



NC DEPARTMENT  
of COMMERCE  
LABOR & ECONOMIC  
ANALYSIS

# North Carolina's Commuting Patterns Dashboard Building from OnTheMap

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Economist

NC Department of Commerce

Labor & Economic Analysis Division (LEAD)

# Labor & Economic Analysis Division

**Labor Market  
Data  
Production**

Data Collection & Production  
(incl. Unemployment Rates)

Industry Establishments & Jobs

Occupational Employment & Wages

**Economic  
& Policy  
Analysis**

Employment Projections

Star Jobs

LMI Tools & Publications

Economic Development Reports  
(e.g. Tiers, Opportunity Zones, Strategic Plan)

**Big Data  
Analysis &  
Research**

Big Data Analysis

Program Evaluation

Common Follow-up System  
(NCTOWER.com)

**Publications &  
Websites**

Online & Print Publications

Dashboards (Analytics.NCcommerce.com)

Data Access Tools (D4.Nccommerce.com,  
NCcareers.org)



# Agenda

- LODES Overview
- Cross-County Commuting in NC
- OnTheMap: Tool and User Challenges
- Commuting Patterns Dashboard
- Technical Implementation



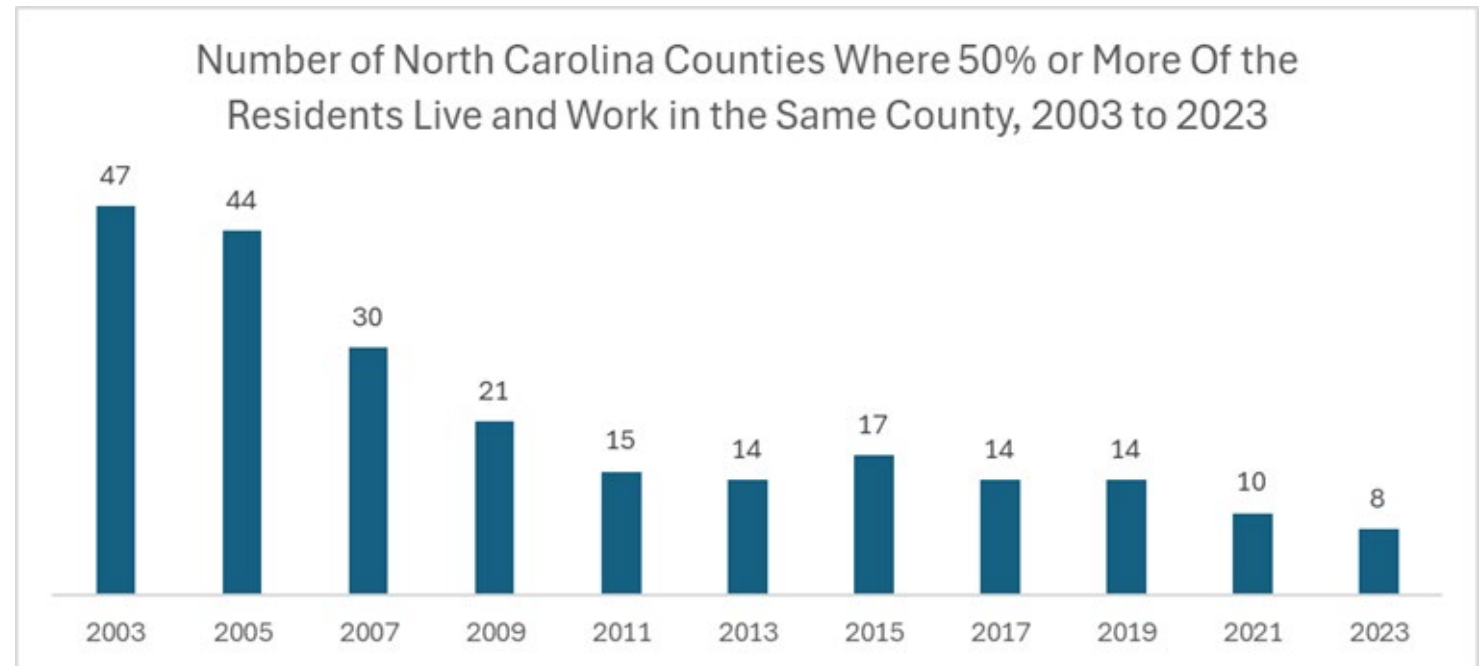
# LODES Overview

- LEHD **O**rigin-**D**estination **E**mployment **S**tatistics (LODES)
- LEHD data with workplace and residence geographies
- Data also identifies private vs. public sector and primary jobs
  - Dashboard uses **Private-Primary** jobs data



# Cross-County Commuting's Big in NC

- Share of NC's 100 counties where 50%+ of residents\* lived & worked:
  - 2003: 47 counties
  - 2013: 14 counties
  - 2023: **8** counties



\* Private sector, primary jobs only

# Important to Understand Commuting

- Enhances decision-making
- Helps **economic developers, businesses, local & state governments**
  - **Labor sheds** for economic developers & businesses
  - **Disaster Recovery, Planning** (e.g. residential & business attraction) for local & state governments



# OnTheMap: Tool Overview



Start Base Map Selection Results

### Inflow/Outflow Analysis

Worker Flows In, Out, and Within Alamance County, NC

Display Settings

Labor Market Segment Filter **All Workers**

Year **2023**

Map Controls

Color Key  Flow Overlay  Selection Outline

Identify Zoom to Selection Clear Overlays Animate Overlays

Report/Map Outputs

Detailed Report Export Geography Print Chart/Map

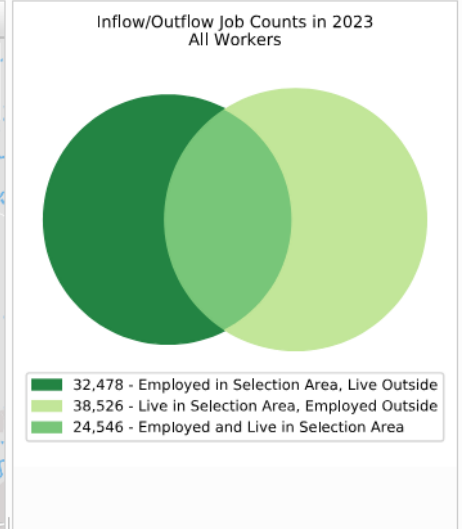
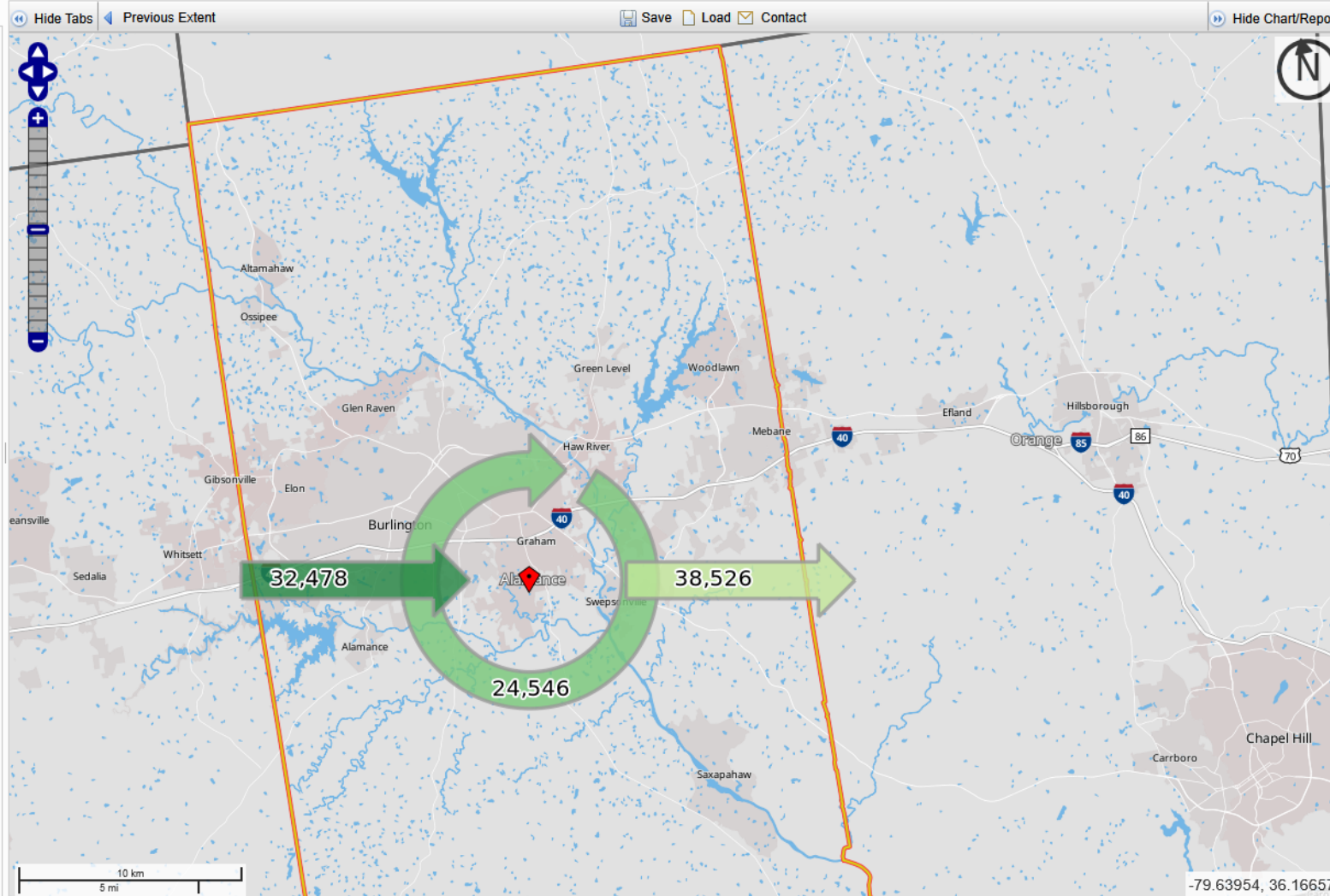
Legends

Note: Overlay arrows do not indicate directionality of worker flow between home and employment locations.

- Employed and Live in Selection Area
- Employed in Selection Area, Live Outside
- Live in Selection Area, Employed Outside
- Selection Area

Analysis Settings

[Change Settings](#)



### Inflow/Outflow Job Counts (Private Primary Jobs)

	2023	
	Count	Share
<a href="#">Employed in the Selection Area</a>	57,024	100.0%
<a href="#">Employed in the Selection Area but Living Outside</a>	32,478	57.0%
<a href="#">Employed and Living in the Selection Area</a>	24,546	43.0%
<a href="#">Living in the Selection Area</a>	63,072	100.0%
<a href="#">Living in the Selection Area but Employed Outside</a>	38,526	61.1%
<a href="#">Living and Employed in the Selection Area</a>	24,546	38.9%

[Reset Highlighting](#)

Note: The U.S. Census Bureau reviewed this data product for unauthorized disclosure of confidential information and approved the disclosure avoidance practices applied to this release. CBDRB-FY21-249.

Start Base Map Selection Results

Hide Tabs Previous Extent Save Load Contact Hide Chart/Report

- Unified/Elementary Schools Districts  
No results found.
- Secondary School Districts  
No results found.
- State Legislative Districts (Upper)  
No results found.
- State Legislative Districts (Lower)  
No results found.
- Alaska Native Regional Corp. (ANRC)  
No results found.
- Tribal Lands  
No results found.
- Tribal Subdivisions  
No results found.
- Military Bases  
No results found.
- OneStop Career Centers  
NCWorks Career Center- Alamance County
- Schools  
No results found.
- Airports  
No results found.
- Amtrak Stations  
No results found.
- Universities  
No results found.

Import Geography

- Import from KML
- Import from SHP
- Import from GPS

Load .OTM File

Click the "Load" button below to load a .OTM file.

Load

Previous Geographies

- Alamance County, NC from Counties  
Delete Reuse

Clear All

### Analysis Settings

#### Destination Analysis in 2023 by Private Primary Jobs

**Home/Work Area**  
Determines whether the selection area is analyzed on where workers live ("Home") or where workers are employed ("Work").

Home  
 Work

**Analysis Type**  
Determines the type of results that will be generated for the selected area.

Area Profile  
Labor Market Segment: All Workers

Area Comparison  
Areas to Compare: Places (Cities, CDPs, etc.)  
Labor Market Segment: All Workers

Distance/Direction

Destination  
Destination Type: Counties

Inflow/Outflow  
Note: Home/Work choice does not affect results

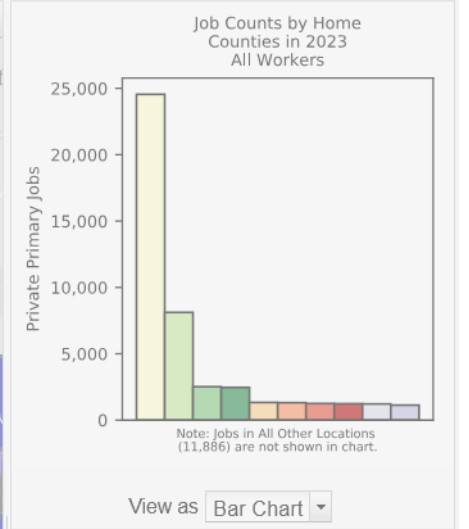
**Year**  
Determines the year(s) of data that will be processed in the analysis.

2023  
 2022  
 2021  
 2020  
 2019  
 2018  
 2017  
 2016  
 2015  
 2014  
 2013  
 2012  
 2011  
 2010  
 2009  
 2008

**Job Type**  
Determines the scope of jobs that will be processed in the analysis.

All Jobs  
 Primary Jobs  
 All Private Jobs  
 Private Primary Jobs

Cancel Go!



#### Job Counts by Counties Where Workers Live - Private Primary Jobs

	2023	
	Count	Share
All Counties	57,024	100.0%
Alamance County, NC	24,546	43.0%
Guilford County, NC	8,118	14.2%
Wake County, NC	2,518	4.4%
Orange County, NC	2,466	4.3%
Mecklenburg County, NC	1,332	2.3%
Durham County, NC	1,314	2.3%
Forsyth County, NC	1,252	2.2%
Rockingham County, NC	1,239	2.2%
Caswell County, NC	1,222	2.1%
Randolph County, NC	1,131	2.0%
All Other Locations	11,886	20.8%

Note: The U.S. Census Bureau reviewed this data product for unauthorized disclosure of confidential information and approved the disclosure avoidance practices applied to this release. CBDRB-FY21-249.

Start Base Map Selection Results

Hide Tabs Previous Extent

Save Load Contact

Hide Chart/Report

### Destination Analysis

**Workers:** Employed in Alamance County, NC  
**Showing:** Residential locations grouped by Counties

#### Display Settings

Labor Market Segment Filter **All Workers**  
 Number of Results **Top 10**  
 Year **2023**

#### Map Controls

Color Key  **■**  
 Thematic Overlay   
 Spoke Overlay   
 Selection Outline   
 Identify  Zoom to Selection   
 Clear Overlays  Animate Overlays

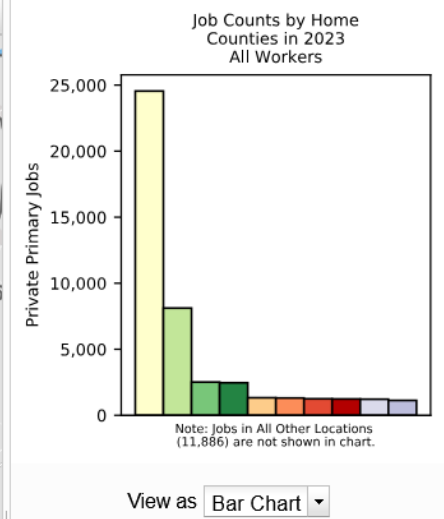
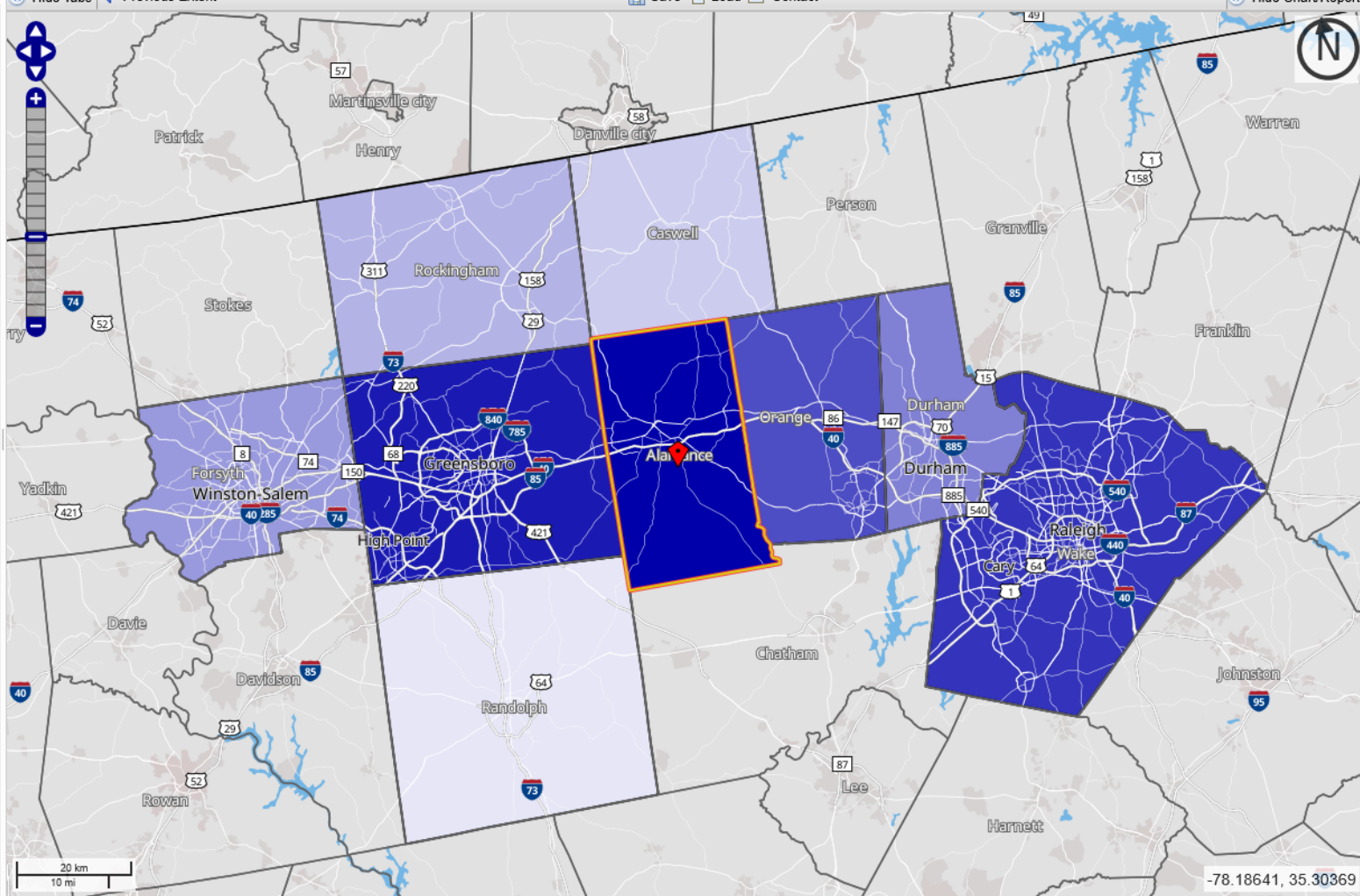
#### Report/Map Outputs

Detailed Report   
 Export Geography   
 Print Chart/Map

#### Legends

- 24,546 Jobs
- 8,118 Jobs
- 2,518 Jobs
- 2,466 Jobs
- 1,332 Jobs
- 1,314 Jobs
- 1,252 Jobs
- 1,222 Jobs
- 1,131 Jobs

[Change Settings](#)



#### Job Counts by Counties Where Workers Live - Private Primary Jobs

2023

	Count	Share
<b>All Counties</b>	57,024	100.0%
Alamance County, NC	24,546	43.0%
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Note: The U.S. Census Bureau reviewed this data product for unauthorized disclosure of confidential information and approved the disclosure avoidance practices applied to this release. CBDRB-FY21-249.

# OnTheMap: User Challenges

- Multiple dropdown menus and selections
- Limited results display
- Substate geographies are not state-specific



# Commuting Patterns Dashboard



# North Carolina Commuting Patterns Dashboard

To browse available geographies, deselect any areas chosen in the Select dropdown, then return to the left Geography

- Summary**
- Inflows
- Outflows
- Within Area

**Geography** **Select County(ies)/Region**

County

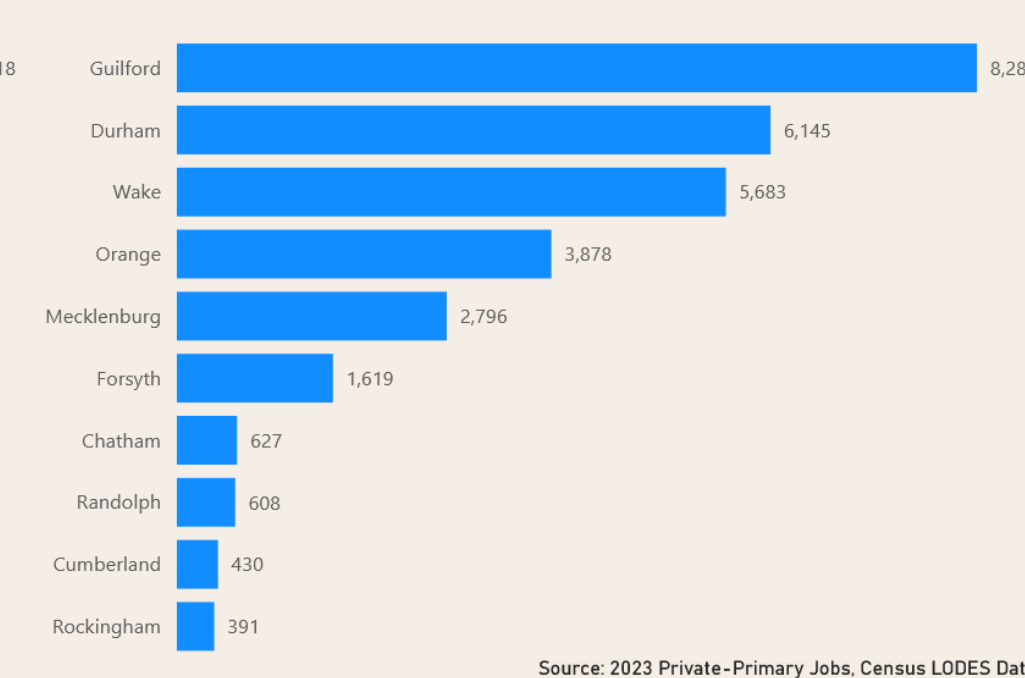
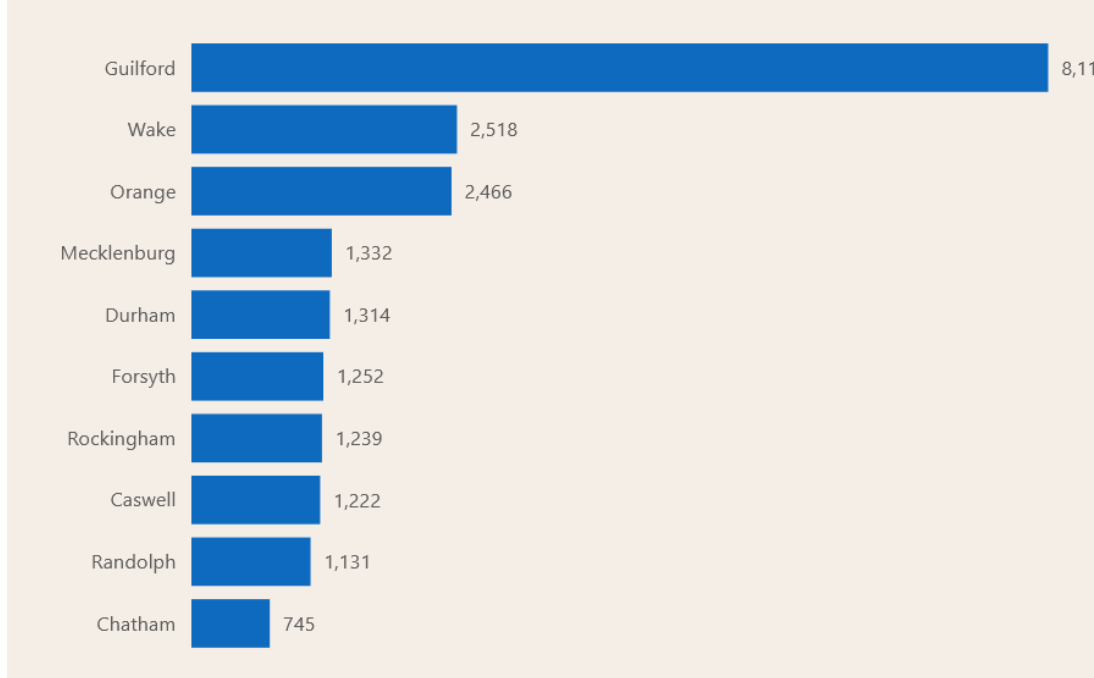
*Selected Counties*

Alamance



<b>Total Employed in the Selection Area</b>	<b>57,024</b>	<b>Total Living in the Selection Area</b>	<b>63,072</b>
<b>Employed in the Selection Area but Living Outside</b>	<b>32,478</b>	<b>Living in the Selection Area but Employed Outside</b>	<b>38,526</b>
<b>Employed and Living in the Selection Area</b>	<b>24,546</b>	<b>Living and Employed in the Selection Area</b>	<b>24,546</b>

## Where are outside workers coming from? Where are home commuters going to for work?



Source: 2023 Private-Primary Jobs, Census LODS Data

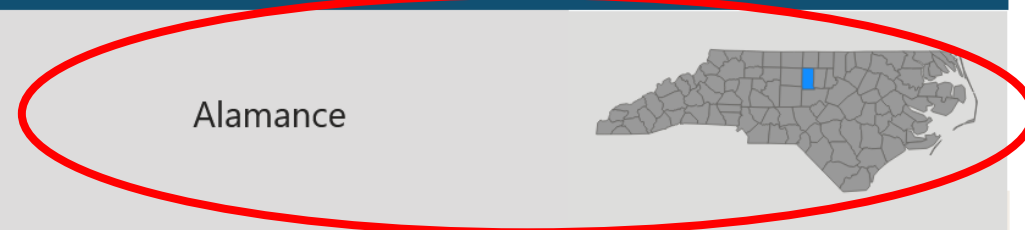
# North Carolina Commuting Patterns Dashboard

To browse available geographies, deselect any areas chosen in the Select dropdown, then return to the left Geography

Summary
Inflows
Outflows
Within Area

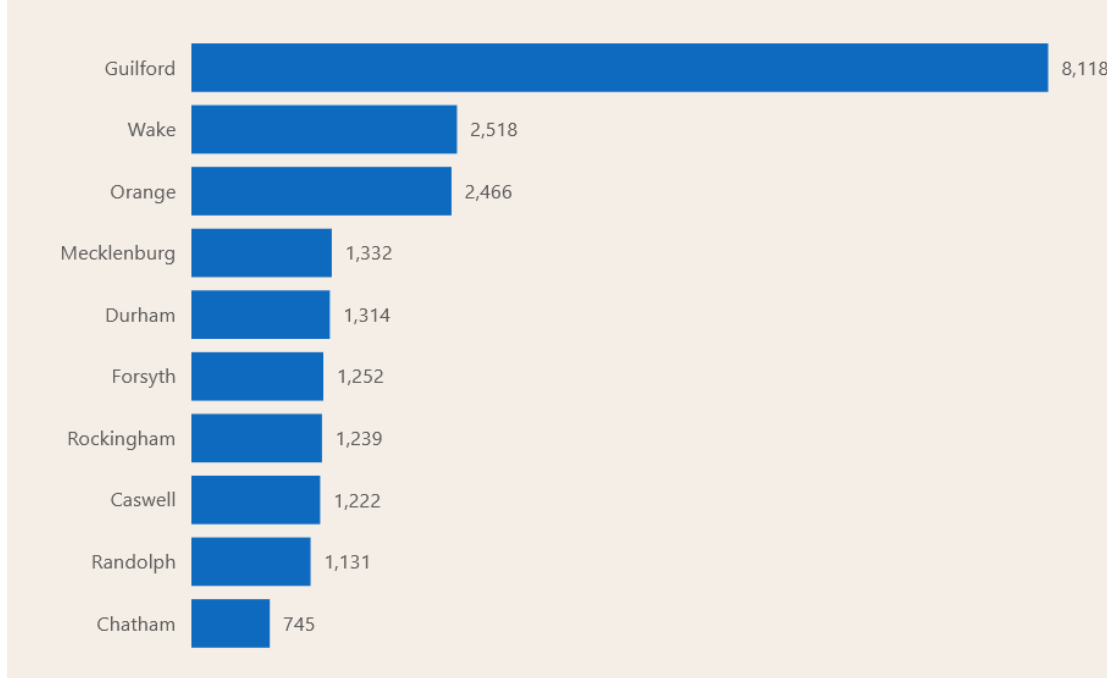
**Geography** **Select County(ies)/Region**  
 County

## Selected Counties

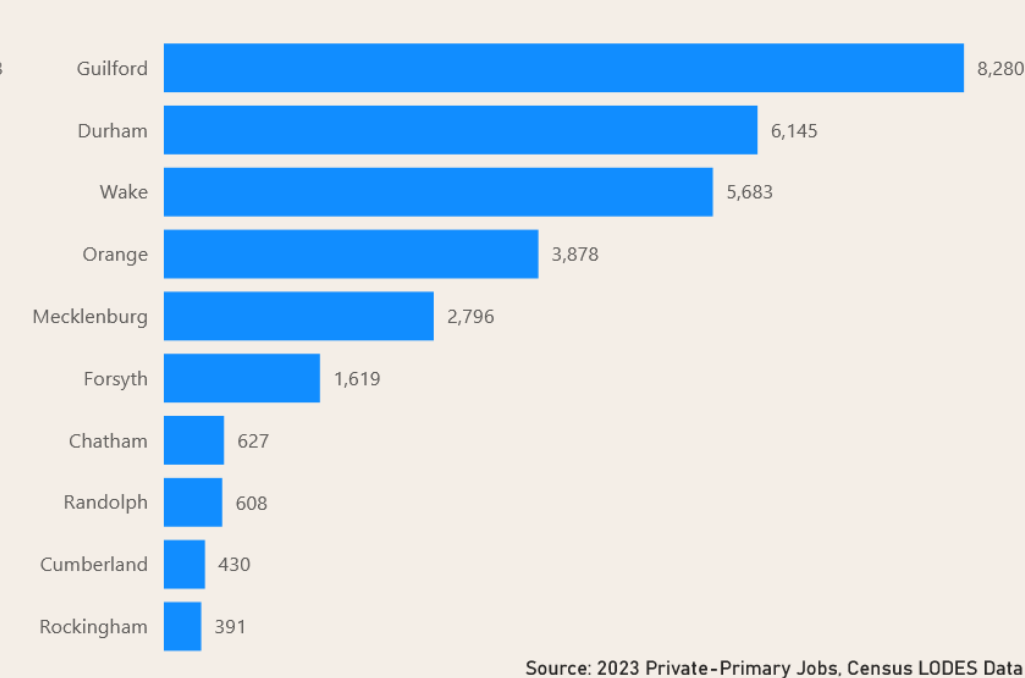


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## Where are outside workers coming from?



## Where are home commuters going to for work?



Source: 2023 Private-Primary Jobs, Census LODS Data

# North Carolina Commuting Patterns Dashboard

To browse available geographies, deselect any areas chosen in the Select dropdown, then return to the left Geography

Selected Counties

- Summary
- Inflows
- Outflows
- Within Area

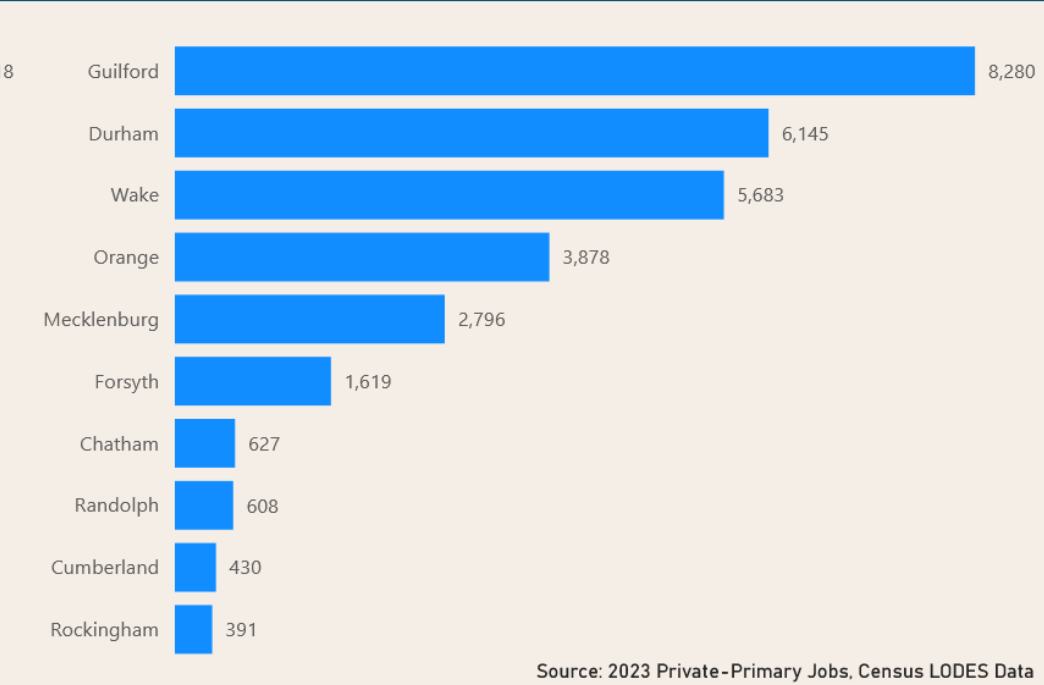
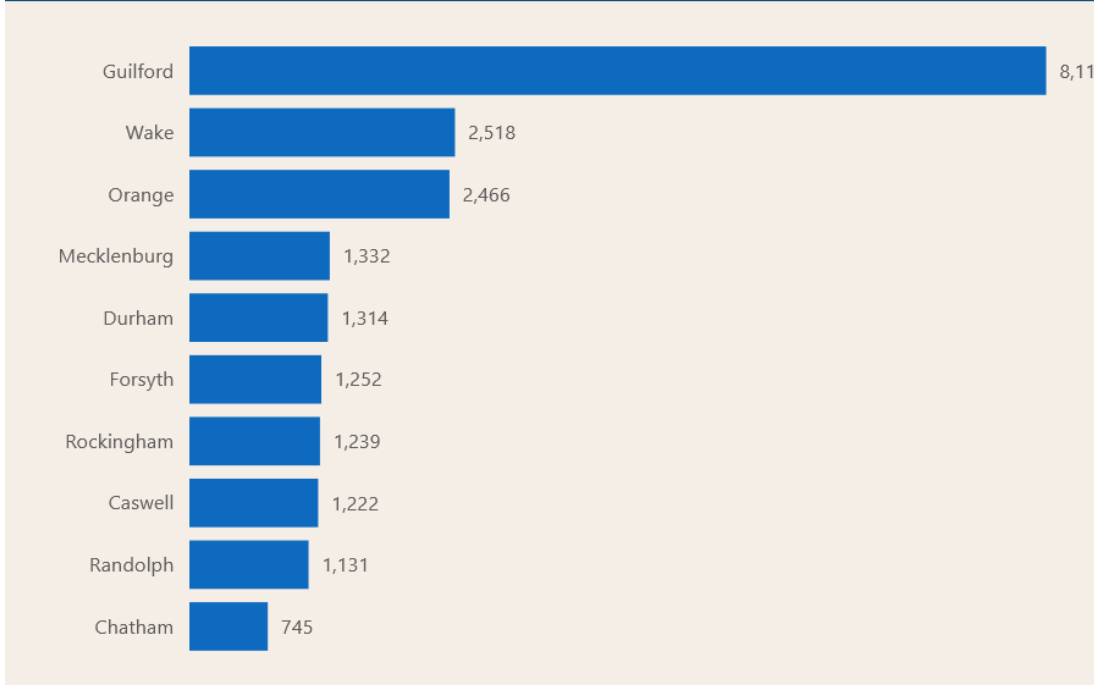
Geography Select County(ies)/Region

County



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## Where are outside workers coming from? Where are home commuters going to for work?



Source: 2023 Private-Primary Jobs, Census LODS Data

# North Carolina Commuting Patterns Dashboard

To browse available geographies, deselect any areas chosen in the Select dropdown, then return to the left Geography

- Summary
- Inflows
- Outflows
- Within Area

Geography Select County(ies)/Region

County Alamance County

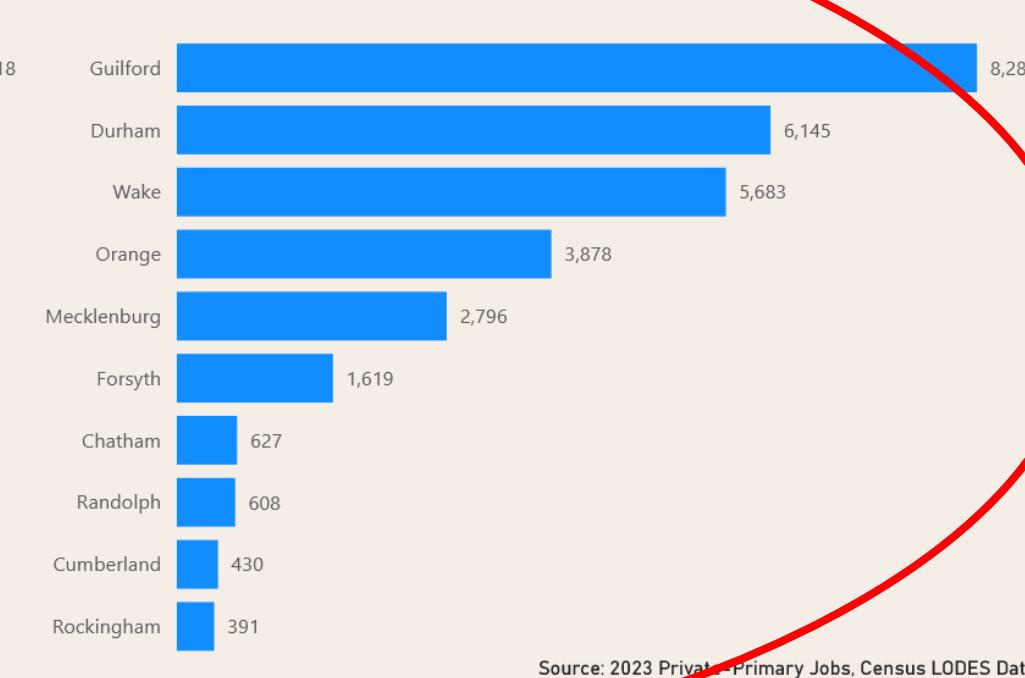
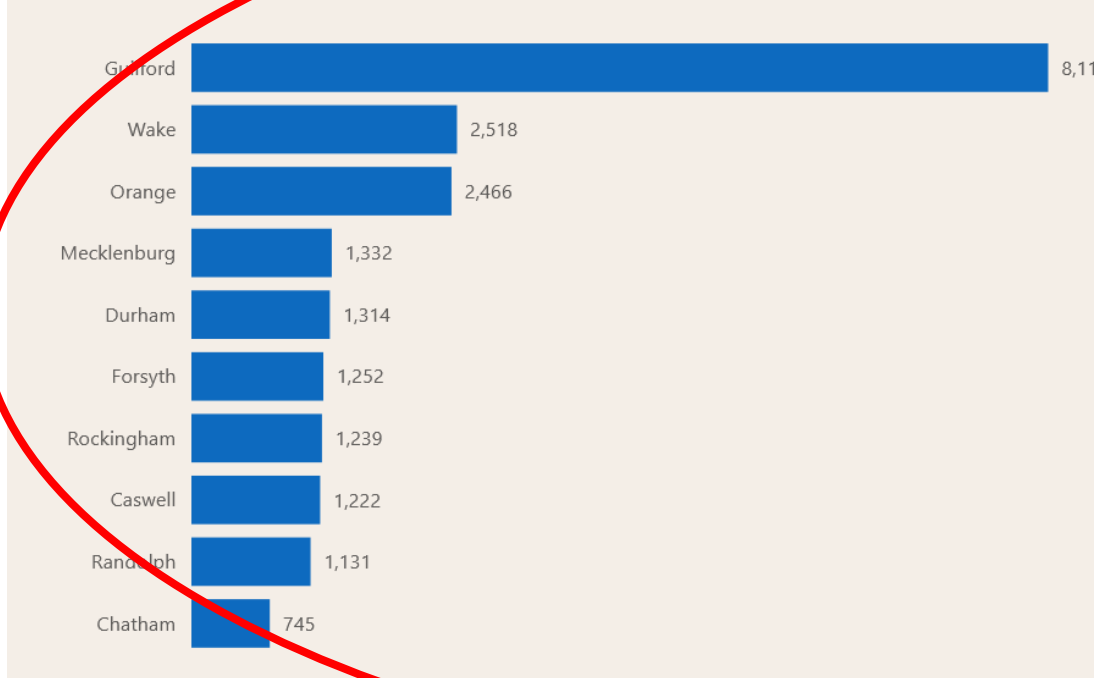
Selected Counties

Alamance



<b>Total Employed in the Selection Area</b>	<b>57,024</b>	<b>Total Living in the Selection Area</b>	<b>63,072</b>
<b>Employed in the Selection Area but Living Outside</b>	<b>32,478</b>	<b>Living in the Selection Area but Employed Outside</b>	<b>38,526</b>
<b>Employed and Living in the Selection Area</b>	<b>24,546</b>	<b>Living and Employed in the Selection Area</b>	<b>24,546</b>

## Where are outside workers coming from? Where are home commuters going to for work?



Source: 2023 Private Primary Jobs, Census LODS Data

# North Carolina Commuting Patterns Dashboard

Selected Counties

To browse available geographies, deselect any areas chosen in the Select dropdown, then return to the left Geography menu.

- Summary
- Inflows**
- Outflows
- Within Area

Geography Select County(ies)/Region

County  Alamance County

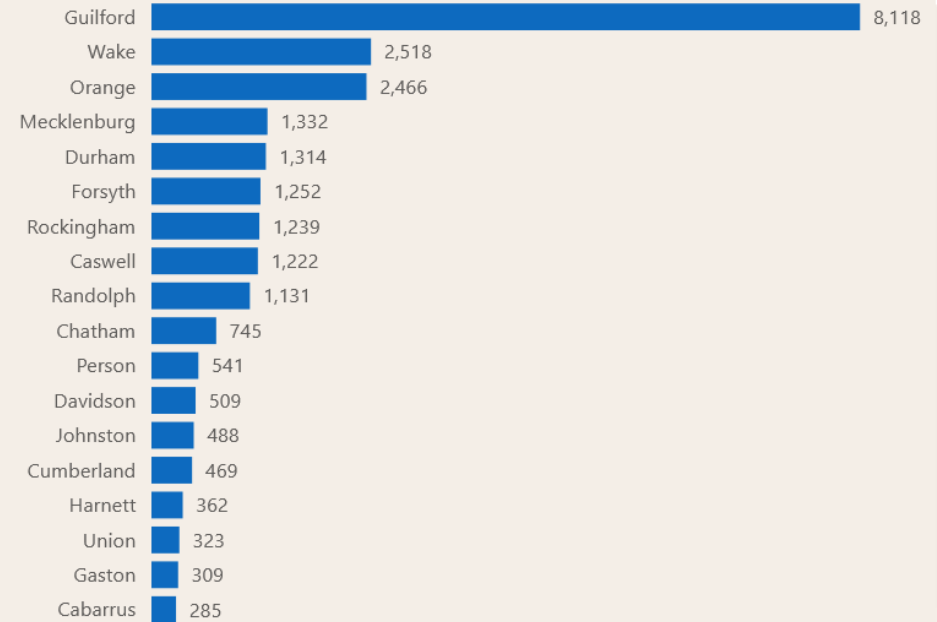
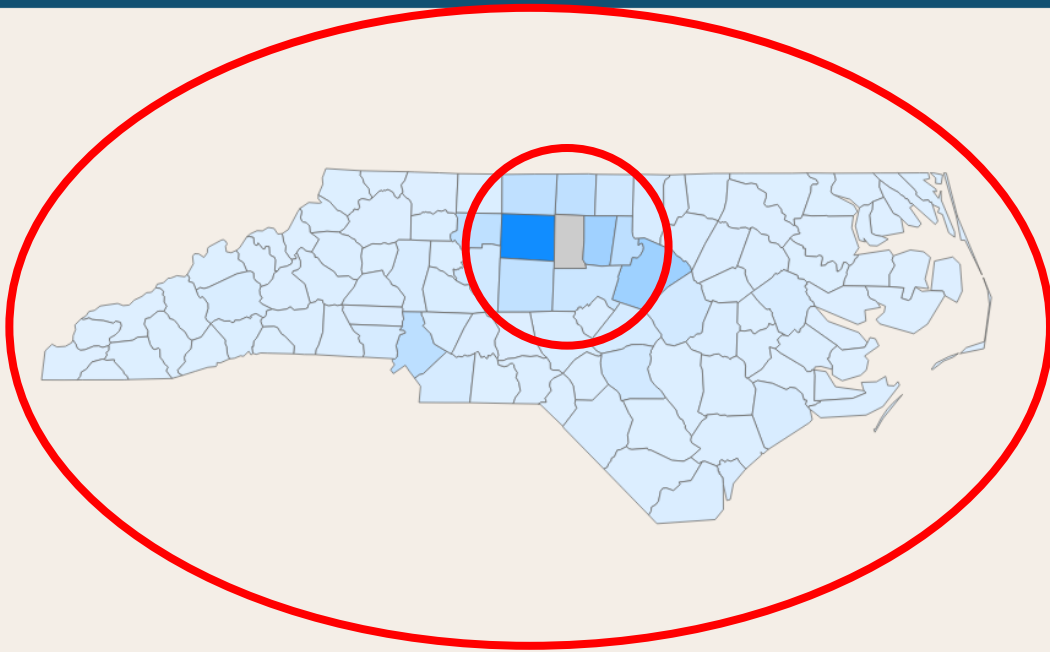
Alamance



# 32,478

Total Inflows to the Area

## Residence Counties of Commuters to the Area



Source: 2023 Private-Primary Jobs, Census LODES Data



# North Carolina Commuting Patterns Dashboard

Selected Counties

To browse available geographies, deselect any areas chosen in the Select dropdown, then return to the left Geography menu.

🔒 nccommerce.com is now full screen [Exit Full Screen \(Esc\)](#)

Summary

**Inflows**

Outflows

Alamance



Geography Select County(ies)/Region

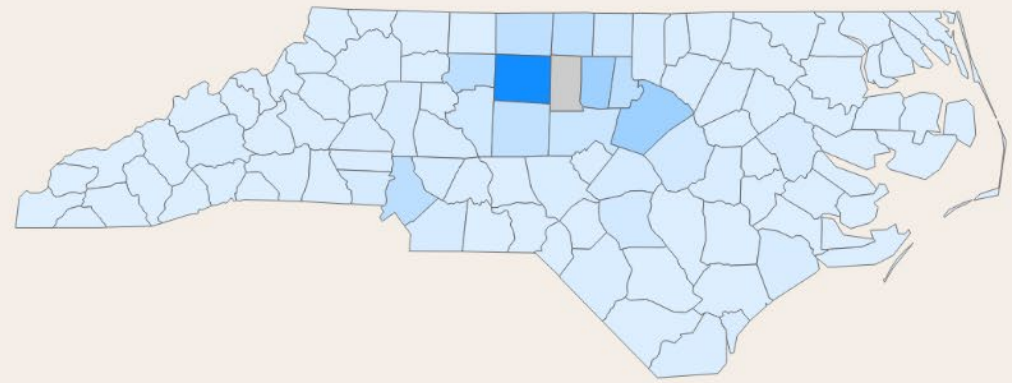
County

Alamance County

# 32,478

Total Inflows to the Area

## Residence Counties of Commuters to the Area



Wilson	103
Burke	99
Craven	98
Cleveland	92
Hoke	92
Pittsylvania, Virginia	86
Caldwell	85
Sampson	83
Duplin	82
Lenoir	82
Scotland	82
Richmond	76
Edgecombe	71
Pender	70
Rutherford	68
Spartanburg, South Carolina	67
Warren	66
Columbus	64

Source: 2023 Private-Primary Jobs, Census LODS Data

# North Carolina Commuting Patterns Dashboard

To browse available geographies, deselect any areas chosen in the Select dropdown, then return to the left Geography menu.

Selected Counties

Summary

Inflows

Outflows

Within Area

Geography

Select County(ies)/Region

County



Alamance County



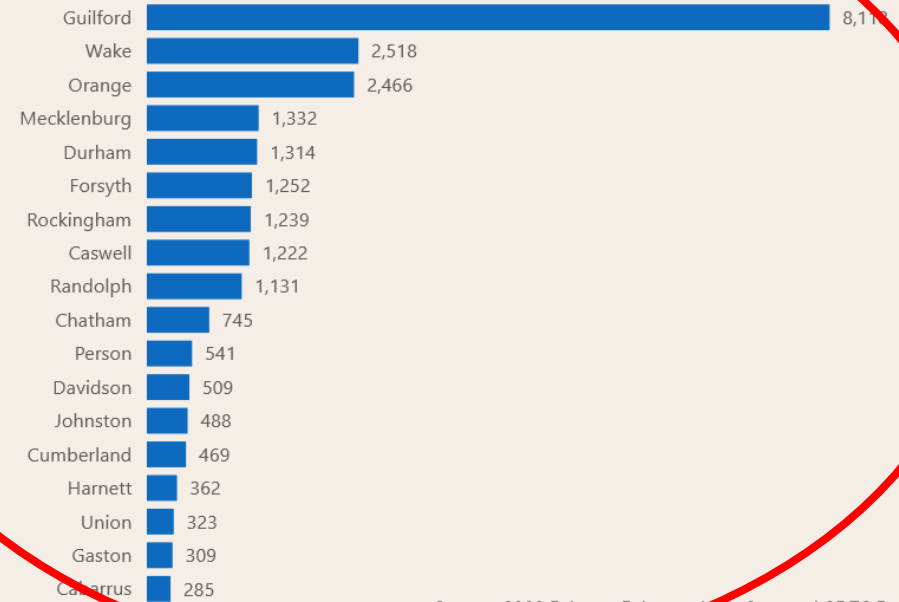
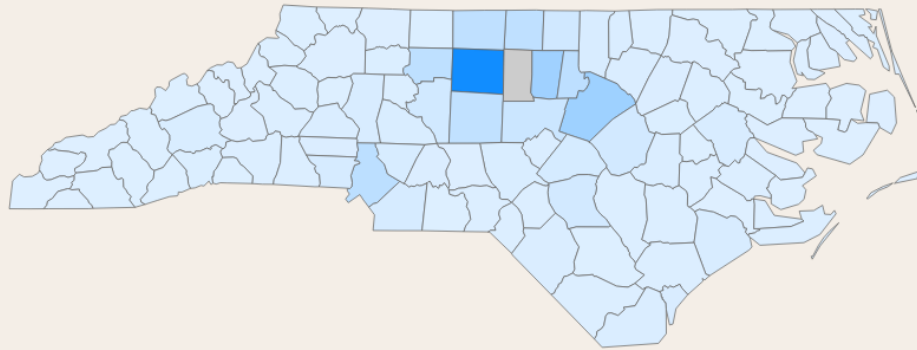
Alamance



# 32,478

Total Inflows to the Area

## Residence Counties of Commuters to the Area



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# North Carolina Commuting Patterns Dashboard

Selected Counties

To browse available geographies, deselect any areas chosen in the Select dropdown, then return to the left Geography menu.

- Summary
- Inflows
- Outflows**
- Within Area

Geography **Select County(ies)/Region**

County

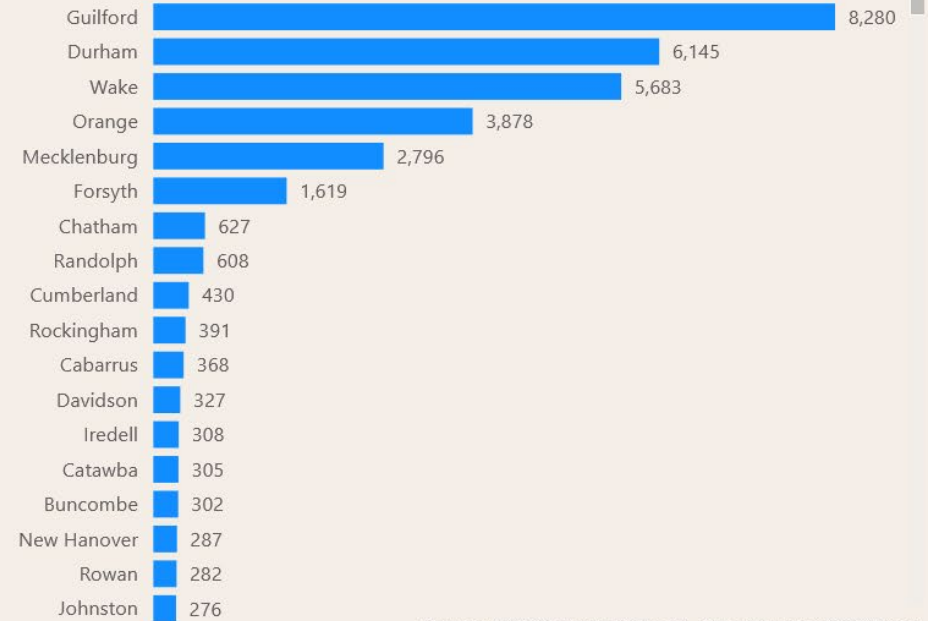
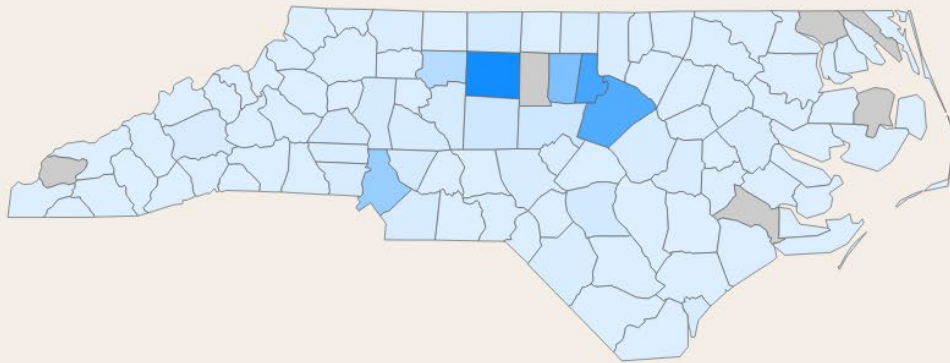
Alamance



# 38,526

Total Outflows from the Area

## Destination Counties of Commuters Out of the Area



Source: 2023 Private-Primary Jobs, Census LODES Data

# North Carolina Commuting Patterns Dashboard

Selected Counties

To browse available geographies, deselect any areas chosen in the Select dropdown, then return to the left Geography menu.

- Summary
- Inflows
- Outflows
- Within Area**

Geography **Select Your County(ies)/Region**

County

Alamance



# 24,546

Total Within-Area Flows

## Commuting Within the Area

Origin County	Destination County	Flows
Alamance	Alamance	24,546

Source: 2023 Private-Primary Jobs, Census LODS Data



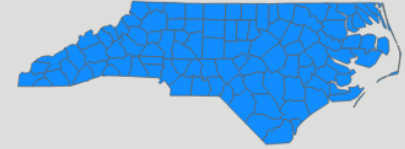
# North Carolina Commuting Patterns Dashboard

Selected Counties

To browse available geographies, deselect any areas chosen in the Select dropdown, then return to the left Geography

- Summary
- Inflows
- Outflows
- Within Area

Alamance, Alexander, Alleghany, Anson, Ashe, Avery, Beaufort, Bertie, Bladen, Brunswick, Buncombe, Burke, Cabarrus, Caldwell, Camden,...



## Geography Select County(ies)/Region

County ^ All ∨

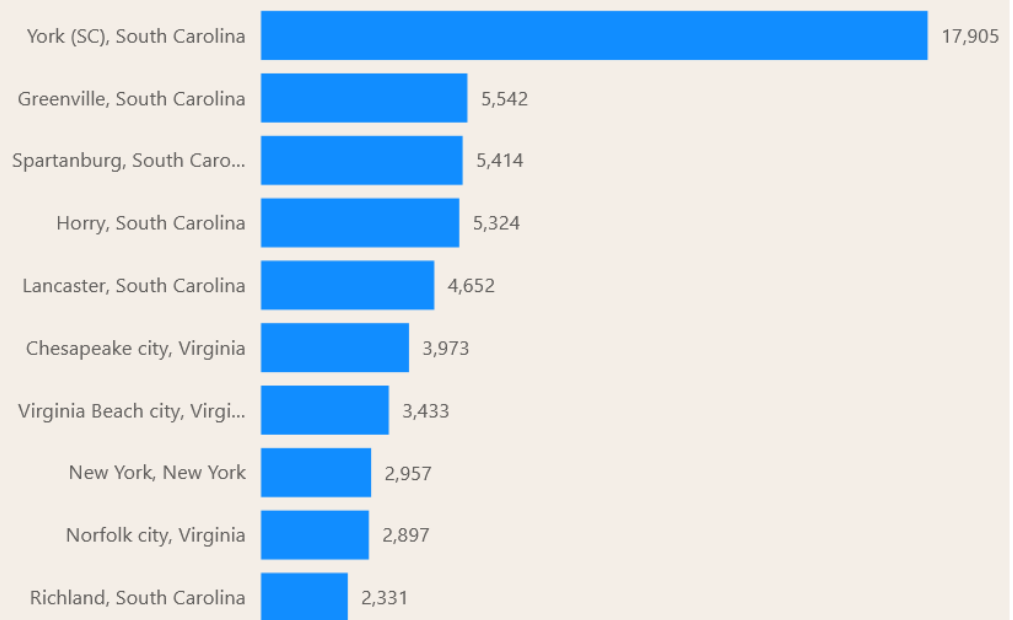
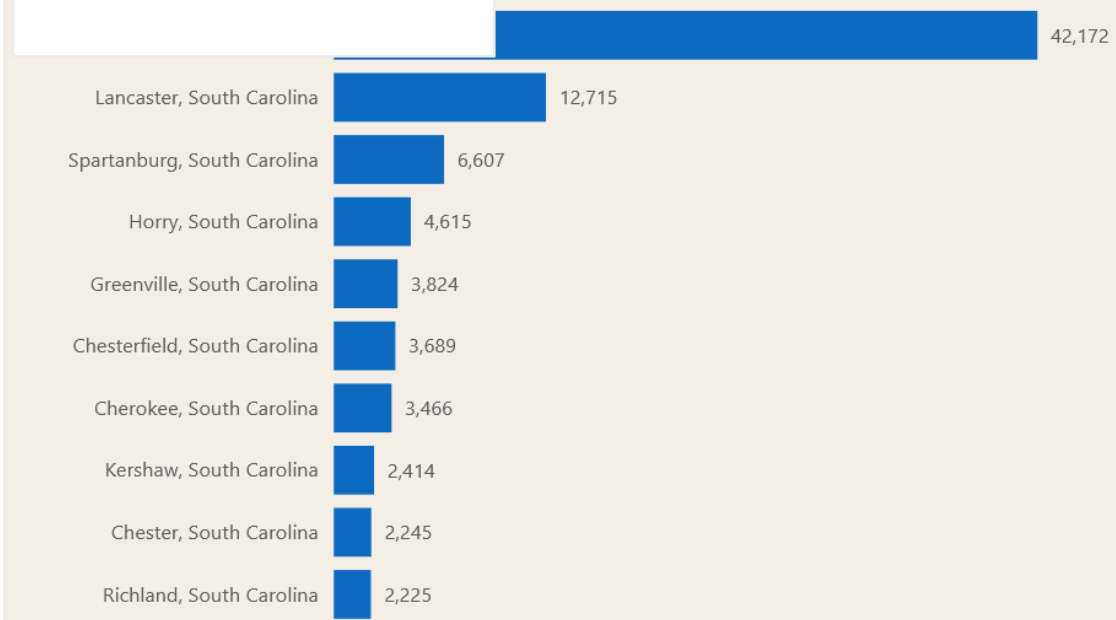
- Council of Governments
- County
- OEWS Region
- Prosperity Zone
- Workforce Development Board

<b>Selection Area</b>	<b>3,845,580</b>
<b>but Living Outside</b>	<b>184,304</b>
<b>Selection Area</b>	<b>3,661,276</b>

<b>Total Living in the Selection Area</b>	<b>3,816,530</b>
<b>Living in the Selection Area but Employed Outside</b>	<b>155,254</b>
<b>Living and Employed in the Selection Area</b>	<b>3,661,276</b>

### Where are workers coming from?

### Where are home commuters going to for work?



Source: 2023 Private-Primary Jobs, Census LODES Data

# North Carolina Commuting Patterns Dashboard

To browse available geographies, deselect any areas chosen in the Select dropdown, then return to the left Geography

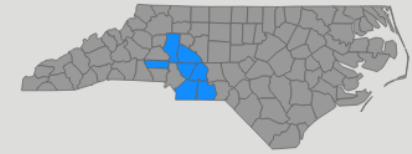
- Summary**
- Inflows
- Outflows
- Within Area

Geography Select County(ies)/Region

Workforce Development Board Centralina WDB

## Selected Counties

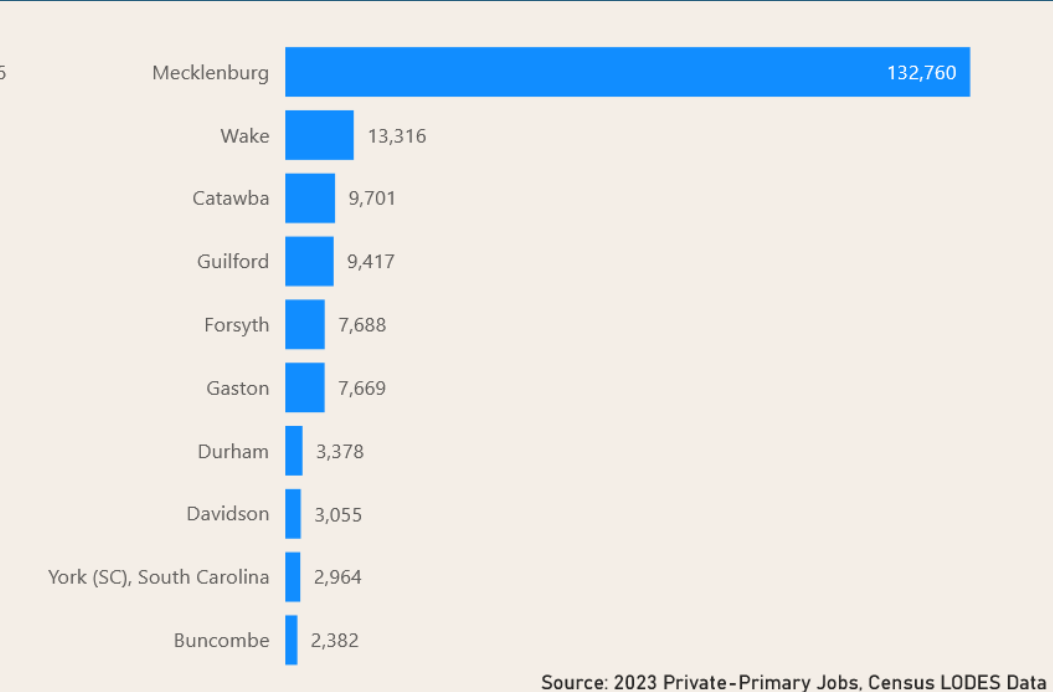
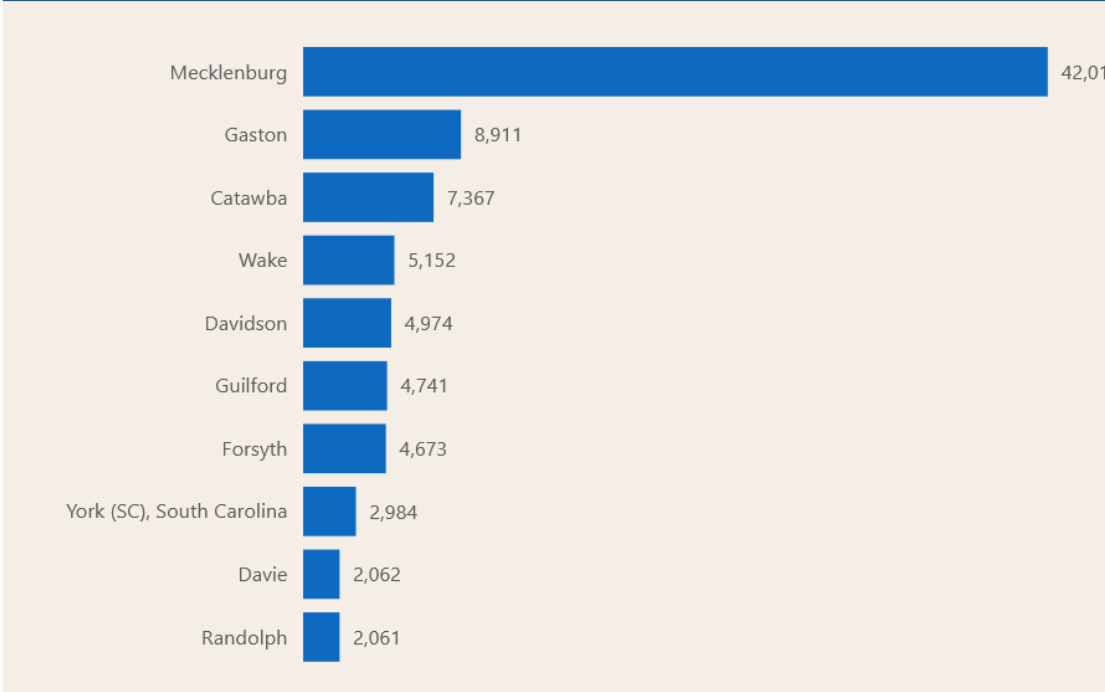
Anson, Cabarrus, Iredell, Lincoln,  
Rowan, Stanly, Union



<b>Total Employed in the Selection Area</b>	<b>290,143</b>
<b>Employed in the Selection Area but Living Outside</b>	<b>137,815</b>
<b>Employed and Living in the Selection Area</b>	<b>152,328</b>

<b>Total Living in the Selection Area</b>	<b>387,142</b>
<b>Living in the Selection Area but Employed Outside</b>	<b>234,814</b>
<b>Living and Employed in the Selection Area</b>	<b>152,328</b>

## Where are outside workers coming from? Where are home commuters going to for work?



Source: 2023 Private-Primary Jobs, Census LODS Data

# North Carolina Commuting Patterns Dashboard

Selected Counties

To browse available geographies, deselect any areas chosen in the Select dropdown, then return to the left Geography menu.

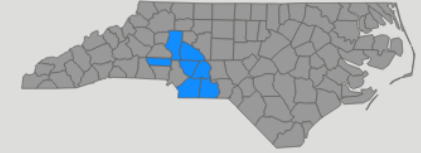
Summary Inflows Outflows **Within Area**

Geography Select Your County(ies)/Region

Workforce Development Board

Centralina WDB

Anson, Cabarrus, Iredell, Lincoln,  
Rowan, Stanly, Union



# 152,328

Total Within-Area Flows

## Commuting Within the Area

Origin County	Destination County	Flows
Iredell	Iredell	29,028
Union	Union	24,333
Cabarrus	Cabarrus	20,532
Rowan	Rowan	16,967
Stanly	Stanly	7,514
Lincoln	Lincoln	7,065
Rowan	Cabarrus	5,803
Rowan	Iredell	4,055
Cabarrus	Rowan	3,741
Iredell	Cabarrus	2,824
Cabarrus	Iredell	2,704
Iredell	Rowan	2,587
Union	Cabarrus	2,121

Source: 2023 Private-Primary Jobs, Census LODS Data



# North Carolina Commuting Patterns Dashboard

To browse available geographies, deselect any areas chosen in the Select dropdown, then return to the left Geography menu.

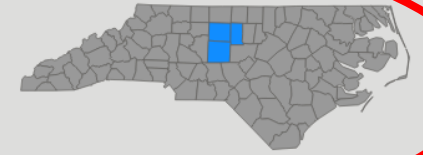
Summary Inflows **Outflows** Within Area

Geography Select County(ies)/Region

County  Multiple selections

Selected Counties

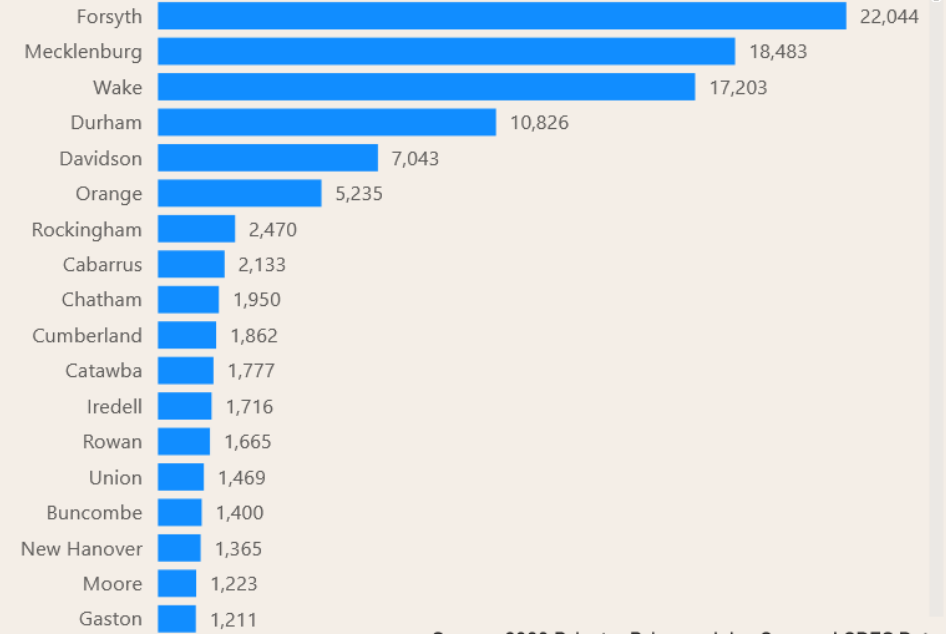
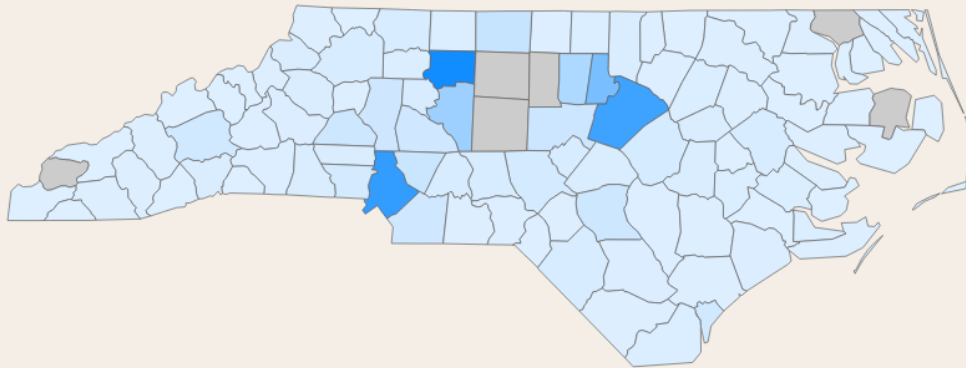
Alamance, Guilford, Randolph



# 125,549

Total Outflows from the Area

## Destination Counties of Commuters Out of the Area



Source: 2023 Private-Primary Jobs, Census LODES Data

# Technical Implementation

- Ideal: automatable dashboard
  - Saves time and reduces error
- Our dashboard is linked to our Workforce Information Database (WID)
  - Updating tables in WID = updating dashboard



# Technical Implementation: Specifics

- Data extract: automated Powershell
- Data transformation and loading: automated stored procedure
- Data manipulation: PowerBI data model
  - Geographic linkage
  - Calculated fields



# Future Features/Adjustments

- Using map as filter
- Options to swap between all primary jobs and private-primary jobs





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# Thank you

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