%	18%
7-31 day pass	9%	12%	15%	19%	18%	8%	18%	6%	8%	2%	19%	4%	4%	5%	4%	8%	16%
GoPass or University ID	57%	38%	51%	32%	42%	56%	32%	60%	62%	83%	24%	68%	76%	84%	78%	78%	45%
Free senior fare and ID	3%	4%	0%	6%	3%	0%	0%	3%	1%	2%	4%	2%	2%	1%	2%	0%	8%
Q29.Mode.To.Stop How did you get to the stop where you got on the first GoTriangle bus you boarded during this trip?																	
Walked	51%	63%	49%	61%	81%	56%	59%	58%	62%	37%	41%	49%	58%	32%	29%	41%	46%
Used own bike	3%	1%	3%	4%	3%	0%	9%	3%	6%	0%	4%	2%	4%	1%	6%	5%	3%
Used rented bike/scooter	1%	1%	1%	0%	6%	10%	0%	2%	0%	0%	1%	2%	0%	0%	2%	8%	0%
Drove	22%	5%	26%	5%	6%	12%	9%	16%	10%	57%	6%	35%	21%	55%	46%	26%	32%
Was dropped off by family or friend	5%	2%	10%	5%	3%	14%	9%	4%	5%	0%	8%	4%	7%	3%	8%	5%	11%
Uber or Lyft	2%	4%	1%	2%	0%	0%	5%	1%	1%	2%	5%	2%	4%	2%	1%	3%	3%
Bus other than GoTriangle	13%	20%	8%	21%	0%	8%	5%	15%	15%	3%	34%	7%	5%	6%	7%	10%	5%
Another mode	1%	3%	1%	3%	0%	0%	5%	1%	0%	2%	2%	0%	2%	0%	0%	3%	0%
Q30 Do you use a cellphone?																	
Yes	97%	96%	99%	94%	100%	94%	100%	95%	99%	98%	96%	97%	99%	99%	99%	100%	95%
No	3%	4%	1%	6%	0%	6%	0%	5%	1%	2%	4%	3%	1%	1%	1%	0%	5%
Q30.A.New2 Cell-phone use to access internet																	
Accesses the internet	87%	86%	85%	82%	91%	84%	91%	86%	91%	79%	82%	91%	88%	95%	90%	98%	82%
Does not	10%	11%	14%	12%	9%	10%	9%	12%	8%	20%	15%	6%	10%	4%	9%	3%	13%
No cell phone	3%	3%	1%	6%	0%	6%	0%	3%	1%	2%	3%	3%	1%	1%	1%	0%	5%
Q30.B.New2 Do you have a mobile app for local transit on your cellphone?																	
Has local transit app on cellphone	59%	59%	61%	53%	72%	53%	50%	54%	60%	42%	48%	62%	66%	73%	65%	73%	56%
Does not	38%	38%	38%	40%	28%	41%	50%	43%	39%	56%	49%	35%	32%	26%	34%	28%	38%
No cell phone	3%	3%	1%	6%	0%	6%	0%	3%	1%	2%	3%	3%	1%	1%	1%	0%	5%
Q31 Driver's license																	

	2019 - All routes	100 Raleigh-Airport-RTC	105 Raleigh-RTC	300 RTC-Cary-Raleigh	301 Cary-Raleigh	305 Lake Pine-Cary- Raleigh	311 Apex-RTC	400 Durham-Chapel Hill	405 Durham-Chapel Hill - Carrboro	420 Hillsborough-Chapel Hill (CHT)	700 Durham RTC	800 Chapel Hill Southpoint RTC	805 Chapel Hill-Woodcroft RTC	CRX Chapel Hill-Raleigh Express	DRX Durham-Raleigh Express	ODX Orange-Durham Express	NRX (GT) and FRX, WRX, & ZWX (GR)	
Yes	71%	61%	74%	50%	70%	69%	55%	64%	74%	97%	51%	79%	78%	95%	90%	92%	68%	
No	29%	39%	26%	50%	30%	31%	45%	36%	26%	3%	49%	21%	22%	5%	10%	8%	32%	
Q32.Lic_drivers_in_hh Licensed drivers in the household																		
None	14%	16%	8%	21%	19%	14%	15%	19%	12%	0%	31%	10%	11%	1%	3%	8%	11%	
One	29%	28%	36%	35%	34%	24%	25%	32%	30%	26%	31%	31%	28%	16%	21%	33%	28%	
Two	40%	34%	44%	29%	28%	53%	40%	32%	40%	52%	28%	40%	51%	60%	59%	38%	42%	
Three	11%	11%	10%	10%	13%	8%	5%	9%	14%	15%	6%	13%	8%	16%	11%	13%	14%	
Four	4%	8%	1%	1%	3%	0%	10%	5%	3%	5%	1%	5%	1%	4%	3%	10%	6%	
Five	1%	2%	1%	1%	3%	0%	0%	1%	1%	2%	1%	1%	1%	1%	2%	0%	0%	
Six	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	0%	0%	0%	
Seven	0%	0%	0%	1%	0%	0%	0%	0%	0%	2%	0%	0%	0%	0%	0%	0%	0%	
8 or more	1%	0%	0%	1%	0%	0%	5%	1%	1%	0%	1%	0%	1%	0%	0%	0%	0%	
Q33.Vehicles_in_hh Vehicle availability																		
None	30%	44%	33%	48%	31%	25%	32%	38%	27%	9%	56%	24%	16%	4%	11%	20%	29%	
One	35%	28%	38%	29%	44%	47%	53%	35%	43%	29%	27%	34%	49%	28%	40%	28%	29%	
Two	26%	19%	18%	17%	22%	22%	0%	20%	25%	42%	13%	32%	31%	51%	39%	35%	32%	
Three	5%	4%	8%	2%	3%	4%	11%	4%	4%	15%	2%	5%	3%	13%	5%	10%	11%	
Four	2%	4%	1%	1%	0%	0%	5%	3%	1%	5%	1%	3%	0%	1%	3%	8%	0%	
Five	1%	1%	1%	1%	0%	2%	0%	0%	0%	0%	1%	1%	0%	2%	2%	0%	0%	
Six	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
Seven	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	0%	0%	0%	0%	0%	0%	
8 or more	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	0%	1%	0%	0%	0%	0%	

	2019 - All routes	100 Raleigh-Airport-RTC	105 Raleigh-RTC	300 RTC-Cary-Raleigh	301 Cary-Raleigh	305 Lake Pine-Cary-Raleigh	311 Apex-RTC	400 Durham-Chapel Hill	405 Durham-Chapel Hill - Carrboro	420 Hillsborough-Chapel Hill (CHT)	700 Durham RTC	800 Chapel Hill Southpoint RTC	805 Chapel Hill-Woodcroft RTC	CRX Chapel Hill-Raleigh Express	DRX Durham-Raleigh Express	ODX Orange-Durham Express	NRX (GT) and FRX, WRX, & ZWX (GR)
Q33.Q32.caratio Ratio of cars to drivers																	
No vehicle no driver	13%	15%	8%	21%	19%	14%	16%	18%	12%	0%	28%	9%	10%	1%	3%	8%	11%
No vehicle	18%	30%	25%	28%	13%	12%	16%	20%	16%	9%	27%	16%	7%	3%	8%	13%	19%
More drivers than vehicles	22%	20%	22%	19%	22%	36%	37%	21%	28%	17%	15%	20%	29%	23%	27%	13%	14%
Same number veh & drivers	42%	31%	37%	27%	44%	34%	26%	36%	41%	64%	24%	50%	53%	67%	54%	58%	51%
More cars than drivers	6%	5%	8%	6%	3%	4%	5%	5%	3%	11%	5%	6%	2%	6%	8%	10%	5%
Q31.Q32.Q33.choice Other transport options?																	
No car available	31%	44%	33%	49%	31%	26%	32%	38%	28%	9%	56%	24%	17%	4%	11%	20%	30%
Shared availability	22%	20%	22%	19%	22%	36%	37%	21%	28%	17%	15%	20%	29%	23%	27%	13%	14%
Car available	47%	36%	45%	33%	47%	38%	32%	41%	44%	74%	29%	56%	55%	73%	62%	68%	57%
Q34 Household size																	
One	22%	27%	30%	16%	35%	12%	21%	27%	20%	21%	28%	23%	25%	13%	18%	17%	12%
Two	35%	26%	36%	29%	26%	47%	11%	34%	38%	38%	29%	37%	48%	46%	39%	23%	24%
Three	19%	17%	17%	22%	26%	27%	16%	16%	23%	13%	19%	17%	11%	19%	23%	17%	21%
Four	15%	16%	13%	18%	6%	10%	32%	17%	12%	24%	10%	15%	10%	14%	12%	26%	29%
Five	5%	7%	1%	5%	0%	4%	21%	4%	3%	3%	7%	5%	1%	4%	6%	14%	12%
Six	2%	4%	3%	4%	0%	0%	0%	2%	3%	2%	3%	0%	5%	3%	1%	3%	0%
Seven	1%	2%	0%	2%	6%	0%	0%	1%	0%	0%	2%	2%	0%	1%	0%	0%	3%
8 or more	1%	0%	0%	3%	0%	0%	0%	1%	1%	0%	2%	1%	0%	0%	0%	0%	0%
Q35 Use of rideshares in month																	
0 not at all	49%	35%	38%	38%	52%	53%	41%	43%	49%	84%	50%	56%	50%	60%	54%	80%	54%
1 time	13%	13%	8%	11%	3%	10%	14%	17%	10%	8%	12%	13%	14%	15%	15%	10%	10%
2 times	11%	15%	11%	11%	12%	6%	14%	13%	13%	3%	7%	9%	13%	12%	10%	8%	5%
3 times	8%	12%	11%	11%	21%	8%	9%	8%	10%	0%	7%	8%	7%	3%	8%	0%	10%
4 or more times	19%	25%	32%	29%	12%	24%	23%	19%	17%	5%	24%	13%	16%	10%	13%	3%	21%

	2019 - All routes	100 Raleigh-Airport-RTC	105 Raleigh-RTC	300 RTC-Cary-Raleigh	301 Cary-Raleigh	305 Lake Pine-Cary-Raleigh	311 Apex-RTC	400 Durham-Chapel Hill	405 Durham-Chapel Hill - Carrboro	420 Hillsborough-Chapel Hill (CHT)	700 Durham RTC	800 Chapel Hill Southpoint RTC	805 Chapel Hill-Woodcroft RTC	CRX Chapel Hill-Raleigh Express	DRX Durham-Raleigh Express	ODX Orange-Durham Express	NRX (GT) and FRX, WRX, & ZWX (GR)
Q35.Rideshare.Yes.No Use of rideshares or not																	
Did not use Uber or Lyft	49%	35%	38%	38%	52%	53%	41%	43%	49%	84%	50%	56%	50%	60%	54%	80%	54%
Did use Uber or Lyft	51%	65%	62%	62%	48%	47%	59%	57%	51%	16%	50%	44%	50%	40%	46%	20%	46%
Q36.rideshare.past.month Number of rideshare trips past 30 days																	
No rideshare trips	49%	35%	38%	38%	52%	53%	41%	43%	49%	84%	50%	56%	50%	60%	54%	80%	54%
One rideshare trip	13%	13%	8%	11%	3%	10%	14%	17%	10%	8%	12%	13%	14%	15%	15%	10%	10%
Two rideshare trips	11%	15%	11%	11%	12%	6%	14%	13%	13%	3%	7%	9%	13%	12%	10%	8%	5%
Three rideshare trips	8%	12%	11%	11%	21%	8%	9%	8%	10%	0%	7%	8%	7%	3%	8%	0%	10%
Four or more rideshare trips	19%	25%	32%	29%	12%	24%	23%	19%	17%	5%	24%	13%	16%	10%	13%	3%	21%
Q36.A.CombineRideshare.GoTriangle Use rideshare with GoTriangle (% of only those using ridesharing)																	
Yes	25%	29%	41%	36%	35%	26%	13%	23%	20%	24%	30%	25%	19%	10%	15%	29%	30%
No	75%	71%	59%	64%	65%	74%	88%	77%	80%	76%	70%	75%	81%	90%	85%	71%	70%
Q36A.Combine.Rideshare.ver2 Combined rideshare with GoTriangle (numerator for % includes those not using ridesharing)																	
Yes, combined a rideshare and a GoTriangle trip	17%	24%	30%	28%	19%	14%	10%	17%	13%	9%	24%	13%	11%	5%	9%	10%	16%
Used rideshare but did not combine	33%	40%	32%	33%	28%	31%	48%	38%	36%	8%	26%	30%	38%	34%	37%	8%	29%
Did not use ridesharing	50%	36%	38%	39%	53%	55%	43%	45%	51%	83%	50%	57%	51%	60%	54%	82%	55%
Q36.B.Replaced.GT.Trip Replaced GoTriangle trip with rideshare (% Includes only those using ridesharing)																	
Yes	39%	45%	43%	50%	47%	48%	35%	42%	39%	28%	33%	33%	53%	29%	26%	11%	32%
No	61%	55%	57%	50%	53%	52%	65%	58%	61%	72%	67%	67%	47%	71%	74%	89%	68%

	2019 - All routes	100 Raleigh-Airport-RTC	105 Raleigh-RTC	300 RTC-Cary-Raleigh	301 Cary-Raleigh	305 Lake Pine-Cary-Raleigh	311 Apex-RTC	400 Durham-Chapel Hill	405 Durham-Chapel Hill - Carrboro	420 Hillsborough-Chapel Hill (GHT)	700 Durham RTC	800 Chapel Hill Southpoint RTC	805 Chapel Hill-Woodcroft RTC	CRX Chapel Hill-Raleigh Express	DRX Durham-Raleigh Express	ODX Orange-Durham Express	NRX (GT) and FRX, WRX, & ZWX (GR)
Q36B.Rideshare.Replace.ver2 Replaced GoTriangle trip with rideshare (numerator for % includes those not using ridesharing)																	
Used Uber/Lyft for a trip would have otherwise made on GoTriangle	26%	35%	31%	38%	25%	27%	27%	30%	25%	11%	26%	19%	31%	15%	16%	5%	16%
Did not replace trip	25%	29%	30%	24%	22%	18%	32%	26%	24%	6%	23%	24%	19%	25%	30%	15%	27%
Have not used Uber/Lyft	50%	36%	39%	39%	53%	55%	41%	44%	51%	83%	51%	57%	50%	60%	54%	80%	57%
Q36.B.Code1 Coded Reason to replace GT trip (1st mention)																	
Frequency of buses	11%	6%	14%	12%	17%	17%	0%	9%	11%	0%	7%	18%	11%	12%	17%	0%	0%
Scheduled run times	25%	31%	18%	21%	50%	25%	20%	24%	17%	50%	16%	20%	40%	24%	37%	50%	20%
Speed	19%	27%	27%	21%	17%	25%	20%	15%	19%	0%	23%	20%	17%	4%	13%	50%	20%
Service area	7%	6%	9%	9%	17%	8%	20%	7%	6%	0%	11%	3%	3%	8%	3%	0%	40%
Safety	1%	0%	5%	0%	0%	0%	20%	1%	3%	0%	0%	0%	0%	0%	0%	0%	0%
Missed bus: bus @ stop too early or late	10%	5%	5%	18%	0%	0%	20%	12%	3%	17%	9%	10%	6%	32%	7%	0%	0%
Luggage	2%	1%	0%	0%	0%	0%	0%	3%	11%	0%	0%	0%	0%	0%	0%	0%	0%
Convenience, money	4%	7%	5%	4%	0%	0%	0%	2%	3%	0%	5%	8%	6%	0%	3%	0%	0%
Vague/Misc.	10%	7%	9%	7%	0%	8%	0%	12%	11%	17%	20%	7%	6%	16%	7%	0%	0%
Passenger related	11%	9%	9%	9%	0%	17%	0%	15%	17%	17%	9%	15%	11%	4%	13%	0%	20%

	2019 - All routes	100 Raleigh-Airport-RTC	105 Raleigh-RTC	300 RTC-Cary-Raleigh	301 Cary-Raleigh	305 Lake Pine-Cary- Raleigh	311 Apex-RTC	400 Durham-Chapel Hill	405 Durham-Chapel Hill - Carrboro	420 Hillsborough-Chapel Hill (CHT)	700 Durham RTC	800 Chapel Hill Southpoint RTC	805 Chapel Hill-Woodcroft RTC	CRX Chapel Hill-Raleigh Express	DRX Durham-Raleigh Express	ODX Orange-Durham Express	NRX (GT) and FRX, WRX, & ZWX (GR)
Q36.B.Code2 Coded Reason to replace GT trip (2nd mention)																	
Frequency of buses	21%	50%	0%	24%	0%	0%	0%	20%	0%	0%	11%	12%	27%	17%	10%	0%	0%
Scheduled run times	25%	13%	50%	12%	50%	0%	0%	33%	30%	0%	44%	31%	18%	50%	10%	0%	0%
Speed	8%	3%	0%	24%	0%	0%	0%	0%	10%	0%	22%	8%	9%	17%	10%	0%	0%
Service area	9%	13%	0%	6%	50%	33%	0%	13%	0%	0%	0%	8%	9%	0%	10%	0%	0%
Safety	1%	0%	25%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	10%	0%	0%
Missed bus: bus @ stop too early or late	26%	7%	25%	35%	0%	67%	0%	27%	50%	100%	22%	31%	27%	17%	20%	0%	100%
Luggage	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Convenience, money	3%	7%	0%	0%	0%	0%	0%	0%	0%	0%	0%	4%	9%	0%	10%	0%	0%
Vague/Misc.	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	10%	0%	0%
Passenger related	5%	7%	0%	0%	0%	0%	0%	7%	10%	0%	0%	8%	0%	0%	10%	0%	0%
Q36.B.Code3 Coded Reason to replace GT trip (3rd mention)																	
Frequency of buses	23%	0%	0%	25%	0%	100%	0%	0%	33%	0%	33%	17%	0%	33%	100%	0%	0%
Scheduled run times	7%	0%	0%	0%	0%	0%	0%	0%	0%	0%	33%	17%	0%	0%	0%	0%	0%
Speed	33%	100%	0%	25%	100%	0%	0%	33%	67%	0%	0%	50%	0%	0%	0%	0%	0%
Service area	17%	0%	0%	25%	0%	0%	0%	0%	0%	0%	0%	17%	50%	33%	0%	0%	0%
Safety	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Missed bus: bus @ stop too early or late	10%	0%	0%	0%	0%	0%	0%	33%	0%	0%	33%	0%	0%	33%	0%	0%	0%
Luggage	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Convenience, money	3%	0%	0%	0%	0%	0%	0%	33%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Vague/Misc.	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Passenger related	7%	0%	0%	25%	0%	0%	0%	0%	0%	0%	0%	0%	50%	0%	0%	0%	0%
Q37.A Use shared bicycle during any part of this trip																	
Yes	5%	7%	7%	8%	0%	6%	10%	4%	5%	2%	6%	5%	6%	5%	3%	3%	0%
No	95%	93%	93%	92%	100%	94%	90%	96%	95%	98%	94%	95%	94%	95%	97%	97%	100%

	2019 - All routes	100 Raleigh-Airport-RTC	105 Raleigh-RTC	300 RTC-Cary-Raleigh	301 Cary-Raleigh	305 Lake Pine-Cary-Raleigh	311 Apex-RTC	400 Durham-Chapel Hill	405 Durham-Chapel Hill - Carrboro	420 Hillsborough-Chapel Hill (CHT)	700 Durham RTC	800 Chapel Hill Southpoint RTC	805 Chapel Hill-Woodcroft RTC	CRX Chapel Hill-Raleigh Express	DRX Durham-Raleigh Express	ODX Orange-Durham Express	NRX (GT) and FRX, WRX, & ZWX (GR)
Q37.B Use shared scooter during any part of this trip																	
Yes	5%	7%	6%	8%	6%	6%	0%	5%	9%	0%	7%	3%	2%	3%	4%	3%	0%
No	95%	93%	94%	92%	94%	94%	100%	95%	91%	100%	93%	97%	98%	97%	96%	97%	100%
Q38. Employment (Priority work, student. Multiple categories ignored)																	
Employed full time	64%	50%	72%	57%	72%	77%	73%	60%	77%	86%	55%	54%	73%	81%	82%	79%	62%
Employed part time	14%	17%	17%	20%	17%	13%	18%	12%	9%	5%	23%	16%	7%	9%	9%	13%	14%
Unemployed	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Homemaker	1%	0%	0%	1%	0%	2%	0%	1%	0%	2%	2%	1%	0%	0%	1%	0%	0%
Student	18%	29%	10%	17%	10%	8%	9%	24%	13%	8%	10%	28%	19%	8%	8%	5%	16%
Retired	3%	3%	1%	4%	0%	0%	0%	3%	1%	0%	11%	1%	2%	2%	0%	3%	8%
Volunteer position	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Q39. AgeGroups																	
16-17	1%	1%	1%	5%	0%	0%	10%	1%	1%	0%	1%	1%	2%	0%	0%	0%	9%
18-24	22%	36%	23%	24%	10%	15%	20%	22%	13%	5%	17%	35%	17%	12%	10%	3%	9%
25-34	30%	26%	31%	21%	26%	26%	15%	35%	34%	34%	22%	28%	40%	33%	36%	19%	22%
35-44	18%	14%	8%	20%	19%	22%	40%	17%	20%	11%	19%	15%	19%	20%	20%	14%	25%
45-54	15%	9%	21%	14%	26%	22%	15%	11%	22%	23%	24%	11%	10%	15%	21%	33%	16%
55-64	10%	10%	15%	8%	16%	13%	0%	11%	8%	23%	12%	6%	10%	16%	7%	22%	9%
65 or older	4%	3%	0%	8%	3%	2%	0%	4%	3%	5%	4%	4%	2%	4%	5%	8%	9%
Q40 Gender																	
Male	48%	58%	66%	59%	61%	42%	62%	43%	48%	29%	51%	39%	48%	43%	44%	35%	61%
Female	50%	39%	33%	40%	39%	56%	38%	55%	50%	69%	46%	60%	52%	55%	54%	63%	39%
Prefer not to answer	2%	3%	1%	1%	0%	2%	0%	2%	2%	2%	3%	2%	0%	2%	2%	3%	0%

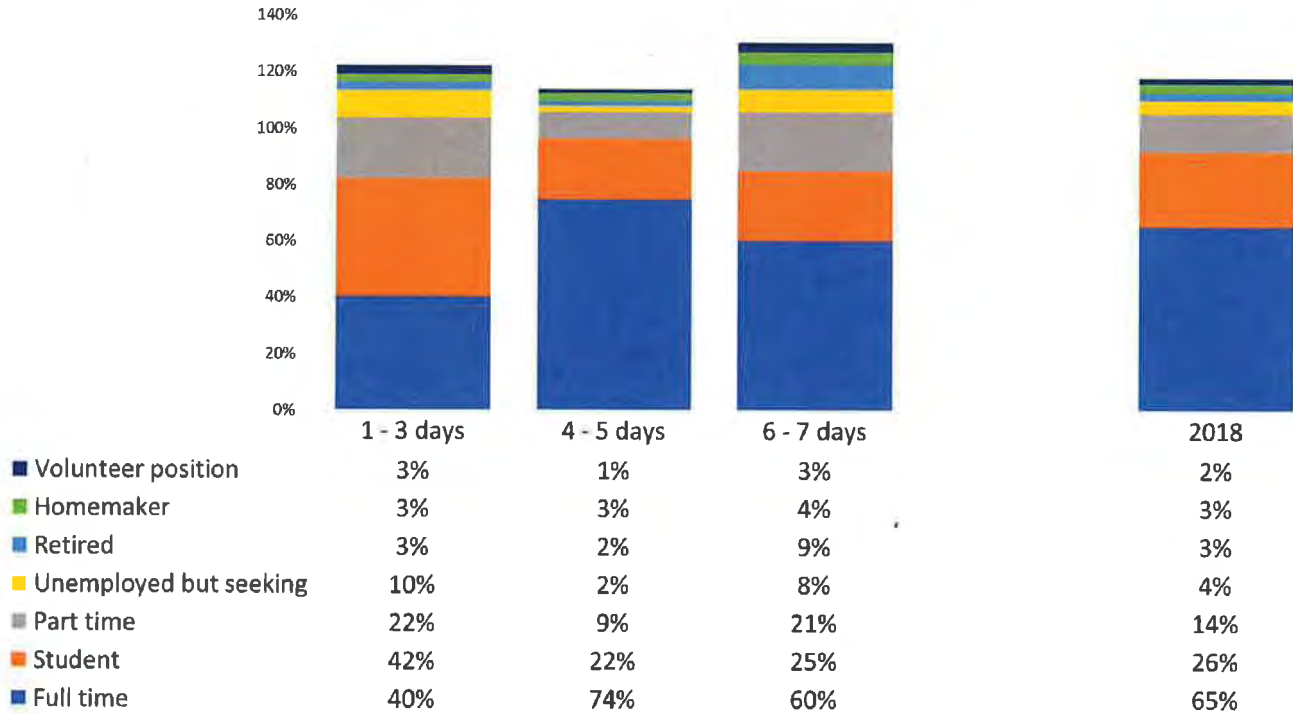
	2019 - All routes	100 Raleigh-Airport-RTC	105 Raleigh-RTC	300 RTC-Cary-Raleigh	301 Cary-Raleigh	305 Lake Pine-Cary- Raleigh	311 Apex-RTC	400 Durham-Chapel Hill	405 Durham-Chapel Hill - Carrboro	420 Hillsborough-Chapel Hill (CHT)	700 Durham RTC	800 Chapel Hill Southpoint RTC	805 Chapel Hill-Woodcroft RTC	CRX Chapel Hill-Raleigh Express	DRX Durham-Raleigh Express	ODX Orange-Durham Express	NRX (GT) and FRX, WRX, & ZWX (GR)	
Q41. Ethnicity (Recorded multiple responses giving priority to minority ethnicities)																		
African American	32%	39%	32%	39%	25%	22%	27%	31%	35%	21%	60%	25%	25%	16%	28%	32%	25%	
Asian	14%	13%	15%	14%	13%	12%	23%	23%	17%	0%	6%	21%	13%	7%	7%	3%	6%	
White	42%	33%	41%	32%	53%	53%	32%	32%	41%	71%	23%	43%	54%	72%	54%	51%	61%	
Hispanic	7%	11%	10%	11%	9%	8%	9%	10%	5%	5%	4%	6%	3%	2%	7%	11%	6%	
Native American	1%	0%	0%	0%	0%	0%	0%	1%	1%	0%	3%	0%	0%	0%	0%	3%	3%	
Other/multiracial	4%	4%	1%	4%	0%	4%	9%	3%	1%	3%	4%	6%	4%	3%	3%	0%	0%	
Q42 English proficiency																		
Very comfortable	91%	89%	94%	89%	94%	100%	82%	82%	85%	98%	92%	92%	97%	99%	96%	100%	92%	
Mostly comfortable	5%	8%	1%	6%	6%	0%	14%	10%	7%	2%	5%	5%	2%	1%	2%	0%	6%	
Slightly comfortable	2%	2%	4%	4%	0%	0%	0%	5%	5%	0%	2%	2%	1%	1%	0%	0%	0%	
Not comfortable	1%	1%	0%	1%	0%	0%	5%	3%	3%	0%	1%	1%	0%	0%	1%	0%	3%	
Q43 Primary language																		
English	89%	86%	85%	84%	97%	92%	82%	80%	88%	95%	92%	90%	94%	97%	95%	100%	97%	
Spanish	5%	8%	4%	10%	3%	4%	9%	8%	3%	3%	3%	3%	2%	0%	2%	0%	3%	
Other	6%	6%	11%	6%	0%	4%	9%	11%	9%	2%	5%	7%	4%	3%	3%	0%	0%	
Q44.poverty.new.2 Above - below 100% poverty																		
100% poverty income or less	18%	24%	11%	29%	17%	4%	32%	20%	10%	5%	34%	17%	9%	5%	11%	7%	8%	
Above 100% poverty	82%	76%	89%	71%	83%	96%	68%	80%	90%	95%	66%	83%	91%	95%	89%	93%	93%	
Q44.poverty.150.new Above - below 150% poverty																		
150% poverty income or less	20%	25%	12%	29%	11%	11%	32%	21%	20%	12%	29%	17%	11%	11%	15%	22%	18%	
Above 150% poverty	80%	75%	88%	71%	89%	89%	68%	79%	80%	88%	71%	83%	89%	89%	85%	78%	83%	
Q44.poverty.200.new Above - below 200% poverty																		
200% poverty income or less	34%	37%	31%	40%	34%	26%	36%	35%	40%	29%	47%	34%	29%	21%	29%	29%	30%	
Above 200% poverty	66%	63%	69%	60%	66%	74%	64%	65%	60%	71%	53%	66%	71%	79%	71%	71%	70%	

APPENDIX C Demographic Ridership & Travel Patterns – CJI Survey

Demographic Ridership and Travel Patterns

20 Employment of Customers

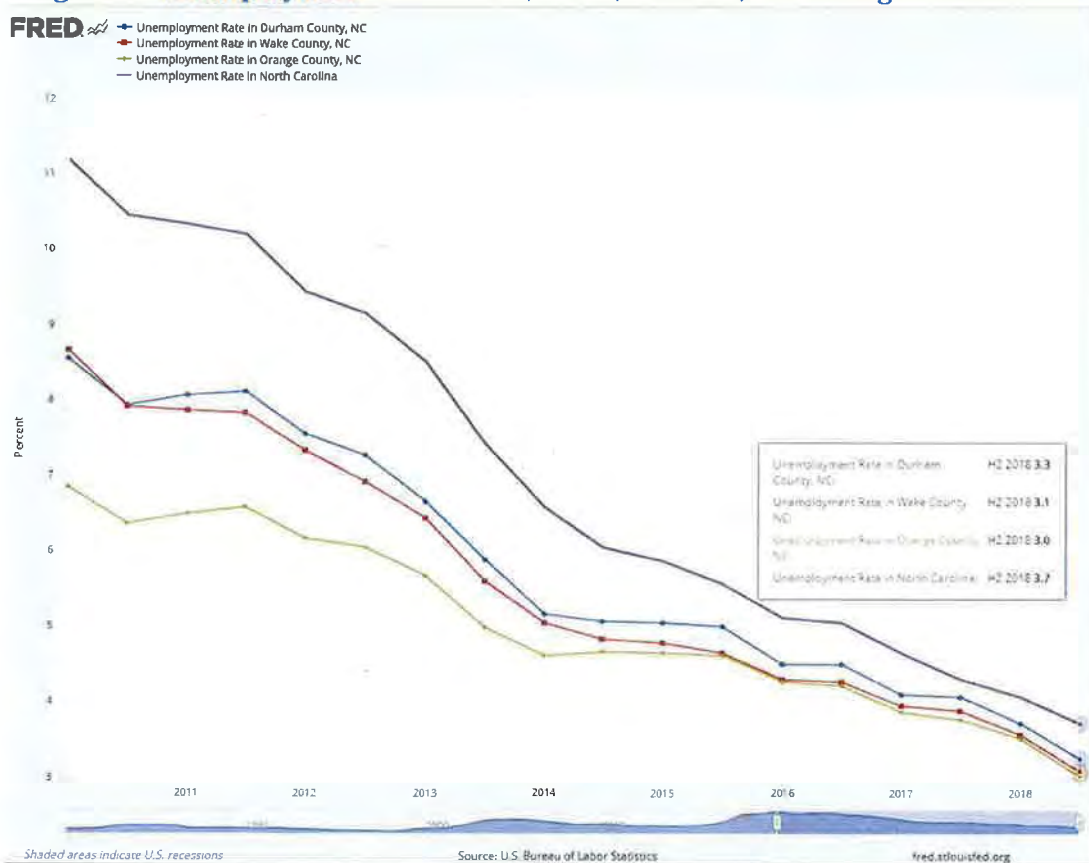
Employment - Multiple responses included



Employment of Customers

Respondents were asked about their employment. In 2018, a total of 65% of GoTriangle customers reported being employed full time, while another 14% said they were employed part time, and 26% said they are students. Although it is not displayed in the chart, students who are also employed full or part time comprise 12% of all riders while students not also employed account for 14%. Full time employment is considerably more frequent among the four-to-five-day riders (74%) than among the six-to-seven-day riders (60%), and the one-to-three-day riders (40%).

Figure 21 Unemployment Rates in NC, Wake, Durham, and Orange Counties



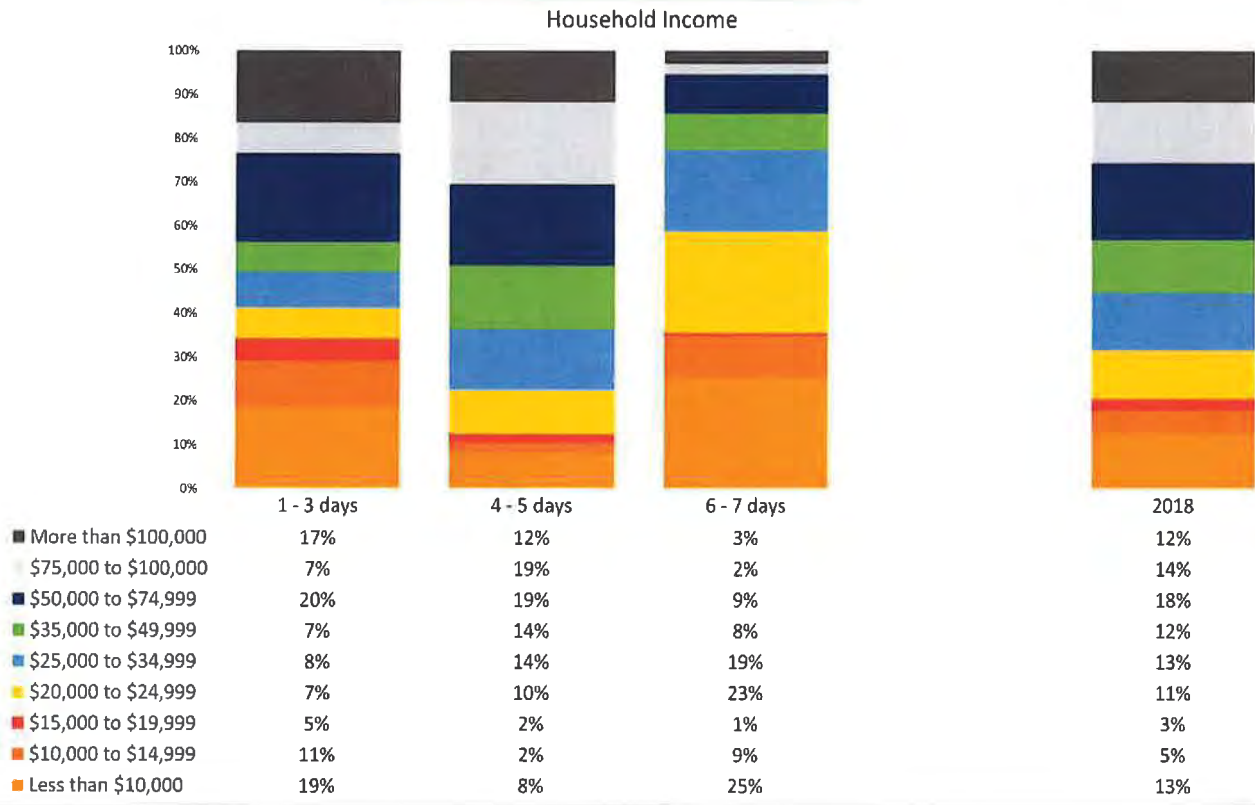
Source: U.S. Bureau of Labor Statistics, Unemployment Rates in North Carolina [NCUR], and selected NC counties, retrieved from FRED, Federal Reserve Bank of St. Louis; <https://fred.stlouisfed.org/series/NCUR>, February 15, 2019.

Unemployment Rates in NC, Wake, Durham, and Orange Counties

In the survey, 4% indicated that they consider themselves unemployed. We also saw in Figure 6 that 57% of these “unemployed” riders said that their trip purpose was getting to or from work. Thus, they are employed in terms used by the Department of Labor, although their employment may be only an interim tactic while seeking a new job. This would amount to about 2.3% of the GoTriangle ridership, leaving 1.7% unemployed and not working in the interim. How do these figures compare to the official unemployment figures in the region?

The substantial decrease in unemployment in the Triangle Region since the Great Recession is shown clearly in Figure 21. At the time of the survey, the rate of unemployment was 3.7% statewide and 3.3%, 3.1%, and 3.0% in Durham, Wake, and Orange Counties respectively. Thus the 4% rate for GoTriangle customers would be more or less within the same range as the three county area, though slightly higher. However, since 2.3% said they were using GoTriangle to get to or from work, most or all of them would be counted by the BLS as employed, leaving the “unemployment rate” as defined by the BLS among GoTriangle riders at only 1.7%. However, the data are interpreted, it is clear that the vast majority of GoTriangle customers are gainfully employed or are students (or both).

22 Income of Rider Households



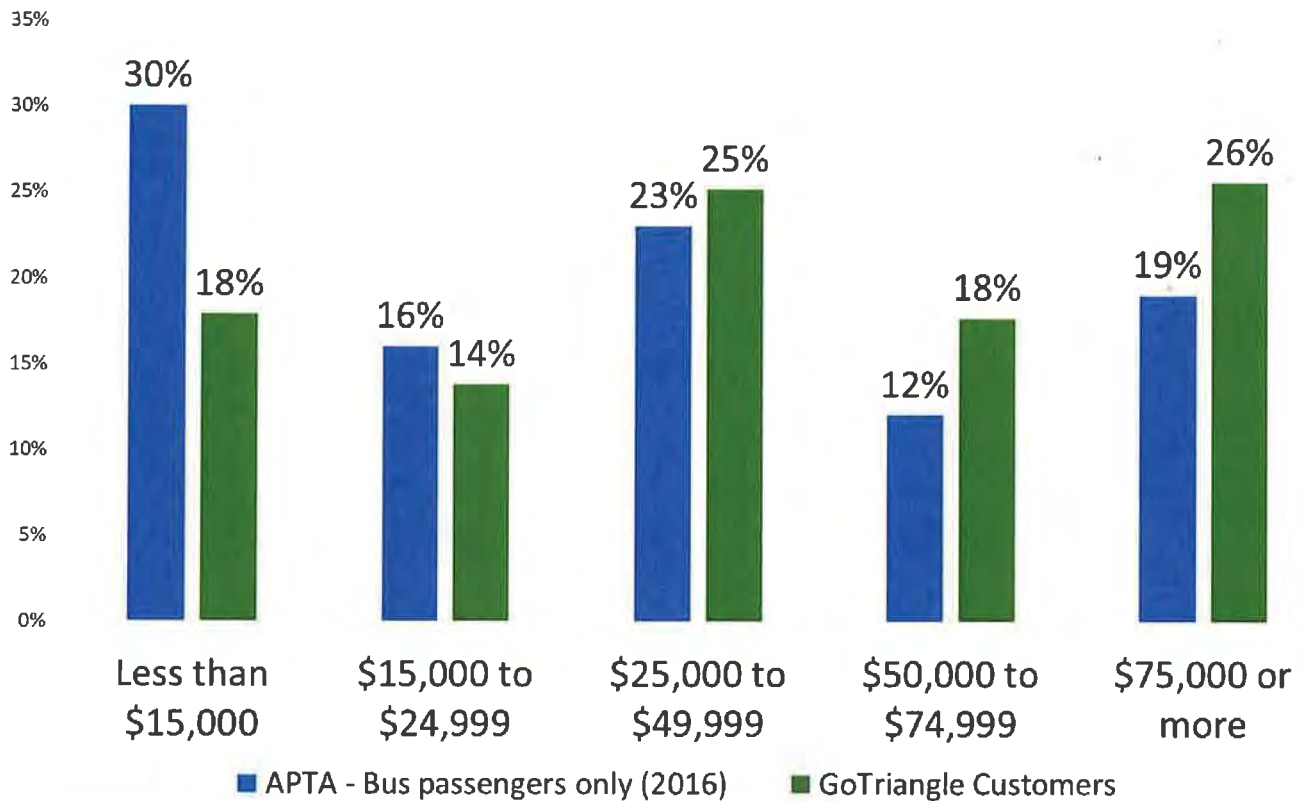
Income of Rider Households

As is true of riders in many passenger transit surveys of other systems in the United States, quite a few GoTriangle riders have low household incomes. In 2018, 32% report household incomes of less than \$25,000. However, as will be seen in the follow-up regional survey report comparing the results system by system, the GoTriangle riders have substantially higher household incomes than the riders on the other systems.

The income distribution varies rather noticeably among the three levels of riding frequency. Among the four-to-five-day riders, only 8% report incomes below \$10,000, a considerably smaller percentage of low-income users than for the other segments (19% for the one-to-three-day riders, and 25% for the six-to-seven-day riders). Conversely, the percent reporting incomes of \$20,000 or more is larger among this segment (88%, compared to 66% for the one-to-three-day riders, and 64% for the six-to-seven-day riders).

Figure 23 Comparison of Bus Rider Income Data Nationally and among GoTriangle Customers

Household Income (Sources: APTA, Who Rides (2016), and 2018 GoTriangle Rider Survey)

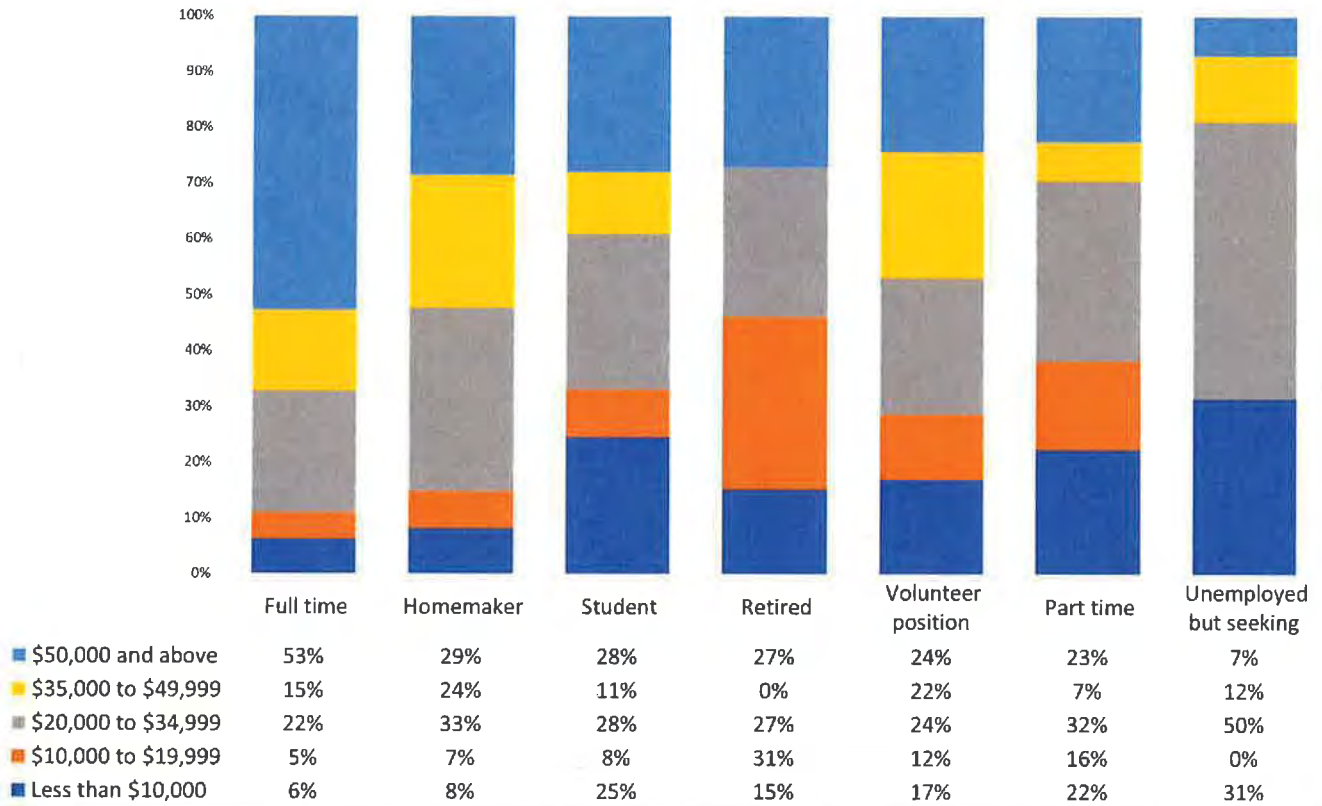


Comparison of Bus Rider Income Data Nationally and among GoTriangle Customers

In comparison to national data on bus rider households, GoTriangle rider households are more likely to have somewhat higher incomes. For example, while nationally, 30% of rider households have incomes below \$15,000, that is true of only 18% of GoTriangle rider households. Conversely, while only 19% of rider households nationally have incomes of \$75,000 or more 26% of GoTriangle rider households have income of that level.

24 Employment and Income

Household Income by Customer Employment



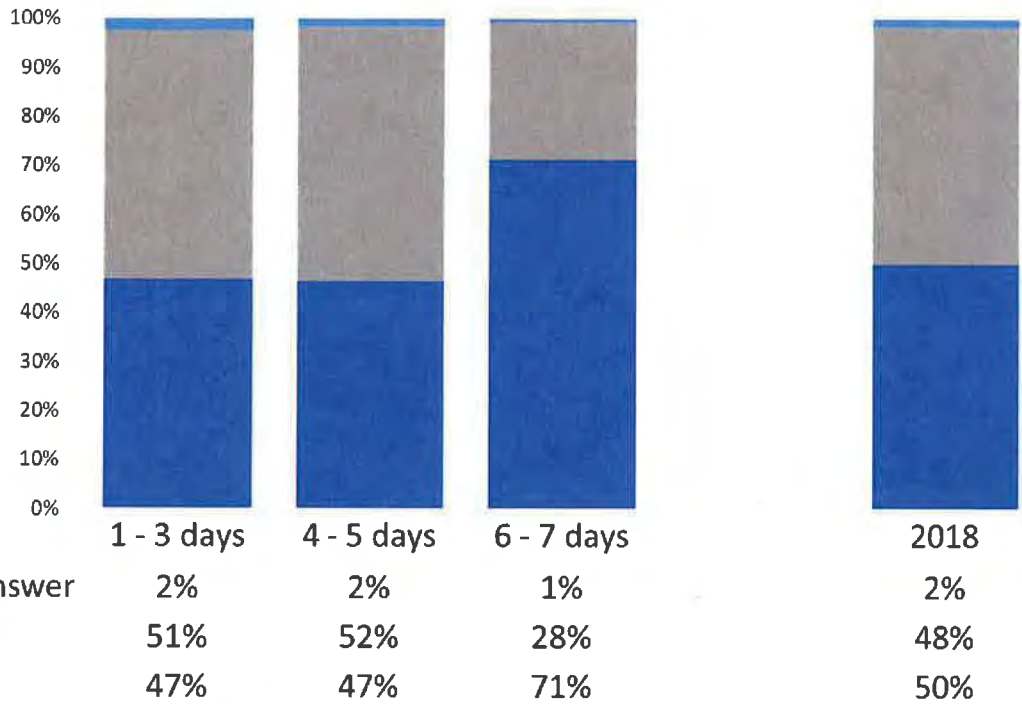
Employment and Income

In 2018, household incomes below \$10,000 seem unlikely. However, in a minimum wage job (\$7.25 in NC), even if a person worked full time for 2,000 hours a year, the income would be only \$14,500. Frequently such low wage jobs do not provide a full 2,000 hours of work with the result that incomes can fall below that level. It is important to remember that responses to the income question in surveys are approximations. For example, the real income of a household with earned income under \$10,000 is likely to be supplemented by such programs as SNAP and Medicaid. And the real incomes of those who are employed and have fully paid health insurance, and those who are sixty-five or older and on Medicare, or students on scholarships (etc.) have income supplements that are unlikely to be accounted for in a quick survey response about household income. Thus, the actual income levels may be understated. The point remains, however, that the income levels of GoTriangle users are low.

As one would expect, income is related to the employment circumstances of customers. Of those who are unemployed and seeking work, 31% report incomes of less than \$10,000. Students are next with 25% in that category, and part time workers third, with 22%. Volunteers are next with 17%, while retired persons and homemakers follow with 15% and 8% respectively. For obvious reasons, full time workers report the highest levels of income (90% of workers make above \$20,000) with only 6% making less than \$10,000.

Figure 25 Rider Segment by Gender

Gender of Respondents



Gender of the Customers

GoTriangle customers are nearly equally split by gender, 50% male and 48% female, with 2% preferring not to state a gender identity.

The gender balance differs significantly among rider segments with the six-to-seven-day rider segment having a much higher percentage of male riders (71%) than the other segments.

Nationally, according to the CJI APTA report cited earlier, among bus customers, 56% are women. However, recent surveys by CJI and others have found a majority of males among the riders in several rider surveys. A recent joint study by CJI with EMC Research Inc in Columbus, Ohio, for example, found a 56% male ridership. Whether or not this represents a significant change in the transit market will not be known until additional studies are conducted.

Figure 26 Ethnicity of Customers

Ethnic Background of Respondents



Native American Indian	2%	2%	3%	2%
Other	2%	4%	7%	4%
Hispanic	3%	6%	10%	6%
Asian	14%	14%	7%	13%
African American/Black	31%	29%	58%	33%
Caucasian/White	51%	43%	18%	41%

Ethnicity of Customers

In measuring ethnicity, it is important to focus on self-identification by asking "Which do you consider yourself...?" and asking that respondents note all descriptions that apply to them. In this way surveys usually capture some overlap among the several groups. In the case of GoTriangle customer, the overlap among ethnic identities is very small.

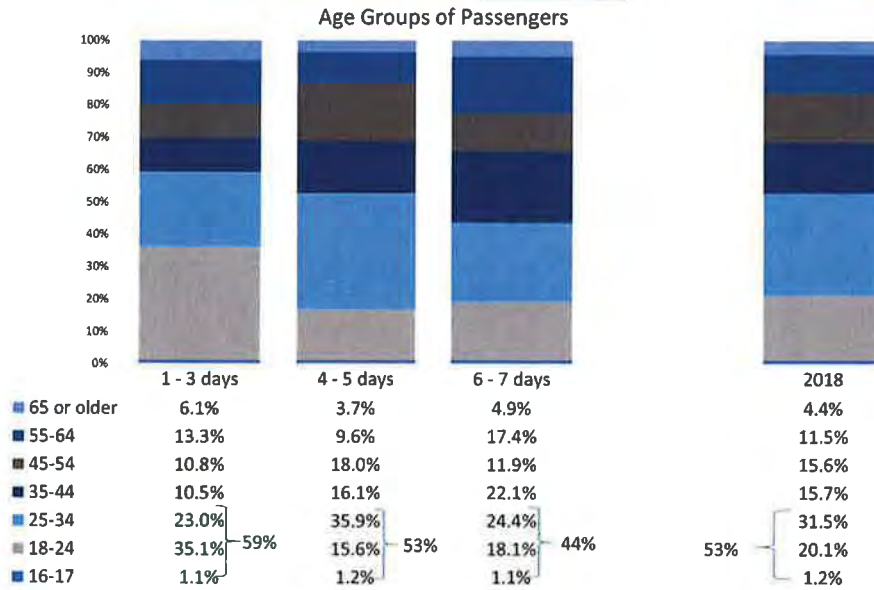
In 2018, 41% of the respondents identified themselves as Caucasian/White. Another 33% identified as African American/Black, 13% as Asian, 6% Hispanic and 2% Native American, for a total of 54% minority ridership.

The "Other" category (4%) allowed for a handwritten response. But the write-ins were predominantly expressions of nationality or cultural groups (Hawaiian, African, Middle Eastern, Turkish, Black Hebrew, etc.) or notations such as "biracial," or sardonic (e.g. Human) and in this context are not at all helpful.

The distribution of ethnicity differs somewhat among the rider segments, with one-to-three-day customers more likely (51%) to identify as Caucasian/White compared to four-to-five-day customers (43%) or six-to-seven-day customers (18%). The more frequently a customer uses GoTriangle in a typical

week, the more likely he or she is to identify with a minority ethnic group. Of the one to three day riders, 47% identify as members of a minority racial / ethnic group (excluding "other"), while of the four to five day riders, the comparable percent is 57%, and for six to seven day riders, 75%.

Figure 28 Age of Customers



Age of Customers

Like most bus transit systems in the United States, GoTriangle has a young ridership. Of all GoTriangle riders, over half (53%) are under the age of 35. This percentage may actually underestimate the youth somewhat because for reasons of data validity and ethical practice, we did not attempt to survey anyone who appeared to be younger than 16.

The age distributions differ somewhat among the three

rider segments. The most notable variation is in the total percentage of the ridership under or over the age of thirty-five. Among the six-to-seven-day customers the percentage younger than thirty-five is 44%. Among the four-to-five-day customers, the percentage is 53%. The one-to-three-day customers fall above with 59% in that age group. This youthful age characteristic reflects the greater proportion of students (42%) in the one-to-three-day category that we saw earlier in Figure 20.

Age Profile of Transit Customers Nationally

Figure 29 demonstrates that nationally, the age distribution among GoTriangle customers has some similarities to the age distribution among bus system customers in general, but GoTriangle is also rather different in some respects.

- Nationally, and at GoTriangle, 22% of bus customers are under the age of twenty-five.
- The major difference between the national and GoTriangle figures is in the 25 to 34 year old range. Nationally, 21% are between twenty-five and thirty-four, but among GoTriangle riders 31% are in this age range.
- In all age ranges above 34, the national bus ridership has a slightly larger percentage of the ridership.

Figure 29 Age Profile of Transit Customers Nationally (APTA, op cit)

Comparison of Rider Age Profile of GoTriangle Riders and Public Bus Transit Riders Nationally

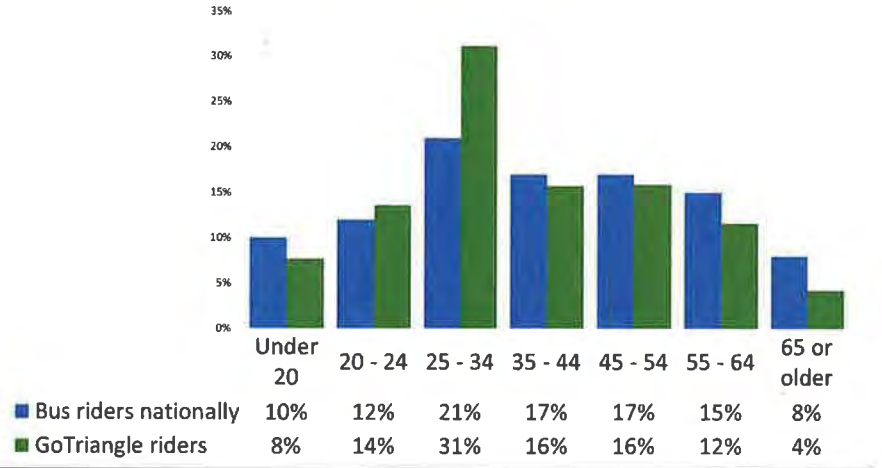
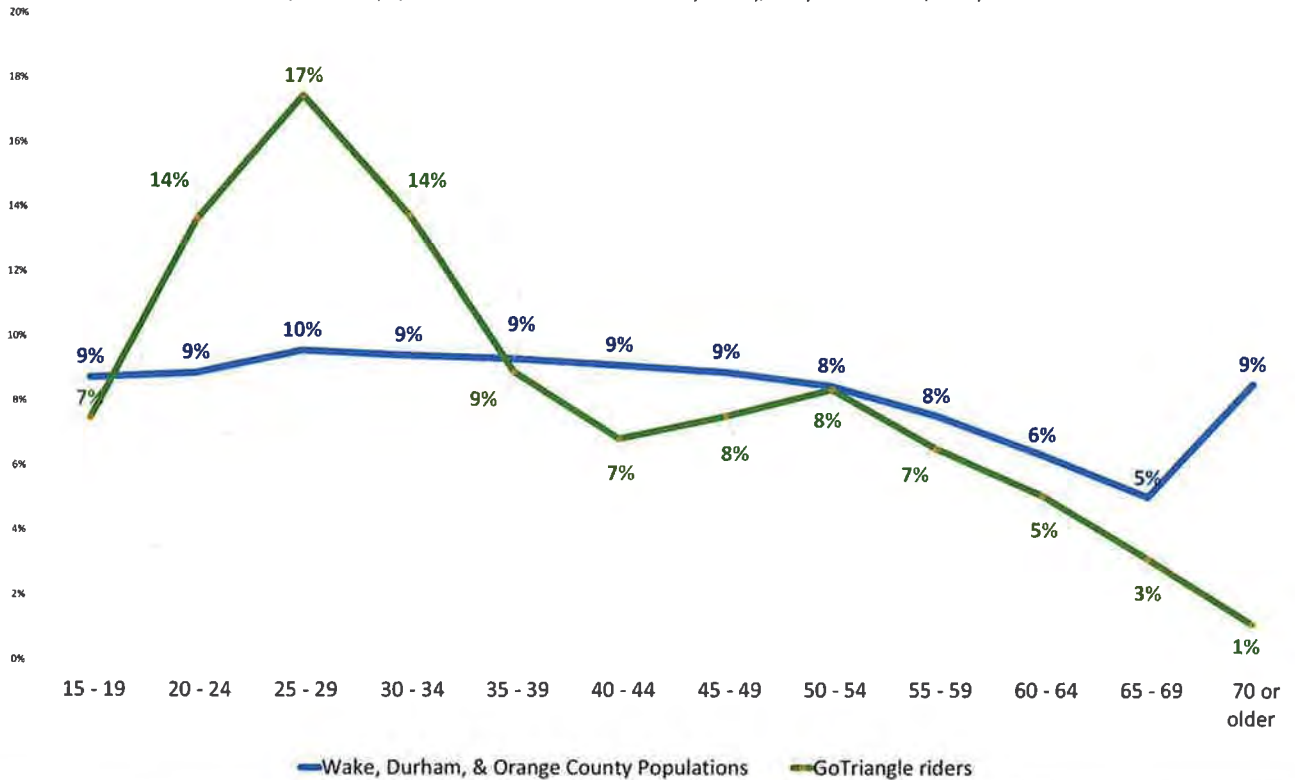


Figure 30 Age of GoTriangle Customers and the Wake, Durham, & Orange County Populations

Age Distribution of GoTriangle Riders and Wake, Durham, & Orange County Populations 15 and Older
(Source of population data: American Community Survey, five year estimates, 2017)

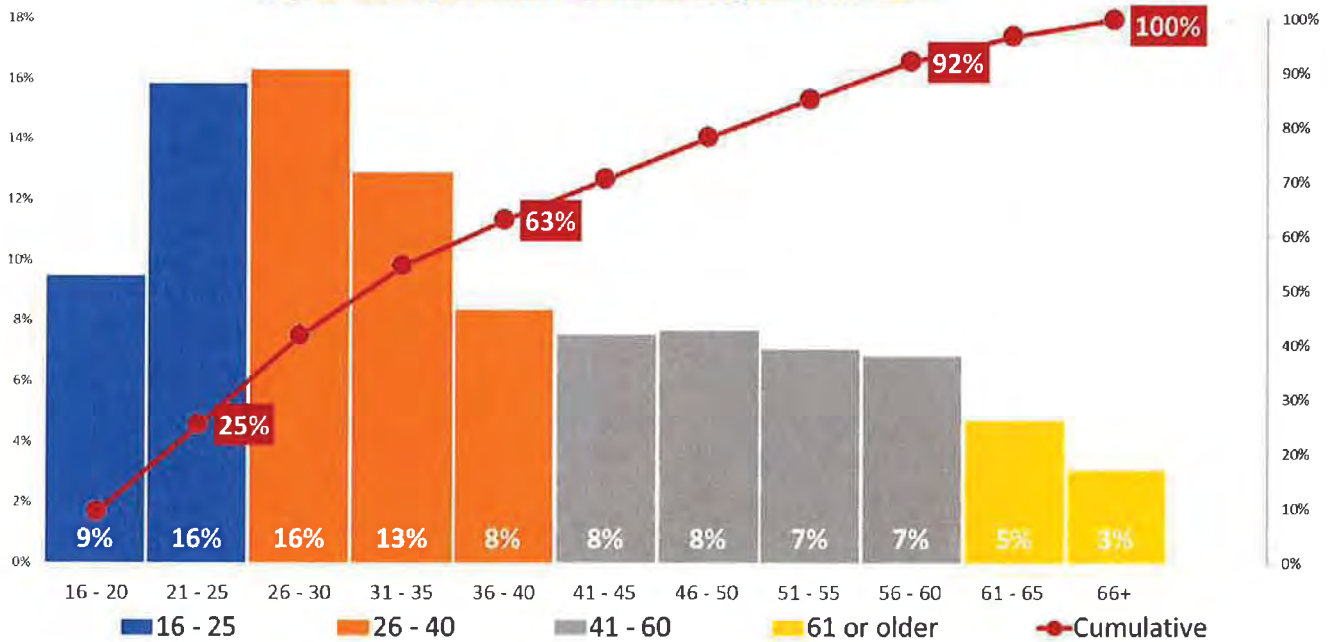


Age of GoTriangle Customers and the Wake, Durham, & Orange County Populations

Relative to the percentages in each age group among the Wake, Durham, & Orange County Populations fifteen and older, GoTriangle ridership diverges most in the age ranges from twenty-five to twenty-nine, and above fifty-five. The population in the twenty-five to twenty-nine year old age cohort accounts for 10%, while in the ridership it accounts for 17%. And at the age of seventy and older, the percentage of the population is 9% while among riders it is 1%. The percentages converge between the ages of thirty-five and thirty-nine, and once again between ages fifty and fifty-four. but once the age curves cross between the ages of thirty-five to thirty-nine, the percent in each age range among the GoTriangle ridership is never higher than the general population.

After the age of fifty, the two populations follow similar gradual downward trajectories until the age of 65 (Baby Boom) when the percentage of the general population above 65 rises to 9% while the percentage among riders in that age-range falls sharply to 1%.

Figure 31 Age Profile of GoTriangle Customers



An Age Profile of GoTriangle Customers

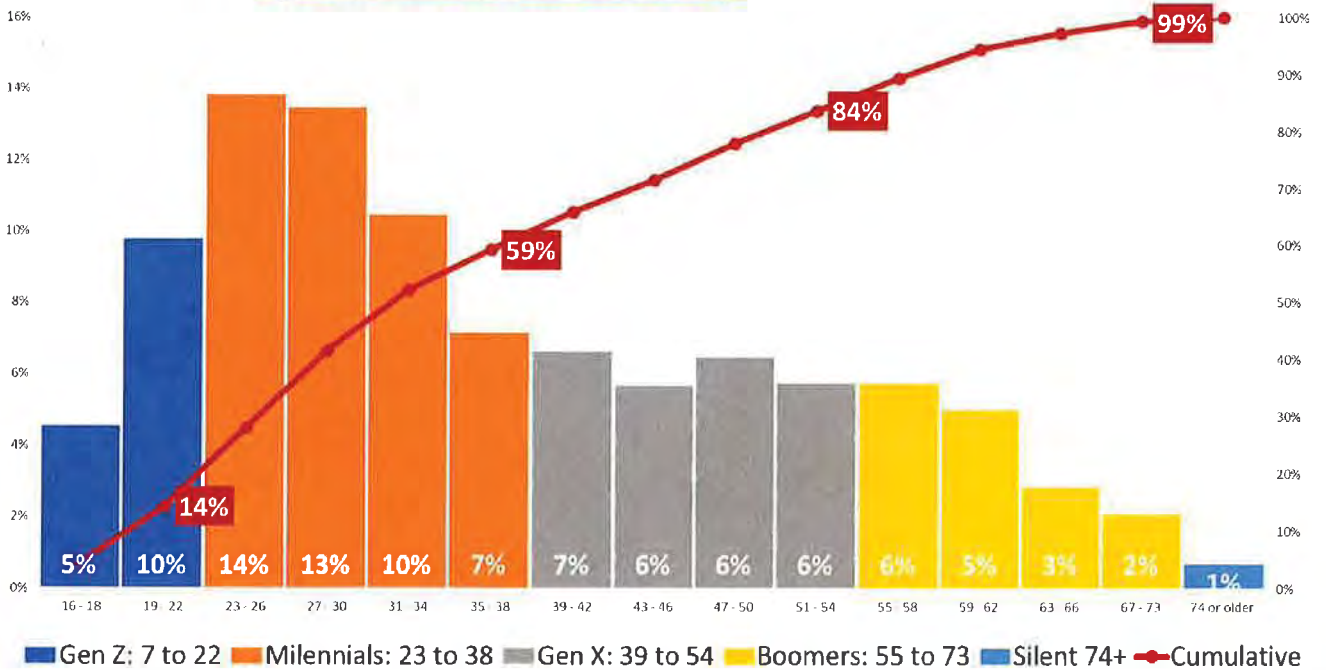
A quick glance at the chart above tells an important story about the age of GoTriangle ridership: Riders tend to be young. One-fourth (25%) of GoTriangle riders are twenty-five or younger. Sixty-three percent (63%) are forty or younger.

In several studies of transit customers in other cities, CJI has found that the age profile of any given system’s bus ridership tends to follow an age progression similar, in very general terms, to that shown above in Figure 31, but with one major exception. Generally, about one-fourth to one-third of ridership falls into a youthful cohort that is often in school or college preparing for work-life and ranging in age from sixteen to approximately twenty-five. Among customers of most systems, after the age of twenty-five the percentage of transit customers in the next five year age span tends to drop off quickly. Among GoTriangle riders, however, the drop-off does not occur until the age of thirty.

After the age of twenty-five or in the case of GoTriangle, the age of thirty, the percentage of riders in each age group tends to decrease, a decline that suggests that with increasing age, more and more customers are ceasing to use transit, probably because they are entering a career phase of life, earning more and often buying a vehicle.

After a decline between the mid to late twenties until about the age of forty, the percent in each age group tends to stabilize. Then, after the age of 60, the percent of ridership again tends to fall off and stabilize at a low level as people retire.

Figure 32 Generations and Ridership



Generations and Ridership

For purposes of visualizing the age characteristics of the GoTriangle customer base, another way to think about the age distribution of the ridership is to apply the age-ranges popularly used to describe

generational groups. We have used definitions proposed by Pew Research Center². The age cohorts used by PEW and those in Figure 32 do not entirely correspond because while Pew defines Gen Z as between the ages of seven and twenty-two, the GoTriangle survey interviewed no one below the age of sixteen. Also, while Baby Boomers are said to be no older than seventy-three, there are too few riders in the survey above that age to create a separate group for the older generation (“The Silent Generation”) and they are grouped with the Boomers for purposes of the chart. However, the PEW definitions provide an adequate guide.

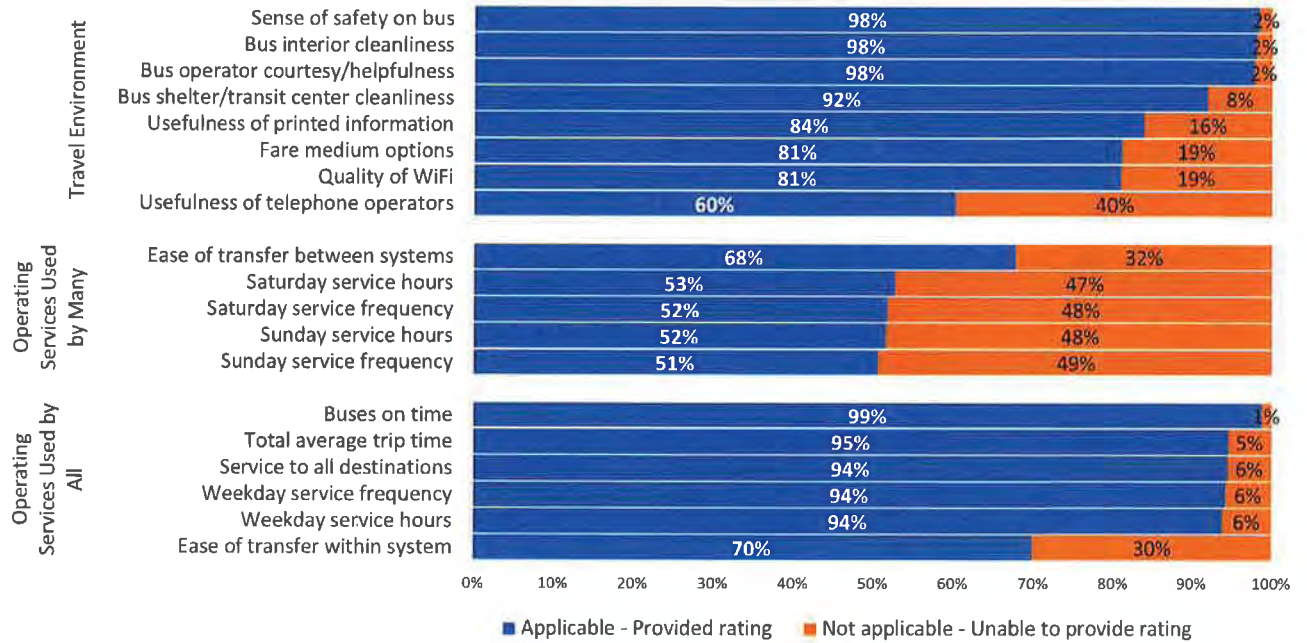
In Figure 32, we see a pattern very similar to that presented in Figure 31. Both charts make the point that a disproportionately large proportion of the ridership is young. In the case of generations, the youthful Gen Z and Millennial generations account for more than half of the total ridership (59%).

² See <http://www.pewresearch.org/fact-tank/2019/01/17/where-millennials-end-and-generation-z-begins/>

Customer Satisfaction

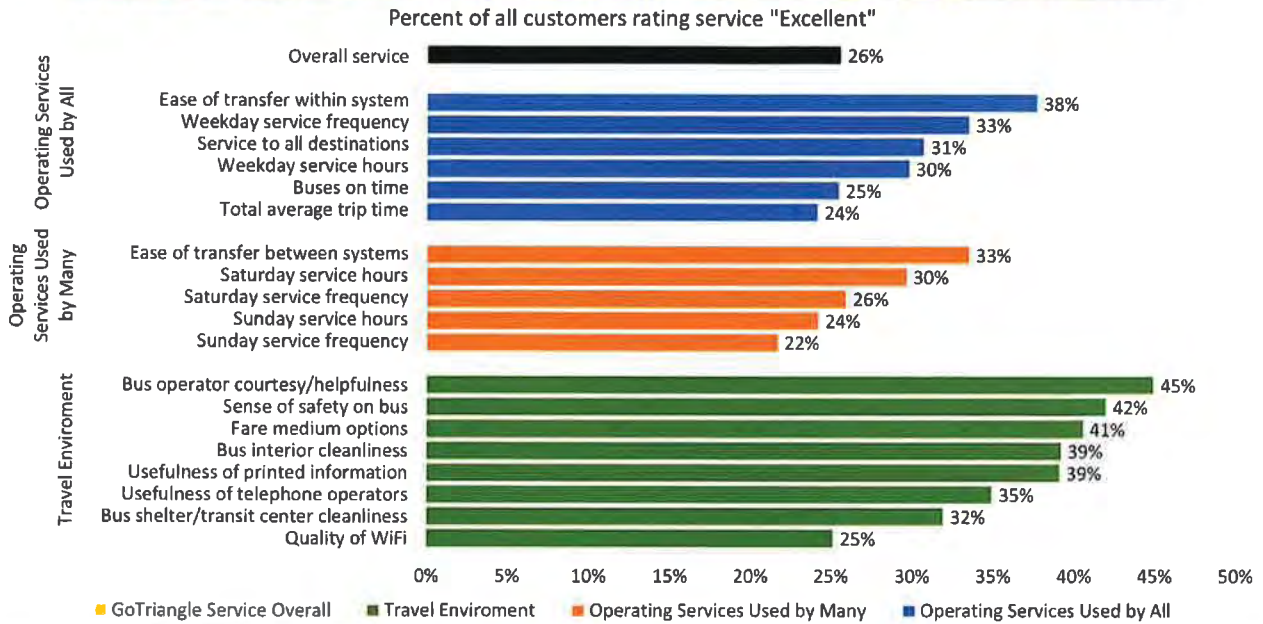
Figure 34 Services Included in the Survey, Grouped by Type and Showing Percentage Unable to Provide a Rating

Percent of riders providing a rating vs those saying that this aspect of service was "Not applicable" to them



Services Included in the Survey, Grouped by Type and Showing Percentage Stating that the Service was not Applicable to Them

Figure 35 Scores of "Excellent" in 2018 on Individual Components of GoTriangle Service



Rating Scores: Scores of "Excellent" in 2018 on Individual Components of GoTriangle Service

Figure 35 above presents a first look at customer rating scores for individual elements of service. This chart includes only the top score of seven, or "Excellent," on the seven-point scale.

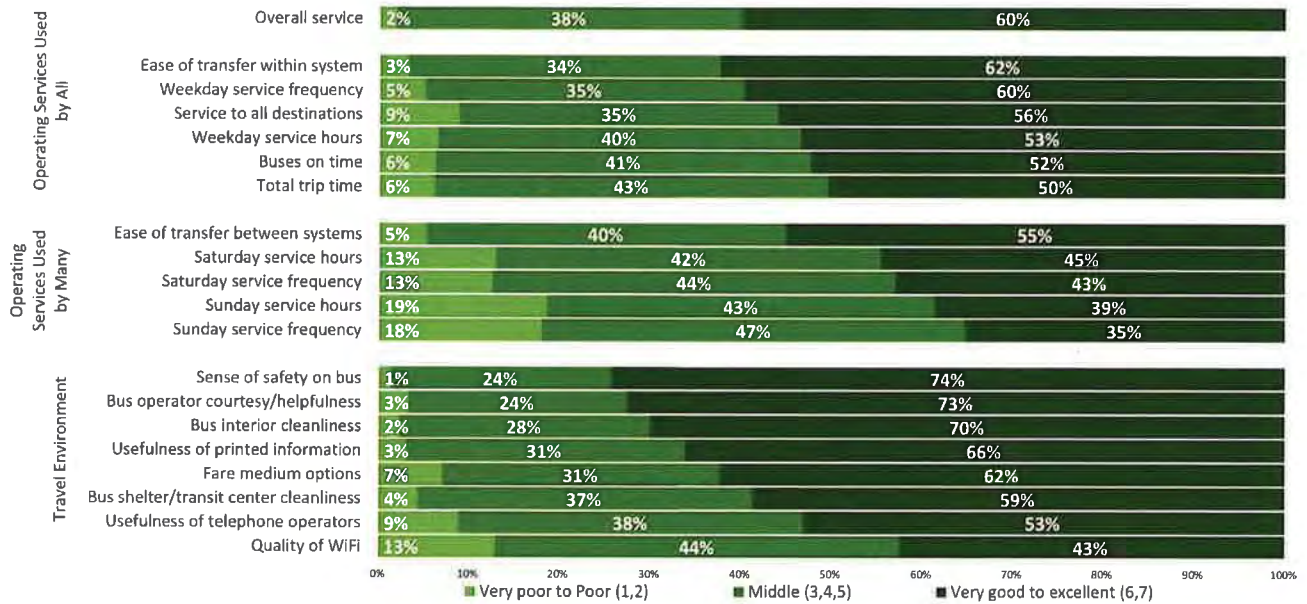
Like Figure 34, Figure 35 is organized by the type of service being rated. At the top of the chart are the operational services fundamental to all customers. Each of these has more than 30% scoring it as excellent. Ease of transferring within the system, Weekday service frequency, and coverage ("Service to all destinations you want to get to") have the highest percent excellent in the high utilization operational group, with 38%, 33%, and 31% excellent, respectively. Weekday service hours finds nearly one third of customers rating it as excellent (30%). On time performance and total time required for a trip lag right behind coverage at 25% and 24%, respectively.

Operational aspects of service that are used by fewer customers than other services, tend to have somewhat fewer ratings of excellent than the more nearly universally used service elements⁵. This is particularly true for weekend service. Transferring between systems (33% excellent) is the one element included in this set that does not involve weekend service. It is in this set because 32% said the question did not apply to them, implying that they do not make such inter-system transfers in a "typical week." Saturday service hours also received excellent ratings by nearly one third (30%). Saturday service frequency falls slightly below that level at 26%. The two other service elements in this set both involve Sunday service, and both get scores of excellent by fewer than one quarter of the customers, 24% and 22% for both service span and frequency respectively.

The third set of services involve the environment in which GoTriangle customers travel. Of the eight services included in this set, three get excellent scores by more than 40% of the respondents. The

⁵ Note that the percentage is based on only those who were able to provide a rating, not the total sample so that the percent "excellent" is not falsely reduced by inclusion of those who answered "not applicable" in the denominator.

Figure 36 Distribution of Grouped Service Rating Scores

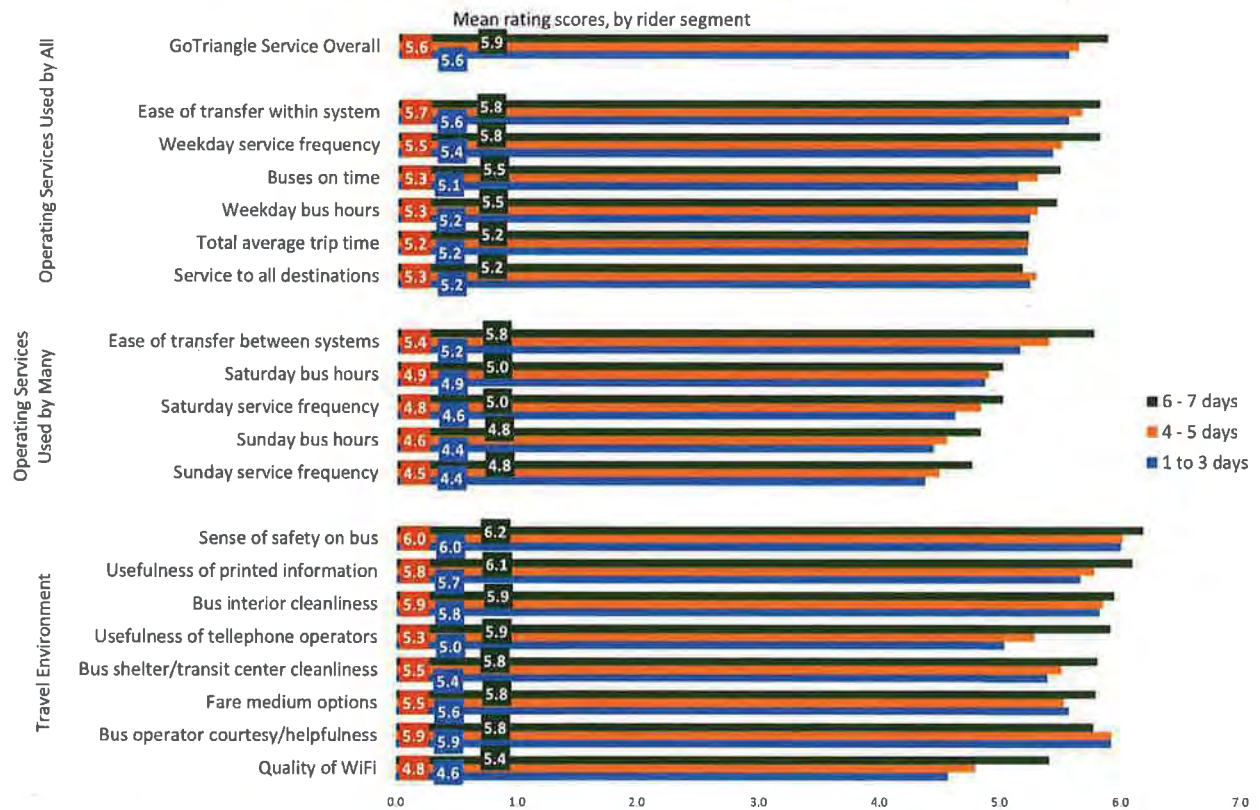


Service Rating Distributions

The previous chart, Figure 35, showed the top percentages on the seven-point scale. However, so that we can see what the balance is between positive and negative ratings, it is important to also consider the distribution of scores within the full 1 – 7 range.

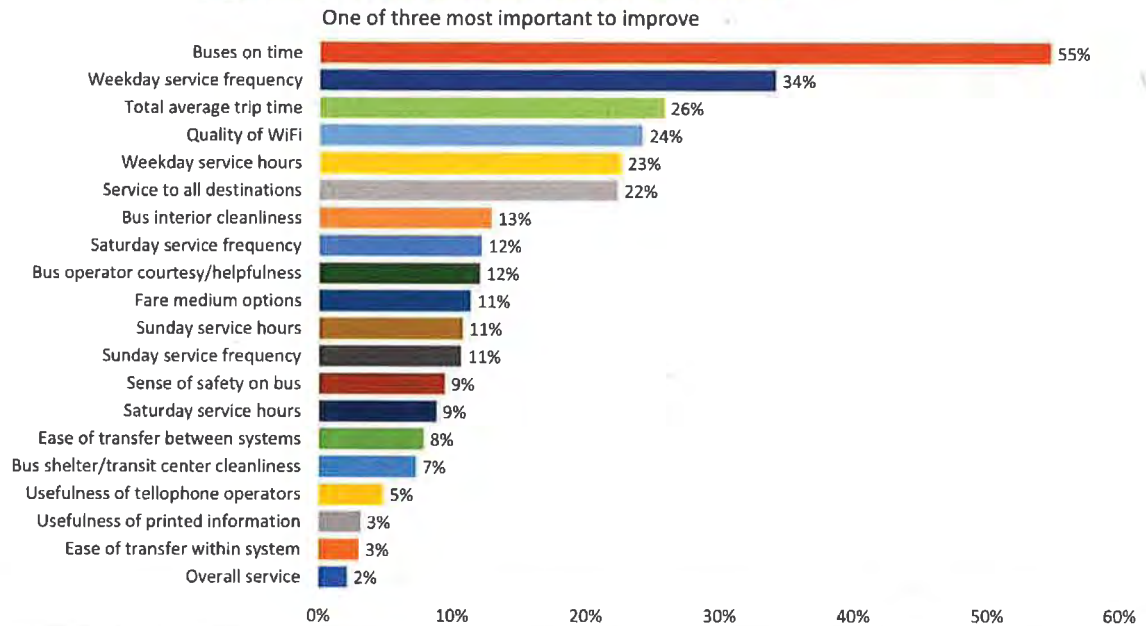
To simplify the chart showing the distributions, the scores of 1 to 7 have been combined into three sets as shown in Figure 36 above. The top two positive scores (6 and 7) are combined as are the bottom two scores (1 and 2). The combined middle scores of 3, 4, and 5 can be considered

Figure 37 Comparing Ratings among the Segments Using Mean Scores



Comparing Ratings among the Segments Using Mean Scores

As measured by the mean score, the rating scores of three segments tend to be in general agreement. This tendency for the rider frequency segments to agree in their ratings is indicated by two characteristics of this chart. First, within each of the three service types, the rank-order of

Figure 38 Most Important Element to Improve

One way to prioritize: Ask Customers “What Are the Three Most Important Services to Improve?”

Fifty-five percent (55%) of GoTriangle customers indicate that having the buses run on-time is one of their top three improvement priorities.

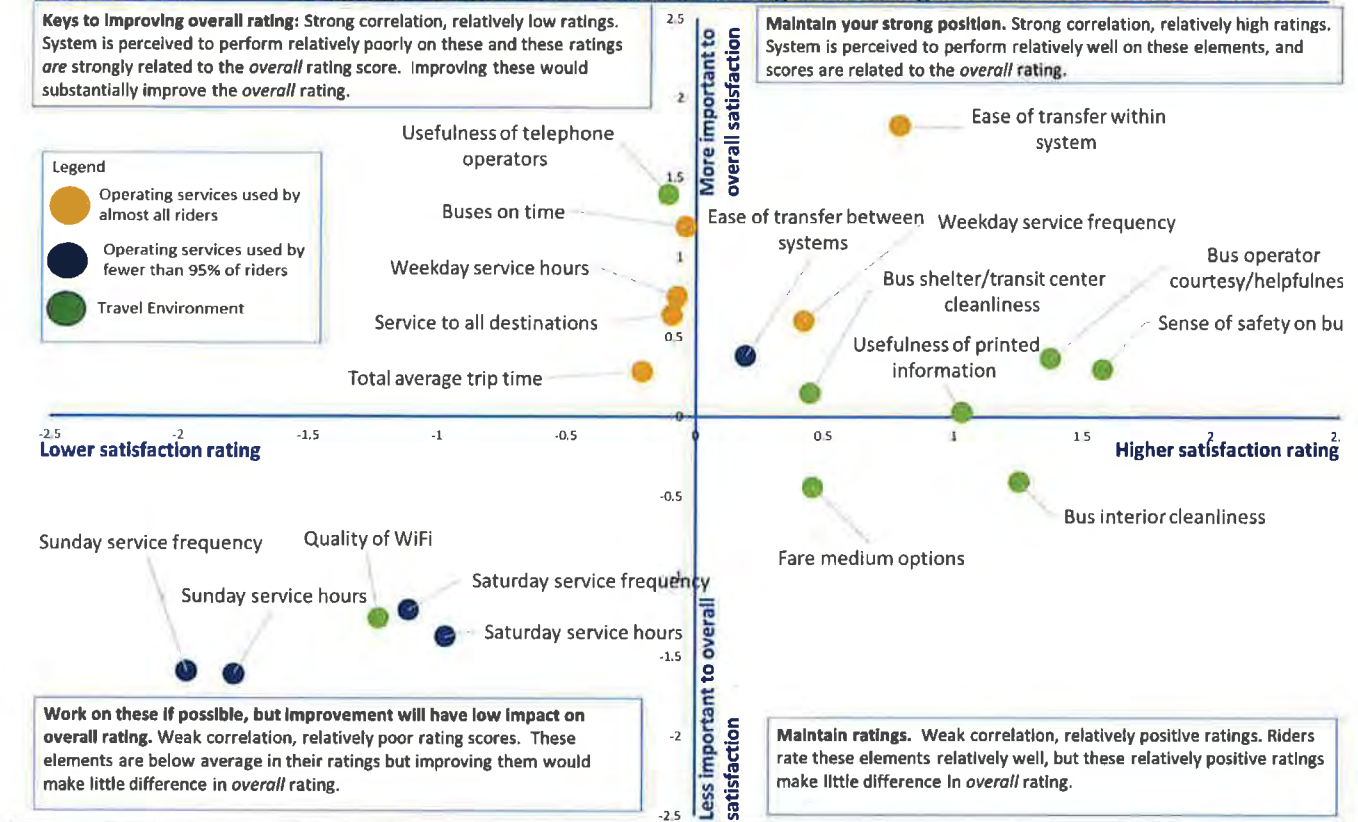
It is important to keep in mind that the customer belief that on-time performance must be improved is a customer *perception*, not a measurement-based observation. Customers themselves will often arrive at their stop early, marginally on time, or a bit late for their bus and perceive that it is the bus that is off schedule. They may also not know the relationship of their stop to a time point. Thus, their perception and the reality can be quite different.

To the extent that more people begin to use real-time transit apps for bus arrival information, as 62% now do (see Figure 40), that information will decrease the anxiety of waiting and will help reduce the perception of a lack of on time performance. This assumes, of course, that the “real-time” information tends to be accurate. In addition, greater frequency will have a similar effect because even in the absence of real time information, frequent service creates certainty that the next bus will be coming soon.

The next closest priority, “Weekday service frequency” is rated in the top three by 34%. This is a bit odd because weekday service frequency was among the highest rated aspects of GoTriangle service. This is a good illustration of a situation in which the high ratings indicate satisfaction, but not an endorsement of service as it is, since – especially with the kind of middle-class clientele that used GoTriangle – there is always a perception that there is room for improvement.

The third and fourth in the rank order of customer service improvement priorities, are “Total average trip time” (26%) and “Quality of WiFi” (24%)

Figure 39 Relationship between Overall Performance Rating and Ratings of Individual Service Elements



Relationship between Overall Performance and Individual Service Elements

In the chart, the location of a service vertically, up or down along the vertical axis indicates the strength of its correlation with, and presumably influence on, the overall rating for GoTriangle service. The higher on that axis, the more important we can assume that element is in influencing the score for service overall. The lower on the line, the weaker it is. The horizontal axis indicates the rating score for the individual element of service relative to the rating of all rating scores. The farther to the left, the poorer the rating compared to the average of all ratings, and the farther to the right, the better the rating compared to the average of all ratings. The two lines cross at the mid-points of the scores.

In considering Figure 39, keep in mind that the position of a service element in the matrix is based on its rating relative to the average for all scores. For example, a service element appearing at the right means that it is rated better than the average of all service elements. If, for example, the average score for all nineteen service elements were, say, 3.0, and the score for a specific element were 4, it would have a relatively positive score in spite of the fact that in absolute terms on a scale from 1 – 7, a 4 would be a neutral score, not a highly positive score. It would be, in short, better than average⁶.

TOP, BOTTOM, LEFT, RIGHT

- Services appearing above the horizontal line are more important to the overall rating of GoTriangle service than those that appear below the line, those that appear below the line are less important.

⁶ The statistic is called the Z-score in statistics jargon and is based on the number of standard deviations from the mean for both the correlation and the satisfaction score. The scores from -2.5 to +2.5 shown on the axes are counts of the number of standard deviations from the mean.

- Services appearing at the right of the vertical line are rated better in quality than the services as the left of the line. The closer to the far right, the better the rating; the closer to the far left, the worse the rating.

Elements in the upper right of the chart are currently helping to boost the overall GoTriangle service rating by being better rated than the average of all nineteen elements of GoTriangle service, while others (top left quadrant) are currently detracting from it. It is elements in the latter group that require particular attention given that the objective is to improve overall customer ratings, a proxy for customer satisfaction. Elements in the lower left of the chart receive relatively poor performance scores but have relatively little influence on the overall score. Similarly, elements in the lower right quadrant have relatively high rating scores, but they too have little statistical relationship to the overall score and can be assumed to have little influence on it.

COLOR CODING SHOWS THE LOCATION OF THE SERVICE TYPES IN THE MATRIX

Notice the color coding of the service elements:

- All the aspects of service we have labeled “Operating services used by almost all riders” are *above* the horizontal line that indicates average importance to the overall service rating. This means that they are above average in their importance to the overall score.
- Of the five elements we have labeled “Operating services used by fewer than 95% of riders,” four are *below* the line of average importance to the overall score, and one, Ease of transferring among area systems, is above the line.

THE UPPER LEFT QUADRANT: IMPROVING THESE WOULD MOVE THE OVERALL RATING NEEDLE THE MOST

Improving service and thus, presumably, the ratings of the five elements in the upper left quadrant would have the greatest positive impact on the rating of GoTriangle service overall. Service coverage (“Service to all destinations”), Buses running on time, the availability of better weekday service hours, the usefulness of telephone operators, and length of trip all are fundamental aspects of service, and all appear in this quadrant. Buses running on time is a perennial desire of transit customers and is often found in this position in the matrix. In addition, it was clearly the top priority (55%) when respondents were asked to name the top three aspects to improve.

It is important to note how close these service elements are to the vertical line that divides the quality rating at the average between higher and lower – i.e., they are all roughly average, and not dramatically below average.

Of course, none of these five services in the upper left quadrant can be easily changed.

THE UPPER RIGHT QUADRANT: MAINTAIN THIS RELATIVELY STRONG POSITION

At the upper right are seven elements of service that represent relative strengths among all GoTriangle services because they score relatively well and they are important to the overall GoTriangle rating. Compared to all other aspects of GoTriangle service, these services are relatively strong and support the current overall positive rating. One of these, Ease of transfer between systems, is an operational service used by somewhat fewer riders than other services. Two of the elements in this quadrant are operational services used by almost all customers: Ease of transferring within the GoTriangle system, and Weekday service hours. Four relate to the travel environment: Bus operators’ courtesy/helpfulness, the Sense of safety on the bus, the Usefulness of the printed information provided by GoTriangle, and the Cleanliness of bus shelter and transit centers. This is an interesting mix of relative strengths, combining the perennial strength of interactions with the bus operators (almost always in this quadrant in such surveys), information services, bus shelter cleanliness, and a sense of

Mobile Communication

Appendix A: Questionnaire

Por favor, díganos sobre cómo utiliza GoTriangle

En los últimos 30 días, cómo calificaría a GoTriangle en los siguientes servicios...
(Círcule una calificación para cada pregunta o marque la casilla que indica que no se aplica a usted)



	Excelente	Bastante	Normal	Muy mal	No se aplica a usted			
1. Autobuses transitan a tiempo	7	6	5	4	3	2	1	<input type="checkbox"/>
2. Frecuencia de servicio entre semana (Lun-Vie)	7	6	5	4	3	2	1	<input type="checkbox"/>
3. Frecuencia de servicio el sábado	7	6	5	4	3	2	1	<input type="checkbox"/>
4. Frecuencia de servicio el domingo	7	6	5	4	3	2	1	<input type="checkbox"/>
5. Horas que autobuses operan entre semana (Lun-Vie)	7	6	5	4	3	2	1	<input type="checkbox"/>
6. Horas que autobuses operan el sábado	7	6	5	4	3	2	1	<input type="checkbox"/>
7. Horas que autobuses operan el domingo	7	6	5	4	3	2	1	<input type="checkbox"/>
8. Tiempo total requerido para hacer su viaje regular	7	6	5	4	3	2	1	<input type="checkbox"/>
9. Disponibilidad del servicio a todos los destinos que desea llegar	7	6	5	4	3	2	1	<input type="checkbox"/>
10. Facilidad de transferir dentro del sistema GoTriangle	7	6	5	4	3	2	1	<input type="checkbox"/>
11. Facilidad de transferir entre GoTriangle y otros sistemas de tránsito de autobuses del área	7	6	5	4	3	2	1	<input type="checkbox"/>
12. Limpieza del interior del autobús	7	6	5	4	3	2	1	<input type="checkbox"/>
13. Limpieza de los albergues de autobús y de centros de tránsito	7	6	5	4	3	2	1	<input type="checkbox"/>
14. Su seguridad personal de otros pasajeros en los autobuses	7	6	5	4	3	2	1	<input type="checkbox"/>
15. Cortesía y amabilidad de operadores de autobús	7	6	5	4	3	2	1	<input type="checkbox"/>
16. Utilidad de la información de los operadores de 485-RIDE	7	6	5	4	3	2	1	<input type="checkbox"/>
17. Utilidad de la información impresa tal como horarios o folletos	7	6	5	4	3	2	1	<input type="checkbox"/>
18. Formas disponibles para que pague su tarifa de autobús	7	6	5	4	3	2	1	<input type="checkbox"/>
19. Calidad del servicio de internet inalámbrico (WiFi)	7	6	5	4	3	2	1	<input type="checkbox"/>
20. Calidad de los servicios de GoTriangle en general	7	6	5	4	3	2	1	<input type="checkbox"/>

21. De los servicios en las preguntas 1 a 19 anteriores, ¿por favor enumere los tres más importantes para mejorar? 1º más importante 2º más 3º más

22. ¿Cuántos días en una semana típica usa GoTriangle? (Círcule sólo uno)

1 2 3 4 5 6 7

23. ¿Cuál es el ÚNICO propósito principal para el que usa los autobuses de GoTriangle más seguido? Es ir hacia o desde... (Marque sólo uno)

- 1 Trabajo 2 Escuela/colegio 3 Compras
4 Médica/dental 5 Recreación/evento 6 Otro _____

24. Comparado con hace un año, ¿actualmente usa GoTriangle... (Marque sólo uno)

1 Más a menudo 2 Lo mismo 3 Menos 4 No lo usaba hace un año

25. Para su tarifa en el primer autobús GoTriangle que abordó en este viaje, usted... (Marque sólo uno)

- 1 ... pago tarifa en efectivo solo por este viaje 2 ... compro el pase de 1-día en el autobús
3 ... compro el pase de 1-día con anticipación 4 ... uso un pase de 7 o 31-días
5 ... uso identificación de universidad u otra 6 ... uso un GoPass

26. ¿Cómo llegaste a la parada donde subiste a este autobús de GoTriangle? (Marque sólo una)

- 1 Caminado 2 Bicicleta 3 Condujo
4 Uber o Lyft 5 Lo lleva familia/amistad 6 Otro autobús de GoTriangle
7 Autobús que no sea de GoTriangle 8 Otro: _____

27. En una semana típica, ¿que sistemas de autobús sueles usar? (Marque todo lo que corresponda)

- 1 GoRaleigh/GoRaleigh Access 2 GoTriangle/GoTriangle Access
3 GoDurham/GoDurham Access 4 GoCary/GoCary Door-to-Door
5 Chapel Hill Transit 6 Duke Transit 7 Wollina

28. Si usa un teléfono celular, ¿usa una aplicación móvil de tránsito local en 68? (Marque sólo una)

- 1 Sí 2 No 3 No uso teléfono celular

29. En los últimos 30 días, ¿con qué frecuencia usó Uber o Lyft o una compañía de viaje compartido similar? (Marque sólo una) 0 veces 1 vez 2 veces 3 veces 4 o más veces

Si usó Uber, Lyft o un servicio de viaje compartido similar... (Marque sólo uno)

- ¿Lo usaste en combinación con un viaje en autobús en GoTriangle? 1 Sí 2 No 3 No aplica
¿Lo usaste para reemplazar un viaje en autobús en GoTriangle? 1 Sí 2 No 3 No aplica

30. ¿Cuántos años tienes? _____ Años

31. Marque todo lo siguiente que se aplique a usted. Eres tú: (Marque todo lo que corresponda)

- 1 Empleado tiempo completo 2 Empleado medio tiempo 3 Desempleado y buscando trabajo
4 Amo/a de casa 5 Estudiante 6 Jubilado
7 Puesto de voluntario

32. ¿Tiene una licencia de conducir válida? (Marque sólo una) 1 Sí 2 No

33. ¿Cuántos automóviles u otros vehículos hay disponibles para su uso? (Círcule sólo uno)

0 1 2 3 o más

34. ¿Te identificas como... 1 Masculino 2 Femenino 3 Prefiero no responder

35. ¿Te consideras ser... (Por favor marque todo lo que aplica a usted)

- 1 Afroamericano/Negro 2 Asiático 3 Caucásico/Blanco
4 Hispano 5 Indio Nativo Americano 6 Otro: _____

36. ¿Qué idioma habla más a menudo en casa? (Marque sólo uno)

- 1 Inglés 2 Español 3 Otro: _____

37. ¿Cuál es su ingreso familiar anual en total? (Marque sólo uno)

- 1 Menos de \$10,000 2 \$10,000 a \$14,999 3 \$15,000 a \$19,999
4 \$20,000 a \$24,999 5 \$25,000 a \$34,999 6 \$35,000 a \$49,999
7 \$50,000 a \$74,999 8 \$75,000 a \$100,000 9 Más de \$100,000

Comentarios: _____



Appendix B: Rider Comments

105	I live in West Raleigh and connect from the #12 to #105. It's ok but difficult to catch sometimes. I also see a lot of people connect from #12 to #4, which could also vast improvement. Generally, the transfers between West Raleigh services could use improvement so travel times are more efficient.
105	It is a refreshing service that has been very helpful for me.
105	On time buses are a challenge, if you miss your connection. Operators should always smile!
105	Route is needed on Sunnybrook road and Rock Quarry near Costal Union amphitheater.
105	Thank you. GoPass was a good idea.
105	The buses need to be on time and the bus drivers need to be more helpful and more respectful.
201	Bus #300 is never really on time in afternoon. Last bus to North Raleigh is at 6 PM. That's a little early. GoTriangle doesn't really cover Morrisville. #300 doesn't run throughout the day.
201	Es un servicio excelente. Y necesario
201	GoTriangle is fine for the most part, although would like to see some type of service from Glendower and Leesville to a stop to connect to service. The on-demand service needs major improvement.
201	Good job. Could not get to work or any other place without the service.
201	I am satisfied with what I have seen. It's just if one bus is late, they're by no way obligated to hold a specific bus which makes me late and really frustrated.
201	On-demand service is horrible.
201	On-demand short service is not reliable. I have been left at work twice because the shuttle did not come.
201	The service is good. I read on the #201 bus. I wish in the morning you would avoid unnecessary stops at empty bus stops or in order for the driver to meet the time sequence. It's annoying and a waste of time.
201	The triangle bus #100 should stay on later for people who need to get to Raleigh after work.
300	Better weekend service.
300	Everything is fine.
300	Hard to reach help when trying to figure out which bus to use. Learning the app for Android.
300	I would like to see extended hours of service and early AM hours from 5 AM to 1 AM, five days a week. Also, more bus shelters with maps.
300	It takes 2.5 hours to get from Cary to Durham, which isn't that far away. Four hours to Hillsborough. I'd like to see the towns and cities of the triangle better connected.
300	Light rail or train between Raleigh and Durham would be great.
300	Not enough service to and from Apex and buses stop running to Cary too early.

400	Extend peak service for loop on the #400 to all-day. Lots of students live off South West Durham Drive. Please!
400	I appreciate the convenience of GoTriangle between Durham and Chapel Hill, but the routes from North Durham downtown and Durham Raleigh are prohibitively long. A single midnight bus along each express route would also be nice.
400	I like it but the price should be less for my age and run on Sundays.
400	I love riding the TTA. Durham bus...not so much.
400	I use Park and Ride from Patterson Place in the AM. Buses are always on time. On my way home I've noticed buses between 6-7 PM never come on time. I have waited for over an hour on multiple occasions. On my way home I catch the #400 from in front of Health Sciences in Library. Stop #3222.
400	I would like more hours or frequency of service during the week. There are some spots near to Durham Drive that the bus just stops few times (#400 bus).
400	If you cancel the route on South West Durham Drive, I will stop riding the bus. So, I probably will not be riding next year. Where are all the people going to park at the Park and Ride on Witherspoon? Poor planning in my opinion.
400	I'm fortunate enough to use my partners university ID. I couldn't afford a pass otherwise.
400	Increase the number of buses on route (busy). Drivers should come to slower stops. Online surveys.
400	Lights out #405 needs Sunday service.
400	Love it. Wish it ran more frequently to Patterson Place Park and Ride (route #400) to UNC.
400	More frequent #406/405 on weekdays.
400	My main concern is availability. I ride route #400 which goes down University Drive during peak time. This might change although I have a way to get somewhere to get on there, that stop is usually crowded and getting rid of that peak hour route would result in it being even more crowded.
400	Need better method for real time updates on delays. I've missed many meetings or events due to late buses and would appreciate you being able to provide ETA vs. guessing if a bus will come.
400	Operators are not very helpful.
400	Overall its fine and I'm fine with waiting longer. Just wish buses didn't just randomly not show up at the end of work. Today's 4:33 PM #400 at UNC hospital not appearing, as an example.
400	Overall the service is really good. There have been a few drivers who drive too fast today. The bus driver that usually picks up on Morning Drive at 4:35 PM did not show up.
400	Please make bus #400 full path or stops. At least some on Saturday for the Lenox apartments.
400	Service on Sundays could be improved.























420	Have concerns about the #420 route in the 2019 plan.
420	I like the buses at the access to them. Some of the drivers can be a little reckless while driving.
420	I wish the #420 ran on weekends.
420	Please keep Hwy 86 on #420 route. Please keep Home Depot stop. Please consider last bus leaving UNC hospital at 6:20 PM.
420	Very satisfied.
420	Would be nice to have more buses run throughout the day.
570DX	Add more connections to part.
570DX	Try to reach out to towns like Henderson, Louisburg, Oxford, Roxboro, Spring Hope in the triangle region.
58CRX	Combination of Eubanks Park and Ride lot and CRX bus make my long commute so much better than driving.
58CRX	Generally, pretty good about being on time although AM val time normally depends on traffic. They're for a certain time never showed up (specifically at UNC in the afternoons).
58CRX	Great job with bus service. It would be very helpful to me if a CRX bus left CH rail around 9:00- 9:15 AM and if once returned RAL Ch around 1:30 PM.
58CRX	I like to have earlier bus at CRX from Chapel Hill to Raleigh on afternoons.
58CRX	I wish there was more service so that I could go from neighborhood to Eubanks. I wish all the bus stops were covered from the elements.
58CRX	I would like to see frequency of services extended during the week.
58CRX	If you want to compare your survey results to census data, q35 will give you a headache. Try 2 questions for race and ethnicity. Also-buses are too cold often.
58CRX	I'm glad the CRX is available. It gets at least a few cars off the interstate.
58CRX	More CRX buses and more hours.
58CRX	Need larger buses to accommodate growing ridership; like to see move to electric, other enviro-friendly buses.
58CRX	Newer, hard plastic chairs/seat buses should not be used for express buses. Express drivers should be strongly encouraged to make it to transit centers on time for passengers with connecting bus schedules.
58CRX	One more bus at 7:20 AM would be great on weekdays, and one more at 5 PM on weekdays, sometimes it is so crowded.
58CRX	The CRX is getting popular and crowded. It would be helpful if more buses/times were added. Like a bus every 15 minutes instead of 30.

59DRX	First route for a bus must turn on transponder both AM/PM. Some are broken e.g. 2610 if bus does not reliably report its location the service is useless.
59DRX	I enjoy using TTA. Like to commute. Like the sociability. Like the TTA bus drivers.
59DRX	I love having the option to ride the bus- it makes my Durham-Raleigh commute so much more bearable. The Wi-Fi can be really spotty/intermittent, and it would be awesome if that could be improved.
59DRX	I used to use the Transloc app, but it stopped working when I updated my phone - having that app functioning again would be very useful.
59DRX	I wish there was a 7:50 AM DRX bus (7:35-8:05 is 30 minutes).
59DRX	I would love more comfortable buses. More times every 15 minutes at 8 AM and 5 PM.
59DRX	It would be nice to be able to use a credit card to pay the fare (referring to #18).
59DRX	Latasha always shows her professional way. She keeps her calm and smiles when emergencies happened two days in a row. Her driving skills are the top #1 request: stop across Emergency Drive. Operator needs to actively listen to ride. They gave me the wrong info on 10/420 morning at 9:00 AM.
59DRX	Please get all of the 7:00 buses to leave Durham station at 5 after the hour. GoDurham is always late and even with help they can get to the transit center in less than 20 minutes and waiting a half hour in the Durham station is unpleasant.
59DRX	Please set Wi-Fi routers so they are discovered sooner. My computer sees 30 other networks first. Also please work with wireless provider to fix two dead spots (1) Duke St. after leaving Durham station and (2) 147 to I-40 on-ramp. Thanks.
59DRX	Provide more convenient ways to purchase bus passes. Need more creative TV monitor service to increase ridership.
59DRX	The buses frequently do not have the locator on thus making the app useless. All drivers should use shoulders. All drivers should use the proper routes.
59DRX	The DRX drivers are wonderful.
60(WRX)	Need weekend service from Wake Forest to Raleigh.
60(WRX)	The PM #1 (Capital) is awful. It is always late and packed! Sometimes it doesn't ever run every 15 minutes like it is supposed to.
60(WRX)	Would like to have more trips on WRX. Example: mid-day WF to Raleigh and vice versa.
63(KRX)	Enjoy taking the bus. Less stressed than when driving to work.
63(KRX)	I am legally blind and depend on the buses. There are some improvements needed but each year it has gotten better.
63(KRX)	I am very grateful for the Zebulon Werdas bus. Without it I wouldn't be able to get to work! Thank you!

800	The temperature of the bus is so cold sometimes.
800	There has been a large number of route cancellations/changes to routes. Also, the time could be extended on weekends shifts to assist people with less usual schedules.
800	When the app doesn't work & buses are really late. Don't usually have any more lighting at some bus stops. When dark I've been passed before Hwy 54 stops.
805	#805 should run mid-day Monday through Friday.
805	Compared to other bus systems I would say that this company could use help with knowledge of other bus services and bus availability!
805	Excellent services. Always on time at the hospital.
805	I just moved from out of state and I've been riding. What I appreciate in the triangle is the combo of Park and Rides all bus stops.
805	I really appreciate the GoTriangle buses - they run on time and the drivers are always so kind.
805	I ride #805. Catch the bus at Dresden. Would like hourly service between 10 AM & 3 PM. Would use bus on weekends if it traveled Hwy 54 between Hope Valley and Farrington.
805	I wish the #805 ran more frequently throughout the day and had longer hours. It is difficult as a commuter student to have reliable transportation on the #805.
805	I'm happy with GoTriangle overall, the Wi-Fi is awful, however, making it difficult to work while on the bus.
805	More bicycle access on buses.
805	Overall good thanks
RSX	Consider making charge for cash or have ability to pay with card.
RSX	I ride a bike to the bus, and taking my bike with me on the bus is very important too. Occasionally both bike racks are filled when I come to the bus.
RSX	I take RSX. It could be good if it runs over the summer vacation.
RSX	Last week I waited for RSX bus at West Campus Duke, but it didn't come and we paid money to Uber.

APPENDIX D Monitoring Program Results

Monitoring Program Results

2020 Title VI Monitoring Results									
Route	Service Type	Minority ridership 10% greater than system average ¹	On-Time Performance ²	Vehicle Load Factor (out of 1.00) ⁴	Peak Headway ³	Peak Daily Ridership ²	Off-Peak Headway ³	Off-Peak Daily Ridership ²	
100 Raleigh-Airport-RTC	Core	No	91%		0.17	30 min	186	30 min/60 min	338
102 Raleigh-Garner	Regional	Yes	84%		0.12	60 min	72	n/a	n/a
105 Raleigh-RTC	Regional	No	89%		0.22	60 min	218	n/a	n/a
201 North Raleigh-RTC	Regional	No	83%		0.15	30 min	56	n/a	n/a
300 RTC-Cary-Raleigh	Core	Yes	85%		0.17	30 min	324	30 min/60 min	220
301 Cary-Raleigh	Regional	No	91%		0.10	30 min	119	n/a	n/a
305 Lake Pine-Cary-Raleigh	Regional	No	83%		0.12	60 min	96	n/a	n/a
311 Apex-RTC	Regional	Yes	89%		0.12	30 min	85	n/a	n/a
400 Durham-Chapel Hill	Core	Yes	87%		0.16	30 min	369	30 min/60 min	352
405 Durham-Chapel Hill-Carrboro	Regional	No	88%		0.30	30 min	493	n/a	n/a
420 Hillsborough-Chapel Hill	Regional	No	89%		0.22	30 min	184	n/a	n/a
700 Durham-RTC	Core	Yes	97%		0.18	30 min	225	30 min/60 min	221
800/800S Chapel Hill-Southpoint-RTC	Core	No	83%		0.15	30 min	553	30 min/60 min	270
805 Chapel Hill-Woodcroft-RTC	Regional	No	87%		0.14	30 min	352	n/a	n/a
CRX Chapel Hill-Raleigh Express	Express	No	86%		0.30	31 min	370	n/a	n/a
DRX Durham-Raleigh Express	Express	No	85%		0.37	26 min	527	n/a	n/a
FRX Fuquay-Varina - Raleigh Express	Express	No	89%		0.01	60 min	59	n/a	n/a
KRX Knightdale-Raleigh Express	Express	Yes	86%		0.07	60 min	31	n/a	n/a
ODX Orange-Durham Express	Express	No	89%		0.18	60 min	110	n/a	n/a
RSX Robertson Express	Express	No	89%		0.09	30 min	97	60 min	101
WRX Wake Forest-Raleigh Express	Express	No	80%		0.10	60 min	55	n/a	n/a
ZWX Zebulon-Wendell-Raleigh Express	Express	No	85%		0.22	60 min	76	n/a	n/a
System Average		58.0%							

Footnotes

1. Demographic data is from the Onboard Survey 2019
2. On time performance metrics and ridership is from the FY 2019 Bus Service Performance Report
3. Headway information is from January 2019 timetables
4. Revenue miles and passenger miles travelled data is from the FY 2019 Performance Report

Report completed by Jennifer Green, Service Planning

Route	Service Type	Minority ridership 10% greater than		Note	
		system average	White		Non-White
100 Raleigh-Airport-RTC	Core	No	42%	58%	
102 Raleigh-Garner	Regional	Yes	-	-	Route eliminated in August 2019. Demographics from 2016 onboard survey
105 Raleigh-RTC	Regional	No	41%	59%	
201 North Raleigh-RTC	Regional	No	-	-	Route eliminated in August 2019. Demographics from 2016 onboard survey
300 RTC-Cary-Raleigh	Core	Yes	32%	68%	
301 Cary-Raleigh	Regional	No	53%	47%	
305 Lake Pine-Cary-Raleigh	Regional	No	53%	47%	
311 Apex-RTC	Regional	Yes	32%	68%	
400 Durham-Chapel Hill	Core	Yes	32%	68%	
405 Durham-Chapel Hill-Carrboro	Regional	No	41%	59%	
420 Hillsborough-Chapel Hill	Regional	No	71%	29%	
700 Durham-RTC	Core	Yes	23%	77%	
800/800S Chapel Hill-Southpoint-RTC	Core	No	43%	57%	
805 Chapel Hill-Woodcroft-RTC	Regional	No	54%	46%	
CRX Chapel Hill-Raleigh Express	Express	No	72%	28%	
DRX Durham-Raleigh Express	Express	No	54%	46%	
FRX Fuquay-Varina - Raleigh Express	Express	No	61%	39%	
KRX Knightdale-Raleigh Express	Express	Yes	-	-	Route eliminated in August 2019. Demographics from 2016 onboard survey
ODX Orange-Durham Express	Express	No	51%	49%	
RSX Robertson Express	Express	No	-	-	Route eliminated in August 2019. Demographics from 2016 onboard survey
WRX Wake Forest-Raleigh Express	Express	No	61%	39%	
ZWX Zebulon-Wendell-Raleigh Express	Express	No	61%	39%	
System Average		58.0%			

Load Factors

2020 Submission

Route	Rev Mi	Pax Mi	Avg Load	Typ Cap	Load Fact
100 Raleigh-Airport-RTC	333,111	2,035,173	6.11	36	0.17
102 Raleigh-Garner	29,131	126,471	4.34	36	0.12
105 Raleigh-RTC	92,348	599,053	6.49	30	0.22
201 North Raleigh-RTC	45,242	200,324	4.43	30	0.15
300 RTC-Cary-Raleigh	243,256	1,205,824	4.96	30	0.17
301 Cary-Raleigh	71,640	211,350	2.95	30	0.10
305 Lake Pine-Cary-Raleigh	53,910	190,527	3.53	30	0.12
311 Apex-RTC	84,019	165,728	1.97	16	0.12
400 Durham-Chapel Hill	282,956	1,587,330	5.61	36	0.16
405 Durham-Chapel Hill-Carrboro	98,603	1,065,512	10.81	36	0.30
420 Hillsborough-Chapel Hill	76,941	671,392	8.73	40	0.22
700 Durham-RTC	218,181	1,447,235	6.63	36	0.18
800/800S Chapel Hill-Southpoint-RTC	338,302	1,807,627	5.34	36	0.15
805 Chapel Hill-Woodcroft-RTC	108,941	551,072	5.06	36	0.14
CRX Chapel Hill-Raleigh Express	206,028	2,260,126	10.97	36	0.30
DRX Durham-Raleigh Express	228,249	3,010,105	13.19	36	0.37
FRX Fuquay-Varina - Raleigh Express	329,354	136,160	0.41	36	0.01
KRX Knightdale-Raleigh Express	30,507	72,710	2.38	36	0.07
ODX Orange-Durham Express	73,463	470,493	6.40	36	0.18
RSX Robertson Express	102,893	348,616	3.39	39	0.09
WRX Wake Forest-Raleigh Express	49,713	170,906	3.44	36	0.10
ZWX Zebulon-Wendell-Raleigh Express	47,325	370,021	7.82	36	0.22

PASSENGER MILES TRAVELLED

	Weekday	Sat	Sun
100 Raleigh-Airport-RTC	1,533,026	299,847	202,300
300 RTC-Cary-Raleigh	1,052,208	93,915	59,701
400 Durham-Chapel Hill	1,324,838	164,173	98,319
700 Durham-RTC	1,188,122	152,496	106,616
800/800S Chapel Hill-Southpoint-RTC	1,625,087	118,479	64,062
RSX	308,520	25,374	14,722

REVENUE MILES	Weekday	Sat	Sun
100 Raleigh-Airport-RTC	255,084	48,934	29,093
300 RTC-Cary-Raleigh	202,462	25,620	15,174
400 Durham-Chapel Hill	218,278	41,521	23,157
700 Durham-RTC	168,316	31,537	18,328
800/800S Chapel Hill-Southpoint-RTC	270,939	42,444	24,920
RSX	88,111	7,462	7,320

Performance Measures

FY 2019 Report

Route	Annual Boardings	Annual Rev. Hours	Boardings per Hour	On-Time Percentage	Daily Ridership (weekdays)	
					Peak	Off-peak
100 Raleigh – Airport – RTC	170353	17391	10	91%	186	338
300 Raleigh – Cary – RTC	156171	13468	12	85%	324	220
400 Durham – Chapel Hill	211375	18984	11	87%	369	352
700 Durham – RTC	134775	9501	14	97%	225	221
800 Chapel Hill – Southpoint – RTC	225547	19422	12	83%	553	270
RSX Robertson Scholars Exp.	31779	4544	7	89%	97	101
102 Raleigh – Garner	17982	1494	12	84%	72	n/a
105 Raleigh – RTC	54189	4645	12	89%	218	n/a
201 North Raleigh – RTC	13853	2039	7	83%	56	n/a
301 Raleigh – Southeast Cary	29639	4264	7	91%	119	n/a
305 Raleigh – Cary – Lake Pine	23993	2934	8	83%	96	n/a
311 Apex – Lake Pine – RTC – EPA	21252	3675	6	89%	85	n/a
405 Durham – Chapel Hill/Carrboro	122833	6020	20	88%	493	n/a
420 Hillsborough – Chapel Hill	45784	3404	13	89%	184	n/a
805 Chapel Hill – Woodcroft – RTC	87726	6841	13	87%	352	n/a
CRX Chapel Hill – Raleigh Exp.	92010	7698	12	86%	370	n/a
DRX Durham – Raleigh Exp.	131119	8890	15	85%	527	n/a
FRX Fuquay-Varina – Raleigh Exp.	14702	1805	8	89%	59	n/a
KRX Knightdale – Raleigh Exp.	7689	1399	5	86%	31	n/a
ODX Orange – Durham Exp.	27436	2686	10	89%	110	n/a
WRX Wake Forest – Raleigh Exp.	13684	2448	6	80%	55	n/a
ZWX Zebulon – Wendell – Raleigh Exp.	19014	1785	11	85%	76	n/a

Source: FY 2018 Report



Connecting all points of the Triangle

MEMORANDUM

TO: GoTriangle Board of Trustees – Operations & Finance Committee
FROM: Service Planning
DATE: February 26, 2020
SUBJECT: FY 2019 Annual Bus Service Performance Report

Action Requested

None.

Background and Purpose

In September 2003, GoTriangle's Board of Trustees adopted the Regional Bus Service Standards to establish performance expectations for the agency's fixed-route services. This report provides a summary of GoTriangle's regional bus service performance during fiscal year 2019, with comparisons to FY 2018 and prior years to illustrate changes and trends in performance.

Key Findings

- Ridership on the GoTriangle system increased by 1% to 1,674,324 boardings in FY 2019, against the trend of ridership declines that began in FY 2015.
- Routes 300 and DRX continue to have the greatest increases in ridership, partially thanks to service increases funded by the County Transit Plans. In FY 2019, Route 300's ridership increased by over 23,000 annual boardings and Route DRX's by over 13,000. Ridership is also up for the other core routes (100, 400, 700, and 800) on weekends, building on an earlier investment from the County Transit Plans.
- In the first year of the Youth GoPass program, GoTriangle had 53,694 boardings with Youth GoPasses, which is 3% of total ridership.
- Routes 400, 700, 805, and CRX had declines in weekday ridership. Identifying the specific causes will require additional research. Ridership also decreased for Go OnDemand, the pilot demand-response service in the Research Triangle Park. (GoTriangle discontinued Go OnDemand and replaced it with RTP Connect in FY 2020.)
- Routes 405, 700, and DRX remain GoTriangle's highest-productivity routes in terms of boardings per hour. Routes 311, KRX, and WRX remain the lowest.
- On-time performance remained at 88%, which exceeds GoTriangle's goal of 85%.

Financial Impact

Not applicable.

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Connecting all points of the Triangle

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Connecting all points of the Triangle

Attachments

- A. FY 2019 Annual Bus Service Performance Report
- B. FY 2019 Service Statistics
- C. FY 2019 Wake Transit Standards Evaluation
- D. FY 2019 Fare Program Statistics

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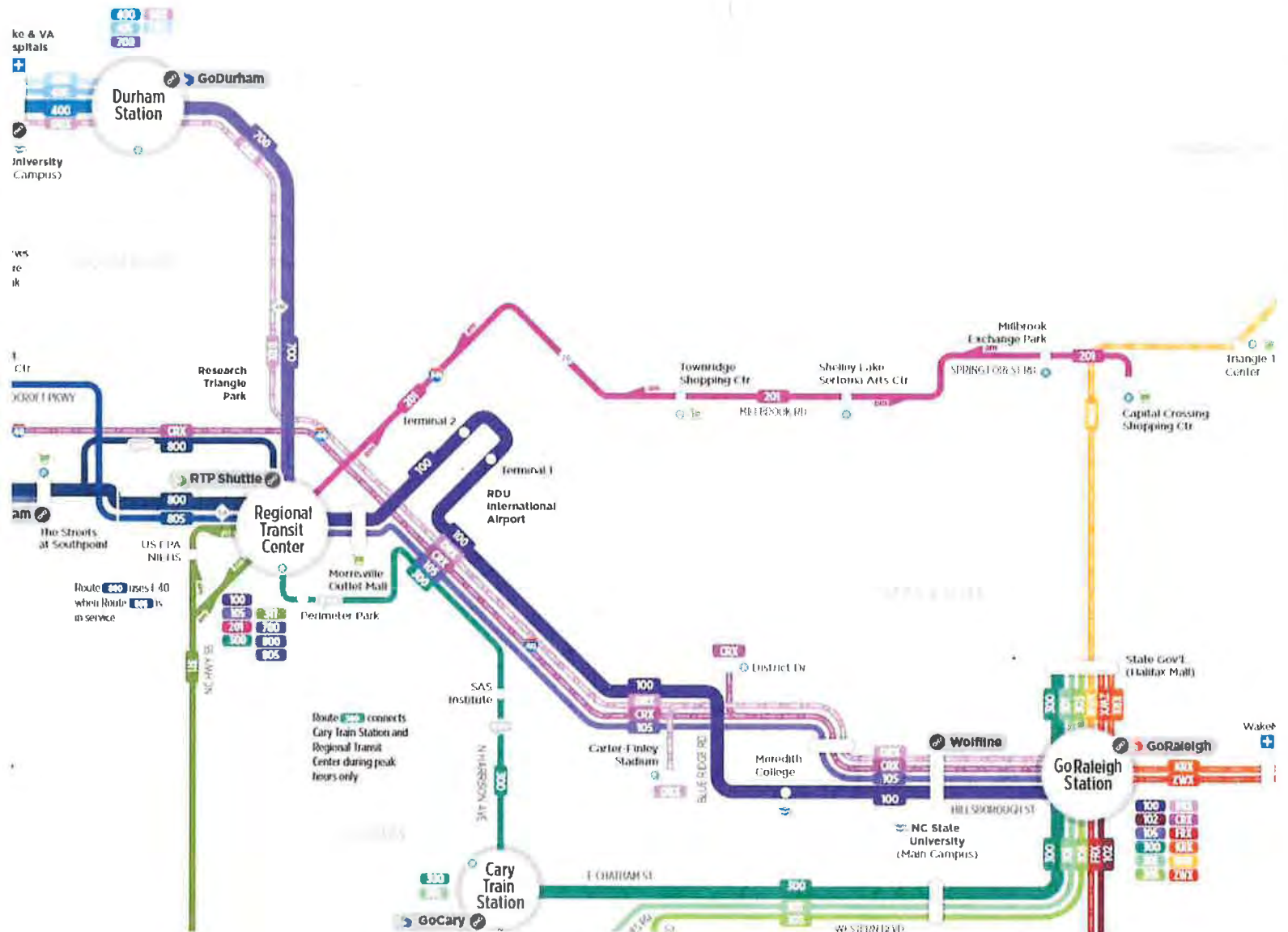
www.gotriangle.org



FY 2019 Annual Bus Service Performance Report

Prepared by
Matthew Frazier
Data Specialist

February 26, 2020



Introduction

In September 2003, GoTriangle's Board of Trustees adopted the Regional Bus Service Standards to establish performance expectations for the agency's fixed-route services. The intent was to drive improvements in productivity by routinely and systematically evaluating bus service performance against quantifiable indicators. Since the adoption of the Standards, the annual performance reporting process has been incrementally adjusted to provide the most useful information about GoTriangle's bus service.

The GoTriangle performance indicators presented in this report are:

- **Daily Boardings** – how many people are using the service provided?
- **Boardings per Revenue Hour** – how cost-effective is this service compared to others?
- **On-Time Performance** – how well is the service meeting the expectations set by the schedule?

This report provides a summary of GoTriangle's regional bus service performance during fiscal year 2019, with comparisons to fiscal year 2018 and prior years in order to illustrate changes and trends in performance.

Key Findings

- Ridership on the GoTriangle system increased by 1% to 1,674,324 boardings in FY 2019, against the trend of ridership declines that began in FY 2015.
- Routes 300 and DRX continue to have the greatest increases in ridership, partially due to service increases funded by the County Transit Plans. In FY 2019, Route 300's ridership increased by over 23,000 annual boardings and Route DRX's by over 13,000. Ridership is also up for the other core routes (100, 400, 700, and 800) on weekends, building on an earlier investment from the County Transit Plans.
- In the first year of the Youth GoPass program, GoTriangle had 53,694 boardings with Youth GoPasses, which is 3% of total ridership.
- Routes 400, 700, 805, and CRX had declines in weekday ridership. Identifying the specific causes will require additional research. Ridership also decreased for Go OnDemand, the pilot demand-response service in the Research Triangle Park. (GoTriangle discontinued Go OnDemand and replaced it with RTP Connect in FY 2020.)
- Routes 405, 700, and DRX remain GoTriangle's highest-productivity routes in terms of boardings per hour. Routes 311, KRX, and WRX remain the lowest.
- On-time performance remained at 88%, which exceeds GoTriangle's goal of 85%.

What Changed in FY 2019

GoTriangle usually implements major service changes in August of each year. The August 2018 service changes affected only a few routes:

Route	Service Change
100 (Raleigh – Airport – RTC)	Extended Sunday service by two hours. Previously, service ended around 7:00 PM, but now service ends around 9:00 PM.
300 (Raleigh – Cary)	
400 (Durham – Chapel Hill)	
700 (Durham – RTC)	
800 (Chapel Hill – Southpoint – RTC)	
DRX (Durham – Raleigh Express)	Added ten trips per day and adjusted the schedule to account for traffic congestion.
CRX (Chapel Hill – Raleigh Express)	Adjusted the schedule to account for traffic congestion (but did not add trips).

GoTriangle also adopted a new holiday schedule, reducing the number of holidays with no transit service from seven to two (Thanksgiving Day and Christmas Day) and improving consistency with the local systems. The Wake, Durham, and Orange County Transit Plans funded these improvements.

At the same time, GoTriangle and our partner agencies began the Youth GoPass program. Riders age 13 through 18 can obtain a free Youth GoPass and ride GoTriangle, GoRaleigh, GoCary, and GoDurham at no cost.

In January 2019, GoTriangle made another set of minor service changes:

Route	Service Change
Go OnDemand (RTP)	Discontinued midday service, and increased peak service from three vehicles to four.
100 (Raleigh – Airport – RTC)	Minor schedule changes.
300 (Raleigh – Cary)	Minor schedule changes.
305 (Raleigh – Cary – Lake Pine)	Minor schedule changes.
311 (Apex – Lake Pine – RTC – EPA)	Minor schedule changes.

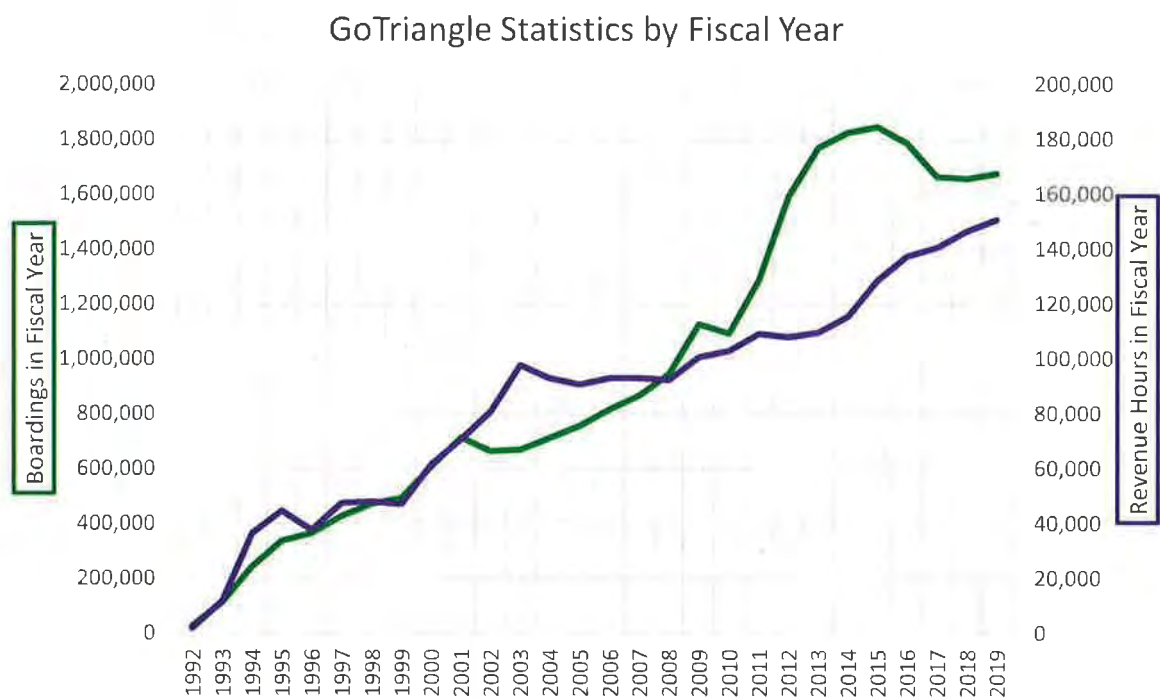
Two key changes implemented in FY 2018 continued to affect ridership in FY 2019: the expansion of off-peak service on Routes 100, 300, 700, and 800, and the replacement of the RTP Shuttles with Go OnDemand.

System Ridership

Across the system and including contracted services, GoTriangle had 1,674,324 customer boardings in FY 2019. This represents a 1% increase from FY 2018 (1,656,150 boardings).

The creation of Youth GoPass contributed to the ridership increase. There were 53,694 Youth GoPass boardings on GoTriangle in FY 2019. Meanwhile, the number of reduced-fare boardings (which previously included youth) and high school student GoPass boardings decreased by only 25,850 from FY 2018 to FY 2019. Details about ridership for each fare program are included in Attachment D.

The following chart compares annual ridership (green) to the amount of service provided in revenue hours (purple).



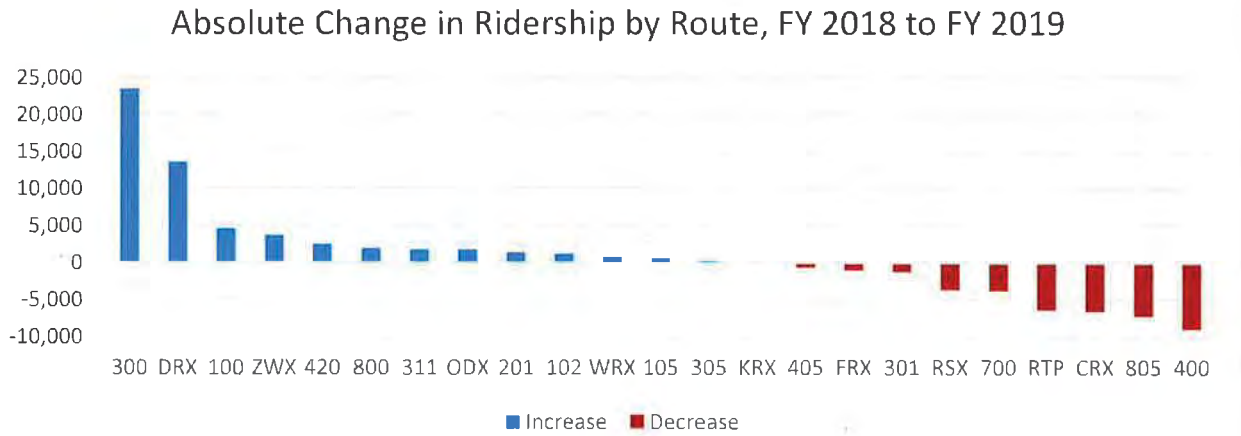
From FY 1992 to FY 2010, GoTriangle’s ridership increased more or less in proportion with the amount of service offered. In FY 2011 – 2013, ridership expanded dramatically, even as the amount of service offered remained stable. This expansion began to reverse in FY 2014: GoTriangle began adding more service each year, but the ridership growth moderated, and eventually turned into a decline. (These patterns correspond well with the price of gasoline, which increased rapidly in FY 2011 and 2012, and decreased rapidly in FY 2015 and 2016. GoTriangle also increased fares in FY 2015.)

It is important to note that despite the recent year-to-year decreases, GoTriangle is still on a long-term trend of increasing ridership. The future of ridership is always difficult to predict, but comparisons can be drawn to FY 2002 and 2003: GoTriangle increased service sharply, and ridership declined in the moment, but it caught back up to the service offered – and indeed, began to grow beyond the level of service offered – in FY 2008.



Changes in Ridership by Route

The relatively minor 1% increase in ridership from FY 2018 to FY 2019 masks larger changes at the route level. Details about the ridership of each route are included in Attachment B. As an overview, this chart shows the absolute change in ridership for each route on the system:



Most of the significant increases in ridership can be linked to recent service changes.

Route 300 (Raleigh – Cary) continues to boast impressive year-over-year ridership gains. (The table to the right shows the average daily boardings for each time period.) GoTriangle began Route 300 in its modern form in August 2015 – before, different routes connected Raleigh and Cary during peak and off-peak times. Route 301 ran during peak hours, with a winding course through southeast Cary, and the more direct Route 303 ran only midday and Saturday. Since August 2015, Route 300 has provided a direct link at all times of day.

Route 300	FY '18	FY '19	Δ
Weekday	474	544	+15%
Peak (Ral.-Cary)	176	201	+14%
Peak (Cary-RTC)	122	123	+1%
Midday	148	180	+22%
Evening	29	40	+39%
Saturday	180	243	+35%
Sunday	78	139	+78%

GoTriangle added evening and Sunday service, and increased the frequency of midday and Saturday service, in August 2017, then extended Sunday service by a further two hours in August 2018. Ridership has increased on the core Raleigh-Cary segment, at all times of day, each year since August 2015. This shows the benefit of operating service consistently at all times of day.

Route DRX (Durham – Raleigh Express) has also experienced ridership growth in the years leading up to FY 2019, though unlike Route 300, it has not received increases in service. Rather, ridership has increased naturally thanks to greater employment in downtown Raleigh and downtown Durham and greater congestion on I-40 and NC-147.

GoTriangle added ten trips to Route DRX’s schedule at the beginning of FY 2019 to capitalize on the growth, and ridership increased from an average of 470 daily boardings in FY 2018 to 527 in FY 2019 – a 12% increase.

Ridership on GoTriangle’s weekend service on the core routes (Routes 100, 300, 400, 700, and 800) has also increased, thanks to improvements to Saturday service in August 2016/2017 and improvements to Sunday service in August 2018.

Route	Saturday			Sunday		
	FY '18	FY '19	Δ	FY '18	FY '19	Δ
100 (Raleigh – Airport – RTC)	431	451	+5%	238	283	+19%
300 (Raleigh – Cary)	180	243	+35%	78	139	+78%
400 (Durham – Chapel Hill)	340	370	+9%	184	214	+16%
700 (Durham – RTC)	258	268	+4%	151	167	+11%
800 (Chapel Hill – Southpoint – RTC)	252	257	+2%	117	122	+4%
Total	1,461	1,589	+9%	767	925	+21%

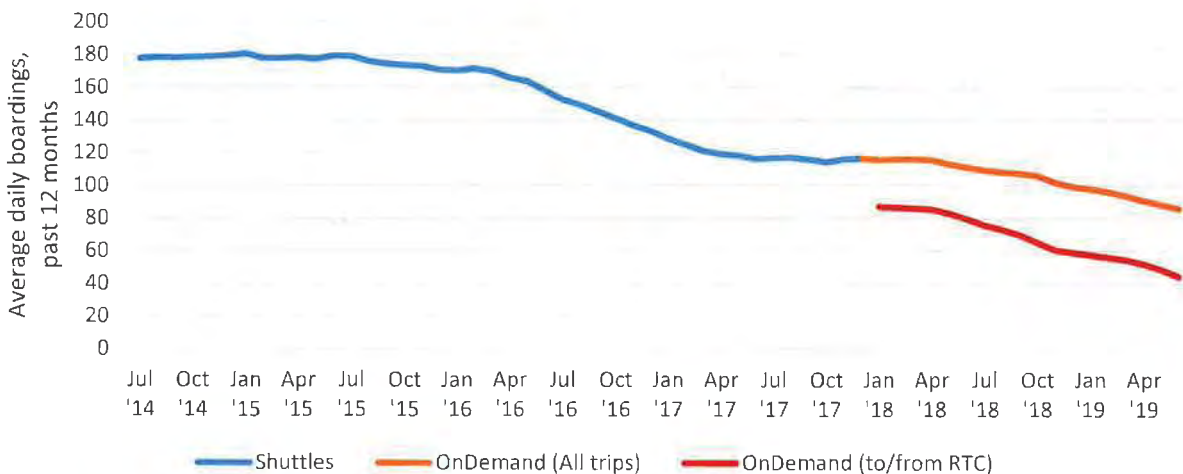
However, several routes had noticeable declines in weekday ridership. (In the case of Routes 400 and 700, this canceled out the growth in weekend ridership.)

Route	FY '18	FY '19	Δ	Most affected direction
400 (Durham – Chapel Hill)	767	722	-6%	Both ways, peak & midday
700 (Durham – RTC)	465	446	-4%	From Durham to RTC
805 (Chapel Hill – Woodcroft – RTC)	380	352	-7%	From RTC to Chapel Hill
CRX (Chapel Hill – Raleigh Express)	394	370	-6%	From Chapel Hill to Raleigh

Ridership and productivity remain healthy on these routes, but year-over-year ridership change has been negative for the past three years. Identifying the specific causes will require additional research.

Finally, the replacement of the RTP Shuttles with Go OnDemand has continued to decrease ridership in the Research Triangle Park. In calendar year 2017, the last full year of service for the RTP shuttles, they had an average of 116 daily boardings. In FY 2019, after eighteen months of service, Go OnDemand had an average of 83 daily boardings – a decrease of 28%. In addition, almost half of the boardings on Go OnDemand were direct trips within the RTP area, which did not connect to other GoTriangle routes at the Regional Transit Center. (This may be contributing to reduced ridership on Route 700 in particular.)

RTP Shuttles and OnDemand Ridership



Productivity by Route

GoTriangle’s Regional Bus Service Standards establish categories for routes, and compare routes to one another within each category. A route is considered “high performing” if its number of boardings per revenue hour is above 125% of the average for its service category, and “low performing” if its number of boardings per revenue hour is below 75% of the average for its service category.

The Wake Transit Service Standards and Performance Measures set a different process for evaluating route performance, by comparing each route’s productivity to a fixed standard for the service category. Attachment C compares the performance of GoTriangle routes to the Wake Transit standards.

Peak Services

Peak services¹ are divided into two categories: Regional and Express.

Regional Routes	Productivity	Performance
405 (Durham – Chapel Hill/Carrboro)	20.4	High
700 (Durham – RTC)	17.5	High
800 (Chapel Hill – Southpoint – RTC)	16.8	High
400 (Durham – Chapel Hill)	13.6	Average
420 (Hillsborough – Chapel Hill)	13.5	Average
805 (Chapel Hill – Woodcroft – RTC)	12.8	Average
102 (Raleigh – Garner)	12.0	Average
300 (Raleigh – Cary – RTC)	11.7	Average
105 (Raleigh – RTC)	11.7	Average
100 (Raleigh – Airport – RTC)	8.3	Low
305 (Raleigh – Cary – Lake Pine)	8.2	Low
301 (Raleigh – Southeast Cary)	7.0	Low
201 (North Raleigh – RTC)	6.8	Low
311 (Apex – Lake Pine – RTC – EPA)	5.8	Low
Go OnDemand	4.1	Low
Category Average – FY 2019	12.5	
Category Average – FY 2018	12.5	

Routes 405, 700, and 800 have been consistently high performing by this measure for several years. Routes 201, 301, 305, and 311 have been consistently low performing, but the Wake Bus Plan includes proposals to address the productivity of each of these routes. GoTriangle implemented changes for Routes 201 and 311, as well as Go OnDemand, in FY 2020, and will address Routes 301 and 305 in future fiscal years – see the “What’s Next?” section on page 13 for more information.

Route 100’s low performing status is challenging to solve. It performs well off-peak, but it overlaps with the faster Routes 105, CRX, and DRX during peak hours. The Wake Bus Plan and Short-Range Transit Plan do not include any proposals that address its relationship with these routes, but the Wake Transit Vision Plan update will examine it.

¹ Because of constraints on the available data, all weekday service for Route RSX is included in the “Peak” category, as is the midday service for Go OnDemand (which ended in January 2019).

Express Routes	Productivity	Performance
DRX (Durham – Raleigh Express)	14.7	High
CRX (Chapel Hill – Raleigh Express)	12.0	Average
ZWX (Zebulon – Wendell – Raleigh Express)	10.7	Average
ODX (Orange – Durham Express)	10.2	Average
FRX (Fuquay-Varina – Raleigh Express)	8.1	Low
RSX (Robertson Scholars Express)	7.3	Low
WRX (Wake Forest – Raleigh Express)	5.6	Low
KRX (Knightdale – Raleigh Express)	5.5	Low
Category Average – FY 2019	10.9	
Category Average – FY 2018	11.4	

Route DRX has always been the highest-performing express route due to its strong bidirectional demand. Its productivity was even higher (18.2 boardings per hour) in FY 2018, and decreased when GoTriangle added ten trips per day – ridership has increased, but has not yet caught up to the added service. Route DRX nevertheless remains the only express route classified as high performing.

GoTriangle discontinued Routes KRX and RSX in FY 2020. GoTriangle Routes 400 and 405 continue to provide service in the same corridor as Route RSX, and GoRaleigh introduced a new local route to Knightdale to replace Route KRX. In addition, work on new Park-and-Rides is underway for Routes FRX and WRX. More details about these changes are available in the “What’s Next?” section on page 13.

Attachment B section 2 shows the ridership and productivity of peak-hour service to each of the four key commute destinations (Raleigh, Durham, Chapel Hill, and the Regional Transit Center/greater Research Triangle Park), with ridership split by direction for routes serving two destinations.² This table summarizes the FY 2019 totals for each destination:

Destination	Boardings	Rev. Hours	Productivity
Raleigh	308,000	31,827	9.7
Durham	209,955	15,732	13.3
Chapel Hill	395,543	22,664	17.5
RTC/Greater RTP	242,875	27,719	8.8

² Example: On Route DRX, which serves Durham and Raleigh, ridership on trips from Raleigh to Durham in the morning and Durham to Raleigh in the afternoon is in the “Durham” category, and ridership on trips from Durham to Raleigh in the morning and Raleigh to Durham in the afternoon is in the “Raleigh” category. However, on Route ODX, all ridership is included in the “Durham” category.

Off-Peak Services

Off-peak services are split into categories based the time of day: Midday, Evening, Saturday, and Sunday. High performing routes are highlighted in blue, and low performing routes in orange.

Route	Midday	Evening	Saturday	Sunday
100 (Raleigh – Airport – RTC)	11.8	10.0	8.4	10.2
300 (Raleigh – Cary)	12.5	11.4	9.4	10.1
400 (Durham – Chapel Hill)	11.4	9.8	7.1	8.1
700 (Durham – RTC)	13.7	12.7	10.0	12.3
800 (Chapel Hill – Southpoint – RTC)	9.8	8.7	5.0	4.7
RSX (Robertson Scholars Express)			6.8	4.1
Category Average – FY 2019	11.6	10.2	7.6	8.4
Category Average – FY 2018	11.7	10.0	7.2	8.1

The core routes all operate at a similar level of productivity (Route 700 has higher productivity mainly because it is shorter). The exception is Route 800, which is slightly less productive than the other routes on weekdays and much less productive on weekends, despite its high peak-hour productivity. The probable cause is that it operates on NC-54 instead of I-40 during off-peak times, which makes the trip between Chapel Hill and points east much slower than driving. GoTriangle plans to realign Route 800 to use I-40 at all times shortly after this report's publication, which will both reduce costs and attract customers who may not use the route today because of the slow trip.

On-Time Performance

GoTriangle considers a trip on time if it arrives at its end-of-line timepoint no more than five minutes later than the scheduled time. The defined goal is for 85% of trips to arrive on time. For FY 2019, GoTriangle met this goal with 88% of trips arriving on time – the same as FY 2018.

The following routes did not meet the 85% mark:

Route	Time	FY 2018	FY 2019	Δ
102 (Raleigh – Garner)	Peak	77%	84%	+7 pt
201 (North Raleigh – RTC)	Peak	88%	83%	-5 pt
305 (Raleigh – Cary – Lake Pine)	Peak	80%	83%	+3 pt
800 (Chapel Hill – Southpoint – RTC)	Peak	81%	80%	-
WRX (Wake Forest – Raleigh Express)	Peak	78%	80%	+2 pt
300 (Raleigh – Cary – RTC)	Midday	88%	83%	-5 pt
300 (Raleigh – Cary – RTC)	Saturday	72%	79%	+7 pt
400 (Durham – Chapel Hill)	Saturday	81%	84%	+3 pt

The following routes failed to meet the standard last year, but did meet it this year:

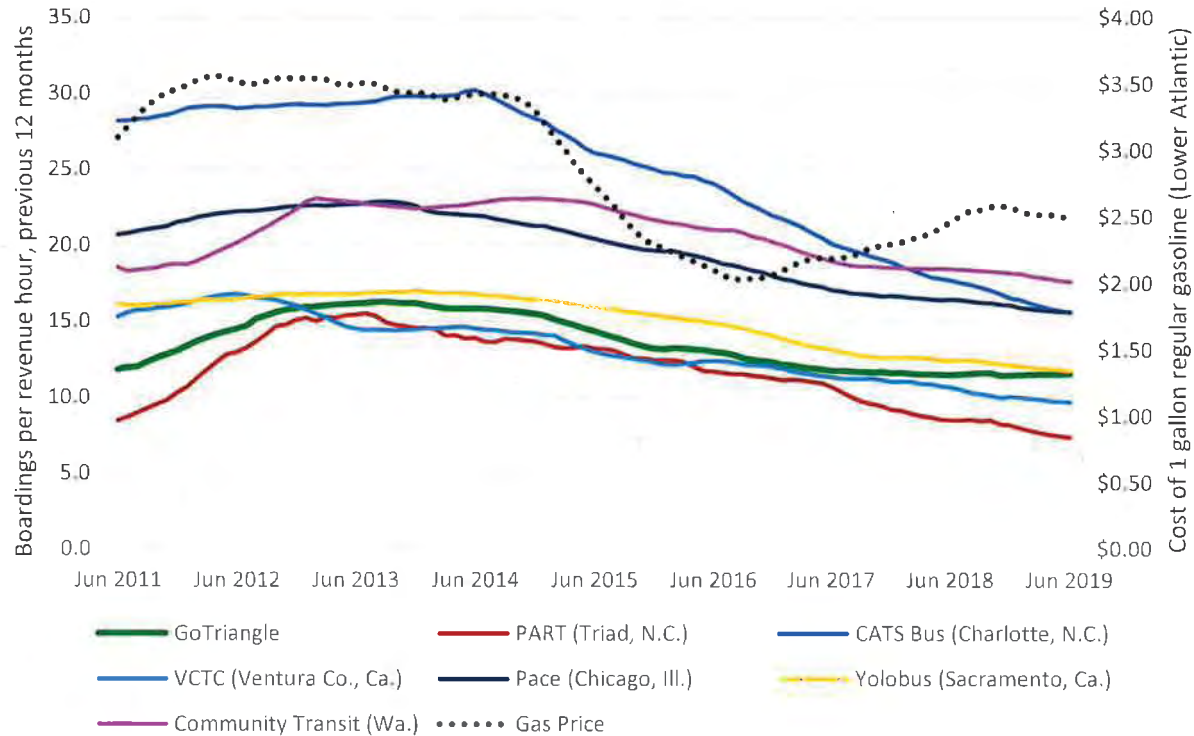
Route	Time	FY 2018	FY 2019	Δ
CRX (Chapel Hill – Raleigh Express)	Peak	84%	86%	+3 pt
DRX (Durham – Raleigh Express)	Peak	78%	85%	+7 pt
KRX (Knightdale – Raleigh Express)	Peak	83%	86%	+3 pt
300 (Raleigh – Cary – RTC)	Sunday	79%	88%	+9 pt

Route DRX's increase in on-time performance can be attributed to schedule changes implemented in August 2018 – with the opportunity to add revenue hours and vehicles, GoTriangle could rebuild the schedule from scratch and add layover time to the trips that needed it. Most other routes do not have the same opportunity. GoTriangle adjusts schedules periodically (for example, Route 305 received schedule adjustments in January 2019), but without more revenue hours or vehicles, the resulting improvements in on-time performance are limited.

On-time performance data for each route is included with ridership data in Attachment B.

Peer Comparison

Other transit systems in the United States have been experiencing a trend of decreasing ridership and productivity over the past few years. This chart shows productivity (in terms of boardings per revenue hour) for other transit agencies that have been identified as GoTriangle's peers.



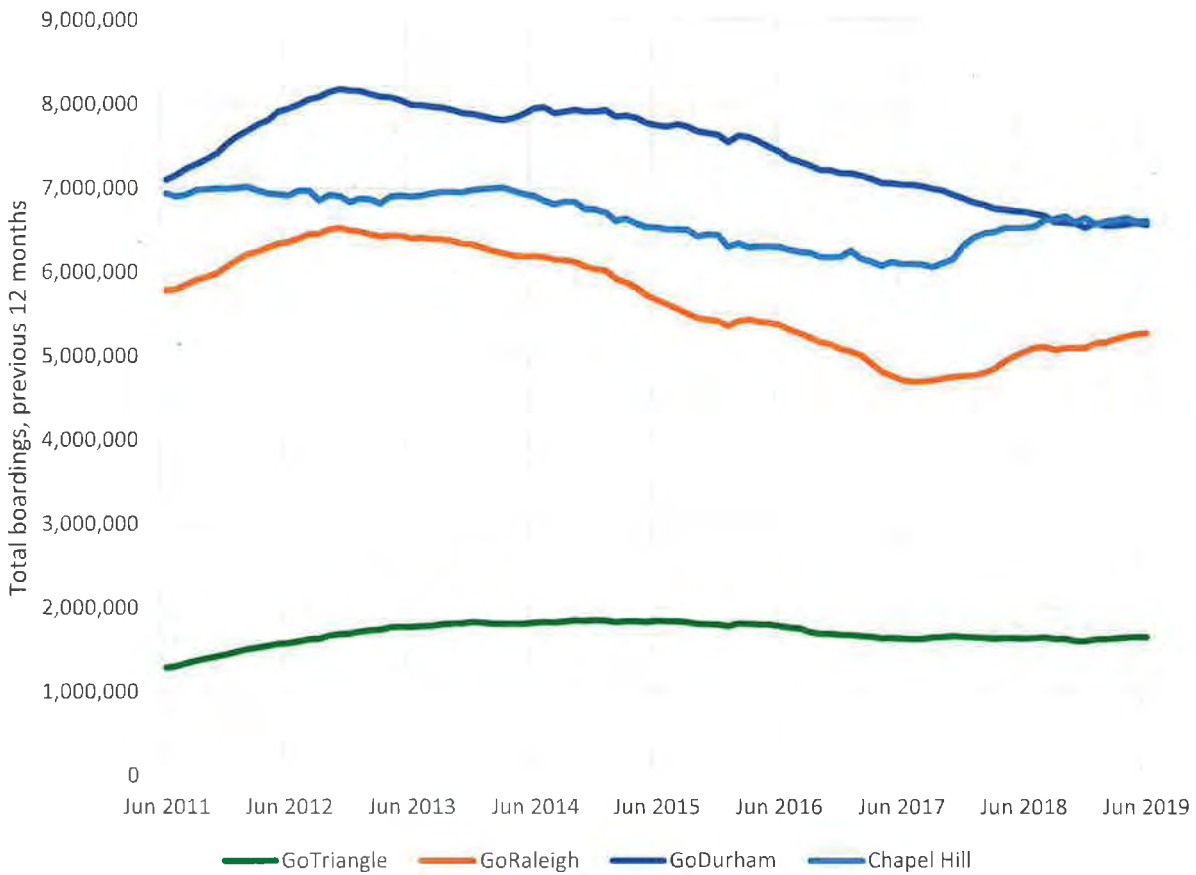
From June 2018 to June 2019, GoTriangle's productivity decreased by around 1.5%, but our peers had a sharper decrease: 4-5% for Community Transit, Pace, and Yolobus, 9% for VCTC, 12% for CATS, and 13% for PART.

GoTriangle's relative position within the peer group has not changed. PART, VCTC, and Yolobus are our closest peers: they provide regional express bus as their basic service type, operate in regions without a single dominant city, coordinate with multiple municipal transit systems, and do not operate rail service. Accordingly, GoTriangle's productivity is comparable to those systems. If we maintain and improve our system's productivity, we are likely to overtake Yolobus.

While CATS, Community Transit, and Pace serve entire regions and operate express service, their basic service type is urban (or suburban) local bus service, which tends to have higher productivity on the basis of boardings per hour. Their regions have rapid transit rail service, and a single central business district on which express buses can focus. Accordingly, their productivity is much higher than GoTriangle's. These systems are included as aspirational peers.

It is worth noting that the price of gasoline was relatively stable during FY 2019, following two years of increase. Gas prices are one of the leading external factors that influence transit ridership, but if they were driving the national decline, one would expect the trend to be reversing for more agencies by this point. This suggests that other factors in the transportation market and the broader economy may ultimately be responsible.

GoTriangle’s partner agencies in the Triangle are also seeing fewer effects from the national decline. From June 2018 to 2019, GoRaleigh’s annual ridership increased by 4% (thanks in part to new service funded by the Wake County Transit Plan), Chapel Hill Transit’s has increased by 1%, and GoDurham’s decreased by only 2% after years of sharper declines.



What's Next?

The Wake Bus Plan and the GoTriangle Short-Range Transit Plan recommended several service changes for FY 2020. GoTriangle has already implemented many of these changes:

- Created Route 310 (Wake Tech – RTC), an all-day shuttle route connecting the Wake Tech RTP campus and Perimeter Park to the Regional Transit Center. When the McCrimmon Parkway extension is completed, GoTriangle will extend Route 310 to the Cary Depot.
- Converted Route 201 (North Raleigh – RTC) into Route NRX (North Raleigh – RTC Express), which provides express service via I-540 instead of running on local streets. Route NRX serves Park-and-Rides at Bent Tree Plaza (on Falls of Neuse Road) and Triangle Town Center.
- Replaced Go OnDemand with the RTP Connect pilot program. Instead of providing on-demand trips in the RTP with GoTriangle vehicles, GoTriangle subsidizes the fare for Uber or Lyft trips.
- Realigned Route 311 (Lake Pine – Apex – RTC) to serve the Kit Creek Road area (Cisco, Biogen, NetApp, and other employers) instead of EPA and NIEHS. Stops around Kit Creek Road had the highest ridership on Go OnDemand.
- Discontinued Routes 102 (Garner – Raleigh) and KRX (Knightdale – Raleigh Express) so GoRaleigh could implement new routes in their place (Route 20 in Garner and Route 33 in Knightdale). The new routes provide all-day local service instead of peak-only express service.
- Discontinued Route RSX (Robertson Scholars Express), since it duplicated GoTriangle Routes 400/405 (which still operate in the same corridor). The Robertson Scholars Foundation now contracts with Carolina Livery to operate an express service meeting their requirements.
- Realigned Route 800 (Chapel Hill – Southpoint – RTC) to use I-40 at all times, instead of using I-40 at peak and NC-54 off-peak. This will provide faster service from Chapel Hill to the Research Triangle Park, RDU Airport, and Raleigh at off-peak times.

The Wake Bus Plan and Short-Range Transit Plan recommend additional route changes for FY 2021 and the subsequent years. To support these changes, GoTriangle has planning studies underway for multiple facilities, including several new or improved Park-and-Rides (for Routes 305, 311, CRX, DRX, NRX, ODX, WRX, and ZWX), a bus facility at Raleigh Union Station, and an improved Regional Transit Center.

The first new facility to open will be a Park-and-Ride at Wake Tech's Southern Wake Campus for Route FRX, which will allow the route to serve trips to Wake Tech along with commutes to Raleigh. GoTriangle and NCDOT also plan to implement the Bus on Shoulder System (BOSS) on I-540 for Route NRX.

Durham, Orange, and Wake counties are updating their county transit plans in FY 2020. When complete, they may include recommendations for regional bus service beyond GoTriangle's current plans.

Finally, GoTriangle, GoRaleigh, GoCary, and GoDurham plan to deploy the Delerrok TouchPass account-based fare collection system in 2020. TouchPass will allow riders to pay their fares using a mobile phone application or a smartcard, and automatically "cap" riders who pay for transit one ride at a time at the price of a 1-day, 7-day, or 31-day pass. This will save money for existing riders and reduce the barrier to entry for new riders, which the partners expect will lead to increased ridership.

Section 1: System and Route Totals

(Details for specific destinations and times of day are on the following pages.)

Route	Annual Boardings	Annual Rev. Hours	Avg. Daily Boardings	5-Year Trends	Boardings per Hour	On-Time Perf. (FY18)	
Whole System	1,674,324	150,610			11.1	88%	88%
Weekday	1,534,369	132,806	6,162		11.6	87%	89%
Peak	1,157,273	97,943	4,648		11.8	87%	87%
Midday	274,674	23,686	1,103		11.6	89%	92%
Night	74,298	7,301	298		10.2	92%	94%
Saturday	84,960	11,232	1,634		7.6	89%	87%
Sunday	54,995	6,572	948		8.4	94%	93%
Core Routes (Seven-Day Service)	898,221	78,767			11.4	88%	90%
100 Raleigh – Airport – RTC	170,353	17,391	(see pg. 16)		9.8	91%	93%
300 Raleigh – Cary – RTC	156,171	13,468	(see pg. 16)		11.6	85%	87%
400 Durham – Chapel Hill	211,375	18,984	(see pg. 16)		11.1	87%	88%
700 Durham – RTC	134,775	9,501	(see pg. 16)		14.2	97%	97%
800 Chapel Hill – Southpoint – RTC	225,547	19,422	(see pg. 16)		11.6	83%	85%
Peak-Only Routes	722,905	62,027	2,903		11.7	87%	86%
102 Raleigh – Garner	17,982	1,494	72		12.0	84%	77%
105 Raleigh – RTC	54,189	4,645	218		11.7	89%	90%
201 North Raleigh – RTC	13,853	2,039	56		6.8	83%	88%
301 Raleigh – Southeast Cary	29,639	4,264	119		7.0	91%	90%
305 Raleigh – Cary – Lake Pine	23,993	2,934	96		8.2	83%	80%
311 Apex – Lake Pine – RTC – EPA	21,252	3,675	85		5.8	89%	91%
405 Durham – Chapel Hill/Carrboro	122,833	6,020	493		20.4	88%	85%
420 Hillsborough – Chapel Hill	45,784	3,404	184		13.5	89%	92%
805 Chapel Hill – Woodcroft – RTC	87,726	6,841	352		12.8	87%	90%
CRX Chapel Hill – Raleigh Exp.	92,010	7,698	370		12.0	86%	84%
DRX Durham – Raleigh Exp.	131,119	8,890	527		14.7	85%	78%
FRX Fuquay-Varina – Raleigh Exp.	14,702	1,805	59		8.1	89%	86%
KRX Knightdale – Raleigh Exp.	7,689	1,399	31		5.5	86%	83%
ODX Orange – Durham Exp.	27,436	2,686	110		10.2	89%	94%
WRX Wake Forest – Raleigh Exp.	13,684	2,448	55		5.6	80%	78%
ZWX Zebulon – Wendell – Raleigh Exp.	19,014	1,785	76		10.7	85%	88%
Special Services							
RTP Go OnDemand	21,419	5,272	86		4.1	n/a	n/a
RSX Robertson Scholars Exp.	31,779	4,544	(see pg. 16)		7.0	89%	91%

High productivity – Exceeded 125% of the category average	20.0
Low productivity – Less than 75% of the category average	5.0
Did not meet on-time performance target (85%)	80%
Did not meet on-time performance target (85%) in FY 2018	80%

Attachment B: FY 2019 Service Statistics

Section 2: Peak Hour Commutes

(Routes marked with ⇄ are split in two based on commute flow. For example, "DRX To Raleigh / From Durham" has data for trips from Durham to Raleigh in the morning, and trips from Raleigh back to Durham in the afternoon.)

Route	Annual Boardings	Annual Rev. Hours	Avg. Daily Boardings	5-Year Trends	Boardings per Hour	On-Time Perf.	(FY18)
Peak Commute to Raleigh	308,900	31,827	1,241		9.7	87%	86%
100 From RTC/Airport ⇄	21,231	2,709	85		7.8	92%	94%
102 From Garner	17,982	1,494	72		12.0	84%	77%
105 From RTC ⇄	23,580	2,124	95		11.1	91%	92%
300 From Cary (Raleigh-Cary section only)	50,013	3,806	201		13.1	86%	88%
301 From Southeast Cary	29,639	4,264	119		7.0	91%	90%
305 From Cary/Apex	23,993	2,934	96		8.2	83%	80%
CRX From Chapel Hill ⇄	33,417	3,576	134		9.3	86%	83%
DRX From Durham ⇄	53,956	3,482	217		15.5	88%	78%
FRX From Fuquay-Varina	14,702	1,805	59		8.1	89%	86%
KRX From Knightdale	7,689	1,399	31		5.5	86%	83%
WRX From Wake Forest	13,684	2,448	55		5.6	80%	78%
ZWX From Zebulon/Wendell	19,014	1,785	76		10.7	85%	88%
Peak Commute to Durham	209,955	15,732	843		13.3	86%	87%
400 From Chapel Hill ⇄	32,709	3,084	131		10.6	79%	85%
405 From Chapel Hill/Carrboro ⇄	50,779	2,939	204		17.3	87%	84%
700 From RTC ⇄	21,868	1,616	88		13.5	93%	93%
DRX From Raleigh ⇄	77,163	5,407	310		14.3	84%	79%
ODX From Hillsborough/Mebane	27,436	2,686	110		10.2	89%	94%
Peak Commute to Chapel Hill	395,543	22,664	1,589		17.5	87%	87%
400 From Durham/Patterson Place ⇄	59,251	3,667	238		16.2	91%	91%
405 From Durham ⇄	72,054	3,081	289		23.4	89%	86%
420 From Hillsborough	45,784	3,404	184		13.5	89%	92%
800 From RTC/Southpoint ⇄	96,167	4,476	386		21.5	82%	82%
805 From RTC/Woodcroft ⇄	63,694	3,915	256		16.3	90%	91%
CRX From Raleigh	58,593	4,122	235		14.2	86%	84%
Peak Commute to RTC	242,875	27,719	975		8.8	85%	88%
100 From Raleigh/Airport ⇄	25,109	2,877	101		8.7	87%	87%
105 From Raleigh ⇄	30,609	2,521	123		12.1	87%	89%
201 From North Raleigh	13,853	2,039	56		6.8	83%	88%
300 From Cary (Cary-RTC section only)	30,733	3,071	123		10.0	89%	93%
311 From Apex/Lake Pine	21,252	3,675	85		5.8	89%	91%
700 From Durham ⇄	34,221	1,596	137		21.4	93%	93%
800 From Chapel Hill/Southpoint ⇄	41,647	3,742	167		11.1	77%	79%
805 From Woodcroft ⇄	24,032	2,926	97		8.2	83%	90%
RTP Go OnDemand	21,419	5,272	86		4.1	n/a	n/a

High productivity – Exceeded 125% of the category average	20.0
Low productivity – Less than 75% of the category average	5.0
Did not meet on-time performance target (85%)	80%
Did not meet on-time performance target (85%) in FY 2018	80%

Section 3: Ridership by Time Period (for all-day routes)

Route	Annual Boardings	Annual Rev. Hours	Avg. Daily Boardings	5-Year Trends	Boardings per Hour	On-Time Perf. (FY18)	
Core Routes – Weekday Peak Service	412,949	30,644	1,658		13.5	86%	88%
100 Raleigh – Airport – RTC	46,340	5,586	186		8.3	89%	91%
300 Raleigh – Cary – RTC	80,746	6,877	324		11.7	87%	90%
400 Durham – Chapel Hill	91,960	6,752	369		13.6	85%	88%
700 Durham – RTC	56,089	3,212	225		17.5	93%	93%
800 Chapel Hill – Southpoint – RTC	137,814	8,217	553		16.8	80%	81%
Core Routes – Weekday Midday Service	274,674	23,686	1,103		11.6	89%	92%
100 Raleigh – Airport – RTC	66,126	5,622	266		11.8	85%	93%
300 Raleigh – Cary	44,810	3,585	180		12.5	83%	88%
400 Durham – Chapel Hill	68,536	6,017	275		11.4	90%	91%
700 Durham – RTC	42,468	3,107	171		13.7	98%	98%
800 Chapel Hill – Southpoint – RTC	52,734	5,354	212		9.8	88%	89%
Core Routes – Weekday Evening Service	74,298	7,301	298		10.2	92%	94%
100 Raleigh – Airport – RTC	18,026	1,799	72		10.0	95%	99%
300 Raleigh – Cary	9,912	868	40		11.4	94%	96%
400 Durham – Chapel Hill	19,219	1,965	77		9.8	85%	86%
700 Durham – RTC	12,584	994	51		12.7	99%	99%
800 Chapel Hill – Southpoint – RTC	14,557	1,675	58		8.7	86%	92%
Core Routes – Saturday Service	82,647	10,894	1,589		7.6	89%	87%
100 Raleigh – Airport – RTC	23,466	2,779	451		8.4	97%	96%
300 Raleigh – Cary	12,657	1,343	243		9.4	79%	72%
400 Durham – Chapel Hill	19,224	2,717	370		7.1	84%	81%
700 Durham – RTC	13,934	1,399	268		10.0	99%	99%
800 Chapel Hill – Southpoint – RTC	13,366	2,656	257		5.0	85%	87%
Core Routes – Sunday Service	53,653	6,242	925		8.6	93%	92%
100 Raleigh – Airport – RTC	16,395	1,606	283		10.2	98%	97%
300 Raleigh – Cary	8,046	794	139		10.1	88%	79%
400 Durham – Chapel Hill	12,436	1,533	214		8.1	90%	91%
700 Durham – RTC	9,700	789	167		12.3	100%	100%
800 Chapel Hill – Southpoint – RTC	7,076	1,520	122		4.7	89%	93%
Robertson Scholars Express	31,779	4,544			7.0	89%	91%
RSX Weekday Service	28,124	3,876	175		7.3	88%	91%
RSX Saturday Service	2,313	338	75		6.8	93%	87%
RSX Sunday Service	1,342	330	43		4.1	99%	97%

High productivity – Exceeded 125% of the category average	20.0
Low productivity – Less than 75% of the category average	5.0
Did not meet on-time performance target (85%)	80%
Did not meet on-time performance target (85%) in FY 2018	80%

Attachment C: Wake Transit Standards Evaluation

The Wake Transit "Service Guidelines and Performance Measures" document sets standards for routes' performance on four measures. GoTriangle and other providers make this information available to TPAC, but each provider retains the primary responsibility for evaluating route performance and making changes. Routes which consistently underperform or overperform may be considered for changes in funding when the Wake Bus Plan is updated.

Performance for routes serving Wake County as of FY 2019 Q4

Route	Project Began		Boardings per Trip	Cost per Boarding	Farebox Recovery	On-Time Performance
Core Regional Routes						
Target			16.0	\$7.20	16%	85%
100 Raleigh – Airport – RTC	Aug. 2017		8.9	\$12.98	7%	94%
300 Raleigh – Cary – RTC	Aug. 2017		8.5	\$10.01	9%	87%
Express (Peak-Only) Routes						
Target			12.0	\$12.00	12%	85%
102 Raleigh – Garner	N/A		11.0	\$8.69	8%	79%
105 Raleigh – RTC	N/A		8.4	\$10.67	9%	94%
201 North Raleigh – RTC	N/A		8.0	\$16.09	5%	85%
301 Raleigh – Southeast Cary	N/A		5.8	\$18.70	5%	94%
305 Raleigh – Cary – Lake Pine	N/A		8.4	\$15.95	6%	85%
311 Apex – Lake Pine – RTC – EPA	N/A		7.1	\$21.78	4%	89%
CRX Chapel Hill – Raleigh Exp.	Aug. 2018		13.6	\$11.07	13%	89%
DRX Durham – Raleigh Exp.	Aug. 2018*		16.2	\$8.42	16%	87%
FRX Fuquay-Varina – Raleigh Exp.	July 2017		8.7	\$17.25	8%	96%
KRX Knightdale – Raleigh Exp.	July 2017		6.5	\$17.74	6%	85%
WRX Wake Forest – Raleigh Exp.	N/A		7.0	\$20.60	6%	85%
ZWX Zebulon – Wendell – Raleigh Exp.	N/A		14.7	\$10.01	13%	87%

- July 2017 Route is being evaluated according to Wake Transit service standards
- Aug. 2018* Route is in 18-month development period after major service change
- N/A No Wake Transit funding
- Route is underperforming per standards (3 or more measures have missed standards for 3 or more quarters)
- Route would be underperforming if it was subject to standards
- Meeting standard for measure
- Missed standard for 1 or 2 quarters (does not apply to any route this quarter)
- Missed standard for 3 or more quarters

Attachment D: FY 2019 Fare Program Statistics

Fare Program	FY 2019		FY 2018		Year over Year	
	Boardings	% of Total	Boardings	% of Total	Boardings	% Change
Generally Available	877,164	52.4%	841,951	50.8%	35,213	+4%
Full Fare Cash/Passes	597,165	35.7%	624,699	37.7%	-27,534	-4%
Reduced Fare Cash/Passes*	165,925	9.9%	170,781	10.3%	-4,856	-3%
Free Fare	34,827	2.1%	28,461	1.7%	6,366	+22%
Youth GoPass*	53,694	3.2%			53,694	<i>new</i>
NC By Train Transit Pass	818	0.0%	556	0.0%	262	+47%
Go OnDemand (No Fare)**	21,419	1.3%	12,700	0.8%	8,719	+69%
Unknown	3,316	0.2%	4,754	0.3%	-1,438	
Employee/Student GoPass	797,160	47.6%	814,199	49.2%	-17,039	-2%
UNC Chapel Hill	379,056	22.6%	387,714	23.4%	-8,658	-2%
Duke University	184,888	11.0%	181,456	11.0%	3,432	+2%
NC State University	97,486	5.8%	94,852	5.7%	2,634	+3%
State Government	47,899	2.9%	45,463	2.7%	2,436	+5%
Durham Tech	19,135	1.1%	23,646	1.4%	-4,511	-19%
Research Triangle HS*			20,994	1.3%	-20,994	<i>ended</i>
City of Raleigh	13,509	0.8%	11,838	0.7%	1,671	+14%
American Tobacco	9,184	0.5%	9,067	0.5%	117	-
City of Durham	7,509	0.4%	5,414	0.3%	2,095	+39%
NC Central University	7,249	0.4%	3,618	0.2%	3,631	+100%
Red Hat	7,069	0.4%	7,730	0.5%	-661	-9%
GoTriangle	6,719	0.4%	5,583	0.3%	1,136	+20%
Other GoPasses (8)	17,457	1.0%	16,824	1.0%	633	+4%
Total Boardings	1,674,324		1,656,150		18,174	

FY 2019 Boardings:



* Before Youth GoPass, youth age 13-18 paid reduced fare. Many of GoTriangle's youth riders had a student GoPass from Research Triangle High School, which is no longer offered since Youth GoPass is available.

** FY 2018 includes only six months of Go OnDemand service.



Connecting all points of the Triangle

MEMORANDUM

TO: GoTriangle Board of Trustees – Operations & Finance Committee
FROM: Regional Services Development
DATE: December 19, 2018
SUBJECT: FY 2018 Annual Bus Service Performance Report

Action Requested

None.

Background and Purpose

In September 2003, GoTriangle's Board of Trustees adopted the Regional Bus Service Standards to establish performance expectations for the agency's fixed-route services. This report provides a summary of GoTriangle's regional bus service performance during Fiscal Year 2018, with comparisons to FY 2017 and prior years to illustrate changes and trends in performance.

Key Findings

- Ridership on the GoTriangle system increased to 1,667,545 boardings in FY 2018 from 1,661,720 in FY 2017.
- Increased midday and weekend frequency has led to increased ridership at all off-peak times. Midday ridership is up 10%, weekday evening ridership is up 25%, Saturday ridership is up 11%, and Sunday ridership is up 15%.
- Productivity fell from 11.8 boardings per hour to 11.4 boardings per hour, a 4% drop. This is partly due to the introduction of increased midday and weekend frequency.
- GoTriangle met the agency goal for on-time performance with 88% of trips arriving on-time to end of line timepoints, up from 86% the previous year. However, several routes failed to meet the target on weekdays, with Routes 102, 305, DRX, and WRX having the lowest on-time performance.

Financial Impact

Not applicable.

Attachments

- FY 2018 Annual Bus Service Performance Report
- FY 2018 System Statistics
- FY 2018 Route Statistics
- FY 2018 Commute Market Statistics
- FY 2018 On-Time Performance
- FY 2018 Wake Service Standards Analysis

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Connecting all points of the Triangle

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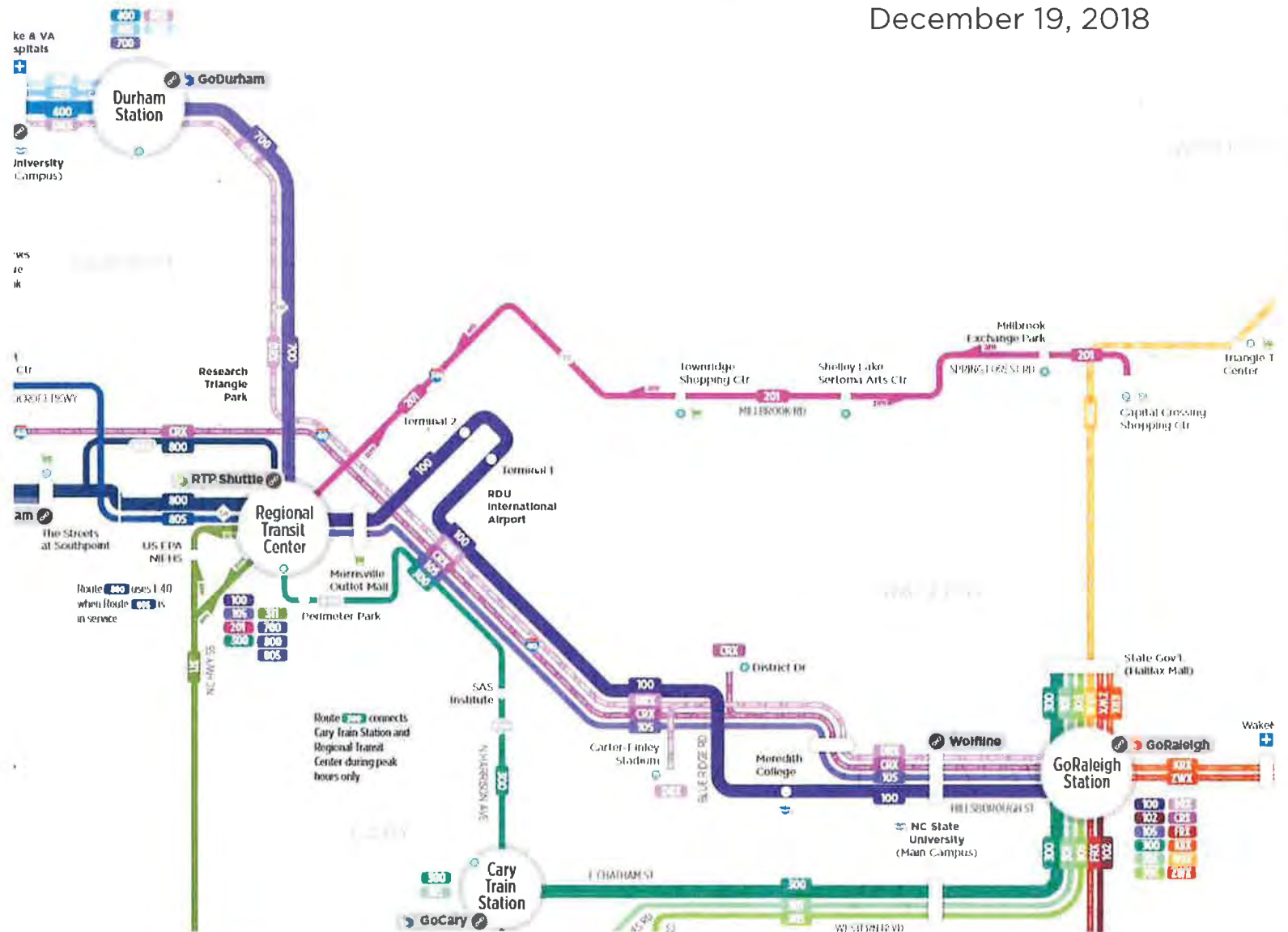


FY 2018 Annual Bus Service Performance Report

Prepared by
 Jon Dodson (Transit Service Planner)
 and Matthew Frazier (Data Specialist)

Regional Services Development

December 19, 2018



Introduction

In September 2003, GoTriangle's Board of Trustees adopted the Regional Bus Service Standards to establish performance expectations for the agency's fixed-route services. The intent was to drive improvements in productivity by routinely and systematically evaluating bus service performance against quantifiable indicators. Since the adoption of the Standards, the annual performance reporting process has been incrementally adjusted to provide the most useful information about GoTriangle's bus service.

The GoTriangle performance indicators presented in this report are:

- **Daily Boardings** – how many people are using the service provided?
- **Boardings per Revenue Hour** – how cost-effective is this service compared to others?
- **On-Time Performance** – how well is the service meeting the expectations set by the schedule?

This report provides a summary of GoTriangle's regional bus service performance during Fiscal Year 2018, with comparisons to Fiscal Year 2017 and prior years in order to illustrate changes and trends in performance.

Key Findings

- Ridership on the GoTriangle system increased to 1,667,545 boardings in FY 2018 from 1,661,720 in FY 2017.
- Increased midday and weekend frequency has led to increased ridership at all off-peak times. Midday ridership is up 10%, weekday evening ridership is up 25%, Saturday ridership is up 11%, and Sunday ridership is up 15%.
- Productivity fell from 11.8 boardings per hour to 11.4 boardings per hour, a 4% drop. This is partly due to the introduction of increased midday and weekend frequency.
- GoTriangle met the agency goal for on-time performance with 88% of trips arriving on-time to end of line timepoints, up from 86% the previous year. However, several routes failed to meet the target on weekdays, with Routes 102, 305, DRX, and WRX having the lowest on-time performance.

What Changed in FY 2018

GoTriangle usually implements major service changes in August of each year. However, this year, there were three groups of service changes.

In July 2017, FHWA mitigation funding for the Fortify I-40/I-440 project ended. This funding had covered the operating costs of Routes FRX (Fuquay-Varina – Raleigh Express), CLX (Clayton – Raleigh Express), and JCX (Johnston County – Raleigh Express), as well as peak service on Route 300 between Raleigh and Cary.

The Wake County Transit Plan provided funding to continue Route FRX and the expanded Route 300 service. However, since Route FRX was not meeting performance standards, its service was reduced from 12 peak-direction trips to 6 peak-direction trips. Routes CLX and JCX were discontinued because they were not meeting performance standards and no funding was available from Johnston County.

In August 2017, funding from the Wake, Durham, and Orange County Transit Plans allowed service to be increased on the core routes. Routes 100 (Raleigh – Airport – RTC), 300 (Raleigh – Cary), 700 (Durham – RTC), and 800 (Chapel Hill – Southpoint – RTC) received additional midday and Saturday trips to raise frequency to every 30 minutes. Previously, the routes operated every 60 minutes from 9:30 AM – 3:30 PM on weekdays and 7:00 AM – 7:00 PM on Saturdays. Service levels on Route 400 (Durham – Patterson Place – Chapel Hill) had already been raised to this level in August 2016.

In addition, Route 300 (Raleigh – Cary – RTC) received hourly evening service until 10:00 PM on weekdays and Saturdays, and Sunday service to match the other core routes. Previously, Route 300 did not operate after 7:00 PM on weekdays and Saturdays, and it did not operate at all on Sundays.

Finally, in January 2018, the Research Triangle Park shuttles (Routes 42, 46, 47, and 49) were replaced with the Go OnDemand pilot service. Rather than operating on a fixed route, customers request a shuttle ride within the RTP area via phone, a Web site, or the TransLoc Rider smartphone app. Midday service was introduced as part of this project. The goal of the pilot was to either increase ridership within the RTP, or to serve the same ridership more cost-effectively.

Overall Performance

Across the system and including contracted services, GoTriangle had 1,667,545 customer boardings in FY18. This represents a nominal increase compared to FY17 (1,661,720 boardings).

GoTriangle increased the amount of service provided from 140,448 revenue hours in FY 2017 to 146,503 revenue hours in FY 2018. The increase in revenue hours mostly consisted of the additional midday and weekend services on the core routes. Productivity declined from 11.8 boardings per hour to 11.4, a decrease of 4%. This was expected, because it takes time for ridership increases to catch up with additional service offered.

System-wide on-time performance increased from 85% to 88%, meeting the GoTriangle goal of 85%.

Attachment C contains detailed ridership and productivity data for each route, and Attachment D contains data for each route's peak service, broken down by direction of travel. The following sections will discuss highlights from the ridership and productivity data.

Changes in Ridership by Route

Ridership on weekday peak services as a whole was slightly down in FY 2018. However, thanks to service increases funded by the County Transit Plans, all off-peak service categories show marked improvements in ridership.

Boardings Per Day	FY 2017	FY 2018	Change
Weekday Peak	4,869	4,782	-2%
Weekday Midday	981	1,078	10%
Weekday Evening	247	309	25%
Saturday	1,351	1,495	11%
Sunday	697	799	15%

* This table includes Route RSX (Robertson Scholars Express), but tables in the following subsections do not.

Peak Services

While the overall change in ridership on the peak services shows a slight decrease, there continues to be a large difference between each route and destination. The following analysis discusses ridership on peak services based on which regional destination each route serves: Chapel Hill, Durham, Raleigh, and the Regional Transit Center.

When a route connects two of these regional centers, ridership is split by direction. (For example, on Route DRX, AM trips from Raleigh to Durham and PM trips from Durham to Raleigh are reported in the "Peak Service to Durham" section.) This is marked by a "+" symbol in the tables.

To Raleigh

Unlike FY 2017, peak ridership to Raleigh increased by 4% in terms of daily boardings. Employment growth in downtown Raleigh is likely contributing, combined with intentional TDM efforts by downtown employers such as Red Hat.

Route DRX continues to be the highest-ridership route to Raleigh. It is followed by Route 300, which also posted the highest year-over-year increase: 33 boardings per day. (The August 2017 service changes to Route 300 did not add more peak service, but the increased off-peak service enables riders to take more trips at peak as well.)

Route	From	FY 17	FY 18	Δ
300	Cary †	157	190	21%
102	Garner	45	67	50%
DRX	Durham †	191	202	6%
105	Raleigh †	85	90	6%
ZWX	Zebulon/Wendell	56	61	9%
WRX	Wake Forest	47	51	9%
CRX	Chapel Hill †	154	157	2%
FRX	Fuquay-Varina	67	63	-6%
KRX	Knightdale	37	31	-16%
100	RTC/Airport †	92	86	-7%
301	Southeast Cary	130	124	-5%
305	Cary/Apex	111	95	-14%
Total Daily Boardings		1,172	1,217	4%

Route 102's ridership increased by 50%, but in absolute terms this is only 22 boardings per day. Ridership on Routes WRX and ZWX is slightly up as well. And while ridership on Route FRX is down by 6%, a full 48% of the route's service was discontinued at the beginning of the fiscal year. This suggests that the new service level (three peak direction trips per day) is more appropriate for the route.

To Durham

Peak ridership to Durham decreased slightly in FY 2018. Route ODX's ridership increased from 93 daily boardings to 103, but Route 400's ridership decreased from 184 daily boardings to 162. (The decrease on Route 400 may be a continuing effect of the August 2016 service change, which reduced service on University Dr and Southwest Durham Dr to peak-only.) The other routes were generally flat, fluctuating by only a few daily boardings.

Route	From	FY 17	FY 18	Δ
ODX	Hillsborough/Mebane	93	103	10%
405	Chapel Hill/Carrboro †	203	209	3%
DRX	Raleigh †	269	269	0%
700	RTC †	98	96	-3%
400	Chapel Hill/South Sq. †	184	162	-12%
Total Daily Boardings		848	837	-1%

To Chapel Hill

Overall boardings to Chapel Hill had a nominal decrease of 2%, and in general ridership remained flat on individual routes. The only significant change was on Route 805, whose ridership decreased from 294 boardings per day to 277.

Route	From	FY 17	FY 18	Δ
400	Durham/Patterson Pl. †	285	287	1%
CRX	Raleigh †	238	237	0%
405	Durham †	287	285	-1%
800	RTC/Southpoint †	455	449	-1%
420	Hillsborough	180	173	-4%
805	RTC/Woodcroft †	294	277	-6%
Total Daily Boardings		1,740	1,708	-2%

To the Regional Transit Center

Boardings to the Regional Transit Center were down by 8% from last year, with across-the-board decreases. Due to the introduction of Go OnDemand, ridership on services within the Research Triangle Park decreased from 117 boardings per day to 104. (Go OnDemand is free during the pilot period, which suggests that ridership decreases would have been even greater if a fare had been charged.)

Route	From	FY 17	FY 18	Δ
300	Cary †	122	123	0%
311	Apex/Lake Pine	82	78	-5%
100	Raleigh/Airport †	118	113	-4%
805	Woodcroft †	112	103	-8%
105	Raleigh †	133	124	-7%
201	North Raleigh	60	50	-16%
700	Durham †	184	173	-6%
	Shuttles/Go OnDemand	117	104	-11%
800	Chapel Hill/Southpoint †	112	89	-20%
Total Daily Boardings		1,038	956	-8%

A more detailed analysis of Go OnDemand revealed that even though the ridership trend is only slightly down, the number of trips to and from the Regional Transit Center has decreased sharply, with their replacements taking trips directly from origin to destination within the RTP area. This suggests that fewer riders are connecting with GoTriangle fixed routes, which is probably contributing to the decrease in ridership on other routes serving the RTC.

Off-Peak Services

Midday Service	FY 17	FY 18	Δ	Evening Service	FY 17	FY 18	Δ
100 (Raleigh – Airport – RTC)	211	248	17%	100 (Raleigh – Airport – RTC)	69	77	11%
300 (Raleigh – Cary)	119	140	17%	300 (Raleigh – Cary)		25	new
400 (Durham – Chapel Hill)	253	260	3%	400 (Durham – Chapel Hill)	61	75	22%
700 (Durham – RTC)	136	150	10%	700 (Durham – RTC)	49	57	16%
800 (Chapel Hill – RTC)	206	223	9%	800 (Chapel Hill – RTC)	52	61	17%
Go OnDemand		14	new				
Total Daily Boardings	926	1,035	12%	Total Daily Boardings	232	294	27%

Saturday Service	FY 17	FY 18	Δ	Sunday Service	FY 17	FY 18	Δ
100 (Raleigh – Airport – RTC)	377	431	14%	100 (Raleigh – Airport – RTC)	223	238	7%
300 (Raleigh – Cary)	105	180	71%	300 (Raleigh – Cary)		78	new
400 (Durham – Chapel Hill)	343	340	-1%	400 (Durham – Chapel Hill)	185	184	0%
700 (Durham – RTC)	233	258	11%	700 (Durham – RTC)	128	151	18%
800 (Chapel Hill – RTC)	252	252	0%	800 (Chapel Hill – RTC)	131	117	-11%
Total Daily Boardings	1,310	1,461	12%	Total Daily Boardings	666	767	15%

The new off-peak service on Routes 100, 300, 700, and 800 resulted in noticeable ridership gains – especially on Route 300 (Raleigh – Cary), where evening and Sunday service was added for the first time. Route 400 is maintaining the additional ridership it gained in the August 2016 service change.

The expanded service was not well-received on Route 800 (Chapel Hill – RTC via Southpoint), where Saturday ridership remained flat despite a near-doubling of service, and Sunday ridership decreased. This continues a trend of declining weekend ridership that began in FY 2016. Additional analysis reveals that the decline in ridership has been mostly in trips from Chapel Hill to Southpoint – ridership to and from the RTC is essentially the same.

Staff suspects that the additional weekend service hasn't attracted new riders because Route 800 serves local stops on NC-54 off-peak, which makes trips from Chapel Hill to the RTC and points east very slow. Currently, a trip from UNC Chapel Hill to NC State at 2:00 PM on Saturday takes 1 hour 25 minutes by bus, while driving takes only 30-40 minutes. The Short-Range Transit Plan recommends realigning Route 800 to I-40 off-peak to provide more competitive travel times.

Robertson Scholars Express (RSX)

Route RSX (Robertson Scholars Express) is unique in that it is funded by the Robertson Scholars Foundation, which reimburses GoTriangle for the route's operating costs. It operates directly between the Duke Chapel and UNC Morehead Planetarium without making any stops in between, and provides service only during the academic year.

From FY 2017 to FY 2018, ridership decreased from 222 to 198 boardings per weekday, and decreased from 72 to 61 boardings per Saturday. Sunday ridership was essentially the same, with 53 daily boardings in FY 2018 compared to 51 daily boardings in FY 2017. This continues a trend of declining ridership that began in FY 2015. GoTriangle has made suggestions to the Robertson Scholars Foundation for increasing the route's ridership, but the Foundation wants to keep the route design the same.

Productivity by Route

GoTriangle's Regional Bus Service Standards establish categories for routes, and compare routes to one another within each category. A route is considered "high performing" if its number of boardings per revenue hour is above 125% of the average for its service category, and "low performing" if its number of customer boardings per hour is below 75% of the average for its service category.

The Wake Transit Service Standards and Performance Measures set a different process for evaluating route performance, by comparing each route's productivity to a fixed target for the service category. For reference, GoTriangle routes are evaluated against the Wake Transit targets in Attachment F.

Peak Services

Peak services are divided into two categories: Regional and Express¹.

Regional Routes	Productivity	Performance
405 (Durham – Chapel Hill/Carrboro)	20.6	High
700 (Durham – RTC)	20.1	High
800 (Chapel Hill – RTC via Southpoint)	17.9	High
400 (Durham – Chapel Hill via Patterson Place)	16.6	High
805 (Chapel Hill – RTC via Woodcroft)	14.0	Average
105 (Raleigh – RTC)	11.5	Average
102 (Raleigh – Garner)	11.2	Average
420 (Hillsborough – Chapel Hill)	12.7	Average
300 (Raleigh – Cary – RTC)	11.1	Average
100 (Raleigh – Airport – RTC)	8.5	Low
305 (Lake Pine – Cary – Raleigh)	8.1	Low
301 (SE Cary – Raleigh)	7.2	Low
201 (North Raleigh – RTC)	6.2	Low
311 (Apex – RTC – EPA)	5.3	Low
42-49 and Go OnDemand (RTP Shuttles)	5.1	Low
Category Average – FY 2018	12.5	
Category Average – FY 2017	13.0	

Routes 400, 405, 700, and 800 have been consistently high performing by this measure. Routes 201, 301, 305, and 311 have been consistently low performing, but the Wake Bus Plan includes proposals to address the productivity of each of these routes.

Route 100's low performing status is challenging to solve, because while it performs well off-peak, at peak it competes with Routes 105, CRX, and DRX for passengers. Similarly, it was hoped that Go OnDemand would have higher productivity than the previous fixed-route shuttles (which were very low performing when compared to other routes), but the productivity has actually declined. Staff is considering other options for GoTriangle service in the RTP and will present proposals in early 2019.

¹ Because the previous shuttles were all combined into a single service (Go OnDemand) in the middle of the year, they have been moved into the Regional category for comparison purposes.

Express Routes	Productivity	Performance
DRX (Durham – Raleigh Express)	18.2	High
CRX (Chapel Hill – Raleigh Express)	13.5	Average
RSX (Robertson Scholars Express)	11.1	Average
ODX (Orange – Durham Express)	9.5	Average
FRX (Fuquay-Varina – Raleigh Express)	8.7	Low
ZWX (Zebulon – Wendell – Raleigh Express)	8.6	Low
KRX (Knightdale – Raleigh Express)	5.5	Low
WRX (Wake Forest – Raleigh Express)	5.3	Low
Category Average – FY 2018	12.2	
Category Average – FY 2017	11.5	

Route DRX has always been the highest-performing express route due to its strong bidirectional demand. To accommodate its growing passenger demand (which leads to consistent passenger overcrowding on some trips), GoTriangle added ten new daily trips in August 2018.

Route FRX is still classified as low performing, but its productivity has improved significantly thanks to the service changes in July 2017. Ridership growth over time, combined with future access to Wake Tech, should allow it to reach average. The Wake Bus Plan recommended finding a new Park-and-Ride for Route WRX, and converting Route KRX into a local route (which is a better fit for the travel market).

Off-Peak Services

Off-peak services are split into categories based the time of day: Midday, Evening, Saturday, and Sunday. High performing routes are highlighted in blue, and low performing routes in orange.

Route	Midday	Evening	Saturday	Sunday
100 (Raleigh – Airport – RTC)	12.3	10.8	8.4	9.9
300 (Raleigh – Cary)	10.7	7.8	7.6	7.1
400 (Durham – Chapel Hill)	10.8	9.5	6.5	8.0
700 (Durham – RTC)	13.2	14.3	10.1	12.7
800 (Chapel Hill – RTC via Southpoint)	10.0	8.1	5.2	5.1
RSX (Robertson Scholars Express)	7.4	3.9	4.6	5.2
Go OnDemand	2.3			
Category Average – FY 2018	10.7	9.2	7.2	8.1
Category Average – FY 2017	15.2	8.7	9.1	7.8

While the service added to Routes 100 and 700 has increased ridership, it has also pulled their productivity closer to the system average. (Both routes were previously high performing at midday, and Route 100 was also previously high performing on Saturday.) And since the service added to Route 800 on Saturday has not resulted in increased ridership, it is now low performing on Saturdays as well as Sundays.

Route 700 has been consistently high-performing by this measure since it has a shorter pattern than other off-peak routes, with high demand at both ends. Similarly, Route RSX has been consistently low-performing by this measure since its travel market is so limited, and staff's suggestions for expanding the market have not been accepted by the Robertson Scholars Foundation. Midday service for Go OnDemand is new, but due to the extremely low productivity, staff is proposing that it be discontinued so the resources can be used to improve the quality of peak service.

On-Time Performance

GoTriangle considers a trip on time if it arrives at its end-of-line timepoint no more than five minutes later than the scheduled time. The defined goal is for 85% of trips to arrive on time. For FY 2018, GoTriangle met this goal with 88% of trips arriving on time, up from 86% the previous year.

Despite the overall increase, some routes did not meet the 85% mark on weekdays. These routes are:

Route	FY 17	FY 18	Δ	Actions in FY 19
102 (Raleigh – Garner)	64%	77%	+13%	Changes proposed in Wake Bus Plan
305 (Raleigh – Cary- Lake Pine)	80%	80%	0%	Schedule adjusted January 2019
800 (Chapel Hill – RTC via Southpoint)	81%	84%	+3%	Changes proposed in SRTP
CRX (Chapel Hill – Raleigh Express)	70%	83%	+13%	Schedule adjusted August 2018
DRX (Durham – Raleigh Express)	78%	79%	+1%	Schedule adjusted August 2018
KRX (Knightdale – Raleigh Express)	84%	84%	0%	Changes proposed in Wake Bus Plan
WRX (Wake Forest – Raleigh Express)	83%	80%	-3%	Changes proposed in Wake Bus Plan

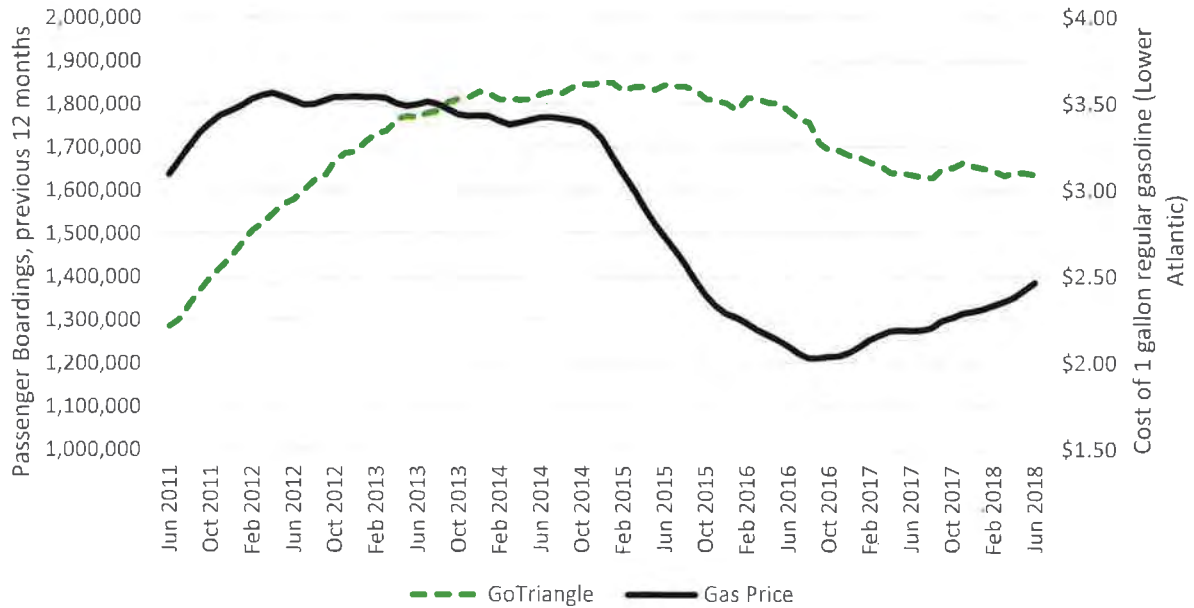
Save for the WRX, all routes not meeting the 85% in FY 2018 did improve from FY 2017. Similarly, Routes 105, 300, 805, FRX, and ZWX had not met the 85% standard in FY 2017, but did meet it in FY 2018. The increase in gas prices may have moderated the growth of regional traffic congestion. Key construction projects also completed during FY 18, including the renovation of GoRaleigh Station.

All routes met the 85% standard on weekends, except for Routes 300 (on both Saturdays and Sundays) and Route 400 (on Saturdays only).

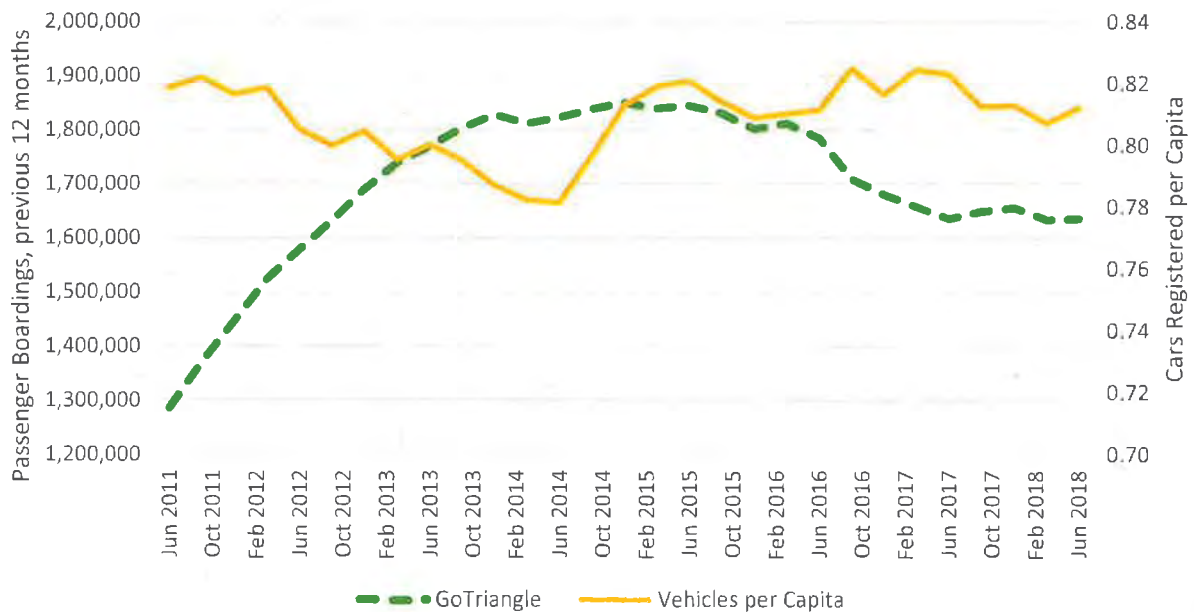
A complete table with each route's on-time performance is included as Attachment E.

External Trends

Gas prices rose during FY 2017, from \$2.18 in June 2017 to \$2.71 in June 2018. This may explain why the previous trend of decreasing ridership has slowed. However, gas prices are still nowhere near the high levels that characterized the period of high ridership growth from FY 2012 – 2014. The relationship between GoTriangle’s ridership and gas prices can be seen in the below chart.

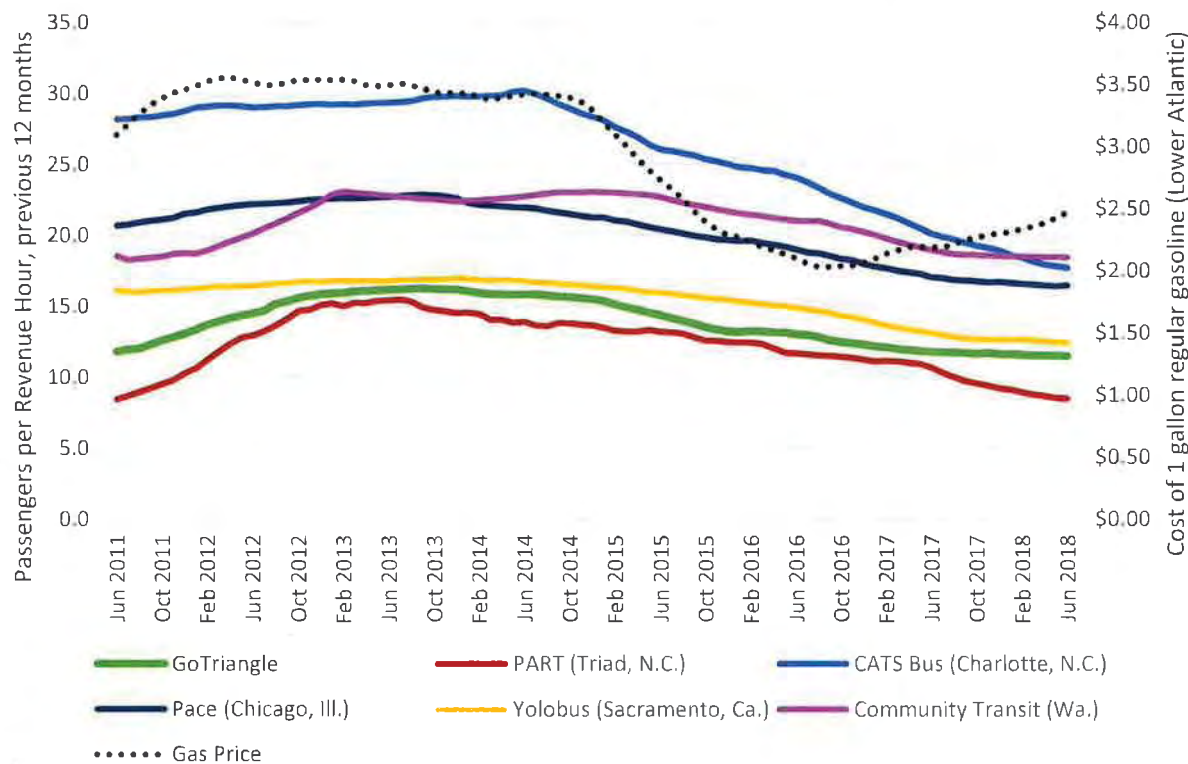


Similarly, the period of increasing ridership in FY 2012 – 2014 was characterized by a noticeable decline in car ownership in GoTriangle’s service area, but currently the rate of car ownership has remained the same since FY 2015.



Peer Comparison

Other transit systems in the United States have been experiencing a trend of decreasing ridership and productivity over the past few years. This chart shows productivity (in terms of boardings per revenue hour) for other transit agencies which have been identified as GoTriangle's peers.



While none of the peers have a trend of increasing productivity, there is less of a downward trend for GoTriangle and our out-of-state peers. GoTriangle had the lowest year-to-year decrease in productivity, followed by Community Transit – another agency which is expanding service through voter-approved funding. By contrast, our North Carolina peers have continued to see sharp declines. CATS' is a continuation of a trend which has been ongoing since 2014, while PART's ridership is still recovering from a revenue-neutral restructure (implemented in July 2017) which discontinued several routes.

GoTriangle's relative position within the peer group has not changed. PART and Yolobus are our closest peers: they are the only other transit systems in the United States which provide regional express bus as their basic service type, operate in regions without a single dominant city, coordinate with multiple municipal transit systems, and do not operate rail service. Accordingly, GoTriangle's productivity is comparable to those systems. If we are able to further increase productivity through investments identified in the SRTP, we may overtake Yolobus.

While CATS, Community Transit, and Pace serve entire regions and operate express service, their basic service type is urban (or suburban) local bus service, which tends to have higher productivity on the basis of boardings per hour, and their express bus service has a single regional CBD on which to focus. Accordingly, their productivity is much higher than GoTriangle's. These systems are included as aspirational peers.

What's Next?

Several service changes have already been implemented in August 2018.

- Sunday service on Routes 100, 300, 400, 700, and 800 was extended by two hours to match the span of the local systems, funded by the Wake, Durham, and Orange County Transit Plans.
- Route CRX's schedule was adjusted to utilize a new vehicle funded by the Wake County Transit Plan.
- Route DRX received a major investment from both the Wake and Durham County Transit Plans, with ten new daily trips added in the AM and PM peak.
- Service was added on previously unserved holidays (Memorial Day, Independence Day, Labor Day, Christmas Eve, and New Year's Day).

More service changes are scheduled for January 2019.

- Midday Go OnDemand service will be discontinued due to low ridership, and the resources will be reinvested in improving the service's reliability during peak hours.
- Minor schedule changes will be made to Routes 100, 105, 300, and 305.

Also in FY 2019, the Wake Bus Plan and the GoTriangle Short-Range Transit Plan (which incorporates GoTriangle's route changes from the Wake Bus Plan) were completed by staff and approved by the GoTriangle Board of Trustees. The Short-Range Transit Plan was focused on three key improvements to the regional transit network, which are cited by both customers and non-customers as reasons to take transit more often:

- Make service faster and more time-competitive
- Provide more frequent service
- Provide more all-day service

The plan provides a blueprint for how the agency will develop and implement regional bus service through FY 2027. Changes to many routes are proposed for implementation in FY 2020 and FY 2021, but coordination with other agencies may affect the alignments of these new routes and the timing of their implementation.

- Route 102 will be replaced with an all-day GoRaleigh local service to Garner.
- Route 201 will be converted into an express route between Triangle Town Center and the RTC.
- Route 300's service between Cary and the RTC will be split into a new Route 310, which will serve the Wake Tech RTP campus and key destinations in Morrisville all day.
- Route 305 will be upgraded to run all day, seven days a week.
- Routes 400 and 405 will be realigned to provide service every 15 minutes between Durham and Chapel Hill during peak.
- Route 800 will be streamlined to use I-40 at all times rather than providing local service along NC-54 off-peak, which will provide faster travel times between Chapel Hill and points east.
- Route FRX will begin serving Wake Technical Community College's Main Campus. (Wake Tech is designating a Park-and-Ride on campus for Route FRX.)
- Route KRX will be replaced with an all-day GoRaleigh local service to Knightdale.

- Route ODX will be streamlined to focus on the high-ridership stops (Mebane Cone Health Park-and-Ride, Durham Tech OCC Park-and-Ride, and in the future, the North Hillsborough Park-and-Ride), providing higher frequency.
- Route WRX will begin serving a new Park-and-Ride which will be convenient for more area residents.

As a follow-up to the Short-Range Transit Plan, Service Planning staff will develop updated service standards and performance measures for GoTriangle bus service. These will be presented to the Board of Trustees later in FY 2019, and if approved, the FY 2019 annual bus service performance report will evaluate service according to the new standards.

The Wake Bus Plan was accompanied by a regional fare study, whose results are currently being presented to the governing boards of GoTriangle, GoDurham, GoRaleigh, and GoCary. If the study results are received favorably by the governing boards, staff would like to implement the new regional fare structure for FY 2020. Already, the transit agencies have implemented a new Youth GoPass, which allows youth ages 13 – 18 to ride transit for free.



Attachment B: System Statistics									
	Daily Boardings			Daily Revenue Hours			Boardings per Hour		
	FY 2017	FY 2018	Δ	FY 2017	FY 2018	Δ	FY 2017	FY 2018	Δ
System							11.8	11.4	-4%
Weekday	6,097	6,169	1%	494.3	543.4	10%	12.7	11.9	-6%
Regional Peak	3,528	3,442	-2%	262.5	264.9	1%	13.5	13.1	-3%
Express	1,224	1,236	1%	111.1	106.1	-5%	11.5	12.2	7%
Shuttles	117	104	-11%	19.0	22.5	19%	6.2	5.1	-17%
Regional Midday	981	1,078	10%	70.9	115.5	63%	15.2	10.7	-30%
Regional Night	247	309	25%	30.9	34.4	11%	8.7	9.2	6%
Saturday	1,351	1,495	11%	156.3	222.3	42%	9.1	7.2	-21%
Sunday	697	799	15%	93.5	104.4	12%	7.8	8.1	4%

	Annual Boardings			Revenue Hours			Revenue Miles	
	FY 2017	FY 2018		FY 2017	FY 2018		FY 2017	FY 2018
System	1,661,720	1,667,545		140,448	146,503		2,819,922	2,892,938
Weekday	1,530,270	1,542,263		120,708	129,667		2,454,113	2,602,845
Regional Peak	885,618	860,383		65,778	65,759		1,225,176	1,231,297
Express	307,262	309,040		26,823	25,269		701,719	652,476
Shuttles	29,272	26,053		4,751	5,066		96,401	119,716
Regional Midday	246,191	269,483		16,226	25,206		289,600	447,168
Regional Night	61,927	77,304		7,131	8,368		141,217	152,188
Saturday	74,287	83,718		8,160	11,697		143,847	197,317
Sunday	35,554	41,564		4,551	5,139		81,001	92,776

Attachment C: Route Statistics	Boardings	Days	Daily Boardings			Daily Revenue Hours			Boardings per Hour		
Route	FY 2018		FY 17	FY 18	Δ	FY 17	FY 18	Δ	FY 17	FY 18	Δ
System Total	1,667,545	358							11.8	11.4	↓ -4%
Weekday System Total	1,542,263	250	6,097	6,169	1%	494.3	543.4	↑ 10%	12.7	11.9	↓ -6%
Weekday Peak Services	1,195,476	250	4,869	4,782	↓ -2%	392.5	393.5	0%	12.6	12.4	↓ -1%
Weekday Peak - Regional Routes	860,383	250	3,528	3,442	↓ -2%	262.5	264.9	1%	13.5	13.1	↓ -3%
100 Raleigh-Airport-RTC	49,686	250	210	199	↓ -5%	23.3	23.3	0%	9.0	8.5	↓ -6%
102 Raleigh-Garner	16,763	250	45	67	↑ 50%	6.0	6.0	0%	7.4	11.2	↑ 51%
105 Raleigh-RTC	53,490	250	217	214	↓ -2%	18.3	18.7	↑ 2%	11.9	11.5	↓ -3%
201 North Raleigh-RTC	12,497	250	60	50	↓ -16%	8.0	8.2	↑ 2%	7.4	6.2	↓ -17%
300 Raleigh-Cary-RTC	78,190	250	280	313	↑ 12%	26.1	26.1	0%	10.7	11.1	↑ 4%
301 Raleigh-Southeast Cary	30,886	250	130	124	↓ -5%	17.0	17.2	1%	7.6	7.2	↓ -5%
305 Raleigh-Cary-Lake Pine	23,749	250	111	95	↓ -14%	11.8	11.8	0%	9.4	8.1	↓ -14%
311 Apex-Lake Pine-RTC-EPA	19,472	250	82	78	↓ -5%	14.8	14.8	0%	5.5	5.3	↓ -4%
400 Durham-Patterson Place-Chapel Hill	112,222	250	469	449	↓ -4%	29.5	29.5	0%	15.9	16.6	↑ 5%
405 Durham-Chapel Hill/Carrboro	123,455	250	490	494	1%	23.4	24.2	↑ 3%	21.1	20.6	↓ -2%
420 Hillsborough-Chapel Hill	43,315	250	180	173	↓ -4%	13.7	13.7	0%	13.5	12.7	↓ -6%
700 Durham-RTC	67,022	250	282	268	↓ -5%	13.2	13.2	0%	21.3	20.1	↓ -6%
800 Chapel Hill-Southpoint-RTC	134,709	250	568	539	↓ -5%	30.8	30.8	0%	18.5	17.9	↓ -3%
805 Chapel Hill-Woodcroft-RTC	94,927	250	406	380	↓ -6%	26.6	27.6	↑ 3%	15.3	14.0	↓ -8%
Weekday Peak - Express Routes	309,040	250	1,224	1,236	1%	111.1	106.1	↓ -5%	11.5	12.2	↑ 7%
CRX Chapel Hill-Raleigh Express	98,565	250	392	394	1%	28.3	29.4	↑ 4%	13.9	13.5	↓ -3%
DRX Durham-Raleigh Express	117,576	250	460	470	↑ 2%	25.5	26.0	↑ 2%	18.1	18.2	1%
FRX Fuquay-Varina-Raleigh Express	15,695	250	67	63	↓ -6%	13.8	7.3	↓ -48%	4.8	8.7	↑ 80%
KRX Knightdale-Raleigh Express	7,695	250	37	31	↓ -16%	5.6	5.6	0%	6.5	5.5	↓ -15%
ODX Orange-Durham Express	25,662	250	93	103	↑ 10%	10.9	10.8	↓ -1%	8.5	9.5	↑ 12%
RSX Robertson Scholars Express	15,644	161	112	97	↓ -13%	10.0	10.0	0%	12.3	11.1	↓ -10%
WRX Wake Forest-Raleigh Express	12,852	250	47	51	↑ 9%	9.8	9.8	0%	4.8	5.3	↑ 9%
ZWX Zebulon-Wendell-Raleigh Express	15,351	250	56	61	↑ 9%	7.2	7.2	0%	7.9	8.6	↑ 9%
Weekday Peak - RTP Shuttle Service	26,053	250	117	104	↓ -11%	19.0	22.5	↑ 19%	6.2	5.1	↓ -17%
Weekday Midday	269,483	250	981	1,078	↑ 10%	70.9	115.5	↑ 63%	15.2	10.7	↓ -30%
100 Raleigh-Airport-RTC	61,939	250	211	248	↑ 17%	11.0	22.0	↑ 100%	19.2	12.3	↓ -36%
300 Raleigh-Cary	34,950	250	119	140	↑ 17%	7.0	16.2	↑ 131%	17.0	10.7	↓ -37%
400 Durham-Patterson Place-Chapel Hill	65,100	250	253	260	↑ 3%	22.9	23.1	1%	11.7	10.8	↓ -8%
700 Durham-RTC	37,462	250	136	150	↑ 10%	6.1	12.3	↑ 101%	22.4	13.2	↓ -41%
800 Chapel Hill-Southpoint-RTC	55,753	250	206	223	↑ 9%	11.9	24.1	↑ 103%	17.3	10.0	↓ -42%
RSX Robertson Scholars Express	12,539	161	86	78	↓ -10%	12.0	12.0	0%	7.9	7.4	↓ -6%
RTP OnDemand (Midday)	1,740	125		14	new		6.0	new		2.3	new
Weekday Evening	77,304	250	247	309	↑ 25%	30.9	34.4	↑ 11%	8.7	9.2	↑ 6%
100 Raleigh-Airport-RTC	19,267	250	69	77	↑ 11%	6.8	6.8	0%	10.2	10.8	↑ 6%
300 Raleigh-Cary	6,161	250		25	new		3.5	new		7.8	new
400 Durham-Patterson Place-Chapel Hill	18,692	250	61	75	↑ 22%	6.8	6.8	0%	8.8	9.5	↑ 8%
700 Durham-RTC	14,203	250	49	57	↑ 16%	4.0	4.0	0%	12.2	14.3	↑ 17%
800 Chapel Hill-Southpoint-RTC	15,273	250	52	61	↑ 17%	6.8	6.8	0%	7.7	8.1	↑ 4%
RSX Robertson Scholars Express	3,708	161	24	23	↓ -4%	6.5	6.5	0%	3.8	3.9	↑ 2%
Saturday	83,718	56	1,351	1,495	↑ 11%	156.3	222.3	↑ 42%	9.1	7.2	↓ -21%
100 Raleigh-Airport-RTC	24,128	56	377	431	↑ 14%	32.1	53.4	↑ 66%	11.7	8.4	↓ -28%
300 Raleigh-Cary	10,068	56	105	180	↑ 71%	11.9	25.8	↑ 117%	8.8	7.6	↓ -14%
400 Durham-Patterson Place-Chapel Hill	19,036	56	343	340	↓ -1%	52.3	52.3	0%	6.9	6.5	↓ -5%
700 Durham-RTC	14,468	56	233	258	↑ 11%	15.8	26.7	↑ 68%	14.7	10.1	↓ -31%
800 Chapel Hill-Southpoint-RTC	14,119	56	252	252	0%	31.2	51.1	↑ 64%	8.1	5.2	↓ -36%
RSX Robertson Scholars Express	1,899	31	72	61	↓ -15%	13.0	13.0	0%	5.5	4.6	↓ -18%
Sunday	41,564	52	697	799	↑ 15%	93.5	104.4	↑ 12%	7.8	8.1	↑ 4%
100 Raleigh-Airport-RTC	12,361	52	223	238	↑ 7%	24.1	24.1	0%	9.2	9.9	↑ 7%
300 Raleigh-Cary	4,050	52		78	new		11.9	new		7.1	new
400 Durham-Patterson Place-Chapel Hill	9,572	52	185	184	0%	23.4	22.9	↓ -2%	7.9	8.0	1%
700 Durham-RTC	7,837	52	128	151	↑ 18%	11.8	11.8	0%	10.8	12.7	↑ 18%
800 Chapel Hill-Southpoint-RTC	6,088	52	131	117	↓ -11%	23.2	22.7	↓ -2%	5.7	5.1	↓ -9%
RSX Robertson Scholars Express	1,656	31	51	53	↑ 6%	11.0	11.0	0%	4.6	5.2	↑ 13%

Attachment D: Commute Market Statistics Route Origin	Daily Boardings			Daily Revenue Hours			Boardings per Hour		
	FY 17	FY 18	Δ	FY 17	FY 18	Δ	FY 17	FY 18	Δ
To Raleigh	1,172	1,217	↑ 4%	130.3	123.8	↓ -5%	9.0	9.7	↑ 7%
100 * From RTC/Airport	92	86	↓ -7%	11.4	11.4	0%	8.1	7.2	↓ -11%
102 From Garner	45	67	↑ 50%	6.0	6.0	0%	7.4	11.2	↑ 51%
105 From RTC	85	90	↑ 6%	8.3	8.6	↑ 4%	10.2	10.6	↑ 4%
300 From Cary (2015)	157	190	↑ 21%	13.7	13.7	0%	11.4	11.9	↑ 4%
301 * From Southeast Cary	130	124	↓ -5%	17.0	17.2	↑ 1%	7.6	7.2	↓ -5%
305 * From Cary/Apex	111	95	↓ -14%	11.8	11.8	0%	9.4	8.1	↓ -14%
CRX From Chapel Hill	154	157	↑ 2%	13.0	13.3	↑ 3%	11.9	12.0	↑ 1%
DRX From Durham	191	202	↑ 6%	12.6	11.8	↓ -6%	15.2	17.2	↑ 13%
FRX From Fuquay-Varina (2015)	67	63	↓ -6%	13.8	7.3	↓ -48%	4.8	8.7	↑ 80%
KRX From Knightdale	37	31	↓ -16%	5.6	5.6	0%	6.5	5.5	↓ -15%
WRX From Wake Forest	47	51	↑ 9%	9.8	9.8	0%	4.8	5.3	↑ 9%
ZWX From Zebulon/Wendell	56	61	↑ 9%	7.2	7.2	0%	7.9	8.6	↑ 9%
To Durham	848	837	↓ -1%	56.5	58.1	↑ 3%	15.0	15.2	↑ 1%
400 * From Chapel Hill	184	162	↓ -12%	13.6	13.6	0%	13.5	13.0	↓ -4%
405 From Chapel Hill/Carrboro (2016)	203	209	↑ 3%	12.1	12.5	↑ 4%	16.9	18.1	↑ 7%
700 * From RTC	98	96	↓ -3%	7.0	7.0	0%	14.0	14.8	↑ 6%
DRX From Raleigh	269	269	0%	12.9	14.2	↑ 10%	20.8	19.1	↓ -8%
ODX From Hillsborough/Mebane (2014)	93	103	↑ 10%	10.9	10.8	↓ -1%	8.5	9.5	↑ 12%
To Chapel Hill	1,740	1,708	↓ -2%	89.4	91.1	↑ 2%	19.5	19.4	↓ -1%
400 From Durham/Patterson Place	285	287	↑ 1%	15.9	15.9	0%	17.9	19.7	↑ 10%
405 From Durham	287	285	↓ -1%	11.4	11.7	↑ 3%	25.4	23.0	↓ -10%
420 From Hillsborough	180	173	↓ -4%	13.7	13.7	0%	13.5	12.7	↓ -6%
800 * From RTC/Southpoint	455	449	↓ -1%	18.4	18.4	0%	24.8	28.0	↑ 13%
805 From RTC/Woodcroft	294	277	↓ -6%	14.9	15.5	↑ 4%	19.8	18.1	↓ -8%
CRX From Raleigh	238	237	↓ 0%	15.3	16.1	↑ 5%	15.6	14.8	↓ -5%
To RTC	1,038	956	↓ -8%	106.4	110.5	↑ 4%	9.8	8.7	↓ -11%
100 * From Raleigh/Airport	118	113	↓ -4%	11.8	11.8	0%	9.9	9.8	↓ -1%
105 From Raleigh	133	124	↓ -7%	10.0	10.1	↑ 1%	13.2	12.3	↓ -7%
201 From North Raleigh	60	50	↓ -16%	8.0	8.2	↑ 2%	7.4	6.2	↓ -17%
300 * From Cary	122	123	0%	12.4	12.4	0%	9.9	10.0	↑ 1%
311 From Apex/Lake Pine	82	78	↓ -5%	14.8	14.8	0%	5.5	5.3	↓ -4%
700 * From Durham	184	173	↓ -6%	6.2	6.2	0%	29.6	25.0	↓ -16%
800 * From Chapel Hill/Southpoint	112	89	↓ -20%	12.4	12.4	0%	9.1	6.4	↓ -30%
805 From Woodcroft	112	103	↓ -8%	11.7	12.1	↑ 3%	9.5	8.7	↓ -9%
RTP Service (42/46/47/49/OnDemand)	117	104	↓ -11%	19.0	22.5	↑ 19%	6.2	5.1	↓ -17%

Attachment E: On-Time Performance		Did not meet target (85%) in FY 2017 or 2018			
Percent of trips on time at end of route (no more than five minutes behind schedule)		Met target FY 2017, but not FY 2018			
		Did not meet target in FY 2017, but did in FY 2018			
Route	Description	Hours of Operation	FY 2017	FY 2018	Δ
Weekdays					
100	Raleigh-Airport-RTC	6:40 AM - 11:25 PM	87%	92%	↑ 6 pt
102	Raleigh-Garner	Peak only	64%	77%	↑ 13 pt
105	Raleigh-RTC	Peak only	85%	90%	↑ 5 pt
201	North Raleigh-RTC	Peak only	89%	89%	--
300	Raleigh-Cary-RTC	6:00 AM - 10:25 PM	83%	88%	↑ 5 pt
301	Raleigh-SW Cary	Peak only	88%	90%	2 pt
305	Raleigh-Cary-Lake Pine	Peak only	80%	80%	--
311	Apex-Lake Pine-RTC-EPA	Peak only	88%	91%	3 pt
400	Durham-Patterson Place-Chapel Hill	6:15 AM - 10:55 PM	88%	89%	1 pt
405	Durham-Chapel Hill	Peak only	86%	85%	-1 pt
420	Hillsborough-Chapel Hill	Peak only	86%	92%	↑ 6 pt
700	Durham-RTC	6:00 AM - 10:55 PM	96%	96%	--
800	Chapel Hill-Southpoint-RTC	6:00 AM - 11:10 PM	81%	84%	3 pt
805	Chapel Hill-Woodcroft-RTC	Peak only	80%	90%	↑ 11 pt
CRX	Chapel Hill-Raleigh Express	Peak only	70%	83%	↑ 13 pt
DRX	Durham-Raleigh Express	Peak only	78%	79%	2 pt
FRX	Fuquay-Varina-Raleigh Express	Peak only	80%	86%	↑ 7 pt
KRX	Knightdale-Raleigh Express	Peak only	84%	84%	--
ODX	Orange-Durham Express	Peak only	91%	94%	2 pt
RSX	Robertson Scholars Express	7:30 AM - 11:28 PM	94%	92%	-2 pt
WRX	Wake Forest-Raleigh Express	Peak only	83%	80%	-3 pt
ZWX	Zebulon-Wendell-Raleigh Express	Peak only	77%	88%	↑ 12 pt
Saturday					
100	Raleigh-Airport-RTC	6:40 AM - 11:12 PM	89%	95%	↑ 6 pt
300	Raleigh-Cary	7:00 AM - 9:55 PM	n/a	72%	
400	Durham-Patterson Place-Chapel Hill	7:00 AM - 10:55 PM	85%	81%	↓ -5 pt
700	Durham-RTC	7:00 AM - 10:55 PM	100%	99%	--
800	Chapel Hill-Southpoint-RTC	6:45 AM - 11:20 PM	88%	86%	-1 pt
RSX	Robertson Scholars Express	12:00 PM - 12:28 AM	90%	88%	-2 pt
Sunday					
100	Raleigh-Airport-RTC	6:40 AM - 9:12 PM	96%	97%	1 pt
300	Raleigh-Cary	7:00 AM - 8:55 PM	n/a	79%	
400	Durham-Patterson Place-Chapel Hill	7:00 AM - 8:55 PM	96%	91%	↓ -5 pt
700	Durham-RTC	7:00 AM - 8:55 PM	100%	100%	--
800	Chapel Hill-Southpoint-RTC	6:45 AM - 9:20 PM	96%	91%	↓ -4 pt
RSX	Robertson Scholars Express	12:00 PM - 10:28 PM	91%	97%	↑ 6 pt
Weekday Total			85%	88%	3 pt
Saturday Total			90%	87%	-3 pt
Sunday Total			96%	92%	↓ -4 pt
System Total			86%	88%	3 pt

Attachment F: Wake Transit Service Standards Analysis		Boardings per Revenue Trip	Op. Cost per Boarding	Farebox Recovery	On-Time Performance
Regional Core Routes - Weekdays					
100	Raleigh-Airport-RTC	10.3 X	\$11.83 X	7.8% X	92% ✓
300	Raleigh-Cary-RTC	10.7 X	\$11.36 X	8.2% X	88% ✓
400	Durham-Patterson Place-Chapel Hill	13.3 X	\$9.19 X	11.2% X	89% ✓
700	Durham-RTC	16.5 ✓*	\$7.38 X	12.6% X	96% ✓
800	Chapel Hill-Southpoint-RTC	13.7 X	\$8.88 X	12.2% X	84% X
<i>Current Standard, through FY 2021</i>		16.0	\$7.20	16.0% **	85%
<i>Eventual Standard, FY 2027 and beyond</i>		20.0	\$6.00	20.0% **	85%
Regional Core Routes - Saturdays					
100	Raleigh-Airport-RTC	8.4 X	\$14.48 X	6.4% X	95% ✓
300	Raleigh-Cary-RTC	7.6 X	\$9.67 X	9.6% X	72% X
400	Durham-Patterson Place-Chapel Hill	6.5 X	\$18.75 X	5.5% X	81% X
700	Durham-RTC	10.1 X	\$12.05 X	7.7% X	99% ✓
800	Chapel Hill-Southpoint-RTC	5.2 X	\$23.68 X	4.6% X	86% ✓
<i>Current Standard, through FY 2021</i>		12.0	\$7.20	16.0% **	85%
<i>Eventual Standard, FY 2027 and beyond</i>		15.0	\$6.00	20.0% **	85%
Regional Core Routes - Sundays					
100	Raleigh-Airport-RTC	9.9 ✓*	\$12.37 X	7.5% X	97% ✓
300	Raleigh-Cary-RTC	7.1 X	\$9.82 X	9.5% X	79% X
400	Durham-Patterson Place-Chapel Hill	8.0 ✓*	\$15.25 X	6.7% X	91% ✓
700	Durham-RTC	12.7 ✓	\$9.58 X	9.7% X	100% ✓
800	Chapel Hill-Southpoint-RTC	5.1 X	\$23.70 X	4.6% X	91% ✓
<i>Current Standard, through FY 2021</i>		8.0	\$7.20	16.0% **	85%
<i>Eventual Standard, FY 2027 and beyond</i>		10.0	\$6.00	20.0% **	85%
Express Routes***					
102	Raleigh-Garner	11.2 ✓	\$9.40 ✓	10.5% X	77% X
105	Raleigh-RTC	11.5 ✓	\$10.56 ✓*	9.0% X	90% ✓
201	North Raleigh-RTC	6.2 X	\$19.72 X	4.5% X	89% ✓
301	Raleigh-SW Cary	7.2 X	\$16.86 X	5.6% X	90% ✓
305	Raleigh-Cary-Lake Pine	8.1 ✓*	\$15.11 X	6.6% X	80% X
311	Apex-Lake Pine-RTC-EPA	5.3 X	\$23.09 X	3.9% X	91% ✓
CRX	Chapel Hill-Raleigh Express	13.5 ✓	\$9.01 ✓	16.1% ✓	83% X
DRX	Durham-Raleigh Express	18.2 ✓	\$6.69 ✓	20.8% ✓	79% X
FRX	Fuquay-Varina-Raleigh Express	8.7 ✓*	\$13.40 X	11.3% X	86% ✓
KRX	Knightdale-Raleigh Express	5.5 X	\$20.91 X	6.6% X	84% X
WRX	Wake Forest-Raleigh Express	5.3 X	\$20.10 X	7.3% X	80% X
ZWX	Zebulon-Wendell-Raleigh Express	8.6 ✓*	\$13.38 X	10.3% X	88% ✓
405	Durham-Chapel Hill/Carrboro	20.6 ✓	\$5.91 ✓	18.2% ✓	85% ✓
420	Hillsborough-Chapel Hill	12.7 ✓	\$8.75 ✓	8.9% X	92% ✓
805	Chapel Hill-Woodcroft-RTC	14.0 ✓	\$8.72 ✓	11.8% X	90% ✓
ODX	Orange-Durham Express	9.5 ✓*	\$12.81 X	11.5% X	94% ✓
<i>Current Standard, through FY 2021</i>		8.0	\$12.00	12.0% **	85%
<i>Eventual Standard, FY 2027 and beyond</i>		10.0	\$10.00	15.0% **	85%

* Meets the standard currently in force, but would not meet the eventual standard (FY 2027 and beyond).

** Standards for farebox recovery are not final - this value was included as a proposal in an earlier draft.

*** All regional peak-only routes are classified as "Express" by the Wake Transit Service Standards.



Connecting all points of the Triangle

MEMORANDUM

TO: GoTriangle Board of Trustees – Operations & Finance Committee
FROM: Regional Services Development
DATE: October 25, 2017
SUBJECT: FY 2017 Annual Bus Service Performance Report

Strategic Objective or Initiative Supported

- 1.1 Increase number of customers served with sustainable transportation services.
- 1.2 Pursue service improvements and expansion opportunities.
- 1.5 Maintain cost-effectiveness.
- 2.2 Deliver reliable service.

Action Requested

None.

Background and Purpose

In September 2003, GoTriangle's Board of Trustees adopted the Regional Bus Service Standards to establish performance expectations for the agency's fixed-route services. This report provides a summary of GoTriangle's regional bus service performance during Fiscal Year 2017, with comparisons to FY 2016 and prior years to illustrate changes and trends in performance.

Key Findings

- In FY 2017, GoTriangle had a total of 1,661,334 boardings. This is a decrease of 7% from FY 2016, where there were 1,784,681 total boardings. Similarly, productivity decreased to 11.8 boardings per hour from 13.0 boardings per hour.
- The decline in ridership mirrors national trends for intercity transit authorities, and is most likely linked to decreases in gas prices and increases in car ownership in the Triangle. Services to employment centers with higher parking costs have retained more ridership.
- Peak hour ridership increased on Routes 300, 405, DRX, FRX, and ODX. Of particular note, Route 405's new service to Carrboro has attracted an average of 33 boardings per day.
- Many peak-hour services to Raleigh and the Regional Transit Center are losing ridership. Ridership on routes from Wake County towns to downtown Raleigh has decreased by 14% (excluding Fortify routes), and ridership on the RTP Shuttle routes has decreased by 26%. A new short-range transit plan is underway in FY 2018, which will provide opportunities to improve or reconsider these services.

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Connecting all points of the Triangle

- Ridership on midday service has decreased by 7%, and ridership on night and weekend service has decreased by 15%. However, additional frequency on Route 400 is leading to ridership growth during midday and Saturday, which will become more evident in future reports.
- GoTriangle's highest-productivity services at peak are Routes 400, 405, 420, 700, 800, 805, CRX, and DRX. In general, routes are more attractive and productive when they serve dense and walkable activity centers, operate along a direct routing, and have demand in both directions.
- Systemwide on-time performance was 86%, which is above the target of 85%. However, several routes failed to meet the target on weekdays, with Routes 102, CRX, DRX, and ZWX having the lowest on-time performance. Some of these routes have received schedule updates in FY 2017 and FY 2018, but without adding revenue hours or deleting route miles, there are limited options for responding to increased travel times.

Financial Impact

Not applicable.

Attachments

- A. FY 2017 Annual Bus Service Performance Report
- B. FY 2017 System Statistics
- C. FY 2017 Route Statistics
- D. FY 2017 Commute Market Statistics
- E. FY 2017 On-Time Performance

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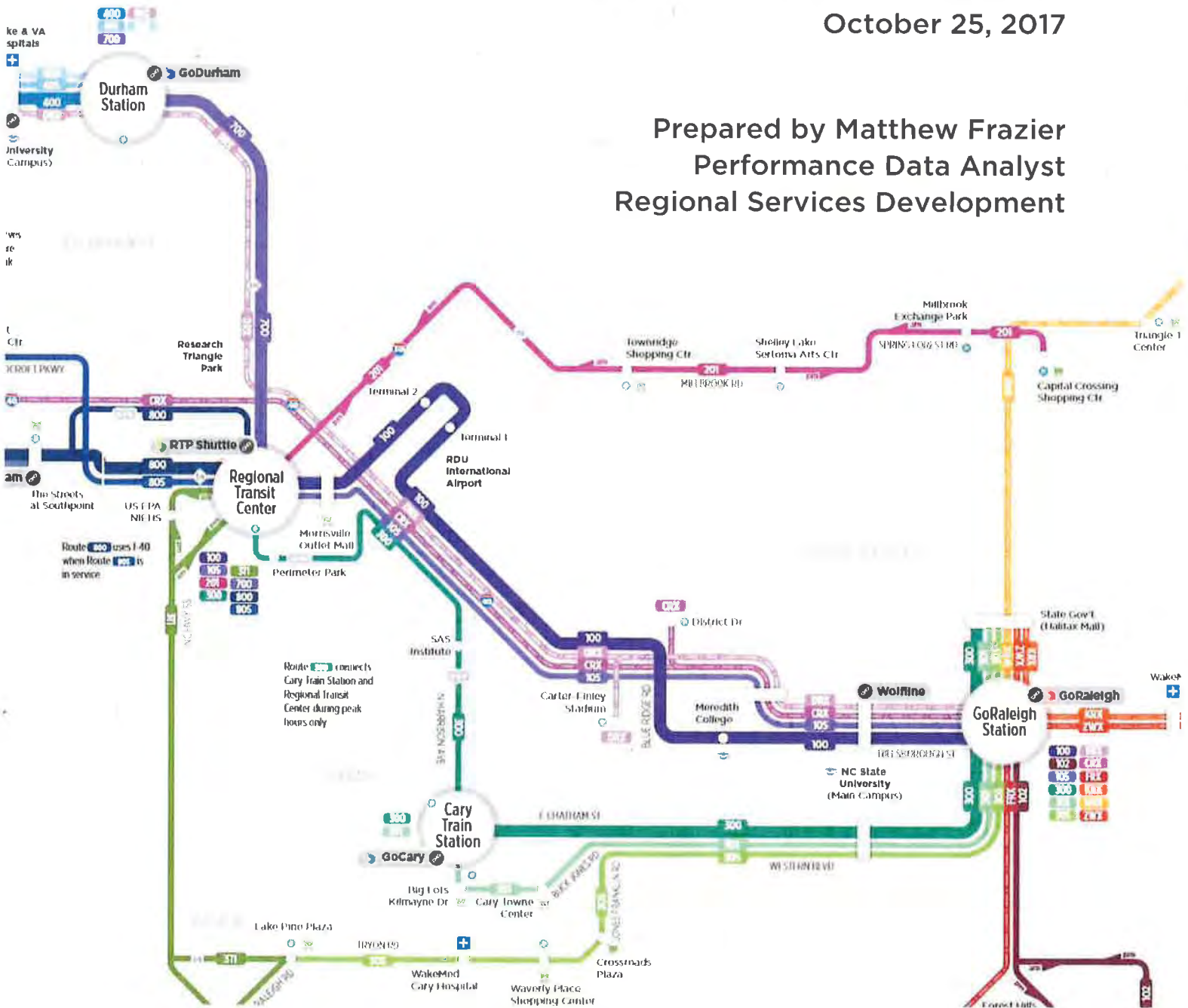




FY 2017 Annual Bus Service Performance Report

October 25, 2017

Prepared by Matthew Frazier
Performance Data Analyst
Regional Services Development



Introduction

In September 2003, GoTriangle's Board of Trustees adopted the Regional Bus Service Standards to establish performance expectations for the agency's fixed-route services. The intent was to drive improvements in productivity by routinely and systematically evaluating bus service performance against quantifiable indicators. Since the adoption of the Standards, the annual performance reporting process has been incrementally adjusted to provide the most useful information about GoTriangle's bus service.

The key performance indicators presented in this report are:

- **Daily Boardings** – how many people are using the service provided?
- **Boardings per Revenue Hour** – how cost-effective is this service compared to others?
- **On-Time Performance** – how well is the service meeting the expectations set by the schedule?

This report provides a summary of GoTriangle's regional bus service performance during Fiscal Year 2017, with comparisons to FY 2016 and prior years to illustrate changes and trends in performance.

Key Findings

- In FY 2017, GoTriangle had a total of 1,661,334 boardings. This is a decrease of 7% from FY 2016, where there were 1,784,681 total boardings. Similarly, productivity decreased to 11.8 boardings per hour from 13.0 boardings per hour.
- The decline in ridership mirrors national trends for intercity transit authorities, and is most likely linked to decreases in gas prices and increases in car ownership in the Triangle. Services to employment centers with higher parking costs have retained more ridership.
- Peak hour ridership increased on Routes 300, 405, DRX, FRX, and ODX. Of particular note, Route 405's new service to Carrboro has attracted an average of 33 boardings per day.
- Many peak-hour services to Raleigh and the Regional Transit Center are losing ridership. Ridership on routes from Wake County towns to downtown Raleigh has decreased by 14% (excluding Fortify routes), and ridership on the RTP Shuttle routes has decreased by 26%. A new short-range transit plan is underway in FY 2018, which will provide opportunities to improve or reconsider these services.
- Ridership on midday service has decreased by 7%, and ridership on night and weekend service has decreased by 15%. However, additional frequency on Route 400 is leading to ridership growth during midday and Saturday, which will become more evident in future reports.
- GoTriangle's highest-productivity services at peak are Routes 400, 405, 420, 700, 800, 805, CRX, and DRX. In general, routes are more attractive and productive when they serve dense and walkable activity centers, operate along a direct routing, and have demand in both directions.
- Systemwide on-time performance was 86%, which is above the target of 85%. However, several routes failed to meet the target on weekdays, with Routes 102, CRX, DRX, and ZWX having the lowest on-time performance. Some of these routes have received schedule updates in FY 2017 and FY 2018, but without adding revenue hours or deleting route miles, there are limited options for responding to increased travel times.

What Changed in FY 2017

GoTriangle typically implements major service changes in August of each year. In August 2016, the primary service changes were a major restructure of service in the US 15-501 corridor:

- Route 400 received additional frequency, in order to operate every 30 minutes from the start of service to 7 PM, Monday through Saturday. Previously, service was hourly at all off-peak times.
- Route 400's local service to University Dr and SW Durham Dr was reduced to peak-only, in order to provide faster service between Durham and Chapel Hill during off-peak times. Previously, trips between Durham Station and downtown Chapel Hill took about 45 minutes by transit, compared to about 25 minutes driving. Without serving University Dr or SW Durham Dr, the transit time was reduced to 35 minutes.
- Route 405 was rerouted so that AM trips to Durham begin in Carrboro before serving downtown Chapel Hill, and reverse in the PM. This provides regional service in Carrboro for the first time.

In addition, changes were made to compensate for increasing travel times on regional highways:

- Route 105's service to the District Dr Park-and-Ride was deleted.
- Route 700's service to Lawson St, Alston Ave (NC 55), and Durham Tech was removed as part of a long-term detour. This area is also served by GoDurham Routes 8 and 12. (The initial motivation for the detour was a planned closure of the ramp from Alston Ave North to NC 147 North. This closure has since been delayed by over a year, but peak-hour traffic is still too heavy for full-time service to be restored. Service Planning will continue to monitor NC 147.)

Overall Performance

Across all services, GoTriangle had 1,661,334 customer boardings in FY 2017. This represents a 7% decline compared to FY 2016 (1,784,681).

GoTriangle increased the amount of service provided from 137,367 revenue hours in FY 2016 to 140,464 revenue hours in FY 2017. (Most of the increase was from the improved midday and Saturday frequency on Route 400.) Consequently, productivity declined from 13.0 boardings per hour to 11.8 boardings per hour – a 9% decrease.

On-time performance decreased slightly from 87% to 86%, but still meets GoTriangle's goal of 85%.

Changes in Ridership by Route

Across all service types, there is an average 7% decline in the number of daily boardings from FY 2016 to FY 2017. The decline in ridership is more significant on night and weekend services than on peak and midday services:

Boardings per Day	FY 2016	FY 2017	Change
Weekday Peak	5,324	4,995	-7%
Weekday Midday	1,086	1,011	-7%
Weeknight	300	255	-15%
Saturday	1,601	1,382	-14%
Sunday	831	717	-14%

* This table includes Route RSX (Robertson Scholars Express), but tables in the following subsections do not.

A complete table of ridership and productivity by route is included in attachment C, and each route's peak service is broken down by direction in attachment D.

Peak Services

The overall change in ridership on peak services is a 7% decline, but there is great variance between routes and destinations. The following analysis breaks down ridership on peak service based on which regional centers each route serves: Raleigh, Durham, Chapel Hill, and the RTC.

When a route connects two of these regional centers, ridership is split by direction. (For example, on Route DRX, AM trips from Raleigh to Durham and PM trips from Durham to Raleigh are reported in the “Peak Service to Durham” section.) This is marked by a “†” symbol in the tables. However, when a route has a regional center at only one end, its ridership is not split.

Peak Service to Raleigh

While a few key routes are increasing in ridership, most Raleigh-based routes are declining. Overall, ridership on peak service to Raleigh is down 6%.

All-day direct service between Raleigh and Cary on Route **300** was first introduced in January 2015, and it has continued to grow steadily in ridership since introduction.

Route **DRX** is the highest-ridership route to Raleigh, and it is continuing to grow even without investments in additional service.

Route **FRX** is the highest-ridership Fortify route, and it continued to grow in FY 2017. Its service has been reduced for FY 2018 since only hourly service is included in the Wake County Transit Plan. Careful public

outreach was undertaken to develop a schedule that would continue to serve as many riders as possible, and accordingly, Route FRX has retained over three quarters of its ridership despite retaining only eight out of eighteen trips.

Routes **CLX** and **JCX** had less ridership, and have been terminated due to the end of the Fortify project.

Other Raleigh-based routes are generally declining (or in the case of Route **KRX**, remaining at a low level of ridership). Changes are contemplated for several of these routes in the Wake County Transit Plan to improve their usefulness.

Route	From	FY 16	FY 17	Δ
300	Cary	147	157	7%
DRX	Durham †	182	191	5%
FRX	Fuquay-Varina	61	67	10%
CLX	Clayton	39	43	11%
KRX	Knightdale	34	37	8%
JCX	Johnston County	44	43	-2%
102	Garner	51	45	-13%
100	RTC/Airport †	100	92	-8%
WRX	Wake Forest	59	47	-19%
CRX	Chapel Hill †	167	154	-8%
ZWX	Zebulon/Wendell	71	56	-20%
305	Cary/Apex	128	111	-14%
301	Southeast Cary	151	130	-14%
105	RTC †	106	85	-20%

Peak Service to Durham

Overall, ridership on peak services to Durham is growing, but in FY 2017 this growth was mitigated by service changes which removed route segments also served by GoDurham. The total decrease was 1%, but on routes without service changes ridership increased by 7%.

Route	Origin	FY 16	FY 17	Δ
405	Chapel Hill/Carrboro †	182	203	11%
DRX	Raleigh †	256	269	5%
ODX	Hillsborough/Mebane	82	93	14%
400	Chapel Hill/South Sq. †	198	184	-7%
700	RTC †	137	98	-28%

Route **405** was rerouted to serve Carrboro directly in August 2016, which has increased ridership. Automated passenger counters show 33 passengers per day boarding in Carrboro.

Route **DRX** continues to grow even without investments in additional service.

Route **ODX** was introduced in August 2014, and it also continues to grow.

The loss in ridership on Routes **400** and **700** can be explained by route changes which removed service to certain areas. In Route 400's case, service to SW Durham Dr and University Dr is still present at peak, but the lack of off-peak service is likely suppressing peak trips. The removed areas are still served by GoDurham (Routes 8, 10/10A, and 12), but additional transfers are now required for regional travel.

Peak Service to Chapel Hill

Ridership to Chapel Hill remains generally stable. Routes **400**, **405**, **420**, and **CRX** had only minor fluctuations in ridership.

However, Routes **800** and **805** headed towards Chapel Hill experienced significant ridership losses. A specific cause has not been identified.

Route	Origin	FY 16	FY 17	Δ
420	Hillsborough	176	180	2%
405	Durham †	285	287	1%
CRX	Raleigh †	242	238	-2%
400	Durham/Patterson Pl. †	292	285	-2%
805	RTC/Woodcroft †	330	294	-11%
800	RTC/Southpoint †	508	455	-10%

Peak Service to RTC

Ridership to the Regional Transit Center (and the general Research Triangle Park area) has decreased on every route which serves it. Overall, ridership to the RTC is down by 12%.

It is worth noting in particular that ridership on the RTP Shuttles (Routes **42**, **46**, **47**, and **49**) has decreased by a full 26%. Given the losses in ridership and continuing low productivity, GoTriangle is planning a pilot project to launch in FY 2018 which would replace the RTP Shuttles with a demand-response service.

Route	Origin	FY 16	FY 17	Δ
800	Chapel Hill/Southpoint †	115	112	-2%
300	Cary †	125	122	-2%
311	Apex/Lake Pine	87	82	-6%
105	Raleigh †	144	133	-8%
201	North Raleigh	74	60	-20%
700	Durham †	201	184	-9%
805	Woodcroft †	133	112	-16%
100	Raleigh/Airport †	146	117	-19%
42-49	RTP Shuttles	158	117	-26%

Off-Peak Services

GoTriangle's off-peak service is limited to the core routes (100, 300, 400, 700, and 800).

Route	Midday			Night			Saturday			Sunday		
	2016	2017	Δ	2016	2017	Δ	2016	2017	Δ	2016	2017	Δ
100	232	211	-9%	77	69	-10%	432	377	-13%	253	223	-12%
300	113	119	6%				135	105	-22%			
400	231	253	10%	80	61	-24%	378	343	-9%	215	185	-14%
700	168	136	-19%	54	49	-9%	241	233	-3%	140	128	-9%
800	228	206	-10%	63	52	-17%	328	252	-23%	170	131	-23%
Total	973	925	-5%	274	231	-16%	1,513	1,310	-13%	777	666	-14%

Service changes to Route 400's off-peak service shortened travel times by ten minutes and doubled midday and Saturday frequency. As a result, many more passengers are using Route 400 to travel from Durham to Chapel Hill or vice versa. However, these changes required removing service to SW Durham Dr and University Dr at all off-peak times, which immediately reduced the route's overall ridership. (Most of the affected riders continue to have service on GoDurham Route 10/10A.) Ridership growth takes time, and staff expects to have a full picture of how the improved frequency is attracting more customers in FY 2018.

In August 2017, GoTriangle similarly increased midday and Saturday frequency on Routes 100, 300, 700, and 800 – providing 30-minute frequencies on all core routes until 7 PM, six days a week. The results of these changes will be presented fully in the FY 2018 annual report, but early results (described later in the "What's Ahead?" section) are promising.

It is also worth noting that removing service to Durham Tech on Route 700 reduced its midday ridership by more than any other route. (As with Route 400, affected riders continue to have service on GoDurham Routes 8 and 12.) However, its ridership decreased by less than other routes at night and on weekends.

Robertson Scholars Express (RSX)

Route RSX (Robertson Scholars Express) is unique in that it is funded by the Robertson Scholars Foundation, which reimburses GoTriangle for the route's operating costs. It operates directly between the Duke Chapel and UNC Morehead Planetarium without making any stops in between, and provides service only during the academic year.

From FY 2016 to FY 2017, ridership decreased from 248 to 222 boardings per weekday, from 88 to 72 boardings per Saturday, and from 54 to 51 boardings per Sunday. Route RSX's ridership is generally excluded from the tables above.

Productivity by Route

GoTriangle budgets for bus services in terms of a cost per revenue hour (\$119 for FY 2018). Accordingly, the number of boardings per revenue hour answers the question, “How many passenger trips is GoTriangle providing for each dollar invested?”

The Regional Bus Service Standards indicate that a route is “high performing” if its number of customer boardings per hour is above 125% of the average for its service category. Similarly, a route is “low performing” if its number of customer boardings per hour is below 75% of the average for its service category.

Peak Services

Peak services are divided into three categories: Regional, Express, and Shuttle. The only true difference between the categories from a cost perspective is that Express routes charge a higher fare (\$3.00 per boarding rather than \$2.25). Regional routes have an average of 13.5 boardings per hour, Express routes have an average of 9.7, and Shuttle routes have an average of 6.2.

Route	Bd./Hr.	Category	Status
700 (Durham – RTC)	21.3	Regional	High Performing
405 (Durham – Chapel Hill/Carrboro)	21.1	Regional	High Performing
800 (Chapel Hill – Southpoint – RTC)	18.5	Regional	High Performing
400 (Durham – Patterson Place – Chapel Hill)	15.9	Regional	Average for Category
805 (Chapel Hill – Woodcroft – RTC)	15.3	Regional	Average for Category
420 (Hillsborough – Chapel Hill)	13.5	Regional	Average for Category
105 (Raleigh – RTC)	11.9	Regional	Average for Category
300 (Raleigh – Cary)	10.7	Regional	Average for Category
305 (Raleigh – Cary – Lake Pine)	9.4	Regional	Low Performing
100 (Raleigh – Airport – RTC)	9.0	Regional	Low Performing
301 (Raleigh – Southwest Cary)	7.6	Regional	Low Performing
102 (Raleigh – Garner)	7.4	Regional	Low Performing
201 (North Raleigh – RTC)	7.4	Regional	Low Performing
311 (Apex – RTC – EPA)	5.5	Regional	Low Performing
DRX (Durham – Raleigh Express)	18.1	Express	High Performing
CRX (Chapel Hill – Raleigh Express)	13.9	Express	High Performing
RSX (Robertson Scholars Express)	12.3	Express	High Performing
ODX (Orange – Durham Express)	8.5	Express	Average for Category
ZWX (Zebulon – Wendell – Raleigh Express)	7.9	Express	Average for Category
KRX (Knightdale – Raleigh Express)	6.5	Express	Low Performing
WRX (Wake Forest – Raleigh Express)	4.8	Express	Low Performing
FRX (Fuquay-Varina – Raleigh Express)	4.8	Express	Low Performing †
CLX (Clayton – Raleigh Express)	3.1	Express	Low Performing †
JCX (Johnston County – Raleigh Express)	3.1	Express	Low Performing †
49 (Kit Creek Shuttle)	8.8	Shuttle	High Performing †
46 (Miami/TW Alexander Shuttle)	7.0	Shuttle	Average for Category †
47 (TW Alexander/Cornwallis Shuttle)	5.8	Shuttle	Average for Category †
42 (Davis Dr/IBM Shuttle)	2.9	Shuttle	Low Performing †

† Routes CLX and JCX was eliminated, and service on Route FRX was reduced, at the end of the Fortify project. (Route FRX’s productivity for FY 2018 Q1 was 8.9 passengers per hour.)

Routes 42, 46, 47, and 49 are proposed for replacement with demand-response service.

Off-Peak Services

Off-peak services are split into categories based on the time of day. The high performers in each category are highlighted in blue, and the low performers in red. Route 700 is a high performer at all times of day, while Route RSX is a low performer at all times of day.

Route	Midday	Night	Saturday	Sunday
100 (Raleigh – Airport – RTC)	19.2	10.1	11.7	9.2
300 (Raleigh – Cary)	17.0	–	8.8	–
400 (Durham – Patterson Place – Chapel Hill)	11.7	8.8	6.9	7.9
700 (Durham – RTC)	22.4	12.2	14.7	10.8
800 (Chapel Hill – Southpoint – RTC)	17.3	7.7	8.1	5.7
RSX (Robertson Scholars Express)	7.8	3.8	5.5	4.6
Time of Day Average	15.2	8.7	9.1	7.8

Attributes of Productive Services

When considering high performing services, and services that attracted ridership in FY 2017, patterns emerge for what services will be considered attractive by customers and operate at high productivity:

- **Density and Walkability.** The most successful routes serve dense employment and activity centers like downtowns and universities.
- **Direct Routing.** Routes which take the most direct path between their key destinations are more attractive to customers and more efficient to operate.
- **Available All Day.** Routes where off-peak service is available are more attractive, as they serve a greater variety of schedules and trip purposes. (Off-peak service can be provided by a parallel route, but routes that operate the same way at all times are ideal for customers.)
- **Bidirectional Demand.** When activity centers are located at either end of a route, it is able to fill in both directions, rather than running mostly empty in one direction.

On-Time Performance

GoTriangle considers a trip on time if it arrives at its end-of-line timepoint no more than five minutes later than the scheduled time. The defined goal is for 85% of trips to arrive on time. Overall, GoTriangle met this goal, with 86% of trips arriving on time.

On weekdays, the overall on-time performance was 85% (right at the goal). The following routes did not meet the on-time performance goal:

Route	FY 16	FY 17	Change	Actions in FY 18
102 (Raleigh – Garner)	66%	64%	-2 pt	
105 (Raleigh – RTC)	87%	84%	-2 pt	Schedule updated
300 (Raleigh – Cary – RTC)	86%	83%	-3 pt	
305 (Raleigh – Cary – Lake Pine)	80%	80%	1 pt	
800 (Chapel Hill – Southpoint – RTC)	83%	81%	-2 pt	
805 (Chapel Hill – Woodcroft – RTC)	86%	80%	-7 pt	Schedule updated
CLX (Clayton – Raleigh Express)	84%	80%	-4 pt	Route deleted
CRX (Chapel Hill – Raleigh Express)	79%	70%	-8 pt	Schedule updated
DRX (Durham – Raleigh Express)	78%	78%	--	Schedule updated
FRX (Fuquay-Varina – Raleigh Express)	76%	80%	4 pt	Route change
KRX (Knightdale – Raleigh Express)	84%	84%	--	
WRX (Wake Forest – Raleigh Express)	84%	83%	-1 pt	
ZWX (Zebulon – Wendell – Raleigh Express)	87%	77%	-10 pt	
46 (Miami/TW Alexander Shuttle)	82%	81%	-1 pt	Replacement proposed

(Routes in orange met the on-time performance goal in FY 2016, but not in FY 2017.)

Routes 105, 300, 305, 700, CRX, and DRX had received schedule updates in FY 2017 to deal with on-time performance issues. Route 700's on-time performance on weekdays increased from 91% to 96% since an entire segment of local service was removed due to the long-term detour. However, on the other routes, no segments could be deleted and no vehicles could be added, so the growth in travel times outstripped the time which could be gained from schedule adjustments.

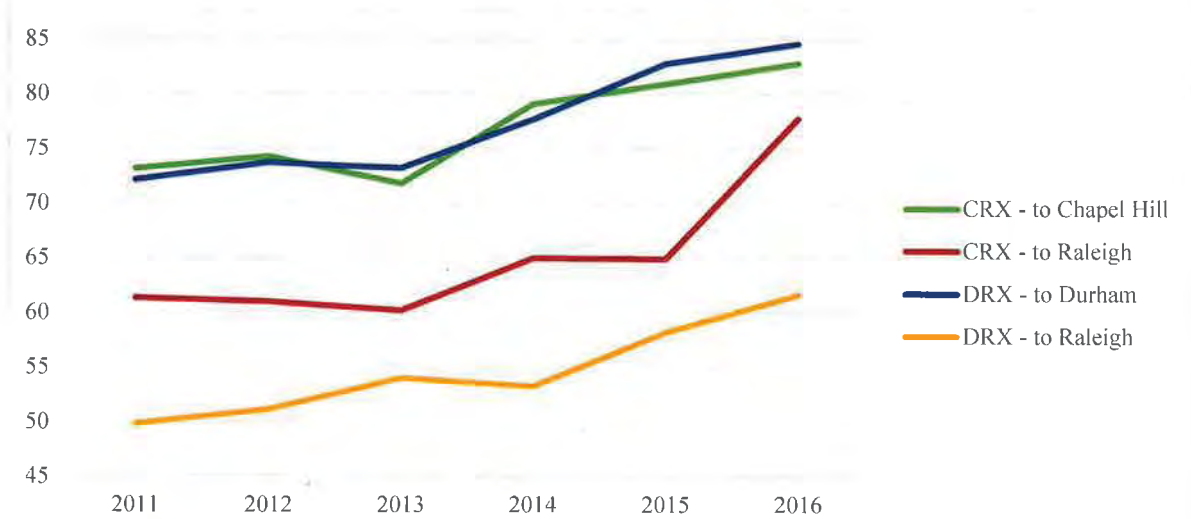
On weekends, on-time performance data for Route 300 was unavailable due to equipment issues, but all other routes met the goal of 85%. Routes 100, 400, and 800 had on-time performance less than 90% on Saturdays, but new schedules were implemented on August 6, 2017 that took updated travel times into account.

A complete table of on-time performance for each route is included in attachment E.

External Trends

Traffic

Bus travel times continued to increase in FY 2017. The following chart shows the average end-to-end travel times for the trips of Routes CRX and DRX departing at 4:30 PM, in the October of each year:

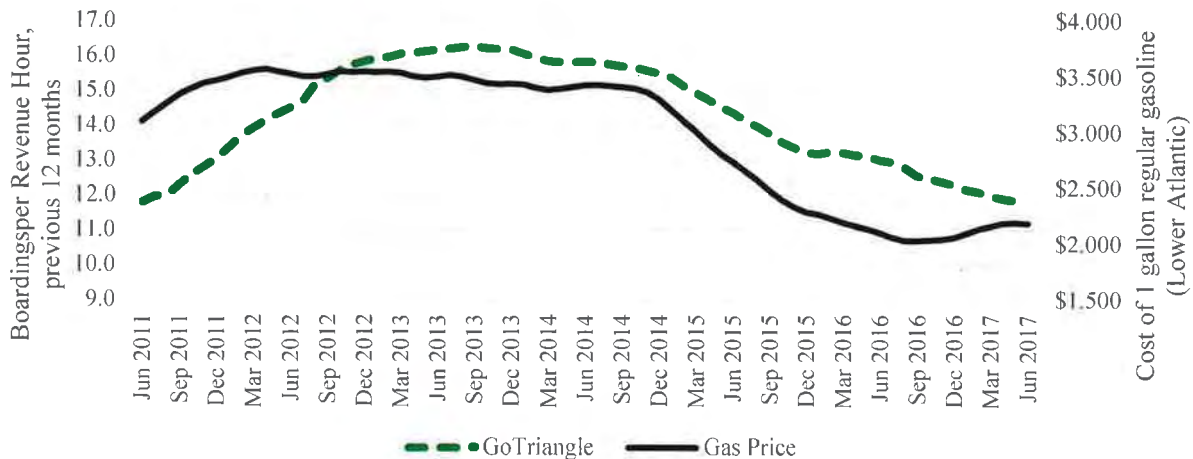


In addition to population growth, traffic flow is being adversely affected by ongoing construction projects like the East End Connector along NC 147 in Durham and the Hillsborough St Renewal Project in Raleigh. The end of these projects may abate travel times to some extent, but the broader forces of population growth and induced demand will likely continue to push traffic congestion higher.

Cost of Driving

Gasoline prices continued at the low levels to which they had dropped in FY 2016. During FY 2012, 2013, and 2014, the average price of 1 gallon of regular gasoline had remained between \$3.259 and \$3.799. However, by January 2015, the price of gasoline had dramatically decreased to \$2.119 per gallon. It fluctuated throughout FY 2015 and 2016, but in FY 2017 the price of gasoline stayed consistently between \$2.049 and \$2.299 per gallon.

GoTriangle's Productivity vs. Gas Prices



The cost of fuel is only a small part of the cost of driving, but travelers perceive most of the other costs of driving (such as licensing, insurance, maintenance, and depreciation) as fixed. Fuel and parking are the primary costs that travelers consider when choosing whether to drive or not to drive for a certain trip. Parking costs and policies have not changed significantly at major Triangle employers since last year:

Annual Parking Prices	GoPass	Satellite	Minimum	Max Non-Assigned
UNC Chapel Hill *	\$0	\$229-394	\$444-952	\$585-1,258
Duke University	\$25	\$141	\$618	\$1,257
Durham VA Medical Center	n/a	n/a	\$474	\$474
NC State University	\$60	\$120	\$357	\$480
Meredith College **	\$0	\$0	\$0	\$125
State Government	\$25	n/a	\$120	\$180
Downtown Durham – Public Parking	n/a	n/a	\$840	\$960
Downtown Raleigh – Public Parking	n/a	n/a	\$816	\$1,380

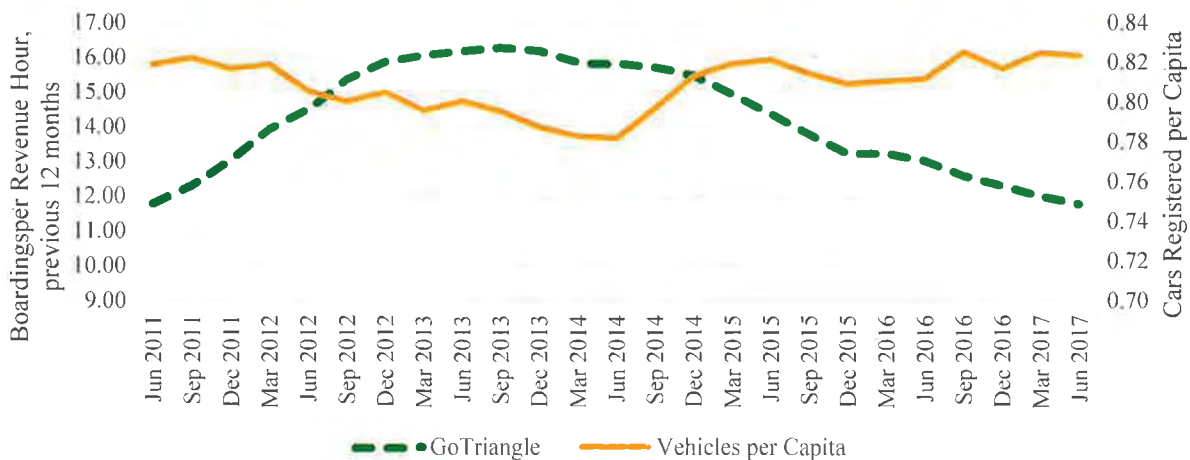
* UNC’s employee parking prices vary with salary.

** Meredith parking is free for employees. Only commuting students must pay for parking.

In general, schools and worksites with less parking and higher parking prices will have higher transit ridership. This naturally correlates well with dense and transit-supportive land use (with more activity, there is less room for parking, so the market drives parking prices higher), but there is also a policy component. The State Government, in particular, has artificially low parking prices since parking policy changes must be approved by the Council of State.

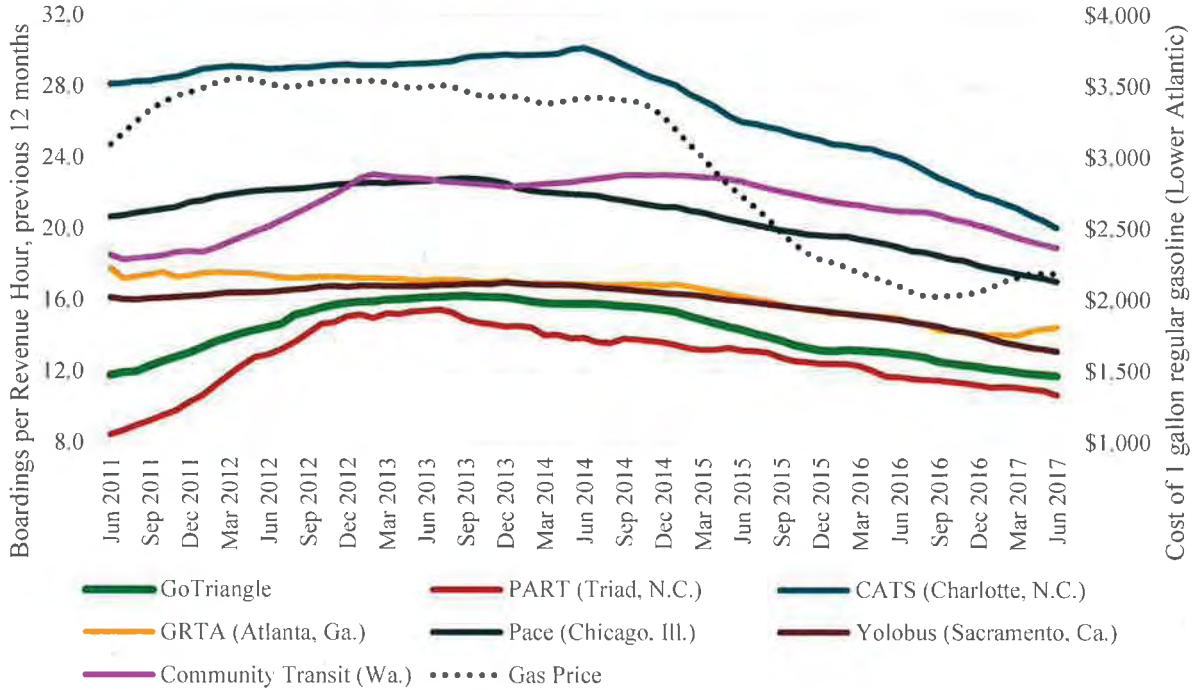
That being said, travelers evaluate the “fixed” costs of driving as well, and the past few years have also seen an uptick in car *ownership* in GoTriangle’s service area. The number of registered cars per capita in Wake, Durham, and Orange Counties was steadily decreasing from FY 2012 through FY 2014, but sharply increased in FY 2015. It has remained generally stable since.

GoTriangle's Productivity vs. Car Ownership



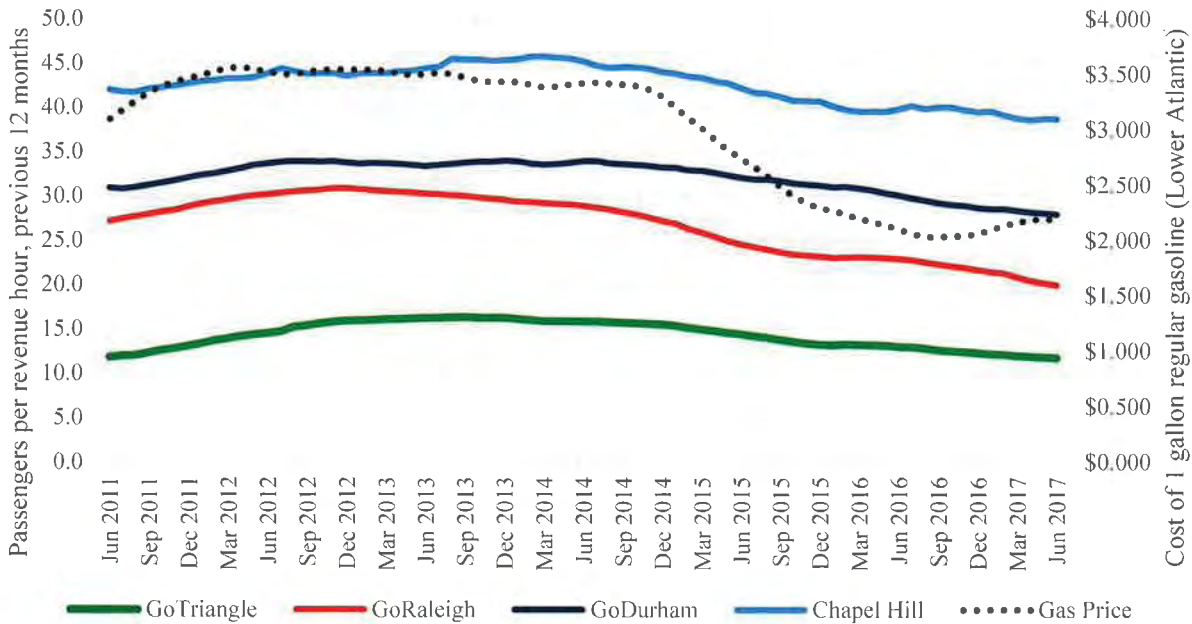
Peer Comparison

Other transit systems in the United States have been experiencing similar declines in ridership. This graph shows the trends in boardings per revenue hour (productivity) at GoTriangle and six peer intercity transit agencies from across the United States, together with gas prices:



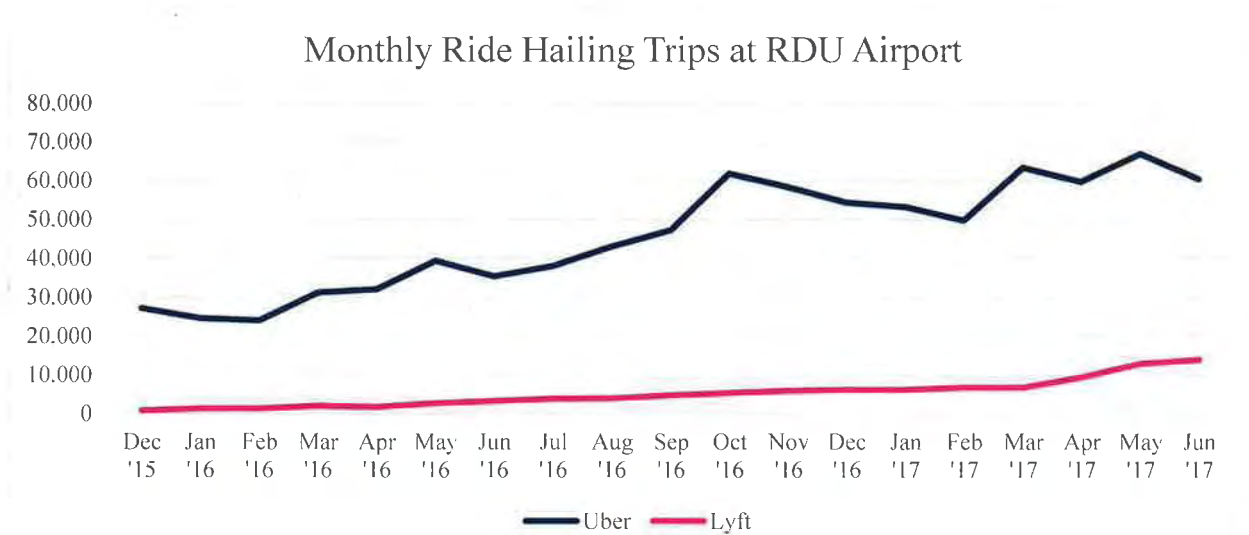
GoTriangle's partner agencies in the Research Triangle have experienced similar declines.

Passengers per Hour, Local Systems



App-Based Ride Hailing

Over the past few years, app-based ride hailing services (most notably Uber and Lyft) have grown in popularity. Ride hailing services advertise their lower prices and ease of use compared to taxis, and their ability to provide a one-seat ride on demand as an advantage over transit. For travelers who do not have access to their own personal car, ride hailing can be a compelling option for quick trips. The Raleigh-Durham Airport Authority monitors ride hailing usage at the airport, and they observed a doubling of ride hailing trips during FY 2017:



GoTriangle's 2016 customer satisfaction survey included questions about how our customers are also using ride hailing services. 37% of GoTriangle customers had used Uber or Lyft within the past 30 days when surveyed, and 20% had specifically used Uber or Lyft to make a trip for which they otherwise would have used transit. The survey provides a limited view into GoTriangle customers' usage of ride hailing services, so it is difficult to draw strong conclusions about how they may be affecting ridership.

What's Ahead in FY 2018

Increasing Bus Service

On August 6, 2017, GoTriangle used revenues from the Wake, Durham, and Orange County transit referenda to add off-peak and weekend trips to Routes 100, 700, 800, and 300 (between Raleigh and Cary). Now, all five core routes (100, 300, 400, 700, and 800) have half-hourly service through 7 PM on weekdays and Saturdays, plus hourly night and Sunday service.

Early ridership results from these changes are positive. Less than two months after implementation, most routes have seen a 25-40% growth in midday ridership and 20-25% growth in Saturday ridership. Route 300 saw even more impressive growth of 68% in midday ridership and 77% in Saturday ridership.

Boardings per Day Route	Midday (Aug., Sept.)			Saturday (Aug., Sept.)		
	2016	2017	Δ	2016	2017	Δ
100 (Raleigh – Airport – RTC)	261	363	39%	579	707	22%
300 (Raleigh – Cary)	113	190	68%	106	188	77%
700 (Durham – RTC)	178	227	27%	365	457	25%
800 (Chapel Hill – Southpoint – RTC)	233	300	29%	406	493	22%

GoRaleigh and GoCary both used revenues from the Wake County transit referendum to add Sunday service to all of their regular routes. The additional local Sunday service in Raleigh has increased ridership on Route 100 from 333 boardings per Sunday to 381 (an increase of 14%), and Route 300's new Sunday service has an average of 70 boardings per day.

No additional increases in service are planned for FY 2018, but staff from all regional agencies are currently planning service improvements for implementation in early FY 2019.

On-Demand Service Pilot in RTP

Beginning on November 27, 2017, GoTriangle will replace the four RTP Shuttle routes (42, 46, 47, and 49) with an on-demand service as a pilot project. It will use on-demand, computer-based dispatch similar to Uber or Lyft (provided by TransLoc), but it will be operated by GoTriangle employees using GoTriangle vehicles. Customers can request rides using the TransLoc Rider smartphone app, a Web browser, or a phone call to GoTriangle.

The goal is to attract new transit riders to GoTriangle by providing more direct trips within the Research Triangle Park (including the possibility of eliminating transfers for trips within the RTP), by serving additional residential and retail centers, and by expanding service to operate during midday instead of during the peak period only.

Regional Bus Network Planning

GoTriangle is currently participating in county-wide transit planning efforts in Wake, Durham, and Orange Counties. While the county-level planning efforts have different focuses, each one will allow regional and local services to be coordinated and plan how to use the revenues from each county's transit referendum. The three plans will be consolidated into one short-range plan for GoTriangle.

In addition, new service standards and performance measures for GoTriangle will be created as part of the plans, which will inform the FY 2018 annual bus service report and future service planning decisions.

Technology and Fare Improvements

GoTriangle is planning a regional technology integration study which would occur in FY 2019. This study would examine fare payment technology (including using mobile phones for fare payment), scheduling software, on-board signs and voice announcements, real-time arrival information, and data collection systems. The study would include all five area transit agencies, and develop a strategy for integrating all of the on-bus technologies with each other and integrating technology across agencies.

GoTriangle and our partner agencies are also exploring changes to fare policy as part of the regional transit plans, including a regional approach to youth fare (13-18) to encourage students to ride the bus.

Bus Stop Improvements

Transit riders in the Triangle continue to request better waiting conditions at bus stops. In FY 2018, GoTriangle will begin improvements at twelve of our bus stops, including shelters and benches. GoDurham, GoRaleigh, and GoCary are also constructing bus stops in their service areas, thanks to funding from the county transit referenda. Since many of GoTriangle's riders begin or end their trip at a local bus stop, regional collaboration is essential to providing safe and comfortable bus stops.

Marketing Initiatives

In FY 2017, GoTriangle's Marketing team focused on storytelling. Through the GoTogether video series, GoTriangle was able to tell the stories of riders who chose an alternative way to travel. These riders included a father and son who bike to work and school, siblings who get to and around their college campus by bus, and middle and high schoolers who ride transit to school. The videos encourage others to see themselves reflected in these stories and consider using an alternative to driving alone.

Moving into FY 2018, the Marketing team is looking for unique and interesting ways to educate people of all ages about alternate means of transportation. This will include a children's book series in both English and Spanish, presentations and workshops focused on seniors, and more overall campaigns focusing on the growing connectivity amongst ourselves and our partners through various transit investments.

Both existing and prospective transit riders will benefit from a new and improved www.gotriangle.org, which will launch during FY 2018. The new site will make maps, schedules, and service alerts more reliable and accessible to customers, and bring information about all of GoTriangle's services – bus, rideshare, travel demand management, transit planning, and more – to one place.

Travel Demand Management

GoTriangle's Sustainable Travel Services team is continuing to promote and improve services for smart commuters of every mode. This includes:

- The GoPerks program, which has monthly prize drawings for commuters who track carpool, vanpool, biking, walking, and transit trips in Share the Ride NC.
- The Emergency Ride Home program, which provides transportation for commuters who need to leave work early for illness or a family emergency, or stay late for unscheduled overtime.
- Individualized assistance that works directly with commuters to identify all of their options for sustainable commuting. (The Durham VA Medical Center requires all new employees to use individualized assistance, and will not issue parking passes unless the employee has no options for a more sustainable commute.)

In addition, Sustainable Travel Services is working directly with business leaders and developers to encourage developments that support sustainable transportation – which includes transit-friendly location, pedestrian-friendly design, and sustainable parking management strategies.



	Daily Boardings			Daily Revenue Hours			Boardings per Hour		
	FY 2016	FY 2017	Δ	FY 2016	FY 2017	Δ	FY 2016	FY 2017	Δ
System							13.0	11.8	-9%
Weekday	6,711	6,261	-7%	509.2	522.3	3%	13.2	12.1	-8%
Regional Peak	3,805	3,527	-7%	261.9	262.5	0%	14.5	13.5	-7%
Express	1,361	1,350	-1%	138.9	139.1	0%	9.6	9.7	2%
Shuttles	158	117	-26%	18.8	19.0	1%	8.4	6.2	-27%
Regional Midday	1,086	1,011	-7%	58.3	70.9	22%	19.4	15.2	-22%
Regional Night	300	255	-15%	31.3	30.9	-1%	10.0	8.7	-13%
Saturday	1,601	1,382	-14%	135.8	156.3	15%	12.0	9.1	-24%
Sunday	831	717	-14%	93.9	93.5	0%	9.1	7.8	-14%

	Annual Boardings	
	FY 2016	FY 2017
System	1,784,681	1,661,334
Weekday	1,657,964	1,551,493
Regional Peak	955,027	885,393
Express	329,391	328,901
Shuttles	39,671	29,272
Regional Midday	260,922	246,047
Regional Night	72,953	61,880
Saturday	84,019	74,287
Sunday	42,698	35,554

FY 2017 Peak Commute Markets	Daily Boardings			Daily Revenue Hours			Boardings per Hour		
	FY 16	FY 17	Δ	FY 16	FY 17	Δ	FY 16	FY 17	Δ
To Raleigh	1,048	1,258	20%				10.3	7.9	-23%
100 * From RTC/Airport	100	92	-8%	11.4	11.4	--	8.7	8.0	-8%
102 From Garner	51	45	-13%	6.0	6.0	--	8.6	7.4	-13%
105 From RTC	106	85	-20%	8.3	8.3	--	13.0	10.2	-21%
300 From Cary (direct trip, 2015)	147	157	7%	13.6	13.7	--	10.8	11.4	6%
301 * From Southeast Cary	151	130	-14%	17.1	17.0	--	8.8	7.6	-13%
305 * From Cary/Apex	128	111	-14%	11.7	11.8	--	10.9	9.4	-14%
CLX From Clayton (2015)	39	43	11%	14.0	14.0	--	2.8	3.1	11%
CRX From Chapel Hill	167	154	-8%	12.8	13.0	--	13.2	11.9	-10%
DRX From Durham	182	191	5%	12.6	12.6	--	14.7	15.2	4%
FRX From Fuquay-Varina (2015)	61	67	10%	13.8	13.8	--	4.4	4.8	10%
JCX From Johnston County (2014)	44	43	-2%	14.0	14.0	--	3.1	3.1	-2%
KRX From Knightdale	34	37	8%	5.6	5.6	--	6.0	6.5	8%
WRX From Wake Forest	59	47	-19%	9.8	9.8	--	6.0	4.8	-19%
ZWX From Zebulon/Wendell	71	56	-20%	7.2	7.2	--	9.9	7.9	-20%
To Durham	855	847	-1%				14.9	15.0	1%
400 * From Chapel Hill	198	184	-7%	15.4	13.6	-12%	12.9	13.5	5%
405 From Chapel Hill/Carrboro (2016)	182	203	11%	11.3	12.1	--	16.0	16.9	5%
700 * From RTC	137	98	-28%	7.0	7.0	--	19.7	14.0	-29%
DRX From Raleigh	256	269	5%	12.9	12.9	--	20.2	20.8	3%
ODX From Hillsborough/Mebane (2014)	82	93	14%	10.9	10.9	--	7.5	8.5	14%
To Chapel Hill	1,832	1,739	-5%				21.0	19.5	-7%
400 From Durham/Patterson Place	292	285	-2%	14.3	15.9	11%	20.4	17.9	-12%
405 From Durham	285	287	1%	10.9	11.4	--	26.0	25.4	-2%
420 From Hillsborough	176	180	2%	13.7	13.7	--	12.9	13.5	5%
800 * From RTC/Southpoint	508	455	-10%	18.4	18.4	--	27.6	24.8	-10%
805 From RTC/Woodcroft	330	294	-11%	14.9	14.9	--	22.2	19.8	-11%
CRX From Raleigh	242	238	-2%	15.3	15.3	--	16.0	15.6	-3%
To RTC	1,025	921	-10%				11.7	10.5	-10%
100 * From Raleigh/Airport	146	117	-19%	12.0	11.8	--	12.1	9.9	-18%
105 From Raleigh	144	133	-8%	10.6	10.0	--	13.7	13.2	-4%
201 From North Raleigh	74	60	-20%	7.8	8.0	--	9.5	7.4	-22%
300 * From Cary	125	122	-2%	12.4	12.4	--	10.1	9.9	-2%
311 From Apex/Lake Pine	87	82	-6%	14.8	14.8	--	5.9	5.5	-6%
700 * From Durham	201	184	-9%	6.8	6.2	--	30.0	29.6	-1%
800 * From Chapel Hill/Southpoint	115	112	-2%	12.1	12.4	--	9.5	9.1	-4%
805 From Woodcroft	133	112	-16%	11.5	11.7	--	11.6	9.5	-18%
RTP Shuttles	158	117	-26%				8.4	6.2	-27%
42 Davis Dr/IBM Shuttle	25	14	-47%	4.8	4.7	--	5.3	2.9	-45%
46 Miami/TW Alexander Shuttle	27	32	22%	4.5	4.6	--	5.9	7.0	19%
47 TW Alexander/Cornwallis Shuttle	44	28	-35%	4.7	4.9	--	9.3	5.8	-38%
49 Kit Creek Shuttle	62	42	-32%	4.8	4.8	--	13.1	8.8	-32%

This table shows peak-hour trips from Origin to Destination in the AM, and back in the PM.

* indicates that passengers commonly do not ride all the way to the final destination.

FY 2017 On-Time Performance		Did not meet target (85%) in FY 2016 or 2017				
Percent of trips on time at end of route		Met target FY 2016, but not FY 2017				
Route	Description	Hours of Operation	FY 2016	FY 2017	Δ	
Weekdays						
100	Raleigh-Airport-RTC	6:40 AM - 11:25 PM	89%	87%	-2 pt	▲
102	Raleigh-Garner	Peak only	66%	64%	-2 pt	
105	Raleigh-RTC	Peak only	87%	85%	-2 pt	▲
201	North Raleigh-RTC	Peak only	91%	89%	-2 pt	
300	Raleigh-Cary-RTC	6:00 AM - 7:25 PM	86%	83%	-3 pt	
301	Raleigh-SW Cary	Peak only	89%	88%	--	
305	Raleigh-Cary-Lake Pine	Peak only	80%	80%	1 pt	
311	Apex-Lake Pine-RTC-EPA	Peak only	90%	88%	-3 pt	
400	Durham-Patterson Place-Chapel Hill	6:15 AM - 10:55 PM	90%	88%	-2 pt	▲
405	Durham-Chapel Hill	Peak only	87%	86%	-1 pt	▲
420	Hillsborough-Chapel Hill	Peak only	86%	86%	-1 pt	▲
700	Durham-RTC	6:00 AM - 10:55 PM	91%	96%	5 pt	▲
800	Chapel Hill-Southpoint-RTC	6:00 AM - 11:10 PM	83%	81%	-2 pt	▲
805	Chapel Hill-Woodcroft-RTC	Peak only	86%	80%	-7 pt	
CLX	Clayton-Raleigh Express	Peak only	85%	80%	--	×
CRX	Chapel Hill-Raleigh Express	Peak only	79%	70%	-8 pt	▲
DRX	Durham-Raleigh Express	Peak only	78%	78%	--	▲
FRX	Fuquay-Varina-Raleigh Express	Peak only	76%	80%	4 pt	▲
JCX	Johnston County Express	Peak only	91%	90%	-2 pt	×
KRX	Knightdale-Raleigh Express	Peak only	84%	84%	--	
ODX	Orange-Durham Express	Peak only	94%	91%	-3 pt	
RSX	Robertson Scholars Express	7:30 AM - 11:28 PM	79%	94%	15 pt	▲
WRX	Wake Forest-Raleigh Express	Peak only	84%	83%	-1 pt	
ZWX	Zebulon-Wendell-Raleigh Express	Peak only	87%	77%	-10 pt	
42	Davis Dr/IBM Shuttle	Peak only	94%	90%	-4 pt	
46	Miami/TW Alexander Shuttle	Peak only	82%	81%	-1 pt	
47	TW Alexander/Cornwallis Shuttle	Peak only	96%	94%	-2 pt	
49	Kit Creek Shuttle	Peak only	90%	88%	-2 pt	
Saturday						
100	Raleigh-Airport-RTC	6:40 AM - 11:12 PM	95%	89%	-6 pt	▲
300	Raleigh-Cary	7:00 AM - 6:55 PM	78%	unavailable		
400	Durham-Patterson Place-Chapel Hill	7:00 AM - 10:55 PM	89%	85%	-4 pt	▲
700	Durham-RTC	7:00 AM - 10:55 PM	97%	100%	3 pt	
800	Chapel Hill-Southpoint-RTC	6:45 AM - 11:20 PM	84%	88%	4 pt	▲
RSX	Robertson Scholars Express	12:00 PM - 12:28 AM	90%	90%	--	
Sunday						
100	Raleigh-Airport-RTC	6:40 AM - 7:12 PM	98%	96%	-2 pt	
400	Durham-Patterson Place-Chapel Hill	7:00 AM - 6:55 PM	93%	96%	3 pt	
700	Durham-RTC	7:00 AM - 6:55 PM	99%	100%	1 pt	
800	Chapel Hill-Southpoint-RTC	6:45 AM - 7:20 PM	91%	96%	5 pt	▲
RSX	Robertson Scholars Express	12:00 PM - 10:28 PM	93%	91%	-2 pt	
Weekday Total			86%	85%	-1 pt	
Saturday Total			91%	90%	-1 pt	
Sunday Total			95%	96%	1 pt	
System Total			87%	86%	-1 pt	

▲ Schedule changes implemented August 2017. × Route deleted at end of FY 2017.

END OF REPORT