

Thomas Jefferson Planning District Commission (TJPDC)

Albemarle County, Virginia

Virginia Department of Rail and Public Transportation (DRPT)

Albemarle County Transit Expansion Study Final Report

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Submitted by:



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INTERNATIONAL

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Executive Summary

The Charlottesville-Albemarle County region is the second-fastest growing metropolitan area in Virginia, behind only Northern Virginia. In recent years, growth has largely been concentrated in the designated Development Areas of Albemarle County, just outside the Charlottesville city limits. Going forward, the region stands to benefit from improved and expanded transit service that can enhance mobility options for residents and visitors. This study assesses the potential for transit expansion in three key areas of the county that are currently served by limited fixed-route or demand response transit (highlighted in **Figure 1**).

There are many ways to provide transit service in a community or corridor, and each approach has its own ideal operating environment. For fixed-route transit service, density and land-use are the keys to success as prospective riders must be able to make their way to and from designated bus stops. For lower-density areas, or areas with challenging pedestrian environments, demand response service – which has the flexibility to meet riders where they are – is often a more effective mobility tool than fixed-route service.

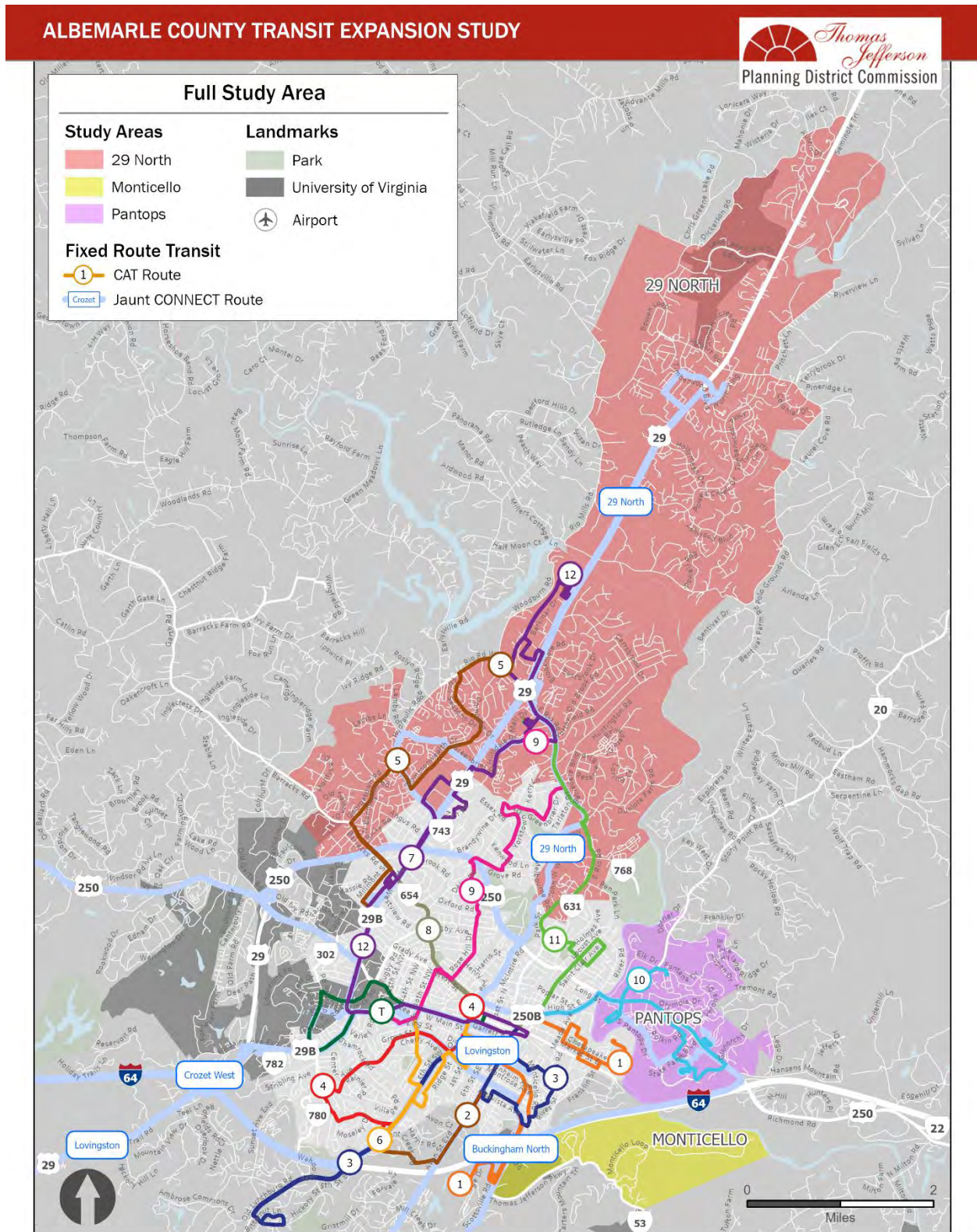
In recent years, a new approach to demand response service has emerged. Microtransit is an app-based demand response service that offers a similar user experience to Uber and Lyft but utilizes transit-specific vehicles that allow for more shared rides and greater potential productivity. Microtransit also differs from Uber and Lyft in that fares are set by a public agency, making them both more predictable and affordable than typical ride-hailing fares. Where it is implemented, microtransit can be used both for local circulation and for “first and last mile” connections to other regional services. Finally, microtransit service is a data-rich platform. All trip requests are recorded electronically (either directly by riders through an app, or indirectly via a call center operator). This information can be used by planners to monitor emerging ridership patterns and identify opportunities to expand service or replace it with fixed-route service when and where appropriate.

The US-29 North corridor and the Pantops area are both fast-growing and destination-rich environments. However, both areas are still relatively low-density and automobile-oriented. Similarly, 98% of trips to Monticello are made by personal or rented automobile. For these reasons, microtransit service was recommended as an option for all three service areas. When presented, together with other transit modes, to the public and other key stakeholders, microtransit emerged as the preferred service option for all three study areas (although there was also a desire to use microtransit to expand on, rather than replace existing routes).

The study team identified Charlottesville Area Transit (CAT) as the most appropriate operator for microtransit in the study areas, as all three preferred microtransit zones are almost entirely within the Charlottesville-Albemarle County Urbanized Area. Additionally, CAT is in the process of procuring four 20-passenger transit vehicles, which are ideal for microtransit operations and would meet the vehicle and capacity needs of two out of the three preferred microtransit zones. Thus, the study team recommends the implementation of two microtransit pilot services in the US-29 North corridor and Pantops area, respectively. Microtransit service in the Monticello area, along with other longer-term service improvements are recommended for future consideration when resources become available.

The estimated operating cost for the two recommended microtransit zones is approximately \$1,940,000 for the first year (including software set-up costs and advertising costs), and \$1,855,000 for subsequent years (not including cost escalations). The pilot service is a strong candidate for funding through the DRPT Transit Demonstration Project Assistance program. A successful grant application to this program would support 80 percent funding of the first-year operating costs. The following document is intended to provide the necessary technical data and public feedback to support CAT’s application to the DRPT Transit Demonstration Project Assistance program.

Figure 1: Combined Study Areas Map



Project Background

The goal of the Albemarle County Transit Expansion Study was to identify short-range opportunities to expanded transit service to key population and employment centers in Albemarle County. The focus of the study was on two growth areas and on major cultural destination:

- The US-29 corridor between Hydraulic Road and Charlottesville-Albemarle Airport.
- The Pantops neighborhood, including Martha Jefferson Hospital, the Virginia Department of Veterans Services, and the Social Security Administration.
- Thomas Jefferson's Monticello is a United Nations Educational, Scientific and Cultural Organization (UNESCO) World Heritage Site that receives about 500,000 visitors per year.

While not a plan for a full transit service area redesign, this study proposes transit service improvements exclusively to and from these growth areas. Due to this specified approach, transit recommendations presented in this report are intended for implementation in these study areas within a relatively short timeframe: the next five years.

To ensure access and connectivity to the jobs, services, and residential neighborhoods of Albemarle County, the County contributes over \$1 million annually to the region's two primary transit providers:¹



Charlottesville Area Transit (CAT)'s regular service network consists of 13 fixed routes, including 12 routes requiring a fare and one free trolley connecting the Downtown area and University of Virginia campus. Since the onset of the COVID-19 pandemic, CAT has operated 12 fixed routes on a reduced schedule, Monday through Saturday.



Jaunt provides intra-county, midday, and commuter demand responsive service to the counties of Albemarle, Buckingham, Fluvanna, Greene, Louisa, and Nelson, and the City of Charlottesville. JAUNT also offers contracted service for human services agencies, ADA paratransit service on behalf of CAT, and four fixed-route services branded as CONNECT.

While CAT and Jaunt provide some degree of fixed-route and/or demand response transit coverage in the three study areas, previous studies, such as the 2018 Transit Development Plans (TDPs) for CAT and Jaunt and the 2015 Albemarle County Comprehensive Plan, have highlighted opportunities for expansion of the current services in the Albemarle development areas, both in terms of coverage and scheduling. This study provides an opportunity to both advance the recommendations of the TDPs and to build on them by considering new mobility opportunities such as microtransit service.

¹ Although stops along some CAT or Jaunt services overlap with University of Virginia's University Transit Service (UTS), UTS does not serve any locations within the three study areas.

Market and Service Analysis

Overview of Study Areas

Study Area 1: US-29 North

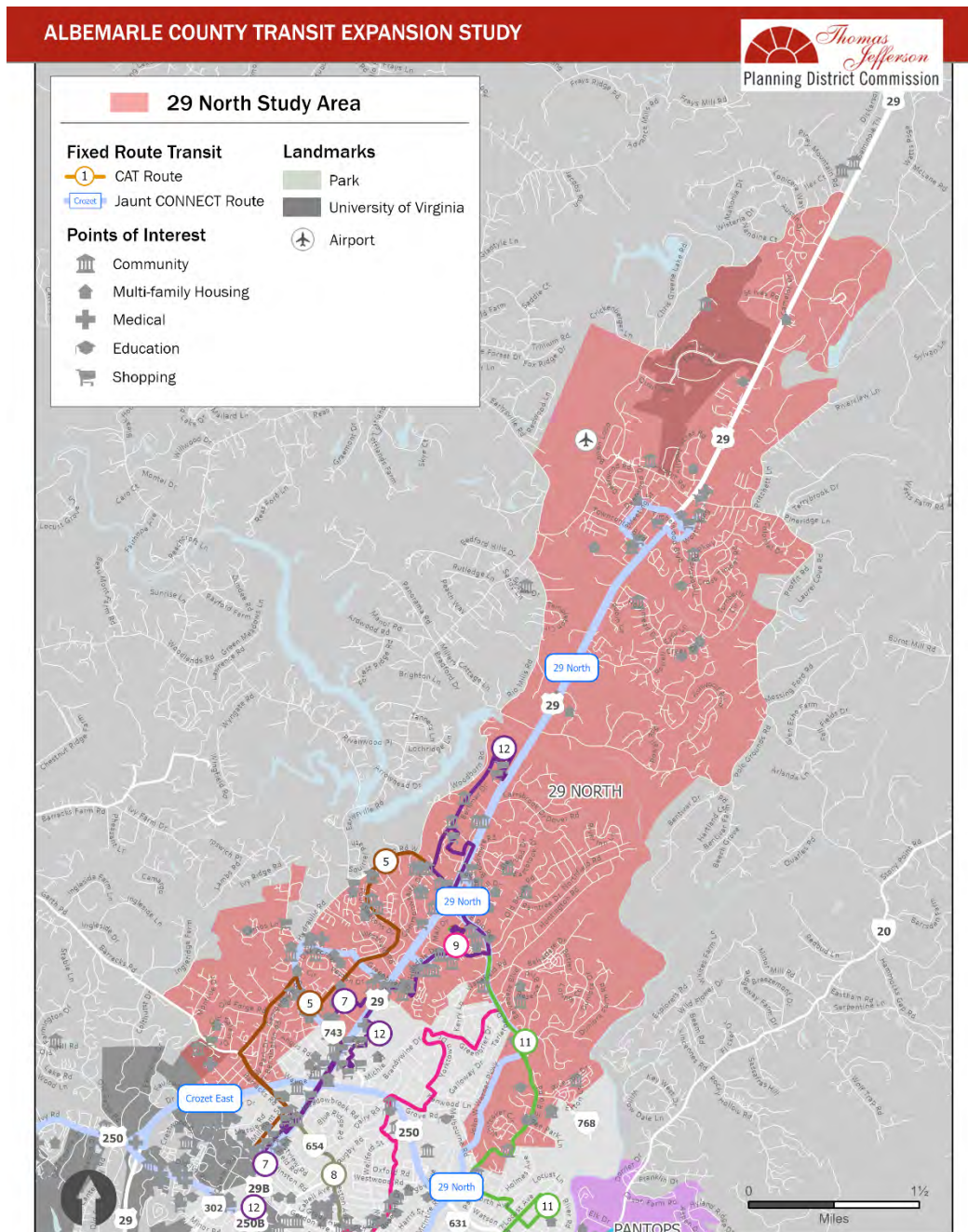
The US-29 North study area (**Figure 2**), encompassing the US-29 corridor, Rio Road and Airport Road, is bounded by Dickerson Road and Piney Mountain to the north; Hydraulic Road, Woodburn Road, Rio Mills Road, and the Charlottesville Albemarle Airport (CHO) to the east; and Meadow Creek, Polo Grounds Road, Proffit Road, and Pritchett Lane to the west. The southern portion of the study area is bounded by the City of Charlottesville. Retail centers located within the study area include The Shops at Stonefield, Fashion Square Mall, the Rio Hill Shopping Center, the Walmart Supercenter, and the Hollymead Town Center. Employment centers include Charlottesville-Albemarle Airport (CHO), North Fork – A UVA Discovery Park, and the National Ground Intelligence Center (NGIC).

Currently, fixed-route service in the study area is provided by CAT Routes 5, 7, 8, 11, and 12 and the Jaunt 29 North and Buckingham CONNECT (North). Jaunt also provides the following demand response service:

- Albemarle Demand Response transports riders within Albemarle County.
- Link services transport riders from urban Albemarle County to and from other regions, including Earlysville, Crozet, Keswick, Esmont-Scottsville, and State Route 20 North.
- Jaunt ADA paratransit transports riders within the ADA area, which is defined as a three-quarter-mile buffer around CAT fixed-route service.

Ripe for service expansion, the US-29 corridor is the second busiest transit corridor in the region. In 2015, in its listing of Urban Development Areas — places for compact, mixed use urban development that can accommodate 10 to 20 years of growth and are established to improve coordination between transportation and land use — the Albemarle County Comprehensive Plan included two communities — Hollymead and Piney Mountain — and two neighborhoods — the US-29 North study area west of US-29 and south of the Rivanna River, and the US-29 North study area east of US-29 and south of the Rivanna River — along the US-29 corridor.

Figure 2: US-29 North Study Area



Regional Planning Context

Regional planning efforts in the US-29 North corridor are worthy of consideration when planning transit expansion. Albemarle County's Places29 Master Plan, adopted in 2011 with a 20-year timeframe, identifies transportation improvement projects deemed essential for maintaining and improving traffic flow in response to growing development on the US-29 corridor.

Since the plan’s adoption, Albemarle County has implemented several infrastructure projects that could shape transportation in the region, including:

- The widening US-29 from four to six lanes between Polo Grounds Road and Towncenter Drive.
- The extension of Berkmar Drive north from its current terminus at Hilton Heights Road to Towncenter Drive, including a bridge spanning the South Fork Rivanna River. Berkmar Drive runs parallel to Route 29 to the west and offers an alternative for local traffic traveling between downtown Charlottesville to the developed Hollymead area, CHO, and a county park at Chris Greene Lake. This project also included the construction of bike lanes and a multi-use path.

In addition, the Albemarle County Comprehensive Plan, adopted in 2015, outlines goals for increasing the supply of affordable housing for households with incomes between zero percent and 80 percent of area median income, through rezoning and incentives to developers. To prepare for future growth, the County's policy is to locate the majority of new housing units in defined development areas.

Study Area 2: Pantops

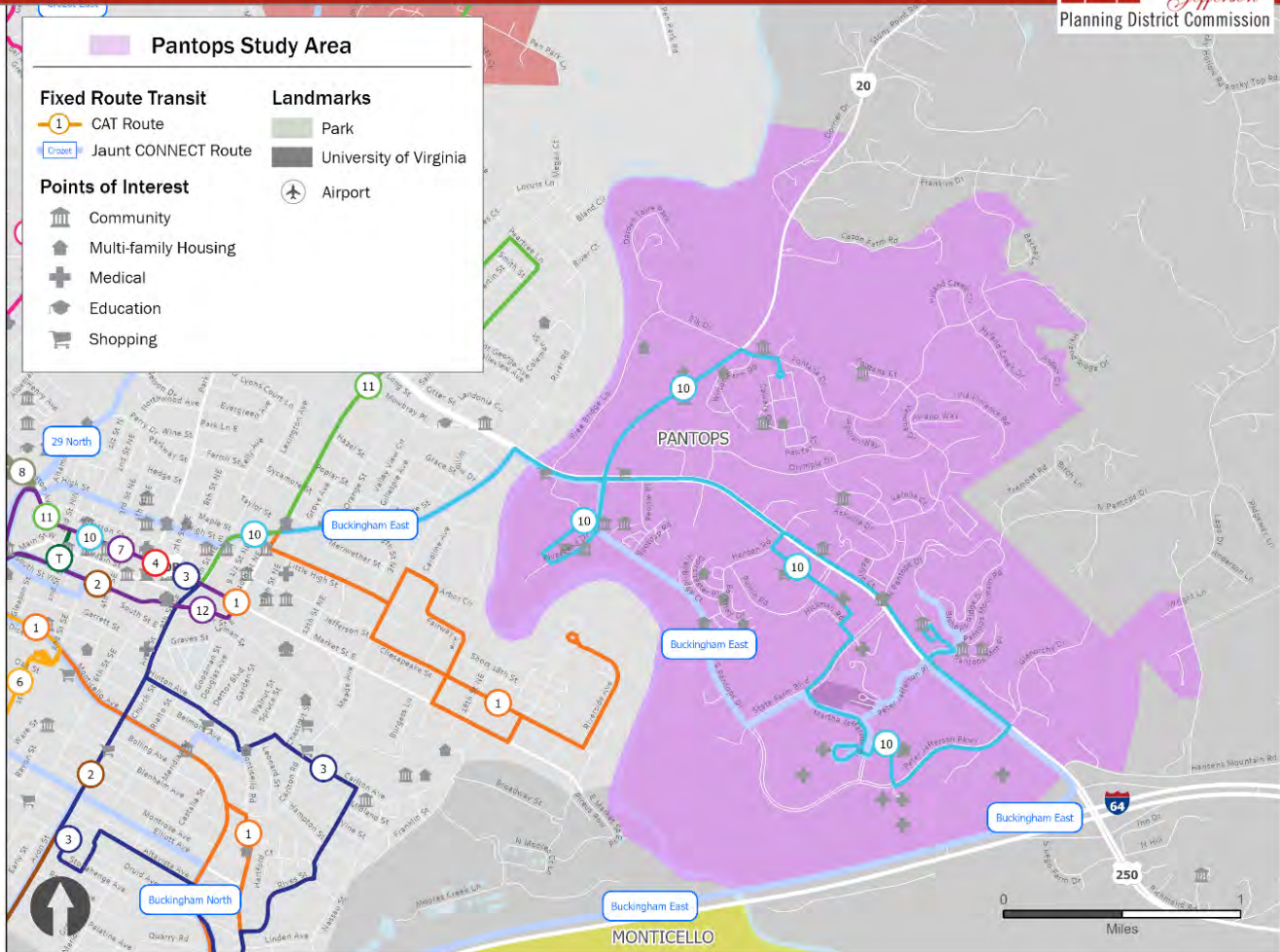
The Pantops study area, shown in **Figure 3**, is bounded by the Rivanna River to the west, Interstate 64 to the south, and Cason Farm Road, and Hyland Ridge Drive to the northeast. US-250 cuts through the middle Pantops study area, while State Route 20 (Stony Point Road) runs along the northeast region of the study area.

Retail and employment centers include Pantops Shopping Center, Rivanna Ridge Shopping Center, Martha Jefferson Hospital, and Peter Jefferson Place. Key residential neighborhoods and developments include Fontana, the Avemore Apartments, and the Wilton Farm Apartments. Currently, CAT Route 10 and Jaunt Buckingham CONNECT (east iteration) serve the study area. Jaunt also provides demand response service to and from Pantops:

- Albemarle Demand Response transports riders within Albemarle County.
- Link services transport riders from urban Albemarle County to and from other regions, including Earlysville, Crozet, Keswick, Esmont-Scottsville, and State Route 20 North.
- Jaunt ADA paratransit transports riders within the ADA area, which is defined as a three-quarter-mile buffer around CAT fixed-route service.

Figure 3: Pantops Study Area

ALBEMARLE COUNTY TRANSIT EXPANSION STUDY

*Regional Planning Context*

Pantops is a major commercial and residential area served by limited transit. According to the Pantops Master Plan, adopted in June 2019 by Albemarle County, community members cite traffic congestion as an important issue. While US-250 and Stony Point Road experience congestion during peak travel times, ongoing development could worsen traffic congestion, as could the region's high private vehicle mode share: as cited in the Pantops Master Plan, it is estimated that over 95 percent of Pantops residents who work outside of the home commute by car.

The Master Plan includes transportation goals, such as improved connectivity across US-250 and the expansion of transportation choices. Currently, US-250, which bisects the region, is particularly difficult and unsafe to cross on foot or bicycle. This issue has unfortunate consequences for cross-region travel, as those living in neighborhoods north of the corridor cannot easily access commercial and office uses south of US-250, unless traveling by vehicle.

In addition, Albemarle County intends for areas designated as Centers and Districts to be Pantops' most active places, with community amenities and multimodal access. Development within Centers and Districts should

also focus on promoting walkability and public outdoor amenities, such as green space. Urban Centers identified in Pantops are the Riverbend Urban Center (in the vicinity of Pantops Shopping Center) and Rivanna Ridge (in the vicinity of Rivanna Ridge Shopping Center). Plan-identified Districts include an Employment District centered around employers at Martha Jefferson Hospital and Peter Jefferson Place, and a Recreational District at Darden Towe Park.

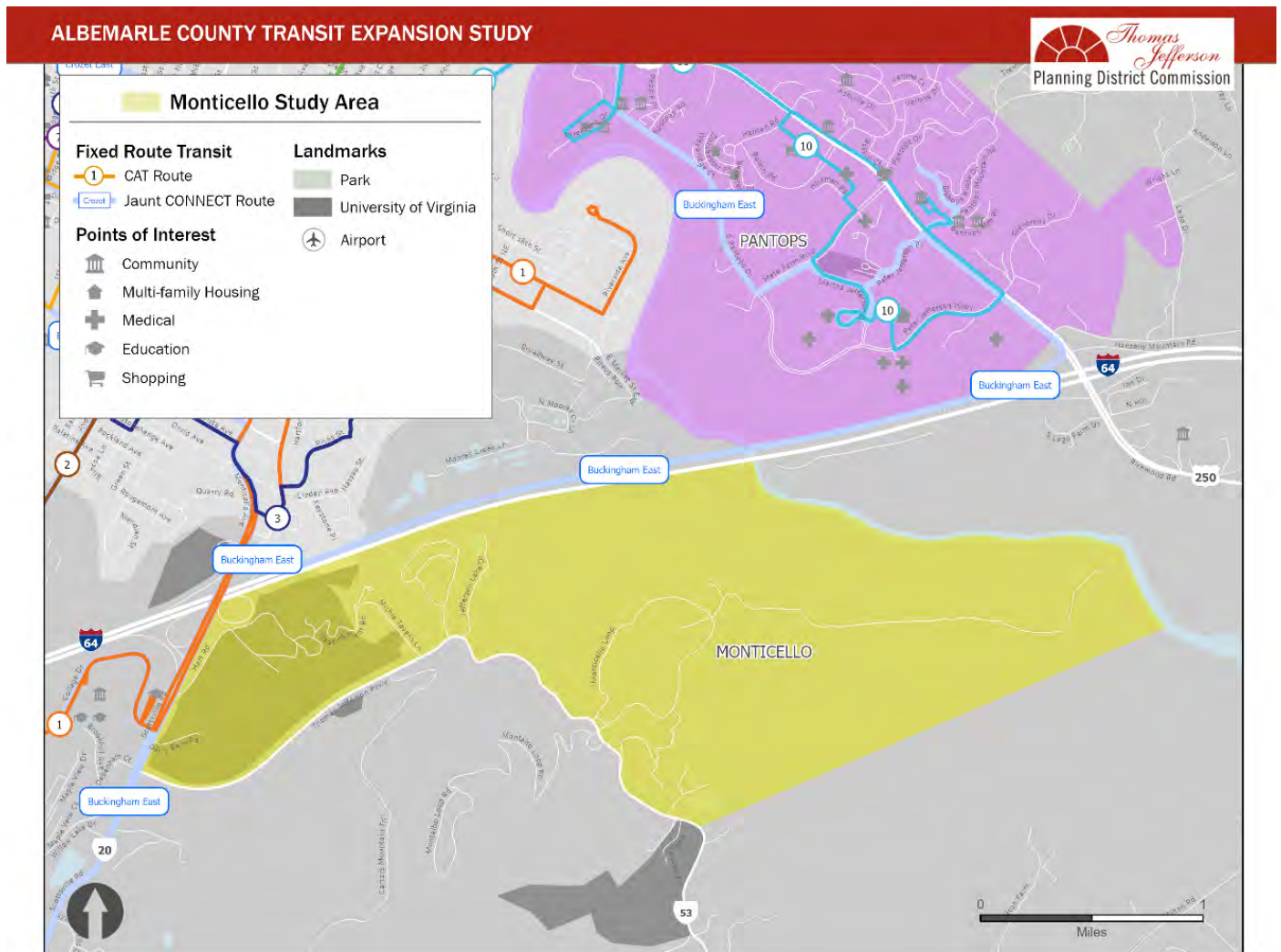
Study Area 3: Monticello

The Monticello study area, shown in **Figure 4**, is bounded by Interstate 64 to the north; Thomas Jefferson Parkway to the southwest; and the Rivanna River to the northeast. Thomas Jefferson's Monticello is a UNESCO World Heritage Site that receives about 500,000 visitors per year. With James Monroe's Highland three miles down the road, the area is an important historical and cultural destination.

While CAT Route 1 and Jaunt Buckingham East run along the edge of the study area, there is currently no fixed-route public transit that serves the Monticello Visitor Center or the Jefferson home. Visitors to Monticello must park at the Visitor Center and either walk the half-mile trail or take a shuttle bus to the mountain-top home. However, Jaunt provides the following demand response service in the region:

- Albemarle Demand Response transports riders within Albemarle County.
- Jaunt ADA paratransit transports riders within the ADA area, which is defined as a three-quarter-mile buffer around CAT fixed-route service.

Figure 4: Monticello Study Area



Regional Planning Context

The 2017 *Charlottesville to Monticello & Beyond* report explores methods to connect the Saunders-Monticello Trail, a two-mile path from off Dairy Barn Road to the Monticello Loop leading to the Visitors Center, with the City of Charlottesville. A public outreach effort associated with the report revealed that respondents preferred connections to Piedmont Virginia Community College (PVCC), Morven Farm, the Rivanna Trail, and James Monroe's Highland. Participants also requested bike access as well as a shuttle bus linking the trail's end to key destinations including PVCC, UVA, and the Downtown Mall. Routes recommended in the report are largely dependent on new or updated infrastructure, such as the construction of pedestrian bridges; installation of crosswalks and signalization; and building and repairing of sidewalks.

In addition, while not specifically transportation-related, the Albemarle County Comprehensive Plan focuses on strategies to protect Monticello's viewshed. Recommendations include making the Monticello Viewshed Map, which represents all properties potentially visible from the Monticello mountaintop, available to the public. The plan also recommends assisting land developers in preventing negative visual impacts on the Monticello viewshed.

Market Analysis

More than any other factor, the effectiveness and efficiency of public transportation is determined by density. Where there are higher concentrations of people and/or jobs, transit ridership tends to be higher. At the same time, most transit agencies have a mandate to provide comprehensive service in the communities they serve, and to provide mobility for residents with no other means of transportation. The purpose of this Market Analysis is to both identify strong transit corridors in the Albemarle County region and to highlight areas with relatively high transit need. Thus, the Market Analysis consists of two key components: Transit Potential and Transit Need.

While Transit Potential is an analysis of population and employment density, Transit Need focuses on socio-economic characteristics such as income, automobile availability, age, and disability status that are indicative of a higher propensity to use transit. Transit use is also influenced by land-use and the built environment. If a prospective transit rider can easily walk to a bus stop, they are far more likely to use the service than a resident of a neighborhood with few sidewalks and difficult-to-cross streets. In addition, there are certain land uses—such retail centers, civic buildings, multifamily housing, educational institutions, medical facilities, and major employment centers—that tend to generate transit trips at a relatively higher rate. As such, these ridership generators are included in the maps describing Transit Potential and Transit Need.

Transit Potential

Transit service is generally most effective in areas with high concentrations of residents and/or jobs. The following Transit Potential analysis uses American Community Survey 2019 5-year population and employment projections from the Census. The geographic divisions used to analyze population and employment density in this section are Census Block Groups. Given that densities may be diluted in cases where Block Groups are especially large, this analysis also takes land use and key activity centers into account to assess transit potential.

Population Density

Public transportation is most efficient when it connects population and employment centers where people can easily walk to and from bus stops. The reach of transit is generally limited to within one-quarter mile to one-half mile of the transit line, or a 10-minute walk. For this reason, the size of a transit travel market is directly related to an area's population density. Typically, a density greater than five people per acre is needed to support base-level (hourly) fixed-route transit service. In the following population density maps, yellow areas indicate places where fixed-route service could be feasible, and areas with darker colors have the potential to support more frequent service.

While much of the US-29 North study area, shown in **Figure 5**, has low to moderate population density, pockets of higher density can be found around The Shops at Stonefield, Rio Road East, and Hollymead in the US-29 area. Virtually all areas and corridors that have the density to support fixed-route transit service currently have some level of service.

The Pantops study area, shown in **Figure 6**, has a low population density, though the area north of US-250 is ripe for growth because of construction of new housing developments. The entirety of the Monticello study area, shown in **Figure 7**, has a population density of fewer than one person per acre. This result is expected, given that population density is calculated based on residential rather than tourist population.

Figure 5: US-29 North Population Density

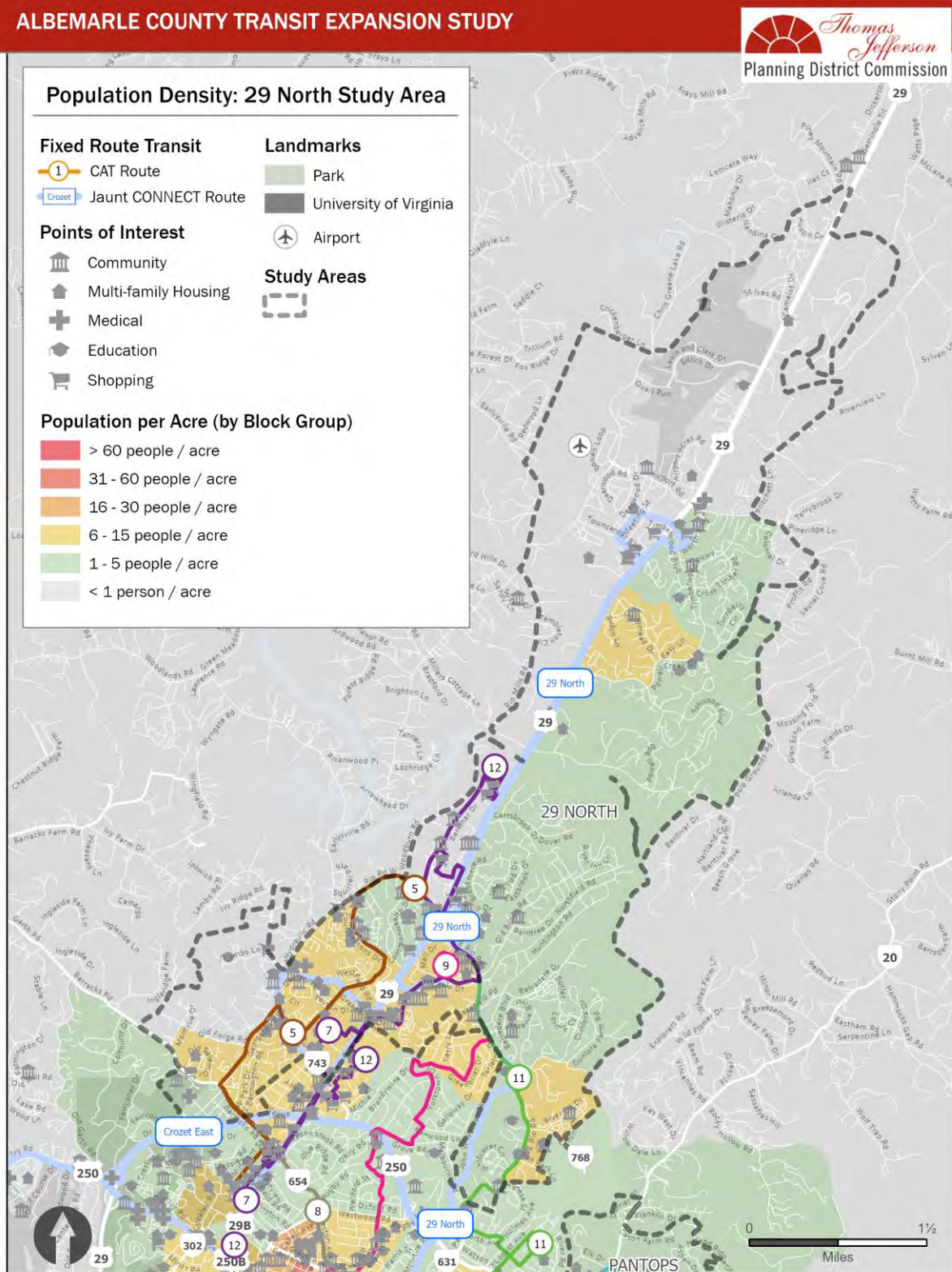


Figure 6: Pantops Population Density

ALBEMARLE COUNTY TRANSIT EXPANSION STUDY

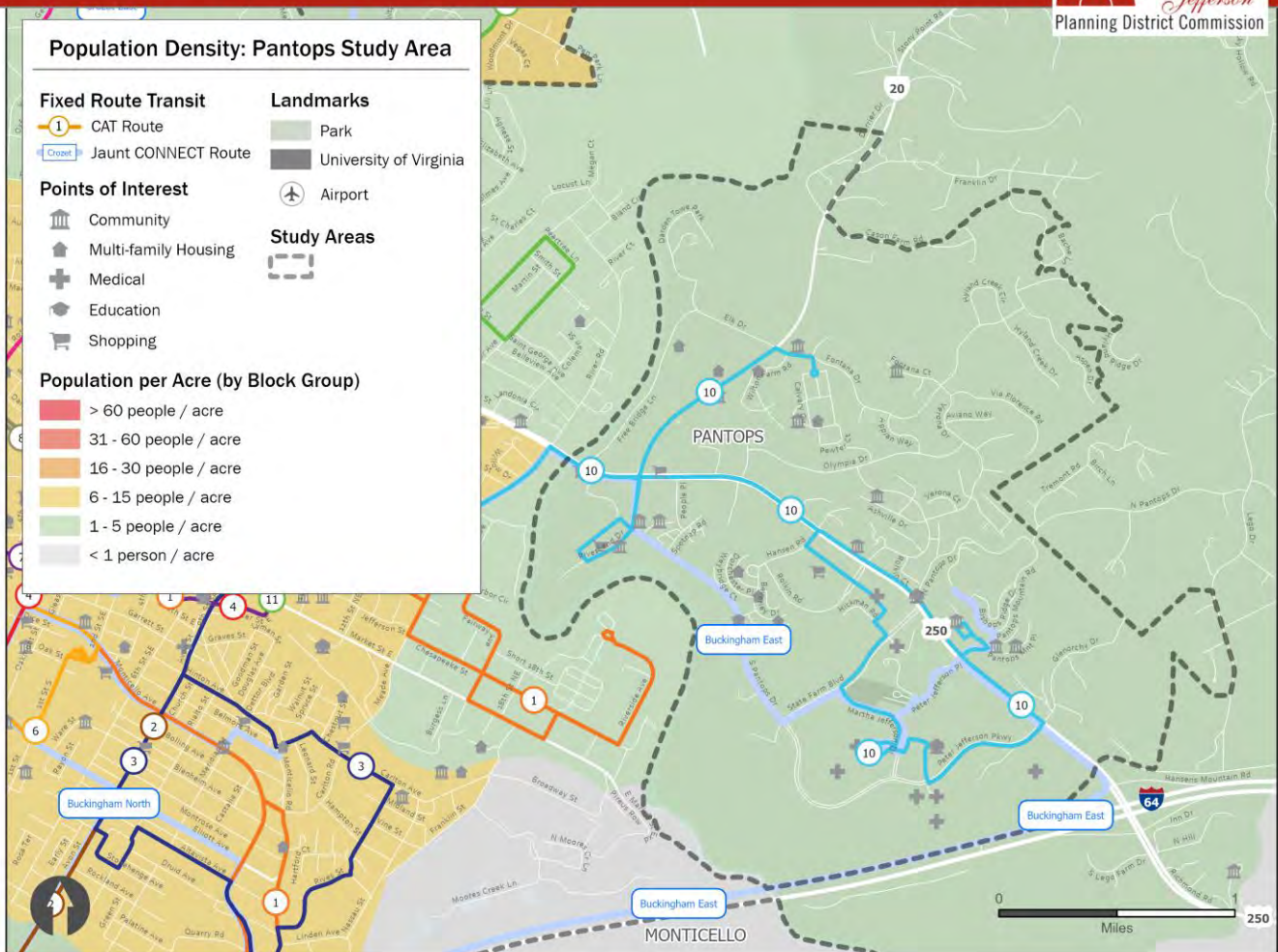
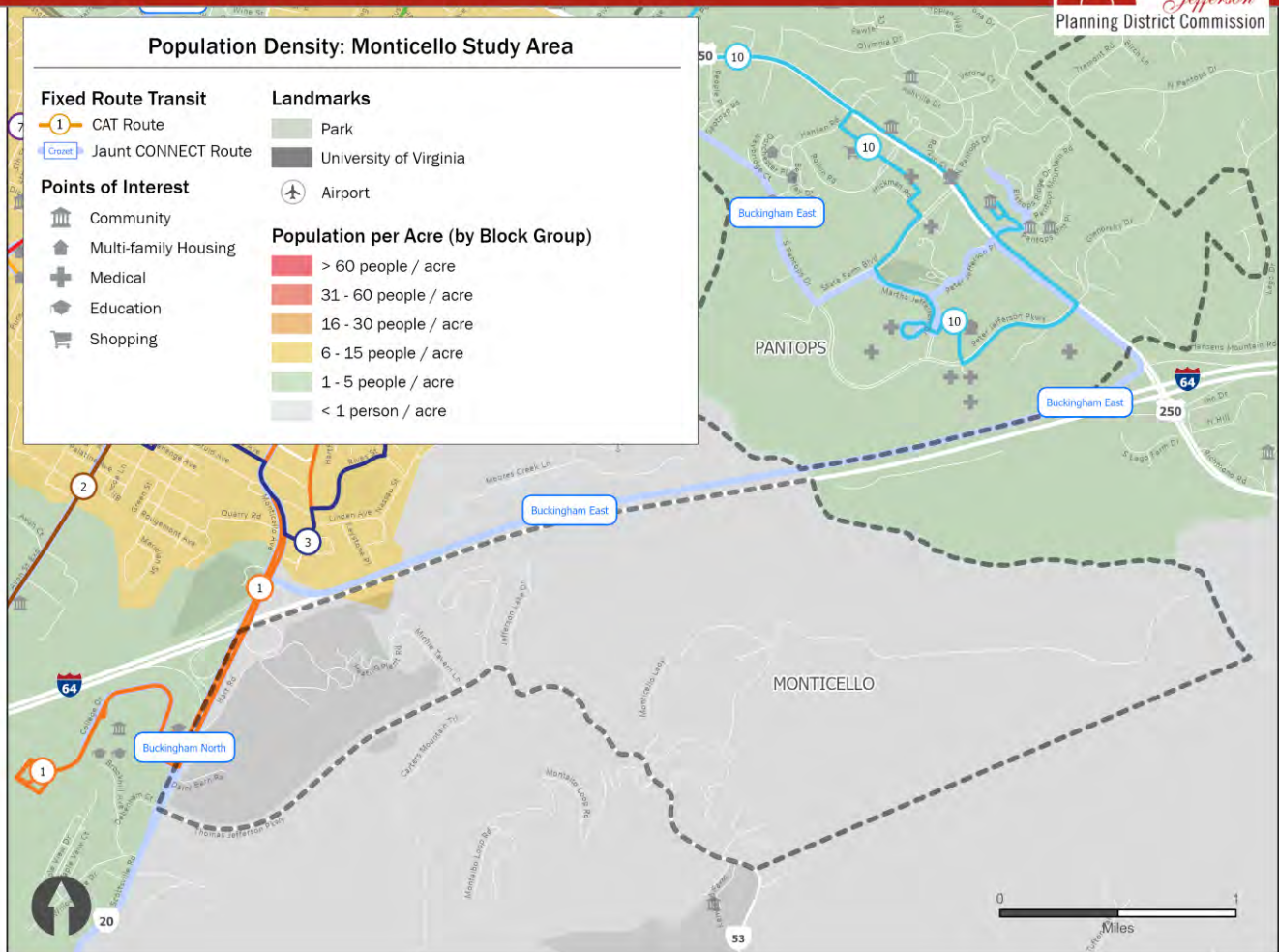


Figure 7: Monticello Population Density

ALBEMARLE COUNTY TRANSIT EXPANSION STUDY



Employment Density

Given that traveling to and from work accounts for the largest single segment of transit trips in most markets, the location and number of jobs in a region are also strong indicators of transit demand. Transit that serves areas of high employment density also provides key connections to job opportunities. Like population density, an employment density greater than five jobs per acre can typically support base-level fixed-route service. This density corresponds with yellow areas in the following maps.

In the US-29 North study area, shown in **Figure 8**, the area around The Shops at Stonefield has a high employment density. Jobs are also concentrated around the Seminole Square Shopping Center, Branchlands, Fashion Square Mall, and the 29th Place Mall. Employment density dissipates further outside the University region.

In the Pantops study area, shown in **Figure 9**, the area south of US-250 (Richmond Road) has moderate employment density. Employment centers in this area include Martha Jefferson Hospital, Peter Jefferson Place, the Rivanna Ridge Shopping Center, Pantops Shopping Center, and the stretch of car dealerships along US-250 (Richmond Road).

The entire Monticello study area, shown in **Figure 10**, has an employment density of fewer than one job per acre. Low density numbers are expected, because the density of the Monticello region is diluted by the size of the Census Block Group used for the analysis.

Figure 8: US-29 North Employment Density

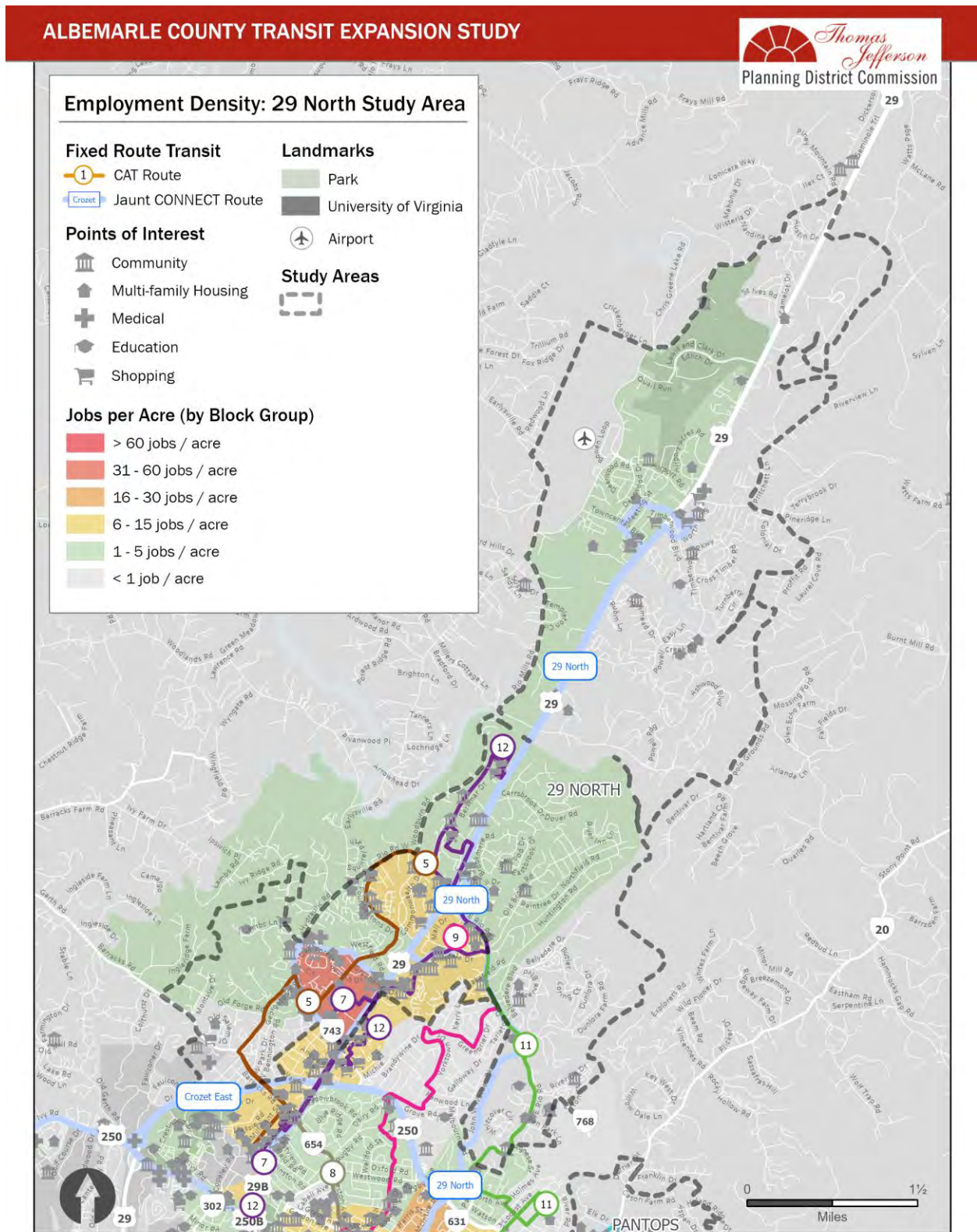


Figure 9: Pantops Employment Density

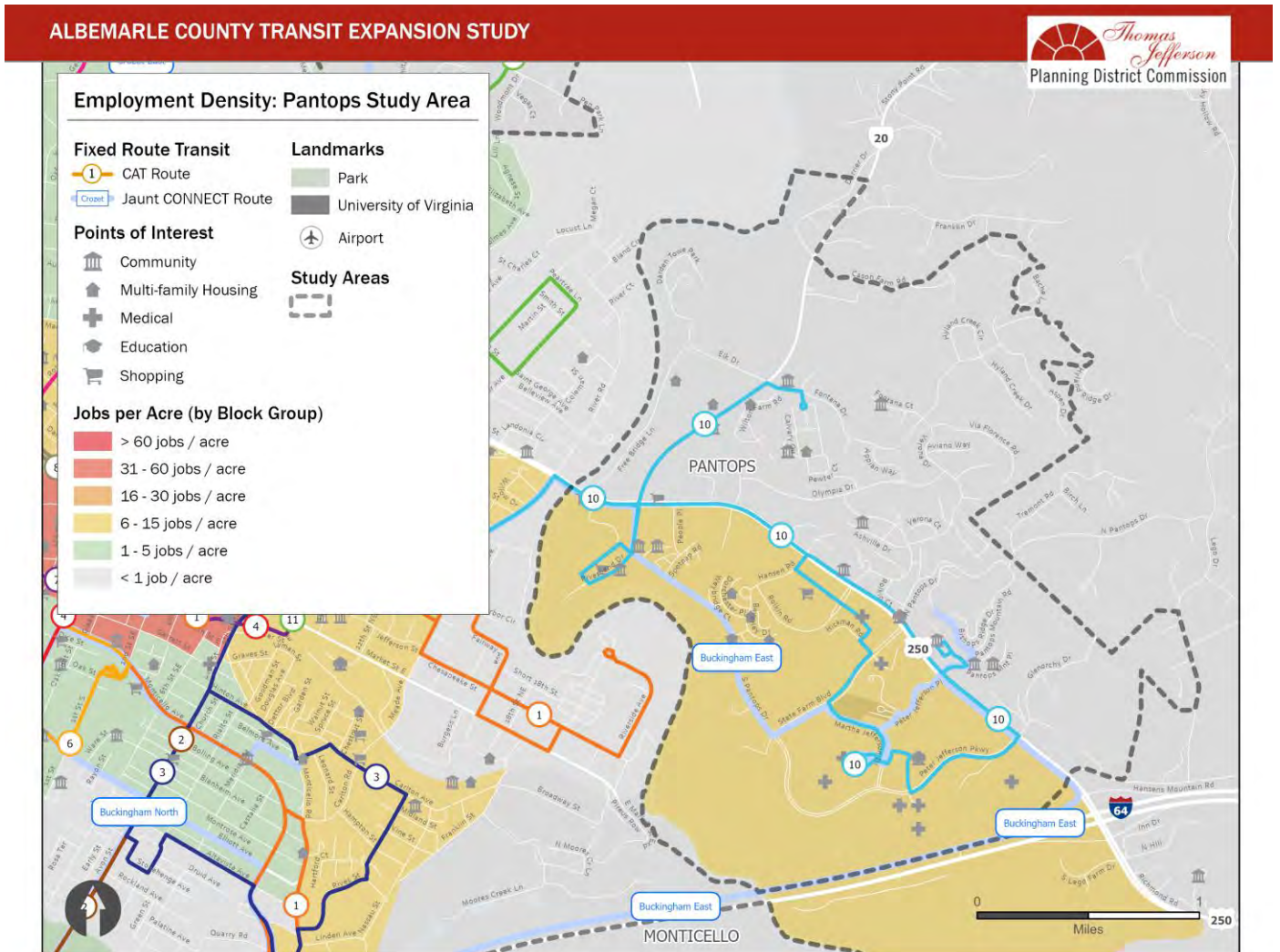
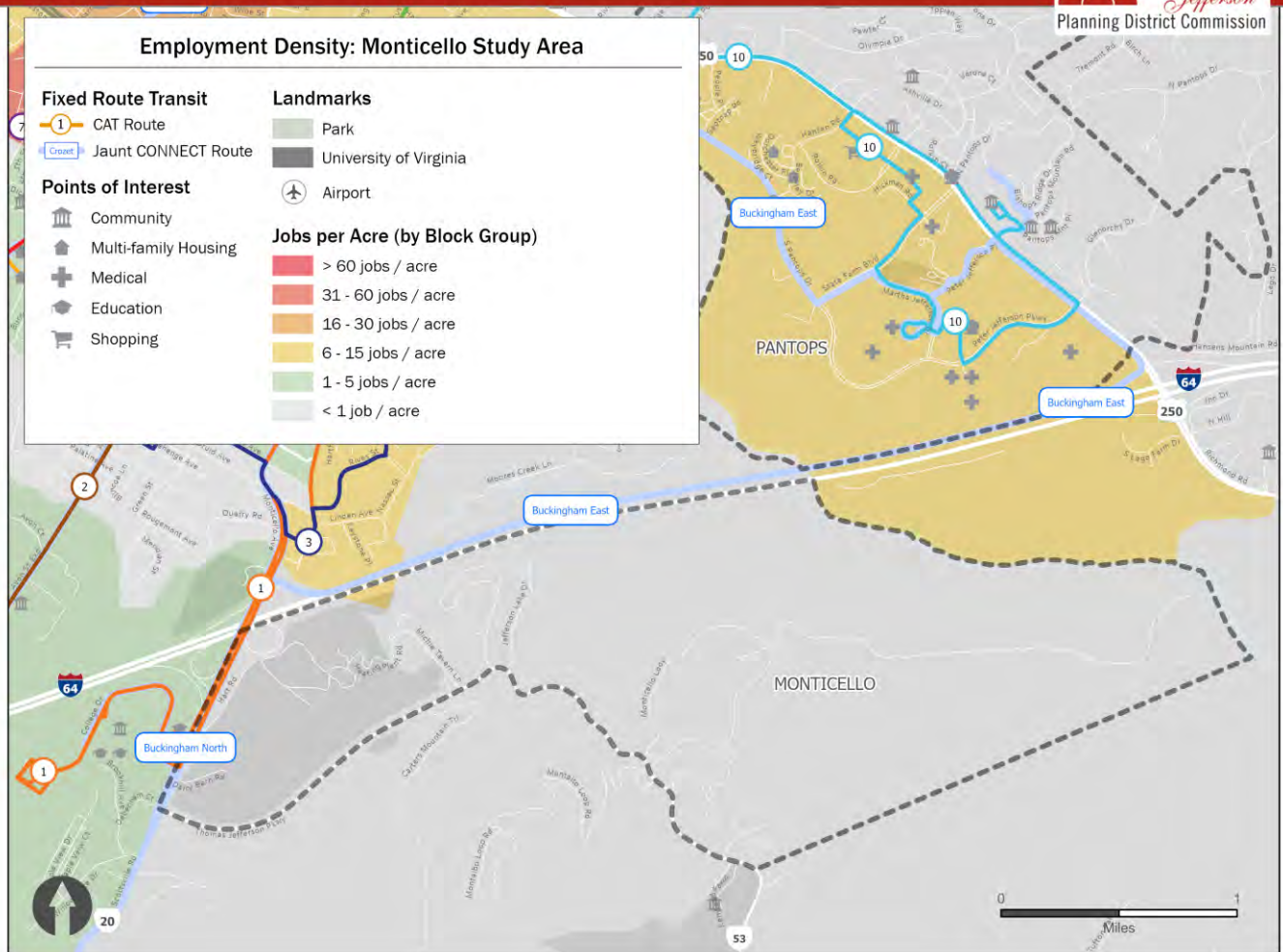


Figure 10: Monticello Employment Density

ALBEMARLE COUNTY TRANSIT EXPANSION STUDY



Transit Potential

Transit Potential combines the population and employment densities for each Block Group to indicate the viability of fixed-route service in an area. In the US-29 North study area, shown in **Figure 11**, moderate-to-high transit potential is found primarily south of the Rivanna River. The highest density in the corridor is found near Commonwealth Drive, between Hydraulic and Greenbriar Drive, which includes The Shops at Stonefield and the Commonwealth Drive neighborhood. A pocket of moderate Transit Potential also exists in the Hollymead area. Most of the areas with density sufficient to support fixed-route service are currently served by at least one CAT or Jaunt route. The largest service gaps include neighborhoods northeast of Rio Road and Hollymead area.

In the Pantops area, shown in **Figure 12**, moderate Transit Potential is found south of US-250 (Richmond Road). This Transit Potential southwest of US-250 (Richmond Road) is driven primarily by relatively high employment density, including retail, medical, and community services. The area north of US-250 (Richmond Road) is seeing growth in population density, including new multifamily housing.

The Monticello area, shown in **Figure 13**, shows a low Transit Potential due to the population and employment density being diluted over a large area. However, transit service is most efficient when destinations and connecting services are concentrated, as is the case with the Monticello Visitor's Center.

Figure 11: US-29 North Transit Potential

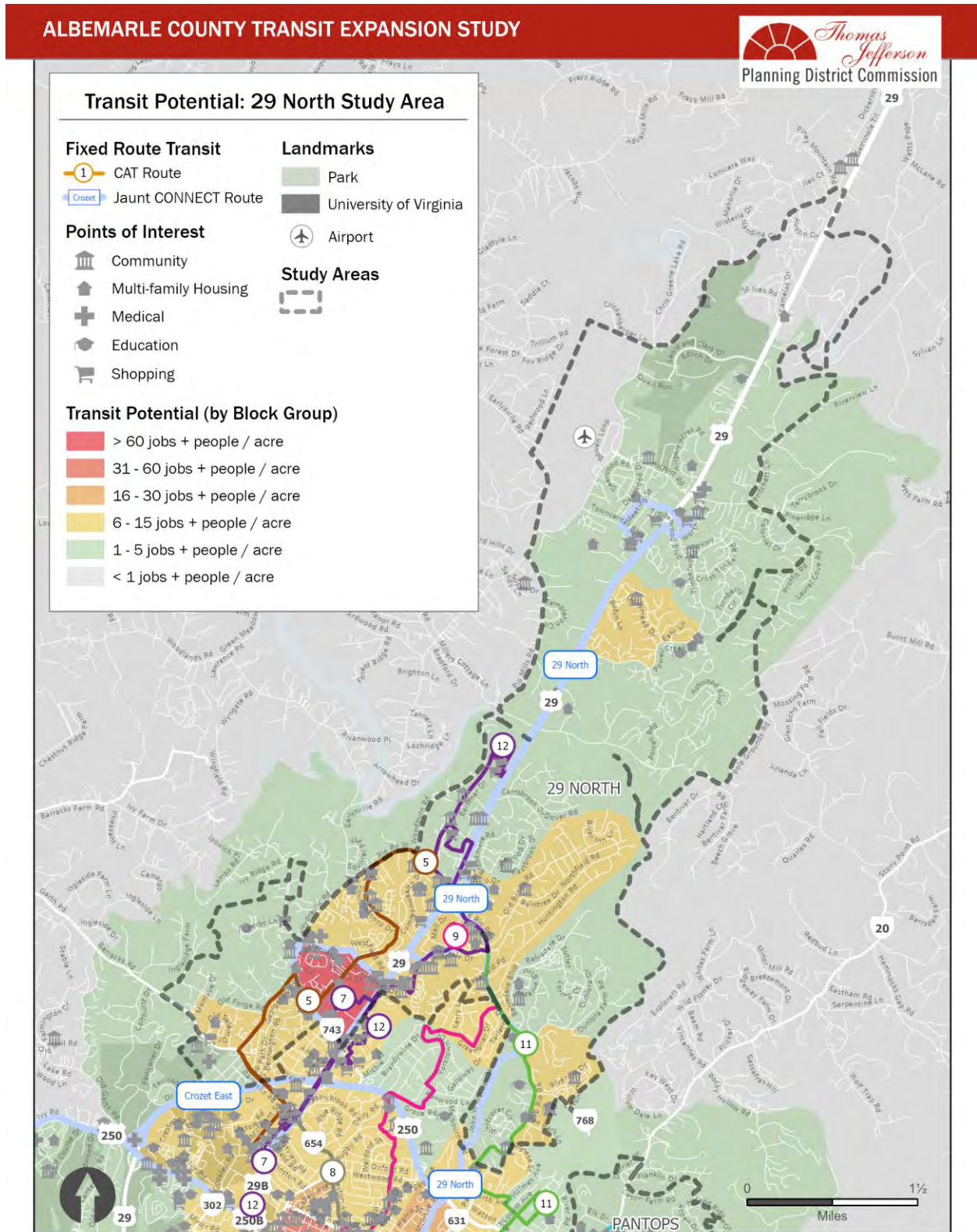


Figure 12: Pantops Transit Potential

ALBEMARLE COUNTY TRANSIT EXPANSION STUDY

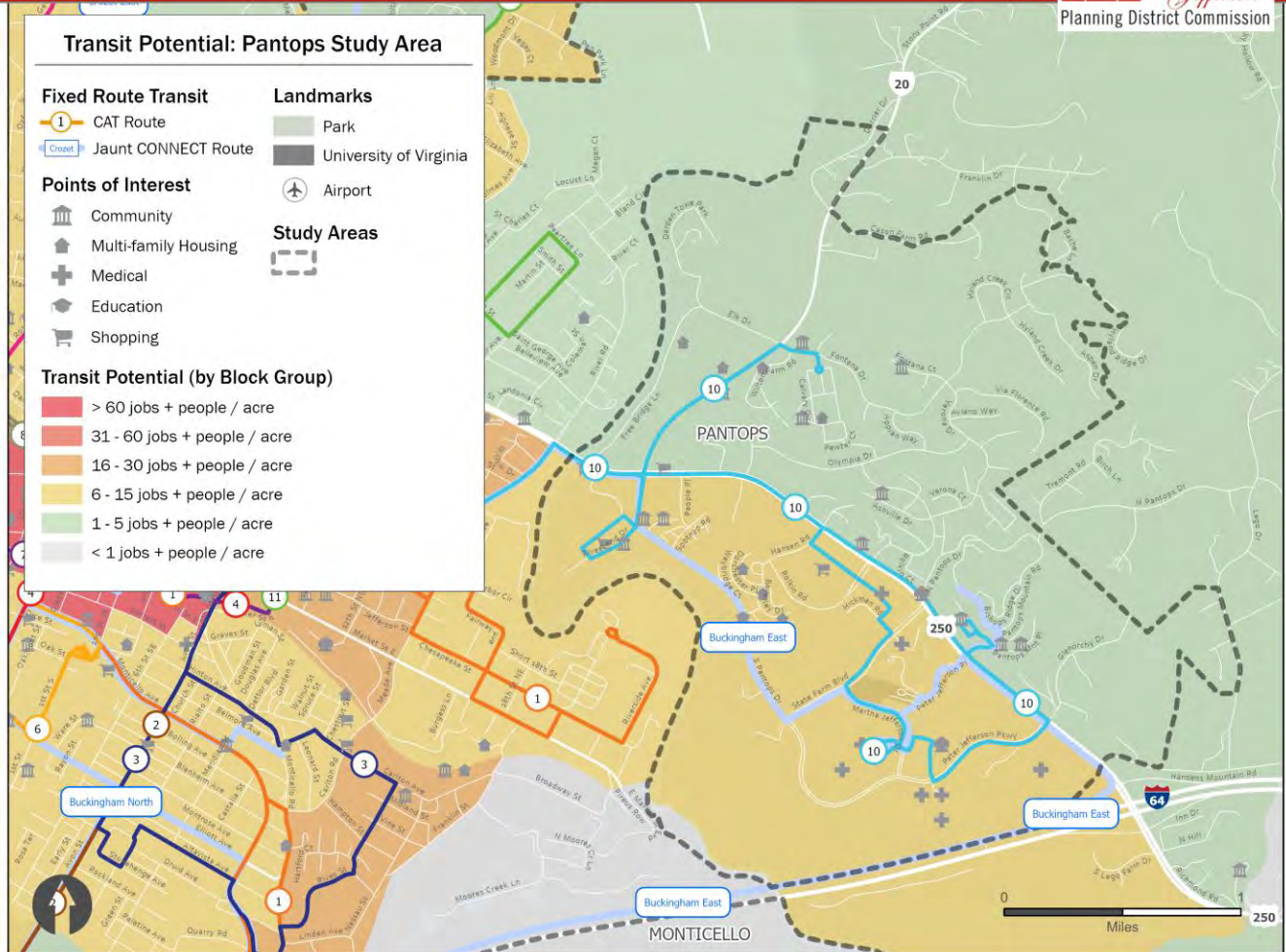
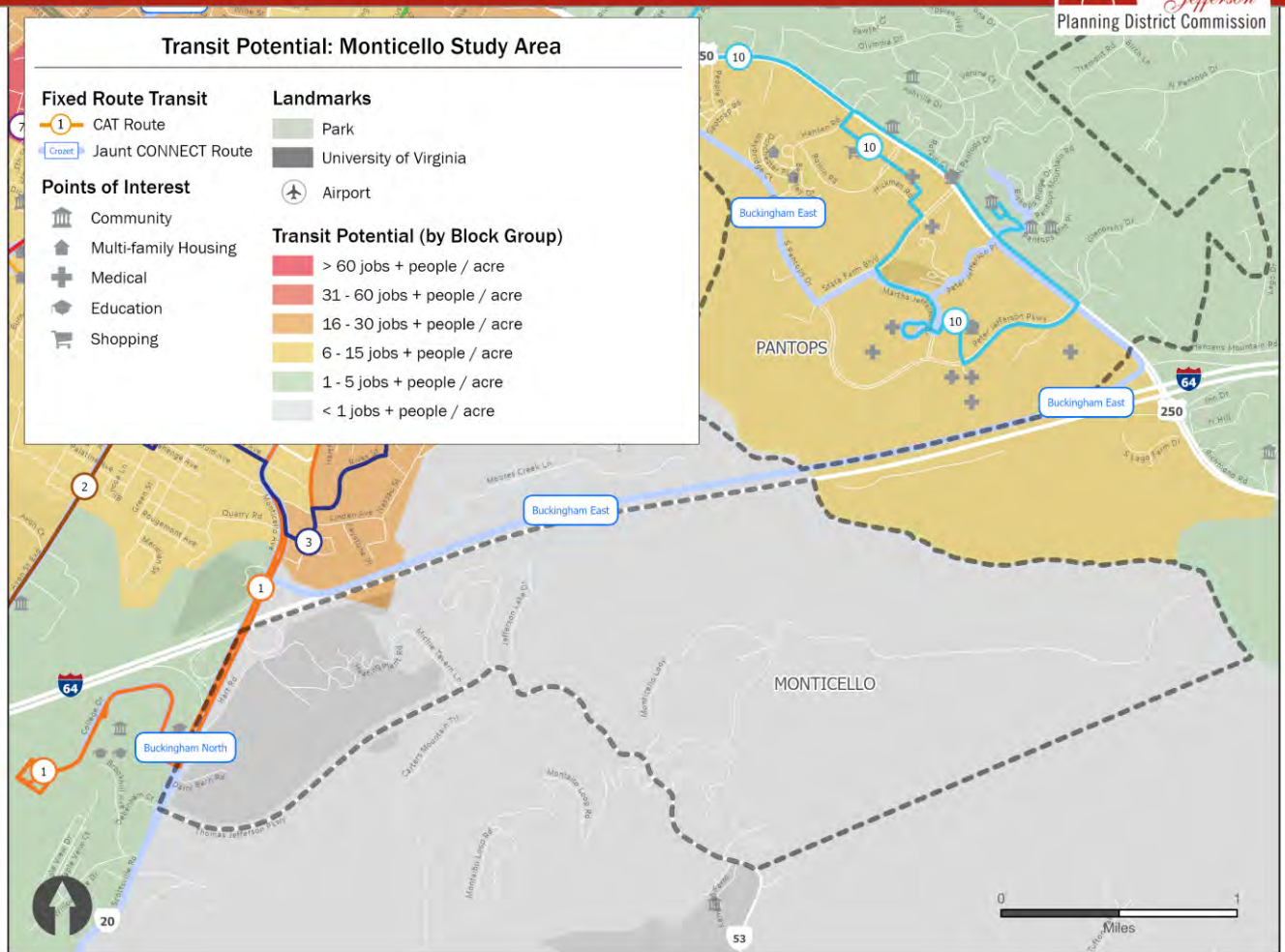


Figure 13: Monticello Transit Potential

ALBEMARLE COUNTY TRANSIT EXPANSION STUDY



Transit Need

Above all, public transportation is a mobility tool. Certain population subgroups have a relatively higher propensity to use transit as their primary means of local and regional transportation. These groups include:

- People without access to an automobile, whether it be by choice or due to financial or legal reasons, often have no other transportation options besides using transit.
- Persons with disabilities, many of whom cannot drive and/or have difficulty driving.
- Low-income individuals, typically because transit is less expensive than owning and operating a car.
- Youth / young adults who are either too young to drive or have in recent years shown a greater interest in transit, walking, and biking than in driving.
- Older adults, who as they age, often become less comfortable or less able to operate a vehicle.

The maps that follow (**Figure 14 – Figure 28**) show the densities of each of these five high transit propensity population subgroups by Census Block Group to help determine where the need for transit service in the study area is greatest.

With density ranges differing for each demographic analysis, the maps utilize a Jenks Natural Breaks Classification Method to assign each block group to one of five density categories. For each analysis, depending on the natural break category into which it falls, a score from 1 (lowest density) to 5 (highest density) is assigned to each block group. Following the analysis of each individual factor, the Transit Need Index maps (**Figure 29 – Figure 31**) show the composite Transit Need score for each study area based on the sum of its scores in each preceding analysis. For example, if a block group falls in the highest density category for each of the five demographic analyses, it will end up with a Transit Need Index value of 25 (5+5+5+5+5). The lowest possible Transit Need Index score is 5 (1+1+1+1+1).

While the Transit Potential analysis highlights areas of the study area region with actual densities to support fixed-route service, Transit Need is a relative measure that estimates the need for transit compared to other block groups. There is not, however, a specific Transit Need Index score or value that represents a threshold for supporting fixed-route service. Instead, Transit Need should be considered alongside Transit Potential. If two areas have similar and sufficient Transit Potential, the area with higher Transit Need should be prioritized for service. Conversely, in some locations, while the density of transit-dependent population groups may be relatively high, if the total population and/or employment density are still quite low, the potential to generate substantial fixed-route transit ridership will also remain low.

Zero-Vehicle Household Density

Figure 14 shows the density of zero-vehicle households in the US-29 North study area. The highest densities of zero-vehicle households can be found in the area surrounding multifamily housing east of Georgetown Road. The area of multifamily housing northeast of Barracks Road, The Shops at Stonefield and Commonwealth Drive neighborhood, and the neighborhoods south of Rio Road bordering the City of Charlottesville all have high densities of zero-vehicle households. All areas with a score of 4 or 5 are currently served by public transit.

In Pantops, shown in **Figure 15**, the area south of US-250 has a moderate density of zero-vehicle households. The entire Monticello study area, shown in **Figure 16**, has a zero-vehicle household density score of 1.

Figure 14: US-29 North Zero-Car Households Density

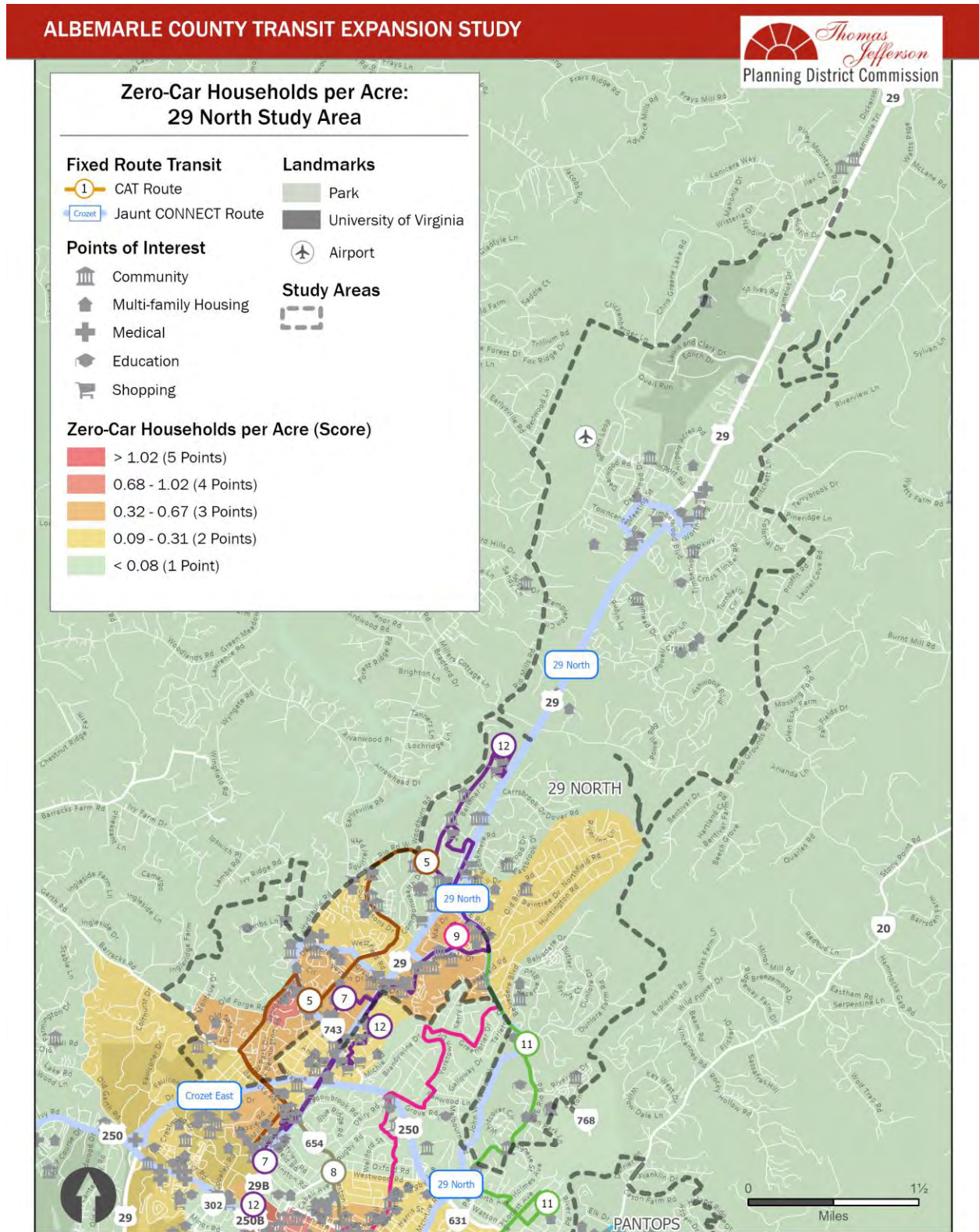


Figure 15: Pantops Zero-Car Households Density

ALBEMARLE COUNTY TRANSIT EXPANSION STUDY

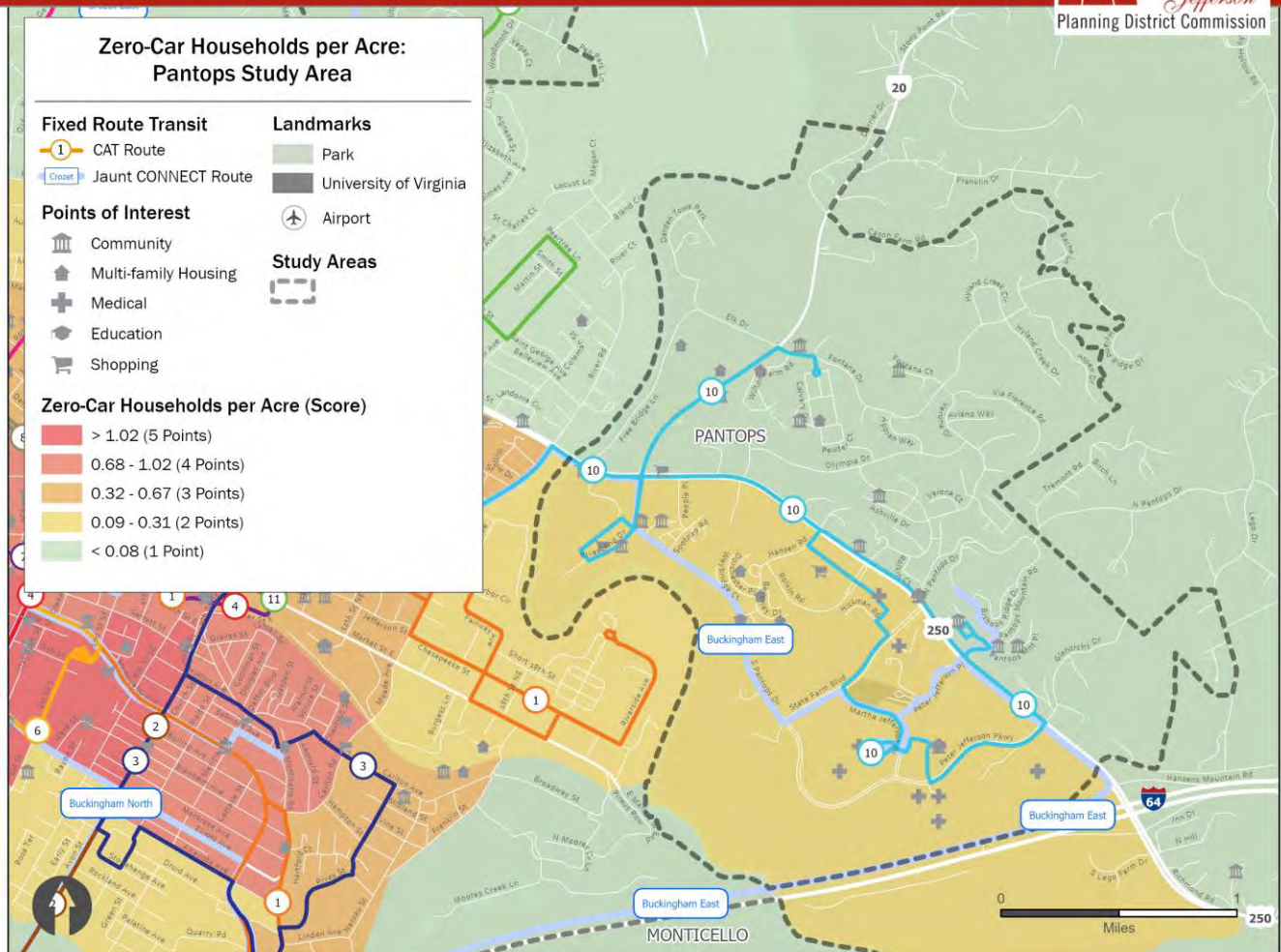
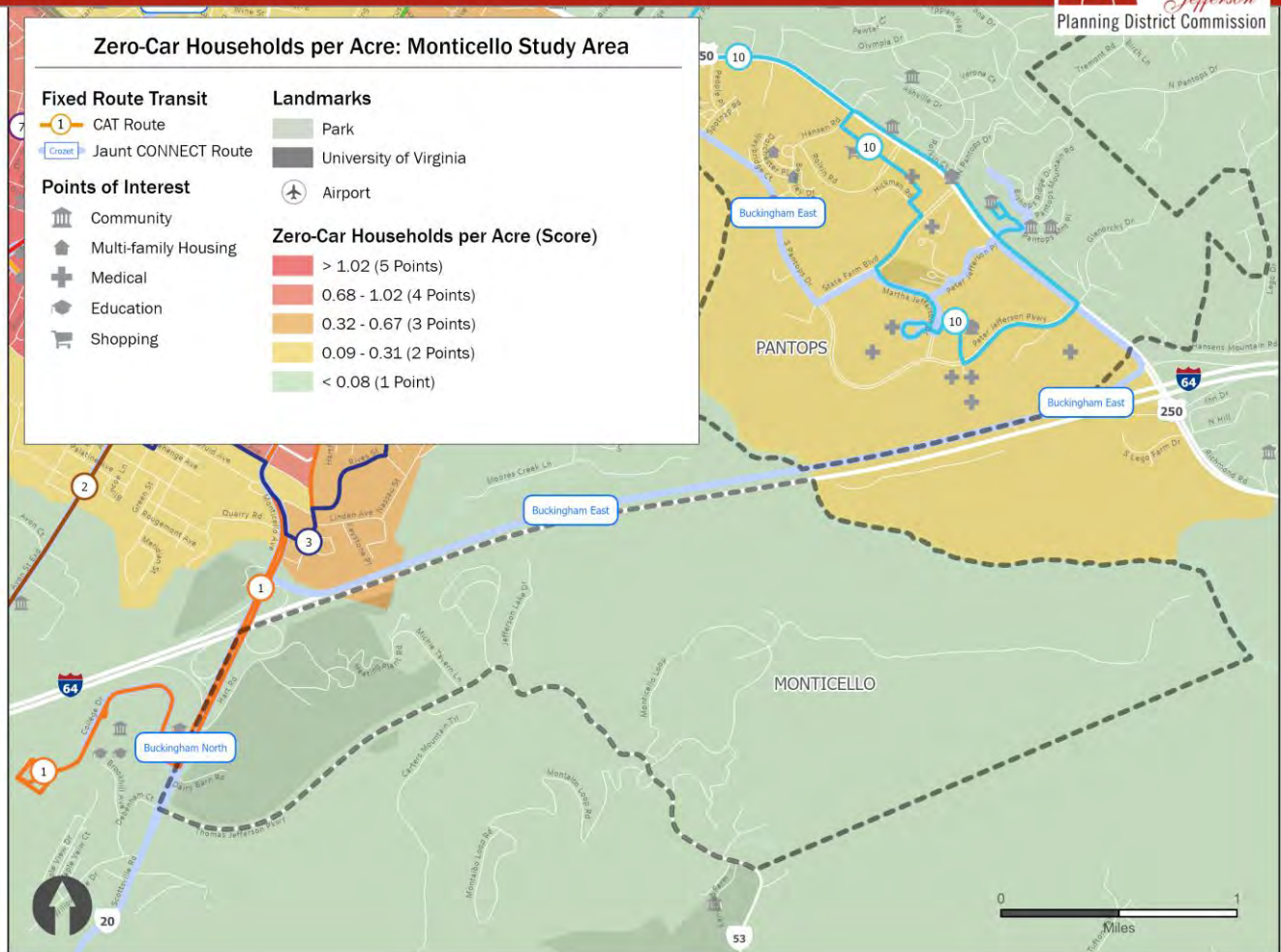


Figure 16: Monticello Zero-Car Household Density

ALBEMARLE COUNTY TRANSIT EXPANSION STUDY



Disabled Population Density

In the US-29 North study area, shown in **Figure 17**, the highest concentration of disabled populations can be found in the Barracks West area, and the neighborhoods south of Rio Road bordering the City of Charlottesville. The area south of Georgetown Road and bordering Charlottesville and area including the Shops at Stonefield and Commonwealth Drive neighborhood also have a high density of disabled populations. All areas with a score of 4 or 5 are currently served by public transit.

In Pantops, shown in **Figure 18**, the entire study area has a low, but not the lowest, concentration of disabled populations. The Monticello area, shown in **Figure 19**, has a disabled population per acre lower than 0.12.

Figure 17: US-29 North Disabled Population Density

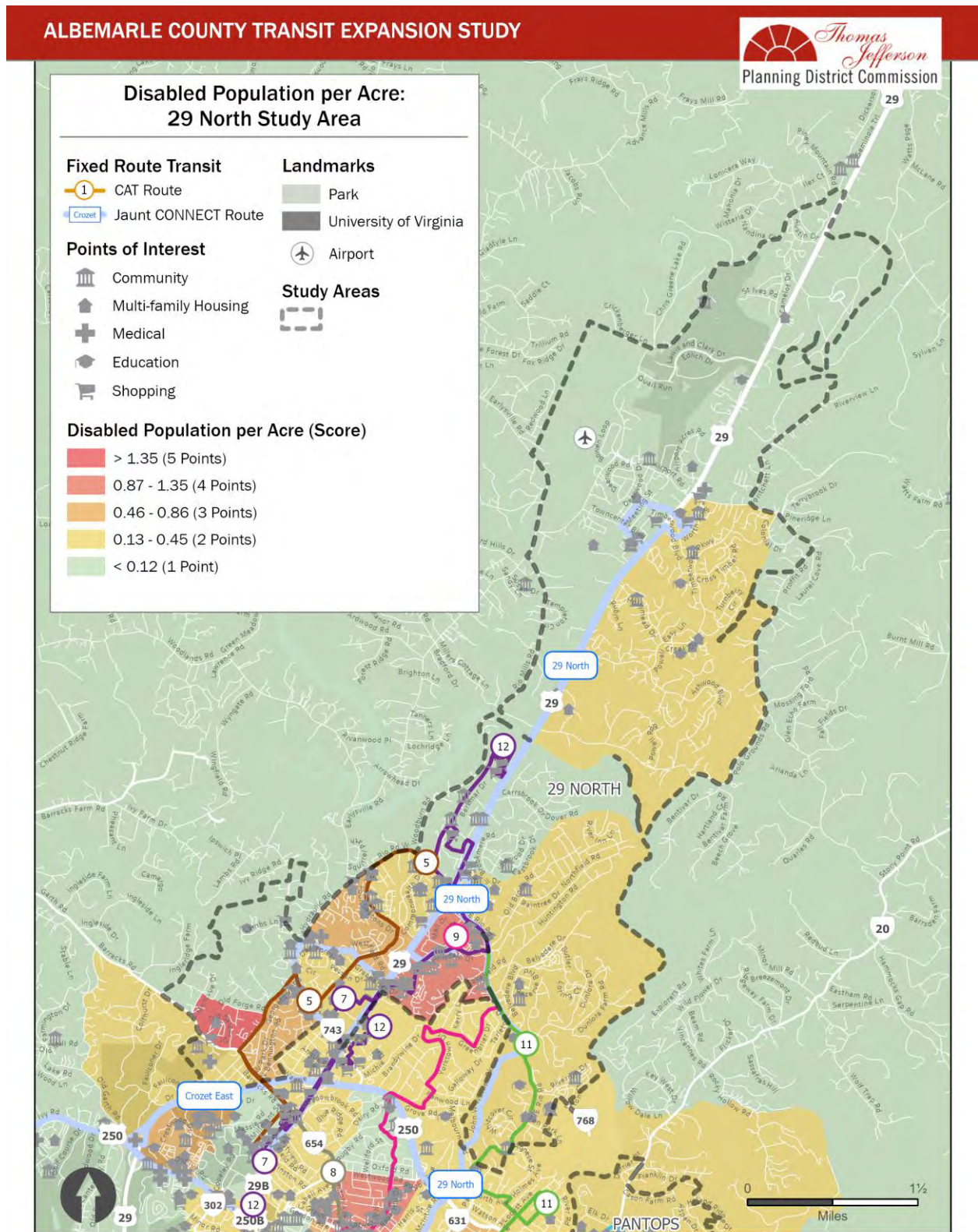


Figure 18: Pantops Disabled Population Density

ALBEMARLE COUNTY TRANSIT EXPANSION STUDY

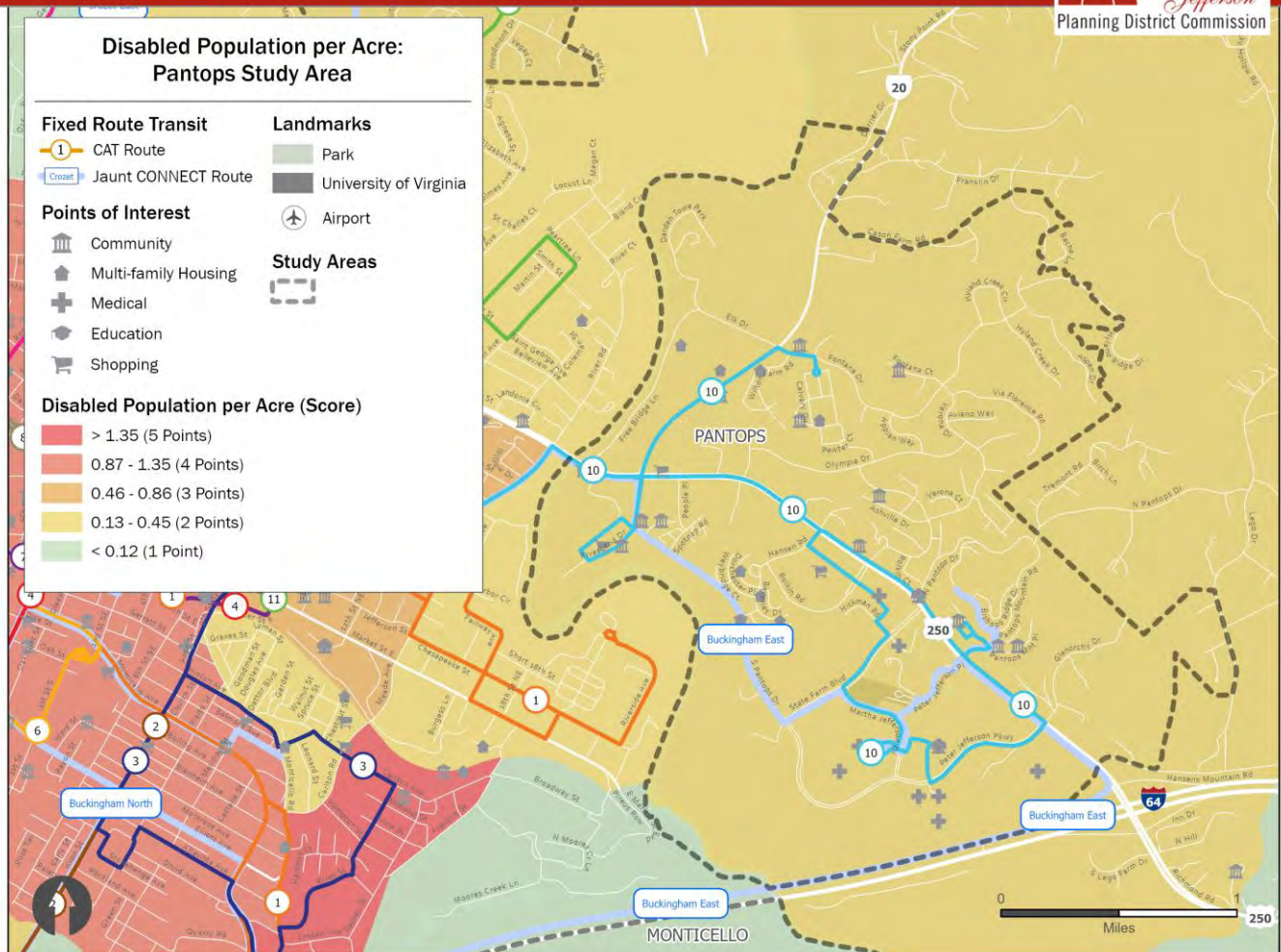
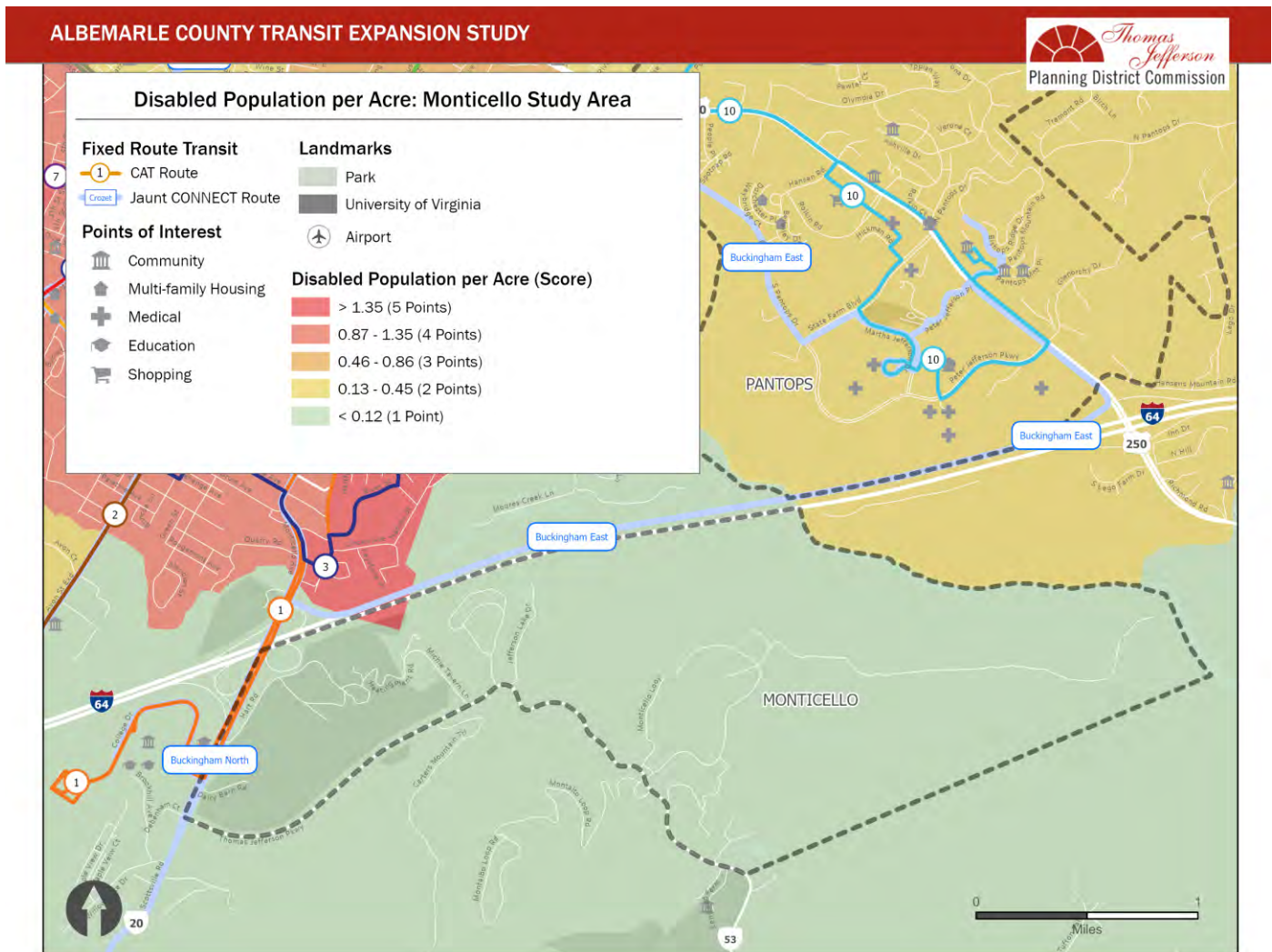


Figure 19: Monticello Disabled Population Density



Low-Income Population Density

In the US-29 North study area, shown in **Figure 20**, a higher density of low-income population – defined as population living in a household with annual income less than 150 percent of the federal poverty line – can be found in Barracks West area, the multifamily housing south of Georgetown Road, and The Shops at Stonefield and Commonwealth Drive neighborhood. Each of these areas is currently served by public transit.

Both the entire Pantops study area, shown in **Figure 21**, and the entire Monticello study area, shown in **Figure 22**, have a low-income population density score of 1.

Figure 20: US-29 North Low-Income Population Density

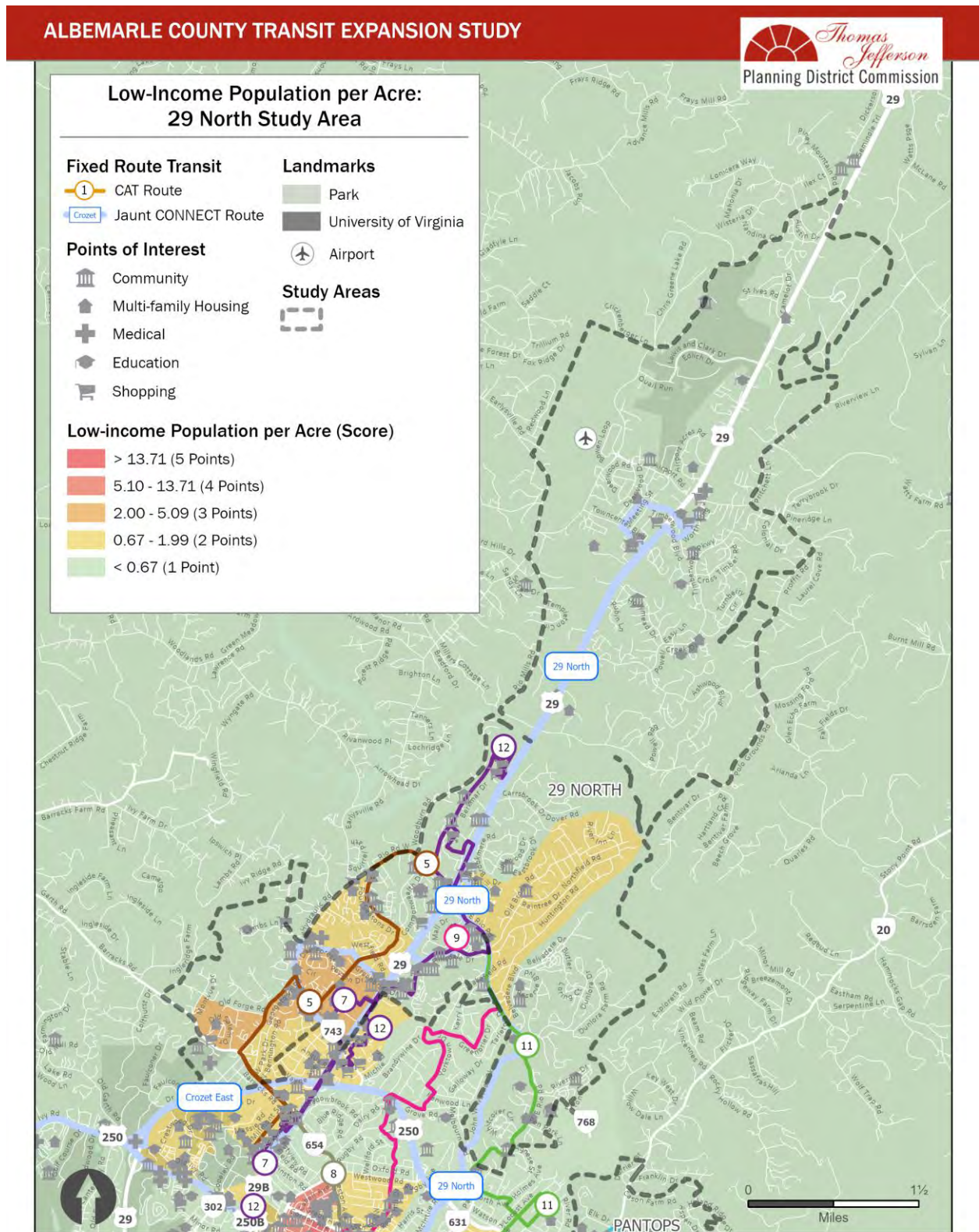


Figure 21: Pantops Low-Income Population Density

ALBEMARLE COUNTY TRANSIT EXPANSION STUDY

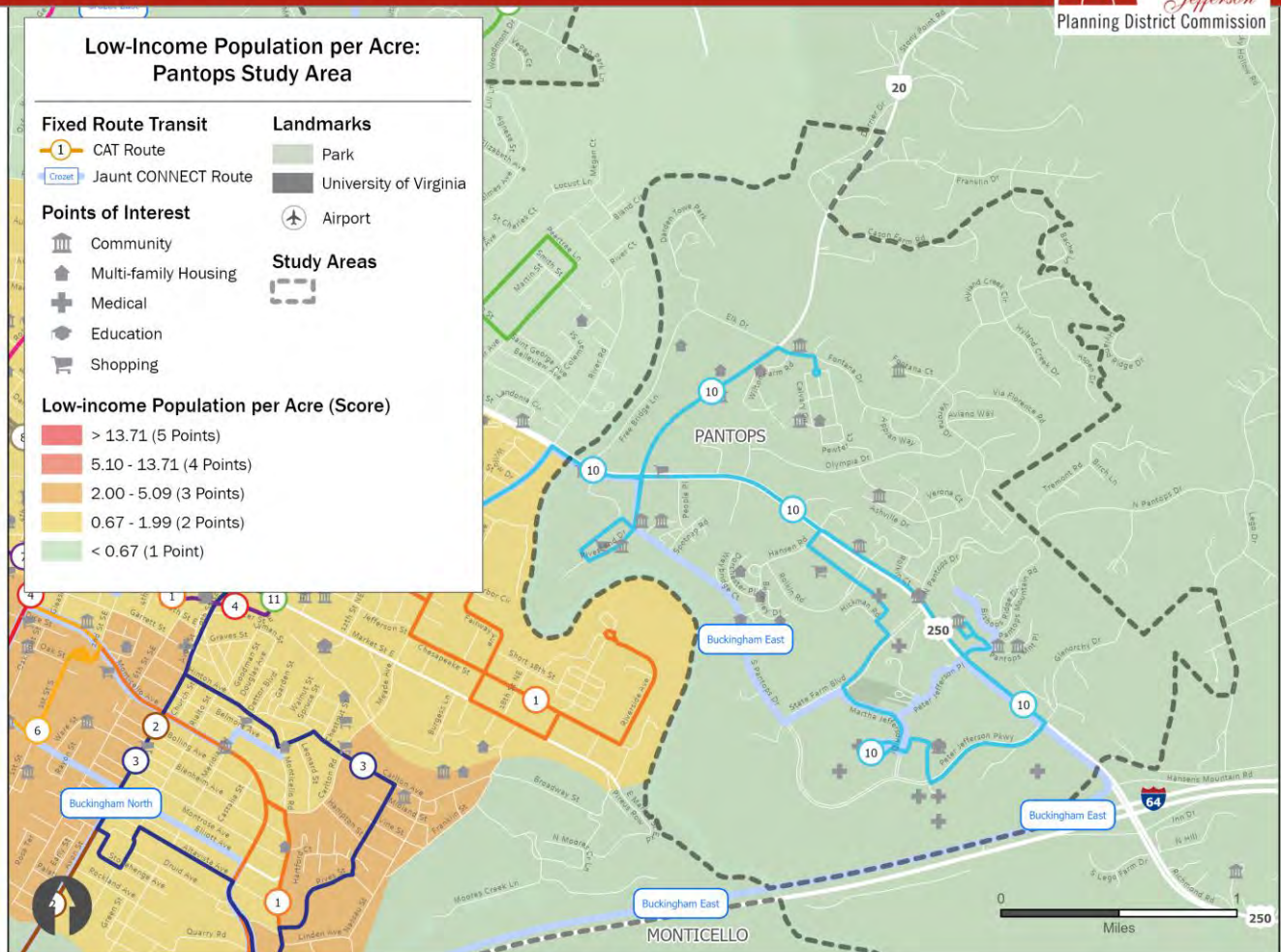
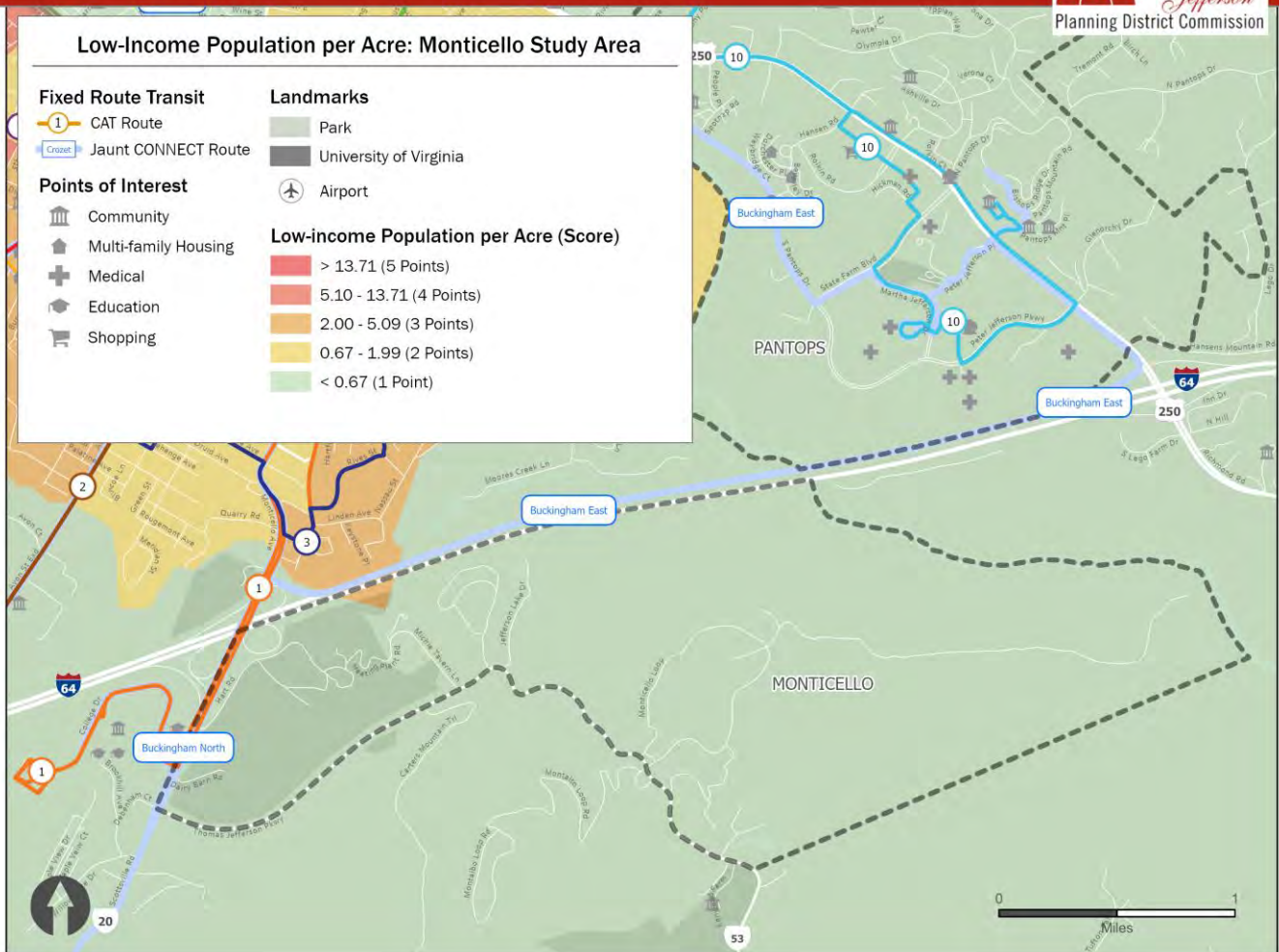


Figure 22: Monticello Low-Income Population Density

ALBEMARLE COUNTY TRANSIT EXPANSION STUDY



Youth/Young Adult Population Density

The youth and young adult population density shows the amount of the population per acre that is between 15 and 24 years old. In the US-29 North study area, shown in **Figure 23**, the highest density of youths and young adults is in the Barracks West area, the area south of Georgetown Road, and The Shops at Stonefield and the Commonwealth Drive neighborhood. Most of the moderate to high concentrations of youths and young adults are closer towards the City of Charlottesville, but there is a pocket of moderate density around the Hollymead and Forest Lakes neighborhoods. All areas with a score of 4 or 5 are currently served by public transit.

Both the entire Pantops study area, shown in **Figure 24**, and the entire Monticello study area, shown in **Figure 25**, have a youth and young adult population density score of 1.

Figure 23: US-29 North Youth/Young Adult Population Density

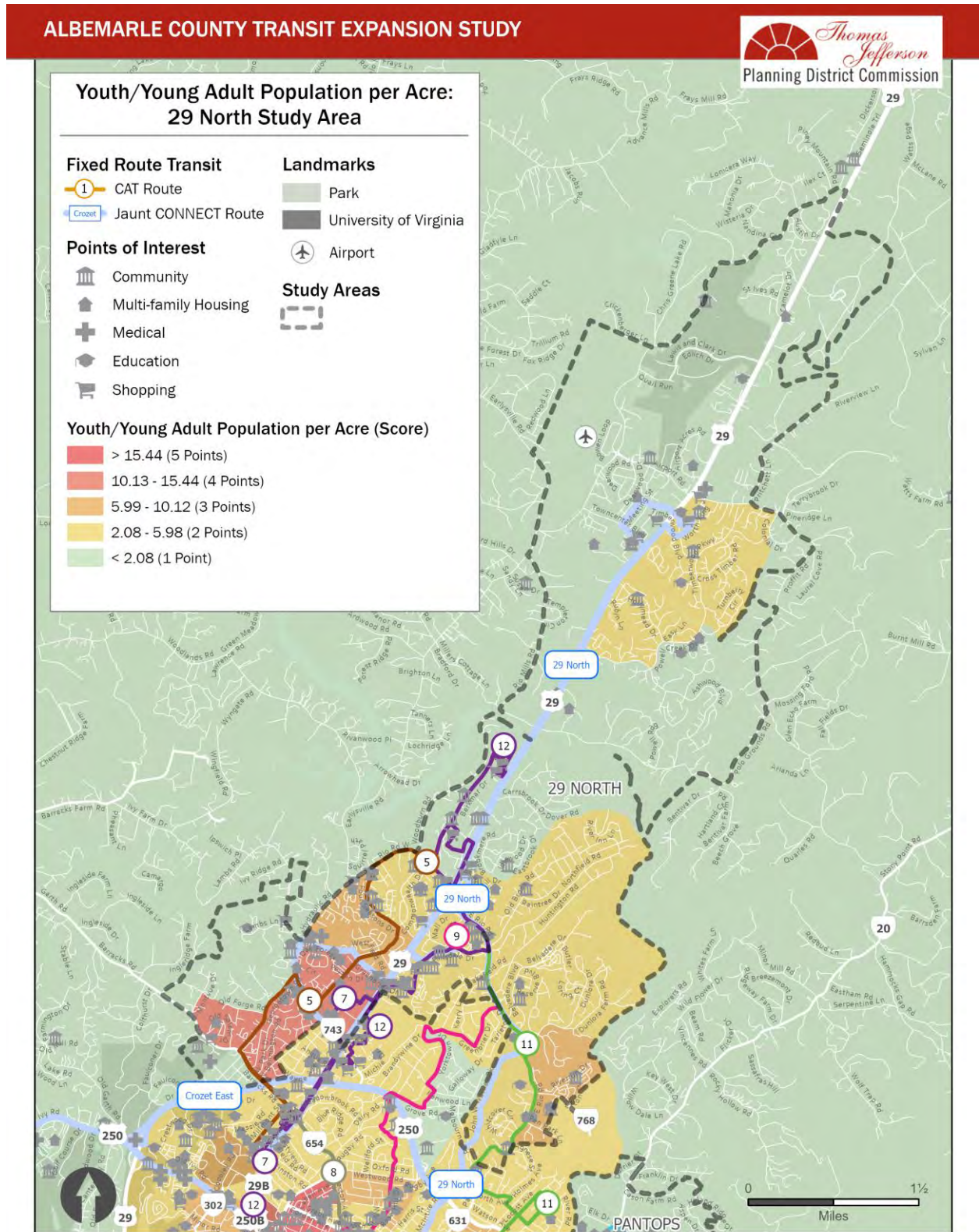


Figure 24: Pantops Youth/Young Adult Population Density

ALBEMARLE COUNTY TRANSIT EXPANSION STUDY

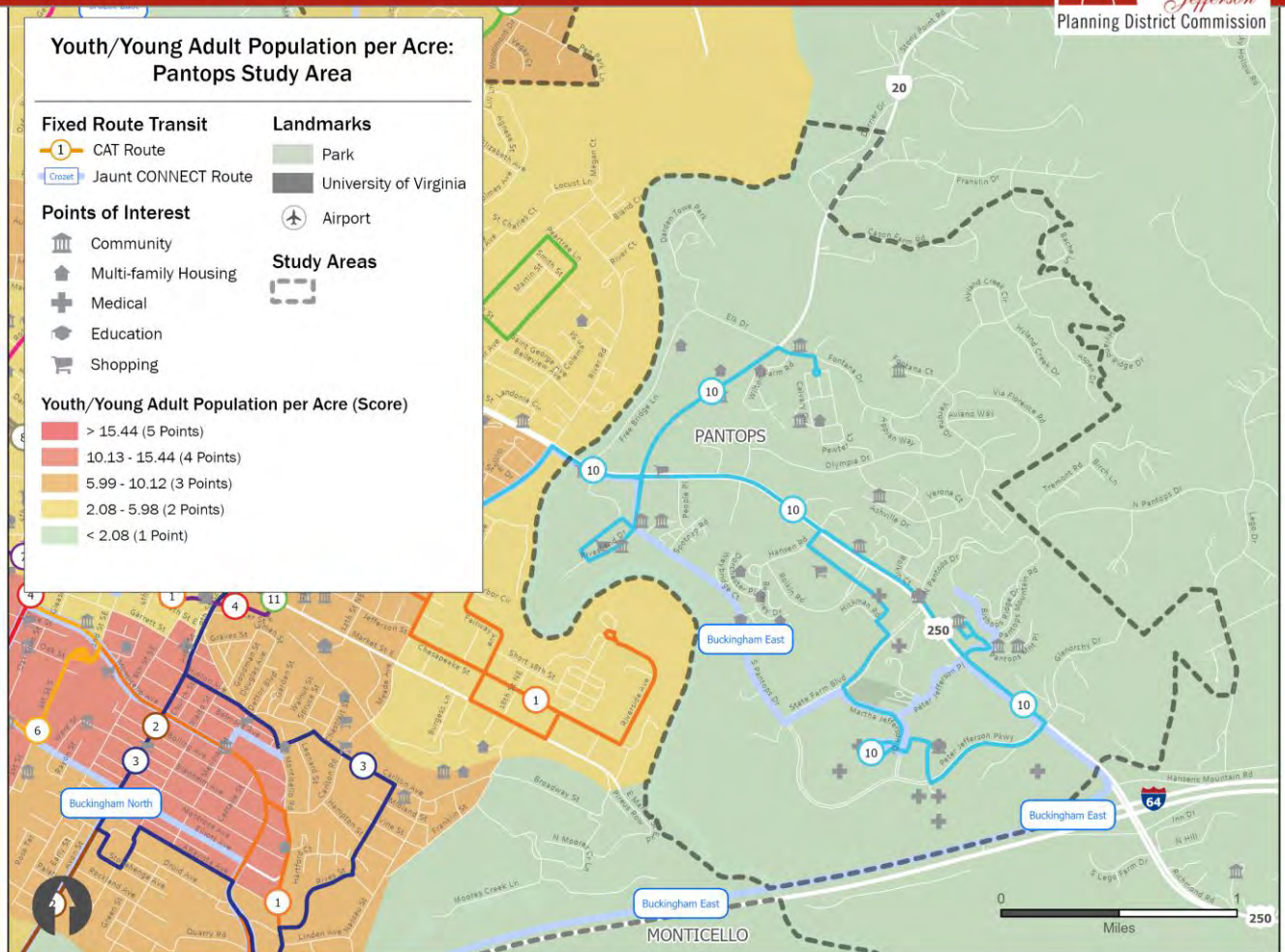
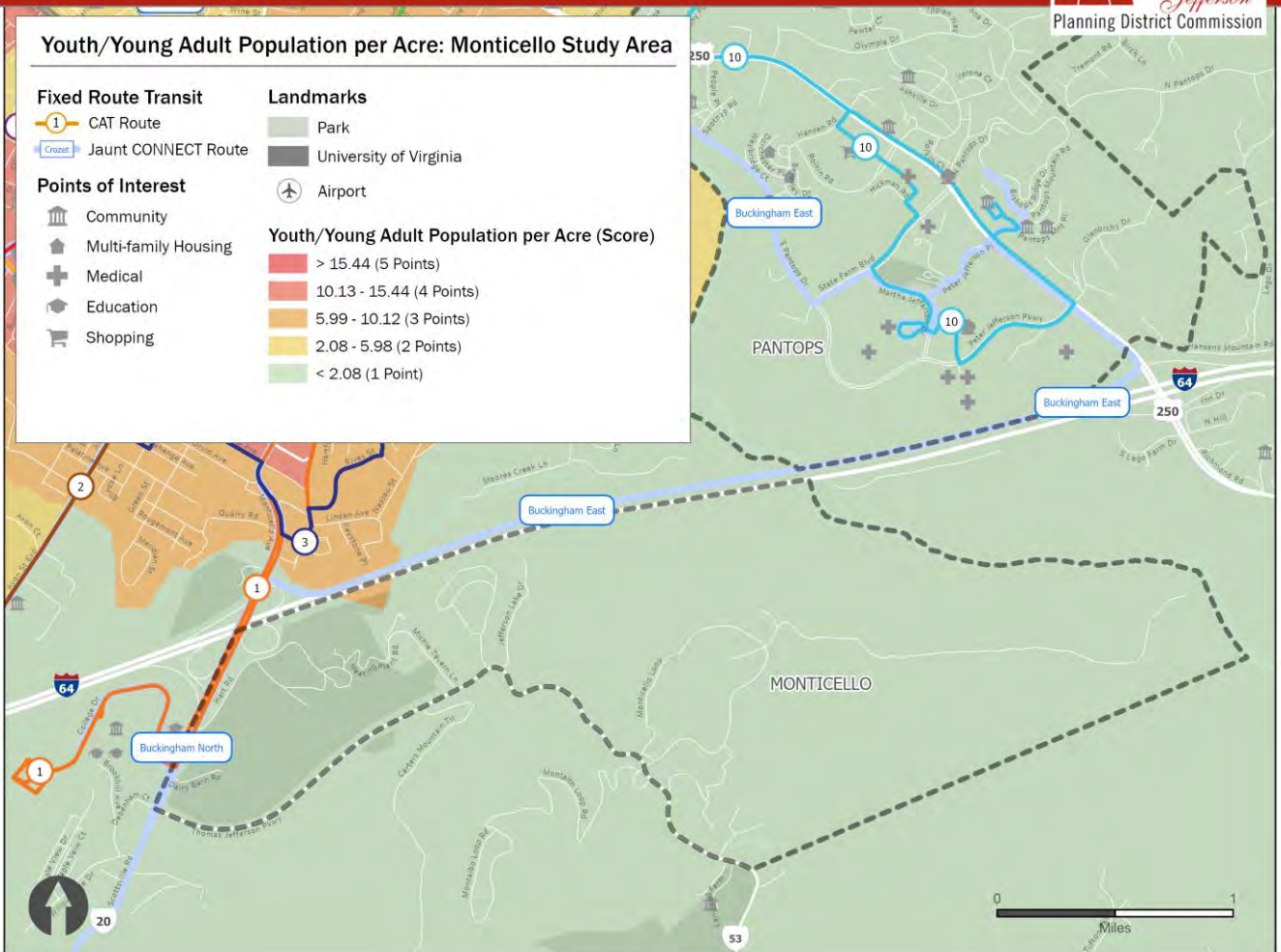


Figure 25: Monticello Youth/Young Adult Population Density

ALBEMARLE COUNTY TRANSIT EXPANSION STUDY



Older Adult Population Density

Figure 26 shows the density of older adults in the US-29 North study area. The highest densities of older adults are south of Rio Road, with one pocket of high density in Hollymead. Almost every neighborhood east of Route 29 in the study area has a score of 2 points or higher. All areas with a score of 4 or 5 are currently served by public transit.

The entire Pantops study area, shown in **Figure 27**, has a moderate density of older adults. This is expected because Pantops has an older population relative to the rest of Albemarle County. The entire Monticello study area, shown in **Figure 28**, has an older adult population density score of 1.

Figure 26: US-29 North Older Adult Population Density

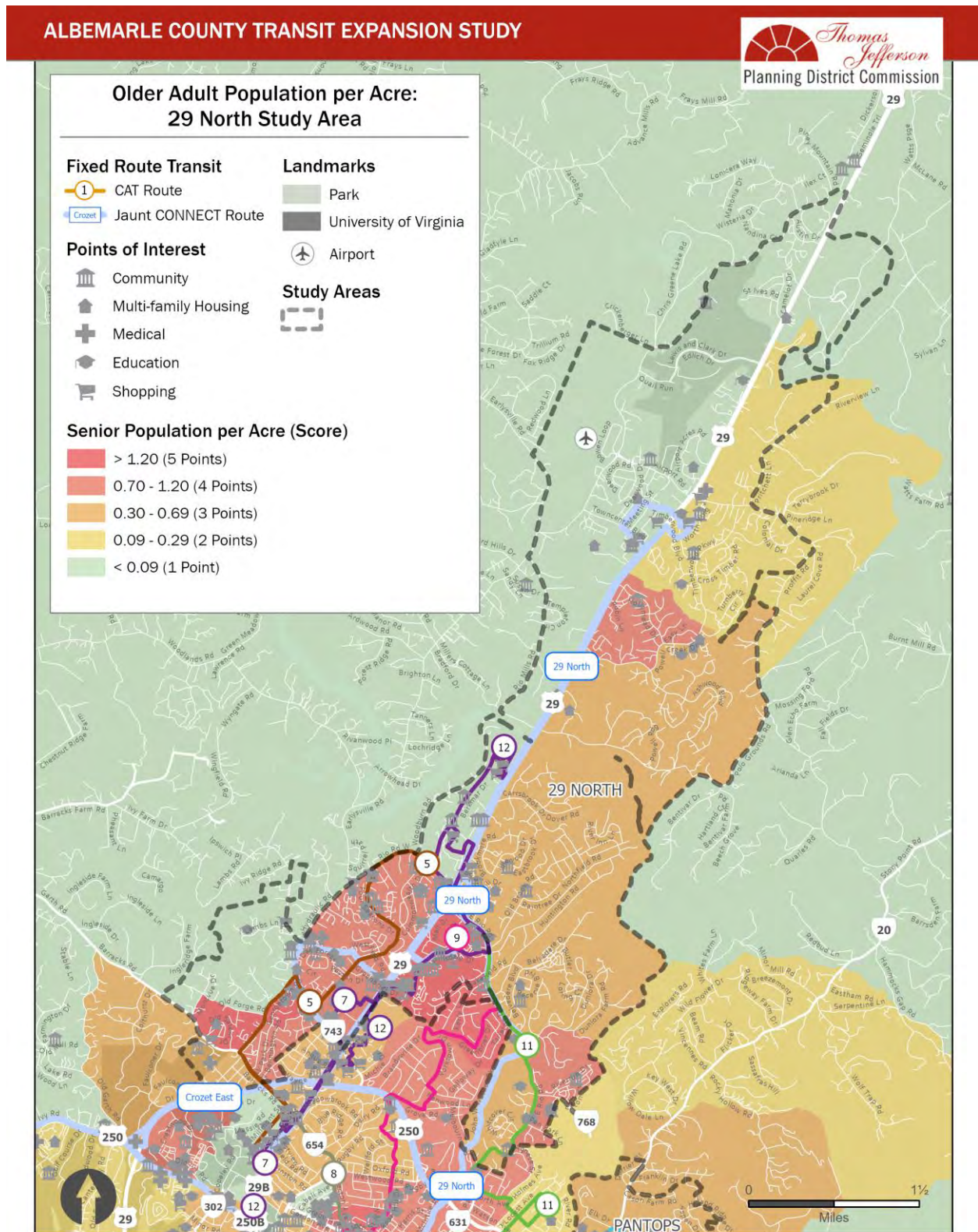


Figure 27: Pantops Older Adult Population Density

ALBEMARLE COUNTY TRANSIT EXPANSION STUDY

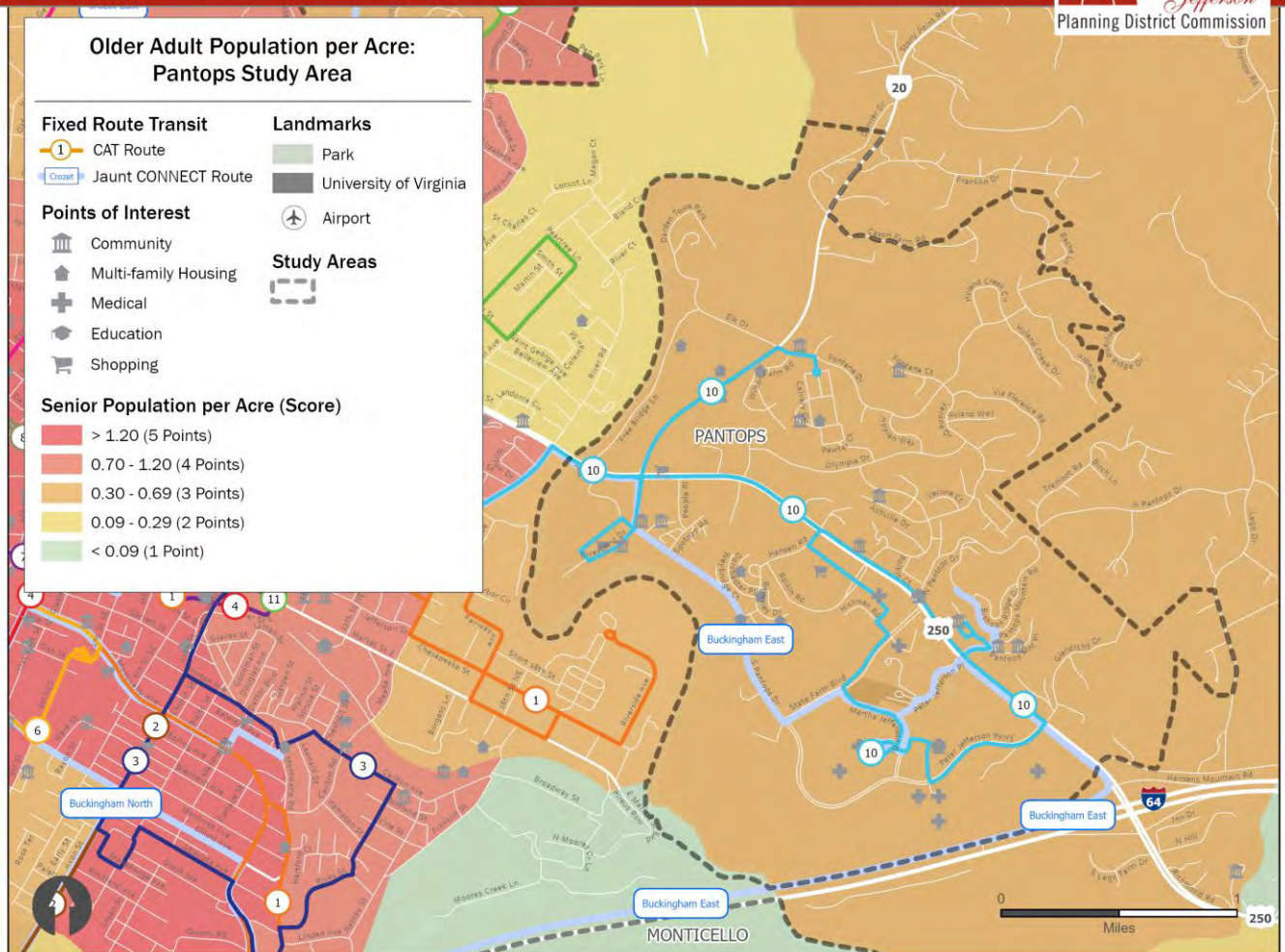
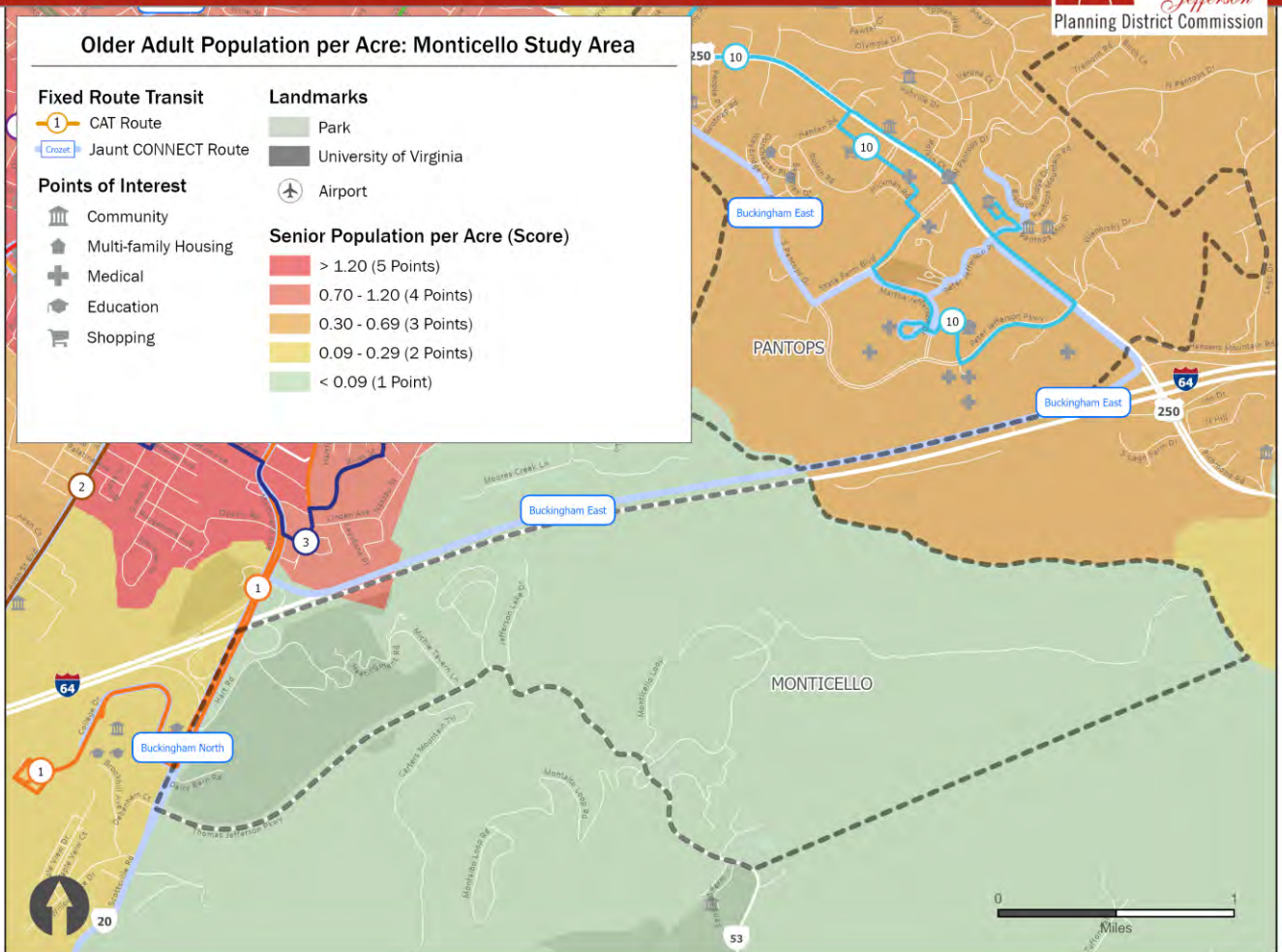


Figure 28: Monticello Older Adult Population Density

ALBEMARLE COUNTY TRANSIT EXPANSION STUDY



Transit Need

The following maps (**Figure 29 – Figure 31**) combine the five density maps into one composite Transit Need Index for each study area. In the US-29 North study area, shown in **Figure 29**, Transit Need is highest in the southwestern leg of the study area, between Barracks Road and Greenbrier Drive. The areas with the highest Transit Need align fairly closely to areas with highest fixed-route Transit Potential (**Figure 11**). The largest service gaps exist in the neighborhoods northeast of Rio Road.

Transit Need in Pantops, shown in **Figure 30**, is relatively low compared to nearby areas. However, the area is rich in regionally significant destinations that may drive transit activity.

Transit Need in Monticello, shown in **Figure 31**, is low compared to nearby areas. However, Monticello attracts around 500,000 visitors per year, which is not reflected in the metrics comprising Transit Need.

Figure 29: US-29 North Transit Need

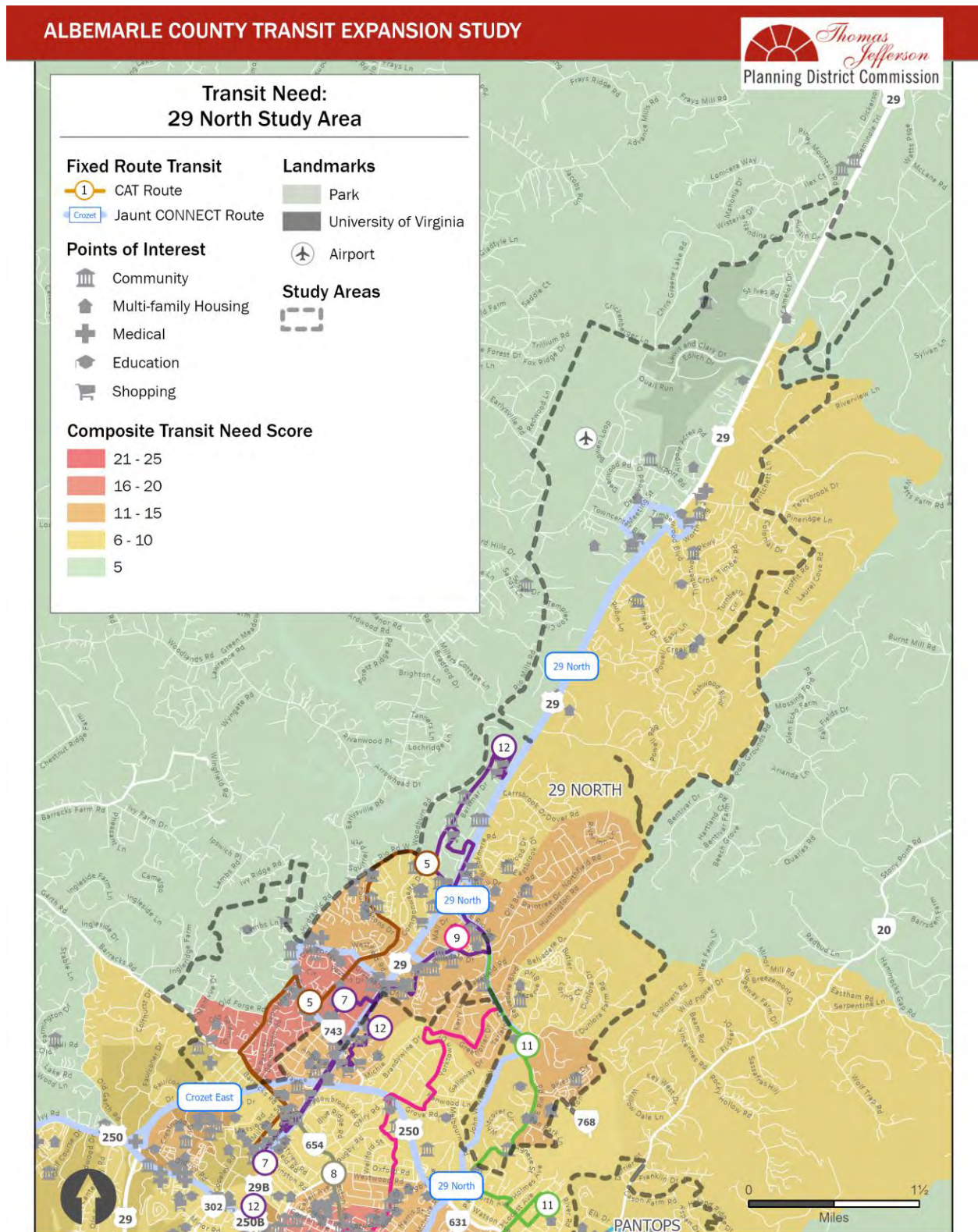


Figure 30: Pantops Transit Need

ALBEMARLE COUNTY TRANSIT EXPANSION STUDY

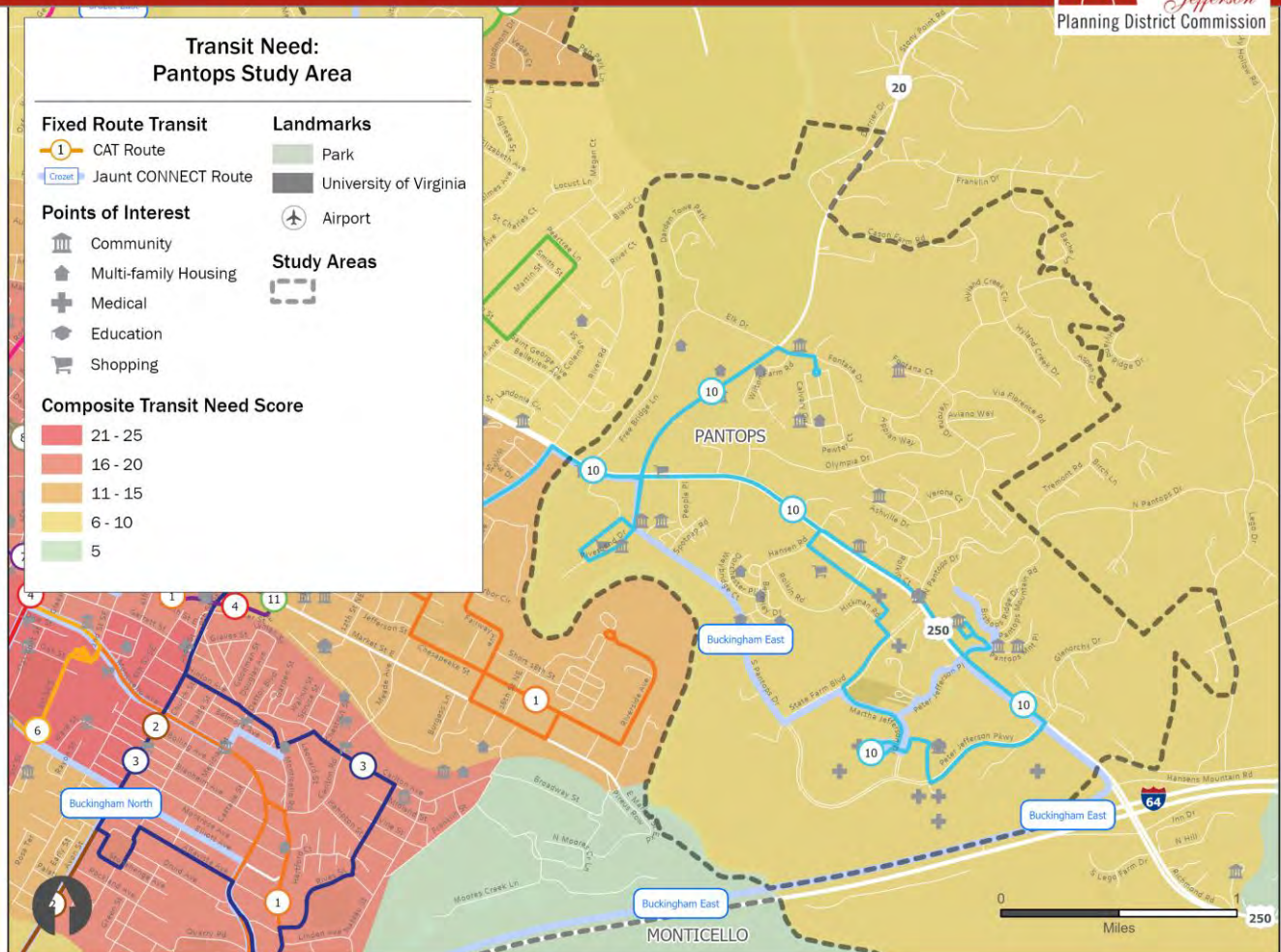
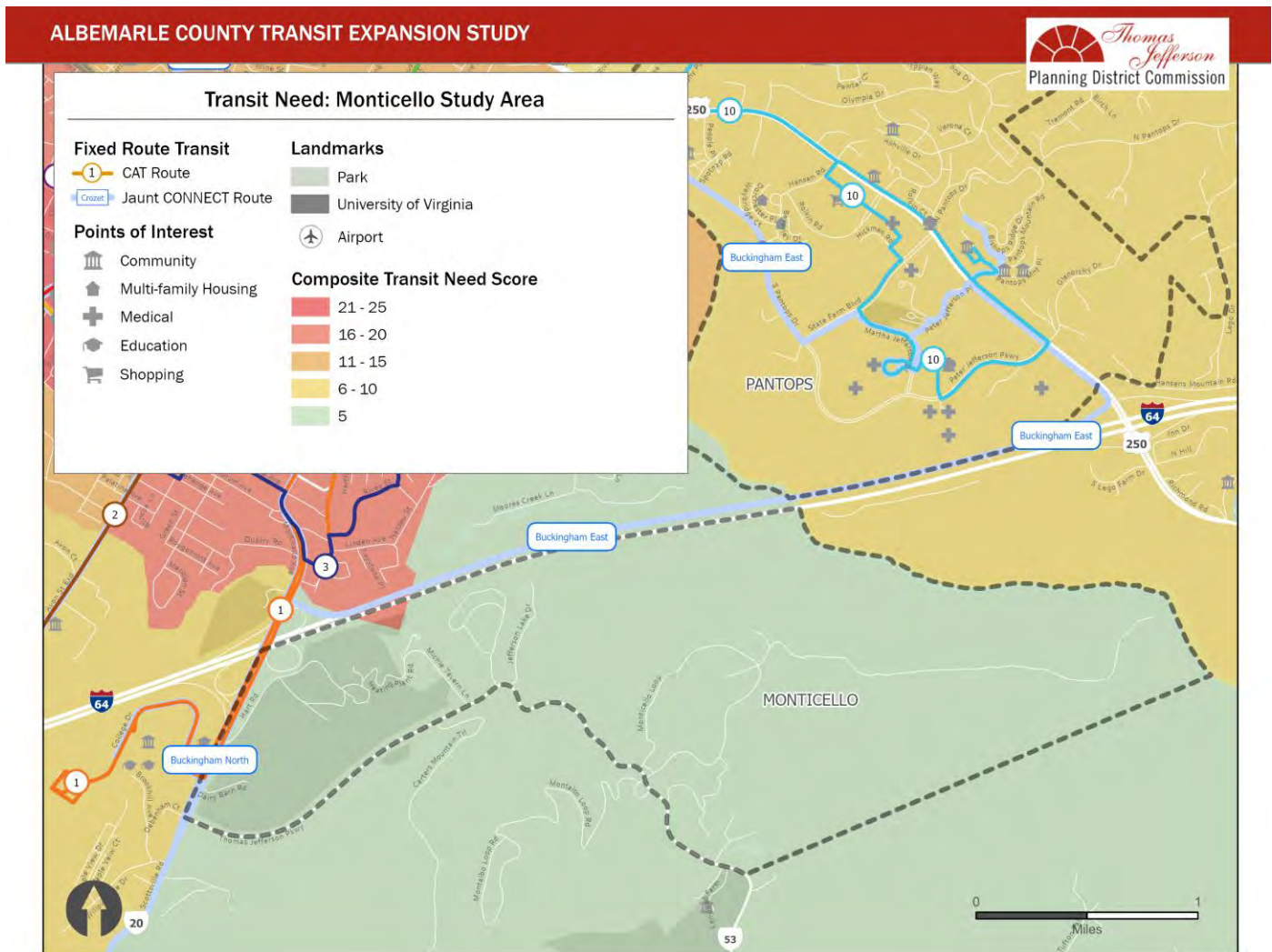


Figure 31: Monticello Transit Need



Service Analysis

While transit service in the three study areas is limited, all three areas are at least partially served by CAT and/or Jaunt service. Together with the market analysis, the service analysis highlights opportunities for service expansion and improvement.

The study team developed detailed profiles for the following routes serving the three study areas:

■ Charlottesville Area Transit (CAT):

- Route 5: Barracks Road Shopping Center / Fashion Square Mall / Walmart (US-29 North)
- Route 7: Downtown / Barracks Road Shopping Center / Fashion Square Mall (US-29 North)
- Route 8: Downtown / Barracks Road Shopping Center / Seminole Square (US-29 North)
- Route 10: Downtown / Sentara Martha Jefferson Hospital (Pantops)
- Route 11: Downtown / Fashion Square Mall (US-29 North).

■ Jaunt:

- 29 North CONNECT (29 North)
- Buckingham CONNECT North (US-29 North)
- Buckingham CONNECT East (Pantops).

For each route, the profiles list the current operating characteristics² and major ridership generators. For CAT routes, route strengths and weaknesses are evaluated alongside current CAT proposals for short-term service improvement. Jaunt profiles evaluate strengths and weaknesses alongside proposed service improvement opportunities. Each profile also summarizes ridership prior to and during the COVID-19 pandemic. CAT weekday ridership is summarized by stop and trip, including maximum load by trip. As Jaunt fixed-route ridership was unavailable at the stop or trip level, the 29 North and Buckingham CONNECT route profiles summarize total route average daily ridership. Jaunt demand response ridership patterns are also summarized in the form of a heat map. **Table 1** summarizes the date ranges associated with each agency's ridership data used in this analysis.

² Operating characteristics are current as of August 2021. CAT is currently operating "Reduced Lifeline" service to address reduced ridership patterns resulting from the COVID-19 pandemic.

Table 1: CAT and Jaunt Route Profiles Ridership Data Summary

Agency	Dataset	Date Range
Charlottesville Area Transit (CAT)	Fixed-Route Weekday Ridership, Pre-COVID-19	September 11 – September 15, 2017
	Fixed-Route Weekday Ridership, Current	April 1 – May 31, 2021
Jaunt	Fixed-Route Weekday Ridership, Pre-COVID-19 ³	July 1, 2018 – February 29, 2020
	Fixed-Route Weekday Ridership, Current	May 1, 2020 – March 31, 2021
	Demand Response Weekday Ridership, Pre-COVID-19	July 1, 2018 – February 29, 2020
	Demand Response Weekday Ridership, Current	March 1, 2020 – June 30, 2020

³ Jaunt fixed-route ridership is currently unavailable at the stop and trip level due to data limitations.

Route Profiles: Charlottesville Area Transit

Route 5: Barracks Road Shopping Center / Fashion Square Mall / Walmart



Study Area: US-29 North

Operates between the Barracks Road Shopping Center and Walmart, via Barracks Road, Georgetown Road, Commonwealth Drive, Rio Road, and Berkmar Drive.

Service Span	Average Service Frequency	Major Generators
Monday-Friday: 6:30 a.m. – 9:00 p.m.	Peak: 30 minutes Off-Peak: 30 minutes	<ul style="list-style-type: none"> ■ Barracks Road Shopping Center ■ Shops at Stonefield ■ Fashion Square Mall ■ Virginia Workforce Center ■ Albemarle Square Shopping Center ■ Rio Hill Shopping Center ■ US-29 Walmart
Saturday: 6:30 a.m. – 9:00 p.m.	All Day: 30 minutes	
Sunday: No service	No Service	

Strengths	Weaknesses
<ul style="list-style-type: none"> ■ Clockface frequency (30 minutes) ■ Relatively extensive span of service ■ Multiple connection opportunities available ■ Identical weekday and Saturday schedules 	<ul style="list-style-type: none"> ■ Circuitous alignment to Fashion Square Mall ■ No Sunday service ■ Past challenges with on-time performance ■ Poor access to Albemarle High School

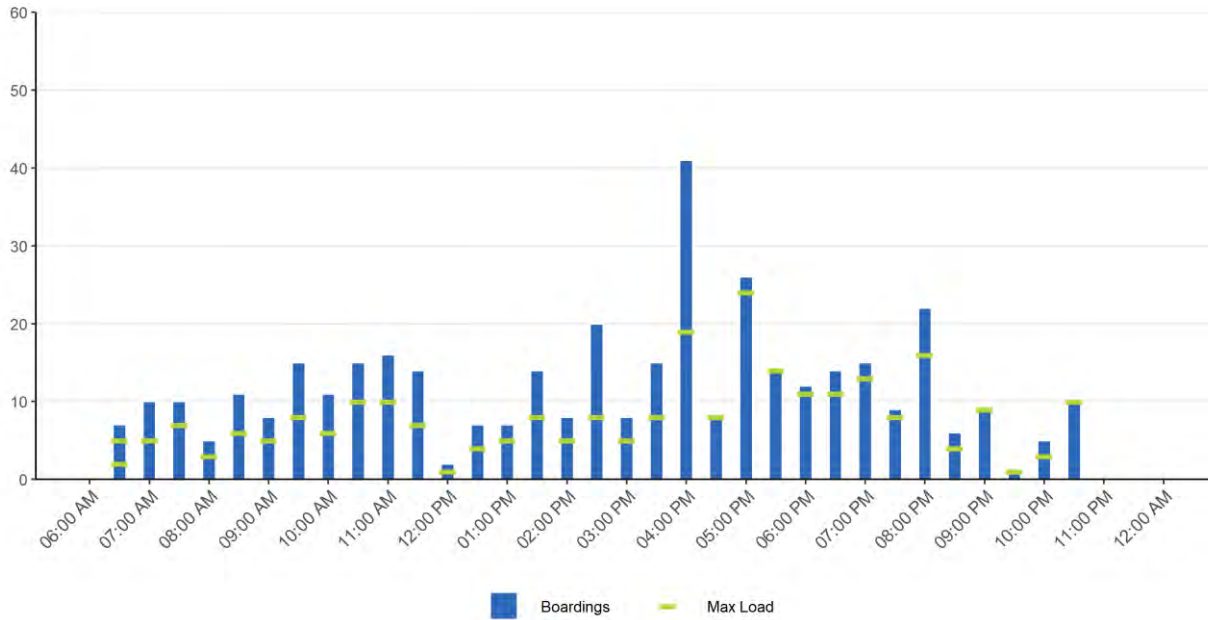
Upcoming Service Modifications

CAT is currently proposing service changes for Fiscal Year 2022. In many cases, recommendations address weaknesses identified above. Service improvements proposed for Route 5 include:

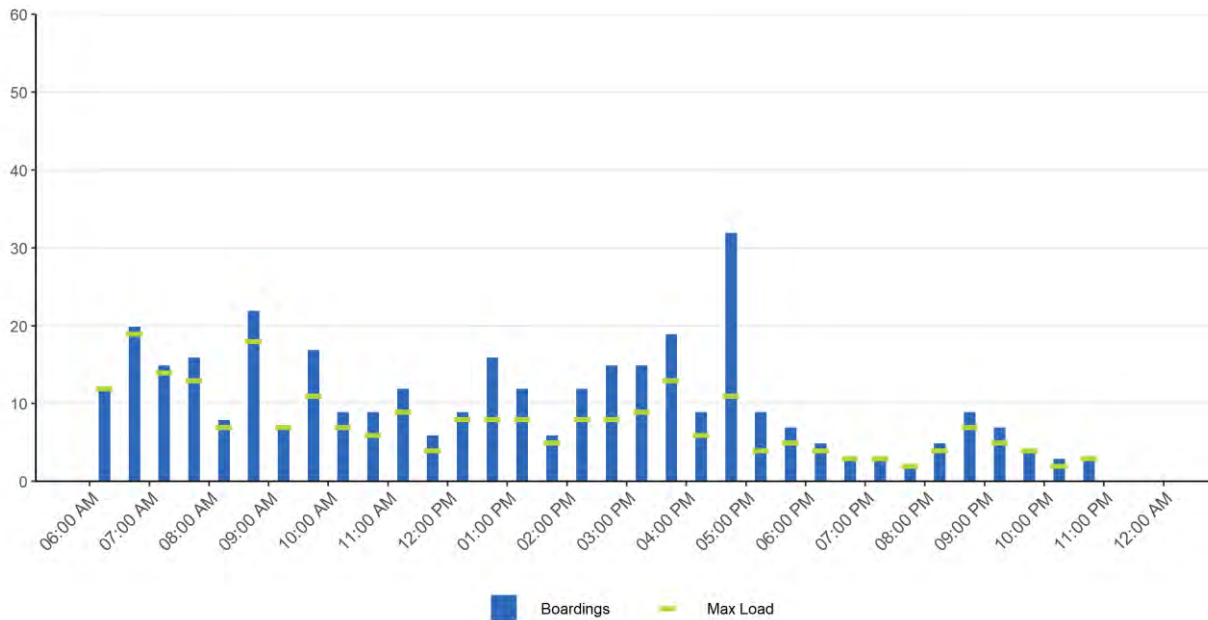
- Improved service between the UVA campus/Hospital and US-29 corridor.
- Termination of the north end of the route at Fashion Square Mall.
- Extension of the south end of the alignment to UVA Hospital.
- Continued operation at 30-minute frequencies on weekdays and Saturdays.

Weekday Ridership by Trip

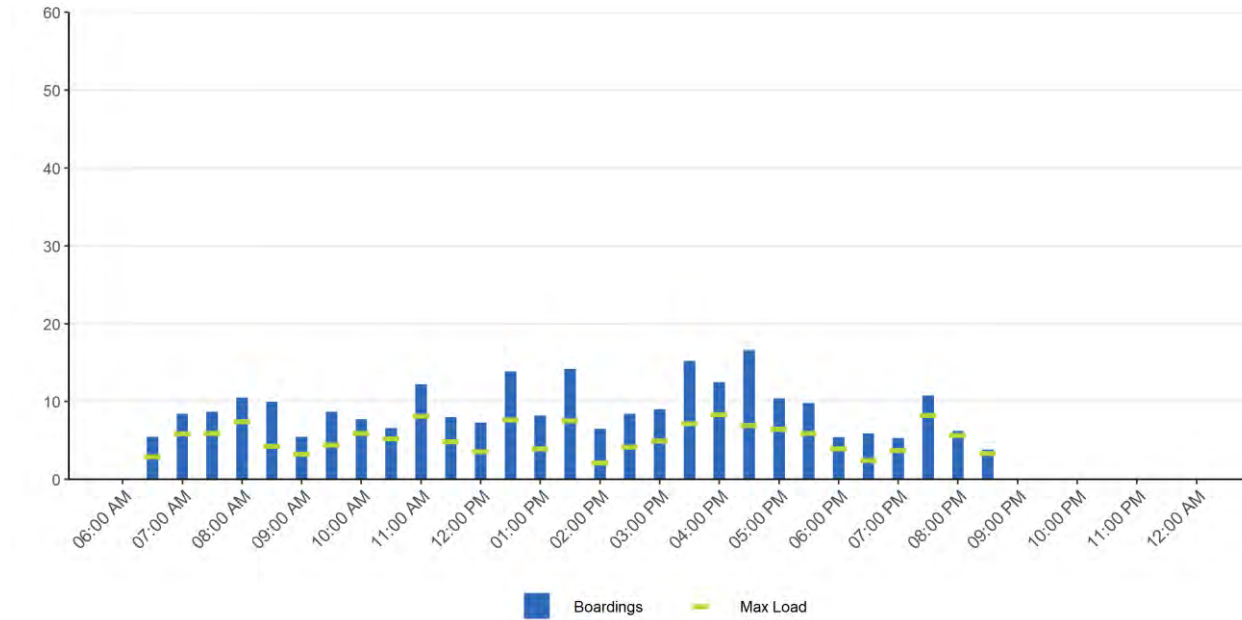
Route 5 | Pre-COVID-19 | Direction: Northbound



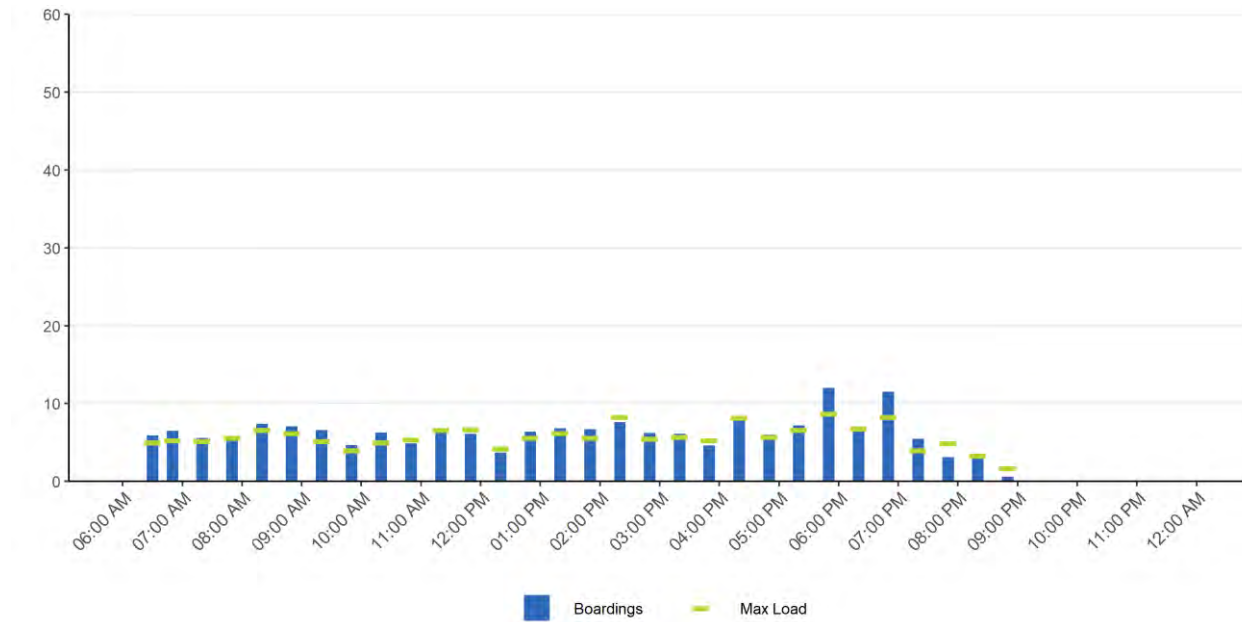
Route 5 | Pre-COVID-19 | Direction: Southbound



Route 5 | Current | Direction: Northbound



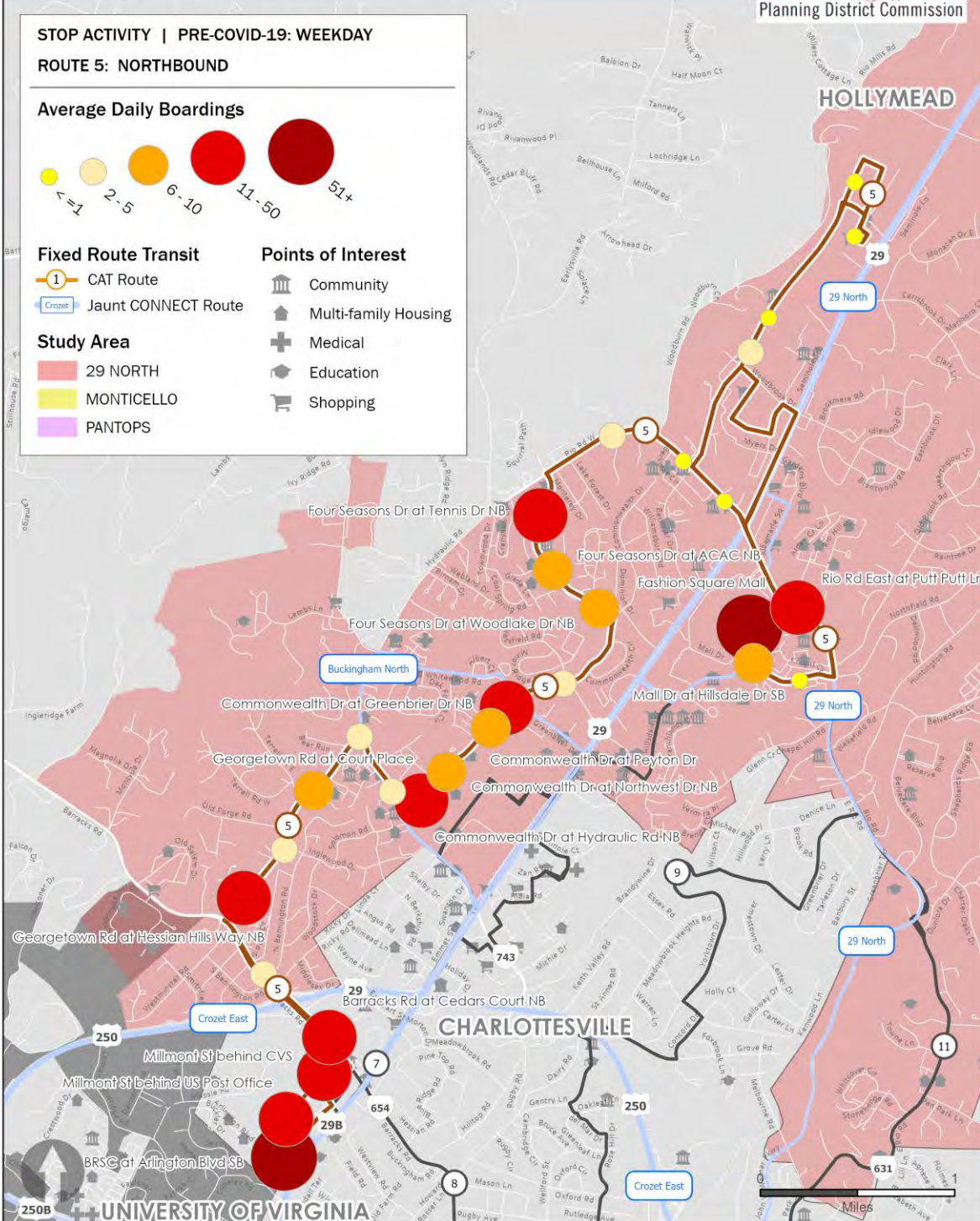
Route 5 | Current | Direction: Southbound



Weekday Ridership by Stop

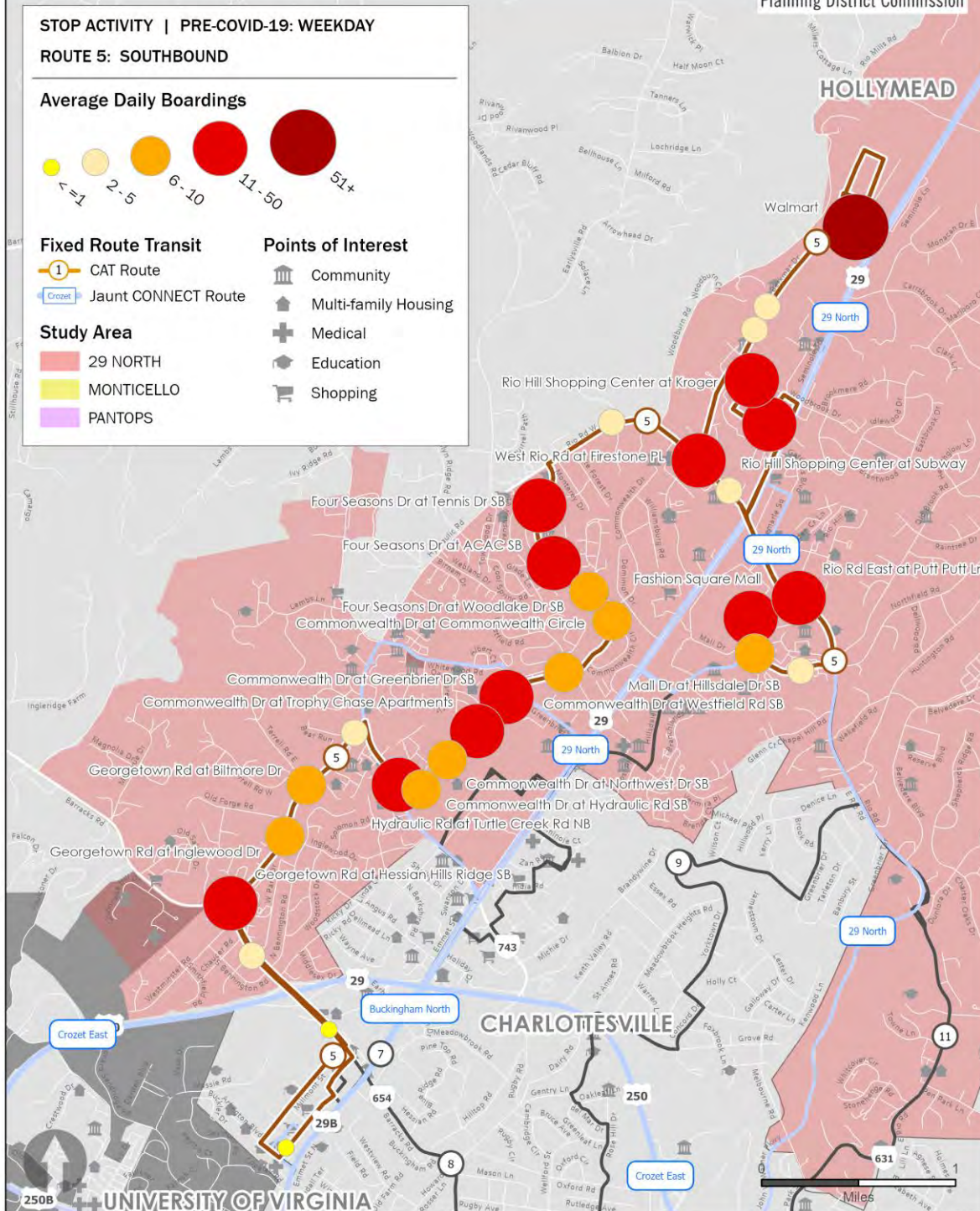
Route 5 | Pre-COVID-19 | Direction: Northbound

ALBEMARLE COUNTY TRANSIT EXPANSION STUDY

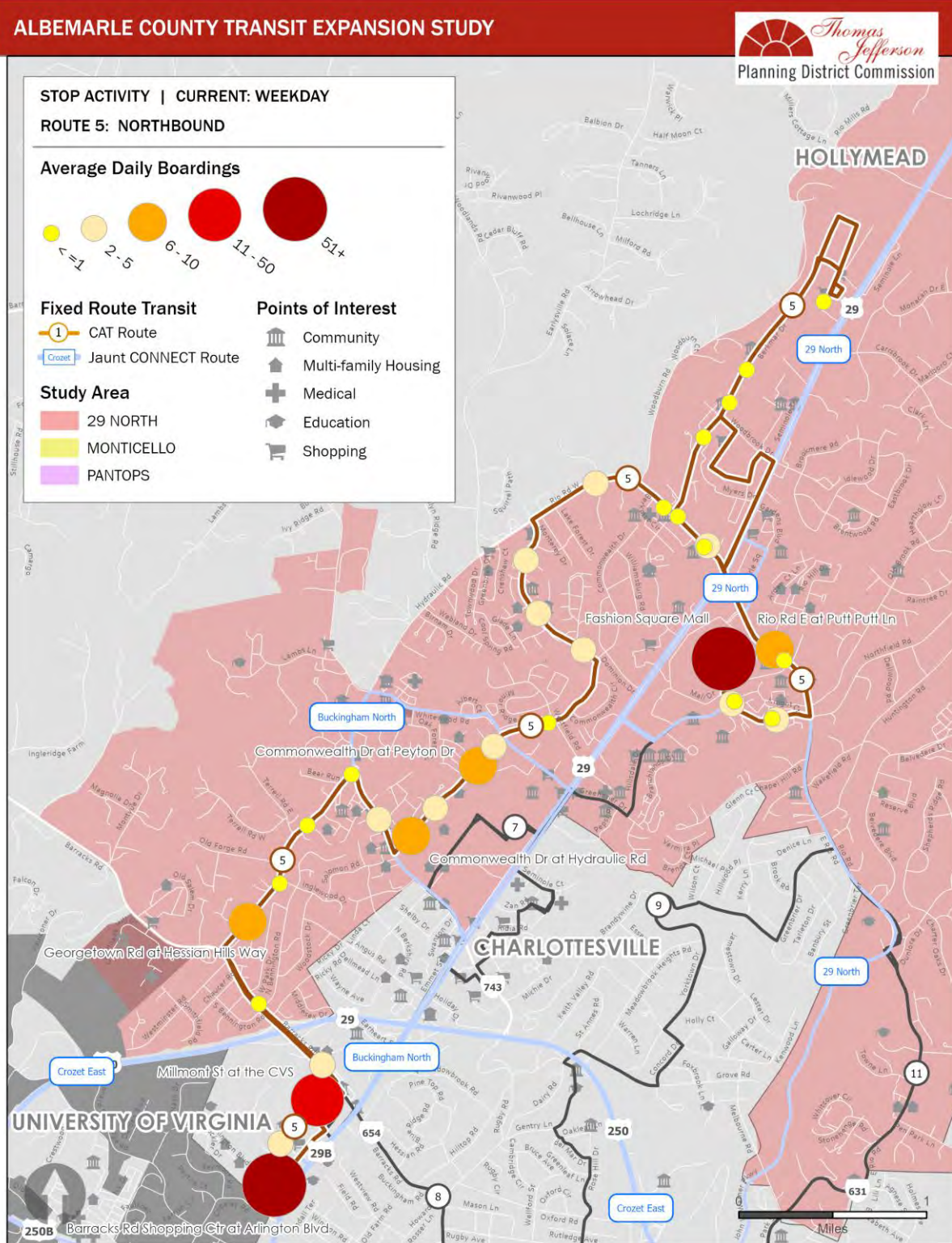


Route 5 | Pre-COVID-19 | Direction: Southbound

ALBEMARLE COUNTY TRANSIT EXPANSION STUDY

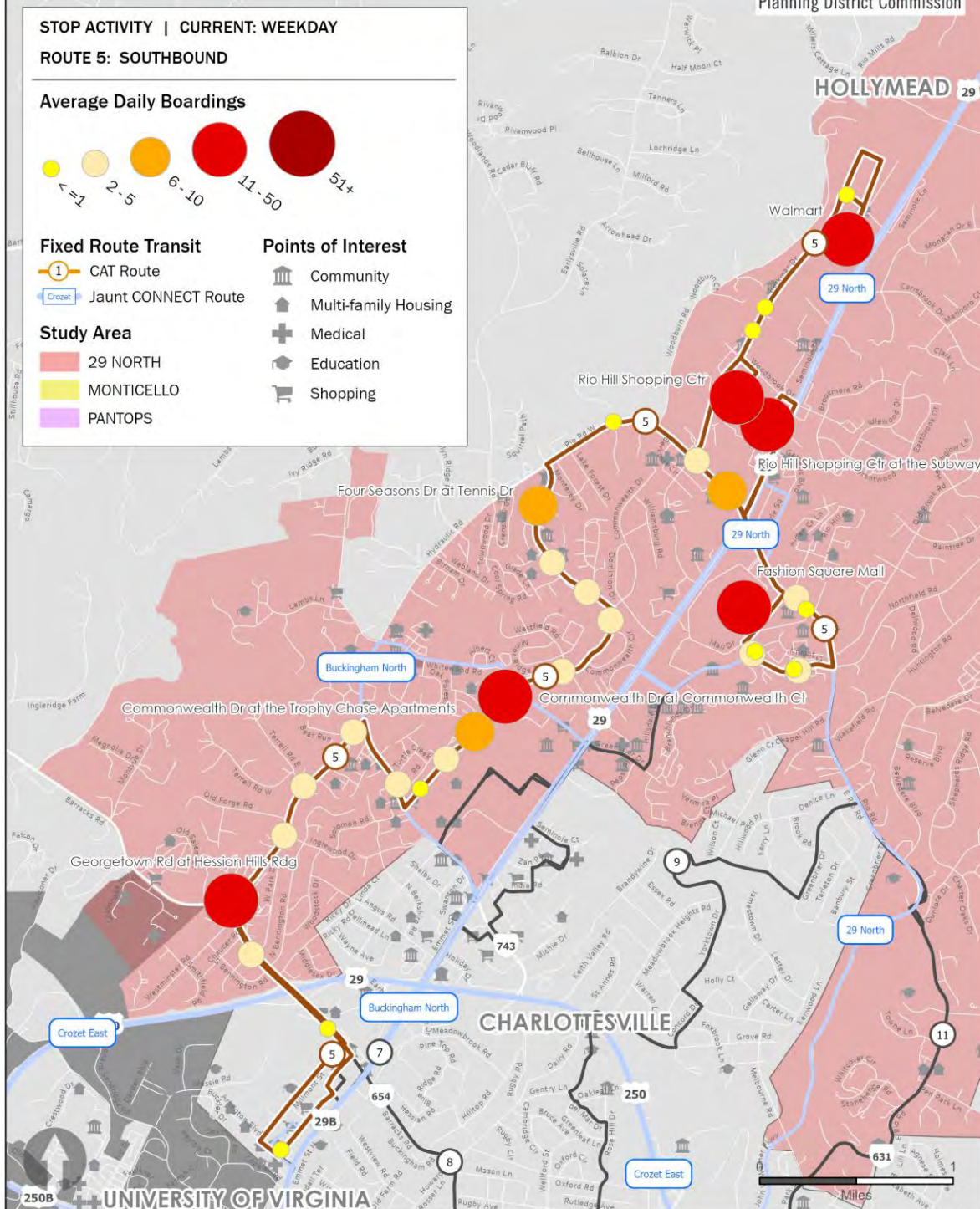


Route 5 | Current | Direction: Northbound



Route 5 | Current | Direction: Southbound

ALBEMARLE COUNTY TRANSIT EXPANSION STUDY



Route 7: Downtown / Barracks Road Shopping Center / Fashion Square Mall



Study Area: US-29 North

Operates between downtown Charlottesville and Fashion Square Mall, via UVA, Barracks Road Shopping Center, Hydraulic Road, and Hillsdale Drive. Prior to the COVID-19 pandemic, Sunday service along the Route 7 alignment was provided via Route 12.

Service Span	Average Service Frequency	Major Generators
Monday-Friday: 6:35 a.m. – 9:15 p.m.	Peak: 30 minutes Off-Peak: 30 minutes	<ul style="list-style-type: none"> ■ Downtown Mall ■ Amtrak station ■ UVA hospital ■ Barracks Road Shopping Center ■ Seminole Square Shopping Center ■ Shops at Stonefield ■ Fashion Square Mall
Saturday: 6:35 a.m. – 9:15 p.m.	All Day: 30 minutes	
Sunday: No service	No Service	

Strengths	Weaknesses
<ul style="list-style-type: none"> ■ Clockface frequency (30 minutes) ■ Directly links Downtown Mall, UVA, UVA hospital, and several major commercial destinations ■ Relatively high ridership ■ Identical weekday and Saturday schedules 	<ul style="list-style-type: none"> ■ Inconsistent northbound and southbound alignment along Seminole Trail forces out-of-direction travel ■ Past challenges with on-time performance ■ Parallels but does not overlap Route 5 between Barracks Road Shopping Center and Fashion Square Mall ■ Standing passenger loads on several trips prior to COVID ■ No Sunday service (provided via Route 12)

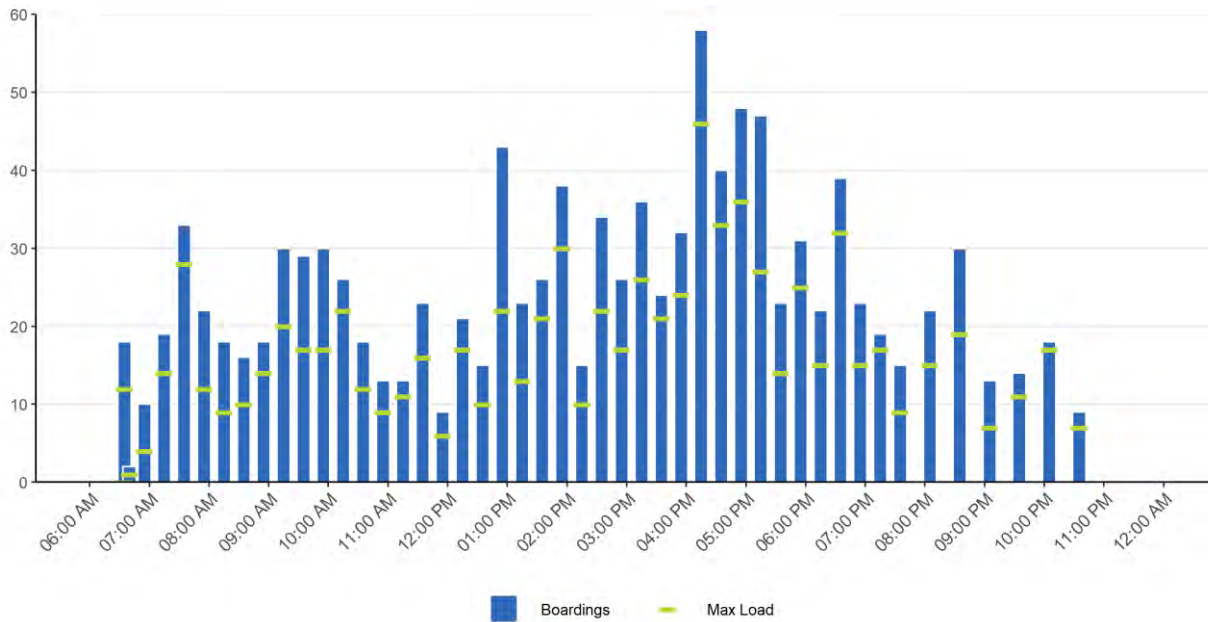
Upcoming Service Modifications

CAT is currently proposing service changes for Fiscal Year 2022. In many cases, recommendations address weaknesses identified above. Service improvements proposed for Route 7 include:

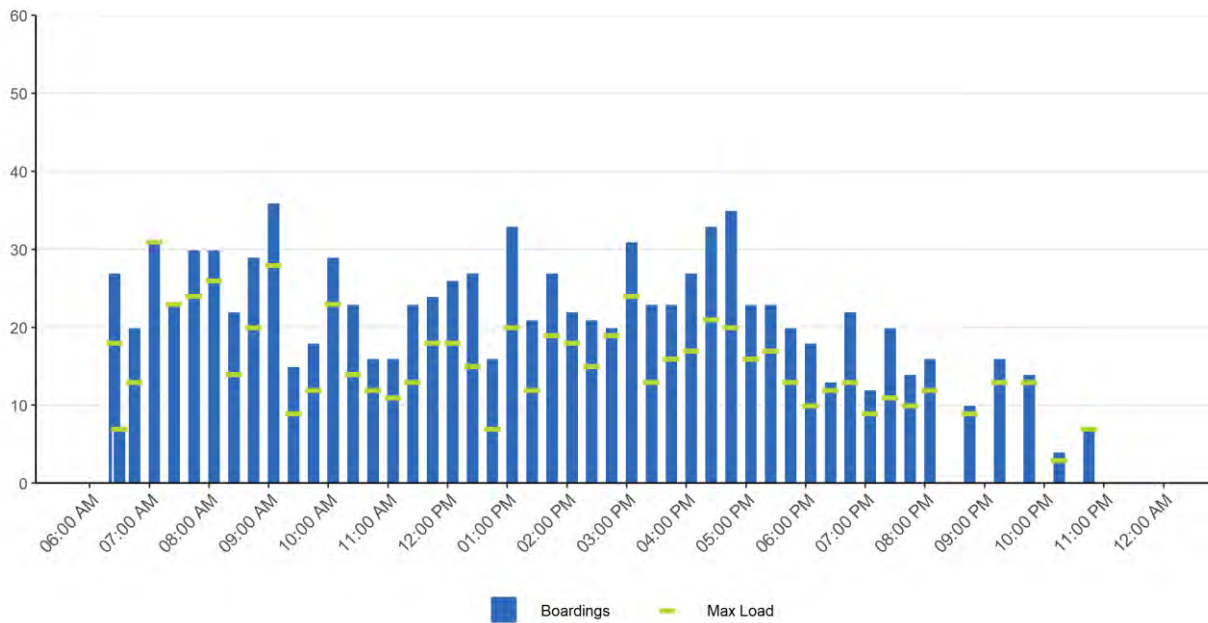
- Extension of route to Walmart.
- Continued operation of 30-minute frequencies, weekdays and Saturdays.
- Route operation on Sundays (60-minute frequencies).
- Provision of supplemental weekday service between downtown and Barracks Center during peak periods, resulting in 15-minute service along this segment.

Weekday Ridership by Trip

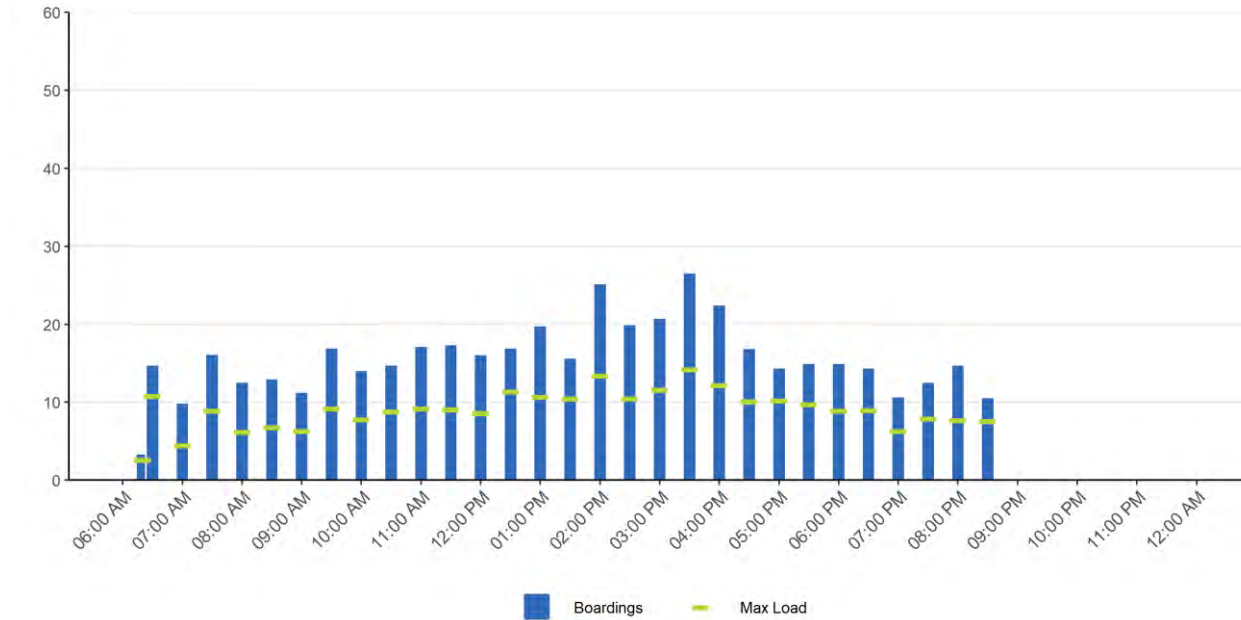
Route 7 | Pre-COVID-19 | Direction: Northbound



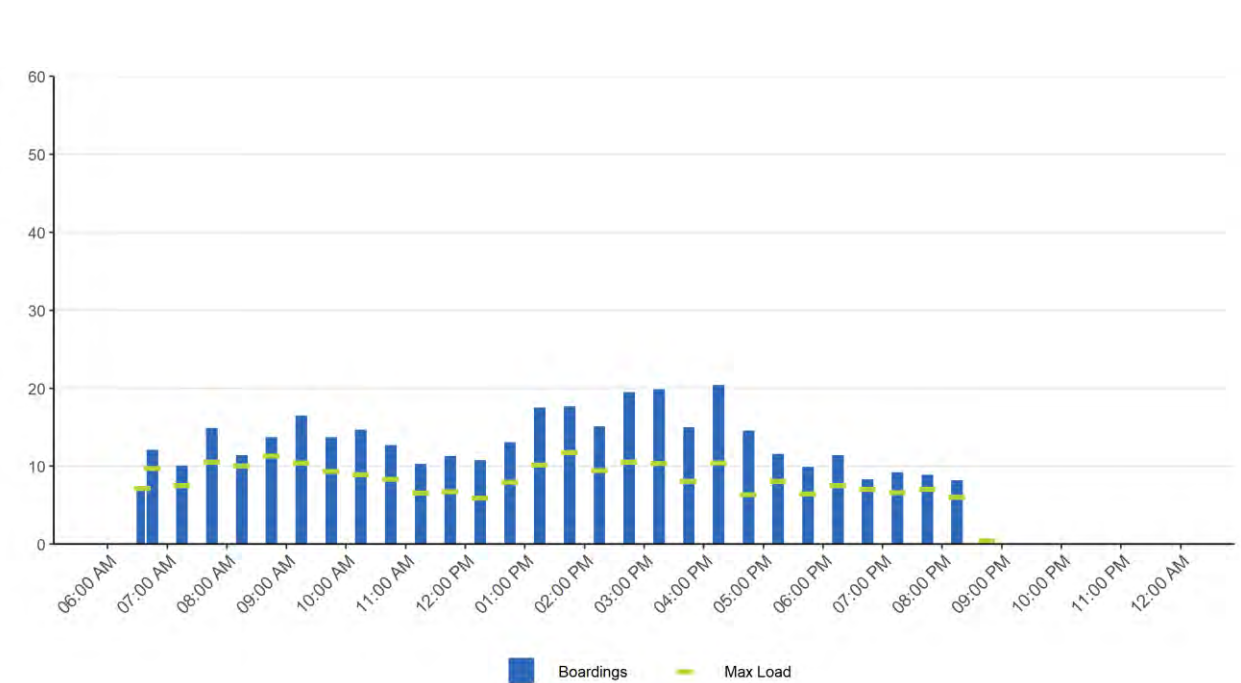
Route 7 | Pre-COVID-19 | Direction: Southbound



Route 7 | Current | Direction: Northbound



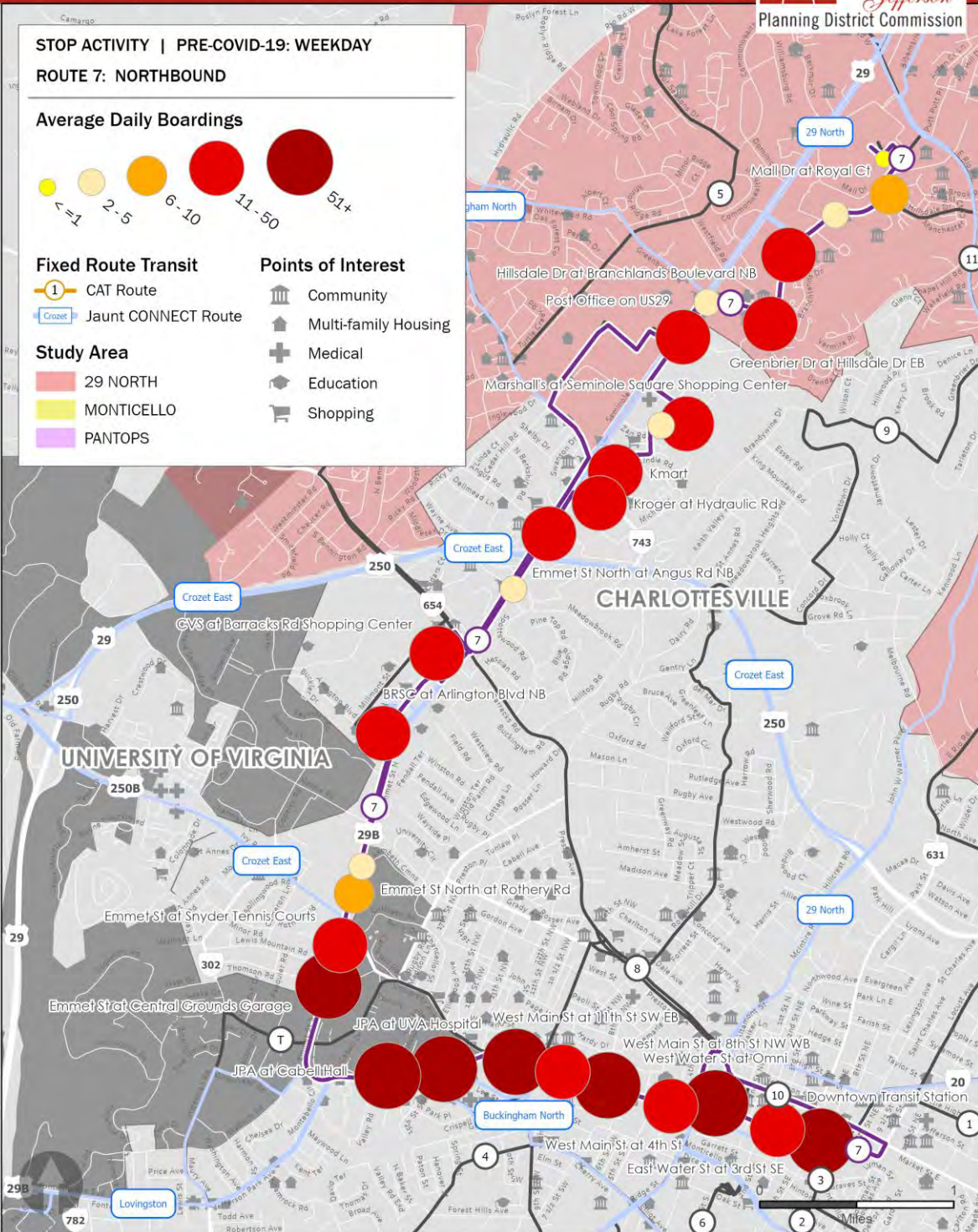
Route 7 | Current | Direction: Southbound



Weekday Ridership by Stop

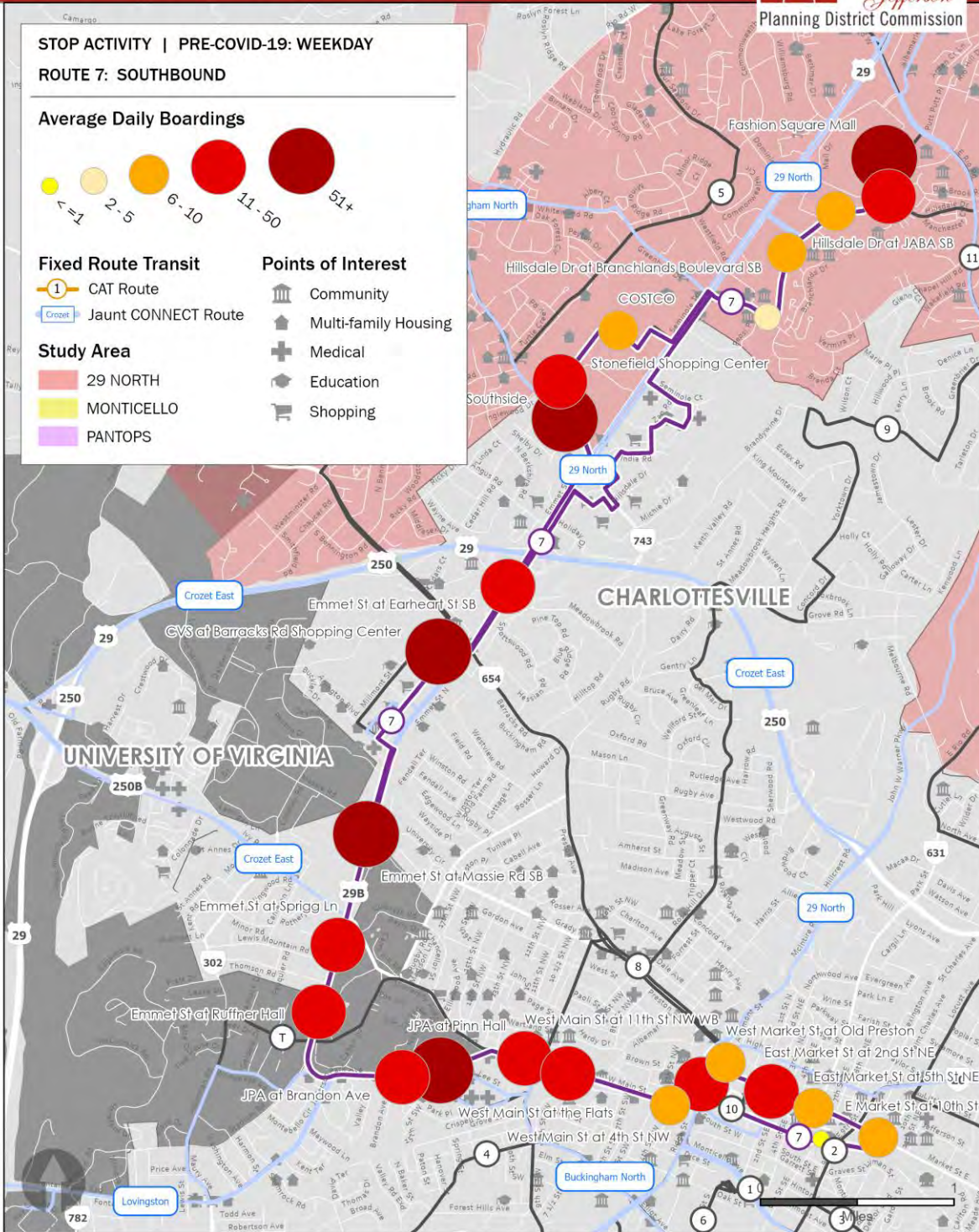
Route 7 | Pre-COVID-19 | Direction: Northbound

ALBEMARLE COUNTY TRANSIT EXPANSION STUDY

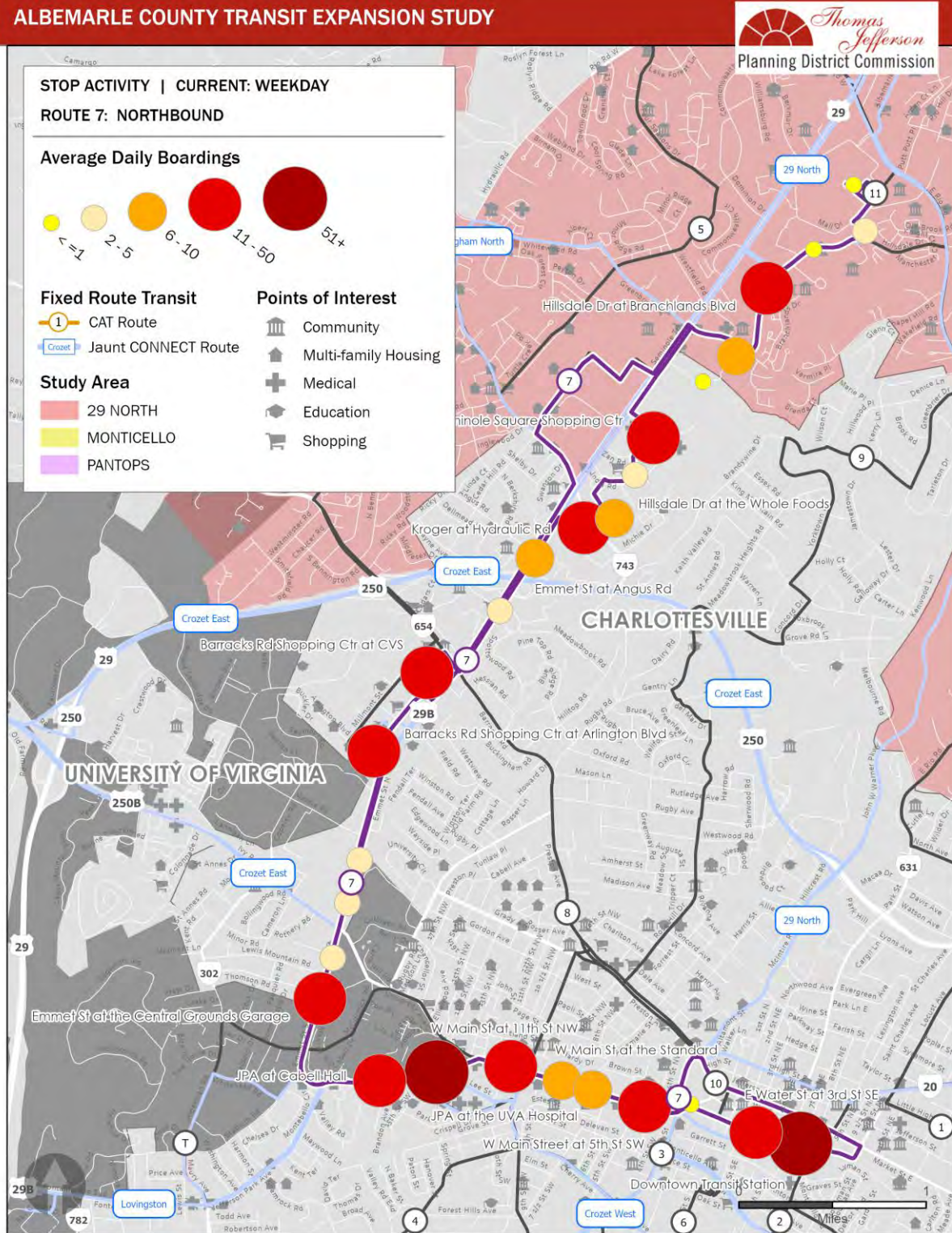


Route 7 | Pre-COVID-19 | Direction: Southbound

ALBEMARLE COUNTY TRANSIT EXPANSION STUDY

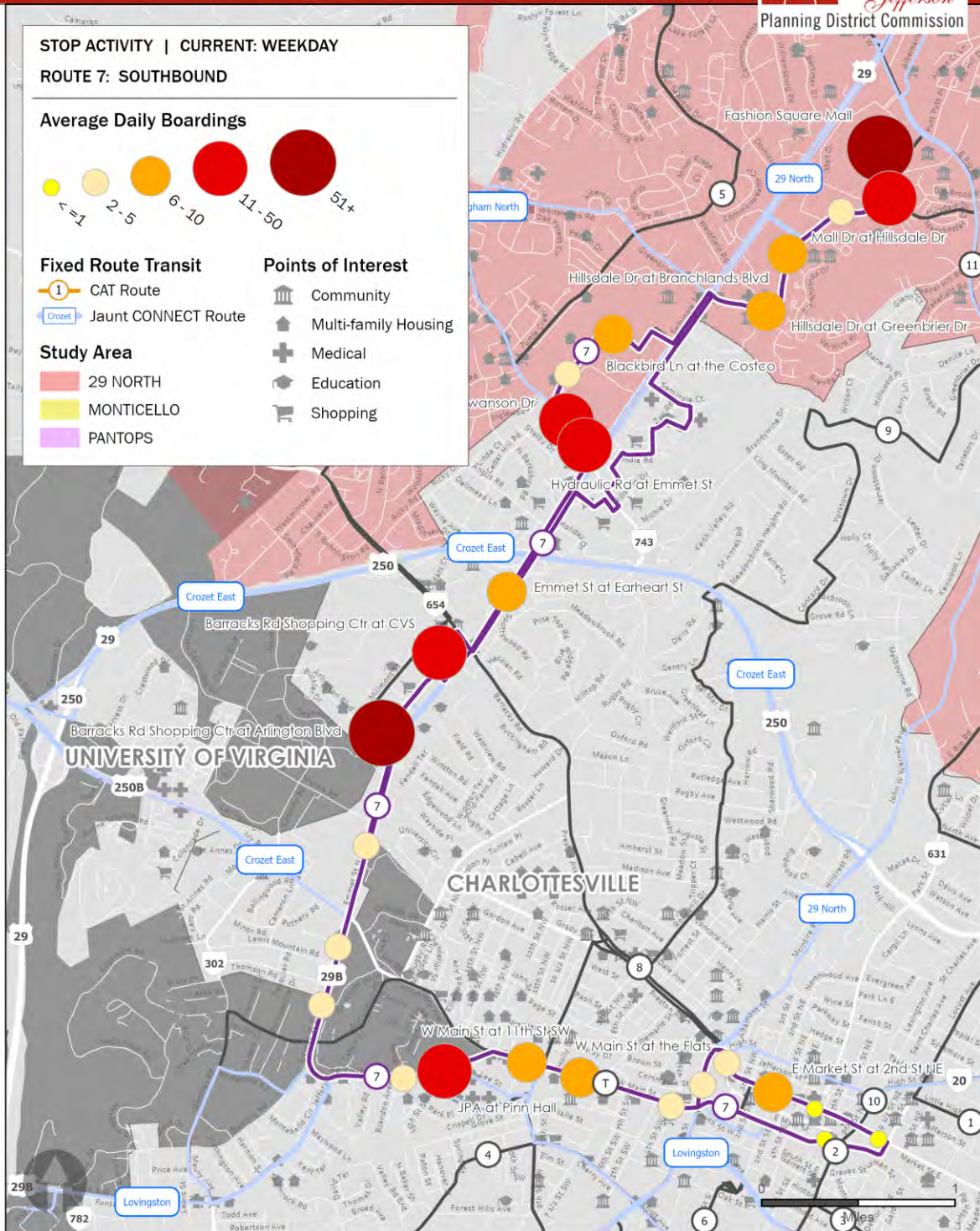


Route 7 | Current | Direction: Northbound



Route 7 | Current | Direction: Southbound

ALBEMARLE COUNTY TRANSIT EXPANSION STUDY



Route 8: Downtown / Barracks Road Shopping Center / Seminole Square



Study Area: US-29 North

Operates between downtown Charlottesville and the Shops at Stonefield, via the Barracks Road Shopping Center.

Service Span	Average Service Frequency	Major Generators
Monday-Friday: 6:30 a.m. – 6:27 p.m.	Peak: 60 minutes Off-Peak: 60 minutes	<ul style="list-style-type: none"> ■ Downtown Mall ■ Washington Park ■ Barracks Road Shopping Center ■ Seminole Square Shopping Center ■ Shops at Stonefield
Saturday: 6:30 a.m. – 6:27 p.m.	All Day: 60 minutes	
Sunday: No service	No Service	

Strengths	Weaknesses
<ul style="list-style-type: none"> ■ Serves several regional centers ■ Relatively direct connector between Downtown Mall and commercial destinations ■ Clockface frequency (either 30 or 60 minutes) for majority of service span ■ Identical weekday and Saturday schedules 	<ul style="list-style-type: none"> ■ One-way end-of-line loop allows passengers to cross Seminole Trail westbound but not eastbound ■ Lower (pre-COVID) ridership than Routes 5 and 7, which serve similar destinations ■ Limited weekday and Saturday service span ■ No Sunday service

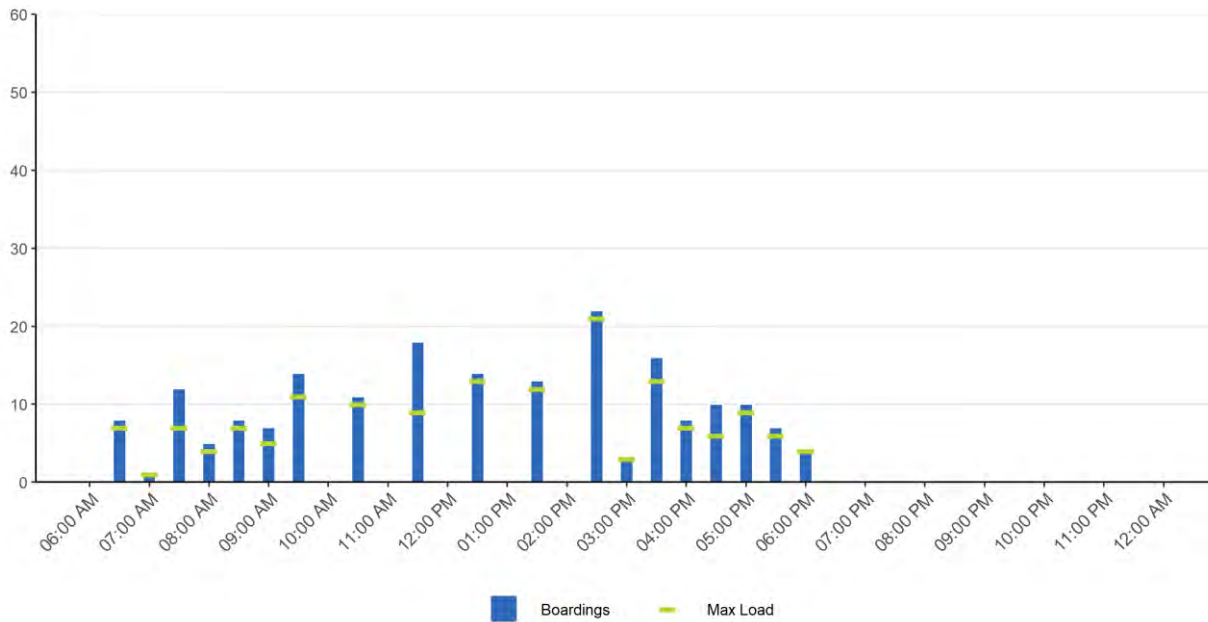
Upcoming Service Modifications

CAT is currently proposing service changes for Fiscal Year 2022. In many cases, recommendations address weaknesses identified above. Service improvements proposed for Route 8 include:

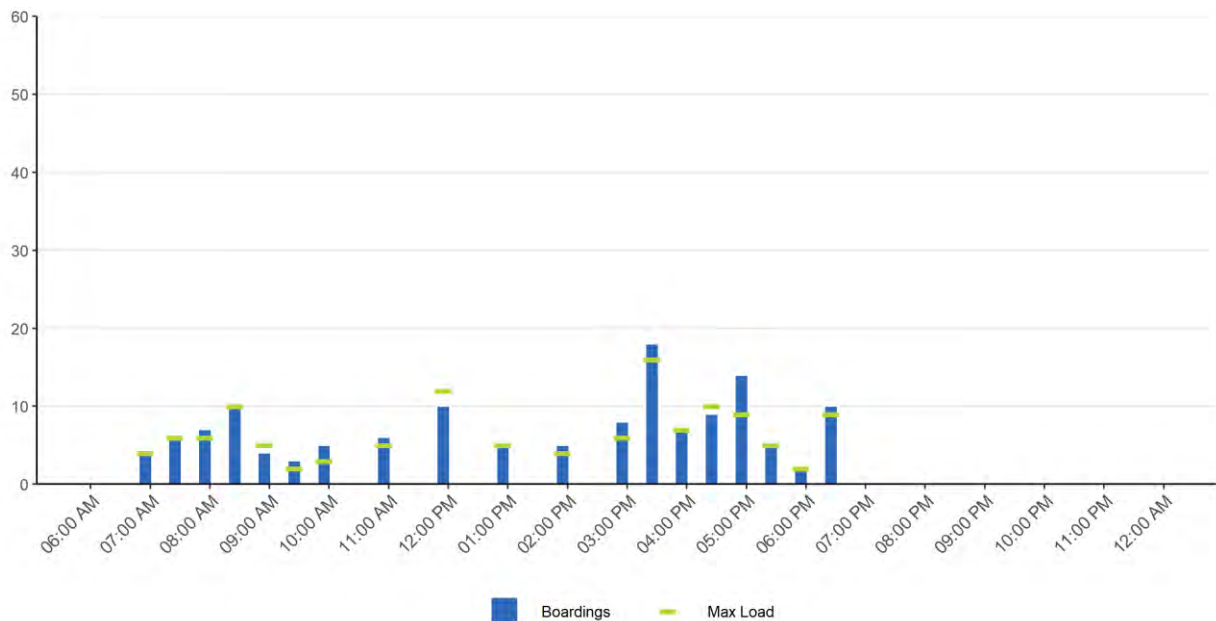
- Modification of the route alignment to operate as a new crosstown service between the Shops at Stonefield and Willoughby Square.
- Continued operation of 60-minute frequencies on weekdays and Saturdays.

Weekday Ridership by Trip

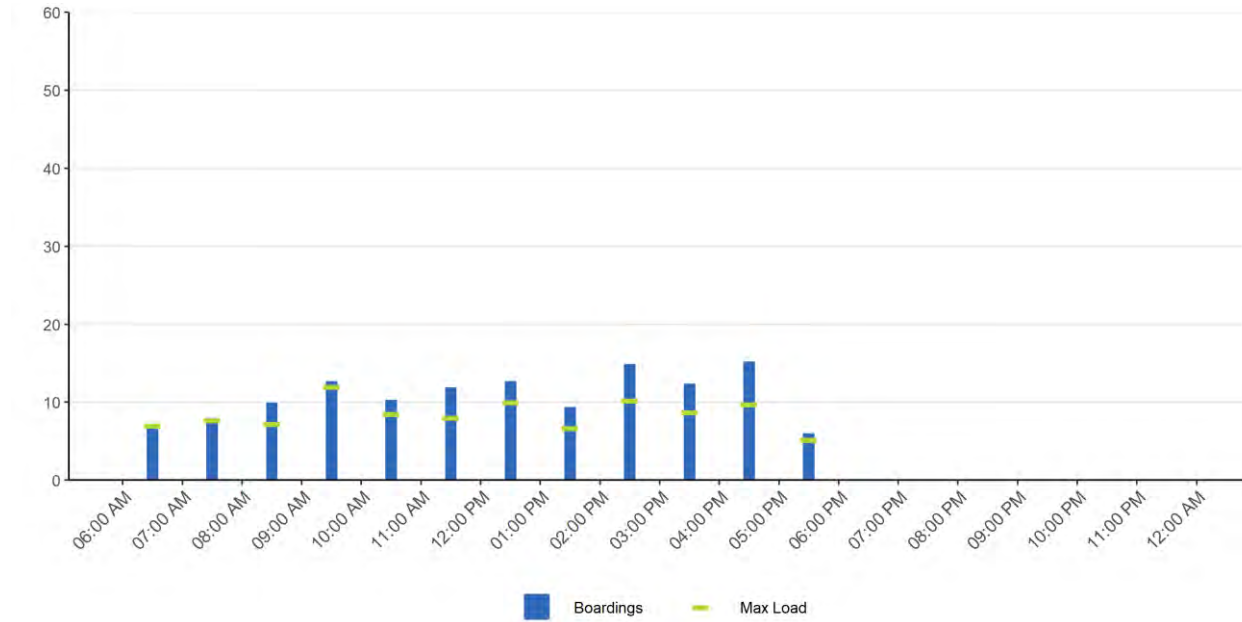
Route 8 | Pre-COVID-19 | Direction: Northbound



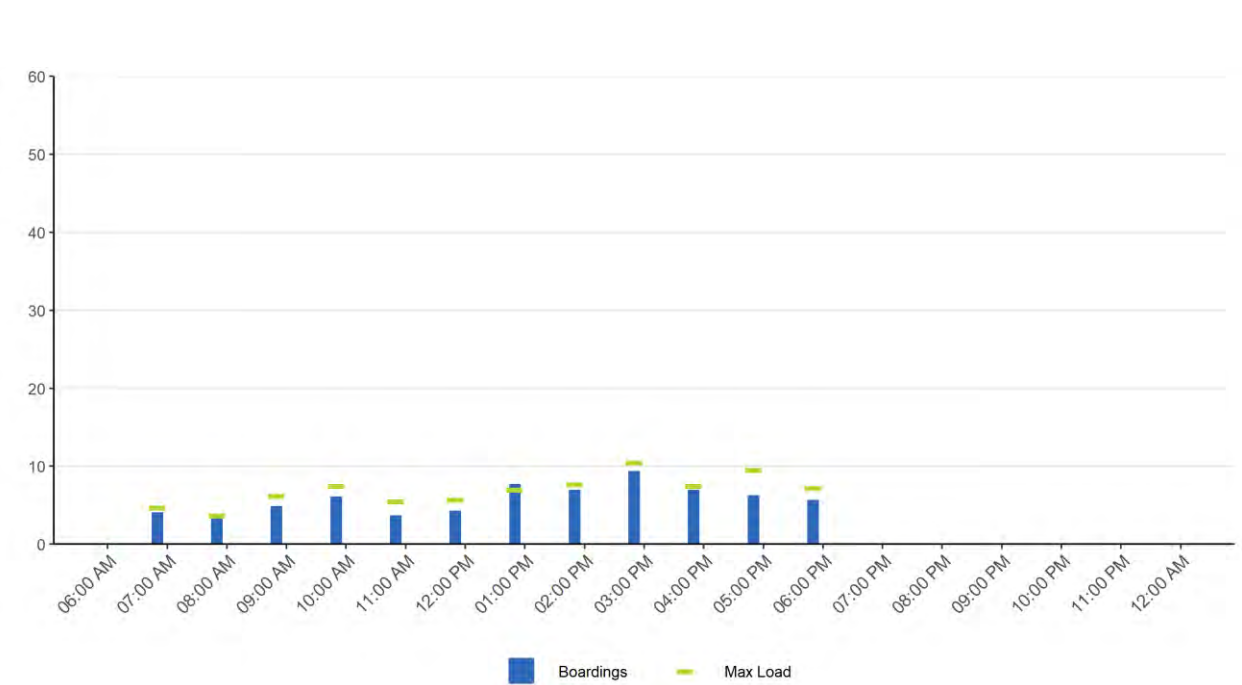
Route 8 | Pre-COVID-19 | Direction: Southbound



Route 8 | Current | Direction: Northbound



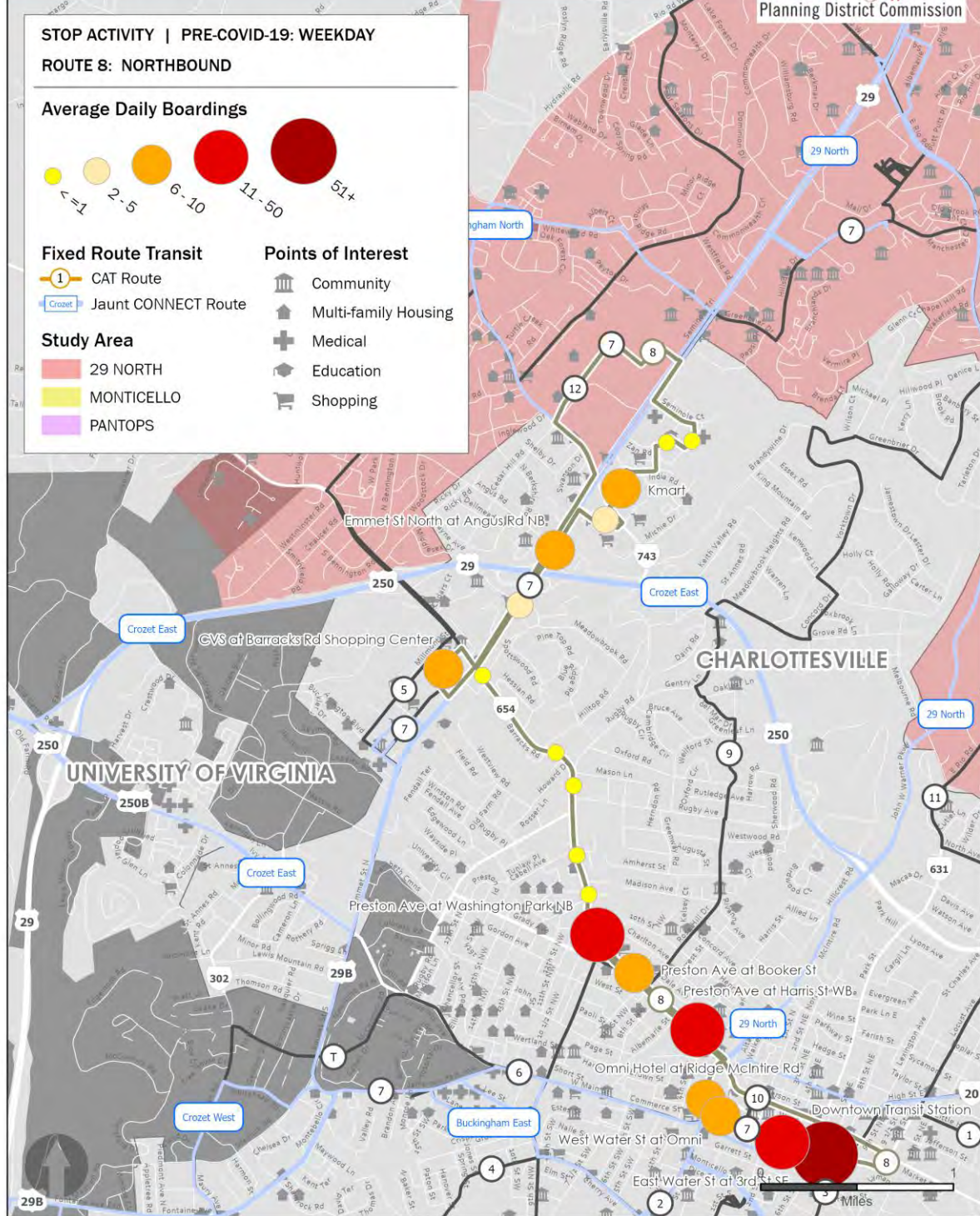
Route 8 | Current | Direction: Southbound



Weekday Ridership by Stop

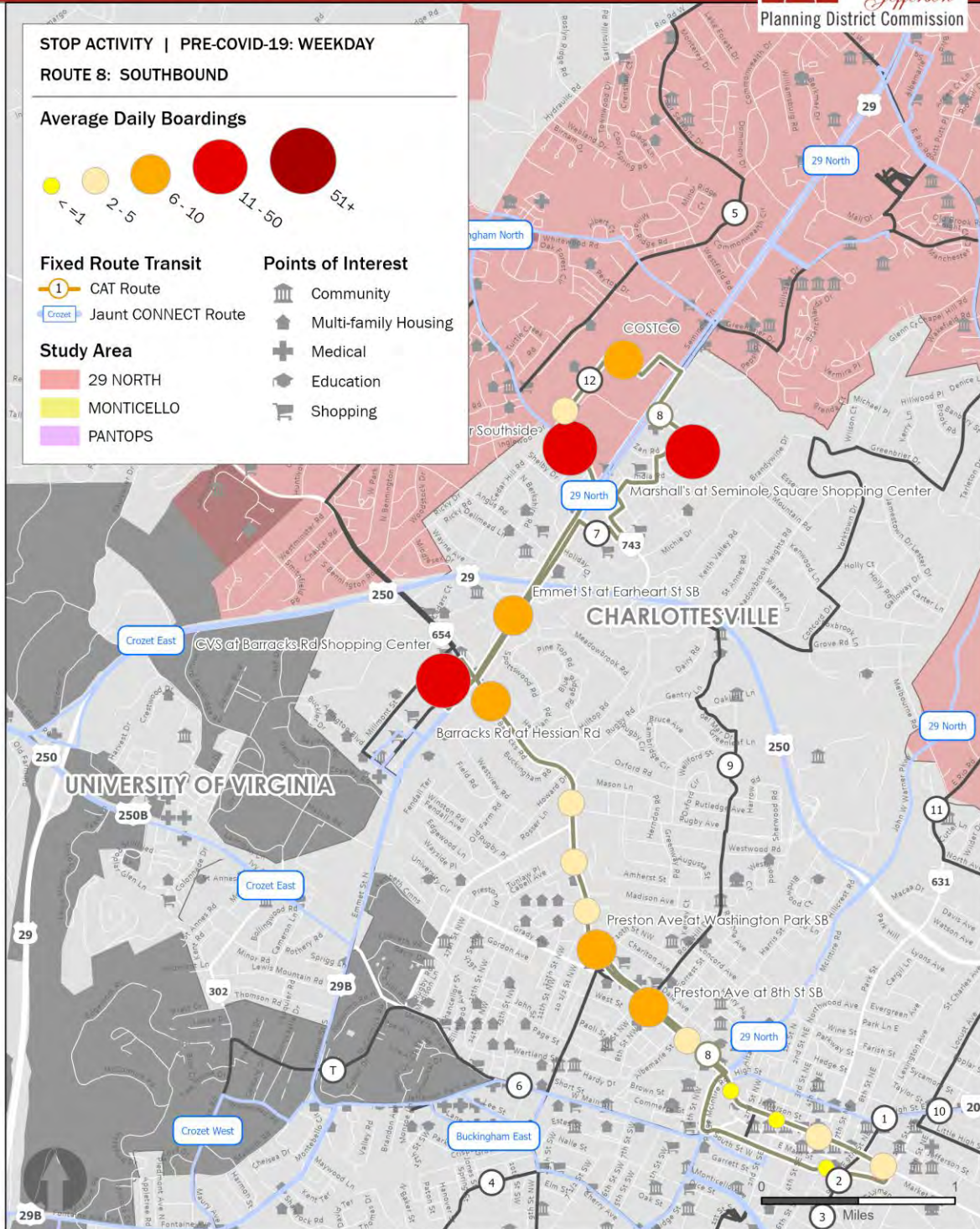
Route 8 | Pre-COVID-19 | Direction: Northbound

ALBEMARLE COUNTY TRANSIT EXPANSION STUDY

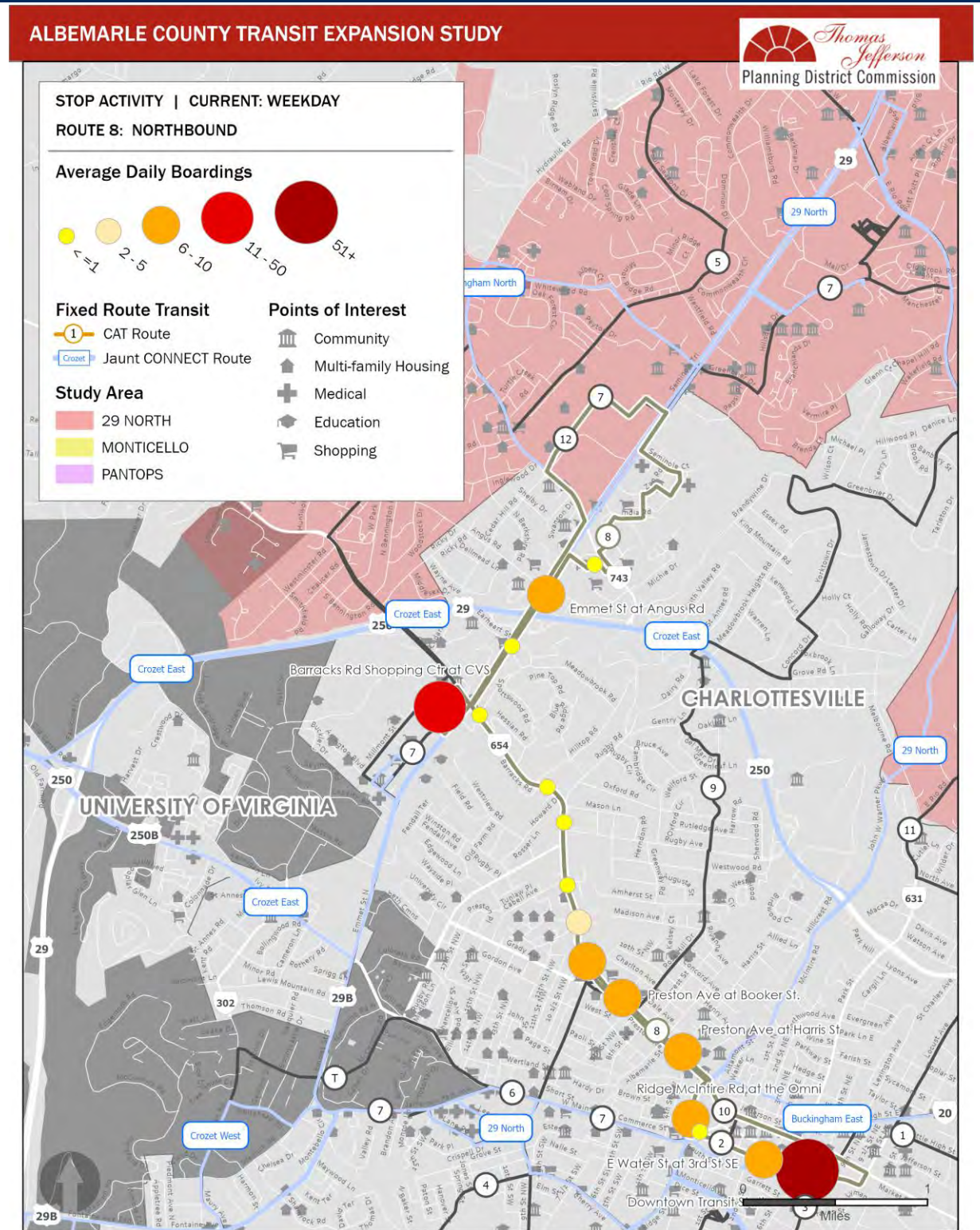


Route 8 | Pre-COVID-19 | Direction: Southbound

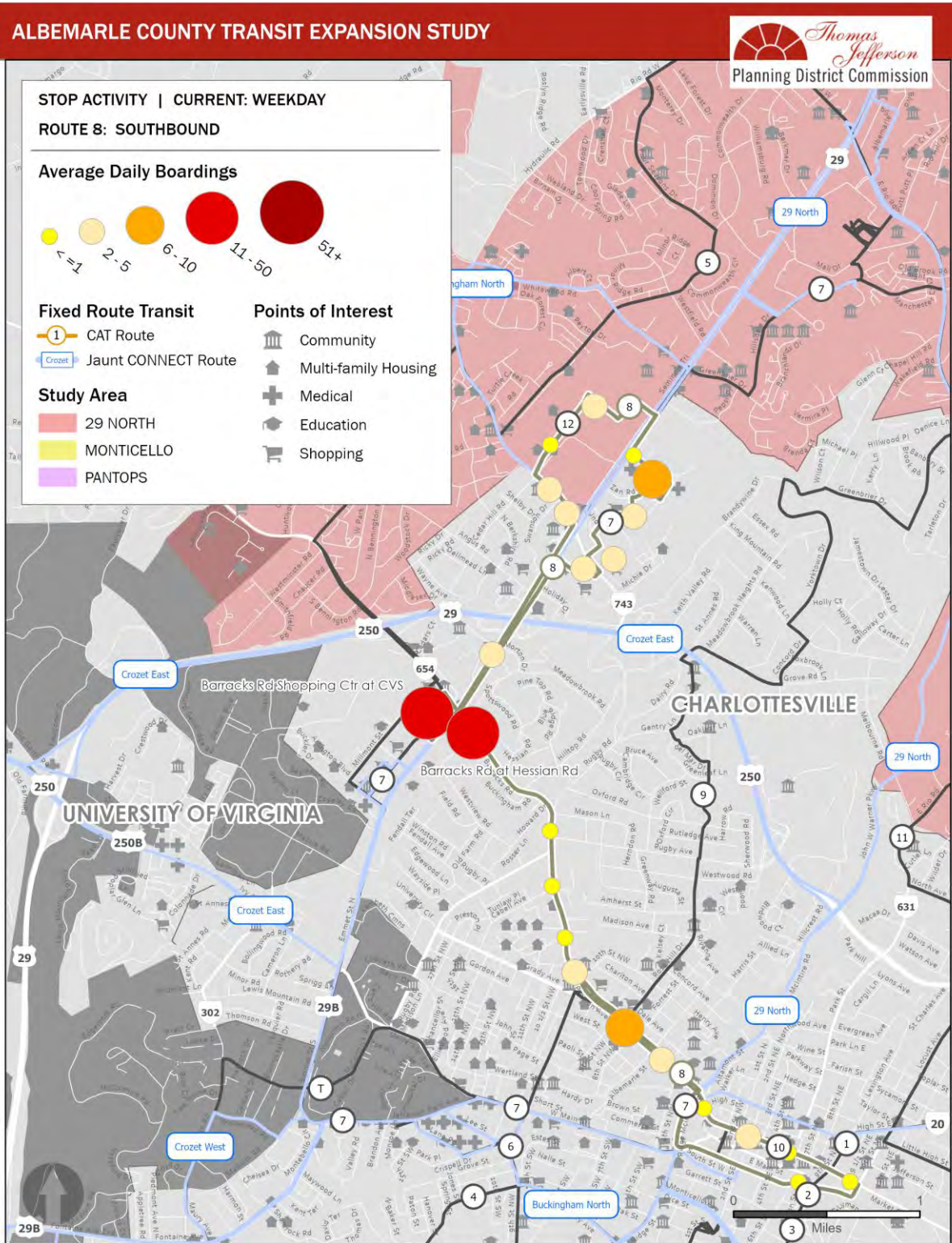
ALBEMARLE COUNTY TRANSIT EXPANSION STUDY



Route 8 | Current | Direction: Northbound



Route 8 | Current | Direction: Southbound



Route 10: Downtown / Martha Jefferson Hospital



Study Area: Pantops

Operates between the Downtown Mall and Sentara Martha Jefferson Hospital, via East High Street, Richmond Road, and Peter Jefferson Parkway. Includes stops at the Pantops Shopping Center and Rivanna Ridge Shopping Center, as well as the Avemore apartment complex.

Service Span	Average Service Frequency	Major Generators
Monday-Friday: 6:30 a.m. – 9:00 p.m.	Peak: 60 minutes Off-Peak: 60 minutes	<ul style="list-style-type: none"> ■ Downtown Mall ■ Pantops Shopping Center ■ Rivanna Ridge ■ Social Security Administration office ■ Veterans Administration office ■ Martha Jefferson Hospital ■ Avemore Apartments
Saturday: 6:30 a.m. – 9:00 p.m.	All Day: 60 minutes	
Sunday: No service	No Service	

Strengths	Weaknesses
<ul style="list-style-type: none"> ■ Direct service to key regional destinations, such as Sentara Martha Jefferson Hospital, the VA Medical Center, and Social Security Administration ■ Relatively extensive span of service ■ Clockface frequency (60 minutes) ■ Multiple connection opportunities in downtown Charlottesville ■ Identical weekday and Saturday schedules 	<ul style="list-style-type: none"> ■ Service along Stony Point Road available in the westbound direction only, requiring out-of-direction travel for residents of Avemore Apartments ■ Service to Pantops Shopping Center available only eastbound direction only ■ No crosswalk at the intersection of US-250 and Stony Point Road (where riders cross between the Stony Point Road stop and Pantops Shopping Center) ■ Low frequency (60 minutes) ■ Large one-way loop that limits travel options

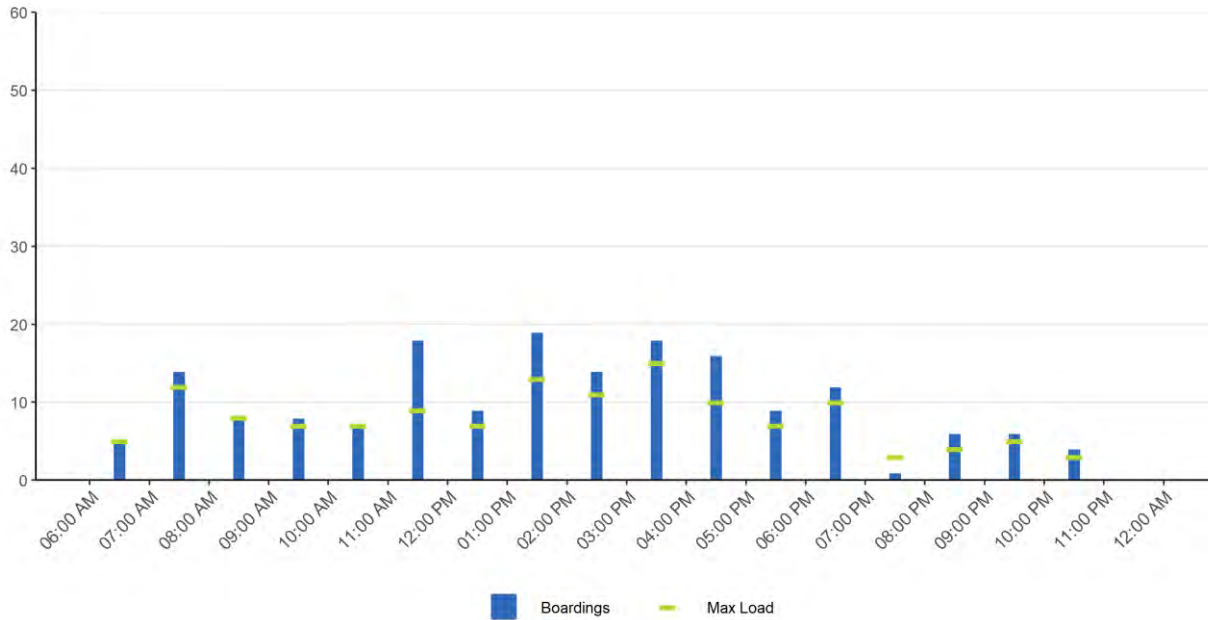
Upcoming Service Modifications

CAT is currently proposing service changes for Fiscal Year 2022. In many cases, recommendations address weaknesses identified above. Service improvements proposed for Route 10 include:

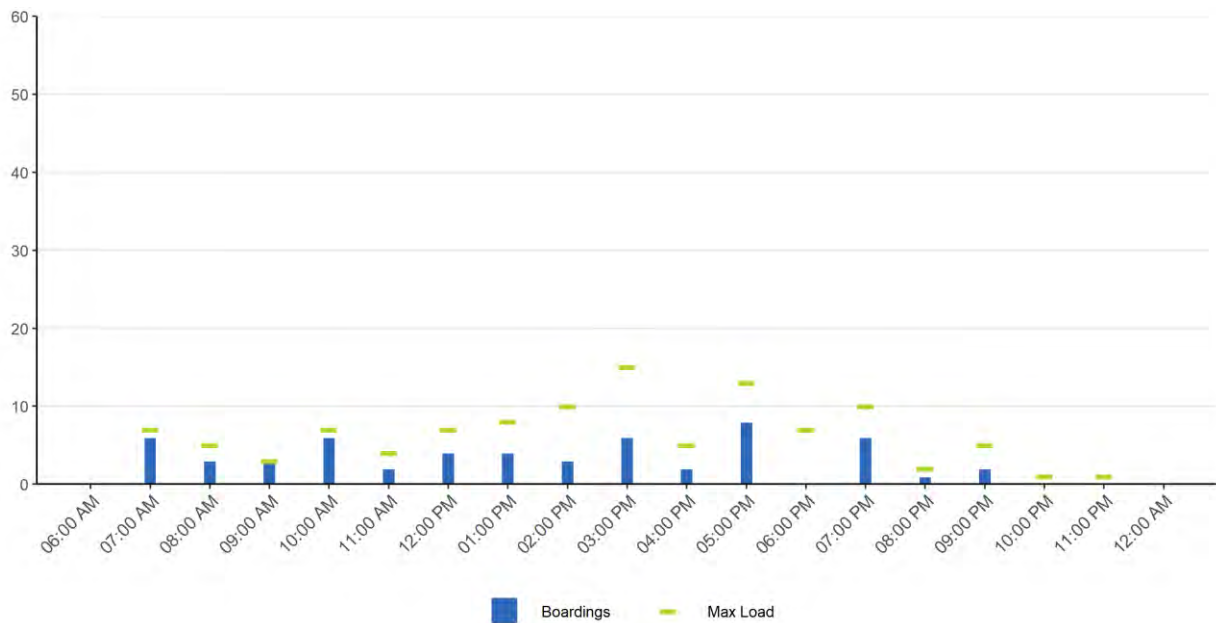
- Elimination of the Stony Point segment; replacement with bidirectional Pantops service (currently only served in the outbound direction).
- Modification of the east end of the route to provide bidirectional service.
- Improvement of weekday frequencies to 30 minutes.
- Addition of Sunday service at 60-minute frequencies.
- Continued operation of 60-minute frequency service on Saturdays.

Weekday Ridership by Trip

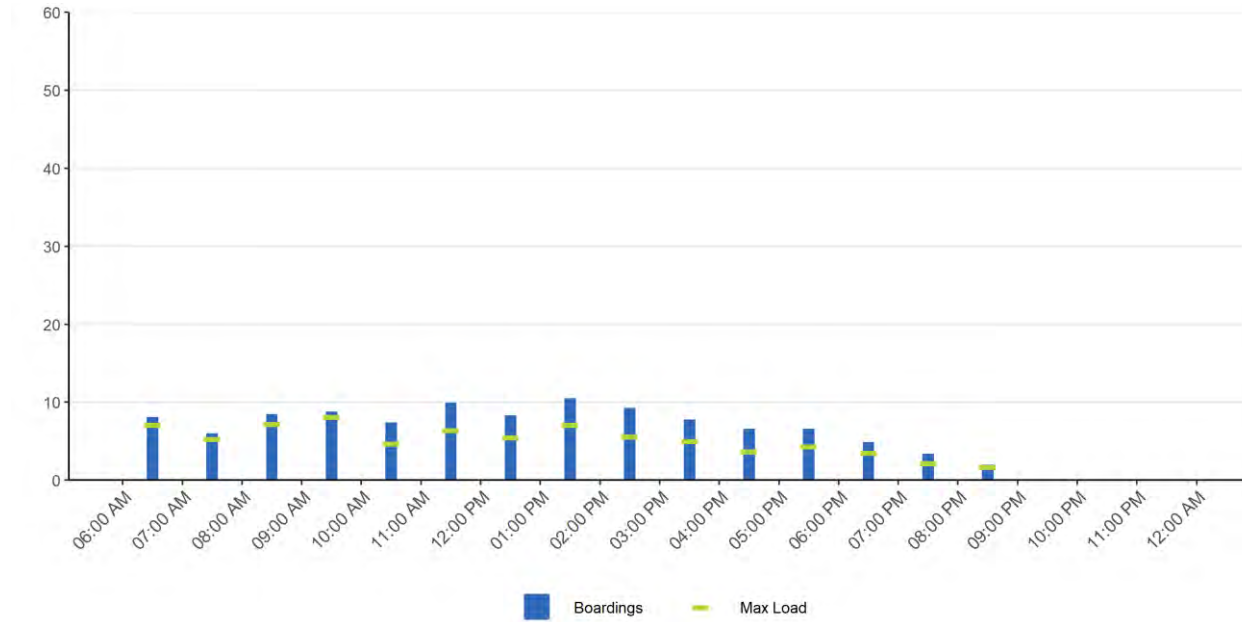
Route 10 | Pre-COVID-19 | Direction: Eastbound



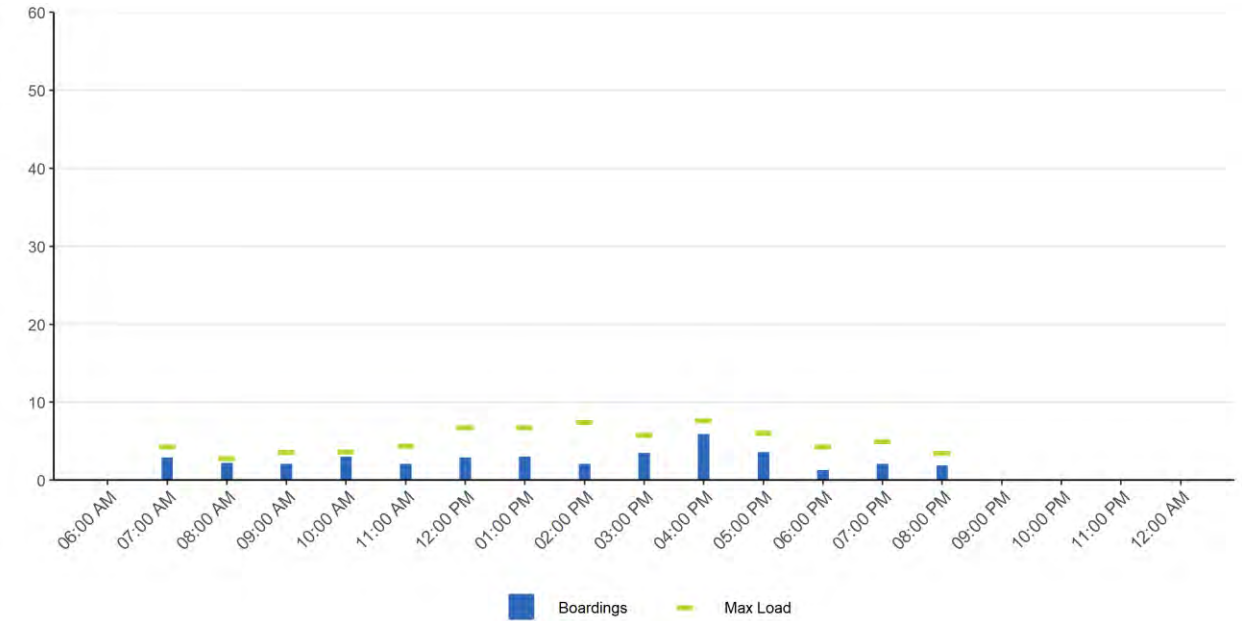
Route 10 | Pre-COVID-19 | Direction: Westbound



Route 10 | Current | Direction: Eastbound

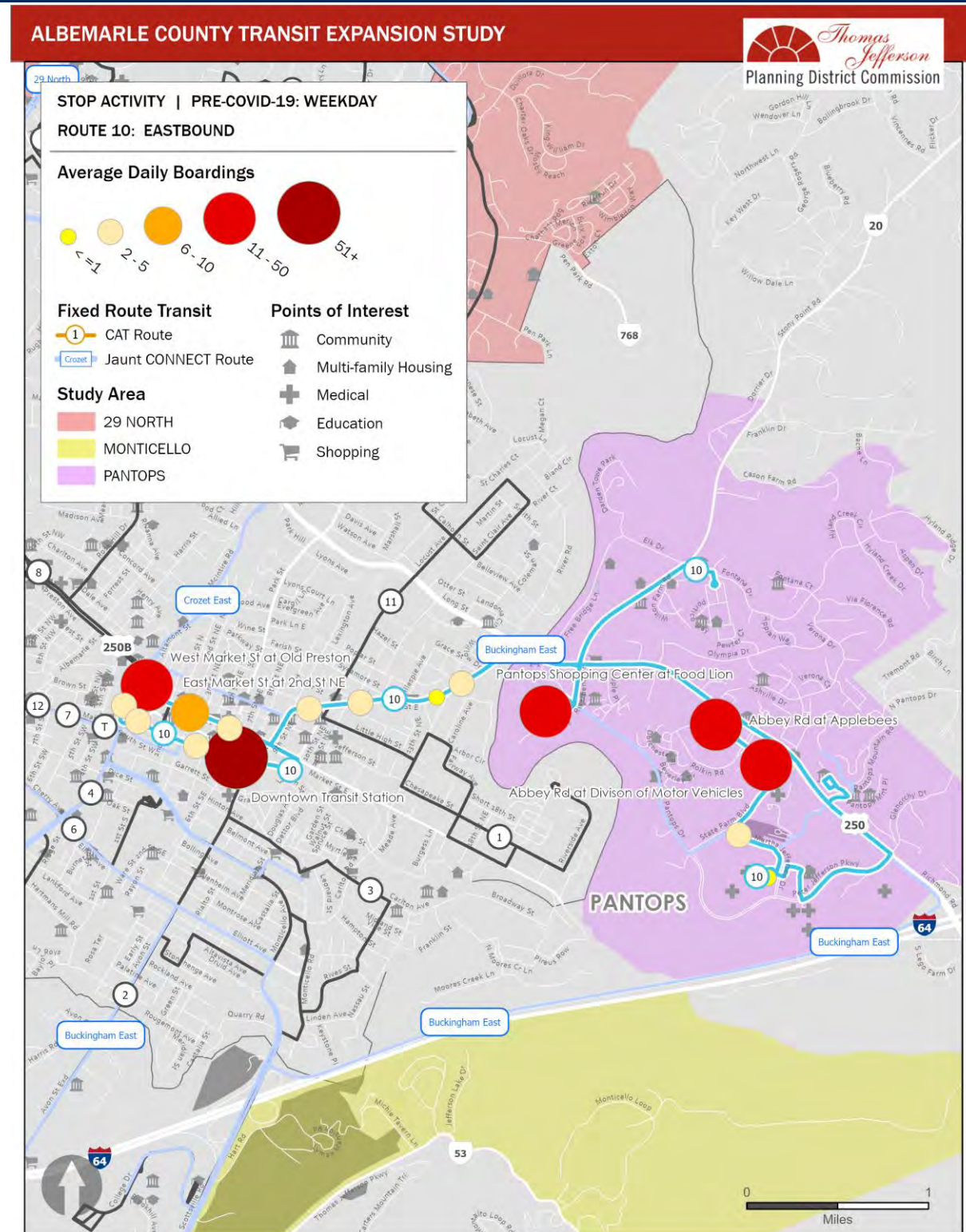


Route 10 | Current | Direction: Westbound



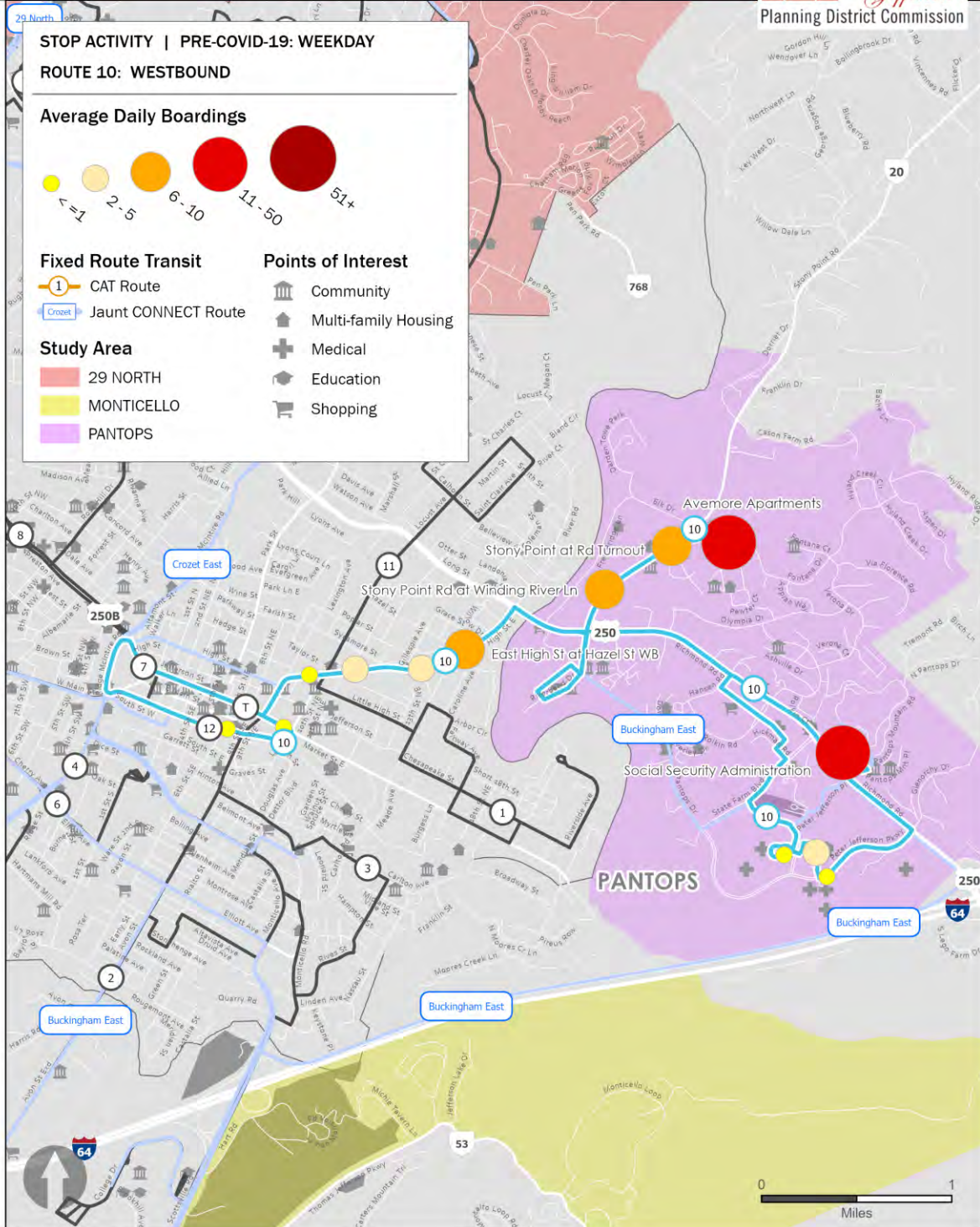
Weekday Ridership by Stop

Route 10 | Pre-COVID-19 | Direction: Eastbound



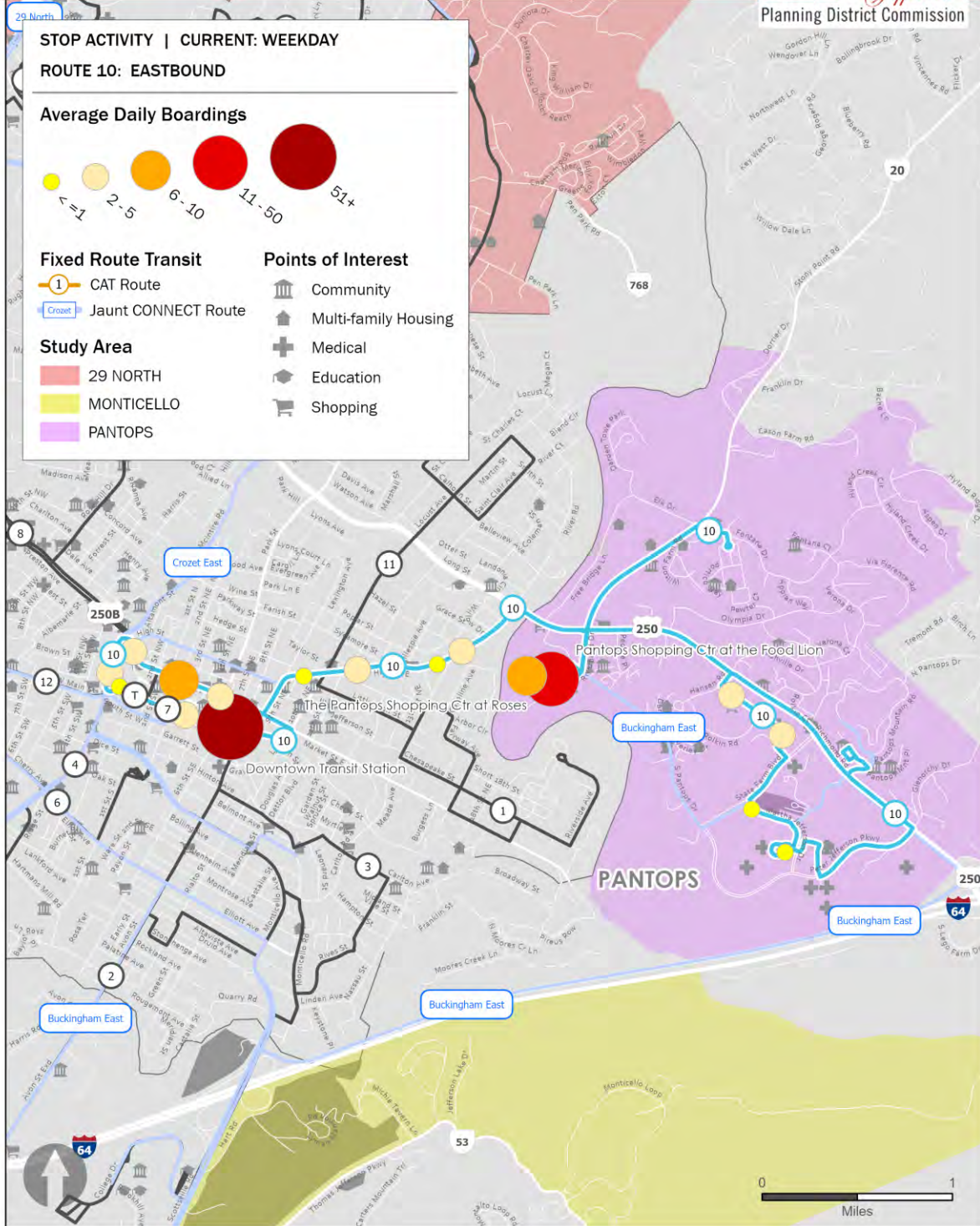
Route 10 | Pre-COVID-19 | Direction: Westbound

ALBEMARLE COUNTY TRANSIT EXPANSION STUDY



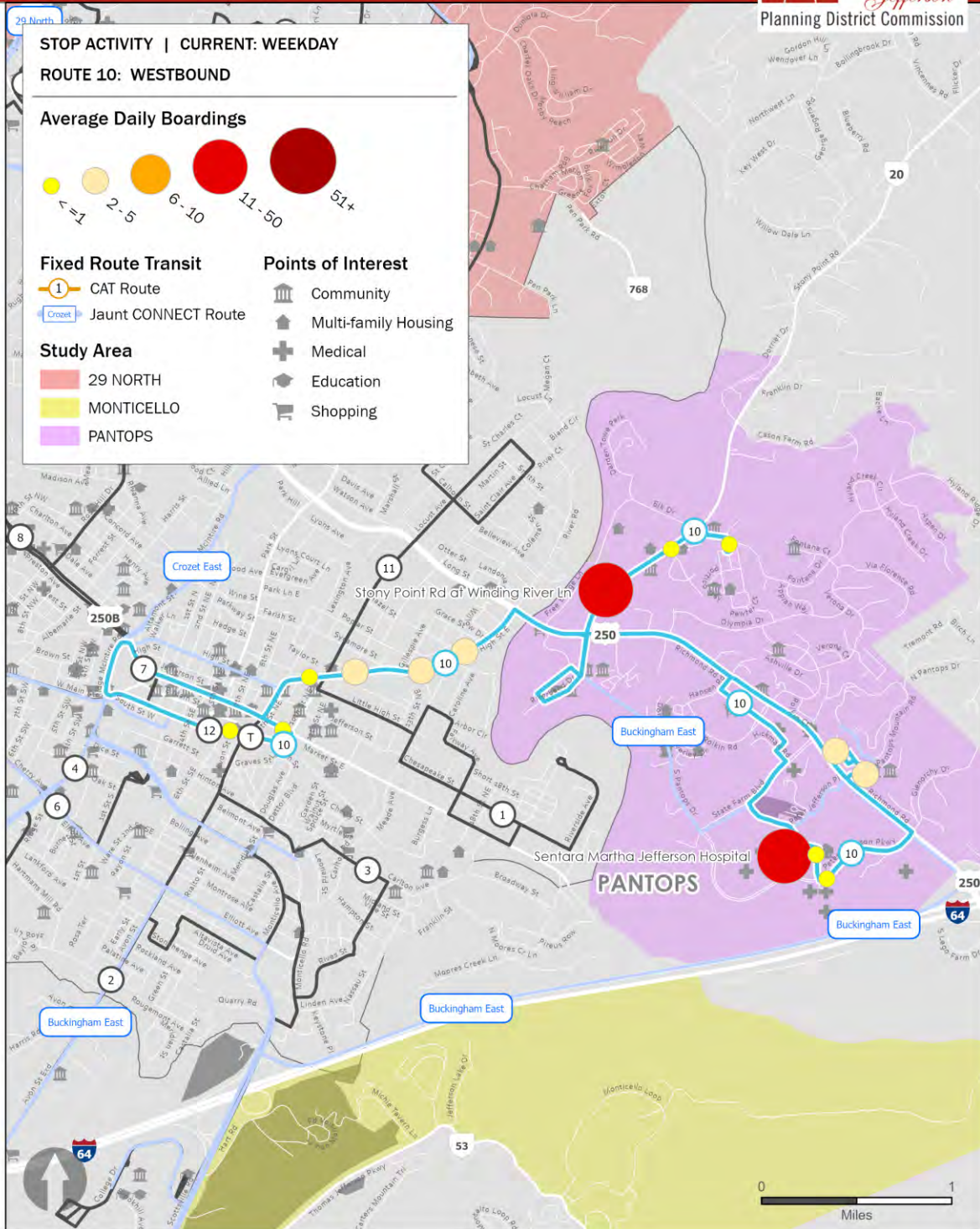
Route 10 | Current | Direction: Eastbound

ALBEMARLE COUNTY TRANSIT EXPANSION STUDY



Route 10 | Current | Direction: Westbound

ALBEMARLE COUNTY TRANSIT EXPANSION STUDY



Route 11: Downtown / Fashion Square Mall



Study Area: US-29 North

Operates between the Downtown Mall and Fashion Square Mall along Locust Avenue, North Avenue, and Rio Road.

Service Span	Average Service Frequency	Major Generators
Monday-Friday: 6:00 a.m. – 9:00 p.m.	Peak: 60 minutes Off-Peak: 60 minutes	<ul style="list-style-type: none"> ■ Fashion Square Mall ■ Downtown Mall ■ Charlottesville-Albemarle Technical Education Center (CATEC) ■ Charlottesville Catholic School
Saturday: 6:00 a.m. – 6:30 p.m.	All Day: 60 minutes	
Sunday: No service	No Service	

Strengths	Weaknesses
<ul style="list-style-type: none"> ■ Only CAT route with direct service to CATEC ■ Multiple connection opportunities in downtown Charlottesville and at Fashion Square Mall ■ Clockface frequency (60 minutes) 	<ul style="list-style-type: none"> ■ Low frequency ■ Relatively low overall ridership ■ No Sunday service ■ Shorter Saturday span of service ■ No direct access to a supermarket

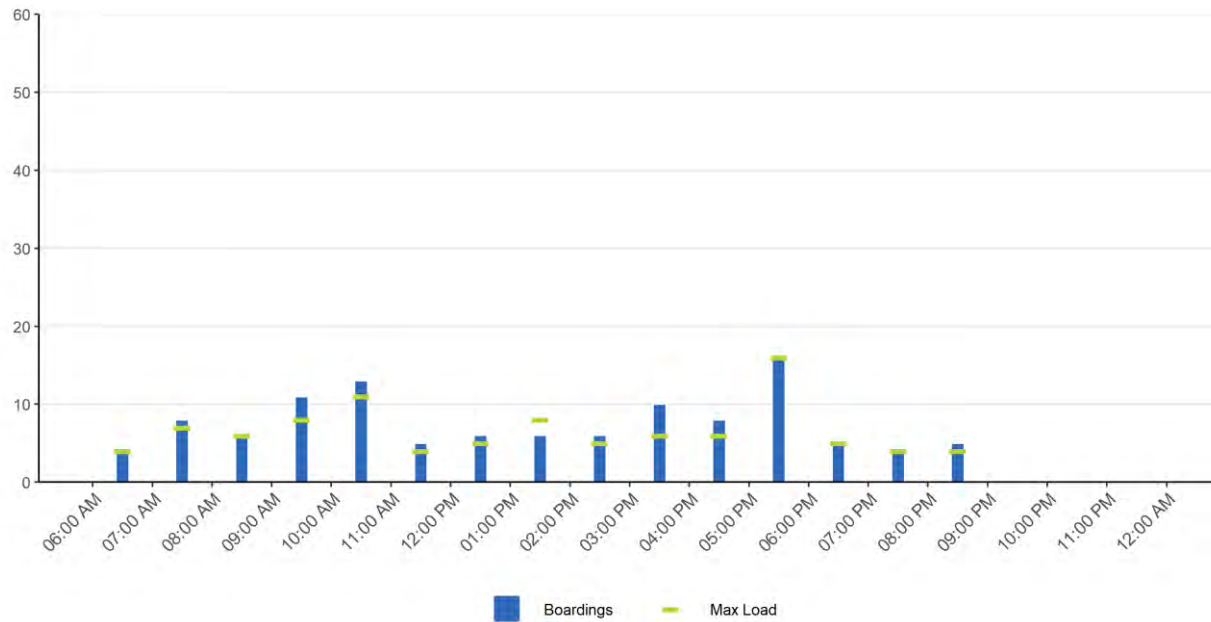
Upcoming Service Modifications

CAT is currently proposing service changes for Fiscal Year 2022. In many cases, recommendations address weaknesses identified above. Service improvements proposed for Route 11 include:

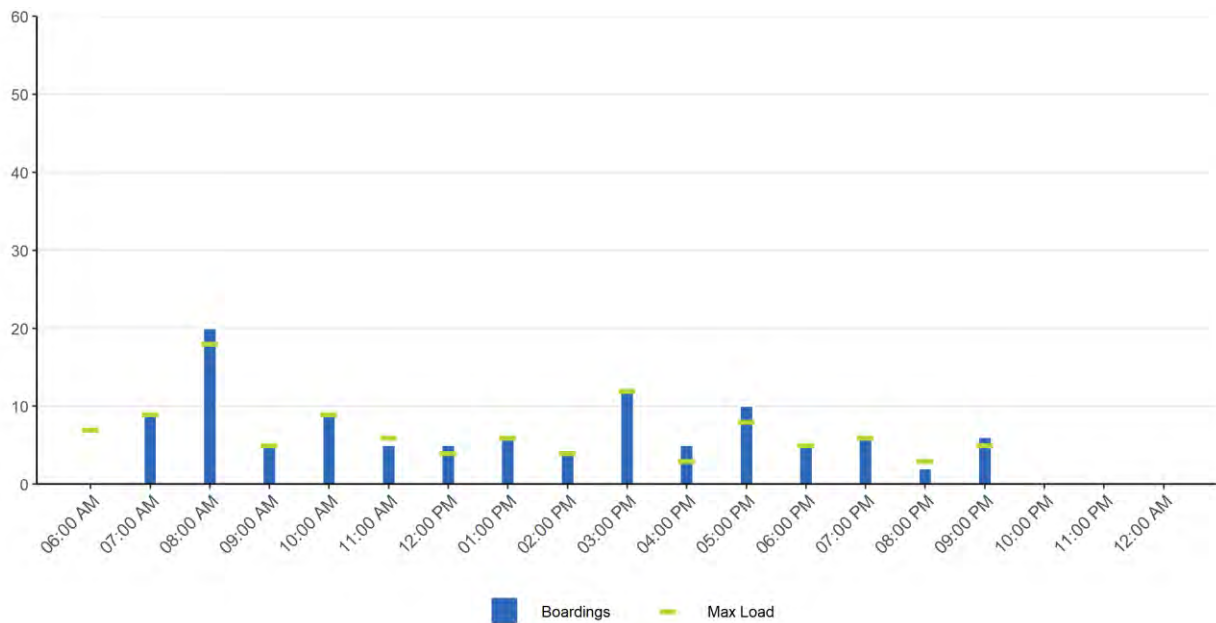
- Addition of northbound only service to the Center on Rio Road; southbound service is not possible due to the lack of a signal at Rio Road and Belvedere Boulevard.
- Elimination of Locust/Peartree/Street Clair loop to provide time for proposed Rio Road service.
- Continued operation of 60-minute frequencies on weekdays and Saturdays.

Weekday Ridership by Trip

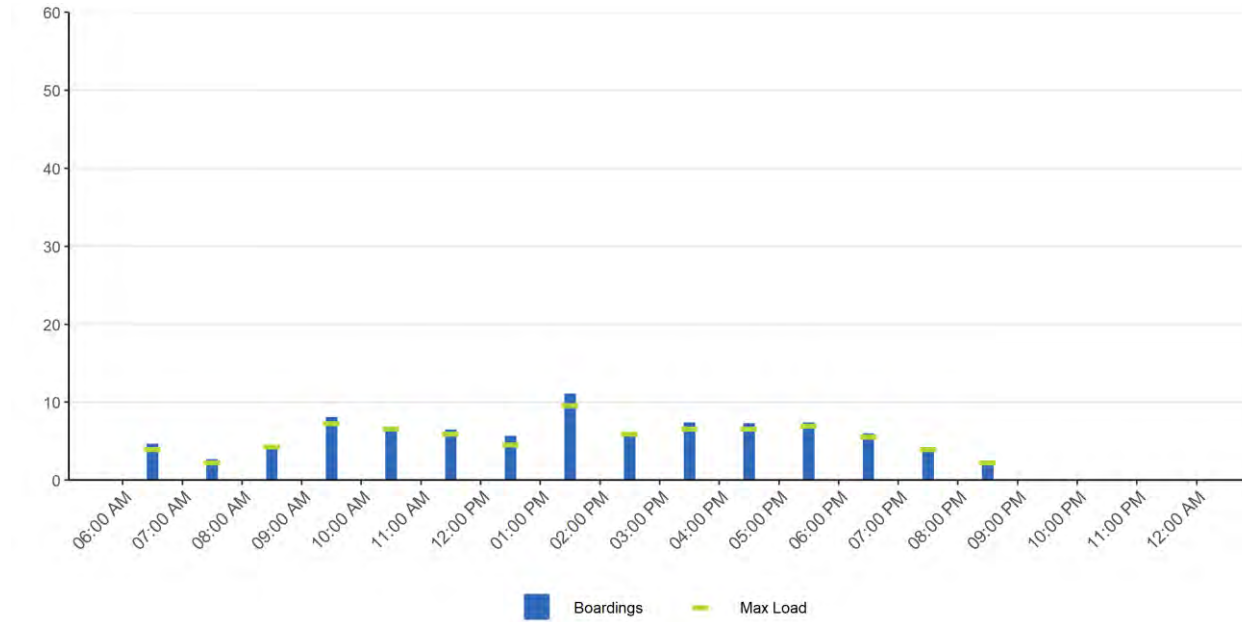
Route 11 | Pre-COVID-19 | Direction: Northbound



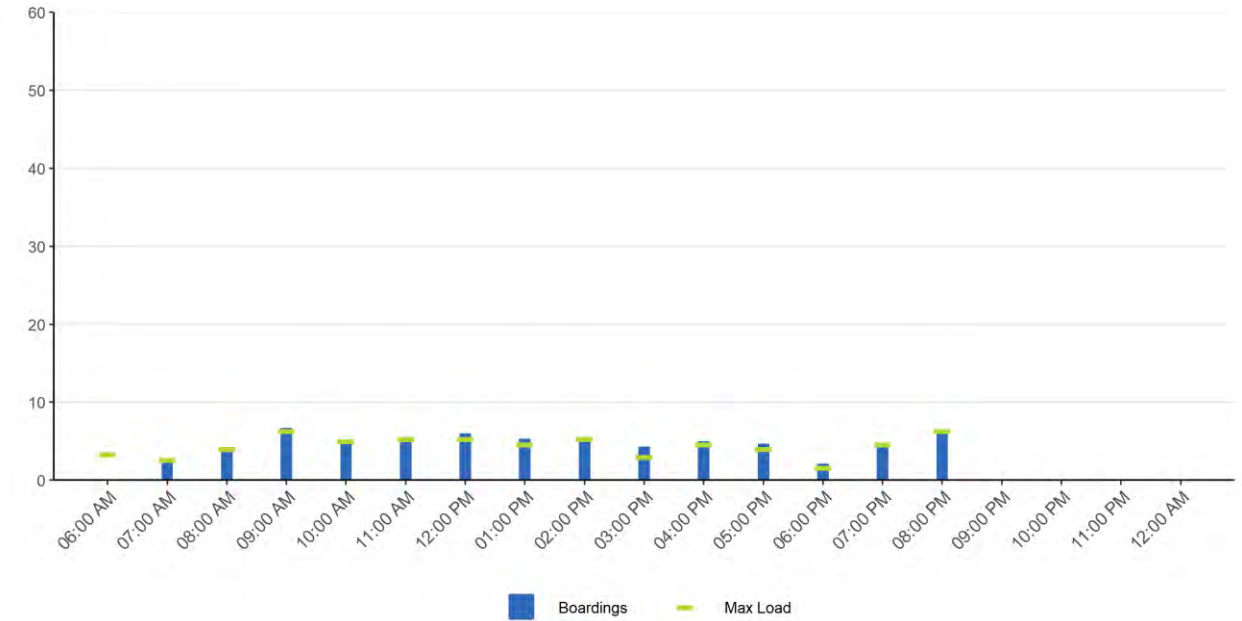
Route 11 | Pre-COVID-19 | Direction: Southbound



Route 11 | Current | Direction: Northbound



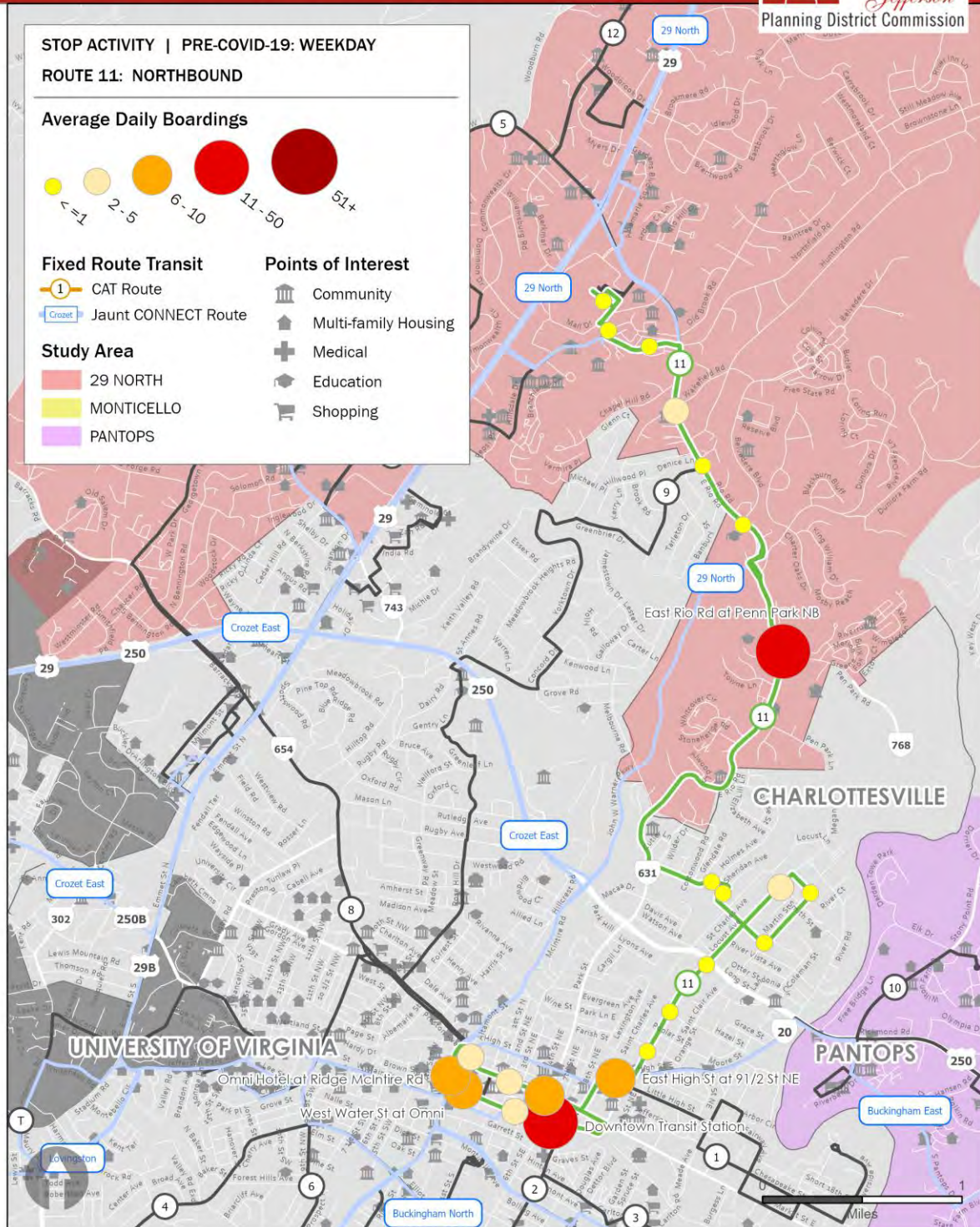
Route 11 | Current | Direction: Southbound



Weekday Ridership by Stop

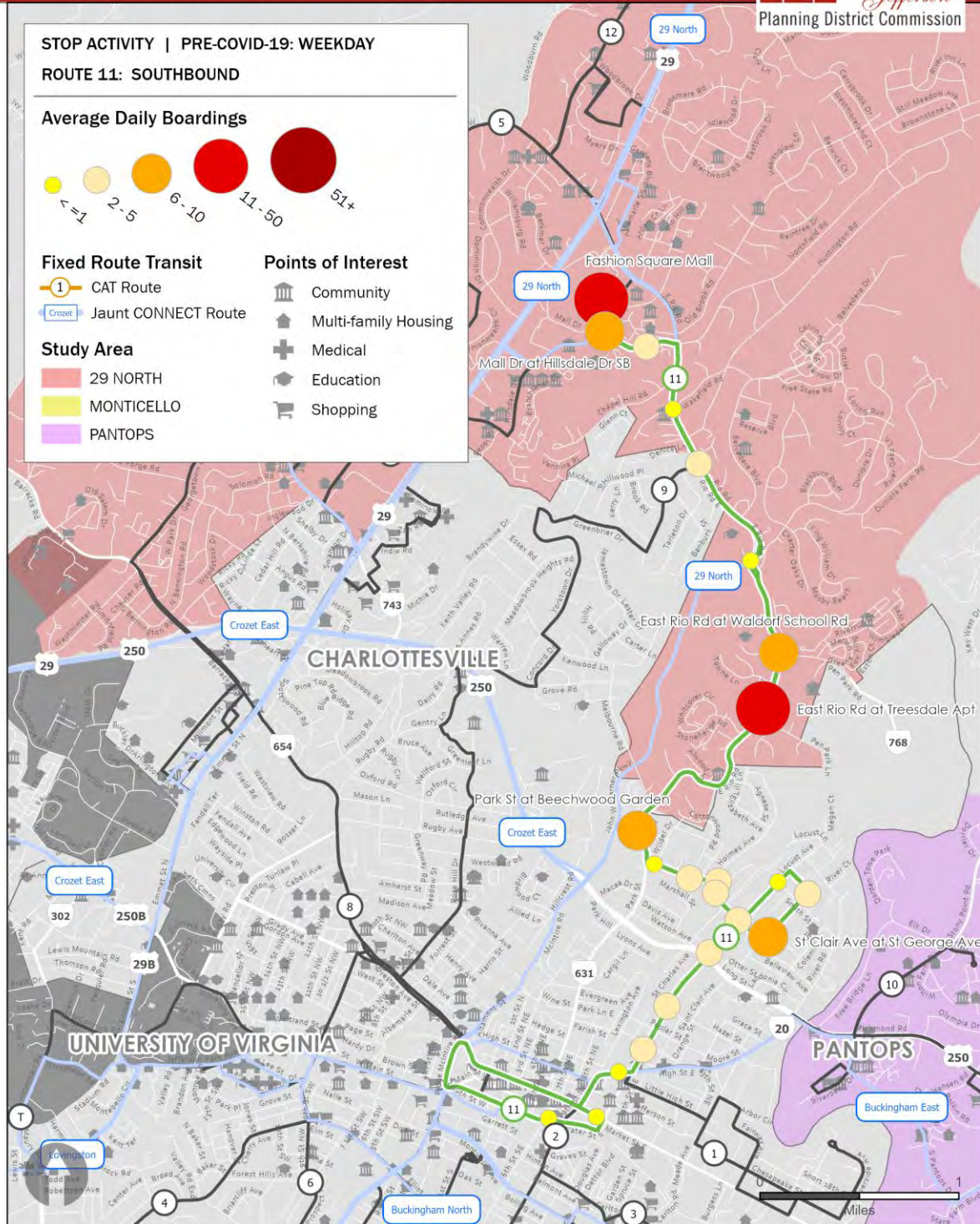
Route 11 | Pre-COVID-19 | Direction: Northbound

ALBEMARLE COUNTY TRANSIT EXPANSION STUDY

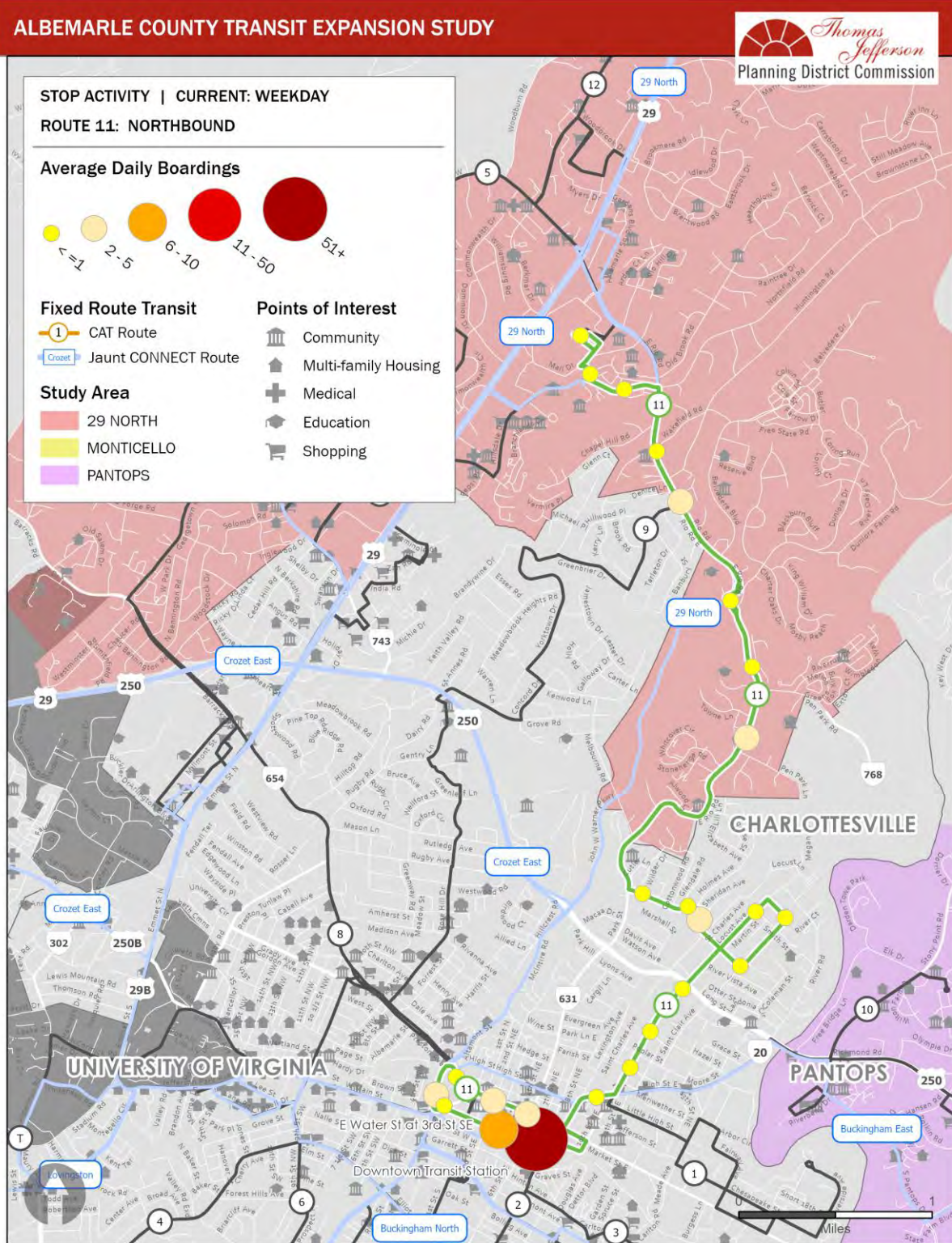


Route 11 | Pre-COVID-19 | Direction: Southbound

ALBEMARLE COUNTY TRANSIT EXPANSION STUDY

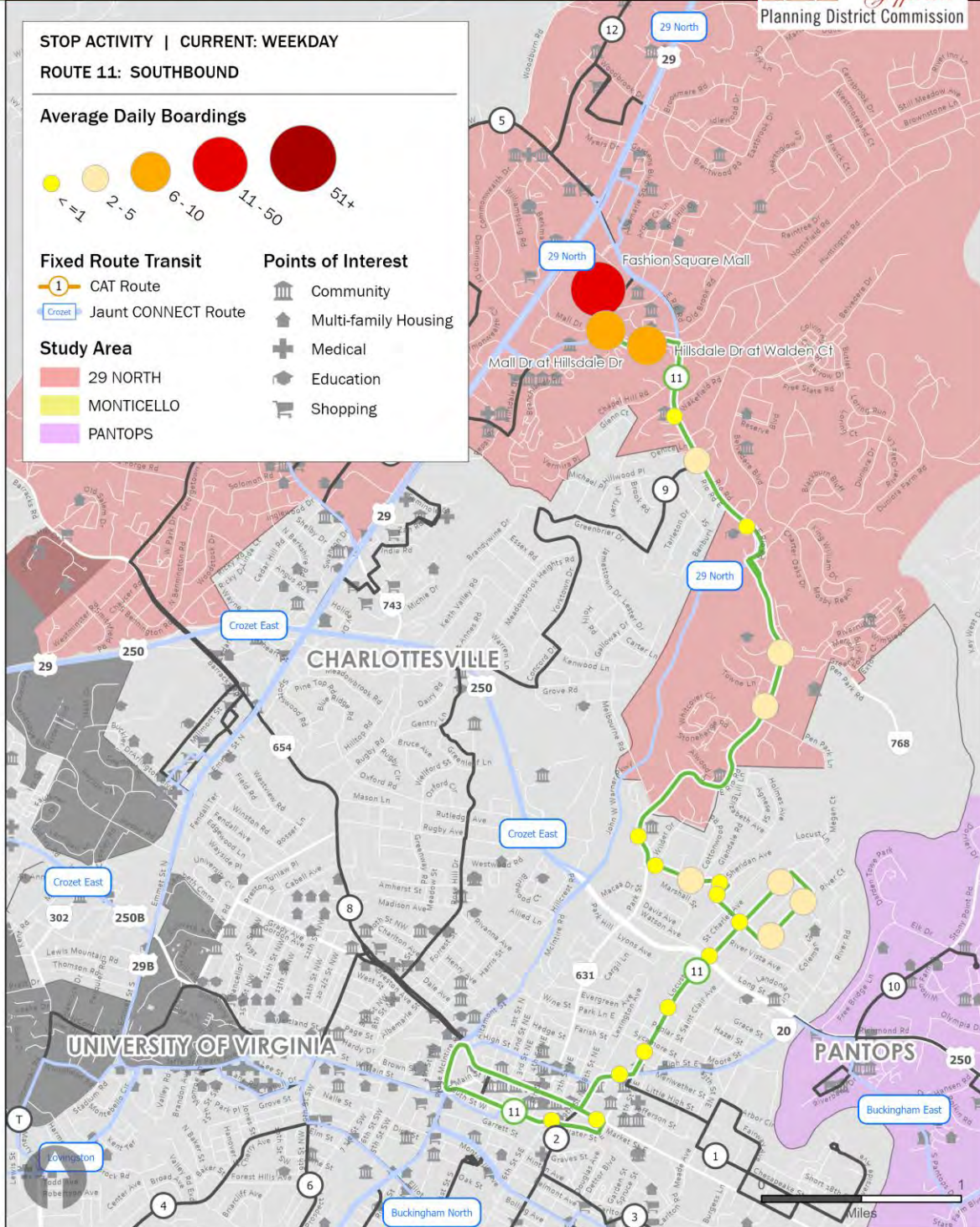


Route 11 | Current | Direction: Northbound



Route 11 | Current | Direction: Southbound

ALBEMARLE COUNTY TRANSIT EXPANSION STUDY



Route Profiles: Jaunt

29 North CONNECT

Study Area: US-29 North



Operates between downtown Charlottesville, UVA hospital, and towns north of Charlottesville, including Forest Lakes and Hollymead.

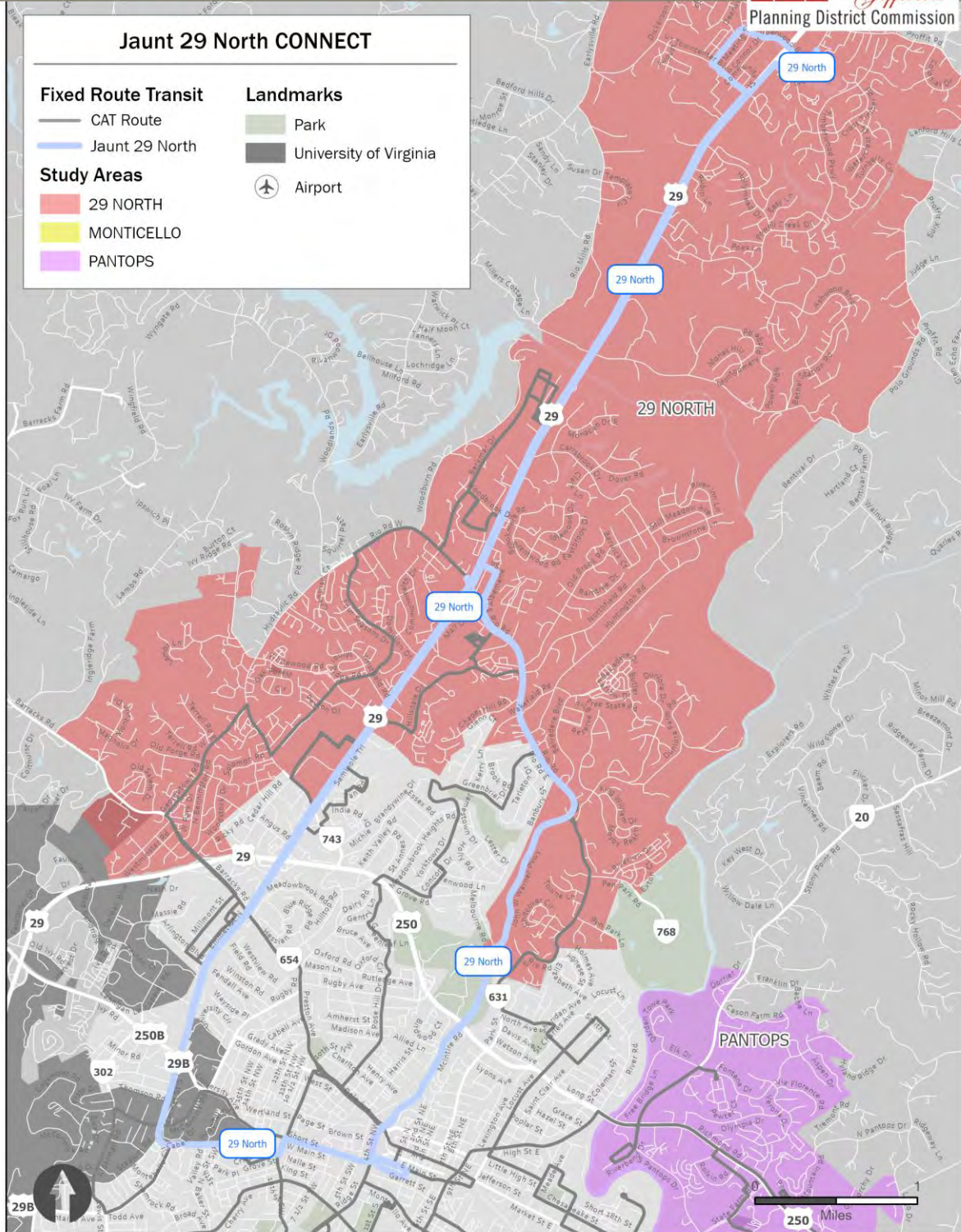
Operates along US-29 North, Seminole Trail, Emmet Street, West Main Street, McIntire Road, John W. Warner Parkway, and East Rio Road.

Service Span	Average Service Frequency	Major Generators
Monday-Friday: 6:05 a.m. – 8:43 a.m. 4:33 p.m. – 7:15 p.m.	Morning: 3 Trips Afternoon: 3 Trips	<ul style="list-style-type: none"> Hollymead Town Center University of Virginia UVA Hospital Omni Hotel
Saturday: No service	No Service	
Sunday: No service	No Service	

Strengths	Weaknesses	Opportunities
<ul style="list-style-type: none"> Explicitly designed for commuters Offers direct connection from Charlottesville and communities along US-29 North One of Jaunt's only fixed-route services (four total) Free for UVA students, and currently free for all riders due to COVID-19 	<ul style="list-style-type: none"> Limited service span and frequency: three morning and afternoon trips No weekend service 	<ul style="list-style-type: none"> Extend service to Charlottesville-Albemarle Airport Extend service to National Ground Intelligence Center (NGIC) Operate more frequent, all-day service Publish route maps on website to supplement Google Maps and Transloc app

Average Daily Ridership Summary			
Pre-COVID-19		Current	
Southbound (AM): 20.3 Riders	Northbound (PM): 21.2 Riders	Southbound (AM): 6.5 Riders	Northbound (PM): 7.3 Riders

ALBEMARLE COUNTY TRANSIT EXPANSION STUDY



Buckingham CONNECT (Buck North)

Study Area: US-29 North



Operates between Buckingham County and Charlottesville destinations, including UVA hospital and Sentara Martha Jefferson Hospital. Route runs on US-20 between Buckingham County and Charlottesville, and in a loop along Avon Street, Elliott Avenue, Cherry Avenue, West Main Street, High Street, South Pantops Drive, Peter Jefferson Parkway (serving Martha Jefferson Hospital), I-64, and Scottsville Road.

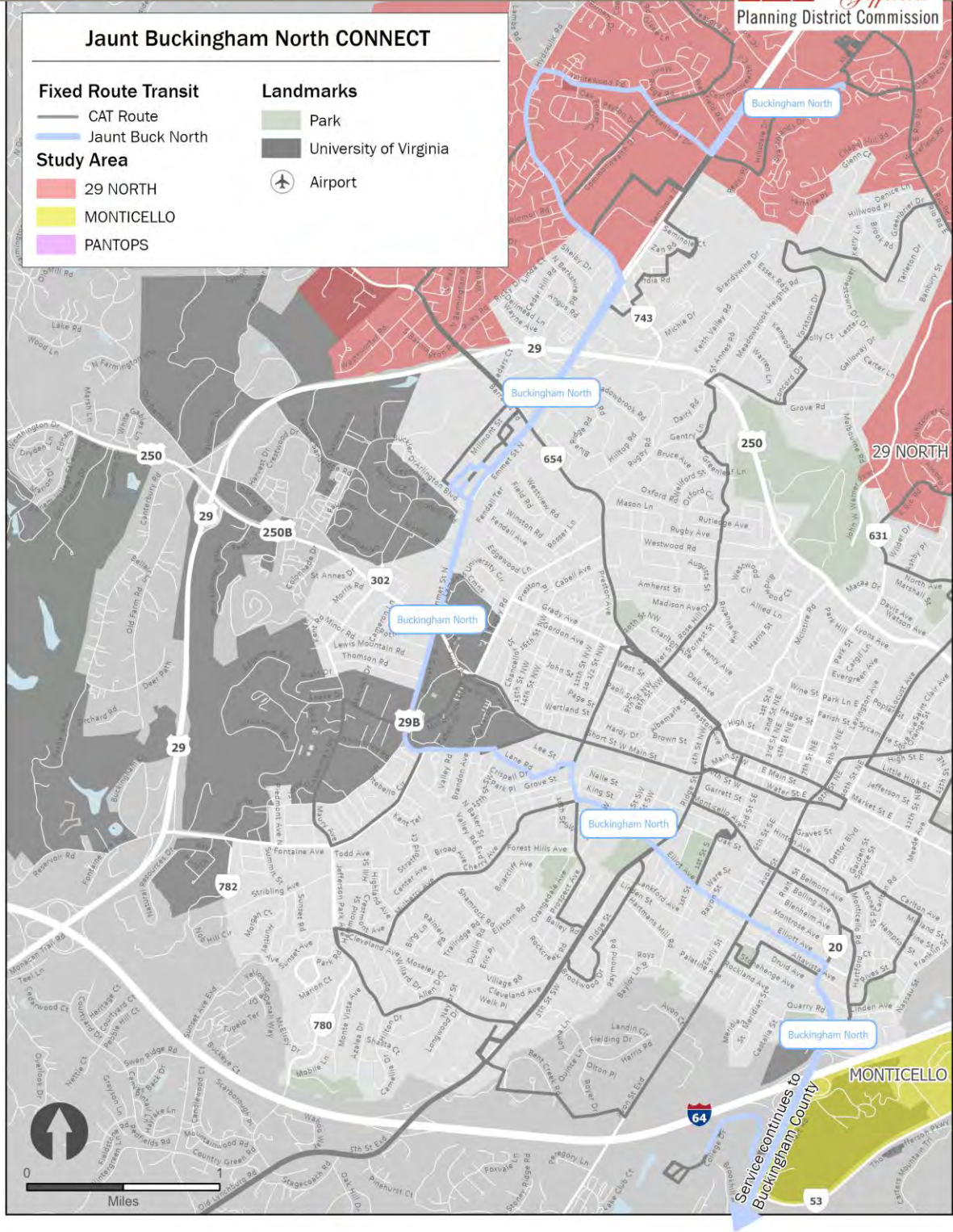
Service Span	Average Service Frequency	Major Generators
Monday-Friday: 6:00 a.m. – 7:43 a.m. 5:02 p.m. – 6:48 p.m.	Morning: 1 Trip Afternoon: 1 Trip	<ul style="list-style-type: none"> ■ Sentara Martha Jefferson Hospital ■ Piedmont Virginia Community College ■ UVA Hospital ■ Scottsville Farmers Market
Saturday: No service	No Service	
Sunday: No service	No Service	

Strengths	Weaknesses	Opportunities
<ul style="list-style-type: none"> ■ Provides reliable connection from central Buckingham County to Charlottesville and Urban Albemarle ■ One of Jaunt's only fixed-route services (four total) ■ Free for UVA students, and currently free for all riders due to COVID-19 	<ul style="list-style-type: none"> ■ Limited geographic coverage ■ Limited service span and frequency: one morning and afternoon trip ■ No weekend service ■ Relatively low ridership 	<ul style="list-style-type: none"> ■ Complement commuter-focused service with zone-based microtransit service for local circulation ■ Publish route maps on website to supplement Google Maps and Transloc app

Average Daily Ridership Summary			
Pre-COVID-19 ⁴		Current	
Northbound (AM): Not Available	Southbound (PM): Not Available	Northbound (AM): 5.5 Riders	Southbound (PM): 4.3 Riders

⁴ Pre-COVID-19 ridership data unavailable due to data limitations.

ALBEMARLE COUNTY TRANSIT EXPANSION STUDY



Buckingham CONNECT (Buck East)

Study Area: Pantops



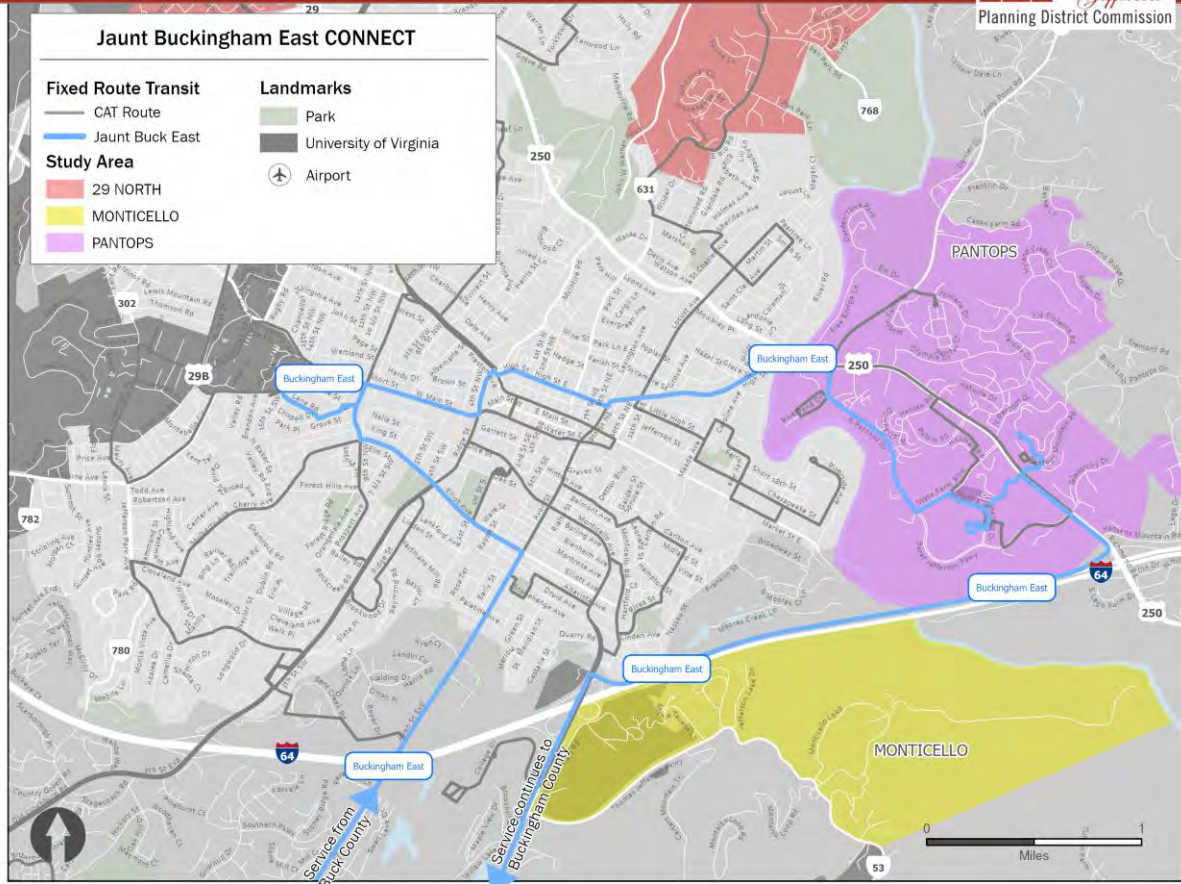
Operates between Buckingham County and destinations in Charlottesville and Albemarle County, including downtown Charlottesville, UVA University Hospital, the Sentara / Martha Jefferson Hospital, and the Westminster-Canterbury retirement community.

Service Span	Average Service Frequency	Major Generators
Monday-Friday: 5:45 a.m. - 7:07 a.m. 4:00 p.m. - 5:27 p.m.	Morning: 1 Trip Afternoon: 1 Trip	<ul style="list-style-type: none"> ■ Sentara Martha Jefferson Hospital ■ UVA Hospital ■ Westminster Canterbury ■ Scottsville Farmers Market ■ Pantops
Saturday: 5:45 a.m. - 7:07 a.m. 4:00 p.m. - 5:27 p.m.	Morning: 1 Trip Afternoon: 1 Trip	
Sunday: 5:45 a.m. - 7:07 a.m. 4:00 p.m. - 5:27 p.m.	Morning: 1 Trip Afternoon: 1 Trip	

Strengths	Weaknesses	Opportunities
<ul style="list-style-type: none"> ■ One of Jaunt's only fixed-route services (four total) ■ Free for UVA students, and currently free for all riders due to COVID-19 	<ul style="list-style-type: none"> ■ Limited service span and frequency: one morning and afternoon trip per weekday, Saturday, and Sunday ■ Relatively low current ridership 	<ul style="list-style-type: none"> ■ Complement commuter-focused service with zone-based microtransit service for local circulation ■ Publish route maps on website to supplement Google Maps and Transloc app

Average Daily Ridership Summary			
Pre-COVID-19		Current	
Northbound (AM): 14.8 Riders	Southbound (PM): 14.7 Riders	Northbound (AM): 8.6 Riders	Southbound (PM): 8.1 Riders

ALBEMARLE COUNTY TRANSIT EXPANSION STUDY



Jaunt Demand Response Service



Study Areas: US-29 North, Pantops, and Monticello

Jaunt provides demand response service throughout the region. Demand response services are branded as Demand Response, Link, Circulator, and Americans with Disabilities Act (ADA) paratransit. Prospective riders may make reservations by phone or email in advance. Services, locations served, and days in operation for Jaunt services that enter the three study areas are shown below. Heat maps showing ridership patterns during the pre-COVID-19 and current periods (across the three project study areas) are displayed in the pages that follow.

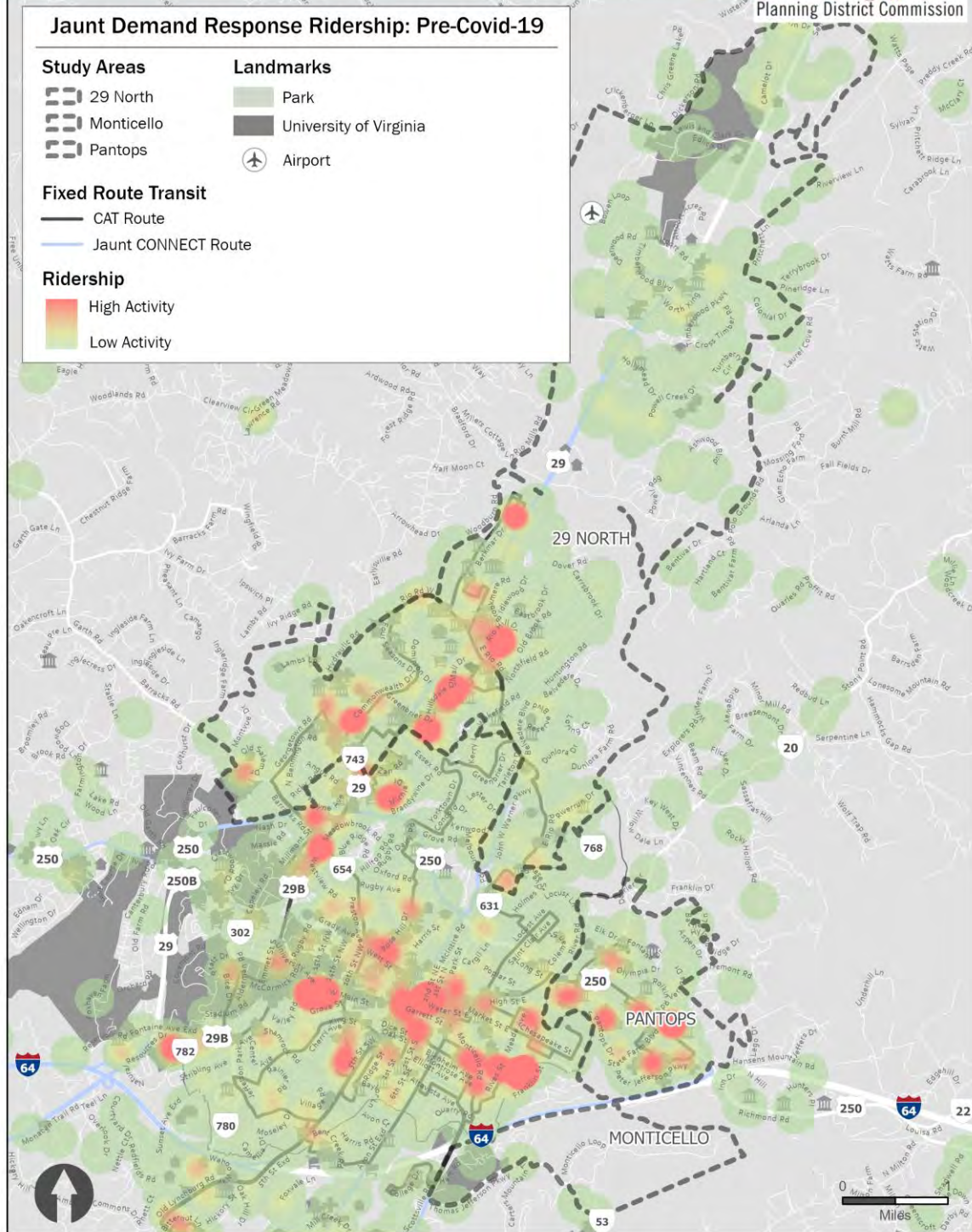
Demand Response Category	Service Name	Locations Served	Days in Operation						
			Sun	Mo	Tu	Wed	Thu	Fri	Sat
ADA	ADA Service	Three-quarter mile buffer of CAT fixed-route service	X	X	X	X	X	X	X
Demand Response	Albemarle Demand Response	Within Albemarle County or between Albemarle County and the Albemarle Priority Zone or Federal ADA Zone.		X	X	X	X	X	
	Wintergreen Shopping Shuttle	Wintergreen to Barracks Road Shopping Center	X			X	X		
	Greene County Transit	Greene County to Charlottesville		X	X	X	X	X	

Demand Response Category	Service Name	Locations Served	Days in Operation						
			Sun	Mo	Tu	Wed	Thu	Fri	Sat
Link Demand Response	Earlsville Link	Charlottesville/Urban Albemarle to Earlsville		X	X	X	X	X	
	29 North Link	Charlottesville and Urban Albemarle to US-29 North past CHO		X	X	X	X	X	
	Fluvanna Commuter Link	Fork Union through Fluvanna County to Charlottesville/Urban Albemarle		X	X	X	X	X	
	Fluvanna Midday Link	Fluvanna County to Charlottesville/Urban Albemarle			X		X		
	Nelson Link	Nelson County to Charlottesville/Urban Albemarle		X				X	
	Louisa Link	Louisa County to Charlottesville/Urban Albemarle		X		X		X	
	20 North Link	Route 20 North region to Charlottesville/Urban Albemarle		X	X	X	X	X	
	Keswick Link	Keswick area to Charlottesville/Urban Albemarle		X	X	X	X	X	
	Esmont/Scottsville Link	Esmont-Scottsville region to Charlottesville/Urban Albemarle		X	X	X	X	X	
	Crozet Link	Crozet to Charlottesville and Urban Albemarle		X	X	X	X	X	

Ridership Heat Maps

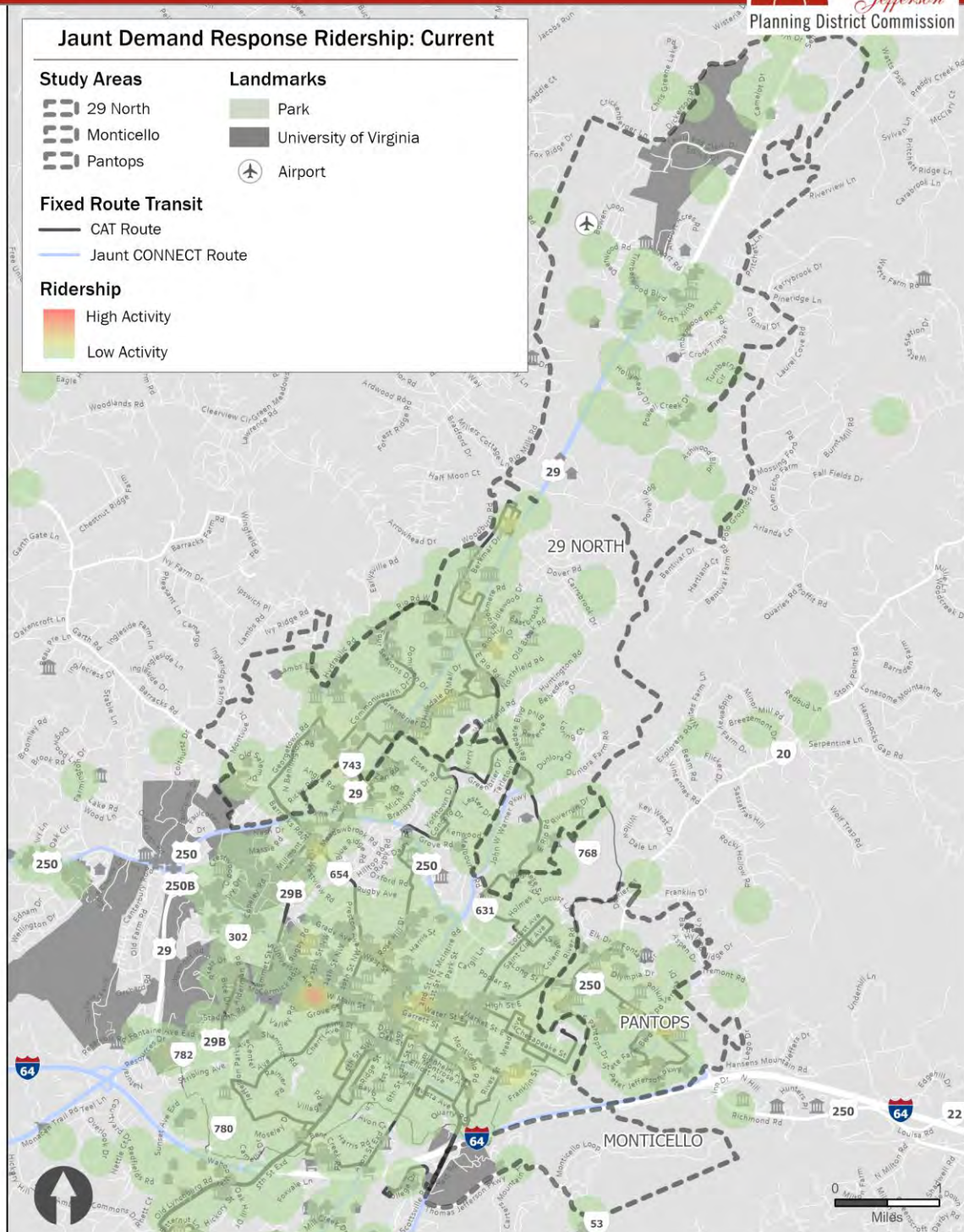
Jaunt Demand Response | Pre-COVID-19 Ridership

ALBEMARLE COUNTY TRANSIT EXPANSION STUDY



Jaunt Demand Response | Current Ridership

ALBEMARLE COUNTY TRANSIT EXPANSION STUDY



Public and Stakeholder Outreach

In July 2021, the study team held two public meetings and three stakeholder meetings to introduce the Albemarle County Transit Expansion Study, provide an overview of existing conditions as well as the Market Analysis, and collect ideas for transit expansion to and from each study area. Public meetings were publicized via the Albemarle County and project websites; email blasts; and TJPDC social media channels. In addition, for stakeholder meetings, the project Technical Committee assisted in identifying key community members in each study area.

While stakeholder meetings were held for each of the three study areas, given the nature of Monticello as a historical site rather than residential or commercial area, the project team held public meetings for the US-29 North and Pantops study areas only. Each meeting included a review of the project background, goals, and study approach. Participants were briefed on the results of the Market Analysis (including Transit Potential and Transit Need), and the Service Analysis (CAT's proposed service changes, independent of the study). By study area and key theme, this section summarizes feedback received at public and stakeholder meetings.

US-29 North

Areas of Future Growth and Development

US-29 North meeting participants listed the following key areas for future growth and development along the corridor:

- Seminole Square Shopping Center and the area surrounding the former K-Mart site.
 - Virginia Department of Transportation (VDOT) has committed to building a pedestrian and bicycle bridge that would connect Stonefield to the K-Mart site.
- Charlottesville Albemarle Airport (CHO).
- North Fork – A UVA Discovery Park.
 - North Fork has ongoing development and is pursuing residential zoning, a portion of which will be affordable housing.
- Hollymead Town Center.

Areas Warranting Transit Service

While the Service Analysis identified strengths and weaknesses of current CAT and Jaunt services that operate in the study area, meeting participants provided the following list of currently-unserved areas that should receive transit service:

- Albemarle High School.
 - Participants considered the potential of connecting North Fork with Albemarle High School, for students with internships.
- Boys and Girls Club of Central Virginia.
- Loaves & Fishes Food Pantry
 - Given that users would likely need to carry large baskets of food, and that the site has specific hours, this site may be best served by microtransit. However, Albemarle County has estimated a cost of \$600,000 to move a bus route two blocks out of the current alignment to reach Loaves & Fishes.
- The employment center located at the old Comdial building (just off Greenbriar Drive and US-29, behind Commonwealth Drive.
- The Center at Belvedere.

- The proposed CAT Route 11 would serve The Center at Belvedere, but only in one direction due to the lack of a signal at Rio Road and Belvedere Boulevard.
- The Center at Belvedere community has cited low frequency and inconvenient service as barriers to using transit service, particularly for traveling downtown or to and from Fashion Square Mall.
- Ivy Creek Natural Area.
 - Green areas in the community such as Ivy Creek are currently mainly only accessible by car.
- Charlottesville Albemarle Airport (CHO).
 - In the past, North Fork funded a Jaunt pilot service between North Fork and UVA and received public feedback to add an airport connection.

Transit Considerations

Participants in both the public and stakeholder meetings offered ideas of what the study team should consider when designing transit recommendations, including:

- Operate transit along Berkmar Drive, a road parallel to US-29 that runs from Sam's Club to Hollymead Town Center.
- Operate transit along the Lewis and Clark Drive extension, which opened in October 2020. This road created a new entrance for North Fork at Airport Road and connects to US-29.
- Consider new Park and Ride Lots in the northern part of the study area, given that commuters from outlying areas of and outside of Albemarle County might be able to take advantage of fixed-route transit if such connections were available.
- Consider development of a circulator route between Forest Lakes, National Ground Intelligence Center (NGIC), Rivanna Station, North Fork, and Hollymead Town Center that offers transfers to a route going into Charlottesville.
- Convert Fashion Square Mall into a transit hub. While Fashion Square Mall lost 80 percent of its tenants during the pandemic, the bus stop located at the site still sees ridership. This is possibly serving as a proxy for nearby multifamily housing, or as a transfer hub, given that it is served by many routes.
- Extend service to CHO and Proffit Road via the following hubs:
 - Martha Jefferson Outpatient Care Center.
 - CVS.
 - Walgreens.
 - Food Lion.

Microtransit

Meeting participants also weighed in on whether microtransit, a non-fixed-route form of transit that offers app-based, demand response service, could provide an upgrade over current service.

Meeting participants raised concern regarding the state of pedestrian infrastructure—including bus shelters, sidewalks, crosswalks, and pedestrian countdown signals—along US-29. However, while these items are essential to fixed-route service, microtransit's curb-to-curb nature allows for service virtually anywhere. Participants also noted that while microtransit may be perceived as an upgrade in several areas, app-based services must be user-friendly so that older residents can learn the technology required.

Pantops

Major Employers

Pantops meeting participants noted that the Department of Motor Vehicles and State Farm Insurance (one of the Pantops' region's largest employers) are each potentially moving office locations. This may change the landscape for proposed transit service in the region.

Stony Point Road (State Route 20)

CAT Route 10 only stops at Pantops Shopping Center in the eastbound direction; perhaps for this reason, the route's Stony Point Road stop has continually seen high ridership, even during the pandemic. CAT's proposal for Route 10 eliminates the Stony Point Road segment, replacing it with bidirectional service to Pantops. Given this development, meeting participants discussed the lack of pedestrian infrastructure in the region, including:

- There is currently no pedestrian crosswalk at US-250 (Richmond Road) and Stony Point Road intersection. While a crosswalk is currently designed, this may not be constructed for several years.
- There is low-income housing on Stony Point Road north of the intersection; strong numbers of people walk down State Route 20 to reach the bus stop or shopping center.

Neighborhoods North of Route 250 Needing Service

The proposed CAT Route 10 would eliminate the single-direction Stony Point Road loop serving Pantops and would no longer provide service north of Richmond Road (US-250). There are several new residential developments north of Richmond Road, in addition to the Cascadia Drive, Verona Drive, and Avemore Apartments, that have significantly high density. These developments should be considered when planning future service.

Senior Apartments on US-250

According to the Pantops Master Plan, Pantops has an older population than the rest of Albemarle County. Given that older adult population density may correlate with a relatively higher propensity to use transit, participants discussed various retirement and assisted living homes in the Pantops study area, such as:

- South of US-250:
 - Park View at South Pantops.
- North of US-250:
 - The Independence.
 - Westminster-Canterbury of the Blue Ridge.
 - Commonwealth Senior Living.

Transit Considerations

Participants in both the public and stakeholder meetings offered suggestions for what the study team should consider when developing recommendations, including:

- It is difficult for buses to stop on US-250 due to traffic and the lack of turn lanes.
- South Pantops Road should be considered for transit operation:
 - The road runs south of and parallel to US-250.
 - The corridor is attracting much new residential development.
 - This road could provide a connection to Sentara Martha Jefferson Hospital and the Carriage Hill Apartments.
 - A bus would likely move faster on South Pantops than on US-250.

- Pantops Shopping Center may support conversion to a transit hub, including provision of infrastructure and transit amenities.

Microtransit

Participants discussed how community members would view microtransit as a recommendation. In general, participants surmised that microtransit would likely be viewed as an upgrade for seniors, many of whom currently use Jaunt demand response services. While seniors would also likely be willing to transfer outside of a microtransit zone via fixed-route services, many of this population subgroup's needs are met locally. Finally, participants noted that it is essential that microtransit vehicles carry wheelchairs.

Monticello

Connections in the Region

The Monticello study area is bounded by Interstate 64, State Route 53 (Thomas Jefferson Parkway), and the Rivanna River. At meetings regarding Monticello, stakeholders noted that Monticello currently only runs shuttles outside of their property on two occasions: the Fourth of July and the Heritage Harvest Festival, when Monticello uses school buses to transport people to and from Piedmont Virginia Community College (PVCC) for overflow parking. Stakeholders discussed the possibility of partnering with other areas or organizations in the region to provide coordinated connections.

Stakeholder meeting participants also discussed the study area boundaries and the importance of connecting Monticello with surrounding attractions, including:

- Saunders-Monticello Trail:
 - Participants suggested that the study team consider transit connections to Saunders-Monticello Trail, a free trail system with two small parking lots at the base of State Routes 53 and 20. One of these parking lots is situated in the Monticello study area, while the other is located just outside the study area (on the other side of State Route 53). The intersection of these two roads is signalized but does not have a crosswalk. Visitors will often hike from the trailhead to the Visitor Center (to use the restroom, purchase a coffee, etc.) and hike back down.
- Kemper Park, which is located just outside of the study area on the other side of State Route 53.
- International Center for Jefferson Studies (IJCS):
 - Monticello operates a scholar's program; participants in the program must often rent vehicles to arrive at the public library and research center, which is located just south of the study area along State Route 53.
- Michie Tavern, a restaurant located just outside of the study area along State Route 53.
- Jefferson Vineyards.
- James Monroe's Highland.
- Carter Mountain, the source of much vehicle traffic during special events.

Monticello Shuttles

Monticello is located on a mountaintop with a parking lot at the Visitor Center. Visitors and employees park in the Visitor Center parking lot and can either walk the half-mile trail to the mountaintop or take the internal shuttle bus. Stakeholders discussed current characteristics of the shuttle system, which consists of up to 12 25-passenger vehicles. Generally, four shuttles run at a time; on busy days, a fifth may be in operation. Shuttles run between the Visitor Center and the mountaintop, with a stop at Thomas Jefferson's gravesite. The loop around the property takes between five and 10 minutes, not accounting for extended drop off or boarding times.

While shuttles normally have space for all visitors, just two of the vehicles in the fleet have wheelchair lifts. A plan is however in place to purchase additional lifts. In addition, the shuttle system has struggled to attract drivers, facing competition from the school system, especially given that Monticello requires drivers to work at least some weekends. Transit recommendations for the region should consider how the future shuttle system will fit.

Autonomous Vehicles

Stakeholders discussed the potential uses of Autonomous Vehicles (AVs) in the Monticello region. With an interest in sustainability, Monticello is interested in the prospect of “greenifying” its fleet. While AVs are an option, there is concern that slow speeds on State Route 53 could irritate passengers and other drivers.

In addition, Monticello has electric vehicle chargers installed, which could ease a transition to AVs. The site may explore working with companies such as Perrone Robotics—which is located in Crozet—to implement AVs on site.

Development of Service Scenarios

To address the service issues and opportunities identified through the market analysis, service analysis, and stakeholder input, the study team developed two preliminary service scenarios for each study area. These are described, by study area, below.

US-29 North

The US-29 North corridor is a fast-growing and destination-rich environment that is ripe for transit expansion. The preliminary scenarios described below are intended both to facilitate both local circulation within the study area, and better connections between the study area and destinations throughout Charlottesville.

Scenario 1

Under Scenario 1, shown in **Figure 32**, a microtransit pilot project is proposed for the study area. Microtransit service would be available in a zone stretching from approximately the North Fork area to the Rivanna River. In addition, trip requests would be permitted to and from the Walmart at Seminole Trail and Hilton Heights Road, in order to facilitate connections to the CAT fixed-route network. The CAT network shown in **Figure 32**, reflects the changes currently being proposed by CAT staff, rather than the existing fixed-route network. Among the changes to the CAT network currently being proposed, is Route 7 service to Walmart on Seminole Drive, rather than the current Route 5.

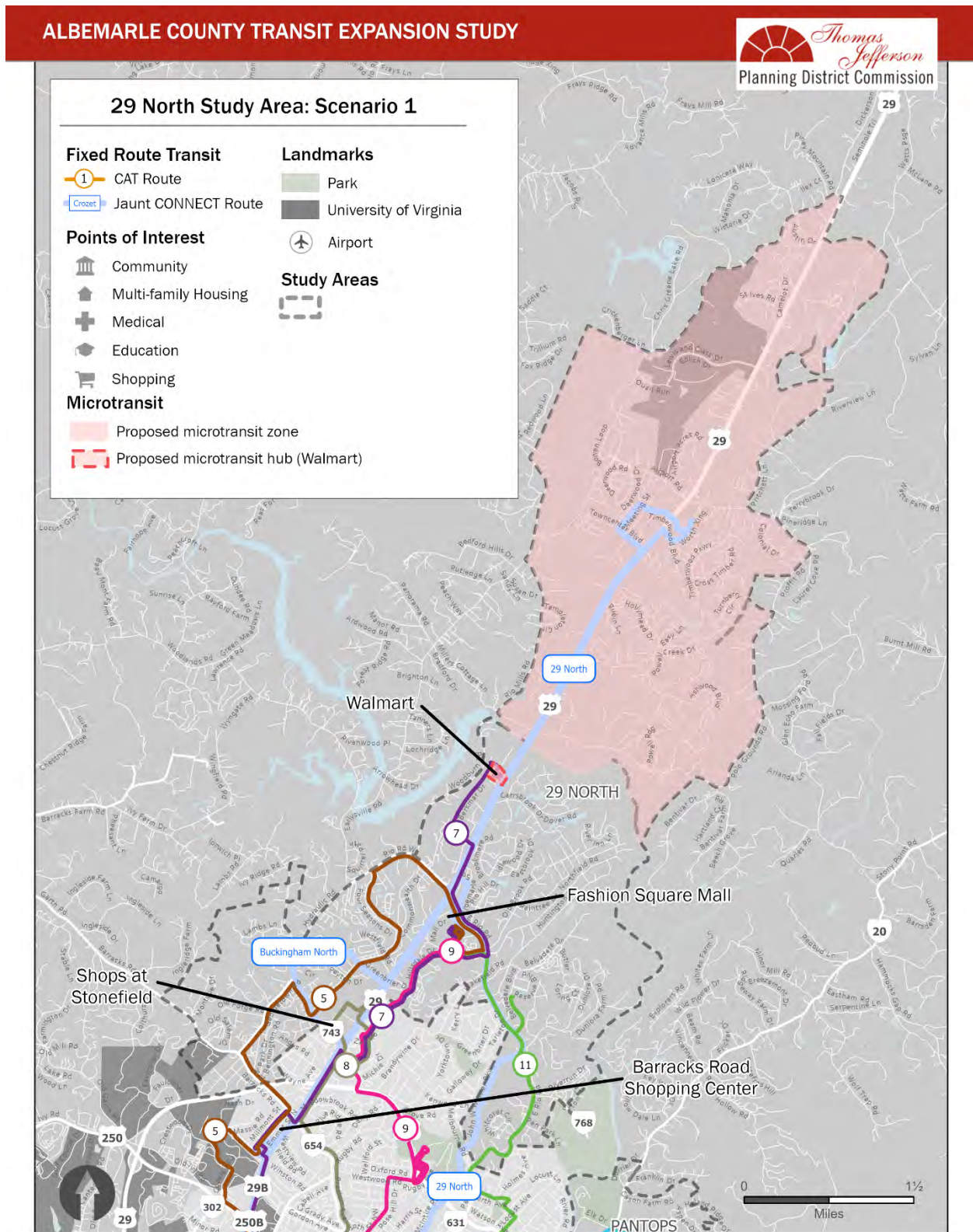
The proposed microtransit service characteristics for Scenario 1 include the following:

- Two vehicles operating concurrently.
- Service available between 6:00 a.m. – 9:00 p.m., initially weekdays only.
- CAT connection opportunities available at Walmart on Seminole Trail.
- Jaunt connection opportunities at Food Lion Hollymead, Lockwood Dr. at Abbington Place Plaza, and Towncenter Dr. at Community St.

The projected key performance indicators for the proposed microtransit service are:

- Approximately 35 riders per weekday.
- Average wait times of less than 15 minutes.

Figure 32: US-29 North Scenario 1



Scenario 2

Under Scenario 2, shown in **Figure 33**, a larger microtransit zone is proposed than in Scenario 1. In this scenario, microtransit service would extend as far south as Rio Road, with additional out-of-zone trip requests permitted to Fashion Square Mall and/or the Shops at Stonefield retail center. These out of zone destinations are meant to facilitate transfers to CAT routes. Currently, Fashion Square Mall serves as a norther hub for the CAT network, but this function may increasingly shift to The Shops at Stonefield as pedestrian and transit-supportive improvements are completed in the area.

As with Scenario 1, Scenario 2 uses the proposed CAT network as a baseline, rather than the current network. However, unlike Scenario 1, Scenario 2 recommends the elimination of the Jaunt 29 North CONNECT route. This route is proposed for elimination because the extension of microtransit service to Fashion Square Mall would provide transfer opportunities to at least three CAT routes, and by extension dozens of destinations throughout Charlottesville.

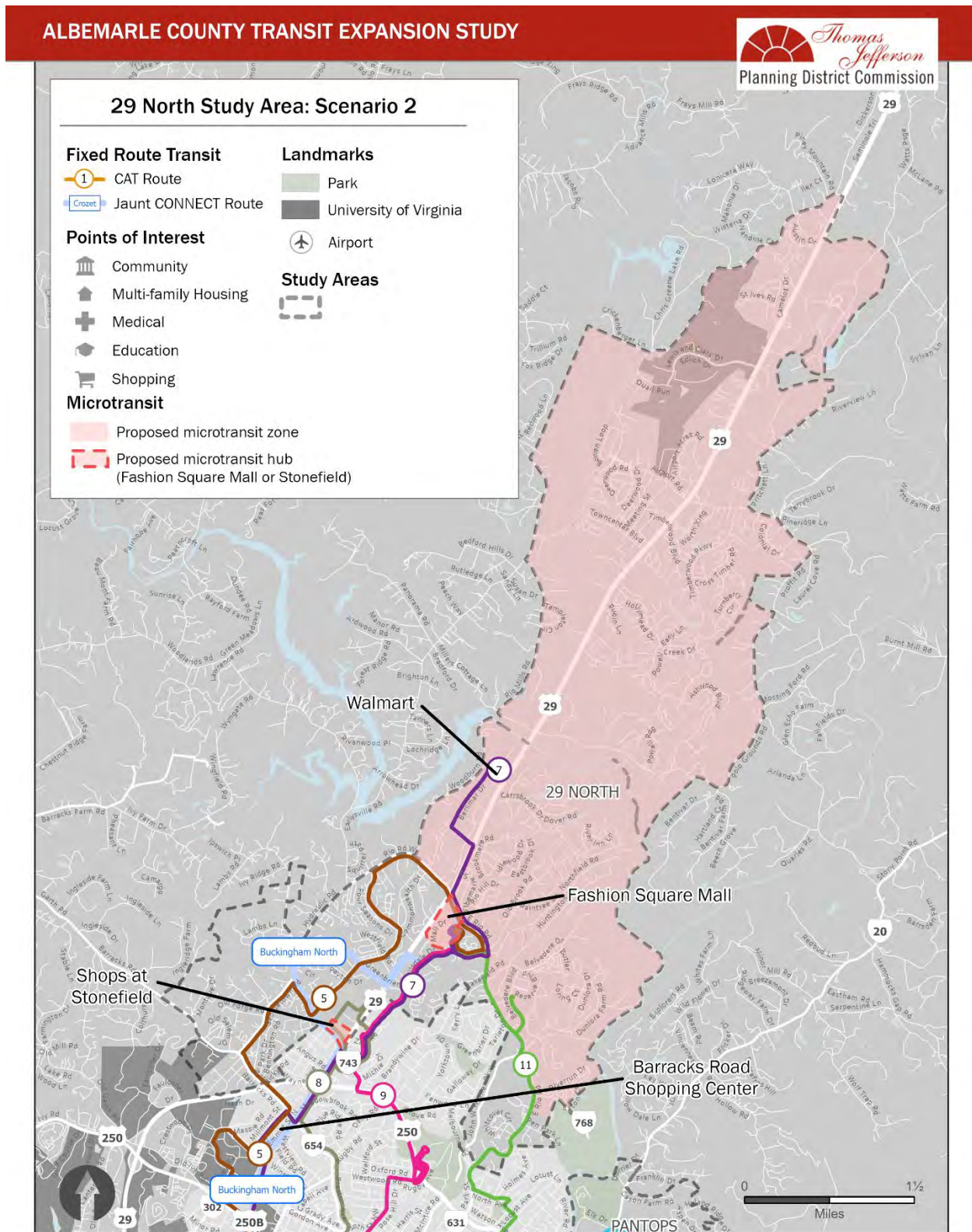
The proposed microtransit service characteristics for Scenario 1 include the following:

- Four vehicles operating concurrently.
- Service available between 6:00 a.m. – 9:00 p.m., initially weekdays only.
- CAT connection opportunities available at Fashion Square Mall (current CAT hub) or the Shops at Stonefield (future CAT hub).

The projected key performance indicators for the proposed microtransit service are:

- Approximately 75 riders per weekday, initially (with the potential to grow to 360 daily riders).
- Average wait times of less than 15 minutes.

Figure 33: US-29 North Scenario 2



Pantops

The Pantops area includes a number of important regional destinations including the Sentara Martha Jefferson Hospital, VA Clinic, and Social Security Administration Office. A significant amount of retail is found south and west of the Richmond Road corridor, which bisects the study area, while new and on-going residential development is transforming the northeastern half of the study area with increased population density. The preliminary scenarios described below are intended to facilitate both local circulation within the study area, and better connections between the study area and destinations throughout Charlottesville.

Scenario 1

Under Scenario 1, shown in **Figure 34**, a new fixed-route service is proposed north and east of Richmond Road, to complement CAT Route 10. The alignment of Route 10 shown in **Figure 34** reflects the service changes currently being proposed by CAT staff, rather than the existing fixed-route network. The proposed new service would link residential neighborhoods and multi-family housing communities such as the Avemore Apartments and others along Cascadia Drive and Verona Drive to retail destinations including the Pantops Shopping Center and the Rivanna Ridge Shopping Center.

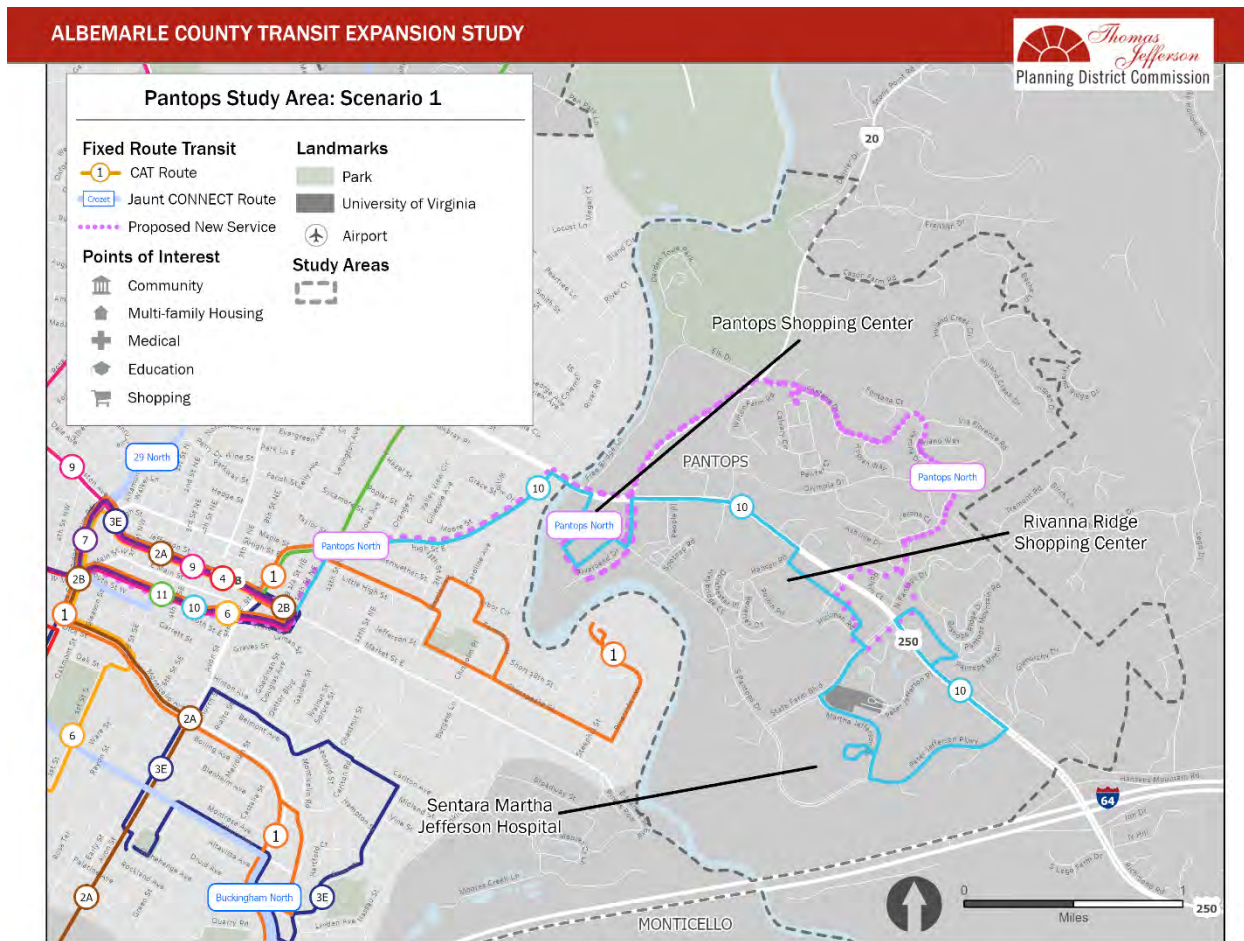
The proposed service characteristics for the fixed-route service in Scenario 1 include the following:

- One additional transit vehicle (compared to the current CAT fixed-route network).
- Service available between 6:00 a.m. – 9:00 p.m., initially weekdays only.
- CAT connection opportunities at Pantops Shopping Center and Rivanna Ridge Shopping Center.

The projected key performance indicators for the proposed fixed-route service are:

- Approximately 20 new riders per weekday, with additional riders shifting from existing CAT services.
- Hourly service frequency.

Figure 34: Pantops Scenario 1



Scenario 2

Under Scenario 2, shown in **Figure 35**, a microtransit pilot project is proposed for the entire Pantops area to complement CAT Route 10. The proposed microtransit service would expand coverage to the growing residential neighborhoods north of Richmond Road, and preserve service along South Pantops Drive, which would be eliminated under the Route 10 service changes currently being considered by CAT.

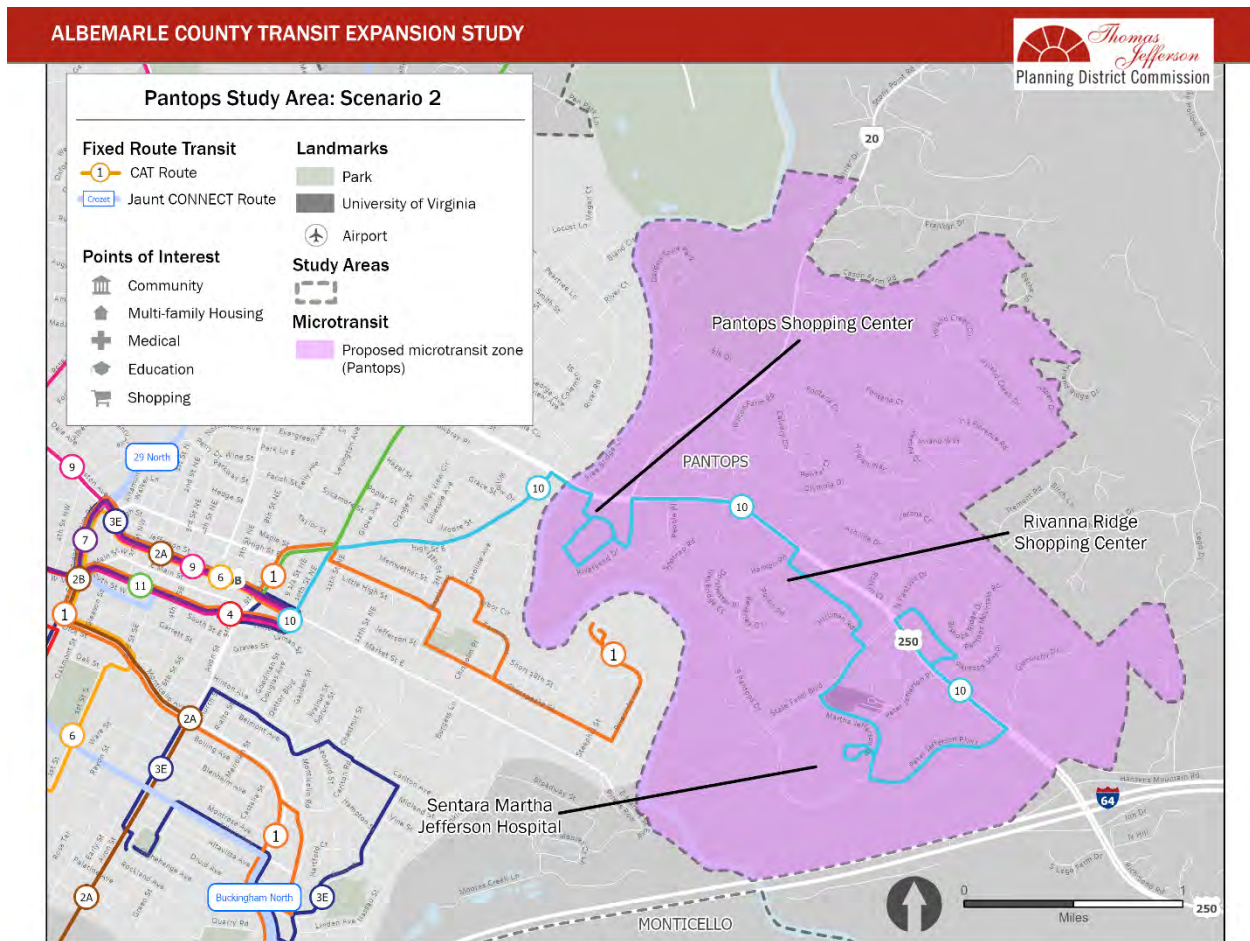
The proposed microtransit service characteristics for Scenario 2 include the following:

- Two vehicles operating concurrently.
- Service available between 6:00 a.m. – 9:00 p.m., initially weekdays only.
- CAT connection opportunities available at Pantops Shopping Center and Rivanna Ridge Shopping Center.

The projected key performance indicators for microtransit service are:

- Approximately 25 riders per weekday, initially (with the potential to grow to 240 daily riders).
- Average wait times of less than 15 minutes.

Figure 35: Pantops Scenario 2



Monticello

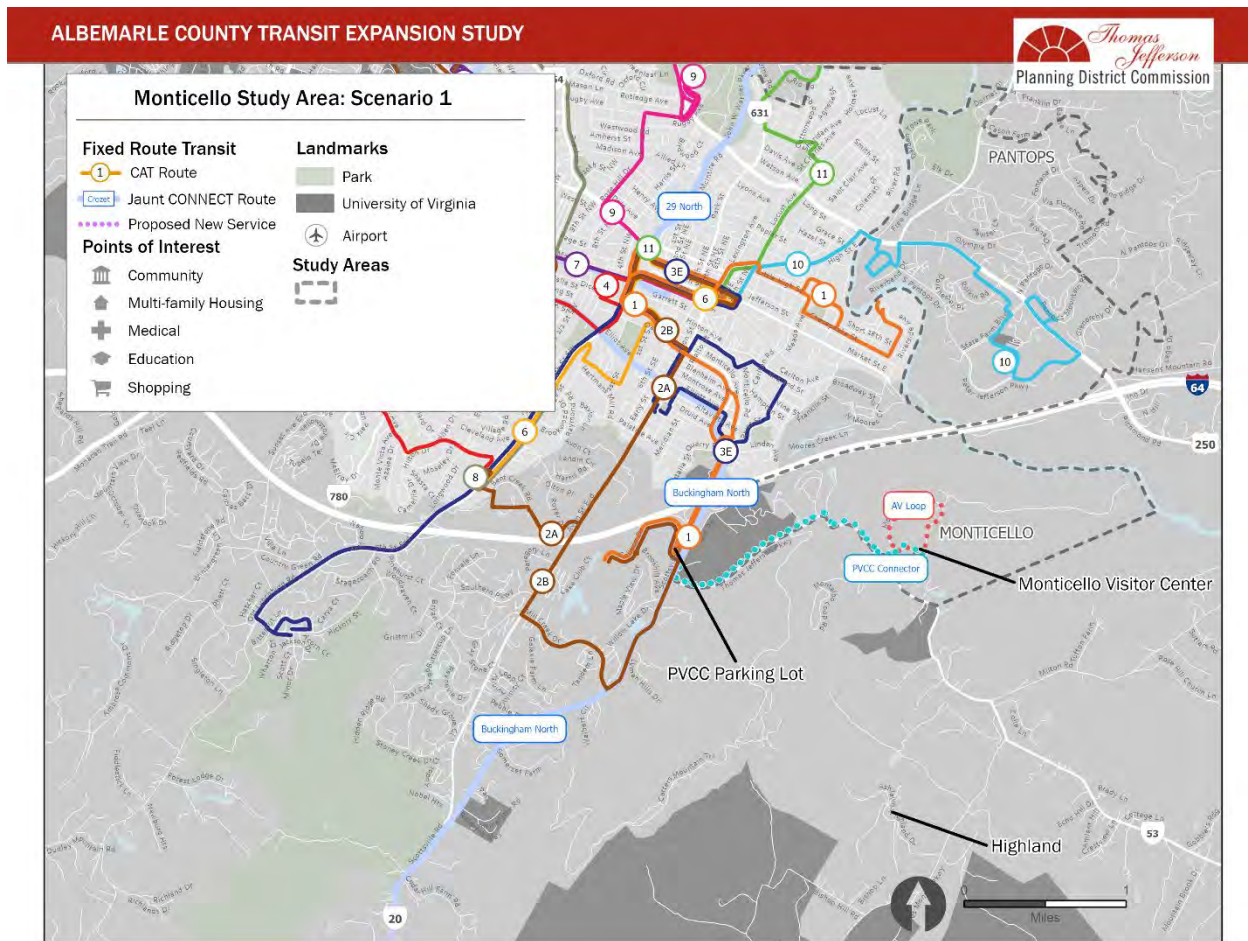
The Monticello area is a key cultural and tourism destination that attracts visitors from around the world. An internal circulator shuttle facilitates connections between the Monticello Visitor Center and main historical site, but there is currently no transit service linking either the Visitor Center or historical site to Charlottesville or the broader region. The preliminary scenarios described below are intended to facilitate both local circulation within the study area, and connections between the study area and destinations throughout Charlottesville.

Scenario 1

Under Scenario 1, shown in **Figure 36**, one of Monticello's internal shuttle vehicles would be used to provide hourly service between the Monticello Visitor Center and the Workforce Services Parking Lot on the campus of Piedmont Virginia Community College (PVCC), approximately two miles away. Providing a link to the PVCC campus would create connection opportunities to the CAT fixed-route network, which could be used by Monticello visitors and employees alike.

Scenario 1 also recommends an autonomous vehicle pilot project aimed at replacing Monticello's internal circulator shuttle with autonomous vehicles. This would help address driver shortages that have impacted the Monticello shuttle operation in recent months. Both the autonomous vehicle shuttle service and the external shuttle connecting to PVCC would be operated by the Monticello historical site.

Figure 36: Monticello Scenario 1



Scenario 2

While microtransit service would be a less effective solution than fixed-route service within Monticello itself, because the site's travel demand is limited to just a couple of key destinations, including Monticello in a larger microtransit zone covering neighborhoods and destinations south of I-64 would provide a public transportation option for accessing the site while also improving overall mobility in a region that is difficult to service effectively with fixed-route service.

Under Scenario 2, shown in **Figure 37**, the Monticello Visitor Center would be included in a microtransit zone covering areas south of I-64, from Monacan Trail to Monticello. The microtransit zone would serve James Monroe's Highland estate in addition to Monticello and would provide increased transit coverage to neighborhoods south of I-64.

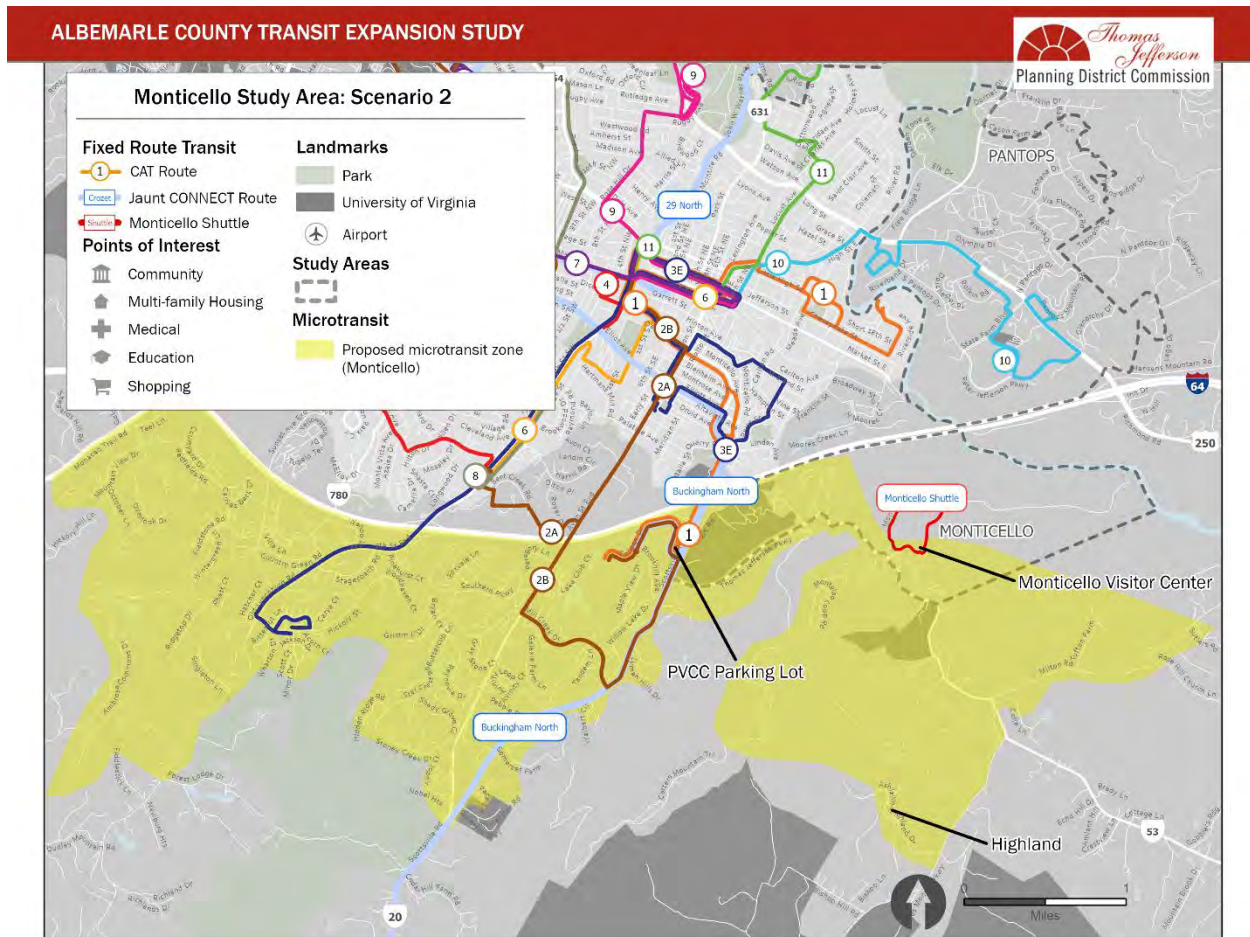
Scenario 2 includes that following microtransit service characteristics:

- Two vehicles operating concurrently.
- Service available between 6:00 a.m. – 9:00 p.m., initially weekdays only.
- CAT connection opportunities available at PVCC Workforce Services Parking Lot.

The projected key performance indicators for microtransit service are:

- Approximately 33 riders per weekday, initially (with the potential to grow to 240 daily riders).
- Average wait times of less than 15 minutes.

Figure 37: Monticello Scenario 2



Public and Stakeholder Reactions to Scenarios

On October 21 and October 22, 2021, the project team held a virtual public meeting and virtual stakeholder meeting, respectively, to present the two preliminary service scenarios developed for each of the three study areas. Meeting participants were encouraged to provide feedback via an online preference survey that was launched the same week. The online survey included an overview of each proposed scenario to allow community members who could not attend the public and stakeholder meetings to become familiar with the scenarios and provide feedback via the survey.

In addition to providing a survey link to all public and stakeholder meeting attendees, who were also encouraged to send the survey to others in their respective networks, the project team created an advertisement to display on monitors at the Downtown Transit Station in Charlottesville. The advertisement included a QR code for riders to scan to easily access the survey, as shown in **Figure 38**. 159 surveys were submitted between October 21st and November 23rd, 2021.


Figure 38: Survey Advertisement Displayed on CAT Screens


Public Survey

Albemarle County Transit Expansion Study

Albemarle County and the Thomas Jefferson Planning District Commission (TJPD) are considering options to improve transit service for current and prospective riders in three key areas of Albemarle County: **The US-29 North corridor, the Pantops area, and Thomas Jefferson's Monticello.**

Your feedback is important to the success of this study! Scan the QR code to the right or follow the link to review potential service improvement scenarios for any or all of the three study areas and provide your feedback in the surveys that follow. Thank you for your participation!





<https://bit.ly/3Bk2KxX>

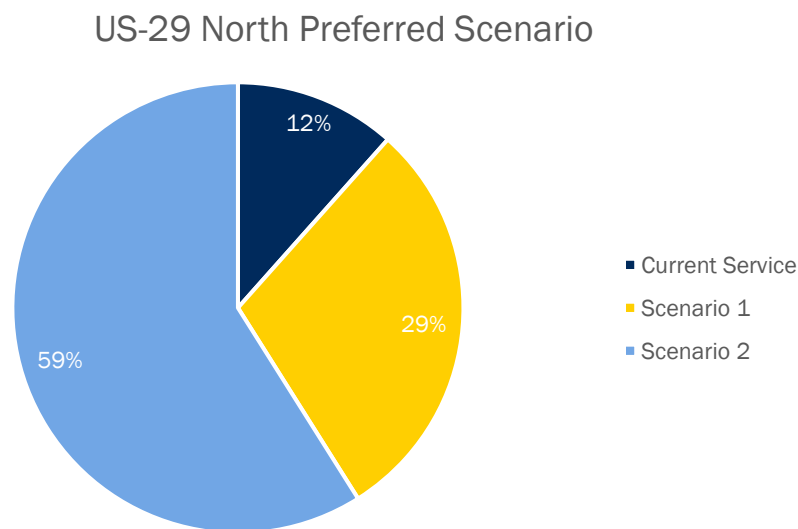
US-29 North Scenarios Feedback

There were 104 responses to the US-29 North portion of the survey. The first question asked respondents to select their preferred scenario. This was followed by open-ended questions asking what respondents like or do not like about each scenario. The breakdown of preferred scenarios and a selection of the open-ended comments, sorted into themes, are provided below.

Preferred Scenario

As shown in **Figure 39**, a majority of respondents, 59 percent, preferred Scenario 2, or the scenario featuring the larger microtransit zone stretching from the North Fork area to Rio Road. Twelve percent of respondents preferred current service, and 29 percent preferred Scenario 1.

Figure 39: US-29 North Preferred Scenario



Comments on Scenarios 1 and 2

Jaunt 29 North CONNECT

Many respondents did not like the fact that Scenario 2 recommended eliminating Jaunt 29 North CONNECT. Some respondents would even like to see increased Jaunt 29 North CONNECT service:

- “I suggest changing Scenario 1 to potentially include a longer service day for the 29-North CONNECT route.”
- “It is desirable to have Jaunt connection service near Hollymead Town Center area.”
- “The 29 North CONNECT service should be maintained. There needs to be single transfer to get into the urban core.”
- “I do not like that Jaunt 29 North CONNECT is eliminated [in Scenario 2]. I like the 29 North CONNECT because it goes directly to UVA, there is no need for transfer to a CAT bus.”

Service Coverage

Respondents noted that Scenario 2 covers more destinations and points of interest than Scenario 1. Some respondents left comments on affordable housing or specific new developments:

- Scenario 1 “does not exhaustively connect the most popular points of interest with high growth areas” of US-29 North.

- Scenario 1 is “inadequate for all the development including affordable housing already built and more under construction on US-29 North.”
- “Scenario 2 adds useful public transportation services to several areas (Woodbrook, Carrsbrook, and Belvedere in particular) that would benefit from those services.”

Microtransit Hub

Many respondents prefer Fashion Square Mall as the microtransit hub because it serves more routes than Walmart and is a destination itself:

- “Walmart doesn't have adequate parking for projected growth. Fashion Square Mall has ample parking, especially for park and ride people.”
- Scenario 2 terminates “microtransit rides at a hub where CAT connections are available, rather than just the one bus line at Walmart. Indeed, given all the space at Fashion Square, you may want to consider constructing some sort of “north hub” connector facility there with restrooms, etc.”

Span

Some respondents would like to see service last longer. Each scenario recommended that microtransit is available from 6:00 a.m. to 9:00 p.m.:

- “Time of service should be expanded to 11:00 p.m.”
- “I would like to see service to midnight.”

Bicycle and Pedestrian Infrastructure

For both scenarios, respondents request more bicycle lanes and better pedestrian infrastructure to more safely cross US-29 North:

- “Any and all options should include a pedestrian bridge crossing 29 at Forest Lakes North and Target. The crossing at Hollymead is insufficient and dangerous.”
- “Please increase bike and pedestrian lanes, to make it easier to cross the street, with either bridges or tunnels, and easier to bike around.”

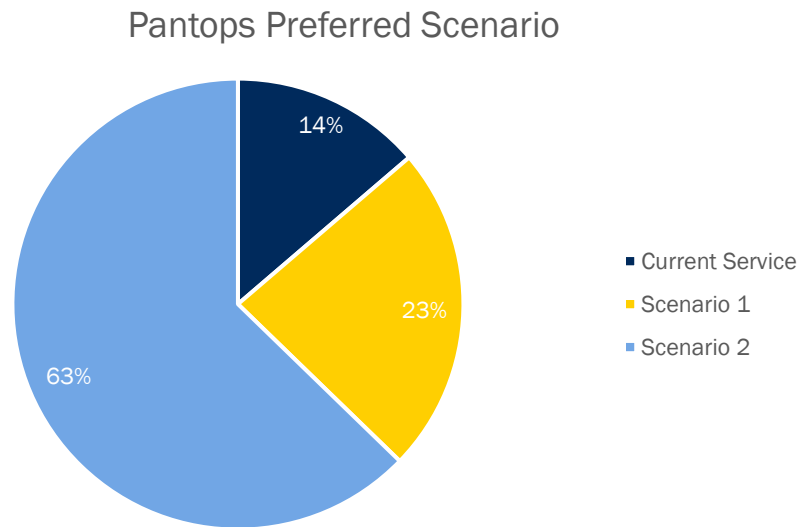
Pantops Scenarios Feedback

There were 54 responses to the Pantops portion of the survey. The first question asked respondents to select their preferred scenario. This was followed by open-ended questions asking what respondents like or do not like about each scenario. The breakdown of preferred scenarios and a selection of the open-ended comments, sorted into themes, are shown below.

Preferred Scenario

As shown in **Figure 40**, a majority of respondents, 63 percent, preferred Scenario 2. Fourteen percent of respondents preferred current service and 23 percent preferred Scenario 1.

Figure 40: Pantops Preferred Scenario



Comments on Scenarios 1 and 2

Span and Frequency

Respondents noted that hourly service in Scenario 1 is not frequent enough, and service should run later in both scenarios:

- “More buses are a good thing, but hourly service is way too infrequent.”
- For both scenarios, “time should be expanded from 6:00 a.m. to 11:00 p.m. instead of 9:00 p.m. The needs of late hour workers should be accommodated.”

Microtransit

Although a majority of respondents preferred Scenario 2, there were some comments in support of fixed-route service as well. However, more commenters indicated that in their view, microtransit will serve Pantops better than fixed-route service:

- Scenario 1 “fits into existing CAT transit service – less complicated than adding a separate service to navigate.”
- Microtransit “makes sense for shopping centers where rider demand probably varies considerably by time of day.”
- “I think microtransit would be more helpful for those with mobility concern who find it difficult to get to a bus stop and who want reliable service for appointments.”

Service Coverage

Respondents appreciate how Scenario 2 covers all of Pantops:

- Scenario 2 would “provide new connectivity across Pantops.”
- Scenario 2 “probably would assist connection between north and south Pantops. This is an urgent need in my opinion, and some expense is warranted to incentivize such connections. This will be increasingly valuable if and when there are needed improvements in the services (restaurants, etc.) offered at Pantops Center and Rivanna Ridge Center.”

- Scenario 2 “checks the coverage box and makes a transit option available to those who want to use it. It could serve intra-Pantops trips better than the fixed-route options.”

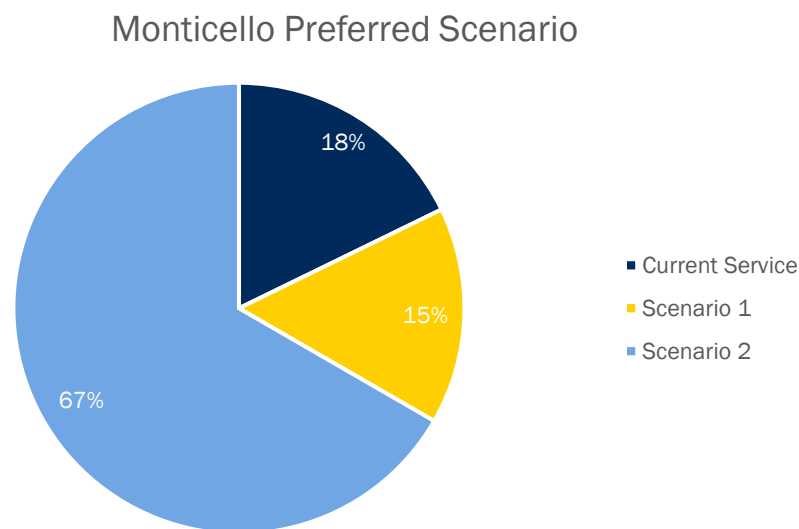
Monticello Scenarios Feedback

There were 51 responses to the Monticello portion of the survey. The first question asked respondents to select their preferred scenario. This was followed by open-ended questions asking what respondents like or do not like about each scenario. The breakdown of preferred scenarios and a selection of the open-ended comments, sorted into themes, are shown below.

Preferred Scenario

As shown in **Figure 41**, most respondents, 67 percent, preferred Scenario 2. Eighteen percent preferred current service, and 15 percent preferred Scenario 1.

Figure 41: Monticello Preferred Scenario



Comments on Scenarios 1 and 2

Service Coverage

Respondents noted that a major difference between Scenarios 1 and 2 is that the first is focused on Monticello while Scenario 2 serves other destinations in the area. Many respondents specifically mentioned James Monroe's Highland:

- “I don't like Scenario 1 because it basically serves only Monticello.”
- “Scenario 2 offers a big boost with transit to another regional destination.”
- “Scenario 2 is much more useful because it serves not only Monticello but also shoppers at Fifth Street Station, commuters, and most of the people who don't live close enough to the existing fixed-route transit services.”
- “I prefer this option because it would offer visitors a more-expansive experience for visitors (and locals, for that matter). Adding Highland to the mix would encourage visitors to stay longer in the area, which might lead to an increase in meals eaten, hotel stays, etc. Highland is an important resource and often overlooked by planners; thank you for this option to increase its visibility and make it more accessible!”

PVCC

Many respondents did not think PVCC is a helpful transfer site. For example, drivers would not park at PVCC and wait for the shuttle rather than driving two miles further to park at Monticello. However, others pointed out the difficulty of driving on Route 53:

- “Nobody would park at PVCC when they can just drive all the way to abundant parking at the site.”
- “It’s difficult to access the PVCC campus via pedestrian and cycling routes for walkers and riders with limited experience navigating high-speed traffic zones with limited to no infrastructure or safety features in the present state.
- “I like the option of convenient parking and a single shuttle driving up 53. The road is treacherous and there are frequent accidents, so reducing the number of vehicles is preferred.”

Tourism

Some of the respondents who preferred current service did not feel that either scenario will help tourists:

- “I would hope for some kind of single trip option to get from downtown to Monticello.”
- A priority should be “providing a clear, well-advertised transit option from centralized locations where tourists may frequent/park (downtown parking garages, hotels, etc.) to the top tourist destinations in our community and looping them to the next site and back to their vehicles, hotel, etc.”

Monticello Guest Transportation Survey

The staff at Monticello also conducted their own survey to understand how tourists travel to Monticello. The survey found that 86 percent of visitors use a personal vehicle to travel to Monticello for their visit and 22 percent of respondents would likely or very likely have been interested in taking a transit alternative to Monticello. Less than two percent of respondents do not have a smartphone, and 85 percent are comfortable using an application similar to Uber or Lyft.

Monticello Staff Transportation Survey

The staff at Monticello conducted an additional survey to understand how their employees travel to Monticello. The survey found that 98 percent of respondents use a personal vehicle to get to work and 29 percent of respondents said they are likely or very likely interested in taking an alternative mode of transportation to Monticello. Respondents work every day of the week: while Tuesday through Friday are the busiest days, 39 percent of respondents work on Saturdays and 27 percent work on Sundays. Less than three percent of respondents do not have a smartphone, and 89 percent are comfortable using an application similar to Uber or Lyft.

Key Take-Aways

Based on the feedback received to the preliminary scenarios, there is a strong interest and preference for microtransit service in all three study areas. Whether the option was a larger microtransit zone versus a smaller one, or fixed-route service versus microtransit, the public and stakeholder feedback was overwhelmingly supportive of as much microtransit service as possible. However, there was also a recognition that microtransit and fixed-route service could be complementary of one another, and opposition to completely eliminating any existing fixed-route services even if microtransit service is introduced in a study area.

Final Recommendations

Based on the feedback received online via the preference survey and in person at the public and stakeholder meetings held in October 2021, the study team developed a set of final recommendations for improving and expanding transit service in the three study areas. The recommendations consist of two phases:

- Phase 1 – short-term recommendations that can be funded, initially, through a DRPT Transit Demonstration Project Grant
- Phase 2 – longer-term recommendations that would improve mobility in the three study areas but require additional resources that are not currently available or programmed for in the near-term.

Phase 1 – Short-Term Recommendations

The most immediate way to expand transit service in the urbanized areas of Albemarle County is to introduce microtransit service. Microtransit has the flexibility to reach riders where they are, regardless of the presence or condition of existing pedestrian infrastructure. In addition, microtransit does not require any capital investment beyond vehicles and information technology, so implementation can occur quickly once vehicles become available.

All of the microtransit zones proposed in this study are almost entirely within the Charlottesville-Albemarle County Urbanized Area (the Monticello historical site is outside of the urbanized area). General-purpose public transportation service within the urbanized area has traditionally been provided by CAT. Microtransit is a service intended for the general public, as opposed to specialized service like paratransit that is geared specifically toward residents with disabilities. For these reasons, and others discussed in the **Implementation Funding** section, it is recommended that CAT operate the microtransit services proposed for the urbanized areas of Albemarle County.

US-29 North and Pantops Pilot Zones

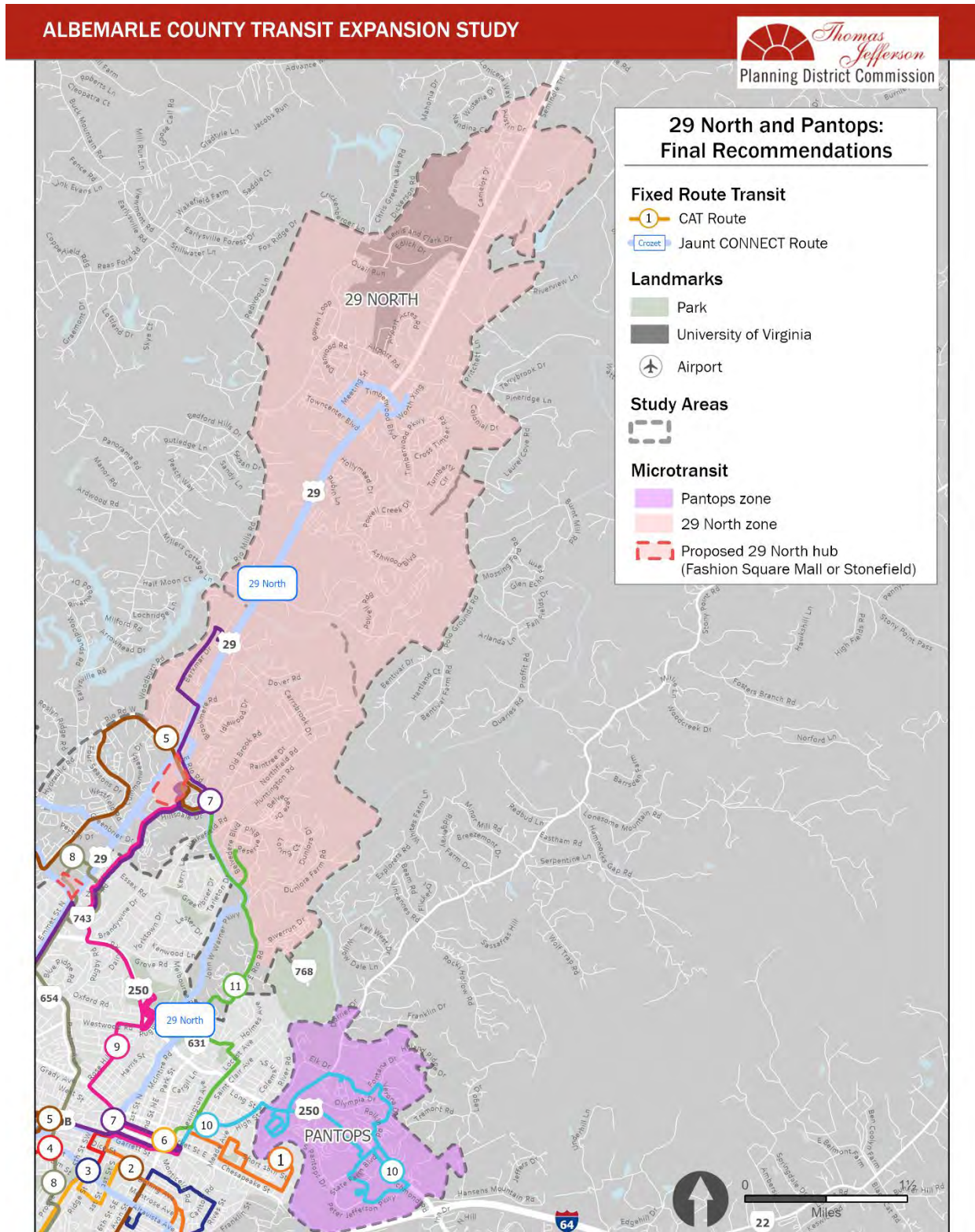
The preferred service scenarios for all three study areas included microtransit service. The success of this service model depends on CAT's ability to offer competitive travel times and wait times (from booking to pick-up). Modeling conducted for this study indicates that 15-minute wait times can be achieved with three vehicles assigned to the preferred US-29 North zone, two vehicles assigned to the preferred Pantops zone, and two additional vehicles assigned to the preferred zone south of I-64 including Monticello. However, given the small size of the Pantops zone (two square miles), one vehicle would be sufficient to maintain 15-minute average wait times most of the time. A shared vehicle with one of the other two zones would be sufficient to ensure competitive wait times for riders in both zones while minimizing capital needs and operating costs. Thus, the minimum number of vehicles required to implement all three zones would be six.

CAT is currently in the process of procuring four 20-passenger body-on frame transit vehicles, which could facilitate the concurrent implementation of the preferred US-29 North and Pantops zones (with one of the US-29 North vehicles shared with the Pantops zone as needed). CAT is also in the possession of additional small transit vehicles that are set to be retired and disposed of in the near-future. Delaying the decommissioning of two of these vehicles would provide necessary spare or back-up vehicles to support the launch of the US-29 North and Pantops microtransit zones.

Prioritizing the US-29 North and Pantops microtransit zones would result in higher ridership and productivity than any other combination of microtransit zones that could be implemented with four vehicles. Launching these first two zones as pilot projects (see **Figure 42**), supported by the DRPT Transit Demonstration Project Grant, will allow CAT and its riders to gain experience with microtransit operations before expanding the model to the Monticello area and other potential zones when resources become available.

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Figure 42: Proposed Microtransit Pilot Zones



Implementation and Operating Costs

There are two primary operating models for microtransit service. The first is a turn-key approach also known as Transportation as a Service (TaaS). This is an operating model in which a contracted provider is responsible for providing and maintaining all elements of the service, including ADA-accessible vehicles, drivers, and supporting technology. The second approach is a technology-only model, also known as Software as a Service (SaaS) – this is a service model where a vendor provides just the technology platform to support app-based direct dispatching, but not the service vehicles or drivers.

For agencies like CAT that have experience in transit service operations and access to vehicles, the Software as a Service model is usually the most cost-effective approach. This approach requires a one-time initiation fee to set up the software and on-vehicle tablets, as well as a recurring monthly fee per vehicle. Additional costs associated with the service are the annual vehicle operating costs and advertising costs needed to inform and educate the community about the new service type. The estimated costs of implementing and operating the US-29 North and Pantops microtransit services are shown in **Table 2**.

Table 2: Cost Associates with Microtransit Implementation and Operations

Line Item	Year 1 Cost	Year 2+ Cost	Notes
Service Initiation Fee	\$50,000	-	Average of multiple providers. Final fee depends on provider and set up options.
Annual Operation Cost (Pantops)	\$425,000	\$425,000	Based on 1 vehicle at \$100/hour
Annual Software Fee (Pantops)	\$7,500	\$7,500	Typical fee was approximately \$600/vehicle/month.
Total Software + Operating Costs (Pantops)	\$432,500	\$432,500	
Annual Operation Cost (US-29 North)	\$1,300,000	\$1,300,000	Based on 3 vehicles at \$100/hour
Annual Software Fee (US-29 North)	\$22,500	\$22,500	Typical fee was approximately \$600/vehicle/month.
Total Software + Operating Costs (US-29 North)	\$1,322,500	\$1,322,500	
Advertising	\$135,000	\$100,000	Based on advertising needs suggested by CAT staff.
TOTAL (Approx.)	\$1,940,000	\$1,855,000	

Implementation Funding

DRPT's Transit Demonstration Project Assistance program was identified as the most likely funding source for at least the first year of service. This program is intended to assist in the development and launch of projects, or pilot programs, for new service or for improvements in technology and innovation. The purpose of the Demonstration Project Assistance program is to "support local efforts to improve transit reliability, connections to housing and employment centers, and transit mobility options." Additional service in Albemarle, especially in the form of microtransit, falls under both "new service" and "technology and innovation" for the purposes of the demonstration project application.

The Transit Demonstration Project Assistance program typically covers the first year of service for selected projects, allowing for buffer time prior to the launch of the service. This buffer time allows for proper training, advertising, and other initialization activities to ensure the success of the service. The Transit Demonstration Project Assistance program requires a 20 percent match from a local organization. The estimated cost of the first year of service, including service initiation fee and additional advertising, is estimated at \$1,940,000. This would make Albemarle County's local match approximately \$390,000.

A variety of factors were considered when determining the most appropriate service provider and grant applicant for the microtransit pilot. These factors, detailed below, included the geography of the area, the readiness of the provider to launch the service, and the long-term options for continuing the service beyond a pilot program. Ultimately, CAT was selected as the recommended provider after discussion with partners, including Albemarle County and DRPT.

Geography of Zones

The two microtransit zones for Phase 1 - Pantops and US-29 North—are both entirely in the urbanized area. CAT is the provider of service in the City of Charlottesville-Albemarle County Urbanized Area and thus is the recipient of FTA 5307 formula funding. Jaunt does provide service in urbanized areas, and is thus eligible for FTA 5307 funds, but the money is funneled through CAT by way of a service agreement. Thus, future operation of these particular microtransit services would be eligible and potentially funded via FTA 5307 funds.

Readiness of Service Provision

CAT indicated that it was in the process of ordering four body-on-chassis vehicles for future unidentified service. These vehicles are one of the preferred options for microtransit service and thus would be available for use when the service is launched. It is estimated that four vehicles will be necessary between the two zones to maintain appropriate wait times (one for Pantops, three for US-29 North). Given a preference for always having at least two vehicles for any microtransit zone, the third vehicle from the US-29 North zone would be used as a "swing" vehicle to support Pantops service when needed.

With CAT already in the process of purchasing vehicles that could be employed for microtransit service, this made the estimated cost of the service cheaper as it only required the procurement of software as a service instead of a full turn-key service. This was another reason CAT was selected as the service provider.

Future Funding Options

Typically, DRPT's expectation is that a new service being funded through a demonstration grant would be continued into future years. This means a future funding strategy needs to be in place prior to securing the demonstration grant. The estimated operating cost for the second year of service is approximately \$1,855,000. At this time, CAT has indicated that this cost would be unlikely to be included in its 5307 funding program beginning in the second year of service. Options for covering and/or offsetting the operation costs for future years include:

- Partnerships between CAT and stakeholders in the county, including Albemarle County, hospitals, developers, major employers, and others in the Pantops and US-29 North communities

- Advertising revenue, which may be specific to the microtransit service/vehicles
- Farebox revenue from the microtransit service; the farebox recovery rate for microtransit service is generally higher than other forms of transit, but it is still variable
- Other funding and grant programs, either offered through the Commonwealth of Virginia or the FTA

Implementation Schedule

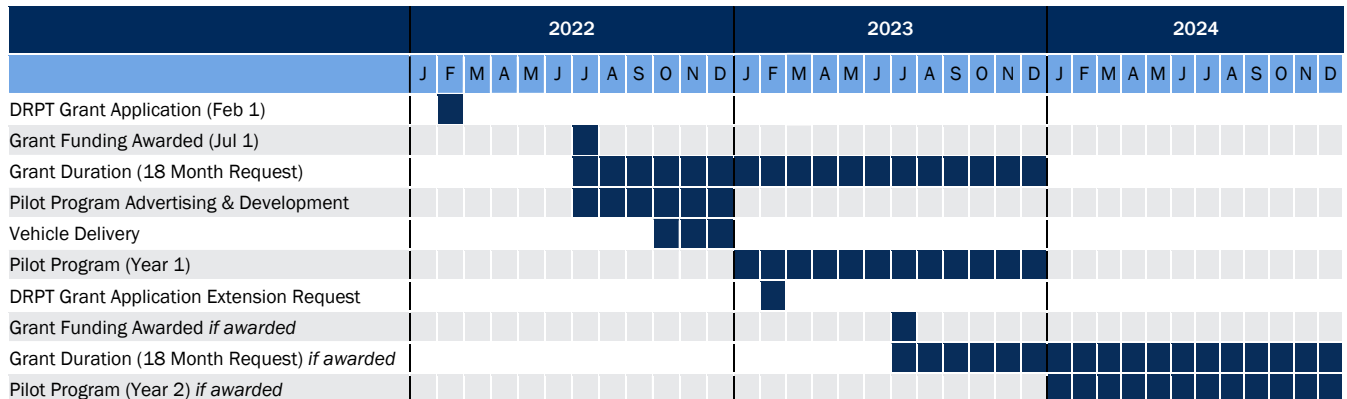
The first step in the implementation of the microtransit service in Pantops and the US-29 North zones is to submit an application for DRPT's Transit Demonstration Project Assistance program. For FY23, the application is due February 1. If awarded, the funds would be available in July 2022. It is recommended that the grant period should be 18 months, which would allow for six months of initialization and 12 months of service.

Figure 43 shows a recommended schedule for the implementation of the microtransit pilot program. For the latter half of 2022 (first half of FY23), activities would include the following:

- Advertising the service—which is new and likely unfamiliar to a majority of potential riders in Albemarle County
- Obtaining the vehicles (estimated for the final quarter of 2022)
- Procuring microtransit software, tablets,
- Software installation, training, and testing

Under this recommended schedule, the service would begin January of 2023 and the pilot program would last through the end of the year.

Figure 43: Recommended Implementation Schedule



Phase 2 – Longer-Term Recommendations

While microtransit service in the US-29 North corridor and Pantops would have the largest and most immediate impact on expanding and improving mobility in the urbanized areas of Albemarle County, additional transit improvement opportunities were identified both through the technical analyses and stakeholder engagement conducted over the course of this study. The following longer-term recommendations should be considered for more detailed study as additional resources become available in the region.

South of I-64 Microtransit Service

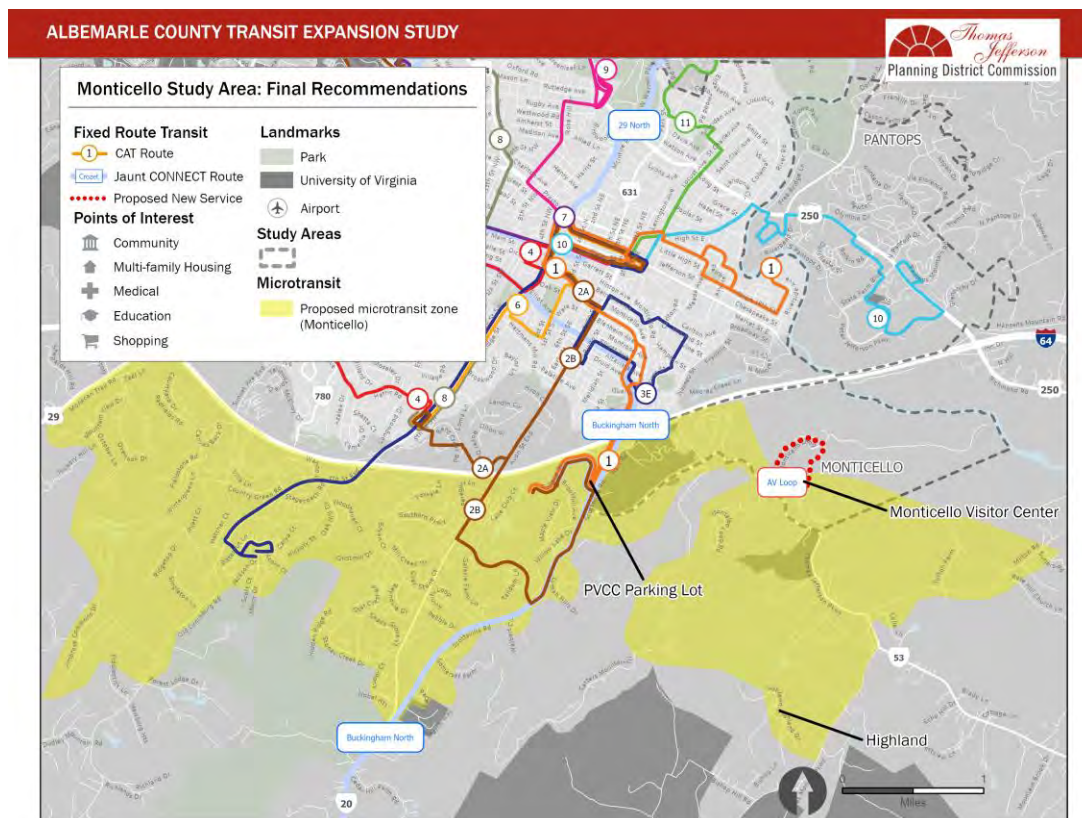
Areas of Albemarle County south of I-64 are generally automobile-oriented and difficult to service by traditional fixed-route service. However, the area east of US-29 and west of the Rivanna River includes a growing population base, a regional high school and community college, and two important cultural/tourism

destinations in Monticello and James Madison's Highland. With two vehicles, microtransit could serve the eight square-mile area highlighted in **Figure 44** with 15-minute average wait times. The estimates operating cost of weekday-only service, operating with two vehicles for 15 hours per day, is approximately \$850,000 annually, including software fees.

Monticello Autonomous Vehicles

The Monticello historical site is currently served by a shuttle system connecting visitors from the Monticello Visitor Center and parking area to Thomas Jefferson's historical home. Over the past two years, Monticello has had some difficulty retaining the staff necessary to support this shuttle operation. A potential solution for this dilemma is to deploy autonomous vehicles on the shuttle route. While autonomous vehicles appear to be on the cusp of main-stream adoption, the industry is still fairly new and somewhat unstable. In fact, over the course of this study a leading manufacturer of autonomous vehicles in the United States ceased operations. Other challenges to autonomous vehicle applications are their relatively slow speeds (up to 35 miles per hour, currently) and limited carrying capacity (8 to 21 passengers). All of these issues may improve in coming years, making autonomous vehicles a viable option for the Monticello shuttle, not only to transport passengers between visitor attractions at Monticello, but also as an attraction for visitors itself. The estimated cost of electric autonomous vehicles is approximately \$400,000 per vehicle with an additional annual support costs of \$8,500 (not including electricity).

Figure 44: Monticello Recommendations



Expanded Commuter Service in the US-29 North Corridor

Jaunt currently provides three commuter trips in the morning and three trips in the afternoon on its 29 CONNECT Route between Hollymead Town Center and key hubs in Charlottesville including UVA, the UVA

Medical Center, and downtown Charlottesville. When presented the option of eliminating this service along with the introduction of microtransit service in the corridor, the response of current riders and other stakeholders was overwhelmingly negative. Instead, many public and stakeholder meeting participants suggested expanding the service to provide more frequent trips along the corridor. The introduction of microtransit service in the corridor could in fact increase demand for commuter service in the corridor as passengers would be able to transfer between the two services. Providing all day fixed-route service along the 29 CONNECT alignment, with 30 minute peak frequencies and 90-minute service in the mid-day would require six peak vehicles and four off-peak vehicles. The estimated annual cost of a weekday-only service with these parameters is approximately \$630,000.