WAKE TRANSIT PLAN UPDATE

Market Analysis

Updated Fall 2024

Table of Contents

Overview

1

Overview

The Wake Transit Plan Update will determine the strategic direction and priorities for the Wake Transit Plan for the 10-year planning horizon between 2026 and 2035. While the strategic plan will be influenced by input from stakeholders and members of the public, it will also be grounded in data, including data based on experience with existing Wake Transit Plan projects, but also the market and need for transit in Wake County.

One of the first steps involved with understanding the market and need for transit is to prepare an analysis of transit demand in the region. The Wake Transit Plan Market Analysis builds off the Wake Bus Plan, which was completed in 2022 and takes a deeper dive into the growth and development of the suburban towns in Wake County.

Findings from the market analysis will help determine where to focus bus-related transit investments throughout Wake County, but especially in the fast-growing suburban communities. The market analysis inventories where current and potential transit riders live, work, and travel to, and how that compares to where there is currently transit access. This includes looking at density, travel patterns, and other factors throughout the region, and where different types of transit would be supported.

APPROACH

To understand the demand and need for public transportation services in Wake County, the project team analyzed densities, socioeconomic factors, travel patterns, and changes over time:

- Existing population density and socioeconomic characteristics related to transit use
- Employment density, including an analysis of the location of employment types that attract additional trips.
- Composite transit demand, combining the adjusted population and employment densities, which shows the potential transit service that may be supported throughout the region.
- Current transit accessibility to jobs, and how that overlaps with demand to identify areas of high need.
- The locations of major activity centers in the region that will attract trips beyond the number of jobs.
- Population and employment density changes from 2016 to 2020 and from 2020 to 2040.
- Projections of population density, employment density, and transit demand for 2040.

KEY DATA SOURCES

Data for this market analysis comes primarily from the following sources:

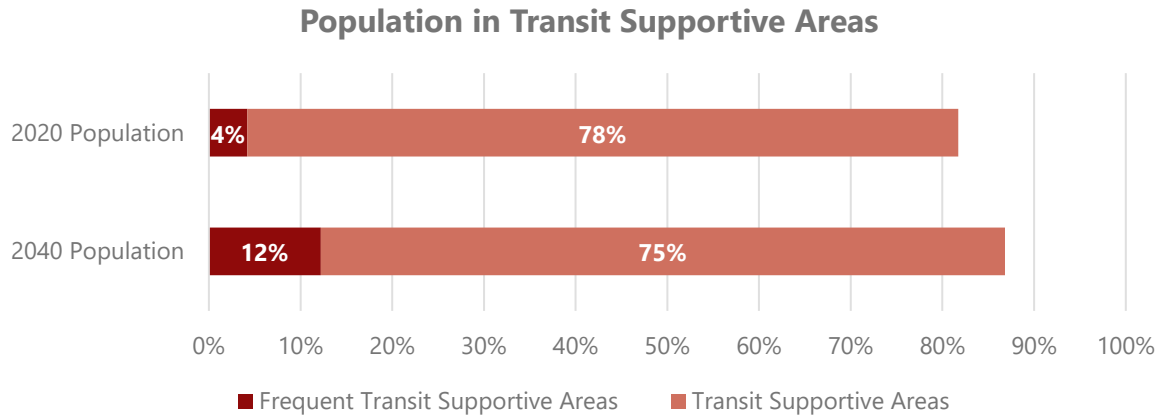
- CAMPO and DCHC MPO, from 2050 Metropolitan Transportation Plan (MTP) efforts
- US Census American Community Survey 2019 5-year estimates. Census data was not updated to 2020 because this market analysis uses data analyzed for the Wake Bus Plan, which was completed in 2022.
- Most maps in this report show data at the Transportation Analysis Zone (TAZ) level.
- More information on the data and analysis used in the Community Profile is available in Appendix A.

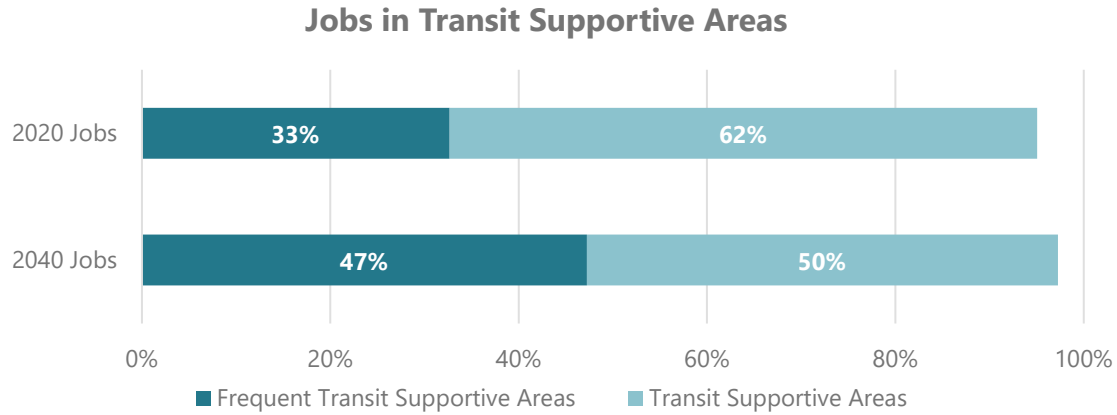
Market Analysis: Key Findings

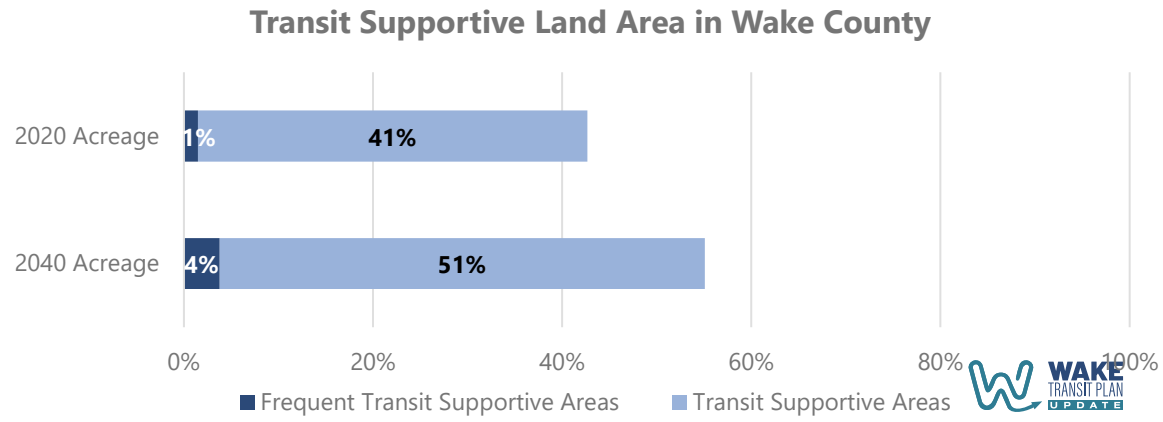
The market analysis shows:

- Population in the region is generally spread out in low density, suburban areas. The highest density concentrations are in the downtown areas of Raleigh and Cary.
- Transit need based on socioeconomic factors is strongest in the City of Raleigh, especially neighborhoods south and east of downtown.
- Jobs are concentrated in urban cores, Research Triangle Park (RTP), and along major roadways. Service and retail jobs are more concentrated in urban cores, while office jobs are in RTP.
- Transit demand is high or very high along the Raleigh-Cary-RTP-Durham Corridor, Capital Boulevard, and neighborhoods on the periphery of downtown Durham and downtown Raleigh, and northern Raleigh between I-440 and I-540, as seen in the following map.
- The region is growing fast in terms of both population and jobs. Growth is happening throughout the region, with the greatest density increase in Raleigh and Cary.
- Transit demand in 2040 parallels the current level, but with increased demand throughout the whole region, as seen in the following map.

In 2020, about 42% of the land area in Wake County supported transit service, with about 1% supporting frequent transit service. By 2040, 40% of the land area of Wake County will be supportive of fixed-route transit or microtransit and this area will contain 86% of all residents and 97% of all jobs in the area. A much smaller subset of the county will be supportive of frequent transit service, but these areas will contain half of all jobs. Maps shown on the following page show the distribution of transit supportive areas in Wake County.

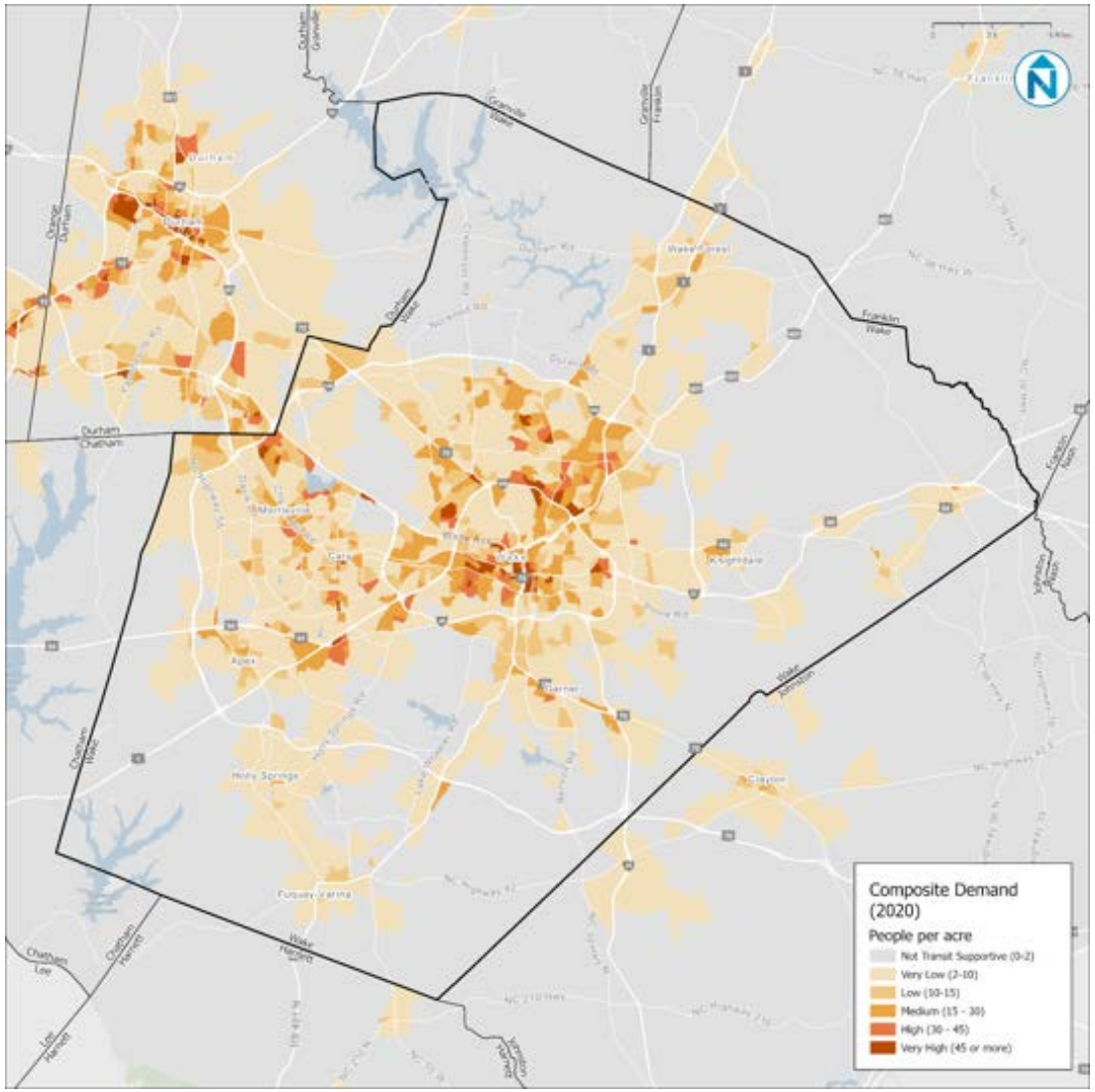


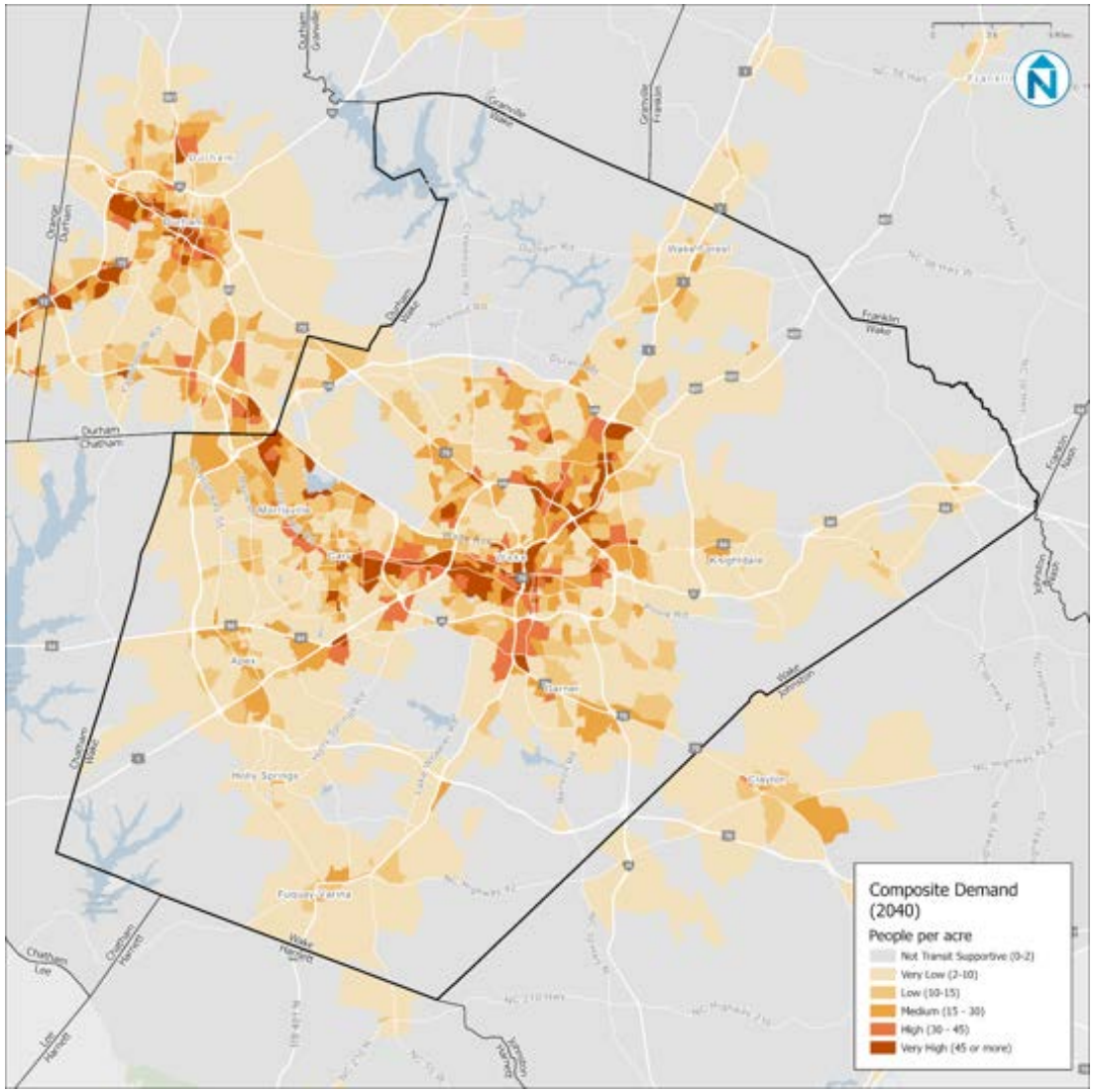




Note: Land area refers to all land within Wake County, Source: CAMPO, ACS 2019 5-Year Estimates, Triangle Region OnBoard Survey (2019)

Wake County Composite Demand: 2020 and 2040





Key Findings & Initial Recommendations

Wake County is growing rapidly and while growth is not distributed equally across the region, all communities in Wake County are adding people and jobs at a fast pace, which is changing the need and opportunity for transit services. Findings from an analysis of the ten Wake County towns (not including Raleigh or Cary) shows that the need and opportunity for transit service is changing dramatically.

1. **Suburban Towns in Wake County are growing at an unprecedented rate,** with many communities experiencing population growth rates of 30% to 50% since the Wake Transit Plan was approved in 2016. In many cases, growth is on top of a small baseline population, but the pace of growth suggests communities are changing.
2. **Towns in Wake County are actively planning for growth** with most communities recently completing comprehensive transportation plans, strategic plans and/or transit plans. In almost all cases, these plans are calling for investments in multi-modal infrastructure, including sidewalks and shared use paths.
3. **All but two Wake County communities have participated in the Community Funding Area program.** Towns are using grants to plan, design and operate local transit services as well as investments like sidewalks or bus stop improvements.
4. Data on recent and planned development shows that **most new projects are single use development largely on the outskirts of downtown centers and often near highways.** Most developments in Wake County towns do not follow best practices for creating walkable, compact communities. Suburban style master planned developments are difficult to serve with transit.

Given these findings, some initial recommendations arise around the approach and service type appropriate to serving these growing communities by transit.

- **Potential for sub-regional solutions.** Wake County is a geographically large region covering 857 square miles. Unique characteristics within Wake County suggests potential for different solutions in different parts of the County:
  - **Apex is a "sub-regional hub" in southwest Wake County.** There are over 100,000 people in Apex and Holly Springs, plus another 35,000 in Fuquay-Varina. Apex already functions as an economic activity center with regional transportation access. Creating a mini-transit hub in Apex that is connected to neighboring towns with fast, frequent services to regional destinations is a potential future model.
  - **Northwest Wake County also has nearly 100,000 people** but is more rural, spread out over a larger area, and further from Raleigh and regional employment centers. Emerging solutions in this part of Wake County include on-demand service models that connect to Wake Forest as the sub-regional hub.
  - **Garner** has more in common with the City of Raleigh than other parts of Wake County, and the planned BRT stations will change transit access. Local transit solutions may focus on first mile/last mile connections and more transit-oriented style development as compared with other parts of Wake County.
- **Development patterns suggest on-demand microtransit style service is likely the most effective solution for local mobility.** On-demand microtransit services work in low density, suburban style development by picking up and dropping off riders at or close to their destination. The services can attract riders by providing a viable option, but the cost of microtransit on a per trip basis is high, with experience showing trips can cost between $30 and $50 per ride.
  - *While microtransit is an effective strategy in the short term, if communities continue to add population by building low density residential development, the cost to maintain microtransit service levels may become prohibitive. Providing on-demand service to a larger, more distributed population will require increasing levels of investment or slower response times/reduced levels of service.*

Market Analysis

2

Understanding Transit and Density

A main factor in determining transit demand is density: where people live and work, and how those areas are concentrated. Generally, transit is accessible to people within one-quarter to one-half mile of a bus stop assuming sidewalks, crosswalks and other pedestrian infrastructure is available, and people feel safe and comfortable walking. ,

The relationship between transit services and density is highlighted in the figure to the right. This data shows how more densely designed communities can support higher levels of transit service. For example, to support service more frequent than every 30 minutes, there generally must be at least 15 residents per acre or more than 10 jobs per acre, or a combination thereof.

Densities broadly indicate demand across contiguous and nearby areas. Clusters of density throughout an area or along a corridor are strong indicators of demand, while a dense but small block in an isolated area would not produce sufficient demand in and by itself. Demand can also accumulate along corridors: for example, if there are many blocks along a corridor that each have the density to support 30-minute service, the entire corridor may be able to produce enough demand for 15-minute or better service.

Additionally, the street environment affects people's access to transit. Transit services are most effective when paired with sufficient and well-lit sidewalks and crosswalks that allow people to safely reach bus stops. Even in the places with the highest density, people may not use transit services if stops are not in a walkable environment.

Lastly, it is important to recognize that areas with minimal population and employment density may not provide an environment where fixed-route transit can be successful. In these instances, communities in Wake County could explore alternative types of transportation services, such as microtransit, shuttles, and other shared mobility services.

Land Use and Transit Service Levels

LAND USE			TRANSIT	
Land Use Type	Residents per Acre	Jobs per Acre	Appropriate Types of Transit	Frequency of Service
Downtowns & High Density Corridors	>45	>25	Light Rail, BRT, Rapid Bus, Local Bus	10 mins or better
Urban Mixed-Use	30-45	15-25	BRT, Rapid Bus, Local Bus	10-15 minutes
Neighborhood & Surburban Mixed-Use	15-30	10-15	Local Bus	15-30 minutes
Mixed Neighborhoods	10-15	5-10	Local Bus, Micro-transit	30-60 minutes
Low Density	2-10	2-5	Micro-transit, Rideshare, Volunteer Driver Pgm	60 mins or less or On Demand
Rural	<2	<2	Rideshare, Volunteer Driver Pgm	On Demand

Source: Thresholds based on research by Nelson\Nygaard.

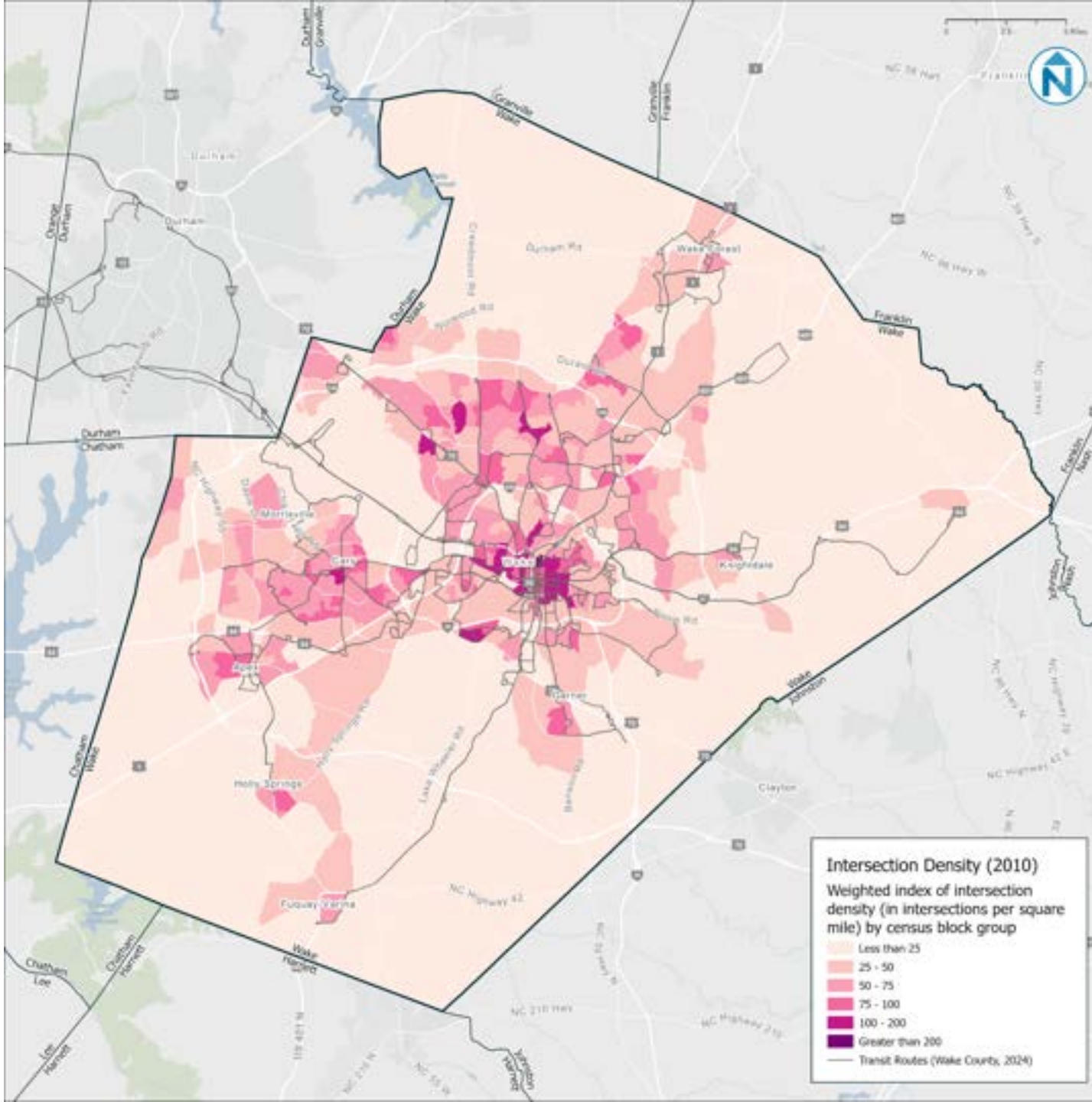
Intersection Density & Street Environment

The pedestrian environment is a major consideration for transit usage since most transit riders walk between their origin or destination and their bus stop. As a result, creating a safe, comfortable, walkable environment is an important part of encouraging transit ridership. Additionally, buses run faster and more reliably when it can stop on a major street rather than weave in and out of smaller streets, developments or parking lots, which means ideally destinations will be within close walking distance to the bus stop. Factors that affect walkability and transit ridership include, but are not limited to:

- Sidewalks, crosswalks, and lighting
- Proximity to diverse sets of housing, services, offices, and other employment sites
- Intersection density, or the number of intersections within a defined area
- Transit availability and parking prices

Due to the countywide scope of this study, the project team used intersection density as a proxy for walkability. Intersection density means there are smaller blocks, which typically mean a more walkable environment.

The following map shows a relative index of intersection density from the EPA's 2010 Walkability Index dataset. Downtown Raleigh, parts of northern Raleigh, and parts of Cary have the highest intersection density and are currently relatively well served by transit services. Most other areas of the county have low intersection density, and thus have pedestrian environments that may be difficult to serve via transit.



Analysis Components

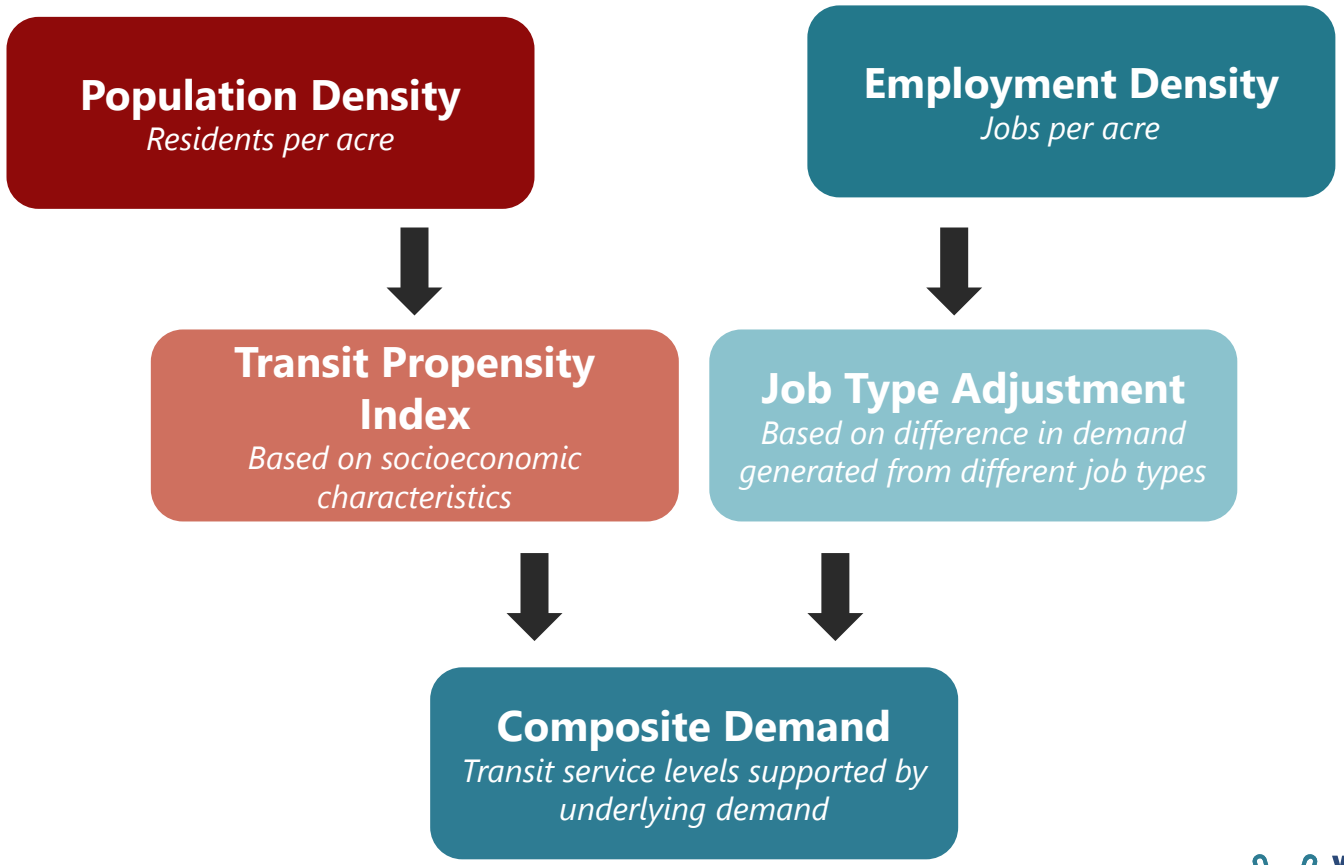
While total population and employment density are crucial to understanding transit demand, analyzing who is taking transit and what types of jobs are in an area allows for a more comprehensive look at the level of service needed. A **Transit Demand Analysis** considers the following factors:

- Population Density, in residents per acre
- Socioeconomic Characteristics, combined into a Transit Propensity Index
- Employment Density, in jobs per acre
- Types of Jobs, to determine a Job Type Adjustment

The analysis results in a **Composite Demand** score for each TAZ by combining population density adjusted by the Transit Propensity Index and employment density adjusted by job type. Composite Demand can be used to identify appropriate transit service levels supported by the underlying demand.

The following sections detail the steps and results of the Transit Demand Analysis.

Transit Demand Analysis Components

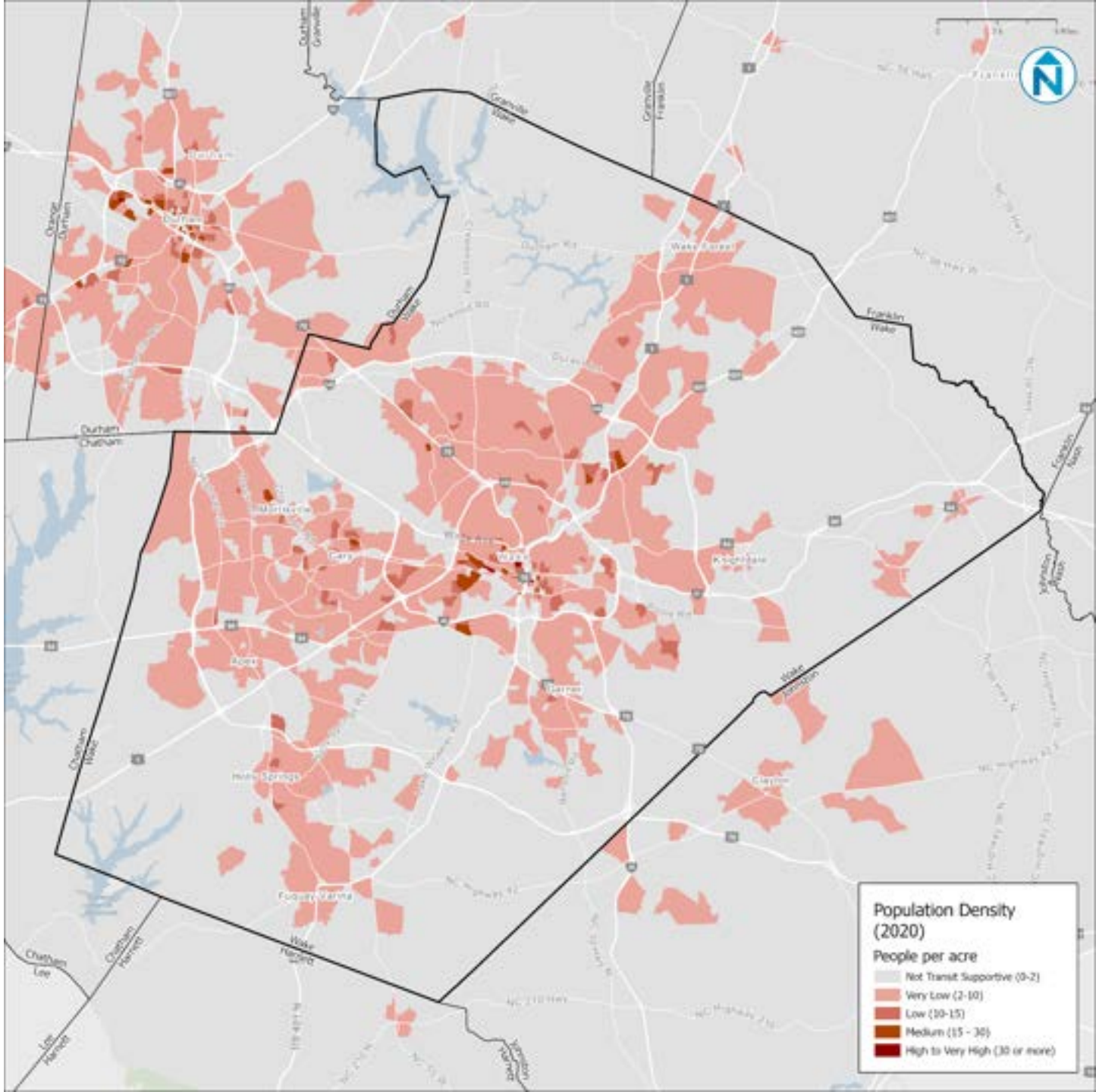


Population Density (2020)

Population density is an important indicator for transit demand, since effective transit systems require people living within walking distance to stops and stations. Additionally, denser areas tend to be more walkable and less automobile-oriented, with limited access to parking and less reason to own a private automobile.

As of 2020, Wake County overall has low population density. The following areas have relatively greater concentrations of residents:

- Downtown Raleigh
- Parts of northern Raleigh
- Near the North Carolina State University Campus
- Parts of Cary



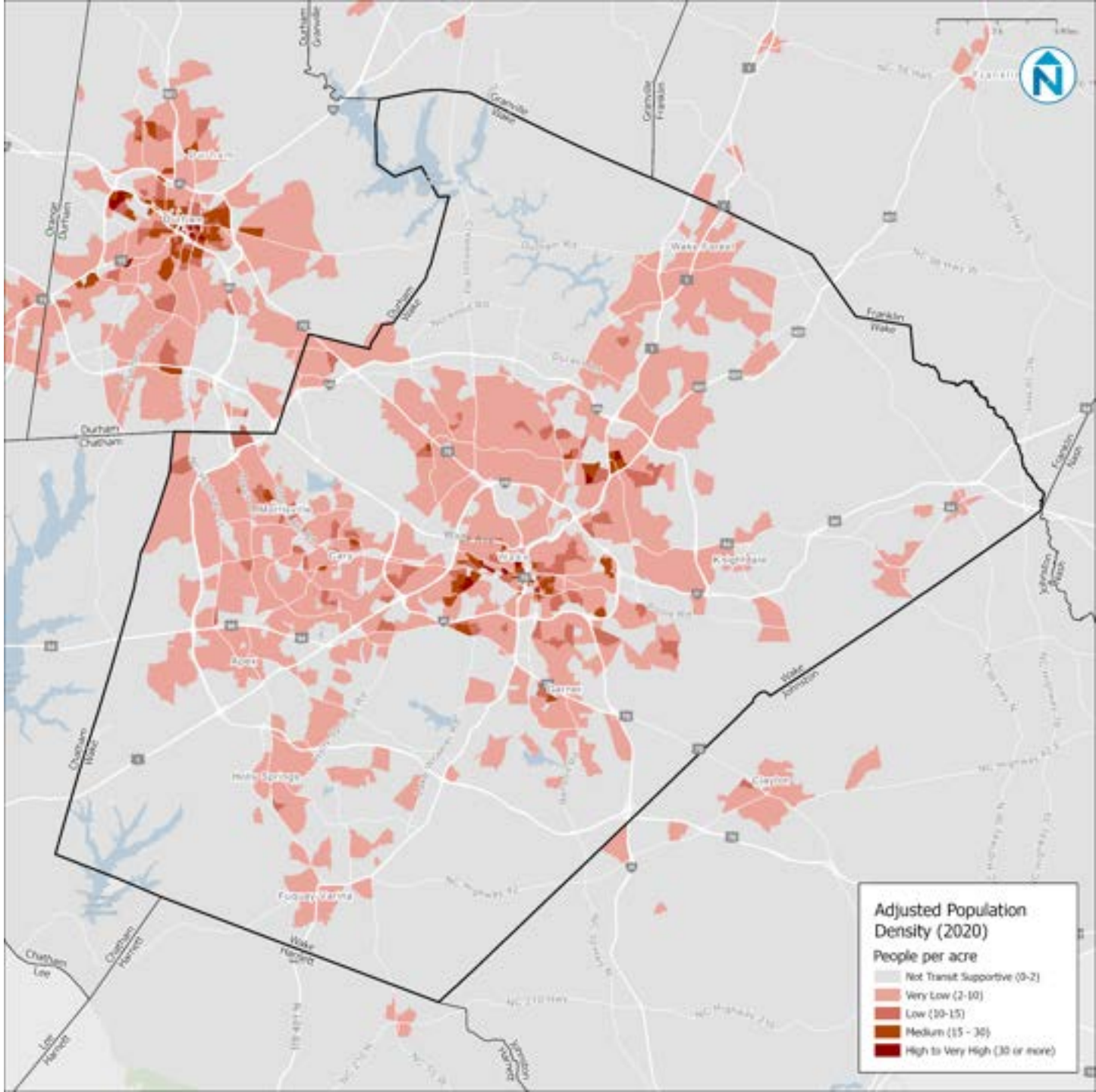
Population Density Adjusted by Transit Propensity Index (2020)

To capture a more nuanced picture of population-based transit demand, the project team adjusted the population density of each TAZ by its transit propensity factor (see Appendix A for more explanation).

When considering both population density and transit propensity, the areas with the greatest adjusted population density include:

- Downtown Raleigh
- Raleigh neighborhoods to the south and northeast of downtown
- Pockets in Garner, Cary and Morrisville

Adjusting the population density toward groups that generally use and need to use transit often intensifies transit demand in urban areas and diminishes demand in rural areas. As the map shows, outlying areas in the region show lower support for transit when socioeconomic factors are included.

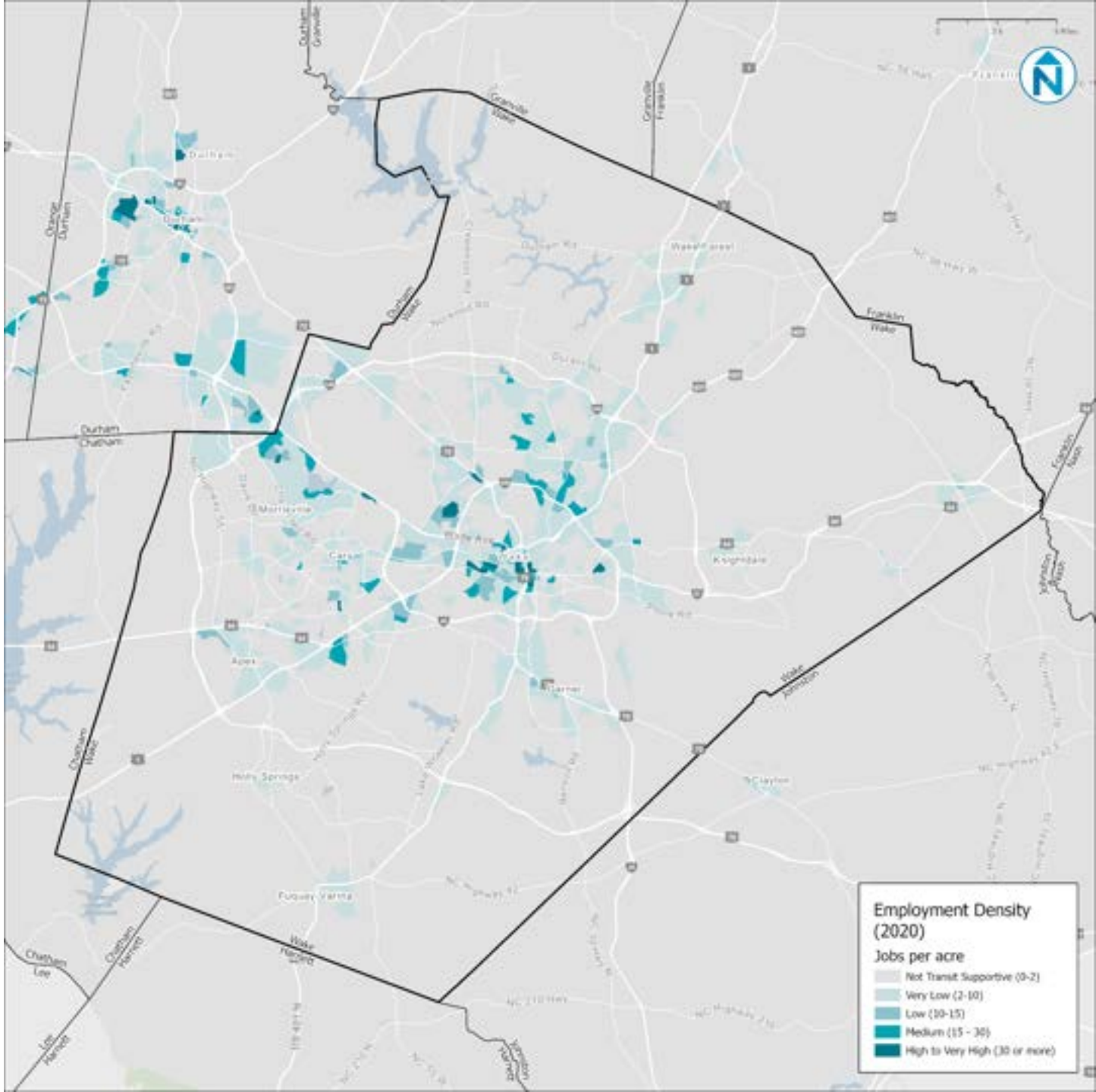


Employment Density (2020)

Like population density, employment density provides a strong indication of transit demand by people traveling to work, as well as to the services that these jobs provide. Analyzing employment density shows both the transit demand generated by the employee traveling to the job and by any customers, clients, or visitors to the job sites.

Jobs are concentrated in urban cores, large office parks, and major corridors in the region. The places in Wake County where employment density is highest include:

- Research Triangle Park (RTP)
- Downtown Raleigh and North Carolina State University
- City of Raleigh north of I-440
- Parts of Morrisville, Cary, and Apex



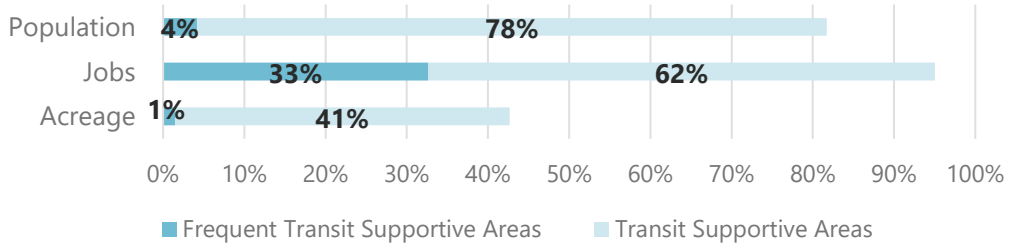
Composite Demand (2020)

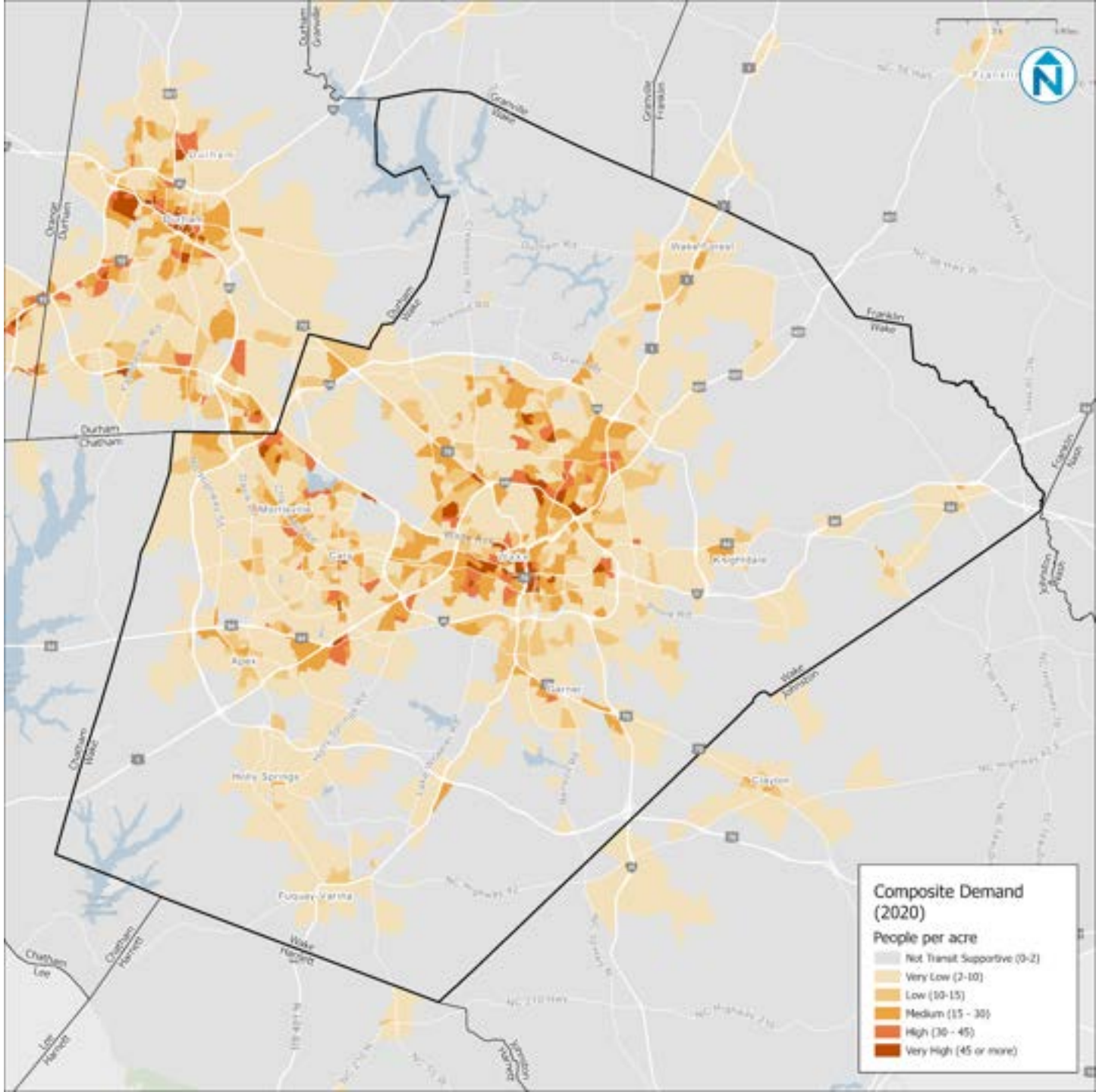
The study team combined population and employment density together with the demographic and job type adjustments to create a Composite Demand index. This analysis indicates where demand for transit is the greatest and where to focus transit investments. The map shows areas with the greatest demand in 2020 include:

- Downtown Raleigh, the area south of Wade Avenue, including North Carolina State University.
- North Raleigh, with the highest demand concentrated around the I-440 corridor, especially north of the beltline.
- The corridors connecting Cary and Research Triangle Park as well as the corridor between Raleigh and Apex, especially the area around Kildaire Farm Road.

In 2020, approximately 40% of the land area in Wake County was supportive of fixed-route transit and microtransit services based on Composite Demand analysis, with 1% of the land area supportive of frequent transit service. However, over 80% of residents and 95% of jobs are in these transit supportive areas.

Population, Jobs, and Acreage of Transit Supportive Areas in Wake County (2020)





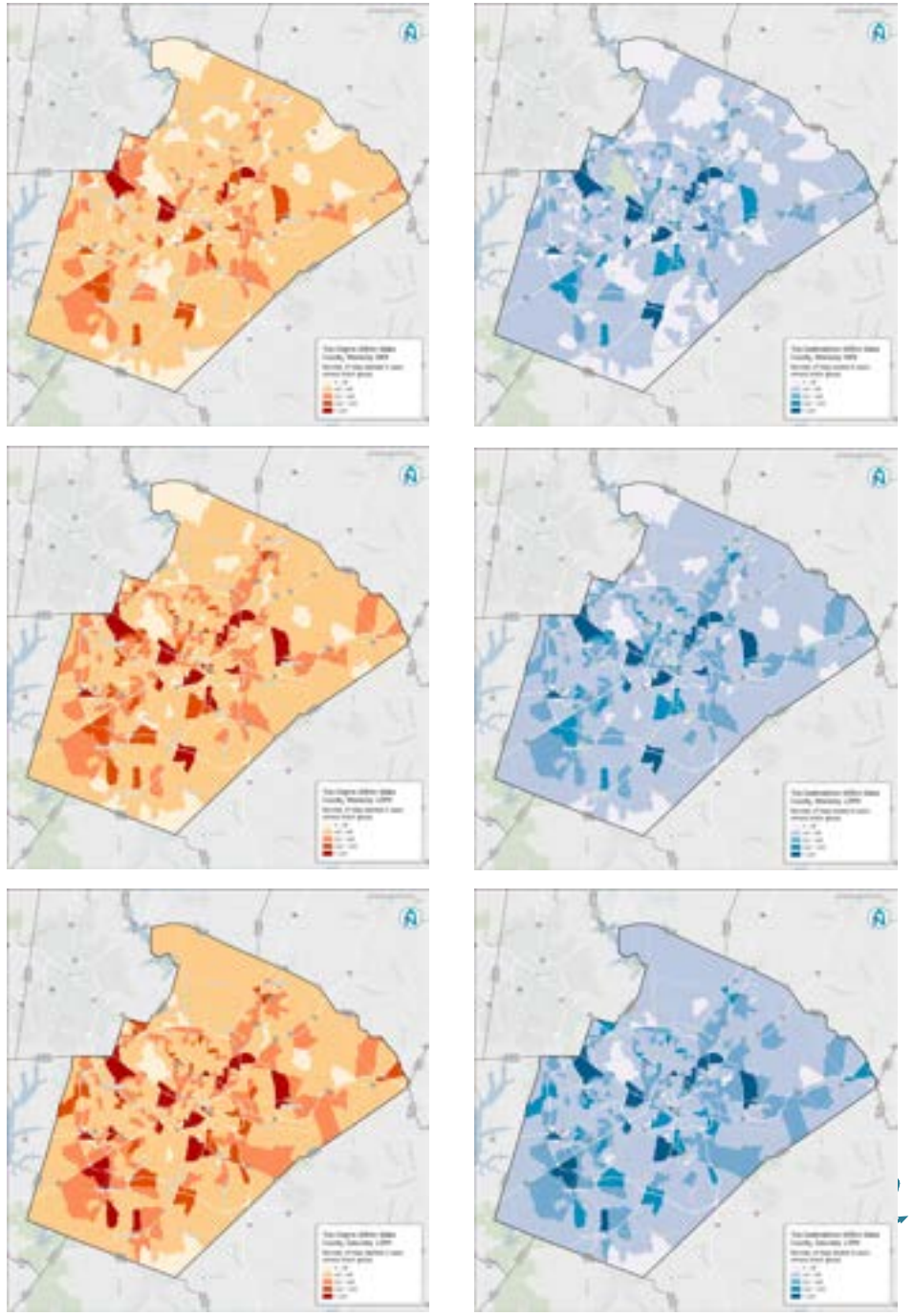
Travel Patterns

Another important part of the transit market analysis is the overall travel patterns. Nelson\Nygaard used Locational Based Service (LBS) data from Replica. Looking at all travel, separate from trips made on transit, reveals the main trip patterns for all travelers. If transit services can provide similar connections, it will serve the largest part of the market.

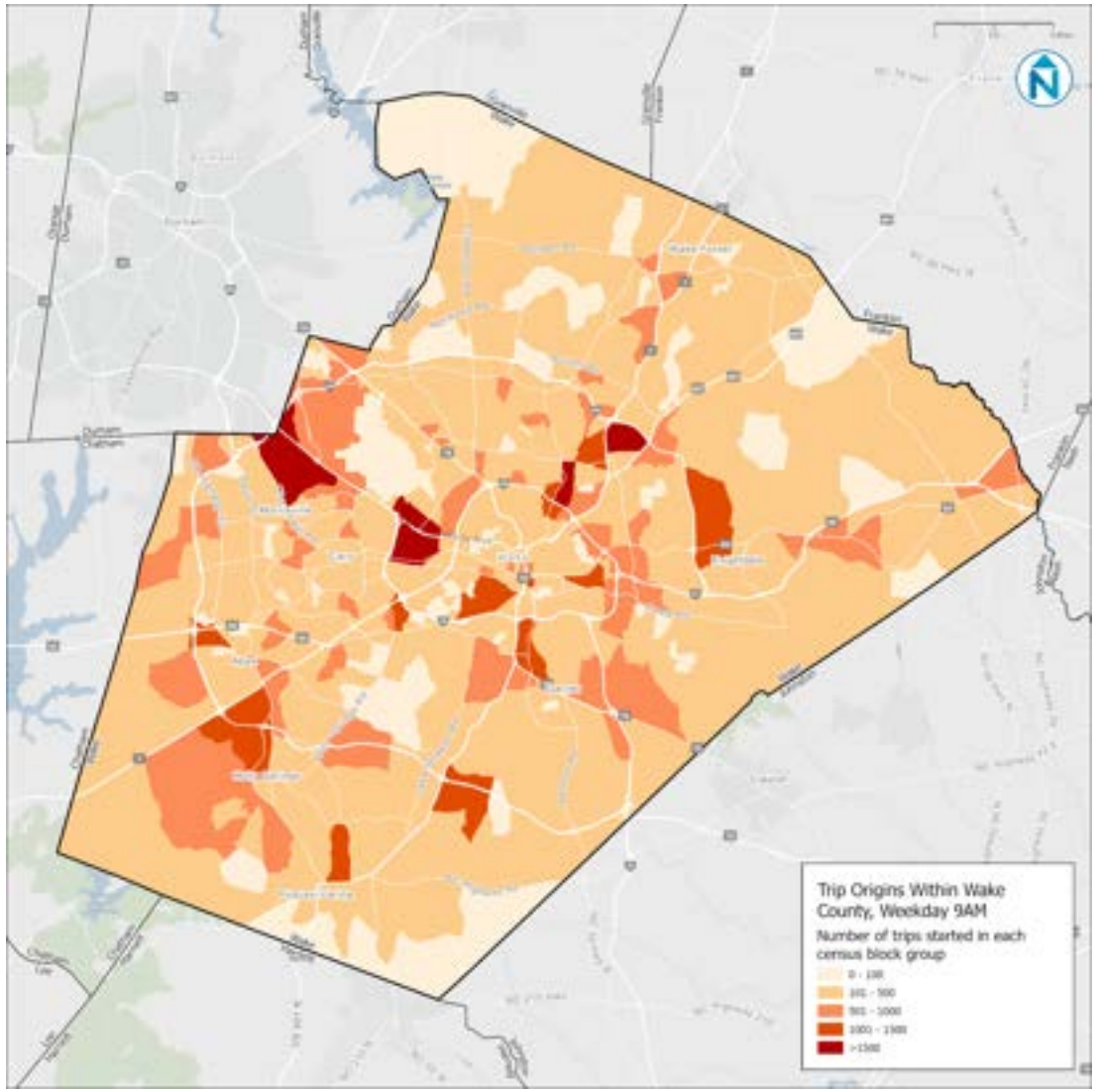
Replica data is simulated from cell phone records that track where and when people travel; the data can also estimate trip purposes. Nelson\Nygaard used Replica data collected during the Fall of 2023 to examine travel patterns for three time periods: weekday mornings (9 AM to 10 AM), weekday midday (12 PM to 1 PM) and Saturday midday (12 PM to 1 PM). These three time points provide an overview of traditional commute periods (weekday mornings), other weekday travel (midday trips) and weekend trips. The maps are shown as thumbnails here; larger maps are shown on the following pages.

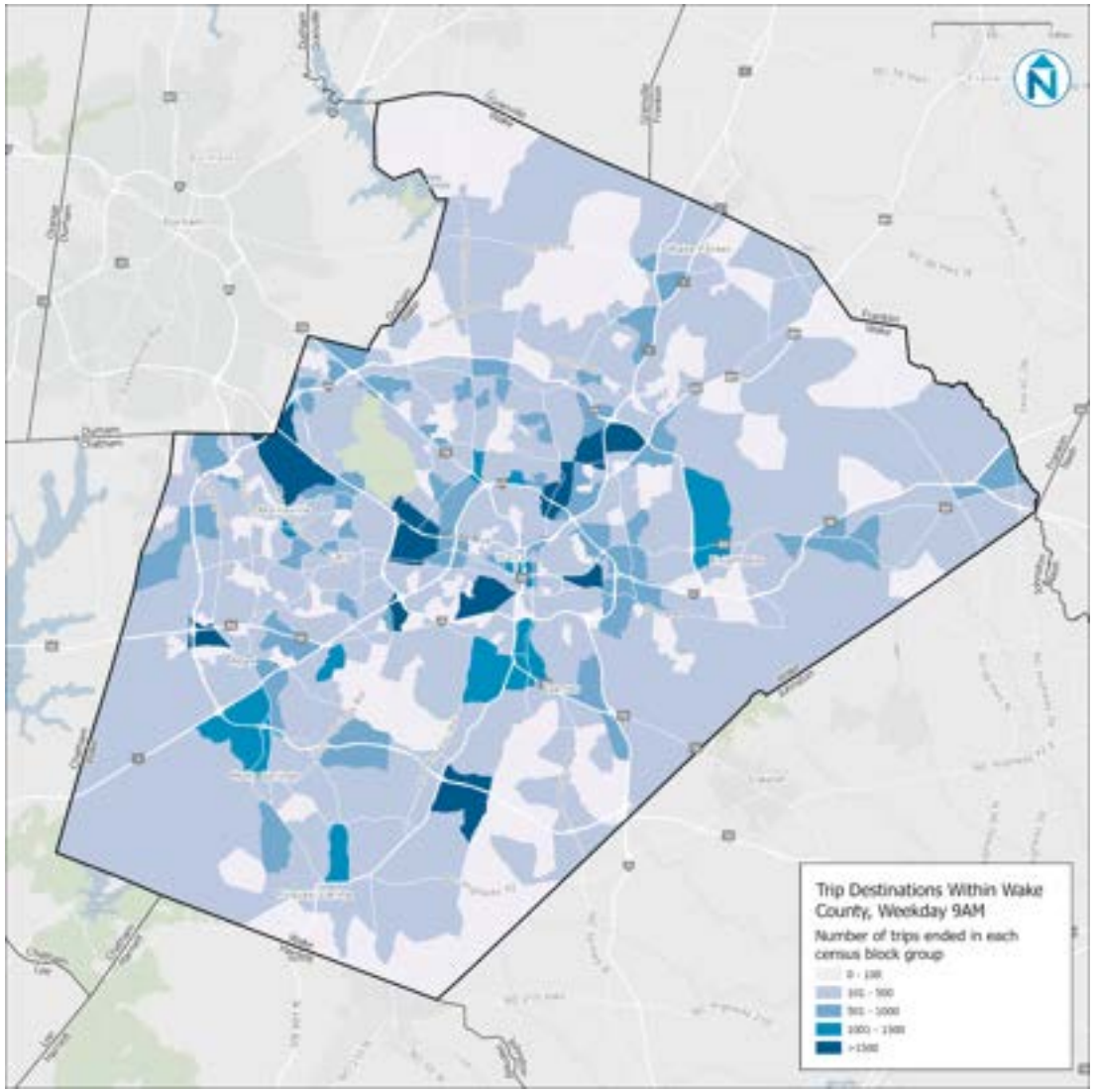
Spatially, the data suggest travel demand is similar for all time points. There is a concentration of trips in North Raleigh, the area around Wade Avenue in Raleigh, Knightdale, Southeast Raleigh, Apex and Holly Springs. During the midday and on Saturdays, travel patterns are more strongly clustered around key corridors, like the U.S. 1 corridor north of Raleigh and along the I-40 corridor between Raleigh and Durham County.

Another interesting finding is that the data indicates a stronger demand in the midday and on Saturday as compared with the weekday morning hour. This underscores the importance of providing transit service on weekdays and weekends and during the midday.



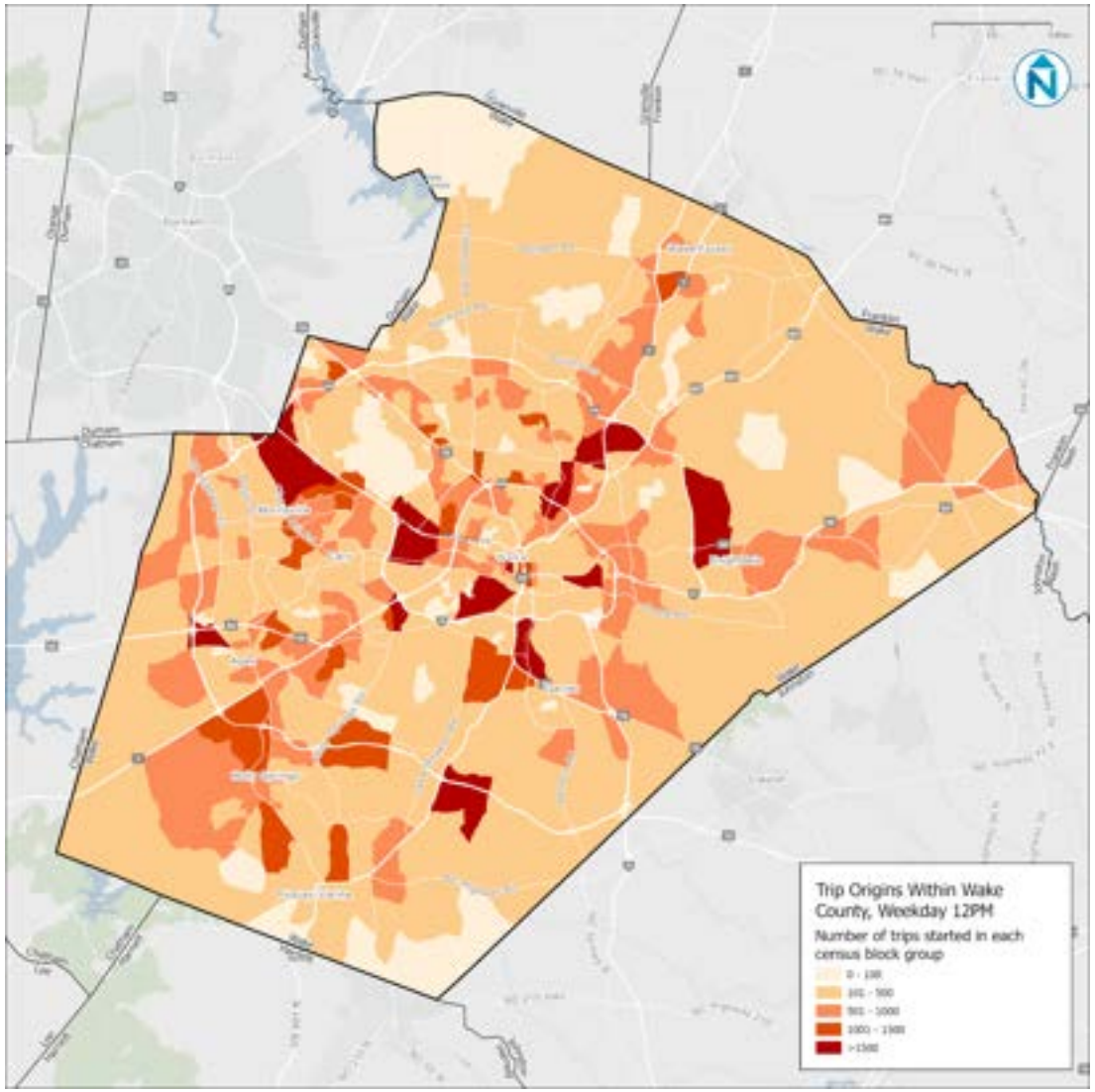
Wake County Travel Patterns: Weekday AM

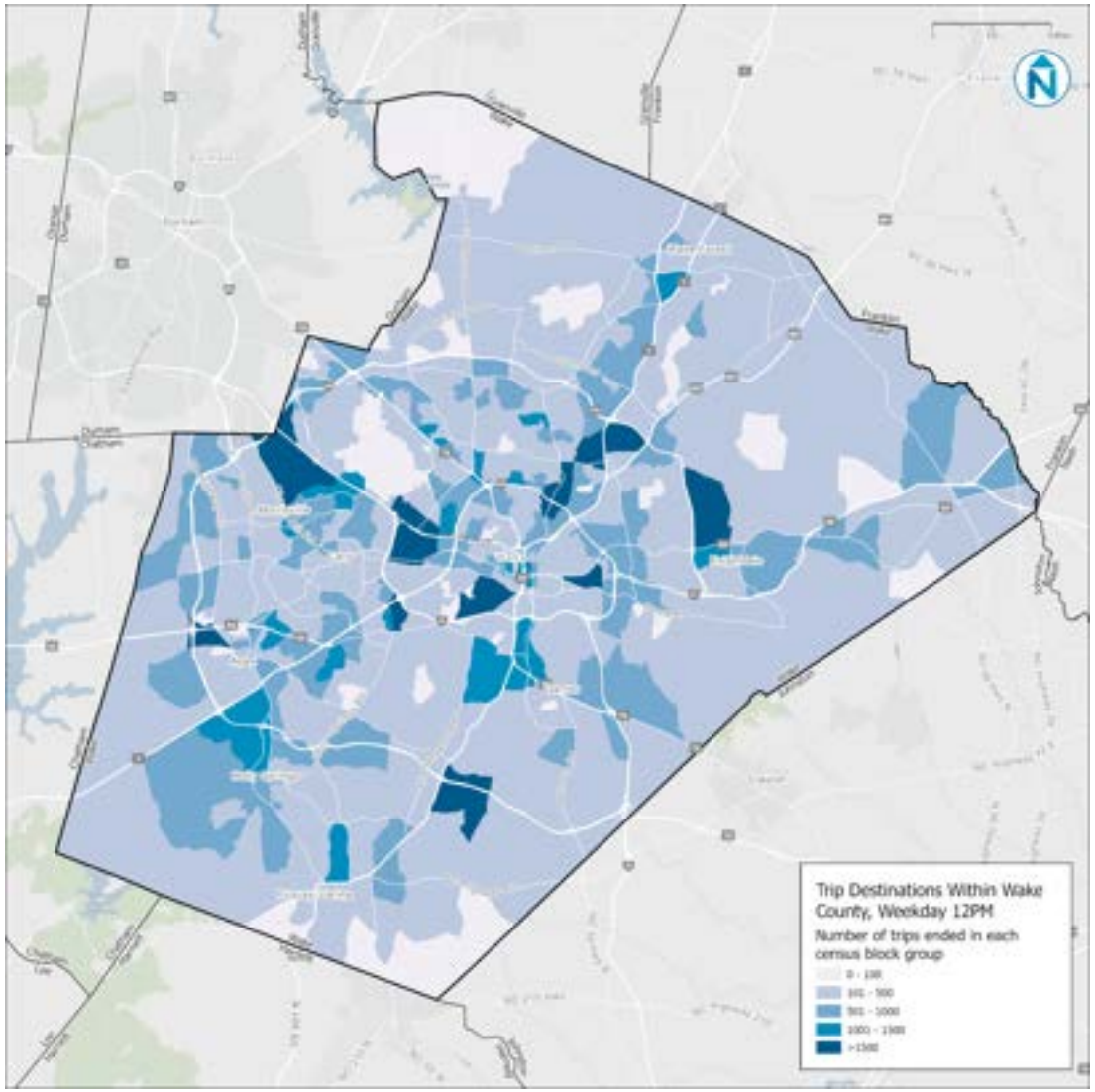




*Only includes trips that start and end within Wake County

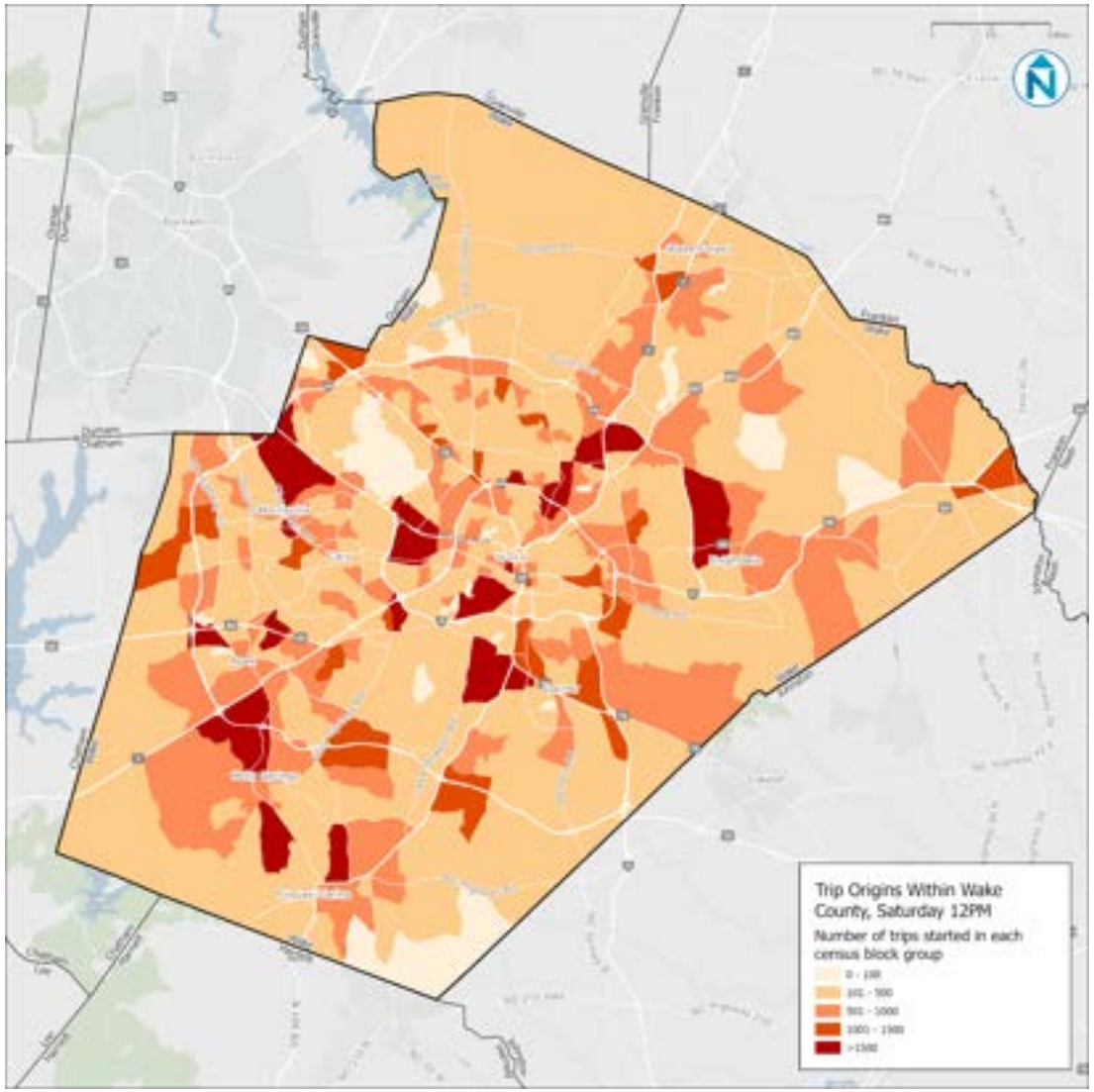
Wake County Travel Patterns: Weekday Midday

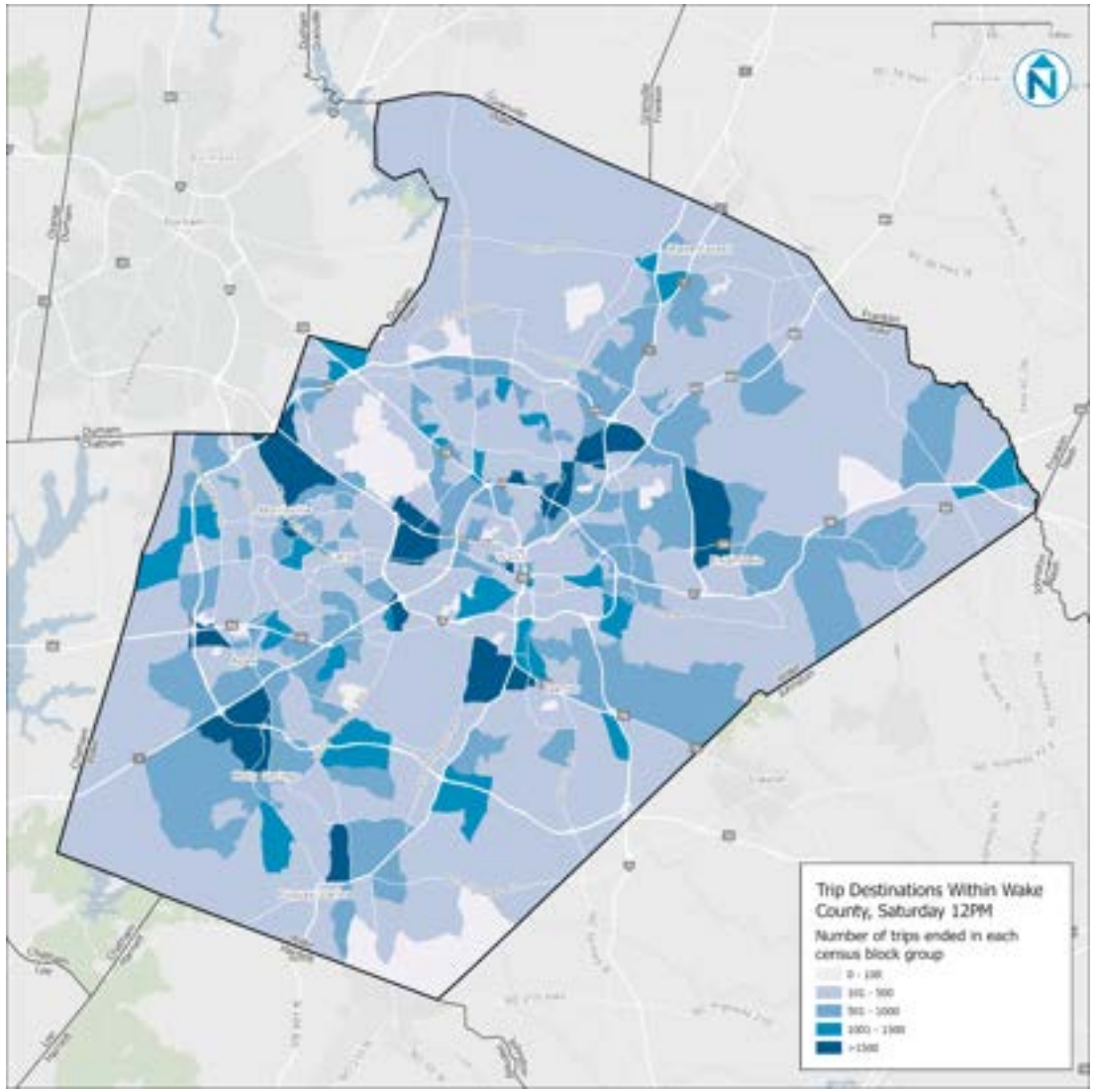




*Only includes trips that start and end within Wake County

Wake County Travel Patterns: Saturday Midday





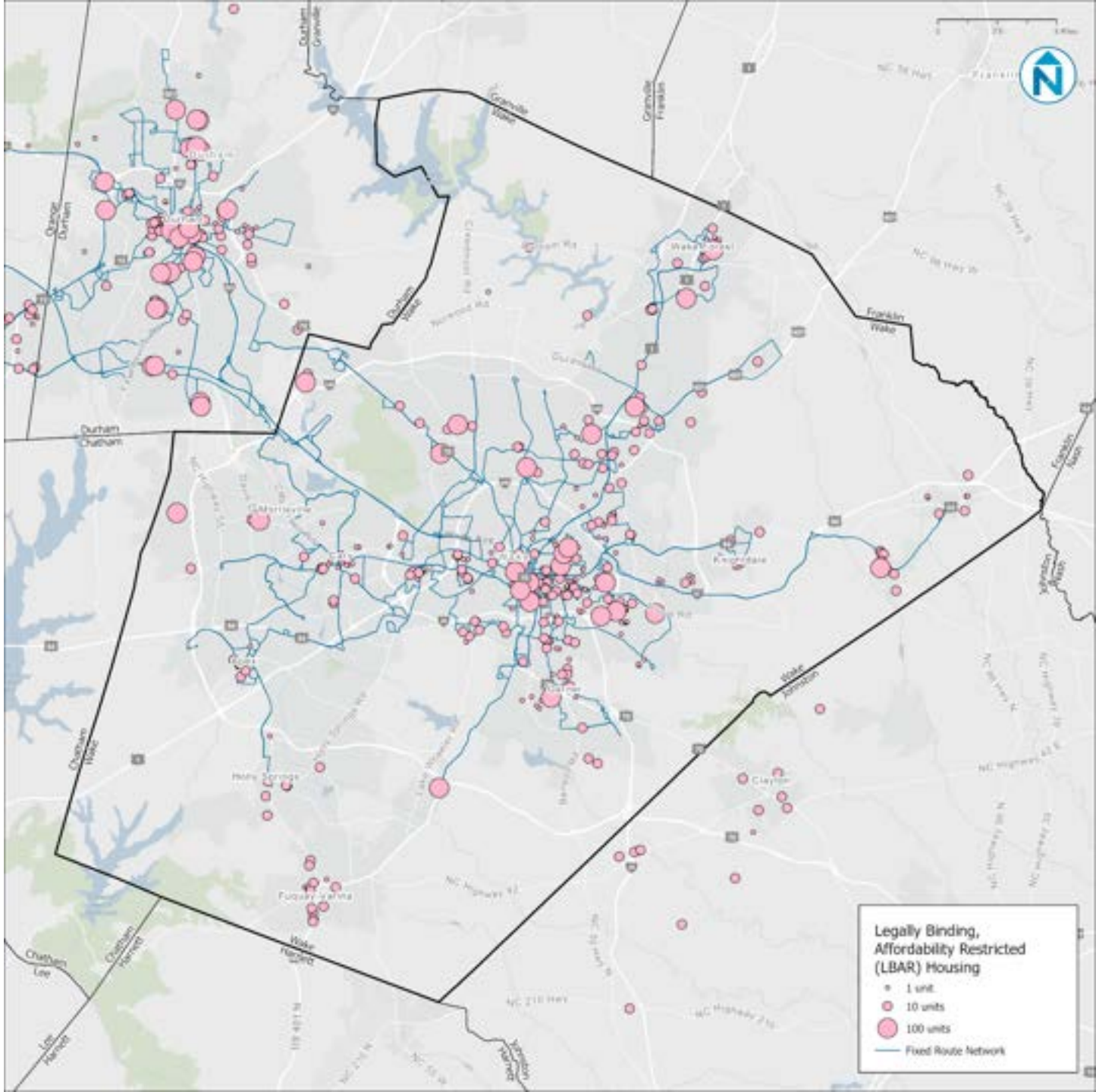
*Only includes trips that start and end within Wake County

Affordable Housing

Density, as mentioned, is critical to understanding where transit services are needed. Affordable housing, including the size and distribution of market rate housing developments are also important considerations in transit service investment because large housing developments help create and support density. In addition, by coordinating housing and transportation investments, cities and towns can create sustainable and affordable communities. The map to the right shows Legally Binding, Affordable, Restricted (LBAR) Housing by the number of units together with the fixed route transit network.

The data generally shows that that the largest affordable housing developments are clustered in the City of Raleigh, especially in areas south and east of downtown. These areas track with other transit propensity analyzed as part in the market analysis; affordable housing is also generally located along or near to existing transit investment. However, the analysis also highlights developments and clusters of developments that are not connected to the transit network or are only connected by one route. For example:

- Morrisville and Fuquay Varina, and parts of Cary and Holly Springs have affordable housing developments that are not connected to the transit network at all.
- Wake Forest, Garner, Wendell, and part of Raleigh have both large affordable housing and clusters of smaller developments but limited access to fixed route service.



Historic and Forecasted Changes in Population and Employment

Population and Employment Changes (2016-2040)

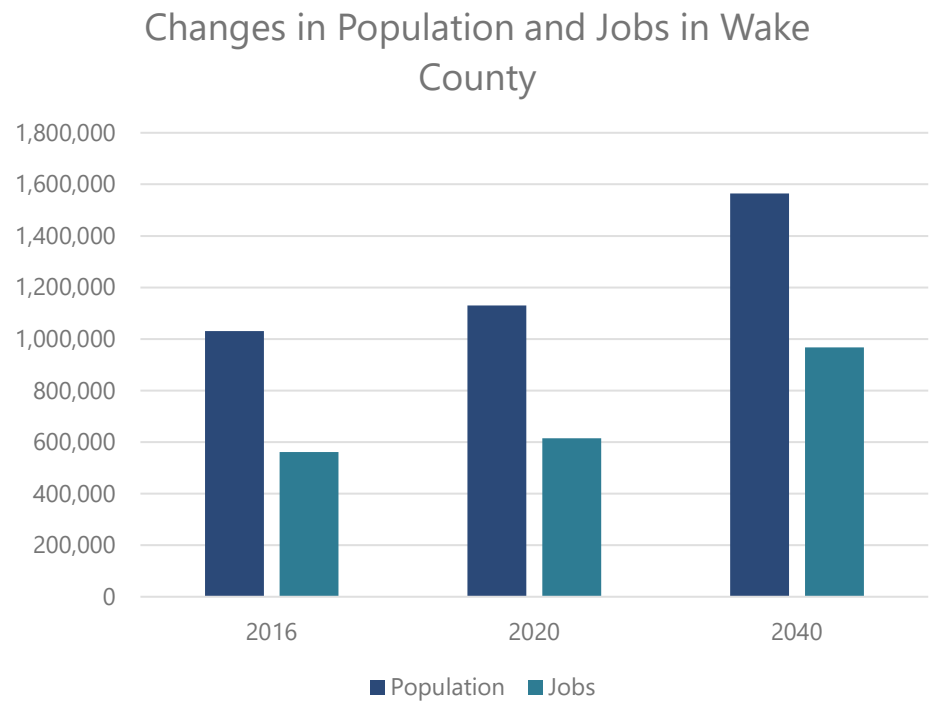
Transit improvements are long term investments, and it is important to understand future development and growth patterns. From 2016 (when the original Wake Transit Plan was enacted) to 2020, Wake County saw a steady increase in population and employment, and that growth is expected to expand over the next 20 years.

Since 2016, at the start of the Wake Transit Plan, both population and the number of jobs in Wake County have increased significantly with continued growth planned through 2040. The maps on the next two pages show how population and employment density changed over the four-year period between 2016 and 2020 and how they are expected to change over a 20-year period between 2020 and 2040. The historic data shows that while both population and employment density primarily increased in downtown areas, especially Raleigh, the rest of the region showed only minor changes in population and employment density.

Regional planning models, however, suggest that the region will continue to add density, as Wake County increases its population by an estimated 35% and the number of jobs grows by 53%. The largest population density increases are projected in Raleigh and Cary with increased density expected along the corridors connecting Raleigh and Cary plus Capital Boulevard north of downtown.

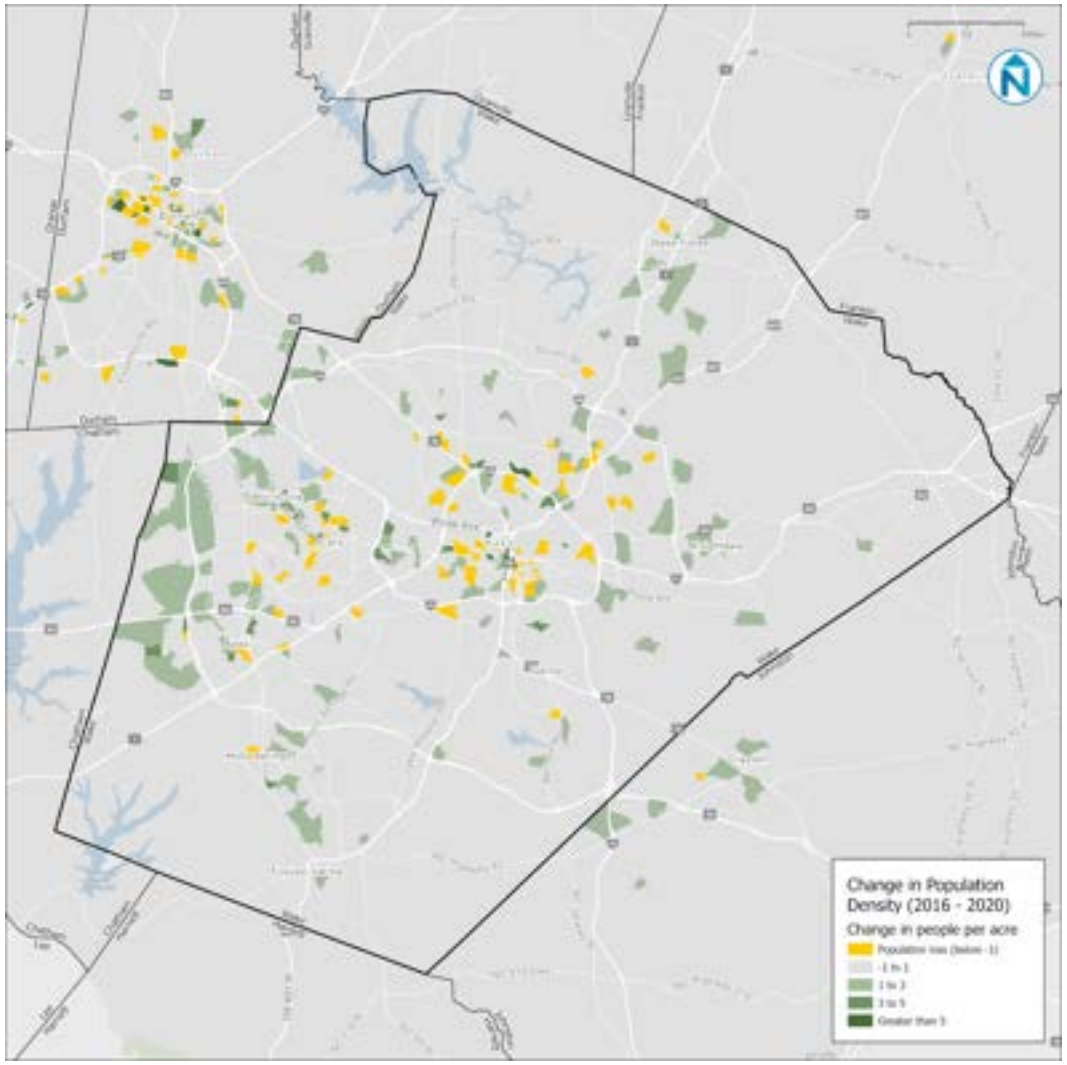
The increase in employment density is expected along the planned Wake BRT corridors in Raleigh and the corridor connecting Cary, Morrisville and the Research Triangle Park. The area south of Apex also shows increased employment density.

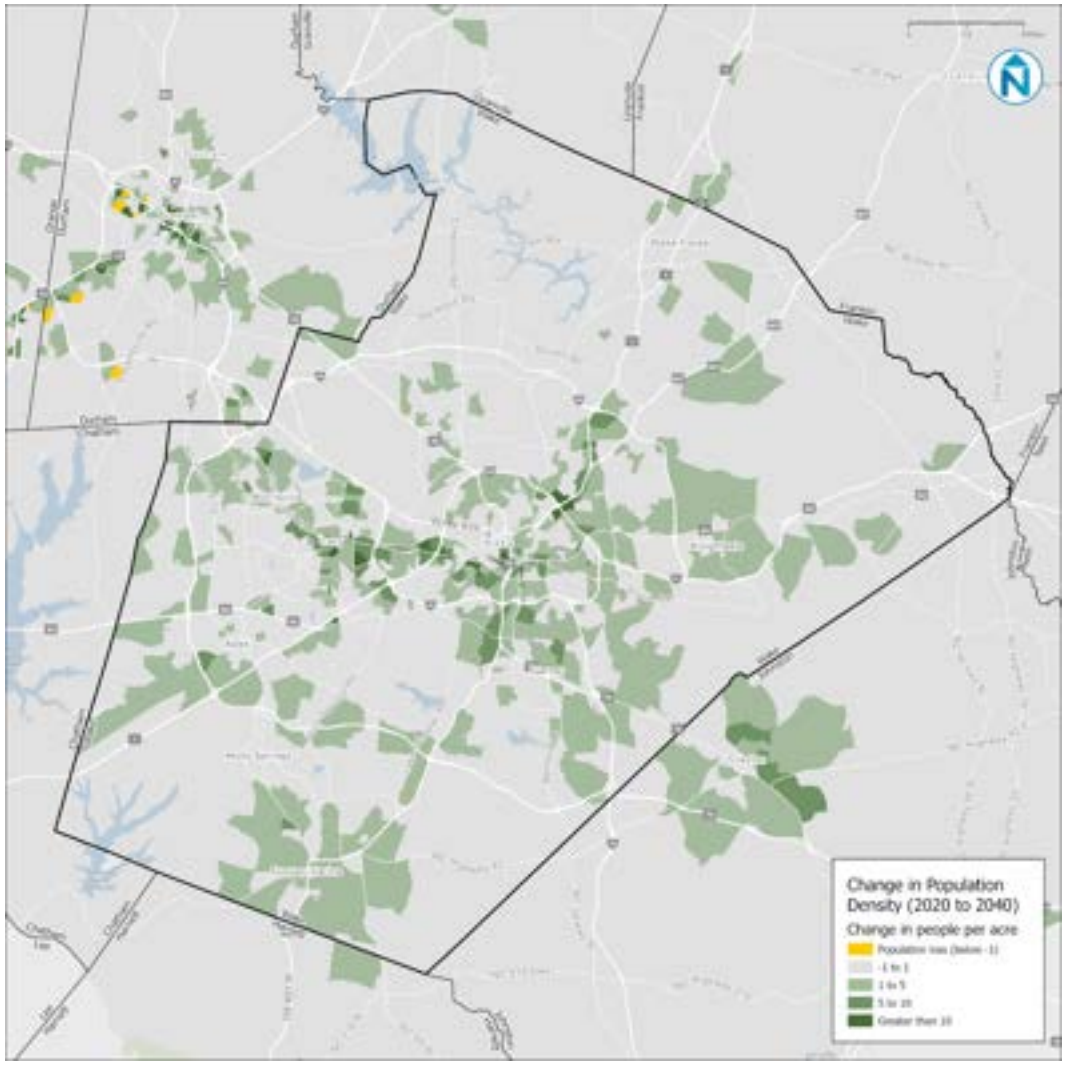
As the density of people and jobs increases in Wake County, there will be new opportunities for transit, creating an opportunity for new investments on some corridors and higher levels of service in others.



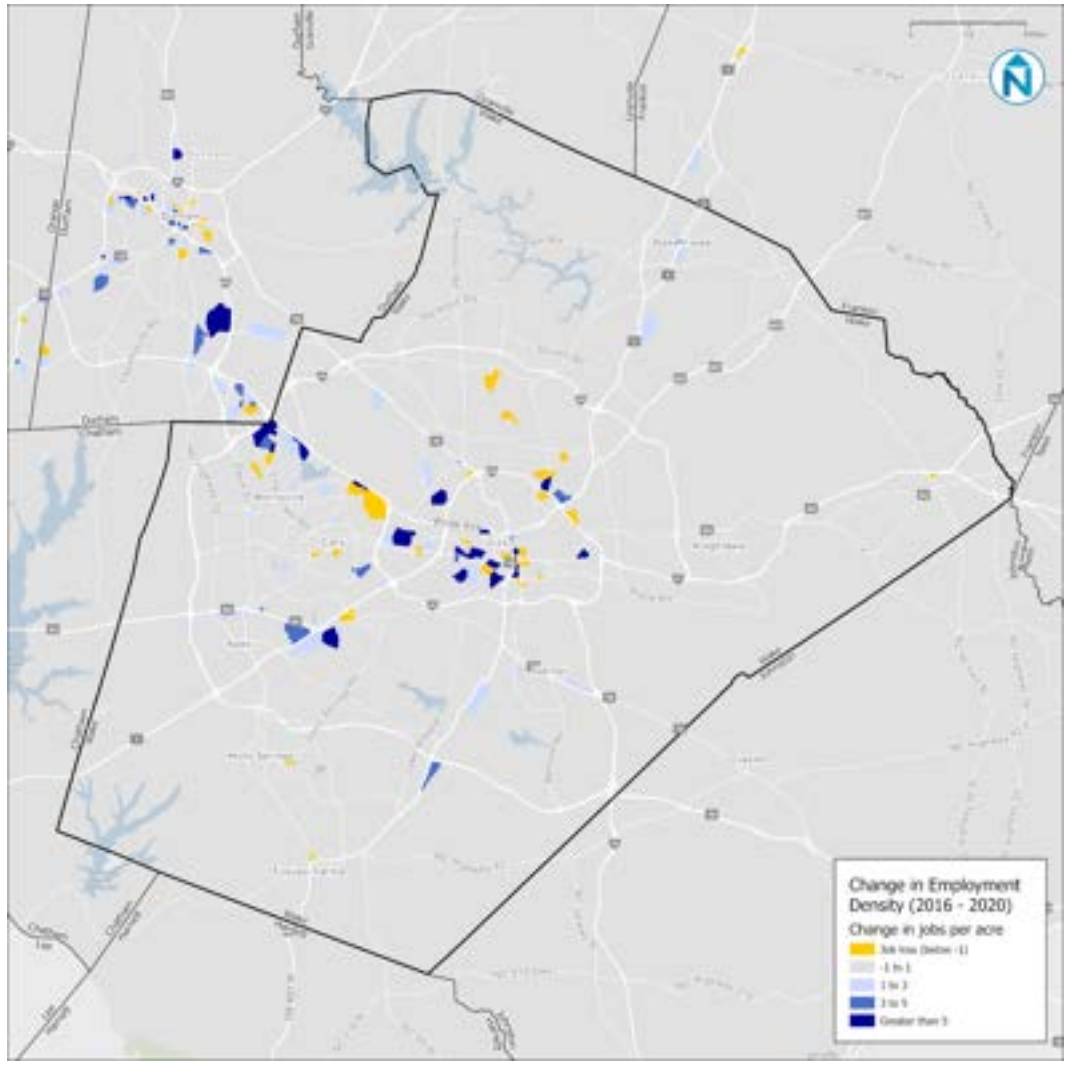
Source: CAMPO, DCHC MPO

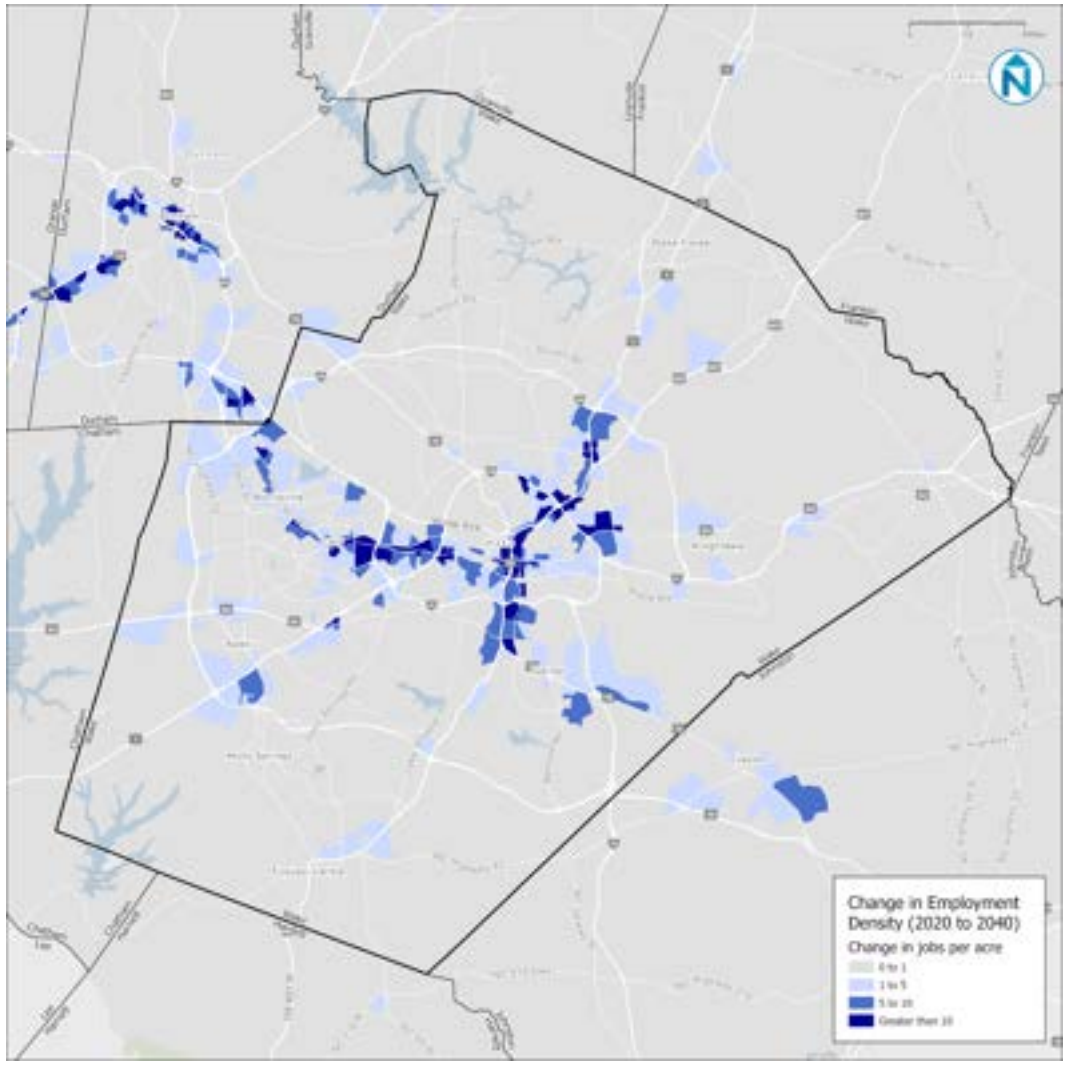
Historic and Forecast Change in Population Density





Historic and Forecast Change in Employment Density



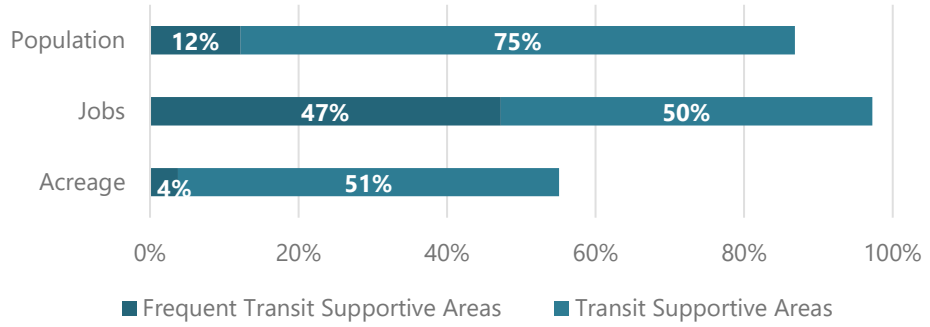


Composite Demand (2040)

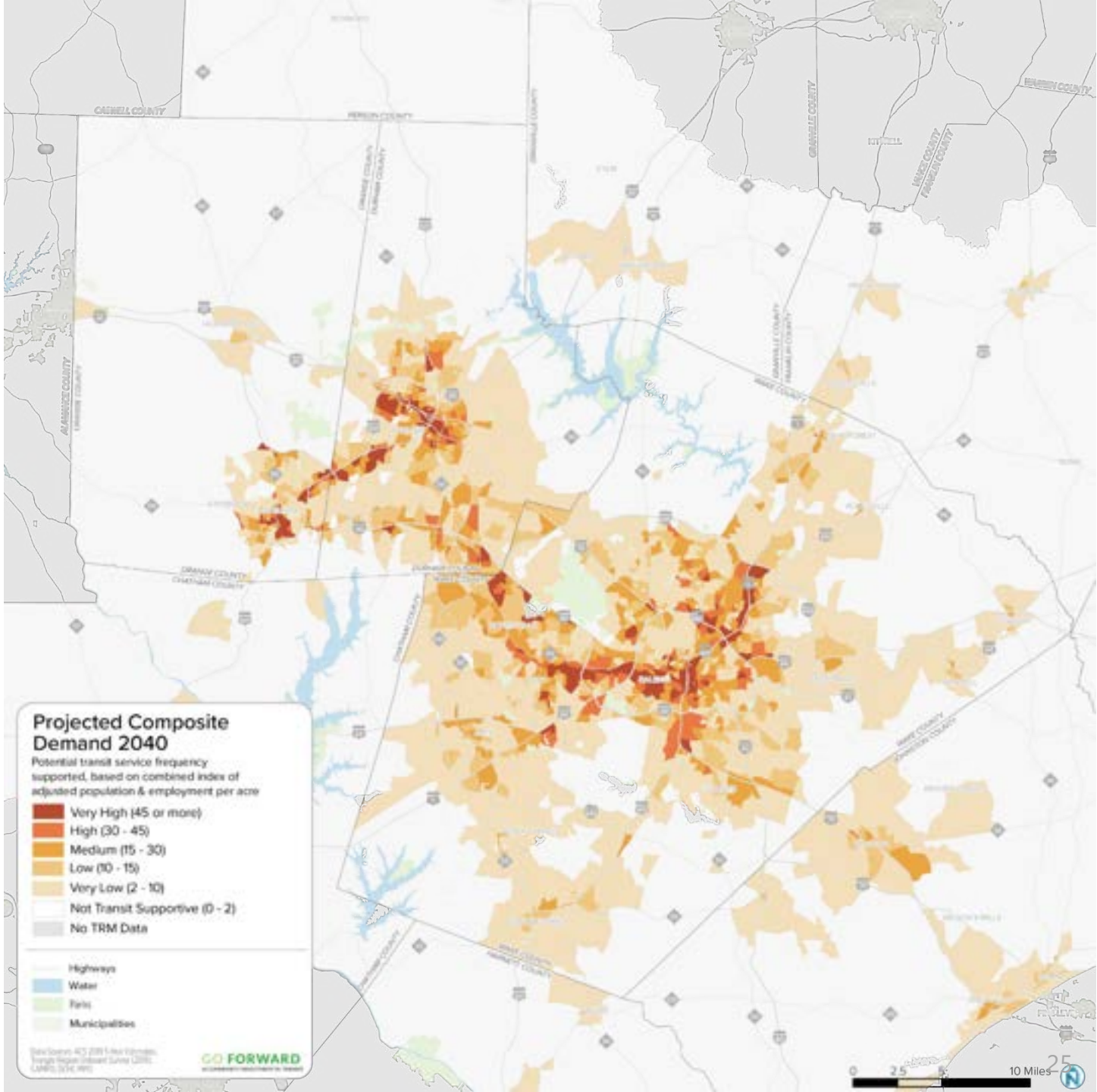
The combination of growth and changes in development patterns have – and are expected to continue to – have an ongoing impact on the demand and need for transit services in Wake County. The map to the right shows the areas that are expected to support high levels of transit service in the future. Several parts of Wake County that had moderate levels of demand will transition to areas with stronger need and potential for transit service. In addition, some areas that previously showed limited demand for transit may be able to support service by or before 2040.

Areas with the highest needs are expected to be in downtown Raleigh and Cary, around the Research Triangle Park, near North Carolina State University, south Raleigh, and north Raleigh. In addition, by 2040, more than half of the land area in Wake County is expected to support transit service. **Roughly 4% of the land area will support frequent transit service, as compared to 1% in 2020.**

Population, Jobs, and Acreage of Transit Supportive Areas in Wake County (2040)



Source: CAMPO, DCHC MPO, ACS 2019 5-Year Estimates, Triangle Region OnBoard Survey (2019)



Transit Demand in 2040

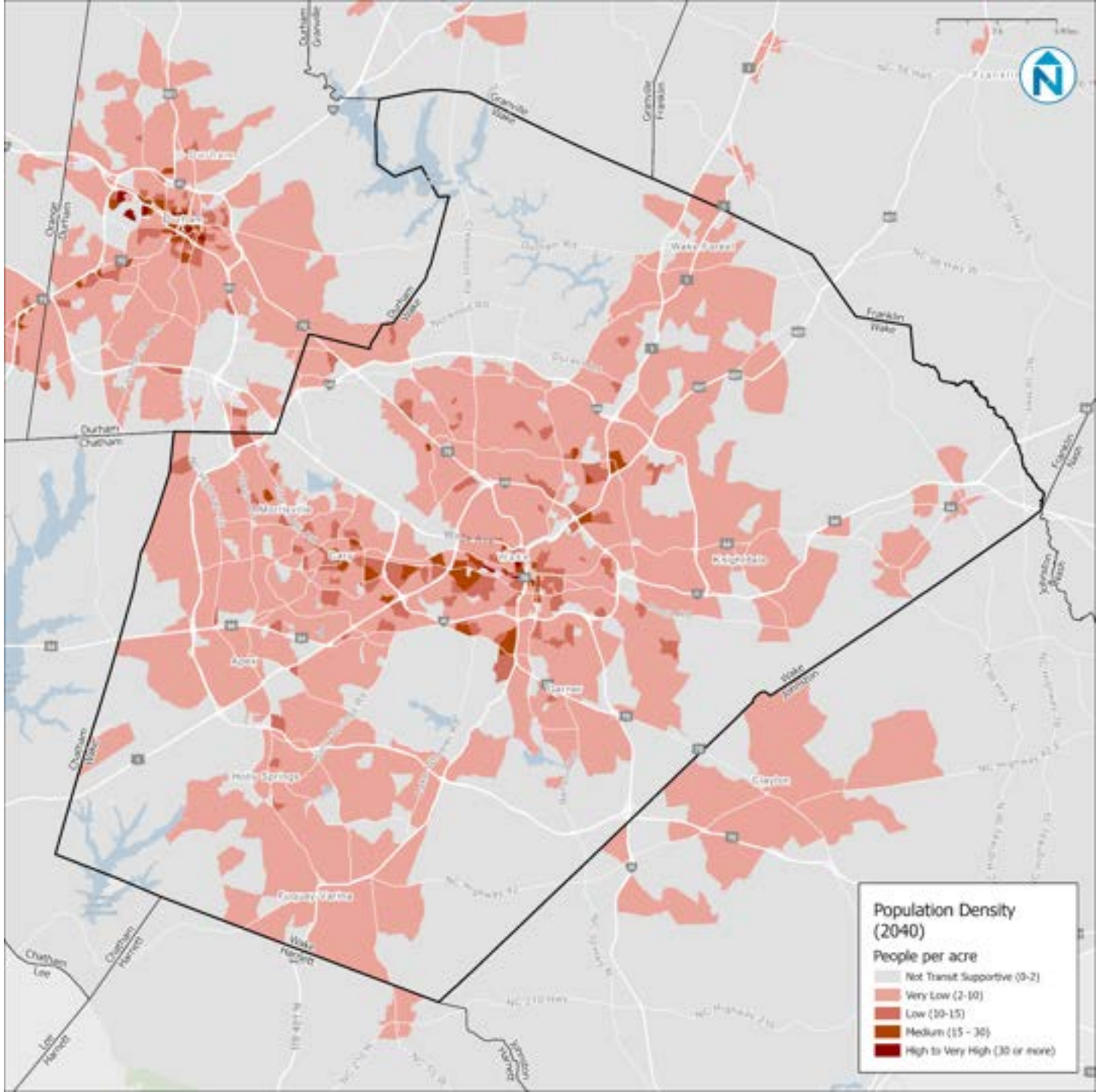
3

Population Density (2040)

Forecasts of population and population density for the future, show increased growth and development throughout Wake County, but with most parts of the County maintaining low population density into the future.

Within the overall trend of low-density development, there are several pockets and corridors that show areas of higher population density, such as the east-west corridor connecting downtown Raleigh, North Carolina State University and downtown Cary. Other pockets of greater population densities are evident in:

- Southeast Raleigh
- Just west of downtown Raleigh along the New Bern corridor and WakeMed campus
- North Raleigh
- Parts of Cary



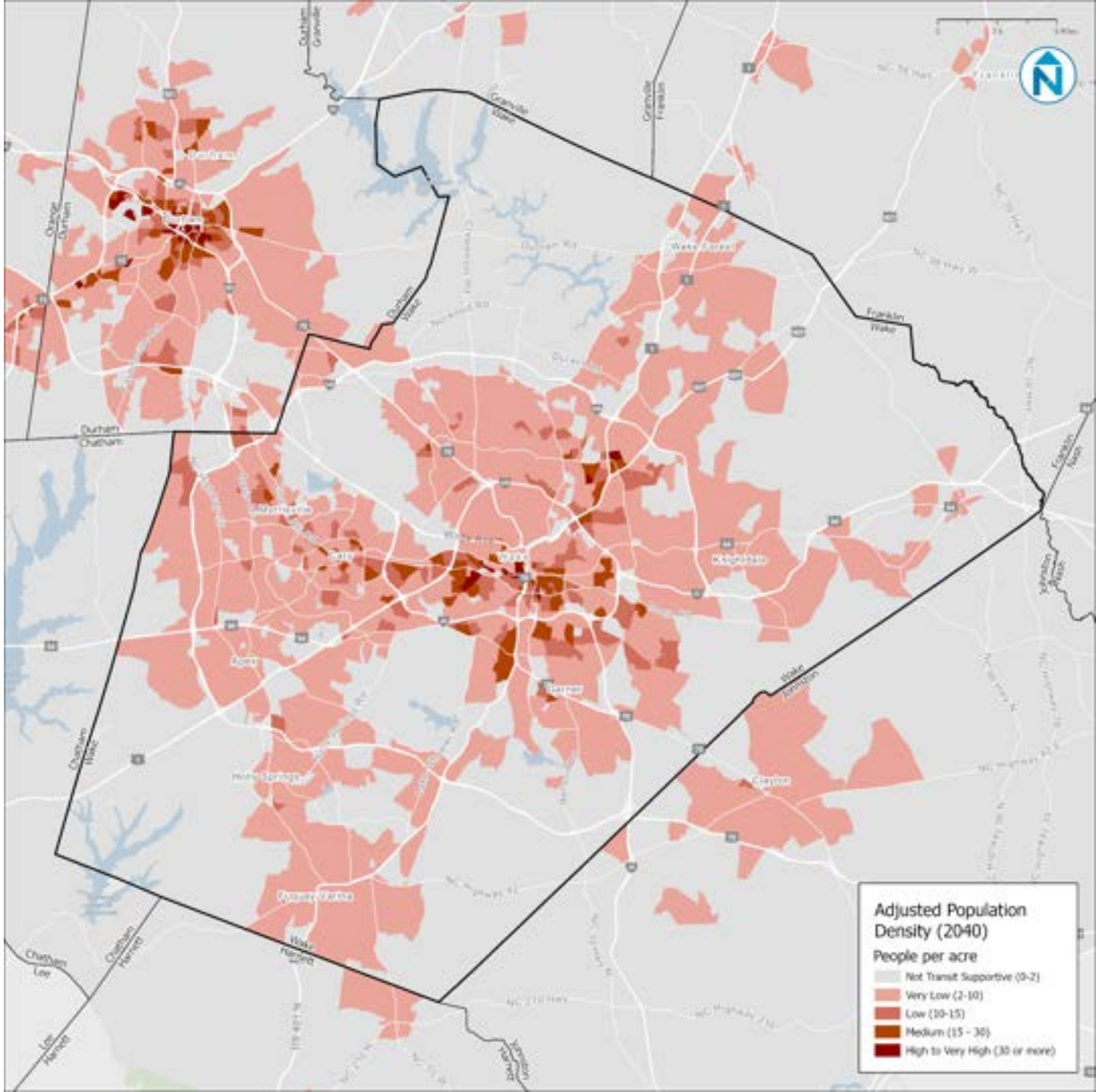
Population Density Adjusted by Transit Propensity Index (2040)

Using the same transit propensity index factors as the 2020 analysis, the population density was adjusted to reflect the impact of socioeconomic factors on potential transit demand.

When factoring in the adjustments, the following areas have high population-based demand:

- Downtown Raleigh
- Southern Raleigh
- Capital Boulevard Corridor
- Downtown Cary
- Eastern Cary Gateway

The Adjusted Population analysis relies on 2020 factors to adjust 2040 population density, since demographic and socioeconomic data are not typically projected on a long-term basis. This analysis was conducted to offer a direct comparison to the 2020 Transit Demand Analysis of this report. However, it is important to note that where different communities live may shift greatly between now and 2040, especially due to gentrification, and further planning and demographic analyses are needed on a recurring basis over the next few decades as updated data becomes available.

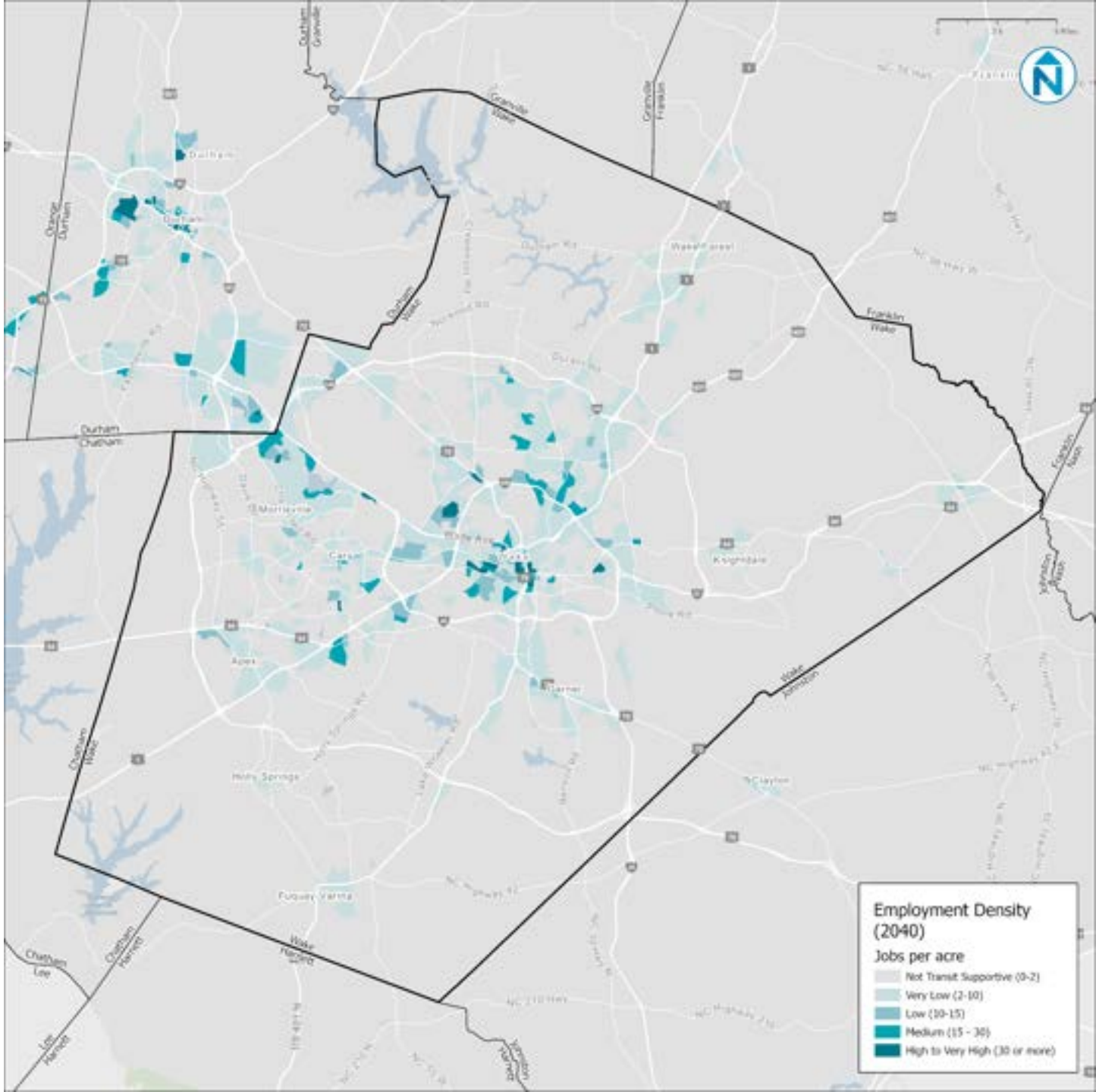


Employment Density (2040)

2040 employment density is distributed similarly to current employment density, concentrated in downtown Raleigh, Durham, Chapel Hill, and Research Park Triangle.

Employment density is highest in downtown Raleigh, Durham, and Chapel Hill, Research Triangle Park, and along major corridors, including NC-54 between Raleigh and Cary, and US-401 northeast of Raleigh.

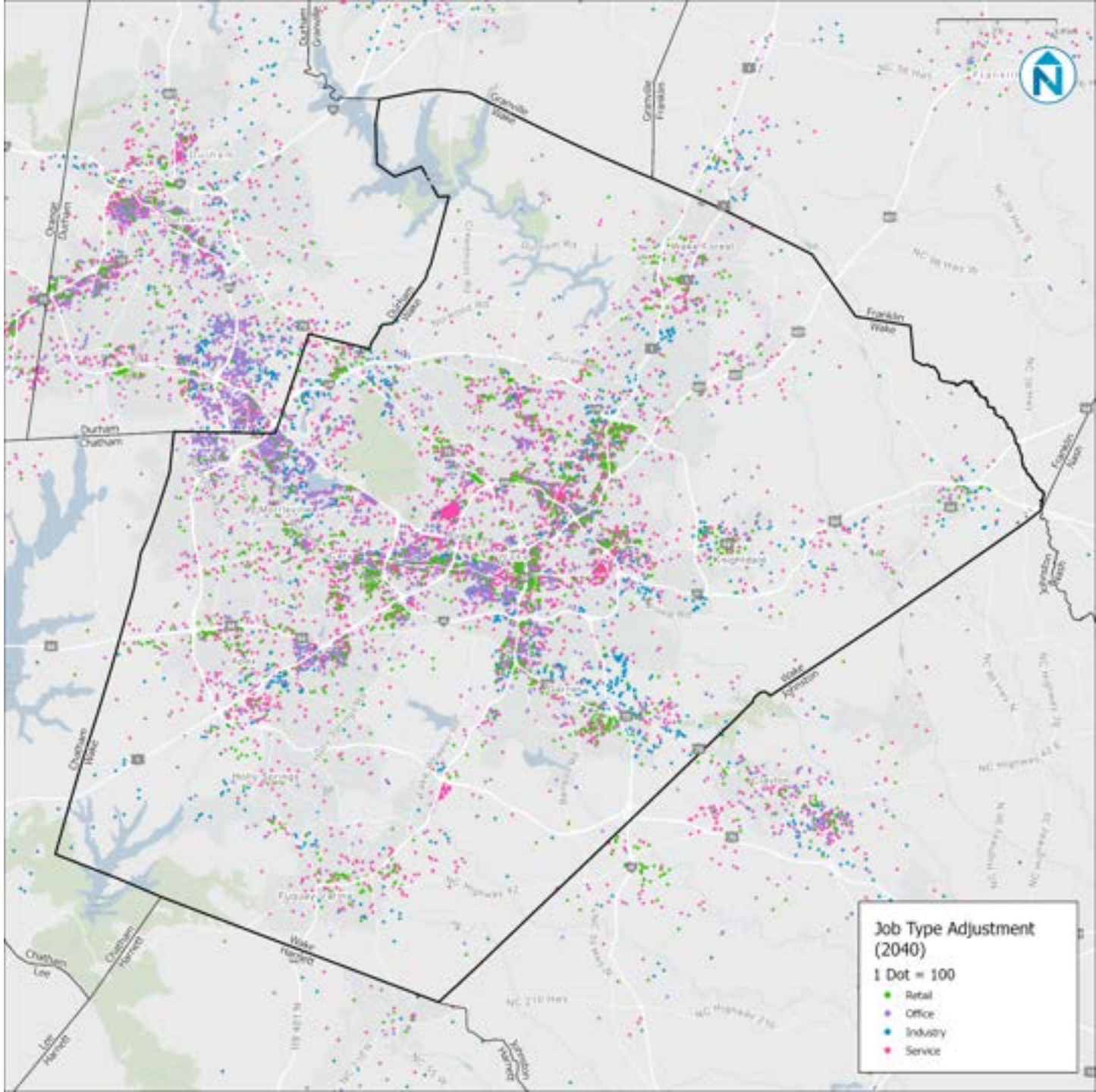
Jobs are more concentrated than population, with low job density that may not support transit outside of these areas.



Job Type Adjustment (2040)

The project team adjusted 2040 employment density using projected job types, looking at the concentrations of different industry types in the region to better reflect the travel patterns generated by different job types beyond the number of directly employed persons at that location.

The increasing job densities in the service industry-heavy downtown areas will increase the transit demand in those areas at higher rates than the outward industry growth or RTP-area office employment growth.



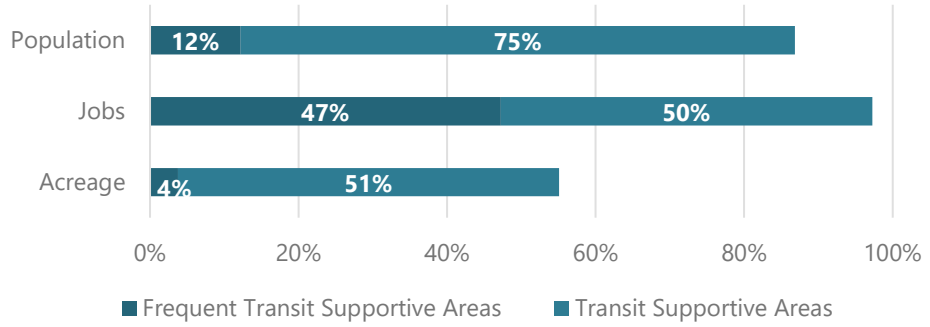
Composite Demand (2040)

The transit supportive regions in the study area show similar patterns to the 2020 composite demand, with areas previously with Medium or High levels of transit support now showing High or Very High levels of support. Some areas that previously showed no support for transit may be able to support Very Low to Medium levels of transit service in 2040.

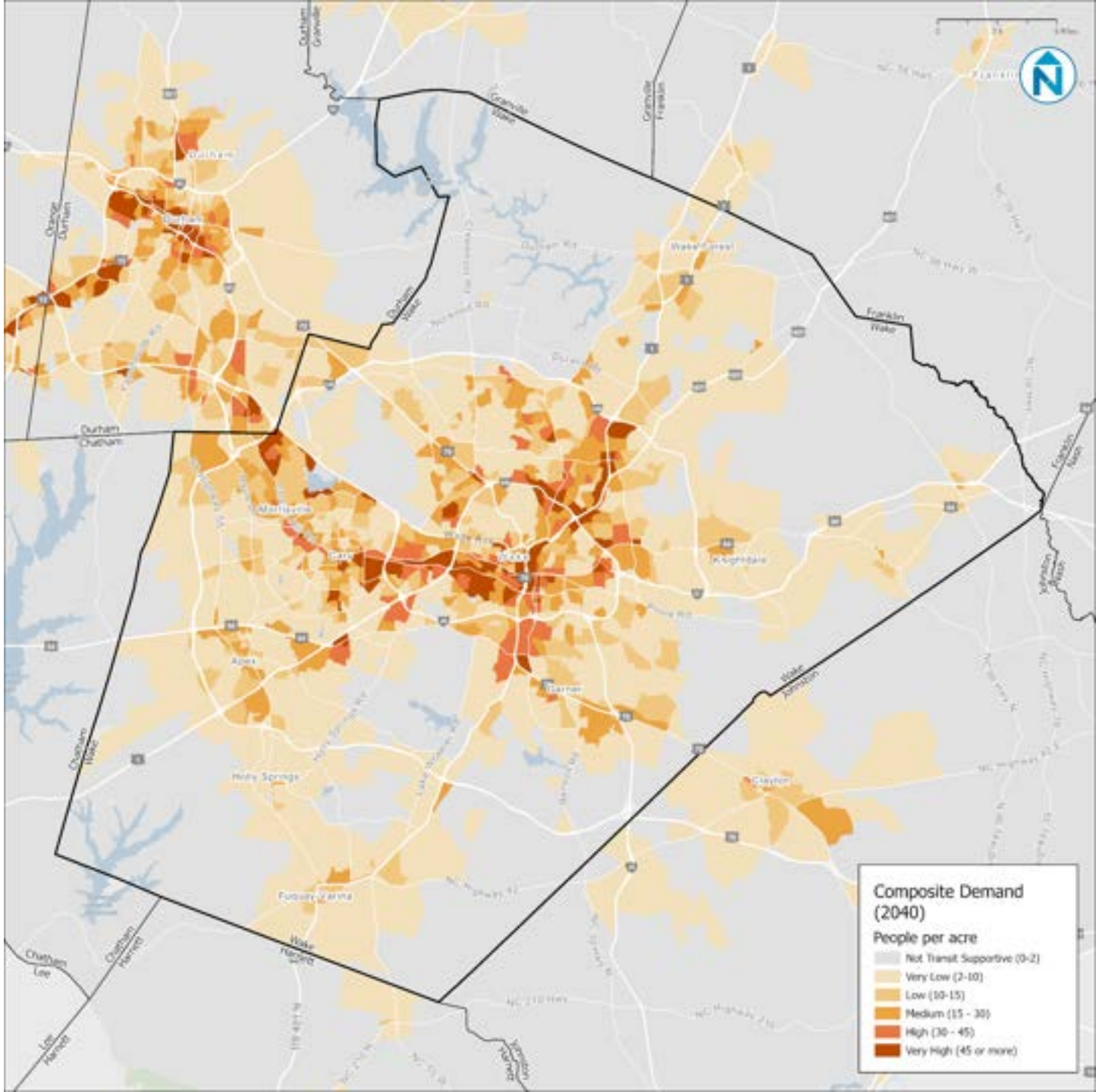
Along with the downtowns of Raleigh and Cary, there is strong demand along Capital Boulevard and northeastern I-440, in Southern Raleigh and Cary and in the Raleigh-Cary-RTP-Durham Corridor.

By 2040, about 40% of land area in Wake County is projected to be transit supportive, home to 86% of people and 97% of jobs. About 3% of land area will be supportive of frequent transit service, with approximately half of all jobs and 14% of the population.

Population, Jobs, and Acreage of Transit Supportive Areas in Wake County (2040)



Source: CAMPO, DCHC MPO, ACS 2019 5-Year Estimates, Triangle Region OnBoard Survey (2019)



Remote Work & Future Travel Patterns

The COVID pandemic impacted a lot of things, including creating increasingly amounts of full or part time remote work. As people work remotely – even part time - commuter travel patterns have also changed. While the long-term impacts of these changes are yet to be determined, the impact of remote work is changing travel patterns in expected and unexpected ways.

Statistics around regional travel

- Studies using American Community Survey data showed that between 2020-2021, certain cities (including Raleigh, NC) saw an increased net migration of remote workers.
- 2022 Census data showed that 26% of workers in the Raleigh metro area worked from home in 2022. This rate is higher than the national average of 15.2%.
- Although Raleigh's work force may be increasingly made up of remote workers, the population is still travelling around the region. Raleigh's average daily weekday vehicle miles traveled (or VMT) is 38.1 miles, higher than the U.S. average of 30.1 miles (New York is the lowest with 14.4 miles).

What this means for the region and future travel patterns

Commuting is just one trip purpose out of many that a person may take throughout the day or week. Other types of trips include those to school, the grocery store, medical appointments, or recreation/social events. The fact that less of the region is commuting to work begins to indicate that transit should be available throughout the day – not just during traditional peak commuting times around the 9am-5pm workday – to help people get to where they need to go.

https://www.nytimes.com/interactive/2023/06/17/upshot/17migration-patterns-movers.html
https://www.axios.com/local/raleigh/2023/09/19/remote-work-jobs-north-carolina-wfh-statistics
https://www.axios.com/local/raleigh/2024/06/14/we-re-a-car-city

	MOVERS WHO WORK REMOTELY	NET MIGRATION OF REMOTE WORKERS
San Francisco	42%	-32k
San Jose, Calif.	40%	-27k
New York	36%	-116k
Los Angeles	34%	-53k
Washington	33%	-11k
Austin, Texas	32%	+28k
Seattle	31%	-3k
Raleigh, N.C.	30%	+7k
Chicago	30%	-29k
Boston	29%	+8k
Denver	28%	+23k
Portland, Ore.	28%	+9k
Richmond, Va.	26%	+5k
Minn./St.Paul	26%	+1k
San Diego	26%	-1k
Philadelphia	26%	-1k
Dallas	26%	+10k

The Places Most Affected by Remote Workers' Moves Around the Country

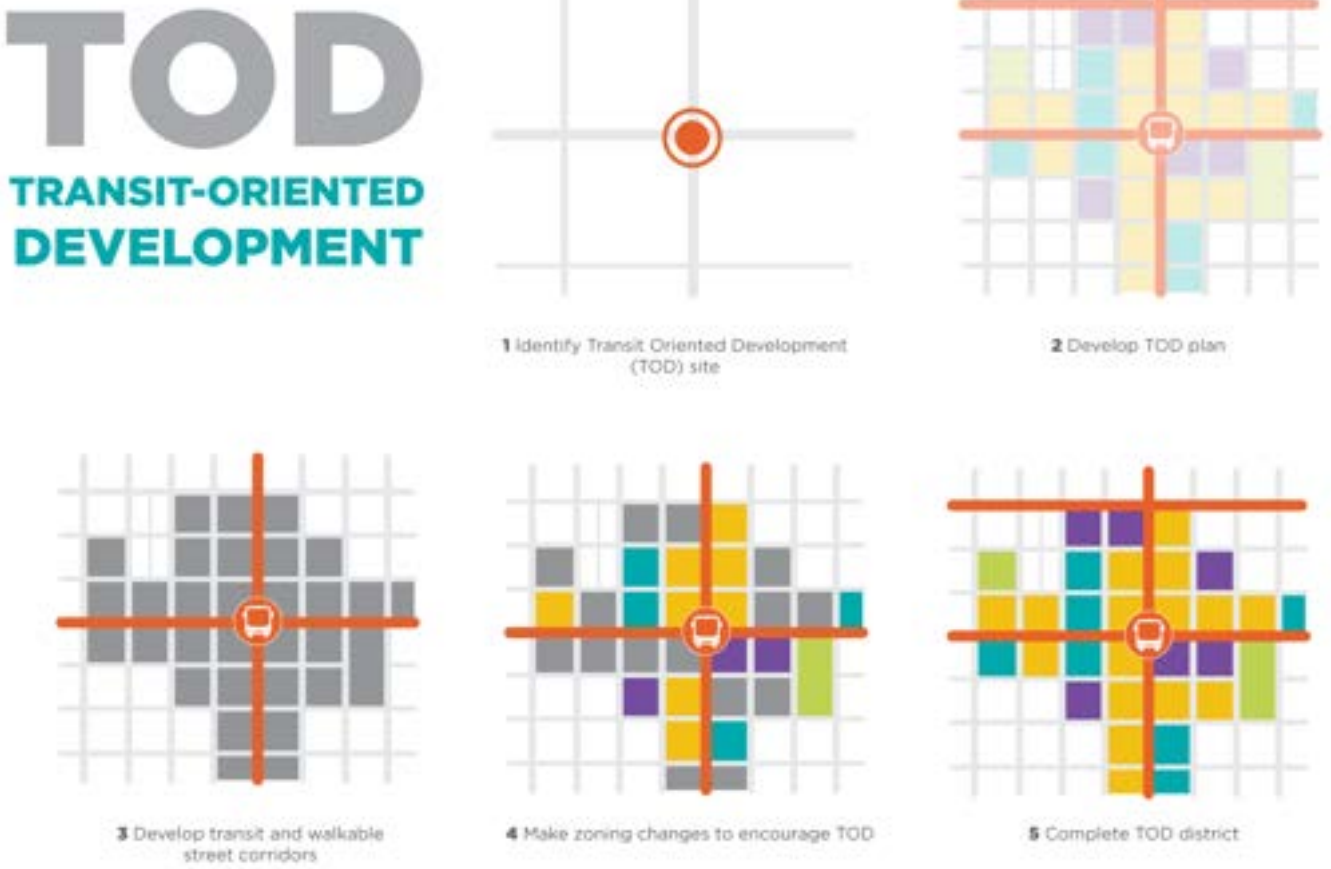
Creating Walkable, Transit Friendly Communities

4

Walkable Communities and Transit Oriented Development

Wake Transit Plan constituents – people living and working in Wake County –consistently say they want fast, frequent and reliable transit. At the same time, local and national experience demonstrates that transit service can be fast, frequent and reliable when transit serves corridors and neighborhoods with compact development where people can comfortably and safely travel using a variety of transportation options (or modes), including by walking, biking, micromobility (electric scooters, etc.) and/or rolling (using mobility devices).

Previous sections of this report use density together with population and employment characteristics to identify existing and potential future areas that can support higher levels of transit services. In this case, density serves as a proxy for land use and urban form, however, density does not always capture how communities can use design to attract and support fast and frequent transit services. Encouraging urban design that is compact, walkable and connected to transit services is often referred to as "transit-oriented design" or TOD. Indeed, TOD has become part of many cities and regions' strategy to encourage, attract and support higher quality transit services.



Planning for TOD and Walkable Communities

Wake County is a large and diverse region with a variety of community types, including urban, suburban and rural communities. Data included in the following section shows that communities across the county are growing at a rapid pace and facing common challenges related to managing growth, retaining community character and developing affordable housing.

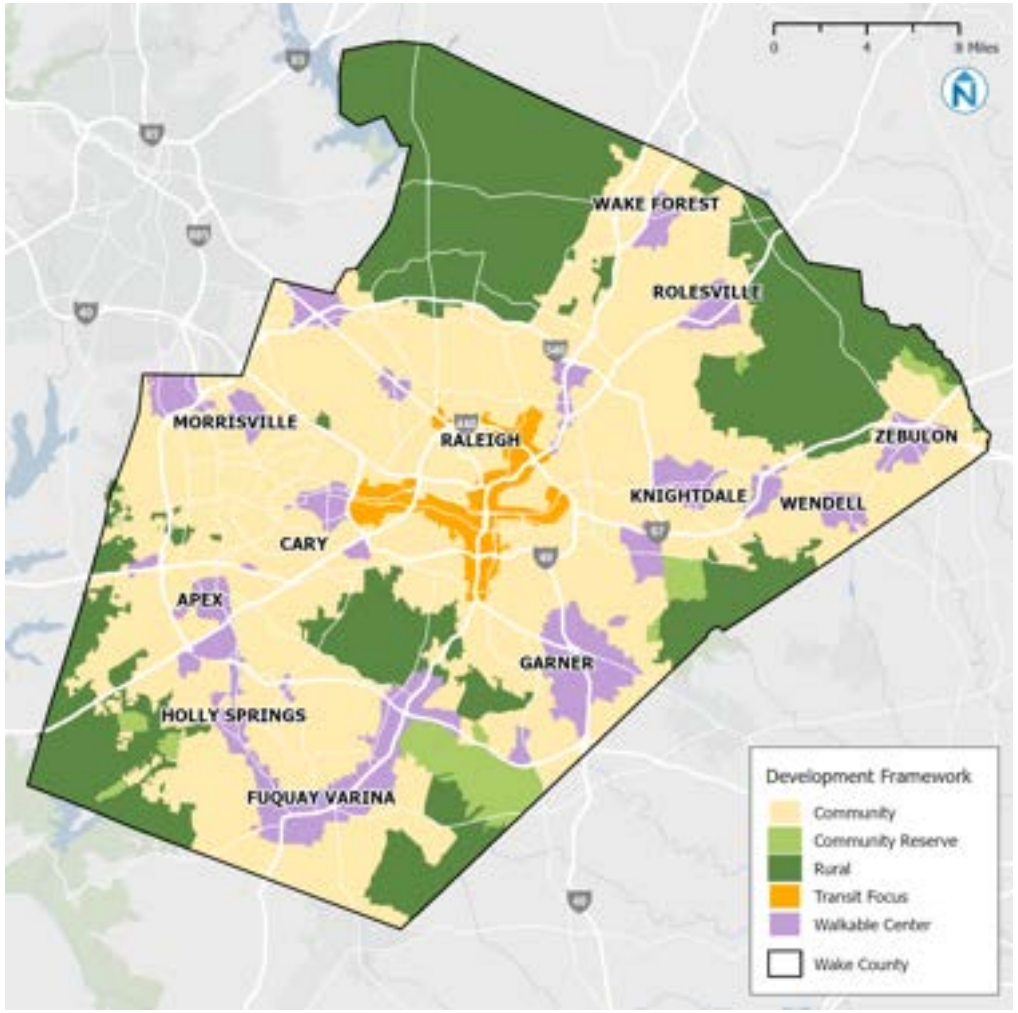
The policies and programs adopted by individual communities will vary according to local values, priorities and resources. However, in nearly all cases there are tools and strategies that can be adapted to create more walkable and transit supportive environments in communities of all types and characters.

- **Transit Oriented Development in Urbanized Areas** encourages development around existing or planned high-capacity transit stops and stations. Strategies including adjusting zoning to promote density and a mix of uses while managing parking investments and creating pedestrian connections. More recently, communities are focusing on ensuring TOD is done equitably and minimizes harm on long standing businesses and residents, including historically disadvantaged populations.
- **Transit Oriented Development in Suburban Communities** may or may not be designed around transit infrastructure. Some historic small towns or suburban communities have a train station or transit centers in their downtown, creating opportunities to encourage investment around transit by encouraging higher or moderate density housing and mixed-use development and connecting investment with parks, public spaces and pedestrian infrastructure.
- **Compact, Walkable Development in Suburban and Rural Areas**. In other cases, suburban and rural transit services may be provided at a park and ride lot located at the edge of town and/or offer service levels too low to be part of the community fabric. Creating compact, walkable communities with a mix of uses, however, still offers benefits to communities by reducing reliance on automobile travel and encouraging shared, community spaces. While short-term connections to transit services will likely require first mile/last mile connections through shuttles, microtransit and/or micromobility, long term benefits from compact, mixed-use land uses with pedestrian infrastructure include future opportunities for transit connections.

Transit Oriented Development in Wake County

Several jurisdictions in Wake County, including Wake County, the City of Raleigh and the Town of Morrisville have already developed plans and strategies to manage and guide growth, specifically by developing programs and policies to encourage compact, walkable development that is centered around historic downtowns with safe, comfortable connections to new and old neighborhoods and existing and/or planned transit services.

- **PLANWake Comprehensive Plan**, charts a course to guide growth in Wake County over the next 10 years. The PLANWake Comprehensive Plan was developed with the Wake Transit Plan in mind and includes a development framework that encouraged dense development along BRT corridors and at the same time, creates a network of walkable centers in communities. The plan recognizes the unique aspects and needs of different community types and creates a regional vision for how new development and redevelopment can be coordinated to support transit investment.
- The City of Raleigh's **Equitable Development Around Transit (EDAT),** a guidebook that is both a policy foundation and a set of design principles to leverage development for creating equitable development around the planned BRT projects in Raleigh. The guidebook sets goals for growth and equity, examines the unique characteristics of each BRT corridor, sets out design principles, and recommends an action plan to maximize community benefits from transit investments.
- The Town of **Morrisville's Transit Oriented Development and Zoning Plan** lays out a development plan of approximately 180 acres around NC54, a planned future transit corridor. Morrisville's TOD plan prioritizes higher density development and multimodal transportation options along this corridor.
- North Carolina's Department of Transportation prepared a **S-Line TOD Study** to guide development around new rail stations. The study was developed with input from nearly 2,000 people and recommends an implementation framework with shared responsibilities allocated to NCDOT and individual communities.



PLANWake Development Framework Map

PLANWake Comprehensive Plan

PLANWake Development Framework Interactive Map

Equitable TOD Development Guidebook

The Equitable Development Around Transit (EDAT) process in Raleigh helped to focus community discussions on priorities for development at and around proposed BRT lines and their stations.

The Equitable TOD Development Guidebook, which was approved by City Council in early 2021, was the culmination of the EDAT process. The guidebook laid out six urban design principles to facilitate growth near transit, defined four station area types, and developed a policy toolkit to help guide future changes. The toolkit included sections on zoning, affordable housing production, and equity programs. The final chapter of the guidebook lays out an action plan of next steps for implementation, some of which has already begun.

Illustration depicting the design principle, "Create Engaging Public Spaces"

Urban Design Principles:
- Encourage Mix of Uses
- Concentrate Density around Transit
- Support Repurposing and Infill Development
- Complete Streets for Better Transit, Manage Parking Effectively
- Create Engaging Public Spaces

Station Area Types:
- Downtown
- Emerging Urban Center
- Neighborhood Center
- Campus/Park

Implementation on aspects of the plan has already begun through changes to the zoning code and localized area planning.

Zoning Overlay Districts

In October 2021, a text change was adopted by the City Council to include a TOD overlay zoning district for the City of Raleigh's development code. The zoning overlay will allow for denser, more compact development near planned transit stations and modify the underlying zoning to ensure a walkable, pedestrian-friendly development footprint and design.

In the summer of 2022, the City Council then approved a TOD map, which applied the TOD zoning overlay district to areas along the Western and Southern BRT routes.

Station Area Planning

Station area planning is a community planning process for areas around the BRT stations. These planning effort help ensure a cohesive approach to development around a transit station.

- Planning for the New Bern Avenue BRT began in 2021. By summer of 2024, properties around the station areas were re-zoned to allow for the New Bern Avenue Station Area Plan vision.
- Planning for the Western and Southern BRT routes began in 2023. Surveys on planning options and concepts closes in late spring 2024.

BEST PRACTICE

Equitable TOD Policy: Project Connect, Austin, Texas

The City of Austin has several similarities with Wake County. It is one of the fastest growing communities in the United States and like Wake County, voters in the City of Austin approved a transit investment strategy, branded as Project Connect that included a tax increase. Like the Wake Transit Plan, Project Connects includes investments in rail services, rapid bus and local bus service. Project Connect also included an Equitable Transit Oriented Development strategy to ensure future developments near transit corridors support overall quality of life as well as equitable outcomes for area residents of all incomes and backgrounds.

The plan was developed with extensive community input that included some clear challenges about existing development practices and experiences, including:

- **Rising Rents** that feel out of control for commercial and residential properties.
- **Pressures on Small Businesses** from new development that has been displacing long-established Austin businesses.
- **Dissatisfaction with Current Transit Services** and the pace of improvements.
- **Lack of Good Government Support/Execution on Affordability Crisis** and frustration that interventions are too late or culturally sensitive.
- **Sustained Quality of Life Concerns**, including lack of affordable housing, childcare and small business assistance.
- **Business Diversity** – creating hubs around a diverse pool of community organizations and businesses.

Project Connect responded a Policy Plan to ensure future development around Project Connects supports all residents with a set of 46 policy tools for station area planning:

1. **Small Business and Workforce Development**, which includes programs to provide business assistance during construction, ongoing small business support and workforce development programs.
2. **Housing Affordability** strategies that use a combination of financing tools, land use strategies, and homeownership and tenant support.
3. **Mobility** programs including Transit Demand Management, mobility infrastructure improvements and parking management.
4. **Land Use and Urban Design** that set guidelines for transit support land uses, incentives, standards and regulations to promote affordable housing and encourage public amenities and investing in the public realm, including tree canopy, civic paces and bike-ped improvements.
5. **Real Estate and Finance Strategies** that leverage publicly owned land, land acquisition and gap financing.

The plan lays out detailed recommendations for each policy area and strategies, including identification of the lead agency, partners, timeline and links back to the region's overriding goals. Recommendations also consider if a similar program exists today and if so, how Project Connect could build from that experience, implementation challenges and considerations, and success metrics.

BEST PRACTICE

Strategic Land Acquisition - Oregon Metro

Another interesting case study is provided by Oregon Metro, a regional governance that encompasses 1.7 million people, 23 jurisdictions, including the City of Portland, and spans three counties (Clackamas, Multnomah and Washington). Oregon Metro is also the metropolitan planning organization for the Portland urbanized area. The combined role of being both an MPO and a regional government body gives Metro a unique role and responsibilities associated with strengthening coordination between land use planning and transportation investments. Goals set by the Metro governing council also prioritize supporting and strengthening investment in public transit.

One of the relevant and interesting strategies used by Oregon Metro is **development of a Transit Oriented Development Program that supports the creation of higher density, affordable and mixed-income housing within the region's centers** and frequent transit program. The TOD program is funded with $3.5 million per year and includes incentives to private developers and strategic property acquisitions along transit investment corridors. The program is funded through regional federal flexible funds, plus discretionary grants and some regional housing funds. Over its lifetime, the TOD program has invested or committed to over $40 million in land and projects (Oregon Metro Transit Oriented Development Program 2022 Annual Report).

While time and resource incentive, Oregon Metro reports that the strategic site acquisition has been and continues to be a powerful tool for TOD. **Ownership gives Metro complete leverage over the project and site** allowing them to control the development process. Metro typically does a lot of engagement to create a vision and value statement for the site and then does a competitive solicitation with timelines, budgets and expectations. Most projects have received multiple strong proposals, in part because the risk of site acquisition is removed. Metro has successfully used this program to support projects on enhanced bus corridors and station areas.

Some lessons learned from Oregon Metro include:

- **Partnerships with transit agencies and municipalities is key.** Oregon Metro works well with TriMet (the regional transit operator).
  - TriMet appreciates Metro's ability to acquire land, which also makes it easier for TriMet to complete projects.
  - Jurisdictions are also generally supportive of Metro acquiring land in their communities because they also have commitments to build affordable housing. The partnership means that both entities can work together to meet goals.
- **Corridor infrastructure is required before an area can support higher density development and transit investments.** Good quality pedestrian infrastructure and other corridor-level investments like bike lanes, streetscape investments, etc. are crucial to creating walkable districts.
- **The TOD Development Program selects sites and prioritizes investments in coordination with other regional and community goals, including equity and climate change.**

Axletree | Milwaukie

Blackburn Center | Portland

Community Profiles

5

Overview: Community Profiles

Wake County is growing rapidly and while growth is not distributed equally across the region, all communities in Wake County are adding people and jobs at a fast pace, which is changing the need and opportunity for transit services. This chapter includes an analysis Wake County's 10 towns: Apex, Fuquay-Varina, Garner, Holly Springs, Knightdale, Morrisville, Rolesville, Wake Forest, Wendell and Zebulon. Raleigh and Cary were included in this analysis, but at a less detailed level. This reflects:

1. The analysis was designed to capture growth, development and changes occurring in Wake County outside of Raleigh and Cary. The relative size of Raleigh and Cary mean that the market analysis' ends up focusing on growth, changes and transit needs in these two communities.
2. The 10 Wake County Towns (plus the Research Triangle Park) are eligible to participate in Community Funding Area program. This analysis will help guide and inform investments through that resource.

Each community profile consists of a set of three slides:

1. An introduction to the community, including existing and planned transit Wake Transit Plan sponsored investments, an overview of recent transit plans or studies, and experience with the Community Funding Area program.
2. Community statistics about density, characteristics and growth rates.
3. A snapshot of recent development activity by type and status, with a short description about how the development patterns could impact future transit needs.

More information about the data sources used in the Community Profiles is available in Appendix B.

Key Findings: Community Profiles

Key findings from the Community Profile analysis include:

1. **Suburban Towns in Wake County are growing at an unprecedented rate,** with many communities experiencing population growth rates of 30% to 50% since the Wake Transit Plan was approved in 2016. In many cases, growth is on top of a small baseline population, but the pace of growth suggests communities are changing.

2. **Towns in Wake County are actively planning for growth** with most communities recently completing comprehensive transportation plans, strategic plans and/or transit plans. In almost all cases, these plans are calling for investments in multi-modal infrastructure, including sidewalks and shared use paths.

3. **All but two Wake County communities have participated in the Community Funding Area program.** Towns are using grants to plan, design and operate local transit services as well as investments like sidewalks and bus stop improvements.

4. Data on recent and planned development shows that **most new projects are single use development largely on the outskirts of downtown centers and often near highways.** Most developments in Wake County towns do not follow best practices for creating walkable, compact communities. Suburban style master planned developments are difficult to serve with transit.

5. **Development patterns suggest on-demand microtransit style service is likely the most effective solution for local mobility.** On-demand microtransit services work in low density, suburban style development by picking up and dropping off riders at or close to their destination. The services can attract riders by providing a viable option, but the cost of microtransit on a per trip basis is high, with experience showing trips can cost between $30 and $50 per ride.
   - While microtransit is an effective strategy in the short term, if communities continue to add population by building low density residential development the cost to maintain microtransit service levels may become prohibitive. Providing on-demand service to a larger, more distributed population will require increasingly levels of investment or slower response times/reduced levels of service.

6. **Potential for sub-regional solutions.** Wake County is a geographically large region covering 857 square miles. Unique characteristics within Wake Region suggest potential for different solutions in different parts of the County:
   - **Apex is a "sub-regional hubs" in southwest Wake County.** There are nearly 100,000 in Apex and Holly Springs, plus another 35,000 in Fuquay-Varina. Apex already functions as an economic activity center with regional transportation access. Creating a mini-transit hub in Apex that is connected to neighboring towns with fast, frequent services to regional destinations is a potential future model.
   - **Northwest Wake County also has nearly 100,000 people** but is more rural, spread out over a larger area and further from Raleigh and regional employment centers. Emerging solutions in this part of Wake County include on-demand service models that connect to Wake Forest as the sub-regional hub.
   - **Garner** has more in common with the City of Raleigh than other parts of Wake County and the planned BRT stations will change transit access. Local transit solutions may focus on first mile/last mile connections and more transit-oriented style development as compared with other parts of Wake County.

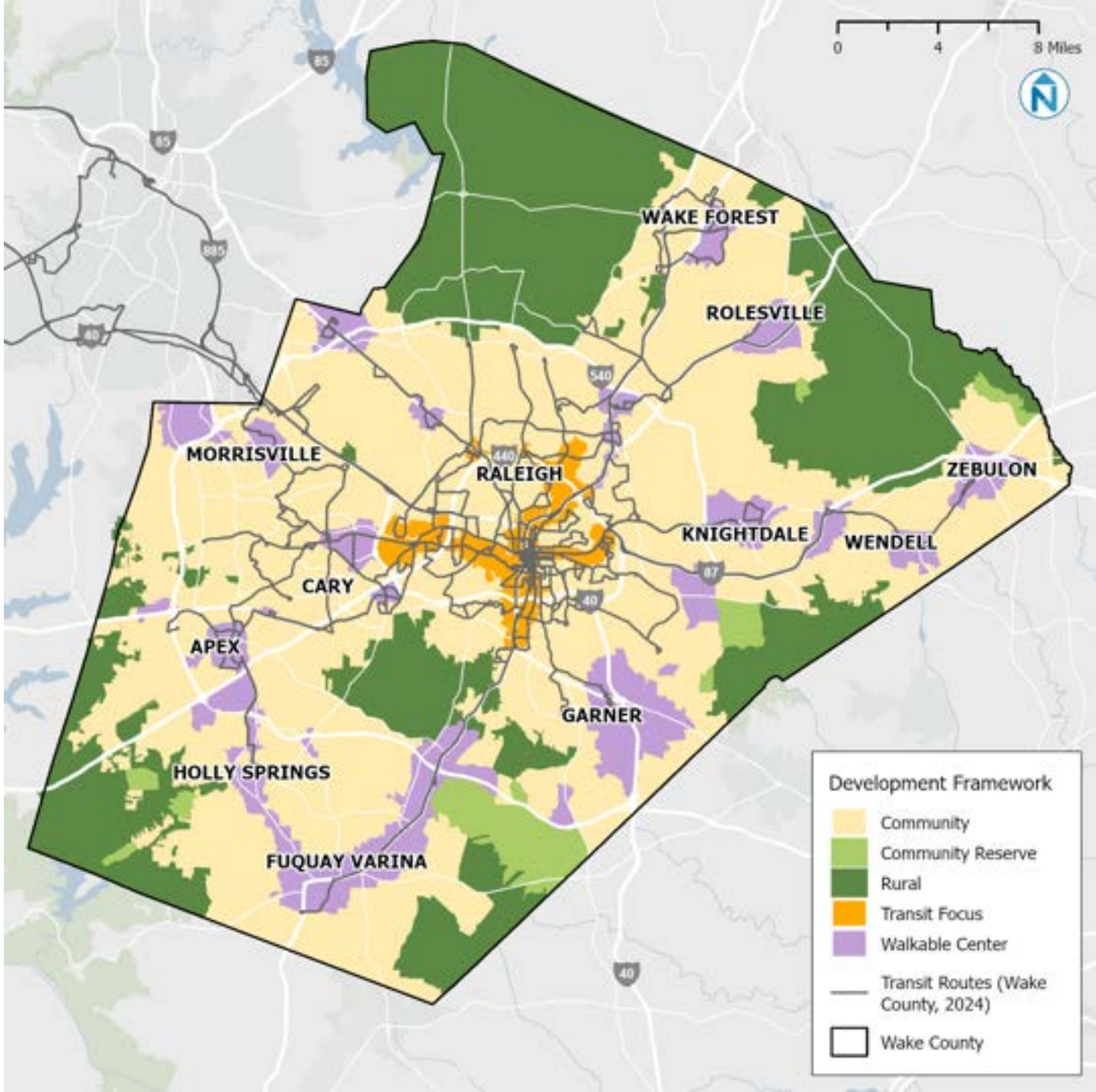
Communities Served by Transit in Wake County

The **PLANWake Comprehensive Plan** defines the following classifications as part of the Wake County Development Framework:

- **Transit Focus Areas** are the most intensively developed and densest urban areas within the county and are along the future Wake County bus rapid transit corridors.
- **Walkable Center** areas are places where redevelopment or new development is expected; they are intended to be dense, walkable transit-supportive areas close to key transportation corridors.
- **Community** areas account for a majority of the County and are predominantly residential use; municipalities have identified key locations for development and redevelopment in these areas.
- **Community Reserve** and **Rural** areas are lower-density and less developed.

With current transit services:

- **Transit Focus Areas** (mainly Raleigh) are relatively well-served by transit and will have access to the future bus rapid transit corridors.
- Most **Walkable Centers** have some transit connections, though there are plenty of opportunities to expand frequency and span of service. A major gap is Rolesville, which is currently not served by any fixed-route service.

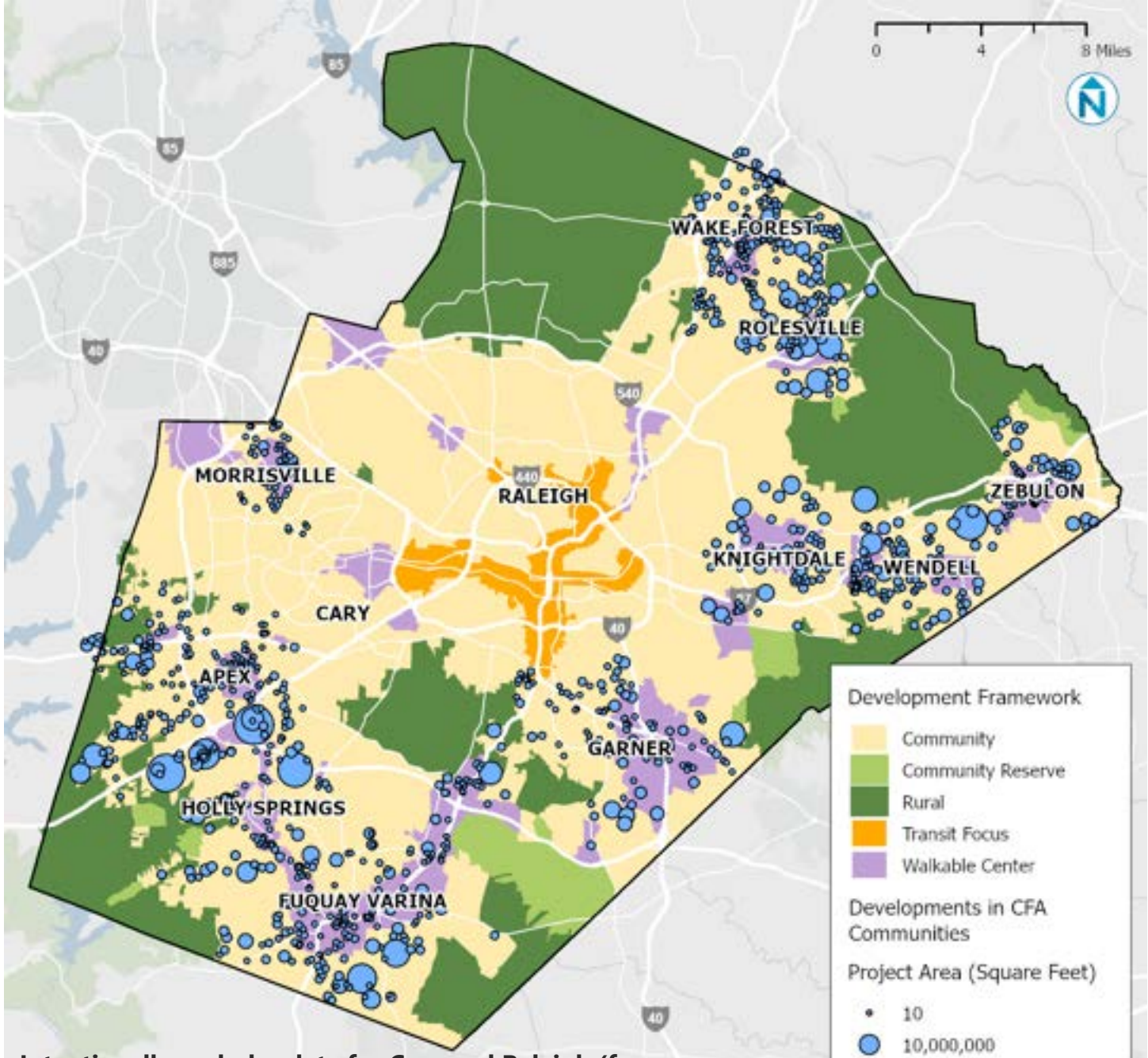


Community Funding Areas: Planned Land Use and Development

The PLANWake comprehensive map is shown together with planned development in Wake County's 10 towns. Cary and Raleigh are included in this analysis but due the scale of development, not shown on the map. Both communities are included in the individual community profiles shown at the end of this section. The PLANWake map shows the distribution and size of development projects in non-urbanized Wake County; it also shows how well development is aligned with the planned walkable centers.

This data suggests that there is a fair amount of development planned or occurring in the walkable center portions of Wake County. This is especially true for small projects. There are also lot of projects occurring around major corridors, especially in southwestern parts of Wake County.

At the same time, however, the data suggests a large amount of development, including large projects, outside of the designated walkable centers or clustered around specific corridors. Instead, these developments are occurring in areas classified as "community" and at the edge of rural areas. Development in lower density areas is more difficult to serve with transit. The transit solution currently used – microtransit – can provide service to low density areas, but the cost of the service is high and as development sprawls, costs will increase.



Intentionally excludes data for Cary and Raleigh (for more information about development in these communities see pages 48-50 and 66 – 68).

Apex: Introduction

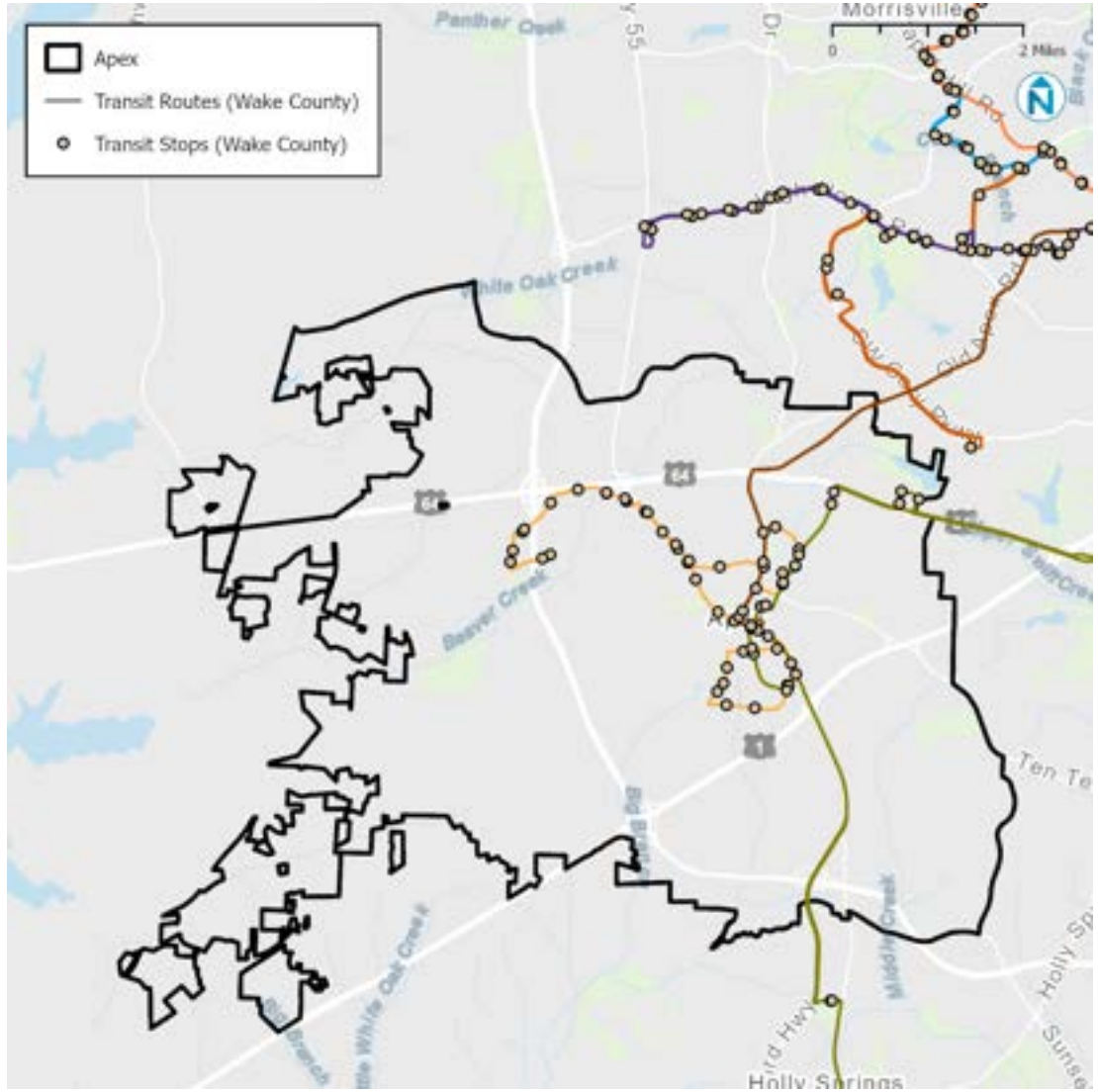
The Town of Apex is one of the largest towns in Wake County with a population of nearly 100,000 and it is also one of the fast-growing communities, increasing its population by 49% between 2016 and 2022. This compares with employment, which grew by 18% over the same period. Apex's larger population contributes to a denser population as compared with Wake County overall. In terms of demographic characteristics, Apex is wealthier, less diverse and younger as compared with the Wake County population overall.

Apex has three regional bus routes although one route (Route 311) was suspended during COVID and has not yet been re-instated.

- Apex-Cary Express (ACX) that connects Apex and Cary with peak period service on weekdays.
- Route 305: Connects Apex with North Carolina State University and Raleigh with hourly service during peak periods on weekdays. A handful of morning and evening trips extend to Holly Springs.
- Route 311: Apex-RTC that provides peak-only connections between Apex and Research Triangle Park. This service was suspended in 2020 and is planned to start again in FY27.

A fourth route – GoApex Route 1 – provides local circulation within the Town of Apex. It operates hourly on weekdays and Saturdays from 6 AM to 10 AM and is fare free.

Apex is actively pursuing several planning efforts and has been one of the largest participants in the Community Funding Area program. Funded projects include a Transit Priorization Study, bus stop improvements, GoApex Route 1 and sidewalk improvements.



Apex: Key Statistics

Population Density (Persons/Acre): 2.65

Wake County: 2.06

Employment Density (Jobs/Acre): 0.71

Wake County: 1.19

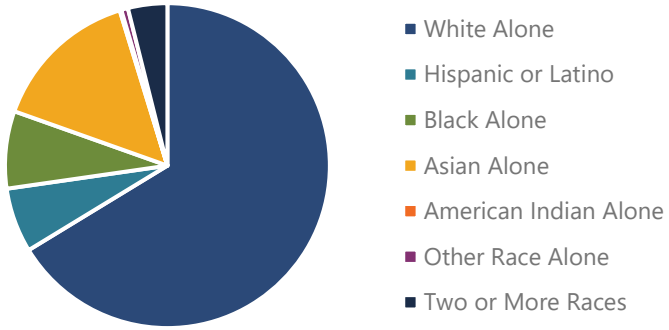
Zero Vehicle Households: 1.9%

Wake County: 4.0%

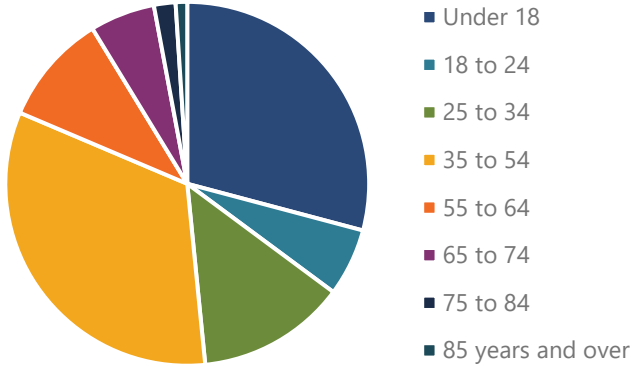
Median Household Income: $129,688

Wake County: $96,806

Race and Ethnicity

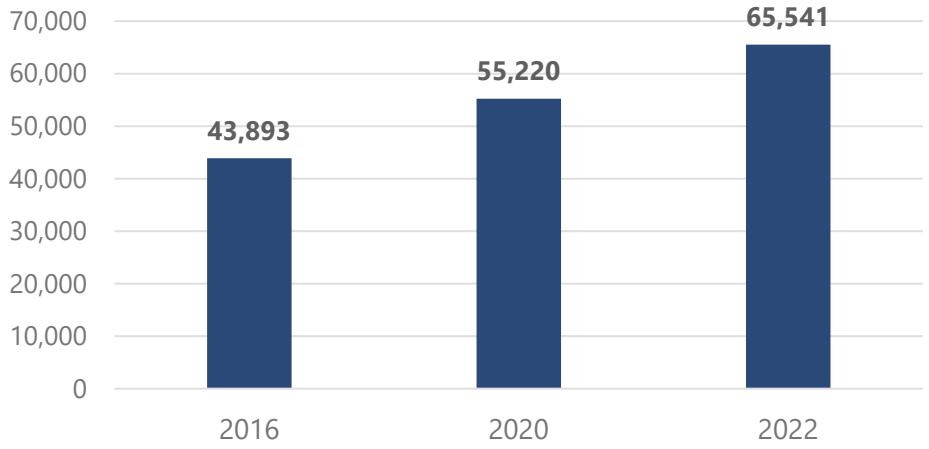


Age Groups



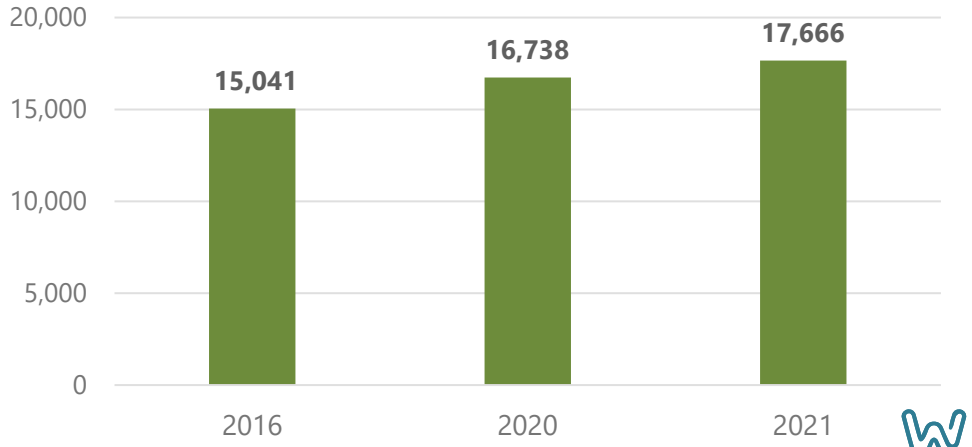
Population Growth, 2016 to 2022: **49%**

Wake County: 13%



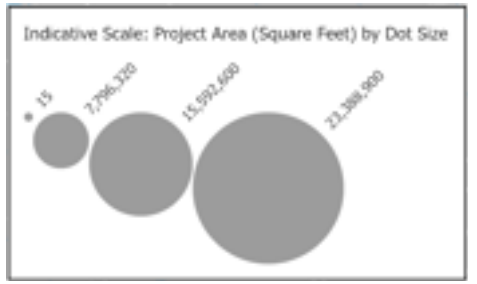
Employment Growth, 2016 to 2021: **18%**

Wake County: 8%



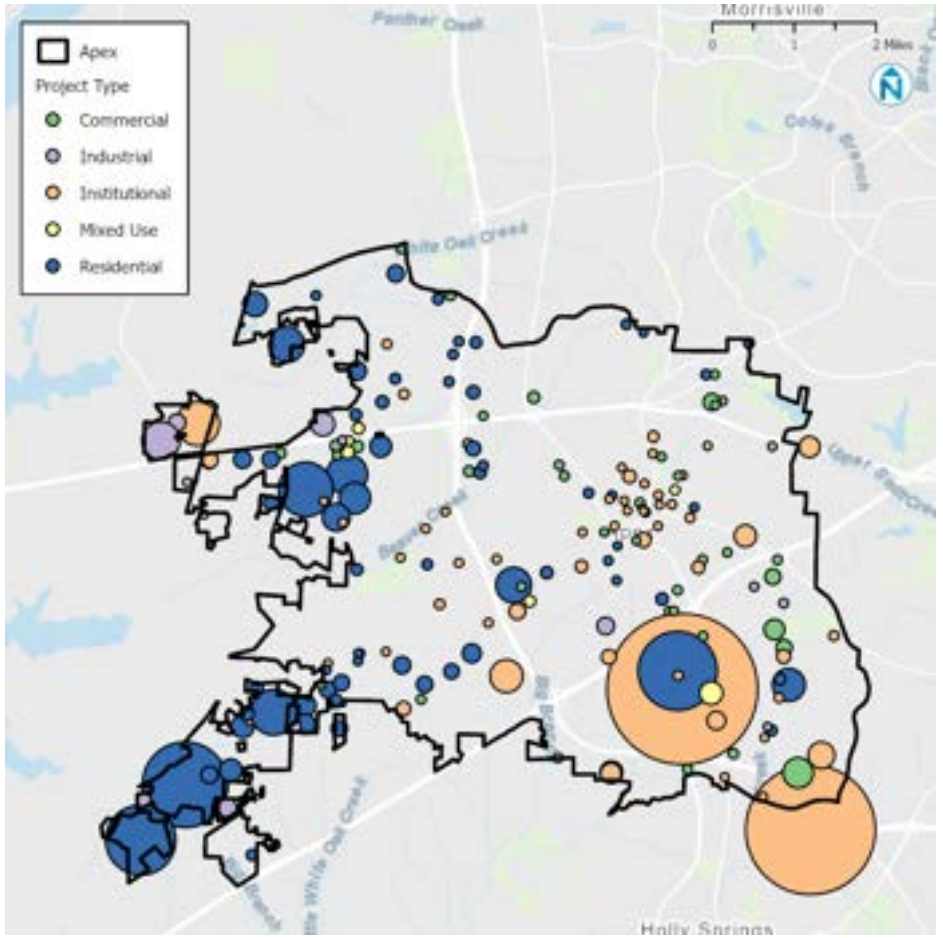
WAKE TRANSIT PLAN UPDATE

Apex: Development

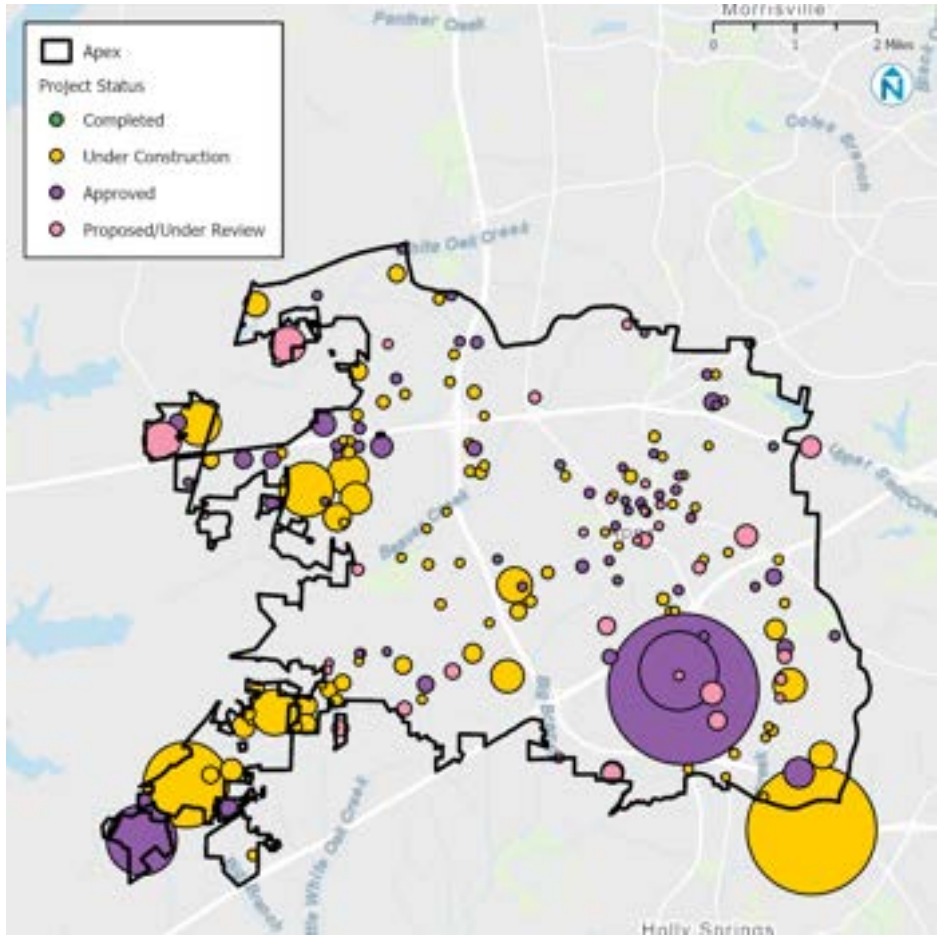


Data collected in 2024 shows Apex has a multitude of projects in various stages of development. Most projects are residential, although a handful of large institutional projects are under construction or recently completed. Most new projects are not located within walking distance of existing transit services, including GoApex Route 1. This suggests that future connections will be needed.

Apex's future rail station, combined with the Town's strategic location south and west of Raleigh mean it has potential to function as a regional transit hub for both Apex residents but also people traveling to/from Cary, Holly Springs and Fuquay Varina. Identifying a location and a facility for a future hub is a potential project.



Development by Type and Size



Development by Status and Size

Cary: Introduction

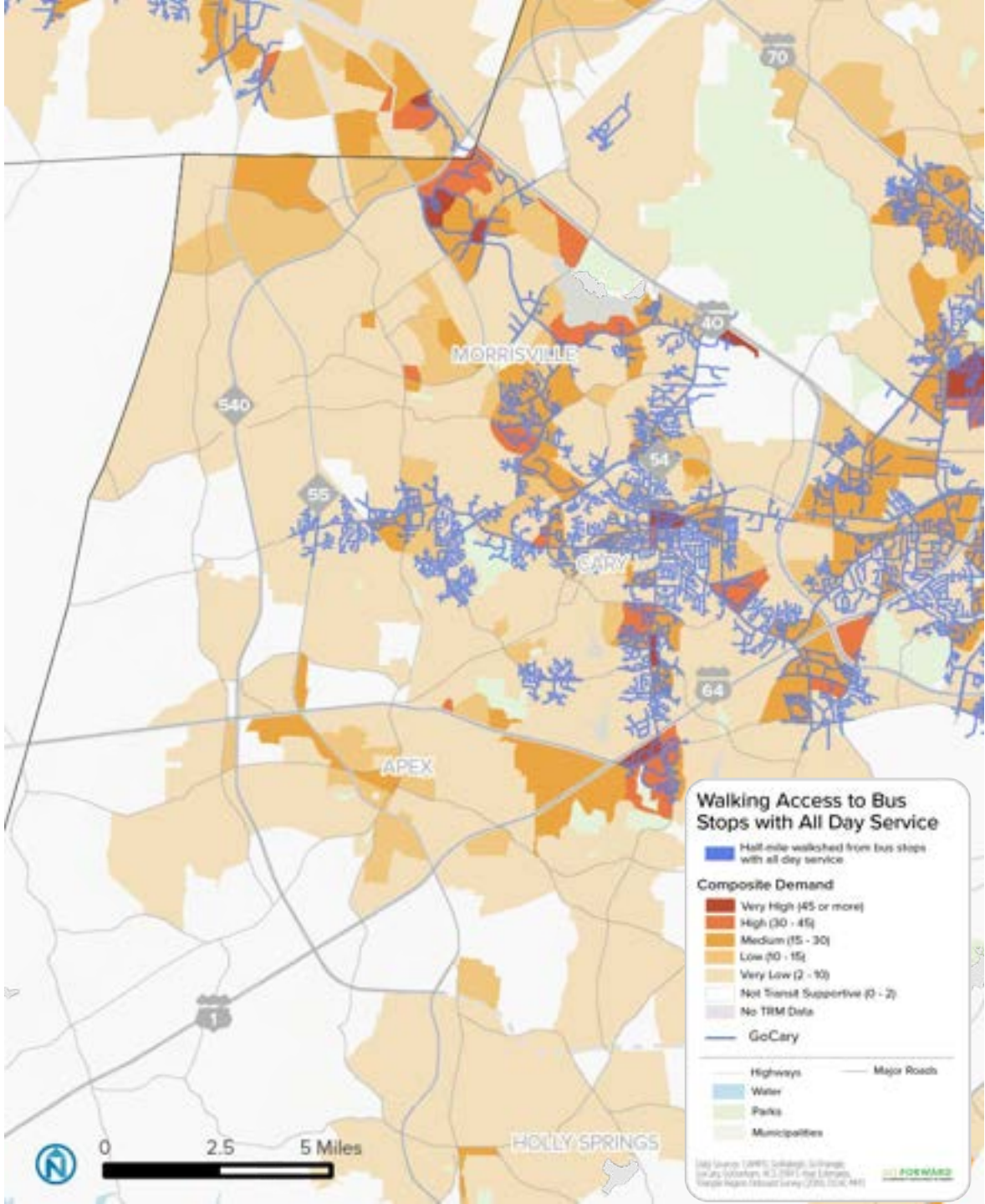
The Town of Cary, like the rest of Wake County, has been experiencing rapid growth. The U.S. Census shows Cary's population at 180,010 in July 2023, which is 33% higher than its population in 2010 and 3% higher than its population in 2020. The growth rates are notable because Cary continues to grow at a fast rate even from a relatively high base.

As compared with other communities in Wake County, Cary is more densely developed, although density is still low from a transit propensity perspective (see also map on right). Cary's population is diverse; roughly 60% identify as white alone, 21% identify as Asian and 8% as Black and 8% as Hispanic or Latino. Cary is an affluent community; median income is nearly 30% higher than the Wake County average. The percentage of households without vehicles is slightly lower than the county average.

The Town of Cary operates its own transit system, GoCary, which includes eight fixed-route bus lines, six of which operate all-day, weekdays and Saturday. There is also one bus route that operates during the midday only and peak period express service to Apex. GoTriangle service connects Cary with downtown Raleigh and the Regional Transit Center (RTC) at Research Triangle Park. Riders traveling to the RTC can connect to Raleigh Durham Airport, Durham Station and Chapel Hill.

The map on the right shows transit demand in Cary, together with the half-mile walkshed from bus stops with all day service. The analysis shows that – in 2024 - most of the densely developed areas in Cary are served by transit. Ridership on GoCary's services has been strong with ridership recovering from pre-COVID levels faster than other regional transit services. While the service remains fare-free, strong ridership suggests services are aligned with need.

Planned transit service investments may include increasing the frequency of service in the evenings and on Sundays to operate every 30 minutes. As the Town continues to add people and jobs, and transitions towards pedestrian oriented development patterns, there may be opportunities to increase the frequency of service on weekdays to every 15 minutes.



WAKE TRANSIT PLAN UPDATE

Report Appendices

Data Sources and Methods

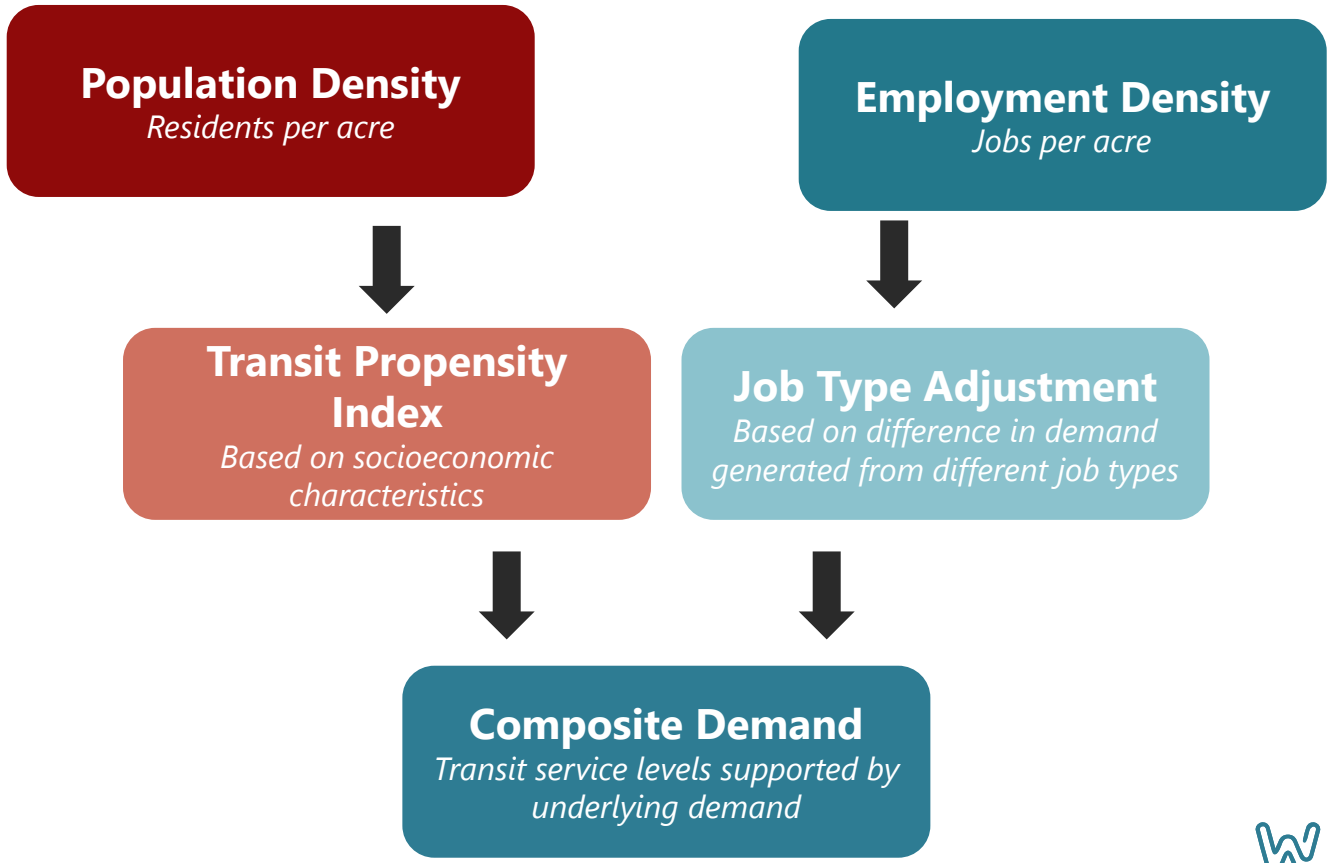
Transit Demand Analysis Calculation and Methodology

While total population and employment density are crucial to understanding transit demand, analyzing who is taking transit and what types of jobs are in an area allows for a more comprehensive look at the level of service needed. A **Transit Demand Analysis** considers the following factors:

- Population Density, in residents per acre
- Socioeconomic Characteristics, combined into a Transit Propensity Index (see slide 71)
- Employment Density, in jobs per acre
- Types of Jobs, to determine a Job Type Adjustment (see slide 72)

The analysis results in a **Composite Demand** score for each TAZ by combining population density adjusted by the Transit Propensity Index and employment density adjusted by job type. Composite Demand can be used to identify appropriate transit service levels supported by the underlying demand.

Transit Demand Analysis Components



Transit Propensity Index

Transit Propensity Index
Based on socioeconomic characteristics

The Transit Propensity Index (TPI) helps to highlight and prioritize transit dependent populations—as identified by the previous demographic analysis—by measuring their relative demand for transit.

When a significant number of people from transit-dependent socioeconomic groups live in clustered areas, the underlying demand for transit in these areas may be higher than is captured by just looking at population density. Conversely, in areas where transit-supportive groups have lower representation, the transit demand may be lower than what is captured purely by population density.

Taking these factors into account, the project team calculated the TPI for each demographic factor, which is the ratio between transit mode share for the specific group and the transit mode share for the general population and calculated at the regional level. The table to the right shows the TPI among different groups. A factor greater than 1 means that the group is x times more likely to use transit than the average population, with x signifying the value of the factor. As an example, a TPI of 12.1 for people without vehicle access means that people in that group are 12.1 times more likely to use transit than the general population.

This ratio is applied to the demographic breakdown of a particular geographic area to target communities that are more likely to use or need transit.

Regional Transit Propensity Index by Demographic Factor

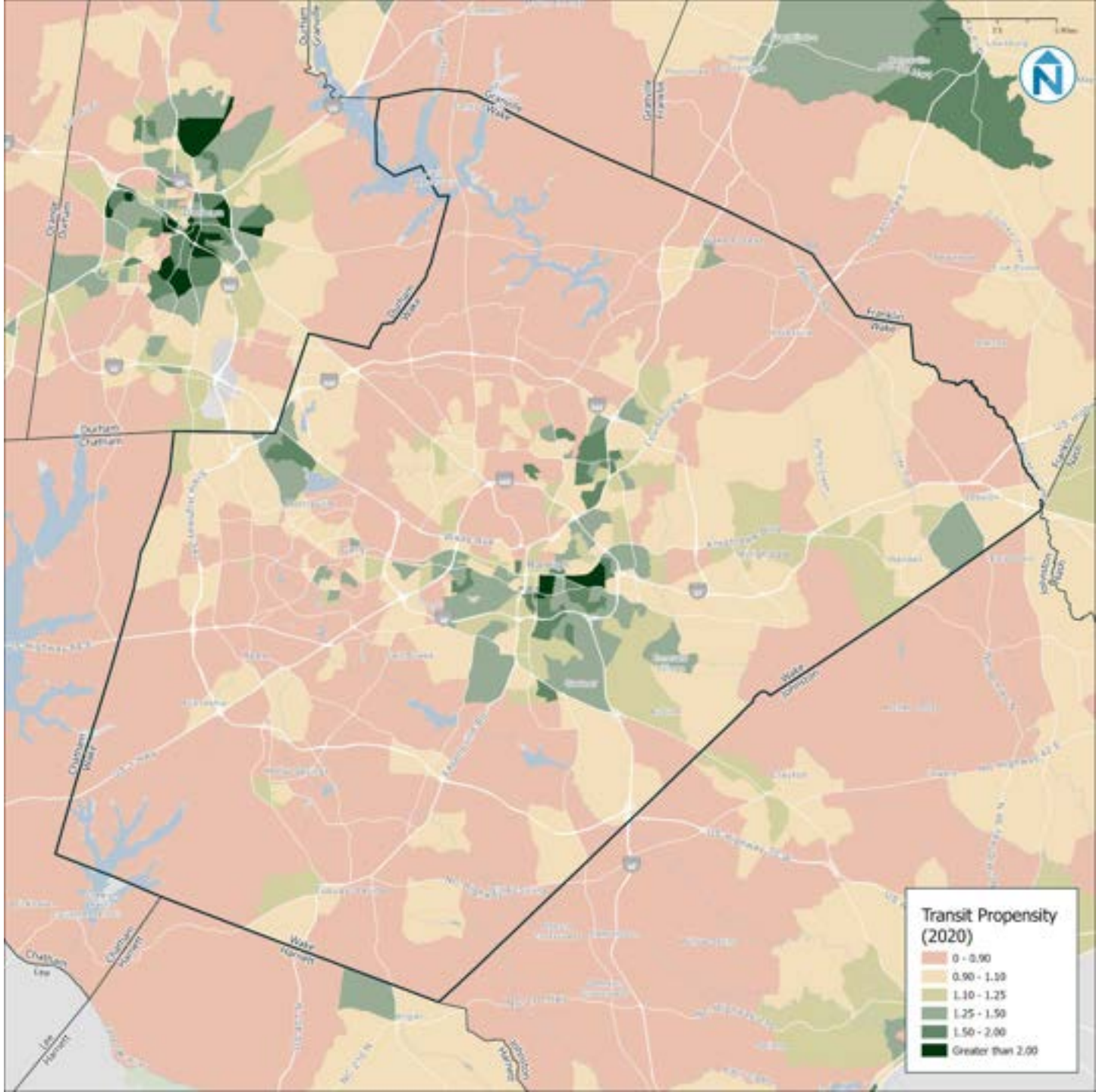
Demographic Factors	TPI
Income	
Less than $15k	6.3
$15k - $25k	3.4
$25k - $35k	1.3
$35k and above	0.3
Race/Ethnicity	
Black, Hispanic, Asian, Indigenous, and Multiracial	1.8
White (non-Hispanic)	0.4
Age (of population 18+)	
18 - 34	1.4
35 - 64	0.9
65 and older	0.5
Vehicle Access	
No vehicle access	12.1
Access to one vehicle	0.8
Access two or more vehicles	0.2

Source: ACS 2019 5-Year Estimates, Triangle Region OnBoard Survey (2019)

Transit Propensity Index (2020)

The Transit Propensity Index (TPI) was calculated for each TAZ in Wake County by measuring the relative demand for transit based on demographic factors, including the proportion of population with low-incomes, zero vehicle households and racial minorities. The calculation ensures currently and historically underserved communities who are likely to use transit at higher rates are prioritized in receiving service for more information about the TPI calculation).

The analysis (see map to the right) shows that the census blocks with the highest needs are in neighborhoods south and east of downtown Raleigh. There are also pockets of high need in North Raleigh, the area around North Carolina State University, Morrisville, and Garner. A smattering of census blocks also indicate higher need, including near Zebulon, Wendell and Knightdale.



Job Type Adjustment
Based on difference in demand generated from different job types

Job Type Adjustment

Different types of jobs generate different levels of transit demand. For examples, jobs in the service and retail sectors have customers who travel to shop and access service. Hospitals and schools, especially universities, also fall into this category because the activity at the site includes visitors, clients, and patients. These types of employment sites have people arriving and departing throughout more of their hours of operation, creating a more sustained need for transit service.

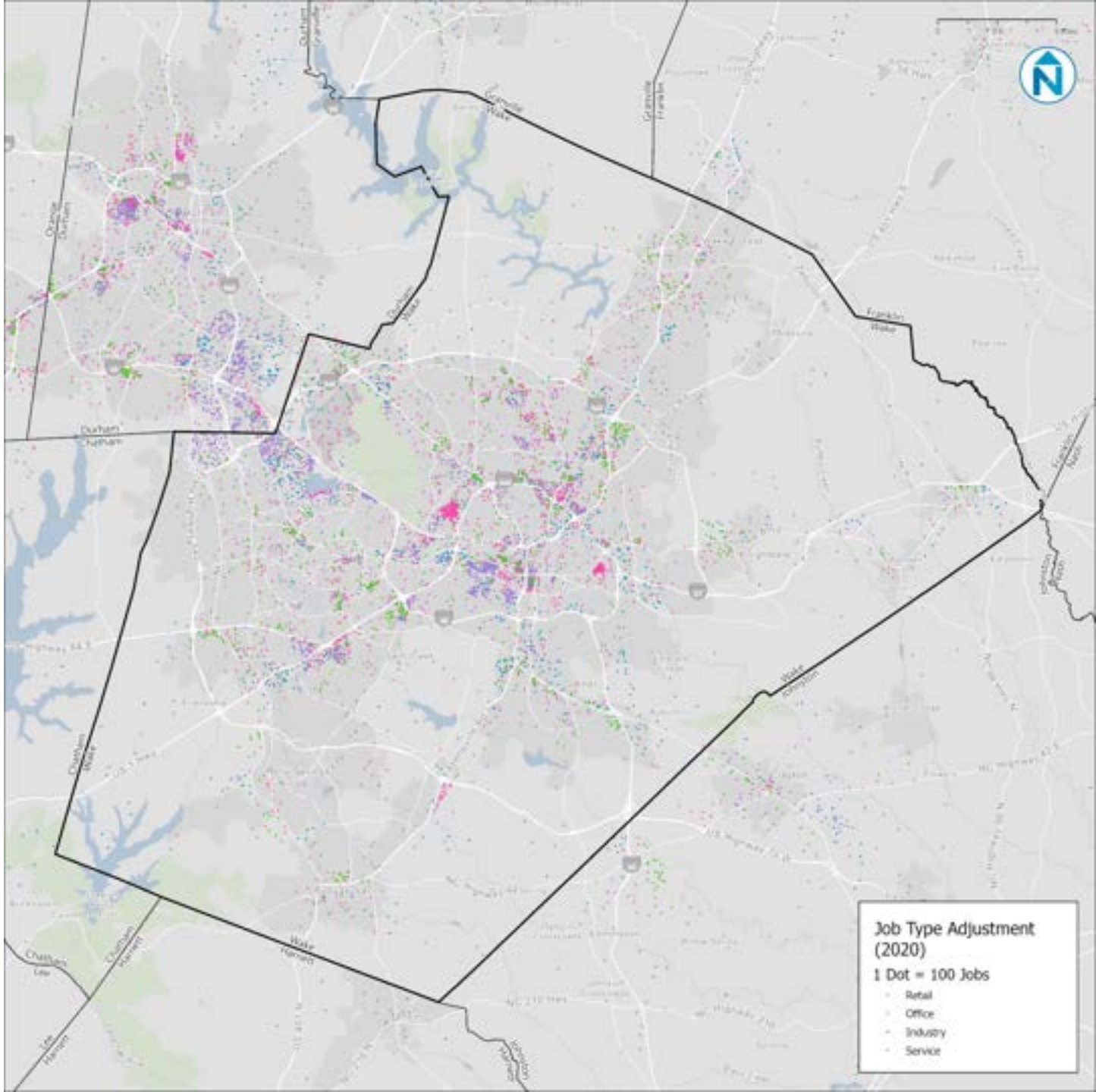
As a result, the potential for transit ridership at jobs serving clients, patients, students and customers is greater than purely office jobs. As part of understanding transit demand, therefore, the study team adjusted demand to place a greater weight on employment sites that attract workers, customers and clients (see table below).

In Wake County, this means that while job density at the Research Triangle Park is high, most jobs are in the office sector and do not generate sustained demand. Conversely, downtown Raleigh has many more service and retail jobs. Other areas with clusters of high demand include the area around Crabtree Valley Mall and UNC Rex Hospital, Triangle Town Center, North Carolina State University and the Wake Med Cary campus, at the intersection of Kildare Farm Road and Tryon Road.

Job Types and Transit Demand

Jobs by Demand Generated	Demand compared to avg job	Demand compared to residents per acre
Service & Retail	1.3	2.5
Office & Industrial	0.9	1.7

Source: Nelson\Nygaard National Research



Appendix B: Community Profile Data Sources

Key demographic statistics for each CFA community were calculated using the following data sources:

- US Census Bureau 2022 American Community Survey (ACS) 5-Year Estimates
- US Census Bureau 2021 Longitudinal Employer-Household Dynamics (LEHD) Origin-Destination Employment Statistics

Ongoing and upcoming development data for each CFA community were either provided directly by the community or collected using publicly available community-specific GIS data. The project team then assigned developments to standardized development type and status categories. Specific data sources for each community are described in the table on the right.

Community	Development Data Source
Apex	Development in Apex web map
Cary	Developments data
Fuquay-Varina	What's Coming to Fuquay-Varina? web map
Garner	Provided by community
Holly Springs	Provided by community
Knightdale	Provided by community
Morrisville	Provided by community
Raleigh	Development Plans data
Rolesville	Development Projects web map
Wake Forest	Active Developments web map
Wendell	Provided by community
Zebulon	Interactive Development web map