



Wake County & Regional Gap Analysis

Wake and Durham Bus Plans

December 2021



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1 – Overview and Key Findings

Task Overview

The Gap Analysis is a companion document to the Regional Market Analysis and compares the market for transit in Wake County and the Triangle Region with current transit service levels. It uses this comparison to broadly evaluate ridership in the context of expected demand and identify the gaps and opportunities for improved transit service investments. This analysis looks at both regional gaps within and between Wake, Durham, and Orange Counties and local gaps within Wake County municipalities.

Findings from the Gap Analysis will be used to inform the Short-Range Transit Plans for GoTriangle, GoRaleigh, GoCary, and GoWake Access.

APPROACH

The Gap Analysis consists of the following components:

- Population and Jobs Near Transit – number of people and jobs within $\frac{3}{4}$ mile of frequent and all day fixed-route transit services.
- Walking Access to Transit – number of people and jobs within walking distance to bus stops and the surrounding transit demand.
- Regional Service Levels – evaluation of how well regional services match underlying transit demand.
- Ridership on Regional Routes – examination of ridership on regional services given the underlying demand and market for transit services.
- Local Service Levels – evaluation of how well local services match the underlying transit demand. This section considers Wake County services only.
- Ridership on Local Routes – consideration of ridership on local routes given underlying transit demand.
- Community Funding Areas (CFAs) Gaps and Opportunities – current status of CFA programs and how community services are meeting transit demand. This section considers Wake County services only.

For the purposes of this task, “regional service” describes routes that are limited-stop and cross jurisdictional boundaries, designed to connect to regional destinations and between municipalities. All GoTriangle routes and some GoRaleigh and GoCary routes are considered regional. Local service includes fixed-route bus routes that operate within Wake County municipalities.

KEY DATA SOURCES

The Gap Analysis draws from analyses conducted as a part of the Regional Market Assessment, which uses data from CAMPO and DCHC MPO’s 2050 Metropolitan Transportation Plan (MTP) efforts, US Census American Community Survey 2019 5-Year estimates, Triangle Region Onboard Surveys, and the Freeway And Street-Based Transit (FAST) Network Study.

Additional data beyond those used in the Market Assessment include:

- Transit routes based on Summer 2021 General Transit Feed Specification (GTFS) from GoRaleigh, GoTriangle, GoCary, and GoDurham
- Average weekday ridership by stop and by route for September 2021 from GoRaleigh, GoTriangle, GoCary, and GoDurham
- Status of Community Funding Areas, based on conversations with CAMPO and CFA municipalities

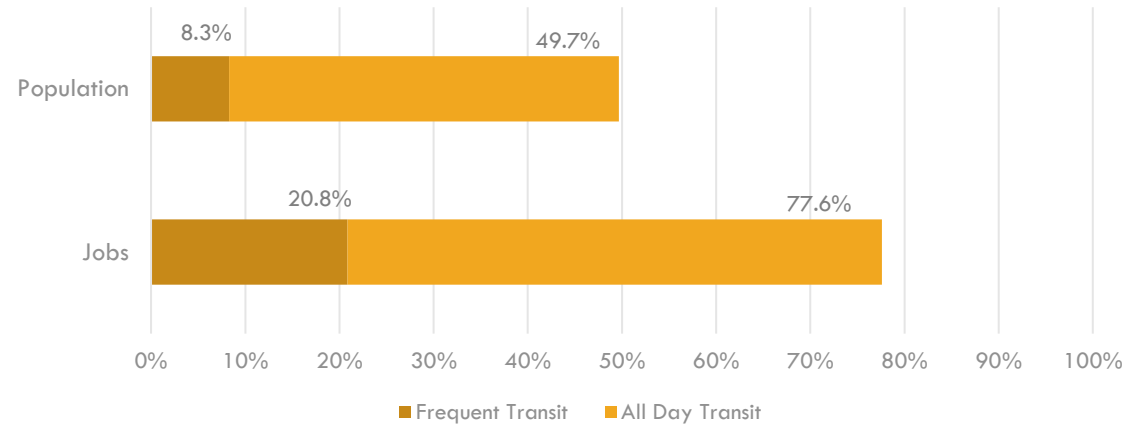
Population and Jobs Near Transit

National research shows that people are willing to walk between five and ten minutes or about ½ mile to a bus stop and slightly longer to high-capacity transit, like train stations or bus rapid transit. The Wake Transit Plan uses a ¾ mile distance to measure people and jobs with proximity to transit. The Wake and Durham Bus Plan retained this metric to measure the reach and impact of transit service. The Bus Plan also evaluated a half-mile walkshed to individual bus stops as part of the walking access to transit and gaps analysis (see Chapter 2).

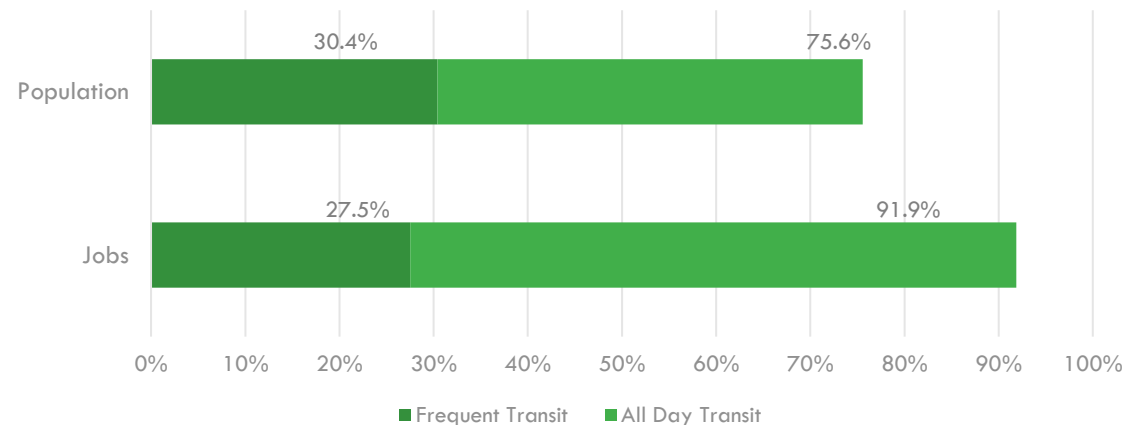
Employment is more concentrated in the region, with many jobs located at key activity centers, like downtowns, office parks, shopping centers, hospitals and major universities. As a result, transit reaches more jobs than people. While many people also live in urbanized areas, Wake and Durham counties both have lower density residential development.

- In Wake County, about half of all residents and nearly 78% of jobs are proximate to all day transit service. Proximity to frequent transit service, however, is significantly lower with only 8% of people and 21% of jobs meeting this definition.
- Access is higher in Durham County with slightly more than 75% of residents and nearly 92% of jobs located within ¾ of a mile of all day transit service. About 30% of people and 28% of jobs also have access to frequent transit service.

Population and Jobs within ¾ Mile of Transit Routes in Wake County



Population and Jobs within ¾ Mile of Transit Routes in Durham County

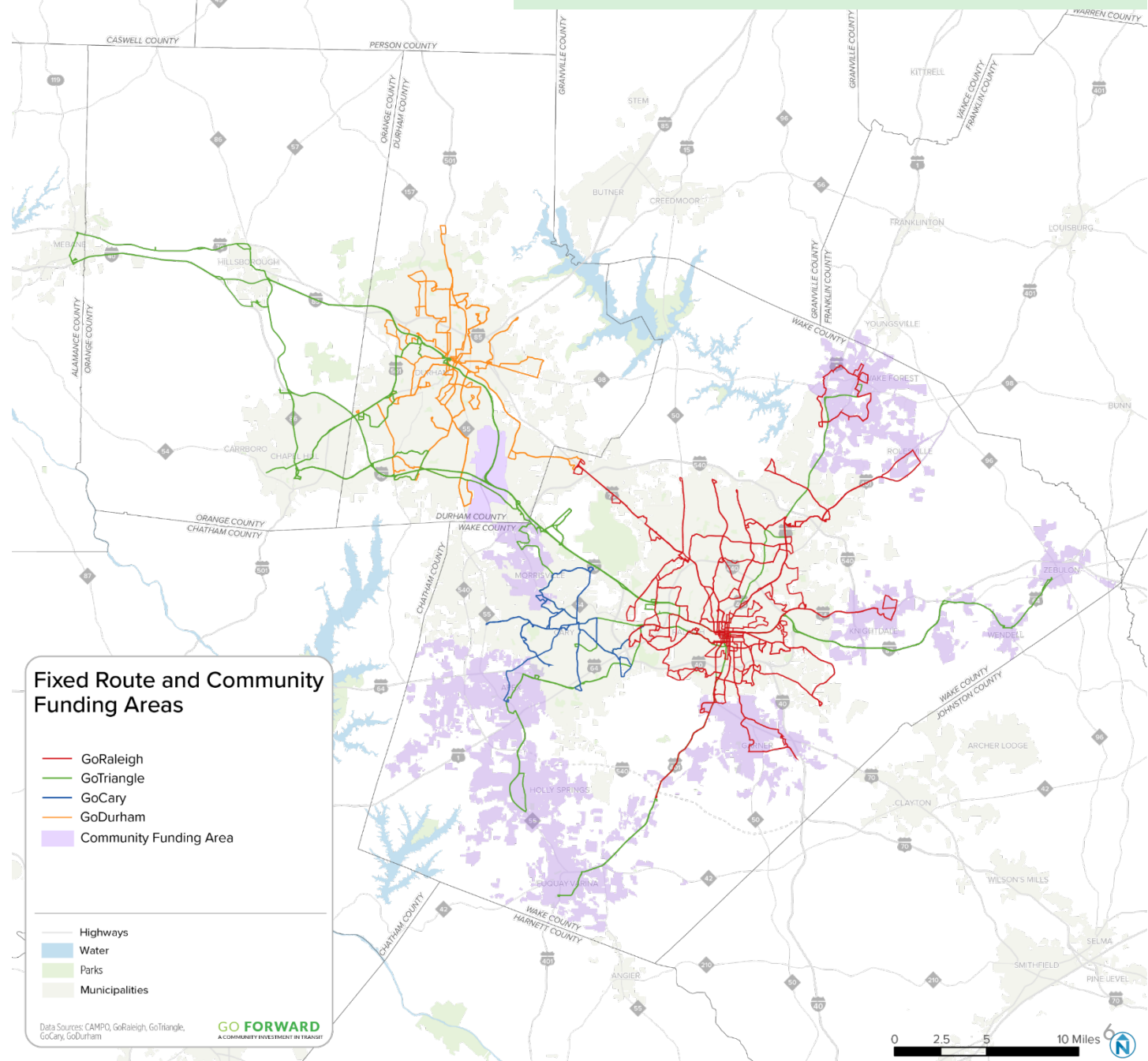


Key Network Improvement Opportunities

The following sections go into detail about gaps and opportunities for regional, local, and CFA services. Key network improvement opportunities include:

- **Generally, most communities with underlying transit demand have access to transit services.** Areas with the highest demand have the most access and highest quality of transit service, while areas with lower demand are served by routes with shorter hours of operation.
- As the region recovers from the COVID-19 pandemic, **there may be opportunities to increase service levels and ridership**, potentially by increasing all-day and weekend day transit services rather than more investment in peak-period and weekday travel. There are many areas, primarily in the City of Raleigh, that would benefit from buses operating every 15 minutes or less.
- **Strong regional corridors, such as between Durham and Chapel Hill, could use additional investment**, potentially with corridor-based services as compared with express (or limited stop) service.
- There are opportunities to **improve local and community services in Cary and Raleigh**. There are also strengthening transit markets in Morrisville and Apex.
- **Improved community transit (such as circulators and microtransit) could help CFA eligible recipients meet local demand** and build connections to regional services. Newly launched and planned CFA services will fill some gaps. The largest gaps not filled by existing or planned CFA projects are in Holly Springs, Fuquay-Varina, Knightdale, and Research Triangle Park (RTP).

Note that GoTriangle Routes 105, 301, 311, and NRX have been suspended due to the COVID-19 pandemic and operator shortages, and they are not shown on this map



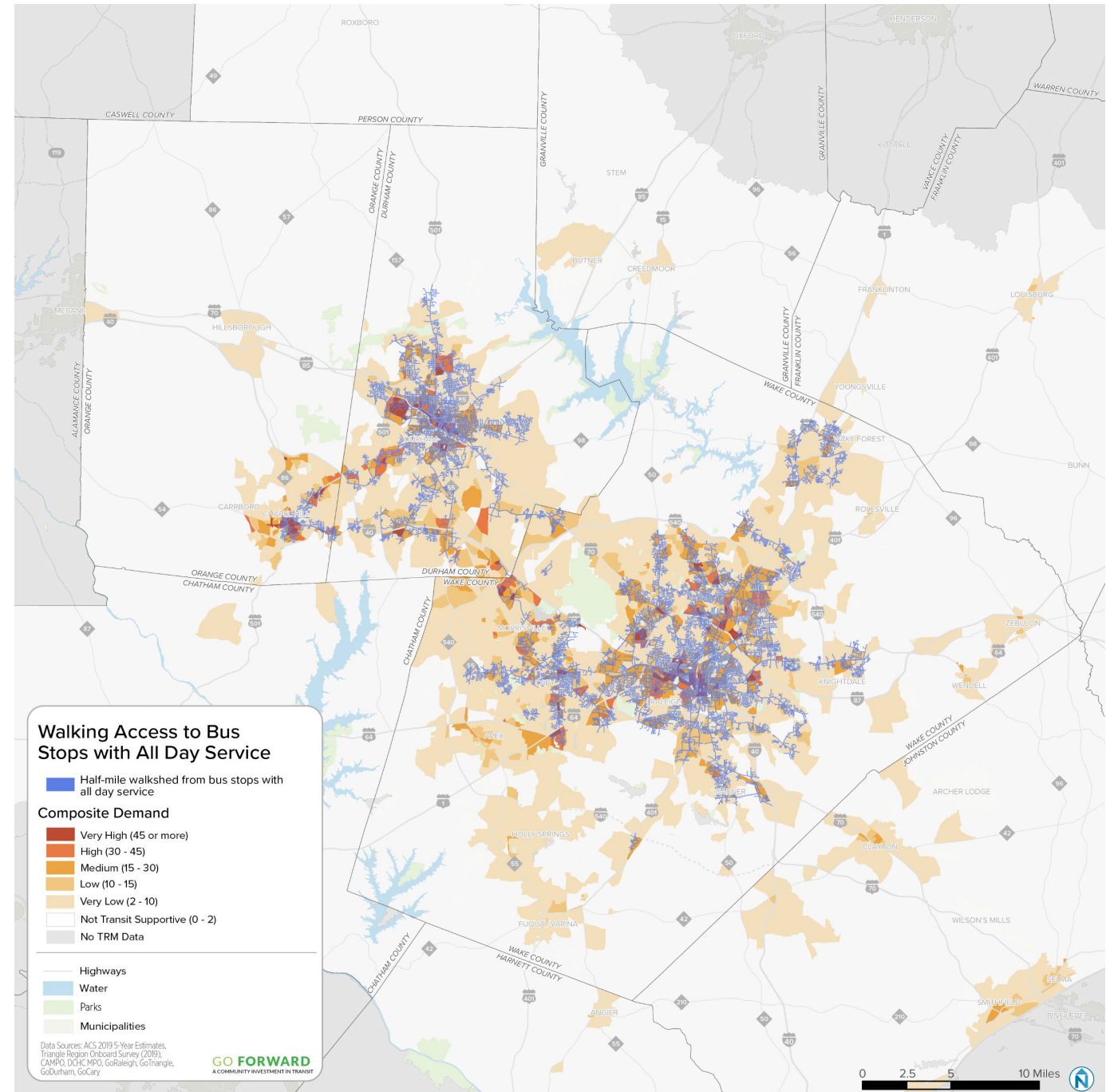
2 – Walking Access to Transit Gaps

Access to All-Day Transit

While much of the region's population and jobs are within $\frac{3}{4}$ miles of transit services, using the more stringent standard of a half-mile walkshed and measuring it from bus stops rather than corridors reveals places where there is demand for transit service but a lack of access. In most cases service gaps are pockets rather than large areas lacking access. In other cases, places where there is a noticeable gap in service, like the Research Triangle Park and the Town of Apex, the apparent lack of service reflects a service model oriented around peak services rather than all-day service.

Gaps are visible in all three counties, include some major activity centers as well as parts of the urbanized areas. For example:

- As mentioned, Research Triangle Park a regional job center is mostly inaccessible to transit, due to a combination of peak-only services, plus challenging land uses throughout much of the area.
- Several regional corridors, including Durham to Chapel Hill, Chapel Hill to the Research Triangle Park, and Apex into Raleigh suggest gaps in service. In some cases, these corridors are served by peak only. In other cases, services have limited stops, leaving some residential and employment areas unserved.
- The denser parts of Apex, Morrisville, and southern and western Cary do not have access to all day fixed route services.
- North Raleigh in and around the I-440 with pockets visible north and south of the corridor, such as North Hills and Crabtree Heights.
- Small pockets in East Raleigh, east of the Wake Med campus, where jobs and housing are just out of reach of transit.
- Southwest Raleigh south of I-40 where there are multiple housing developments but without walk access to bus service.

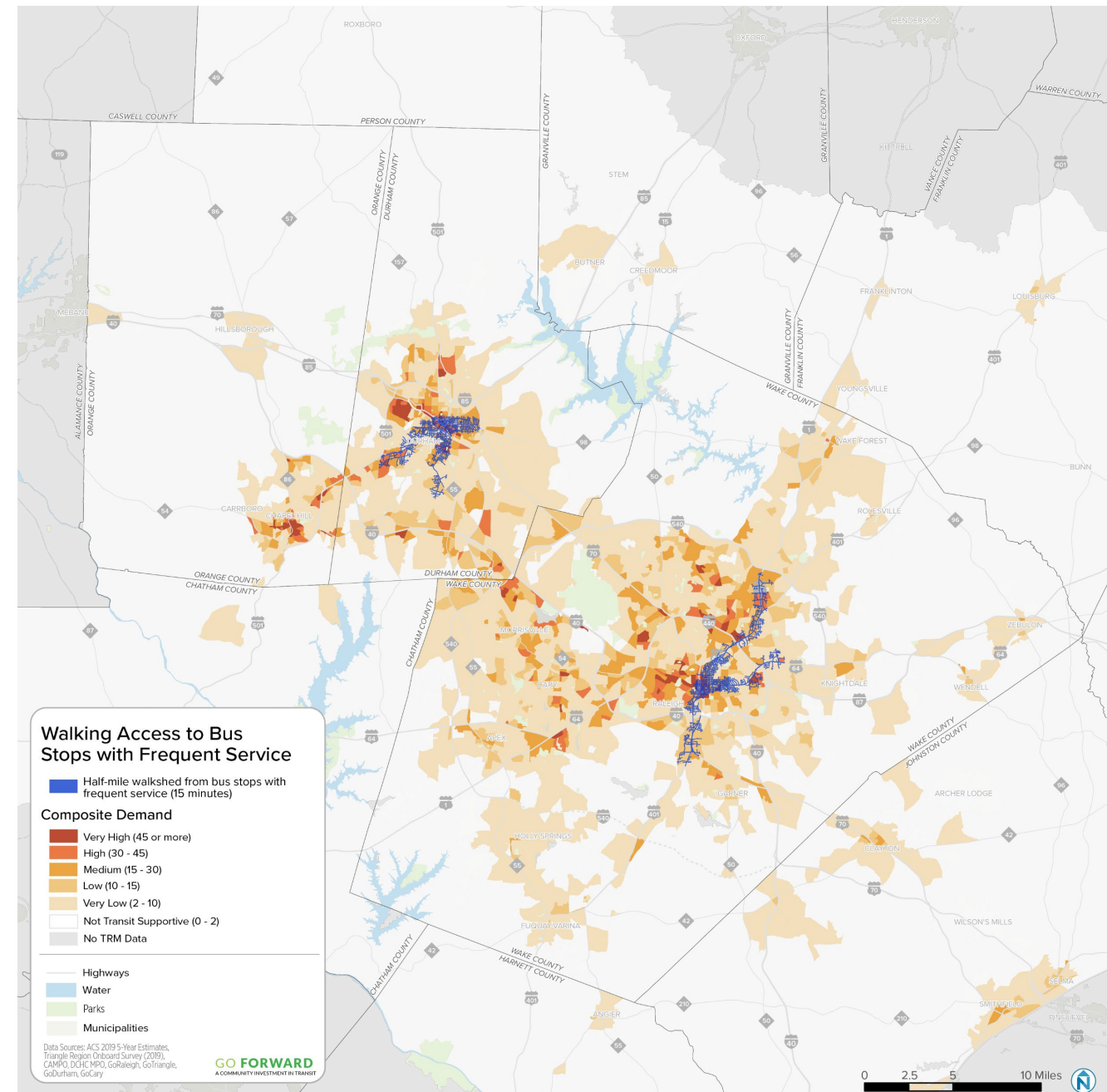


Access to Frequent Transit

Frequent transit services are concentrated in the Durham and Raleigh and along specific corridors, leaving bigger gaps in access. However, the relationship between population and employment density and frequent transit service is critical in this analysis, recognizing that frequent transit service will only be productive in dense community and along dense corridors. While the composite demand map shows a range of transit demand it is only the darkest colors that suggest opportunities for frequent transit.

The analysis does suggest areas where there are opportunities for frequent transit services, in Durham, Orange and Wake counties. Many of these opportunities overlap with previous analyses, while others are new. Areas that could benefit from investment in frequent transit service include:

- Parts of North Durham, especially the area around Duke Hospital.
- The Durham to Chapel Hill corridor has pockets of high and very high demand suggesting it may be possible to strengthen service along this alignment.
- Neighborhoods west of downtown Raleigh, including the area around North Carolina State University.
- North Raleigh in and around the I-440 corridor, especially neighborhoods west of the Capital corridor.
- Chapel Hill and Carrboro
- Parts of Cary
- Parts of the Research Triangle Park



3 – Regional Gaps and Opportunities

Regional Service Levels

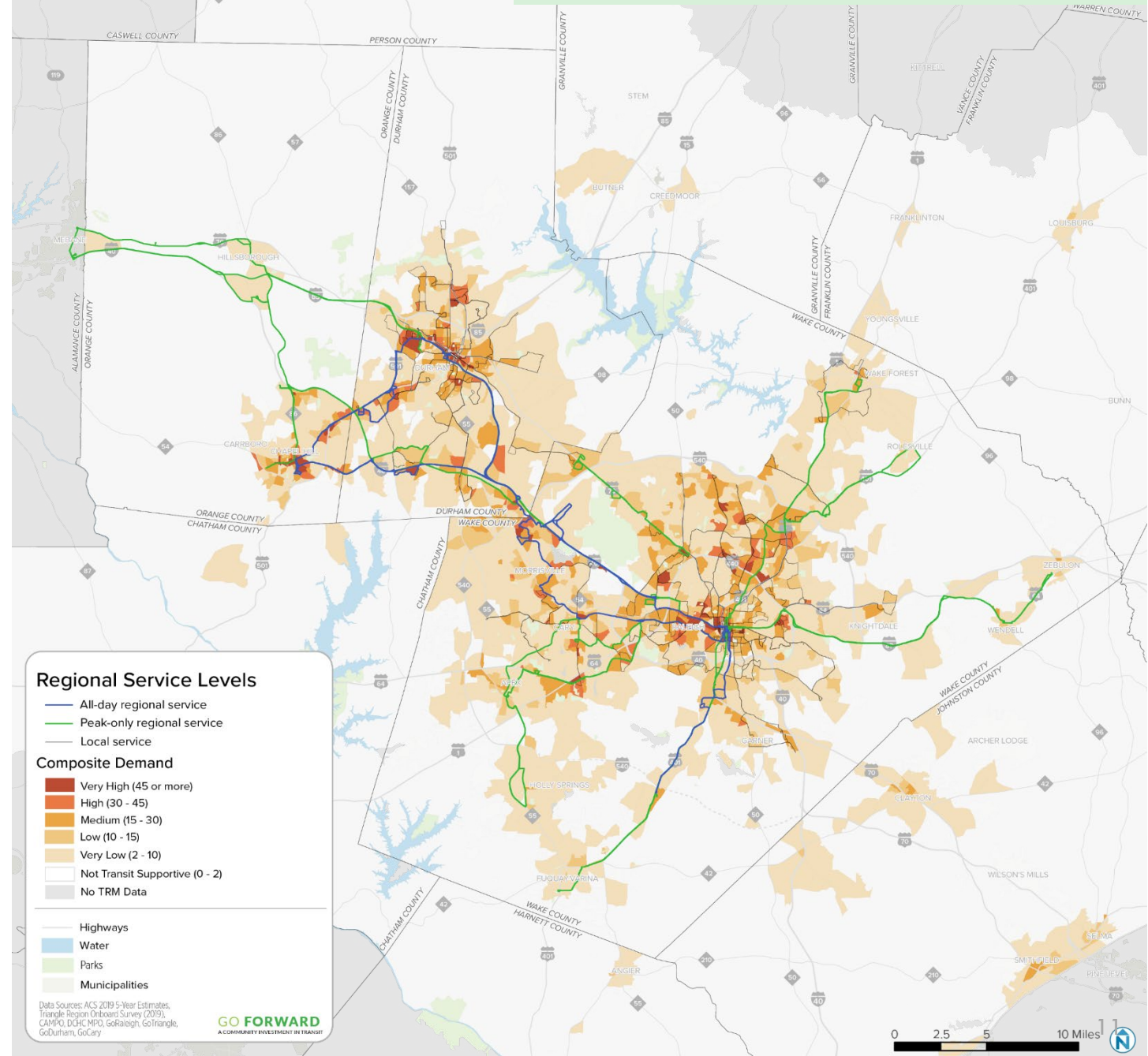
Regional transit services are primarily provided by GoTriangle (all Express and Regional routes), as well as by GoRaleigh (Routes 40X, 70X, and 401X) and GoCary (ACX).

The largest municipalities in Wake, Durham, and Orange Counties are connected via the regional transit network into Raleigh, Durham, and/or Chapel Hill. Generally speaking, corridors with the highest transit demand are served with all day transit routes with additional service offered during peak periods. For example, Route 400 runs between Chapel Hill and Durham all day, and Route 405 operates during peak times. Another example is the Raleigh – Regional Transit Center (RTC) – Durham corridor. Route 700 provides all day service between Durham and the RTC while Route 100 provides all day service between Raleigh with the RTC. The DRX connects the two cities at peak times.

Regional services to municipalities other than Raleigh, Durham, Cary, Morrisville, and Chapel Hill only operate at peak times (Garner and Knightdale also have local all-day services). For many of these municipalities, which are smaller communities overall, the regional services are the only fixed-route transit services within their boundaries. As the region recovers from the COVID-19 pandemic, regional transit services may consider transitioning peak only services into all day routes. Offering all day connections can help strengthen transit opportunities for a larger and more diverse group of travelers.

One regional corridor with low-to-medium, but growing, demand is between Fuquay-Varina, Holly Springs, Apex, western Cary, Morrisville, and RTP. GoTriangle Route 311 served the Apex to RTP portion of the corridor, but it has been suspended due to the COVID-19 pandemic. Holly Springs and Fuquay Varina are currently connected into Raleigh rather than RTP.

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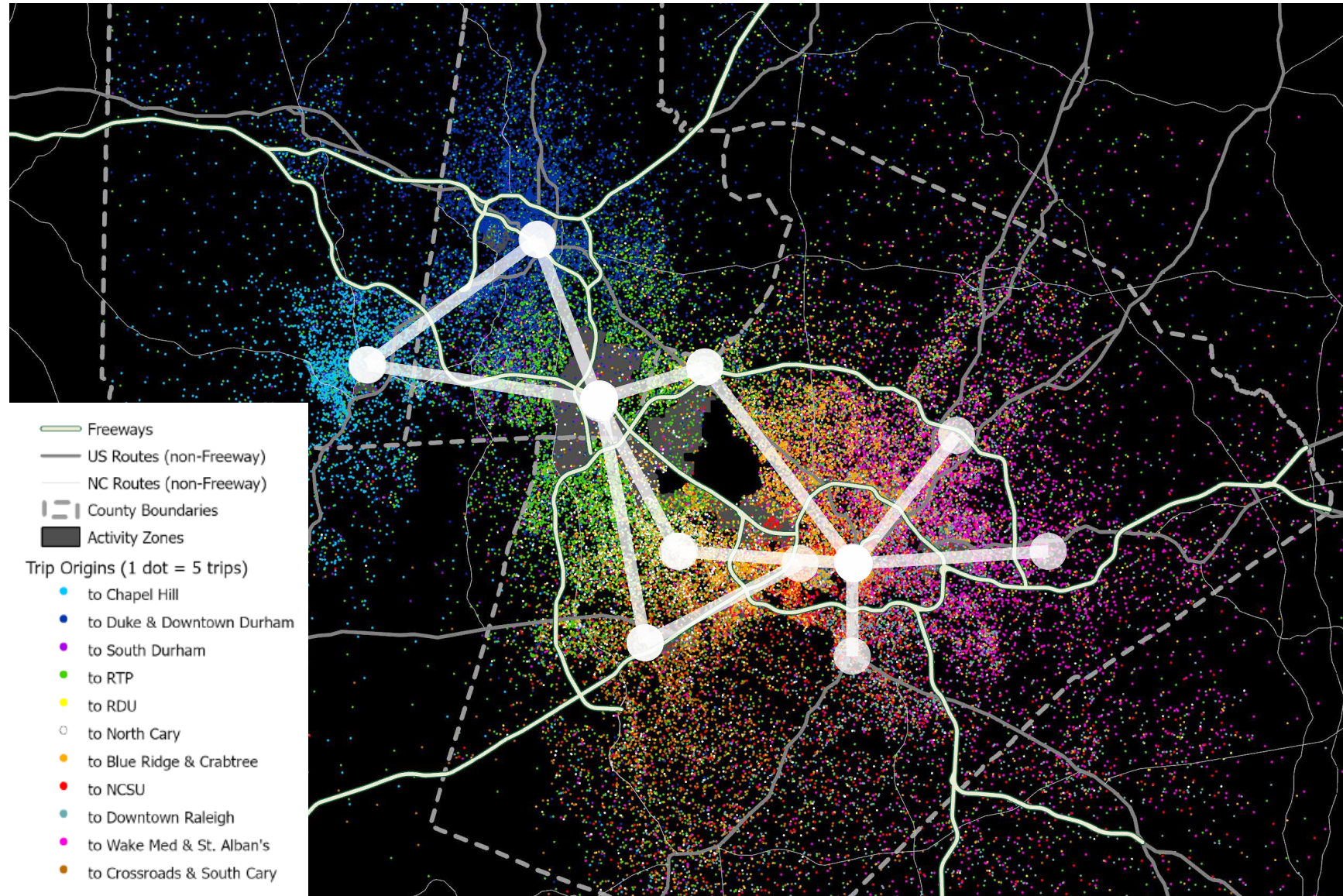
Regional Travel

In 2021, the North Carolina Department of Transportation and its partners prepared the “FAST” study to identify and understand trip origins to major destinations (for all modes in 2030). Findings from this analysis are described in greater detail in the Regional Market Assessment. A key finding from this analysis was identification of key corridors for regional travel (see white lines on the map to the right).

Except for Brier Creek to Research Triangle Park (RTP) and the temporarily suspended GoTriangle Route 311 Apex-RTC, all of these corridors are served by existing regional or local services. Investment in increasing service levels can help facilitate greater transit ridership along these corridors. Service between Apex, Cary, and Raleigh, in particular, could benefit from increased transit access, ideally all-day service.

Strong travel corridors radiating from downtown Raleigh match with planned Wake Bus Rapid Transit investments.

2030 Trip Origins to Destinations Defined in FAST Study + Key Corridors



Ridership on Regional Routes

Another goal of the gap analysis was to evaluate how well existing services are used by riders, in consideration of both underlying transit demand and the availability of transit. The map shows average weekday boardings by stop on regional services, with data collected for the month of September 2021.

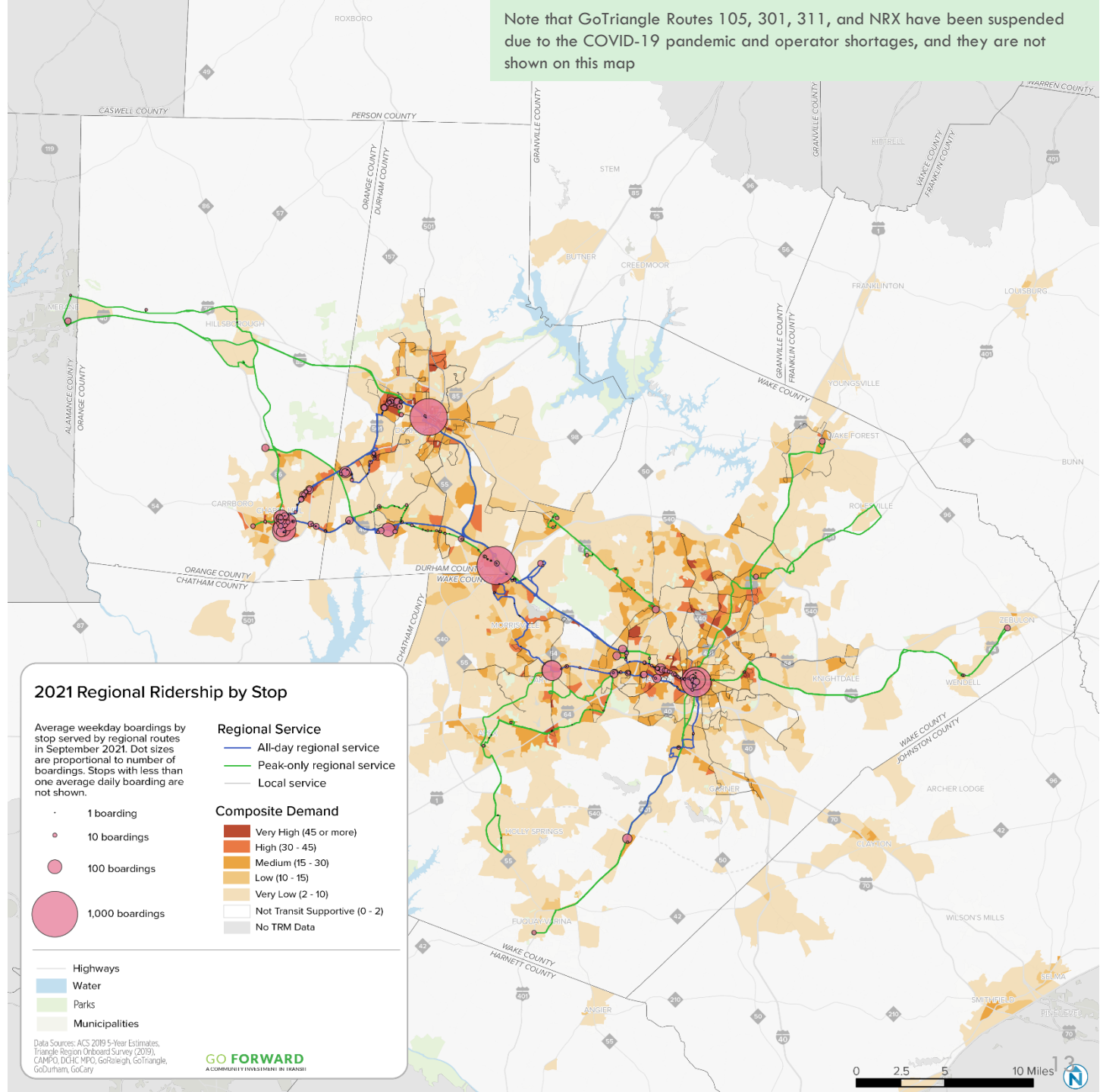
Ridership on regional routes is highest at the region's major municipalities, such as downtown Raleigh, Durham and Chapel Hill. RTC also has high ridership as a major transfer location.

Cary and south Durham also show relatively strong transit ridership as do areas west of downtown Raleigh, including the areas surrounding North Carolina State and Duke universities.

Ridership along several of the regional routes is low, even in cases where underlying demand suggests opportunities to attract some riders. Most of these routes, however, operate during peak-periods only. Demand may be suppressed by:

- Reduced or suspended service due to COVID-19 Pandemic and bus operator shortage.
- Reduced demand during peak period as many office workers continue to work from home.
- A mismatch between peak period service and all-day demand.
- A mismatch between peak only and limited stop service along regional corridors with high demand throughout the corridor. Investment in underlying local service may be useful in these areas, such as Durham-Chapel Hill.
- Difficulty of serving RTP, the region's largest employment site, with transit despite proximity to RTC, due to its site design.

Note that GoTriangle Routes 105, 301, 311, and NRX have been suspended due to the COVID-19 pandemic and operator shortages, and they are not shown on this map



4 – Local Gaps and Opportunities

Local Service Levels

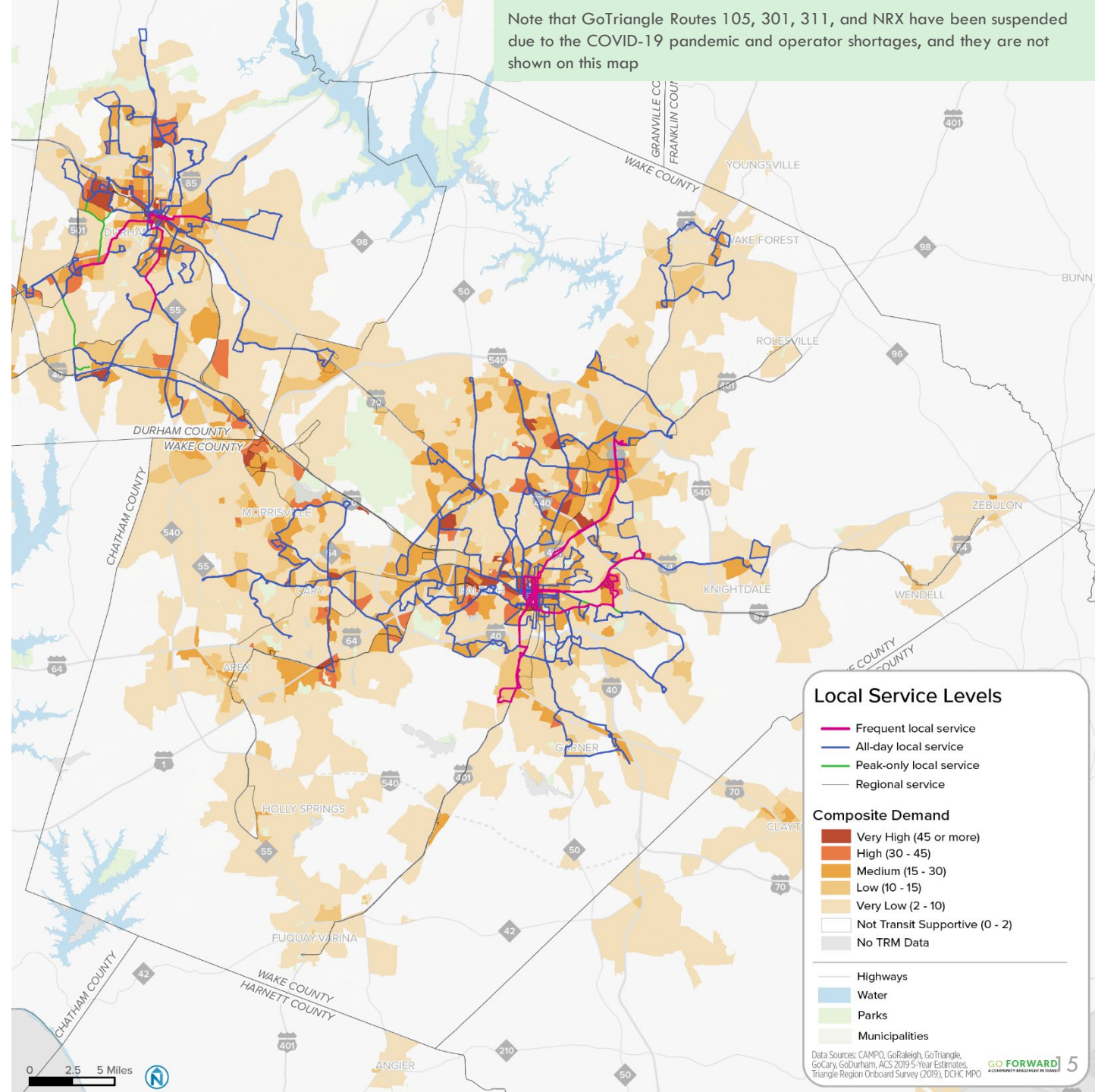
This section focuses on local services in Wake County only and specifically on the local fixed-route transit services operated by GoRaleigh and GoCary. Durham County-specific gaps and opportunities will be analyzed later in the project as a part of the Durham Bus Plan.

Generally, existing local GoRaleigh and GoCary routes serve most parts of Wake County that have medium to very high composite transit demand.

There are two main opportunities to strengthen local services:

1. Expand frequent transit services along corridors with high or very high composite transit demand. Investments would improve service for existing and new riders and increase ridership overall. Corridors that can benefit from frequent service include:
 - Downtown Raleigh to Cary, the site of the planned Wake BRT: Western Corridor
 - Raleigh to south Cary (US-64/US-1 Junction)
 - Routes serving northern Raleigh near I-440
2. Address transit gaps in areas with medium transit demand, like Morrisville and Apex, as well as pockets of higher density within the smaller municipalities. In the case of Morrisville and Apex, this may include increasing existing service levels or implementing new all-day local services.

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Ridership on Local Routes

Ridership on local routes is highest in downtown Raleigh and along routes that operate frequently, such as Routes 1 Capital Blvd, 7 South Saunders, 15 WakeMed, and 19 Apollo Heights.

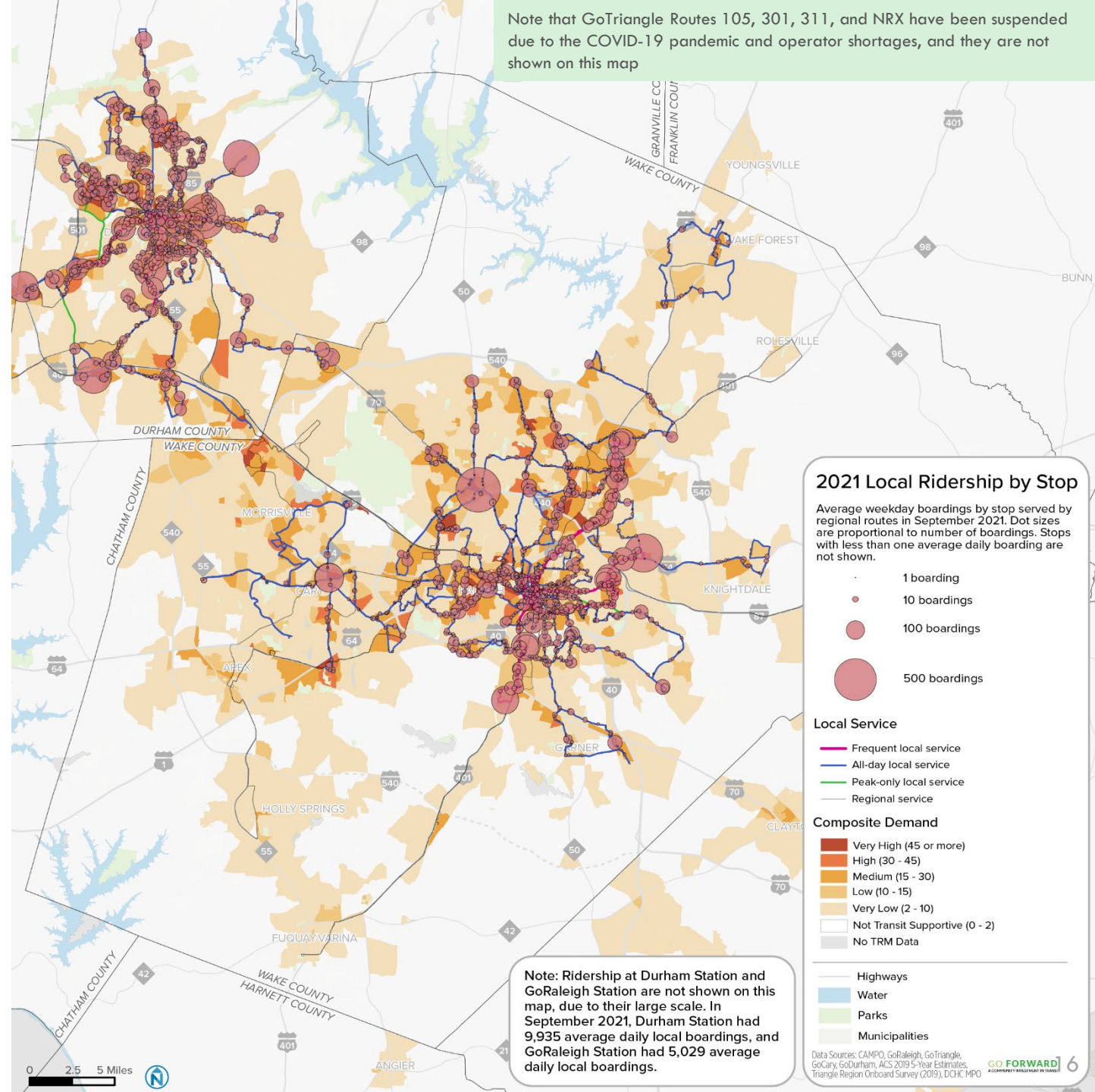
Outside of GoRaleigh Station, the highest ridership stops are primarily areas served by multiple routes and/or offering transfers:

- Crabtree Valley Mall
- New Hope Commons
- Cary Depot
- Pecan Road & South Wilmington Street
- Triangle Town Center Mall

There are areas with high transit demand, but relatively lower ridership; these areas are candidates for route improvements, such as a route redesign or better frequencies or spans. For example, GoCary Route 7 Weston and GoRaleigh Route 4 Rex Hospital serve important destinations and densities that suggest moderate to high demand, but routes have lower ridership.

Given the ongoing pandemic, there are multiple reasons that routes could be underperforming relative to demand. These reasons include lower demand overall and mismatches between service times and demand. Other potential factors include the underlying pedestrian environment and challenges for riders accessing bus routes.

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5 – Community Funding Areas Gaps and Opportunities

Community Funding Areas

The CFA Program provides an opportunity for communities in Wake County to create local public transit programs. Ten municipalities and RTP are eligible to apply for matching funding for planning, capital, and operating projects. To date, six communities have used the CFA Program to fund studies. Two services are currently operating (Morrisville Smart Shuttle and Wake Forest Loop), with additional services in operation without CFA funds or planned for implementation in the short-term.

SERVICES IN OPERATION

Morrisville Smart Shuttle

In 2019, Morrisville used CFA funds to conduct the Morrisville Public Transportation Study, which recommended a Smart Shuttle service. This service began operating in October 2021 and provides residents with free, on-demand transit among 14 nodes throughout the town and one at the Regional Transit Center, with connections to GoTriangle and GoCary. Morrisville has moderate transit demand throughout most of the town.

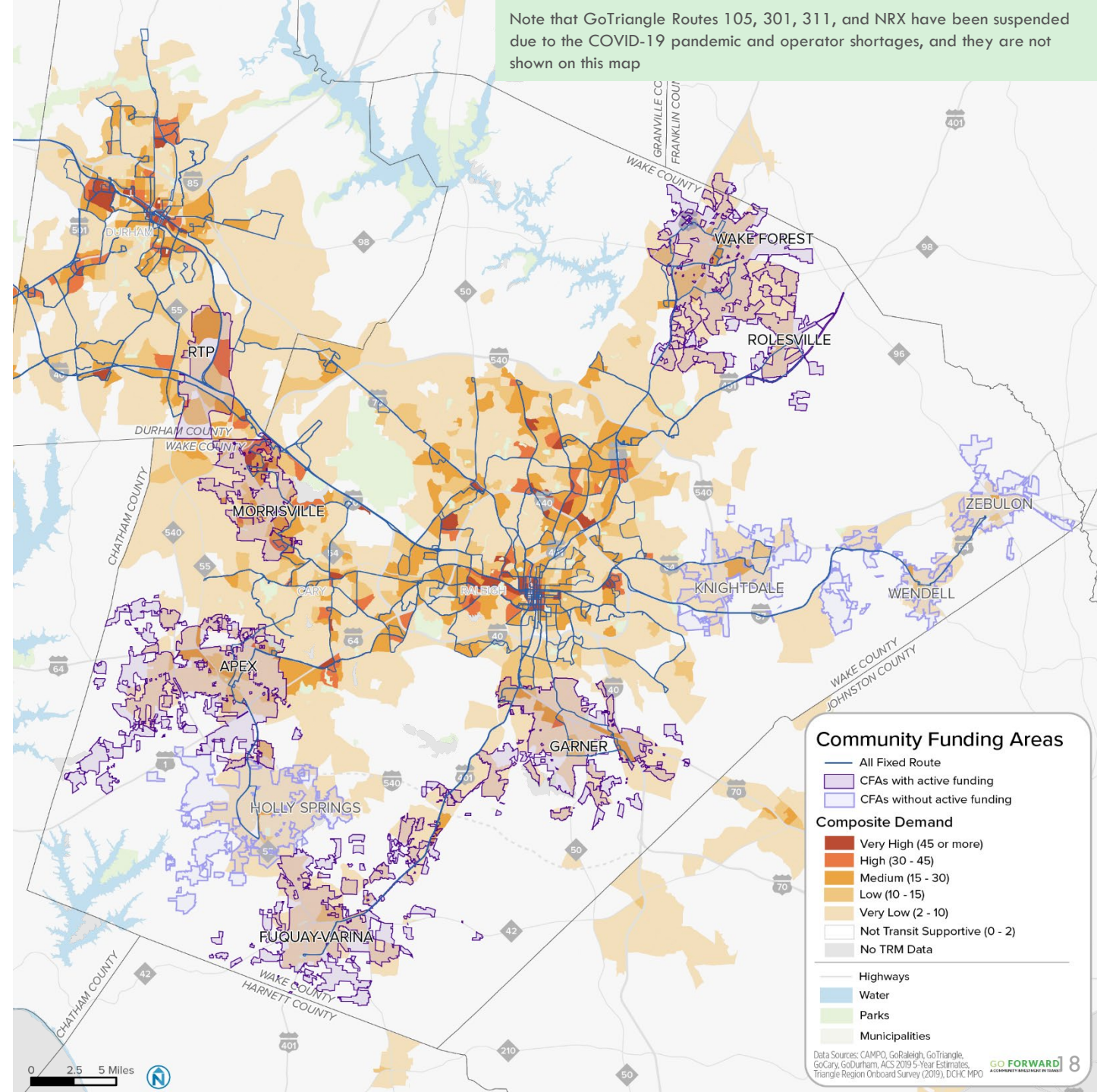
Wake Forest Loop

Wake Forest is currently served by the Wake Forest Loop, which had been in service in one direction prior to the CFA program. The first operating project funded by the CFA program was to add service in the opposite direction as well. The service provides coverage within the town itself, and the WRX connects Wake Forest to Raleigh. Wake Forest has relatively low transit demand.

RTP Connect

RTP is the region's biggest employment hub. Though not funded by the CFA program, RTP Connect is a pilot program in a CFA-eligible area for commuters traveling to the Regional Transit Center by bus who want to use an on-demand service like Uber or Lyft as their last-mile connection to their offices inside RTP.

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Community Funding Areas Gaps and Opportunities

SERVICES PLANNED TO BE IMPLEMENTED

GoApex

Apex received CFA funding for a transit study that endorsed a preferred alignment for a “GoApex” route that is scheduled to begin operating fixed-route service in early 2022. Apex has low to medium composite demand.

Garner Community Shuttle

Garner received CFA funding for a transit study, published in 2020, and is planning to implement a community shuttle on a fixed-route line in FY24. This shuttle would provide community connections, in addition to GoRaleigh bus services in Garner. The town has very low to medium transit demand.

GoWake SmartRide NE Pilot

Operated by GoWake ACCESS, the SmartRide NE Pilot is not funded by the CFA program but will serve the CFAs in northeastern Wake County, including Rolesville, Zebulon, and Wendell. This microtransit service is planned to launch in Fall 2021 and will serve areas with very low composite demand.

OTHER COMMUNITIES

Additional CFA efforts that have been conducted but have not yet led to planned services include:

- Fuquay-Varina’s Microtransit Study, completed in 2019, recommended a microtransit service that was ultimately not implemented due to high costs.
- Wake Forest and Rolesville Transit Study, completed in 2020, recommended a connector bus to the Wake Forest Loop. Implementation is on hold.
- Knightdale received CFA funding to evaluate transit options in their comprehensive transportation plan.

GAPS AND OPPORTUNITIES

The CFA program fills some of the gaps in Wake County’s transit network, by relying on communities to design programs and services that match their local needs. In most cases, the implemented and planned services funded by the program or other sources—Morrisville Smart Shuttle, Wake Forest Loop, RTP Connect, GoApex Circulator, Garner Community Shuttle, and GoWake SmartRide—are designed around local demand and represent a combination of fixed-route circulators and flexible, demand responsive services. The services complement the fixed-route bus network operated by GoCary, GoRaleigh, and GoTriangle that connects communities with Raleigh and Cary.

With projects sponsored in part through the CFA program, the biggest gaps in community transit are in Fuquay-Varina, Holly Springs, and Knightdale, which do not have CFA or GoWake SmartRide programs planned for implementation, though Knightdale does have all-day weekday service through GoRaleigh Route 33. Investing in these areas could improve local travel and connect people to regional buses.