
# Charlottesville Area Transit

# *Transit Strategic Plan*

## Fiscal Year 2025 – 2034

**Chapter 2: System Performance and Operations Analysis**

**June 2024**

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**Chapter 2: System Performance and Operations Analysis**

# Chapter 2: System Performance and Operations Analysis

The system performance and operations analysis portion of the Transit Strategic Plan (TSP) provides both quantitative and qualitative evaluation of the existing Charlottesville Area Transit (CAT) service and operating environment. Chapter 2 will highlight the following topics related to system performance and operations:

- **System and Service Data** – Introduction to the service area with summary-level statistics, service design standards, survey results, and a summary of stakeholder input.
- **Evaluation of Transit Market Demand and Underserved Areas** – In-depth analysis of various factors that influence the demand for transit, such as land use, jobs, population, and the sociodemographic variables associated with ridership. Transit supply and demand is then analyzed to identify areas with a combination of high activity and needs and low levels of transit service.
- **Performance Evaluation** – Analysis of ridership and performance metrics at the system level, route level, and stop level. An evaluation of peers, route deviations, accessibility, and safety is also included.
- **Operating and Network Efficiency Evaluation** – Evaluation of the service network using efficiency metrics that assess frequency, span, speed, and reliability of the transit system.
- **Analysis of Opportunities to Collaborate with Other Transit Providers** – Identification of opportunities for CAT to improve connections with nearby transit providers.

**Section 2.1** focuses on system and service data. Each subsequent section of Chapter 2 concludes by identifying opportunities for improvement. The service changes that address the opportunities for improvement will be provided in **Chapter 3: Planned Improvements and Modifications.**

## 2.1 System and Service Data

The system and service data section provides high-level service statistics, results from the summer 2023 public survey (conducted as part of the TSP effort), and takeaways from discussions with key stakeholders.

Unless otherwise noted, data in this section is primarily sourced from the National Transit Database (NTD). NTD data provided is from Fiscal Year 2022, which was the latest available data at the time of the analysis.

### Existing System Service Statistics

CAT serves the city of Charlottesville and runs service into adjoining areas of Albemarle County. As shown in **Table 2-1**, CAT has a service area of 38 square miles with a population of 85,755, equating to a population density of 2,257 people per square mile[1]. **Section 2.2** contains a detailed analysis of the city of Charlottesville and surrounding areas' population trends.

[1] NTD, 2022. Charlottesville Area Transit Annual Agency Profile. Accessed at 30036 2021 Agency Profile (dot.gov)

*Table 2-1: System Characteristics*

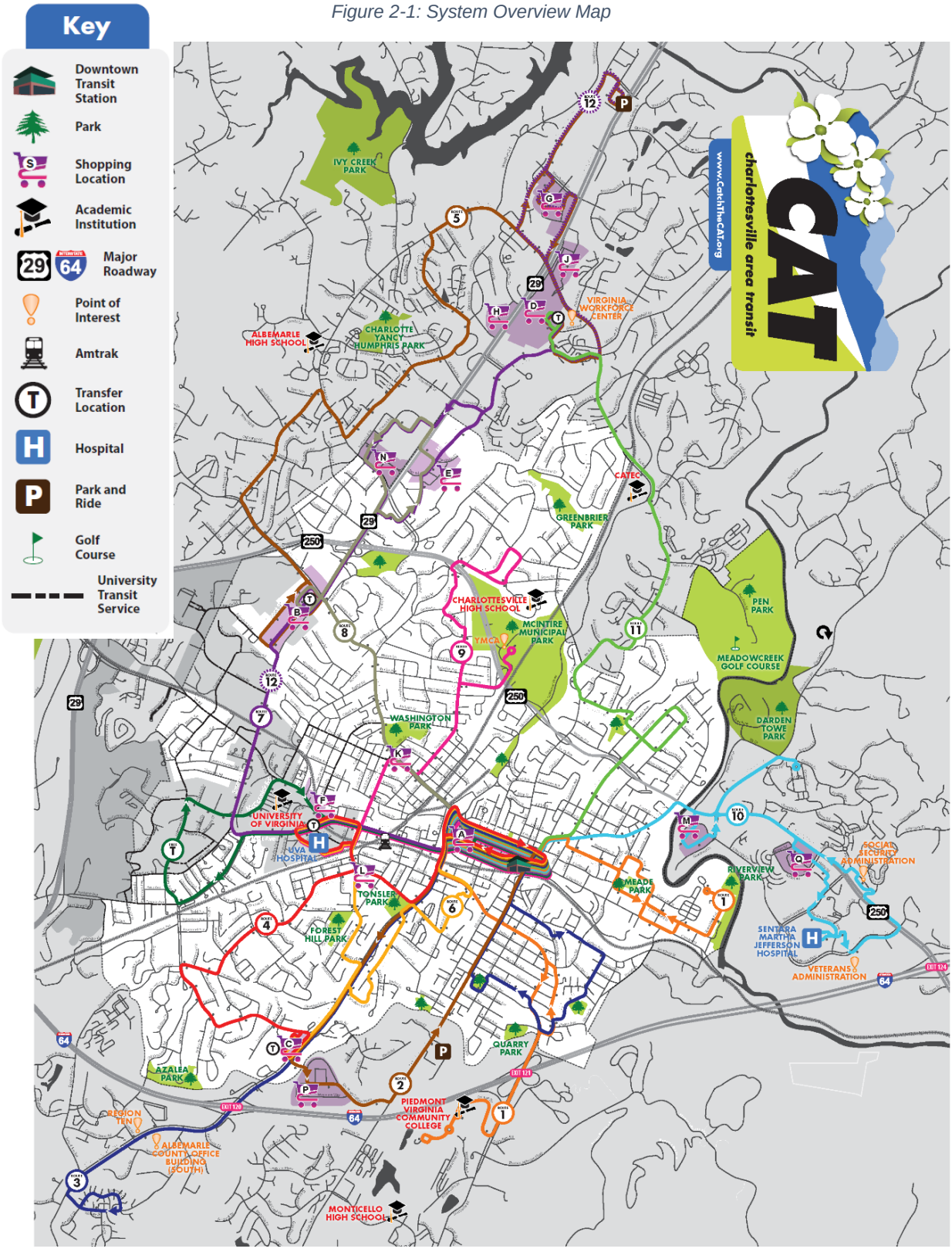
| Category | System Total | Source |
|---|---|---|
| **Service Area (Square Miles)** | 38 | NTD (2022) |
| **Population** | 85,755 | NTD (2022) |
| **Density (People per Square Mile)** | 2,257 | NTD (2022) |
| **Operating Costs** | $9,836,029 | NTD (2022) |
| **Ridership** | 1,156,514 | CAT (2022) |
| **Revenue Hours** | 84,873 | CAT (2022) |
| **Revenue Miles** | 841,185 | CAT (2022) |
| **Vehicles Operating in Peak Service** | 19 | CAT (2023) |
| **Vehicles Available for Peak Service** | 36 | CAT (2023) |
| **Trips per Day** | 277 (Monday – Friday), 273 (Saturday) | CAT (2023) |
| **Days Operated** | Monday – Saturday | CAT (2023) |
| **Daily Route Miles** | 2,703 (Monday – Friday), 2,660 (Saturday) | CAT (2023) |

CAT currently operates six days a week, Monday through Saturday. Sunday service operated prior to the COVID-19 pandemic but has not yet been reinstated due to subsequent shortages of operations staff and maintenance parts. CAT has a total of 12 active routes of varying frequencies, with headways ranging from 25 minutes to 60 minutes. **Table 2-2** shows service levels and performance for each CAT route. **Figure 2-1** provides a map of all CAT routes.

*Table 2-2: Route Characteristics*

| Route | Ridership (FY 2022) | Average Headway | Revenue Hours | Revenue Miles | Passengers per Hour | Passengers per Mile |
|---|---|---|---|---|---|---|
| **1 PVCC/Riverside** | 29,864 | 60 min | 4,225 | 44,708 | 7.1 | 0.7 |
| **2 5th St Station** | 58,188 | 30 min | 4,966 | 100,121 | 11.7 | 0.6 |
| **3 Southwood/Belmont** | 85,662 | 60 min | 5,148 | 48,847 | 16.6 | 1.8 |
| **4 UVA Health/Willoughby** | 60,579 | 52 min | 5,664 | 59,460 | 10.7 | 1.0 |
| **5 BRSC/FSQ/Walmart** | 187,018 | 30 min | 14,976 | 170,773 | 12.5 | 1.1 |
| **6 UVA Health/Willoughby** | 58,682 | 60 min | 4,992 | 43,475 | 11.8 | 1.3 |
| **7 BRSC/UVA Health/ FSQ** | 319,806 | 30 min | 14,976 | 83,238 | 21.4 | 3.8 |
| **8 BRSC/Stonefield** | 70,640 | 60 min | 3,744 | 33,674 | 18.9 | 2.1 |
| **9 UVA Health/YMCA/ CHS** | 18,356 | 43 min | 6,396 | 37,634 | 2.9 | 0.5 |
| **10 Pantops/Martha Jeff** | 55,556 | 60 min | 4,992 | 44,409 | 11.1 | 1.3 |
| **11 Locust Grove/FSQ** | 50,999 | 60 min | 4,940 | 111,865 | 10.3 | 0.5 |
| **Trolley** | 161,164 | 25 min | 9,854 | 62,981 | 16.4 | 2.6 |

*Figure 2-1: System Overview Map*



CAT operating revenues and expenses for Fiscal Years 2022 and 2023 are shown in **Table 2-3**.

*Table 2-3: Operating Revenues and Expenses*

| Operating Budget | FY22 | FY23 |
|---|---|---|
| *Operating Expenses* | | |
| Operations | $6,238,135 | $6,392,247 |
| Maintenance | $2,477,241 | $2,782,762 |
| General Administration | $2,811,708 | $2,130,303 |
| **TOTAL** | **$11,597,085** | **$11,305,312** |
| *Service Generated Operating Revenues* | | |
| Passenger Fares[2] | $0 | $0 |
| UVA Service | $80,040 | $82,440 |
| Advertising | $50,000 | $25,000 |
| **TOTAL** | **$130,040** | **$107,440** |
| *Governmental Operating Revenues* | | |
| Commonwealth of Virginia Aid | $3,032,584 | $2,729,126 |
| Federal Aid | $1,897,979 | $2,867,365 |
| Albemarle County Subsidy | $1,000,000 | $1,000,000 |
| City of Charlottesville Subsidy | $2,513,651 | $2,513,651 |
| Grants | $3,022,831 | $2,087,730 |
| **TOTAL** | **$11,467,045** | **$11,197,872** |

*Source: CAT (2023)*

[2] CAT suspended fare payments in response to the COVID-19 pandemic. CAT then received a TRIP Zero and Reduced Fare grant from DRPT to maintain fare free service. The grant values CAT's farebox revenue at $627,423 per year with DRPT funding 80% of the listed cost in FY23. However, no fares were directly collected in FY23.

## Existing Service Design Standards

### *Route Design and Schedule Standards*

Per CAT's Fiscal Year 2019 – FY 2028 Transit Development Plan, existing service design standards relating to route design and scheduling are outlined in **Table 2-4**.

*Table 2-4: CAT Service Design Standards*

| Service Standards | | |
|---|---|---|
| **Span of Service** | Core Service | 6:00 AM – 6:00 PM |
| | Select Routes | 6:00 PM – 11:00 PM (no less than 60 minute headway) |
| **Frequency of Service** | Local Routes | 30 min. peak, 60 min. off-peak |
| | Key Routes | 20 min. peak, 30 min. off-peak |
| | Lifeline Routes | Not to exceed 60 min. |
| **Bus Stop Spacing** | Local Routes | 800 – 1,300 feet |
| | Key Routes | 1,000 – 1,300 feet |
| | Lifeline Routes | 1,000 – 1,300 feet |
| **Route Directness** | Deviations from a direct path from end-to-end of the route shall account for no more than one-quarter of the end-to-end travel time of the route. | |
| **Total Route Travel Time** | Maximum of 60 min. one-way | |
| **Bus Stop Amenities** | Bus stops with more than 50 passengers boarding daily should have a bus shelter within the City of Charlottesville. | |
| | Bus stops with more than 35 passengers boarding outside the City of Charlottesville should be explored for inclusion of a bus shelter. | |
| **Load Factor** | The loading standard should be a maximum average load factor of 1.2 (ratio of total passengers to seated passengers) during the weekday peak periods, and 1.0 at all other time periods. | |
| **Dependability** | 90% on-time service (0-5 minutes late) – No trips leaving early. | |
| | Maintain fewer than 6,500 miles between service road calls. | |
| | Less than five percent missed trips due to operational failures. | |
| | No more than 15 percent of fleet exceeding the FTA Useful Life Benchmarks (ULB) for its vehicle classification. | |
| **Farebox Recovery** | Review and modify, if possible, services that exhibit less than 60 percent of average. | |
| | Review and modify, if warranted, services between 60 percent and 80 percent of average. | |

| Service Standards | |
|---|---|
| **Productivity (Passengers per Revenue Hour/Mile)** | Review and modify, if possible, services that exhibit less than 60 percent of average of route type. |
| | Review and modify, if warranted, services between 60 percent and 80 percent of average of route type. |
| **Cost Effectiveness (Cost per Revenue Hour/Mile** | Review and modify, if possible, services that exhibit less than 60 percent of route type average. |
| **Safety** | 0.10 or fewer "reportable incidents" per 100,000 miles, as defined by the National Transit Database. |
| **Customer Service** | Less than 20 customer complaints per 100,000 trips. |
| | Maximum reservation wait time less than 30 seconds (ADA) * |
| **Fleet Age (Fixed Route)** | No more than 15 percent of fleet in excess of the FTA Useful Life Benchmarks (ULB) for the vehicle classification. |

*Source: CAT FY 2019 - FY 2028 Transit Development Plan*
** ADA Paratransit service is provided by JAUNT on behalf of CAT*

## Public Survey Results

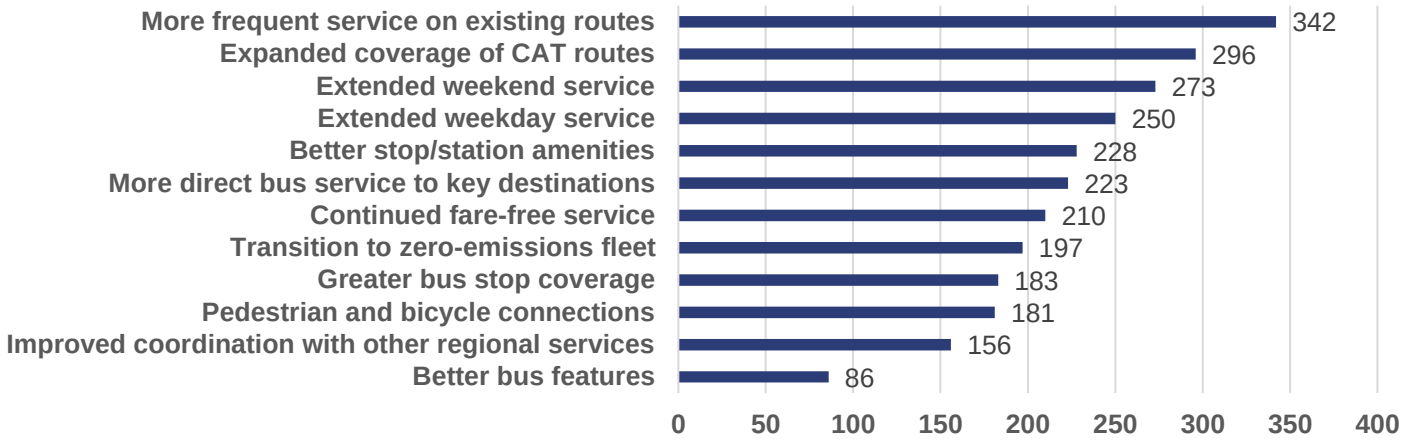
As part of the first round of public engagement for the TSP, an online public survey was conducted to guide the TSP process and inform the development of recommendations. The survey had two main sections that focused on priorities for use of transit. The survey was made available in English and Spanish and a link to the survey was published on CAT's website as well as on public engagement materials distributed at in-person engagement events. The survey was open for four weeks between July 1 and July 31, 2023 and collected a total of 523 responses.

Results from the survey were used to discern general trends, but the results were not given significant weight for determining service changes, nor were they used to serve as official data sources. The number of responses the survey received—523 responses—is not enough to be considered statistically significant for the city or region. A response-weighting formula was not developed for this survey; therefore, the survey results are only representative of the population that responded, and not of the Charlottesville region.

### *Priorities for Improvement*

**Figure 2-2** shows survey respondents' top priorities for CAT service. Respondents were asked to select their top five priorities out of the 12 shown. Improving the frequency on existing routes was the top response. Other notable priorities include expanding coverage of CAT routes, extending weekend service, extending weekday service, and better bus stop amenities.

*Figure 2-2: Priorities of Survey Respondents*



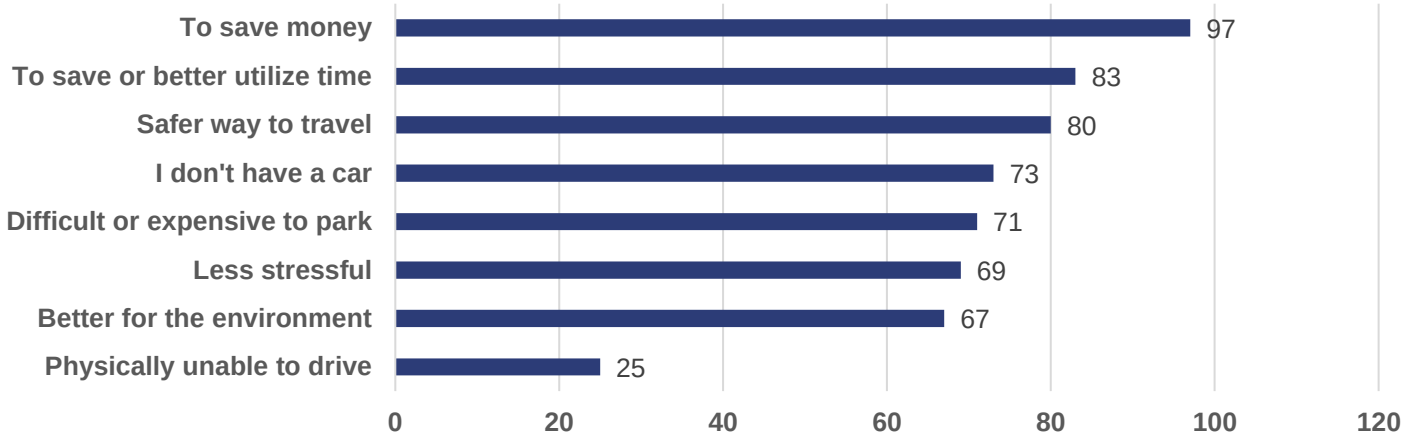

Survey respondents that identified as current transit riders were also asked to identify what changes could encourage them to use the bus more often, with answers largely matching the above priorities for improvement. Key responses to this question include the following:

- *"I would like to see extended day and weekend services, increased frequency, and continued fare-free service."*
- *"I would love to see the bus provide Sunday service on Route 5 and Route 8."*
- *"I wish there was more service closer to UVA campus; this would help me get to work."*
- *"More frequent service. If I miss the #3 on 5th St. it is an hour before the next one comes."*
- *"Sunday service would be great, and better shelters from sun and rain."*

## *Reasons for Riding*

Respondents were asked the reasons why they ride the bus, with **Figure 2-3** showing the frequency of responses. The most common response was "To save money." Other popular responses were "To save or better utilize time," "It is a safer way to travel," and "I don't have a car."

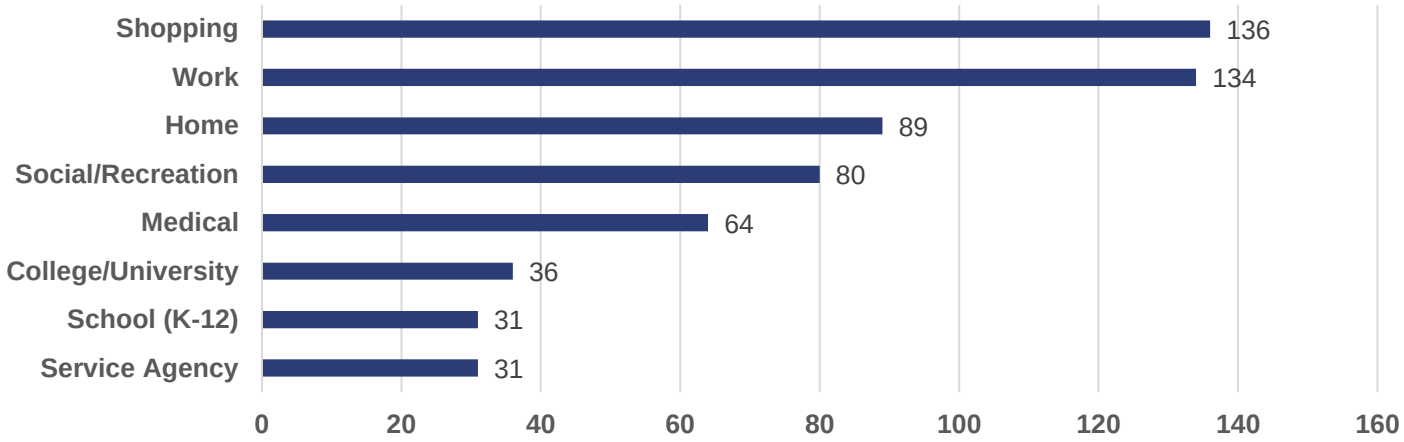
*Figure 2-3: Reasons for Riding the Bus*



### *Purpose and Destination of Transit Trips*

Respondents were asked what the purpose/destination of their bus trips were, with **Figure 2-4** showing the frequency of responses. The most common response was "Shopping," closely followed by "Work." "Home," "Social/Recreation," and "Medical" were other common selections.

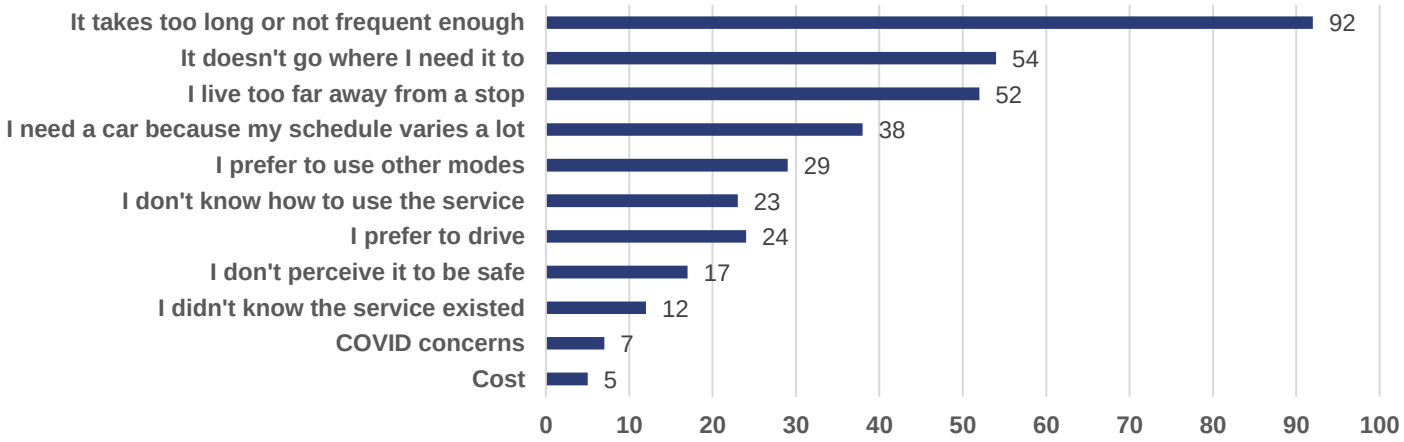
*Figure 2-4: Trip Purpose/Destination*




### *Reasons for Not Riding*

Survey respondents that identified as non-transit riders were asked the reasons why they do not currently ride the bus, with **Figure 2-5** showing the frequency of responses. The most common response was "It takes too long or is not frequent enough." Other popular responses were "It doesn't go where I need it to," "I live too far away from a stop," and "I need a car because my schedule varies a lot."

*Figure 2-5: Reasons for Not Riding the Bus*




Survey respondents that identified as non-transit riders were also asked what could be improved to attract them to ride the bus. The most common responses included increasing frequency/making service faster, serving new destinations and areas across the region, extending hours of operation, better information, and reducing the need for transfers. Key responses to this question include the following:

- *"Connections between neighborhoods and popular destinations (downtown mall, shopping areas, more public information on making connections). I honestly do not know the system but would use it if I knew how to use it."*
- *"I commute into Cville and I'd ride it all the time if there was a better regional transit authority with buses that started in outlying counties and connected with Cville busses. If I could put my bike on the bus I would seriously never drive into Cville again."*
- *"Reduce needs for transfers – I attend Charlottesville High School and the area is only serviced by one route, which takes me a mile to get to. Other stops require a transfer, making the 30-minute walk much easier."*
- *"A better app would be helpful! To see buses in real time, report issues, even show bus capacity would be nice!"*
- *"Frequency increased to at least 30 minutes on all routes. Sunday service."*
- *"I am planning to start riding the bus in the fall, but I'm discouraged at how long it will take me to get to my destination, despite start and end points being in the city and not too far from each other. I'm going to do it anyway! But hope we can continue to build out public transit – plus I know lots of people rely on it more than me!"*

### *Demographics*

Survey respondents that chose to respond to the optional demographic questions reported the following demographic characteristics:

- 15 percent of survey respondents indicated that they are students
- Gender identity of survey respondents was near-evenly split (30 percent male, 37 percent female)
- 16 percent of respondents indicated an age 60 or older; 41 percent indicated an age between 20 and 39
- 19 percent of respondents reported an annual household income of under $30,000, and 45 percent of respondents reported an annual household income of $30,000 or higher
- 10 percent of respondents reported having zero vehicles at their household, and 34 percent of respondents reported having one vehicle at their household

### Support for Transit

A series of stakeholder workshops was also held during the TSP development process to better understand the use of and support for transit in the community and identify unmet needs. Several key qualitative themes emerged from the perspectives and perceptions shared during these stakeholder workshops. Key takeaways are listed below.

- Support for transit is strong among Charlottesville area elected officials, members of the public, and institutions; and stakeholders are supportive of CAT's future growth and success
- There are many strengths of the system today, including zero-fare service, routes that serve most key destinations, a strong pedestrian and bicycle network that allows access to transit, and coordinated transfers between routes and other modes of transportation
- Zero-fare service has helped many people in the Charlottesville area access jobs, services, and opportunities – especially low-income individuals
- Public transit is critical to meeting the goals of the region, especially goals focused on quality of life, economic development, climate, traffic safety, livability, affordability, and equity
- When presented with the types of decisions on tradeoffs that CAT must make when providing services, stakeholders expressed:
    - A strong preference for providing more frequent service to a limited geographic area (83 percent) versus covering a greater geographic area with lower frequency service (17 percent)
    - A strong preference for walking a greater distance to a bus stop for more frequent service (90 percent) versus walking a shorter distance to a bus stop but waiting longer for less frequent service (10 percent)

- A moderate preference for proving frequent service during the peak hours (64 percent) versus less frequent service all day long (36 percent)

## 2.2 Evaluation of Transit Market Demand and Underserved Areas

This section provides an overview of the market for transit riders in the city of Charlottesville and urbanized portions of Albemarle County. This evaluation includes study of demographic, socioeconomic, residential, and employment data to indicate where transit service may be most effective or needed, as well as helping to show future areas where service may be necessary and/or successful.

### Transit Demand and Underserved Area Evaluation

The demand for transit is influenced by a variety of factors, such as land use, development patterns, population and employment density, the prevalence of disadvantaged populations, and the associated costs of various modes of transportation. Of these factors, population and employment density are the most important in determining the underlying demand for transit. This is because the reach of transit is generally limited to walking distance to/from a bus stop (typically, 0.25 miles) and therefore relies on higher numbers of people and jobs in high concentration.

This section presents land use, employment, population, and demographic data to reveal opportunities both inside and outside of the existing CAT service area. Locations with high concentrations of variables that influence transit demand are highlighted.

#### *Land Use, Employment, Population, and Demographics*

This section explores several of the most influential factors in determining transit demand; including land use and development patterns, employment, population, and sociodemographic characteristics (including minority, older adults, low-income, those with limited English proficiency, persons with disability, and zero-car populations).

#### Land Use

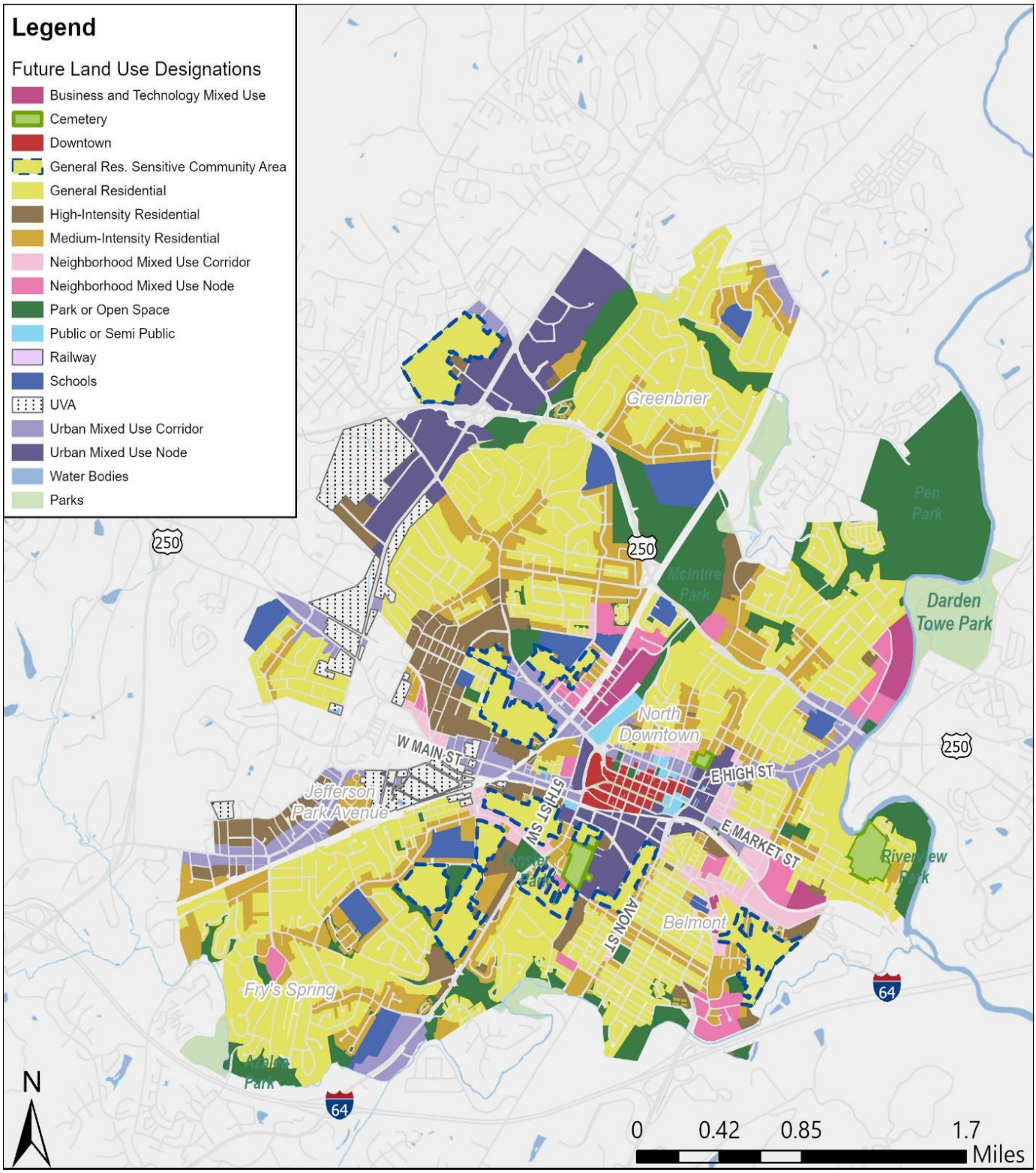
Land use is inextricably linked with the long-term success of transit networks. However, in many cases, the institutional powers with authority over land use do not control the local transit systems, and vice versa. In cities such as Charlottesville, where the transit system is managed directly by the City government, a single entity has the authority to shape both the transit network and future land use to accommodate future growth, maximizing the benefits that result from transit-supportive land use and coordinated service.

Charlotteville's future land use map shown in **Figure 2-6**, adopted as part of the City's 2021 Comprehensive Plan, features an emphasis on mixed-use development over single-use zoning. This is reflective of the City's objectives relating to future land use, which include:

- Increase opportunities for development near community amenities such as shopping, employment centers, and transit.
- Explore the development potential of vacant or underutilized properties.
- Increase access to transit, as well as walking and biking infrastructure, to help achieve the City's climate goals and connect the community to jobs and amenities.
- Foster walkable, bikeable, and transit-accessible neighborhoods.
- Support the development of 'under-utilized' grayfield sites along community corridors.
- Provide opportunities to develop a variety of housing options near employment and community services.
- Encourage compact block and street networks and a built environment that facilitates walking, biking, and bus riding.

This focus on mixed-use development and increased access to transit will allow more residents to live where they work and play, reducing their dependence on personal vehicles and granting them more mobility options such as walking, biking, and transit for their daily trips. Additionally, the emphasis on infill development and redevelopment promotes transit usage by incentivizing transit-supportive development and building where transit already exists, rather than on the periphery where transit service must be extended to new developments. This allows the City to maximize its public services by concentrating new development in established areas with quality transit.

*Figure 2-6: Future Land Use Map for City of Charlottesville*



### Employment Density and Growth

Employment is one of the strongest factors in predicting demand for transit because places of employment generate work trips. This section displays and describes employment throughout the CAT service area using employment totals and employment density.

### Existing Employment

Traditionally, employment has been a key factor influencing transit ridership, as these trips tend to happen on a regular and consistent basis. While changes in employment location and labor market trends remain in flux because of the COVID-19 pandemic, traditional employment centers remain substantial generators of transit ridership.

Total jobs and density of jobs in Charlottesville and Albemarle County are shown in **Table 2-5**. The top ten employers in Charlottesville and Albemarle County are outlined in **Table 2-6**.

*Table 2-5: Total Employment and Density*

| | CAT Service Area | City of Charlottesville | Albemarle County |
|---|---|---|---|
| **Acreage** | 9,846.7 | 6,560.0 | 461,100.8 |
| **Jobs** | 98,108 | 46,554 | 112,396 |
| **Density (Jobs per Acre)** | 10.0 | 7.1 | 0.2 |

*Source: Longitudinal Housing and Employment Dynamics (LEHD) 2020 block-level data*

*Table 2-6: Top Employers in Charlottesville and Albemarle County*

| Rank | City of Charlottesville | Albemarle County |
|---|---|---|
| **1** | University of Virginia/Blue Ridge Hospital | University of Virginia/Blue Ridge Hospital |
| **2** | County of Albemarle | Sentara Healthcare |
| **3** | UVA Health Services Foundation | U.S. Department of Defense |
| **4** | City of Charlottesville | County of Albemarle |
| **5** | Charlottesville City School Board | Crutchfield Corporation |
| **6** | Servicelink Management Com Inc | Walmart |
| **7** | Morrison Crothall Support | Piedmont Virginia Community College |
| **8** | ADP Totalsource Co XXIII Inc | Northrop Grumman Corporation |
| **9** | Assoc for Investment Management | RMC Events |
| **10** | Labormax Staffing | Atlantic Coast Athletic Club |

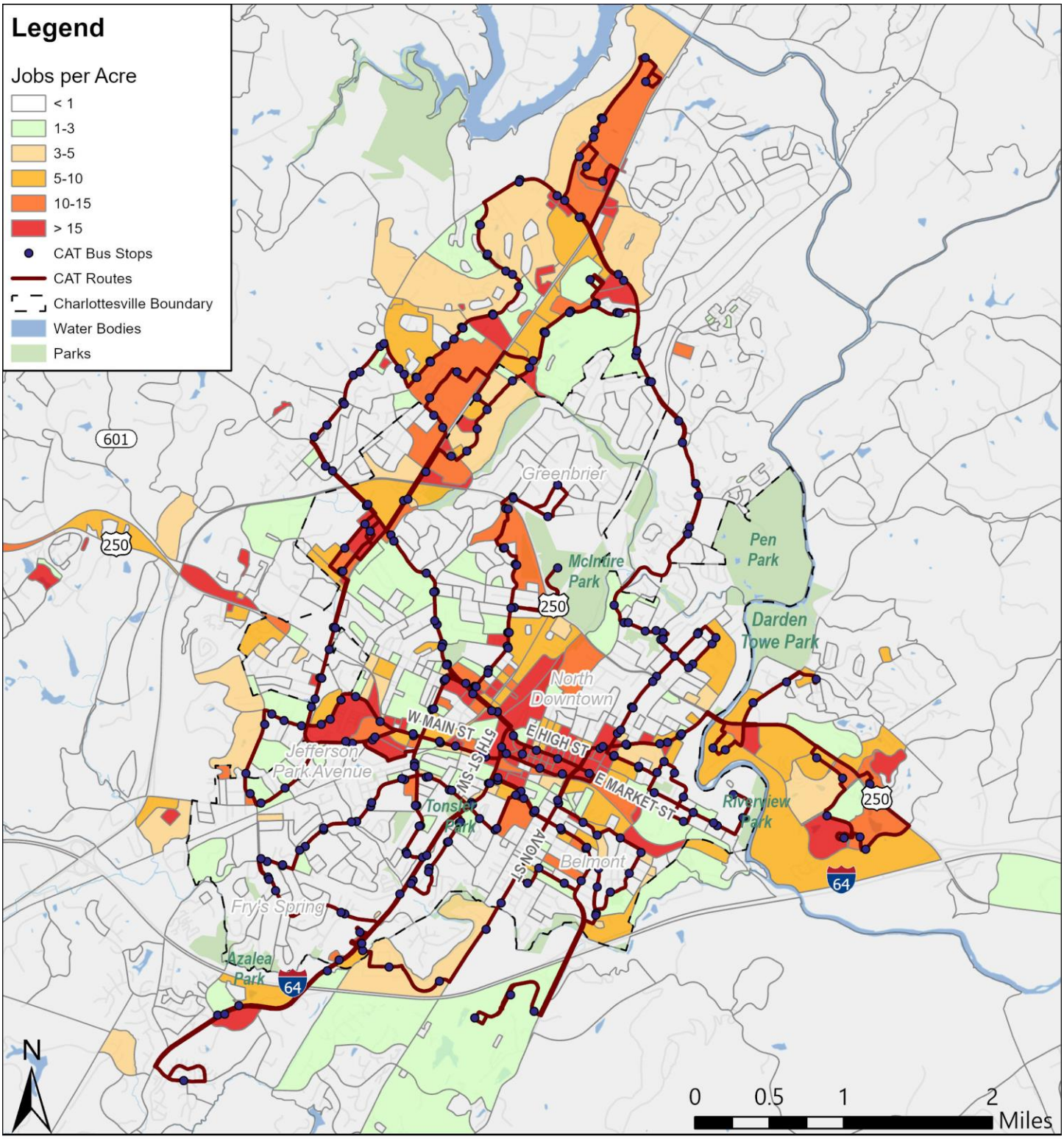
*Source: Virginia Employment Commission Economic Information & Analytics Division*

A map showing the area's employment density based on 2020 block-level Longitudinal Housing and Employment Dynamics (LEHD) data is provided in **Figure 2-7**.

Much of the employment within the City of Charlottesville is located in the city center, particularly along the West Main Street corridor linking Downtown with the University of Virginia grounds and UVA Hospital complex. The distribution of employment centers in the CAT service area is highly concentrated in a few key areas:

- Downtown Charlottesville
- Pantops
- US-29 Corridor
- University of Virginia & UVA Hospital
- US-250/Ivy Road Corridor

*Figure 2-7: Existing Employment Density Map for CAT Service Area*



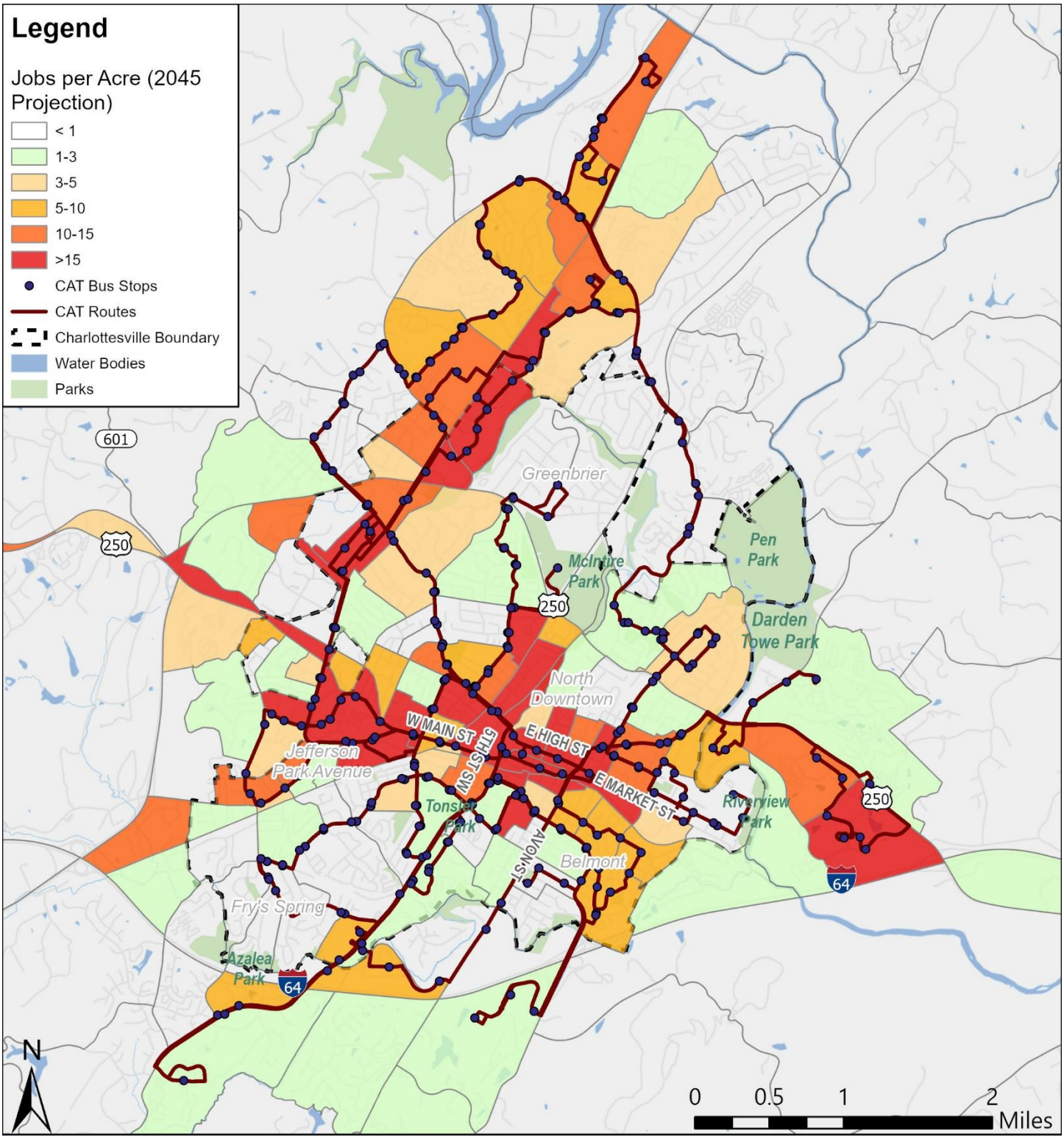

2020 Longitudinal Employment Housing Dynamic (LEHD) Block-Level Data

### Employment Growth

Echoing the goals of mixed-use and infill development laid out in the city's Comprehensive Plan, projected employment data for 2045 shows significant concentration of employment in central Charlottesville. Significant job centers also remain on the outskirts of the city, including Pantops, the US-29 corridor to the north, UVA, and the US-250 corridor to the west.

A map showing the area's 2045 projected employment density based on traffic analysis zone-level data from the Charlottesville-Albemarle Regional Travel Model is provided in **Figure 2-8**. Some of the concentration of jobs projected for 2045 could be due to the higher-level data used in the projection (done at the traffic analysis zone-level rather than at the block-level). Still, it appears that there will be an intensification of job density within Charlottesville's core, which would be congruent with the City's goals aimed at advancing mixed-use and infill development within the city center.

*Figure 2-8: Projected 2045 Employment Density Map for CAT Service Area*




Traffic Analysis Zone data from Charlottesville/Albemarle Regional Travel Model

### Population Density and Growth

When determining the optimal location to provide transit service, it is critical to consider current and future population density. Fixed-route public transit operates most efficiently when it serves high-density centers of population and employment, ideally within a quarter- to a half-mile walking distance. This allows transit riders to access a variety of destinations and complete trips for many different purposes, including (but not limited to) work, shopping, school, leisure, and social activities. In this way, population density is important for fixed-route transit because it allows a single stop to serve a variety of population needs within a quarter-mile.

### Existing Population

According to the *Transit Cooperative Research Program (TCRP) Transit Capacity and Quality of Service Manual, 2nd Edition*, a population density of 3 households/acre (about 6 people per acre) or 4 jobs/acre are sufficient to support an hourly fixed-route transit service. While areas with lower densities may not support regular fixed-route service, they can still be served effectively by demand-responsive service.

As shown in **Table 2-7**, the CAT service area (defined as the area within a quarter mile of a CAT bus stop) has a population density of 6.6 persons per acre, compared to the City of Charlottesville (7.1) or Albemarle County (0.2). A population density of 6.6 persons per acre shows that the region overall features the necessary density to support transit service.

*Table 2-7: Population Total and Density*

| | CAT Service Area | City of Charlottesville | Albemarle County |
|---|---|---|---|
| **Acreage** | 9,846.7 | 6,560.0 | 461,100.8 |
| **Population** | 65,386 | 46,554 | 112,396 |
| **Density (Population per Acre)** | 6.6 | 7.1 | 0.2 |

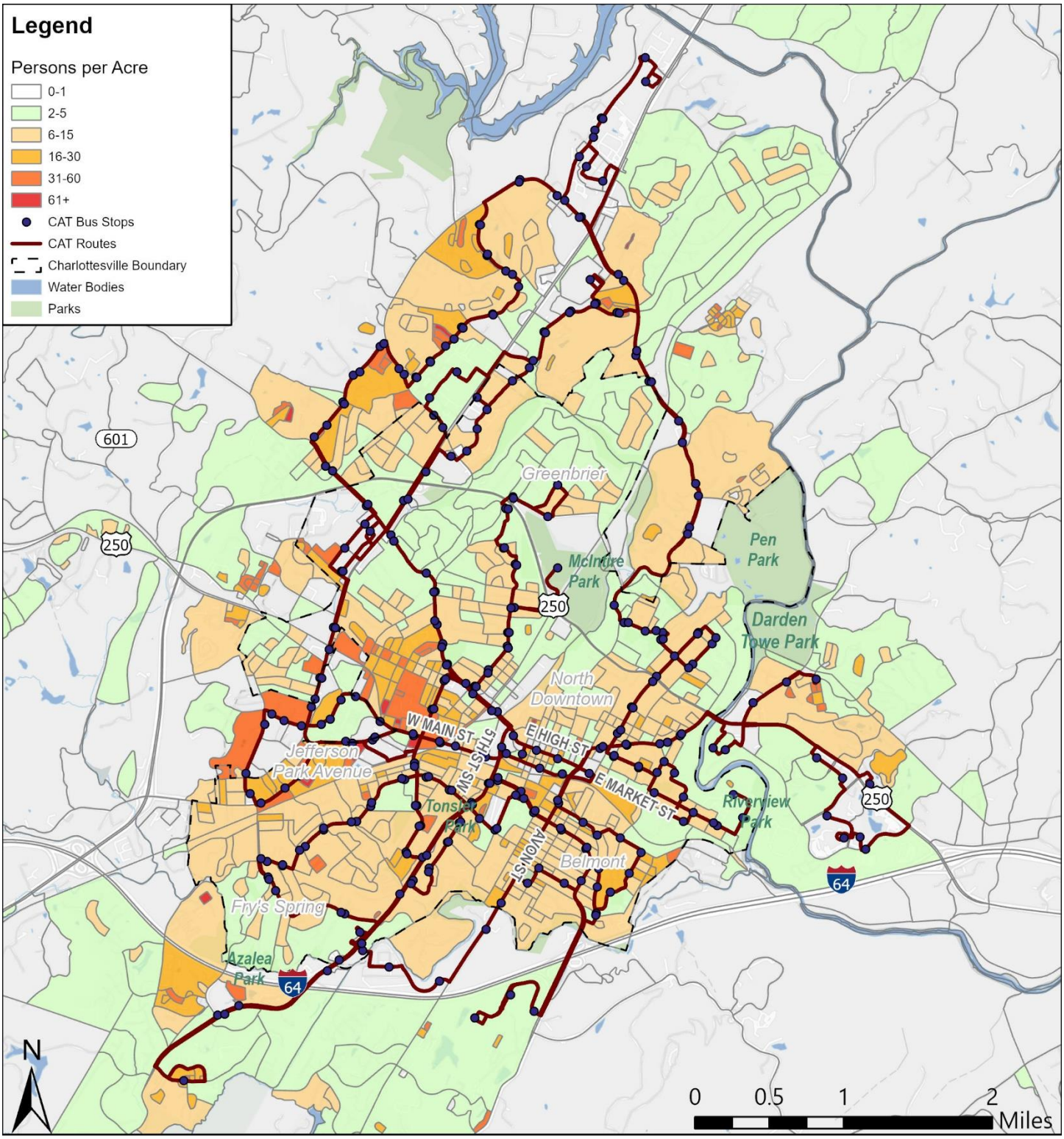
*Source: US Census (2020)*

**Figure 2-9** shows the existing 2020 census-block level population density for the CAT service area. Areas in gray or green depict low densities (fewer than 6 persons per acre), yellow depicts moderate densities (6-30 persons per acre), while orange and red depict high densities (greater than 30 persons per acre).

Locations with the highest population densities include:

- Areas surrounding the University of Virginia grounds, including the Jefferson Park Avenue and Venable neighborhoods, served by routes 7, 8, 9, and the Trolley
- Neighborhoods south of Downtown and UVA, including Belmont, Ridge Street, Fifeville, Johnson Village, and Fry's Spring, served by routes 1, 2, 3, 4, and 6
- The US-29 corridor north of the City, particularly housing complexes between US-29 and Hydraulic Road, served by route 5
- Housing complexes south of the city off Old Lynchburg Road, served by route 3
- Pantops, north of US-250, served by route 10

*Figure 2-9: Existing Population Density within the CAT Service Area*




2020 Decennial Census Block-Level Data

## Population Growth

According to the Charlottesville-Albemarle Regional Travel Model, the City of Charlottesville is projected to gain around 10,200 new residents between 2020 and 2045, an increase of nearly 22 percent (**Table 2-8**). During the same period, Albemarle County is expected to gain about 14,000 residents, a 12 percent increase. The city's higher growth rate is a positive for building transit-supportive density, as it will allow CAT service to ultimately serve more people more efficiently without necessarily needing to increase service or extend routes to new areas. In fact, assuming the service area remains unchanged, its population is projected to increase by 21%. This also represents a reversal of previous trends, as shown in **Table 2-9**, wherein Albemarle County had a higher growth rate than the City, indicating that in the future more development and population growth will be concentrated within the City of Charlottesville.

*Table 2-8: Projected 2045 Total Population and Density*

| | CAT Service Area | City of Charlottesville | Albemarle County |
|---|---|---|---|
| **Acreage** | 9,846.7 | 6,560.0 | 461,100.8 |
| **2020 Population** | 65,386 | 46,554 | 112,396 |
| **2020 Density (Population per Acre)** | 6.6 | 7.1 | 0.2 |
| **2045 Projected Population** | 79,397 | 56,770 | 126,358 |
| **2045 Projected Density** | 11.1 | 8.7 | 0.3 |
| **% Change (2020-2045)** | 21.4% | 21.9% | 12.4% |

*Source: Charlottesville-Albemarle Regional Travel Model*

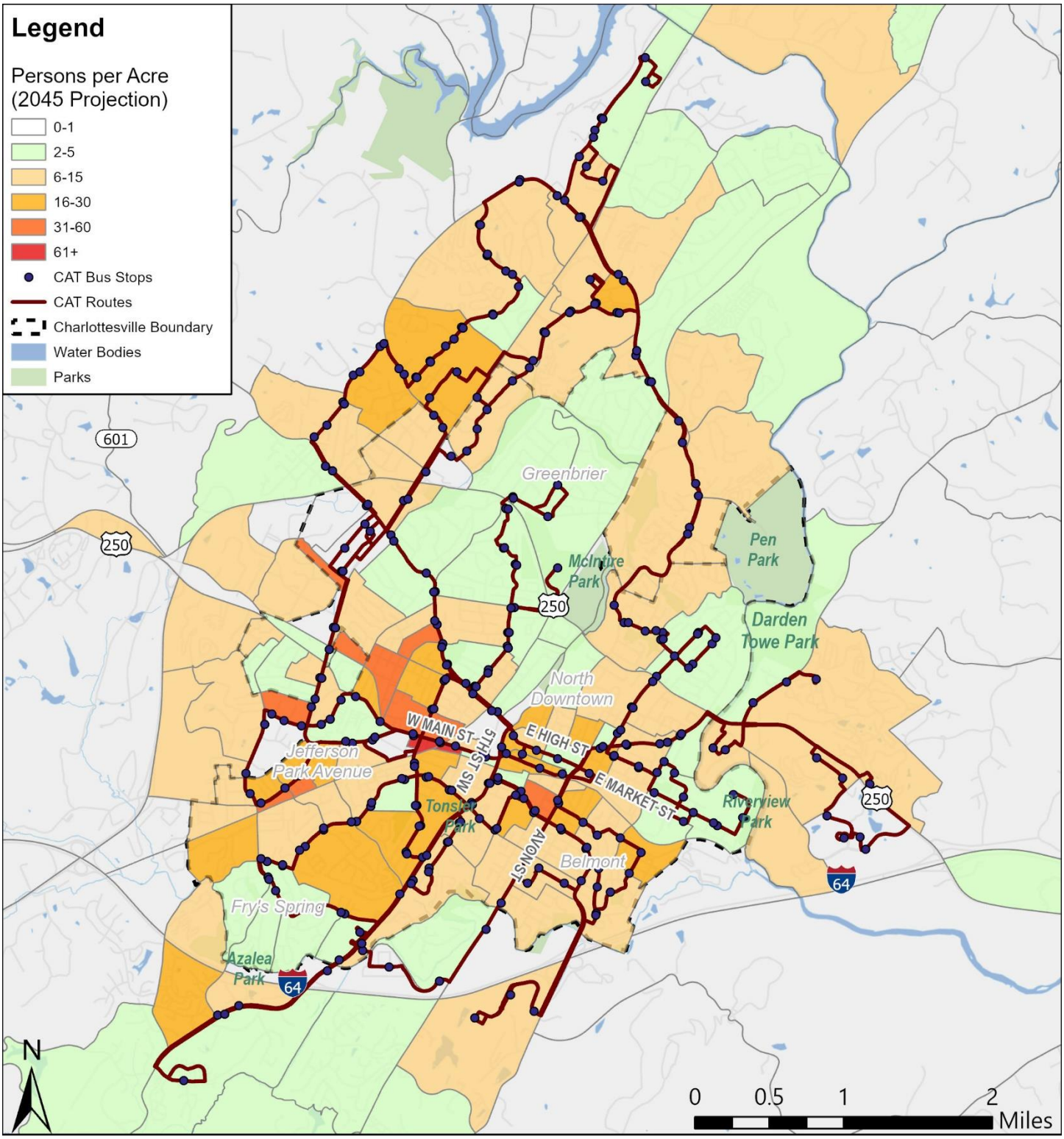
*Table 2-9: Historical Population Trends for Charlottesville and Albemarle County*

| Year | City of Charlottesville | | Albemarle County | |
|---|---|---|---|---|
| | Population | % Change | Population | % Change |
| **1960** | 29,427 | - | 30,969 | - |
| **1970** | 38,880 | 32.1% | 37,780 | 22.0% |
| **1980** | 39,916 | 2.7% | 55,783 | 47.7% |
| **1990** | 40,341 | 1.1% | 68,040 | 22.0% |
| **2000** | 40,099 | -0.6% | 79,236 | 16.5% |
| **2010** | 43,475 | 8.4% | 98,970 | 24.9% |
| **2020** | 46,553 | 7.1% | 112,395 | 13.6% |

*Source: US Census*

**Figure 2-10** shows the projected 2045 traffic analysis zone-level population density for the CAT service area. This data was obtained from the Charlottesville-Albemarle Regional Travel Model maintained by the Virginia Department of Transportation. Areas shaded gray or green depict low densities (fewer than 6 persons per acre), yellow depicts moderate densities (6-30 persons per acre), while orange and red depict high densities (greater than 30 persons per acre).

*Figure 2-10: Projected 2045 Population Density Map for CAT Service Area*




Traffic Analysis Zone data from Charlottesville/Albemarle Regional Travel Model

## Demographics

The following sections contain an analysis of demographics (e.g., the location and prevalence of population groups including minority groups, older adults, low-income earners, those with limited English proficiency, and persons with disabilities) and discussion of how these groups affect transit demand and/or the propensity to utilize public transit services.

### Minority Groups

Title VI of the Civil Rights Act of 1964 requires that CAT ensures equitable service provision. Thus, transit service must be delivered such that it does not exclude minority populations. These populations make up about 35% of the City of Charlottesville's population as of 2020 and are present throughout the service area. **Table 2-10** shows the total minority population and density in the city of Charlottesville and Albemarle County.

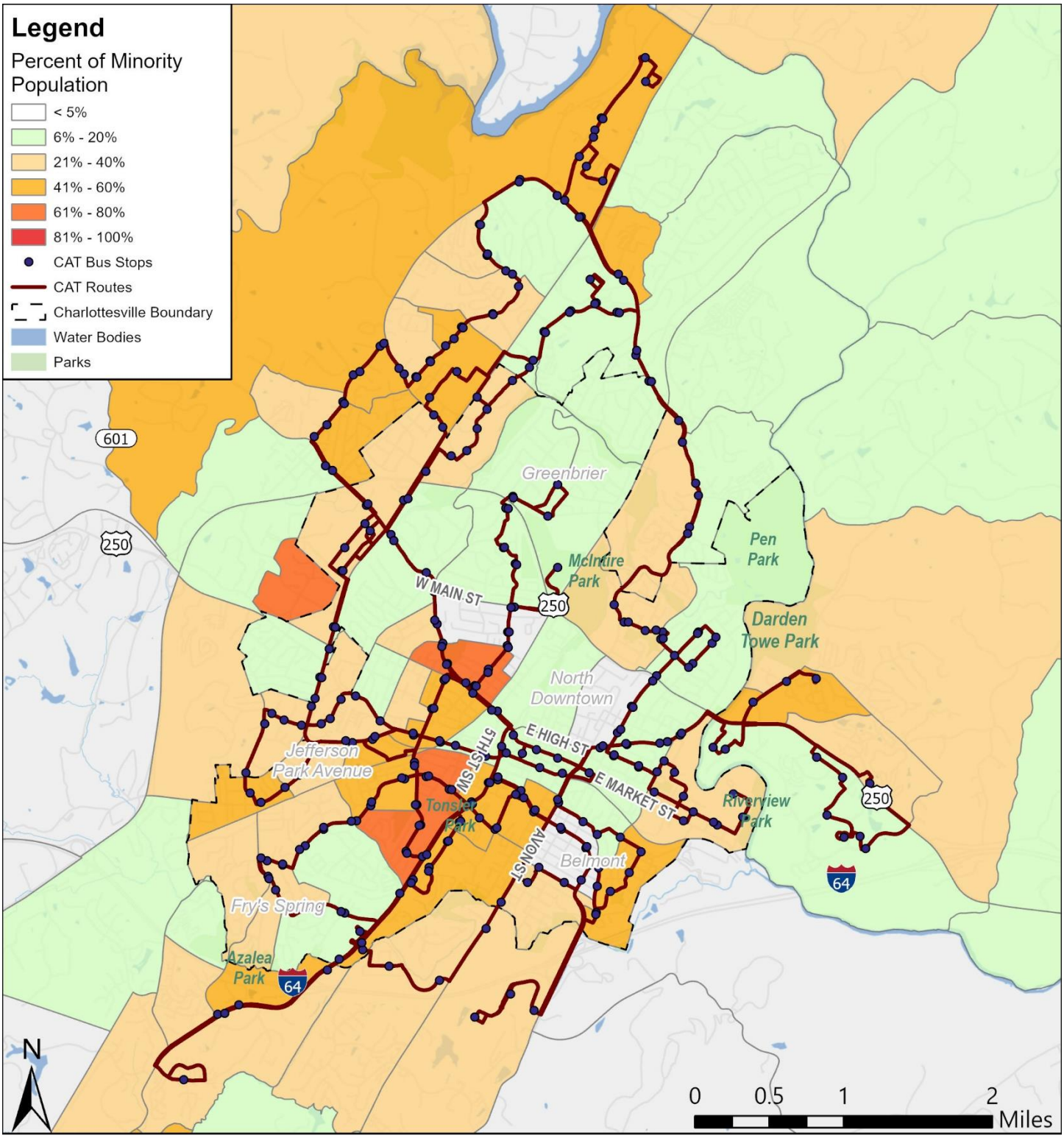
*Table 2-10: Minority Population Total and Density*

| | CAT Service Area | City of Charlottesville | Albemarle County |
|---|---|---|---|
| **Acreage** | 9,846.7 | 6,560.0 | 461,100.8 |
| **Minority Population** | 20,506 | 14,125 | 22,364 |
| **Density (Population per Acre)** | 2.1 | 2.2 | 0.0 |

*Source: US Census*

A map showing the distribution of minority population is provided in **Figure 2-11**. Notable concentrations are located in areas south and west of downtown Charlottesville, including the Fifeville, Rose Hill, 10th & Page, Ridge Street, and Jefferson Park Avenue neighborhoods; as well as along the US-29 corridor.

*Figure 2-11: Percentage of Minority Population within the CAT Service Area*




2021 American Community Survey (ACS) Block Group-Level Data

### Population Aged Under 18

Since most of the population under 18 are not of driving age, they tend to be reliant on other modes of transportation for their mobility, including transit. **Table 2-11** shows the total and density of the population under the age of 18 in the city of Charlottesville and Albemarle County.

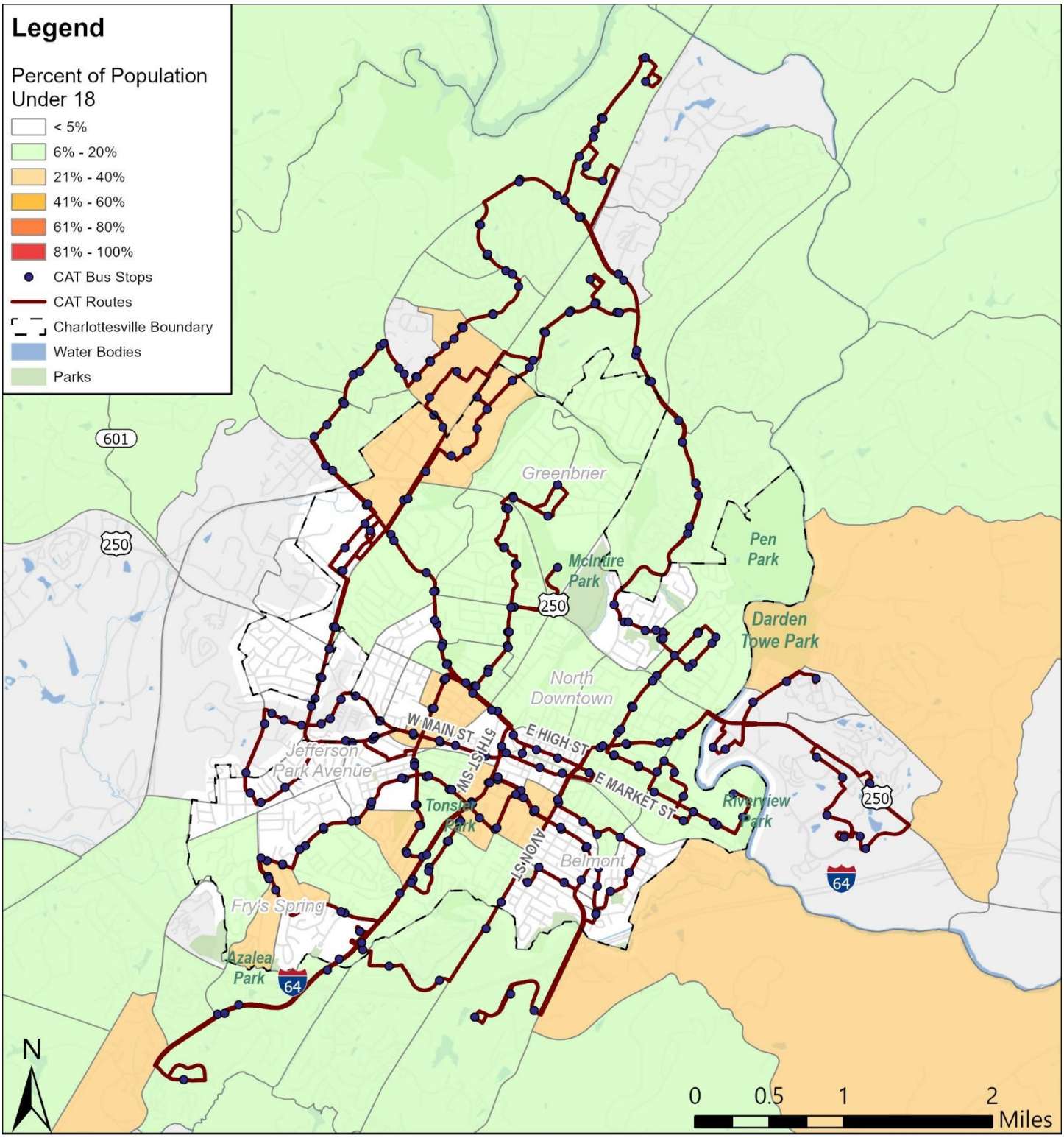
*Table 2-11: Population Under 18 Total and Density*

| | CAT Service Area | City of Charlottesville | Albemarle County |
|---|---|---|---|
| **Acreage** | 9,846.7 | 6,560.0 | 461,100.8 |
| **Population under 18** | 17,212 | 11,888 | 23,628 |
| **Density (Population per Acre)** | 1.7 | 1.8 | 0.1 |

*Source: US Census*

A map showing the distribution of population aged under 18 is provided in **Figure 2-12**. The population aged under 18 is dispersed throughout the service area, though concentrations exist in neighborhoods including Fifeville, Ridge Street, 10th & Page, and The Meadows; as well as along the US-29 corridor and on the eastern periphery of the CAT service area.

*Figure 2-12: Percentage of Population Aged Under 18 Map for CAT Service Area*




2021 American Community Survey Block Group-Level Data

### Population Aged 65 and Older

Seniors are a population that may be more inclined to use transit for their essential trips including shopping, socializing, and healthcare. This may be a result of high costs of vehicle ownership, or they may have other constraints on their mobility such as a loss of the ability to drive. **Table 2-12** shows the total and density of the population aged 65 and older in the city of Charlottesville and Albemarle County.

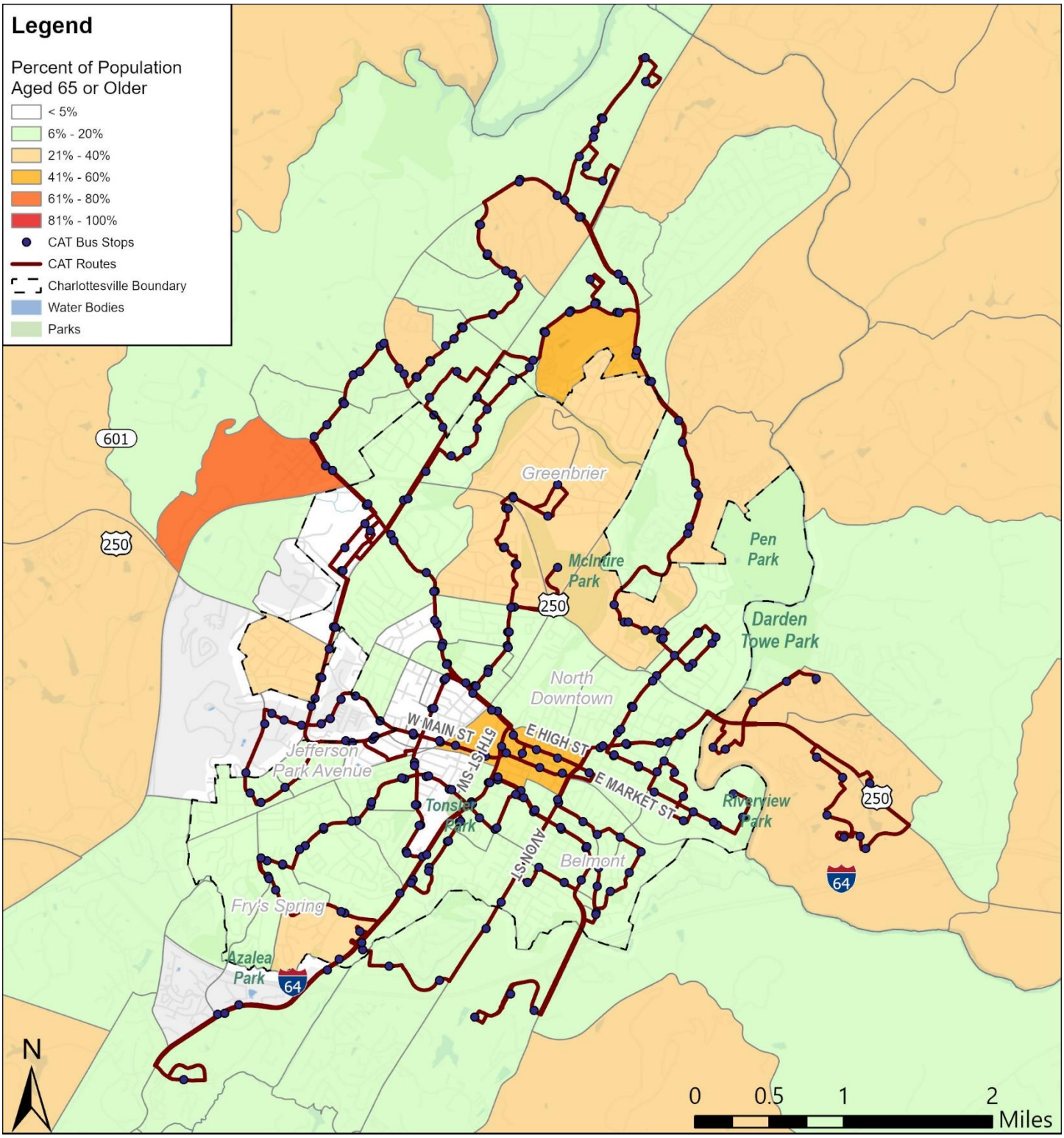
*Table 2-12: Population 65 and Older Total and Density*

| | CAT Service Area | City of Charlottesville | Albemarle County |
|---|---|---|---|
| **Acreage** | 9,846.7 | 6,560.0 | 461,100.8 |
| **Population 65 and Older** | 8,319 | 5,585 | 20,855 |
| **Density (Population per Acre)** | 0.8 | 0.9 | 0.0 |

*Source: US Census*

A map showing the distribution of population aged 65 and older is provided in **Figure 2-13**. Seniors are dispersed throughout the region but have high concentrations in the Branchlands and the Barracks areas north and west of the City of Charlottesville. Within the City, there are concentrations Downtown; in Starr Hill, Lewis Mountain, and Greenbrier; as well as parts of Fry's Spring, Barracks/Rugby, and Locust Grove.

*Figure 2-13: Percentage of Population Aged 65 or Older Map for CAT Service Area*




2021 American Community Survey Block Group-Level Data

### Low-Income Households

Households with low incomes, defined for this study as those having an income of $30,000 or less for a family of four based on federal poverty guidelines, tend to be more reliant on transit for their mobility because of the high costs of automobile ownership. **Table 2-13** shows the total and density of the low-income population in the city of Charlottesville and Albemarle County.

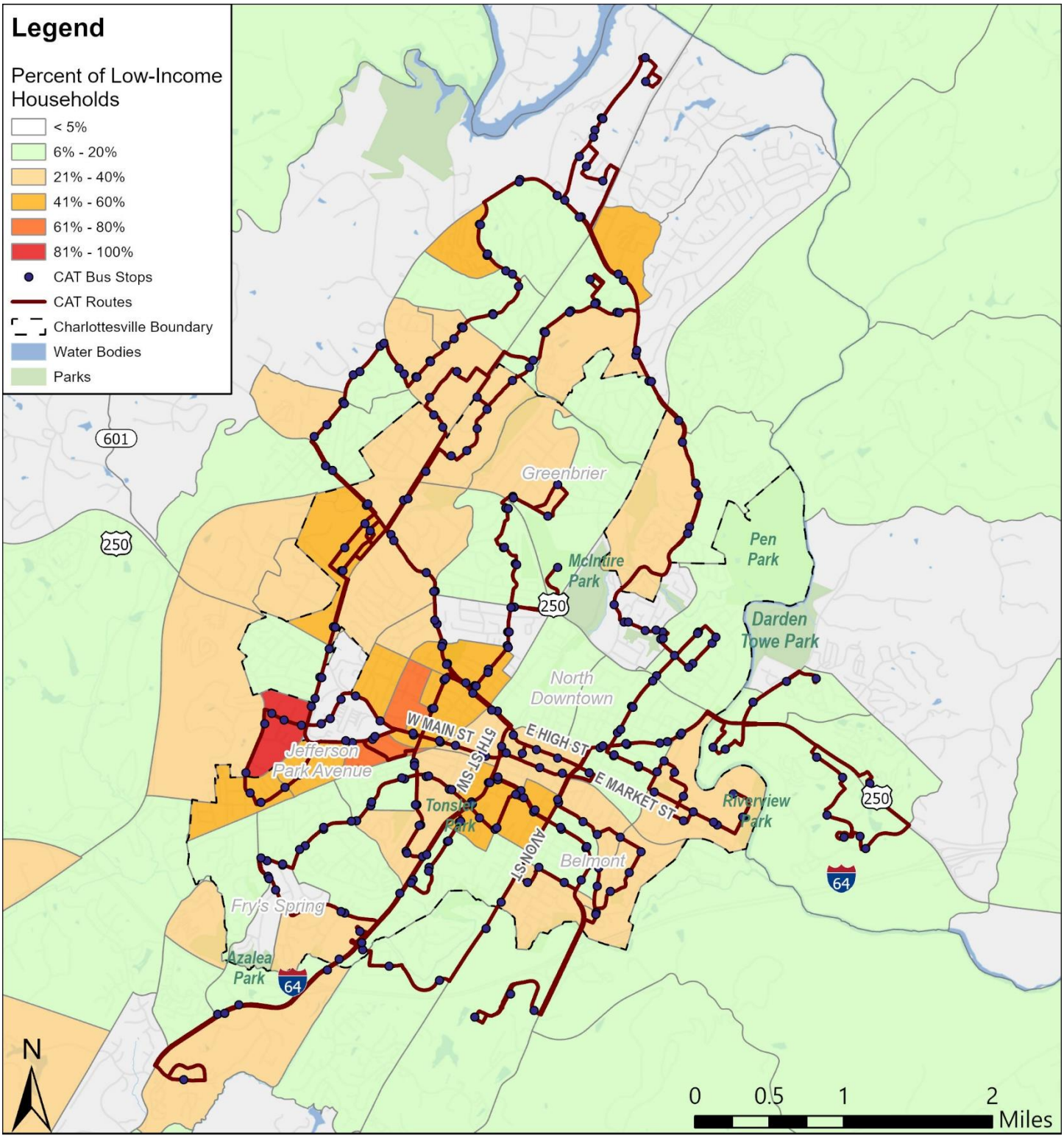
*Table 2-13: Low-Income Households Total and Density*

| | CAT Service Area | City of Charlottesville | Albemarle County |
|---|---|---|---|
| **Acreage** | 9,846.7 | 6,560.0 | 461,100.8 |
| **Low-Income Households** | 6,425 | 5,080 | 5,978 |
| **Density (Households per Acre)** | 0.7 | 0.8 | 0.0 |

*Source: US Census*

A map showing the distribution of low-income households is provided in **Figure 2-14**. There are high concentrations of low-income households in western Charlottesville near the University of Virginia grounds, possibly due to the high student population in those neighborhoods, which include Venable, Jefferson Park Avenue, 10th & Page, Ridge Street, and Barracks Road.

*Figure 2-14: Distribution of Low-Income Households for CAT Service Area*




2021 American Community Survey (ACS) Block Group-Level Data

### Zero-Vehicle Households

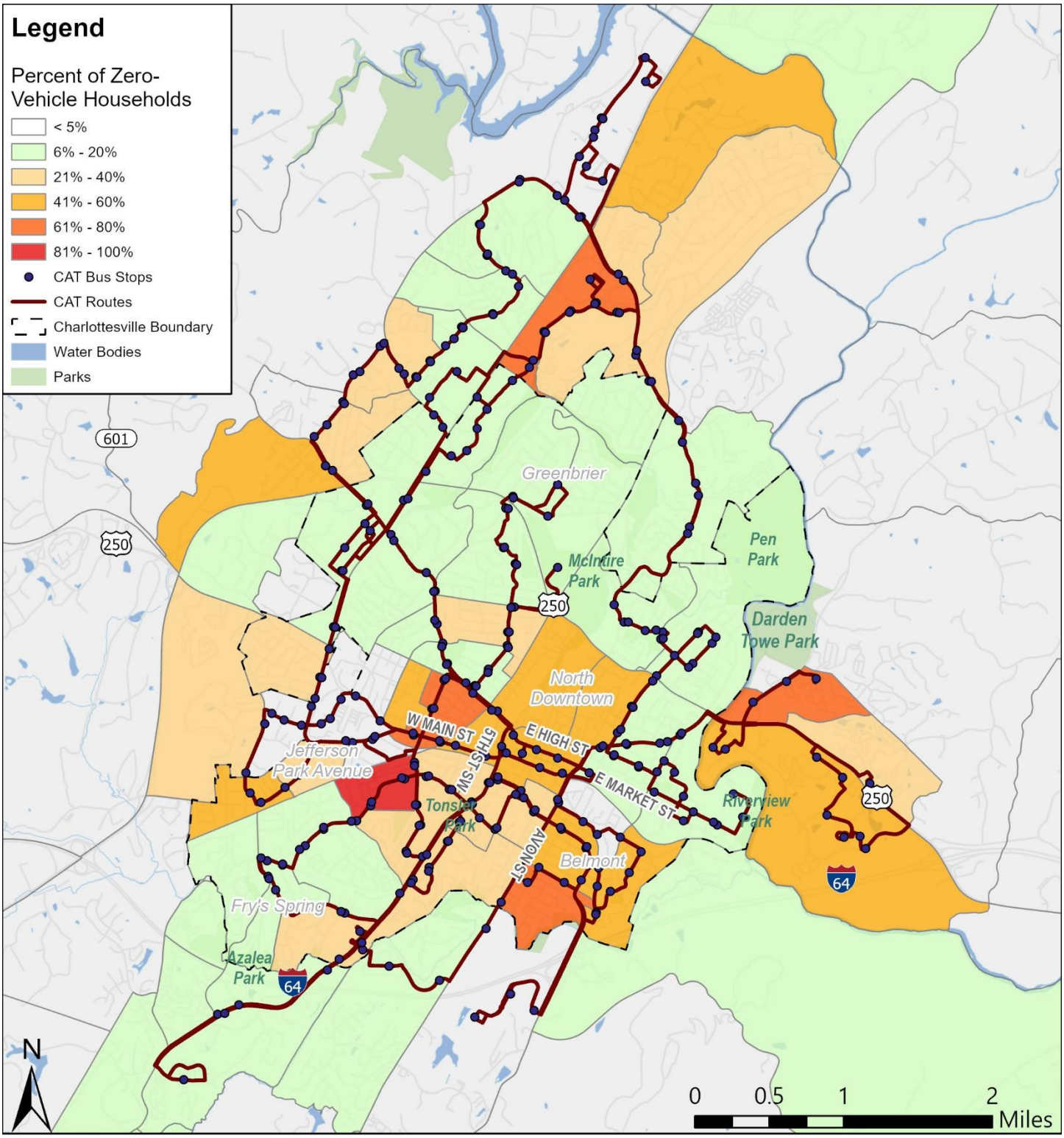
Households without access to personal vehicles are more likely to rely on transit as a primary mobility option. **Table 2-14** shows the total and density of zero-vehicle households in the city of Charlottesville and Albemarle County.

*Table 2-14: Zero-Vehicle Households Total and Density*

| | CAT Service Area | City of Charlottesville | Albemarle County |
|---|---|---|---|
| **Acreage** | 9,846.7 | 6,560.0 | 461,100.8 |
| **Zero-Vehicle Households** | 8,171 | 10,419 | 5,637 |
| **Density (Households per Acre)** | 0.8 | 1.6 | 0.0 |

A map showing the distribution of zero-vehicle households is provided in **Figure 2-15**. Areas with the highest concentrations of zero-vehicle households include Fifeville, Belmont, 10th & Page, Pantops, Downtown, Belmont, and the US-29 corridor.

*Figure 2-15: Distribution of Zero-Car Households for CAT Service Area*




2021 American Community Survey (ACS) Block Group-Level Data

### Persons with Disabilities

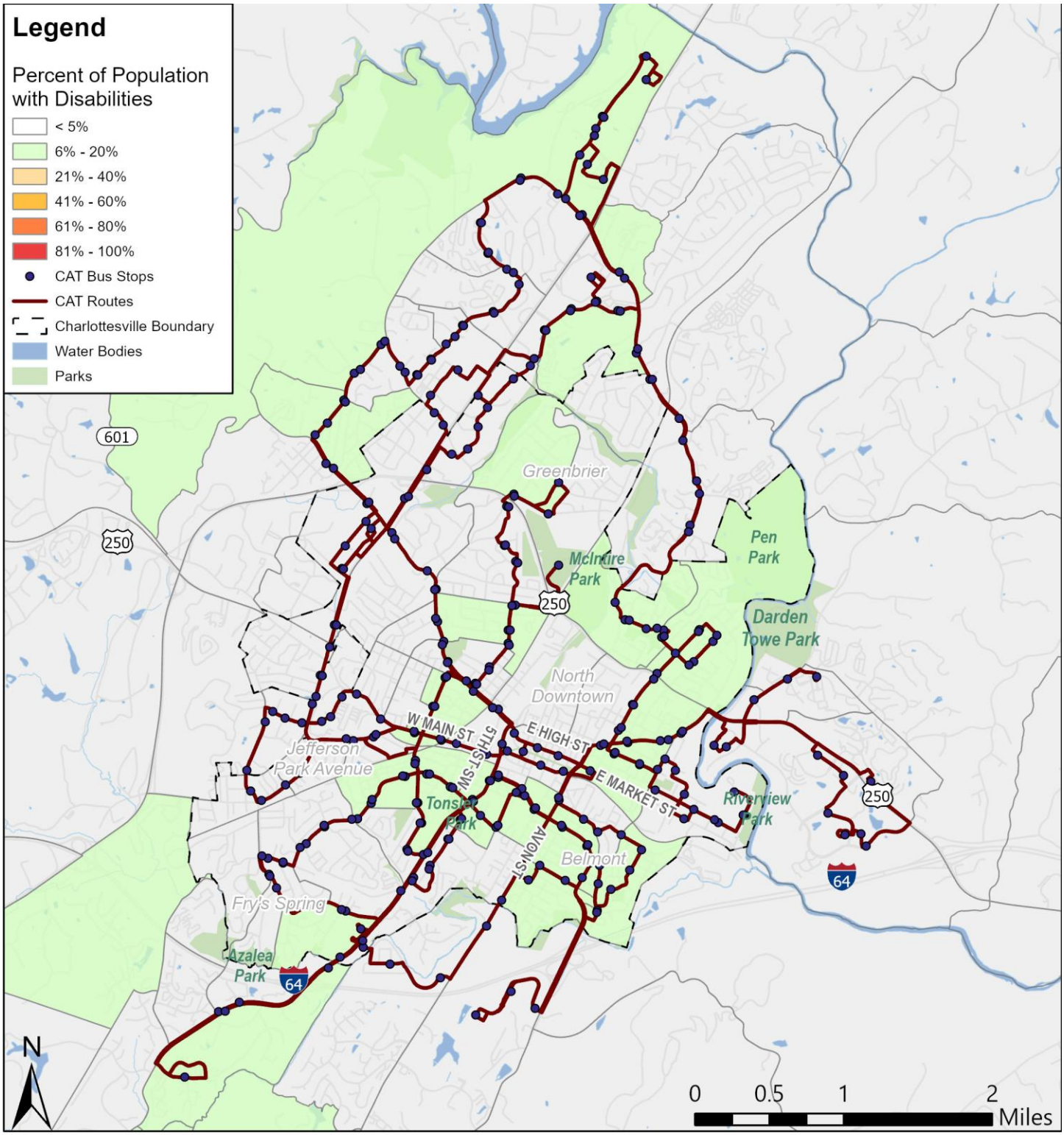
Persons with disabilities tend to rely more heavily on public transportation, either because of physical difficulties accessing other modes or because of the high costs of owning and operating a personal vehicle. **Table 2-15** shows the total and density of the population of persons with disabilities in the city of Charlottesville and Albemarle County.

*Table 2-15: Population with Disabilities Total and Density*

| | CAT Service Area | City of Charlottesville | Albemarle County |
|---|---|---|---|
| **Acreage** | 9,846.7 | 6,560.0 | 461,100.8 |
| **Population with Disabilities** | 2,635 | 1,994 | 3,805 |
| **Density (Households per Acre)** | 0.3 | 0.3 | 0.0 |

A map showing the distribution of persons with disabilities is provided in **Figure 2-16**. Within the service area, the highest concentrations of persons with disabilities are in Fifeville, Belmont, and Branchlands.

*Figure 2-16: Distribution of Population with Disabilities for CAT Service Area*




2021 American Community Survey (ACS) Block Group-Level Data

### Population with Limited English Proficiency

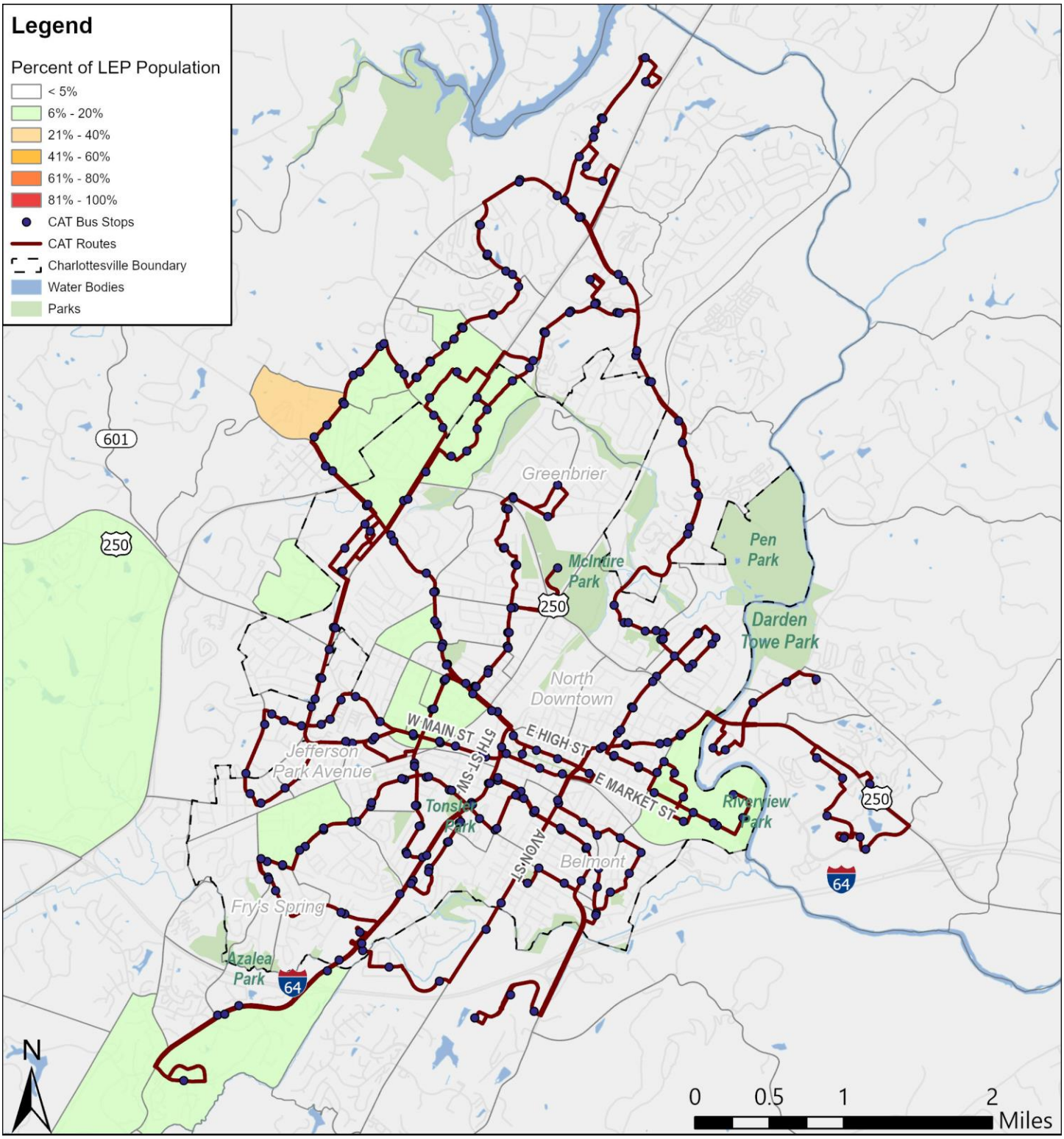
In ensuring equity of service provision and full compliance with Title VI, populations with limited English proficiency (LEP) must also be considered. **Table 2-16** shows the total and density of the LEP population in the city of Charlottesville and Albemarle County.

*Table 2-16: Limited English Proficiency Population Total and Density*

| | CAT Service Area | City of Charlottesville | Albemarle County |
|---|---|---|---|
| **Acreage** | 9,846.7 | 6,560.0 | 461,100.8 |
| **LEP Population** | 2,239 | 941 | 1,965 |
| **Density (Households per Acre)** | 0.2 | 0.1 | 0.0 |

A map showing the distribution of LEP population is provided in **Figure 2-17**. Within the service area, the highest concentrations of LEP population are in the Barracks and Southwood areas of Albemarle County.

*Figure 2-17: Distribution of Limited English Proficiency (LEP) Population within the CAT Service Area*




2021 American Community Survey (ACS) Block Group-Level Data

### *Opportunities to Expand Service to Underserved Areas*

This section analyzes opportunities to expand service to underserved areas. To identify locations and times that are underserved, transit service is evaluated against the demand for transit. This is done by comparing demand with the availability and frequency of the existing transit service. The analysis identifies areas with an imbalance between CAT transit services and the community's unmet need.

The framework for evaluating transit supply and demand can be summarized into three steps:

1. Evaluate transit demand using demand metrics (activity density and transit propensity density)
2. Assess transit supply using service data (transit supply)
3. Compare transit supply and demand metrics (Activity density and transit propensity density) to locate areas of imbalance (low supply and high demand)

Places with low transit supply and high demand may represent opportunities for increasing or expanding service. Conversely, areas with low transit demand and high supply may represent opportunities for reducing or eliminating service.

#### Transit Potential

Higher densities of residents and/or jobs in an area correlate with higher transit ridership. Because most trips start or end at home, and work trips compose a large portion of overall travel, higher concentrations of potential origin and destination points within a given area make it more likely to support transit service.

By combining the population and employment densities present in each traffic analysis zone (TAZ), the area's transit potential can be evaluated to determine new areas where fixed route transit may be viable, or potentially where it is currently operating despite a lack of supportive density. Though employment and population density are not the sole factors influencing where transit should operate, they are good indicators of where service is most viable. Transit potential is described using the categories outlined in **Table 2-17**.

*Table 2-17: Transit Potential Thresholds*

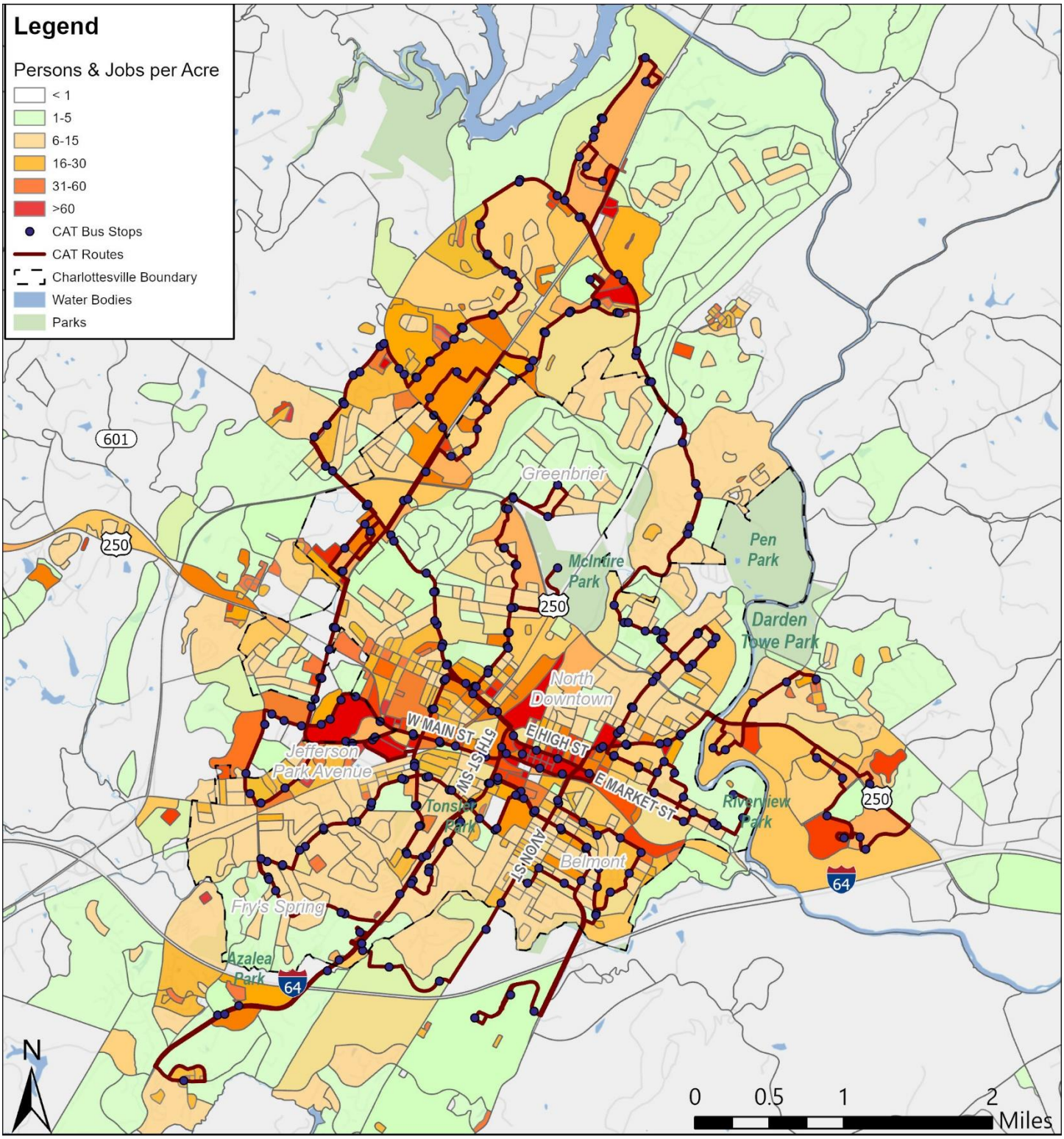
| Category | People and Jobs per Acre |
|---|---|
| **Negligible** | <1 |
| **Low** | 1-5 |
| **Low-Moderate** | 6-15 |
| **Moderate** | 16-30 |
| **Moderate-High** | 31-60 |
| **High** | >60 |

*Source: TCRP Transit Capacity and Quality of Service Manual, 2nd Edition*

Using data from the 2020 Census, population densities were calculated at the block level. Job densities were also calculated at the block level using Longitudinal Employer-Household Dynamics (LEHD) data from the Census Bureau. These two factors were then added together to calculate the overall job + population density for each Census block in Charlottesville and Albemarle County to determine each block's transit potential.

A map showing the region's transit potential is included in **Figure 2-18**. Areas with the highest transit potential include the downtown core, University of Virginia grounds, Pantops, and the US-29 corridor. With a notable exception of the Greenbrier neighborhood, most of the City of Charlottesville features job and population densities that can support regular transit service.

*Figure 2-18: Transit Potential for the CAT Service Area*




2020 Decennial Census/Longitudinal Employment Housing Dynamics (LEHD) Block-Level Data

### Transit Propensity

A transit propensity index uses population, employment, and demographic characteristics to determine the variability and location of areas with high demand and need for transit service. The consideration of demographic statistics is critical, as certain subgroups tend to use and rely on transit more than others. For example, a neighborhood with many zero-car households will likely to be more transit-supportive than one where most households own one or more cars.

This transit propensity index was developed using the 2021 U.S. Census American Community Survey (ACS) block group-level data. Each block group was ranked based on demographic or employment characteristics (such as total population or total jobs). Each block group was then assigned a score for each characteristic based on its rank. Scores were weighted equally for each characteristic and combined to create a propensity score for each block group.

For this study, it is assumed that those living in areas with higher total population, as well as higher concentrations of seniors, youth, low-income households, zero-vehicle households, and disabled persons will have a greater propensity to use transit over other mobility options.

**Table 2-18** outlines the top 10 block groups within the CAT service area for transit propensity.

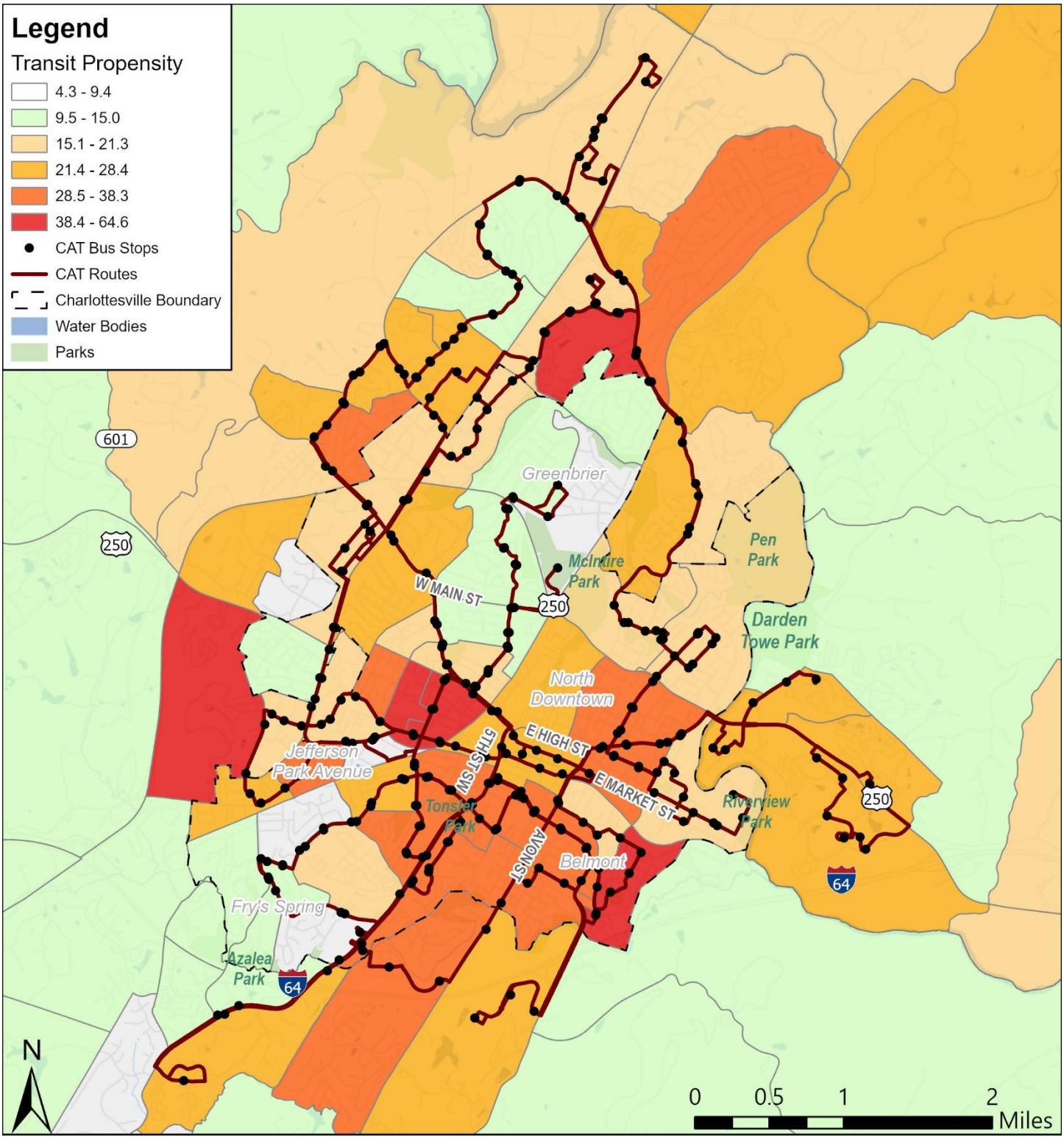
*Table 2-18: Block Groups with High Transit Propensity*

| Rank | Census Tract | Block Group | Area | Propensity Score | Key Factors |
|---|---|---|---|---|---|
| **1** | 106.03 | 1 | Branchlands | 64.6 | • Seniors<br>• Persons w/Disabilities |
| **2** | 2.02 | 2 | Venable (Southeast) | 55.2 | • Low-Income Households<br>• Zero-Vehicle Households |
| **3** | 109.04 | 2 | UVA West Grounds | 53.0 | • Youth<br>• Total Population |
| **4** | 4.02 | 3 | Belmont (East) | 46.7 | • Low-Income Households<br>• Zero-Vehicle Households |
| **5** | 2.02 | 1 | 10th & Page | 45.6 | • Zero-Vehicle Households<br>• Low-Income Population<br>• Persons w/ Disabilities |
| **6** | 6 | 2 | Jefferson Park Avenue (Central) | 38.3 | • Low-Income Households<br>• Zero-Vehicle Households |
| **7** | 4.01 | 1 | Ridge Street (North) / Belmont (West) / North Downtown (South) / Fifeville (East) | 37.4 | • Zero-Vehicle Households<br>• Low-Income Households |
| **8** | 5.01 | 1 | Fifeville (Central) | 36.2 | • Persons w/Disabilities<br>• Low-Income Households<br>• Zero-Vehicle Households |
| **9** | 4.01 | 2 | Ridge Street (Central/South) | 34.6 | • Zero-Vehicle Households<br>• Total Population |
| **10** | 2.02 | 3 | Venable (South) | 34.6 | • Zero-Vehicle Households |

A map showing the transit propensity scores by Census block group is shown in **Figure 2-19**. Overall, transit propensity is highest in Charlottesville's core. This includes downtown as well as areas surrounding the University of Virginia grounds. Neighborhoods east and south of downtown including Martha Jefferson, Belmont, Ridge Street, and Fifeville score highly as well.

Transit propensity is high in the city's core because these neighborhoods tend to have higher population densities, as well as higher rates of low-income households and households without access to vehicles. Several of the highest-scoring block groups also have high rates of youth population, seniors, or persons with disabilities. These factors make the core a good location for transit service, as it will serve populations that are more likely to use it.

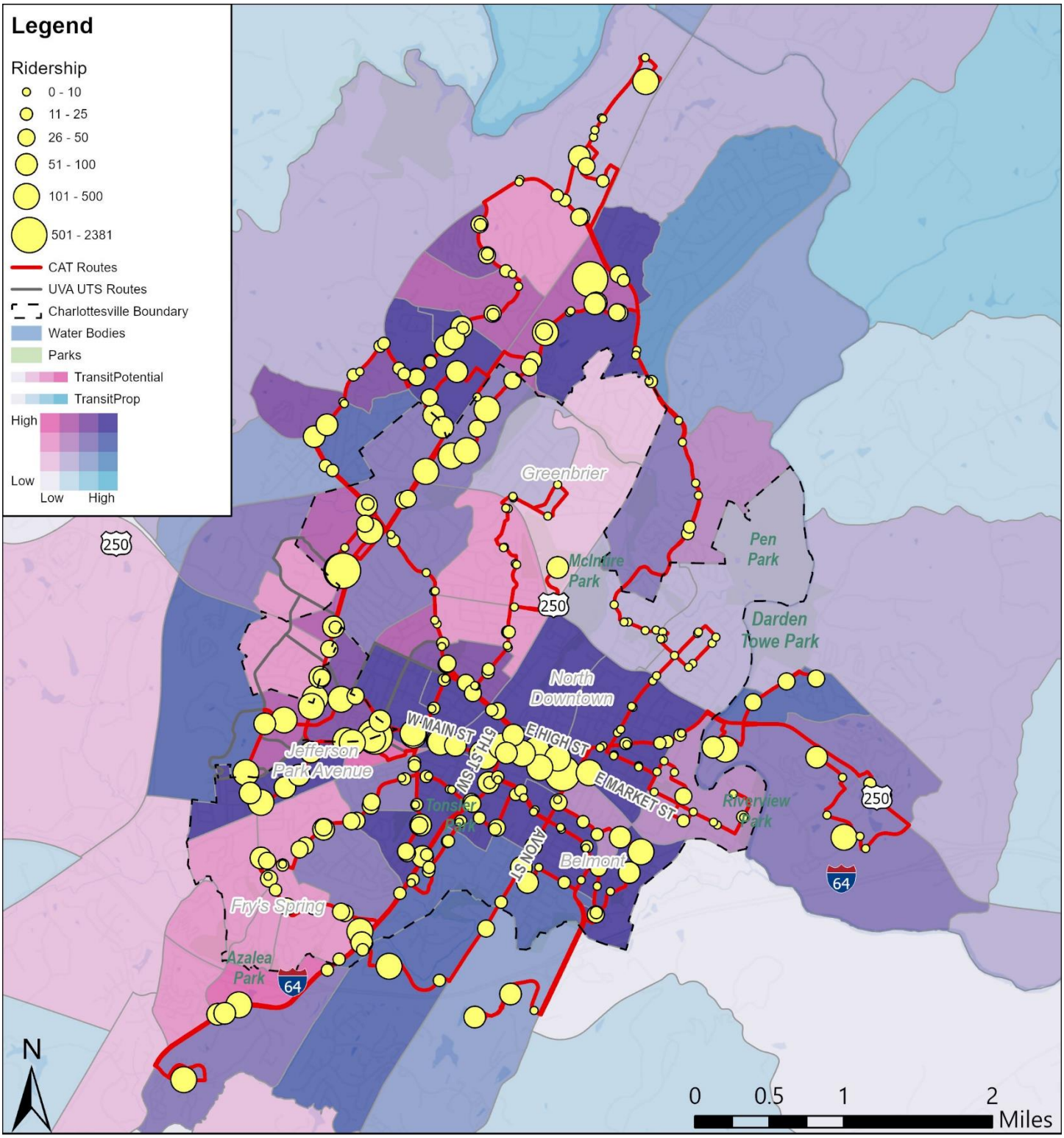
*Figure 2-19: Transit Propensity Map for CAT Service Area*




2021 American Community Survey (ACS) Block Group-Level Data

**Figure 2-20** shows existing transit demand conditions for the CAT service area. This map was created by overlaying the service area with both the Transit Potential and Transit Propensity scores to show where the population and job density exists to support transit, show where populations who are more inclined to use transit are situated, and highlight areas where the two overlap. Pink shading indicates transit potential, with darker shades denoting higher potential, while blue shading indicates transit propensity. Purple shading highlights areas of both significant potential and propensity.

*Figure 2-20: Transit Demand Map for CAT Service Area*




2021 American Community Survey/2020 Longitudinal Employment Housing Dynamics Block Group-Level Data

## Transit Demand and Underserved Area Opportunities for Improvement

While CAT provides adequate transit service coverage for most of the Charlottesville area, a few areas of potential unmet demand exist, including:

### *North Downtown*

- This area has high potential and high propensity due to its central location. However, since all routes run east-west through downtown, this area lacks adequate coverage relative to its demand and location. The central location of this neighborhood leads it to have higher walk and bike mode splits which may dampen potential ridership numbers.

### *Venable*

- This area has some of the highest population density in Charlottesville but doesn't have CAT service through the core of the neighborhood. Venable is currently served by UVA's University Transit Service (UTS), the university's transit system for staff, faculty, and students. The 14th Street NW corridor is a potential high-demand area to be considered for future service, but future services should account for the different and unique needs for transit service among students and staff compared to the general public.

### *UVA Grounds along Ivy Street*

- This area has high potential and high propensity due to its high student population. There is an opportunity here to coordinate with UVA's University Transit Service to improve service in the area.

### *Routes 3 & 8*

- Routes 3 and 8 currently operate with a 60-minute frequency. However, they rank among the highest-performing routes in terms of passengers per hour and passengers per mile. This indicates that they may be good candidates for increased frequency as a strategy to boost ridership.

There are also areas that have potentially more service than the demand warrants:

### *Greenbrier*

- This area has low potential, low propensity, and low ridership because it is primarily a neighborhood of single-family homes that lack the necessary density to support frequent transit service.

## 2.3 Performance Evaluation

This section assesses the existing performance of CAT transit service against the performance standards identified in Chapter 1. The performance evaluation assesses CAT service at the system, route, and stop level to understand where the system could improve. This analysis informs opportunities for service improvements, presented immediately following this section.

### Performance Evaluation

CAT's service performance was evaluated based on ridership, cost efficiency, safety, and system accessibility metrics. A peer comparison yields additional insight into how Charlottesville is performing relative to other agencies with similar composition. The results of this evaluation are discussed in the following sections.

#### *System Evaluation*

CAT's ridership, cost, and service data were collected from NTD for the five-year period from 2017 to 2021. **Table 2-19** summarizes the operating measures for all routes. The operating measures were then used to calculate systemwide performance measures, shown in **Table 2-20**.

Findings from the five-year retrospective are discussed below:

- Operating expenses continue to grow year-over-year, with an overall 24% increase from 2017 to 2021. This can be attributed to a 21.3% increase in operator pay during that period, as well as the addition of 10 additional operators to facilitate the expansion of service.
- Passenger trips have declined every year. This trend started before, but was significantly accelerated by, the COVID-19 pandemic. The number of trips annually has declined nearly 72% between 2017 and 2021.
- In response to the pandemic and a shortage of operators, CAT has been operating a reduced level of service since April 2020, which has reduced the number of revenue hours and miles operated.

*Table 2-19: Operating Measures Five-Year Trend*

| Operational Measure | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 |
|---|---|---|---|---|---|---|
| **Operating Expenses** | $7,421,700 | $7,915,506 | $8,435,078 | $8,264,887 | $9,211,327 | $9,836,029 |
| **Fare Revenues** | $457,391 | $667,346 | $598,735 | $538,024 | $266,800 | $80,040 |
| **Annual Unlinked Trips** | 2,189,612 | 2,052,376 | 1,871,952 | 1,323,176 | 617,010 | 1,156,514 |
| **Annual Vehicle Revenue Miles** | 1,005,147 | 962,803 | 976,417 | 912,447 | 730,629 | 712,242 |
| **Annual Vehicle Revenue Hours** | 97,665 | 103,824 | 108,033 | 99,096 | 74,987 | 74,479 |

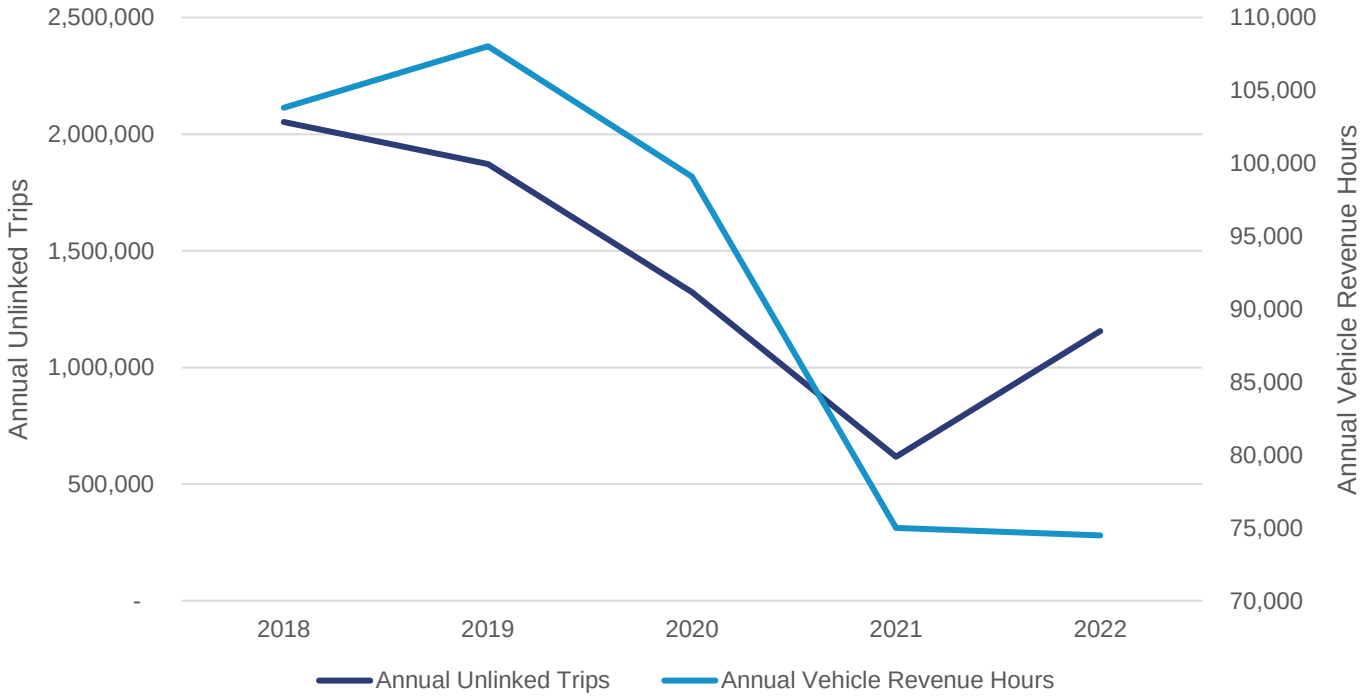
*Source: National Transit Database (NTD)*

*Table 2-20: Performance Measures Five-Year Trend*

| Performance Measure | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 |
|---|---|---|---|---|---|---|
| **Operating Expenses per Passenger Trip** | $3.39 | $3.86 | $4.51 | $6.25 | $14.93 | $8.50 |
| **Operating Expenses per Vehicle Revenue Mile** | $7.38 | $8.22 | $8.64 | $9.06 | $12.61 | $13.81 |
| **Operating Expenses per Vehicle Revenue Hour** | $75.99 | $76.24 | $78.08 | $83.40 | $122.84 | $132.06 |
| **Passenger Trips per Vehicle Revenue Mile** | 2.2 | 2.1 | 1.9 | 1.5 | 0.8 | 1.6 |
| **Passenger Trips per Vehicle Revenue Hour** | 22.4 | 19.8 | 17.3 | 13.4 | 8.2 | 15.5 |
| **Farebox Recovery Ratio** | 6.2% | 8.4% | 7.1% | 6.5% | 2.9% | 0.8% |

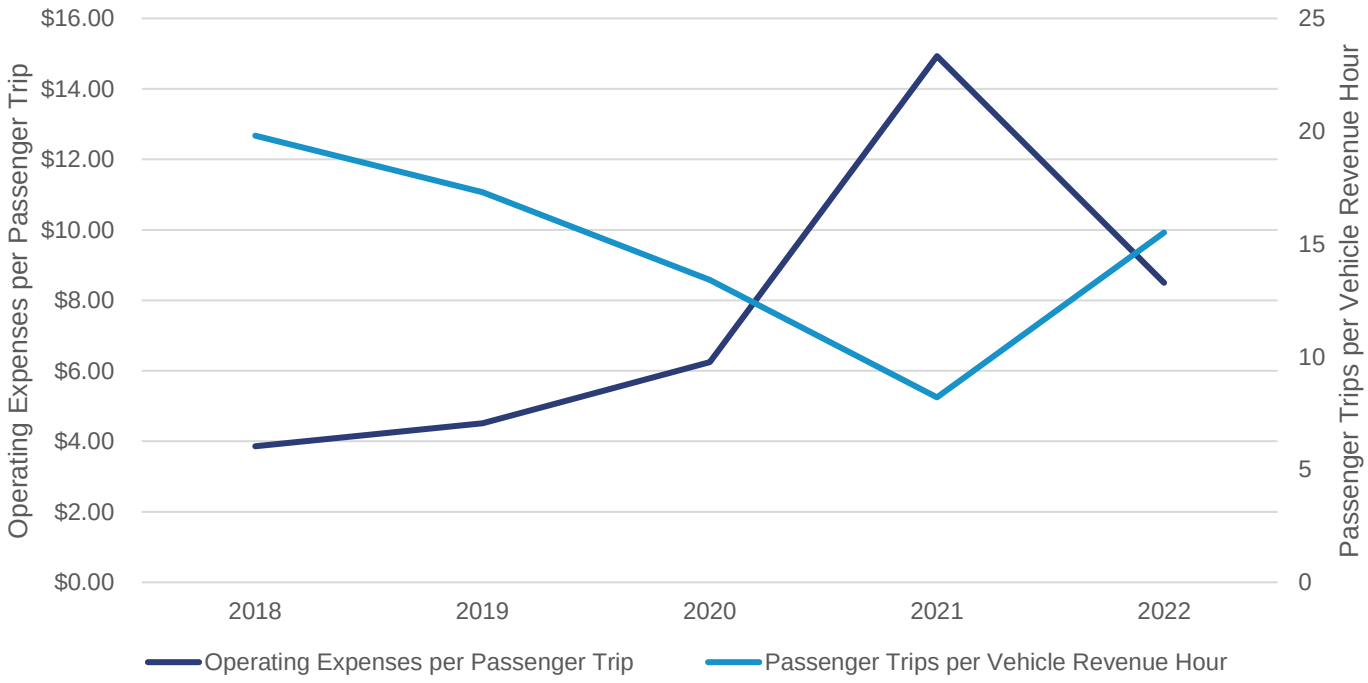
*Source: National Transit Database (NTD)*

*Figure 2-21: Passenger Trips and Revenue Hours Five-Year Trend*




*Source: National Transit Database (NTD)*

*Figure 2-22: Operating Expenses per Passenger Trip & Passenger Trips per Revenue Hour Five-Year Trend*




*Source: National Transit Database (NTD)*

### *Peer Comparison*

A peer comparison was conducted to understand the efficiency and effectiveness of CAT service with respect to similar agencies across the country. The peer comparison provides a quantitative comparison between agencies with similar profiles to highlight opportunities to improve Charlottesville's transit service and identify challenges in the region. To identify transit agency peers, the selection process involved data from the National Transit Database and a review of local transit development plans. Peers ultimately selected possess several, but not always all, of the following selection criteria:

***Similar city characteristics:***

- Urban area population is between 50,000-150,000
- System serves a college or multiple colleges with total undergraduate enrollment between 20,000-30,000 students

***Similar services provided:***

- Vehicle revenue miles between 600,000–1,000,000 (2022)
- Vehicle revenue hours between 60,000–100,000 (2022)
- Provides fixed-route service or fixed-route deviated service

***Similar agency makeup:***

- Total facilities between one and five
- Only Virginia agencies

The results of the peer comparison are included in **Table 2-21**. Takeaways from the peer analysis are below:

- CAT's operating expenses are the highest per passenger trip, per revenue mile, and per revenue hour of all agencies examined.
- CAT's ridership compares favorably to its peer agencies with the highest rate of passenger trips per revenue mile and an above-average rate of passenger trips per revenue hour.

*Table 2-21: Operating Expense and Passenger-Based Peer Comparison*

| Performance Measure | CAT | Peer Average | Blacksburg Transit | Williamsburg Area Transit Authority | Harrisonburg Transit | Greater Lynchburg Transit Company |
|---|---|---|---|---|---|---|
| **Operating Expenses per Passenger Trip** | $8.50 | **$7.31** | $3.05 | $8.34 | $4.36 | $13.49 |
| **Operating Expenses per Vehicle Revenue Mile** | $13.81 | **$7.67** | $9.49 | $5.96 | $7.87 | $7.36 |
| **Operating Expenses per Vehicle Revenue Hour** | $132.02 | **$94.47** | $99.55 | $92.93 | $79.55 | $105.83 |
| **Passenger Trips per Vehicle Revenue Mile** | 1.62 | **1.51** | 3.11 | 0.71 | 1.8 | 0.42 |
| **Passenger Trips per Vehicle Revenue Hour** | 15.53 | **17.01** | 32.63 | 11.14 | 18.25 | 6.01 |

*Source: 2022 National Transit Database (NTD)*

## *Route Evaluation*

### Operating Statistics

Route level performance was evaluated to understand productivity at a more detailed level. CAT's operating statistics and ridership data were reviewed, and performance metrics were calculated for every route in operation.

Operating statistics by route are shown in **Table 2-22**, highlighting the routes that require the most resources in terms of daily revenue hours and revenue miles.

*Table 2-22: Service Performance by Route*

| Route | Daily Revenue Hours | | Daily Revenue Miles | |
|---|---|---|---|---|
| | Total | Rank | Total | Rank |
| **Route 1** | 16:15 | 8 | 171.9 | 7 |
| **Route 2** | 15:55 | 11 | 320.9 | 3 |
| **Route 3** | 16:30 | 6 | 156.6 | 8 |
| **Route 4** | 18:35 | 5 | 195.5 | 6 |
| **Route 5** | 48:00 | 1 | 547.4 | 1 |
| **Route 6** | 16:00 | 9 | 139.3 | 10 |
| **Route 7** | 48:00 | 1 | 266.8 | 4 |
| **Route 8** | 12:00 | 12 | 107.9 | 12 |
| **Route 9** | 21:30 | 4 | 120.6 | 11 |
| **Route 10** | 16:00 | 9 | 142.3 | 9 |
| **Route 11** | 16:30 | 6 | 332.3 | 2 |
| **Trolley** | 31:35 | 3 | 201.9 | 5 |

## Service Productivity

Service productivity by route is shown in **Table 2-23**. Metrics where routes perform below the systemwide averages (13.4 riders per revenue hour or 1.56 riders per revenue mile) are highlighted in orange.

The routes with the highest productivity are Route 7, the Trolley, and Route 8. These routes connect downtown Charlottesville with two of the region's largest job centers—the University of Virginia and the US-29 corridor.

*Table 2-23: Service Productivity by Route*

| Route | Daily Passengers | Riders/Revenue Hour | Riders/Revenue Mile |
|---|---|---|---|
| **Route 1** | 117 | 7.2 | 0.68 |
| **Route 2** | 197 | 12.4 | 0.61 |
| **Route 3** | 276 | 16.8 | 1.77 |
| **Route 4** | 225 | 12.1 | 1.15 |
| **Route 5** | 459 | 9.6 | 0.84 |
| **Route 6** | 214 | 13.4 | 1.54 |
| **Route 7** | 1,022 | 21.3 | 3.83 |
| **Route 8** | 235 | 19.6 | 2.18 |
| **Route 9** | 73 | 3.4 | 0.60 |
| **Route 10** | 184 | 11.5 | 1.30 |
| **Route 11** | 168 | 10.2 | 0.50 |
| **Trolley** | 755 | 23.9 | 3.74 |

## Financial Performance

**Table 2-24** shows the financial performance for each route in terms of operating cost and cost per rider. Routes with costs above the system averages ($11.88 per rider) are highlighted in orange.

Key findings are described below.

- The least efficient routes in terms of cost per passenger are Route 9 ($36.18), Route 1 ($17.06) and Route 5 ($12.85). Only two routes have a cost per passenger in excess of $15.00, indicating that the system overall is performing relatively well.
- The most efficient routes in terms of cost per passenger are the Trolley ($5.14), Route 7 ($5.77), and Route 8 ($6.27).

*Table 2-24: Financial Performance by Route*

| Route | Daily Operating Cost | Cost per Rider |
|---|---|---|
| **Route 1** | $1,996.15 | $17.06 |
| **Route 2** | $1,955.20 | $9.92 |
| **Route 3** | $2,026.86 | $7.34 |
| **Route 4** | $2,282.78 | $10.15 |
| **Route 5** | $5,896.32 | $12.85 |
| **Route 6** | $1,965.44 | $9.18 |
| **Route 7** | $5,896.32 | $5.77 |
| **Route 8** | $1,474.08 | $6.27 |
| **Route 9** | $2,641.06 | $36.18 |
| **Route 10** | $1,965.44 | $10.68 |
| **Route 11** | $2,026.86 | $12.06 |
| **Trolley** | $3,879.70 | $5.14 |

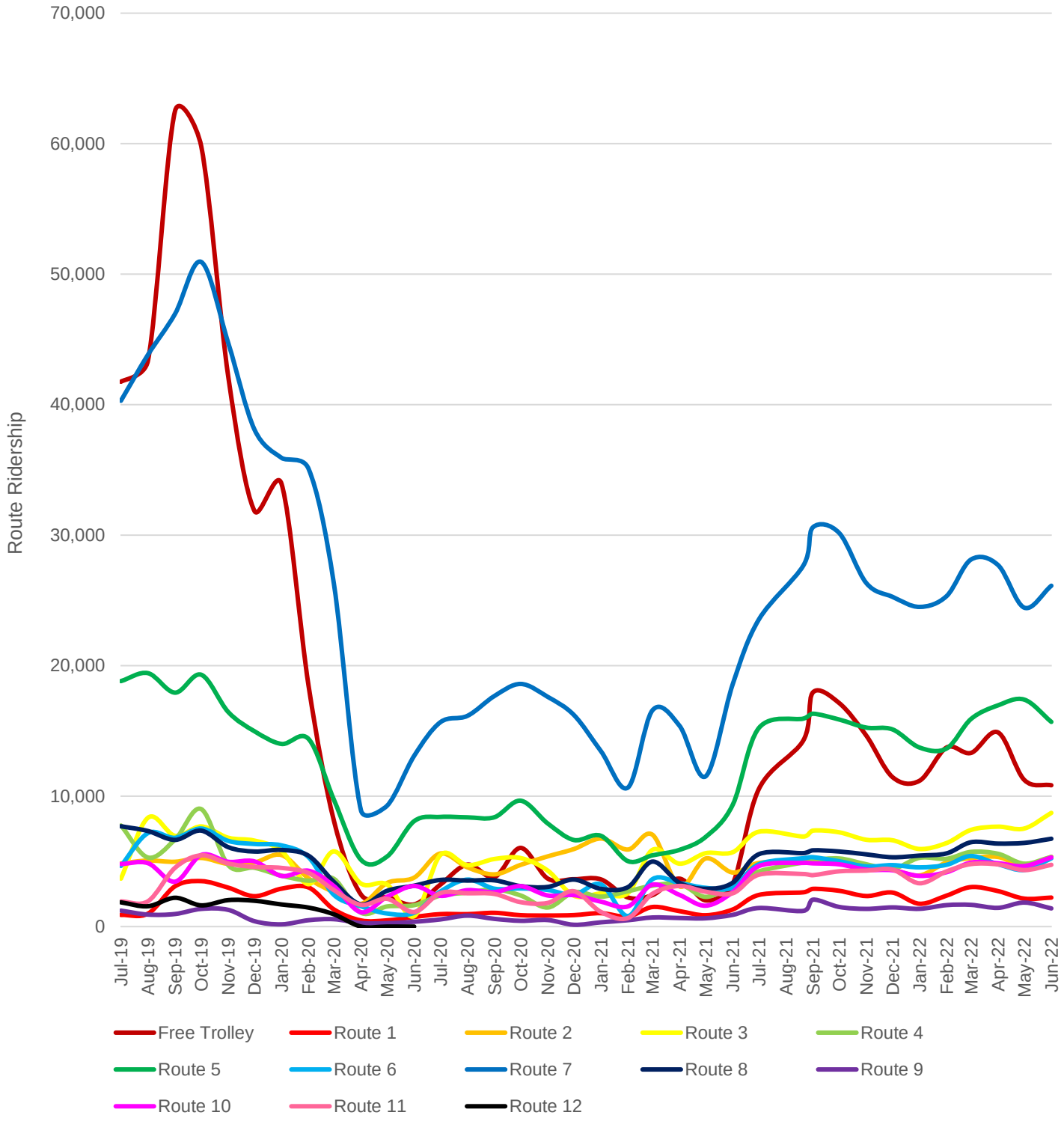
### Monthly Ridership

CAT maintains monthly ridership data records for every route in the system. To understand how each route has performed relative to the system over time, ridership data from July 2019 through June 2022 is displayed in **Figure 2-23**.

The sample period captures pre-pandemic ridership levels, the fluctuations over the course of the pandemic, and pandemic recovery. Key trends are identified below:

- Ridership decreased to its lowest point in April 2020, where it was only 15.9 percent of the ridership observed in October 2019. However, most months have seen an increase in ridership since.
- Although ridership has seen significant rebounds, CAT has not fully recovered to pre-pandemic levels. May 2022 ridership was 67 percent of May 2019 levels, and June 2022 ridership was 77 percent of June 2019. Service has been modified over the course of the pandemic, which has likely influenced ridership levels.
- Several routes have increased in ridership totals since before the pandemic (September 2019 compared to September 2021). Routes with the greatest increases in ridership are Route 9 (114 percent), 10 (41 percent), and 3 (6 percent).
- Routes that have seen large ridership losses over the three-year study period include the Trolley (71 percent), Route 7 (35 percent), Route 4 (24 percent), and Route 6 (22 percent). These ridership losses can likely be attributed to changes in frequency between pre- and post-COVID-19 service, as many CAT routes are now operating with less frequency.

*Figure 2-23: Monthly Ridership by Route*




*Source: CAT*

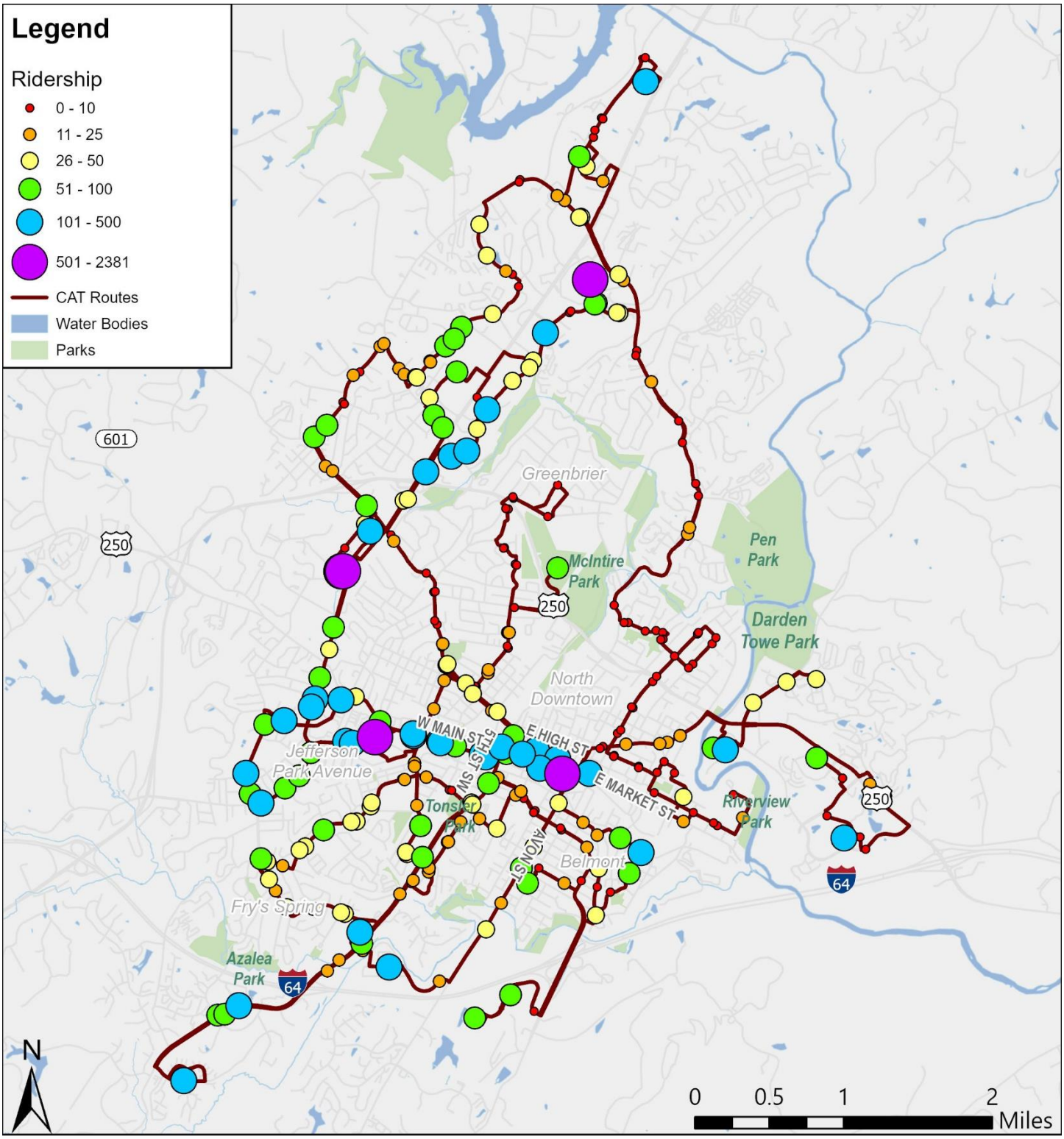
### *Bus Stop-Level Evaluation*

Stop-level ridership data was used to visualize ridership levels across all CAT routes. Ridership maps help pinpoint productive segments of systems to better understand where passengers are boarding and alighting vehicles.

**Figure 2-24** shows average weekday boardings and alightings within the CAT service area. Observations include:

- The highest ridership stop—with 2,381 average daily boardings and alightings—is the Downtown Transit Station. This emphasizes the importance of transfers between routes.
- Major areas of high ridership activity include:
  - Around the Downtown Mall (1,642 boardings)
  - Jefferson Park Avenue (926 boardings)
  - Barracks Road Shopping Center (847 boardings)
  - West Main Street (673 boardings)
  - Fashion Square Mall, served by routes 5, 7, & 11 (394 daily boardings)
- The lowest ridership areas include:
  - The portion of Route 11 between East High Street and Hillsdale Drive (75 daily boardings at 31 stops)
  - The portion of Route 9 through the Greenbrier neighborhood (97 daily boardings at 20 stops; 1/3 of boardings are at the YMCA)
  - The portion of Route 1 east of Locust Avenue (111 daily boardings at 17 stops)

*Figure 2-24: Average Weekday Ridership by Stop*




FY2022 CAT Ridership

### *System Safety*

CAT has Safety Performance Targets as a benchmark for the safety performance of the transit system. The targets utilize data collected and provided to the National Transit Database. Thresholds utilize totals as well as rates (total per 100,000 vehicle revenue miles). The CAT Public Transportation Agency Safety Plan (dated May 2022) targets are shown in **Table 2-25**.

*Table 2-25: Safety Performance Targets*

| Target Variable | Metric | Target Value |
|---|---|---|
| **Fatalities** | Total number of reportable fatalities per year | 0 |
| | Rate per total vehicle revenue miles by mode | 0 |
| **Injuries** | Total number of reportable injuries per year | 2 |
| | Rate per total vehicle revenue miles by mode | Less than .5 injuries per 100,000 vehicle revenue miles |
| **Safety Events** | Total number of safety events per year | 10 |
| | Rate per total vehicle revenue miles by mode | Less than 1 reportable event per 100,000 vehicle revenue miles |
| **Vehicle Failures** | Distance between major failures | 10,000 miles |
| | Distance between minor failures | 3,200 miles |

The results of reportable events, fatalities, and injuries for the past five years is shown in **Table 2-26** (totals) and **Table 2-27** (rates). CAT is currently meeting its standards for safety.

*Table 2-26: Safety Performance Measure Totals*

| | 2018 | 2019 | 2020 | 2021 | 2022 |
|---|---|---|---|---|---|
| **Reportable Events** | 2 | 0 | 2 | 0 | 1 |
| **Fatalities** | 0 | 0 | 0 | 0 | 0 |
| **Injuries** | 1 | 0 | 1 | 0 | 1 |

*Table 2-27: Safety Performance Measure Rates*

| | 2018 | 2019 | 2020 | 2021 | 2022 |
|---|---|---|---|---|---|
| **Reportable Events** | 0.21 | 0 | 0.22 | 0 | 0.14 |
| **Fatalities** | 0 | 0 | 0 | 0 | 0 |
| **Injuries** | 0.10 | 0 | 0.11 | 0 | 0.14 |

### *System Accessibility*

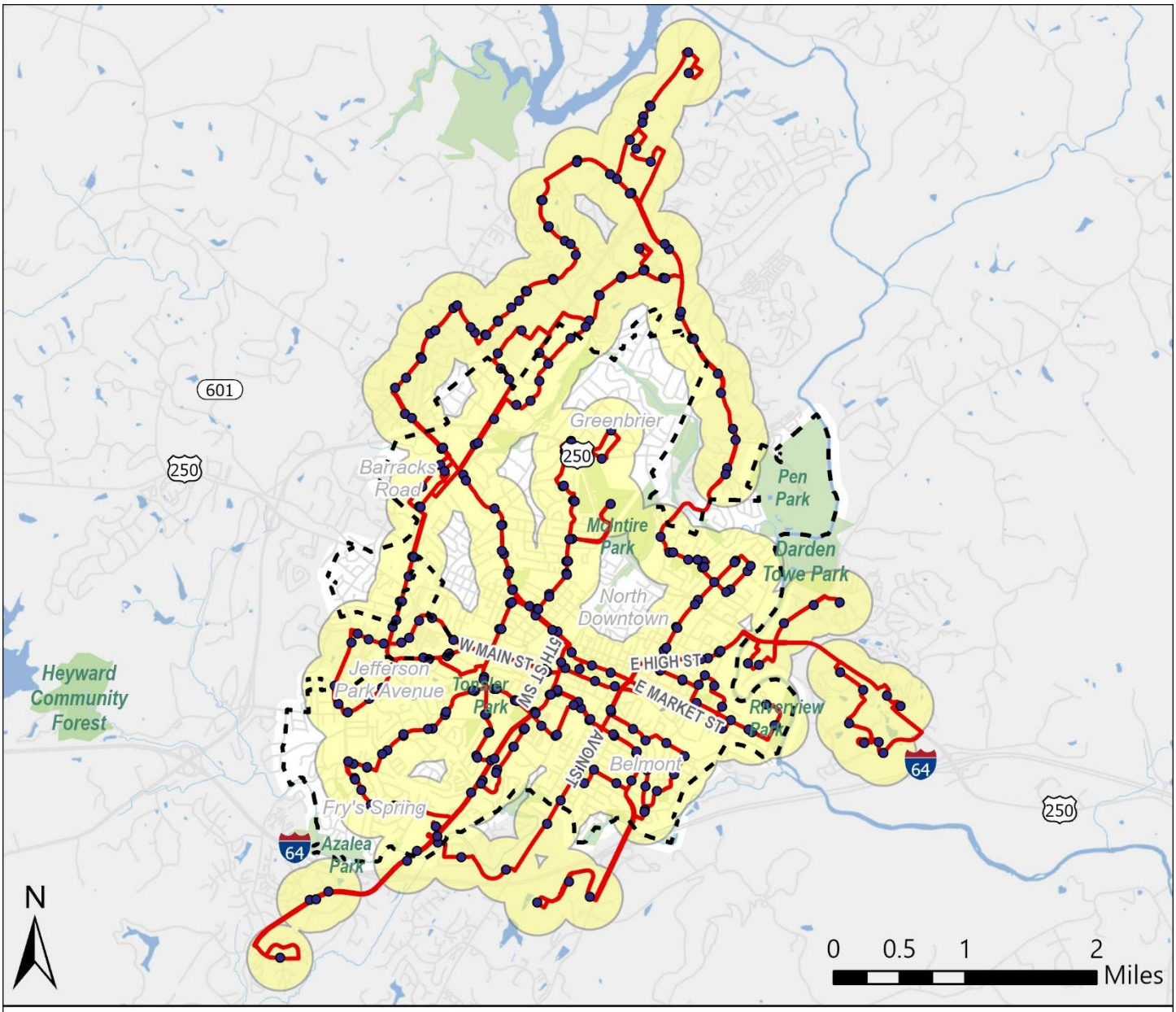
CAT routes serve approximately 65,485 residents within ¼ mile of a bus stop, as outlined in **Table 2-28**, and account for around 75 percent of the population included in the service area reported in the National Transit Database. CAT routes provide access to approximately 65,610 jobs within ¼ mile of a bus stop, or around 58% of all jobs in Charlottesville and Albemarle County.

While most of the City of Charlottesville does have access to transit within ¼ mile, certain areas north of downtown have limited coverage, as do a few areas on the city's periphery to the east and west, as shown in **Figure 2-25**.

*Table 2-28: Population and Jobs by Route*

| Route | Population | | Jobs | |
|---|---|---|---|---|
| | Total | Density (per acre) | Total | Density (per acre) |
| **Route 1** | 9,084 | 5.9 | 16,086 | 10.4 |
| **Route 2** | 8,923 | 6.8 | 12,322 | 9.3 |
| **Route 3** | 13,928 | 7.6 | 16,124 | 8.8 |
| **Route 4** | 13,576 | 9.3 | 28,486 | 19.6 |
| **Route 5** | 12,944 | 6.0 | 11,116 | 5.1 |
| **Route 6** | 12,838 | 10.2 | 28,613 | 22.7 |
| **Route 7** | 17,396 | 8.3 | 42,404 | 20.3 |
| **Route 8** | 9,111 | 6.4 | 19,027 | 13.3 |
| **Route 9** | 11,672 | 8.1 | 30,759 | 21.3 |
| **Route 10** | 7,033 | 5.0 | 18,950 | 13.5 |
| **Route 11** | 9,748 | 5.7 | 15,436 | 9.1 |
| **Trolley** | 16,702 | 14.1 | 34,402 | 29.0 |
| **Network** | **65,485** | **6.6** | **65,610** | **6.6** |

*Figure 2-25: CAT System Coverage*




## Legend

- 1/4 Mile Bus Stop Buffer
- CAT Bus Stops
- CAT Routes
- Charlottesville Boundary
- Water Bodies
- Parks

2021 American Community Survey (ACS) Block Group-Level Data

### *Specific Performance Measurements Identified by State Policy*

DRPT allocates funding for transit agency operating assistance through an allocation process pursuant to the Code of Virginia and Commonwealth Transportation Board (CTB) policy. The *DRPT Performance-Based Operating Assistance Allocation Guidance (Fiscal Year 2023 July 1, 2022 – June 30, 2023)* document describes the methodology for allocating state operating assistance. The performance-based operating allocation methodology is based on a combination of an agency's sizing and performance metrics.

***Sizing***

- Operating cost
- Ridership
- Vehicle revenue hours
- Vehicle revenue miles

For each performance metric, three years of historical data plus the most recent year of data is used to calculate performance trends of each agency and statewide.

***Performance Adjustments***

- Operating cost per passenger
- Operating cost per vehicle revenue hour
- Operating cost per vehicle revenue mile
- Passengers per vehicle revenue hour
- Passengers per vehicle revenue mile

## Performance-Based Opportunities for Improvement

Performance measures were evaluated at the route level to determine opportunities for improvement.

### *Passengers per Revenue Hour*

CAT's service standard is as follows:

- Review and modify, if possible, services that exhibit less than 60 percent of average of route type.
- Review and modify, if warranted, services between 60 percent and 80 percent of average of route type.

Because CAT operates only 12 routes, routes were evaluated on a systemwide basis rather than by route type. While routes have differing characteristics and performance, the overall sample is not large enough to make meaningful comparisons based on the classifications of Key (3 routes), Local (8 routes) and Lifeline (1 route).

The system average passengers per revenue hour is 13.44, setting a 60 percent threshold at 8.06 and an 80 percent threshold at 10.75. Routes not meeting these thresholds are outlined in **Table 2-29**.

*Table 2-29: Passengers per Revenue Hour Opportunities for Improvement by Route*

| Route | Route Type | Passengers per Revenue Hour | Percent of System Average |
|---|---|---|---|
| **Route 9** | Local | 3.39 | 25.2% |
| **Route 1** | Local | 7.21 | 53.6% |
| **Route 5** | Local | 9.56 | 71.1% |
| **Route 11** | Lifeline | 10.16 | 75.6% |

### *Passengers per Revenue Mile*

CAT's service standard is as follows:

- Review and modify, if possible, services that exhibit less than 60 percent of average of route type.
- Review and modify, if warranted, services between 60 percent and 80 percent of average of route type.

Routes were evaluated compared to systemwide rather than route type averages.

The system average passengers per revenue mile is 1.56, setting a 60 percent threshold at 0.94 and an 80 percent threshold at 1.25. Routes not meeting these thresholds are outlined in **Table 2-30**.

*Table 2-30: Passengers per Revenue Mile Opportunities for Improvement by Route*

| Route | Passengers per Revenue Mile | Percent of System Average |
|---|---|---|
| **Route 11** | 0.50 | 32.1% |
| **Route 9** | 0.60 | 38.4% |
| **Route 2** | 0.61 | 39.1% |
| **Route 1** | 0.68 | 43.6% |
| **Route 5** | 0.84 | 53.8% |
| **Route 4** | 1.15 | 73.7% |

### *Cost per Passenger*

CAT's service standard is as follows:

- Review and modify, if possible, services that exhibit less than 60 percent of route type average.

The system average cost per passenger is $11.88, setting a 60% threshold at $19.01. Only one route does not meet this threshold: Route 9 ($36.18).

## 2.4 Operating and Network Efficiency Evaluation

### Efficiency Evaluation

#### *Frequency*

Most CAT routes operate on 30-minute (Routes 2, 5, & 7) or 60-minute (Routes 1, 3, 6, 8, 10, & 11) headways, though a few operate with exceptions, as outlined in **Table 2-30**. Routes 4 and 9 operate every 30 minutes during morning hours and every 60 minutes later, while the Trolley operates every 25 minutes.

Service previously operated on a more frequent basis, until service reductions were implemented in response to the COVID-19 pandemic in 2020.

*Table 2-30: Span of Service and Frequency by Route*

| Route | Service Start | Service End | Frequency |
|---|---|---|---|
| **1** | 6:15 AM | 10:27 PM | 60 min |
| **2** | 6:35 AM | 10:30 PM | 30 min |
| **3** | 6:00 AM | 10:27 PM | 60 min |
| **4** | 6:25 AM | 10:27 PM | 30 min until 8:30 AM, 60 min afterward |
| **5** | 6:30 AM | 10:30 PM | 30 min |
| **6** | 6:30 AM | 10:27 PM | 60 min |
| **7** | 6:20 AM | 10:35 PM | 30 min |
| **8** | 6:30 AM | 6:27 PM | 60 min |
| **9** | 7:00 AM | 10:27 PM | 30 min until 10:30 AM, 60 min afterward |
| **10** | 6:30 AM | 10:27 PM | 60 min |
| **11** | 6:00 AM | 10:27 PM | 60 min |
| **Trolley** | 6:40 AM | 10:30 PM | 25 min |

#### *Span*

CAT's regular weekday service begins at 6 AM and ends by 10:30 PM. **Figure 2-26** shows how both ridership and transit trips are aligned over the weekday span of service, with a steady increase throughout the day before decreasing in the late afternoon and evening. Unlike some systems, CAT does not have very pronounced morning and afternoon peak periods but has relatively steady ridership throughout the day. On Saturdays, ridership steadily increases until a peak during the 3 PM hour, before declining steadily for the rest of the service day (**Figure 2-27**). Service does not operate on Sundays.

*Figure 2-26: Weekday Ridership and Transit Trips by Hour*

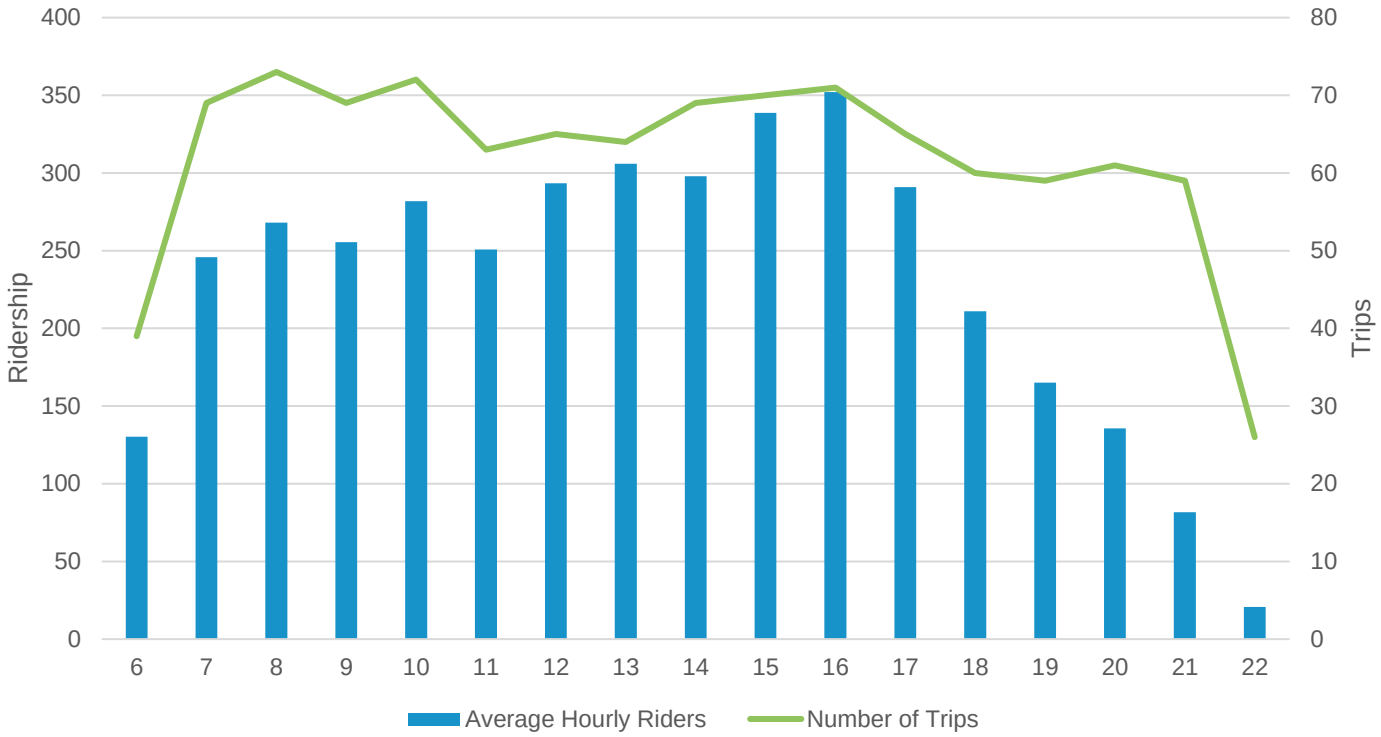



*Figure 2-27: Saturday Ridership and Transit Trips per Hour*

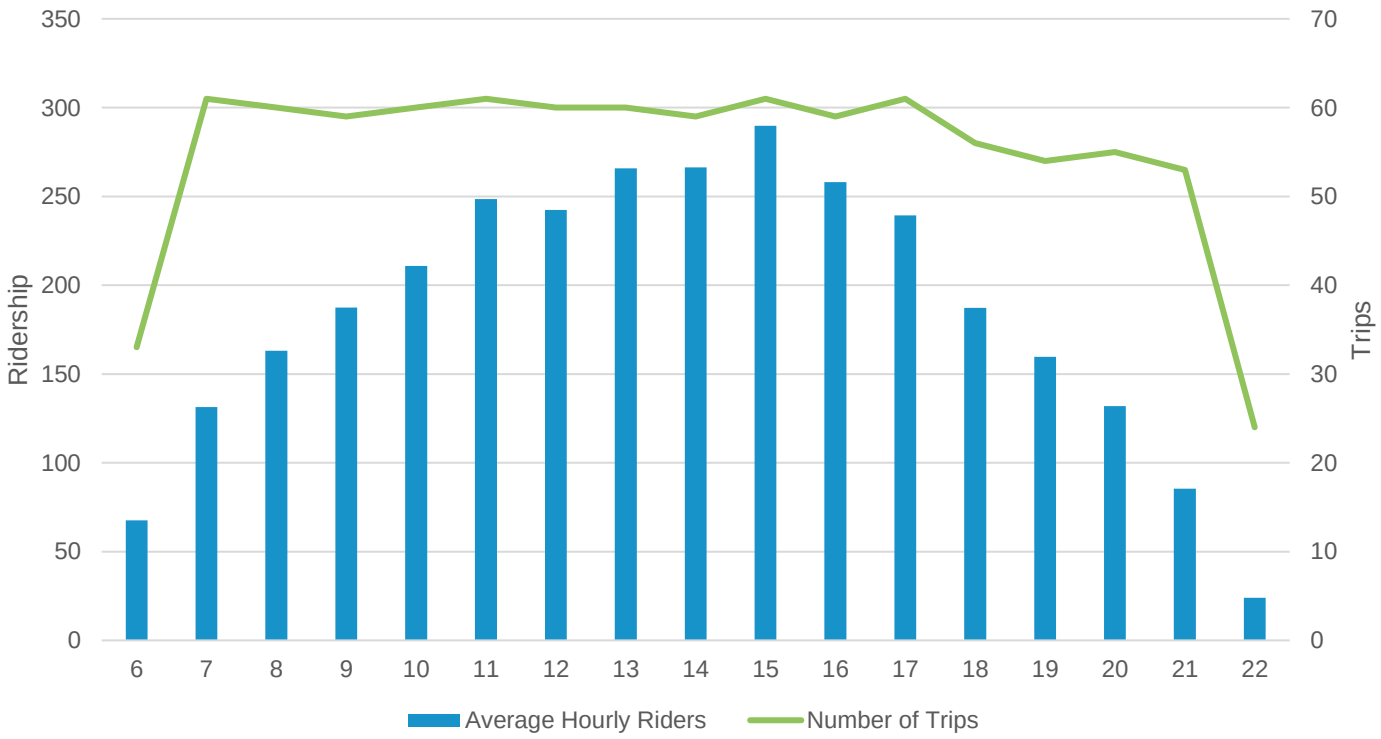


*Figure 2-28: Weekday Ridership per Route by Time of Day*

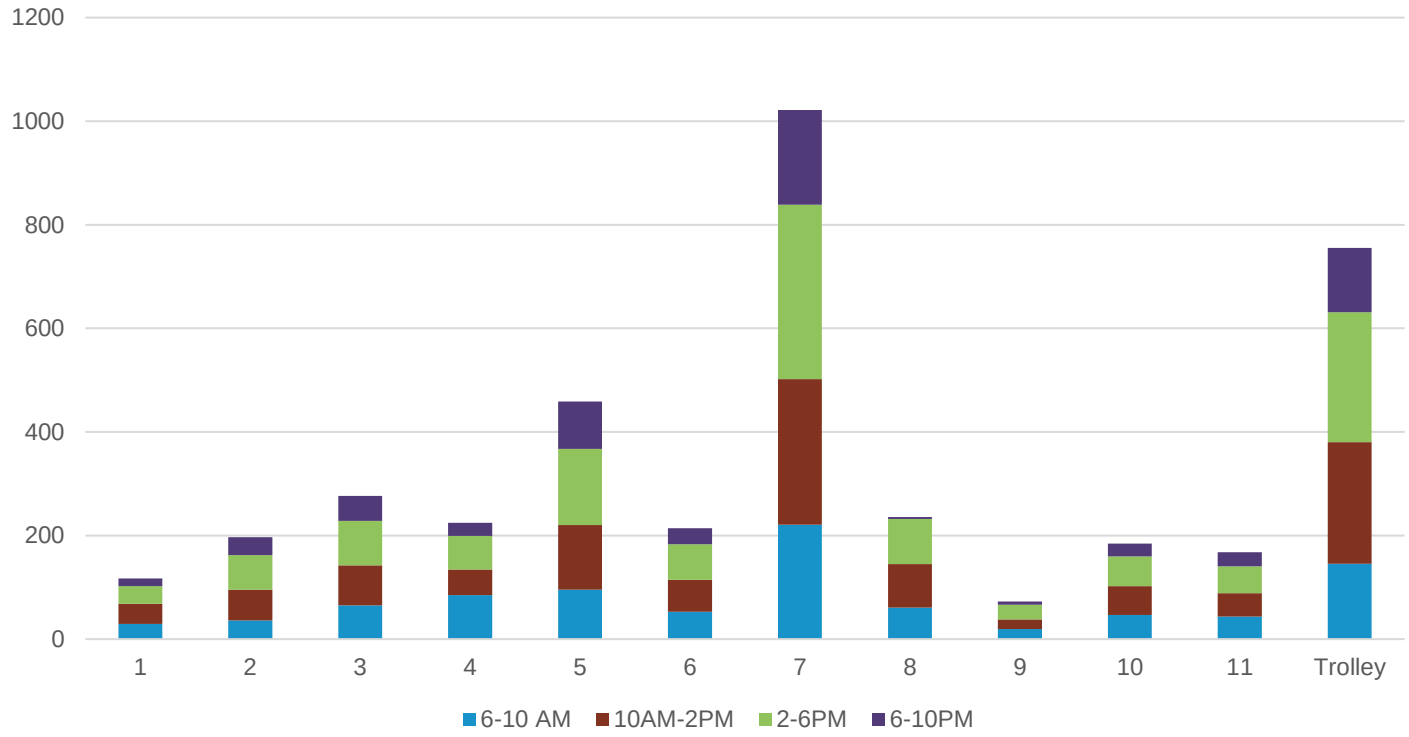
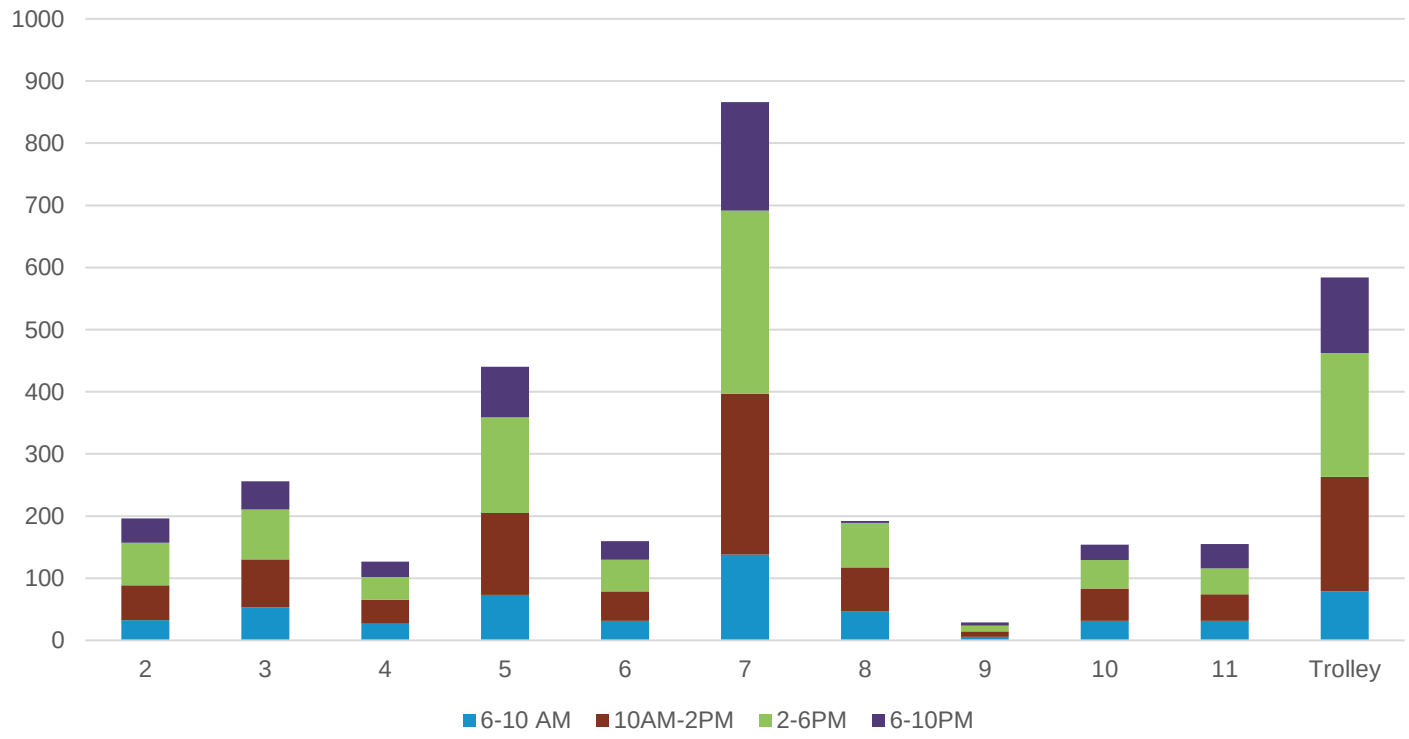


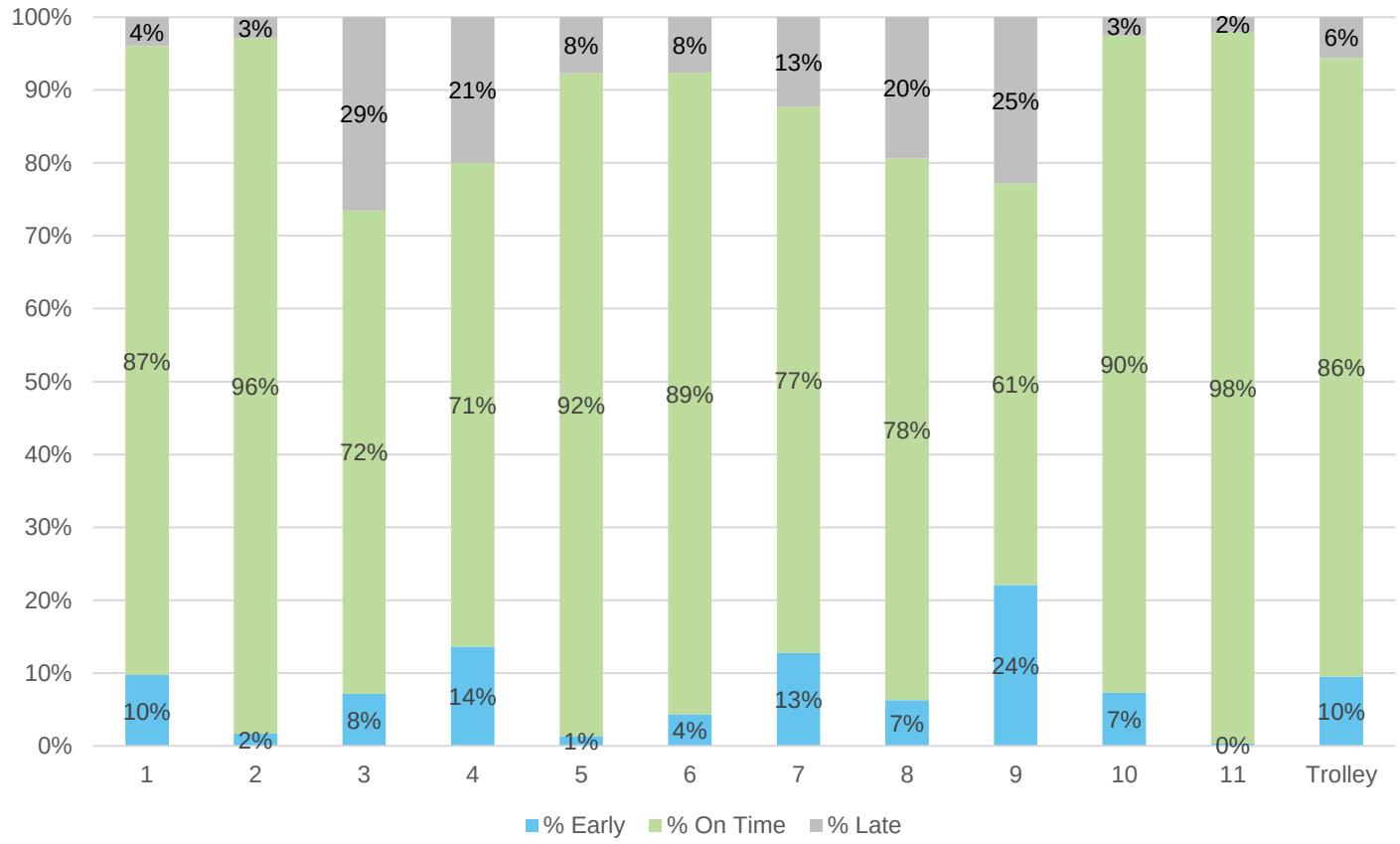

*Figure 2-29: Saturday Ridership per Route by Time of Day*



### *Reliability*

Reliability, as measured by on-time performance (OTP), is a key indicator of service quality. At CAT, a vehicle is considered to be "on-time" if it departs a timepoint between 0 and 5 minutes after the scheduled time, with no trips leaving early. **Figure 2-30** shows on-time performance by route for FY 2023. CAT's service standard sets a threshold of 90% on-time service.

*Figure 2-30: On-Time Performance by Route*




Route 9 has the lowest on-time performance in the CAT system (61 percent), followed by Route 4 (71 percent), Route 3 (72 percent), and Route 7 (77 percent).

Only four routes meet or exceed the service standard of 90 percent on-time: Route 11 (98 percent), Route 2 (96 percent), Route 5 (92 percent), and Route 10 (90 percent).

Particularly significant is the prevalence of early performance (including nearly a quarter of timepoints on Route 9). While there are many factors out of a transit provider's control that can contribute to late performance, early performance can be mitigated through operator action—bus operators can pull over at a safe location and momentarily wait to get back on schedule. By controlling early performance, service reliability and the customer experience can be improved. Operators are not solely responsible for controlling on-time performance, however. Over time, route schedules can be modified to bring expected service more in line with the actual service delivered.

### Efficiency Based Opportunities for Improvement

The results of the efficiency analysis indicate that there are several potential opportunities to improve the transit network:

- Developing a focus on on-time performance is one potential opportunity to improve the reliability of CAT service and make it more predictable for customers. While OTP is subject to external factors and is thus not fully controllable, some aspects (particularly early performance) can be improved through CAT intervention. Detailed analysis can determine specific times of day or segments of routes that present problem areas. It can also identify operators with low performance, presenting opportunities for management to address early/late performance on an individual level.
- CAT has not operated any service on Sundays since the start of the COVID-19 pandemic. The reintroduction of Sunday service was commonly cited by riders, non-riders, and stakeholders as one of the things they would most like to see changed about the system.

## 2.5 Analysis of Opportunities to Collaborate with Other Agencies and Stakeholders

Coordination among transit agencies and other transportation providers can yield greater efficiencies for both agencies and passengers without additional costs. It is in the best interests of all involved agencies when services are well coordinated and work together. This section identifies each of the operators in the area before discussing the opportunities to improve collaboration with the goal of improving mobility in the area.

### Collaboration Analysis

#### *Local Institutions*

##### University of Virginia

CAT has existing partnerships with the University of Virginia. Before service went fare-free for all customers in 2020, an arrangement allowed UVA-affiliated persons to ride CAT buses for free with their UVA ID.

CAT services the UVA grounds via Route 7 and the Free Trolley route.

UVA also operates the University Transit Service (UTS) to facilitate transportation around its grounds. There are potentially opportunities for CAT and UTS to collaborate to improve service.

#### *Transit Providers*

An inventory of other transit providers that operate within the CAT service area was conducted to identify potential for collaboration.

##### Jaunt

Jaunt is a publicly-owned private transportation company that serves the greater Charlottesville area including the City of Charlottesville, Albemarle County, Louisa County, Fluvanna County, Greene County, Buckingham County, and Nelson County. Jaunt provides ADA/paratransit service, demand response service, and commuter service. Jaunt and CAT already have a service partnership as Jaunt is contracted by CAT to provide ADA paratransit service.

##### Jaunt ADA/Demand Response Service

The demand-response service has two different forms of operation: link service and circulator service. Circulator service operates intra-jurisdictionally, transporting passengers anywhere within their County of origin. The circulator service operates continuously, often between the hours of 8:00 AM and 4:00 PM.

The link services are akin to commuter services which transport riders from the outer counties into Charlottesville and urban areas of Albemarle County, overlapping with CAT's service area. The link services

have a morning pick-up period within the outer County and run service into Charlottesville, and a return pick-up period in the afternoon where patrons are transported back to their County of origin. The link service run classes are not operated continuously, with an approximately six- to ten-hour break between morning and afternoon service.

Both the circulator and link services are “curb-to-curb” meaning passengers will be picked up and dropped off at the addresses specified upon the order of the ride.

*Table 2-31: Jaunt Services*

| Service | Area | Days | Departure | Return |
|---|---|---|---|---|
| **ADA Service** | Charlottesville, Urban Albemarle County | Monday – Friday; Saturday | 6:15 am – 11:00 pm; 7:15 am – 10:00 pm | |
| **20 North Link** | Albemarle County, Charlottesville | Monday – Friday | 7:30 am – 8:30 am | 3:00 pm – 3:30 pm |
| **29 North Link** | Albemarle County, Charlottesville | Monday – Friday | 6:22 am – 8:13 am | 4:23 pm – 6:16 pm |
| **Albemarle Demand Response** | Albemarle County, Charlottesville | Monday – Friday | 10:00 am – 2:00pm | |
| **Crozet Link** | Albemarle County, Charlottesville | Monday – Friday | 8:00 am – 2:00 pm | 9:00 am – 5:00 pm |
| **Crozet Circulator** | Albemarle County | Monday – Friday | 8:00 am – 4:00 pm | |
| **Earlysville Link** | Albemarle County, Charlottesville | Monday – Friday | 6:00 am – 9:00 am | 3:00 pm – 3:30 pm |
| **Esmont – Scottsville Link** | Albemarle County, Charlottesville | Monday – Friday | 6:15 am – 10:00 am | 12:00 pm – 4:30 pm |
| **Keswick Link** | Albemarle County, Charlottesville | Monday – Friday | 8:00 am – 8:30 am | 3:00 pm – 3:30 pm |
| **Fluvanna Midday Link** | Fluvanna County, Urban Albemarle County, Charlottesville | Tuesday, Thursday | 7:30 am – 9:30 am | 1:45 pm – 2:45 pm |
| **Fluvanna Workday Link** | Fluvanna County, Urban Albemarle County, Charlottesville | Monday – Friday | 6:00 am – 6:35 am | 4:15 pm – 4:30 pm |
| **Fluvanna Circulator** | Fluvanna County | Monday, Wednesday, Friday | 8:30 am – 4:00 pm | |
| **Greene Link** | Greene County, Urban Albemarle County, Charlottesville | Monday – Friday | 6:30 am – 12:00 pm | 8:30 am – 6:00 pm |
| **Greene Circulator** | Greene County | Monday – Friday; Saturday | 7:00 am – 9:00 pm; 9:00 am – 4:00 pm | |
| **Louisa Link** | Louisa County, Urban Albemarle County, Charlottesville | Monday, Wednesday, Friday | 7:30 am – 9:00 am | 2:45 pm – 3:30 pm |
| **Louisa Circulator** | Louisa County | Monday – Friday | 6:00 am – 5:00 pm | |
| **Nelson Midday Link** | Nelson County, Urban Albemarle County, Charlottesville | Monday, Friday | 8:00 am – 9:30 am | 2:30 pm – 3:30 pm |
| **Lovingston Circulator** | Nelson County | Monday, Tuesday | 8:00 am – 4:00 pm | |

### Jaunt Connect

Connect provides fixed-route commuter service to the University of Virginia (UVA) and downtown Charlottesville from Crozet, Route 29 to the north, Buckingham County, and Nelson County. Connect operates like a fixed-route bus service and does not require a reservation to ride. Connect has four fixed route services:

- Crozet Connect
- 29 North Connect
- Buckingham Connect
- Lovingston Connect

Connect is a commuter service, so routes are not continually operated throughout the day. The fixed route services are operated during morning and evening peak hours, typically 5:30 AM to 9:00 AM in the mornings and 3:30 PM to 7:00 PM in the evenings.

### Afton Express

Afton Express is a commuter route by BRITE Bus which runs between Staunton, VA and Charlottesville with stops in Fishersville and Waynesboro.

### Intercity Services

#### Amtrak

Amtrak is the national passenger rail service offering multiple routes across the country. Amtrak operates three routes through Charlottesville: *Northeast Regional* (Boston to Roanoke), *Crescent* (New York City to New Orleans), and *Cardinal* (New York City to Chicago). All Amtrak routes serve Charlottesville Union Station, which is currently served by CAT routes 7, 9, and the Trolley route.

#### Intercity Bus Services

Charlottesville hosts several private intercity bus services which provide connections to small and large urban areas throughout the United States such as Washington, DC; New York, NY; and Charlotte, NC. The most notable services are:

##### *Virginia Breeze*

Virginia Breeze provides intercity bus service throughout Virginia. The service is funded by the Virginia Department of Rail and Public Transportation and operated by Megabus. The City of Charlottesville is served by the Piedmont Express Line which runs North-South service between Washington, DC and Danville, VA. The Piedmont Express stops along Alderman Road at the Gooch/Dillard student housing complex. CAT's Trolley route serves this area of Alderman Road for possible connections to the Virginia Breeze.

##### *Greyhound/Flixbus*

Greyhound and Flixbus are two nationwide intercity bus services which merged in 2021. Greyhound and Flixbus have two stop locations within Charlottesville: Flixbus and Greyhound can both be found at Charlottesville Union Station, and Flixbus can also be accessed near UVA at the intersection of University Ave and Newcomb Road North. Charlottesville Union Station is currently served by CAT routes 7, 9, and the Trolley route; while the UVA stop can be accessed from the Trolley line.

## Collaboration Based Opportunities for Improvement

There are several potential collaboration efforts that could serve to improve, expand, and enhance transit service and overall mobility in the greater Charlottesville region. Opportunities for improvement include:

### *Microtransit*

- 29 North Zone will cover the area of the Jaunt Connect route.

### *Regional Coordination*

- Regional fare system (if zero-fare service is not anticipated to continue long-term). CAT currently has grant funding to extend zero-fare service through 2026.
- Regional coordination of stop amenities at transfer points between providers, local jurisdictions, and VDOT
- Regional coordination of transit service between CAT, Jaunt, and UVA
- Completion and implementation of the ongoing Regional Transit Governance Study