



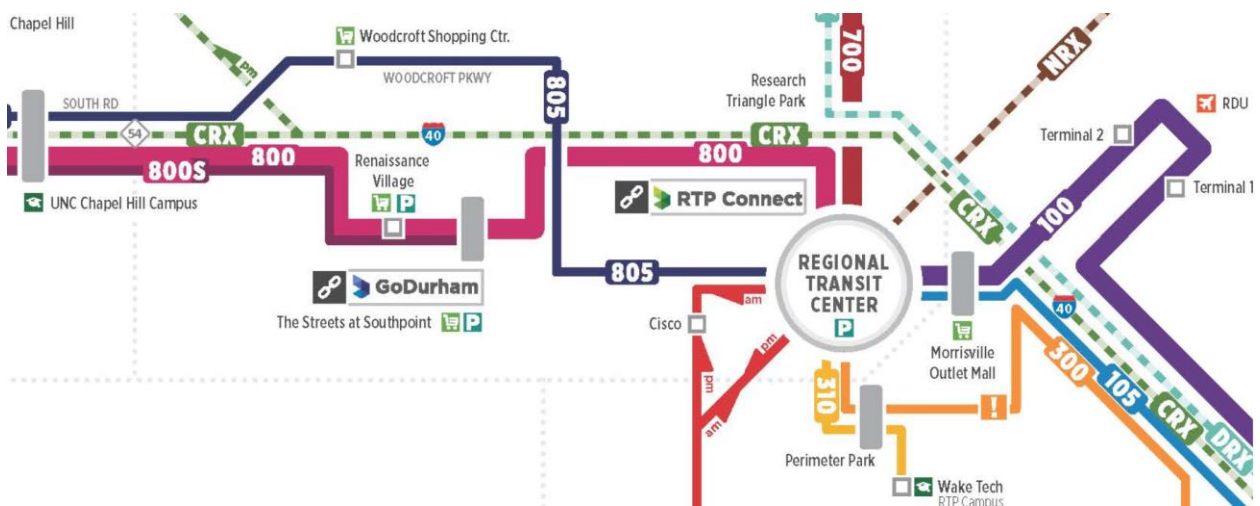
FY 2020 Annual Bus Service Performance Report

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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.

Fiscal year 2020 presented unique challenges in the transit world and beyond due to the COVID-19 pandemic. Toward the end of the 3rd quarter, ridership dropped suddenly and dramatically due to the progressive increase in the population testing positive to the virus and the announcement of the Stay-at-Home order imposed by the Governor of North Carolina (Executive Order 121). To better facilitate health and safety protocols and match the reduced demand with better sized service, GoTriangle reduced its service levels starting March 29th, 2020. At the end of the fiscal year, the pandemic and Stay-at-Home orders were still in place and ridership had not recovered: the 4th quarter showed ridership levels substantially lower than those recorded in FY 2019.

For this reason the performance indicators presented in this report are also broken down in "before" the pandemic with February 29th, 2020 as a cutoff date and the time "during" the pandemic starting on April 1st, when this helps providing a more accurate understanding of GoTriangle's performance. The month of March was a transitional time when ridership collapsed and because of its uniqueness, it is mostly not included in either the "before" or "during" datasets.

The principal performance indicators presented 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 also provides comparisons to Fiscal Year 2019 and prior years in order to illustrate changes and trends in performance.

Key Findings

- Ridership dropped by 18 percent in FY 2020. However, before the COVID-19 outbreak it was substantially stable over FY 2019. Therefore the entire drop in ridership can be associated with the virus outbreak.
- The reduction in service levels that was implemented in response to the pandemic was rightly sized and helped limit the loss in boardings per revenue hour across the system.

- There are consistent signs that the demand for regional transit service is increasing on the core routes, particularly at off-peak times (weekday evenings and Sundays).
- Ridership on the core routes is more resilient to prolonged emergency scenarios than the peak-only commuter routes.
- Before the pandemic route 405 was the most productive route in the system, followed by the DRX.
- Route NRX, which replaced Route 201 with a new routing in August 2019, did not meet the ridership and productivity expectations in the first eight months of service.
- The replacement of Go OnDemand with RTP Connect led to a moderate ridership increase and a strong productivity increase. Its structure allowed the boardings per revenue hour indicator to grow even during the pandemic.

What Changed in FY 2020

GoTriangle usually implements major service changes in August of each year and minor service changes in January. In FY 2020 the COVID-19 outbreak led to three additional service changes in March, May and June, which modified service to respond to the fall in ridership and public health concerns such as facilitating social distancing.

August 5th, 2019

In an effort to advance the implementation of the approved Short Range Transit Plan the August 2019 service changes introduced new routes, discontinued some and altered others:

Route	Service Change
201/NRX (North Raleigh - RTC)	Route 201 was discontinued due to low ridership, replaced by Route NRX.
310 (RTC - Wake Tech)	The new route started service. Upon completion of McCrimmon Pkwy it will extend to Cary Depot (October 2020).
311 (Apex - RTC)	New routing serving Kit Creek Rd instead of EPA.
700 (Durham - RTC)	New routing started in 2016 made permanent.
CRX (Chapel Hill - Raleigh Express)	Additional trips.
DRX (Durham - Raleigh Express)	Additional trips.
OnDemand/RTP Connect (RTP)	OnDemand discontinued due to low ridership, replaced by RTP Connect.
RSX (Duke - UNC)	Discontinued.

October 14th, 2019

Route KRX and 102 were discontinued. Concurrently, GoRaleigh started new service in the areas previously covered with the KRX and 102.

January 25th, 2020

In January 2020, GoTriangle made another set of minor service changes:

Route	Service Change
420 (Chapel Hill - Hillsborough)	Minor schedule changes.
800 (Chapel Hill - RTC)	New routing.
800S (Chapel Hill - Southpoint)	New routing.
805 (Chapel Hill - RTC)	Additional trip.
CRX (Chapel Hill - Raleigh Express)	New stop.

March 29th, 2020

Responding to the drop in ridership due to the pandemic outbreak and the Stay-at-Home order and in an effort to better comply with health protocols and safety measures, GoTriangle reduced its service to Saturday service during weekdays (with shorter span at night) and Sunday levels during the weekend still guaranteeing access to major health and employment centers to essential workers.

This resulted in operating the five core routes (100, 300, 400, 700 and 800) only. Chapel Hill Transit also continued to operate Route 420 with reduced frequency. Fare collection was suspended and rear-door boarding was required on fixed-route vehicles to limit contact between the operators and the passengers.

May 26th, 2020

Another minor service change expanded the span on the routes that showed signs of overcrowding. Early morning trips were added to meet the demand for transit originating from essential workers and facilitate social distancing on GoTriangle buses.

June 28th, 2020

Most routes resumed regular service. Only routes 310, 311, NRX and routes operated by GoRaleigh (FRX, WRX and ZWX) remained suspended through the last few days of FY 2020.

System Ridership and Productivity

FY 2020 overview

Across the system and including contracted services, GoTriangle had 1,371,441 customer boardings in FY 2020. This represents an 18% decrease from FY 2019 (1,674,324 boardings).

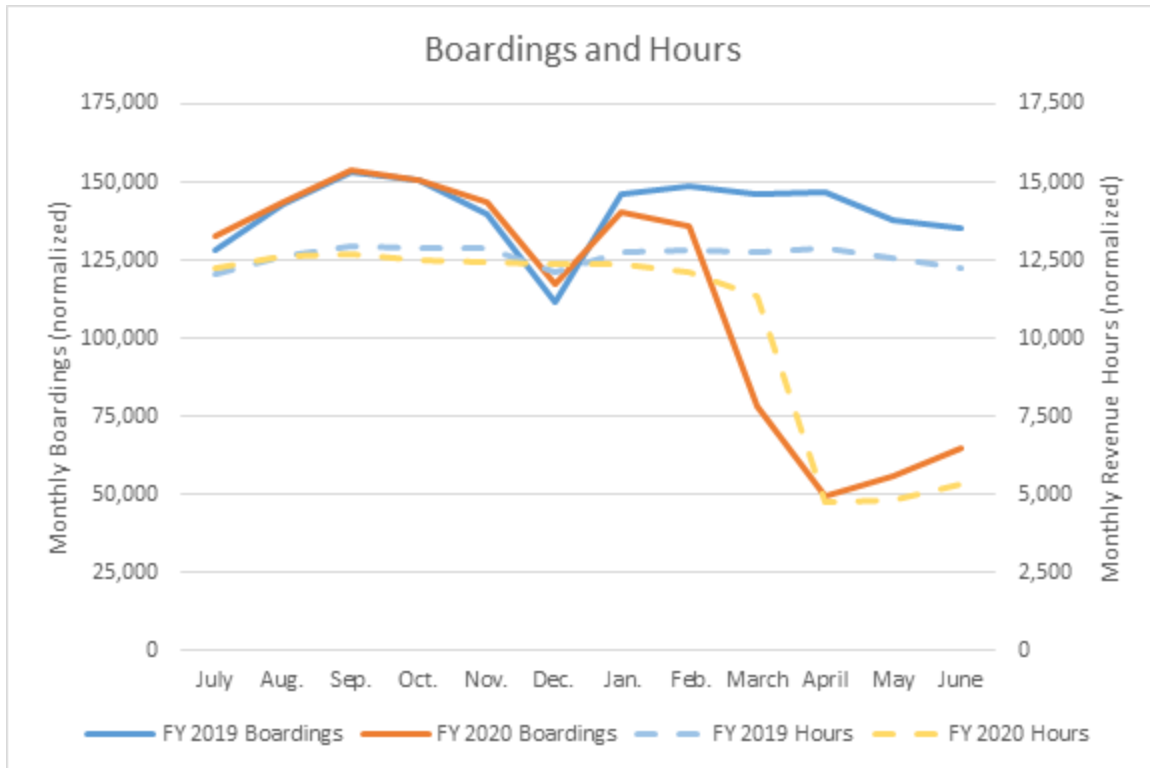
Route	5-Year Trends	Entire Fiscal Year					
		Total Boardings			Total Revenue Hours		
		FY 2019	FY 2020	Change	FY 2019	FY 2020	Change
Whole System		1,674,324	1,371,441	-18%	150,610	126,328	-16%
Weekday		1,534,369	1,234,694	-20%	132,806	110,933	-16%
Peak		1,157,273	901,937	-22%	97,943	81,426	-17%
Midday		274,674	265,055	-4%	23,686	23,084	-3%
Night		74,298	67,702	-9%	7,301	6,424	-12%
Saturday		84,960	76,886	-10%	11,232	9,272	-17%
Sunday		54,995	59,861	+9%	6,572	6,123	-7%

FY 2020 was a year of tremendous ridership loss for the commuter/express routes connecting to major employment centers because of a dramatic drop in March followed by three months of service suspension due to the COVID-19 pandemic. Ridership was consistently down by about one third on high-productivity routes like the 420, DRX, CRX, ODX and ZWX as well as other peak-hour service like Routes 105, 301, 305, 311 or 405. (The routes did not operate in Q4, and if that was the only factor one would expect a ridership drop of only one quarter.) Among the peak-hour routes the 805 had the lowest ridership loss (-23 percent) while the 311 (which also suffered from unsuccessful service changes) lost the highest percentage (-44 percent).

Among the core routes that were operated throughout the year, all but Route 800 were able to contain the loss in ridership to a maximum of four percent. Route 800 lost 21 percent of its ridership due to the loss of commuter riders between Southpoint and Chapel Hill.

The “boardings” and “hours” were still tracking with each other well during the outbreak. In fact, similarly to the ridership trend, the productivity across the system (measured with the boardings per hour indicator) has been stable in FY 2020 over FY 2019, with a slight uptick (+1 percent to 11.2). This was driven by the off-peak service until February followed by a sharp decline in March (6.9 boardings per hour) and a strong recovery to 11.4 in the last quarter due to the service reduction. The change suggests that the service provided to GoTriangle customers as a response to the outbreak efficiently matched the demand.

The following chart shows the total amount of service (in revenue hours) and boardings in each month. (For ease of comparison, each month is normalized to 21 weekdays, 4 Saturdays, and 5 Sundays.)

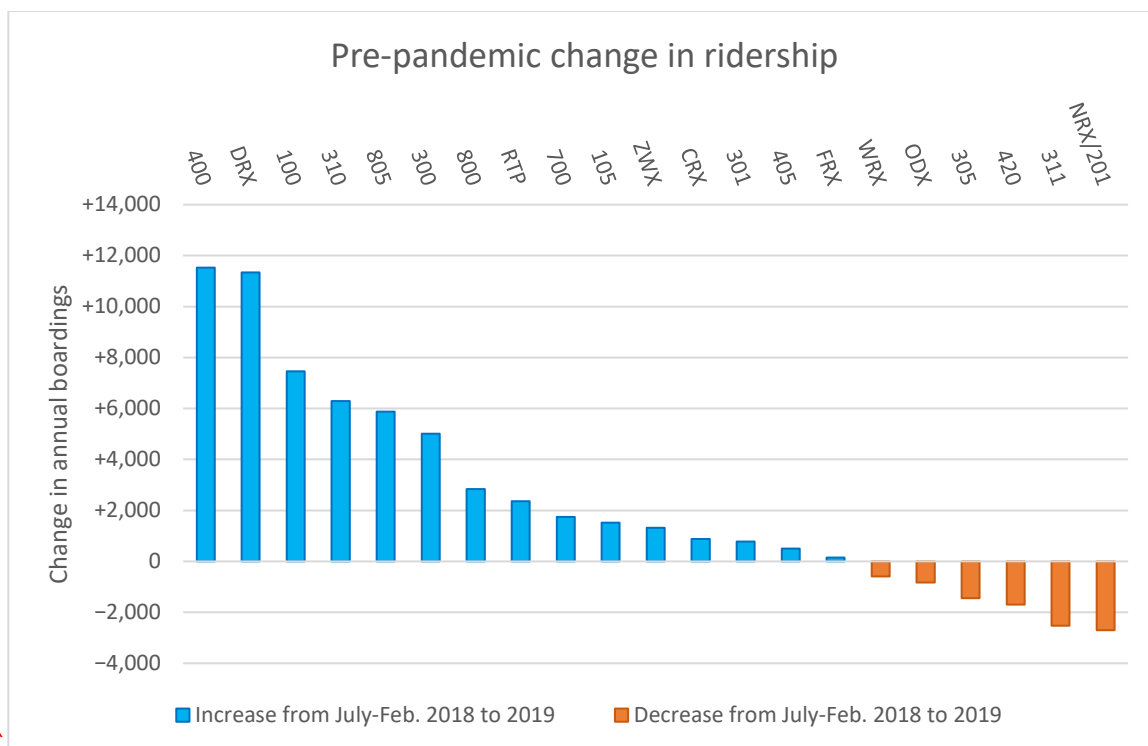


The uniqueness of FY 2020 makes a meaningful comparison of productivity year-to-year only possible in the July-February timeframe (see below).

Changes in Ridership by Route

Before the COVID-19 outbreak (July 2019 – February 2020)

Ridership was fairly stable across the system when compared to FY 2019 before the outbreak, however a notable growth can be observed on core route service, mostly driven by the increase in Sunday and midday ridership balancing a slight decrease on the peak only commuter service.



This chart shows the changes in ridership at the route level from FY 2019, only comparing the data before the pandemic. The 102, KRX, and RSX were discontinued at the beginning of FY 2020, so they are not included. The 310 started service in FY 2020, so all of its ridership is an increase.

Ridership analysis¹ (average daily boardings performance measure – Attachment B)

- Most of GoTriangle's routes increased in ridership. For Routes 100, 300, and DRX, this continues a trend of increasing service, but the connection with service improvements isn't as strong for Routes 400 and 805.
- The peak commute to Durham and Chapel Hill continued their upward trajectory (+6 percent and +4 percent, respectively), while peak ridership to Raleigh decreased by 2 percent and to RTC decreased by 5 percent.
- The increase on Routes 400 and 405 is not necessarily a result of the discontinuation of the Robertson Scholars Express from the GoTriangle network, since the Robertson Scholars Foundation continued operations with a different service provider.
- Changes to Routes 311 appear to have had a negative effect on ridership. Providing fixed route service to employers such as Cisco, Pfizer and Biogen along Kit Creek Rd instead of the US EPA and NIEHS resulted in a sharp loss in

¹ For more details refer to the average daily boardings performance measure – Attachment B

ridership (-20 percent). Similarly, Route 201 was discontinued in August 2019 and replaced with the express Route NRX to increase ridership but the result in its first seven months of service was a decline even sharper than that on Route 311 (-32 percent). Another route that had very low ridership is the new Route 310. It was planned to expand, connecting the Regional Transit Center with Cary Depot, in January 2020 but due to delays in road construction, it continued to operate with a shorter routing to Wake Tech's RTP Campus until the reduction of service in March. As a result of these three routes' poor performance, they were the only routes operated by GoTriangle that did not resume service on June 28th 2020.

- The increase in ridership on other routes outweighed the loss in ridership due to the discontinuation of Routes 102, KRX and RSX.
- Ridership grew by about 3 percent on average on the core routes during weekdays. The growth was more substantial on Route 400. Worth noting is that this ridership increase was not achieved at the expenses of Route 405, which serves the same corridor at peak and maintained stable ridership levels.
- Sunday ridership has continued its upward trend by growing 6 percent over 2019 although service was not expanded in FY 2020.
- The January 2020 service change that adjusted the routing of Route 800 to utilize I-40 at all times between the Regional Transit Center and Southpoint was only operated for a little over a month before the pandemic hit the Triangle. We do not have substantial data to evaluate the ridership performance at this stage.
- In August 2019 the Go OnDemand microtransit program which was operated in-house with ACCESS vehicles and did not meet the ridership and productivity goals was replaced with the RTP Connect program operated in partnership with Uber and Lyft. The service change did increase ridership (+13 percent to 106 daily boardings on average), but more notably it favorably increased the boardings per hour and the cost per hour. The productivity from one program to the other increased dramatically (+77 percent) with 7.6 boardings/hour with the RTP Connect program compared with only 4.3 with OnDemand.

Changes in Productivity by Route

Before the COVID-19 outbreak

The table below includes the comparison in productivity FY 2019 – FY 2020 (July – February) by typology of service:

Typology of service	July to February ("pre-pandemic" in FY 2020)		
	Boardings per Hour		
	FY 2019	FY 2020	Change
	11.1	11.2	+1%
Weekday	11.5	11.6	+1%
Peak	11.8	11.6	-2%
Midday	11.6	12.1	+4%
Evening	9.8	10.7	+8%
Saturday	7.6	7.8	+4%
Sunday	8.7	9.6	↑ +11%

The High Productivity routes (those that exceeded 125 percent of the category average) were Route 405 (with 20.3 average boardings/hour) and Route DRX (14.0 average boardings/hour).

The Low Productivity routes (those with productivity level lower than 75 percent of the category average) were Routes 301, 305, 310, 311, NRX and WRX. Route 310 (still in its short routing to Wake Tech - RTP Campus) was the worst performing route with only 3.0 average boardings/hour followed by the NRX with 3.7.

Before the pandemic, the most productive destination for peak-hour commuters was Chapel Hill with 17.8 average boardings/hour against 13.3 to Durham and 9.7 to Raleigh, matching closely the 2019 results. In contrast, the trips heading to the Research Triangle Park, which had 8.8 in FY 2019, further lowered their productivity to only 7.8 boardings/hour in FY 2020.

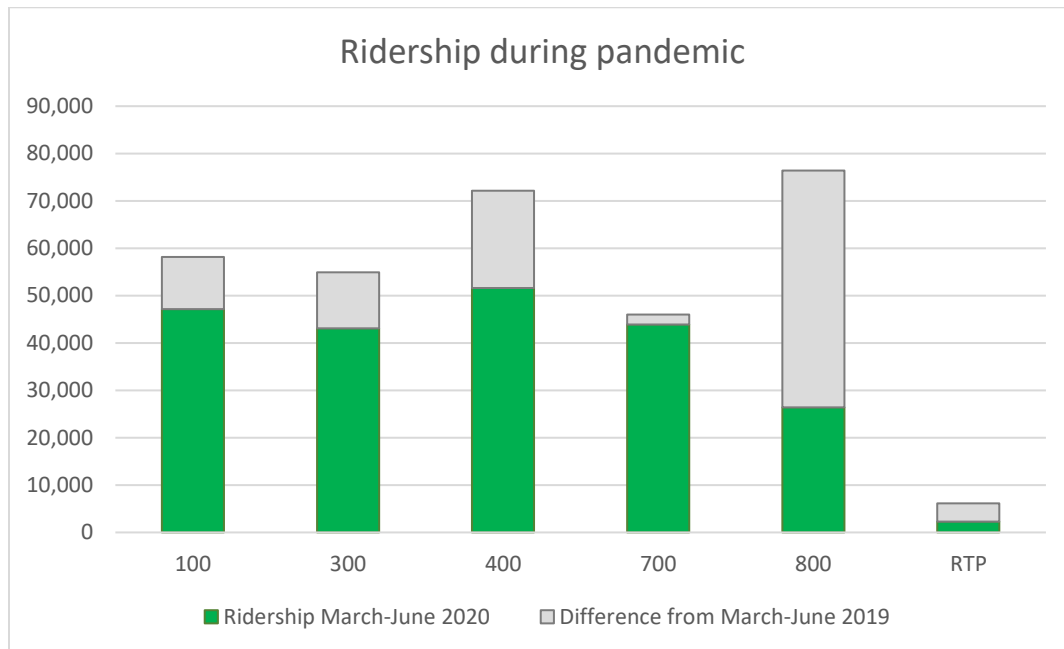
The sharp productivity improvements on Sunday (+11 percent) is partially the result of providing the same amount of service on Routes 400 and 800 with only 3 buses from previous 4 thanks to the new routing on I-40, in addition, before the pandemic started, the evening ridership went up 9 percent.

Changes in Ridership by Route

During the COVID-19 pandemic

The weekday ridership in the last quarter of FY 2020 fell dramatically as a result of the fall in demand for transit and of the reduced levels of service implemented in response to the COVID-19 pandemic. In the April 1st - June 30th timeframe the agency retained only 36 percent of the riders compared with the same time period in FY 2019. The loss in ridership was primarily concentrated in the peak-hour service (when the non-core routes usually operate but were not with the reduced service levels), which only retained 23 percent of its ridership while the midday service was at 87 percent and evening 53 percent. A striking result was achieved with Sunday service where ridership grew by 26 percent running the regular schedule, possibly as a result of the temporary fare-free policy.

The next chart shows the ridership on the core routes during the pandemic period, compared to the ridership they had in the previous year. Please note that only the core routes and RTP Connect operated through the whole time period.



- Route 700 was the most resilient. The route only lost 5 percent of its ridership over the same period in 2019. One contributing factor is that it was rerouted to serve a hotel temporarily utilized to shelter families in need during the pandemic.
- The worst performer among the Core Routes was the 800, which primarily caters to UNC commuters who had parking restrictions lifted during the time period and had widespread work-from-home options. The route lost 65 percent of its ridership over 2019.
- Ridership on RTP Connect went down about 86 percent compared to pre-COVID levels and 78 percent over the OnDemand service provided in the same period in FY 2019. What stands out is that, likely as a result of the decrease in traffic levels in RTP, the program's productivity increased consistently during the pandemic from 7.6 to 10.1 boardings per hour.

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 percent of trips to arrive on time. For FY 2020, GoTriangle was on track to meet this goal before the pandemic with 88 percent of trips arriving on time (matching FY 2019) but further improved this result to 94 percent during the pandemic.

In the portion of FY 2020 that preceded the pandemic only a few routes did not meet the 85 percent mark:

		<i>July – February (before pandemic)</i>	
		On-Time Perf.	
Route		(FY19)	
Peak-Only Routes			
CRX	Chapel Hill – Raleigh Exp.	83%	86%
WRX	Wake Forest – Raleigh Exp.	83%	80%
Core Routes – Weekday Peak Service			
800	Chapel Hill – Southpoint – RTC	79%	80%
Core Routes – Weekday Midday Service			
300	Raleigh – Cary	82%	83%
Core Routes – Saturday Service			
300	Raleigh – Cary	71%	79%
400	Durham – Chapel Hill	84%	84%

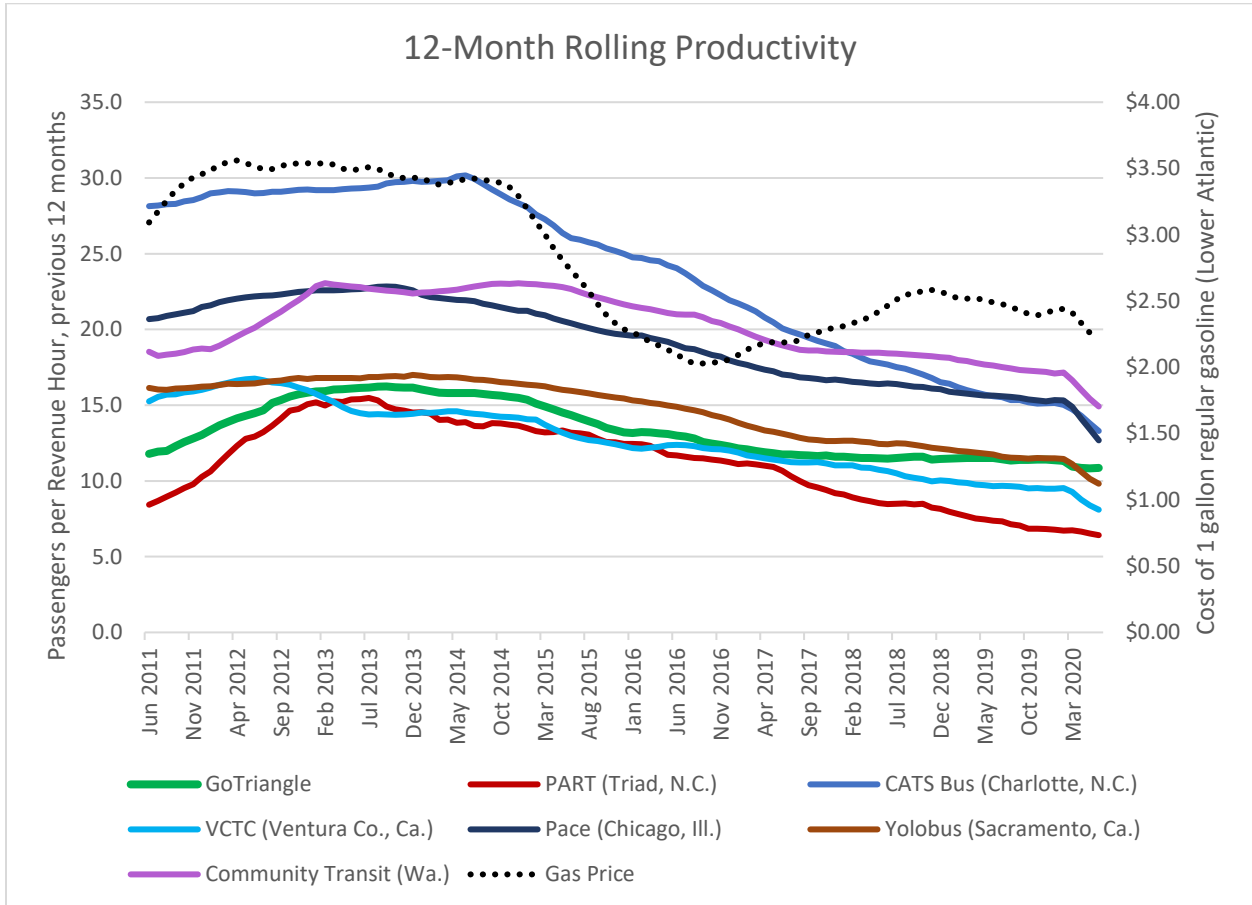
- Route 300 on Saturday, which is operated by GoCary, showed the worst OTP at 71 percent, a sharp drop from 79 percent in 2019.
- Routes 305 and 800 failed to meet the standard last year, but did meet it this year.
- The service changes on Route 800 in January 2020 that were implemented only one month before the pandemic affected the Triangle, inclusive of substantial schedule changes, could potentially lead to improvements in its peak service.
- In January 2020 a stop was added to Route CRX but this is likely not the reason of the lower on-time performance from FY 2019.
- All routes met the 85 percent mark during the pandemic.

Peer Comparison

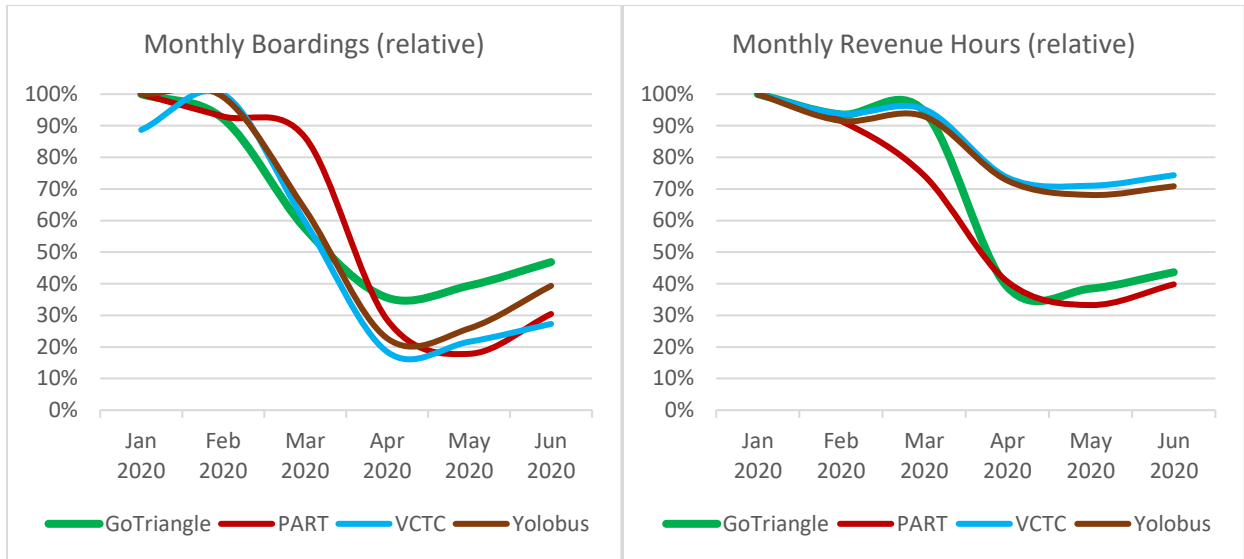
FY 2020 was showing signs of stabilization or small growth for most transit agencies in the United States after several years of steady decline (possibly as a result of raising gas prices) until the pandemic disrupted the transit market. Most agencies experienced a tremendous drop in ridership and productivity starting in March 2020.

The chart below shows productivity (in terms of boardings per revenue hour) for transit agencies that have been identified as GoTriangle's peers in their regional scope of service and size. GoTriangle is included for comparison. While the other agencies' productivity dropped together with their ridership, GoTriangle managed to improve

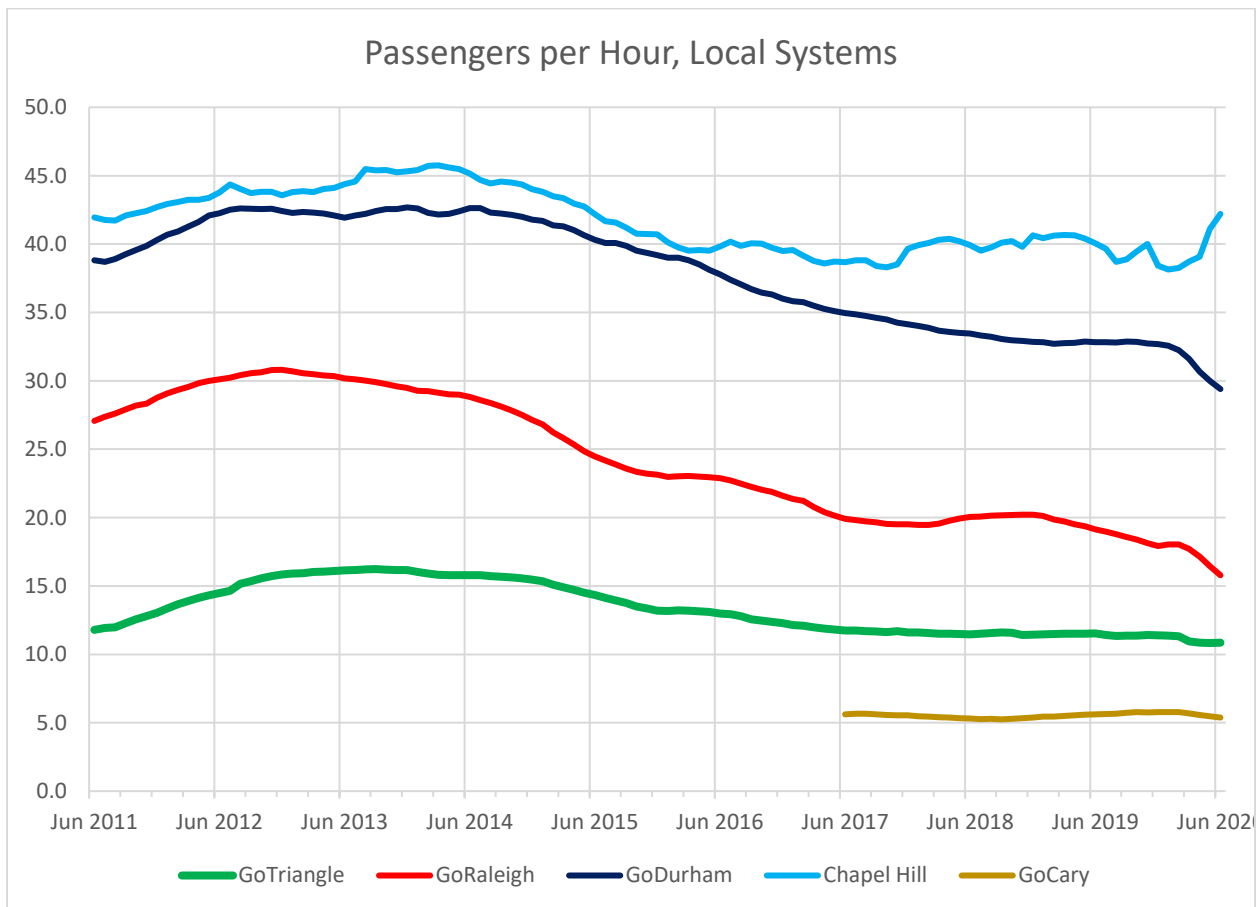
its productivity with a timely adjustment in its service levels that matched the new demand more effectively than any peer in the analysis.

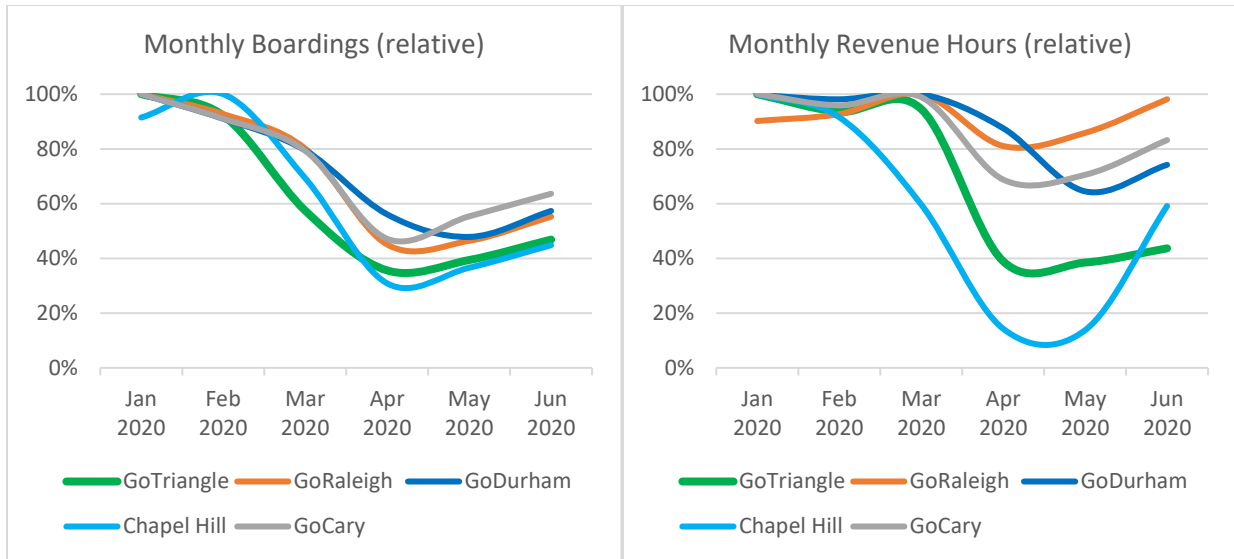


The charts below separately track the two measures that compose the productivity analysis including GoTriangle’s peer agencies (boardings and revenue hours), suggesting that GoTriangle is the agency that saw the lowest reduction in ridership while being one of those that cut most revenue hours:



Finally, when comparing productivity in FY 2020 with GoTriangle’s partner agencies in the Triangle, only Chapel Hill Transit adjusted its service levels more efficiently than GoTriangle, widening the gap with GoDurham, the second most productive transit agency in the Triangle (see chart below).

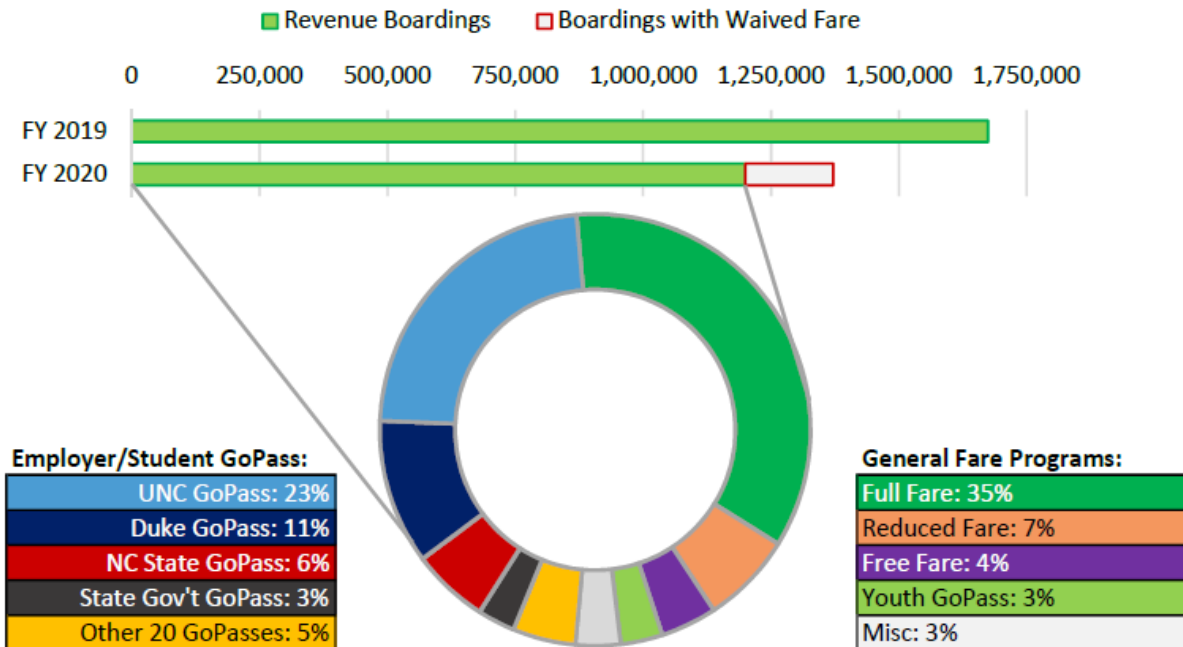




The detailed charts above tracking the loss in boardings and revenue hours suggests that CHT’s good productivity performance was the result of heavy cuts in the service provided, which in mid-April only reached 10 percent of its 2019 levels. At the peak of its service reductions, GoRaleigh cut about 20 percent of its regular service while GoDurham about 38 percent (GoTriangle over 62 percent).

Ridership by fare program

The chart below shows the ridership by fare program, which has been very stable from FY 2019 through the beginning of the pandemic. As GoTriangle waived fares in March, 12.5 percent of the total boardings are not captured in any fare program.



All of the major GoPass customers (UNC, Duke, NC State and State Government) had minimal changes in their percent usage and although four new GoPass partnerships were added to the program in FY 2020, they have not generated additional ridership in the “Other” category. The Youth GoPass program, which was successfully introduced in 2019, has not expanded substantially in FY 2020.

What’s Next?

Under the climate of uncertainty that started with the COVID-19 outbreak and moved into FY 2021 the planning and prioritization of transit operations projects for short term service changes will require flexibility and resilience. The previously approved County Transit Plans (Durham, Orange and Wake) will require amendments and many projects will likely be re-scoped to better respond to the change in the environment they need to operate.

Some routes that were not operated entering the new fiscal year like Route 311 and NRX might resume service if the transit environment is restored to pre-crisis level, might be adjusted or their suspension might become permanent. In October 2020 Route 100 and 105 were combined to maximize efficiency and decrease travel time between Raleigh and the Regional Transit Center given the drop in ridership to/from RDU Airport during the COVID-19 pandemic. Service to/from the airport is guaranteed by a newly created RDU Shuttle between the airport and the Regional Transit Center.

Some of the GoTriangle Short-Range Transit Plan recommendations for service changes for FY 2020 had to be postponed to or re-evaluated in FY 2021. These changes include:

- The extension of **Route 310** from the Regional Transit Center to Cary Depot. Originally planned for FY 2020, it was postponed due to delays in the construction of the McCrimmon Pkwy extension. Concurrently, **Route 300** had maintained the peak service between the Regional Transit Center and Cary Depot until the Route 310 started. The changes have been implemented on October 11th, 2020.
- The realignment of **Route 105** in west Raleigh to use Blue Ridge Rd instead of Faircloth Ave to travel between Wade Ave and Hillsborough St. The route was actually suspended on October 11th 2020, but the recommendation is reflected in the temporary **Route 100** rerouting.
- The reduced frequency on **Route 311** from 30 minutes at peak to hourly at peak. At the time of this publication the route is still suspended.
- The elimination of the peak period deviation on **Route 400** to SW Durham Drive and University Dr to create direct, consistent service all day. Mitigation measures with alternative service will be investigated.
- The addition of a stop at Patterson Place on **Route 405**.

- The realignment of **Route 420** service from Old NC-86 and US-70 to Churton St and I-40.
- The removal of underutilized trips (eastbound AM and westbound PM) on **Route 805**.

Other changes recommended in the Short Range Transit Plan for FY 2021 are:

- A new Park-and-Ride at Wake Tech's Southern Wake Campus for Route **FRX**, will allow the route to serve trips to Wake Tech along with commutes to Raleigh - Successfully implemented in October 2020.
- Extension of **Route 305** into an all-day weekday service between Apex and Raleigh, with 30-minute service at peak and hourly service during the middle of the day, evenings and on weekends.
- Upon completion of the signage installation in Fall 2020, GoTriangle vehicles will be allowed to utilize the Bus On Shoulder System on the section of I-540 currently utilized by Route **NRX**, potentially benefitting the on-time performance of the route. Given the low performance during the first seven month of activity before the COVID-19 outbreak, the route was temporarily suspended and might be subject to routing changes. The availability of bus on shoulder operations will nonetheless benefit any bus service that utilizes the corridor in the years to come.
- The elimination of **Route 301** once new services provided by GoRaleigh and GoCary are implemented (likely not happening in the current fiscal year)

Other improvements that will benefit the operations of the GoTriangle system in FY 2021 include:

- GoTriangle has planning studies underway for multiple facilities, including several new or improved **Park-and-Rides** (for Routes 305, CRX, DRX, NRX, ODX, WRX), a bus facility at **Raleigh Union Station**, and an **improved Regional Transit Center**.
- Durham, Orange, and Wake counties are updating their county transit plans in FY 2021. When complete, they may include recommendations for regional bus service beyond GoTriangle's current plans.
- GoTriangle, GoRaleigh, GoCary, and GoDurham plan to deploy the Delerrok TouchPass account-based fare collection system in 2021. 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.

- RTP Connect pilot program will likely add options for the customers. Through a partnership with the Research Triangle Foundation, additional service will include a new pick-up/drop-off location at the Boxyard RTP and the extension of the coverage area to include the entirety of the Regional Triangle Park area.