Davidson County

Microtransit Feasibility Study

April 2025

Developed for

Davidson Co. Transportation System

Project Partners

DC Rides
Davidson County Transportation System

Integrated Mobility Division
N.C. DEPARTMENT OF TRANSPORTATION

AECOM

Acknowledgements

Thank you to the Davidson County Transportation System (DCTS) staff, the DCTS Technical Advisory Board (TAB) members, Davidson Community College, local employers, and residents for their involvement and support in this study process.

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Initial Project Start-Up

NCDOT IMD selected AECOM as the project consultant to develop a microtransit feasibility study. This study assesses the potential integration of microtransit service into Davidson County's existing transit operations. The report includes an existing conditions analysis, a gap analysis for microtransit zone development, an assessment of the feasibility of providing microtransit, and guidance for microtransit implementation.

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Acronyms and Abbreviations

ATTAIN	Advanced Transportation Technologies & Innovative Mobility Development
AVL	Automated Vehicle Location
BTS	Bureau of Transportation Statistics
CAA	Clean Air Act
CFAP	Community Funding Area Program
CMAQ	Congestion Mitigation and Air Quality
CRP	Carbon Reduction Program
CSD	County Service District
CT	Community Transportation
CTP	Comprehensive Transportation Plan
CTSP	Community Transportation Service Plan
DCTS	Davidson County Transportation System
DFR	Deviated Fixed-Route
DBE	Disadvantaged Business Enterprise
DMP	Data Management Plan
DMV	Department of Motor Vehicles
DR	Demand Response
EAP	Equity and Accessibility Plan
EBS	Electronic Business Code
EDTAP	Elderly and Disabled Transportation Assistance Program
EJ	Environmental Justice
EMI	Enhancing Mobility Innovation
EMPL	Employment and Transportation Assistance Program
ETA	Estimated Time of Arrival
EV	Electric Vehicle
FY	Fiscal Year
HPUAMPO	High Point Urban Area Metropolitan Planning Organization
IIJA	Infrastructure Investment and Jobs Act
JCATS	Johnston County Area Transit System
KPI	Key Performance Indicator
LEHD	Longitudinal-Employer Household Dynamics
LODES	LEHD Origin-Destination Employment Statistics
LTV	Light Transit Vehicle
MEE NC	Mobility for Everyone, Everywhere in NC
MOD	Mobility on Demand
MOE	Margin of Error
MPO	Metropolitan Planning Organization
MTP	Metropolitan Transportation Plan
NTD	National Transit Database
RFP	Request for Proposal
RGP	Rural General Public Program
ROAP	Rural Operating Assistance Program
STI	Strategic Transportation Investments
STP	Surface Transportation Program
TANF	Temporary Assistance for Needy Families
TDI	Transportation Disadvantage Index
UGA	Unified Grant Application
USDA	US Department of Agriculture
VOMS	Vehicles Operating at Maximum Service
WSTA	Winston-Salem Transit Authority
WSUAMPO	Winston-Salem Urban Area Metropolitan Planning Organization

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Executive Summary

The objective of the *Davidson County Microtransit Feasibility Study* is to analyze the County's existing deviated fixed-route, demand response service, regional connections through Piedmont Authority for Regional Transportation (PART), and recommend microtransit service options. This study evaluates six microtransit zones, provides ridership projections, estimates capital and operating costs, identifies a preferred scenario, and develops an implementation strategy. This microtransit study builds on several planning efforts that the County has undertaken and participated in for exploring microtransit service as a strategy to offer more frequent transit service and address transportation challenges difficult to serve with fixed routes. These planning efforts include the following:

- *2045 Winston-Salem Urban Area Metropolitan Planning Organization Metropolitan Transportation Plan (2020)*
- *Davidson County Parks and Recreation and Tourism Development Master Plan (2017 Update)*
- *DCTS Community Transportation Service Plan (2015)*
- *2045 High Point Urban Area Metropolitan Planning Organization Metropolitan Transportation Plan (2015)*
- *Davidson County Comprehensive Transportation Plan (2011)*
- *Davidson County Land Development Plan Update (2009)*
- *Davidson County Greenway Master Plan (2009)*
- *Davidson County Blueway Plan*

What is Microtransit?

Microtransit is a technology-enabled service typically using shuttles or vans to provide pooled, responsive transit with dynamic routing. Microtransit has emerged as an alternative to traditional demand response and fixed-route transit for some mobility markets with the potential to provide service for lower density areas that are difficult to serve with fixed-route transit and provide first mile/last mile connections to existing transit.

Riders typically request rides through a smartphone application but can also book rides using an online web portal or through a call center. Including a call center provides access to microtransit service for riders who do not have access to smartphones and/or internet service. Microtransit can be scaled to the market it is serving based on size and number of zones, often proving more efficient than fixed-route transit in lower-density areas.

Transit agencies have many options for implementing microtransit service according to their capacity and preferences. Microtransit implementation is discussed in terms of who is providing the microtransit service element (transit agency or vendor) and is generally categorized according to two primary service models: Software-as-a-Service (SaaS) or Transportation-as-a-Service (TaaS). However, it is important to note that options for implementation exist along a continuum with transit agencies having the flexibility to choose which service aspects are performed in-house versus contracted out.

Figure ES-1. Example of a Microtransit Trip



Key Benefits

- Removes the 48-hour advance reservation requirement allowing for spontaneous trips.
- Improves connections to existing DCTS routes.
- Expands choice in how the community moves.
- Connects with essential community services and jobs.
- Serves harder to reach areas with transit.

Software-as-a-Service (SaaS)

In the SaaS model, the County would provide microtransit services by purchasing software from a third-party. The Davidson County Transportation System (DCTS) would be responsible for providing drivers, vehicles, and operations management. It is recommended that a microtransit platform include, at a minimum: dynamic vehicle routing capacity, passenger aggregation, rider and driver apps, support for booking by phone and cash payments, backend administrative tools, and ongoing technical, operational, and marketing support.

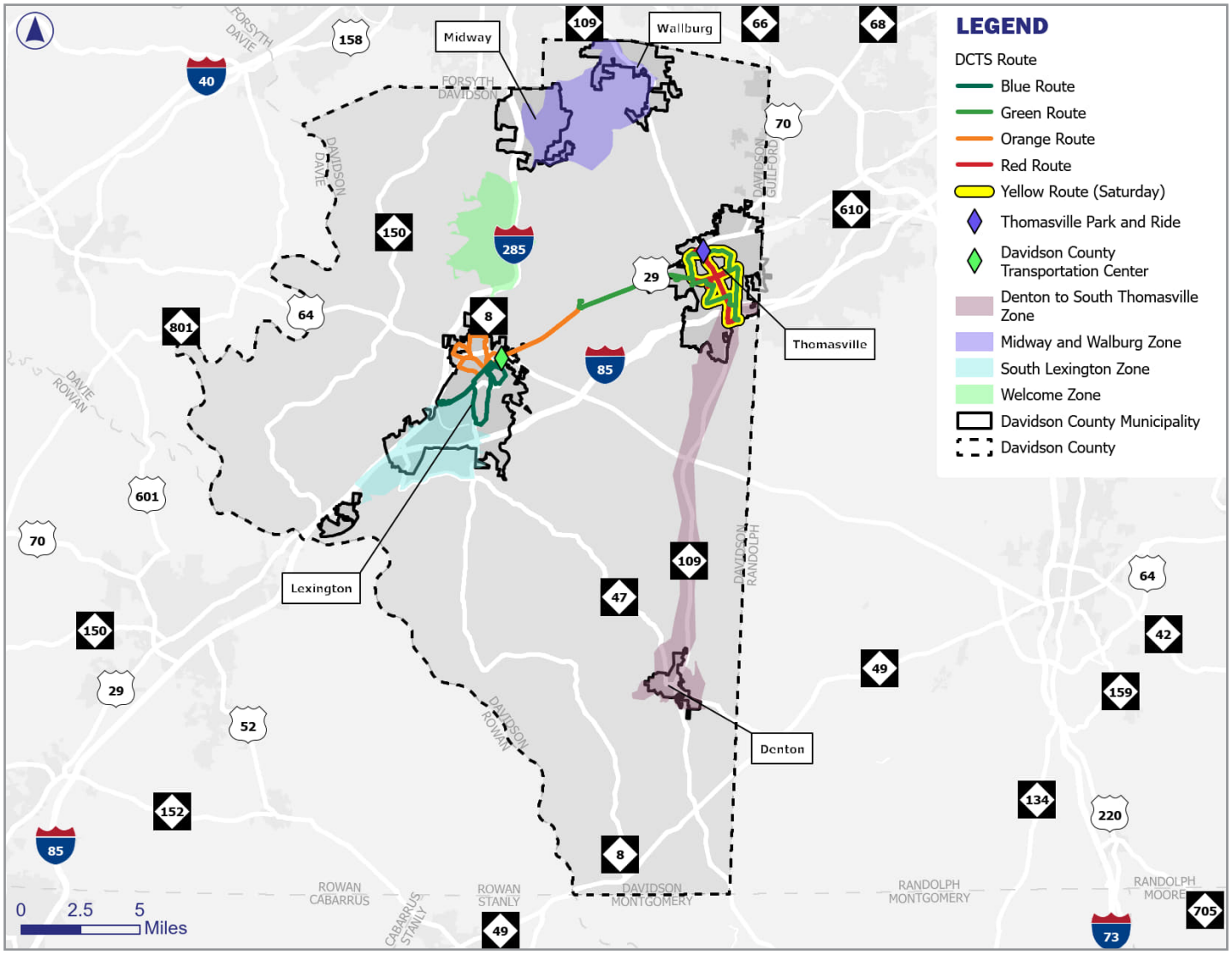
Transportation-as-a-Service (TaaS)

In the TaaS model, the County would contract with a microtransit vendor to provide a turnkey solution that includes microtransit technology, drivers, vehicles, and operations management.

Microtransit Service Zones

The County began by evaluating six service zones for microtransit service implementation: Countywide, Denton to South Thomasville, Denton Area, South Lexington, Midway and Walburg, and Welcome. Zone 1 would encompass the entire county, replacing both the existing fixed-route and demand response

Figure ES-2. Final Four Assessed Microtransit Zones



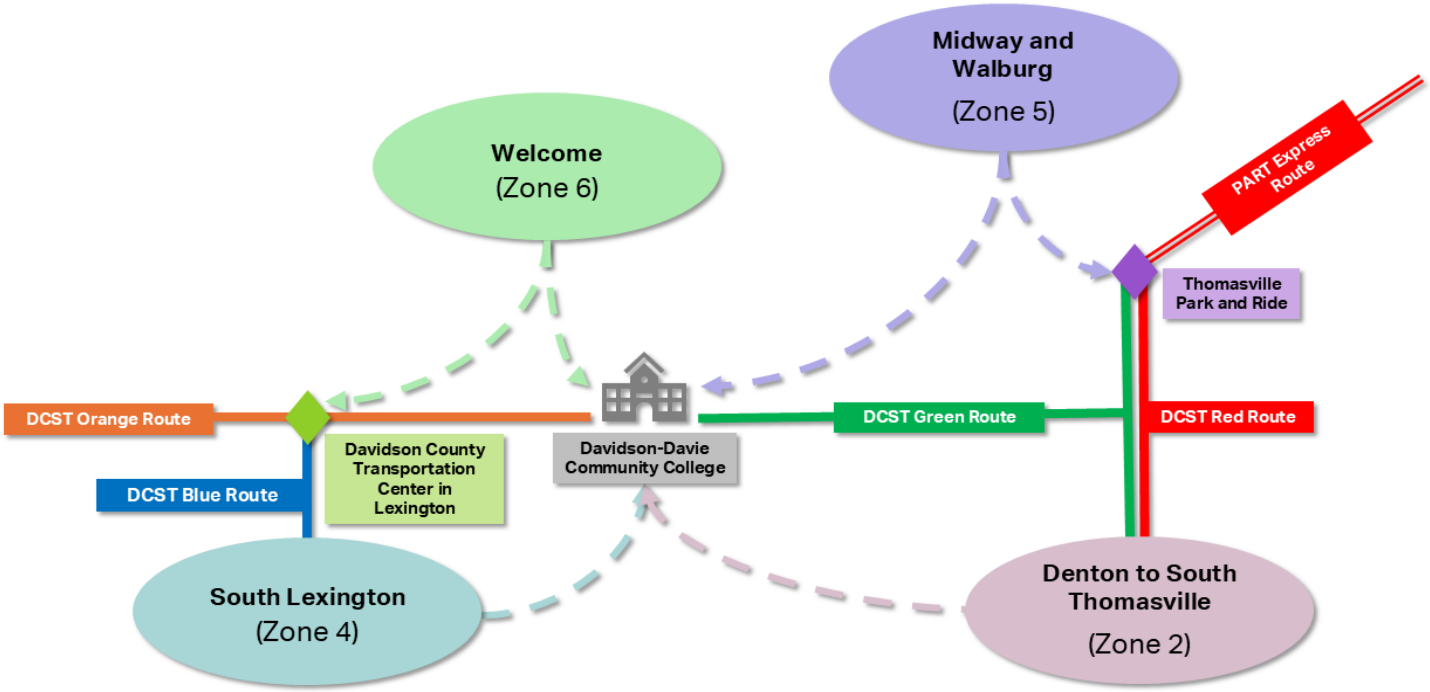


Figure ES-3. Connections to Final Four Assessed Microtransit Zones

services. Zones 2 and 3 are more limited in scope, specifically addressing the needs of Denton residents not covered by fixed-route services. Zone 4 would cover southern Lexington, an area dense with residences and businesses but out of reach of the DCTS routes. Zones 5 and 6 would broadly cover the northern communities of Midway, Walburg, and Welcome, with dedicated stops outside these zones for the Thomasville Park-and-Ride and the county Transportation Center, respectively. All zones would allow connections to the Davidson-Davie Community College and deviated fixed routes (Figure ES-3).

After analyzing demographic coverage, community services, and ridership estimates for each potential microtransit zone, two zones were removed from further consideration. To manage service costs and limit redundancy of the potential service, the Denton Area zone and the Countywide zone were eliminated from the remainder of the feasibility study. The analysis leading to this decision is documented in Chapter 5. To implement microtransit, the County will need to select between a SaaS or TaaS model.

Ridership Estimates

The estimated ridership for each zone has been calculated and are summarized in Table ES-1. Zone 2 is projected to have the highest ridership at just over 127 riders per week. Zone 4 is expected to have the second highest ridership with a projection of 99 riders per week. All ridership projections are summarized in Table 5-1.

Capital and Operating Cost Estimates

Estimated capital and operating costs were developed using data from recent quotes provided to the County, peer systems, vendors, and the North Carolina Department of Transportation (NCDOT). The capital costs for all four zones would be approximately $1,190,000, with the purchase of new vehicles comprising the majority of these costs. Roughly $76,400 of the capital costs for each zone are tied to the one-time software setup fee, a

Table ES-1. Comparison of Service Characteristics

	Denton to South Thomasville (Zone 2)	South Lexington (Zone 4)	Midway and Walburg (Zone 5)	Welcome (Zone 6)	Total
Service Characteristics					
Days of operation	Monday - Saturday				-
Hours of operation	6 am to 6 pm weekdays, 10 am to 4 pm Saturday				-
Estimated average wait time	20 minutes				-
Ridership scenario	Medium	Medium	Medium (20% of rides to Thomasville Park and Ride)	Medium (20% of rides to Transportation Center stop)	-
Estimated number of microtransit vehicles needed for maximum service	2-3	1-2	1-2	1-2	**5-9**
Spare vehicles	1	1	1	1	**1-2**
Annual operating hours	9,864	6,576	6,576	6,576	**29,592**
Estimated ridership (per week)	127	99	82	63	**371**

voice calling software licensing fee from the current vehicle technology vendor, and the materials needed for branding and promotion. However, these are costs that would be shared across the four zones if all of them were to be implemented. A total of nine revenue vehicles would need to be purchased across the four zones to meet the anticipated ridership demand for the service. If implemented independently, each zone would also require an additional spare vehicle to satisfy the FTA 20% spare ratio requirement. However, only two spare vehicles would need to be purchased for the whole system if all zones are put into service at the same time.

For TaaS, the total capital costs across all four zones add up to $60,000. Without the cost of vehicles and associated modifications and licensing, the

Table ES-2. Comparison of SaaS and TaaS Total Capital Costs

	Denton to South Thomasville (Zone 2)	South Lexington (Zone 4)	Midway and Walburg (Zone 5)	Welcome (Zone 6)	Total
Total SaaS Capital Costs	$480,000	$380,000	$380,000	$380,000	**$1,190,000**
Total TaaS Capital Costs	$60,000				**$60,000**

remaining costs are for branding and the setup fee, distributed across all four zones. A comparison of the SaaS and TaaS capital costs can be found in Table ES-2.

For SaaS, the annual costs of operations, software, licensing, and data total $880,000 for the Denton to Thomasville Zone and $590,000 for each of the other zones. If all four zones were implemented, the total cost would be $2,650,000 annually. Because drivers cannot be reallocated from the DCTS deviated-fixed route service, an additional 14 part-time drivers would be needed to cover the weekly operating hours for all of the zones. A transit planner would be recommended to ensure requested rides are booked and completed. This transit planner would also provide capacity for analyzing microtransit service quality, changes to zones, and feedback from riders and the community.

In the TaaS scenario, a lower hourly operating cost is assumed based on the current cost of the demand response contractor. This decreases the annual cost of operations, in addition to a lack of annual data and licensing costs. The annual cost for the Denton to Thomasville Zone would be $450,000, and $300,000 for each of the other three zones. The total cost for all zones would be $1,510,000 each year. The operating costs for both SaaS and TaaS scenarios are in Table ES-3.

Table ES-3. Comparison of SaaS and TaaS Total Operating Costs

	Denton to South Thomasville (Zone 2)	South Lexington (Zone 4)	Midway and Walburg (Zone 5)	Welcome (Zone 6)	Total
Total SaaS Operating Costs	$880,000	$590,000	$590,000	$590,000	**$2,650,000**
Total TaaS Operating Costs	$450,000	$300,000	$300,000	$300,000	**$1,510,000**

Implementation

Implementing microtransit service in Davidson County would require the same steps regardless of the zones that the County selects to begin with. The County may also opt to pilot one of the zones to test out the service within the community. The County will be responsible for complying with federal and state requirements and regulations including Title VI, ADA and Drug and Alcohol programs.

The distinction between SaaS and TaaS is not strict. Rather, options for implementation exist along a continuum with the flexibility to choose which service aspects are performed in-house versus contracted out. Under the SaaS model, the County may contract with consultants or vendors for specific implementation actions such as marketing and promotion. If the County selects the SaaS model where microtransit service is directly operated by the County, DCTS would have a more active role in launching and operating its microtransit service. Figure ES-4 identifies the required actions for launching and operating a microtransit service and whether the County or a vendor would have the primary responsibility according to service model. The County could hire a consultant to assist with any implementation actions for the zones if needed.

Figure ES-4. Implementation Actions by Service Model

Implementation Action	SaaS Model	TaaS Model
1. Finalize Service Design (Davidson County Microtransit Study)		
2. Select the Microtransit Scenario		
3. Prepare Data Management and Equity and Accessibility Plans (optional)		
4. Procurement of SaaS or TaaS vendor		
5. Develop a Branding and Marketing Campaign		
6. Develop Detailed Operations and Safety Plans		
7. Test Dispatching Software		
8. Test Rider-facing Smartphone Application and Website		
9. Train Drivers, Maintenance Staff, and Administrative Staff		
10. Conduct Field Test		
11. Brand Microtransit Vehicles and Stop Infrastructure		
12. Launch the Marketing Campaign Prior to Service Launch		
13. Launch Service		
14. Collect, Analyze, and Report Data		
15. Monitor and Enhance Service		

Resource provided by Transit Agency Resource provided by microtransit vendor

An implementation timeline was developed for the *Davidson County Microtransit Feasibility Study*, beginning with the first implementation step of selecting the microtransit scenario by the County. As shown in **Table ES-4**, a total of seven to nine months is estimated for launching microtransit service beginning with selecting the microtransit scenario. Implementation steps are phased concurrently where possible such as developing a branding marketing campaign, operations plan, and safety plan in order to expedite service launch. The timeline varies slightly between SaaS and TaaS scenarios with an additional two months estimated for SaaS due to the time associated with recruiting and hiring drivers and securing vehicles.

Table ES-4. Implementation Timeline

Implementation Step	Month									
	1	2	3	4	5	6	7	8	9	10
Select the Microtransit Scenario	■									
Prepare Data Management & Equity & Accessibility Plans (optional)	■	■								
Vehicle Procurement (SaaS only)	▒	▒	▒	▒						
Procure a SaaS or TaaS vendor		■	■	■						
Develop a branding & marketing campaign					■	■				
Develop a detailed operations plan & safety plan					■	■				
Hire additional drivers (SaaS only)						▒	▒	▒		
Train drivers, maintenance staff, & administrative staff							■	▒	▒	
Test dispatching software, ride app, & hard-to-serve locations							■	▒	▒	
Implementation of marketing campaign								■	▒	▒
Launch service								■	▒	▒

■ *Action Step Duration* ▒ *Additional Time for SaaS*

Key Considerations

The key considerations for DCTS, its Transportation Advisory Board, and Davidson County Board of Commissioners are:

- Select a general microtransit service model.
- Define which service aspects will be the responsibility of DCTS or the vendor.
- Decide whether to pilot one zone for as low as $360,000 annually or implement multiple zones for $1.6M to $3.8M annually.

01. Introduction

The Davidson County Transportation System (DCTS) operates four fare-free, deviated fixed-routes serving Lexington, Thomasville, and Davidson-Davie Community College. These routes also connect regionally with the Piedmont Authority for Regional Transportation (PART) at PART's Park & Ride on the Red Route in Thomasville. PART's Route 9 continues to High Point, downtown Greensboro, and connects with the Triad and beyond. Additionally, DCTS offers a demand response service that requires a two-day advance reservation.

Introducing microtransit service would complement the existing DCTS demand response and deviated fixed-route services, particularly benefiting seniors and underserved populations who need same-day transit for accessing critical services. Many communities within Davidson County are too far from the existing deviated fixed-routes in Lexington and Thomasville to be served by them. Microtransit service could facilitate connections to nearby transit systems for regional connectivity, including High Point Transit, Salisbury Transit, and Winston-Salem Transit Authority.

The goal of this study is to determine the feasibility and potential benefits of microtransit for Davidson County, as well as to identify how the County's existing deviated fixed-route and demand response services could be optimized for an integrated transit system. Findings and recommendations from this study will support the vision of both Davidson County and the North Carolina Department of Transportation (NCDOT) Integrated Mobility Division (IMD) for safe, affordable, and innovative multimodal transportation.

NCDOT IMD selected AECOM as the project consultant to develop a microtransit feasibility study. This study will assess the potential integration of microtransit service into Davidson County's existing transit operations. The report includes an existing conditions analysis, a gap analysis for microtransit zone development, an assessment of the feasibility of providing microtransit, and guidance for microtransit implementation.

1.1 Vision and Goals

A visioning exercise was held during the first Focus Group meeting with DC Connect and other local agencies that rely on transit. From this exercise, the project team developed the following vision statement for the study:

Davidson County envisions a collaborative, needs-based microtransit system that is streamlined, convenient, and safe. The goal is to provide accessible transportation options that connect residents to work, healthcare, basic needs, and resources. By offering more service and comprehensive coverage, Davidson County aims to increase access for all within the County, including neighboring areas.

Stemming from this vision, the project team developed the following goals for the future microtransit service to accomplish:

- **Enhance Accessibility:** Develop a transportation network that ensures easy access for all residents, regardless of their location within the County or neighboring areas.
- **Expand Transit Service and Coverage:** Increase the number of routes and extend coverage to reach underserved communities, connecting them to essential destinations such as work, healthcare facilities, and resources.
- **Safety and Reliability:** Prioritize safety by implementing robust safety protocols and ensuring reliable service. Riders should feel secure while using the microtransit system.
- **Streamlined Operations:** Optimize operations to create a seamless experience for riders. Minimize wait times, improve scheduling, and reduce inefficiencies.
- **Energy Efficiency:** Design the microtransit system with energy-efficient vehicles and sustainable practices to minimize environmental impact.
- **Low Barriers:** Remove financial and logistical barriers by offering free rides and multiple options for booking trips and paying for trips if fares are charged in the future.
- **Flexible Service:** Increase flexibility by providing on-demand microtransit service while maintaining an option to pre-book trips to accommodate diverse needs.

Performance measures, both quantitative and qualitative, are detailed in Section 10.1. These measures would support monitoring progress made in achieving these goals. The performance measures relate to the aforementioned goals and provide a clear outlook on regarding what DCTS hopes to achieve as well as determine the success of the study's goals.

1.2 What is On-Demand Microtransit?

Microtransit is a type of technology-enabled public transit service that uses shuttles or vans to provide pooled, responsive transit with dynamic routing. The idea of microtransit originally emerged as an alternative to traditional demand response and fixed-route transit for lower density communities that are difficult to serve with fixed-route transit. Microtransit systems can also be integrated into existing transit systems to help provide first-and-last-mile connections.

To use microtransit, riders typically request rides through a smartphone application which then connects them to a nearby vehicle. In some instances, users may also book rides through an online web portal or a call center (**Figure**

1-1). Including a call center provides access to microtransit service for riders who do not have access to smartphones and/or internet service. Microtransit can be scaled to the community it is serving based on size and number of service zones, often proving more efficient than fixed-route transit in lower-density areas.

1.3 On-Demand Microtransit Service Models

In addition to being scalable to the size of a given area, transit agencies have many options for implementing microtransit service according to their capacity and preferences. Microtransit implementation is discussed in terms of who is providing the microtransit service element (transit agency or vendor) and is generally categorized according to two primary service models: Software-as-a-Service (SaaS) or Transportation-as-a-Service (TaaS). In general, SaaS models involve the purchase and management of microtransit software by government using public vehicles and labor, while TaaS models involve the hiring of a private vendor to operate and manage all aspects of microtransit (see Figure 1-2).

However, the distinction between SaaS and TaaS is not strict. Rather, options for implementation exist along a continuum with flexibility to choose which service aspects are performed in-house versus contracted out. Under the SaaS model, a system may contract with consultants or vendors for specific implementation actions such as marketing or promotion. It is important to note that a system can perform the needed functions for implementation using in-house staff, by hiring a consultant, or by building the functions into the provider contract.

Figure 1-1. Example of a Microtransit Trip

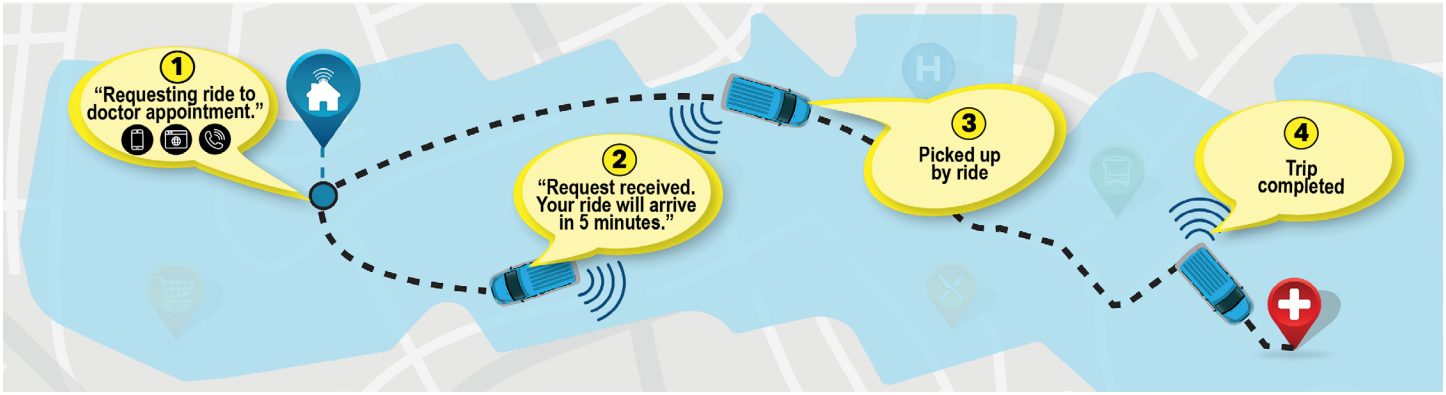


Figure 1-2. Microtransit Service Models



Software as a Service (SaaS)

In the SaaS model, the system would provide microtransit services by purchasing software from a third-party. The system would be responsible for providing drivers, vehicles, and operations management.

Transportation as a Service (TaaS)

In the TaaS model, the system would contract with a microtransit vendor to provide a turnkey solution that includes microtransit technology, drivers, vehicles, operations, and marketing.

1.3.1 Software-as-a-Service

In the SaaS model, the transit agency provides microtransit services by purchasing software from a third-party. Davison County would be responsible for providing drivers, vehicles, and operations management. It is recommended that a microtransit platform include, at a minimum: dynamic vehicle routing capacity, passenger aggregation, rider and driver apps, support for booking by phone and cash payments, backend administrative tools, and ongoing technical, operational, and marketing support.

1.3.2 Transportation-as-a-Service

In the TaaS model, transit agencies contract with microtransit vendors to provide a turnkey solution that includes technology, drivers, vehicles, and operations management. However, transit agencies have the flexibility to choose which service aspects are performed in-house versus contracted out. For example, an agency with available vehicles but limited staff may choose a hybrid of SaaS and TaaS where they use their vehicles to deploy microtransit service but contract with a vendor for drivers. Figure 1-3 summarizes the benefits and challenges associated with SaaS and TaaS service models for agencies in general.

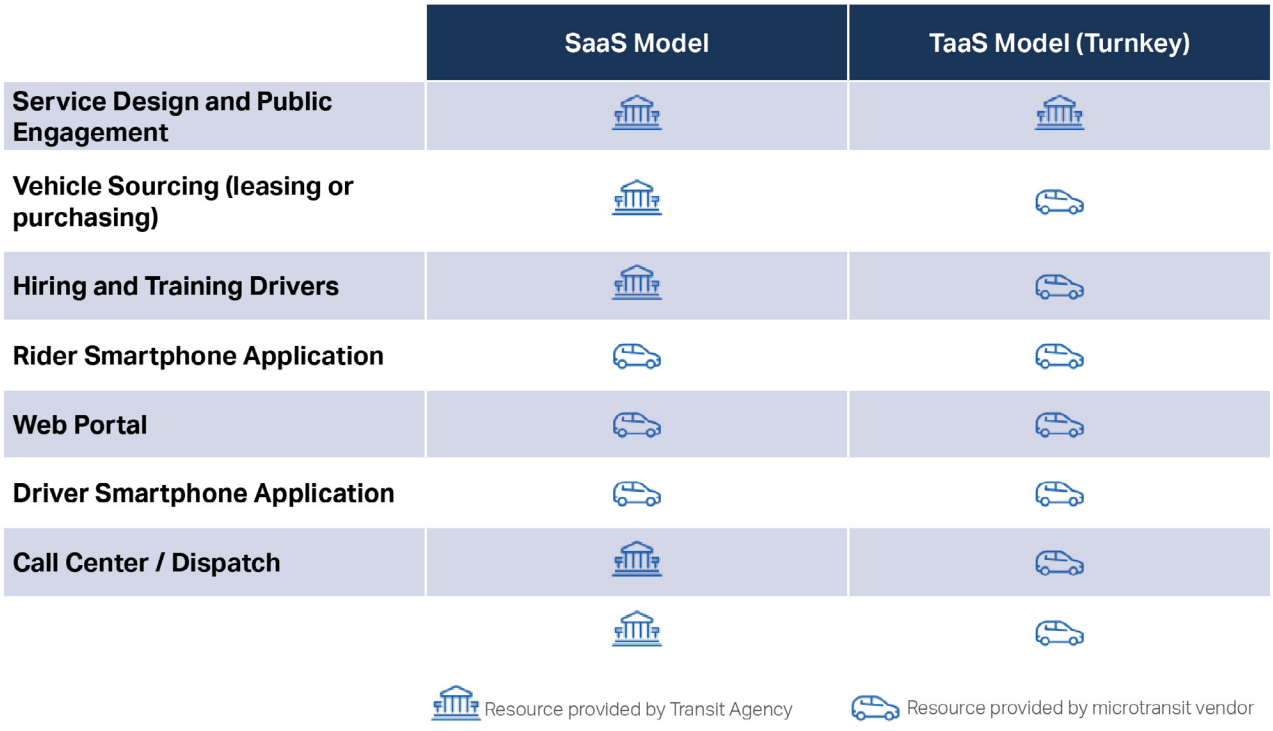
Figure 1-3. Benefits and Challenges of Microtransit Service Models



	SaaS	TaaS
Benefits:	• The agency has more control over managing and operating the service • The vendor costs will be lower for a software-only option • User-facing interfaces are continually validated and improved through large networks of riders, drivers, and dispatchers • Solutions may be launched quickly	• Faster implementation • Potential cost savings • Greater flexibility and scalability • Access to the latest technology • Vendor takes on risk of accidents and claims • Vendor responsibility to recruit and retain drivers, which may be particularly beneficial to the agency during this current period of driver shortage
Challenges:	• Higher start-up capital costs to purchase vehicles and tablets if not currently available • Potential need to hire more staff to manage and operate the service • Longer start-up time to allow for the procurement of vehicles and to hire staff/drivers • The overall costs may be higher when considering salaries for drivers and staff • Agency is responsible for maintenance of vehicles	• Service rates may change based on market demand and trends, which is out of the agency's control • More responsibility to ensure service quality and performance targets are met • Vendor may not have as much experience with local, state, and federal requirements and/or National Transit Database reporting • Vendor may not know the community and riders as well as the agency does

This study provides a comprehensive analysis of the microtransit implementation options for Davidson County based on the DCTS's existing conditions and resources as well as the experiences of peer transit agencies. **Figure 1-4** identifies the microtransit service elements typically provided by the transit agency or vendor according to the SaaS and TaaS service models.

Figure 1-4. Comparing Microtransit Service Models



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02. Public & Stakeholder Engagement

A Public Engagement Plan (PEP) was developed to guide engagement with stakeholders and members of the community throughout the study. The PEP was used to guide the community and stakeholder outreach for the duration of the project and included multiple outreach techniques and opportunities to prepare a microtransit feasibility study that is responsive to the community. It includes an Equity Engagement Plan to reach any potential underserved community groups through partnerships with local community leaders to promote engagement opportunities and focus groups. Please see **Appendix A: Public Engagement Plan** for additional information.

The PEP includes the following engagement components which are summarized below:

- Focus Group Meetings
- Pop-Up Event
- Survey
- Stakeholder Interviews

2.1 Focus Group Meetings

AECOM facilitated two Focus Group meetings during the study: Focus Group #1: DC Connect and Focus Group #2: Davidson-Davie Community College and local employers. These meetings enabled the broader team to raise awareness about the study, highlight the potential for microtransit to complement existing services, explore ongoing collaboration opportunities, and collect feedback while setting expectations for follow-up. Below, are summaries of each Focus Group, including details about the stakeholders in attendance, their roles in the study, the content shared with them, and the valuable feedback they provided to DCTS and the project team.

2.1.1 Focus Group #1

The first Focus Group Meeting was held in person on June 28, 2024, at the Davidson County Parks and Recreation Building (West Campus) with DC Connect and other local organizations whose clients rely on transit. DC Connect, Inc. acts as an entry point to local resources for Davidson County residents who are experiencing homelessness, substance misuse, and/or post incarceration. During the meeting, attendees learned about the DCTS system and the project. Additionally, they participated in a Poll Everywhere exercise and provided input on the project's vision and goals, as well as information for the needs assessment. Key findings from the first Focus Group meeting are summarized below.

Key Findings:

- Many of the organizations at the meeting have clients that use DC Rides.
- Attendees noted that coverage and frequency are two of the greatest unmet transit needs within the County.
- Attendees would like to see DC Rides equally prioritize coverage and frequency.
- Attendees find that mobility hubs and more sidewalks to connect to transit are multimodal improvements that are needed to a have a direct impact on the success of the current and future transit service.
- Attendees believe their respective agencies can hold workshops, advocate for the transit system, facilitate connectivity and networking, as well as act as resources during the study.
- Several organizations mentioned that they have clients that walk several hours to reach services , which is dangerous due to the lack of sidewalks. It was noted in conversation during the Focus Group meeting that clients may not be aware of existing DCTS' demand response services, which include the entire county.
- Attendees advocated for a roundtrip fee. If a fare were charged, attendees noted that paying for the roundtrip fare at time of booking would be important for their clients.
- Attendees voiced concern for clients reaching food pantries across the County.
- The group discussed the potential to set up rider profiles under the microtransit service for those fleeing domestic abuse.

2.1.2 Focus Group Meeting #2

The second Focus Group was held with Davidson-Davie Community College and local employers in Davidson County to understand the needs of potential and current riders that commute to and from these businesses and groups via public transit. The meeting took place on August 27, 2024, at Davidson-Davie Community College and was held before the community pop-up event on campus.

During the meeting, the project team reviewed existing conditions associated with DCTS, held a Poll Everywhere exercise, and reviewed the draft microtransit zones with attendees. Key findings from the second Focus Group meeting and Poll Everywhere results are summarized below.

Key Findings:

- Attendees voiced concern for wheelchair users.
- Attendees voiced concern for riders taking advantage of a fare-free system (e.g., going to the grocery store every day).
- Attendees expressed interest in expanding the zones to cover the area of the County between the South Lexington and Denton to South Lexington microtransit zones.
- Attendees recommended piloting one of the zones to evaluate its success.
- Attendees do not think that 1-2 vehicles per zone will be sufficient for the future system.

Poll Everywhere Results:

Below is a summary of the responses from the Poll Everywhere exercise for Focus Groups #1 and #2, organized by each question.

What is your vision for future public transportation in Davidson County?

Focus Group participants are interested in future public transportation services that include more availability, accessibility, and mobility options for all.

Select Responses:

- More availability
- Accessibility
- Trains to Winston
- No one will go without adequate transport
- Affordable
- Mobility options for all
- Available to all areas of county
- Convenient
- Accessible
- Flexible
- Safe

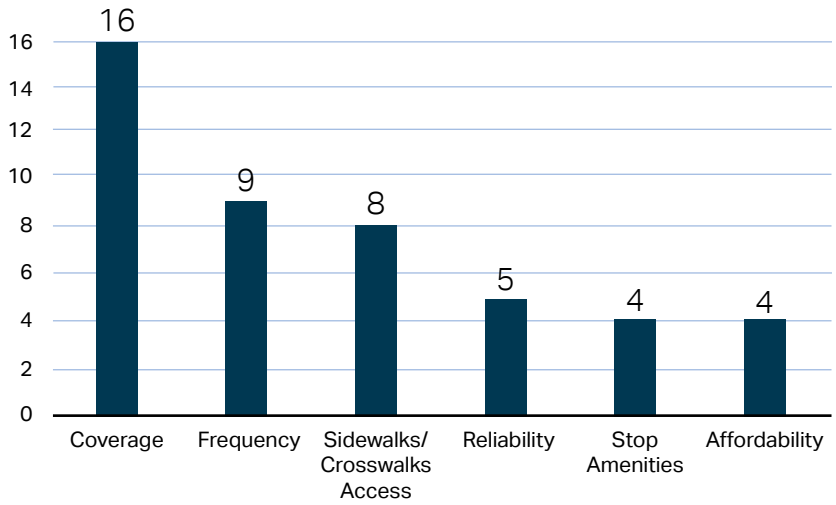
What are the most important unmet transit needs within Davidson County?

The most pressing, unmet transit needs were coverage, followed by frequency and sidewalks/ crosswalks/access.

Responses:

- Coverage (16)
- Frequency (9)
- Sidewalks/crosswalks/access (8)
- Reliability (5)
- Stop amenities (4)
- Affordability (4)

What are the most important unmet transit needs within Davidson County?



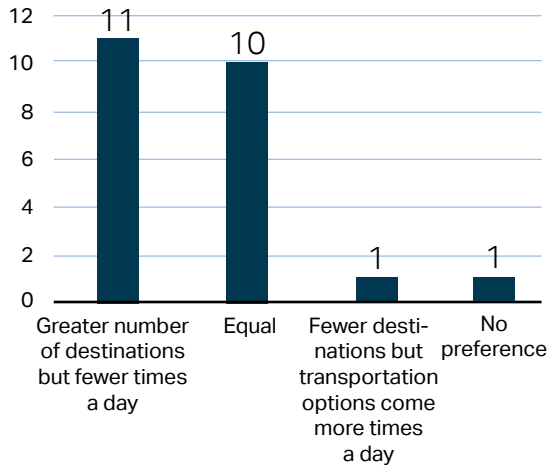
What should Davidson County prioritize?

Participants prioritize a greater number of destinations but fewer times a day (more coverage area served) rather than serving fewer destinations more times a day (more frequency of service).

Responses:

- Greater number of destinations but fewer times a day (11)
- Equal (10)
- Fewer destinations but transportation options come more times a day (1)
- No preference (1)

What should Davidson County prioritize?



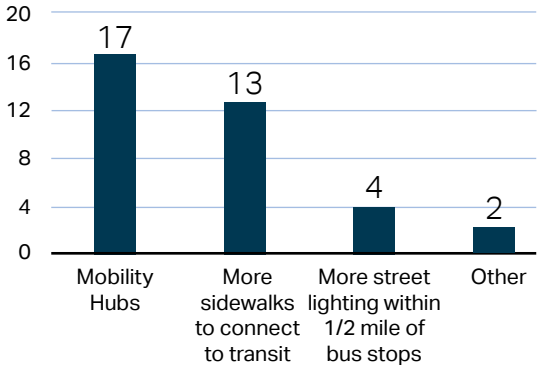
What multimodal improvements are needed that could have a direct impact on the success of current or future transit service?

Participants favor adding mobility hubs followed by the inclusion of more sidewalks to connect to transit.

Responses:

- Mobility hubs (17)
- More sidewalks to connect to transit (13)
- More street lighting within ½ mile of bus stops (4)
- Other (2)

What multimodal improvements are needed?



How would Microtransit impact and/or benefit the community?

Participants emphasized gaps, responsiveness, equitability, and connections.

Select Responses:

- Bridges gaps
- Responsive
- Enhance system
- Equitable
- Connections
- Accessible
- Personalized
- Convenient
- Safe

How do you think your organization can contribute to the success of this study?

Participants suggest that their organizations can help advocate and promote participation in project-related surveys to help encourage utilization of the service.

Select Responses:

- Advocate
- Knowledge
- Promote participation
- Service evaluation
- Encourage participation
- Promote surveys
- Networking
- Resourcing

2.2 Pop-Up Event

The public pop-up event took place on August 27, 2024, at Davidson-Davie Community College and was held after the second Focus Group meeting. During the event, the project team spoke with students and staff about the proposed service and learned more about their travel patterns and desired destinations around the County. Attendees also filled out paper surveys and placed sticky dots on a map representing key origins and destinations.

Key Findings:

Origins:

- Old U.S. Highway 52
- Hannerville Rd
- Fairview Dr
- S Main St & W 5th Ave
- Near Highway 801 and 40

Destinations:

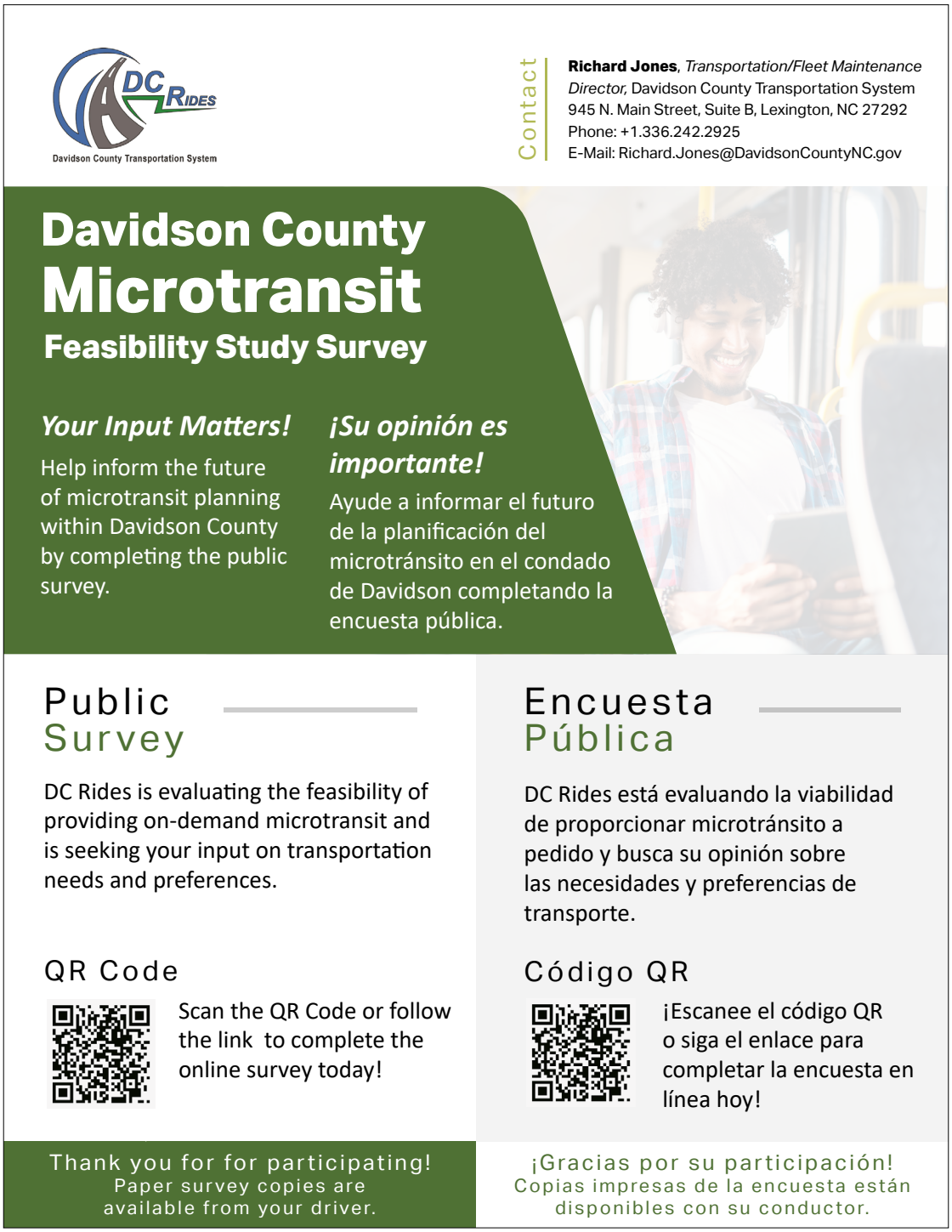
- Sexton Rd near Denton
- Old Greensboro Rd near Highway 29
- North of Midway near Highway 285



2.3 Survey

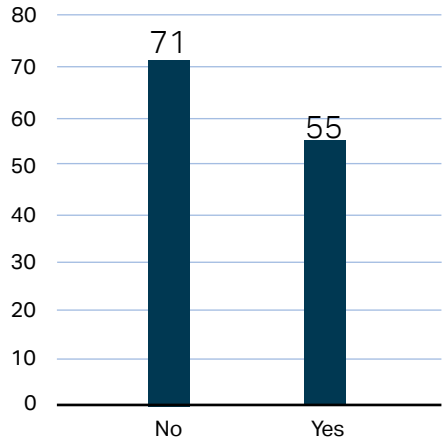
A general survey was distributed to the public between May 22, 2024, and September 11, 2024, to assess current transportation patterns and sentiments around microtransit. The survey was available electronically and in print form, as well as in Spanish to maximize the number of those able to participate. A total of 128 surveys were submitted. Paper surveys were made available at the public pop-up event. Flyers about the project and the survey were posted on DCTS' buses and demand response drivers distributed and collected paper surveys. (**Figure 2-1**).

Figure 2-1. Survey Flyer



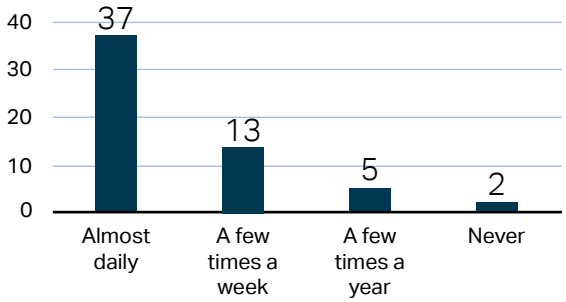
Do you use Davidson County Transportation System (DC Rides)?

Based on the data, 71 respondents do not use DCTS (DC Rides).



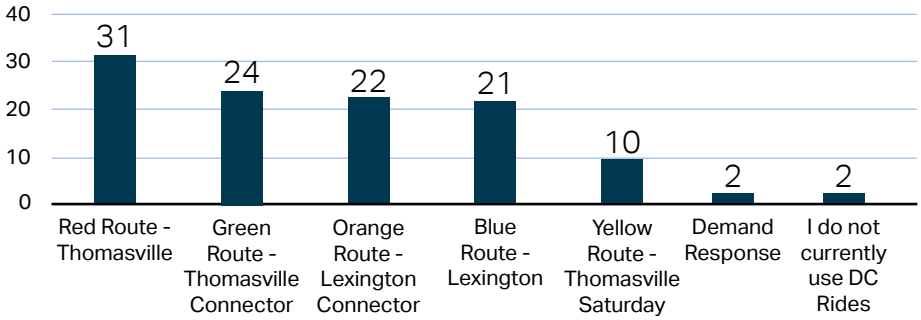
How often do you use DC Rides services?

The data below shows that most respondents use DC Rides service(s) almost daily.



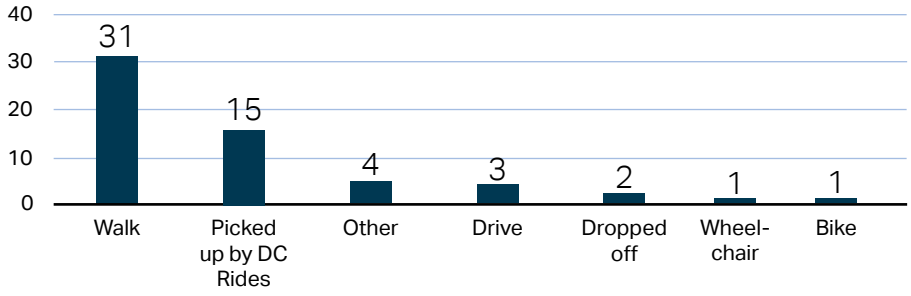
Which DC Rides service(s) do you use?

Based on the results, 31 respondents use the Red Route in Thomasville for their DC Rides service, while 2 respondents do not currently use DC Rides.



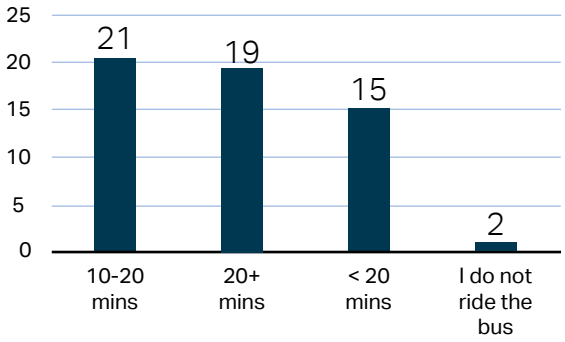
How do you typically access DC Rides?

Among 31 respondents, the most common way to access DC Rides is by walking. However, 15 respondents access DC Rides by being picked up directly. No one selected Taxi/Uber/Lyft, scooters, or carpool/vanpool.



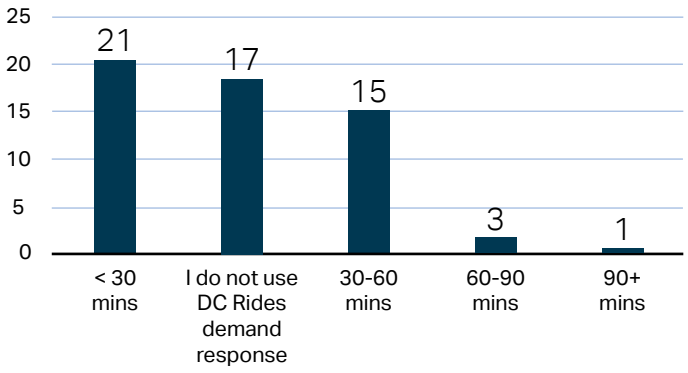
Typically, how long does it take you to reach your final destination from the bus stop?

Most respondents (21) typically take 10 – 20 minutes to reach their final destination, while 19 respondents take more than 20 minutes to reach their final destination.



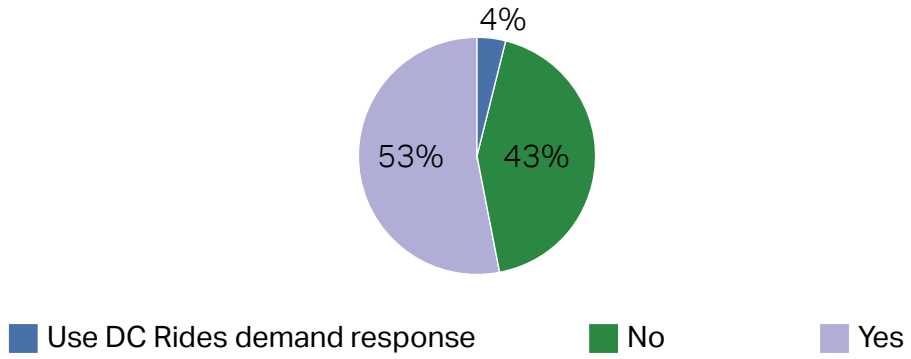
If you use DC Rides demand response, how long are you typically waiting for your pick-up before your scheduled trip?

The results show that 21 respondents wait less than 30 minutes for pick-up before their scheduled trip.



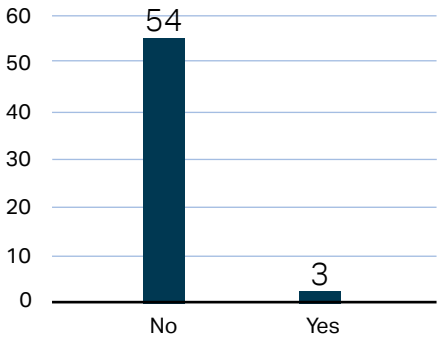
Do you typically transfer between bus routes to get to your destination?

According to the survey results, 53 percent of respondents typically have transfers between bus routes to get to their destination, while 43 percent of respondents do not.



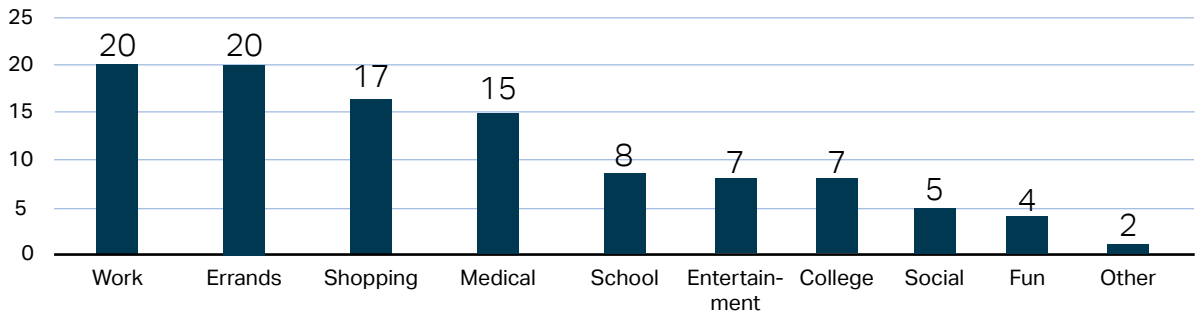
Do you typically use bicycle racks on your trip?

The majority of respondents do not use bicycle racks on their trip.



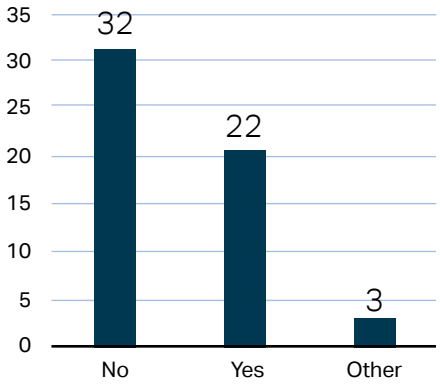
What is typically the primary purpose of your trip?

The primary purpose of many respondents' trip is work and errands.



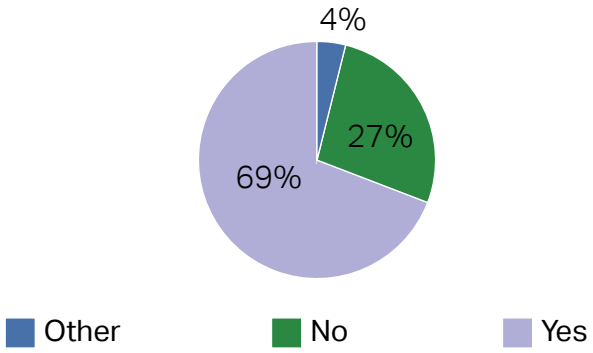
Has DC Rides helped you obtain or maintain employment?

Thirty-two (32) respondents marked that DC Rides has not helped them to obtain or maintain employment.



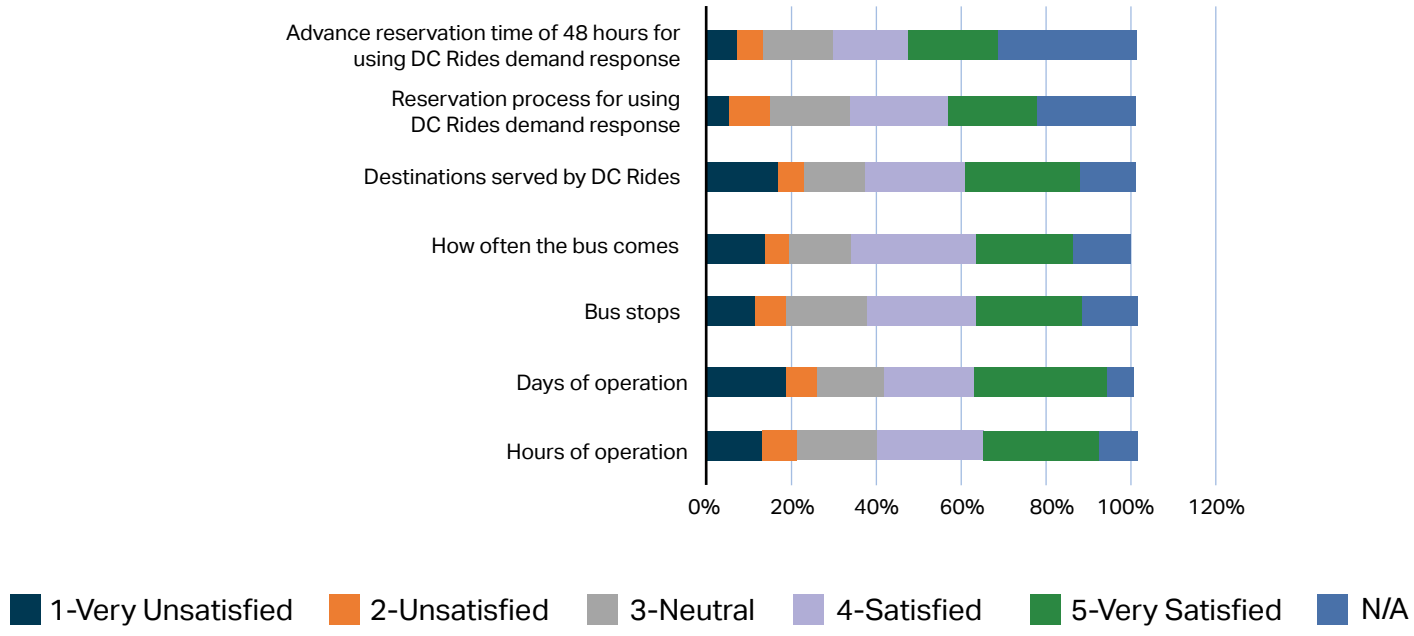
Has DC Rides effectively facilitated your access to critical services (e.g., dialysis appointment, grocery shopping, etc.)?

According to the results, 69 percent of respondents have been effectively facilitated to access critical services by DC Rides, while 27 percent of respondents have not been.



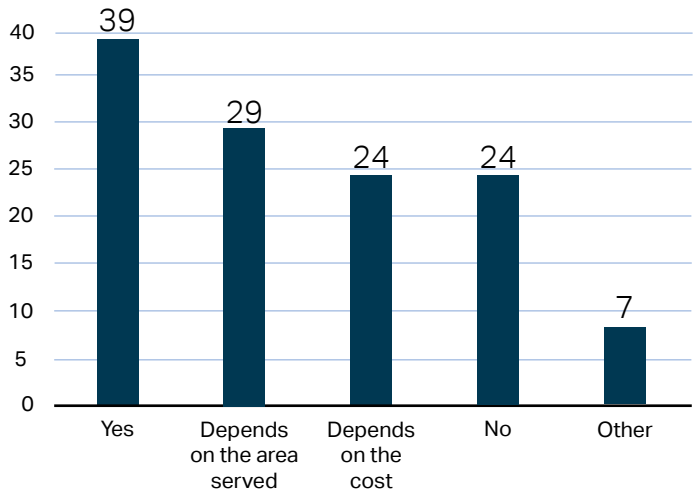
How would you rate your overall service experience over the past year?

In terms of overall service experience over the past year, advance reservation time of 48 hours for using DC Rides demand response was rated 'N/A' the most. The reservations process for using DC Rides demand response was rated both 'Satisfied' and 'N/A' the most. Destinations served by DC Rides was rated highly for 'Very Satisfied'. How often the bus comes, and bus stops were rated 'Satisfied'. While respondents marked days of operation and hours of operation at 'Very Satisfied'.



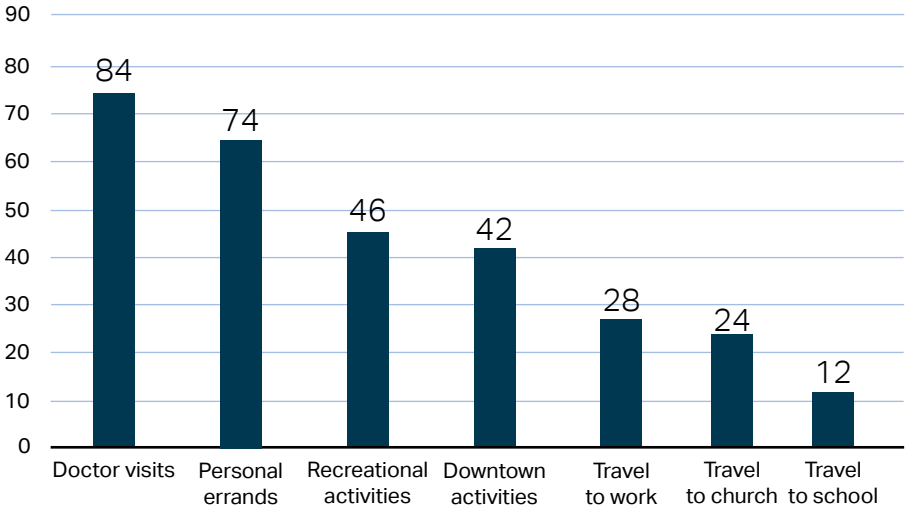
Would you be interested in using Microtransit?

Overall, 39 respondents are interested in using microtransit in the future. Twenty-nine (29) respondents marked that they are interested, but it depends on the area served, and 24 are interested depending on the cost. Twenty-four (24) respondents were not interested.



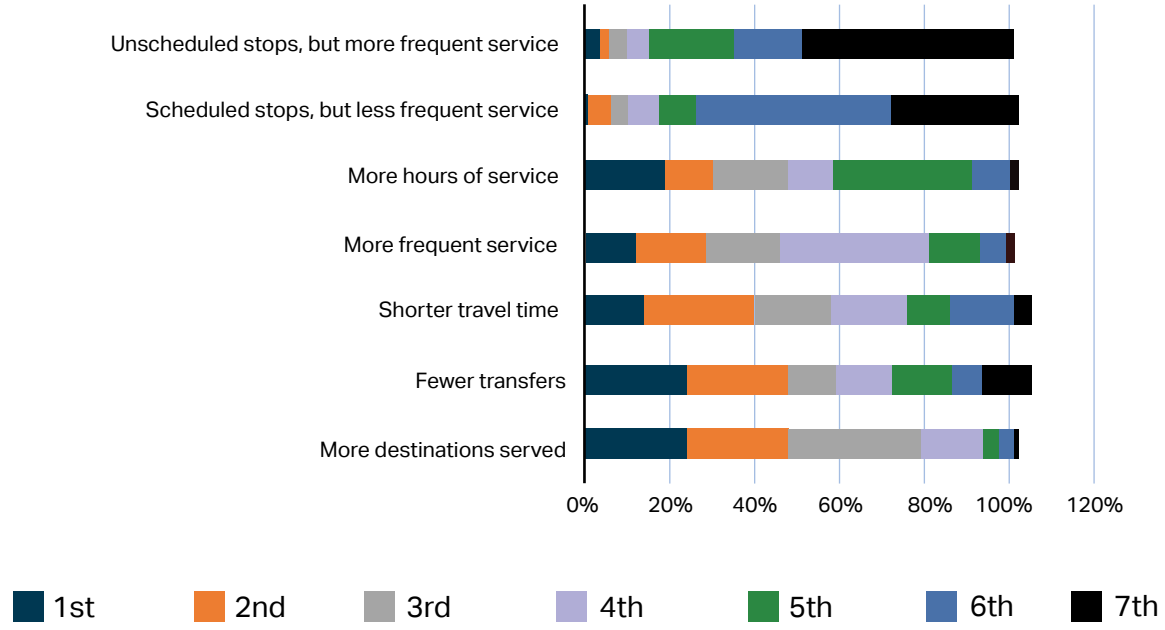
How would you use Microtransit if available?

The majority of respondents (84) marked that they would use microtransit as a service to reach their doctor appointments.



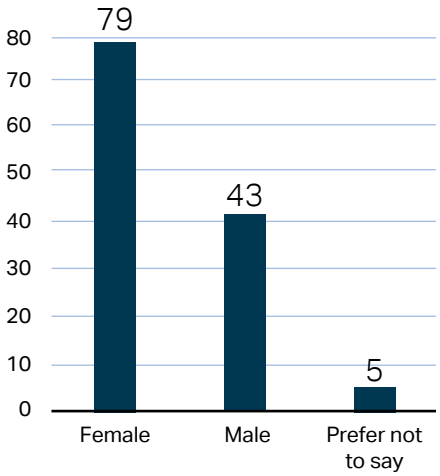
Modify the order of the service elements below based on their level of importance to you.

Respondents selected more destinations served as their first, third, and fifth option for the service element based on their level of importance. The service element most selected for many respondents' second option on their level of importance was shorter travel time, while scheduled stops, but less frequent service was the sixth option and unscheduled stops, but more frequent service as was their seventh option.



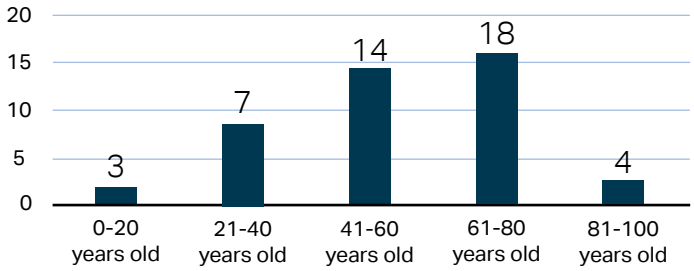
What is your gender?

The majority of survey respondents were female. No one selected non-binary or other.



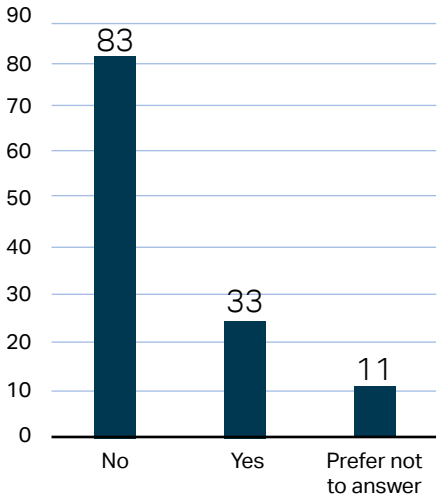
What is your age?

The majority of survey respondents were between the ages of 61 and 80 years old.



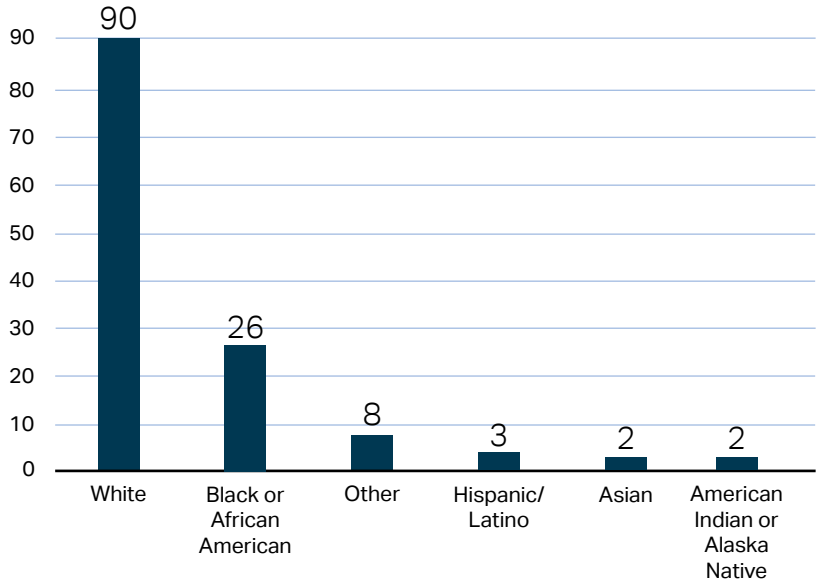
Are you a person with a disability?

The majority of respondents do not have a disability.



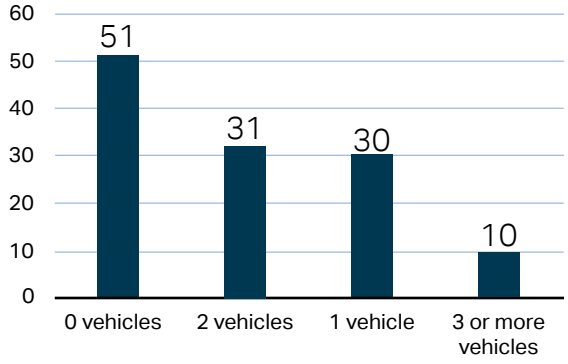
Are you?

Most respondents were white. No one selected Native Hawaiian or Other Pacific Islander or Middle Eastern/ Arabic.



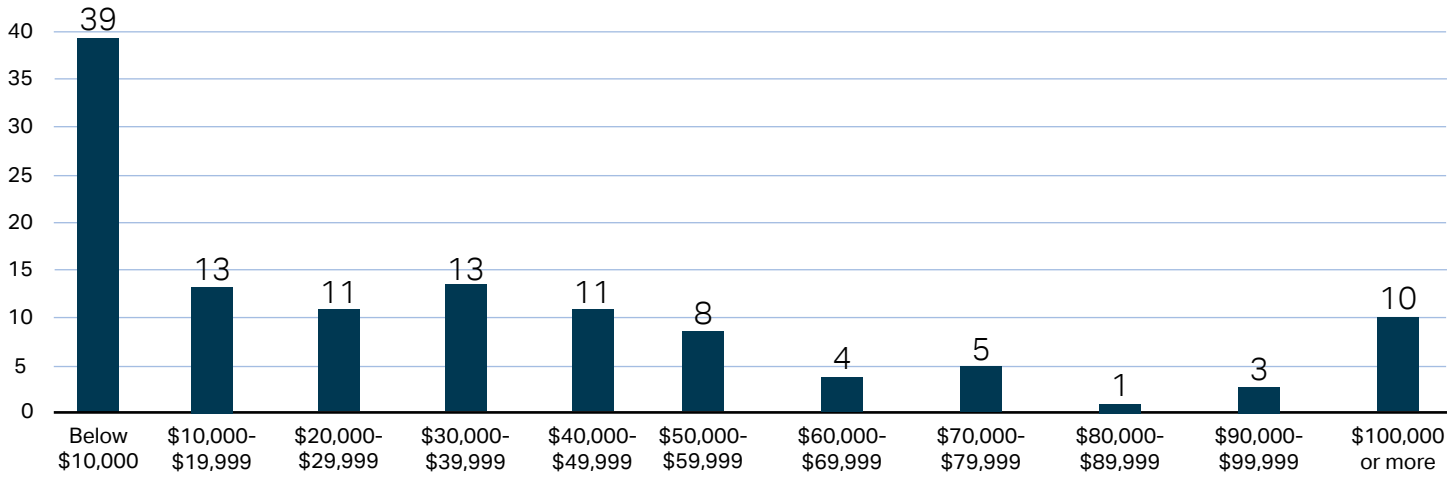
How many working vehicles are available to your household?

Based on the results, 51 respondents do not have access to a working vehicle within their household.



Which of the following best describes your household income?

The survey results show that many respondents fall into lower income brackets, with 39 households earning below $10,000 and 13 households either earning between $10,000 and $19,999 or $30,000 and $39,999 annually.



What is your zip code?

The majority of respondents live in Thomasville, ZIP Code 27360.

Responses:

- 27360 (44)
- 27292 (27)
- 27295 (24)
- 27239 (6)
- 27107 (3)
- 27293 (2)
- 27006 (1)
- 62966 (1)
- 27351 (1)
- 27291 (1)
- 27260 (1)
- 27012 (1)
- 22292 (1)

2.4 Stakeholder Interviews

Stakeholder interviews were conducted to gather detailed insights. The project team identified interviewees based on responses from focus group activities, gaps noted in the feasibility study, and requests from Davidson County. Interviewees were asked a series of questions pertaining to their roles and their potential connection to microtransit. The following stakeholders were interviewed:

- Kimberly Horton, Goodwill
- Joe Wallace, Lexington Area Chamber of Commerce
- Erika Mueller, Facility Logistic Services

The following questions were used to guide discussions during the interviews:

- What are some key considerations for the service that would benefit your clients/ the community?
- What payment method(s) for fares are important for your clients/ the community? For example, is it important that DCTS offer a cash payment option?
- Does your organization subsidize or cover fares?
- What hours would they use the service the most?
- What do you think is the best way to promote and educate the riders about the service?
- How can your organization support the future service?

Results of the interviews are summarized in **Table 2-1**.

Table 2-1. Stakeholder Interview Summaries

Stakeholder	Organization	Position	Interview Date	Key Findings
Kimberly Horton	Goodwill	Workforce Development Center Manager	September 11, 2204	• Goodwill is located along the DCTS Orange Route. • It would be nice to have more clients from Goodwill hired to run the new microtransit service. • Goodwill does not subsidize fares for transportation. • A few years ago, they partnered with Indeed who partnered with Lyft to offer vouchers for new job hires and for interviews.
Joe Wallace	Lexington Area Chamber of Commerce	President/ CEO	October 21, 2024	• Would be interested in creating inviting and comfortable sitting areas for riders to wait on the service. • A cash payment option would be beneficial; however, there is the safety concern that it may be a liability for drivers to have cash in the vehicle. • Greater Outreach Ministries in Thomasville provides fare coverage for public transportation in Thomasville. • The majority of riders may use the service to get to appointments during normal working hours.
Erika Mueller	Facility Logistic Services	HR/Payroll Manager	October 21, 2024	• Many of the employees are not tech savvy so they may require a call-in option. • Two employees do not have access to cell phones. • Facility Logistic Services does not cover fares for public transportation, but they do discuss transportation options during interviews. • Most employees work in shifts that run from 6:00 am to 6:00 pm or 6:00 pm to 6:00 am. Employees work on the weekends as well. • Most employees have their own vehicles that they use to get to work but some choose to carpool or get rides form family and friends.

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03. Needs Assessment & Gap Identification

This chapter examines the gaps in the current DCTS service, identifies key service destinations, analyzes commuter patterns, and explores potential barriers faced by special user groups within Davidson County. The project team also reviewed previous planning efforts, including the *DCTS 2015 Community Service Transportation Plan*, land use plans, comprehensive plans, and bicycle and pedestrian plans. By reviewing these existing plans, the project team aims to gain a deeper understanding of the County's transit system and its vision for future service in the region.

3.1 Existing Transit Services

Davidson County currently provides deviated fixed-route and demand response services. DCTS contracts demand response services through a third-party transportation company. The demand response service is offered Monday through Friday 6:00 am to 6:00 pm for the general public and is fare free. A 48-hour advanced reservation is required for using the demand response service. Riders pre-registered for critical medical trips reserve rides on Saturdays. Dialysis patients may additionally book reservations on Sundays for dialysis center visits, although these rides are infrequent, typically 1-2 trips a year.

Lexington, Thomasville, and Davidson-Davie Community College are served by four deviated fixed-routes operated by DCTS. The deviated fixed-route service runs Monday through Friday, 6:00 am to 6:00 pm and in Thomasville on Saturday from 10:00 am to 4:00 pm. The Saturday Thomasville route previously operated from 6 am to 6 pm; however, no decrease in ridership was observed when the service window was reduced. DCTS does not operate on official county

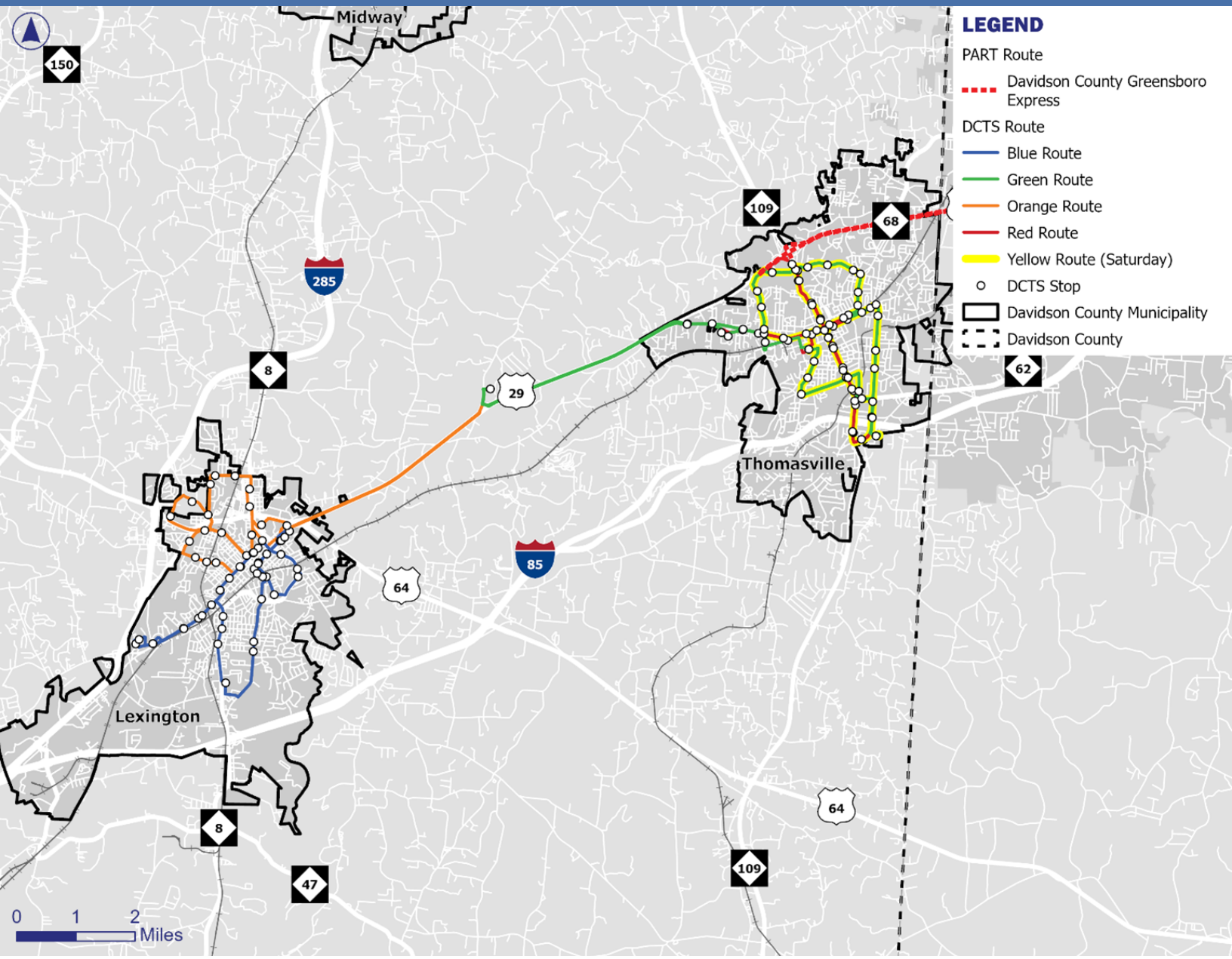
government holidays. The service is fare free and transfers are free to riders.

The Orange and Blue Routes serve Lexington, while the Red and Green Routes primarily serve Thomasville. The Orange and Green Route meet at Davidson-Davie Community College every hour. Specific route destinations are documented below in **Table 3-1**. Additionally, DCTS links up with the PART at its Park-and-Ride location on Thomasville's Red Route. PART's Route 9 continues to High Point, downtown Greensboro, and connects with the Triad and beyond. All buses are wheelchair accessible and have bicycle racks. Existing transit service routes are displayed in **Figure 3-1**.

Table 3-1. Route Destinations

Route	Location	Destinations
Blue	Lexington	• Davidson County Transportation Center • Farmer's Market • Walmart • Lexington Medical Center • Pastor's Pantry
Orange	Lexington	• Davidson County Transportation Center • Davidson-Davie Community College • Davidson County Courthouse • Davidson County Senior Center • YMCA • Big Lots
Green	Thomasville	• Davidson County Admin Buildings • Davidson-Davie Community College • James Ave Apartments • Food Market • Walmart
Red	Thomasville	• Davidson County Administrative Building • Walmart • Horner & Association • James Ave Apartments • Thomasville Medical Center

Figure 3-1. Existing Transit Services



3.2 Demographics & Socioeconomics

To better understand the mobility needs of Davidson County residents, a demographic profile was created. To provide a local and regional perspective, the profile compares the demographics of Davidson County to those of neighboring counties and North Carolina. Current demographic and socioeconomic characteristics of the population, employment, and travel patterns in and around Davidson County are discussed throughout this section. While DCTS currently offers deviated fixed-route services around Davison County, many of its routes concentrate on providing service to and from the Town of Lexington and the City of Thomasville. To illustrate the home and work travels made by Davidson County workers and residents as they travel to and from other parts of the region, inter- and intra-county patterns are also examined. DCTS and PART Routes are overlaid on the demographic results for comparison purposes.

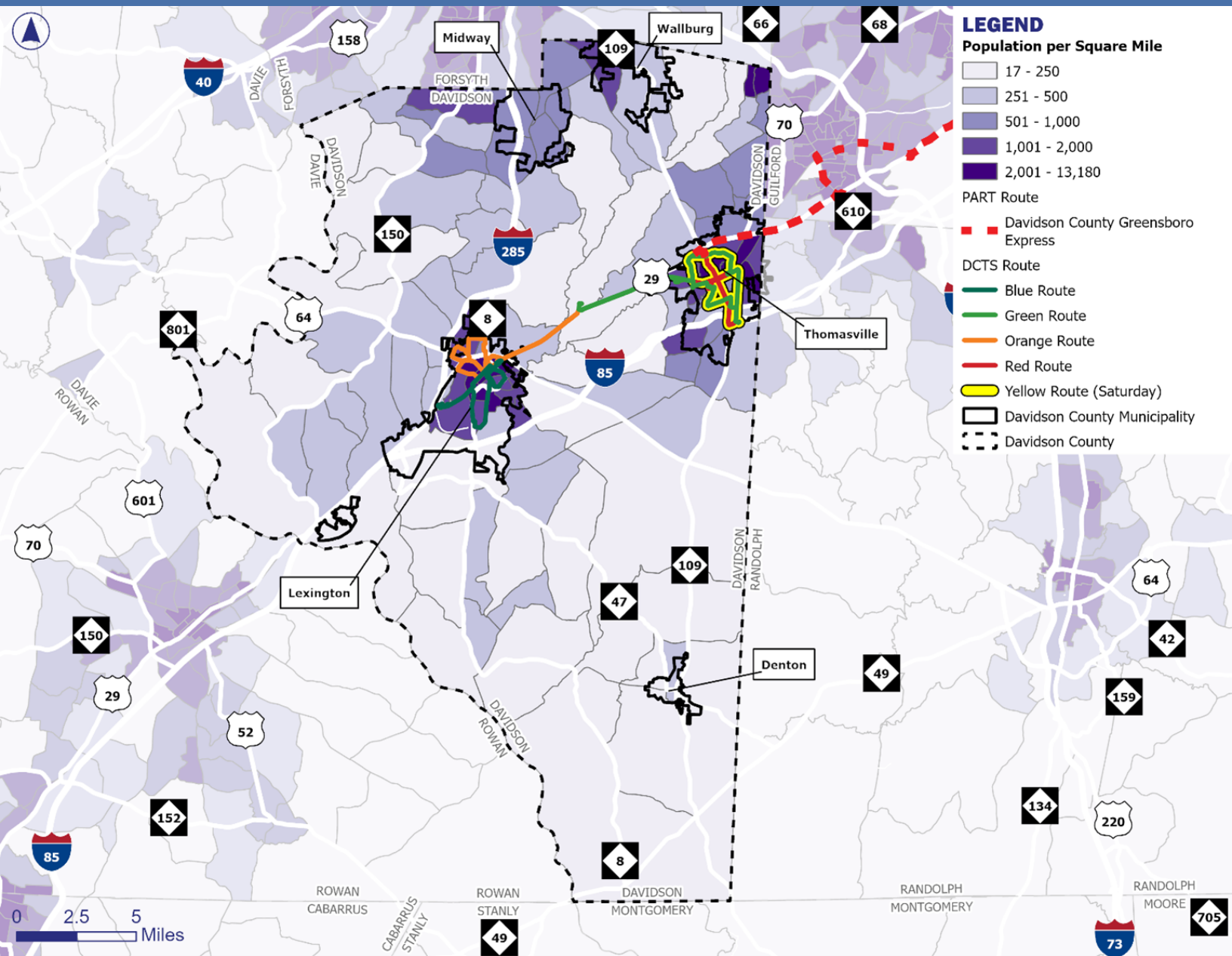
Sources of data for the analysis include the US Census Bureau American Community Survey (ACS) 5-year estimates for 2018-2022, 5-year estimates for 2016-2020 (Transportation Disadvantage Index

and Environmental Justice), the 2020 Decennial Census, and the North Carolina Office of State Budget and Management (NC OSBM). Note that ACS data is accompanied by margins of error (MOE) which is the difference between an estimate and its upper or lower confidence bounds. Confidence bounds can be created by adding the margin of error to the estimate (for an upper bound) and subtracting the margin of error from the estimate (for a lower bound). All published margins of error for the ACS are based on a 90 percent confidence level. Demographics reported in this study are reported directly from the ACS tables without adding MOE.

3.2.1 Population

The population density in and surrounding Davidson County is depicted by Census Block Group (BG) in Figure 3-2. Much of the population lives in the County's eastern and central regions, especially in the areas surrounding Lexington and Thomasville. Both areas contain populations of 2,001 to almost 8,000 individuals per square mile. The population density of the County ranges between 14 and 500 individuals per square mile outside of these two municipalities.

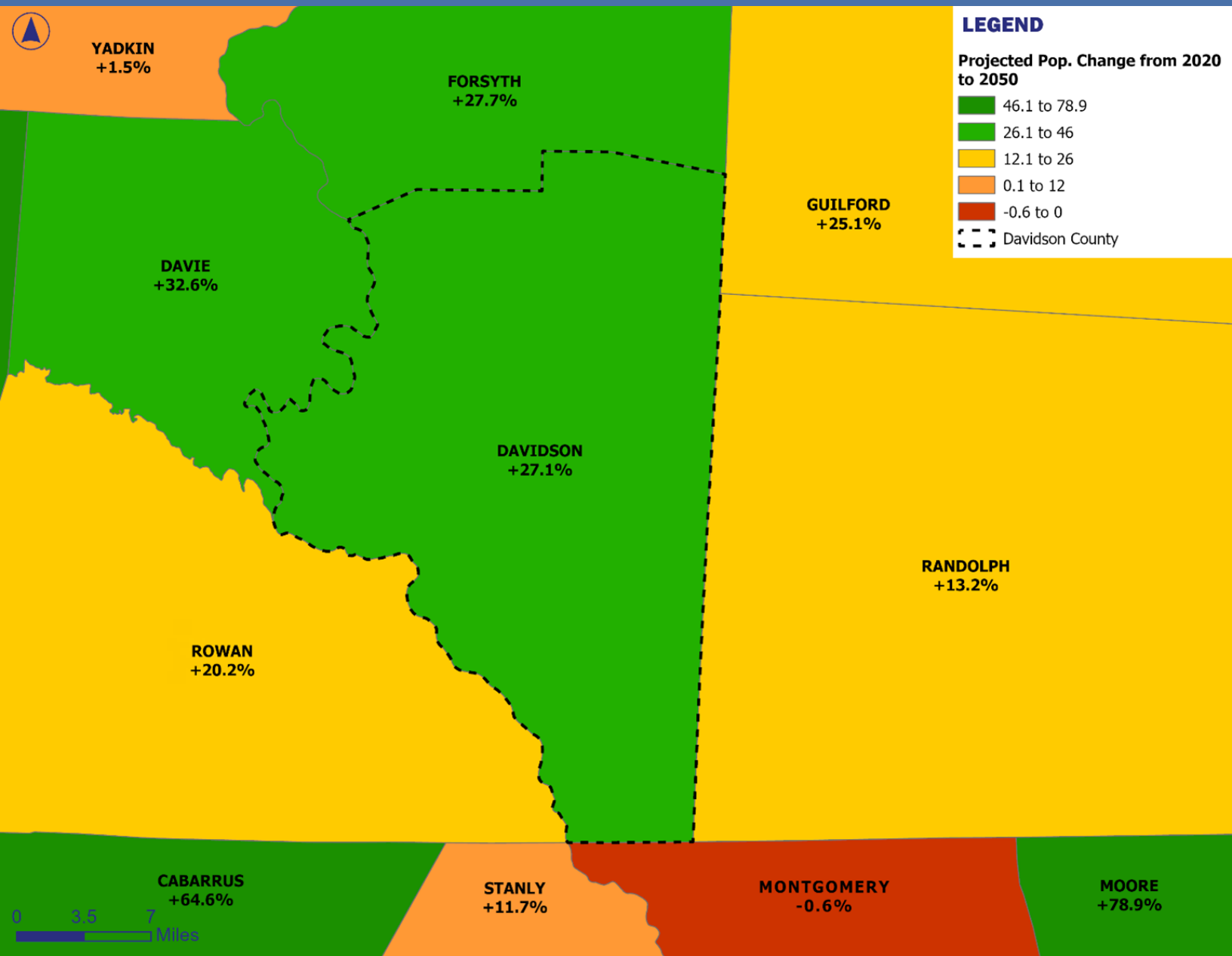
Figure 3-2. Population Density



Projected Population Growth

Population projections for Davidson County and the neighboring counties from 2020 to 2025 are displayed in **Figure 3-3**. According to the NC OSBM, Davidson County is expected to grow 27.1 percent from 2020 through 2050. In 2020, the population estimate was 169,638 people and is expected to grow to 215,618 by 2050. Compared to nearby counties like Rowan, Stanly, Montgomery, Randolph, and Guilford which are either expected to experience slower growth or to continue experiencing population declines, this is a notable increase in population.

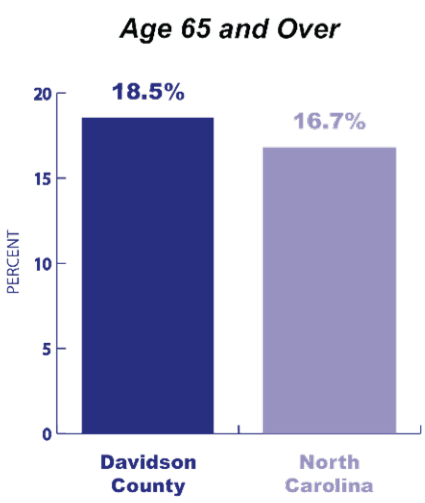
Figure 3-3. Projected Population Change (2020 to 2050)

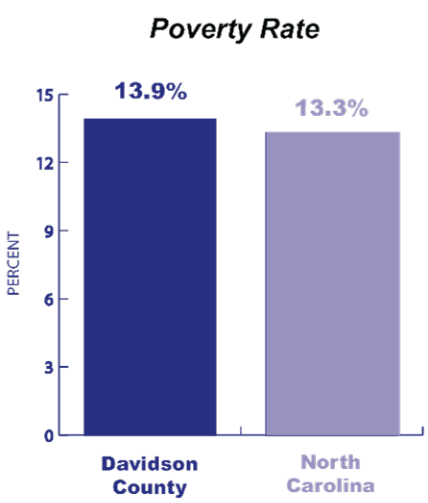


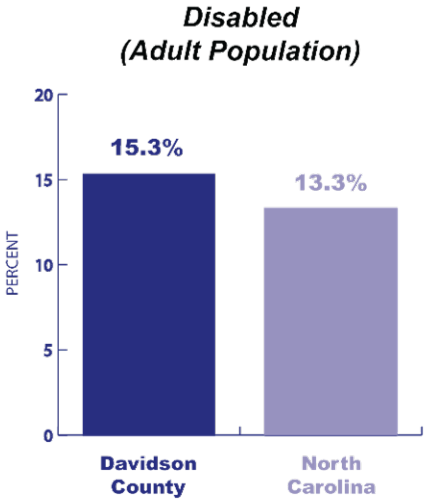
3.2.2 Transit Market Populations

Davidson County surpasses statewide averages in transportation disadvantage indicators across several demographics, including its population aged 65 and over, poverty rate, and adults with disabilities. These factors significantly impact households and individuals who depend on public transportation.

When developing a microtransit service area, it is critical to assess socioeconomic and demographic data to identify prospective transportation markets in a given location. Many demographic characteristics, including age, income, language spoken, environmental justice, and automobile access, are linked to transit dependency. Convenience plays a big part in drawing in "choice riders," or people who have access to a car. Selective riders will be drawn to transit services that are dependable, frequent, and offer travel times that are competitive with those of private vehicles.





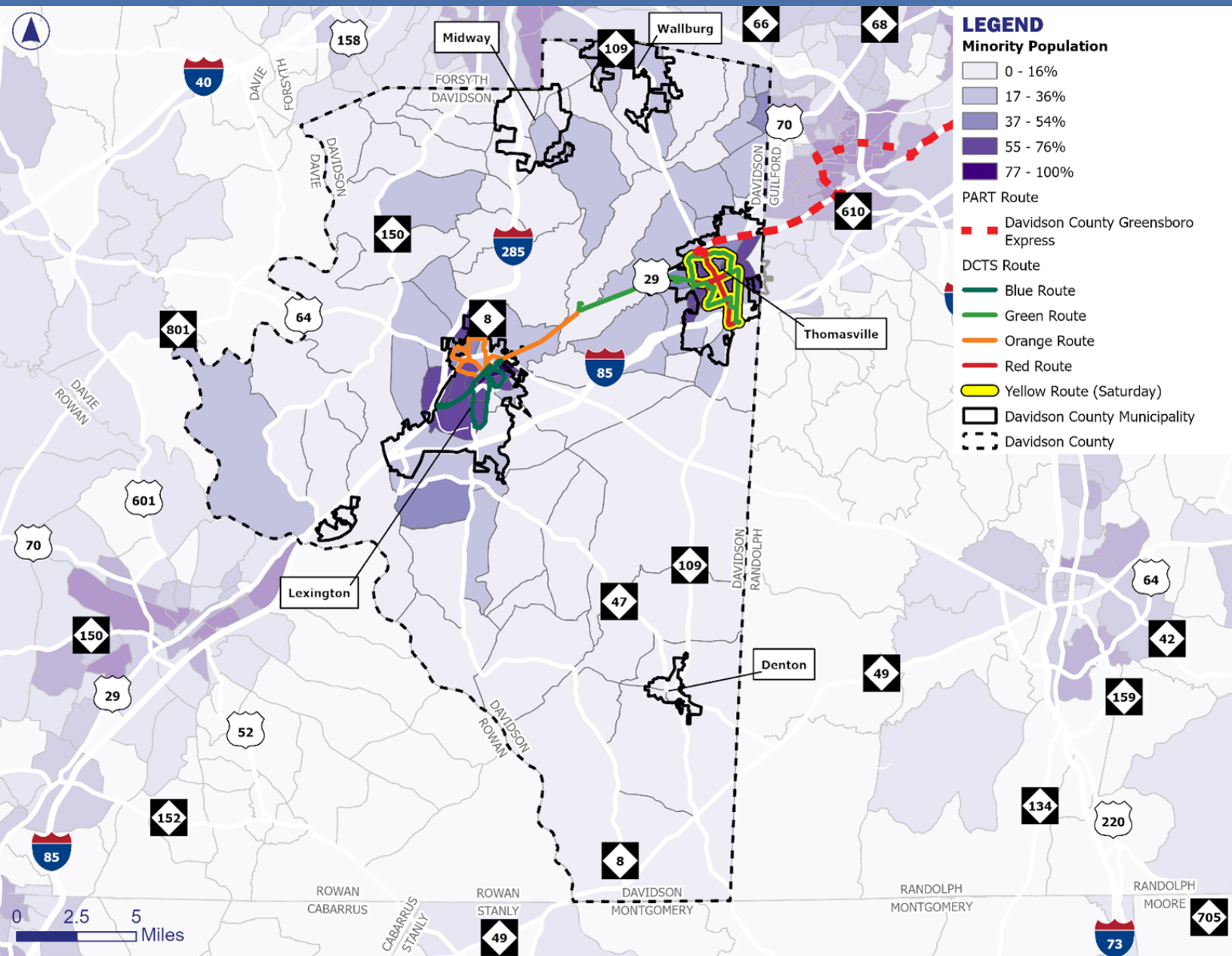




Minority Population

Davidson County has a lower proportion (21.3%) of its population who identify as minorities than the state as a whole (37.9%). In the County, 78.7 percent of people identify as White, Non-Hispanic, which means that 21.3 percent identify as a minority. Minorities include all races that are Non-White and Hispanic populations that are also White. Under 8 percent (7.6%) of individuals are Hispanic. Similar to the other demographic trends studied in this report, BGs in Lexington and Thomasville contain the highest proportion of minorities (77-100%) (**Figure 3-4**). DCTS Routes in Thomasville serve the highest concentrations of minority populations (77-100%) in the County. By incorporating minority perspectives into transit planning, the study ensures a more comprehensive and effective transportation system for all residents.

Figure 3-4. Minority Population

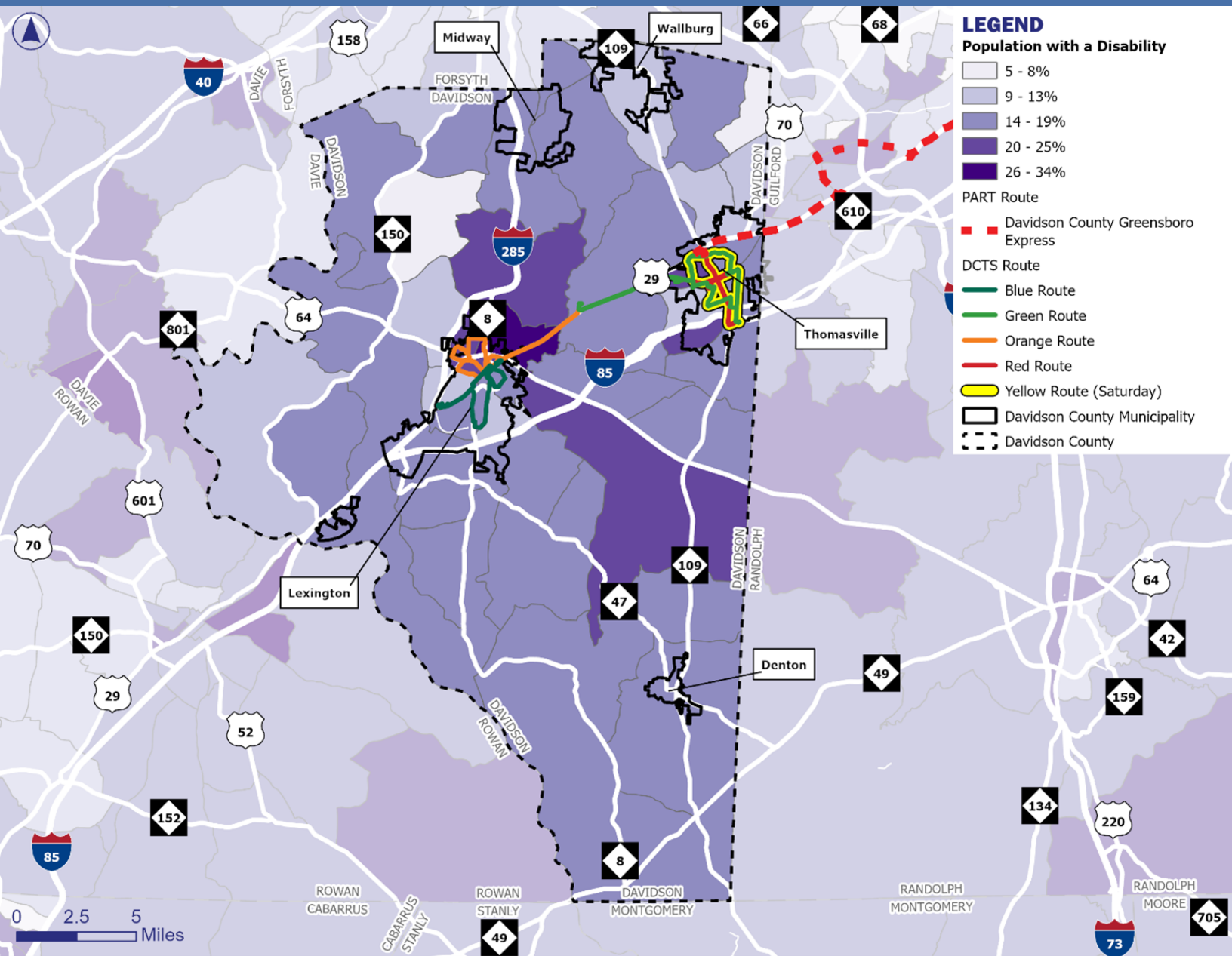


Populations with Disabilities

Compared to the state as a whole, Davidson County has a higher overall percentage of people with disabilities. The percentage of people with disabilities in Davidson County is over 15 percent (15.2%). This is marginally higher than the state's rate of 13.2 percent. Lexington contains the highest proportion of BGs with individuals with disabilities ranging between 26 and 36 percent. This BG is served by DCTS' Orange Route (see **Figure 3-5**). Incorporating considerations for populations with disabilities ensures that transit services and associated infrastructure are equitable, Americans with Disabilities Act (ADA)-compliant, and responsive to the diverse needs of all passengers.



Figure 3-5. Populations with Disabilities

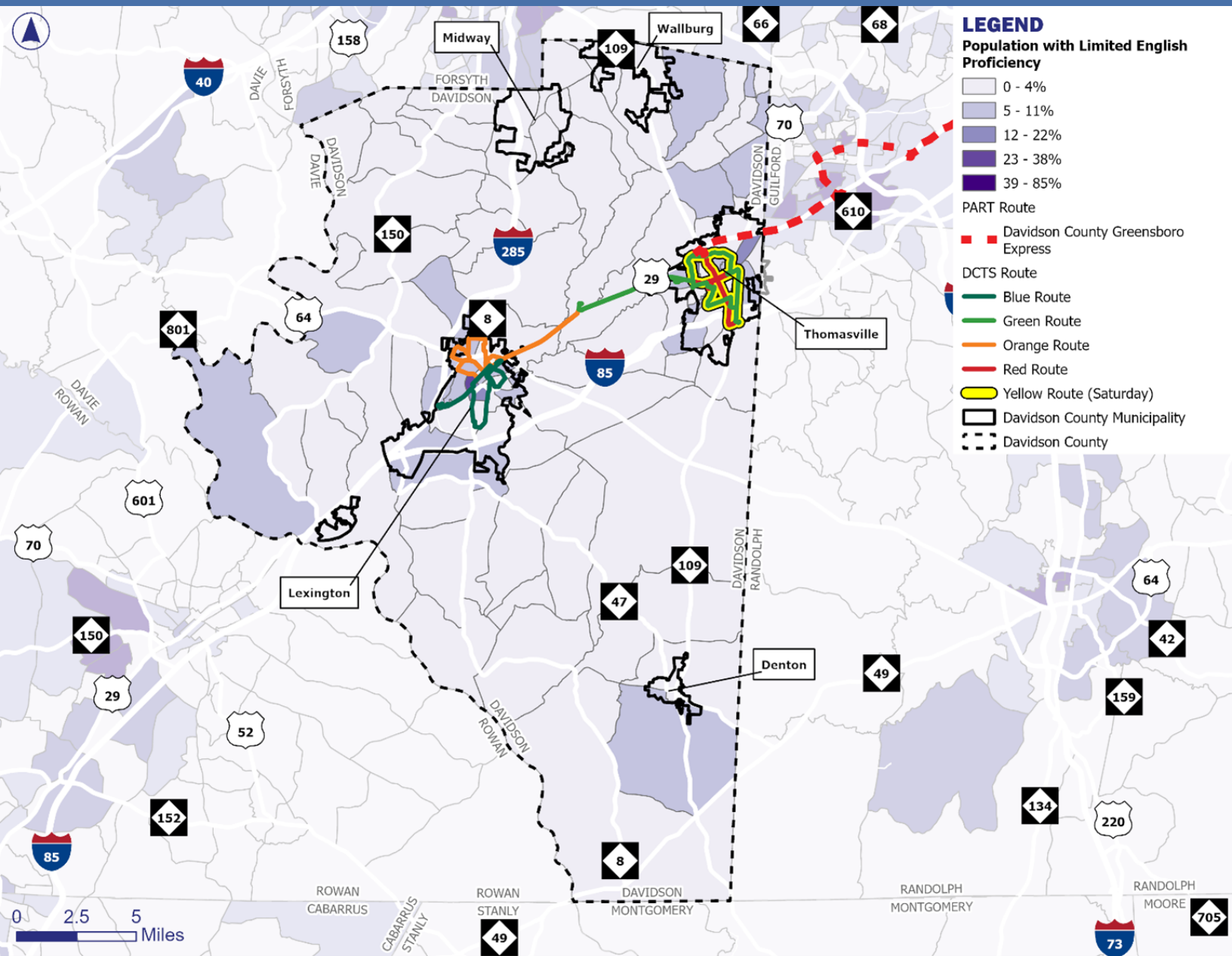


Limited English Proficiency (LEP)

Under 4 percent (3.2%) of Davidson County's population is LEP. This is lower than the state's value of 4.2 percent. Within Davidson County, Spanish is the most common language spoken among persons who speak English less than very well, accounting for 2.4 percent of speakers. Other Indo-Euro language groups come in second at 0.2 percent, followed by Asian/Pacific language groups at 0.6 percent. These figures are in line with the state's rates. At the municipal level, Thomasville contains the greatest share of LEP individuals within a BG at 31 to 45 percent. DCTS' Yellow (Saturday only) and Green Routes, as well as PART's Davison County Greensboro Express Route all serve this area (see **Figure 3-6**).

Considering languages spoken ensures that transit services are inclusive, effective, and responsive to the diverse linguistic backgrounds of passengers. Additionally, study outreach materials developed in multiple languages, especially Spanish, may be more effective in reaching future potential riders.

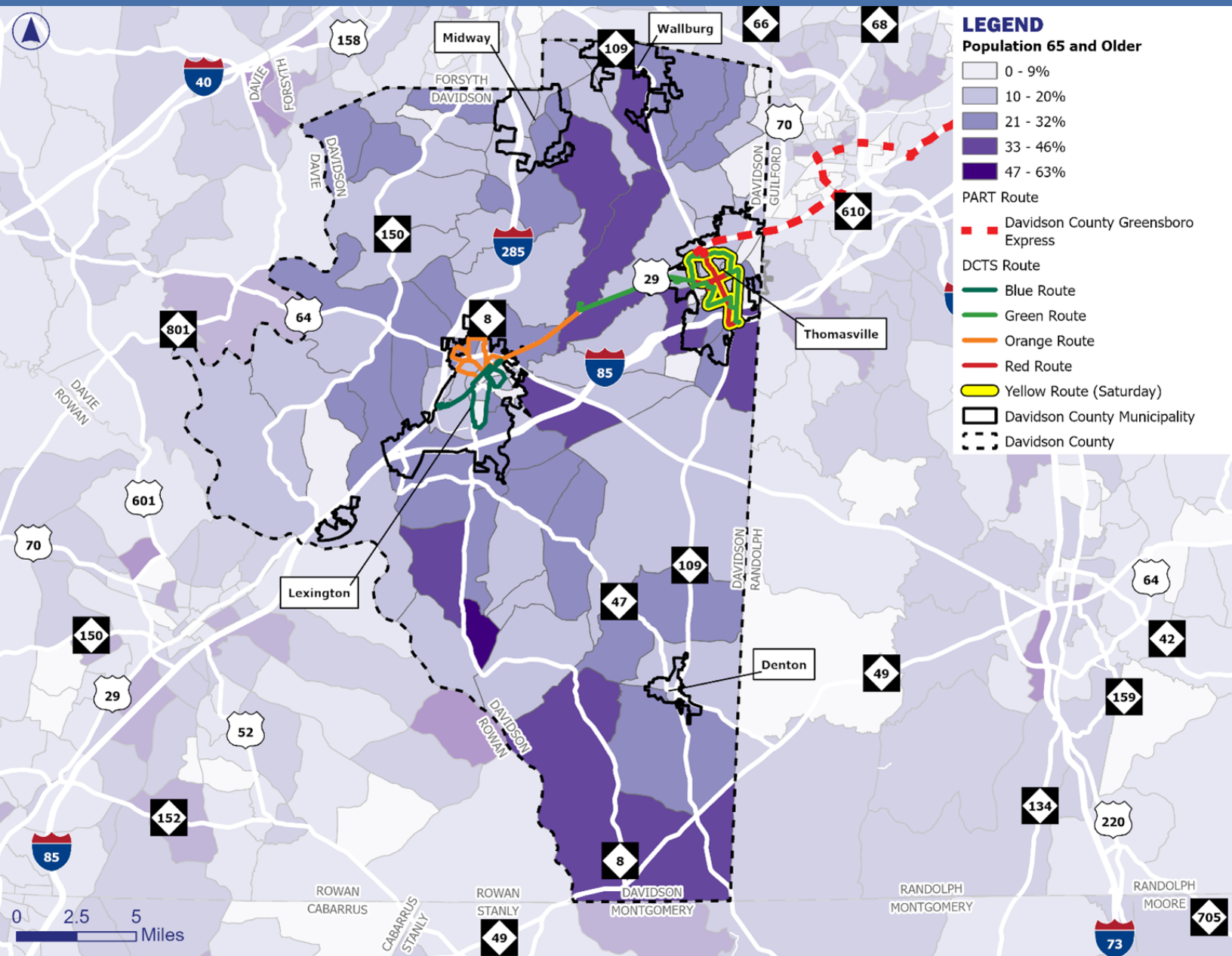
Figure 3-6. Limited English Populations



Aging Population

The age distribution of Davidson County is similar to that of the state. Out of 168,002 individuals in Davidson County, 59.9 percent of people are between the ages of 18 and 64, followed by 22.0 percent of people under the age of 18, and 18.1 percent of people who are 65 and older. These percentages are in line with state averages. **Figure 3-7** displays the senior population (age 65 and older) for BGs in Davidson County. One BG located between Lexington and Thomasville, just south of US 29 contains the highest proportion of seniors at 42 to 58 percent. This area is served by DCTS' Orange and Green Routes. Transit serves a broad spectrum of users, including individuals of various ages. Knowing their requirements assists service planners in creating a transit service that is applicable and available to everyone.

Figure 3-7. Senior Population



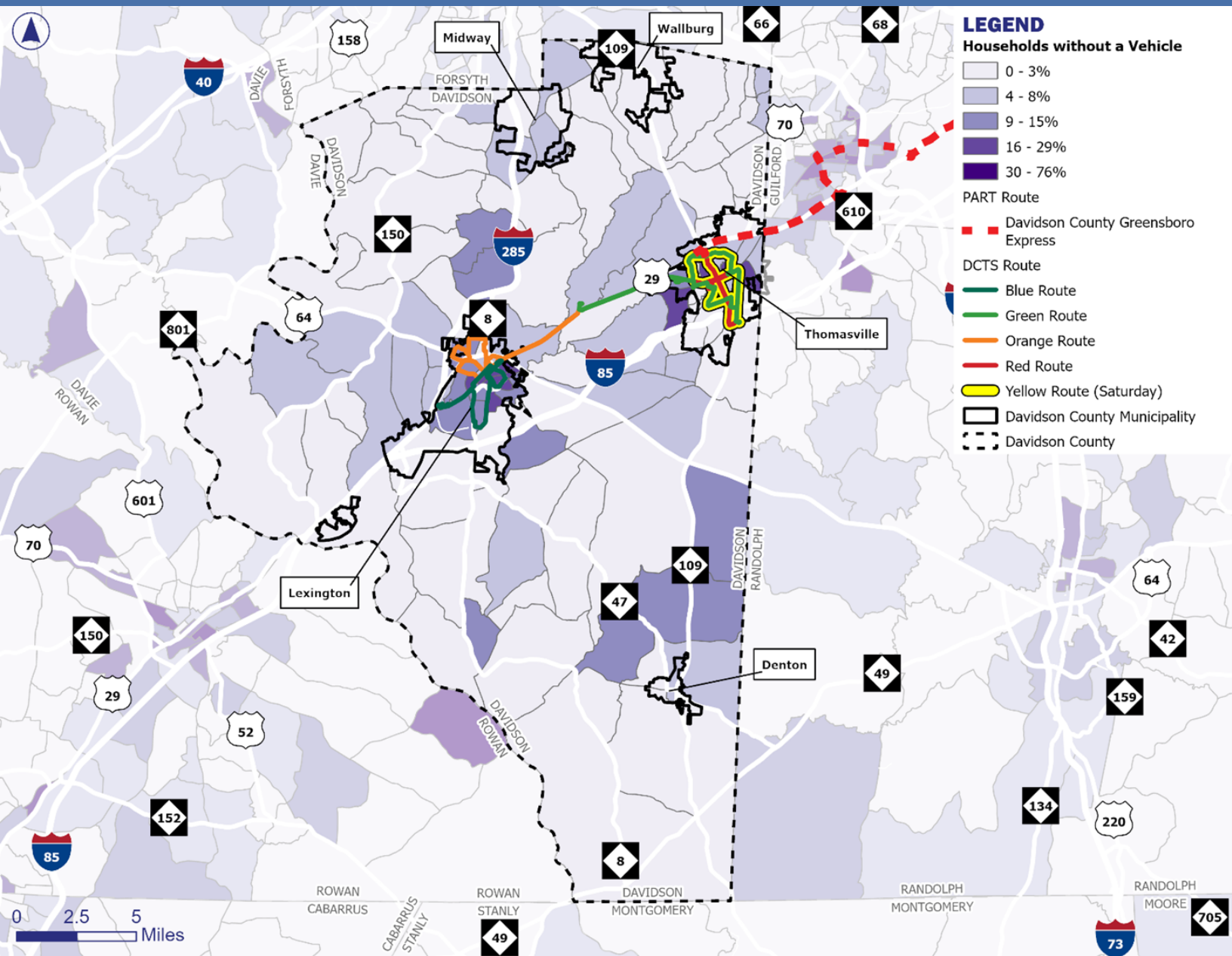
Vehicle Availability

Another important aspect in influencing who might use transit is the availability of vehicles. Age, physical or mental disabilities, or personal preference are some of the additional reasons why some people do not have access to a car.

Compared to the state, a lower proportion of individuals in Davidson County experience difficulties getting access to a personal automobile. Out of 66,986 households in the County, 4.8 percent lack access to a vehicle, 26.4 percent have access to at least one vehicle, and 68.8 percent have access to two or more vehicles. In comparison to the state (63.2%), a greater percentage of households in the County (68.8%) have access to two or more vehicles. In general, Davidson County has a smaller percentage of households without access to a vehicle (4.8%) than the state (5.5%).

Figure 3-8 displays the percentage of the households that does not have access to a car. Like the areas of poverty, the highest concentrations of residents without access to a car are in Thomasville and Lexington. BGs in Lexington suggest that 30 to 72 percent of households are without a vehicle. These places are mostly served by the current DCTS deviated fixed-routes. By considering car access, the study can ensure that transit services are provided in areas with higher transit dependency, enhance connectivity, and provide equitable options for all residents.

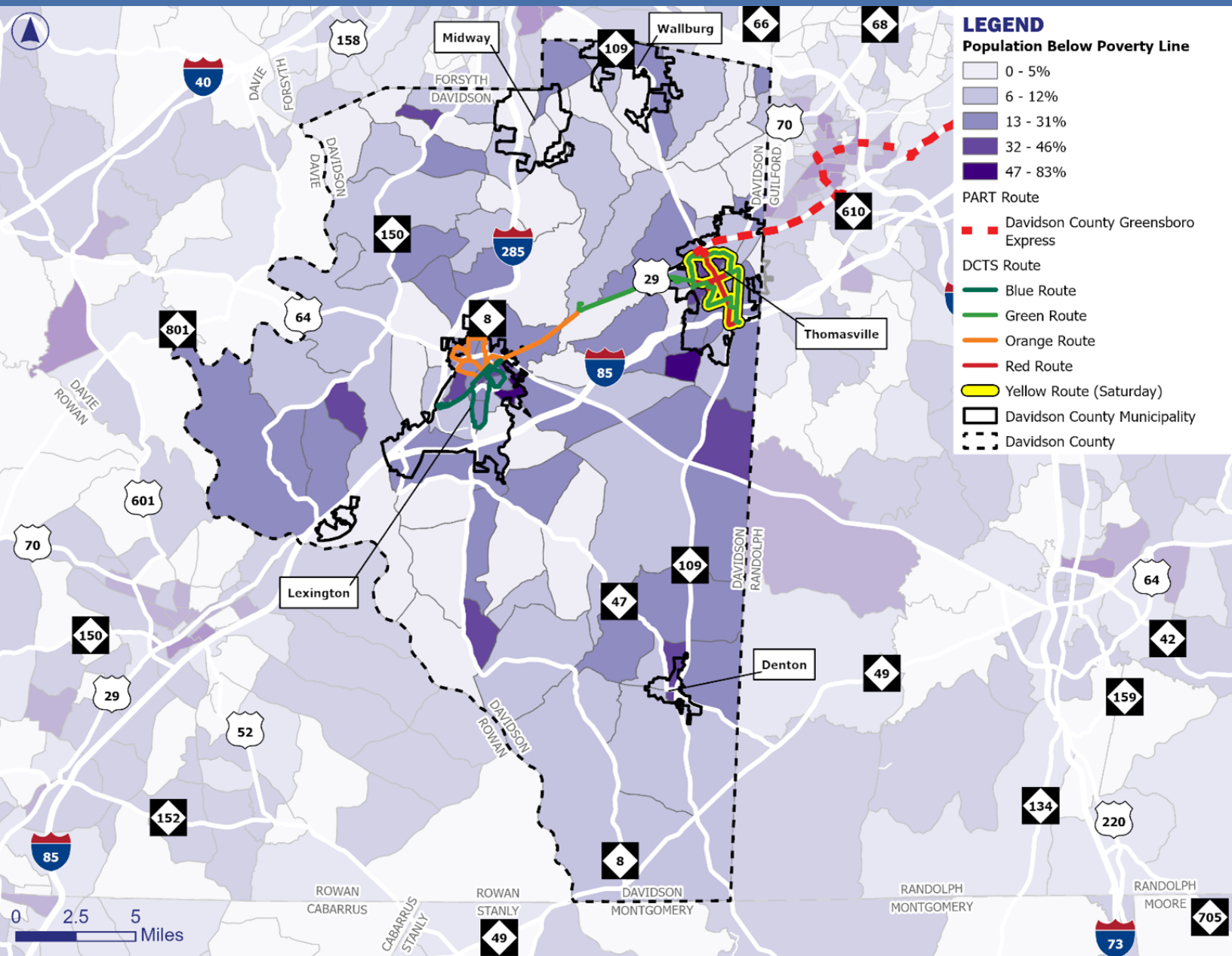
Figure 3-8. Concentration of Zero-Vehicle Households



Low-Income Population

Almost 15 percent (14.5%) of Davison County's population is living below the poverty level which is higher than that of the state at 13.7 percent. Out of the 166,072 people living in Davidson County, 5.6 percent live below the 50 percent poverty level and 11.3 percent between 100 and 149 percent of the poverty level. While the current deviated fixed-routes provide service to many areas with higher concentrations of low-income populations, there are several BGs within the County that may benefit from additional transit service (see **Figure 3-9**). By including poverty thresholds in transit planning, services for economically disadvantaged people and families are ensured to be accessible, equitable, and responsive to their needs.

Figure 3-9. Low-income Populations



Environmental Justice (EJ)

NCDOT's Environmental Justice (EJ) Tool may be used to identify where EJ populations are concentrated in a particular geographic area. This tool computes a dynamic index score out of 12 points based on the relative concentration of various populations in that selected area (Figure 3-10). Higher scores convey greater concentrations of protected populations relative to other areas in the state. When compared to the state, BGs within Thomasville and Lexington both receive EJ scores that range between 9 and 11 (Figure 3-11). According to the EJ results, Wallburg may also benefit from additional transit services.

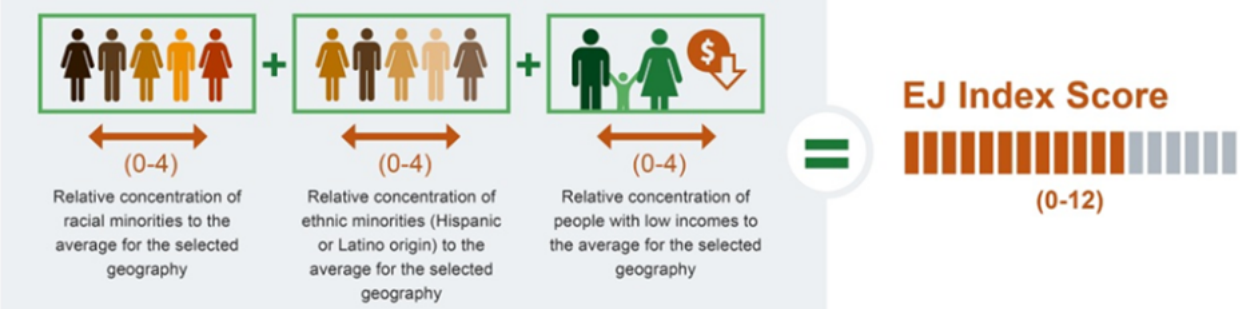
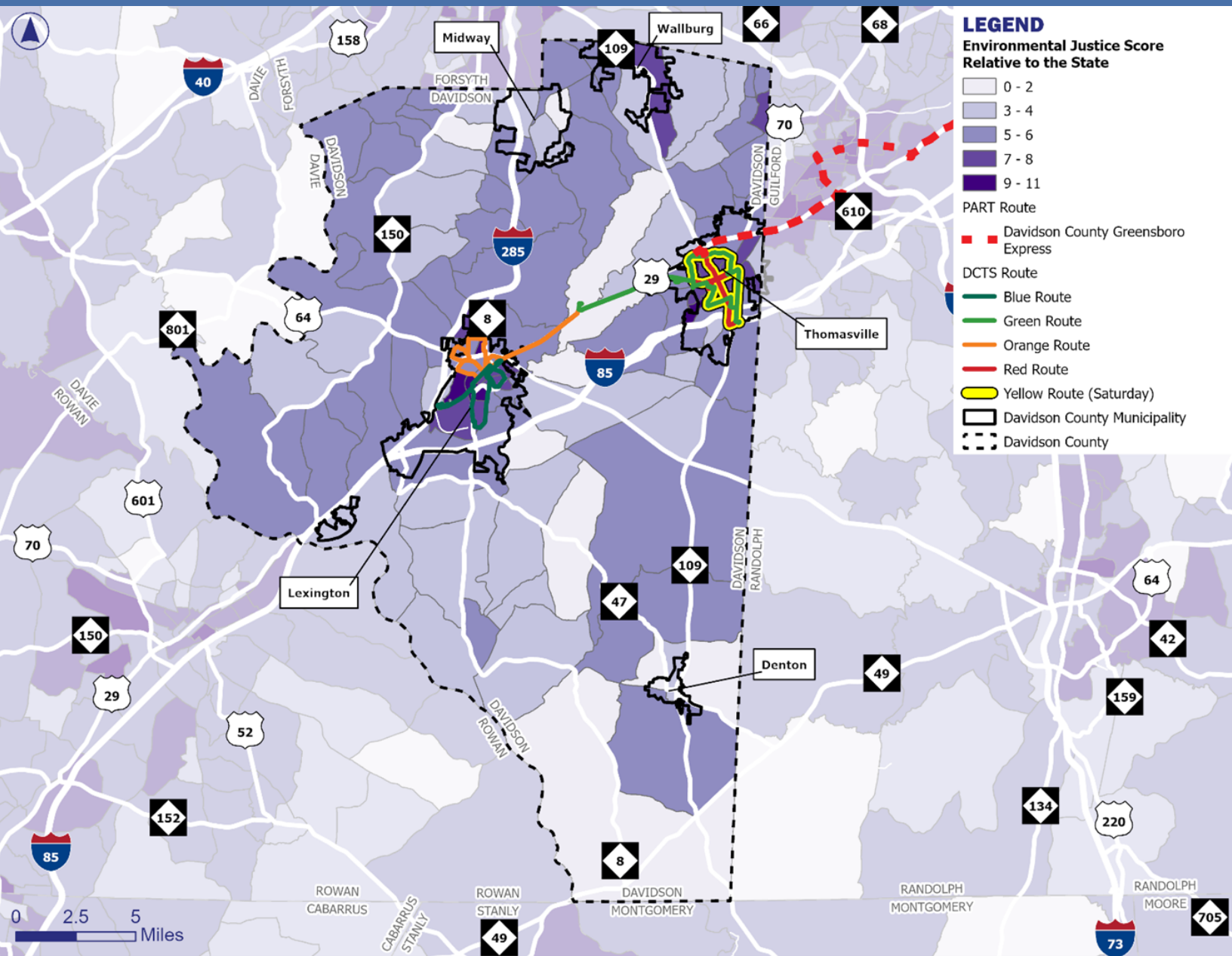


Figure 3-11. EJ Scoring *(Image courtesy of NCDOT IMD)*

Figure 3-10. EJ Scoring Relative to the State



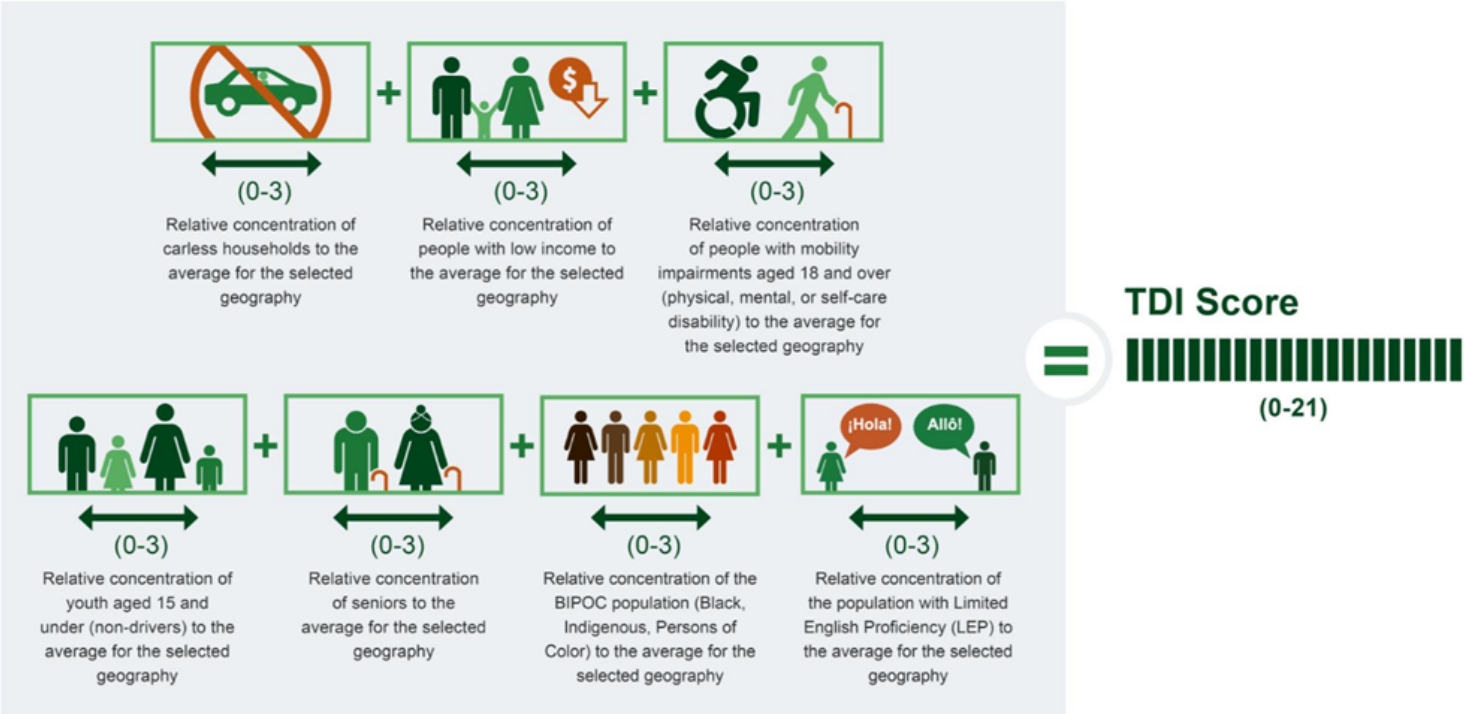
Transportation Disadvantage Index (TDI)

NCDOT's Transportation Disadvantage Index (TDI) Tool may be used to determine the concentration of transportation disadvantaged populations within a selected geographic area based on specific demographics. The demographic categories that have been shown to be more vulnerable to transportation issues and to have a harder time overcoming barriers to transportation—such as those who do not own a vehicle, have lower incomes, are under 15 years old, are 65 years old or older, have mobility impairments, and are members of racial and ethnic minorities—are the focus of TDI data.

These populations sometimes reside in places with fewer multimodal transportation alternatives and are more dependent on public transportation or walking to access jobs and essential services. A comprehensive score ranging from 0 to 21 is assigned to each BG, which indicates the relative share of these demographics in comparison to the county, division, state, and metropolitan planning organization (MPO). The percentages of these demographic categories in the area and the degree of transportation disadvantage increase the index score at the BG level. The TDI provides a comprehensive outlook of the transportation challenges faced by individuals and communities, which can be used to help inform the transit service recommendations and priorities for Davidson County. **Figure 3-12** displays the scoring breakdown for the TDI.

When compared to the state, BGs within Thomasville and Lexington both receive TDI scores that range between 16 and 19.5. As discussed in the demographic analysis, these two municipalities contain higher proportions of transit market populations. BGs to the west and north of Lexington exhibit high TDI scores (**Figure 3-13**). These areas could potentially benefit from additional transit services to enhance accessibility and bridge transportation gaps.

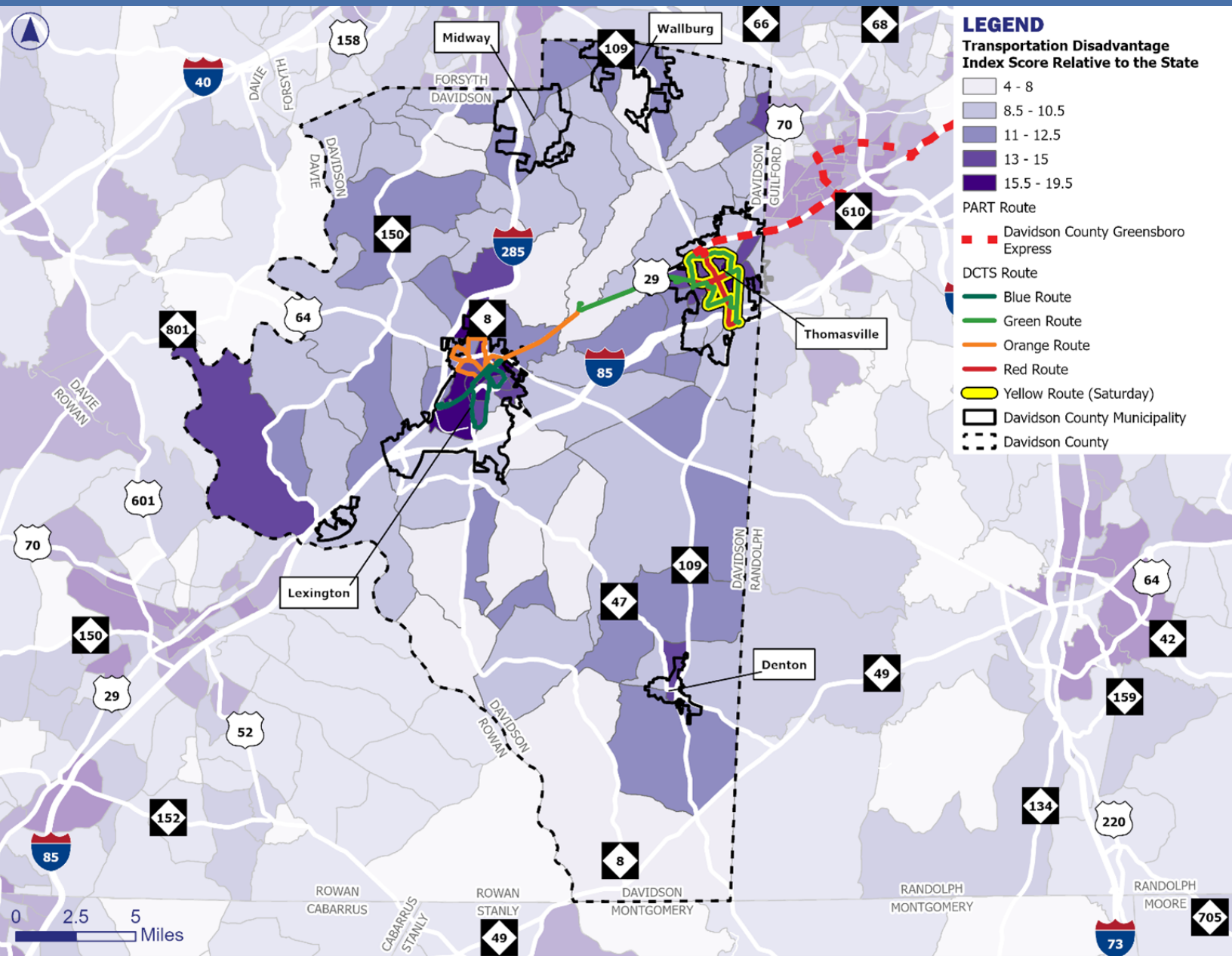
Figure 3-12. TDI Scoring *(Image courtesy of NCDOT IMD)*



TDI Tool Overview

Each U.S. Census BG is scored between 1-3 for each population category, based on U.S. Census Bureau ACS data (2020, 5-year estimate). The scores for each BG are then weighted to reduce double counting and summarized to produce a cumulative score ranging from 0-21. Higher scores convey a greater level of transportation disadvantage compared to other areas in the state.

Figure 3-13. Transportation Disadvantage Index



3.3 Employment & Commuting Patterns

According to the US Department of Transportation's Bureau of Transportation Statistics, 15 percent of daily trips are taken for commuting purposes, hence occupational characteristics play a significant role in the conversation about transportation and transit. Providing transit service between concentrations of residential areas and major employment centers is essential due to the considerable number of work-related journeys.

Sources of data for the analysis include the US Census Bureau Longitudinal-Employer Household Dynamics (LEHD) dataset for 2021. The LEHD dataset, produced through the Local Employment Dynamics Partnership, provides detailed information on workers and work locations based on employer administrative records.

3.3.1 Employment Density & Largest Employers

There are clusters of employment density along US 29 between Lexington and Thomasville and in Denton, as shown in **Figure 3-14**. This map also displays the major employers within the County which are included in **Table 3-2**. Davidson County Schools and Atrium Corporation are the largest employers within the County, employing 1,000 individuals or more. The Davidson County Schools administrative board is headquartered off US 64 in the Town of Lexington, whereas Atrium Corporation, a window supplier, is located north of Lexington in Welcome, between Old US Hwy 52 and I-285. Other major employers employing 500 to 999 individuals within the County include Davidson County, Old Dominion Freight Line, Walmart, Food Lion, Bradley Group, Jeld-Wen Inc, Mohawk, and Asco Power Technologies.

Table 3-2. Major Employers in Davidson County

Rank	Employer	Industry	Number of Employees
1	Davidson County Schools	Educational Services	1,000+
2	Atrium Corporation	Manufacturing	1,000+
3	Davidson County	Public Administration	500-999
4	Old Dominion Freight Line	Management of Companies and Enterprises	500-999
5	Walmart	Retail Trade	500-999
6	Food Lion	Retail Trade	500-999
7	Bradley Group	Administrative Services	500-999
8	Jeld-Wen Inc	Manufacturing	500-999
9	Mohawk	Manufacturing	500-999
10	Asco Power Technologies	Manufacturing	500-999

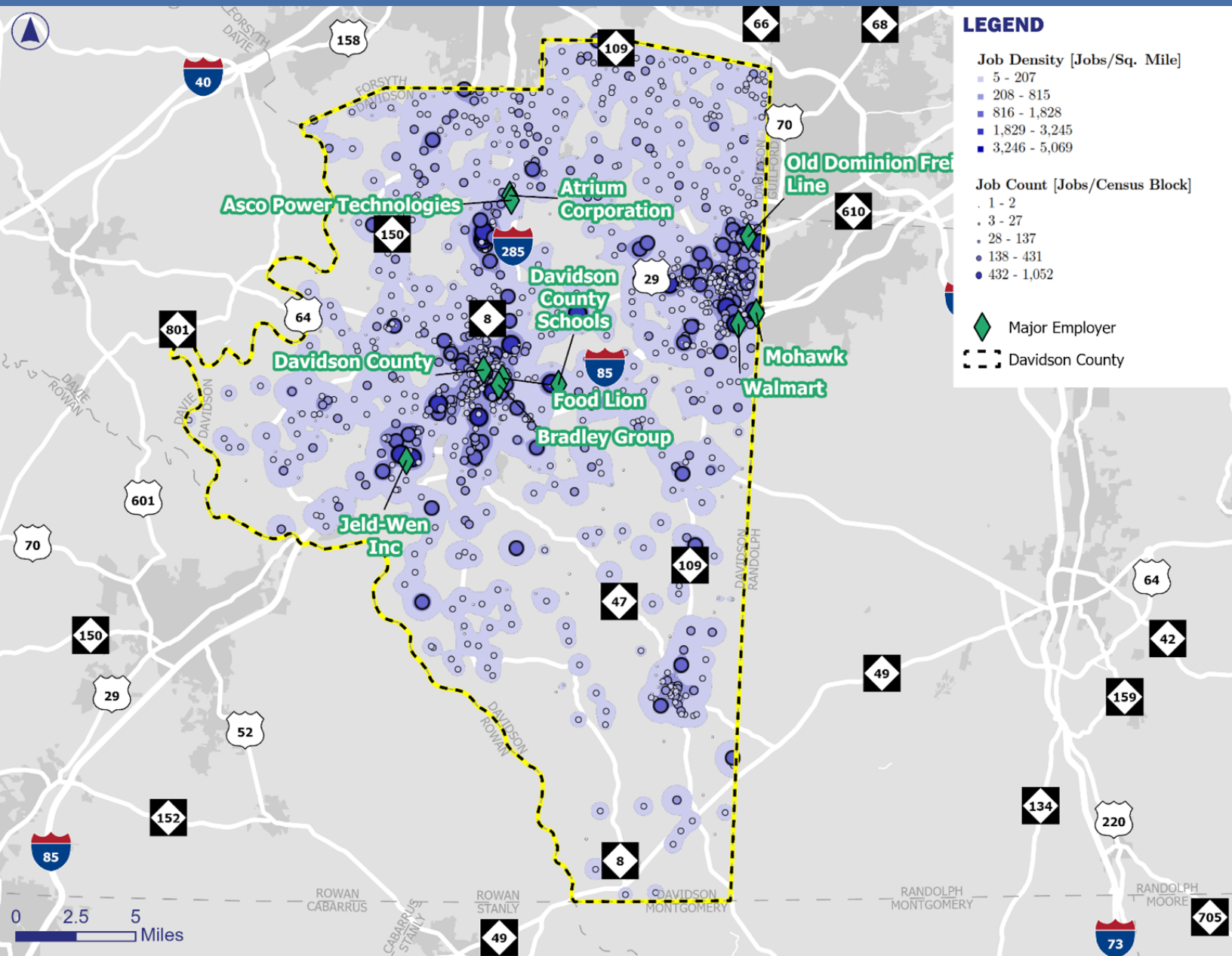
Major Employers

Atrium Corporation and Davidson County Schools are the largest employers in the County, each providing jobs to over 1,000 individuals.

ATRIUM WINDOWS AND DOORS

DAVIDSON COUNTY SCHOOLS
Your future. Our focus.

Figure 3-14. Davidson County Employment Density and Major Employers (LEHD)



3.3.2 Commuting Patterns

Researching commuting characteristics using OnTheMap, a Census based web-based mapping application that uses LEHD Origin-Destination Employment Statistics (LODES) data, can help in understanding regional travel patterns and travel choices. **Figure 3-15** and **Figure 3-16** show the commuting patterns of Davidson County residents and workers, as they relate to the surrounding counties.

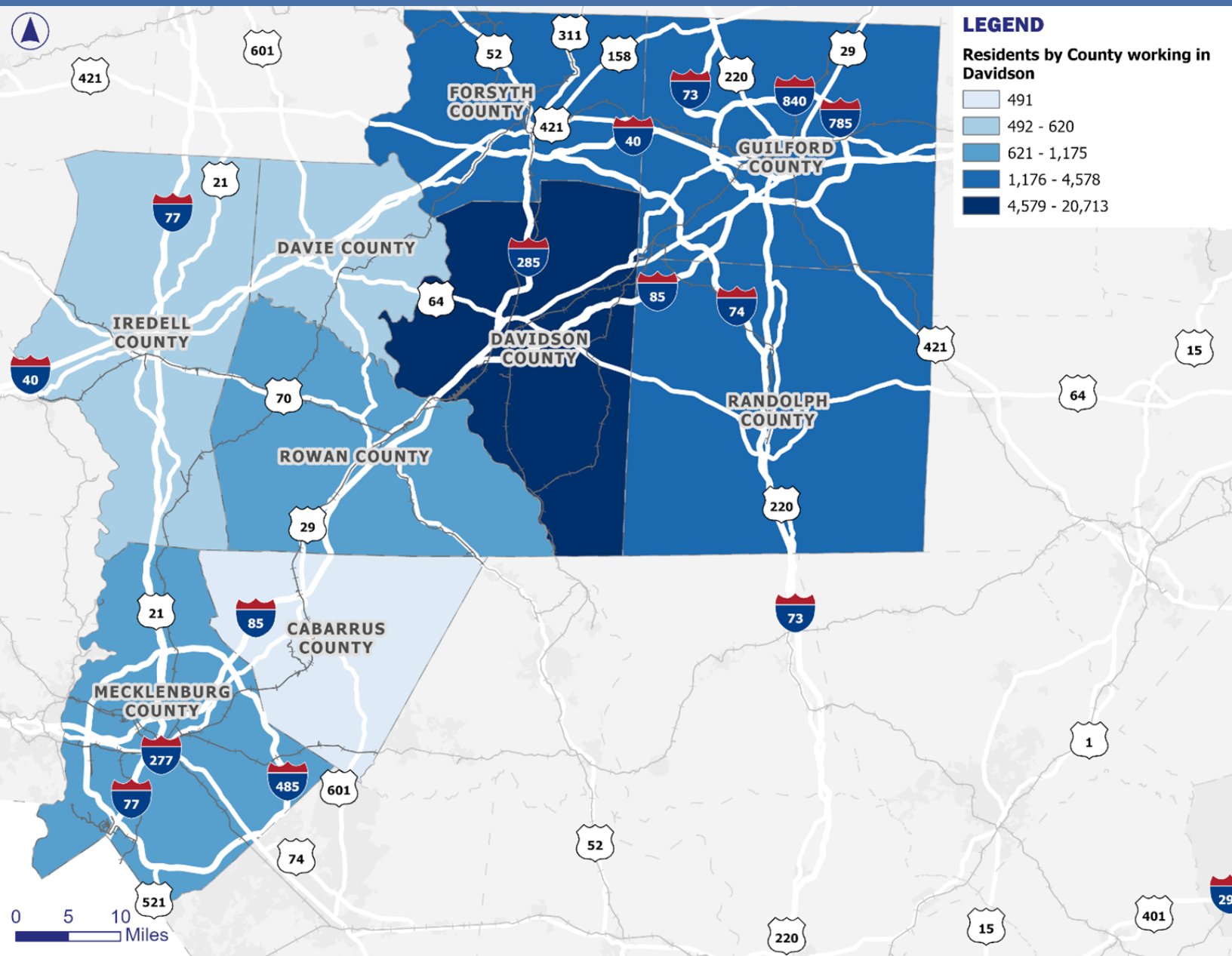
In total, 44,841 Davidson County workers live within and outside of the County (**Table 3-3**). The largest percentage of them – 46.2 percent – live within the County. The second largest percentage of residents, 10.2 percent, live in Forsyth County.

Table 3-3. Commuting Patterns for Davidson County – 2021 Commute Out (Where Workers Live)

Location	Count	Share
Davidson County, NC	20,713	46.2%
Forsyth County, NC	4,578	10.2%
Guilford County, NC	4,293	9.6%
Randolph County, NC	3,252	7.3%
Rowan County, NC	1,175	2.6%
Mecklenburg County, NC	893	2.0%
Davie County, NC	620	1.4%
Iredell County, NC	561	1.3%
Wake County, NC	503	1.1%
Cabarrus County, NC	491	1.1%
All Other Locations	7,762	17.3%
Total	**44,841**	**100.0%**

Source: U.S. Census Bureau, OnTheMap Application and LEHD Origin-Destination Employment Statistics (Beginning of Quarter Employment, 2nd Quarter of 2002-2021).

Figure 3-15. Workers in Davidson County, by County of Residence



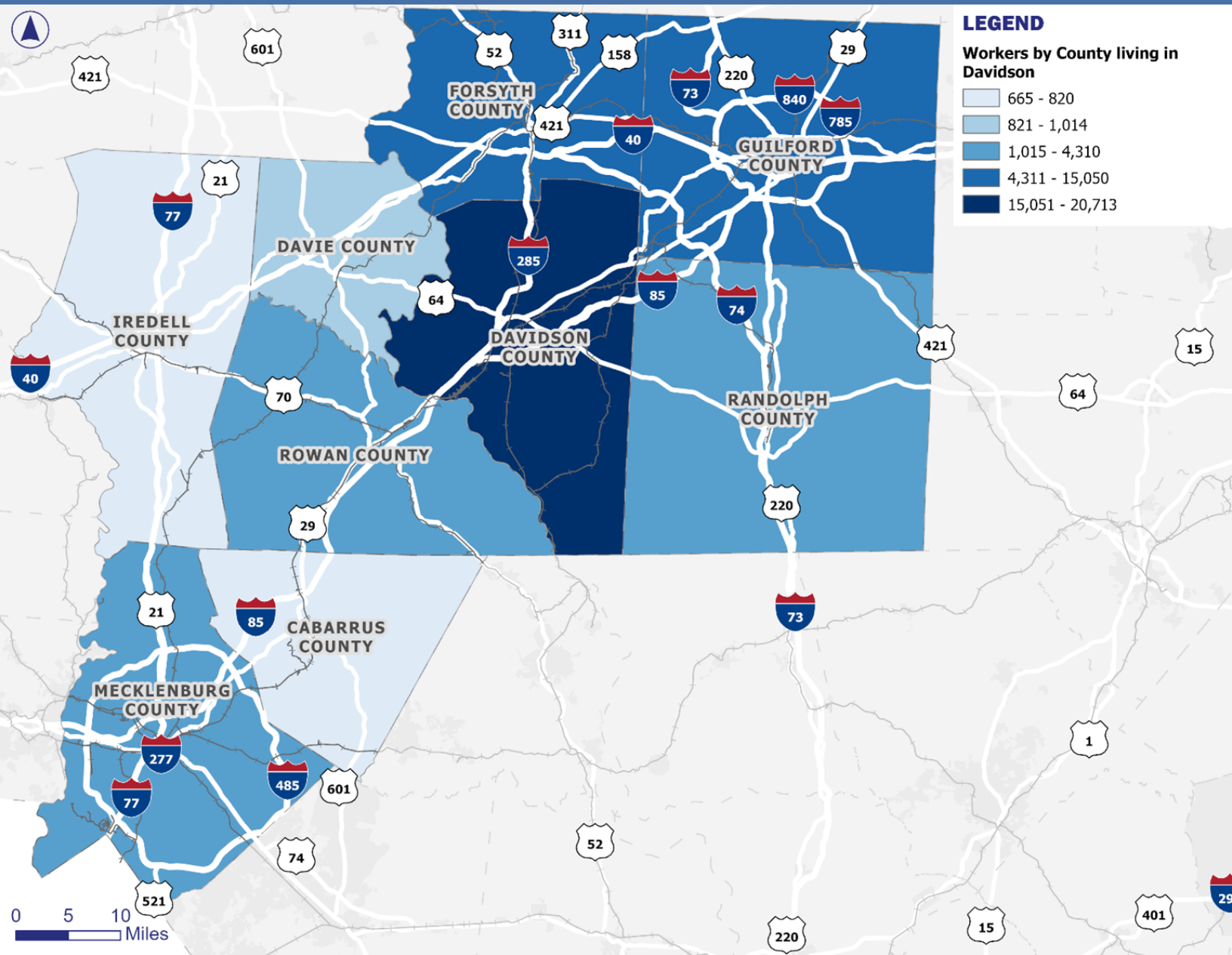
At 27.4 percent, the greatest percentage of workers that live in Davidson County currently work in Davidson County (out of 75,707 total workers). Guilford County employs nearly 20 percent (19.9%) of Davidson County workers, while Forsyth County is at a rate of 19.3 percent (Table 3-4). The number of workers by county who currently work in and around Davidson County is shown geographically in Figure 3-16. This data can help with recommendations for future mobility possibilities, particularly regional connectivity, and provide more context for understanding the direction that different employees are coming into the County from.

Table 3-4. Commuting Patterns for Davidson County – 2021 Commute In (Where Workers are Employed)

Location	Count	Share
Davidson County, NC	20,713	27.4%
Guilford County, NC	15,050	19.9%
Forsyth County, NC	14,599	19.3%
Mecklenburg County, NC	4,310	5.7%
Randolph County, NC	3,315	4.4%
Rowan County, NC	3,101	4.1%
Wake County, NC	2,736	3.6%
Davie County, NC	1,014	1.3%
Cabarrus County, NC	820	1.1%
Iredell County, NC	665	0.9%
All Other Locations	9,384	12.4%
Total	**75,707**	**100.0%**

Source: U.S. Census Bureau, OnTheMap Application and LEHD Origin-Destination Employment Statistics (Beginning of Quarter Employment, 2nd Quarter of 2002-2021).

Figure 3-16. Residents of Davidson County, by County of Employment



3.4 Community Services

Transit services are crucial for ensuring equitable access to essential services and key destinations, including educational facilities, government offices, medical clinics, hospitals, libraries, and social services. **Table 3-5** lists each major community service in Davidson County, as well as a corresponding map label that is displayed in **Figure 3-17**.

Table 3-5. Community Services within Davidson County

Map ID	Name	Type
1	Happy Laundry	Laundromat/Dry Cleaner
2	Davidson County Senior Services	Social Services
3	Denton Library	Library
4	Novant Health-GoHealth Urgent Care	Hospital/Clinic
5	Lexington Medical Center	Hospital/Clinic
6	Lexington Public Library	Library
7	West Davidson Library	Library
8	Davidson Veterans Services	Social Services
9	Davidson-Davie Community College Uptown Lexington Education Center	College/University
10	Novant Health-GoHealth Urgent Care	Hospital/Clinic
11	Thomasville Dialysis Center	Hospital/Clinic
12	Davidson-Davie Community College	College/University
13	Grady Edward Love Learning Resource Center - Library	Library
14	Davidson-Davie Community College Library	Library
15	STC Bible College	College/University
16	Thomasville Medical Center	Hospital/Clinic
17	Thomasville Public Library	Library
18	St Andrews Theological	College/University
19	North Davidson Library	Library
20	Davidson County Community Action	Social Services
21	Lexington City Hall	Government Office
22	Thomasville City Hall	Government Office
23	Lexington DMV	Government Office
24	Davidson County Courthouse	Government Office
25	NC DMV	Government Office

Map ID	Name	Type
26	Coin Wash II	Laundromat/Dry Cleaner
27	Seventh Avenue Laundry	Laundromat/Dry Cleaner
28	Tina's Laundry Services	Laundromat/Dry Cleaner
29	Welcome Coin Laundry	Laundromat/Dry Cleaner
30	Thomasville Laundry Land Laundromat	Laundromat/Dry Cleaner
31	Youngs Cleaners Inc	Laundromat/Dry Cleaner
32	Denton Coin Laundry	Laundromat/Dry Cleaner
33	A Cleaner World	Laundromat/Dry Cleaner
34	Southside Laundry	Laundromat/Dry Cleaner
35	Carolinas Laundromat	Laundromat/Dry Cleaner
36	Coin Laundry	Laundromat/Dry Cleaner

Davidson-Davie
COMMUNITY COLLEGE

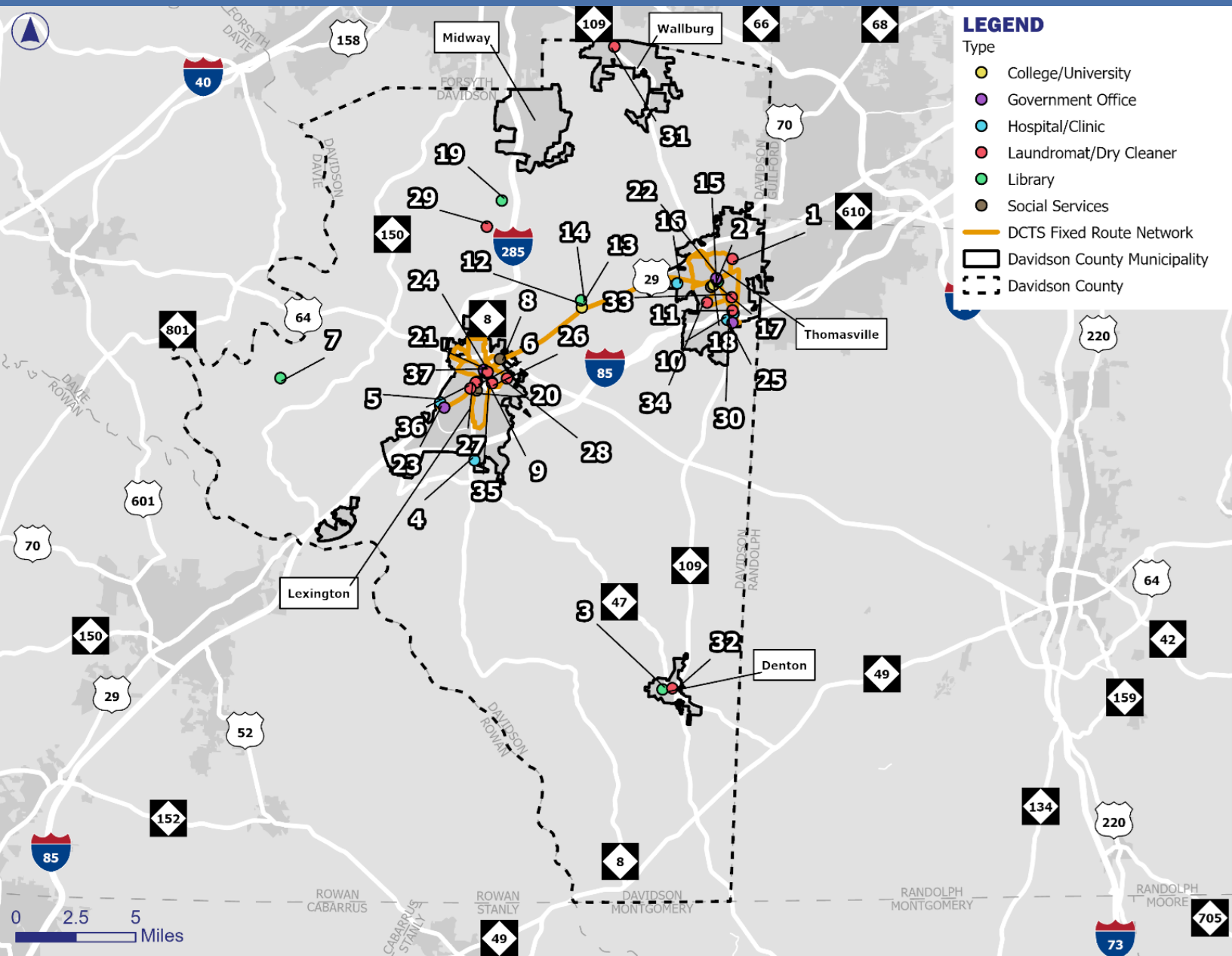




DMV
North Carolina Division of Motor Vehicles

The following figure illustrates a diverse distribution of service and destination types across Davidson County. Notably, several destinations lie between Lexington and Thomasville, while three libraries are scattered throughout the County. Expanding transit service coverage to include access to destinations beyond the current DCTS transit network could facilitate individuals and households in reaching additional services countywide.

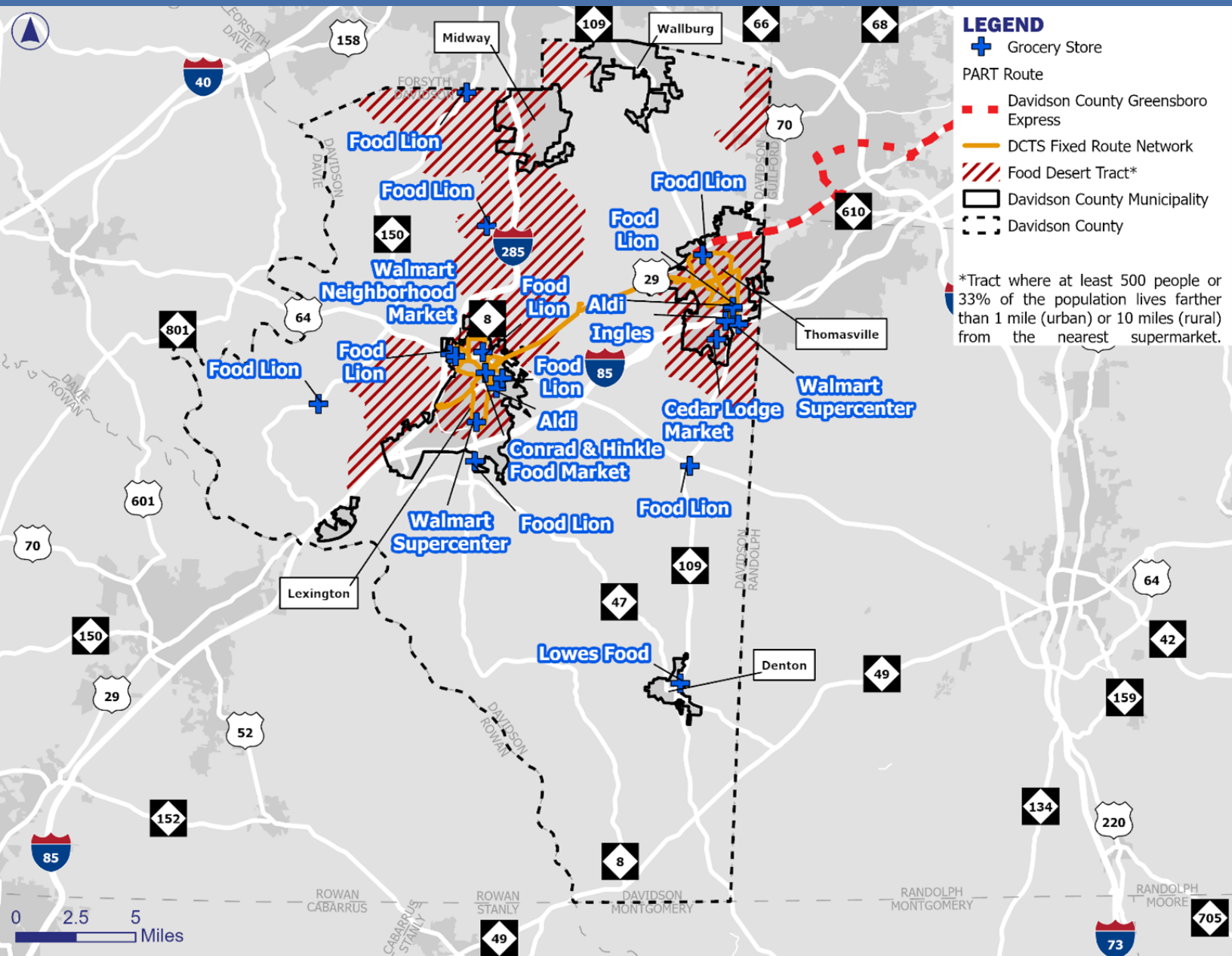
Figure 3-17. Community Services



3.5 Food Accessibility

Figure 3-18 illustrates the distribution of food desert census tracts in Davidson County relative to grocery stores and the DCTS deviated fixed-route network. The food desert data was sourced from the US Department of Agriculture's (USDA) Food Desert Locator online tool. According to the USDA, a food desert tract is a low-income census tract with a substantial number or share of residents lacking access to retail outlets selling healthy and affordable foods. The following figure highlights that DCTS deviated fixed-routes serve several of the food desert tracts, with exceptions for areas west of the Walmart in Lexington, north of Lexington along both sides of I-285, and near Cedar Lodge Market in Thomasville. Expanding transit services between existing grocery stores and food desert tracts could enhance access to grocery stores for households and individuals.

Figure 3-18. Food Deserts and Grocery Stores



3.6 Existing Plan Review

The following planning documents were reviewed to gain a better understanding of the interconnectivity between planned transit projects, multimodal projects, and land use patterns within Davidson County:

- *2045 Winston-Salem Urban Area Metropolitan Planning Organization Metropolitan Transportation Plan (2020)*
- *Davidson County Parks and Recreation and Tourism Development Master Plan (2017 Update)*
- *DCTS Community Transportation Service Plan (2015)*
- *2045 High Point Urban Area Metropolitan Planning Organization Metropolitan Transportation Plan (2015)*
- *Davidson County Comprehensive Transportation Plan (2011)*
- *Davidson County Land Development Plan Update (2009)*
- *Davidson County Greenway Master Plan (2009)*
- *Davidson County Blueway Plan*

The key findings and recommendations from these planning documents are summarized below. Projects highlighted in these studies within the study area will help to better understand community mobility needs within Davidson County. This information will also guide the recommendations in this study for Davidson County's microtransit service.

2045 Winston-Salem Urban Area Metropolitan Planning Organization Metropolitan Transportation Plan (Amended 2020)

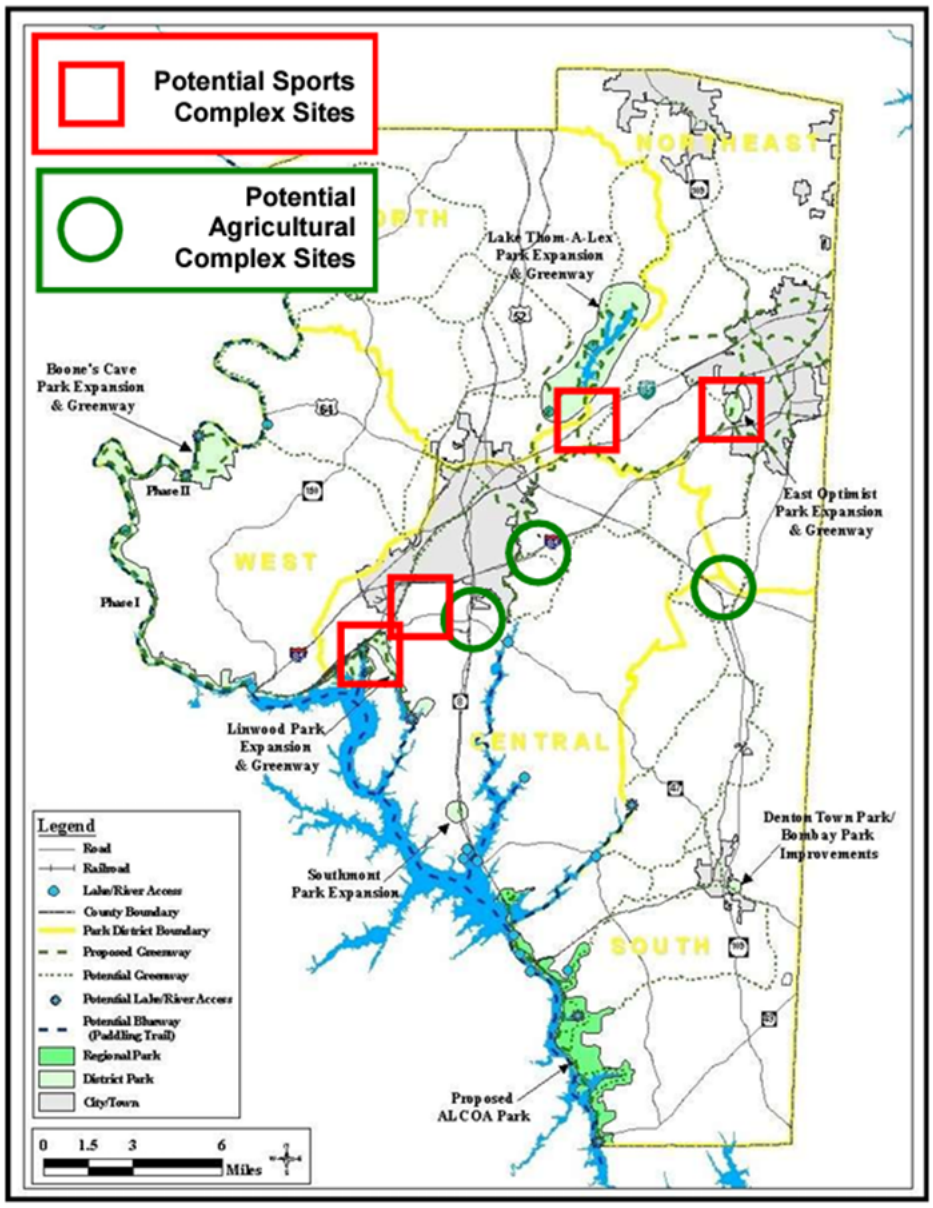
The Winston-Salem Urban Area Metropolitan Planning Organization (WSUAMPO) provides transportation planning and transit funding assistance to Davidson County. The WSUAMPO provides funding for the two deviated fixed-routes in Lexington. This funding supports routine capital expenses, preventative maintenance, and operating assistance. The *Metropolitan Transportation Plan* (MTP) states that new routes may be implemented in Lexington, including a connection between Salisbury and Lexington. It also mentions that there is a need for larger vehicles to accommodate growing transit needs in the region, as well as additional multimodal connections to transit stops.

Davidson County Parks and Recreation and Tourism Development Master Plan (2017 Update)

The goal of the master plan is to maximize Davidson County's distinctive assets to entice both public and private investment in the local economy while maintaining and developing the County's natural, cultural, and historic resources. According to the *Parks and Recreation and Tourism Development Master Plan*, recreational assets (e.g., High Rock Lake, the Yadkin River and other lakes and streams) within the County would be of greater value if more public access becomes available. The plan also emphasizes capacity building and states that, should NC Amtrak Service to Davidson County be established, the County will support efforts to increase access for visitors and transportation, as well as to improve access to the Davidson County Airport. Lastly, the plan highlights several potential multi-purpose sports complex sites and agricultural complex sites located throughout the County.

Throughout the planning process, these complex sites were identified as tourism needs of highest importance among residents and are displayed in **Figure 3-19**. Potential sports complex site locations include East Optimist Park, Davidson-Davie Community College, a site along Old Linwood Rd, and the Linwood Community Center Park. Potential agricultural complex site locations include southeast of Lexington near the intersection of I-85 and Old US 64, south of Lexington near the intersection of NC 8 and NC 47, and south of Thomasville near the intersection of NC 109 and US 64. Once constructed, microtransit may be able to help alleviate surges in demand to these sites.

Figure 3-19. Potential Sports and Agricultural Complex Sites



- Amtrak Station in Lexington; Passenger Rail (Amtrak Stop); Passenger Rails
- Multi-modal Transportation Hub
- Fixed bus routes between cities of Thomasville, Lexington, and Denton
- Inter/cross county services, fixed-route or deviated fixed-route
- Preserve Rail Corridors/Spur Lines
- Intercity Bus Service (Lexington)
- Service to Lake Thom-A-Lex once Greenway is established
- Denton Park-and-Ride Lot
- Southside Village, N. Main Street, Pope Street and Hemstetler
- Transit route from Denton to major employment centers

According to the CTSP, medical facilities (e.g., dialysis centers, hospitals, nursing homes, and general medical service clinics serve as some of the major activity centers in Davidson County. The plan found that the majority of the inter-county trips made through DCTS were trips made to medical facilities in Winston-Salem, High Point, Mocksville, and Spencer.

DCTS Community Transportation Service Plan (2015)

The *Community Transportation Service Plan* (CTSP) evaluates the public transportation system's organizational direction and current performance. It then makes recommendations for alternative managerial or operational approaches that will boost passenger mobility options and enhance the system's overall effectiveness and efficiency. During a plan workshop held in 2009, participants identified and prioritized the following needs and future project ideas:

2045 High Point Urban Area Metropolitan Planning Organization Metropolitan Transportation Plan (2015)

The *2045 High Point Urban Area Metropolitan Planning Organization* (HPUAMPO) MTP was approved in 2015. DCTS' service area within Thomasville falls within the MPO's boundary. According the MTP, one DCTS route is proposed

along I-285 and I-85. This route will serve Egger Wood Product employees, Atrium, and business parks along the corridor.

Davidson County Comprehensive Transportation Plan (2011)

The Town of Denton and the City of Lexington are included in the *Davidson County Comprehensive Transportation Plan* (CTP), which was collaboratively developed by Davidson County and NCDOT's Transportation Planning Branch in December 2008. This long-range plan identifies multimodal transportation needs for the County through 2035 and evaluates the following modes of mobility: bicycles, pedestrians, public transportation, rail, and highways. Several public transportation improvements that may be supported by microtransit are highlighted below.

- Through DCTS, a fixed-route bus service route connecting north Lexington to southwest Lexington and the Lexington Memorial Hospital will be established. Additionally, the CTP recommends building a park-and-ride facility next to the Business I-85/US 64 Interchange.
- DCTS may establish a fixed-route bus service route within Lexington, connecting northwest Lexington to south Lexington.
- Each inner-city circular routes may connect with the proposed intermodal connector and proposed Amtrak train stop in downtown Lexington in the future.
- There are two existing Park-and-Ride lots for PART's Winston-Salem and Greensboro Routes. One is located on Hargrave Road (SR 1224) near the Davidson County Airport and the other is on Forest Hill Road (SR 1247) near US 64.
- There are also planned DCTS Routes for Lexington that include the construction of park-and-ride lots. The Routes will traverse the City of Lexington and connect with the existing PART Routes.
- Additionally, a Park-and-Ride lot is proposed for Denton on NC 109. Davidson County residents who choose to share rides to other destinations will be able to do so from this park-and-ride lot.

Davidson County Land Development Plan Update (2009)

The *Davidson County Land Development Plan* was developed by Davidson County residents, the County board of Commissioners, the County Planning Board, and County staff. The plan, which was last modified in 2009, directs the County's land use decisions from 2008 through 2028. The plan includes the following polices that support public transit, as well as multimodal transportation:

- Policy 2.6: Sidewalks, trails, bikeways, public transit, and other means of transportation may be encouraged.
- Policy 5.2: Large commercial centers should be encouraged to locate adjacent to the intersections of major freeways and arterials and convenient to mass transit routes, if available; planned concentrations of employment and housing should be encouraged to locate convenient to these centers.
- Policy 6.7: Factors in determining preferred locations for higher density residential development shall include: close proximity to employment and shopping centers, access to major thoroughfares and transit systems, the availability of public services and facilities, and compatibility with adjacent areas and land uses.

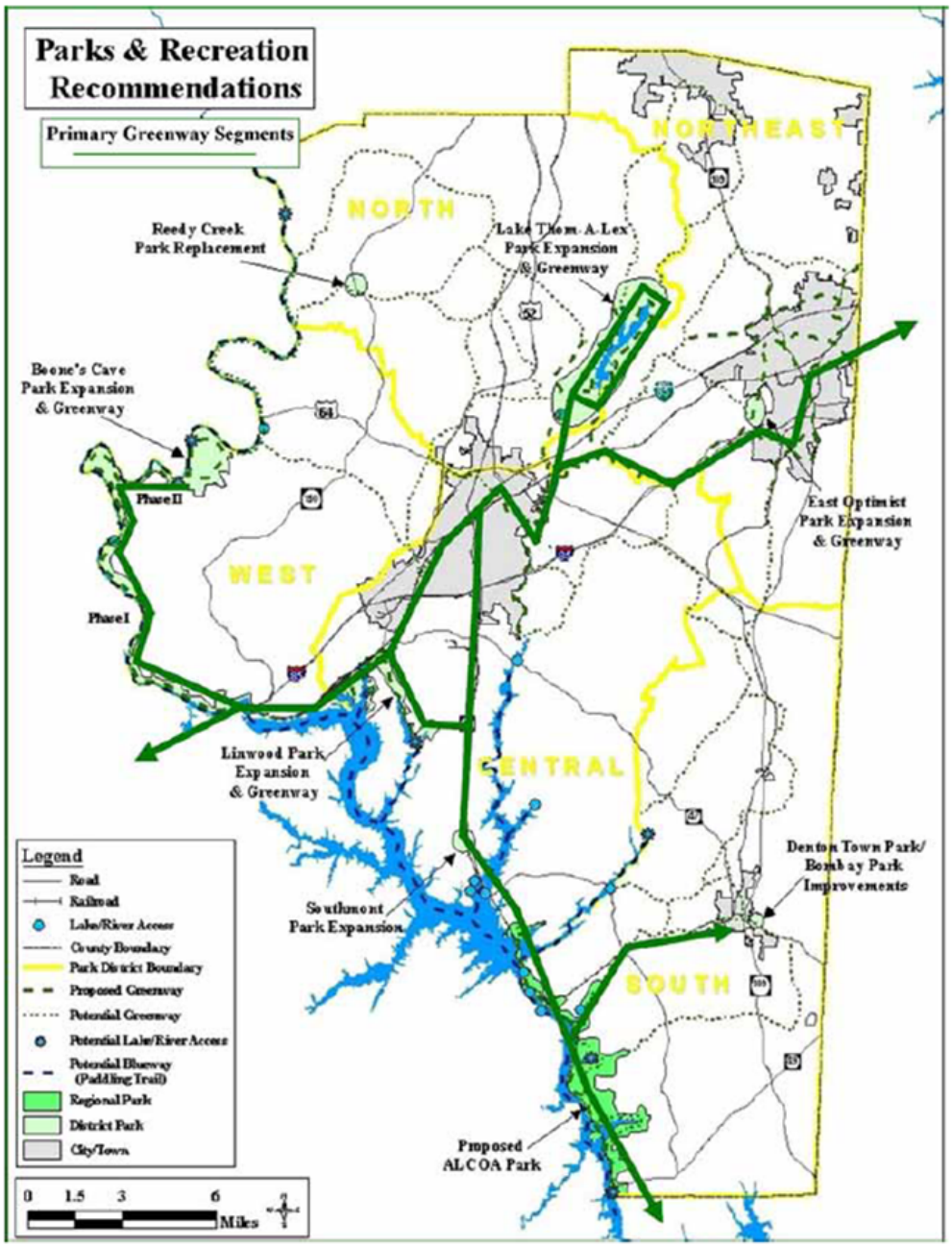
By evaluating current and future land use patterns, present and anticipated demographics, as well as current and planned transit services, agencies such as DCTS can more successfully implement microtransit to increase mobility equity and accessibility.

Davidson County Greenway Master Plan (2009)

Adopted in January 2009, the County's *Greenway Master Plan* outlines strategies for greenway

development within the County and describes two greenway and blueway pilot projects. The County expressly desires to use greenways as a means of fostering economic growth to draw in business and hire additional workers. According to the plan, the greenway system is mostly utilized for travel as well as leisure. It also claims that companies and employers have been moving to Davidson County for a longer period of time because the expanding park and greenway systems improve the quality of life. Greenway recommendations displayed in Figure 3-20 will link to County parks, existing greenways, as well as Lexington and Thomasville. Similar to biking and walking, microtransit can also help reduce personal vehicle usage, resulting in reduced greenhouse gas emissions and traffic. While planning for microtransit, the study can ensure that the service is available to all members of the community, particularly those without access to personal vehicles, by taking into account commonly visited locations by foot or bicycle.

Figure 3-20. Conceptual Greenway Plan



Davidson County Blueway Plan

Davidson County is home to several public access sites that link to blueway opportunities along the Yadkin River and several of the County's lakes. Ten (10) sites are existing public boat ramps or paddle access locations and four (4) are public fishing areas. The *Davidson County Blueway Plan* identifies 13 new blueway access sites within the County (see **Figure 3-21**). The majority of blueway access points are in western Davidson County around Lexington. Microtransit service can be tailored to blueway trailheads and help bridge the gap between existing transit stops and trailheads, serving as a last-mile connection.

Piedmont Triad Regional Council Inadequate Needs Survey (2024)

In addition to the planning efforts discussed above, the Piedmont Triad Regional Council recently conducted a survey on inadequate needs in the region. The top three inadequately met needs in Davidson County include (see graphic below):

1. Housing and Home Improvement
2. In-Home Aide Level I
3. Transportation

The prominence of transportation within the top three inadequate needs underscores the importance of conducting this microtransit study.

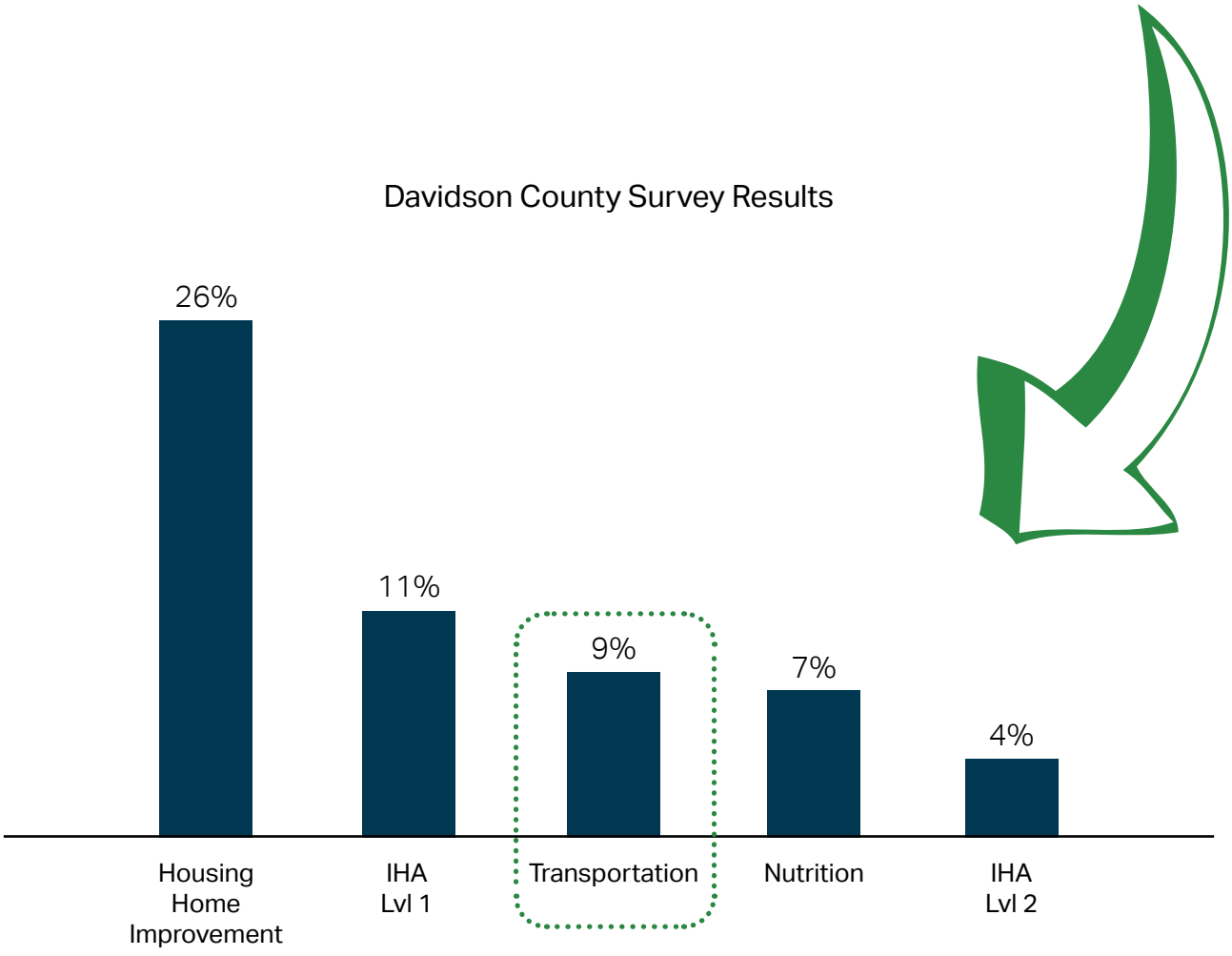
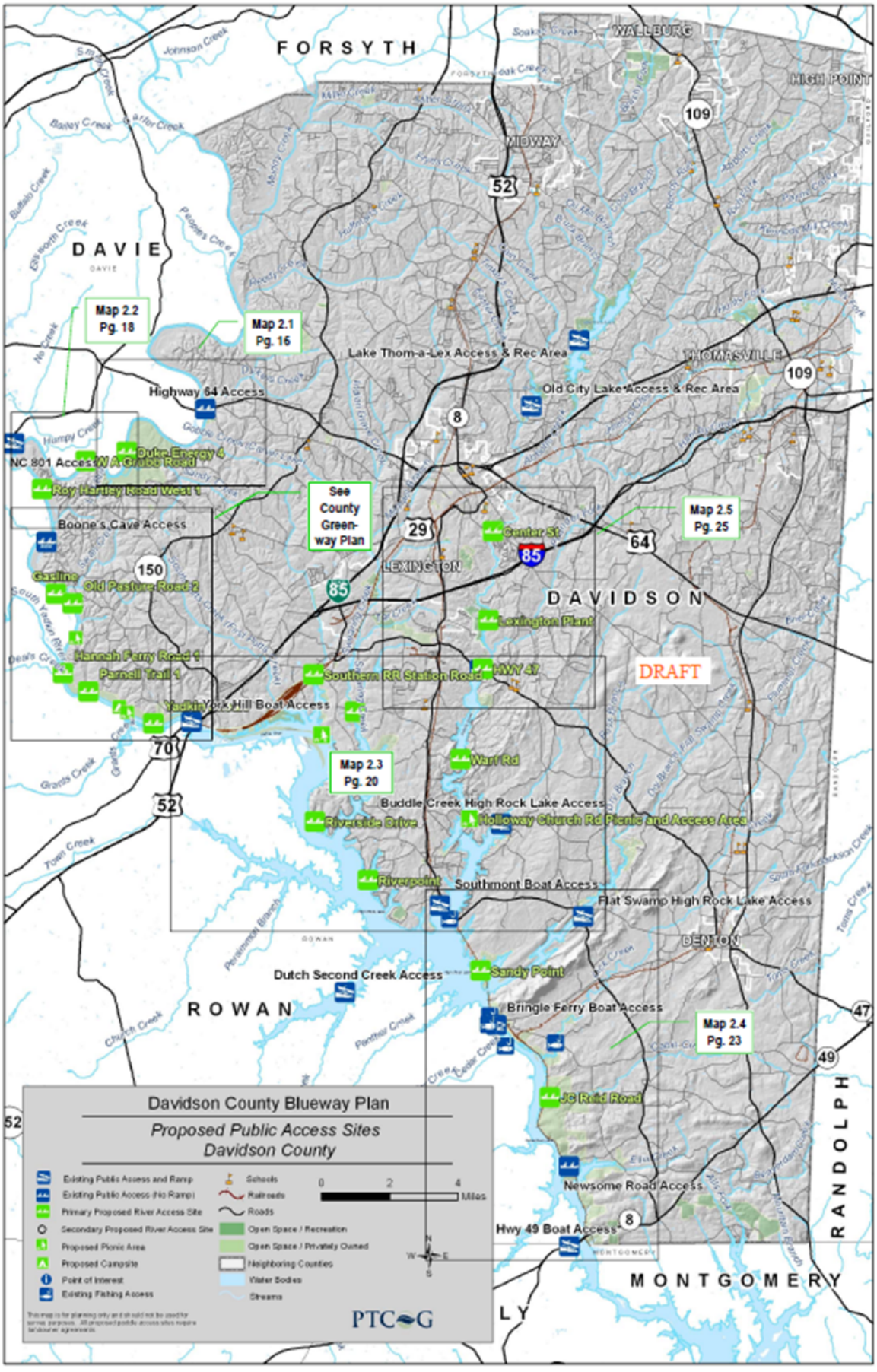


Figure 3-21. Proposed Public Blueway Access Sites



3.7 Gap Identification

The purpose of the gap analysis is to identify areas of deficiency in the existing DCTS deviated fixed-route and demand response network. **Table 3-6** provides a summary of the service gaps identified in respect to the various demographic and socioeconomic categories, as well as existing plans analyzed above. Route coverage is divided into major, partial, and no coverage. Major coverage means that a route serves a major demographic or socioeconomic factor/area of concern. A route is said to have partial coverage if it covers the majority of socioeconomic factors, demographics, or areas of concern; if it serves none of these, it is said to have no coverage.

The matrix is divided into the following categories:

- **Coverage** - Does current DCTS service reach employment centers, social services, neighborhoods? Does service cover areas of transit dependency?
- **Temporal** - When does the service operate and does that align with when riders need it (time of day, days of week)?
- **Regional Connectivity** - Does service provide regional connectivity for commuting?
- **Convenience** - Do current policies like advance reservations allow for convenient trips?
- **Plan Consistency** - Does the current transit system address goals/plans identified in the existing plan review?

Findings from the gap analysis can guide future decision-making and inform strategies to address identified deficiencies in the transit system as well as provide the analysis required for **Chapter 5** in this study.

Matrix Legend

DCTS Route Coverage:

● =Major coverage

◐ =Partial coverage

○ =No coverage

DR=Demand Response

DFR=Deviated Fixed-Route

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Table 3-6. Gap Analysis Matrix

Category		DCTS Coverage					
		Blue	Green	Orange	Red	Yellow (Saturday)	
Minority Population	DFR	●	●	●	●	●	
	DR	N/A – Demand Response operates countywide.					
Populations with Disabilities	DFR	●	●	●	●	●	
	DR	N/A – Demand Response operates countywide.					

Matrix Legend

DCTS Route Coverage:

● =Major coverage

◐ =Partial coverage

○ =No coverage

DR=Demand Response

DFR=Deviated Fixed-Route

	Temporal	Regional Connectivity	Convenience	Plan Consistency	Gap Type
	No changes recommended.	Lexington riders may transfer to Thomasville to connect to the Davidson County Greensboro Express Route.	Consider extending wait time at transfer stops.	N/A	No major gaps identified
	No changes recommended.	N/A – Trips can be booked directly to Thomasville Park-and-Ride to connect to Davidson County Express Route.	Consider decreasing advance notice window for reservations. Enable technology to allow for on-demand trip requests online or through a mobile application.	N/A	N/A – Demand Response operates countywide.
	Consider expanding service times to account for medical visits.	Lexington riders may transfer to Thomasville Park-and-Ride to connect to the Davidson County Greensboro Express Route.	Consider extending wait time at transfer stops.	N/A	Gaps in Southern Davidson County
	Consider expanding service times to account for medical visits.	N/A – Trips can be booked directly to Thomasville Park-and-Ride to connect to Davidson County Express Route.	Consider decreasing advance notice window for reservations. Enable technology to allow for on-demand trip requests online or through a mobile application.	N/A	N/A – Demand Response operates countywide.

Category		DCTS Coverage					
		Blue	Green	Orange	Red	Yellow (Saturday)	
LEP	DFR	●	●	●	●	●	
	DR	N/A – Demand Response operates countywide.					
Aging Population	DFR	◐	●	●	◐	◐	
	DR	N/A – Demand Response operates countywide.					

Matrix Legend

DCTS Route Coverage:

● =Major coverage

◐ =Partial coverage

○ =No coverage

DR=Demand Response

DFR=Deviated Fixed-Route

	Temporal	Regional Connectivity	Convenience	Plan Consistency	Gap Type
	No changes recommended.	Lexington riders may transfer to Thomasville to connect to the Davidson County Greensboro Express Route.	Consider extending wait time at transfer stops.	N/A	No major gaps identified
	No changes recommended.	N/A – Trips can be booked directly to Thomasville Park-and-Ride to connect to Davidson County Express Route.	Consider decreasing advance notice window for reservations. Enable technology to allow for on-demand trip requests online or through a mobile application.	N/A	N/A – Demand Response operates countywide.
	Consider expanding service times to account for medical visits.	Lexington riders may transfer to Thomasville Park-and-Ride to connect to the Davidson County Greensboro Express Route. BGs south of Lexington lack regional connections.	Consider extending wait time at transfer stops.	*DCTS CTSP*: Medical facilities (e.g., dialysis centers, hospitals, nursing homes, and general medical service clinics serve as some of the major activity centers in the County.	Gaps throughout the County
	Consider expanding service times to account for medical visits.	N/A – Trips can be booked directly to Thomasville Park-and-Ride to connect to Davidson County Express Route.	Consider decreasing advance notice window for reservations. Enable technology to allow for on-demand trip requests online or through a mobile application.	N/A	N/A – Demand Response operates countywide.

Category		DCTS Coverage					
		Blue	Green	Orange	Red	Yellow (Saturday)	
Vehicle Availability	DFR	●	●	●	◐	●	
	DR	N/A – Demand Response operates countywide.					

Matrix Legend

DCTS Route Coverage:

● =Major coverage

◐ =Partial coverage

○ =No coverage

DR=Demand Response

DFR=Deviated Fixed-Route

	Temporal	Regional Connectivity	Convenience	Plan Consistency	Gap Type
	No changes recommended.	Lexington riders may transfer to Thomasville to connect to the Davidson County Greensboro Express Route.	Consider extending wait time at transfer stops.	*WSUAMPO*: There is a need for larger vehicles to accommodate growing transit needs in the region, as well as additional multimodal connections to transit stops. *Davidson County Greenway Master Plan/Blueway Plan*: The DCTS Routes connect to major greenway segments within the County. There are some service gaps in the western and southern portions of the County for greenways and blueways.	Some service gaps in the western and southern portions of the County for greenways and blueways.
	No changes recommended.	N/A – Trips can be booked directly to Thomasville Park-and-Ride to connect to Davidson County Express Route.	Consider decreasing advance notice window for reservations. Enable technology to allow for on-demand trip requests online or through a mobile application.	Triad Regional Council Inadequate Needs Survey: Transportation is among the top three inadequately met needs in Davidson County	N/A – Demand Response operates countywide.

Category		DCTS Coverage					
		Blue	Green	Orange	Red	Yellow (Saturday)	
Low-Income Populations	DFR	●	●	◐	●	●	
	DR	N/A – Demand Response operates countywide.					
EJ	DFR	●	●	●	●	●	
	DR	N/A – Demand Response operates countywide.					

Matrix Legend

DCTS Route Coverage:

● =Major coverage

◐ =Partial coverage

○ =No coverage

DR=Demand Response

DFR=Deviated Fixed-Route

	Temporal	Regional Connectivity	Convenience	Plan Consistency	Gap Type
	No changes recommended.	BGs in western Lexington and southwest of Thomasville lack regional connections.	Consider extending wait time at transfer stops.	N/A	Gap southwest of Thomasville and eastern Lexington
	No changes recommended.	N/A – Trips can be booked directly to Thomasville Park-and-Ride to connect to Davidson County Express Route.	Consider decreasing advance notice window for reservations. Enable technology to allow for on-demand trip requests online or through a mobile application. Ensure that technology includes provisions for riders that are unbanked and/or do not have access to the internet.	N/A	N/A – Demand Response operates countywide.
	No changes recommended.	BGs in Wallburg lack regional connections.	Consider extending wait time at transfer stops.	N/A	Gap in Wallburg.
	No changes recommended.	N/A – Trips can be booked directly to Thomasville Park-and-Ride to connect to Davidson County Express Route.	Consider decreasing advance notice window for reservations. Enable technology to allow for on-demand trip requests online or through a mobile application. Ensure that technology includes provisions for riders that are unbanked and/or do not have access to the internet.	N/A	N/A – Demand Response operates countywide.

Category		DCTS Coverage					
		Blue	Green	Orange	Red	Yellow (Saturday)	
TDI	DFR	●	●	●	●	●	
	DR	N/A – Demand Response operates countywide.					

Matrix Legend

DCTS Route Coverage:

● =Major coverage

◐ =Partial coverage

○ =No coverage

DR=Demand Response

DFR=Deviated Fixed-Route

	Temporal	Regional Connectivity	Convenience	Plan Consistency	Gap Type
	No changes recommended.	BGs in the most western side of the County (near Rowan County) lack regional connections.	Consider extending wait time at transfer stops.	N/A	Gap in western Davidson County and north of Lexington.
	No changes recommended.	N/A – Trips can be booked directly to Thomasville Park-and-Ride to connect to Davidson County Express Route.	Consider decreasing advance notice window for reservations. Enable technology to allow for on-demand trip requests online or through a mobile application. Ensure that technology includes provisions for riders that are unbanked and/or do not have access to the internet.	Triad Regional Council Inadequate Needs Survey: Transportation is among the top three inadequately met needs in Davidson County	N/A – Demand Response operates countywide.

Category		DCTS Coverage					
		Blue	Green	Orange	Red	Yellow (Saturday)	
Employment Density & Largest Employers	DFR	●	●	●	●	●	
	DR	N/A – Demand Response operates countywide.					

Matrix Legend

DCTS Route Coverage:

● =Major coverage

◐ =Partial coverage

○ =No coverage

DR=Demand Response

DFR=Deviated Fixed-Route

	Temporal	Regional Connectivity	Convenience	Plan Consistency	Gap Type
	Consider expanding service times to accommodate for early/late work hours.	Asco Power Technologies (north of Lexington), Jeld-Wen Inc (south of Lexington), and Denton lack regional connections.	Consider extending wait time at transfer stops.	*DCTS CTSP*: Transit Route from Denton to major employment centers. *2045 HPUAMPO*: One DCTS Route is proposed along I-285 and I-85. It will serve Egger Wood Product employees, Atrium, and nearby business parks.	Routes do not service Asco Power Technologies (north of Lexington), Jeld-Wen Inc (south of Lexington), or job clusters in Denton.
	Consider expanding service times to accommodate for early/late work hours.	N/A – Trips can be booked directly to Thomasville Park-and-Ride to connect to Davidson County Express Route.	Consider decreasing advance notice window for reservations. Enable technology to allow for on-demand trip requests online or through a mobile application.	Triad Regional Council Inadequate Needs Survey: Transportation is among the top three inadequately met needs in Davidson County.	N/A – Demand Response operates countywide.

Category		DCTS Coverage					
		Blue	Green	Orange	Red	Yellow (Saturday)	
Community Services	DFR	●	●	●	●	●	
	DR	N/A – Demand Response operates countywide.					

Matrix Legend

DCTS Route Coverage:

● =Major coverage

◐ =Partial coverage

○ =No coverage

DR=Demand Response

DFR=Deviated Fixed-Route

	Temporal	Regional Connectivity	Convenience	Plan Consistency	Gap Type
	Consider expanding service times to accommodate for late night trips or expanding weekend service.	Lacks connections to libraries outside of Lexington and Thomasville.	Consider extending wait time at transfer stops.	*Davidson County Parks & Recreation & Tourism Development Master Plan*: Transit service needed for future sports complexes and agricultural complex sites. *DCTS CTSP*: The majority of the inter-county trips made through DCTS were trips made to medical facilities in Winston-Salem, High Point, Mocksville, and Spencer.	Libraries scattered within the County.
	Consider expanding service times to accommodate for late night trips.	N/A – Trips can be booked directly to Thomasville Park-and-Ride to connect to Davidson County Express Route.	Consider decreasing advance notice window for reservations. Enable technology to allow for on-demand trip requests online or through a mobile application.	N/A	N/A – Demand Response operates countywide.

Category		DCTS Coverage					
		Blue	Green	Orange	Red	Yellow (Saturday)	
Food Accessibility	DFR	●	●	●	●	●	
	DR	N/A – Demand Response operates countywide.					

Matrix Legend

DCTS Route Coverage:

● =Major coverage

◐ =Partial coverage

○ =No coverage

DR=Demand Response

DFR=Deviated Fixed-Route

	Temporal	Regional Connectivity	Convenience	Plan Consistency	Gap Type
	Consider expanding service times to accommodate for late night trips or expanding weekend service.	Food desert BGs west and north of Lexington lack regional connections.	Consider extending wait time at transfer stops. Consider increasing frequency to allow riders to make spontaneous trips to access food.	N/A	Gaps in areas west of the Walmart in Lexington, north of Lexington along both sides of I-285, and near Cedar Lodge Market in Thomasville (7 food desert BGs lack route coverage).
	Consider expanding service times to accommodate for late night trips.	N/A – Trips can be booked directly to Thomasville Park-and-Ride to connect to Davidson County Express Route.	Consider decreasing advance notice window for reservations. Enable technology to allow for on-demand trip requests online or through a mobile application.	N/A	N/A – Demand Response operates countywide.

Category		DCTS Coverage					
		Blue	Green	Orange	Red	Yellow (Saturday)	
Commuting Patterns	DFR	●	●	●	●	●	
	DR	N/A – Demand Response operates countywide.					

Matrix Legend

DCTS Route Coverage:

● =Major coverage

◐ =Partial coverage

○ =No coverage

DR=Demand Response

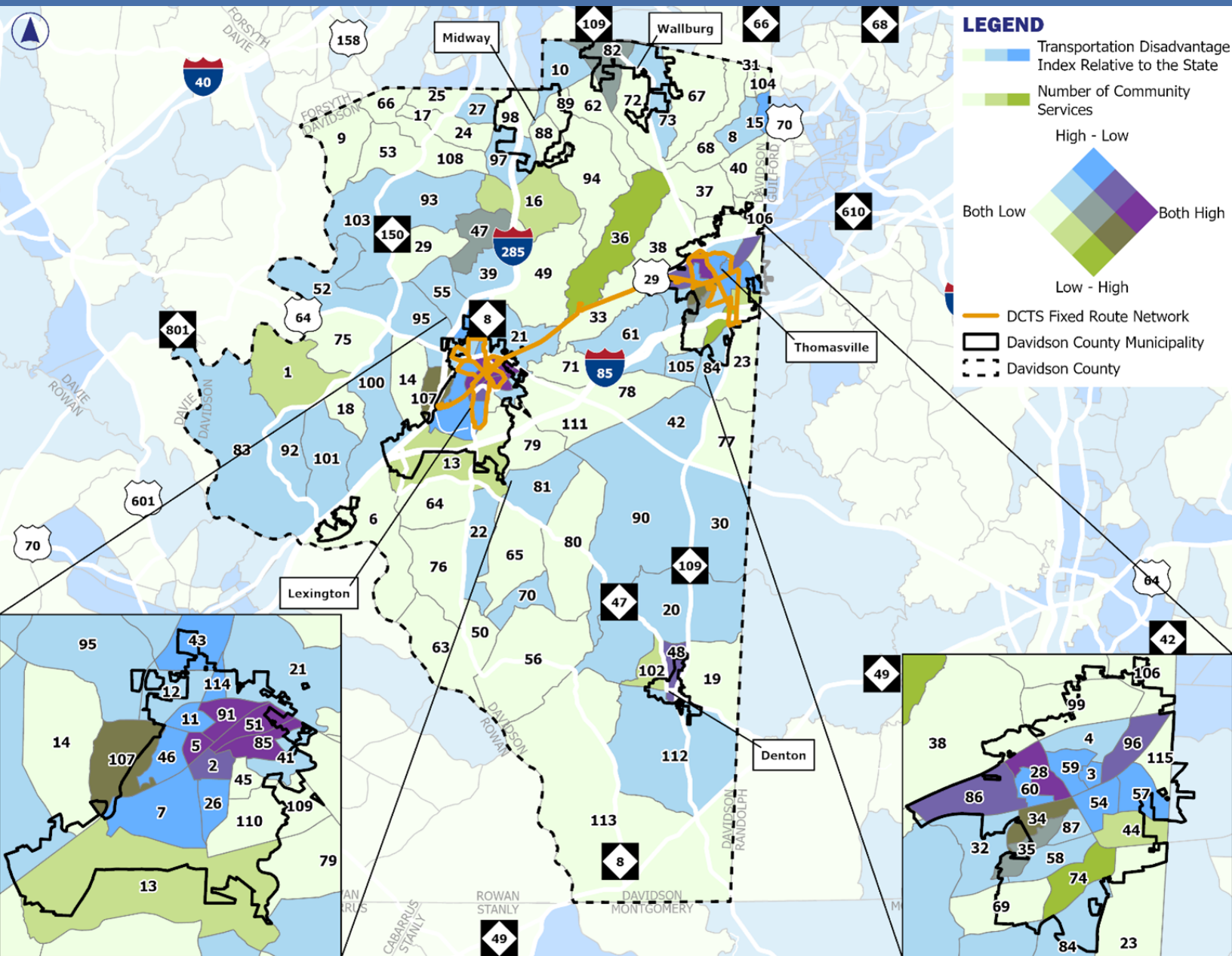
DFR=Deviated Fixed-Route

	Temporal	Regional Connectivity	Convenience	Plan Consistency	Gap Type
	Consider evening service to accommodate later work shifts.	Promotes regional connections to Forsyth, Guildford, and Randolph counties. These are popular employment destinations for people who commute from Davidson County.	Consider extending wait time at transfer stops. Consider increasing frequency to allow riders to better align using transit with their work schedules.	*WSUAMPO*: New routes may be implemented in Lexington, including a connection between Salsbury and Lexington. *Davidson County CTP*: Proposed Park-and-Ride lots throughout the County.	Current schedule does not serve later work shifts.
	Consider evening service to accommodate later work shifts.	N/A – Trips can be booked directly to Thomasville Park-and-Ride to connect to Davidson County Express Route.	Consider decreasing advance notice window for reservations. Enable technology to allow for on-demand trip requests online or through a mobile application.	Triad Regional Council Inadequate Needs Survey: Transportation is among the top three inadequately met needs in Davidson County.	Current schedule does not serve later work shifts.

3.7.1 Coverage Analysis

Most of Davidson County outside of Lexington and Thomasville has a low density of community services, with a notable exemption along US-29 where two libraries are in the same BG as one of the DCTS transfer stops. TDI scores are conversely the highest within the County's two major municipalities. Areas in most need of transit coverage are those where both community services are scarce and TDI scores are high, such as eastern Thomasville, southwest Lexington, and northern Denton. **Figure 3-22** shows these areas shaded in a saturated blue hue, as well as where DCTS deviated fixed-route service overlaps with these areas in Thomasville and Lexington but is absent in Denton. Areas that are a more saturated green indicate better existing coverage, with lower TDI scores and a higher density of community services. Areas that are dark purple have both high TDI scores and are dense with community services, and light green depicts the opposite, having both low TDI scores and sparse community services. Demographic and TDI scoring data for each numbered BG are in **Appendix C**.

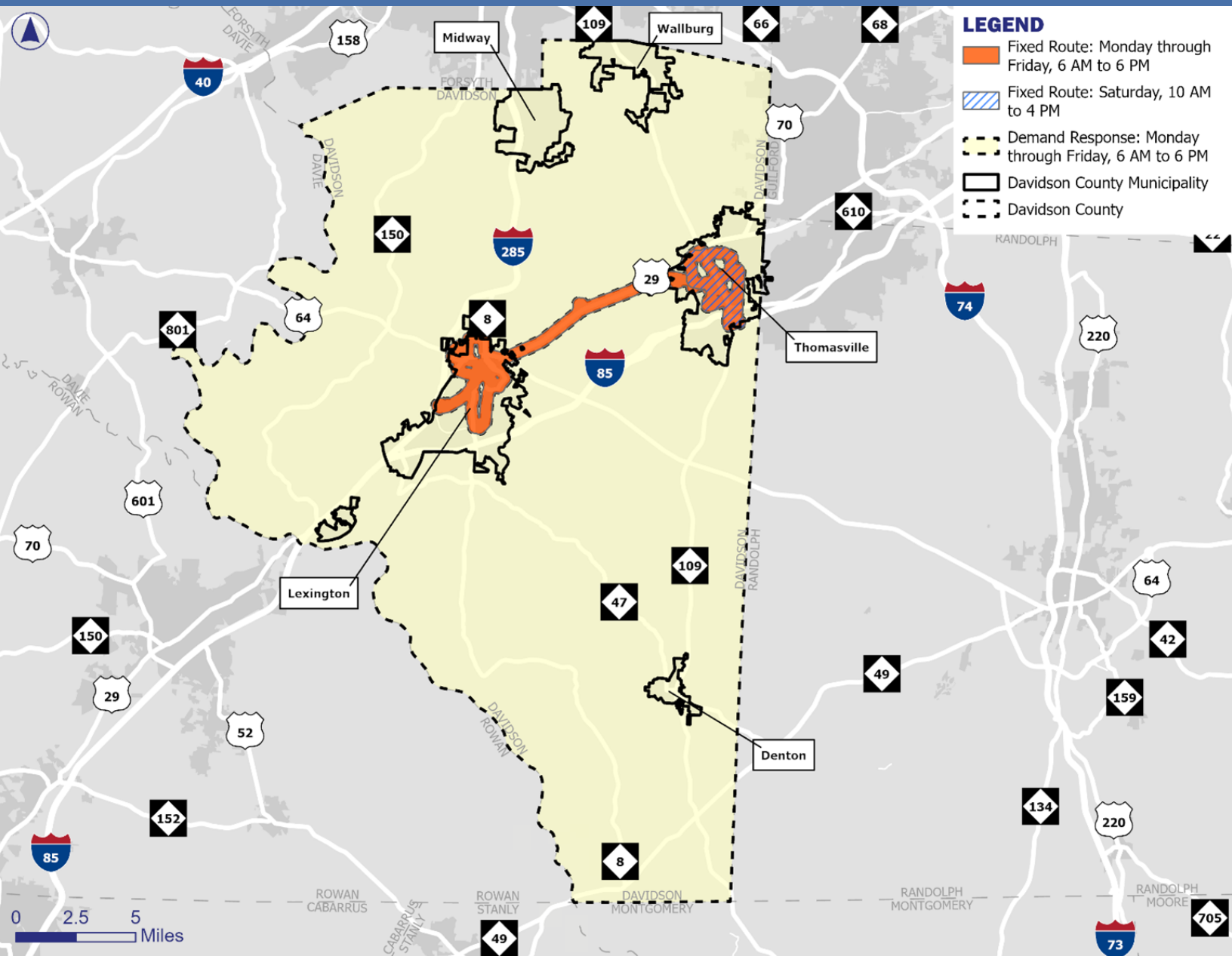
Figure 3-22. Density of Community Services and TDI Scores by Block Group



3.7.2 Temporal Analysis

DCTS riders have access to the entire County all week from 6 am to 6 pm through demand response service. Deviated fixed-route services operate on weekdays during the same 6 am to 6 pm window, accommodating first-shift commuters, but are constrained to Lexington and Thomasville. Weekend coverage is further constrained to just Thomasville from 10 am to 4 pm on Saturday. Figure 3-23 shows where coverage gaps exist across the county based on transit mode, service window, and day of the week. The County's smaller towns and rural areas are inaccessible using existing DCTS services outside of the workday and on weekends.

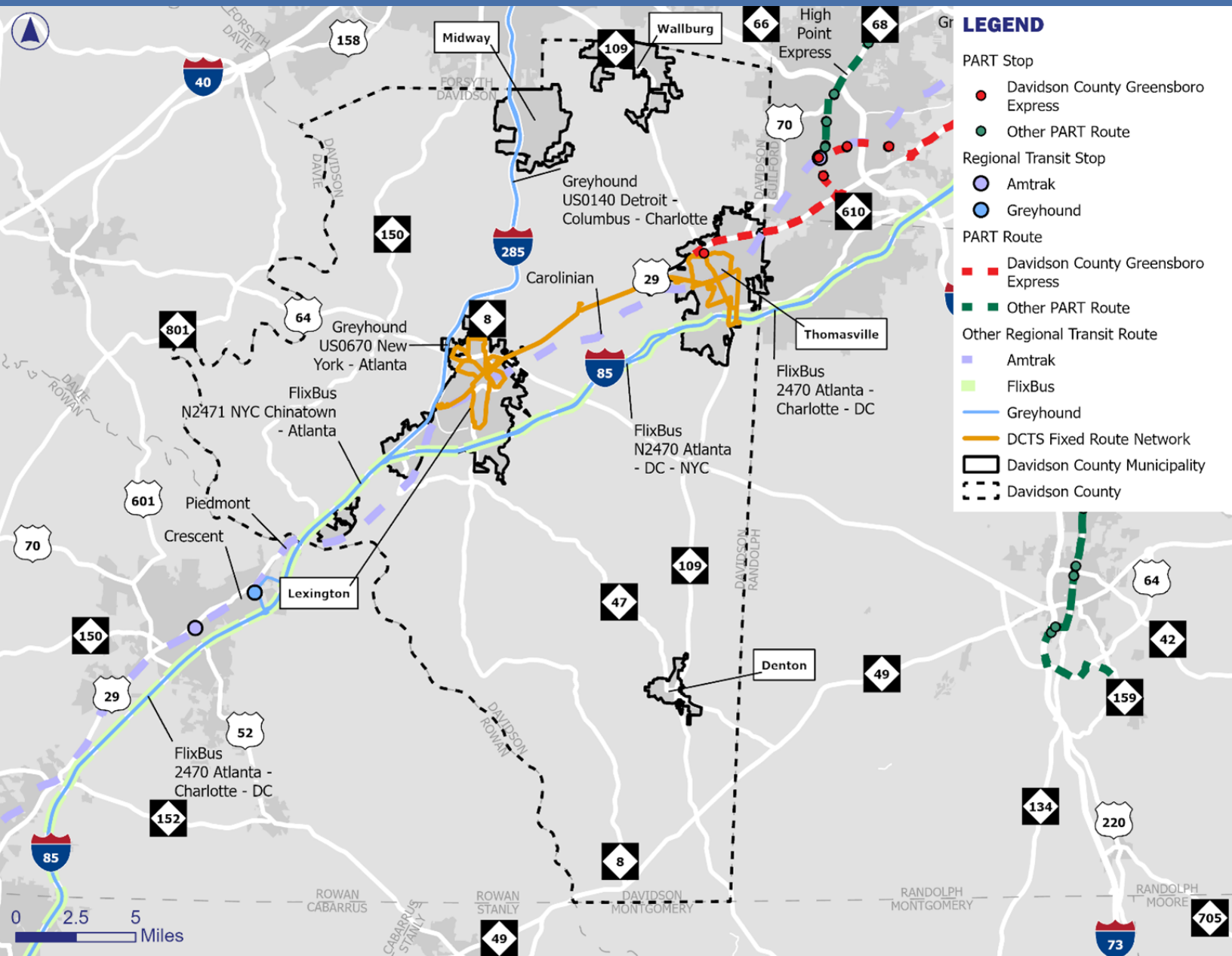
Figure 3-23. Deviated Fixed-Route and Demand Response Temporal Analysis



3.7.3 Regional Connectivity Analysis

Several regional transit lines cross through Davidson County including Greyhound and Amtrak. These train and bus routes connect cities in the Northeast, Mid-Atlantic, and Midwest to major metro areas in the South, such as Charlotte and Atlanta. However, there are no stops for these services within the county, with the closest stops being in East Spencer, High Point, and Winston-Salem. PART also has a route, the Davidson County Greensboro Express, that crosses into the County. Within Davidson County, this PART Route stops at the Thomasville Park-and-Ride, allowing DCTS riders to transfer from the Red Route to the regional transit service with coverage across North Carolina's Piedmont Triad (Figure 3-24).

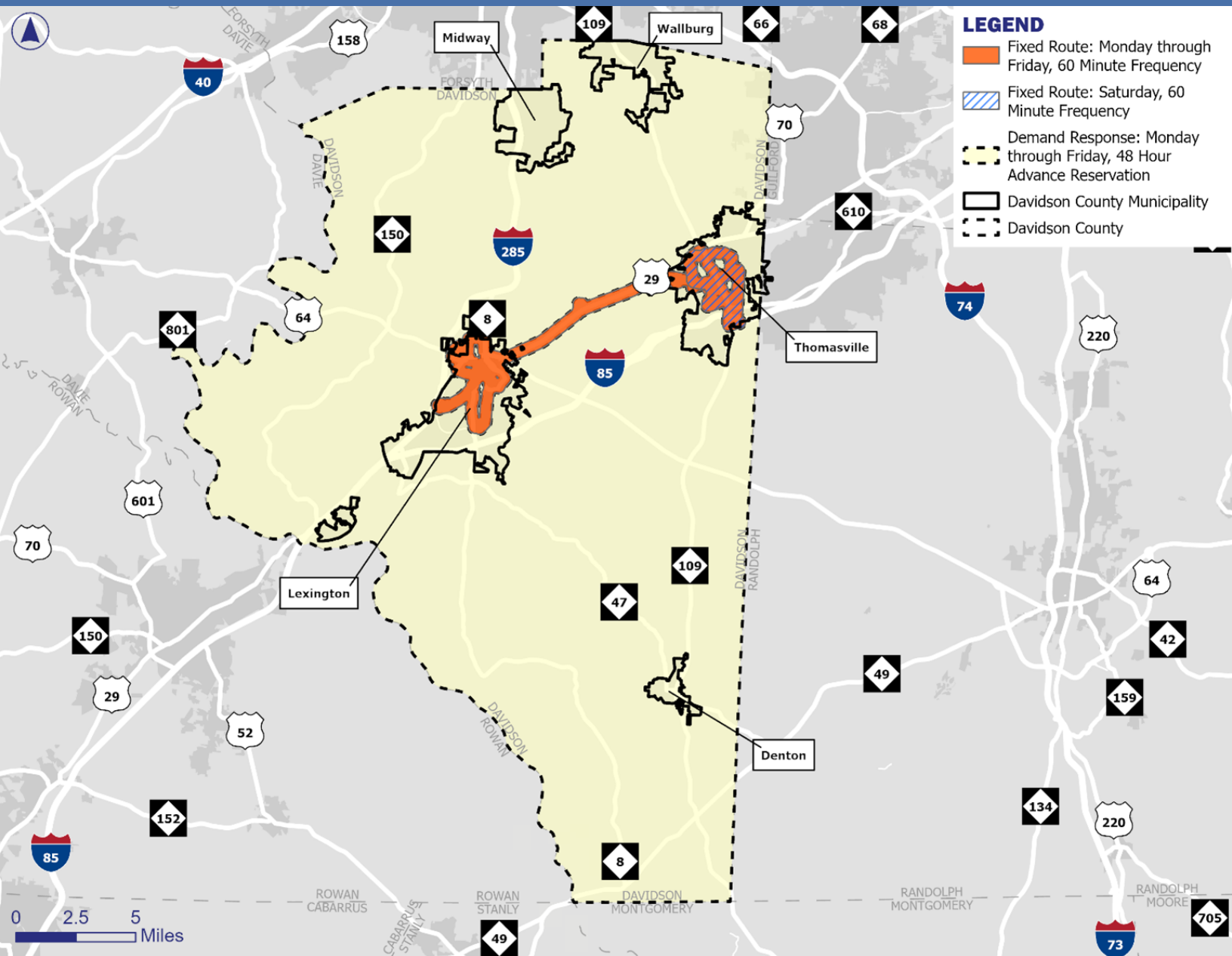
Figure 3-24. Regional Connectivity Analysis of Davidson County



3.7.4 Convenience Analysis

On both weekdays and on Saturday, each DCTS Route has a total runtime of one hour. This is the longest amount of time a rider would have to wait for the bus if they were to arrive late to one of the stops during the scheduled service window. The demand response service requires a minimum 48-hour advance reservation to book a ride. **Figure 3-25** shows a map of the system's coverage across the County based on how long a rider would need to wait for service.

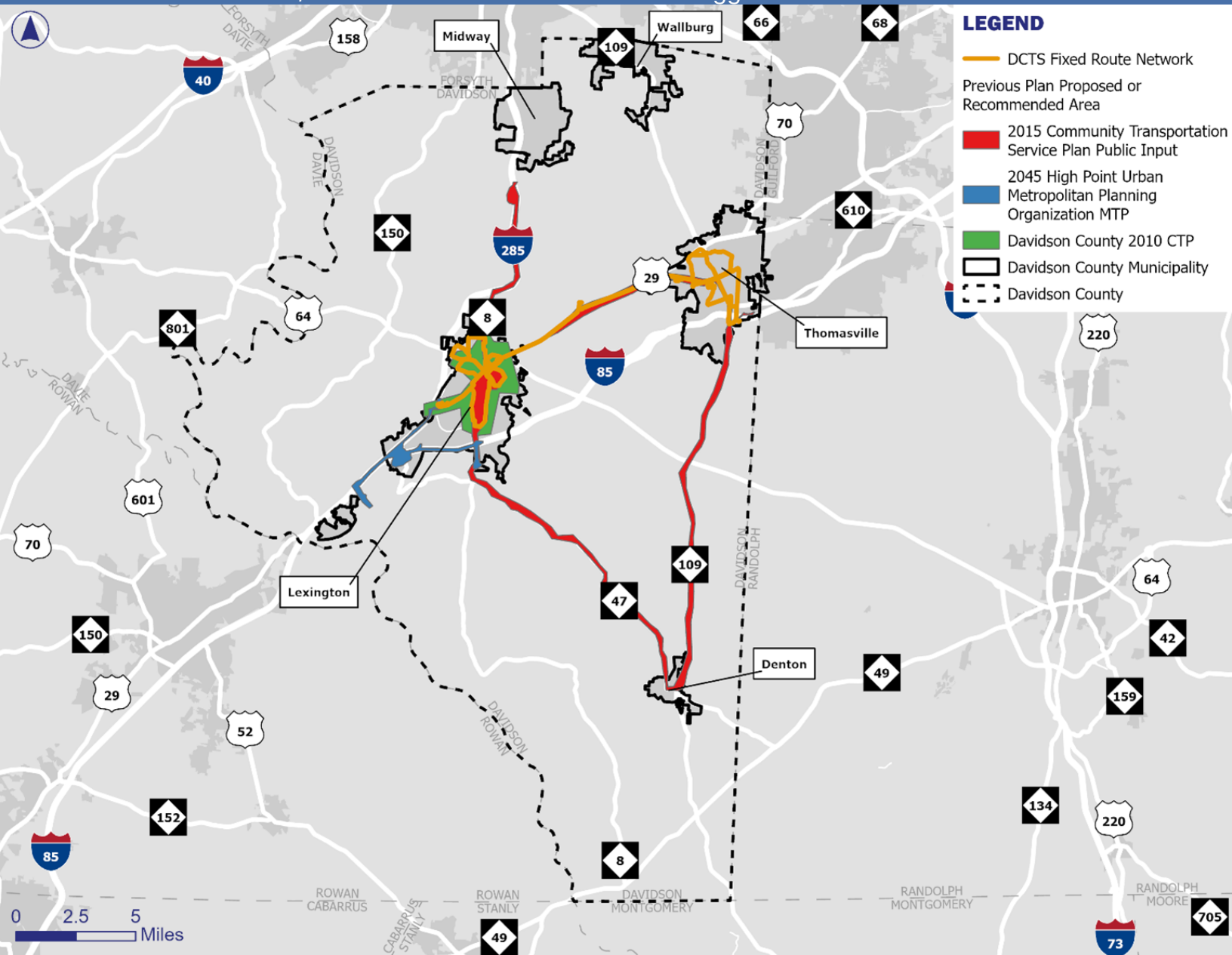
Figure 3-25. Deviated Fixed-Route and Demand Response Convenience Analysis



3.7.5 Plan Consistency Analysis

Existing plans detailing transportation services and needs in the County and throughout the region describe areas where transit should be integrated within Davidson County. The interpretations for each of them are depicted in **Figure 3-26**. The *2010 CTP* recommends a fixed-route service in Lexington that has since been implemented (shown in green). The *2045 HPUAMPO MTP* lists a proposed route for DCTS "along I-285 and I-85 serving Egger Wood employees, Atrium, and other business parks along the corridor" (shown in blue). Current DCTS Routes have limited overlap with this proposal, with only the blue line terminating at the Lexington Medical Center. The *Community Service Plan* (shown in red) lists several suggestions pertaining to transit from a 2009 planning workshop; "Fixed Bus Routes between cities of Thomasville, Lexington and Denton", "Inter/cross county services, fixed-route or deviated fixed-route", "Intercity Bus Service (Lexington)", and "Transit Route from Denton to major employment centers". Since that workshop, the Green and Blue DCTS Routes have aligned with several suggestions, connecting Lexington to Thomasville. The largest discrepancy between current service and the workshop suggestions are the absence of any routes connecting to Denton.

Figure 3-26. Plan Consistency Analysis - Areas Where Transit Gaps Were Identified, or Where Routes Were Planned or Suggested



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04.
Peer Analysis

The project team identified both national and regional peer agencies that operate in similar environments and provide comparable levels of service to DCTS. This peer comparison analysis enhances the project team's understanding of DCTS's potential performance relative to similar agencies operating microtransit services within the region and across the country. The five peer agencies that were reviewed include:

- Hall County, GA (WeGo)
- JCATS, NC (QuickRide)
- Lubbock, TX (Citibus On-Demand)
- Morrisville, NC (Smart Shuttle)
- Wilmington, NC (RideMICRO)

A general overview of each peer agency is provided in **Table 4-1**. Full interview notes are located in **Appendix B: Peer Agency Interviews**.

Table 4-1. Peer Agency Characteristics

Agency	Locale, State	Services Provided	Jurisdictions Served	Service Area Population Estimates (2022)	Service Area (Sq. Mi.)	Year
Hall County, GA (WeGo)	Hall County, GA	On-Demand	Hall County, City of Gainesville	212,692	429	2020
JCATS (Quick-Ride)	Selma and Smithfield, NC	On-Demand	Town of Smithfield and Town of Selma (NC)	17,817	20	2023
Lubbock, TX (Citibus On-Demand)	Lubbock, TX	On-Demand + Fixed Route	City of Lubbock (TX)	258,000	135	2020
Morrisville, NC (Smart Shuttle)	Morrisville, NC	On-Demand	Town of Morrisville (NC)	31,493	22	2021
Wilmington, NC (RideMICRO)	Wilmington, NC	On-Demand + Fixed Route	Northern Brunswick and Pender, and New Hanover counties (NC)	120,324 (Wilmington)	Less than 2,050 (combined county totals)	2021

Sources: Data was collected during phone interviews, agency websites, and from "Public Microtransit Pilots in the State of North Carolina: Operational Characteristics, Costs, and Lessons Learned".

Morrisville Smart Shuttle

Morrisville, North Carolina

The Town of Morrisville launched a SaaS microtransit pilot program in October 2021, serving a citywide zone with two vehicles. The service operates along 16 ADA accessible nodes with 2 additional nodes expected to launch in 2024. While Morrisville is connected to a regional bus system, the Town lacked transit options to serve transportation needs within the community. The Morrisville Public Transportation Study was conducted to explore potential solutions, and the microtransit Smart Shuttle was recommended for its scalability and relative ease of implementation.

Leading up to the launch, the Town worked to educate the public on the new service and accompanying ride booking technology. Morrisville had success with targeted outreach and an education campaign that involved mailing postcards to residents. Residents have found high-level informational materials to clarify how the service functions.

Ridership has been strong from the start, and the Town continues to adjust the service based on feedback. Early trends indicate that the service is popular for recreational trips that are not time sensitive. Flexible pick-up locations have also been a beneficial aspect of the service.

JCATS (QuickRide)

Towns of Selma &
Smithfield, North Carolina

The QuickRide service began in March 2023 as a four-month pilot project. Since then, demand for the service has substantially increased as Johnston County's growth pressured needs for additional transit services. The service provides trips within the Towns of Smithfield and Selma which is where the JCATS facility is located. JCATS recently applied for a 5339 grant to obtain funding for new vehicles to improve their spare ratio. JCATS is a recipient of the Mobility for Everyone, Everywhere in NC (MEE NC) grant award to fund microtransit for three years.

Although the development of the on-demand QuickRide service was a product of several years of planning and input from the community, the agency finds that aging riders are hesitant to use the technology. Initially, JCATS held informal discussions with riders and facilitated focus group meetings. They also posted flyers, mailed postcards, and purchased advertisements on Google and social media to disseminate information on the service to the public.

There has been recent interest in prepaying for services so riders can use the service. A nearby group home participates in this offering. Employers and schools such as Johnston County Community College within the area have inquired regarding similar agreements to help their employees and students travel to work or school. Overall, the service has been successful for the past 14 months since the pilot began.

WeGo

Hall County, Georgia

To fill the gaps in the county's previous fixed-route service, Gainesville Connection, Hall County launched a WeGo pilot program in December 2020. Over 10,000 residents and visitors around Gainesville-Hall County have found the WeGo on-demand vanpool service to be a transformative transit choice. The WeGo Powered by Via app, which can be downloaded on smartphones, has emerged as the preferred resource for those who want to easily schedule rides and build relationships with the people, places, and activities that are most important to them.

WeGo has been especially well-liked by commuters going to work, college students on their way to school, and people making their way to nearby nonprofits, government buildings, or retail establishments. In addition to proving to be practical, the service has established itself as an economical and effective way to get around town.

WeGo has proactively expanded its service hours, working from 5 am to 9 pm, Monday through Friday, in response to the increasing demand. This extension works for people with varying schedules, including those who have late obligations and those who rise early. WeGo is committed to fulfilling the changing demands of the community, as seen by its active consideration of introducing Saturday services in response to the ridership growth that has persisted. WeGo's success and flexibility highlight how important a role it plays in improving connection and accessibility across Gainesville-Hall County.

RideMICRO

Wilmington, North Carolina

Wave Transit launched the RideMICRO TaaS microtransit pilot program in October 2021 to provide regional connectivity, expand on the City's fixed-route transit, and provide a more flexible service in areas where fixed routes were underperforming. Wave Transit is a recipient of the MEE NC grant award to fund microtransit for three years.

RideMICRO operates four vehicles across four zones located in Northern Brunswick, Pender, and New Hanover counties. Approximately 80 percent of rides are booked through the Ride MICRO app and pre-bookings are permitted. Pre-booking has been a popular option for riders seeking to commute or students traveling to class in the mornings.

Wave Transit identified a potential learning curve for its existing riders in adopting the on-demand and app-based microtransit. To ease the transition, the agency allowed for a slight overlap in services before eliminating the discontinued fixed routes. The agency believes that this approach, coupled with one-on-one trainings at senior living centers and targeted outreach, has helped the public to understand the new technology and service. Extensive marketing was also done, and RideMICRO was featured on electronic billboards, on radio announcements, in television commercials, and in social media posts. RideMICRO's unique wrapping on its vehicles has also been influential in bringing awareness to the service throughout the community.

Citibus On-Demand

Lubbock, Texas

The Citibus microtransit service was a result of the COVID-19 pandemic. Following the pandemic, the agency decided to reduce fixed-route service and supplement it with the microtransit program. Additionally, the agency was interested in obtaining data on rider needs since the fixed-route service only covered about 60 percent of Lubbock's city limits. Overall, the agency has found that riders prefer the microtransit service over the fixed routes due to its flexibility and convenience. They also found that microtransit has been successful in filling the gaps within the fixed-route coverage.

Citibus prioritizes its paratransit trips over microtransit trips since the two services share the same vehicles. This allows them to maximize the same number of trips they are used to providing within the same budget. The services are supported by 32 vehicles, and on average, 20 vehicles run during peak service.

Public engagement was not a primary focus for the service since it was discussed at city-held meetings and posted on social media. Marketing efforts included social media posting and posting flyers at libraries and medical centers. These efforts helped to increase ridership and eventually they agency stopped marketing because they could not fulfill all ride requests.

4.1 Overview

Peer transit systems shared information on their motivation for implementing microtransit; when the service began; why the specific model was selected; and the financial, staff, and marketing efforts that were required. The interview questions were designed to identify early considerations when implementing microtransit and to understand the necessary resources to launch the service.

Systems that already offered fixed-route transit implemented microtransit as a first- and last-mile solution while also filling in service hour gaps and extending coverage to areas without existing transit access. In cases where a fixed route was underperforming, microtransit also offered a flexible alternative. In communities that did not previously offer public transportation, microtransit was implemented as a transit solution appropriate to their community population size, geography, and transportation needs.

The interviews indicated that existing availability of transit vehicles often drove the service model choice. Staff capacity also contributed to this decision (e.g., staff to support administration, vehicle maintenance, operate the vehicles, etc.). In most cases, systems with available vehicles chose SaaS models while peers who selected turnkey TaaS models required additional vehicles and staffing support to operate the microtransit service.

Different levels of marketing were used to promote the service. In instances where there was existing or immediate demand for the service, marketing efforts were minimal. In all cases, the interviews highlighted the importance of focusing on early outreach to educate the public on how to use the new service and app-based technology. In addition, targeted outreach (e.g., mailers and postcards to residents and businesses) and opportunities to have one-on-one conversations with community members were identified as key components of successful outreach.

Table 4-2. Service Overview Comparison

Agency	Hall County, GA (WeGo)	JCATS QuickRide Selma & Smithfield, NC	Citibus On-Demand Lubbock, TX	Smart Shuttle Morrisville, NC	RideMICRO Wilmington, NC
Service Model	Software-as-a-Service	Software-as-a-Service	Software-as-a-Service	Software-as-a-Service	Transportation-as-a-Service
Service Launch	December 2020	March 2023	May 2020	October 2021	October 2021
Start as a Pilot?	Yes, the service began as a pilot program.	Yes, the service began as a pilot program and has been successful for the past 14 months.	Yes, it began as a one-year pilot program.	Yes, the service remains a pilot program but does not have an end date.	Yes, it began as a one-year pilot. Now operating as part of a separate pilot.

Agency	Hall County, GA (WeGo)	JCATS QuickRide Selma & Smithfield, NC	Citibus On-Demand Lubbock, TX	Smart Shuttle Morrisville, NC	RideMICRO Wilmington, NC
Marketing Efforts	Public hearings, meetings at terminals, and trainings.	Informal discussions with riders, focus groups, postcards, ads on Google and social media, posters.	Social media posts; posted flyers at libraries and medical centers.	Community events, social media, informational postcards.	Posts on social media, TV commercials, radio commercials, and specialized wraps on the vehicles that say RideMICRO, and electronic billboards.
Why was the Microtransit Service Model Selected?	They already had the infrastructure in place to run the service and wanted more control over the service. They did not want to have to alter contracts.	Complemented their current service offerings (most rides were related to Medicaid trips). Wanted to keep pick-up times within 10-15 mins.	Interested in serving the 40 percent of Lubbock city limits that were not covered by fixed route services. Also interested in data gathering to see how much of the City could serve with the new microtransit program.	Recommended in public transportation study based on level of control, cost, flexibility, and resources needed.	Based on the level and type of support needed to implement and operate a new service in addition to their fixed routes.
Software Provider	Via	Trip Master and CTS software	Spare	Via	Moovit, a subcontractor to Bus.com
Staff Supporting the Service	5.5 administrative staff.	Added one staff person to help with the reconciliation of the rides. The Administrative Assistant helps book rides.	Initially, cross-divisional support (e.g., government affairs, marketing, operations, planning). Now, managed by the specialized transit services manager.	1 staff member oversees program (30-40% or role). Other staff provide support.	Mobility manager, deputy director, dispatchers at the paratransit call center.

Agency	Hall County, GA (WeGo)	JCATS QuickRide Selma & Smithfield, NC	Citibus On-Demand Lubbock, TX	Smart Shuttle Morrisville, NC	RideMICRO Wilmington, NC
Staffing Changes	N/A	N/A	N/A	N/A	Drivers from eliminated fixed-routes were shifted to routes that were being expanded.
Funding Sources	5307 funding	Johnston County funding, Rural Ops grant, recently applied for a 5339 grant, MEE NC grant	5307 federal and state, local general fund contribution; 5310 funding to pay for trips	Wake County transit sales tax revenue through the Community Funding Area Program (CFAP), local match, ARPA funds.	ConCPT grant, community grant from NCDOT, MEE NC grant

4.2 Service

Peers were asked to share information on their microtransit service structure, including hours of operation, booking options, trip costs, accommodations for unbanked riders or those without smartphones, and to indicate any system capacity challenges. Peers that offer a combination of microtransit and fixed routes were also asked about ridership comparisons and other interactions across the hybrid systems. The questions helped to identify best practices and any lessons related to setting service parameters.

While service hours vary, many of the peers shared that they had either expanded their service hours or that they offer a pre-booking option to riders so they can set up early morning or late-night commutes to work or school. For systems that complement fixed routes, service hours were often designed to include peak commuting hours and others extended operations into areas that were not already covered by fixed routes. While several systems have been designed to be fare-free for riders, most charge riders around $2 per ride. All peer systems offer both mobile and call center booking options. Most also provide cash payment options for unbanked riders. Different systems face different capacity issues. While some have been able to meet demand, others are unable to provide rides to everyone because of a lack of funds and other resources. Some services experienced immediate demand and rapid ridership growth, while others noted slower adoption as the public continues to learn about the service. In many cases, demand has been strongest in communities that do not have other forms of transit.

Table 4-3. Service Comparison

Agency	Hall County, GA (WeGo)	JCATS QuickRide Selma & Smithfield, NC	Citibus On-Demand Lubbock, TX	Smart Shuttle Morrisville, NC	RideMICRO Wilmington, NC
Service Hours	Monday-Friday 5 am - 9 pm	Monday-Friday 7 am to 6 pm	Monday-Friday 7 am - 11 am	Monday-Friday 7 am - 9 pm Saturday 8 am - 8 pm Sunday 8 am - 7 pm	Zones 1 and 2 Monday-Friday 6:30 - 10 am 12 - 7 pm Zones 3 and 4 Monday-Friday 6 am - 8 pm Saturday 8 am - 6 pm Sunday 9 am - 5 pm
Booking a Ride	Mobile app and call center	Mobile app or call center	Mobile app or calling a call center.	Mobile app, desktop website, or calling the GoCary call center.	Mobile app, desktop web-site, or calling the Bus.com call center. Calls not answered by Bus.com are routed to Wave's para-transit call cen-ter.
Trip Cost	Each one-way trip is $2.00 for the first 5 miles & $0.50 cents per additional mile (after 6:30 pm, trips start at $4.00 for first 5 miles)	$6.00	$2.00 per ride	Free	$2.00 per ride
Accommoda-tions for Unbanked Riders and the without Smartphones	Can book a ride through the call center. Unbanked individuals can purchase vouchers in denominations from $2 to $100.	Can book by phone and pay with cash.	Can book a ride through the call center. Working on a pass that can be purchased in person.	Can call the GoCary dis-patch or use a desktop brows-er to book a ride.	Can book a ride through the call center. Riders can pay for the trip at designated transit stations or upon boarding with exact change.

Table 4-4. Microtransit with Fixed-Routes Comparison

Agency	Hall County, GA (WeGo)	JCATS QuickRide Selma & Smithfield, NC	Citibus On-Demand Lubbock, TX	Smart Shuttle Morrisville, NC	RideMICRO Wilmington, NC
Ridership Breakdown	88,074 rides (completed between July 1, 2022, and June 30, 2023)	12,000 rides during 1-year trial period	2,700 riders weekly	Averages 65 rides per day	Ridership continues to increase
Why are you using a Hybrid System?	N/A	N/A	To fill in gaps in the existing fixed-route bus schedule and extend transit coverage.	N/A	To meet diverse needs across the city. Microtransit increases the number of potential stops and allows greater flexibility for underperforming fixed routes.
How Long have you been Running a Hybrid System?	N/A	N/A	May 2020	N/A	Since Fall 2021
Plans Moving Forward	Purchasing hybrid vehicles, conducting assessment of passengers with wheelchair needs, monitor impact of evening rate hike, expand vehicles in rural areas, and acquiring two new trollies.	Additional zone to serve Clayton.	Plan to continue the hybrid service with some adjustments.	The service would like to focus more on setting and communicating expectations for the service, so the public is on the same page with the agency.	Depends on the outcome of the pilot program.

Agency	Hall County, GA (WeGo)	JCATS QuickRide Selma & Smithfield, NC	Citibus On-Demand Lubbock, TX	Smart Shuttle Morrisville, NC	RideMICRO Wilmington, NC
Transfers between Services	N/A	QuickRide can connect to Amtrak. The service also takes riders to the airport.	Citibus does not offer transfers.	N/A	Passengers can book an ondemand ride from a 'virtual stop' within a RideMICRO 'zone' and be connected to Wave Transit's fixed-route service or brought to a destination within a zone.

4.3 Vehicles

Peer systems shared information on the vehicles used to operate their microtransit services. The fleet size varies greatly depending on the service area size and structure. For example, some systems share vehicles with other transit services such as paratransit, and therefore have more vehicles available. Regardless of the fleet size, most peers indicate that they operate all their available vehicles at maximum service. While all systems offer ADA compliant vehicles or operate a separate paratransit service, peers unanimously highlighted the importance of carefully considering the diverse accessibility needs and how they can be best accommodated within the overall service structure. For example, some rider profiles may indicate the need for special accommodations, but the rider may not require a wheelchair-accessible vehicle. Having the software configured to recognize these nuances will provide a more efficient and equitable service.

The interviews also emphasized the importance of having the necessary maintenance facilities near the service area. In some cases, due to the model or the provider's internal operations, vehicles were sent to facilities in other cities, reducing the number of available vehicles for longer periods of time. In addition to routine maintenance, vehicles can also require cleanings in between trips. The interviews point to the importance of having early maintenance discussions with TaaS vehicle providers to identify a convenient maintenance and cleaning facility.

Table 4-5. Vehicle Comparison

Agency	Hall County, GA (WeGo)	JCATS QuickRide Selma & Smithfield, NC	Citibus On-Demand Lubbock, TX	Smart Shuttle Morrisville, NC	RideMICRO Wilmington, NC
Vehicle Provider	Via	JCATS	Citibus	GoCary	Bus.com
Fleet Size	31 vehicles	Using 5 spare vehicles from the demand response service	32 vehicles (serves microtransit and paratransit services)	2 vehicles	4 vehicles (one for each zone)
Vehicles at Maximum Service	15 vehicles	5 vehicles	20 vehicles	2 vehicles	4 vehicles
ADA compliant/ accessible vehicles	Some vehicles can accommodate wheelchairs.	Vehicles with wheelchairs are available.	All vehicles in the fleet are wheelchair accessible.	All vehicles in the fleet are wheelchair accessible.	Wheelchair vehicles and bike racks (Carolina Beach) are available.

4.4 Challenges & Opportunities

Peer systems were asked to share the public response to the microtransit service and to reflect on areas of success, challenges, and future opportunities. Public response was reported to be generally supportive, and community members have been excited to have access to transit for the first time or to have an additional option. Peers highlighted early education efforts and targeted outreach as an important way to address any concerns or questions.

The interviews also emphasized the importance of actively monitoring feedback and ridership data. Microtransit is flexible and can function very differently based on software parameters and the service area structure. Feedback and ridership data can inform software or system adjustments that need to be made to increase capacity or otherwise improve the service. Given the importance of data in evaluating the service, data sharing agreements with the software provider should ensure that the appropriate information is captured and is easily accessible.

Many agencies noted that the success of their services has made it difficult to accommodate all ride requests. Several have considered expanding service hours and days, but are constrained by resource such as funding, drivers, and the number of vehicles available.

Table 4-6. Challenges & Opportunities Comparison

Agency	Hall County, GA (WeGo)	JCATS QuickRide Selma & Smithfield, NC	Citibus On-Demand Lubbock, TX	Smart Shuttle Morrisville, NC	RideMICRO Wilmington, NC
Public Response	The service has not only met but surpassed all expectations.	The service has had continued success since the start of the pilot program. They expanded to Saturday and offered service between 6 am to 9 pm to help accommodate work trips.	The service has been popular from the start given the demand from the reduced fixed-route hours. The service also reaches areas that were previously under or not served by transit.	Ridership has been strong from the start of the program. Zone-based service allowed for controlled pick-up locations which have been positive for the service.	Elected officials have been supportive. The public has generally been supportive, but some miss the predictability of the eliminated fixed routes.
What would you do differently in implementing your microtransit service?	Currently testing out an advance reservation scheduling pilot that is only available to ADA riders and dialysis patients. Considering Saturday services.	If they could obtain more vehicles, then they would expand service to the Town of Clayton.	More marketing resulted in not being able to fulfill all ride requests. Tried outsourcing rides to Lyft but had to limit the usage since they do not have a large budget.	Focus more on training drivers with their apps. Drivers would turn off the iPad when they took breaks. In return, this would not allow rider requests to come through.	Although service dogs are allowed to ride, it has been challenging to figure out how to accommodate ADA riders due to limited accessible vehicles.
What has been successful in implementing your microtransit service?	Deploying a variety of vehicles has enabled the service to accommodate all types of riders.	Offering prepaid services to businesses and the local community college helps students and workers get to their destinations with ease.	Meeting existing demand.	Outreach and educational efforts to explain the new service (e.g., postcards and attending local events).	Meetings and trainings with groups to explain the new service and technology.

Agency	Hall County, GA (WeGo)	JCATS QuickRide Selma & Smithfield, NC	Citibus On-Demand Lubbock, TX	Smart Shuttle Morrisville, NC	RideMICRO Wilmington, NC
Anything else to share?	The service started curb to curb and tried virtual stops within Gainesville. Riders did not like to walk so they returned to providing curb to curb service.	Most trips are individual but can be occupied by multiple riders. The service provides 80-90 rides per day.	A well-designed fixed-route system complemented by microtransit is cost effective.	The Town has a robust network of sidewalks and all nodes within the service are ADA-accessible.	Rider survey data about smartphone usage can help to gauge willingness and ability to use an app-based format. Education is key to adoption.

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05. Microtransit Service Development

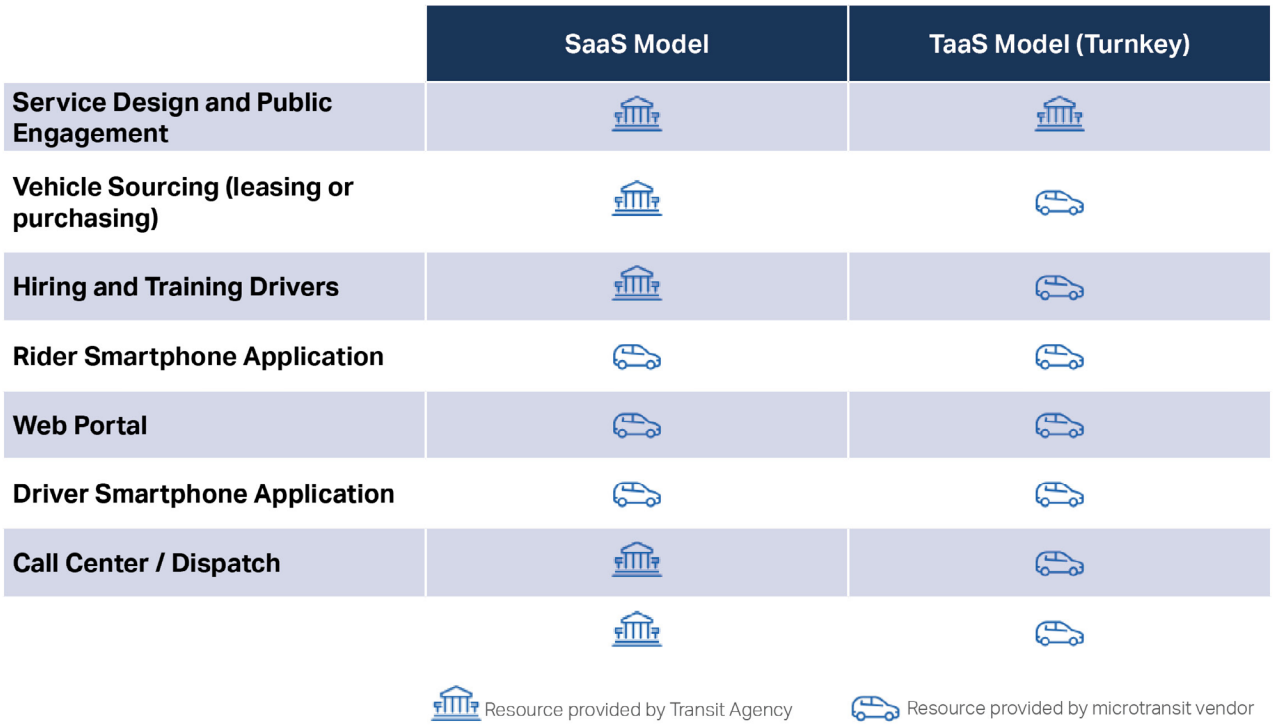
Microtransit is a transit mode that utilizes shuttles or vans to provide pooled rides on-demand within a predetermined area. These rides may pick-up and drop-off at set points or provide door-to-door trips anywhere within a defined service zone. Microtransit adoption has risen in low density areas that are difficult to serve with fixed-route transit, or as a supplement to fixed-route transit by providing first- and last-mile connections.

Microtransit services typically provide riders the choice with booking through a smartphone application, a traditional web page, or through a call center. Riders may pay via card online or on the application, or purchase ride vouchers or passes at a physical transportation center. These accommodations ensure accessibility for riders who may not have smartphones, have low access to consistent internet service, or may not have a bank account.

5.1 Microtransit Service Models

There are two main service models for agencies to implement microtransit. These two service models are SaaS and TaaS, and they are differentiated by whether the agency or a third-party contractor provides the microtransit service element. Factors such as staff availability, IT capabilities, and fleet size should be taken into consideration when deciding on a service model. **Figure 5-1** summarizes the responsible party for each component of the two models. It is important to note that service models can exist along a spectrum between the two models described where the microtransit vendor may take on more roles in a SaaS-based system, and vice versa.

Figure 5-1. SaaS and TaaS Comparison



5.1.1 Software as a Service (SaaS)

SaaS implementation would entail the County purchasing software for microtransit from a third-party vendor. DCTS would supply the drivers, vehicles, and operations management. It is recommended that a microtransit platform include, at a minimum: dynamic vehicle routing capacity, passenger aggregation, rider and driver apps, support for booking by phone and cash payments, backend administrative tools, and ongoing technical, operational, and marketing support.

It is recommended that DCTS select a microtransit software that can optimize trips that involve both modes by limiting the waiting time to transfer. For example, if a rider requests a ride at 12:00 pm and needs to connect to a fixed-route that will not arrive until 12:45 pm, the software would provide the rider with an option to pick them up at 12:30 pm instead of 12:00 pm. The increased frequency of microtransit would be of benefit to riders whose trips start and end within the zone.

5.1.2 Transportation as a Service (TaaS)/Turnkey

For Taas implementation, the County would contract with a microtransit vendor to provide a turnkey solution that includes microtransit technology, drivers, vehicles, and operations management. This model would be similar to how DCTS currently contracts with a vendor to operate the current demand response service.

5.1.3 Service Model Selection

During a working session, the project team reviewed and discussed two service models, SaaS and TaaS, with DCTS staff. Guided by a series of questions, the discussion yielded the following insights. Overall, DCTS finds that the SaaS model offers greater control over the microtransit service. However, the department remains open to considering the TaaS model. Responses to each question are summarized below.

SaaS Guiding Questions

Does Davidson County and/or its demand response contractor have a vehicle fleet appropriate for microtransit service such as accessible minivans or Light Transit Vehicles (LTV)?

Yes, the current demand response contractor has appropriate vehicles for microtransit. The bigger question is whether they have the staff to drive the vehicles. DCTS does not have sufficient vehicles so they would need to purchase more.

Are there sufficient operations and administrative staff to support microtransit service?

Administrative staff is limited so it would depend on the percentage of riders using the app vs. a call-in center to book their rides. An additional staff person may be required to help with the call center if the call volume increases.

What technology requirements are there for interfacing with existing agency technology such as automated vehicle location (AVL)?

DCTS currently has tablets and AVL on its deviated fixed-route vehicles provided by its vendor GMV, and it interfaces with other platforms. The demand response vehicles use different systems and primarily use CTS. DCTS uses TripMaker and emails manifests to Providence Transportation and Carolina Custom Transportation. There are two new companies (DBEs) that use another platform. It could be an option for DCTS to procure software/ technology for all demand response contractors.

Does DCTS have existing relationships with riders that are important to maintain?

Yes, DCTS would like to maintain existing relationships with its fixed-route riders and demand response riders.

TaaS Guiding Questions

Does Davidson County lack a vehicle fleet, drivers, and an operations team for microtransit service?

The system's current resources may be an obstacle for microtransit implementation. They would likely need another position to manage/oversee the new microtransit service as well as additional drivers.

Does the County desire a service that can be scaled relatively quickly, in the case of higher of lower demand than expected?

DCTS is interested in having the capability to increase the service if the demand increases relatively quickly.

Are there clear cost savings?

DCTS finds that it would be costly to hire full time staff compared to part time without benefits (up to 19 hours). The system currently employs several retired staff.

Do potential contractors have substantial experience providing microtransit service?

The current demand response contractors do not have experience with same day, on-demand service.

5.2 Comingling with ADA Paratransit Service

Microtransit service can be combined, or comingled, with ADA paratransit service (see Section 10.4 for ADA paratransit requirements) in terms of sharing an agency's vehicle fleet, driver shifts, and/or trips:

- **Comingled fleet:** same pool of vehicles is used to provide general on-demand microtransit service and ADA paratransit service; however, each vehicle is assigned to only providing general on-demand microtransit service or ADA paratransit service during the driver's shift.
- **Comingled driver shifts:** drivers provide general on-demand microtransit service and ADA paratransit service during their shift; however, these trips are provided separately.
- **Comingled trips:** general on-demand microtransit riders and ADA riders share trips provided by the same vehicle fleet and drivers at the same time. In other words, a microtransit rider and ADA rider may be in the same vehicle simultaneously.

Comingling service allows agencies to utilize their drivers and fleets more efficiently, and in turn provide riders with more responsive service. Under this model, agencies do not have to maintain separate vehicle fleets or schedule drivers for each service separately. Furthermore, agencies can counter perceptions of separate ADA paratransit service when trips are comingled.

Although there are many benefits to comingling service, if ADA service provides trips to locations outside of the microtransit zone for general riders then the response times may be negatively impacted. For example, if ADA service takes riders to a dialysis location far from the microtransit zone, then general riders may have to wait longer for that vehicle to return from the dialysis trip to pick them up. In this scenario, an agency could still comingle service but add vehicle(s) to compensate for the longer trip times.

In summary, comingling service offers many benefits and can result in greater efficiencies when general microtransit and ADA origins and destinations are located within the same zone or in close proximity.

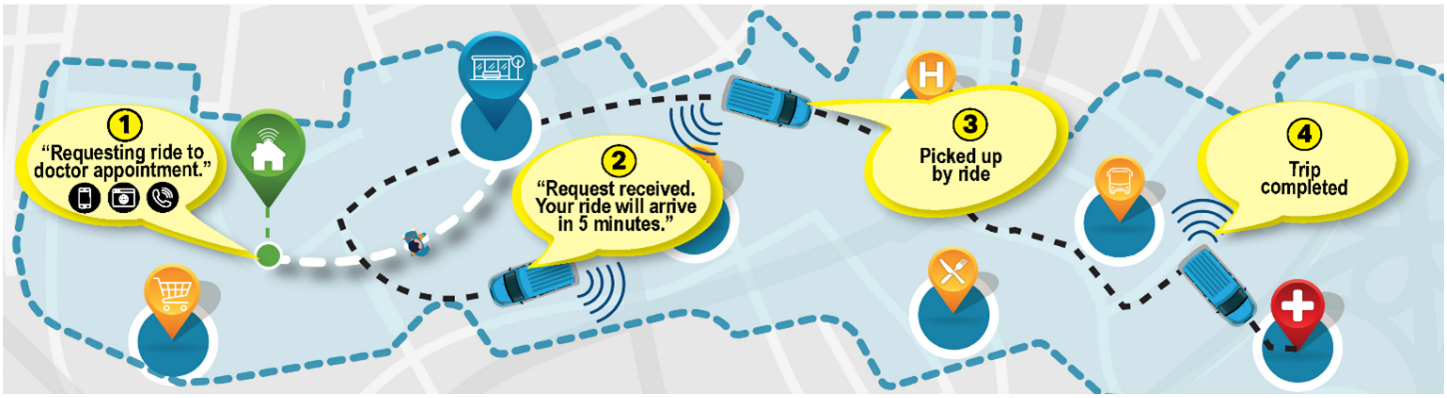
5.3 Microtransit Stop Options

Microtransit services commonly employ two distinct stop methods: nodes and virtual stops. Nodes are typically fixed physical locations where vehicles may pick up or drop off passengers, while virtual stops enable on-demand pickups from locations close to their requested origins and destinations within the service area. A community may decide on a method depending on their needs and desired level of flexibility for microtransit services. Each option is explored further below.

5.3.1 Nodes

Nodes are specific physical locations where passengers can board or alight from microtransit vehicles and are most appropriate in communities with pedestrian infrastructure that allows for safe and accessible connectivity to nodes. At nodes, there is often infrastructure such as benches and shelters. In certain microtransit systems, passengers are required to meet the vehicle at predefined nodes within the service area. These nodes serve as fixed pickup and drop-off points, akin to traditional bus stops. Examples of nodes include transit centers or designated stops within a community such as shopping centers or hospitals (see **Figure 5-2**).

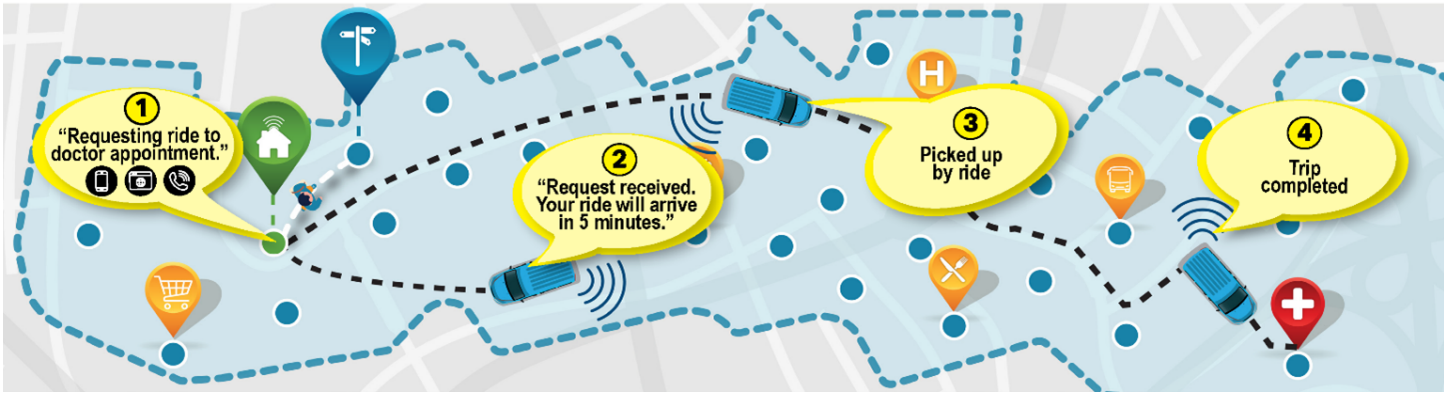
Figure 5-2. Representation of Microtransit Nodes



5.3.2 Virtual Stops

Virtual stops offer flexibility and convenience while balancing service efficiency by picking up and dropping off riders at locations close to their requested origins and destinations within the microtransit service area. Agencies can either review and approve virtual stop locations or let an algorithm dynamically select them. Riders use applications or call centers to request pickups from their current location rather than waiting at established physical stops. To maximize efficiency, the microtransit vehicle modifies its path in response to current demand. For riders, virtual stops offer more flexibility and convenience, particularly in areas with low population density or irregular travel patterns. Virtual stops located close to the requested origins and destinations are especially important in communities with limited pedestrian infrastructure. The virtual stop method is visualized below in Figure 5-3.

Figure 5-3. Representation of Microtransit Virtual Stops



5.4 Microtransit Zone Development

Six microtransit zones were identified for evaluation after the project team's analysis of existing conditions and service gaps, and evaluation of public engagement feedback. These zones provide DCTS with options for implementation, including a phased approach for expanding microtransit coverage.

Zone 1 would encompass the entire county and would replace both the existing fixed-route and demand response services. Zones 2 and 3 are more limited in scope, and intended to more specifically address the needs of residents in Denton who are not covered by fixed-route services. Zone 4 provides coverage for the extent of southern Lexington that is out of reach of the DCTS routes, but it is dense with residences and businesses. Zones 5 or 6 broadly cover the northern communities of Midway, Walburg, and Welcome, with dedicated stops outside the zones for the Thomasville Park-and-Ride and the county Transportation Center, respectively. **Table 5-1** below describes the demographic characteristics of each zone, what services are available within each zone, and several key operating statistics. Remix transit planning software was used to generate ridership scenarios, and to provide demographic information (ACS 2018-2022 5-year estimates).

Table 5-1. Potential Microtransit Zone Comparison

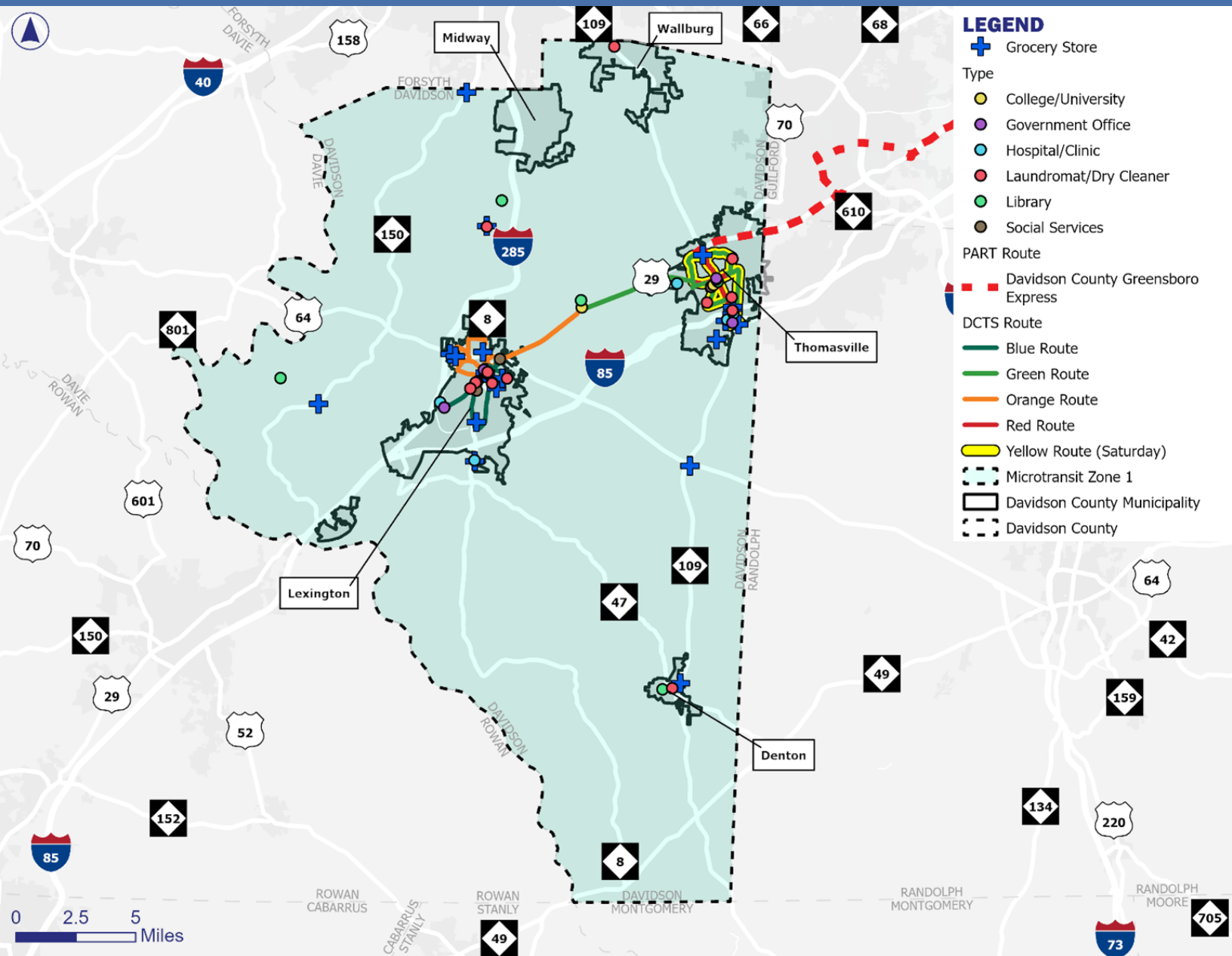
	Microtransit Zone 1	Microtransit Zone 2	Microtransit Zone 3	Microtransit Zone 4	Microtransit Zone 5	Microtransit Zone 6
Background						
Geographic Description	Countywide Zone	Denton to south Thomasville	Denton Area	South Lexington Zone	Midway and Walburg (with Thomasville Park and Ride)	Welcome Zone (with Transportation Center)
Service Area Size (Sq. Mi)	569	19.2	5.2	12.2	17.7	10.2
Demographics						
Total population (2020 Census)	168,900	7,200	2,100	4,700	7,900	4,300
Low-income population	14%	19%	27%	12%	5%	12%
Zero-vehicle households	4%	2%	4%	7%	2%	5%
Limited English Proficiency	3%	2%	3%	6%	1%	1%
People of color	22%	13%	5%	51%	14%	6%
Disability	15%	17%	19%	17%	12%	19%
Seniors	18%	21%	14%	18%	22%	17%

	Microtransit Zone 1	Microtransit Zone 2	Microtransit Zone 3	Microtransit Zone 4	Microtransit Zone 5	Microtransit Zone 6
Community Services						
Social Services	3	0	0	0	0	0
College / University	4	0	0	0	0	0
Government Office	5	1	0	1	0	0
Hospital / Clinic	5	2	0	2	0	0
Laundromat / Dry Cleaner	13	2	1	0	1	1
Library	7	1	1	0	0	1
Grocery	19	7	1	2	0	1
Service Characteristics						
Days of operation	Mon-Sat	Mon-Sat	Mon-Sat	Mon-Sat	Mon-Sat	Mon-Sat
Hours of operation	6 am to 6 pm weekdays, 10 am to 4 pm Saturday	6 am to 6 pm weekdays, 10 am to 4 pm Saturday	6 am to 6 pm weekdays, 10 am to 4 pm Saturday	6 am to 6 pm weekdays, 10 am to 4 pm Saturday	6 am to 6 pm weekdays, 10 am to 4 pm Saturday	6 am to 6 pm weekdays, 10 am to 4 pm Saturday
Estimated average wait time	30 minutes	20 minutes	20 minutes	20 minutes	20 minutes	20 minutes
Ridership scenario	Medium	Medium	Medium	Medium	Medium (20% of rides to Thomasville Park and Ride)	Medium (20% of rides to Transporta-tion Center stop)
Estimated number of microtransit vehicles needed for maximum service	29-30	1-2	1	1-2	1-2	1-2
Estimated ridership (per week)	2,618	127	45	99	82	63

5.4.1 Microtransit Zone 1 (Countywide)

Microtransit Zone 1 (Figure 5-4) would reflect coverage of the existing on-demand service, allowing riders anywhere in Davidson County to travel anywhere else within the County. The decreased advance reservation window of 30 minutes instead of 48 hours would allow riders more flexibility with their travel plans. This service would provide the highest level of coverage and convenience but at the highest cost.

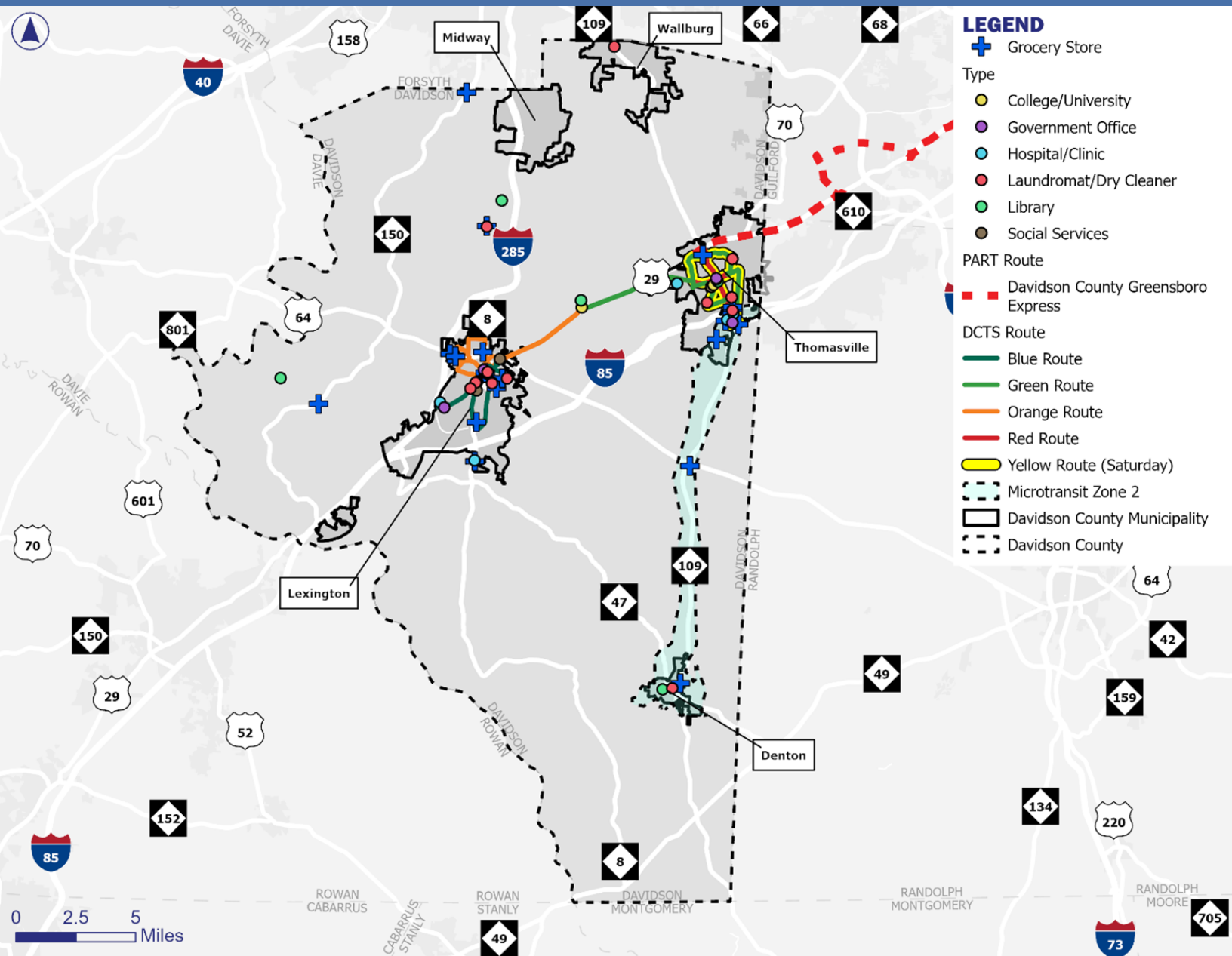
Figure 5-4. Potential Microtransit Zone 1



5.4.2 Microtransit Zone 2 (Denton to South Thomasville)

Microtransit Zone 2 (Figure 5-5) was created considering current and previous engagement efforts, where a prevailing theme was connections between Denton and the employment/activity centers of Lexington and Thomasville. A zone connecting Denton to Thomasville along NC Route 109 up to Old Julian Avenue and the Mohawk facility would accommodate commuters from Thomasville into Denton, who are the largest share of Denton's workers living outside of the town according to 2021 LEHD data. The zone would also allow Denton residents to reach medical services and the Department of Motor Vehicles (DMV) within Thomasville. Paired with the DCTS deviated-fixed route, riders in this zone could board the Green Route to reach additional services and employment opportunities within Lexington, or board the Red Route to connect to PART and commute outside of the County. Riders in this zone would also be able to access the proposed mobility hub at the Davidson-Davie Community College, providing connections to the Green and Orange routes.

Figure 5-5. Potential Microtransit Zone 2



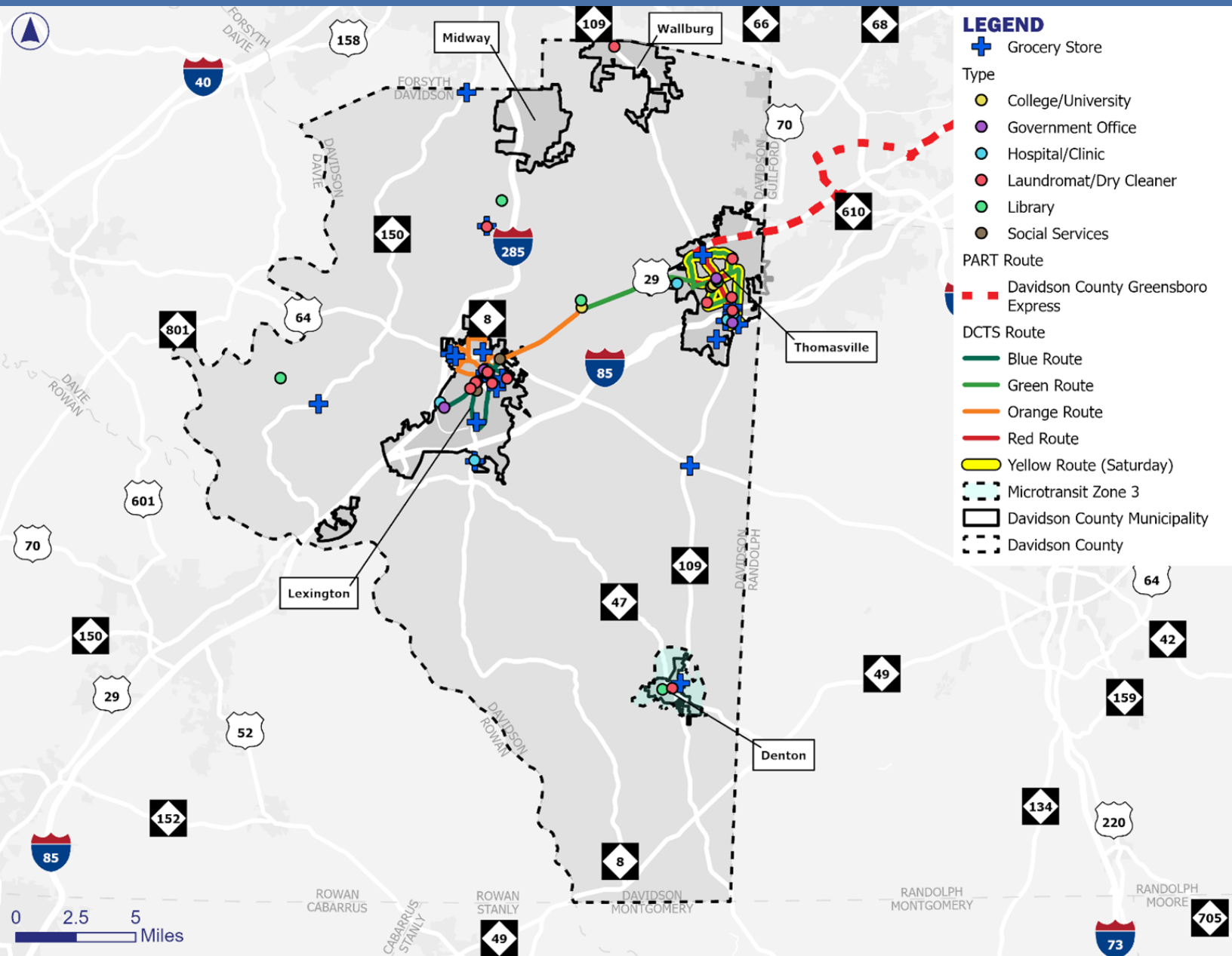
5.4.3 Microtransit Zone 3 (Denton Area)

The third microtransit zone (Figure 5-6) would primarily serve Denton residents. However, the zone also incorporates surrounding neighborhoods that lack services and would be more transportation disadvantaged than residents of Denton proper. Employment centers on the outskirts of the town would also be included, allowing residents without access to reliable transportation to reach Rut Manufacturing, Down Home Recycling, Mountain Vista Health Park, Century Hosiery, and other facilities. While riders are limited to travel within the zone, an exception would be made for riders to travel outside the zone to the proposed mobility hub at the Davidson-Davie Community College, which would provide connections to the Green and Orange routes.

5.4.4 Microtransit Zone 4 (South Lexington)

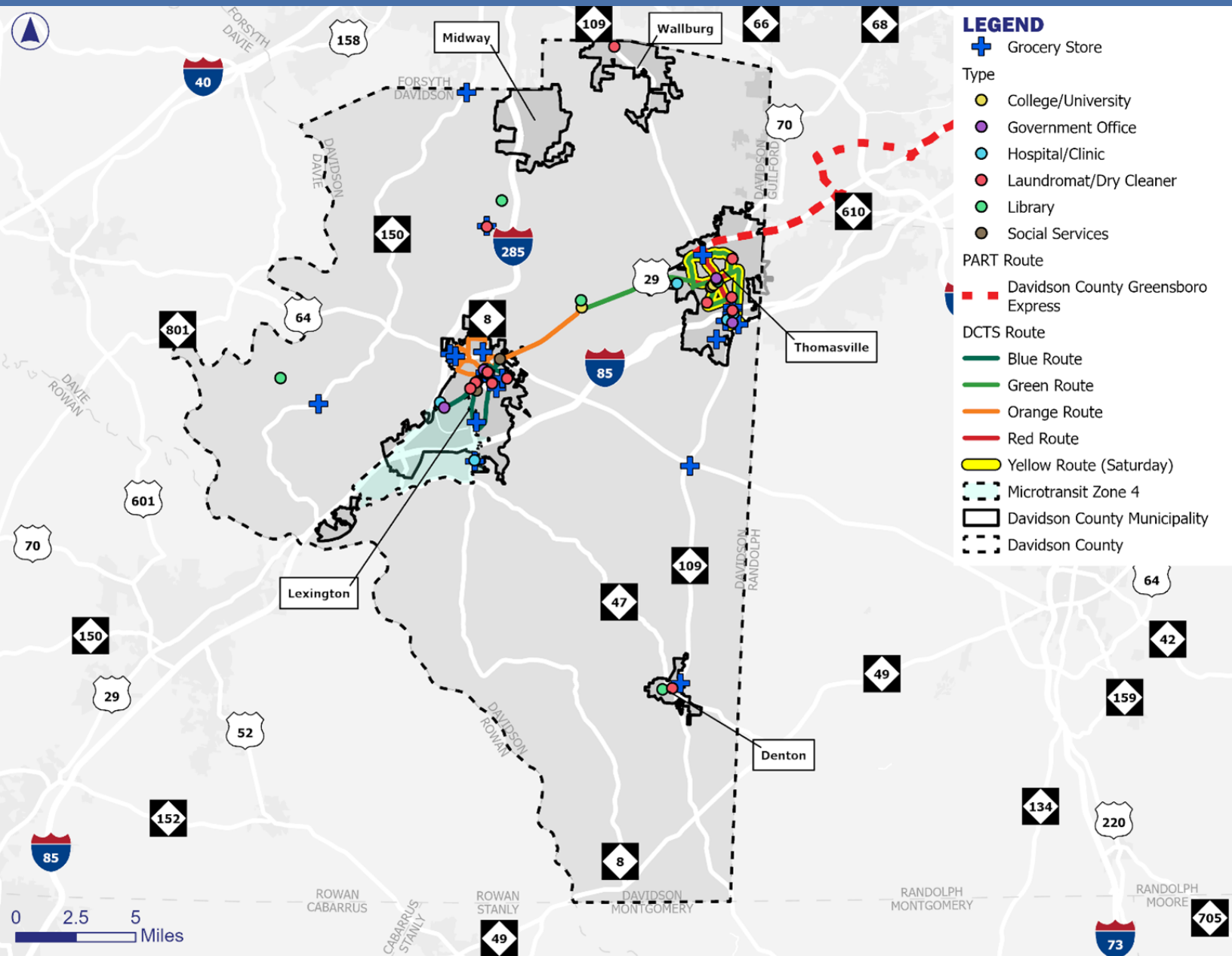
Zone 4 (Figure 5-7) would also be complementary to the DCTS fixed route, primarily filling the service gaps of Southern Lexington. The zone overlaps with the end of the Blue Route at the Lexington medical center and is bounded by Cotton Grove Road and the railroad to the East, and Junior Order Home Road and Belmont Road to the South, including points of

Figure 5-6. Potential Microtransit Zone 3



interest along the I-285 and I-85 corridors. Jeld-Wen and other employment centers such as the facilities at the intersection of Rogers Road and Cotton Grove Road, EGGER Wood Products, United Furniture, and Owens and Minor Halyard. Several shops, as well as a gym for recreation are within Lexington Parkway Plaza on the edge of the zone, which is roughly three quarters of a mile from the closest DCTS stop at the Walmart on Lowes Boulevard. Additionally, riders have access to the South Lexington PART Park and Ride, potential future mobility hubs at the Walmart Supercenter on Cotton Grove Road and at the Lexington Medical Center, and the Davidson County regional airport for travel outside of the County. Currently, the community of Washington Park is not served by fixed-route service due to a one-way tunnel along Old Linwood Road separating it from other significant routes in Lexington. Vans used for microtransit are smaller and more navigable than buses, making the inclusion of this neighborhood within the zone possible. Riders in this zone would also be able to access the proposed mobility hub at the Davidson-Davie Community College, providing connections to the Green and Orange routes.

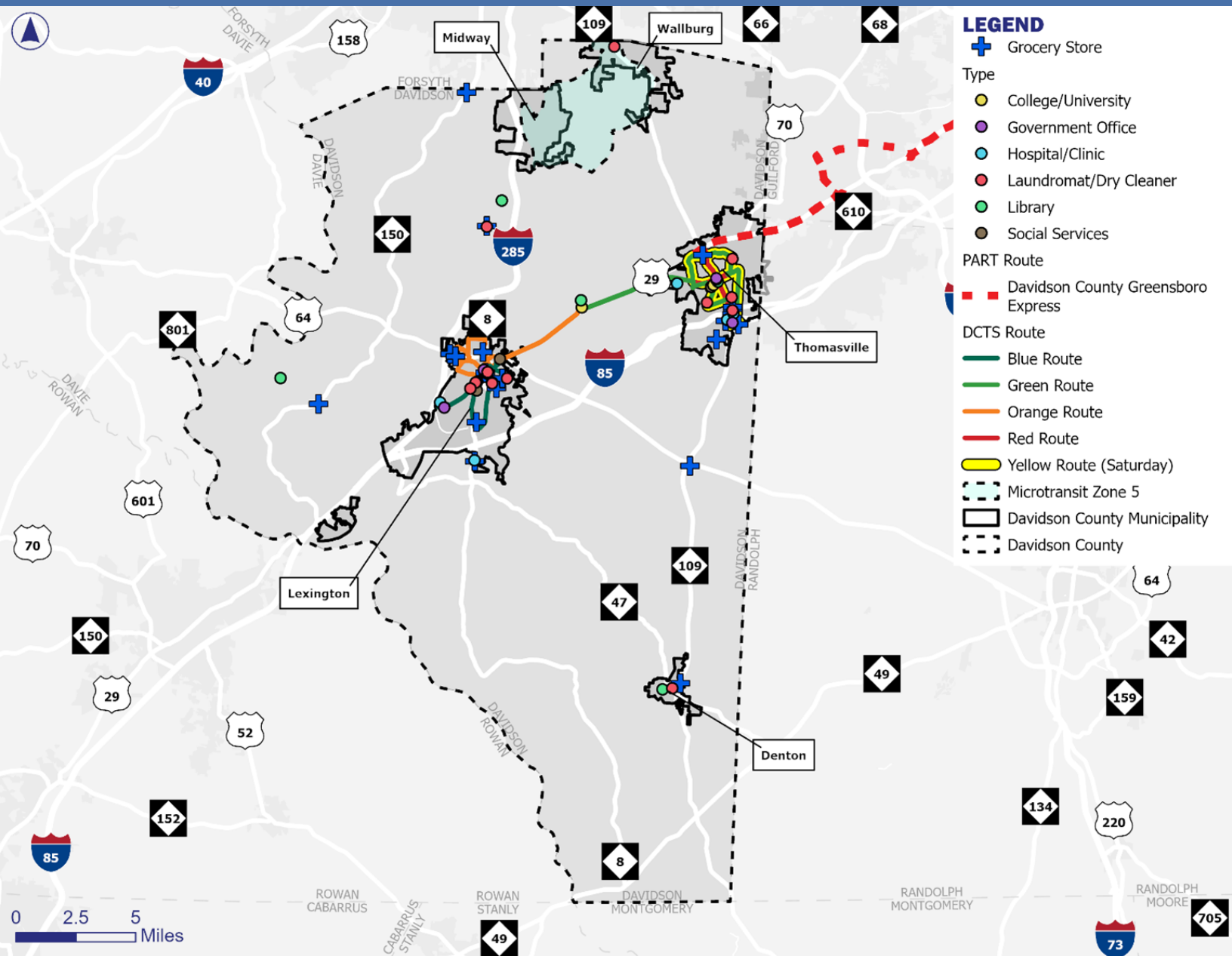
Figure 5-7. Potential Microtransit Zone 4



5.4.5 Microtransit Zone 5 (Midway and Walburg)

An additional microtransit zone, Zone 5 (Figure 5-8), would be located within the northern portion of the County, encompassing most of Midway, Walburg, and the communities between the two municipalities. Riders would have access to the PART Park and Ride stop in Thomasville. The zone's main objective would be connecting the residents of north Davidson County with destinations of interest within proximity to the DCTS routes in Lexington and Thomasville. A mobility hub would be included at the Food Lion along Thomasville Road. Riders in this zone would also be able to access the proposed mobility hub at the Davidson-Davie Community College, providing connections to the Green and Orange routes.

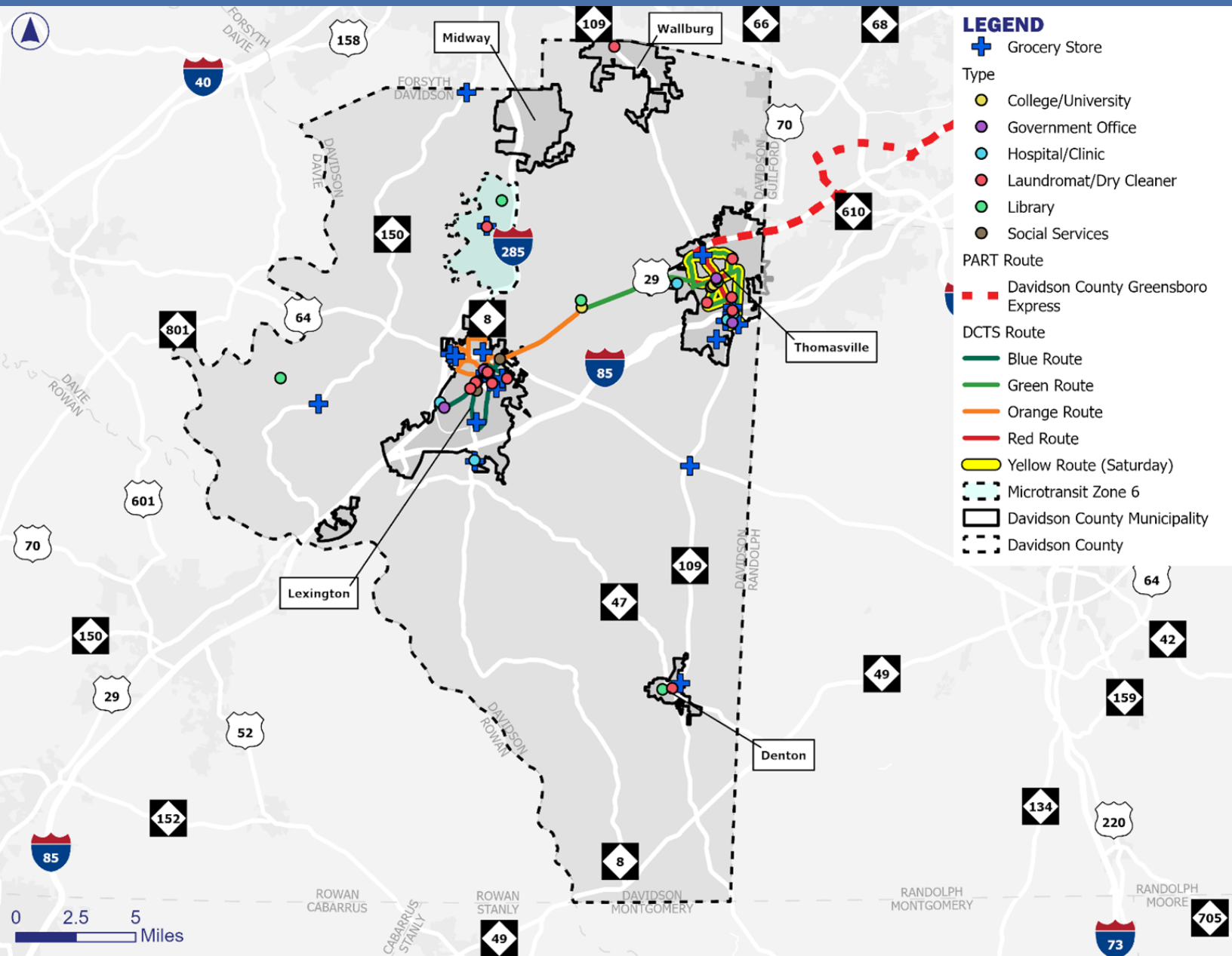
Figure 5-8. Potential Microtransit Zone 5



5.4.6 Microtransit Zone 6 (Welcome)

The final microtransit zone, Zone 6 (Figure 5-9), would serve the municipality of Welcome. Old US Highway 52 is the center of the zone and hosts most of the businesses in Welcome, along with important community sites such as North Davidson High School, Welcome Fire Station, and Center Methodist Church. I-285 borders the eastern side of the zone, allowing ease of travel throughout the zone and ensuring the inclusion of Atrium, Aurora, and other businesses in the complex southwest of the interchange with Old US Highway 52. Like the Midway and Walburg zone, riders for this zone would have access to an external stop, which would be the Transportation Center in Lexington. This stop ensures riders in Welcome have access to the Blue and Orange Routes of DCTS. Riders in this zone would also be able to access the proposed mobility hub at the Davidson-Davie Community College, providing connections to the Green and Orange routes.

Figure 5-9. Potential Microtransit Zone 6



5.5 Refinement of Microtransit Zone Options

After analyzing demographic coverage, community services, and ridership estimates for each potential microtransit zone, two zones were removed from further analysis. To manage service costs and limit redundancy of the potential service, the Denton Area zone and the Countywide zone were eliminated from the remainder of the feasibility study (**Table 5-2**).

Ridership projections for the Denton Area Zone were roughly a third of the Denton to South Thomasville zone, while the latter also encompassed ten additional trip destinations. The zone extending to South Thomasville was only expected to require one additional vehicle compared to the zone exclusive to Denton, a trade-off made worthwhile by the benefits provided by covering the NC-109 corridor connecting the two communities.

The Countywide zone was removed due to limitations in available resources and expected wait times. Preliminary estimates from route planning software forecasted an annual cost for the zone far exceeding the costs for the other five zones combined. This cost is attributed to the high number of vehicles in a fleet required to provide average wait times of 30 minutes or less for the entirety of the county. This level of convenience would not be worthwhile for a zone which encompasses all of the area currently served by deviated fixed-routes already.

The four final microtransit zones are shown in **Figure 5-10**, and the connections available from each zone are shown in **Figure 5-11**.

Table 5-2. Decision to Keep or Remove Microtransit Zone Options

Countywide (Zone 1)	Denton to South Thomasville (Zone 2)	Denton Area (Zone 3)	South Lexington (Zone 4)	Midway and Walburg (Zone 5)	Welcome (Zone 6)
Eliminated due to high cost and vehicle nedeeds.	✓	Eliminated due to it serving fewer areas compared to Zone 2 with only one more vehicle required.	✓	✓	✓

Figure 5-10. Final Four Assessed Microtransit Zones

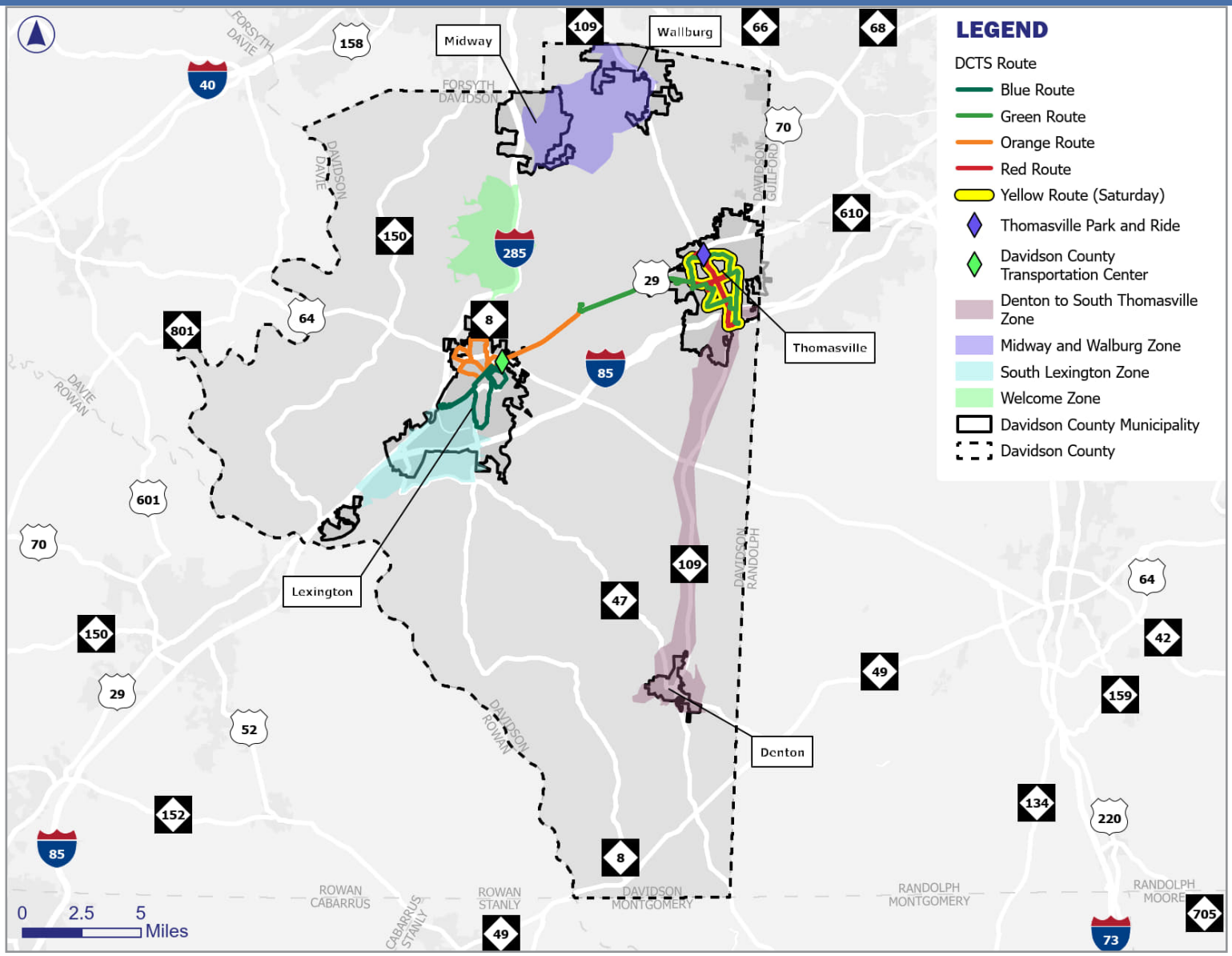
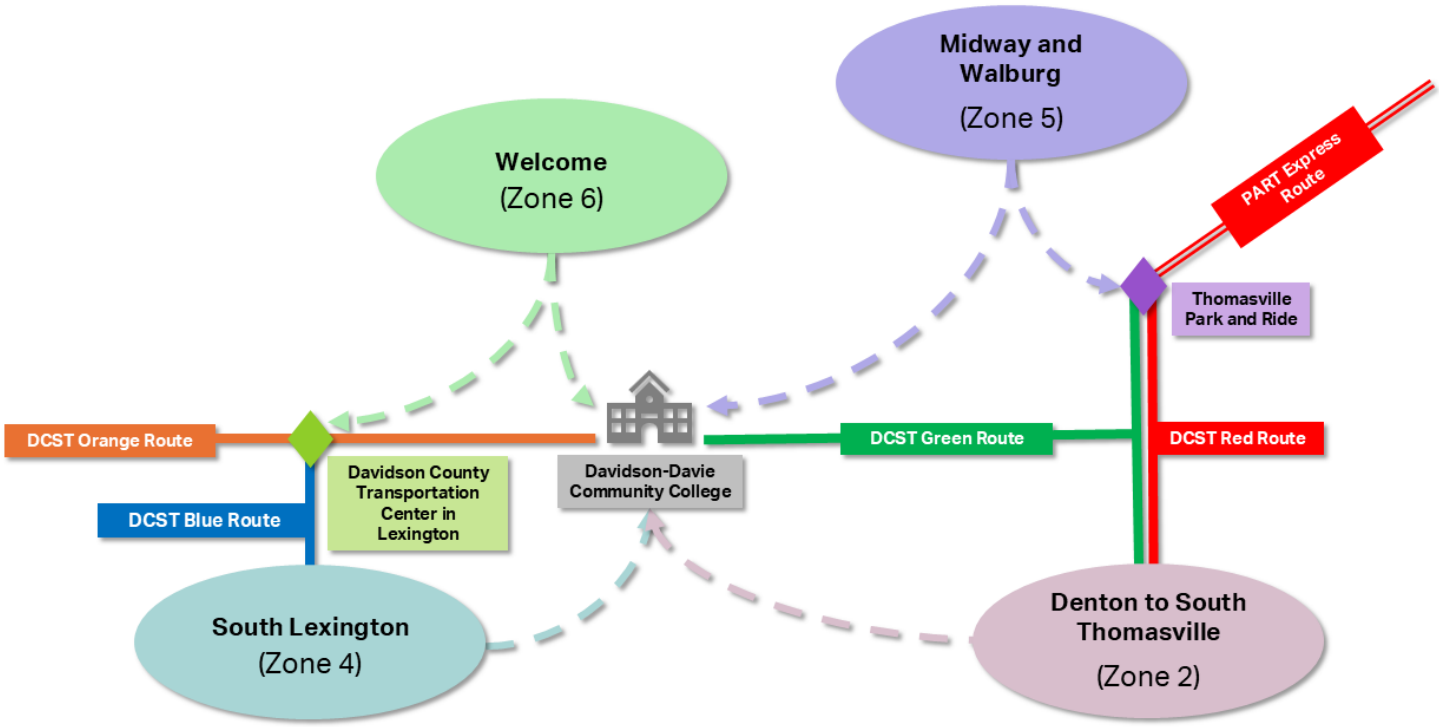


Figure 5-11. Connections to Final Four Assessed Microtransit Zones



5.6 Consideration of Deviated Fixed-Route Stops

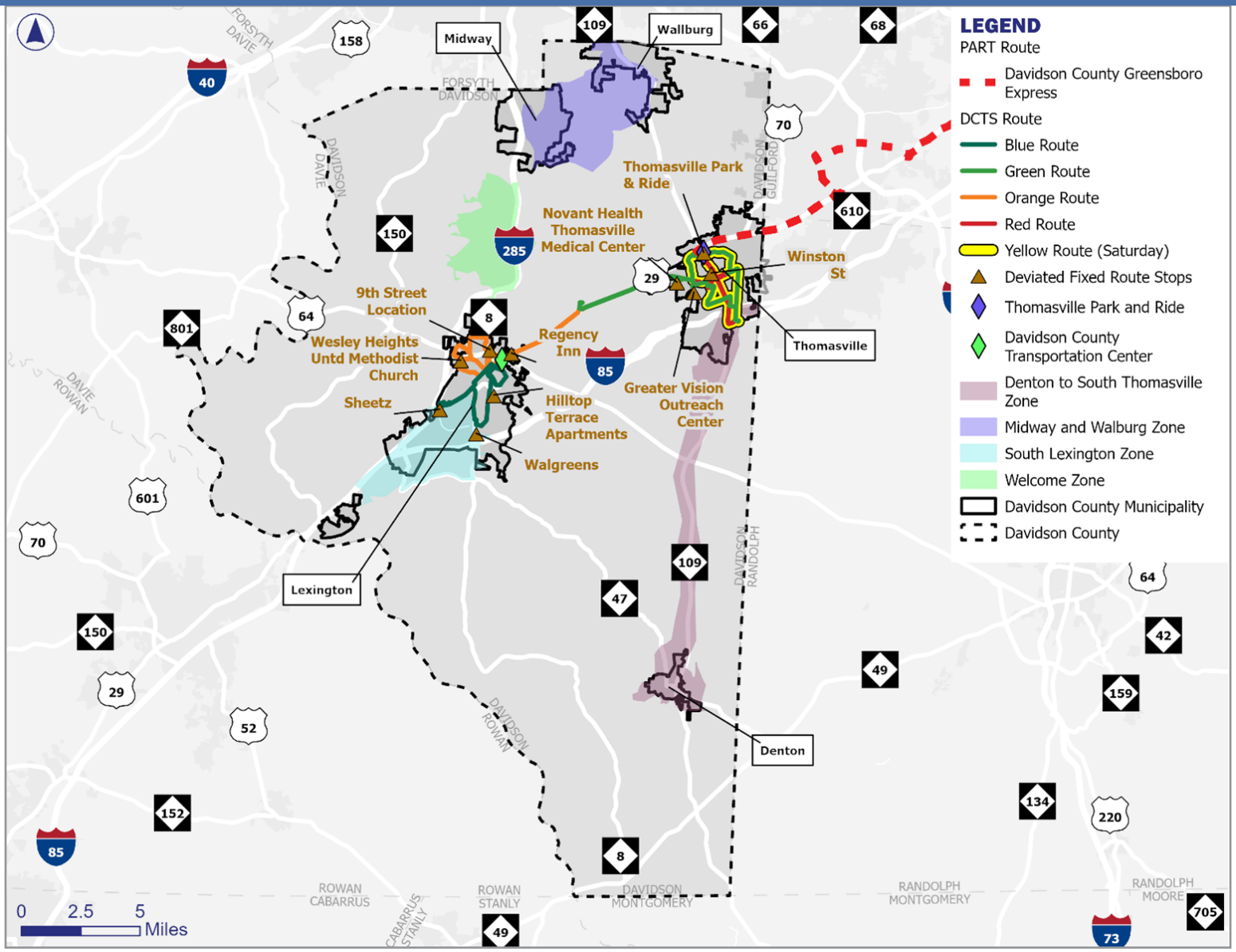
Davidson County's deviated fixed-route service allows riders to request stops within a quarter mile of the routes' alignments. Requested stops off the routes' alignments with the highest ridership, and their overlap with the proposed microtransit zones are shown below in Table 5-3. The majority of these stops would not be served by the proposed

Table 5-3. Top Deviated Fixed-Route Off-Alignment Stops

Route	Stop	Denton to South Thomasville Zone	Midway and Walburg Zone	South Lexington Zone	Welcome Zone
Blue Route	Walgreens on Cotton Grove			●	
	Hilltop				
	Sheetz by Lexington Hospital			●	
Orange Route	Regency Inn				
	Wesley Heights				
	9th Street near Eleanor Drive / White Street / Virginia Drive				
Green Route	Thomasville Park and Ride		●		
	Thomasville Hospital				
Red Route	Winston Street				
	Greater Vision / Children's Home Area				

microtransit zones, with most being one mile or further from the zone's boundaries (Figure 5-12). Serving these stops with microtransit would lead to greater overlap of microtransit zones with the bus routes. This greater overlap would potentially siphon ridership from the fixed-route service and negate the complementary purpose of the microtransit zones.

Figure 5-12. Top Deviated Fixed-Route Off-Alignment Stop Locations



06. Benefits & Impacts Analysis

Benefit and impact assessments play a crucial role in understanding the potential effects of projects before they commence. These assessments identify strategies to mitigate negative impacts and may also uncover opportunities to enhance positive aspects of the project. In the case of this study, four rider groups—namely, the general public, riders with medical appointments, students, and commuters—were assessed for the impacts and benefits of a future implemented microtransit service within Davidson County. Potential benefits and impacts for each rider group are described in **Table 6-1**.

Table 6-1. Rider Group Benefits and Impacts

Rider Group	Potential Benefits	Potential Impacts
General public	• More convenient service for spontaneous trips such as accessing grocery stores • Interfaces with the existing fixed-route system for expanded coverage • Multiple options for requesting rides: smartphone application and call center	• Demand for service is greater than the County's capacity • Fares could potentially increase to offset increased operating expenses • May reduce traffic congestion • May help decrease carbon emissions, particularly when trips are pooled
Riders with medical appointments	• Ability to request rides when needed (recurring and on-demand trips) • Comingling paratransit with microtransit service may address transportation barriers for patients with disabilities • Can operate corner-to-corner (pick-ups and drop-offs at a nearby intersection), curb-to-curb, door-to-bus-stop, or door-to-door	• Demand from general public on-demand trips could lengthen travel times for accessing medical appointments
Students	• May help bridge transportation gaps for students to access campus, internships, and/or employment • Accommodating to student's schedules • Cost-effective option when compared to private transportation	• May reduce traffic congestion • May contribute to smoother traffic flow around campuses and reduce environmental impact • Opportunity for schools to sponsor the service for students
Commuters	• Flexibility benefits workers with unpredictable schedules • May result in shorter travel times • May be more cost effective compared to driving or using other modes of transportation	• May reduce traffic congestion due to decreased private vehicles on the road • May help decrease carbon emissions, particularly when trips are shared • Businesses may partner with the service provider on pre-paid passes or showcase the service as an added benefit

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07. Interface with DCTS, Regional Transit Services, & Other Transportation Modes

In addition to commuting patterns and existing community services, existing public transportation service including intercity bus was taken into consideration when designing service zones and their respective mobility hubs. While providing transportation within their respective area, each zone is intended to create linkages for transportation throughout the county, and surrounding communities in the region.

7.1 Coordination with Additional DCTS Services

Within the county, DCTS deviated fixed-routes primarily operate within and between Lexington and Thomasville. These riders have an additional quarter-mile margin for drop-offs from each route alignment, and those opting for demand response can book a door-to-door trip anywhere within the county with a two-day advance reservation.

However, for more spontaneous trips, the majority of the county beyond Lexington and Thomasville cannot be reached. This general scheduling-limited transit inaccessibility contributed to these areas being considered for potential microtransit zones. Routes that cross these zones and intersect multiple communities, such as NC-109 and Old U.S. Highway 52, would also allow service vehicles to shuttle riders in and out of these zones. These vehicles would be able to take riders directly to several designated stops, or mobility hubs, along US-29 from the microtransit zones. In every microtransit zone, riders can book a trip to the most centrally located destination within the county; Davidson-Davie Community College, where a bus shelter is already present. From there, every DCTS deviated fixed-route stop can be reached, requiring only a potential transfer in Lexington or Thomasville.

7.2 Connections to Regional Transit Services

As previously shown in **Figure 3-24**, the Davidson County Greensboro Express route for PART stops at the Park-and-Ride in Thomasville. This route connects to Greensboro, where a rider can take several other PART express routes terminating in major cities throughout central North Carolina, such as Winston-Salem, Asheboro, and Chapel Hill. None of the microtransit zones directly cover the area around the Park-and-Ride, as the location is currently well served by the Red and Green routes of DCTS. However, riders in the Midway and Walburg zone can take microtransit directly to the Park-and-Ride from any origin in that zone and vice versa. There is also some overlap between the Denton and South Thomasville zone and the southern portions of the Red and Green routes, allowing riders throughout this popular commuting corridor to book a ride to one of the fixed-route stops, and take the bus to the Park-and-Ride. Both of these mobility hub connections from Denton and Midway and Walburg provide stronger transportation linkages to the county's more urban core for residents located at the northern and southern reaches of the county.

The microtransit zones provide a comparable level of access to intercity bus service as well. The Transportation Center in Lexington serves as a stop for Greyhound and Flixbus. From this stop, brief trips can be made just outside of the county to East Spencer and High Point , further afield in the state to Raleigh or Greenville, or to more distant destinations beyond the state's borders, such as Atlanta or New York City. Similar to Thomasville's Park-and-Ride, two DCTS routes, Blue and Orange, both connect to the Transportation Center. To supplement the fixed-route service, the Welcome zone allows riders to book a trip directly to the stop, and the South Lexington zone provides coverage along portions of the Blue route for a connection via the bus.

7.3 Linkages for Multimodal Transportation

There are currently limited bicycle facilities located throughout the county. While there are mountain bike trails within Finch Park in Lexington, these are solely within the park property and are intended for recreation. However, the *2019 High Point Regional Bicycle Plan* proposes bike routes throughout the county in the form of paved shoulders, sidepaths, bike lanes, shared lanes, and separated bike facilities. Several of these proposed routes are within the vicinity of planned microtransit zone mobility hubs. The 11-mile proposed route along Old Salisbury Road is roughly a quarter mile from the South Lexington mobility hub in front of the Lexington Medical Center. The endpoint for a ¾ mile stretch of paved shoulder along 9th St is roughly the same distance to the Davidson County Transportation Center. Additionally, proposed routes run the majority of the lengths of the Welcome and Denton and South Thomasville zones, providing a potential bicycle connection.

Cycling is not the only active transportation option in the county. There are sidewalks for pedestrian use within Davidson County, but the majority of these are located within central Lexington and central Thomasville. Beyond these two cities, there are limited sidewalks in central Denton, the community college, and around the Meadowlands Golf Club south of Walburg. This dearth of sidewalks throughout most of the county creates a health and safety obstacle for potential pedestrian trips. Residents outside of the areas with sidewalks would be forced to walk along the side of the road or the median, exposing themselves to risk of vehicular collisions. Microtransit would allow riders to be picked up and dropped off closer to their origins and destinations, limiting the distance they must walk in areas without sidewalks.

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08. Estimated Operating & Capital Costs

Cost models were calculated for each proposed mobility hub and microtransit zone using data from recent quotes provided to the County, peer systems, vendors, and NCDOT.

Mobility Hub Cost Estimates

Cost estimates for mobility hubs assume that a shelter, trash can, signage, and a bike rack will be located at each hub. Lighting is removed from consideration since the majority of DCTS' service is in the daylight and sheltered stops are typically near street or parking lot lights. Each cost estimate is documented below with their respective sources (**Table 8-1**). Davidson County can consider the varying sizes and materials of the various mobility hub elements when making their selections. Considering these factors will help ensure they choose the most suitable options for their needs. Additionally, evaluating the durability and maintenance requirements of these elements can lead to more cost-effective and sustainable choices in the long run.

Table 8-1. Mobility Hub Cost Estimates

Item	Cost Estimate	Specifications	Source
Shelter	$10,175	12' Slimline Bus Shelter Material: Aluminum Roof: Aluminum Perforated Panels Powder Coat: Anodized Silver Includes design and installation costs	Davidson County
Trash Can (with lock)	$800	Zoid Trash Receptacle with lock Material: Galvanized Steel Skin w/ Stainless Steel structure Powder Coat: Anodized Silver	Davidson County
Bench	$700	6' Urban Scape Bench w/arms Material: Steel Powder Coat: Anodized Silver	Davidson County
Signage	$200	N/A	Davidson County
Bike Rack	$250	Omega and Single Loop racks	Davidson County
Total Cost (One Hub)	**$12,125**		

8.1 Fleet Requirements and Service Windows

In order to develop operating and capital cost estimates, the number of service vehicles and the service windows were calculated. The desired microtransit service windows were provided directly by DCTS, and the calculated number of peak demand vehicles per zone were estimated from planning software. These metrics together are necessary to calculate the annual operating hours for each zone.

8.1.1 Estimated Vehicle Fleet Needs

Remix transit planning software was used to estimate the number of vehicles needed to provide service with a medium-level (100% of expected riders based on demographic makeup, walkability, jobs, housing, etc.) ridership estimation at 20-minute target wait times. For the purpose of the study, it is assumed that all of DCTS' existing fleet and drivers will be dedicated exclusively to existing deviated fixed-route service; all vehicles required for microtransit service would be new purchases. A spare ratio of 20% of vehicles operating at maximum service (VOMS) was also factored into the fleet requirements of each microtransit zone, and for the system as a whole. Assuming nine vehicles are necessary for peak demand in all four zones, only two additional spare vehicles interoperable between zones would be needed to meet ridership demands across all four microtransit zones. The required number of vehicles is also provided should individual zones be implemented instead of implementing all four zones (Table 8-2).

8.1.2 Service Windows

Operating costs were based on the above VOMS assumptions and the service windows for the four zones shown in Table 8-3. The number of annual weekdays and operating days is based on the current Davidson County operating schedule.

Table 8-2. Projected Microtransit Fleet Requirements by Microtransit Zone

Fleet Requirements	Denton to South Thomasville	South Lexington	Midway and Walburg	Welcome
Peak Demand Vehicles	3	2	2	2
Recommended Spare Vehicles per zone	1	1	1	1
Total Required Vehicles for Individual Zone Implementation	**4**	**3**	**3**	**3**
Recommended Spare Vehicles for System-Wide Implementation	2			
Total Required Vehicles for System-Wide Implementation	**9**			

Table 8-3. Microtransit Service Windows

Zone	Denton to South Thomasville	South Lexington	Midway and Walburg	Welcome
Operating Days	Monday - Saturday			
Operating Hours	6 am to 6 pm Weekdays 10 am to 4 pm Saturday			
Annual Weekdays	248			
Annual Saturdays	52			
VOMS	3	2	2	2
Annual Operating Hours	9,864	6,576	6,576	6,576

8.2 SaaS Cost Estimates

Unit costs for estimates were gathered from various vendor quotes, service metrics provided by DCTS, prior service contracts held by DCTS, and SaaS peer system data (Table 8-4). Driver tablet costs were estimated based on the Apple iPad with 5G cellular connectivity, as well as costs for cases and vehicle mounts for each tablet. Vehicle costs were based on a Ford Transit and included the itemized cost of installing a rear wheelchair lift in addition to the base cost of the vehicle as listed in the statewide NCDOT contract.

Table 8-4. Average SaaS Microtransit Service Element Costs

Microtransit Service El-ement	Average Cost	Cost Source	Microtransit Service Element
Operating Cost per Hour	$83	DCTS deviated fixed-route current operating cost per hour from FY 2024 adjusted to FY 2025 and rounded up to the next whole dollar	Operating Cost per Hour
Software per Vehicle	$18,000	Via Quote	Software per Vehicle
Annual Mobile Data per Vehicle	$200	SaaS Peer Average	Annual Mobile Data per Vehicle
Vehicle Painting per Vehicle	$550	Creative Bus Sales	Vehicle Painting per Vehicle
One-time setup/ installation fee and initial vehicle voice calling software licensing	$54,000	SaaS Peer Average, GMV contract	One-time set-up/ installation fee
Vehicle (VOMS)	$99,700	Creative Bus Sales (Ford Transit), GMV contract	Vehicle (VOMS)
Tablets and Related Hardware per Vehicle	$400	Apple iPad and related hardware	Tablets and Related Hardware per Vehicle
Education/ Promotion	$22,400	Marketing consultant	Education/ Promotion

8.2.1 Operating Costs

Annual SaaS operating costs for each zone were calculated based on the projected VOMS for each zone and the annual operating hours. The current DCTS deviated fixed-route operating cost per hour of $79.92 in FY 2024 was adjusted to FY 2025 using an inflation factor of 3.5% and rounded up to the next whole dollar resulting in an operating cost per hour of $83. The total yearly cost to operate the microtransit service in all four zones would be approximately $2,650,000 (Table 8-5).

Table 8-5. Annual SaaS Operating Cost Estimate by Zone

	Denton to South Thomasville	South Lexington	Midway and Walburg	Welcome	Total
Vehicles in Maximum Service (VOMS)	3	2	2	2	**9**
Annual Operating Hours	9,864	6,576	6,576	6,576	**29,592**
Annual Operating Cost	$820,000	$550,000	$550,000	$550,000	**$2,470,000**
Annual Software Cost	$54,000	$36,000	$36,000	$36,000	**$162,000**
Annual Data Cost	$200	$200	$200	$200	**$800**
Annual Licensing Cost	$5,000	$4,000	$4,000	$4,000	**$17,000**
Total Annual Operating Cost	**$880,000**	**$590,000**	**$590,000**	**$590,000**	**$2,650,000**

8.2.2 Capital Costs

Similar to the annual operating costs, most of the capital costs to start microtransit service are driven by the VOMS for each zone. DCTS would need to procure vehicles in order to operate microtransit service. The installation fee and costs of education and promotion by the microtransit vendor would apply to the entire system. Based on these costs, DCTS would expect an initial investment of about $1,190,000 to begin microtransit for all four zones (Table 8-6).

Table 8-6. SaaS Capital Cost Estimate by Zone

	Denton to South Thomasville	South Lexington	Midway and Walburg	Welcome	Total
Vehicles in Maximum Service (VOMS)	3	2	2	2	**9**
Spare Vehicles	1	1	1	1	**2**
One-time set-up/installation fee	$54,000				**$54,000**
Purchase Vehicles (VOMS)	$400,000	$300,000	$300,000	$300,000	**$1,100,000**
Vehicle Painting	$1,650	$1,100	$1,100	$1,100	**$4,950**
Tablets	$1,600	$1,200	$1,200	$1,200	**$5,200**
Education/ Promotion	$22,400				**$22,400**
Total Capital Costs	**$480,000**	**$380,000**	**$380,000**	**$380,000**	**$1,190,000**

8.2.3 Additional Personnel Requirements

As a department of Davidson County, DCTS is led by a transportation manager who oversees a dispatcher, route supervisor, and three transportation coordinators. These staff members would be able to take on the administrative and maintenance duties associated with microtransit. However, DCTS would benefit from hiring a transit planner/operations supervisor for additional support for manual ride booking, service zone evaluations, and transit planning. While DCTS currently has 14 part-time drivers, these drivers are needed for the deviated fixed-route service to continue its operation. Working at a maximum of 19 hours per week, 14 additional part-time drivers would be needed for the 264 weekly revenue hours across the four microtransit zones (Table 8-7).

Table 8-7. Additional Personnel Requirements for SaaS

Additional Personnel Requirements	Denton to South Thomasville	South Lexington	Midway and Walburg	Welcome	Total
Transit Planner/ Operations Supervisor	+1				**+1**
Fleet Supervisor	-	-	-	-	**-**
Transit Dispatcher	-	-	-	-	**-**
Drivers	+5	+3	+3	+3	**+14**

8.3 TaaS Cost Estimates

The TaaS model costs are based on the assumption that DCTS or its vendor would still need to purchase software for microtransit outside of the current demand response contractor covering drivers and vehicles. The other cost similar to SaaS is the cost associated with promoting and advertising the microtransit service.

8.3.1 Operating Costs

Operating costs for a TaaS model are based upon the same ridership, vehicle requirements, and operating hours as the SaaS model. For TaaS, cost estimates are specifically based on the current operating cost of $43.02 per hour for purchased demand response transportation. The current cost was adjusted to FY 2025 using an inflation rate of 3.5% and rounding to the nearest dollar, resulting in a cost of $45 per hour. Microtransit software would also need to be purchased as it is not included in current demand response transportation. Table 8-8 shows an expected annual total operating cost of $1,510,000.

Table 8-8. Annual TaaS Operating Cost Estimate by Zone

	Denton to South Thomasville	South Lexington	Midway and Walburg	Welcome	Total
Vehicles in Maximum Service (VOMS)	3	2	2	2	**9**
Annual Operating Hours	9,864	6,576	6,576	6,576	**29,592**
Annual Operating Cost	$450,000	$300,000	$300,000	$300,000	**$1,350,000**
Annual Software Cost	$54,000	$36,000	$36,000	$36,000	**$162,000**
Total Annual Operating Costs	**$450,000**	**$300,000**	**$300,000**	**$300,000**	**$1,510,000**

8.3.2 Capital Costs

Because the microtransit service provider supplies drivers, technology, and vehicles for the TaaS model, anticipated capital costs would be the installation fee for microtransit software as well as education and promotion of the new service. At a minimum, estimated capital costs would be $60,000 (Table 8-9). There may be additional costs if the provider needs to procure tablets and paint vehicles.

Table 8-9. TaaS Capital Cost Estimate by Zone

	Denton to South Thomasville	South Lexington	Midway and Walburg	Welcome	Total
One-time setup/ installation fee		$29,000			**$29,000**
Education/ Promotion		$22,400			**$22,400**
Total Capital Costs		**$60,000**			**$60,000**

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09. Potential Funding Sources

There are multiple sources and strategies for funding microtransit services, including discretionary and formula grants through FTA programs as well as state and local funding sources. Microtransit is eligible for the same funding sources that traditional demand response service is eligible for. Furthermore, when demand response or fixed-route service is replaced with microtransit, agencies can use the decrease in operating costs from those modes to fund microtransit. This chapter provides strategies for managing microtransit costs and identifies potential federal, state, and local sources for operations, capital, and supporting infrastructure.

9.1 Strategies for Managing Costs

The benefits of microtransit provide the County with several strategies for controlling costs of operations, which are important given the challenges of this mode in responding to increased demand. When demand increases for the service, additional vehicles are typically added to maintain target wait times and acceptable quality of service. The additional vehicles and drivers can increase operating and capital costs significantly. In comparison, fixed-route service can more easily accommodate increases in demand because it serves fixed stops and uses larger vehicles.

Some agencies hold operating costs steady while allowing average wait time to increase. This option avoids increasing the operating budget for microtransit but can degrade service quality and rider satisfaction, particularly for riders that use microtransit for time-sensitive trips such as employment or medical appointments. Agencies have some options for implementing moderate

changes to their microtransit service to balance costs increases and service quality goals:

- Increase average wait time (e.g., 20 minutes to 25 minutes).
- Increase distance that the microtransit vehicle will deviate to pick up other riders.
- Increase distance the rider must travel from their origin to meet the microtransit vehicle.
- Convert from curb-to-curb or virtual stop system to a node-based system where riders may only be picked up and dropped off at designated stops within the community.
- Offset cost increases by raising rider fares.

These strategies aim to maximize trips without having to increase the microtransit vehicle fleet size, which is the key driver of operating costs. However, these strategies are limited in responding to significant increases in rider demand.

9.2 Funding Strategies

Securing sustainable, long-term funding is often a challenge for transit agencies seeking to jumpstart new microtransit programs. Several potential funding sources at the local, state, and federal levels are outlined below.

9.2.1 Federal Funding

Federal funding directly from FTA or from a designated recipient can be used to fund microtransit operations and capital needs. Funding used for demand response can also fund microtransit. The cost share between local, state, and federal sources depends on the cost type.

9.2.1.1 Discretionary Grants

Microtransit can be funded through multiple discretionary grant programs including the FTA Mobility on Demand (MOD) Sandbox Program, United States Department of Transportation's (USDOT) Advanced Transportation Technologies & Innovative Mobility Development (ATTAIN), and USDOT Rural Surface Transportation Grant.

USDOT Rural Surface Transportation Grant

The USDOT Rural Surface Transportation Grant Program supports projects that improve and expand the surface transportation infrastructure in rural areas to increase connectivity, improve the safety and reliability of the movement of people and freight, and generate regional economic growth and improve quality of life.

NCDOT IMD applied for and won the grant in FY2022 to fund microtransit or on-demand mobility as it was referred to in the USDOT notice of funding opportunity. MEE NC, will accelerate the deployment of high-quality, on-demand transit services to rural, low-income communities throughout North Carolina, leading to more equitable mobility and improved access to opportunities, services, and resources for transportation disadvantaged populations. In late December 2022, FTA announced that the MEE NC grant application would be awarded in the amount of $10.4 million.

Enhancing Mobility Innovation (EMI)

In addition to the USDOT Rural Surface Transportation Grant, FTA has typically released a notice of funding availability for innovative microtransit projects. The most recent grant opportunity, Enhancing Mobility Innovation (EMI), awards projects that 1) improve mobility and enhance the rider experience with a focus on innovative service delivery models, creative financing, novel partnerships, and integrated payment solutions or 2) support the development of software solutions that facilitate integrated demand-response public transportation that dispatches transit vehicles through riders' mobile devices or other means. FTA seeks projects that accomplish the following: Support innovation in mobility that meets evolving needs of transit riders; Advance equitable and climate-smart transportation; Improve public transportation service; and advance the vision of carefree mobility for all. Examples of potential projects include data tools to enable climate-smart choices, payment integration, novel partnerships,

new models to enhance mobility in underserved communities, and AI tools to personalize mobility.

The FTA is currently seeking projects that align with the following objectives:

- Support innovation in mobility to meet the evolving needs of transit riders.
- Advance equitable and climate-smart transportation.
- Improve public transportation service.
- Advance the vision of carefree mobility for all.

Partnering is encouraged and eligible applicants include transit agencies; state or local departments of transportation; Indian tribes; private and nonprofit organizations; colleges and universities; and state and local governments, including MPOs. The County may still apply even if they received funding through another FTA source.

Advanced Transportation Technologies & Innovative Mobility Development (ATTAIN)

The ATTAIN program makes funds available to employ, install, and operate advanced transportation technology, including on-demand transportation services and other forms of shared-use mobility. This is a competitive grant that the Infrastructure Investment and Jobs Act (IIJA) provided $900 million towards in total and is available to transit agencies, local or state governments, MPOs, or academic institutions. Eligible activities include Planning; Construction; Equipment and Materials; Operations and Maintenance; Technology Demonstrations and Deployment; Technical Assistance, Workforce Development, and Training/Education; Research and Development; Climate and Sustainability; and Accessibility.

Research, Development, Demonstration, and Deployment Project

IIJA provides approximately $132.2 million in competitive grants, cooperative agreements, and contracts to states, cities, townships, special districts, and other institutions to assist innovative projects that advance and sustain safe, efficient, equitable, and climate-friendly public transportation. The eligible research and demonstration explore novel approaches to improve public transportation for transit dependent individuals, meeting equity and climate goals.

9.2.1.2 Formula Funds

In addition to discretionary grants, there are several formula programs that can fund microtransit.

Section 5307

Davidson County is part of the Winston-Salem Urban Area and the High Point Urban Area. These urbanized areas are served by the respective MPOs. Davidson County receives 5307 allocations from the Winston-Salem Urban Area MPO. The transit agencies in this MPO eligible for 5307 funding include Davidson County Transportation, PART, and the Winston-Salem Transit Authority (WSTA).

Section 5307 funding provides funds for transit capital, operating, and planning activities to urbanized areas with populations of over 50,000. For urbanized areas with populations less than 200,000, operating assistance is an eligible expense. Urbanized areas of 200,000 such as Davidson County, or more may not use funds for operating assistance unless identified by FTA as eligible under 49 U.S.C. 5307(a)(2) and (3).

FTA provides funding to eligible recipients for costs incurred in the operation of public transportation services. Operating expenses usually include driver salaries, fuel, an item having a useful life of less than one year (i.e., office supplies). There is no limitation on the amount of the apportionment that recipients can use for operating assistance in small, urbanized areas. The local match required for Section 5307 can vary from 10 percent to 50 percent depending on the type of project. The federal share for planning and capital projects that receive funding under Section 5307 may not exceed 80 percent of the project cost. There are several notable exceptions though for

projects related to ADA, the Clean Air Act, or certain bicycle projects:

- **Vehicles:** The federal share is 83 percent for the acquisition of vehicles for the purposes of complying with or maintaining compliance with the ADA of 1990 (42 U.S.C. 12101 et seq.) or the Clean Air Act (CAA; 42 U.S.C. 7401 et seq.)
- **Vehicle-Related Equipment and Facilities:** The federal share for project costs for acquiring vehicle related equipment or facilities (including clean fuel or alternative fuel vehicle-related equipment or facilities) for the purposes of complying or maintaining compliance with CAA, or required by ADA, is 90 percent.

The federal share of operating expenses may not exceed 50 percent of the net operating cost.

Since Davidson County is within an urbanized area with a population of 200,000 or more, the formula is based on a combination of bus vehicle revenue miles, bus passenger miles, fixed guideway vehicle revenue miles, fixed guideway directional route miles, fixed guideway passenger miles, and operating expenses, as well as population, low-income population, and population density.

Flexible Funding Program – Surface Transportation Program (STP) Funds

The STP program provides a national annual appropriation to the Federal Highway Administration (FHWA). This funding has a broad project eligibility and funding may be used for projects to preserve or improve conditions and performance on any federal-aid highway, bridge project on any public road, facilities for non-motorized transportation, transit capital projects and public bus terminals and facilities. This program funding can also be "flexed" to FTA for use by transit agencies.

Congestion Mitigation and Air Quality (CMAQ) Program

CMAQ provides funds to states for transportation projects that reduce traffic congestion or improve air quality, including "on-demand transportation service technologies" such as microtransit. Projects must be located in counties designated "nonattainment" or "maintenance" under certain pollutant standards, except if a state has no such counties, in which case they may be spent anywhere. In this case, Davidson County is designated as a maintenance area for certain pollutant standards having previously been designated as nonattainment.[1] Funds generally flow to state DOTs and MPOs. These funds may be used for both capital and operating expenses.

Carbon Reduction Program (CRP)

The CRP formula funding opportunity was created by the IIJA, also known as the Bipartisan Infrastructure Law. CRP provides funds for a variety of capital and operating projects which reduce carbon emissions, including microtransit. These funds are apportioned to states, which then manage their own processes for awarding CRP funding to projects. NCDOT distributes CRP funds in North Carolina. Of those funds, 65 percent are distributed based on population while the remaining 35 percent can be disbursed to projects anywhere throughout the state.

9.2.1.3 Other Federal Programs

There are other federal funding sources that may be used as local match, as described by FTA in an FAQ[2]:

1. If another federal agency permits its funds to be used by a local share, the following programs are authorized to accept that funding as local share and are available to DCTS:
   a. Section 5310 (Enhanced Mobility for Seniors and Individuals with Disabilities)
   b. Section 5307 (Urbanized Area Formula Grants)
2. Funding for Temporary Assistance for Needy Families (TANF) is expressly authorized for used as local share for Section 5310, Section 5307, Section 5311.

9.2.2 State Funding

There are several grants and formula funds available

through the NCDOT Integrated Mobility Division (IMD) in addition to federal funding opportunities. DCTS is eligible for these funding opportunities, which are highlighted below. Additional information on these funding sources can be found in the NCDOT Unified Grant Application (UGA): https://connect.ncdot.gov/business/Transit/Pages/Unified-Grant-Application.aspx.

Capital Cost of Contracting

IMD has established a grant for Capital Cost of Contracting, part of the State's Section 5311 or 5339 funding, to support microtransit system development. This grant aids transit agencies working with contractors for operations, maintenance, or vehicle services. The Federal Transit Administration (FTA) funds the capital used in these contracts, shared by the FTA, private contractors, and transit agencies. Only costs for privately owned contractor assets are eligible, excluding items bought with federal, state, or local funds.

Table 9-1 outlines seven types of contracts that may be used to identify a desired Capital Cost of Contracting eligible expenditures by Electronic Business Code (EBS) G-Code. The cost shares vary by the contract type and are from Appendix F of the FTA Section 5311 Circular 9040.1G.

Table 9-1. Capital Cost of Contracting – Types of Contracts

Type of Contract	EBS G-Code	Federal Participation	State Participation	Local Participation
Service Contract (Contractor provides maintenance and transit service; recipient provides vehicles)	G-600	32%	10%	58%
Service Contract (Contractor provides transit service only; recipient provides vehicles and maintenance	N/A	0%	10%	90%
Vehicle Maintenance Contract (Contractor provides maintenance; recipient provides vehicles and transit service)	G-601	80%	10%	10%
Vehicle Lease Contract (Contractor provides vehicles; recipient provides maintenance and transit service)	G-602	80%	10%	10%
Maintenance/Lease Contract (Contractor provides vehicles and maintenance; recipient provides transit service)	G-603	80%	10%	10%
Turnkey Contract (Contractor provides vehicles, maintenance, and transit service)	G-604	40%	10%	50%
Vehicle/Service Contract (Contractor provides vehicles and transit service; recipient provides maintenance)	G-605	8%	10%	82%

ConCPT CO Funding

NCDOT IMD administers the ConCPT Coordination Program to enhance coordination between NCDOT IMD grantees. Funding has typically been provided for coordination activities where three or more public transportation grantees agree to establish formal relationships to maximize resources, gain efficiencies, and improve access to public transportation. This is a state-funded program that provides a 50 percent operating match to transit systems.

This funding source would be applicable if DCTS coordinates the microtransit service with PART and/or any other transit systems. DCTS would need to identify non-state sources of funding to match ConCPT funds. Coordination funds may only be used for operating expenses. One of the coordinating agencies would need to serve as the lead agency, which is the applicant and recipient of the funds. The lead agency enters into a memorandum of understanding with the participating agencies.

Combined Capital

The Combined Capital Program allows identified rural and small urban systems the opportunity to apply for funding for capital projects in a single application, including vehicles, bus stops, and bus terminals. The funding is open to 5311 and/or small urban 5307 grantees. Replacement vehicles must meet the minimum useful life mileage outlined in the capital replacement schedule included in the UGA. The Combined Capital Program cannot be used for expansion vehicles. Systems can apply for electric vehicles (EV) but are only eligible if they have initiated a feasibility study and EV infrastructure design, or already have charging infrastructure in place.

5310 Enhanced Mobility of Seniors and Individuals with Disabilities Program

The Section 5310 program provides formula funding to improve mobility for seniors and individuals with disabilities by removing barriers to transportation service and expanding transportation mobility options. IMD selects projects based on scoring criteria and selected projects require a 50 percent local cost share. There are several requirements for small urban systems such as DCTS:

- Small Urban service area using 5310 funds cannot duplicate trips provided by a Rural Community Transportation (CT) system. It is eligible if they serve a different area.
- Written 5310 Operating application must provide detailed description of the project and all the supporting documentation required by the program, including Master Documents.
- Small Urban system is required to validate riders using 5310 Operating funds are either 65 years or older and/or have a documented disability. Documents must be kept on file for future validation.
- Small Urban system is required to maintain a list of eligible riders. 5310 riders are not included on general fixed-route stops.
- Projects will be scored along with other 5310 applications submitted.
- 5310 Operating funds are for trips (G-313) and not to offset or supplement the normal system operating budget.
- 5310 Operating-funded trips must be separate and documented with trip information and cost.
- Claims must contain back-up documentation, including passenger manifest and trip cost.
- Small Urban system receiving a 5310 Operating grant is subject to a compliance review by IMD up to every 3 years, regardless of a compliance review conducted by the FTA.

5311 Non-Urbanized Area Formula Program

Section 5311 funding is a federal formula grant for rural areas established to help support public transportation in areas with populations of less than 50,000. This funding may be used to address the

needs of rural area residents who often rely on public transit to reach their destinations. Section 5311 funding may be used for eligible capital, operating, and planning expenditures.

Eligible transportation systems can use Section 5311 funds for public transportation projects in non-urbanized areas. Because most rural trips end in urbanized areas, Section 5311 funds can be used for portions of trips in urbanized areas; however, the primary beneficiary of Section 5311-funded transportation activity must be rural areas. A rural transit provider should consider designing its Section 5311-funded services to maximize use by members of the general public who are transportation disadvantaged such as elderly people and people with disabilities.

Rural Strategic Transportation Investments (STI) Program

The Rural STI Program is for capital expenses including land purchase and construction, vehicles, bus stops, and facilities. Technology is not eligible. Systems awarded a grant through STI in NCDOT's Prioritization Process must complete an application in the fiscal year they are using the funds to receive the state match of Highway Trust Funds. The Rural-STI application allows systems to add federal funds where IMD has oversight of the application for the project and receives reimbursement.

Non-STI Rural Expansion Vehicle Program

This funding opportunity is for rural systems who are interested in applying for an expansion vehicle. State matching funds will not be provided for projects funded through this program. Eligible projects are expansion vehicles and the security cameras, lettering and logos, and other such additions to the vehicle only. Computers, furniture, and other capital requests are not eligible under this grant. All projects eligible for STI to be funded with FTA Section 5311 funds or 5307 funds must be submitted and scored under STI.

Rural Operating Assistance Program (ROAP)

NCDOT provides state-funded transportation assistance for rural transit providers through the Rural Operating Assistance Program (ROAP). ROAP has three components outlined below:

1. Elderly and Disabled Transportation Assistance Program (EDTAP): Provides operating assistance for the transportation of the state's elderly and disabled citizens.
2. Employment and Transportation Assistance Program (EMPL): (a) Intended to help DSS clients that transitioned off Work First or Temporary Assistance for Needy Families (TANF) in the previous 12 months; or Workforce Development Program participants; or, (b) Intended to help the transportation of disadvantaged public; and/or, (c) Intended to help the general public travel to work, employment training, and/or other employment-related destinations.
3. Rural General Public Program (RGP): (a) Intended to provide transportation services for individuals from the county who do NOT have a human service agency or organization that will pay for the transportation service; (b) The passenger's origin or destination must be in the rural area; and, (c) RGP trips can be coordinated on vehicles with other human services trips.

It is important to note that ROAP has a different application and award schedule, which is subject to an approved State budget before disbursements can be made. ROAP funding goes to each individual county.

9.2.3 Local Funding

The following section highlights several local funding opportunities that are available to support the future microtransit service.

Employer Support/Partnerships

There is a significant opportunity for financial support from employers given the strong workforce base in Davidson County and employee interest in

microtransit throughout the course of this study. Twenty-eight (28) survey respondents identified that they would use microtransit to access employment. There is incentive for employers in partnering with a microtransit service to provide reliable transportation options for employees. Microtransit technology allows for multiple options of employer support:

- General contributions to the annual operating cost of the service
- Subsidies for trips to/from the specific employer based on the rider's origin and destination
- Coupon codes paid for by the employer and given to employees that cover the full or partial cost of the microtransit
- Vehicle purchase

General contributions would be the least restrictive, allowing DCTS to provide service throughout the zone whereas subsidies and coupon codes would only apply to that employer's employees. Accounting for subsidies and coupon codes would require more time and effort, but microtransit software can automate some of this administration.

Local Contributions

The County will most likely need to contribute local funds to support the microtransit service unless contributions from employers or other organizations are sufficient to cover the required matches mentioned for state and federal programs.

Fare and Advertising Revenue

Modest fare revenue could be generated from the microtransit service. DCTS may decide to continue to operate the service fare-free, with the missed fare revenues offset by employer and organization contributions.

Affordability was a key concern of the focus group attendees surveyed as part of this study. Attendees voiced preference for fare-free service and transfers. As such, trip fare is recommended to remain low, if not fare free. In addition to fare revenue, revenue from selling advertisement space is another potential source of funding for DCTS. Advertising can be placed on the outside and/or inside of a microtransit vehicle.

Sales Tax

G.S. 105 Article 43 allows counties and transportation authorities to levy sales and use tax to meet the needs of financing public transportation systems. All such taxes must be approved in a referendum. If voters approve the levy of the tax, the county board of commissioners may, by resolution, levy a one-quarter percent (1/4%) local sales and use tax in addition to any other state and local sales and use taxes levied. Higher tax rate and variations to the procedural requirements may be authorized by special legislation, as in the case of Mecklenburg County, Piedmont Authority for Regional Transportation (PART), and GoTriangle, to meet the specific circumstances and needs of a region.

County Vehicle Registration Tax

As of 2009, counties can impose a vehicle registration fee for transit that would be shared on a pro rata basis with municipalities within their boundaries that operate transit systems (G.S § 105-570). This fee can be up to $7.00 per registration, and the proceeds can be used for financing, constructing, operating, and maintaining a transit system. To enact this fee, the County Commission must adopt a resolution following a public hearing.

A second county option allows "public transportation authorities", consisting of two or more counties, to impose up to $8.00/registration per year (G.S § 105-561). The commissions of all counties in the authority would have to adopt resolutions authorizing this fee.

General Obligation Bonds

Under North Carolina law, any local government may issue bonds secured by its tax levying authority. These are known as General Obligation Bonds. Transportation bonds are an excellent way to generate extra revenues when there are specific

capital projects in need of funding. The first step is to apply to the N.C. Local Government Commission for approval and obtain approval from the governing body (City Council or County Commissioners) after a public hearing. The bonds need to be approved by referendum and the majority of those voting must approve the bonds. The bonds must be directed to a certain improvement or set of improvements and are a one-time revenue. Bonds may be issued up to seven years after approval.

Property Tax Levied Through County Service Districts (CSDs)

G.S. Ch. 153A, Art. 16, Part 1 (CSDs), is a general statute that authorizes counties to define a part of the county as a service district to levy a property tax in the district additional to the county-wide property tax, and to use the proceeds to fund certain projects or services in the district. Establishing CSDs may be a potential way for DCTS to fund new transit services as they can be created in areas served directly by the new services, particularly around mobility hubs.

9.2.4 Funding Source Summary

All funding opportunities are summarized below in **Table 9-2**. The table also specifies the type of funding and whether it covers microtransit operations, vehicles, or supporting infrastructure. Included in supporting infrastructure would be capital items such as tablets or infrastructure at mobility hubs such as shelters, benches, and lighting. For additional information on funding resources please visit NCDOT IMD's Unified Grant Application webpage: https://connect.ncdot.gov/business/Transit/Pages/Unified-Grant-Application.aspx.

Table 9-2. Summary of Funding Sources

Funding Source	Type (Discretionary vs. Formula)	Microtransit Operations	Vehicles	Supporting Infrastructure
Federal				
USDOT Rural Surface Transportation Grant	Discretionary	●	●	●
Enhancing Mobility Innovation (EMI)	Discretionary	●		●
Advanced Transportation Technologies & Innovative Mobility Development (ATTAIN)	Discretionary	●		●
Research, Development, Demonstration, and Deployment Project	Discretionary	●		●
Section 5307	Formula	●	●	●

Funding Source	Type (Discretionary vs. Formula)	Microtransit Operations	Vehicles	Supporting Infrastructure
Flexible Funding Program – Surface Transportation Program (STP) Funds	Formula			●
Congestion Mitigation and Air Quality (CMAQ) Program	Formula	●	●	●
Carbon Reduction Program (CRP)	Formula	●	●	●
State				
Capital Cost of Contracting	Discretionary	●		
ConCPT CO Funding	Discretionary	●		
Combined Capital	Discretionary		●	●
5310 Enhanced Mobility of Seniors and Individuals with Disabilities Program	Formula	●		
5311 Non-Urbanized Area Formula Program	Formula	●		
Rural STI Program	Discretionary		●	●
Non-STI Rural Expansion Vehicle Program	Discretionary		●	
Rural Operating Assistance Program (ROAP)	Formula	●		
Local				
Employer Support/ Partnerships	N/A	●	●	●
Local Contributions	N/A	●	●	●
Fare and Advertising Revenue	N/A	●	●	●
Sales Tax	N/A	●	●	●
County Vehicle Registration Tax	N/A	●	●	●
General Obligation Bonds	N/A			●
Property Tax Levied Through CSDs	N/A			●

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10. Implementation Guidance

This section discusses the steps that Davidson County would take to implement the recommendations of this plan and the sequence in which they should be completed. Since implementation dates have not been selected, this section generally describes key tasks through years and phases of the project.

It is recommended that DCTS select a microtransit software that can optimize trips that involve both modes by limiting the waiting time to transfer. The increased frequency of microtransit would be of benefit to riders whose trips start and end within the zone. Additional guidance on selecting software and/or a microtransit vendor is provided in Section 10.5.

Selecting the Service Model

First, the County would finalize the selection of the microtransit zones and service model, taking into consideration the benefits and challenges associated with each option. This may involve additional community and stakeholder engagement to finalize the preferred operating scenario.

The County will be responsible for complying with federal and state requirements and regulations including Title VI, ADA, and Drug and Alcohol programs that it already complies with for deviated fixed-route and demand response service. If the County contracts with a provider for the service similar to its current arrangement for demand response service, then it would be responsible for the administration and oversight of the contract, including compliance with applicable regulations.

10.1 Objectives & Performance Measures

Transit system performance is evaluated based on goals and standards that reflect the operating

environment and the values of the community it serves. These goals should embody a community's vision for transit in supporting broader objectives such as addressing unmet needs, ensuring safety, enhancing regional connectivity, improving ADA accessibility, fostering economic development, and providing equal access to goods, services, and activities.

The County should continue to refine goals and strategies for future transit services, building upon those identified through this planning process. Key goals include:

1. **Enhance Accessibility:** Develop a transportation network that ensures easy access for all residents, regardless of their location within the county or neighboring areas.
2. **Expand Transit Service and Coverage:** Increase the number of routes and extend coverage to reach underserved communities, connecting them to essential destinations such as work, healthcare facilities, and resources.
3. **Improve Safety and Reliability:** Prioritize safety by implementing robust safety protocols and

Figure 10-1. Implementation Actions Based on Model Type

Implementation Action	SaaS Model	TaaS Model
1. Finalize Service Design (Davidson County Microtransit Study)		
2. Select the Microtransit Scenario		
3. Prepare Data Management and Equity and Accessibility Plans (optional)		
4. Procurement of SaaS or TaaS vendor		
5. Develop a Branding and Marketing Campaign		
6. Develop Detailed Operations and Safety Plans		
7. Test Dispatching Software		
8. Test Rider-facing Smartphone Application and Website		
9. Train Drivers, Maintenance Staff, and Administrative Staff		
10. Conduct Field Test		
11. Brand Microtransit Vehicles and Stop Infrastructure		
12. Launch the Marketing Campaign Prior to Service Launch		
13. Launch Service		
14. Collect, Analyze, and Report Data		
15. Monitor and Enhance Service		

Resource provided by Transit Agency Resource provided by microtransit vendor

ensuring reliable service. Riders should feel secure while using the microtransit system.

4. **Streamline Operations:** Optimize operations to create a seamless experience for riders. Minimize wait times, improve scheduling, and reduce inefficiencies.
5. **Reduce Greenhouse Gas Emissions:** Design the microtransit system with energy-efficient vehicles and sustainable practices to minimize environmental impact.
6. **Reduce Barriers:** Remove financial and logistical barriers by offering free rides and multiple options for booking trips and paying for trips if fares are charged in the future. Ensure that everyone can use the service without hindrance.
7. **Provide Flexible Service:** Increase flexibility by providing on-demand microtransit service while maintaining an option to pre-book trips to accommodate diverse needs.

Objectives and performance standards should also help identify priority transit markets, service priorities, and design parameters. An important next step for the County is to define measurable objectives related to the goals mentioned above.

The microtransit vendor contracted by Davidson County, whether implementing a TaaS or SaaS model, should provide access to a performance dashboard and source data. This will enable County staff to track performance measures on a daily, weekly, monthly, and annual basis. Performance measures will allow staff to properly monitor and evaluate project performance and help identify areas for improvement.

10.1.1 Performance Metrics and Standards

Metrics and standards should reflect the performance measures that align with established project goals and objectives. This may include Key performance indicators (KPI) that are developed to address standards for efficiency and service quality. It is important that these be outlined and included in any contract with a microtransit vendor, as they will be used to guide future service evaluation, set standards for future service changes, and to ensure compliance with ADA, Title VI, and other local, state, and federal requirements. This also facilitates monitoring and evaluation of the project and helps identify system improvements.

As a best practice, data metrics should reflect key performance indicators related to service and operations, as well as data on rider growth, rider experience, safety and security, and environmental impacts. Examples of some data points that could be required of a microtransit vendor along with the goals and objectives they support include:

- **Riders per Revenue Hour:** Calculated by dividing total riders by revenue service hours, this metric helps monitor ridership relative to vehicle hours. It is essential for boosting ridership and future service planning for additional ridership within a suitable service area. A minimum of three riders per revenue hour is best practice for microtransit (*Supports goals 1, 2, 3, 4, 6, and 7*).
- **Operating Cost per Trip:** Calculated by dividing total operating costs by total trips, this metric tracks the cost effectiveness of the system in relation to ridership over time (*Supports goal 4*).
- **Percent of Pooled Trips:** This includes the percent of total trips that have two or more passengers per trip. This is a key efficiency indicator showing that service is being optimized through shared rides and contributing to environmental sustainability (*Supports goals 4, 5, and 7*).
- **Percent of Trips within the Average Wait Time:** Prior to service implementation, DCTS must define the average wait time, assumed here as 20 minutes. This KPI tracks the percentage of trips meeting the defined wait time (*Supports goals 1, 2, 3, 4, and 7*).
- **Missed Trips:** The total number of trips missed

per day, measuring service reliability and quality. A missed trip is defined as a pickup later than a specified time from the planned window, e.g., more than 15 minutes late (*Supports goals 1, 2, 3, and 4*).

- **Call Center Average Wait Time:** The average time that a rider must wait before being connected with a staff person to assist them with booking at trip (*Supports goals 1, 3, 4, 6, and 7*).
- **Trip Booking Types:** The percentages of trips booked by the rider directly through the app and with assistance through a call-center (*Supports goal 6*).
- **Vehicle Average Downtime:** The average time a vehicle is out of service for maintenance. Minimizing downtime with local maintenance providers helps reduce the need for a larger fleet to maintain service standards (*Supports goals 3 and 4*).
- **Capacity Denials:** The total number of trips denied due to capacity restraints (*Supports goals 3 and 4*).

A comprehensive list of relevant data metrics may also include those listed below:

- Rider ID
- Pickup date and time
- Drop off date and time
- Ride distance (miles)
- Fare paid
- Completed rides
- Average deadhead distance
- Active drivers
- Estimated Time of Arrival (ETA)
- Completed ride %
- Drop off request locations (by polygon)
- Top 5 drop off request intersections
- Revenue miles
- Average wait time
- Vehicle failures
- Number of injuries
- Request origin latitude/longitude
- Request destination latitude/longitude
- Number of riders (utilization)
- Ride duration (minutes)
- Number of trips using mobility devices
- Average ride distance (miles)
- Average ride duration (minutes)
- Driver hours
- Pickup request locations (by polygon)
- Top 5 pickup request intersections
- Revenue hours
- Service interruptions
- Number of crashes
- No shows
- Rider demographics
- Percent of hybrid vehicles in fleet

10.1.2 Data Collection and Analysis

Consistent with the 2021 FTA guidelines, recipients of its discretionary microtransit grants are required to prepare Data Management Plans (DMPs). The purpose of the DMP is to address project-generated data collection, ownership, sharing, accessibility, and preservation. Furthermore, data sharing and preservation enable the validation of results by allowing others to further analyze results and merge similar and/or related datasets collected by others nationwide.

The DMP provides relevant information for data stakeholders, including the following:

- USDOT
- Government agencies
- Non-government stakeholders
- Researchers and educational institutions
- Transit systems interested in replicating this

project in their communities

- Independent evaluators

The DMP is organized as follows:

- **Section 1:** Project overview
- **Section 2:** Data overview
- **Section 3:** Data ownership, accessibility, and controls
- **Section 4:** Policies for re-use and re-distribution of reports created utilizing the data collected
- **Section 5:** Plans for archiving final research data and the preservation of access to them

DCTS would be responsible for analyzing microtransit service data collected and ensuring that the microtransit provider complies with DMP requirements. The DCTS should utilize the DMP to specify the data to be collected and outline sharing requirements in their contract with the microtransit provider.

10.2 Stakeholder Coordination

A key step in the implementation process is continuing to prioritize stakeholder coordination. This includes coordination between Davidson County, neighborhood associations, local municipalities, Davidson-Davie Community College, chambers of commerce, NCDOT, and major employers. A stakeholder committee may be needed during the early stages of the implementation process to provide input on changing mobility needs of Davidson County residents. Frequent and timely communication builds trust among stakeholders and the public and would be key for service success.

10.3 Applying Lessons Learned

Several communities in North Carolina have recently implemented microtransit service, while others are in various stages of exploration and planning. Microtransit projects in North Carolina and nationally provide Davidson County with several lessons learned for the County to consider when implementing microtransit service:

- Plan for the potential of increased ridership demand resulting from an on-demand service that is more convenient and efficient.
- Establish level of service metrics that may be different from those used for fixed-route or other demand-responsive services.
- Design a service that is equitable and accessible to diverse rider populations by operating a call center and accepting cash, vouchers, or pre-paid debit cards.
- Include an option for pre-booking trips when designing the service, which is especially important for riders needing to arrive at specific times for employment or medical appointments.
- Identify an on-call local maintenance provider to minimize vehicle downtime, if the County is not maintaining the fleet directly.
- Provide flexible service that includes curb-to-curb service for non-ambulatory passengers and virtual stops for ambulatory riders.
- Identify priorities of service by balancing wait times with the size of the service zone and the number of vehicles.

Through this study, DCTS has met with several peer transit services to understand what has worked well and lessons learned from their microtransit services. These peers can continue to be a resource as DCTS implements its services. In addition, NCDOT IMD continues to be a resource for technical assistance and potential funding.

10.4 ADA Requirements

When comingling microtransit systems and paratransit systems, transit agencies should pay special attention to the regulations of the 1990 ADA. The ADA is relevant to comingling because it sets the standard for how transit agencies should treat people with disabilities who utilize on-demand transit services like paratransit and defines the regulations for comingled service. If microtransit is comingled with paratransit, or if an agency uses any resource associated with microtransit to meet paratransit requirements, then the microtransit system must meet paratransit accessibility requirements.

The ADA defines "paratransit" as "comparable transportation service required by the ADA for individuals with disabilities who are unable to use fixed-route transportation systems" (§ 37.3). In this definition, the word "comparable" refers to fixed-route transit systems. This means that paratransit service must be comparable to fixed-route transit (not including commuter bus, commuter rail, or intercity rail systems) in terms of the following criteria:

- **Hours and days of service** (available throughout the same hours and days as fixed-route service)
- **Service area** (service within a width of three-fourths of a mile on each side of each fixed route)
- **Response time** (service to any eligible person at any requested time in response to a request for service made by reservation agents or mechanically)
- **Fares** (fares shall not exceed twice the fare for a similar trip on the fixed route system)
- **Operating without regard to trip purpose** (no restrictions or priorities based on trip purpose)
- **Absence of capacity constraints** (no limits on service availability, such as restrictions on the number of trips per person; waiting lists for service; or any operational pattern or practice that significantly limits the availability of service).

In addition to meeting these criteria, paratransit systems must provide "an ongoing mechanism for the participation of individuals with disabilities in the continued development and assessment of services to persons with disabilities (§ 37.137(c))," meaning that agencies must provide residents eligible for paratransit service with opportunities for ongoing public engagement.

In contrast, the FTA defines on-demand services as "any system of transporting individuals, including the provision of designated public transportation service by public entities and the provision of transportation service by private entities, including but not limited to specified public transportation service, which is not a fixed-route system" (49 CFR § 37.3).

Microtransit systems are a type of on-demand service. In addition, transit agencies that utilize on-demand services (i.e., vehicles, drivers, scheduling, and dispatch) to meet all or part of their complementary paratransit service requirements must meet all the paratransit requirements. This means that comingled microtransit systems must meet all ADA requirements for on-demand and paratransit services, including:

- **ADA compliant vehicles:** vehicles must be readily accessible to and usable by individuals with disabilities, including individuals who use wheelchairs
- **Integrated Service:** service integrates individuals with and without disabilities to the extent possible while still meeting individual needs
- **Equivalent service:** on-demand service is equivalent to fixed-route service regarding: Response time; Fares; Geographic area of service; Hours and days of service; Restrictions or priorities based on trip purpose; Availability of information and reservations capability; and any constraints on capacity or service availability)

- **All Applicable ADA requirements:** service meets all requirements, including nondiscrimination

There are some exceptions to ADA compliance criteria for on-demand transit systems. For instance, if a fixed-route system or a comingled paratransit system that shares a fixed-route fleet make route deviations to accommodate non-ADA-eligible riders, then paratransit regulations do not apply to these trips. Table 10-1 describes the conditions under which the exceptions apply. Refer to FTA Circular 4710.1 ADA Guidance for additional information on ADA requirements for transit service.

Table 10-1. Exceptions to On-Demand Transit Requirements (FTA C 4710.1)

Service Option	Type of Route Deviation	Legal Requirements
Route deviation that is demand responsive	Deviates for all riders, including those without disabilities publicly advertised as route deviation service	Not applicable
Comingled paratransit and fixed-route service on the same vehicle	Deviates only for ADA paratransit eligible riders	Apply only to paratransit trips
Fixed-route service with separate paratransit service (operated with separate vehicles or dial-a-ride service)	Not applicable	All paratransit laws apply

10.5 Microtransit Vendor Guidance

DCTS may refer to this section as a reference for important microtransit vendor requirements for effective service under SaaS or TaaS models. These requirements may be further customized to meet DCTS unique needs. Some vendors may be able to assist with additional services as identified in Section 10.5.3.

10.5.1 SaaS

- Rider App
  - Intuitive and easy-to-use with minimal training
  - Custom branding unique to service
  - Accessibility features, including meeting WCAG 2.1 AA and ADA requirements
  - Offered in native language of key rider groups, such as Spanish
  - Multiple payment options available in the rider app, including credit cards, prepaid debit cards, vouchers, and cash payment options (depending on the department's services needs)
  - Ability to pre-schedule trips, particularly for time-sensitive trips such as medical appointments
- Integrated Regional Transit
  - Ability to view the following in the rider app:
    - Regional bus stops and routes
    - Intercity bus stops and routes
  - Ability to book the following in the rider app:
    - Deviated fixed-route trip and on-demand trip proposal
    - Intermodal trip proposals, consisting of deviated fixed-route and on-demand trip segments
- Driver Application

    - Routing based on mapping software layers, such as Google Maps, Apple Maps, and/or custom mapping layers
    - Routing that considers traffic speeds, traffic, detours, and road closures
    - Multi-channel communications to notify riders (e.g., text, phone, email)
    - Pertinent rider profile information including origin, destination, companions, and ADA eligibility
- Dispatch Center
    - Single view into all DCTS services
    - Intuitive and easy to use booking capabilities on behalf of riders
    - Schedule and planning view to easily track and message riders and drivers
    - Map view to see all microtransit and deviated-fixed route vehicles and corresponding drivers in service area
    - Real-time service alerts to escalate concerns that require immediate resolution
- Trip Routing Rules
    - Enable door-to-door, corner-to-corner, pre-set virtual stop, or node service for pick-ups and drop-offs
    - Modify service parameters (e.g., maximum walk distance, maximum trip duration) based on location / region, time of day, day of the week, and trip type(s)
    - Routing based on real time speeds and road closures
    - Set and enforce trip rules such as mobility hubs assigned to each microtransit zone.
    - Multimodal trip planning and booking that compares available deviated fixed-route and on-demand trip options, then recommends the best trip(s) to riders based on agency's rules
- Reporting & Audit Support
    - Standard, filterable, and self-service analytics dashboards to agency staff
    - Raw data exports for ad hoc queries and integration into planning software
    - Map-based reporting, showing rider origins & destinations and hot-spots
    - Automated National Transit Database (NTD) and NCDOT OpStats reporting
- Fares & Pricing
    - Ability to accommodate a variety of pricing models, such as:
        - Flat fare
        - Distance based fare
        - Day of week-based fare
        - Time of day-based fare
        - Location/origin-based fare (ex. free rides to or from the senior center) based
        - Additional passenger-based fare (e.g., ability to discount additional riders, service animals, personal assistants)
    - Ability to provide promotional pricing, such as:
        - Free rides (e.g., for the day, to or from a specific location, etc.)
        - Ad-hoc promo codes upon request (for special events, weather / emergencies, etc.)
        - Ability to create codes / vouchers for hospitals, schools, food banks, etc.
    - Ability to provide fare options for the unbanked, such as:
        - Cash
        - Locally purchased transit card
- Integrations to Existing or Future Systems
    - APIs that can provide origin/destination to third party applications (e.g., transit planning applications)
    - APIs for fare integration

- APIs for other third-party integrations, as agreed upon

- Technical Support and Customer Success Management
  - Provide 24-7 vehicle software support
  - Provide 24-7 rider app support (e.g., through call center)
  - Provide a single point of contact for support issues and to discuss service performance and opportunities for improvement

10.5.2 TaaS Operations

- Software Requirements
  - Same requirements under SaaS apply, see Section 10.5.1
- Operational Support
  - Oversee local operations on a regular basis (local management)
  - Adjust fleet supply according to ongoing shifts in demand trends to optimize vehicles on the road
- Driver Acquisition Expertise & Onboarding
  - Recruit, screen, and onboard drivers that align with DCTS requirements
  - Manage background checks and other required screenings
  - Provide drivers with onboarding resources outlining service specifics
  - Provide driver training, including creating and delivering educational content / training on agreed upon topics
  - Provide ongoing federal, state, and local driver compliance monitoring and management (e.g., drug and alcohol testing)
  - Provide live driver support during operating hours
- Vehicle Sourcing
  - Provide branded, dedicated fleet, with in-state license plates
  - Regularly maintain and clean available fleet
  - Adjust fleet size in response to demand in a timely manner
  - Perform maintenance locally to minimize downtime
  - Operate an adequate number of wheelchair-accessible vehicles
- Customer Service
  - Provide call center support for riders who want to book a ride by talking to an agent in lieu of using the rider app
  - Troubleshoot and respond to rider complaints (either directly to the rider, or to the partner)
  - Provide call center support and share relevant call center stats / trends (e.g., average wait time, longest wait time)
- Technical Support and Customer Success Management
  - Provide 24-7 vehicle software support
  - Provide 24-7 rider app support (e.g., through call center)
  - Provide a single point of contact for support issues and to discuss service performance and opportunities for improvement
  - Develop a process for riders to provide comments (e.g., comment cards, through the app)
  - Formalize a comment response process
  - Hold reviews every 3-6 months
  - Distribute surveys focusing on customer satisfaction
  - Distribute survey findings to promote transparency and notify customers how concerns will be addressed

10.5.3 Additional Support

- Marketing & Rider Growth
  - Consistent or ad hoc marketing support throughout the contract duration (e.g., email,

posters, social posts, flyers, newsletters, TV ads)
    - Design, distribute, collect, and analyze rider surveys through appropriate channels (e.g., email, text, paper copies, or rider app)
- Community Engagement
    - Support the department with presenting on / representing the service at key local community events
    - Support press events as needed, and facilitate ride alongs for key stakeholders (e.g., public officials)
    - Interface with riders or key target populations / groups during one-on-ones to educate them on the service and capture their feedback about the service
- Ongoing Service Design
    - Model and recommend service changes based on changes to budget, department priorities, or community needs
    - Implement service changes with minimal disruption to existing services
    - Update customers on upcoming service changes to promote transparency
- Funding & Policy Support
    - Policy and public relations support to advocate for service and garner support within the community and with elected / appointed officials
    - Full writing support for grants that can be used to fund or expand the service
- Ongoing Service Consulting
    - Provide robust data and analysis on ridership trends, rider experience, most frequent destinations and rider use cases
    - Provide proactive and ad hoc recommendations to better meet service goals
    - Recommend and facilitate ways to leverage the proposed solution for other important use cases / community needs (e.g., support student transportation)

10.6 Detailed Implementation Plan

These recommendations include the service and system recommendations following extensive analysis of existing conditions and intentional public engagement. Through the planning process and stakeholder coordination, the following items should be addressed prior to implementation:

- **County Board of Commissioners approval:** In order to move ahead with implementation, the Davidson County Board of Commissioners will need to approve the transit recommendations.
- **Regional connections:** The service should be coordinated with the existing PART service to provide easy connections between the two services. This could include establishing scheduled transfers at various times of the day between the microtransit service and the existing PART service.
- **Operating characteristics:** Determine operating characteristics for microtransit including service hours, frequency of service, days of the week, and vehicle type.
- **Fares:** If fares are charged, coordinate the fare with the existing DCTS service and develop a fare structure that includes transfers to PART, day passes, and monthly passes. Establish an app with convenient fare purchase capabilities and provide a few physical locations for the public to purchase their fare, which is especially beneficial for unbanked riders.
- **Contracting:** DCTS will need to procure a vendor for microtransit software at a minimum, and potentially a provider to operate the service, if the TaaS service model is selected.

- **Garnering support:** Major employers and institutions such as Davidson-Davie Community College and DC Connect have already demonstrated significant interest in a microtransit service. The County should continue coordinating with these stakeholders and exploring the potential for financial support from stakeholders.
- **Marketing:** It is critical to market the service. This includes branding the service on vehicles and providing public information through signs, social media, transit service website, and public outreach.
- **Monitoring the service after implementation:** Once the new service is in place, performance should be monitored.

NCDOT IMD Statewide Technology Contract NCDOT IMD prepared a Request for Proposal (RFP) for technology services, including microtransit, that allows transit providers around the state to select a software vendor from a statewide contract. This contract would likely simplify and streamline the procurement process for Davidson County.

The following checklists present a summary of the key implementation milestones for implementation. Implementation steps are organized into three distinct phases, each with administration, operations, and financial components. For guidance on which steps may be performed by the agency or vendor based on TaaS and SaaS models, please reference Figure 10-1.

10.6.1 Phase 1: Planning

Table 10-2 defines the necessary steps that a system will need to take in the Planning Phase (Phase 1) for Administration, Operations, and Financial Planning. As noted by the checked boxes, DCTS has completed the vast majority of the planning steps.

Table 10-2. Phase 1: Planning

Phase 1: Planning
Administration
☑ Analyze demographics and existing transit performance data
☑ Define and analyze preliminary microtransit zones
☑ Integrate accessibility and equity into service design
☑ Estimate capital and operating costs for SaaS model
☑ Identify potential funding sources
☑ Develop an implementation plan o Identify and Develop Fare Policy
☑ Finalize Service Design o Zone Boundaries o Stop Type o Stop Locations o Pre-scheduling Trips

Phase 1: Planning
Administration
☐ Select Microtransit Model ☐ Prepare a DMP that addresses data stewardship, standards, storage, data ownership and access ☐ Develop an Equity and Accessibility Plan (EAP) that includes ADA considerations o Service Equivalency for Seniors, Populations with Mobility Impairments and Other Disabilities o Service Equivalency for the Unphoned, Underphoned and Low Connectivity Riders o Service Equivalency for the Unbanked and Underbanked ☐ Develop a Staffing Plan (Org Chart, Positions Required, Job Descriptions)
Operations
N/A
Financial
☐ Allocate resources to microtransit in the next fiscal year budget.

10.6.2 Phase 2: Contracting and System Start-up

Table 10-3 defines the necessary steps that a system will need to take in the Contracting and System Start-up phase (Phase 2) for Administration, Operations, and Financial Planning.

Table 10-3. Phase 2: Contracting and System Start-up

Phase 2: Contracting and System Start-up
Administration
☐ Procure a SaaS vendor using an RFP or select a vendor off the NCDOT IMD Statewide Technology Contract if available *or* a TaaS vendor using an RFP ☐ If applicable, receive board approval for selected vendor ☐ Develop a branding and marketing campaign that includes elements such as o A new logo o Vehicle wrap o New rider guide o Website content o Direct mail postcard o Promotion and education video ☐ Develop a detailed operations plan and safety plan that includes vehicle storage, vehicle maintenance, cleaning, and safety procedures ☐ Train drivers, maintenance staff, and administrative staff on key elements of the service o Safety procedures o Maintenance of microtransit vehicles o Use of the dispatching software o Use of the rider-facing booking tools o Process for riders who cannot book rides using the smartphone application or website o Transfer policies from microtransit to fixed-route o New fare structure (if applicable) ☐ Launch the Marketing Campaign, including press releases, ribbon cutting event, service promotion

Phase 2: Contracting and System Start-up	
Operations	
☐	Procure vehicles if necessary
☐	Field test locations that may be more difficult to access or present safety concerns such as operating in retail parking lots
☐	Modify the operations and safety plans as necessary based on the field test
☐	Test dispatching software prior to training drivers, maintenance, and administrative staff
☐	Test rider-facing smartphone app and website applications prior to training drivers, maintenance, and administrative staff
☐	Confirm reports and exports are functionally correct and contain all necessary data
☐	Brand microtransit vehicles with vehicle wrap and logo
☐	Install microtransit signs at any designated microtransit stops
☐	Install driver tablets on the vehicles
☐	Install microtransit booking kiosks at locations where riders may need assistance
☐	Launch service
Financial	
☐	Coordinate funding for service
☐	Fulfill funding reporting requirements

10.6.3 Phase 3: Implementation and Monitoring Service

Table 10-4 defines the necessary steps that a system will need to take in the Implementation and Monitoring Service phase (Phase 3) for Administration, Operations, and Financial Planning.

Table 10-4. Phase 3: Implementation and Monitoring Service

Phase 3: Implementation and Monitoring Service	
Administration	
☐	Prepare Title VI review to ensure that the level and quality of the services are provided in a non-discriminatory manner
☐	Update and establish regular procedures for maintaining system goals, objectives, and strategies based on first year of service
☐	Develop method for collecting feedback from riders
☐	Prepare educational materials that organizations, colleges, and employers can use to promote the microtransit service to their clients, students, and employees
☐	Assess service for potential service improvements, reviewing rider and stakeholder feedback
Operations	
☐	Adjust the microtransit service area based on demand including updates to frequency, service hours, and service days
☐	Update service based on development of new transit generators including residential, large shopping centers, and new employers
☐	Track operational data for performance standards
☐	Report NTD data on an annual basis
Financial	
☐	Identify additional sources of funding to sustain the microtransit service
☐	Monitor potential grant and funding opportunities
☐	Fulfill funding reporting requirements

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Appendix A. Public Engagement Plan

Public Engagement Plan

The Public Engagement Plan (PEP) will guide the community and stakeholder outreach for the duration of the project and will include multiple outreach techniques and opportunities to prepare a microtransit feasibility study that is responsive to the community. The PEP includes strategies for equitable engagement to reach traditionally underserved community groups through partnerships with local community leaders to promote engagement opportunities and focus groups. Additionally, custom promotional materials such as social media posts and website messages will be developed to promote engagement opportunities for the project.

Goals of the PEP include the following:

- Present goals and objectives for public participation in the project.
- Identify key stakeholders and how they will be engaged.
- Recommend public involvement techniques and materials to fully engage the public in the project decision-making process. Describe public meeting structure and schedule.
- Create a timeline for public engagement activities.
- Develop a workflow for continuous updates to the public via the website and other outlets.
- Outline key roles and responsibilities of the project team, IMD, and the County related to each public engagement task.

The PEP is a dynamic document that will be updated throughout the project development process to reflect changes in the project. The PEP includes the following engagement components:

- Focus Group Meetings
- Stakeholder Interviews
- Surveys

The results of the community and stakeholder engagement will be summarized within the *Davidson County Microtransit Feasibility Study* (the Feasibility Study). The data collected during the public engagement effort will be used to inform the decision-making process.

Deliverables: Summary of public engagement, meeting materials and summaries, virtual materials, interview guides and notes, survey instruments and results.

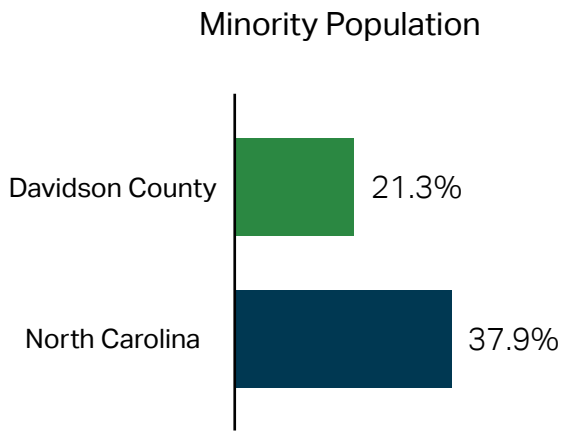
Strategies for Equitable Engagement

To design and implement transit services that most effectively meet defined transportation needs, the Project's public engagement will take into account the following factors: Davidson County's minority, low-income, Limited English Proficiency (LEP), lower internet access, lower vehicle access, disabled, younger, and older populations. All demographics presented below are from the US Census Bureau, American Community Survey 5-year Estimates (2017-2021).

Minority Population

Finding: Davidson County has a lower proportion of its population who identify as traditional minorities than the state as a whole.

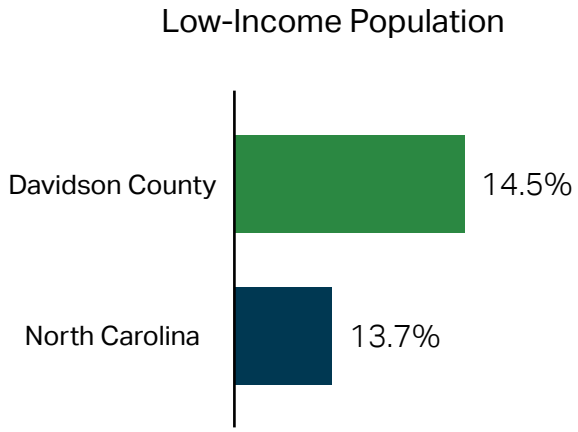
In the County, 78.7% of people identify as White, Non-Hispanic, which means that 21.3% identify as a minority. Minorities include all races that are Non-White and Hispanic populations that are also White. Under 8% (7.6%) of individuals are Hispanic. By incorporating minority perspectives into microtransit planning, the study ensures a more comprehensive and effective transportation system for all residents.



Households Below the Poverty Threshold

Finding: People in Davidson County are living below the poverty line at a higher rate than the state.

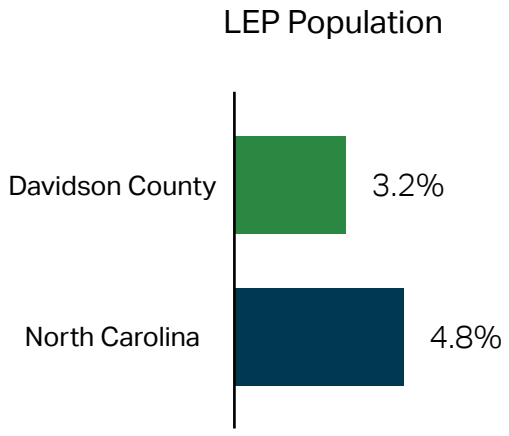
Almost 15% (14.5%) of Davison County's population is living below the poverty level. This is higher than that of the state at 13.7%. Out of the 166,072 people in Davidson County, 5.6% live below the 50% poverty line and 11.3% between 100% and 149%. By including poverty thresholds in microtransit planning, transit services for economically disadvantaged people and families are guaranteed to be accessible, equitable, and responsive to their needs.



Limited English Proficiency (LEP)

Finding: Similar to the state, the majority of LEP adults in Davidson County speak Spanish as their first language.

Under 4% (3.2%) of Davidson County's population is LEP. This is lower than the state's value of 4.2%. Within Davidson County, Spanish is the most common language spoken among persons who do not speak English, accounting for 2.4% of speakers. Other Undo-Euro comes in second at 0.2%, followed by Asian/Pacific at 0.6%. These figures are in line with the state's. Considering languages spoken ensures that microtransit services are inclusive, effective, and responsive to the diverse linguistic backgrounds of passengers. Additionally, study outreach materials developed in multiple languages may be more effective in reaching future potential riders.

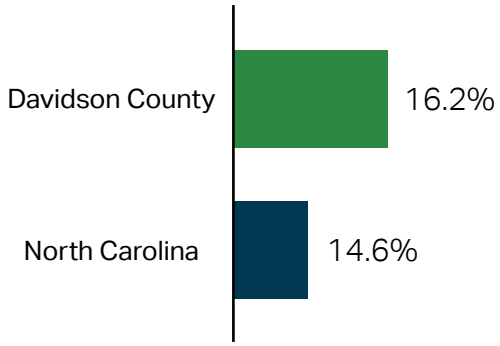


Internet Access

Finding: Compared to the state, a higher percentage of people in Davidson County have access to the internet.

Under 20% (16.2%) of individuals have limited access to internet in Davidson County. Limited access to Internet refers to having a dial-up internet service with no other type of Internet subscription, internet access without a subscription, or no Internet. This rate is higher than the state's at approximately 15%. Microtransit systems that take internet access into account are certain to be effective, responsive, and in line with the modern passenger's expectations for digital experiences. Assessing internet access also helps the project team determine how best to reach out to existing riders and the general public for feedback during the study.

Households with Limited Access to Internet

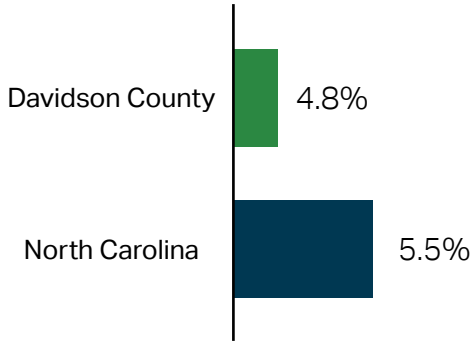


Zero-Vehicle Households

Finding: Compared to the state, a lower proportion of individuals in Davidson County experience difficulties getting access to a personal automobile.

Out of 66,986 individuals in the County, 4.8% lack access to a vehicle, 26.4% have access to at least one vehicle, and 68.8% have access to two of more vehicles. In comparison to the state (63.2%), a greater percentage of households in the county (68.8%) have access to two or more vehicles. In general, Davidson County has a smaller percentage of households without access to a vehicle (4.8%) than the state (5.5%). By considering car access, the study can ensure that microtransit services align with existing car infrastructure, enhance connectivity, and provide equitable options for all commuters.

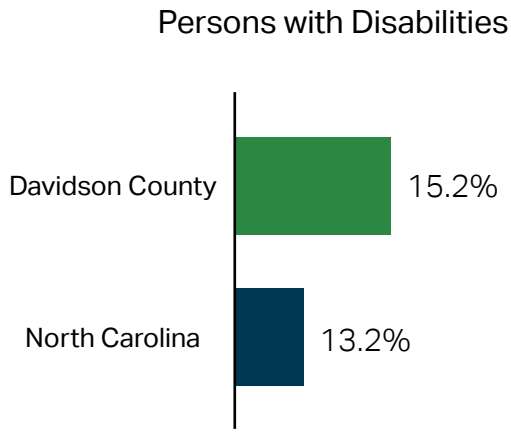
Households without Access to Vehicles



Disabilities

Finding: Compared to the state as a whole, Davison County has a higher overall percentage of people with disabilities.

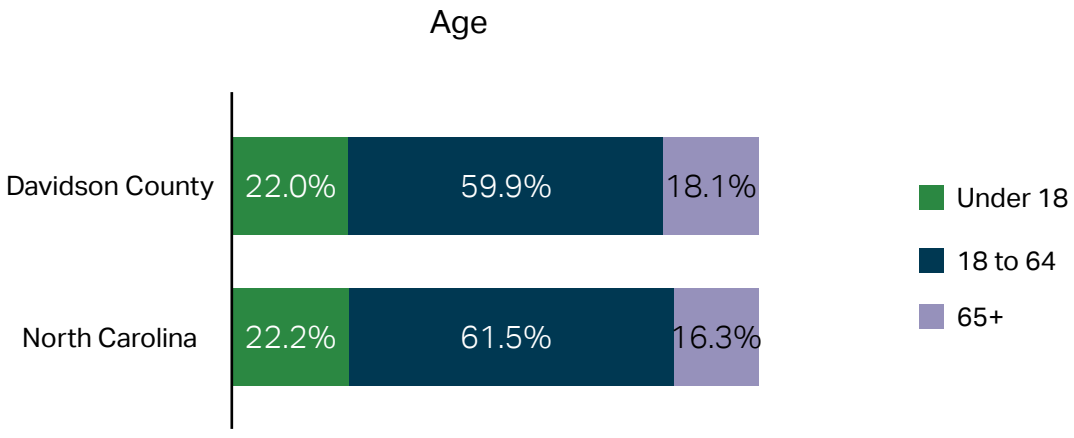
The percentage of people with disabilities in Davidson County is over 15% (15.2%). This is marginally higher than the 13.2% state rate. Incorporating considerations for populations with disabilities ensures that microtransit services and associated infrastructure are equitable, ADA-compliant, and responsive to the diverse needs of all passengers.



Age

Finding: The age distribution of Davidson County is similar to that of the state.

Out of 168,002 individuals in Davidson County, 59.9% of people are between the ages of 18 and 64, followed by 22.0% of people under the age of 18 and 18.1% of people who are 65 and older. These percentages are in line with state averages. Microtransit serves a broad spectrum of users, including individuals of various ages. Knowing their requirements guarantees that the service is applicable and available to everyone.



Marketing/ Communication Materials

- FAQs
- How to Guides (use the service, download the app, etc.)
- Route Information
- Postcards
- Promotional Flyers
- Signage
- Ads
- Email (Project staff)

A variety of handouts will be created to provide information about the project. They will help promote the project and may be distributed in public places, community centers, and businesses to raise awareness during community open houses and survey periods. All handouts will be updated to reflect the most current information and will be available on the project webpage. Handouts include:

- Project Fact sheet
- Maps with microtransit service area recommendations
- FAQs
- Event flyers
- Other informational materials

Social Media

Social media is a useful instrument for public participation that may be used to share basic information, facilitate in-the-moment idea sharing, have conversations on a variety of subjects, and solicit feedback. Social media content may be developed and distributed through existing accounts operated by the County and IMD to reach the largest audience possible.

- Facebook (Senior Services)
- Instagram (Senior Services)
- Youtube
- Nextdoor

Engagement Activities & Tools

The following section provides an overview of the engagement activities and accompanying tools that are recommended during the planning process. Each component of public engagement will answer important questions designed by the project team to inform the community on making microtransit service more effective and efficient for the County, the public, and key stakeholders.

Pop-Up Event

One pop-up event will be held at the Davidson-Davie Community College. The purpose of this event is to provide an overview of the project and to gather information from the community, as well as students, about unmet mobility needs. Light food and beverages may be served.

Community College Pop-Up Event

Purpose: Discuss the project and learn more about unmet community mobility needs.

Date	Location
August 27, 2024	Davidson-Davie Community College

Virtual Opportunities

AECOM will provide up to two (2) opportunities for public engagement through virtual methods so that the public can engage in the manner most accessible to them concurrently with the public workshops. Information that will be presented at the in-person public workshops will also be posted on the DCTS website. AECOM will produce two (2) short videos (5 min max.) in PowerPoint with voice over to post on social media and the County's website. AECOM can also produce Remix maps that allow for public review and commenting on existing conditions and proposed recommendations. Virtual opportunities will be complemented by online surveys discussed at the end of the PEP.

Materials:

- Two (2) short videos (5 min max.) in PowerPoint with voice over to post on social media and the County's website.
- AECOM can also produce Remix maps that allow for public review and commenting on existing conditions and proposed recommendations.

To be determined based on on-going engagement related to the CTSP. Will depend on the survey.

Focus Group Meetings

AECOM will facilitate up to three (3) 30–45-minute focus group meetings that may include a diverse group of representatives from other County departments, local governments, nonprofits, economic development, businesses, health, and educational facilities to understand Davidson County's mobility needs holistically. These meetings will ideally be held in-person on the same day as the pop-up event. Alternatively, they could be hosted virtually.

AECOM staff will meet with key stakeholders to engage in conversations about the project and build trust by exchanging information openly. Hosting these meetings allow the broader team to:

- Drive awareness of the Feasibility Study
- Showcase the opportunity for microtransit to supplement existing services

- Explore opportunities for continued collaboration
- Gather feedback and set expectations for follow-up

Focus groups will be an essential component to this project. Focus groups will be identified through the curated stakeholders list, as well as recommendations from the County and IMD. Focus groups can be broken down into the following categories: 1) Social Services, Health Institutions, and Educational Institutions; 2) Transit & Multimodal Advocates; 3) Transportation Systems; and 4) Business Community. A comprehensive list of potential stakeholders is provided below.

Category	Name
Social Services, Health Institutions, and Educational Institutions	• United Way of Davidson County • Habitat for Humanity • Davidson-Davie Community College • Novant Health Thomasville Medical • Atrium Health Wake Forest Baptist | Lexington Medical Center • YMCA • DC Connect
Transit & Multimodal Advocates	• Davidson County Transportation Advisory Board • Existing deviated fixed-route riders • Potential riders • Friends of Greenways in Davidson County
Transportation Systems	• Davidson County Transportation Advisory Board • Existing deviated fixed-route riders • Potential riders • Friends of Greenways in Davidson County
Business Community	• Lexington Area Chamber of Commerce • Thomas Area Chamber of Commerce • Davidson County Economic Development Commission

Focus Group Meeting #1: DC Connect, Inc.

Purpose: DC Connect, Inc. acts as an entry point to local resources for Davidson County residents who are experiencing homelessness, substance misuse, and/or post incarceration. DC Connect, Inc. will help provide input on the project's vision and goals, as well as information for the Needs Assessment.

Date	Location
June 28, 2024	Davidson County Parks and Recreation Building (West Campus)

Materials: Develop list of open-ended focused questions and Poll Everywhere exercises.

Focus Group Meeting #2: Davidson-Davie Community College, Local Employers, Economic Development Partners, Chamber of Commerce

Purpose: A second focus group meeting will be held with Davidson-Davie Community College, local employers, economic development partners, and chambers of commerce (Lexington Area Chamber of Commerce, the Thomas Area Chamber of Commerce, and the Davidson County Economic Development Commission) in Davidson County to understand the needs of potential and current riders that commute to and from these businesses and groups via public transit.

By providing better mobility options, microtransit initiatives can boost economic growth. As a result, the project team will work to better understand the County's previously unserved or underserved areas. The availability of dependable transit for job seekers may also be a key topic of conversation.

The project team may administer the survey during this meeting. Employers may also share the survey with employees.

Date	Location
August 27, 2024	Davidson-Davie Community College

Materials: Develop list of open-ended focused questions and Poll Everywhere exercises.

Stakeholder Interviews

Following the conclusion of the focus group meetings, AECOM will conduct up to three (3) interviews with stakeholders that have a special interest or may be affected by the project. Interviewees may be focus group participants that wish to provide additional information to the project team following the focus groups.

Date	Name	Affiliation
September 11, 2024	Kimberly Horton, Workforce Development Center Manager	Goodwill
October 21, 2024	Joe Wallace, President/CEO	Lexington Area Chamber of Commerce
October 21, 2024	Erika Mueller, HR/ Payroll Manager	Facility Logistic Services

Survey

Surveying existing DCTS transit riders, drivers, and the general public will be critical to preparing a feasibility study that is responsive to community mobility needs. The survey will help identify effective methods for community involvement by identifying concerns, assessing the most effective communication methods, and determining the preferred frequency of communication. It will be available online and printed, as well as in English and Spanish. AECOM will collect and analyze the survey results in narrative and graphical form.

Feedback & Engagement: Documentation & Evaluation

Every outreach event gives the general public a chance to offer input on how the system currently serves their needs and how microtransit might more effectively help them travel. Performance metrics, including the number of individuals expected to participate and the target audiences that should be engaged, will be developed at the start of the project for the engagement process. Every outreach event will have a summary created following it that includes information on who was invited, who attended, an overview of the program, an overview of the feedback that was received, and any additional information required to monitor results.

At each phase of the project, the analytics of who attended against who was invited will be compared in accordance with the equity and accessibility strategy. The project team may modify the PEP to enhance performance outcomes if needed. One way to make sure outreach efforts reach a varied audience of potential riders who fit the service area's demographics would be to alter the outreach campaign's invitational technique.

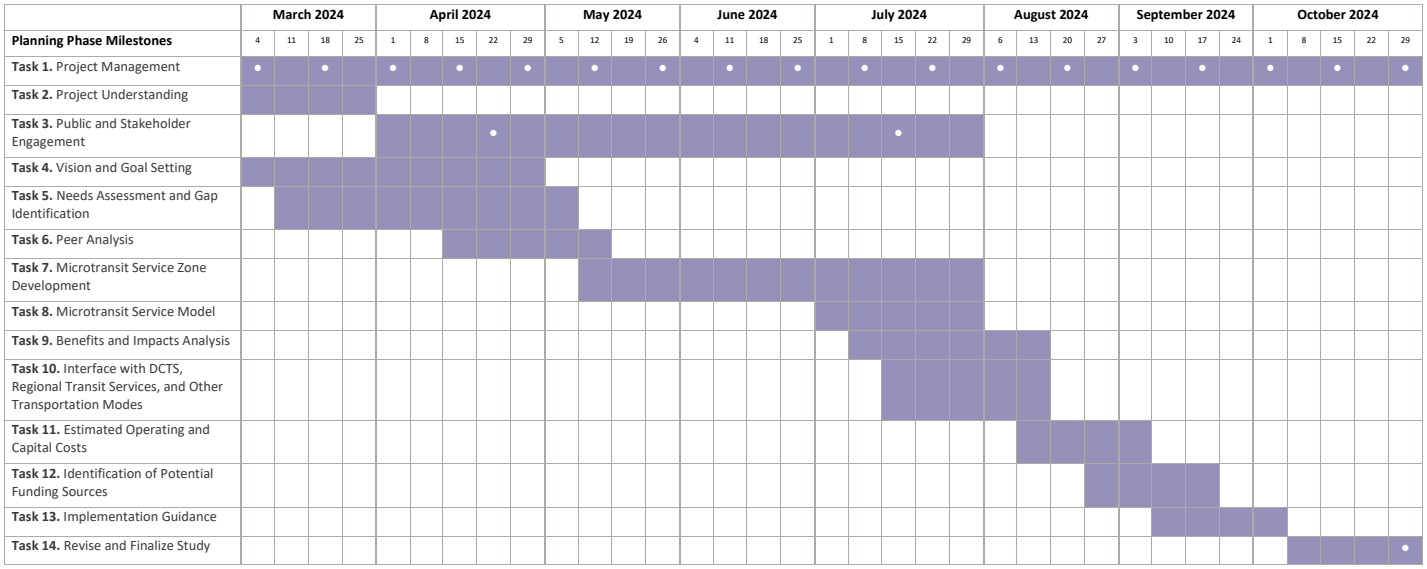
Feedback will be welcomed by focus groups, postal mail, email, and verbally during public meetings. A written or spoken narrative, as well as manually or digitally created maps and photos, can all be used as comments.

As the project moves forward, the input and remarks received will be compiled. The project team will tell participants at the beginning of each step on how their input will influence future phases in the study. By establishing expectations and providing regular updates to the community, this approach fosters trust and motivates the community to continue providing input on the project.

PEP Milestones Table

The following table includes a summary of the tasks, tools, and timeframes for the PEP. A summary of findings for each engagement activity is provided in the feasibility study.

Engagement Activity	Platform/ Tools/ Materials	Responsible Party	Date
Pop-Up Event	Platform: In-person at Davidson-Davie Community College Promotion: Social media posts, press release, flyers, and website message. Place narrated PowerPoint online. Materials: • Project overview handouts • Boards with recommendations • Comment sheets	AECOM	August 27, 2024: Davidson-Davie Community College
Virtual Opportunities	Platform: Virtual (Teams or Zoom)	AECOM	TBD
Focus Group Meetings	Platform: In-person Materials: • Ice breaker exercise • Focused discussion questions (Poll Everywhere)	AECOM	June 28, 2024 (FG #1): Davidson County Parks and Recreation Building (West Campus) August 27, 2024 (FG #2): Davidson-Davie Community College
Stakeholder Interviews	Platform: virtual	AECOM	September - October 2024 virtual
Survey	Platform: Microsoft Teams Task: Develop survey questions (online and paper copies); translate into Spanish.	AECOM	May 22, 2024 - September 11, 2024


March 2024
April 2024
May 2024
June 2024
July 2024
August 2024
September 2024
October 2024
4 11 18 25 1 8 15 22 29 5 12 19 26 4 11 18 25 1 8 15 22 29 6 13 20 27 3 10 17 24 1 8 15 22 29
Planning Phase Milestones
Task 1. Project Management
Task 2. Project Understanding
Task 3. Public and Stakeholder Engagement
Task 4. Vision and Goal Setting
Task 5. Needs Assessment and Gap Identification
Task 6. Peer Analysis
Task 7. Microtransit Service Zone Development
Task 8. Microtransit Service Model
Task 9. Benefits and Impacts Analysis
Task 10. Interface with DCTS, Regional Transit Services, and Other Transportation Modes
Task 11. Estimated Operating and Capital Costs
Task 12. Identification of Potential Funding Sources
Task 13. Implementation Guidance
Task 14. Revise and Finalize Study

County conducting survey on providing on-demand transportation

By Sharon Myers The Dispatch
Sep 5, 2024

DAVIDSON COUNTY - The Davidson County Transportation System, known as DC Rides, is considering adding on-demand pickups and drop-offs for residents in the future.

Currently, DC Rides has four weekday bus routes in Lexington and Thomasville for buses that make scheduled stops at specific sites, such as Lexington and Thomasville medical centers, Davidson Davie Community College, local grocery stores, and other high-traffic areas. It has a route in only Thomasville on Saturdays.

But the county transportation department is conducting a survey to gather public interest in on-demand "micro transit" for areas in Denton, Wallburg and Midway.

Micro transit is a ride-sharing service, similar to Uber and Lyft, that uses smaller vehicles to provide on-demand transportation that can be scheduled through an app or call center. The new program would not replace the current demand/response transportation in which appointments are made two days in advance.

“Providing transportation for our citizens is important for their quality of life,” said Richard Jones, director of Davidson County Transportation Services. “There are folks who don’t have access to a vehicle for many reasons, and they have to rely on family or friends, which can limit them. We already have several programs, but his would allow them to have more flexibility.”

Benefits of the program are pick-ups and drop-offs at a specific location rather than one of the DC Rides bus stops and having more service times. But riders may have to share vehicles, depending on the number of transportation requests in a certain time period.

The micro transit study is to add transportation for currently underserved areas in the county. It would not replace any current program, including the DC Rides bus services in Lexington and Thomasville.

Jones said the survey will run through late fall, and then after gathering all the data, the county would apply for a federal grant to run a pilot program in one of the specified areas to determine whether it is feasible to expand to other areas.

In addition to stops within Davidson County, DC Rides connects with the Piedmont Authority for Regional Transportation at PART's Park & Ride on the RED Route in Thomasville. PART's Route 9 continues to High Point, downtown Greensboro and other parts of the triad.

The Davidson County Transportation Service micro transit survey can be found at https://rb.gy/np1cd9

Appendix B. Peer Agency Interviews

Hall County, GA (WeGo)

Date: 7/01/24 | Time: 1:30 pm

Service Overview

Why was your community interested in microtransit?

Initially, Gainesville-Hall County had utilized fixed-route service as well as Dial-a-Ride. Fixed-route service was inefficient, and ridership had plateaued after a certain point. Wait times were also long with an hour-long deadhead. The feasibility study they conducted in 2019 concluded microtransit would be beneficial for riders and would be more cost-effective than existing fixed route.

Was there a pilot period? How was performance evaluated?

Their pilot period began in December of 2020, starting out within just Gainesville, with a service area of approximately 30 square miles. Strong ridership during the pilot period allowed them to fully transition to county-wide microtransit in July 2021 and end their fixed-route and dial-a-ride services.

How does the microtransit service interact with other transit services your agency or regional agencies provide?

Microtransit replaced existing transit within the county. Riders cannot book rides outside of the county, and there has been some pushback on connecting WeGo to larger urban systems outside of Hall.

However, there is a possibility that Gwinnett County will allow rides from Hall to reach the airport with the transportation service they're working on.

What are the considerations for selecting the microtransit service model (e.g., SaaS, TaaS)?

SaaS-already had the infrastructure in place to run the service. Didn't have to alter contracts. Wanted more control over the service.

How many staff are currently employed at your agency? Are additional staff needed for microtransit

5.5 admin staff

Do you operate the microtransit service directly, or do you use a vendor/contractor?

Via

What software do you (or the vendor) use to schedule/develop itineraries and route selections?

Via's software

The Service

Is microtransit scheduling available both over the phone and online?

App and call center only

Are there booking and payment options for riders that are unbanked and/or do not have smartphone/ internet access?

They are a cashless system. WeGo has a voucher system that allows riders to enter in a unique voucher code within the app to redeem online.

What is the current microtransit ridership, and if applicable, how does that compare to the previous demand response or fixed-route service?

N/A

How much does your microtransit service cost to operate per hour and annually?

$5.20 per ride (FY 2023)

What funding sources will be used to operate microtransit?

5307 funding

How many vehicles are you using for microtransit and did you purchase or lease them?

31 vehicles. Hope to purchase 4 EVs this year. Up to 15 vehicles in service at a time to meet demand. All vehicles are WAVs.

Can you please confirm your service area boundaries (how much area do you cover)?

Hall County

Implementation

Has any public engagement been conducted regarding microtransit service (planning, implementation, evaluation)?

Public hearings were held in person and online. They trained individuals on the app and system information at meetings at terminals.

What marketing efforts did you undertake to promote the service?

They already knew a lot of the riders and promoted the service through news articles, flyers, signage on buses, and called Dial-a-Ride service riders personally.

What challenges have you encountered and what lessons learned can you share?

They were unable to meet all ride requests and found it hard to find vehicle operators. Itay take riders 45 mins to get a vehicle. They found that space was diminished with smaller vehicles. Some riders have created accounts in instances where they lost ride permissions on their first account.

Anything else you would like to share?

The agency can set the seat capacity for each vehicle. A secret advance reservations scheduling pilot is available to ADA riders and dialysis patients. Translation services are available to drivers (Google Translator on iPads). Riders may rank rides and drivers through the app. Call center uses a translator company. Riders must keep their seat belt on. There are not many sidewalks. They started curb to curb and then tried virtual stops within Gainesville. No one wanted to walk so they went back to curb to curb.

The vehicles have nicknames for riders to more easily identify them for feedback.

JCATS (QuickRide)

Date: 5/23/24 | Time: 11:00 AM

Service Overview

Why was your community interested in microtransit?

The pilot started before Josh joined. Over the years, the county's growth pressured needs for additional service. The 4-month trial took off with county funding (started March 2023). They receive the rural ops grant that helped keep the pilot going (it is about to end). They extended the pilot through the end of the year. They had 12,000 rides within their 20 square mile service zone.

Was there a pilot period? How was performance evaluated?

Piloted in March 2023. Performance was based on ridership. It started within the Smithfield-Selma area to keep the pick-up time within 10-15 mins. This is also where the JCATS facility is located. They tracked pick-ups and locations which was shared with county commissioners. During March through December (2023), 66% of the rides were for general purpose needs (shopping, banks, etc.). Twenty-one percent (21%) of rides were work related.

How does the microtransit service interact with other transit services your agency or regional agencies provide?

Sixty percent (60%) of rides are Medicaid related so it was a nice complement to the current service provided. Josh will provide a report presented to the county commissioners. QuickRide can connect to Amtrak. They take riders out to the airport. There is not an inner-city bus system in the area. People have to go to Raleigh.

What are the considerations for selecting the microtransit service model (e.g., SaaS, TaaS)?

SaaS. They wanted to keep the service model in house (was not ideal). JCATS borrowed vans from the QuickRide service, so the spare ratio is not what it should be. They use Trip Master and the app has had some bugs. 9,000 calls were made to book rides. Booking through the app is improving. Aging riders seem to be afraid of using the technology. The majority of rides are booked on the same day.

How many staff are currently employed at your agency? Are additional staff needed for microtransit?

The added one staff person to help with the reconciliation of the rides (accounting position). The existing call structure can handle bookings. The Administrative Assistant is also able to help book rides.

Do you operate the microtransit service directly, or do you use a vendor/contractor?

In house

What software do you (or the vendor) use to schedule/develop itineraries and route selections?

Trip Master and CTS software

The Service

Is microtransit scheduling available both over the phone and online?

Less than 10% of rides are paid with credit cards (can be paid over the phone or through the app). Drivers will make change until they can go cashless. Rides are $6 per trip.

Are there booking and payment options for riders that are unbanked and/or do not have smartphone/ internet access?

Telephone, pay by cash

What is the current microtransit ridership, and if applicable, how does that compare to the previous demand response or fixed-route service?

Between March and December 2023, QuickRide recorded over 11,870 (460 unduplicated riders).

How much does your microtransit service cost to operate per hour and annually?

They budgeted $50 an hour for QuickRide. They have an annual agreement with Trip Master. Josh will send the cost per year.

What funding sources will be used to operate microtransit?

Rural Ops grant and applied to the 5339 grant

How many vehicles are you using for microtransit and did you purchase or lease them?

Were previously using five spare vehicles from the demand response service, but recently received CRP funding to purchase five E-Transit vehicles for the QuickRide. Also applied for 2 through 5339.

Can you please confirm your service area boundaries (how much area do you cover)?

Smithfield, Selma

Implementation

Has any public engagement been conducted regarding microtransit service (planning, implementation, evaluation)?

The development of the on-demand QuickRide service was a product of several years of planning and input from the community. They had informally talked to the ridership and held focus groups. They made it clear to everyone that it was going to be a pilot. They have not offered any formal training for riders.

What marketing efforts did you undertake to promote the service?

They mailed postcards and purchased ads on Google and social media. They also used billboards within the service zone and pushed out press releases. They put posters up at the libraries, senior centers, airport, and businesses. The community college wants a prepaid service so there is not a barrier to students getting to and from school.

What challenges have you encountered and what lessons learned can you share?

The vast majority of riders are happy with the service. If state funding is not available, then they have to rely on the county. They cannot keep fares while using the Rural Ops grant funding. This year they can only replace two vehicles (6 in the past). A nearby group home prepays JCATS so they can travel. Other employers have inquired about a similar agreement. Clayton is growing and wants the service badly. Once they obtain more vehicles they can offer the service there.

Anything else you would like to share?

Most trips are individual but can be occupied by multiple riders. They provide 80-90 rides per day.

Service was provided between 6am and 6pm, Monday through Friday. They expanded to Saturday and offered service between 6am to 9pm. The helped accommodate work trips. The microtransit service operates like a public version of Uber. Seven (7) riders can ride or 5 riders with 1 wheelchair. Josh is not aware of any capacity issues. The service has been successful for 14 months.

Lubbock, TX (Citibus On-Demand)

Date: 5/31/24 | Time: 2:00 pm

Service Overview

Why was your community interested in microtransit?

Result of the pandemic. Prior to it, there were local conversations regarding what transit would like in the community. Trying to figure out what it needs to look like in the future. Arlington, TX, started their microtransit and they were interested in learning more about it. They reduce the fixed route because everyone was at home during the pandemic. 30 min service turned to hourly fixed service, but they added the microtransit program to help supplement the fixed route. Started at the end of May 2020 and has evolved since then. It seems there is preference to use microtransit over the fixed route because it is more flexible and convenient.

Was there a pilot period? How was performance evaluated?

Started as a 6-month pilot project. It continued to grow, and they found more ways to provide more trips. The intent was to have a data gathering aspect to the program. Fixed routes didn't serve the entire community. They only served about 60% of the city limits which left a lot of transit deserts. When the microtransit began they opened it to the entire city limits to see where trips origins and destinations were. They also had to open the paratransit service to the full city limits. They were short on CDL drivers, so they continued microtransit. Once they became fully staffed, they got a route restoration planning grant through an ARPA grant. The plan is finished but requires council adoption. Once the redesign is complete the microtransit will hopefully complement fixed route service. General performance measures: on-time performance, overall ridership, finding ways to fulfill all trips, etc. They are unable to support all trip requests which contributes to negative customer service.

How does the microtransit service interact with other transit services your agency or regional agencies provide?

It interacts with the fixed route, microtransit, paratransit (on demand), and university rides. They prioritize paratransit trips. They have not added any vehicles specifically for microtransit. They opened up seats on the paratransit vehicles. It's all considered one service. Vehicles are often maxed out. They tried outsourcing rides to Lyft, but they have to limit the usage for this since they do not have a large budget. They try to maximize the same number of trips they provide within the same budget allotted.

What are the considerations for selecting the microtransit service model (e.g., SaaS, TaaS)?

SaaS. They did not consider a turn-key provider. They talked to Arlington about Via, but they did not find it to be financially viable.

How many staff are currently employed at your agency? Are additional staff needed for microtransit?

No additional staff, vehicles, or funding requested

Do you operate the microtransit service directly, or do you use a vendor/contractor?

Everything is in-house

What software do you (or the vendor) use to schedule/develop itineraries and route selections?

Spare is the vendor. They operate curb-to-curb service. They will also service some destinations through stop zones (mall/apartment complexes).

The Service

Is microtransit scheduling available both over the phone and online?

They offer the GoPass app and the ability to pay by phone. Spare provides an app, but they also use the GoPass app. All public riders use the GoPass app so they can view microtransit and fixed route service options.

Are there booking and payment options for riders that are unbanked and/or do not have smartphone/ internet access?

GoPass has a cashed at value option. It is through a Vanilla paid direct (offered at general stores like CVS). They can scan a barcode to cash in stored values on their apps. Vehicles still accept cash. Citibus pays for any transaction fees.

What is the current microtransit ridership, and if applicable, how does that compare to the previous demand response or fixed-route service?

As of 9/30/23 2M rides for the university fixed route. There have been just over 400,00 rides on the fixed routes. The paratransit/microtransit service has just under 132,000 rides. In 2024 they are looking at a 4-5% increase in ridership.

How much does your microtransit service cost to operate per hour and annually?

About $38 a trip on vans and $4 for fixed routes. Hourly cost is around $72-75 an hour.

The software contract has a flat fee per year, and it includes 6,00 trips a month. Anything over is a $1.45 a trip.

What funding sources will be used to operate microtransit?

5307 federal and state, local general fund contribution, 5310 funding to pay for trips

How many vehicles are you using for microtransit and did you purchase or lease them?

They are using Citibus On-Demand and CitiAccess shared vehicles. The microtransit/paratransit service has 32 total vehicles. They run 20 or so during peak service. Dodge Pro Masters, New England wheel frontrunners. Chassey with cutaway bodies, Chevy Arboc vans. They are stretched thin on wheelchair positions. All vehicles in the fleet are wheelchair accessible.

Can you please confirm your service area boundaries (how much area do you cover)?

Lubbock city limits

Implementation

Has any public engagement been conducted regarding microtransit service (planning, implementation, evaluation)?

They did very little for microtransit. Posted a few social posts. It was discussed at City-held meetings. They do not offer rider surveys. Spare offers a mobile shift survey twice a year through text message (10 questions).

What marketing efforts did you undertake to promote the service?

They did market the service in 2021 (mid-late 2021) which included posting on social media, posting flyers at libraries and medical centers. This helped increase ridership and eventually they stopped marketing because they could not fulfill all ride requests.

What challenges have you encountered and what lessons learned can you share?

They are unable to fulfill all ride requests.

Anything else you would like to share?

They did not offer rider education training. They did share "how to" infographics on the service and the app.

Morrisville, NC (Morrisville Smart Shuttle)

Date: 5/20/24 | Time: 3:00 pm

Service Overview

Why was your community interested in microtransit?

They selected a 'nodes' approach to pick-ups and drop-offs because it allowed for more control over where the public transit went. Explaining the on-demand and nodes component of the service was challenging from a marketing and outreach perspective, so they had to focus a lot on education. The pilot began without an end date. The term 'Smart Shuttle' was defined in the 2019 Public Transit Study. The study looked at zone-based service and found that demand was high for the service. The more opportunities to be picked up, the higher the demand can grow. It allowed them to control the pick-up locations better and it has been positive for the service.

Was there a pilot period? How was performance evaluated?

Service launched on Oct. 2, 2021. The service remains a pilot program but does not have an end date.

How does the microtransit service interact with other transit services your agency or regional agencies provide?

See response to question #1.

What are the considerations for selecting the microtransit service model (e.g., SaaS, TaaS)?

Various service models were explored and evaluated in the Morrisville Public Transportation Study. The SaaS approach was selected based on the Study's findings related to level of control, cost, flexibility and resources needed.

How many staff are currently employed at your agency? Are additional staff needed for microtransit?

Caleb is the only one that runs the service. It takes up most of his time.

Do you operate the microtransit service directly, or do you use a vendor/contractor?

GoCary

What software do you (or the vendor) use to schedule/develop itineraries and route selections?

Via

The Service

Is microtransit scheduling available both over the phone and online?

They have a contract with GoTriangle who administers to the regional call center. Bus stop signs contain a QR Code to an app store or website and a phone number. The number goes to a dispatch office. They prefer riders to use the app which allows them to access real time information associated with their trip.

Are there booking and payment options for riders that are unbanked and/or do not have smartphone/internet access?

Phone

What is the current microtransit ridership, and if applicable, how does that compare to the previous demand response or fixed-route service?

~11,200 annual ridership

How much does your microtransit service cost to operate per hour and annually?

It costs about $730,000 to operate the service annually. GoCary charges $97/hr. They partnered with Via (6-year contract at a fixed rate) and has rate of $912 per vehicle. Cost is variable per fiscal year.

The service is still fare-free.

What funding sources will be used to operate microtransit?

There is a 50/50 match. Half comes from the Town's general fund and then they have contracts (operating fund and fixed fund for capital improvements-ADA accessibility improvements). They can apply for planning, operating, or capital funds and they renew every year. It has been in place for 4 years. Caleb hopes to receive funding for a planning study to see if they should expand their service model.

How many vehicles are you using for microtransit and did you purchase or lease them?

One vehicle runs 7 days a week and the other runs M-F 1-7pm. He thinks the 1-7 vehicle may run on Saturdays in the future. Since Jan. 1st, there have been almost 65 rides a day (on average). There is no book in advance features. It takes 10-12 minutes to reach the node and another 10-15 minutes the reach the destination. From booking to completing the trip it takes about 20-30 minutes total. Caleb says there are 3-4 riders per trip. They are reaching 4 bookings an hour. Demand and capacity are neck and neck.

They use an 18-seat shuttle bus. They vehicles are never full which is confusing to the public when they see an empty vehicle.

Can you please confirm your service area boundaries (how much area do you cover)?

There are 16 nodes. They are going to launch 2 nodes this calendar year. The Town receives a lot of feedback on locations residents would like to be served. There is prioritization based on distance. Performance metrics are collected on the service. Caleb can send the information to Adam. They started preparing quarterly reports for Council (Caleb will send a copy of the summer report).

Implementation

Has any public engagement been conducted regarding microtransit service (planning, implementation, evaluation)?

Caleb tries to go at least once a quarter to an event. They will team up with GoTriangle and provide swag at events. The Town has presented to various boards and councils (CAMPO), planning conferences, and at senior centers and living facilities. Caleb drops off materials at various locations like the aquatics and fitness center. Caleb recommends using GIS to gain a list of residential addresses and then mail them flyers about the service. The information on outreach materials needs to be high-level for the residents to understand. Caleb also recommends connecting with businesses and supporters like the Chamber who can help distribute information.

What marketing efforts did you undertake to promote the service?

The Town promoted the service at community events, via social media (Engage Morrisville platforms), and by sending out informational postcards. Postcards were mailed to each resident and hand delivered to businesses around the nodes and in places that get a lot of foot traffic. The postcard-sending initiative cost between $5,000-$6,000 and was very successful in familiarizing residents with the new service.

What challenges have you encountered and what lessons learned can you share?

Caleb found that during the first 4 months of the service there were problems with the app that the drivers used. Drivers would turn off the iPad when they took breaks. In return, this would not allow rider requests to come through. IT had to lock the tablets.

Anything else you would like to share?

The Town has been built out since the growth boomed starting around 2000. They have accommodated bike and ped networks through the Town through growth and development planning. They have a robust sidewalk network for a suburban community. All nodes are ADA-accessible. GoCary solely works the Town's system. Cary partners with MV Transportation. They will use GoCary vehicles with temporary signs for Morrisville if a shuttle vehicle is out of service. ITRE has a study on microtransit in North Carolina. The team has been reviewing this document.

Wilmington, NC (RideMICRO)

Date: 06/03/24 | Time: 2:00 pm

Service Overview

Why was your community interested in microtransit?

Part of the state's microtransit program. Interested in looking at different types of services. Northern Brunswick and Pender, and New Hanover counties to meet needs where fixed route is not warranted.

Was there a pilot period? How was performance evaluated?

It started in Fall 2021. There are four zones with a vehicle for each zone. Two out of four routes helped replace underperforming fixed routes. The other zones were funded through a grant. They applied for ConCPT funding.

How does the microtransit service interact with other transit services your agency or regional agencies provide?

Underperforming fixed routes are replaced with RideMICRO.

What are the considerations for selecting the microtransit service model (e.g., SaaS, TaaS)?

TaaS. Now it's turnkey but in the system, but they might convert to in-house.

How many staff are currently employed at your agency? Are additional staff needed for microtransit?

N/A

Do you operate the microtransit service directly, or do you use a vendor/contractor?

Bus.com has a call center in-house (M-F 8am-6pm). Calls are routes to the dispatcher when Bus.com is not in service. The call center is the same for paratransit and RideMICRO.

What software do you (or the vendor) use to schedule/develop itineraries and route selections?

Moovit is the subcontractor

The Service

Is microtransit scheduling available both over the phone and online?

They offer a mobile app, by phone to call center, or online. The RideMICRO app is not integrated with the fixed route service. RideMICRO tickets are available, but neither can be used for the fixed route buses. Around 80% of rides are booked through the app. The rest are booked by phone. Riders can pre-book trips a week in advance. Morning commutes and students traveling to morning classes pre-book the rides a lot. Jonathan can provide the raw data for Adam to look through.

Are there booking and payment options for riders that are unbanked and/or do not have smartphone/ internet access?

Riders can pay with exact change upon boarding; purchase ticket from set station. Caretakers can call in for senior riders.

What is the current microtransit ridership, and if applicable, how does that compare to the previous demand response or fixed-route service?

Ridership has increased.

How much does your microtransit service cost to operate per hour and annually?

It costs $2 to ride, $74 an hour (up from the past couple of years and does not include the fuel cost) goes to Bus.com, and $1M annually.

What funding sources will be used to operate microtransit?

They applied for MEENC (IMD) funding to change how it operates and the provider.

ConCPT funding. Zones 3 and 4: Resources from the reallocated routes (ConCPT and local funds). Operate 7 days a week.

How many vehicles are you using for microtransit and did you purchase or lease them?

Wheelchair vehicles and bike racks (Carolina Beach) are available

Can you please confirm your service area boundaries (how much area do you cover)?

Northern Brunswick, Pender, and New Hanover counties

Implementation

Has any public engagement been conducted regarding microtransit service (planning, implementation, evaluation)?

Public meetings, training sessions, one-on-one meetings at senior living facilities (most time intensive), and meetings with the airport

What marketing efforts did you undertake to promote the service?

Posts on social media, TV commercials, radio commercials, and specialized wraps on the vehicles that say RideMICRO, and electronic billboards

What challenges have you encountered and what lessons learned can you share?

The call center hours are difficult because it is based in Canada. It is difficult for riders who need to get places at specific times (pre-booking). It is still a challenge to figure out how to service ADA riders. Service dogs are allowed to ride. They recommend making sure a service is 100% ready to launch before launching to build trust. Outreach and education efforts need to be ongoing.

Anything else you would like to share?

The virtual stops are curb-to-curb. They try to have rides arrive within 30 mins to an hour. The county jail is located in Zone 4. Discharging officer had to book everyone at one rather than multiple trips because it was difficult to get to. They mentioned the Cape Fear Bridge Closure. Car seats can lock into the vans (not provided)

Appendix C. Coverage Analysis Table

Map ID	GEOID	Minors (%)	Low-Income (%)	Seniors (%)	Minority (%)
1	370570617041	4%	24%	27%	7%
2	370570615012	26%	73%	13%	73%
3	370570607002	23%	55%	19%	63%
4	370570607003	22%	13%	7%	30%
5	370570616001	19%	46%	7%	61%
6	370570618071	11%	21%	10%	10%
7	370570615011	35%	33%	15%	69%
8	370570601012	19%	10%	12%	43%
9	370570603032	17%	11%	28%	7%
10	370570602021	21%	31%	22%	27%
11	370570613002	19%	28%	16%	52%
12	370570612031	18%	28%	21%	34%
13	370570618031	11%	21%	24%	26%
14	370570617011	15%	15%	31%	11%
15	370570601011	17%	57%	23%	49%
16	370570602033	22%	8%	16%	4%
17	370570603022	16%	9%	9%	15%
18	370570617031	16%	19%	28%	6%
19	370570620021	16%	28%	12%	0%
20	370570620012	14%	26%	14%	10%
21	370570612041	14%	34%	26%	22%
22	370570618083	20%	34%	32%	30%
23	370570611023	13%	28%	33%	17%
24	370570603012	23%	19%	17%	0%
25	370570603023	20%	13%	19%	12%
26	370570615013	27%	60%	15%	60%
27	370570603013	15%	12%	29%	14%
28	370570608001	32%	67%	15%	60%
29	370570603042	20%	22%	6%	0%
30	370570619023	15%	39%	20%	5%

	Zero Car (%)	Disability (%)	Limited English Proficiency (%)	Score Relative to State	Score Relative to Division	Score Relative to MPO	Score Relative to County	Destinations (#)
	7%	25%	6%	10	10.5	9.5	11	1
	9%	22%	17%	17.5	17.5	17.5	18	1
	16%	27%	22%	18	18	18	17	0
	5%	9%	0%	10.5	10.5	9	10.5	0
	30%	10%	25%	16.5	16.5	15.5	17.5	3
	0%	22%	0%	9.5	9.5	9.5	9.5	0
	12%	35%	1%	17.5	16.5	16	17.5	0
	0%	10%	13%	11	11	11	11	0
	4%	20%	2%	10	9.5	9.5	9.5	0
	3%	14%	3%	11	12.5	11	11.5	0
	21%	20%	5%	13.5	13.5	13.5	15.5	0
	8%	24%	1%	12.5	12.5	12.5	12.5	0
	3%	17%	5%	10	11.5	10	12	1
	0%	25%	9%	10	10.5	9.5	9.5	0
	11%	24%	8%	15	15.5	14	16.5	0
	3%	18%	0%	10	9.5	9.5	9.5	1
	0%	11%	3%	9	9	9	9	0
	8%	16%	0%	9.5	8.5	8.5	7.5	0
	3%	21%	0%	10	10	10	10	0
	12%	14%	0%	11	10	9	10	0
	13%	34%	2%	12	11.5	12.5	13.5	0
	6%	15%	0%	11	11	9.5	9.5	0
	0%	25%	6%	8.5	9.5	8.5	9	0
	3%	10%	0%	7	7	7	7	0
	3%	12%	0%	8.5	8.5	8.5	8.5	0
	6%	25%	0%	14.5	17	14	16	0
	8%	31%	1%	11.5	10.5	10.5	10.5	0
	22%	9%	3%	15	15.5	14.5	16.5	2
	0%	13%	0%	9	9	9	9	0
	6%	27%	0%	11.5	11.5	11.5	10.5	0

Map ID	GEOID	Minors (%)	Low-Income (%)	Seniors (%)	Minority (%)
31	370570601013	7%	9%	12%	49%
32	370570609005	15%	13%	31%	20%
33	370570605003	0%	32%	41%	0%
34	370570609001	26%	26%	22%	56%
35	370570609004	29%	46%	6%	61%
36	370570605001	8%	7%	30%	0%
37	370570606012	22%	11%	11%	8%
38	370570605002	20%	36%	18%	9%
39	370570604003	15%	26%	15%	19%
40	370570606021	23%	10%	12%	21%
41	370570614001	23%	36%	3%	53%
42	370570619031	15%	24%	13%	15%
43	370570612032	17%	16%	13%	65%
44	370570610001	12%	24%	12%	14%
45	370570615021	8%	18%	46%	14%
46	370570616002	37%	66%	9%	79%
47	370570604002	18%	31%	22%	7%
48	370570620022	25%	58%	14%	7%
49	370570604001	9%	17%	16%	3%
50	370570618081	21%	11%	24%	22%
51	370570614003	25%	53%	8%	80%
52	370570617051	23%	26%	9%	5%
53	370570603033	17%	17%	18%	11%
54	370570610002	19%	44%	12%	38%
55	370570612021	23%	22%	22%	10%
56	370570620011	30%	21%	18%	3%
57	370570610003	19%	48%	19%	60%
58	370570609003	17%	23%	26%	22%
59	370570607004	22%	45%	17%	46%
60	370570608002	12%	66%	30%	88%

	Zero Car (%)	Disability (%)	Limited English Proficiency (%)	Score Relative to State	Score Relative to Division	Score Relative to MPO	Score Relative to County	Destinations (#)
	2%	10%	2%	10	10	10	11	0
	13%	15%	4%	11	10	8	10.5	0
	7%	18%	0%	6	6	6	6	0
	5%	8%	10%	13	13	13	14.5	3
	0%	9%	0%	12.5	14	12.5	14	1
	5%	17%	0%	7	6.5	6.5	6.5	3
	0%	5%	2%	9	9	9	9	0
	9%	12%	2%	10	10	10	10	0
	17%	22%	5%	13	12	12	15	0
	0%	9%	1%	9	9	10	10	0
	11%	5%	7%	13	13	13	15	0
	4%	19%	0%	11	11	11	11	0
	29%	17%	8%	16	15	14	15	0
	0%	11%	13%	9.5	9.5	9.5	9.5	1
	19%	29%	0%	9.5	9.5	9.5	9.5	0
	26%	22%	19%	18	18	18	20	0
	0%	15%	1%	10.5	10.5	9	9	1
	13%	23%	1%	14	14	14	15	1
	0%	7%	1%	8	7	7	7	0
	0%	10%	0%	7.5	7.5	7.5	8.5	0
	32%	17%	4%	17	16.5	17.5	18.5	2
	0%	25%	0%	10.5	11.5	11.5	10.5	0
	0%	20%	0%	8.5	8.5	8.5	8.5	0
	9%	29%	5%	15.5	15.5	14.5	16	0
	17%	10%	4%	11	11	12	11	0
	0%	5%	0%	9.5	9.5	9.5	9.5	0
	8%	24%	5%	13.5	16	13.5	15.5	0
	8%	34%	0%	11.5	10.5	11.5	13	0
	4%	25%	7%	14	15.5	14	15.5	0
	7%	36%	21%	16	15.5	15.5	15.5	0

Map ID	GEOID	Minors (%)	Low-Income (%)	Seniors (%)	Minority (%)
61	370570605004	18%	32%	16%	13%
62	370570602013	8%	14%	23%	5%
63	370570618072	9%	17%	20%	4%
64	370570618032	24%	25%	20%	12%
65	370570618062	14%	13%	12%	1%
66	370570603021	24%	23%	13%	6%
67	370570601031	13%	7%	35%	11%
68	370570601032	15%	12%	35%	19%
69	370570611012	15%	29%	46%	1%
70	370570618061	24%	26%	11%	7%
71	370570619042	24%	12%	10%	0%
72	370570601042	10%	15%	32%	4%
73	370570601043	33%	29%	9%	26%
74	370570611011	13%	31%	28%	3%
75	370570617052	19%	16%	13%	7%
76	370570618082	15%	11%	38%	19%
77	370570619032	16%	30%	19%	3%
78	370570619041	9%	23%	40%	1%
79	370570618051	15%	29%	33%	0%
80	370570618063	11%	0%	24%	2%
81	370570618052	16%	29%	20%	4%
82	370570601041	33%	9%	9%	21%
83	370570617042	26%	42%	6%	15%
84	370570611022	37%	36%	17%	23%
85	370570614002	8%	46%	24%	43%
86	370570608003	30%	36%	16%	34%
87	370570609002	12%	41%	13%	29%
88	370570602011	21%	7%	24%	10%
89	370570602014	11%	37%	26%	0%
90	370570619022	15%	18%	20%	10%

	Zero Car (%)	Disability (%)	Limited English Proficiency (%)	Score Relative to State	Score Relative to Division	Score Relative to MPO	Score Relative to County	Destinations (#)
	2%	18%	1%	12	11	11	11	0
	3%	25%	0%	8.5	9.5	8.5	8.5	0
	0%	21%	0%	7.5	7.5	7.5	7.5	0
	0%	15%	0%	9.5	9.5	9.5	9.5	0
	8%	7%	0%	8	9	9	9	0
	2%	12%	0%	10	10	9.5	11	0
	3%	23%	6%	8.5	8.5	8.5	9	0
	0%	16%	0%	6.5	7.5	7.5	8	0
	1%	27%	0%	9.5	10.5	10.5	9.5	0
	5%	23%	1%	12	12	13	13	0
	3%	16%	0%	9	9	10	9	0
	1%	9%	0%	6.5	6.5	6.5	6.5	0
	1%	13%	0%	11	12.5	11	12.5	0
	0%	26%	0%	9.5	9	7.5	7.5	4
	0%	13%	3%	9	9	9	9	0
	0%	20%	0%	7.5	7.5	7.5	9	0
	0%	16%	0%	9.5	9.5	9.5	8.5	0
	6%	25%	0%	8.5	9.5	8.5	8.5	0
	0%	31%	0%	7.5	8.5	8.5	8.5	0
	0%	20%	0%	6.5	6.5	6.5	6.5	0
	0%	16%	4%	10.5	10.5	10.5	9	0
	1%	7%	4%	11	11	11	12	1
	2%	14%	4%	13	13	12	12	0
	0%	13%	3%	10.5	10.5	10.5	11.5	0
	31%	26%	4%	14	14.5	13	14	3
	15%	20%	5%	15	14.5	13.5	15	1
	2%	10%	11%	10.5	12	10.5	12	0
	0%	20%	0%	8.5	8.5	7.5	8.5	0
	0%	43%	1%	9	9	8.5	9	0
	0%	30%	0%	10.5	10.5	10.5	10.5	0

Map ID	GEOID	Minors (%)	Low-Income (%)	Seniors (%)	Minority (%)	
91	370570613001	25%	25%	12%	38%	
92	370570617033	23%	28%	13%	3%	
93	370570603041	22%	26%	15%	19%	
94	370570602012	4%	33%	23%	38%	
95	370570612022	20%	31%	24%	3%	
96	370570607001	26%	14%	6%	68%	
97	370570602032	11%	22%	13%	17%	
98	370570602031	20%	7%	19%	3%	
99	370570606011	24%	28%	9%	13%	
100	370570617012	18%	28%	19%	15%	
101	370570617032	18%	26%	8%	7%	
102	370570620023	16%	27%	16%	0%	
103	370570603031	13%	22%	16%	4%	
104	370570601014	31%	12%	4%	19%	
105	370570611021	35%	72%	0%	0%	
106	370570606022	11%	20%	17%	9%	
107	370570616003	16%	24%	14%	36%	
108	370570603011	21%	7%	9%	2%	
109	370570615023	14%	12%	8%	6%	
110	370570615022	6%	7%	39%	21%	
111	370570619021	18%	26%	33%	12%	
112	370570620024	12%	22%	28%	7%	
113	370570620013	11%	29%	25%	0%	
114	370570612042	1%	62%	21%	53%	
115	370570610004	22%	3%	9%	12%	

Note: NCDOT's TDI data uses ACS 5-Year Estimates for 2016 to 2020.

	Zero Car (%)	Disability (%)	Limited English Proficiency (%)	Score Relative to State	Score Relative to Division	Score Relative to MPO	Score Relative to County	Destinations (#)
	12%	29%	1%	15	14.5	15.5	16.5	3
	1%	27%	0%	12.5	12.5	13.5	11	0
	0%	16%	1%	11	10.5	10.5	11	0
	2%	10%	2%	10	10	9.5	10	0
	6%	20%	0%	10.5	10.5	10.5	10.5	0
	6%	13%	27%	15	15	15	15	1
	4%	16%	2%	11	11	10	10	0
	0%	18%	0%	8.5	8.5	8.5	8.5	0
	0%	14%	1%	10	11	11	11	0
	4%	20%	1%	11	11	11	11	0
	0%	20%	0%	10.5	10.5	10.5	10.5	0
	1%	19%	0%	9	9	9	9	1
	6%	17%	0%	11	10	10	10	0
	2%	12%	0%	10	10	10	11.5	0
	15%	13%	0%	12.5	12.5	12.5	12.5	0
	2%	16%	4%	10	10	9	8	0
	3%	20%	0%	12.5	12.5	12.5	12.5	2
	0%	8%	0%	8	8	8	8	0
	0%	11%	3%	8	8	8	8	0
	0%	11%	12%	7	7	7	8	0
	0%	23%	0%	8.5	8.5	8.5	8.5	0
	6%	31%	6%	11	10.5	10.5	11	0
	5%	16%	0%	8	8	8	7	0
	38%	64%	27%	17	17	16	18	0
	7%	19%	0%	10	10	10	10	0

Endnotes

1 EPA Greenbook: NC Nonattainment/Maintenance Status for Each County by Year for All Criteria Pollutants: https://www3.epa.gov/airquality/greenbook/anayo_nc.html

2 FTA Local Matching Funds FAQ: https://www.transit.dot.gov/funding/procurement/third-party-procurement/local-matching-funds

Davidson County

Microtransit Feasibility Study

December 2024