

# Opportunity Analysis

A descriptive evaluation  
of the Greater Triangle Commuter Rail Corridor

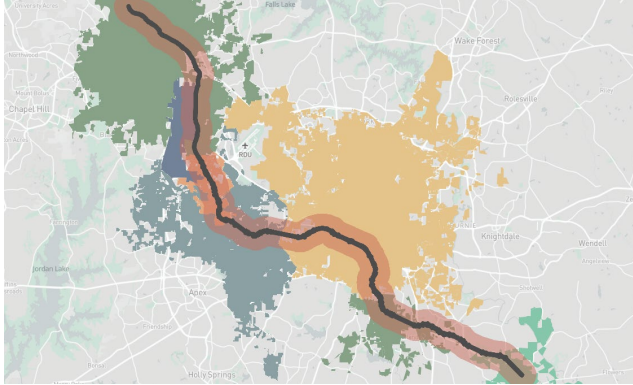


Triangle J Council of Governments

March 2022

# Two Types of Rail Corridor Technical Analysis: Service Analysis and Opportunity Analysis

## Service Analysis: What Will It Take To Build?



- Staff work by STV Consultant Team
- What can happen **within** the corridor
- Capital Investments: track, structures, maintenance facilities, vehicles, etc.
- Service Patterns – stops, schedule, etc.
- Capital and Operating Costs
- Ridership
- Operational & Environmental Considerations

## Opportunity Analysis: What **Might** We Get If We Build?



- Staff work by TJCOG and HR&A
- What can happen **along** the corridor
- Travel Markets (TJCOG)
- Land Use (TJCOG)
- Affordable Housing (TJCOG)
- Economic Impact (HR&A)

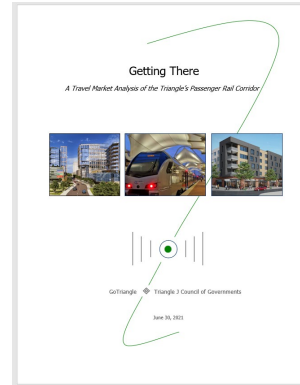
# Passenger Rail Corridor Analysis: Region-Corridor-Station Study Areas

## Affordable Housing Analysis



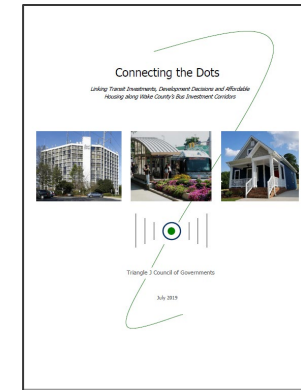
- Key Metrics
- Existing types and locations: legally-binding/affordability-restricted & naturally occurring affordable housing
- Planned additional affordable housing
- FTA CIG scoring calculation
- Opportunity sites & segments

## Travel Market Analysis



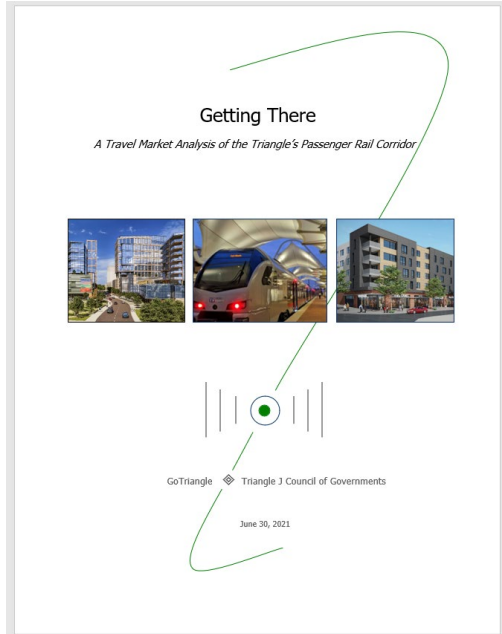
- Where workers live
- Where residents work
- Connecting Workers to Jobs
- Emphasized areas:
  - Travel *to* Key Hubs
  - Travel *from* Key Neighborhoods
    - Race/Ethnicity
    - Income
    - Vehicle availability
    - Affordable Housing

## Land Use Analysis



- Place types & development status
- Existing population & jobs
- Capacity for added jobs and residents
- Emphasized topics:
  - Anchor Institutions
  - HR&A Market Analysis Results
  - Community ROW setbacks
  - FTA Joint Development

# Passenger Rail Corridor Analysis: Why Travel Markets Matter



- **The importance of starting with a focus on travel markets**

- **Author of *Trains, Buses, People*:** "A good transit corridor is one with high density where multiple centers line up, perhaps resulting in a bottleneck....A good corridor must be reasonably straight: people do not want to move in "U"s or circles or zig-zags. It is critical when identifying corridors to think about land use, not existing transportation infrastructure. A congested freeway might be a sign that transit is needed, but that doesn't mean that freeway is a strong transit corridor. We need to think about where people are going, not what path they are currently taking."
- **Author of *Better Buses, Better Cities*:** "I don't think that buses are superior to trains. We need a lot of investment in trains. We need new subway extensions, commuter rail improvements and more light rail. We also need a lot more bus service to complement that. **We need a strong spine of high-capacity transit**, and then we have great arteries and bus lines running to many more neighborhoods than have good service today. It's all connected."





# Passenger Rail Corridor Analysis: Why Land Use Matters



- **Author of *Walkable City Rules*:** "Transportation systems beget land use patterns. Then land use patterns beget transportation systems. ***If they are not addressed together...mobility and quality of life suffer.***"
- **Author of *Human Transit*:** "***Density is still an overwhelming force for determining the possibilities and outcomes of transit,*** and we can't begin to make good transit decisions until we understand it."
- **Author of *Trains, Buses, People*:** "It is critical when identifying corridors to ***think about land use, not existing transportation infrastructure.*** A congested freeway might be a sign that transit is needed, but that doesn't mean that freeway is a strong transit corridor. We need to think about where people are going, not what path they are currently taking."
- **Author of *The Affordable City*:** "Multifamily housing is almost universally more affordable than single-family...***Any policy that seeks to improve affordability in urban areas will require a much greater emphasis on multifamily housing,*** and large-scale zoning changes will be necessary."

- **The importance of considering land use and transit networks together**



# Passenger Rail Corridor Analysis: Why Equity Matters



- **Author of *Trains, Buses, People*:** “Most US and Canadian transit has been designed by non-disabled white men in a way that best serves non-disabled white men....Women, for example, have different travel patterns than men: they travel more outside peak hours, are more likely to “chain” trips together, and are more likely to be traveling with groceries or strollers.”

## Transit Propensity for work trips by demographic factor

(each number is how likely a person with the indicated characteristic would use transit for their work trip compared to the average worker)

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

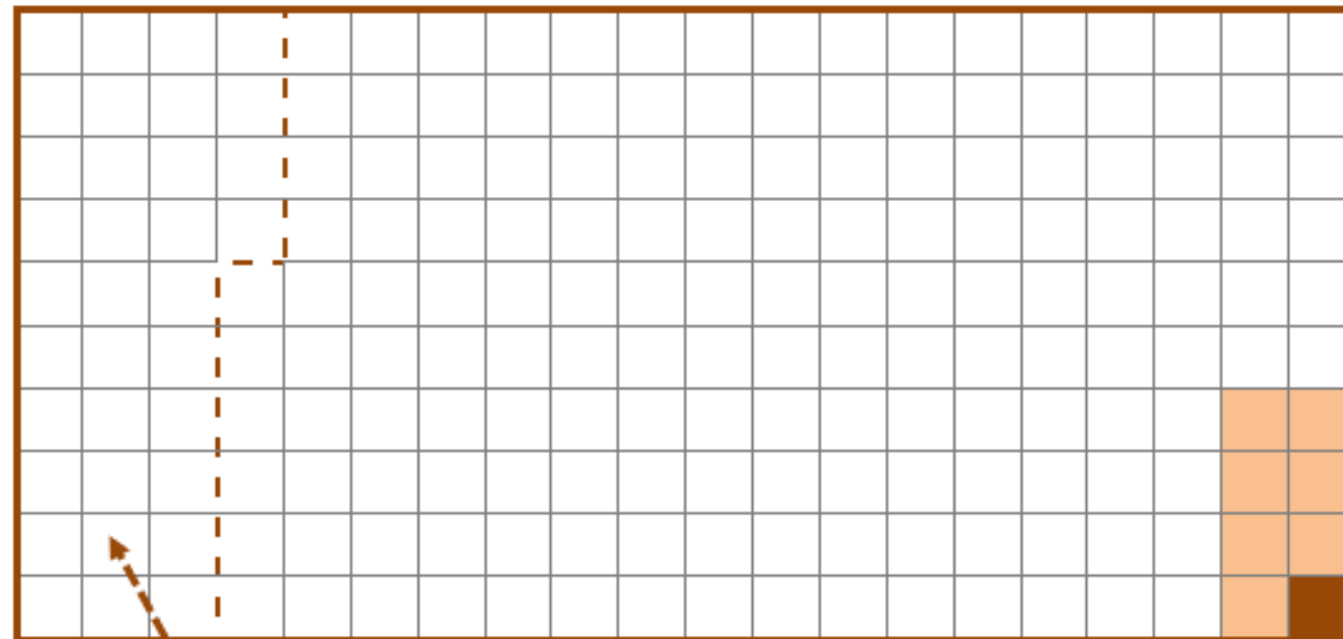
- **The importance of considering equity for effective transit investments**



# Opportunity Analysis Framework: Region-Corridor-Station Study Areas

- ❖ The analysis focuses on three areas:
  - ❑ A four-county region through which the rail corridor passes (Johnston, Wake, Durham, Orange)
  - ❑ The “rail corridor:” an area within one-mile of the railroad tracks for the planned initial investment
  - ❑ “Station study areas:” ½-mile radius circles at 15 locations from the Phase I Study\*

Relative Size of The 4-County Region, The 2-Mile Wide Rail Corridor, and the 15 Station Study Areas



← The large grid represents the combined size of Wake, Durham, Johnston and Orange Counties.

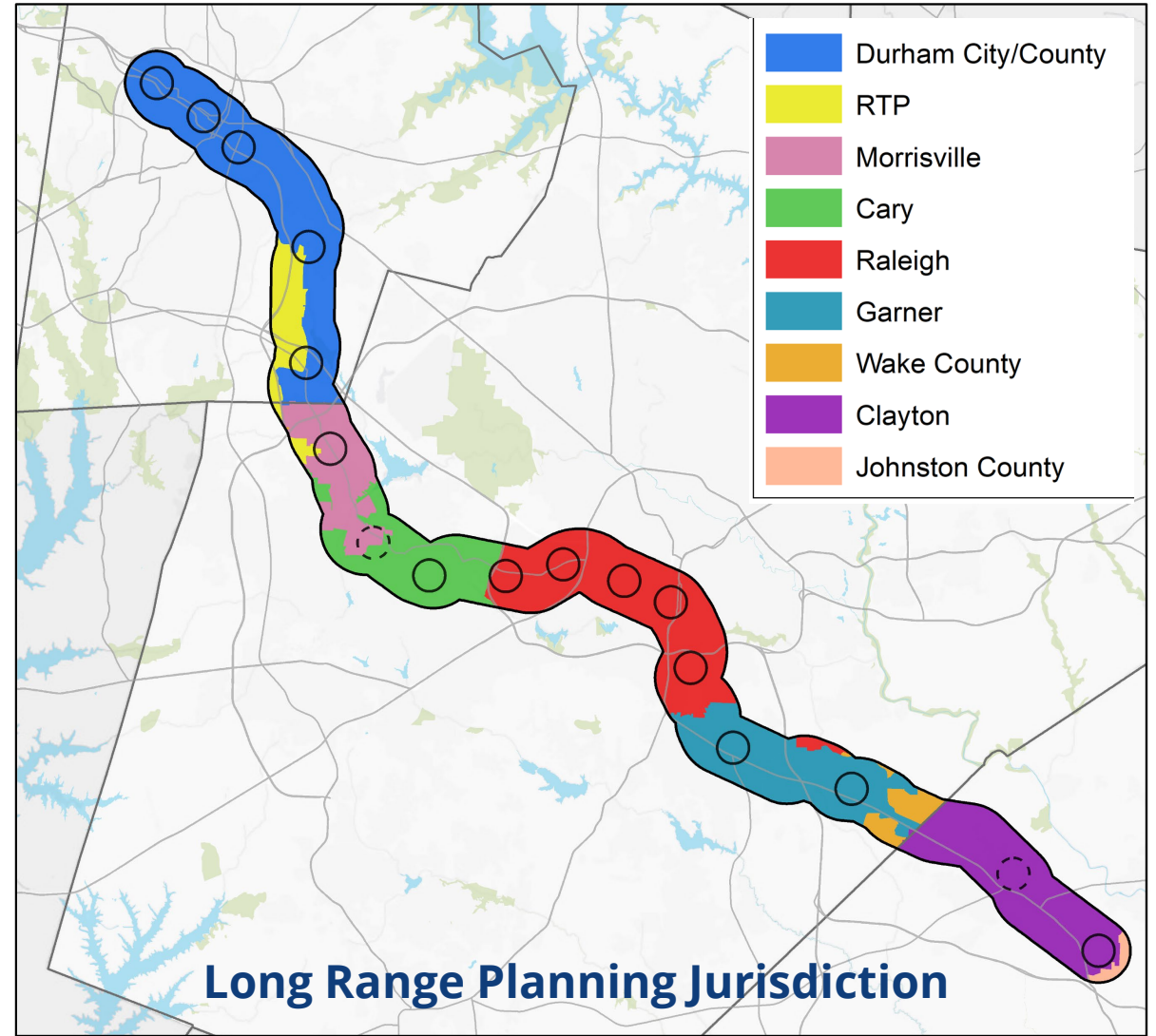
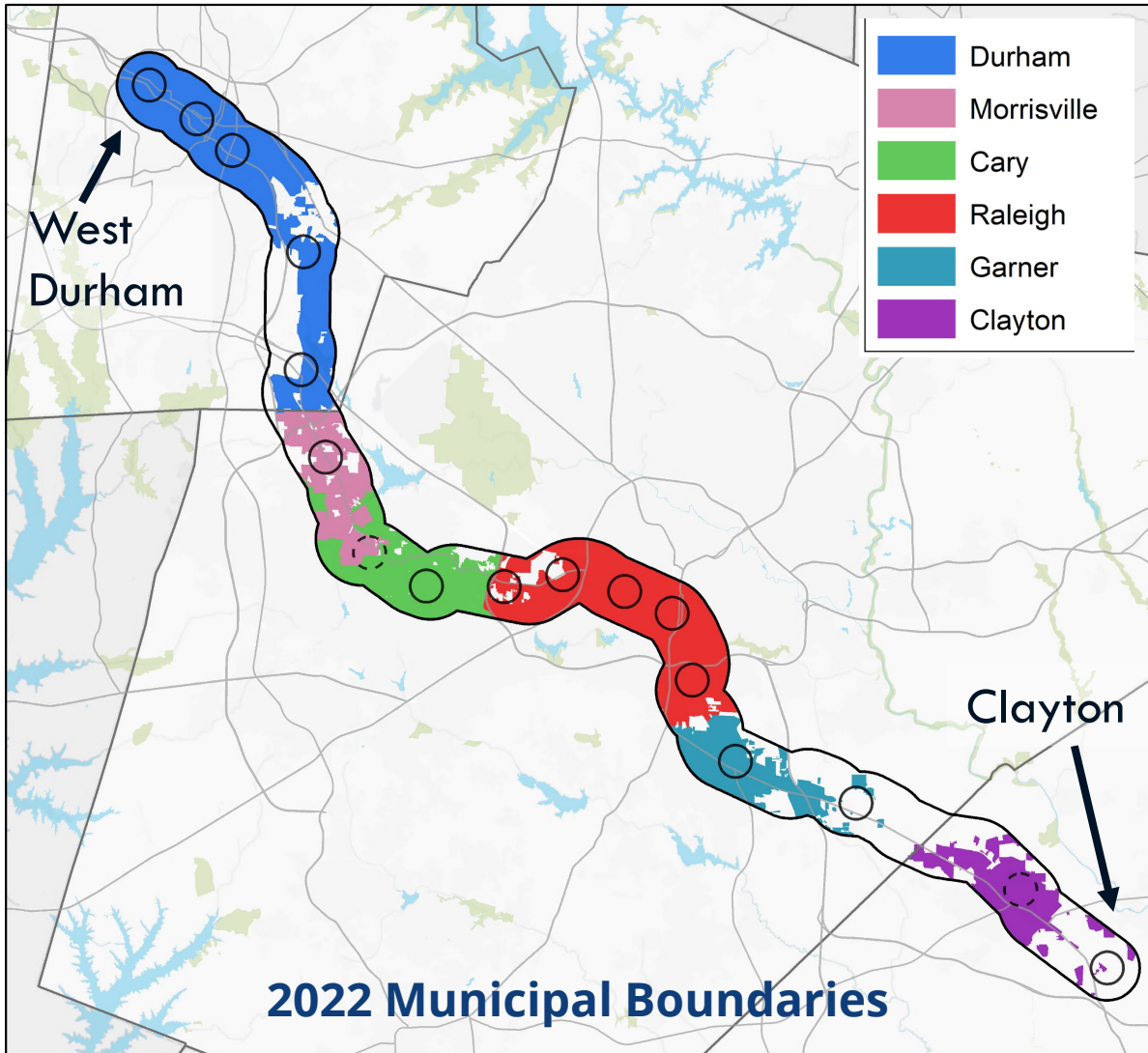
← These 8 boxes represent the size of the rail corridor – 1 mile on either side of the tracks.

← This box represents the combined size of the 15 station study areas: one-mile wide circles centered on a station platform.

← Portion of region in Orange County, which is not part of the initial investment phase

- \* In addition to the 15 initial station study areas, this analysis also looked at 2 “infill” sites based on potential:
- downtown Clayton
  - Morrisville Parkway

# Passenger Rail Corridor Analysis: Land Use & Affordable Housing – Who’s in Charge?

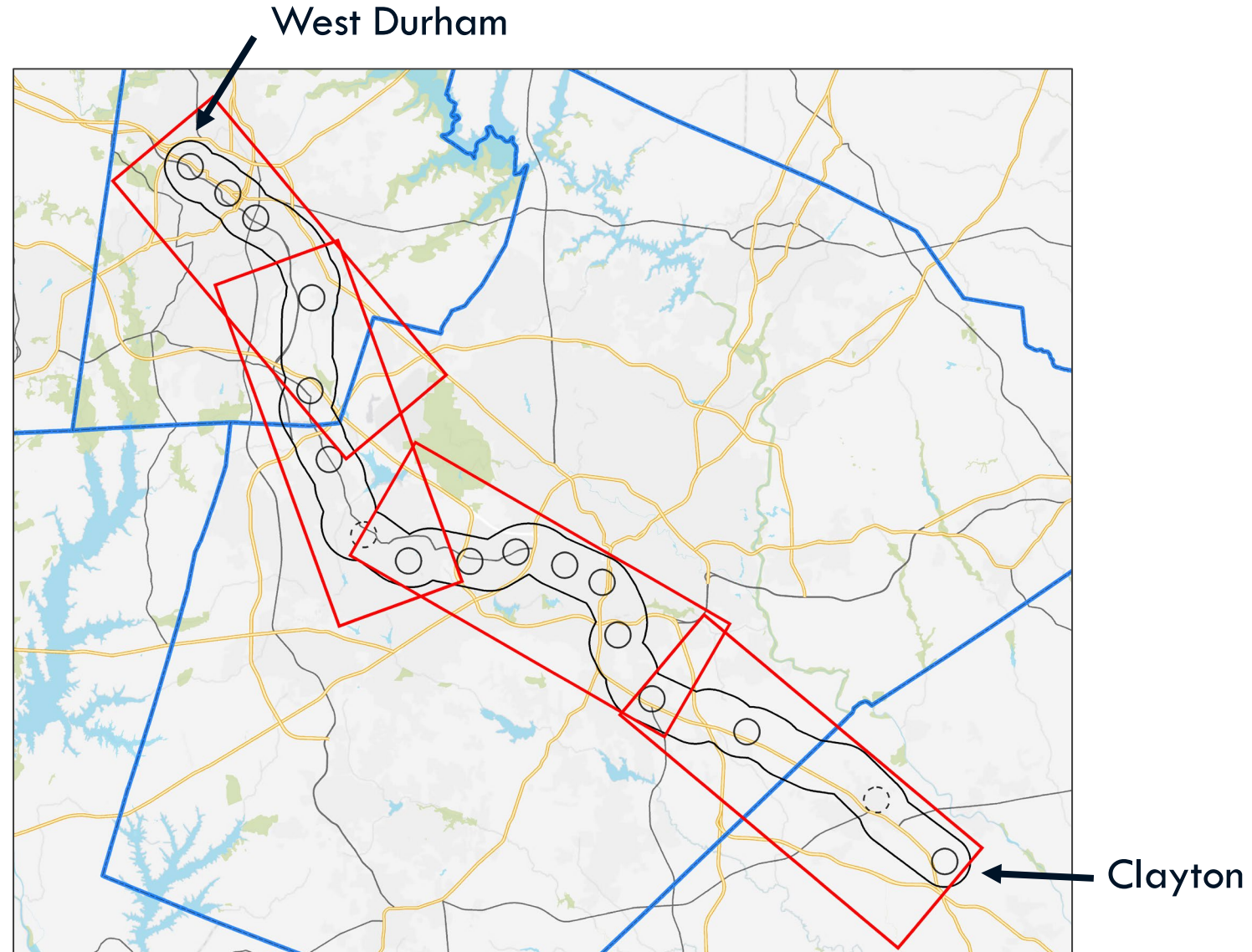




# Passenger Rail Corridor Analysis

- **Corridor Segments**

- To show more detail, the reports divide the corridor into 4 overlapping segments, shown by the red boxes on the map.
- All of the travel market, land use and affordable housing data in the reports is displayed by corridor segment
- “Zooming in” on much of the data will be possible through on-line mapping



# Passenger Rail Corridor Analysis: Key Concepts

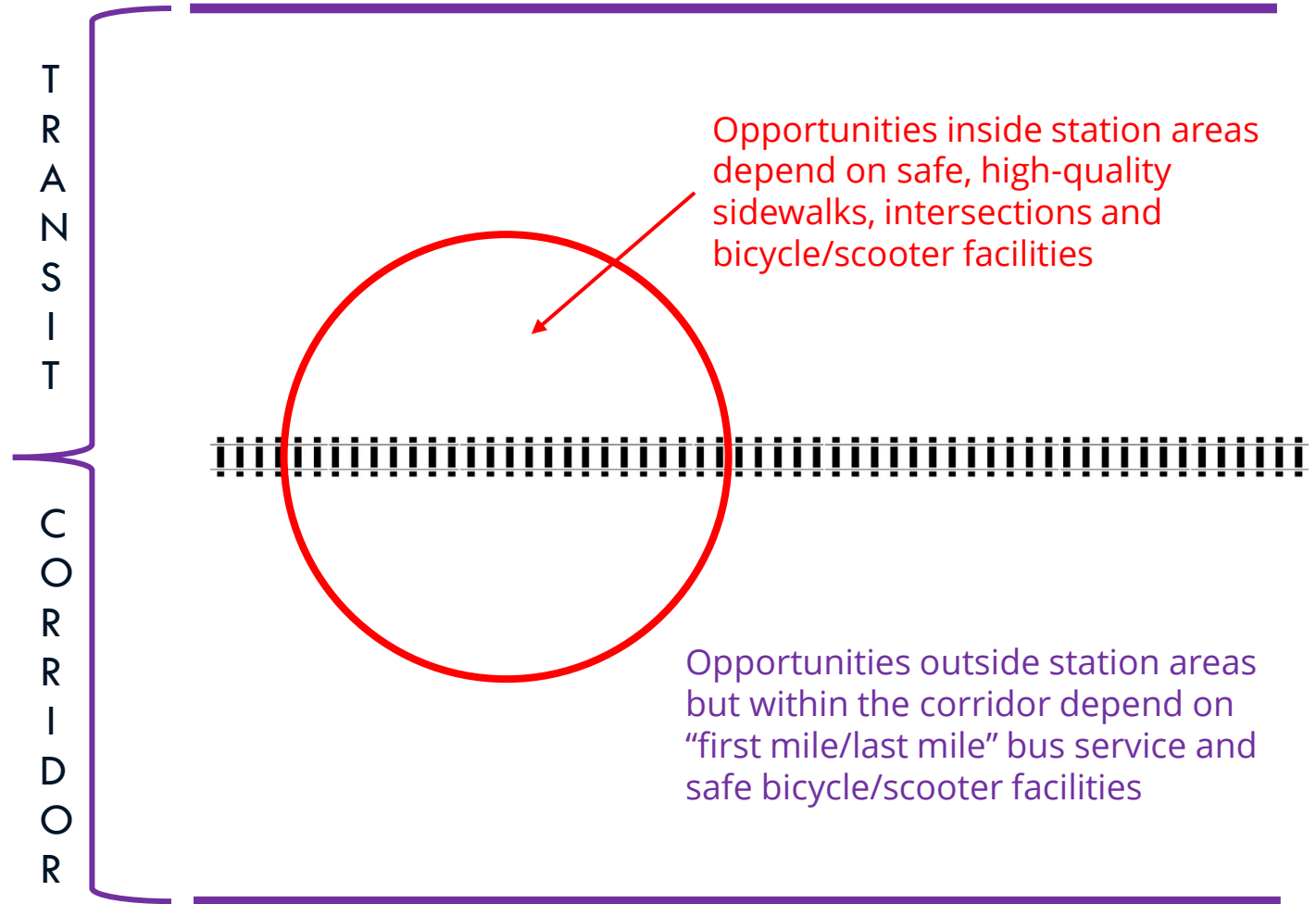
- **Opportunity**

- Opportunity is NOT benefit
- Opportunity + actions can lead to benefits
- Rail corridor opportunities and the actions that can transform them into benefits will differ in different station areas and along different segments of the corridor

- **Descriptive Analysis**

- seeks to understand evidence, not recommend decisions
- Most useful if paired with engagement

Opportunities, no matter the location, depend on the transit service being able to serve a user's travel needs.



Opportunities outside the corridor depend on park and ride access and intersecting bus lines. These are part of the **Service Analysis**.

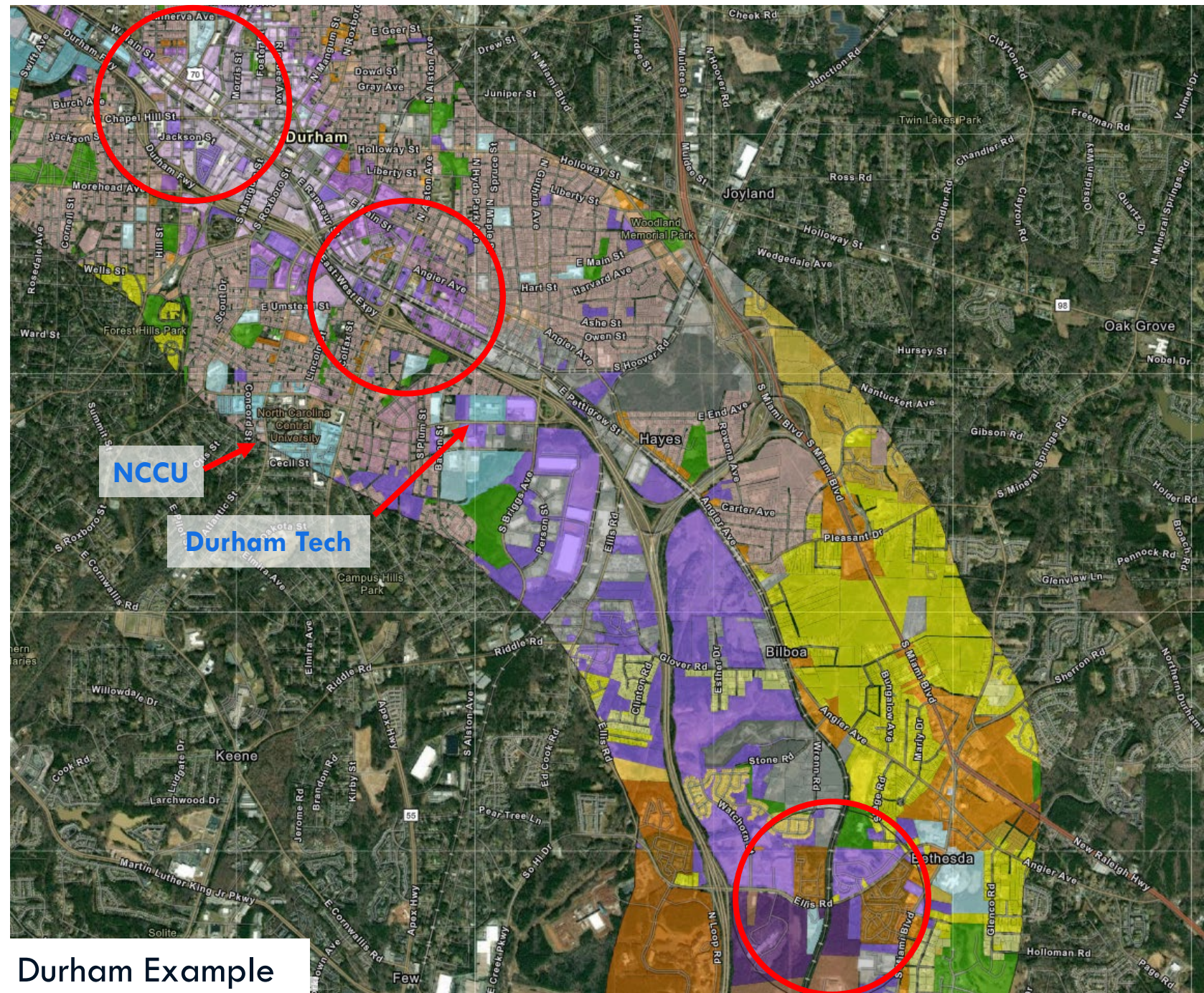




# Passenger Rail Corridor Analysis: Land Use

- **Station Areas (red circles)**
- **Corridor (highlighted area)**

As a couple of important examples, both NCCU and Durham Tech are within the corridor, but not within a “rule of thumb” walking distance of the East Durham Station, so transit, shuttle, and active transportation connections will influence access



Durham Example



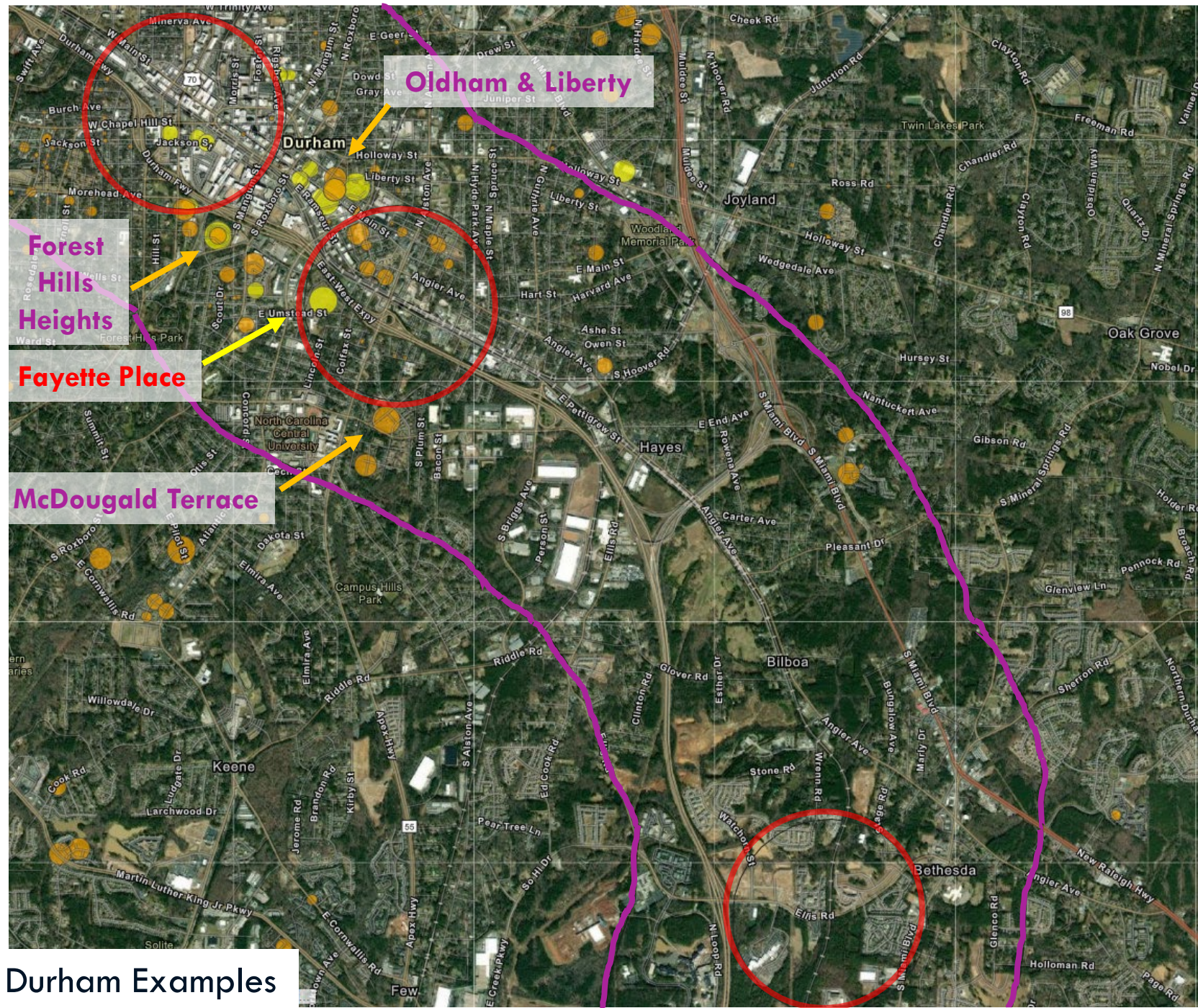
# Passenger Rail Corridor Analysis: "LBAR" Housing

- **Station Areas (red circles)**
- **Corridor (purple lines)**

Similarly, many existing and planned affordable housing units are within station areas, but many others are in the corridor, but more than a short walk away.

## Legally Binding, Affordability-Restricted (LBAR) Housing

- Existing "LBAR" units
- Planned "LBAR" units



Durham Examples



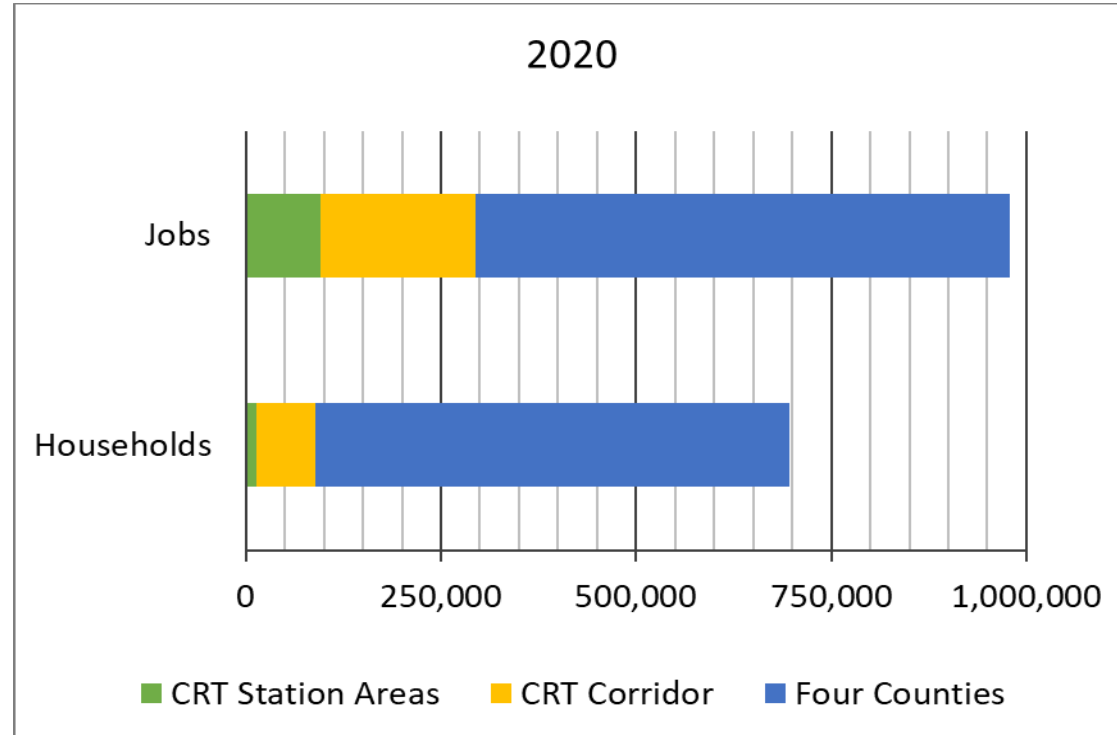
# Passenger Rail Corridor Analysis: Land Use Analysis



## • Key Metrics

### 2020 Households and Jobs

- 2020 Census and Metro Transport Plan
- Region: 4 counties
- Corridor: 2-mile wide, Durham-Clayton
- 17 Stations: ½ mile radius (includes “infill” stations)



*Note: yellow bars are the CRT corridor outside of the station areas and blue bars are the 4-county region outside of the rail corridor*

2020	Households	Jobs
Station Areas	14,000	95,000
Rest of Corridor	75,000	200,000
Total Corridor	89,000	295,000



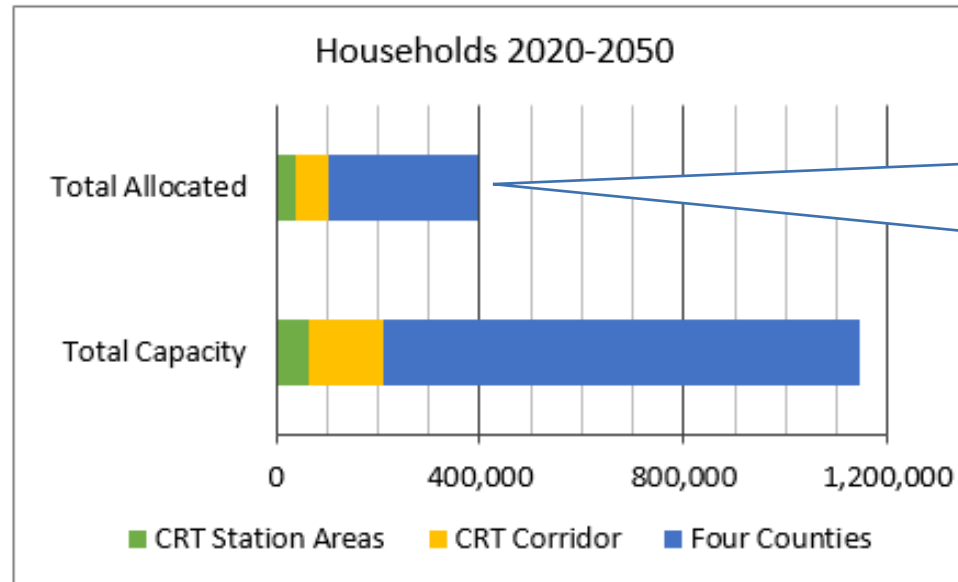
# Passenger Rail Corridor Analysis: Land Use Analysis



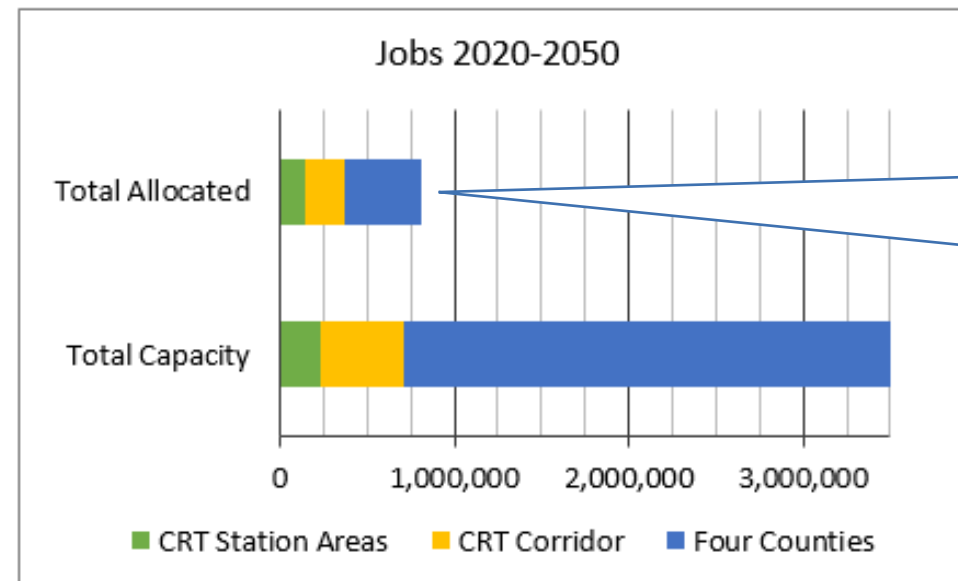
## • Key Metrics

### Future Growth Capacity & Allocation

- *Connect2050* “Opportunity Places” Land Use
- Region: 4 counties
- Corridor: 2-mile wide, Durham -Clayton
- 17 Stations: ½ mile radius



+ 38,000 in station areas  
+ 67,000 in corridor outside of station areas



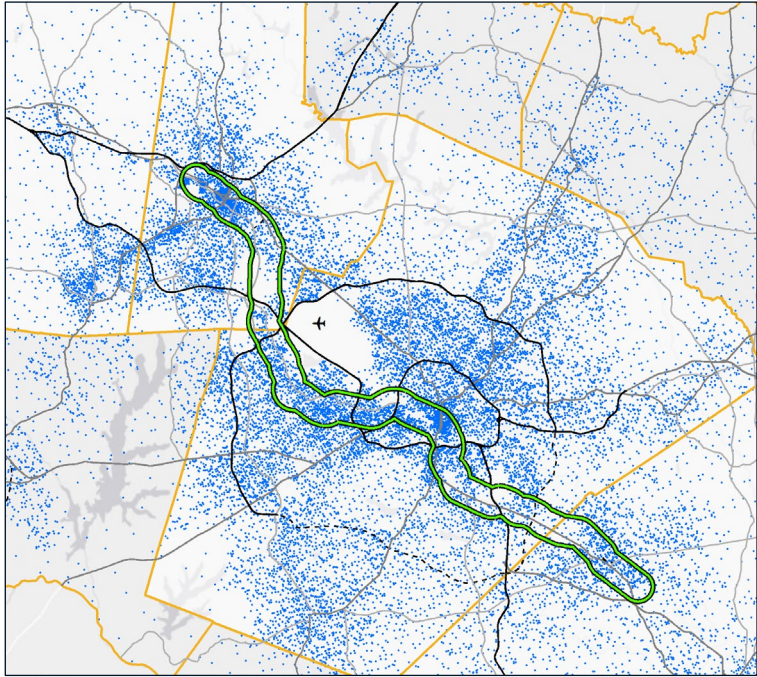
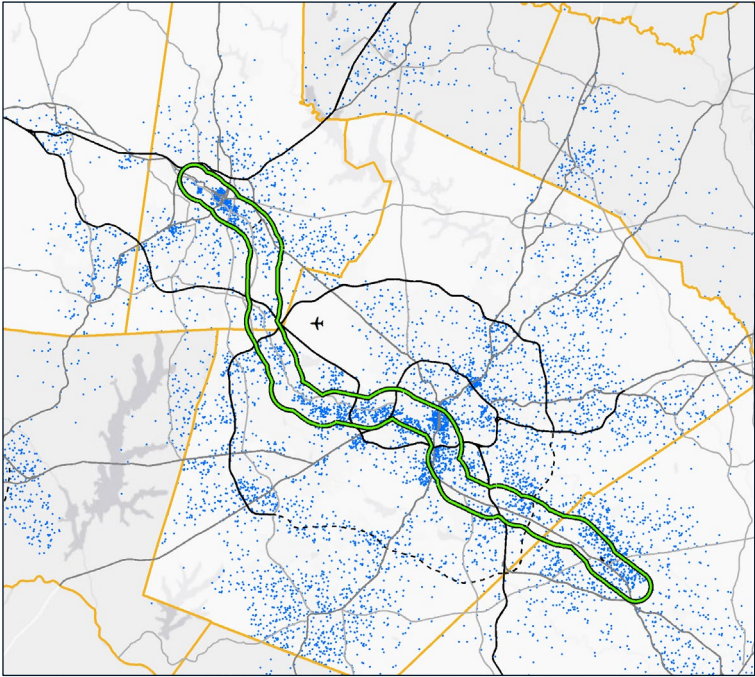
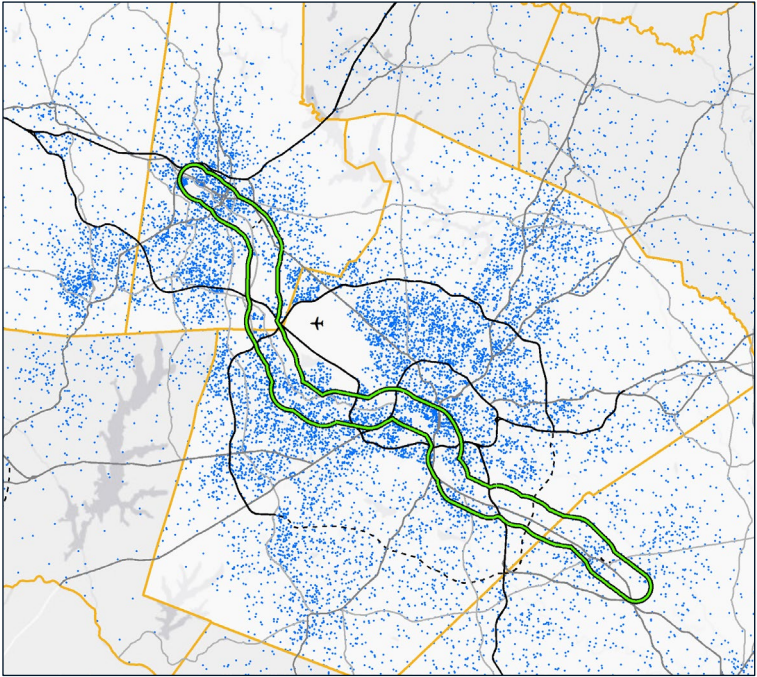
+ 150,000 in station areas  
+ 223,000 in corridor outside of station areas

# Passenger Rail Corridor Analysis: Land Use Analysis – Households

2020

2020-2050  
growth

2050



● 1 Dot = 50 Households

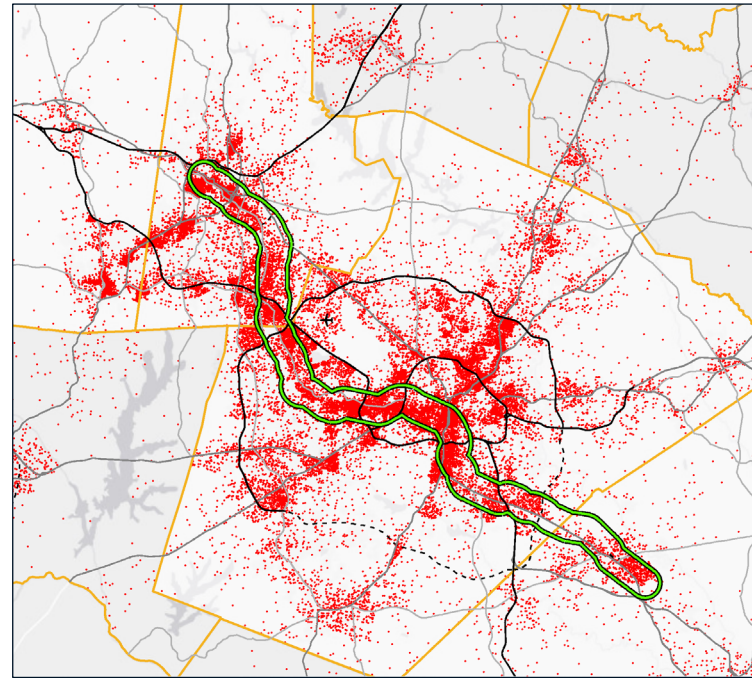
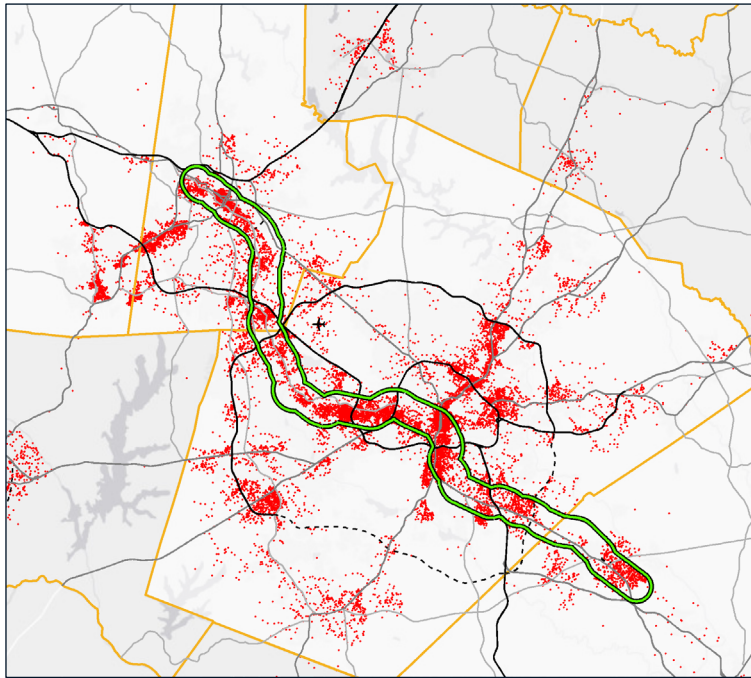
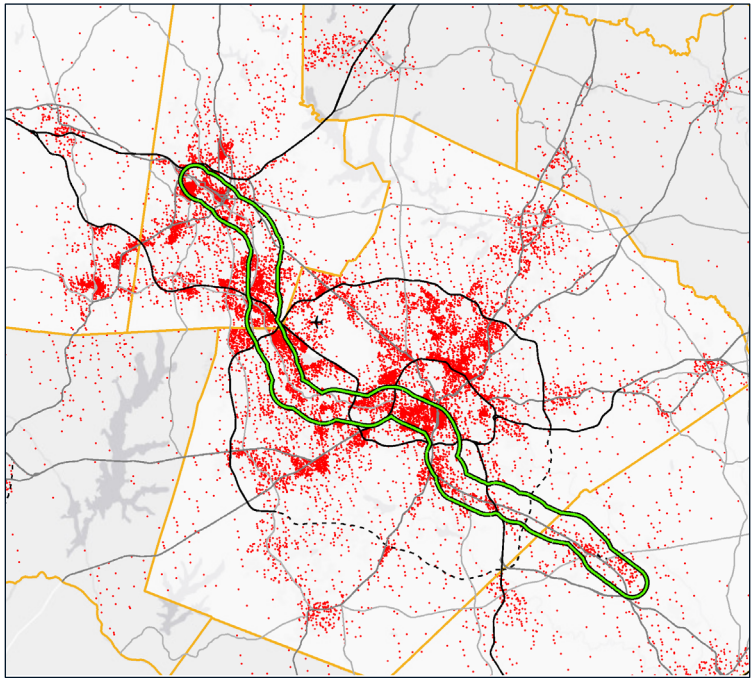


# Passenger Rail Corridor Analysis: Land Use Analysis – Jobs

2020

2020-2050  
growth

2050



● 1 Dot = 50 Jobs

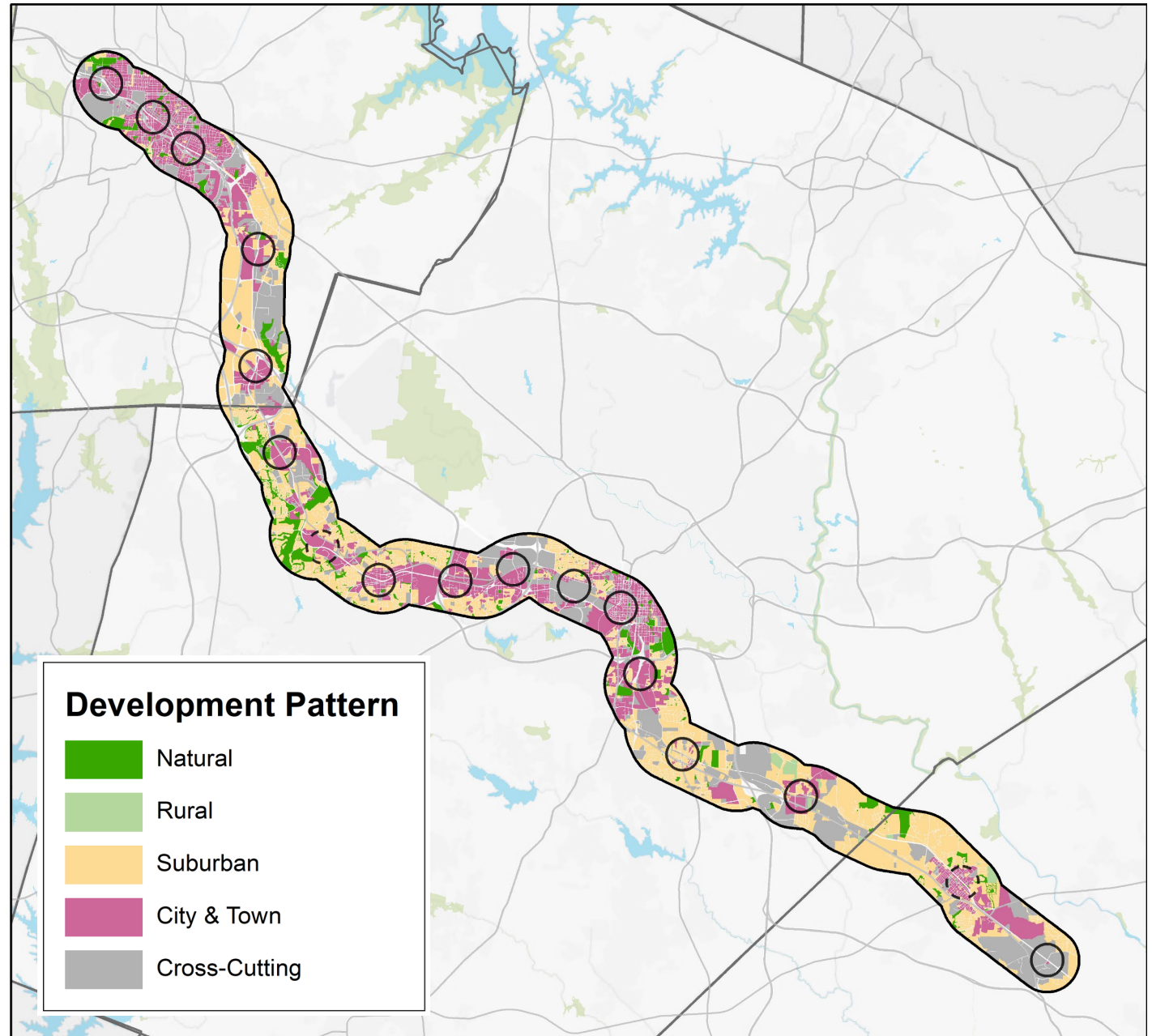
# Passenger Rail Corridor Analysis

## • Corridor Development Pattern

- The more “urban” a transit corridor, especially in station areas, the more likely it is to generate high ridership

Acres in Corridor*	Developed	Undeveloped or Not Fully Developed	Total
Natural	--	--	<b>3,806</b>
Rural	163	307	<b>469</b>
Suburban	13,670	7,724	<b>21,395</b>
City & Town	4,661	<b>9,676</b>	<b>14,338</b>
Cross-Cutting	7,347	5,356	<b>12,703</b>
<b>Total</b>	<b>29,561</b>	<b>23,150</b>	<b>52,711</b>

\* Excluding rights-of-way

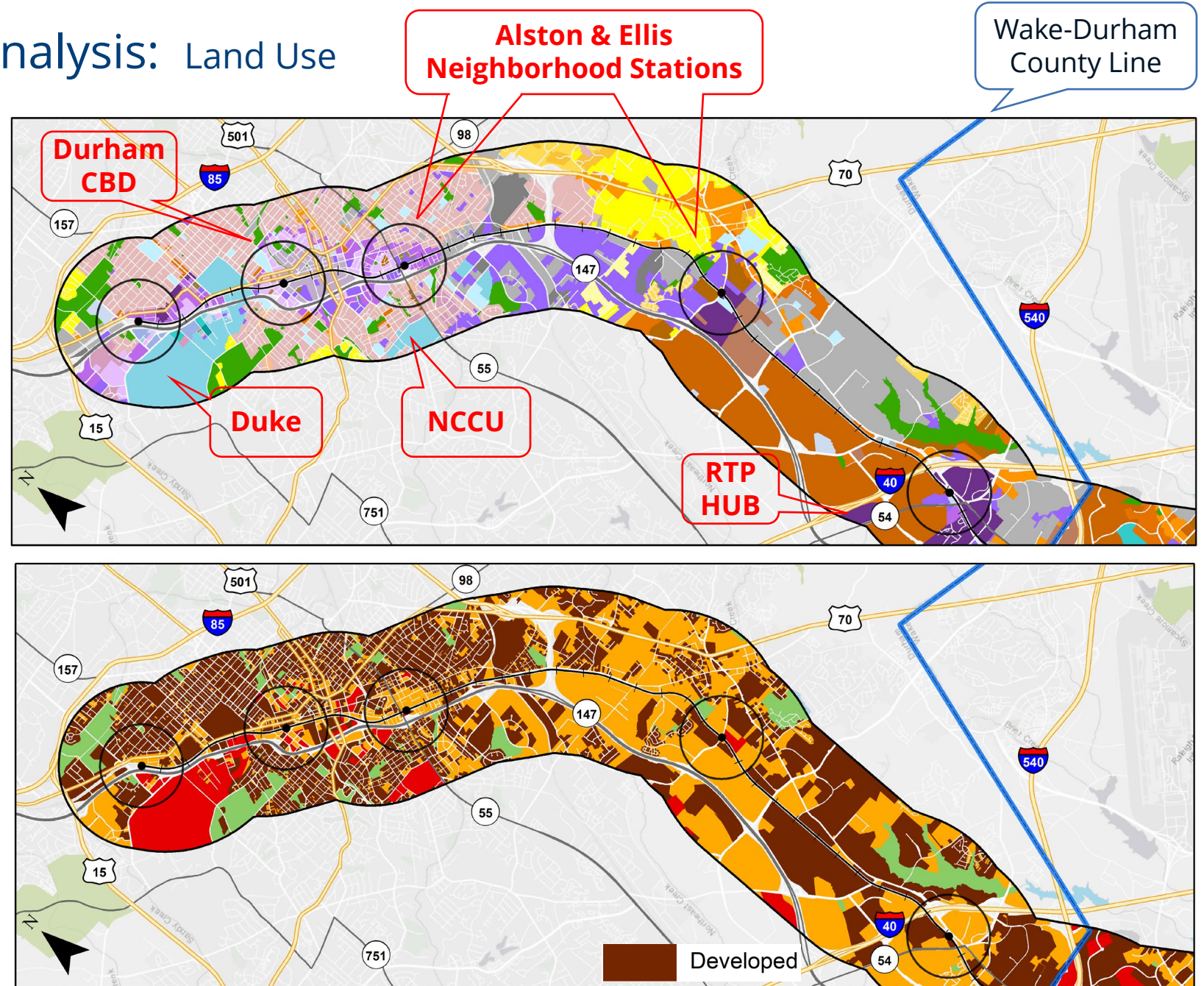




# Passenger Rail Corridor Analysis: Land Use

## • West Durham-RTP

- Centers: 2 universities, Durham CBD, RTP Hub
- Key neighborhoods near stations:
  - Alston (established)
  - Ellis (developing)
- Opportunities between East End Connector and I-40
- NCCU and Durham Tech within “first mile-last mile”
- Key transit connectors:
  - Durham Transit Center
  - Relocated Regional Transit Center @ RTP station





# Passenger Rail Corridor Analysis: Housing Analysis

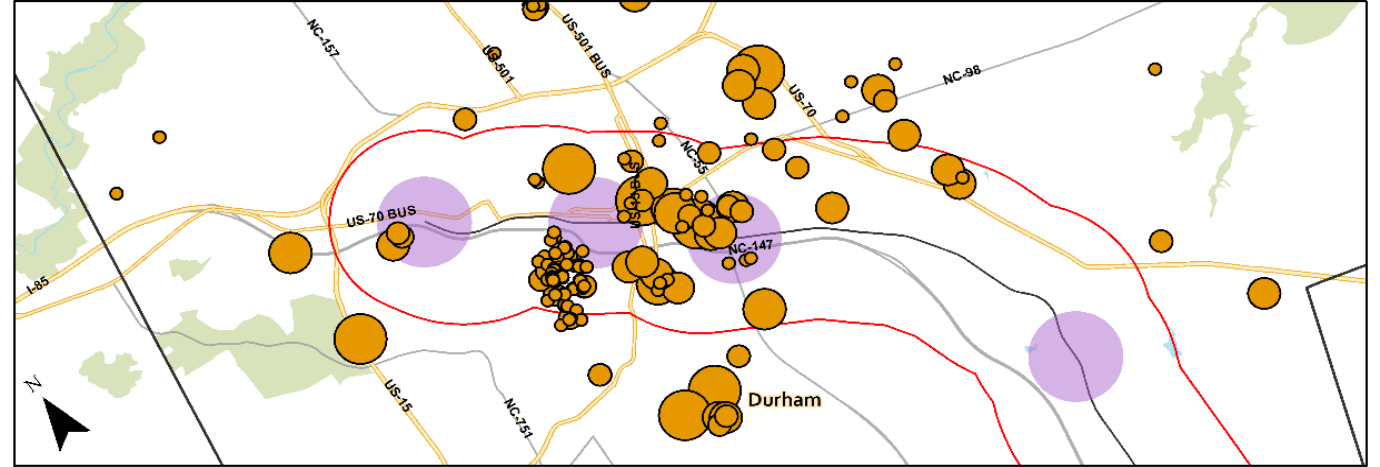
## Existing types and locations:

- legally-binding/affordable-restricted (LBAR)
- naturally occurring affordable housing (NOAH)

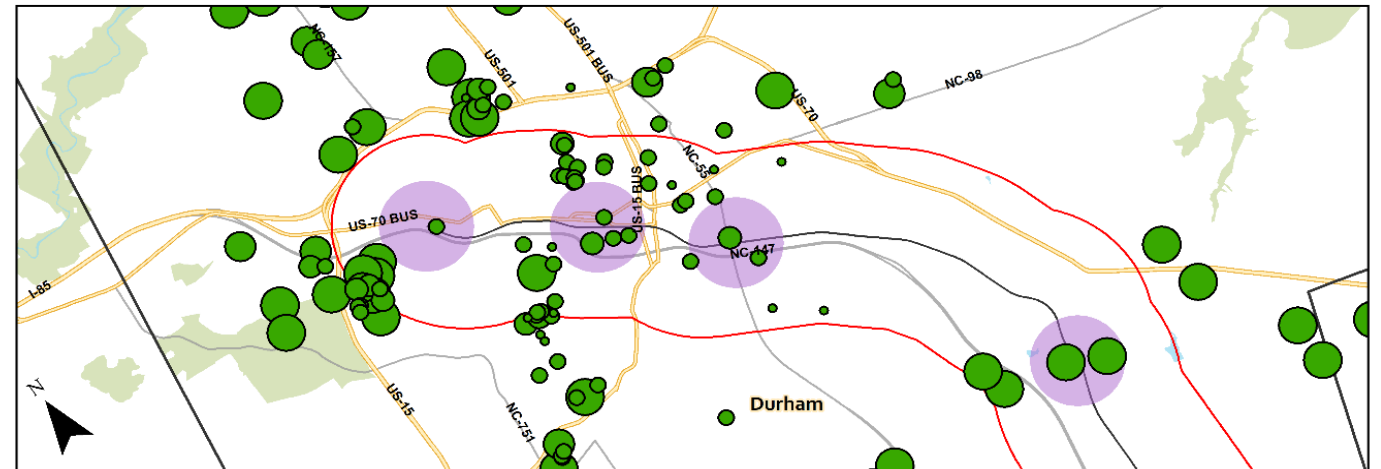
County	LBAR Units CRT Corridor	% of County LBAR in Corridor
Durham	2,758	37% (of 7,425)
Johnston	202	8% (of 2,446)
Wake	3,321	25% (of 13,211)
<b>TOTAL</b>	<b>6,177</b>	<b>27% (of 23,082)</b>

County	NOAH Units CRT Corridor	Total NOAH Units	% of County NOAH in Corridor
Durham	5,648	30,607	19%
Johnston	976	2,188	45%
Wake	15,420	88,591	17%
<b>TOTAL</b>	<b>22,044</b>	<b>121,386</b>	<b>18%</b>

Stations (left-to-right): W. Durham, Downtown Durham, East Durham, Ellis Rd



Stations (left-to-right): W. Durham, Downtown Durham, East Durham, Ellis Rd

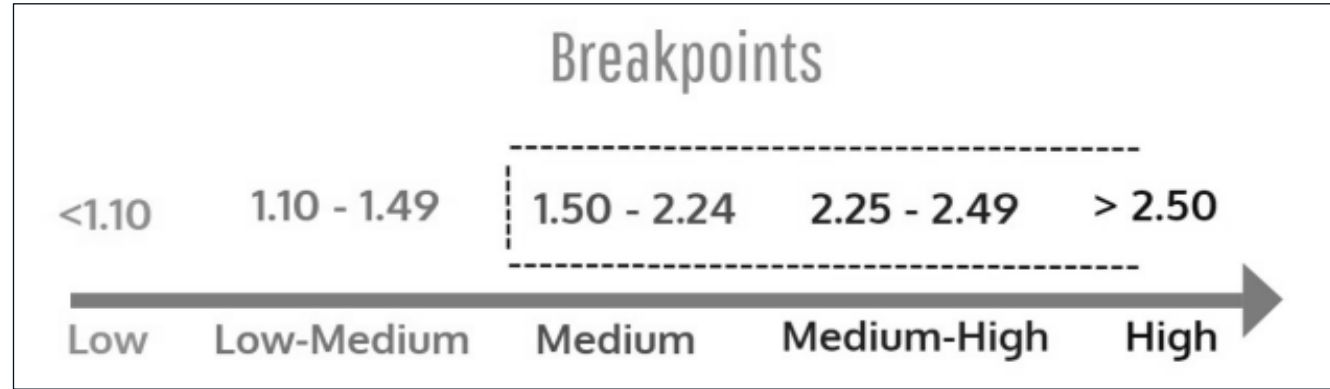


— Rail corridor boundary  
 ● ½ mile radius station study area

● LBAR housing units      ● NOAH Multifamily units

# Passenger Rail Corridor Analysis: Housing Analysis

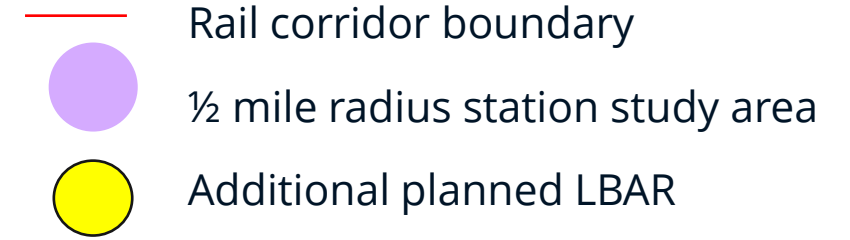
- **FTA scoring calculation (existing units)**
- 2.29 ratio of LBAR in half-mile radius station study areas compared to counties overall.



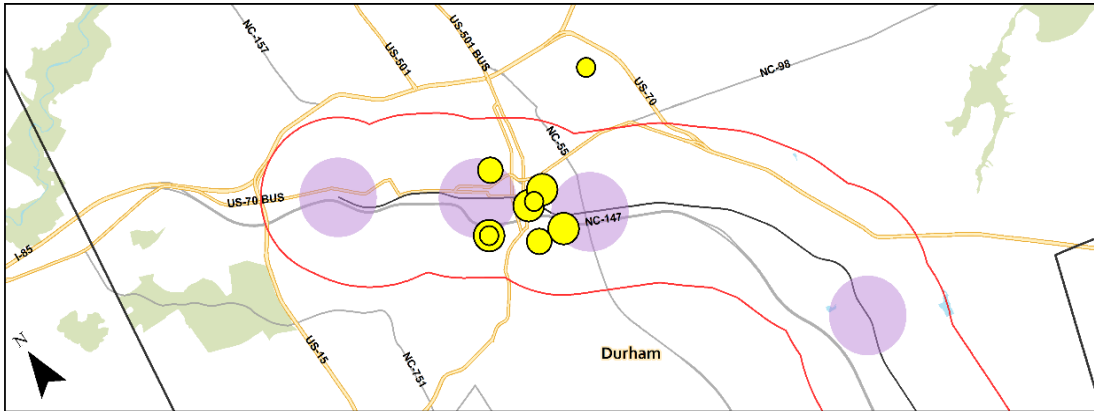
Proportion of LBAR to Total Units in Station Areas				Proportion of LBAR to Total Units in County Overall			
County	LBAR Units within Station Study Areas	Units within Station Study Areas	% LBAR/ Units in Station Areas	Total LBAR Units within County	Total Units within County	% LBAR/Total Units in County	Proportion LBAR in Station Areas/County Overall
Durham	801	8,710	9.20%	7,425	141,796	5.24%	1.76
Johnston	104	1,140	9.12%	2,446	84,151	2.91%	3.14
Wake	743	11,232	6.62%	13,211	448,931	2.94%	2.25
<b>TOTAL</b>	<b>1,648</b>	<b>21,082</b>	<b>7.82%</b>	<b>23,082</b>	<b>674,878</b>	<b>3.42%</b>	<b>2.29</b>

# Passenger Rail Corridor Analysis: Housing Analysis

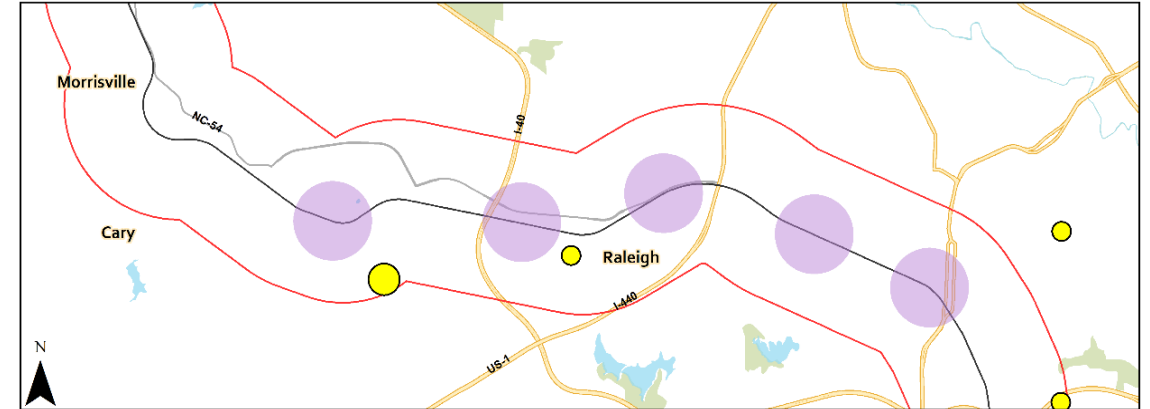
- **Planned additional LBAR** including LIHTC and Durham Housing Authority Downtown redevelopment



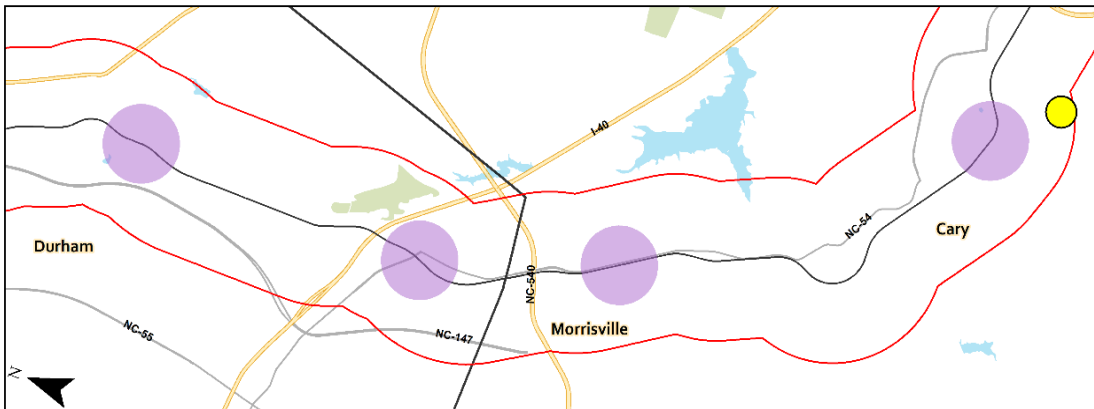
Stations (left-to-right): W. Durham, Downtown Durham, East Durham, Ellis Rd



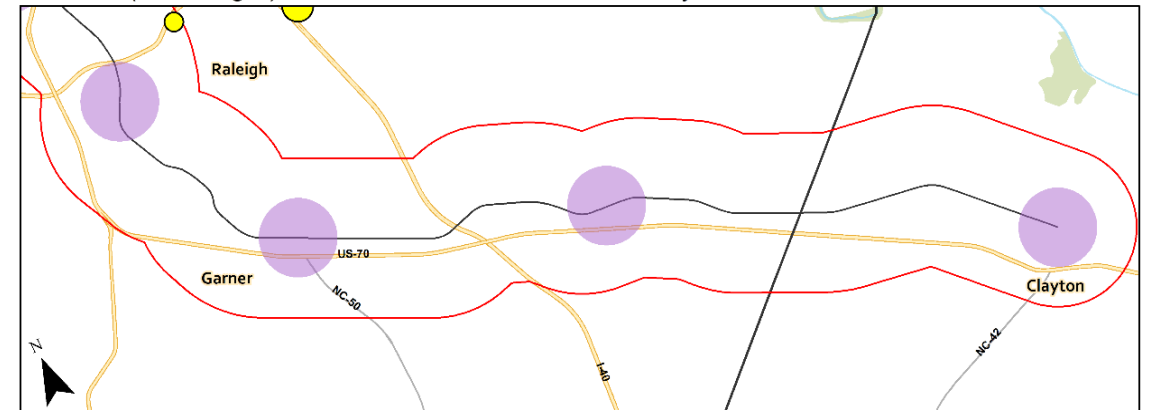
Stations (left-to-right): Downtown Cary, Corp Center Dr, Blue Ridge Rd, NCSU, Downtown Raleigh



Stations (left-to-right): Ellis Rd, RTP, Morrisville, Downtown Cary



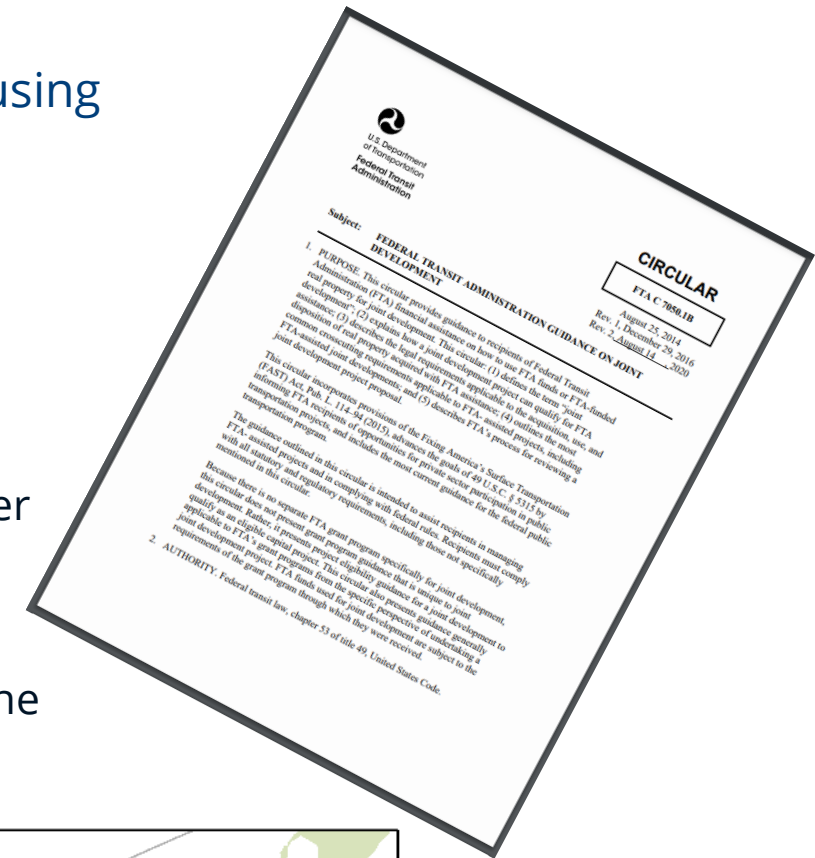
Stations (left-to-right): Hammond, Garner, Auburn, Clayton



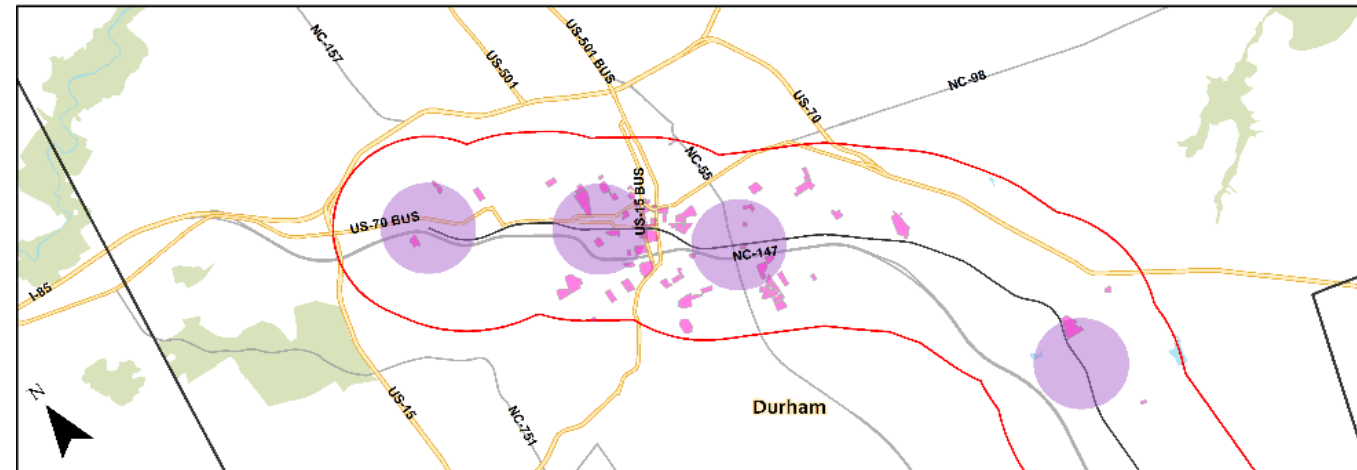
# Passenger Rail Corridor Analysis: Land Use & Affordable Housing

## • Equitable TOD

- There are significant public land assets along the corridor, including in or close to many station study areas
- The Federal Transit Administration (FTA) Joint Development program can be used to support use of public land at stations for affordable housing or other community services without transit project costs associated with joint development counting against a project's cost effectiveness score.
- Legally-binding, affordability-restricted housing in a station area improves the competitiveness of transit projects in the consideration of federal funding.



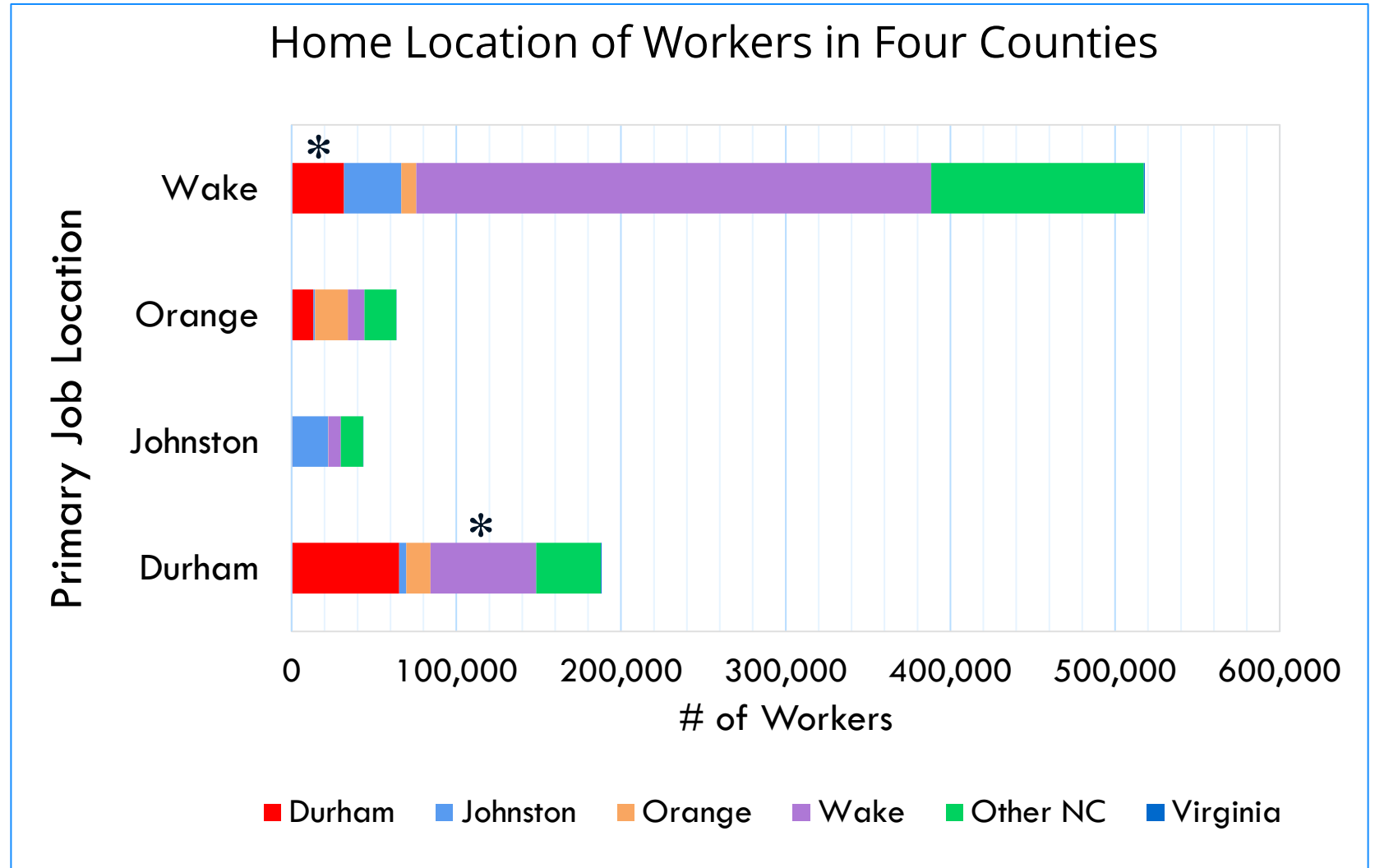
- Rail corridor boundary
- ½ mile radius station study area
- Potential opportunity sites



# Passenger Rail Corridor Analysis: Travel Analysis – primary jobs

## • County-to-County Flows

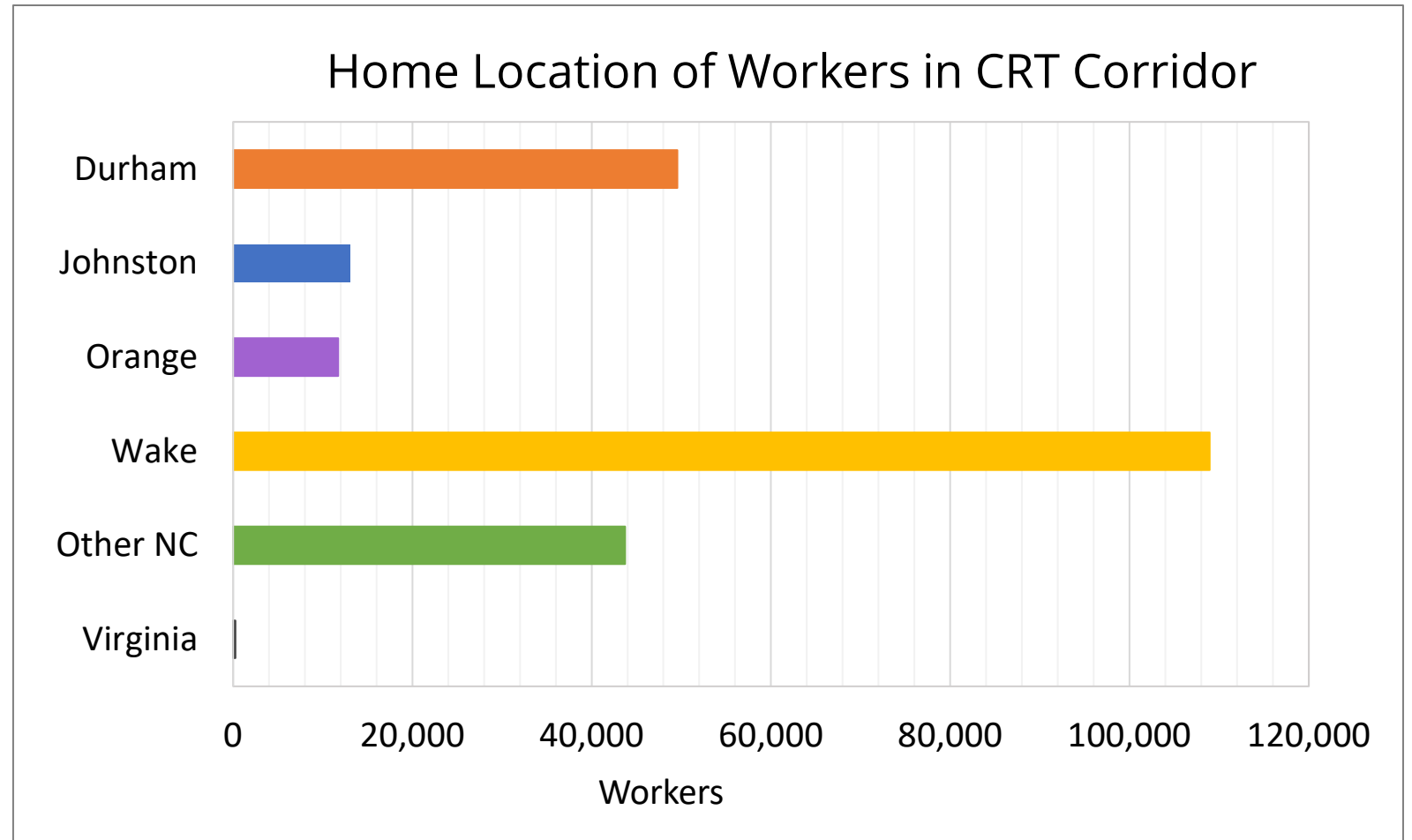
- 45% of workers who live in Wake, Durham, Orange & Johnston Counties have employers in another county
- The Wake-Durham flows are prominent: 96,000 workers have employers in the other county \*
- About an equal number of Johnston and Durham workers have primary job employers in Wake County
  - 32,000 in Durham
  - 35,000 in Johnston



# Passenger Rail Corridor Analysis: Rail Corridor Travel Markets

- **Where People With Primary Jobs in the Corridor Live**

- 180,000 people live in Wake, Durham, Johnston and Orange County and have their primary job in the rail corridor
- 70,000 of these people live in one county and have their workplace in the corridor in another county
- 56,000 people both live and work in the corridor



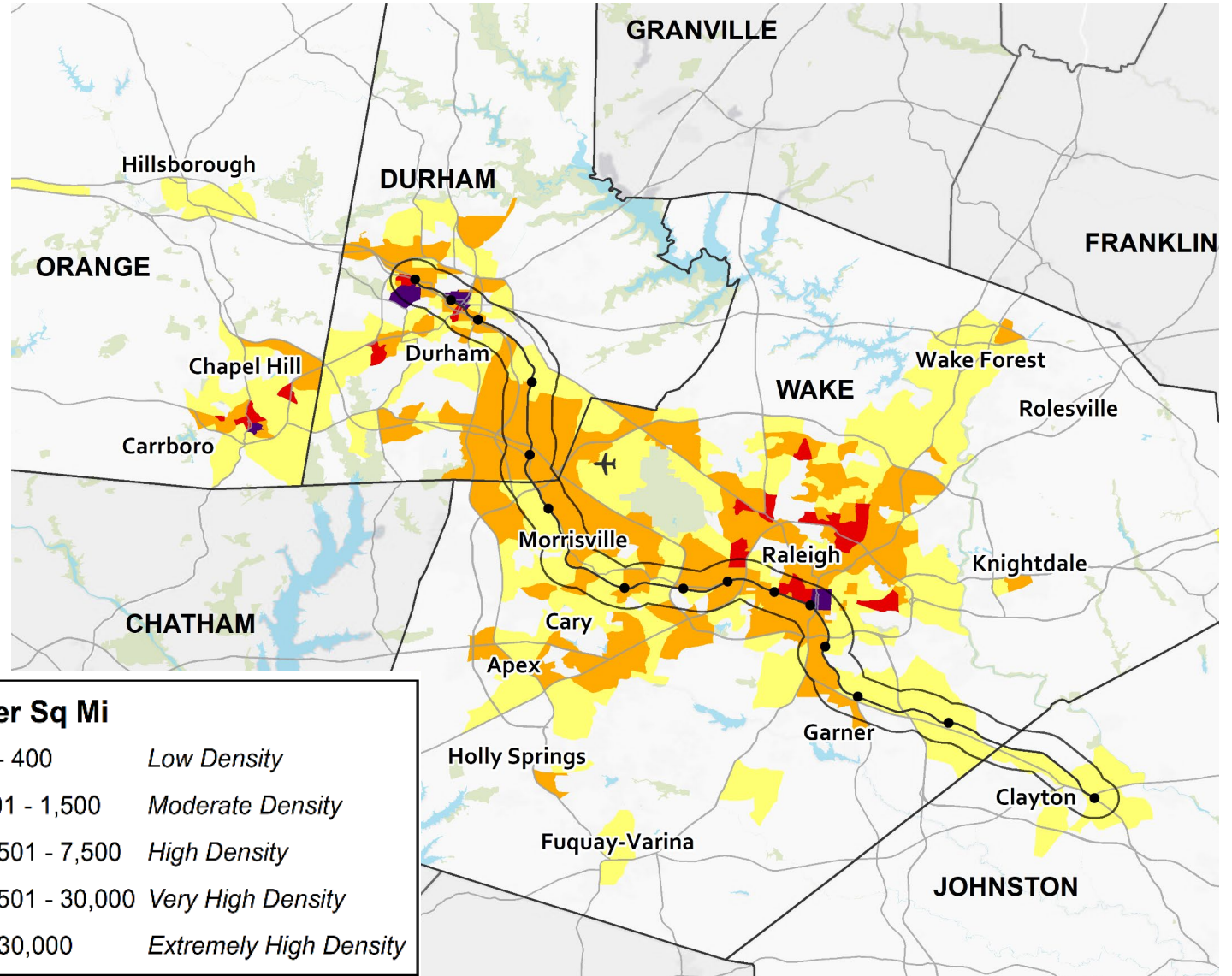


# Passenger Rail Corridor Analysis: Travel Analysis

## • Jobs in the Corridor

- 30% of the region's total jobs are in the corridor
- 23% of the region's low & moderate earnings jobs are in the corridor
- 56,000 workers both live and work in the corridor
- 41% of the corridor is high or better job density

*Corridor is 4% of the region's area*

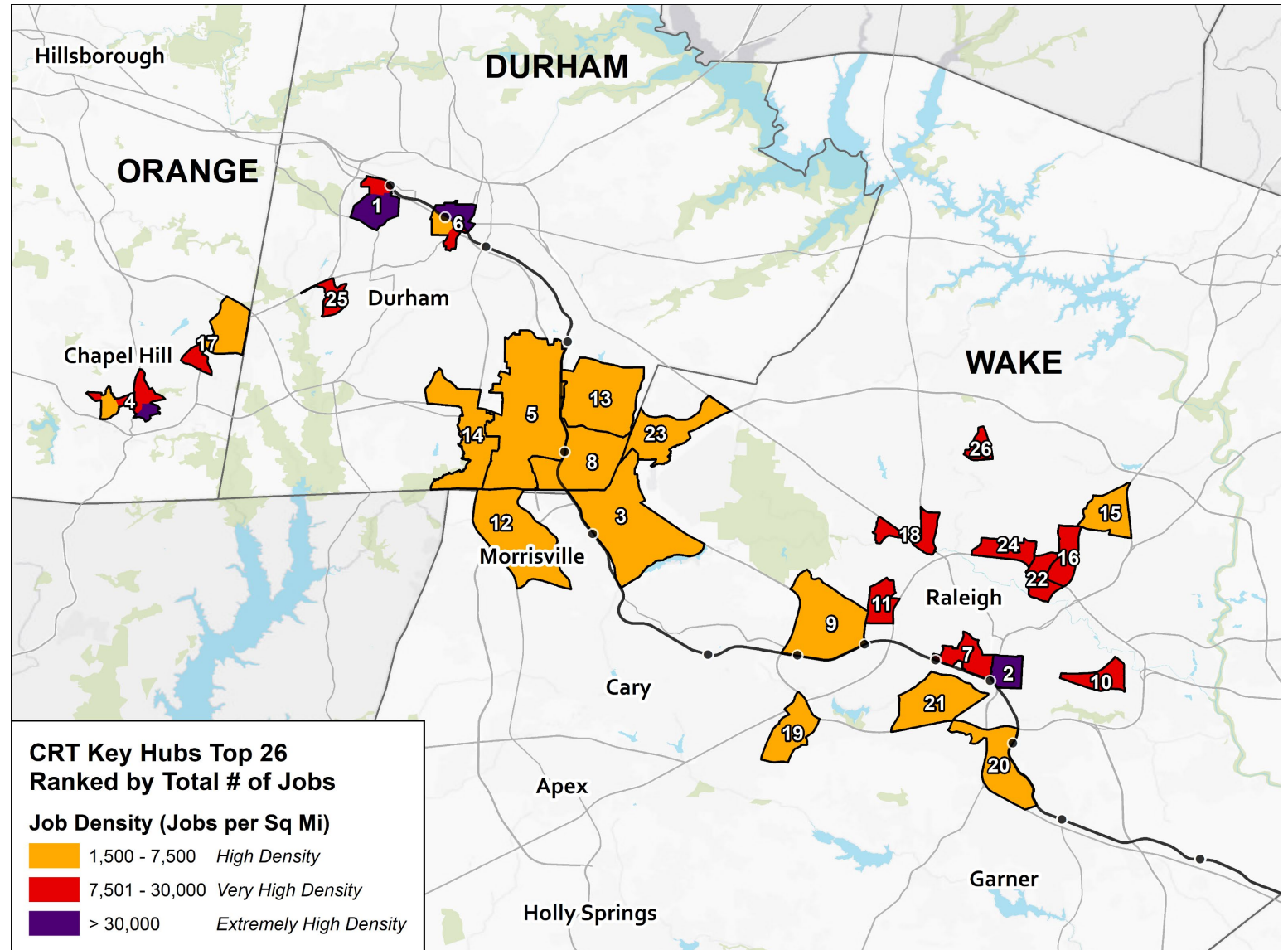




# Passenger Rail Corridor Analysis: All Jobs

## • Jobs in Key Hubs

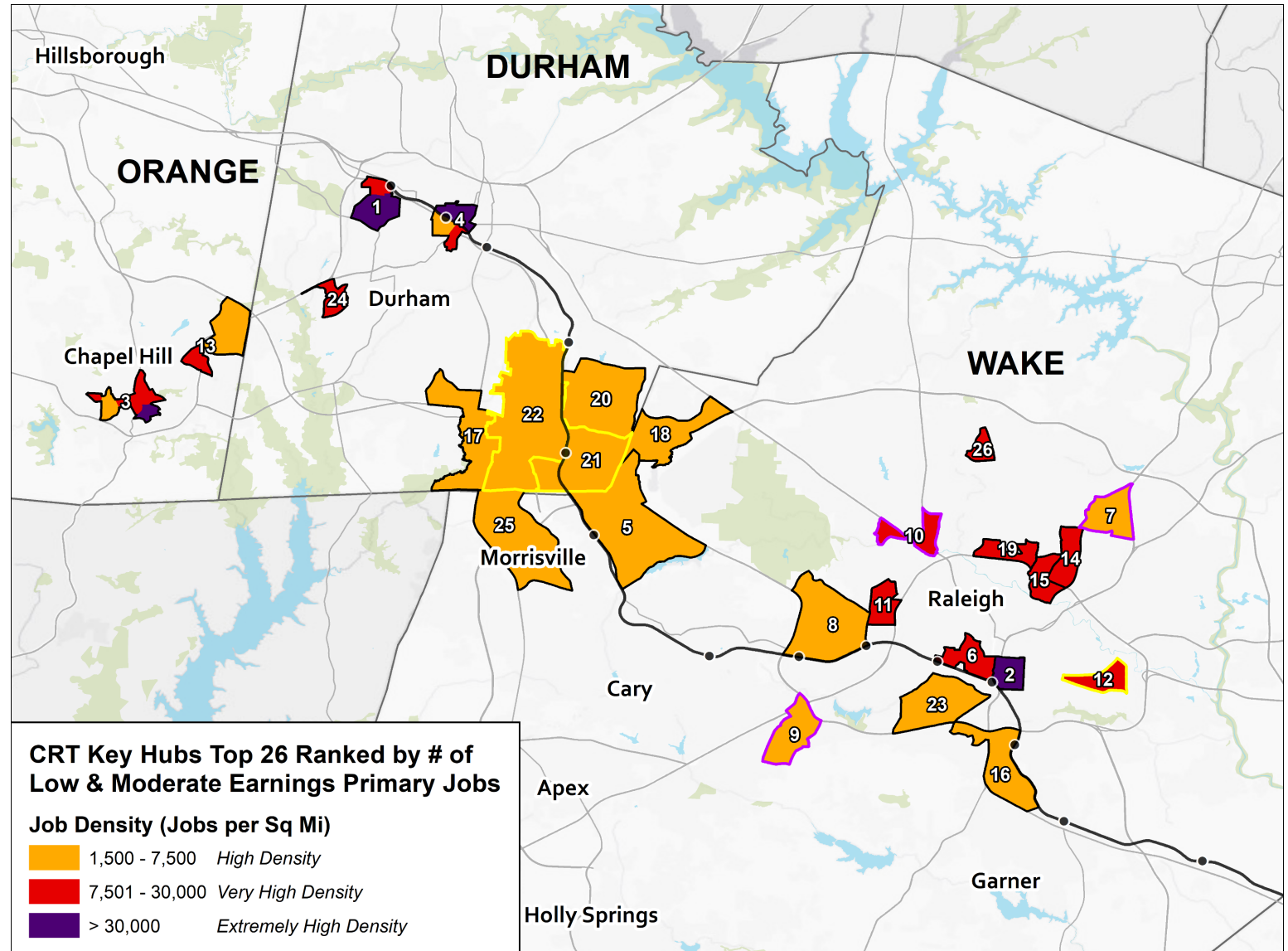
- Top hubs have 40% of the region's jobs on <3% of the region's land
- The rail line runs through 8 of the largest 10 job hubs
- These 8 hubs have 200,000 jobs



# Passenger Rail Corridor Analysis: Low & Moderate Earnings Jobs

## • Jobs in Key Hubs

- Top hubs have 40% of the region's jobs on <3% of the region's land
- The rail line runs through 8 of the largest 10 job hubs
- These 8 hubs have 200,000 jobs
- 7 of the top 10 job hubs for total jobs are also in the top 10 for low & moderate earnings jobs
  - ↓ 2 hubs around RTP and ...
  - ↓ ... 1 hub at WakeMed fall out of the top 10 for low & moderate earning jobs
  - ↑ 3 Wake County hubs move into the top 10: Crossroads, Crabtree and NE Raleigh

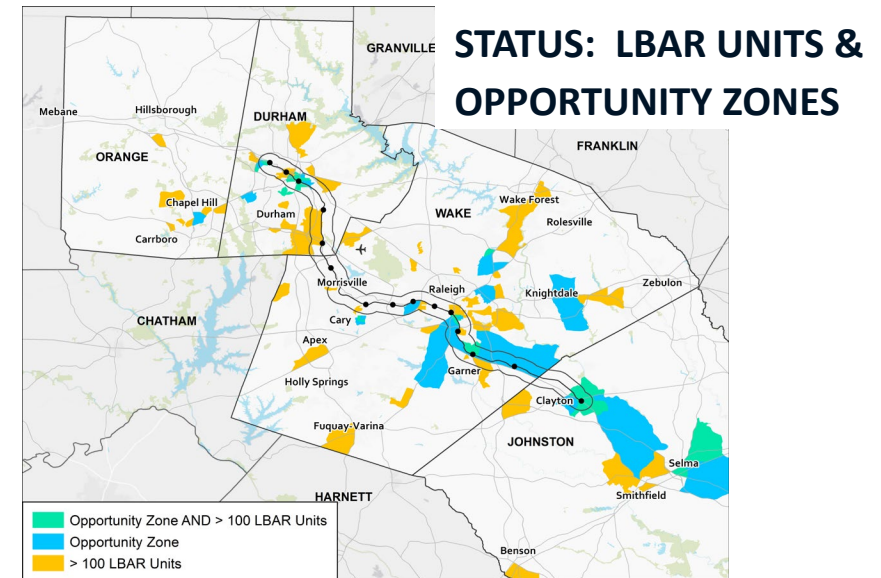
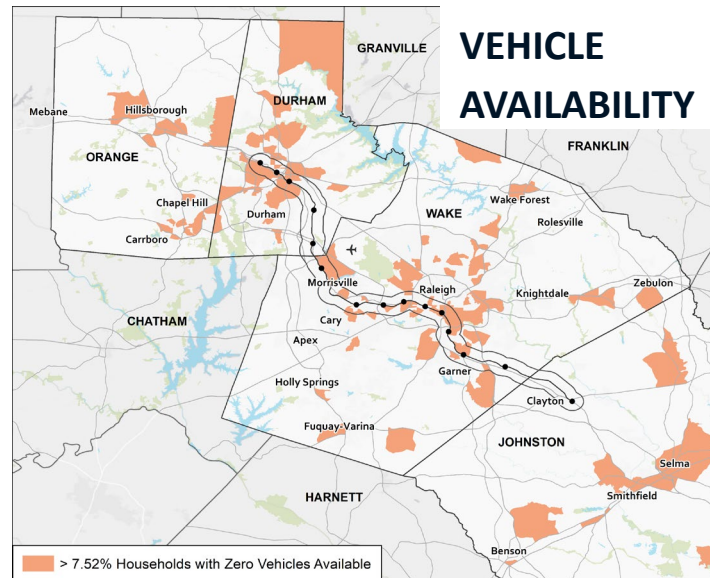
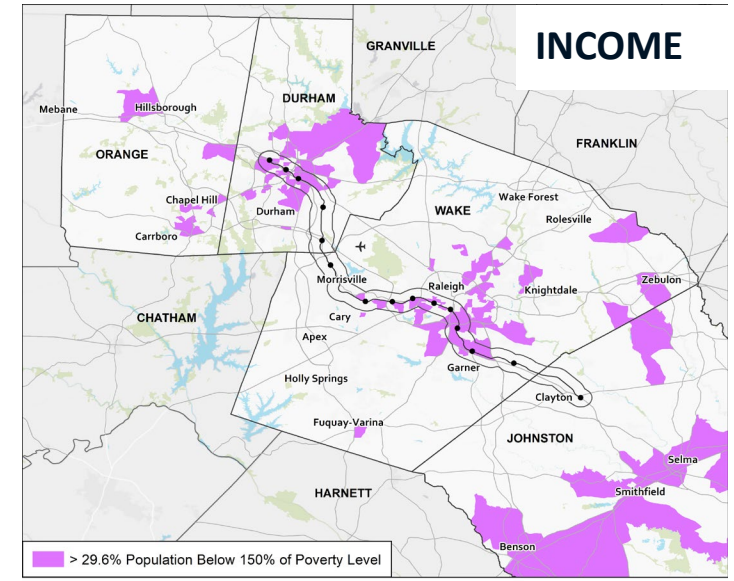
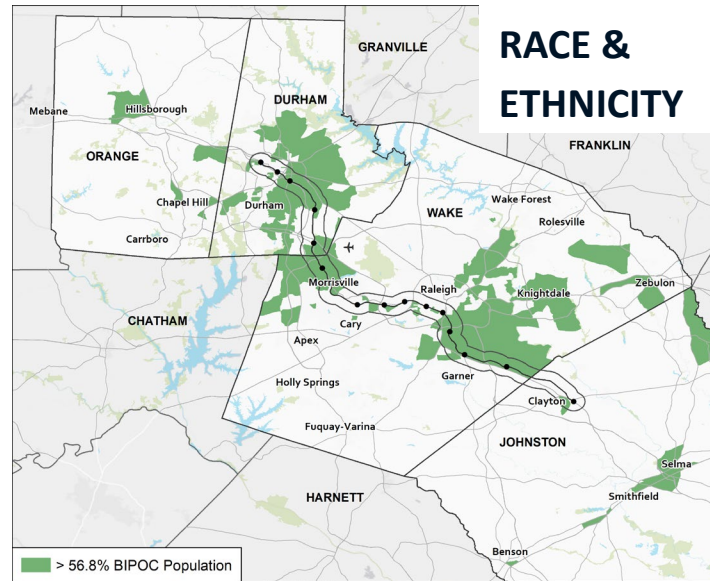




# Passenger Rail Corridor Analysis – Land Use, Affordable Housing & Equitable TOD

## • REINVEST Neighborhoods

- Start with individual RE-IN-VE-ST components
- Each component determined by top 25% of Census Block Groups for the trait that is measured

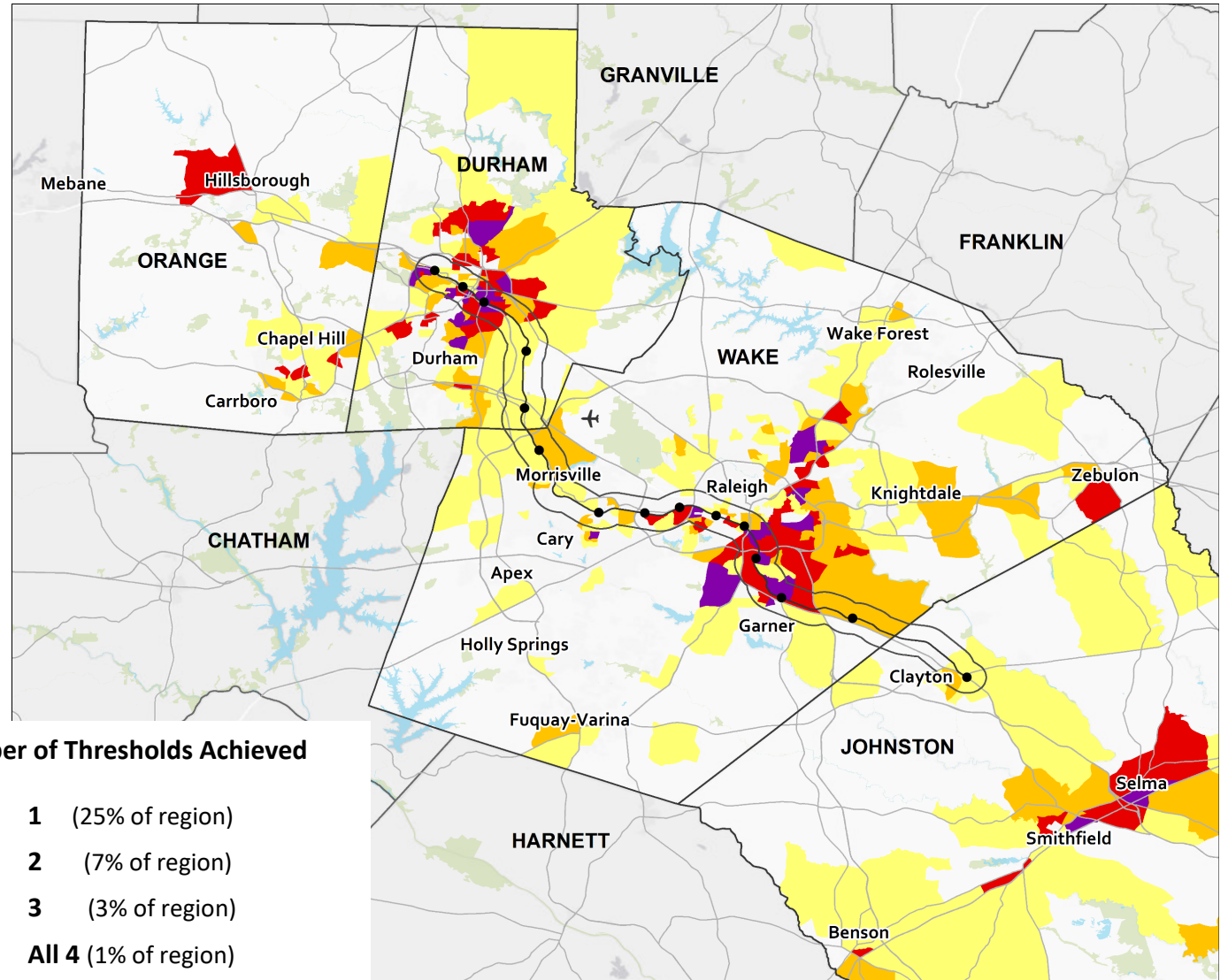


Trait ➔	BIPOC residents	People <150% poverty line	0-car house holds	LBAR units
% of land:	12%	18%	12%	11%
% of trait:	48%	46%	66%	74%

# Passenger Rail Corridor Analysis

## • REINVEST Neighborhoods

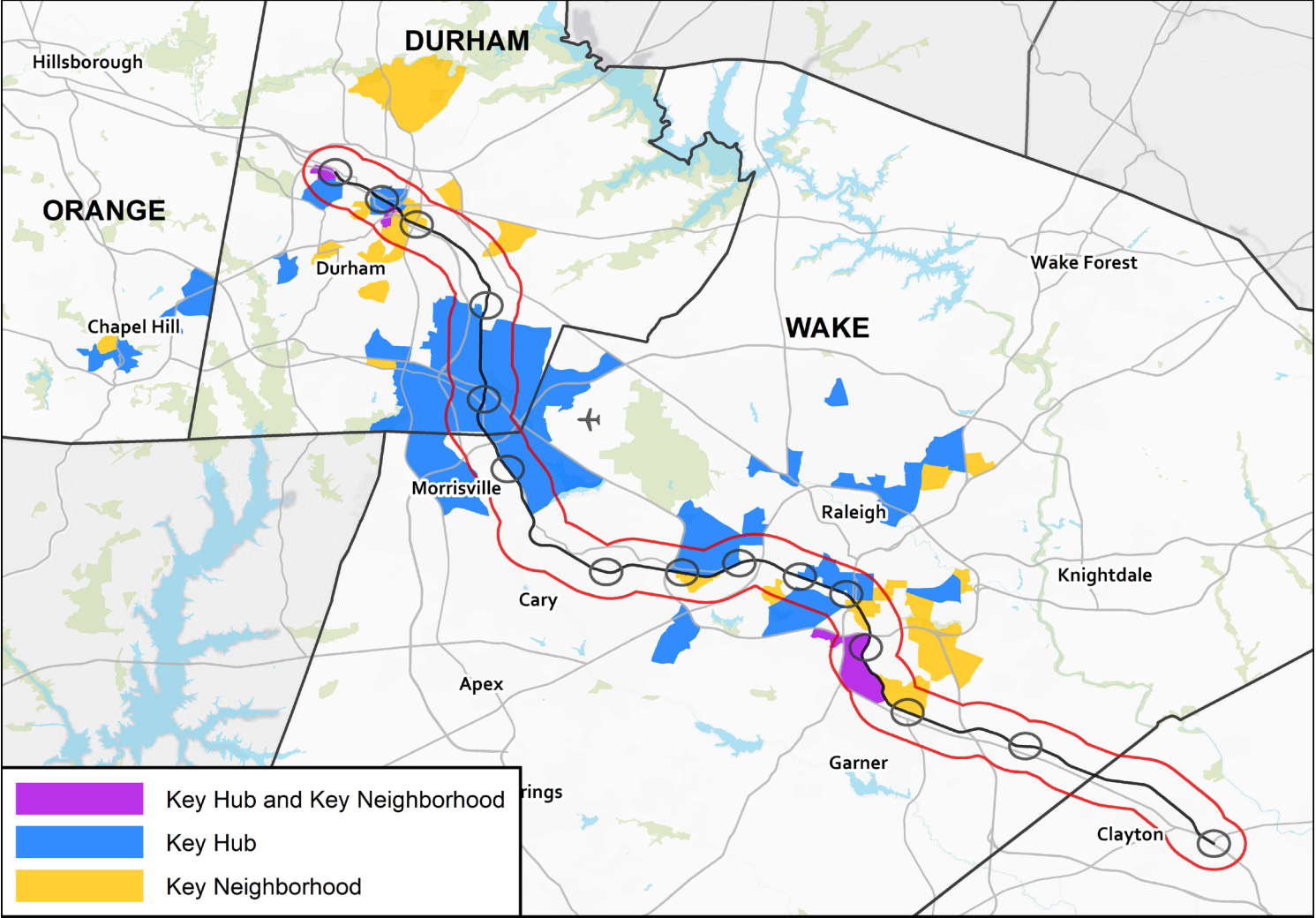
- ❖ 767 total block groups in region; 103 (13%) score high on multiple characteristics – these 103 form the REINVEST Neighborhoods
- ❖ REINVEST Neighborhoods are 4% of the region's land and contain:
  - 11% of the total population
  - 21% of the BIPOC population
  - 27% of people <150% of poverty line
  - 37% of zero-car households
  - 41% of LBAR housing units



# Passenger Rail Corridor Analysis: Rail Corridor “Top-Tier” Key Hubs & Neighborhoods

- **Composite Map**

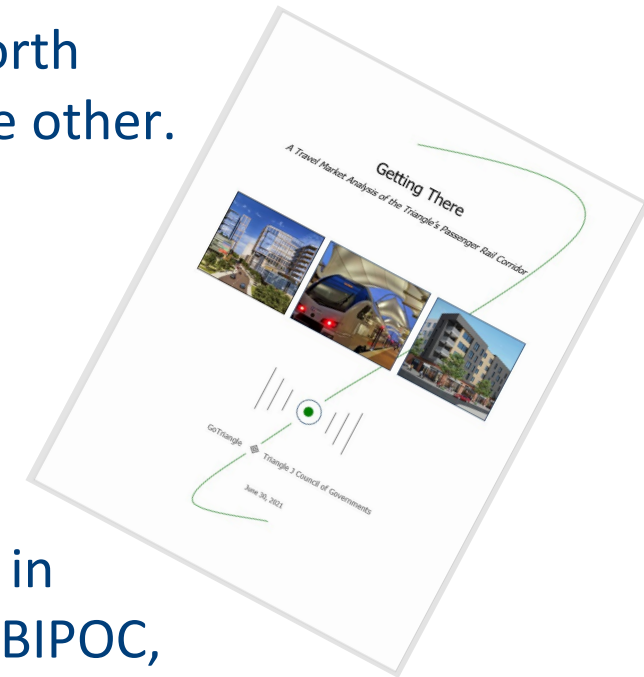
➤ 12 of the 15 initial station study areas overlap a key hub, a top-tier REINVEST Neighborhood, or both





# Travel Market Analysis Take-Aways

1. The rail corridor is only 4% of the area of Orange, Durham, Wake and Johnston Counties, but has ~30% of the region's jobs: 280,000 jobs.
2. 23% of the region's jobs with earnings below \$40,000 per year are located in the rail corridor.
3. The Wake County-Durham County regional connection is the largest in North Carolina, with over 96,000 workers living in one county and working in the other.
4. 8 of the top 10 job hubs in the region are along the rail corridor, including the city centers of Raleigh and Durham, Duke University and Medical Center, North Carolina State University and the Research Triangle Park.
5. 56,000 workers both live and work in block groups along the rail corridor.
6. Almost 70,000 people live in neighborhoods that are completely or partly in the corridor and achieve thresholds for the amount and concentration of BIPOC, lower income and zero-car households, and legally-binding, affordability-restricted housing units.
7. Safe and seamless "first-mile/last-mile" connections are key to serving these neighborhoods.



# Land Use Analysis Take-Aways

1. The rail corridor is only 4% of the area of Orange, Durham, Wake and Johnston Counties, but is forecast to hold 20% of the region's households and 45% of the region's jobs by 2050.
2. The corridor is forecast to add 100,000 housing units and 370,000 jobs by 2050. Even more corridor housing and commercial demand may be market-realistic.
3. With this growth, there will still be room for another 100,000 housing units and 330,000 jobs beyond 2050 based on the 2050 Transportation Plan.
4. Because much of the land in the corridor is beyond walking distance of a station, high-quality transit and active transportation connections to stations will be influential for household and job access.
5. If corridor land use is to serve a spectrum of users, then sustained, deliberate efforts to create equitable Transit-Oriented Development seem needed. Leveraging public land, federal Joint Development rules, and anchor institution collaboration may be impactful





# Affordable Housing Take-Aways

1. There is a substantial amount of legally-binding, affordability restricted (LBAR) housing along the rail corridor, especially in Wake & Durham Counties, which can be linked to major job hubs by CRT
2. There is a substantial amount of multi-family naturally occurring affordable housing (NOAH) along the rail corridor, including a large percentage of Johnston County multi-family NOAH units
3. Housing Authority plans and LIHTC awards would add more than a thousand LBAR affordable housing units within station study areas
4. Existing affordable housing would earn a “medium-high” score in federal funding competition; future affordable housing would likely raise this score
5. Based on a “first pass” analysis, there are opportunities for more affordable housing using public and anchor institution land along the rail corridor, should communities and partners wish to pursue this option
6. Safe and seamless “first-mile/last-mile” connections will be important to serve affordable housing



# Issues to Consider

The opportunity analysis was *descriptive*, not *prescriptive*, but the evidence suggests that the following issues might warrant particular attention:

- ❖ Involving institutional landowners, including GoTriangle, Cities, Counties, Universities, Housing Authorities, and the State in development and housing strategies in the corridor
- ❖ Ensuring land use & transit are given equal weight and planned together, and using equitable TOD as the framework for future planning
- ❖ Developing a compelling regional vision for the future growth this analysis looked at, not just in this corridor, but along a network of high-quality transit investments in the region
- ❖ Placing special emphasis on multi-family housing development in the corridor, through local efforts, leveraging public land, and using the FTA Joint Development program
- ❖ A collaboration on first-mile, last-mile investments to connect stations to destinations



# Available Resources

- ❖ A detailed *Analysis Report* for each topic
- ❖ A four-page *Executive Summary* for each topic
- ❖ PowerPoint Presentations for each topic, plus a combined presentation
- ❖ More detailed data and mapping for each topic, by corridor segment and station study area

-- all materials will be available at [ReadyForRailNC.com](https://ReadyForRailNC.com) --

