CARTA

Downtown Charleston Transit Study

State of the System Report

January 2024

BCDCOG
BERKELEY-CHARLESTON-DORCHESTER COUNCIL OF GOVERNMENTS

DOWNTOWN CHARLESTON TRANSIT STUDY

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1 EXECUTIVE SUMMARY

The State of the System report provides a starting point for the Downtown Charleston Transit Study through an evaluation of existing services and a detailed understanding of transit markets, demand, and service need in Downtown Charleston. As a first step in understanding the strengths and opportunities associated with the existing system, this document provides an overview of:

- CARTA services, network, and operating characteristics
- Ridership trends
- Collaborations and partnerships with community organizations and institutions
- Transit markets defined according to population, employment, and socioeconomic characteristics as well as activity centers and commute patterns
- How well existing services are matched with demand and community needs

The report concludes with a description of system strengths and opportunities for transit improvements for Downtown Charleston residents and people who travel there for school, work, and as visitors.

2 INTRODUCTION

STUDY PURPOSE

The Berkeley-Charleston-Dorchester Council of Governments (BCDCOG) provides staffing, management, and oversight of Charleston Area Regional Transportation Authority (CARTA) operations. In June 2022, CARTA was awarded Route Planning Restoration Program funding from FTA to develop a downtown restoration plan to improve ridership and service quality post pandemic. The stated goals of this plan, named the *Downtown Charleston Transit Study*, are as follows:

- Develop a strategy for improving transit in the Charleston Peninsula; and
- Build new ridership, regain ridership lost during the COVID-19 pandemic, modernize infrastructure, and enhance service frequency, access reliability, and coverage.

Initiated in January 2023, the *Downtown Charleston Transit Study* is evaluating the needs and opportunities to improve transit service for Downtown transit riders, residents, workers, and visitors. The study is focused on transit service and transit supportive infrastructure in the Charleston Peninsula, including CARTA's Local, Express, and DASH routes. The study's purpose is to identify and program investments to develop a refined downtown bus network and transit priority infrastructure. Study recommendations will align with the planned Lowcountry Rapid Transit modern bus rapid transit system, BCDCOG's *Long Range Transportation Plan* and the City's *Peninsula Plan*.

REPORT ORGANIZATION

This report is one part of the larger planning process. The content of this report will be re-purposed upon its finalization. Critical findings and figures will be placed in the final Downtown Charleston Transit Study report and executive summary, while the remaining detailed findings will become the Downtown Charleston Transit Study appendices.

The State of the System report is divided into the following chapters:

Chapter	Title	What questions does the chapter answer?
3	Transit Market Analysis	▪ Where in Downtown Charleston do potential transit riders live? ▪ Where are the highest need areas for transit in Downtown Charleston? ▪ How will future growth affect transit demand? ▪ What current travel patterns could transit be most effective in providing alternative transportation options?
4	Public Outreach	▪ Who is riding transit in Downtown Charleston? ▪ What improvements would people like to see for CARTA services in Downtown Charleston? ▪ What do CARTA and BCDCOG staff experience operating transit services?
5	Fixed Route Assessment	▪ What local routes currently serve Downtown Charleston? ▪ How much service is provided and how many people ride transit? ▪ What do transfers look like in Downtown Charleston? ▪ What is the Hospitality on Peninsula (HOP) shuttle and where is its Park-and-Ride lot?
6	Bus Supportive Infrastructure	▪ How will the Lowcountry Rapid Transit (LCRT) service affect current fixed routes in Downtown Charleston? ▪ How will planned bicycle and pedestrian facilities affect fixed route transit?
Appendix	Route Profiles	▪ Where is the highest and lowest ridership along each route? ▪ How productive is each route on different service days? ▪ How productive is each route on different service days? ▪ What opportunities and challenges exist for each route?

3 TRANSIT MARKET ANALYSIS

Before analyzing how well CARTA services are performing in Downtown Charleston, we need to understand the underlying market for transit services. This chapter examines three major elements of the market for transit:

- Transit demand based on existing population and employment density;
- Current and future land uses and activity centers for residents and visitors; and
- Existing travel patterns of both transit users and the general population.

By addressing these market needs and tailoring transit services to accommodate the unique characteristics of Downtown Charleston, CARTA can effectively meet the demand and enhance the overall mobility experience for residents and visitors alike.

As in most of the country, the primary way people travel in Downtown Charleston is alone in a private vehicle. According to the 2020 U.S. Census, 65% of Downtown Charleston residents drive alone to work, 9% walk, 8% carpool, 4% bike, 11% work from home, and only 3% take transit. Much of Downtown Charleston is dense and walkable, both supporting the ability to have high frequency transit and making transit an attractive option. This market analysis focuses on understanding where there is demand for public transit, so that improvements can be made in a way that will encourage more people to use transit services.

Population and employment density are the most crucial factors that determine the underlying demand for transit, for the following reasons:

- The travel market is strongly correlated with the density of the region since transportation is often available to individuals who live and/or work within one-quarter mile of a bus stop, one-half mile of a bus rapid transit stop, or one mile of a rail station.
- Transit service levels must be aligned with demand to serve the most passengers. More individuals can reach their destinations faster and more dependably by offering regular service in the busiest regions.
- Transit must be able to transport most people to the locations with the most demand in a cost- and time-competitive way to entice visitors who frequently drive.

DOWNTOWN TRANSIT DEMAND

The market analysis of transit use in Downtown Charleston reveals a demand for efficient bus service. With a dense population and a diverse demographic makeup, including a mix of residents and tourists, there is a significant need for reliable public transportation. The area's high employment density further emphasizes the importance of accessible transit services for commuters, and the presence of neighborhoods with higher poverty rates underscores the importance of affordable and accessible public transportation as a vital lifeline for those who rely on it as their primary mode of travel. This analysis is based on the latest U.S. Census data (2020), which may not include large new developments, such as the Morrison Yard Residences, Magnolia mixed-use development, or developments in the NoMo (north Morrison) neighborhood.

Population Density

Population density is an important indicator for transit demand, since effective transit systems require people living and working within walking distance to stops and stations. Denser areas tend to be more walkable and less automobile-oriented with limited access to free parking. As seen in Figure 1, the population within the Peninsula grew more than 20% from 2010 to 2020. With many historic neighborhoods in the southern Peninsula, many of these new residents are living within new developments in the middle of downtown.

Figure 1 Change in Population

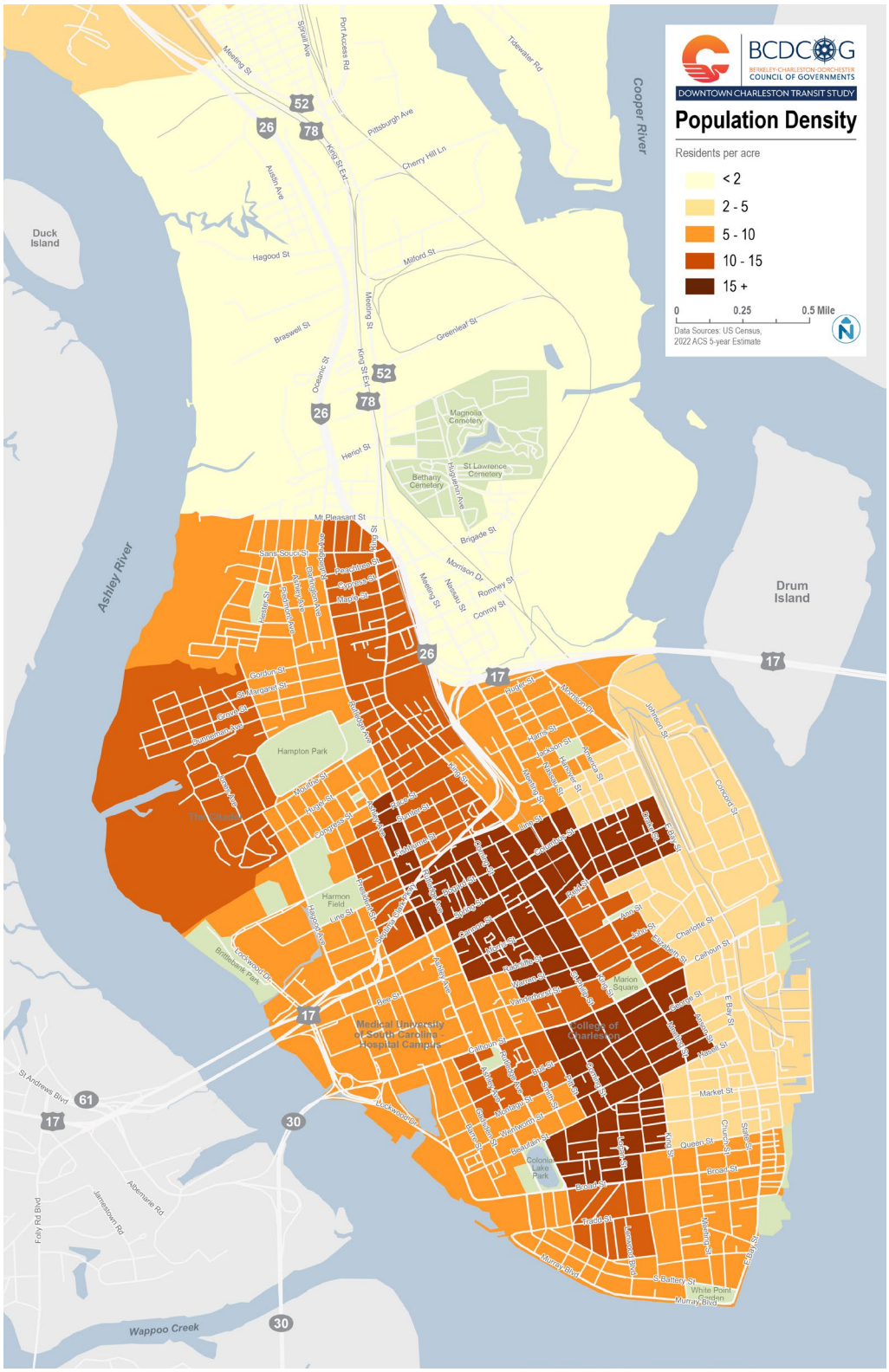
Metric	2010	2020	Percent Change
Total Population	28,409	34,180	20.3%

Source: 2010 & 2020 Decennial Census

In Downtown Charleston, much of the population is concentrated in south of Line Street, as seen in Figure 2. From north to south, the King Street corridor features some of the most densely populated areas of the downtown core, with additional pockets of higher density along Spring Street and Bull Street. Other moderately dense neighborhoods are generally located west of Rutledge Avenue and south of Broad Street.

With mostly industrial uses and open areas in the northern Peninsula, the population density is much lower north of Mt Pleasant Street. Due to how the U.S. Census defines census block groups (a statistical geographic unit used by the census), the Rosemont community in the northern portion of the study area is shown as very low density even though it is a low to moderate density neighborhood. Additionally, some areas of the Peninsula are developing quickly, and new densities may not be captured within the existing data and census block groups. The influence of these new developments on overall transit demand will be captured within the Land Use and Activity Centers section of this chapter.

Figure 2 Population Density



Demographics-Based Transit Propensity

In addition to looking at overall population density, there are segments of the population that have a higher and lower tendency to use transit services. By identifying who these people are and where these populations live, we can prioritize transit services to people who may be more likely to ride transit or are more transit dependent.

Race and Ethnicity

Black and Hispanic populations are especially likely to use public transportation on a regular basis.[1] People of color account for 60% of all transit riders nationwide, with Black riders making up the largest racial group at 34%.

In Downtown Charleston, 64% of residents identify as White with 36% identifying as people of color. Black Charlestonians make up the second largest racial group downtown, at 28% of the population. Hispanic residents make up 3% of the downtown population and 1% identify as Asian.

While there is a mix of residents throughout the Peninsula, the southern part of the Peninsula has a higher concentration of white residents, while the northern part of the Peninsula, north of Septima Clark Parkway, is more racially diverse. In Figure 3[2], Black Charlestonians are concentrated in the northern part of the Peninsula, the East Side, in pockets of the west side, near Gadsden Green Homes, and in the southern tip of the Peninsula near Robert Mills Manor between Beaufain Street and Queen Street.

Hispanic residents are concentrated near the College of Charleston and in the mid-Peninsula region, between Septima Clark Parkway and Mt Pleasant Street, but are also spread out fairly evenly over the east side. There are few clusters of Asian residents, with a small group of Asian residents living in the west side near the MUSC campus.

Household Income

An individual's poverty level also impacts their transit propensity. People who live below the poverty level are more likely to use transit to get to work.

In Downtown Charleston, poverty is most concentrated in the Peninsula's most densely populated black communities, as seen in Figure 4. Poverty rates are highest on the east side, especially between Huger Street and Amherst Street, but on the wealthier west side, poverty rates are still high between Congress Street and Spring Street. These high poverty rate neighborhoods located in the most walkable, densely populated part of the Peninsula present key opportunities for transit access.

Vehicle Availability

Workers who live in households without access to a personal vehicle are more likely than the average worker to use transit to get to work. As seen in Figure 5, zero vehicle households in Charleston are often

[1] *Who relies on public transit in the U.S.*, Pew Research Center

[2] In Figure 3, population is shown as dots throughout the Peninsula. Each dot represents two people, and the dots are randomly distributed throughout the census blocks, which may result in some areas without any housing showing population. As we move through the planning process, we understand where these people are through the land use layers in the Land Use and Activity Centers section.

co-located with high poverty neighborhoods of color in the north Neck, east side, and west side, between Congress Street and Spring Street. The west side and southern tip of the Peninsula feature the fewest zero-vehicle households.

Figure 3 Racial Density

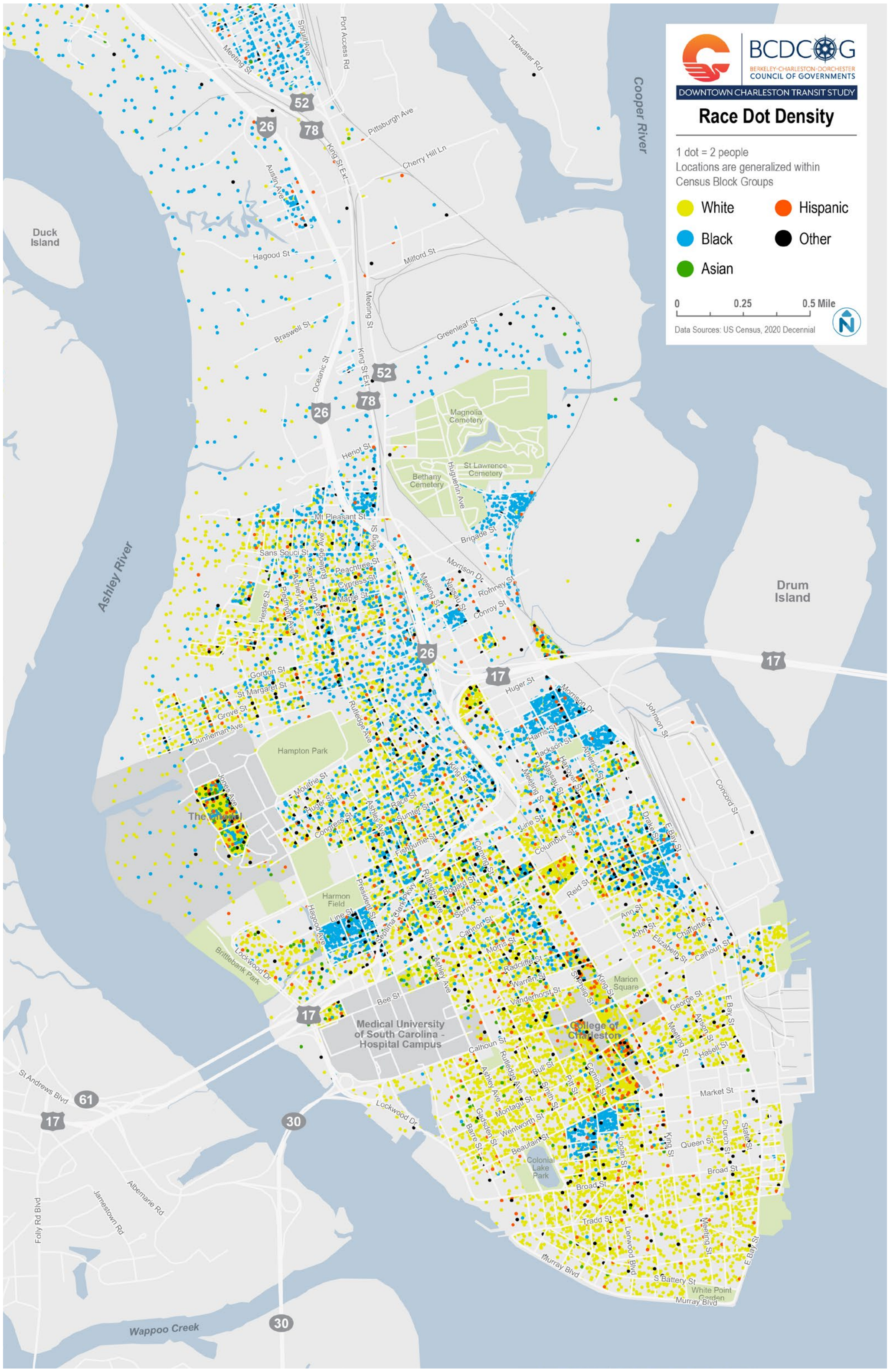


Figure 4 Household Income and Poverty Rate

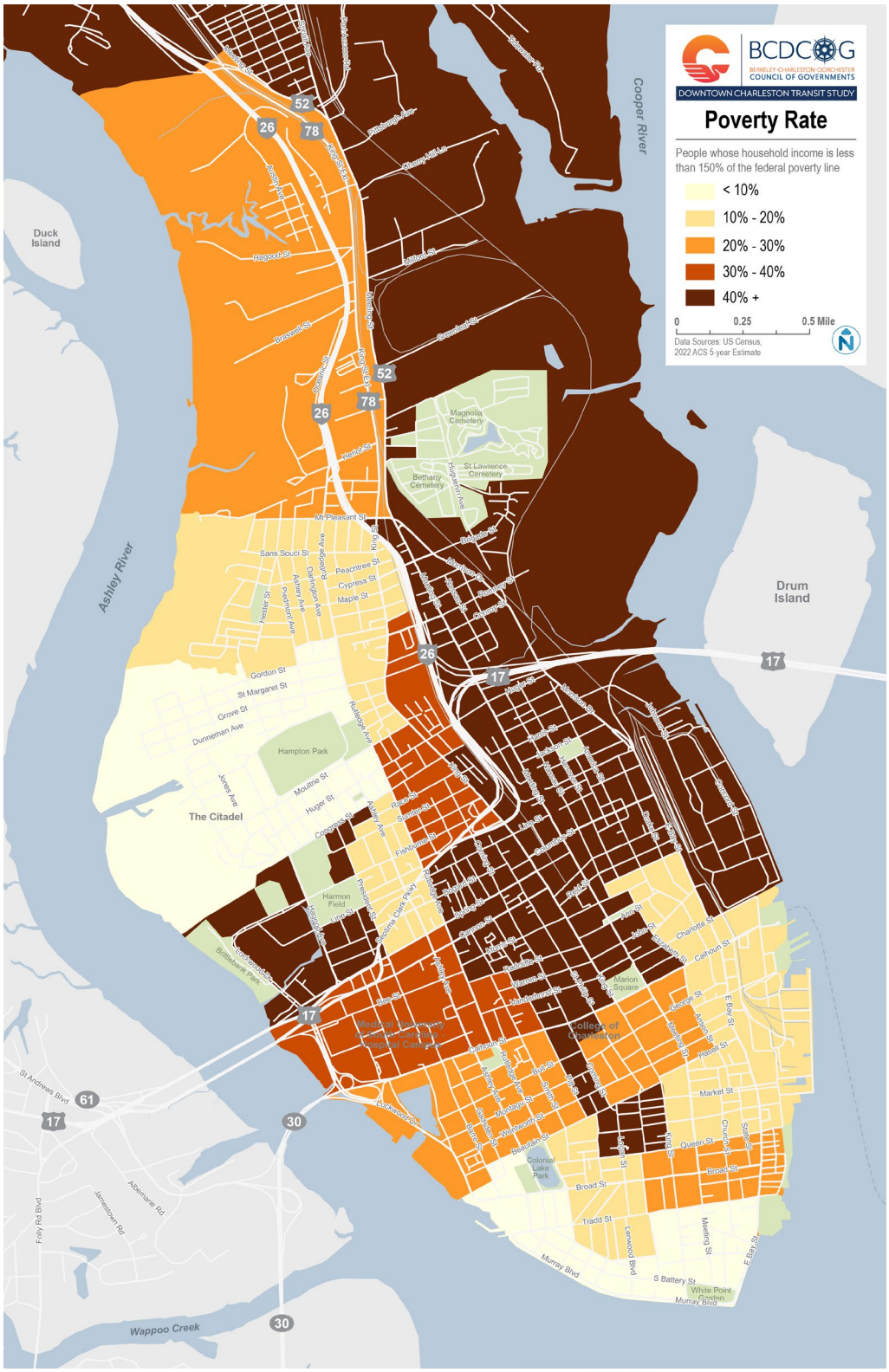
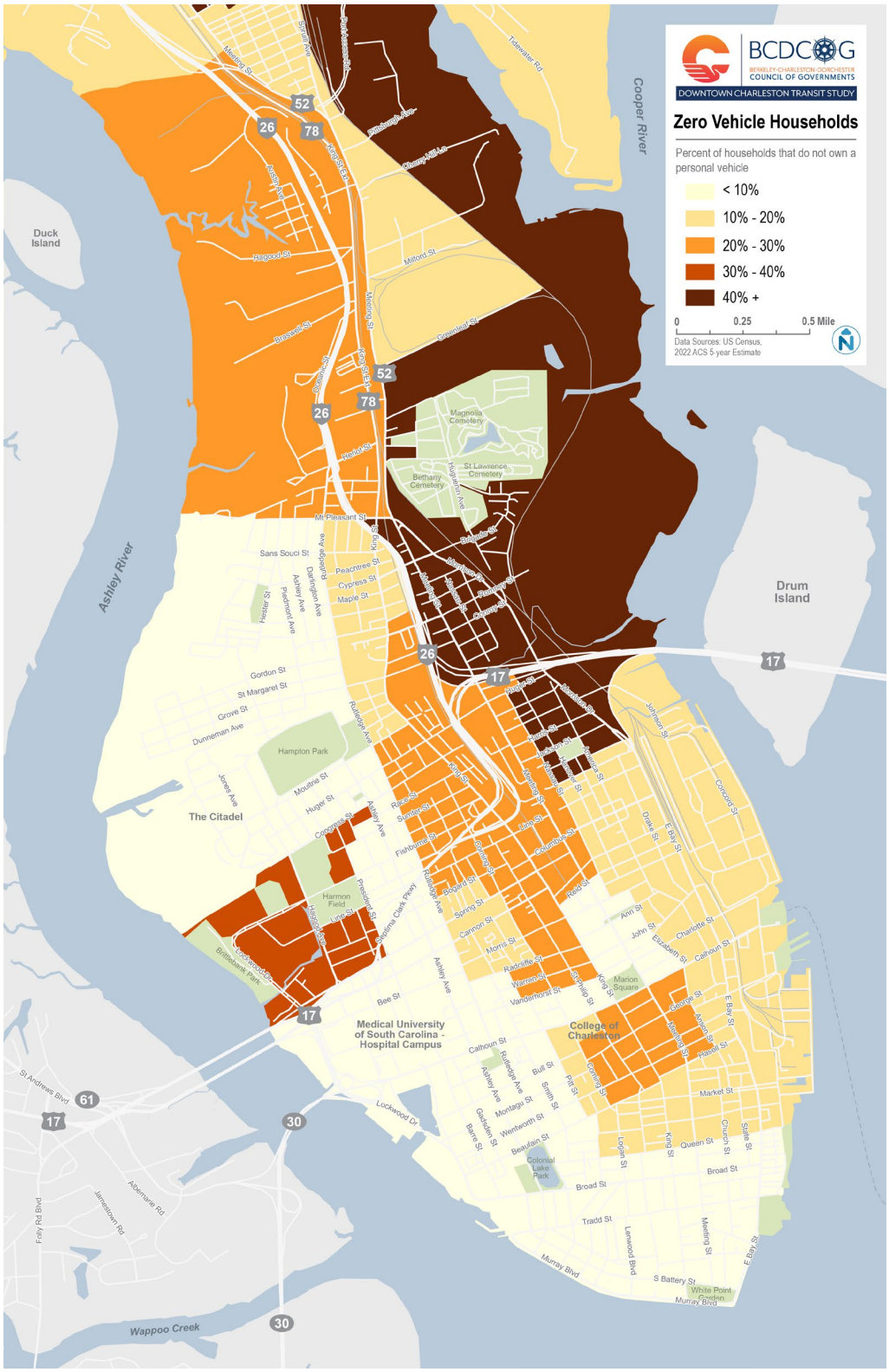


Figure 5 Zero Vehicle Households



Adjusted Population Density

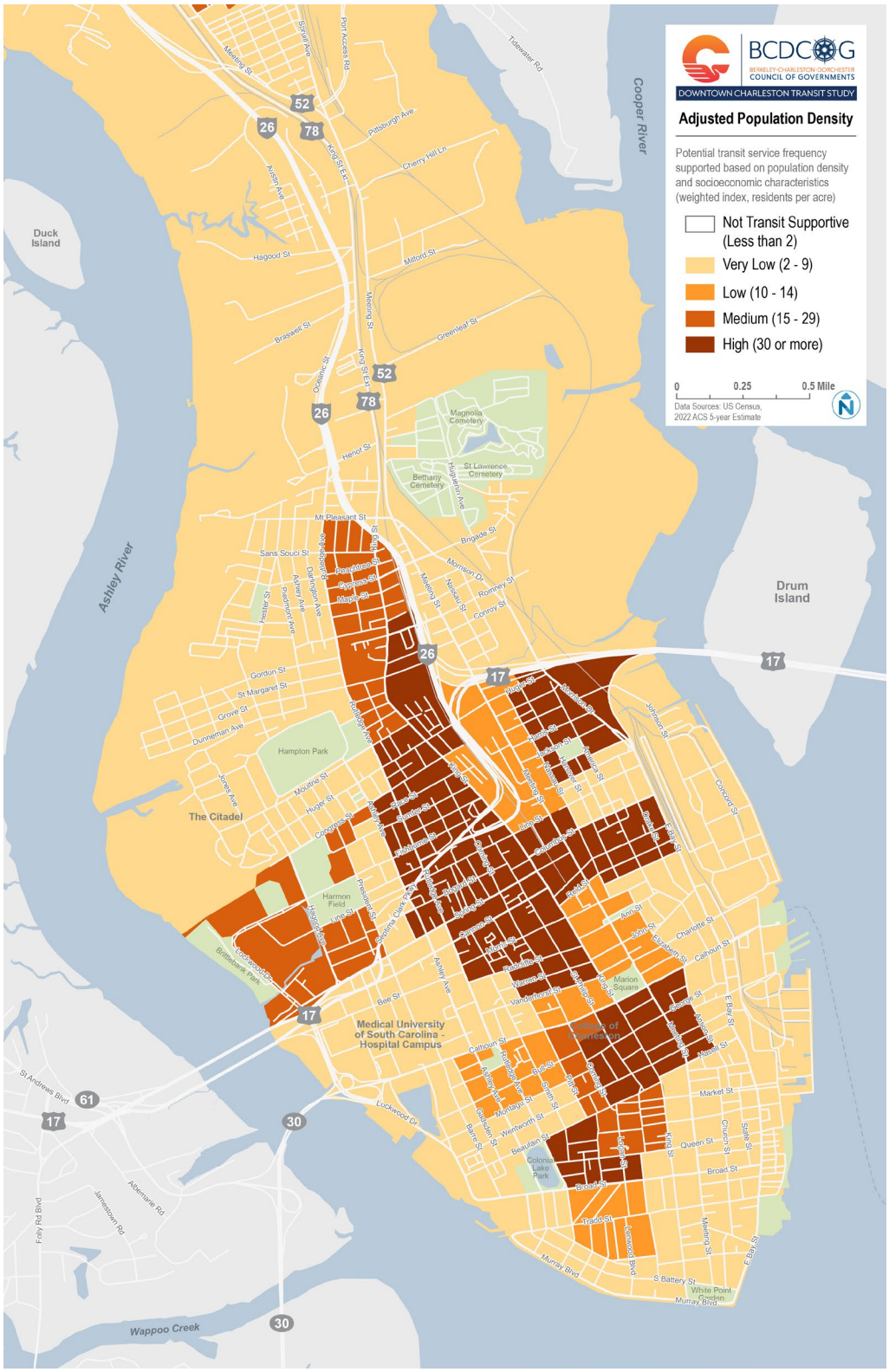
By applying the demographics-based transit propensity adjustment factors on overall population density, we are able to show the adjusted population density for Downtown Charleston. Adjusting the population density towards groups that generally use and need to use transit often intensifies transit demand in urban areas and diminishes demand in rural areas.

As seen in Figure 7, the entire Peninsula has substantial population density for transit. Parts of the north Neck, which are less densely populated than the southern part of the Peninsula, are more prominently shown on the adjusted population density map. Adjusting the population density to account for other demographic factors also reveals deeper pockets of transit supportive neighborhoods along King Street and on the east side.

Figure 6 Charleston Area Transit Propensity Adjustment Factor

Demographic Group	Transit Propensity Factor
Race/Ethnicity	
White, non-Hispanic	0.40
Hispanic or Latino	1.02
Black	2.54
Asian	6.44
Other	0.12
Household Income	
Less than $35,000	2.08
$35,000 to $65,000	0.36
More than $65,000	0.29
Vehicle Availability	
No Vehicles	18.84
1 Vehicle	0.89
2 or More Vehicles	0.35

Figure 7 Adjusted Population Density



Employment Density

Employment density provides a strong indication of transit demand derived from people travelling to and from jobs, and to the services these jobs provide. For example, restaurant and hospital employees may take transit to and from work, and customers and patients may also use the same transit. As seen in Figure 8, jobs are concentrated on the east side, south of Line Street, and in the Medical District, with especially dense employment centers around the College of Charleston, the Charleston City Market, the South Carolina Aquarium, and the southern portion of Meeting Street.

Transit Demand

Different levels of residential and employment density are supportive of different levels of transit. Most of the land area of Downtown Charleston is high density or urban mixed-use. When a significant number of people from the demographic groups described earlier live in clustered areas, the underlying demand for transit in these areas may be higher than is captured by just looking at population density. Conversely, in areas where transit-supportive groups have lower representation, the transit demand may be lower than what is captured purely by population density. As seen in Figure 10, there is high demand for transit south of Huger Street and along King Street to Mt Pleasant Street.

Figure 8 Transit Demand based on Local Land Use

LAND USE			TRANSIT	
Land Use Type	Residents per Acre	Jobs per Acre	Appropriate Types of Transit	Frequency of Service
Downtowns & High Density Corridors	>45	>25	Light Rail, BRT, Rapid Bus, Local Bus	10 mins or better
Urban Mixed-Use	30-45	15-25	BRT, Rapid Bus, Local Bus	10-15 minutes
Neighborhood & Surburban Mixed-Use	15-30	10-15	Local Bus	15-30 minutes
Mixed Neighborhoods	10-15	5-10	Local Bus, Micro-transit	30-60 minutes
Low Density	2-10	2-5	Micro-transit, Rideshare, Volunteer Driver Pgm	60 mins or less or On Demand
Rural	<2	<2	Rideshare, Volunteer Driver Pgm	On Demand

Source: Thresholds based on research by Nelson\Nygaard.

Figure 9 Employment Density

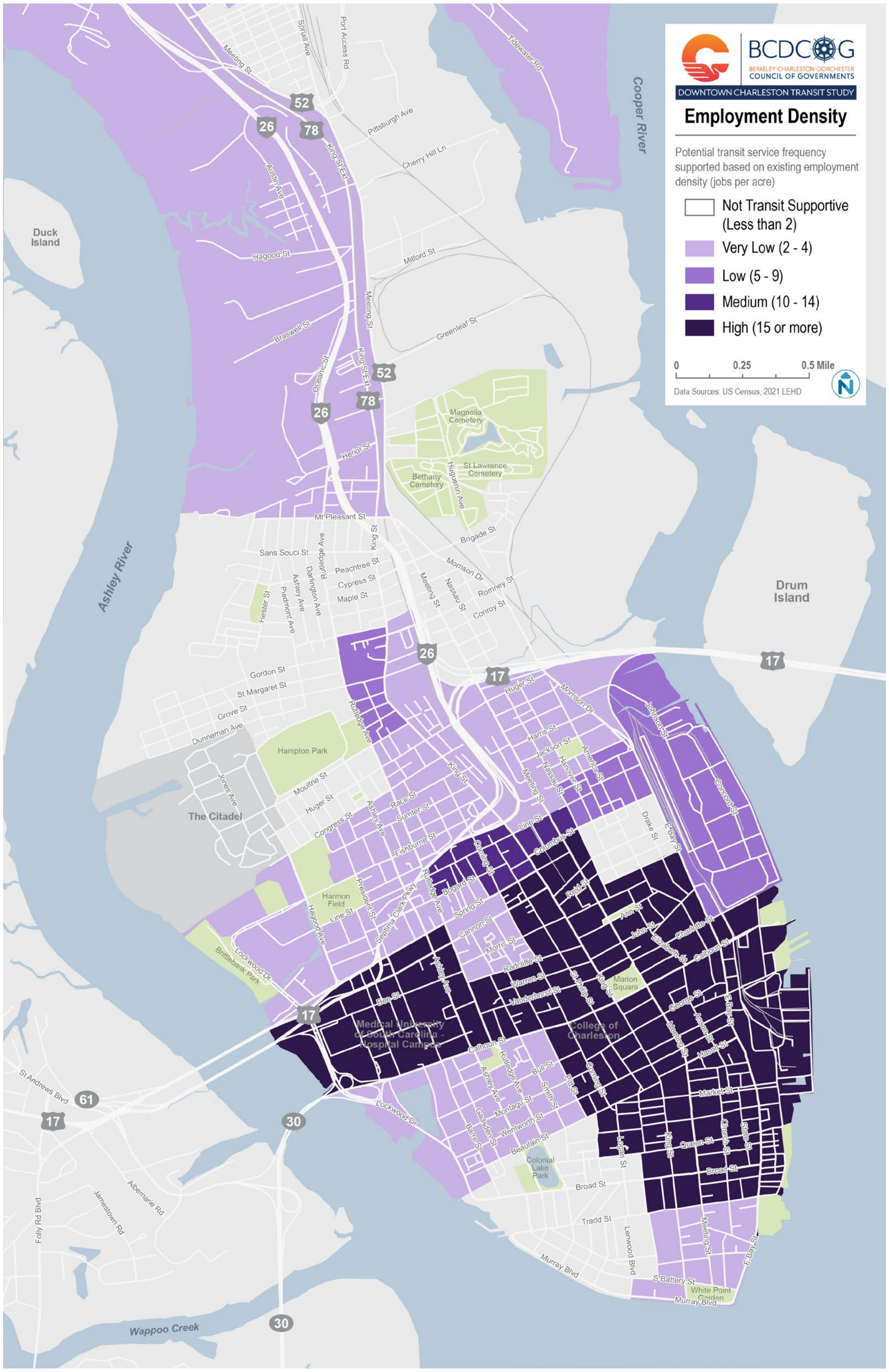
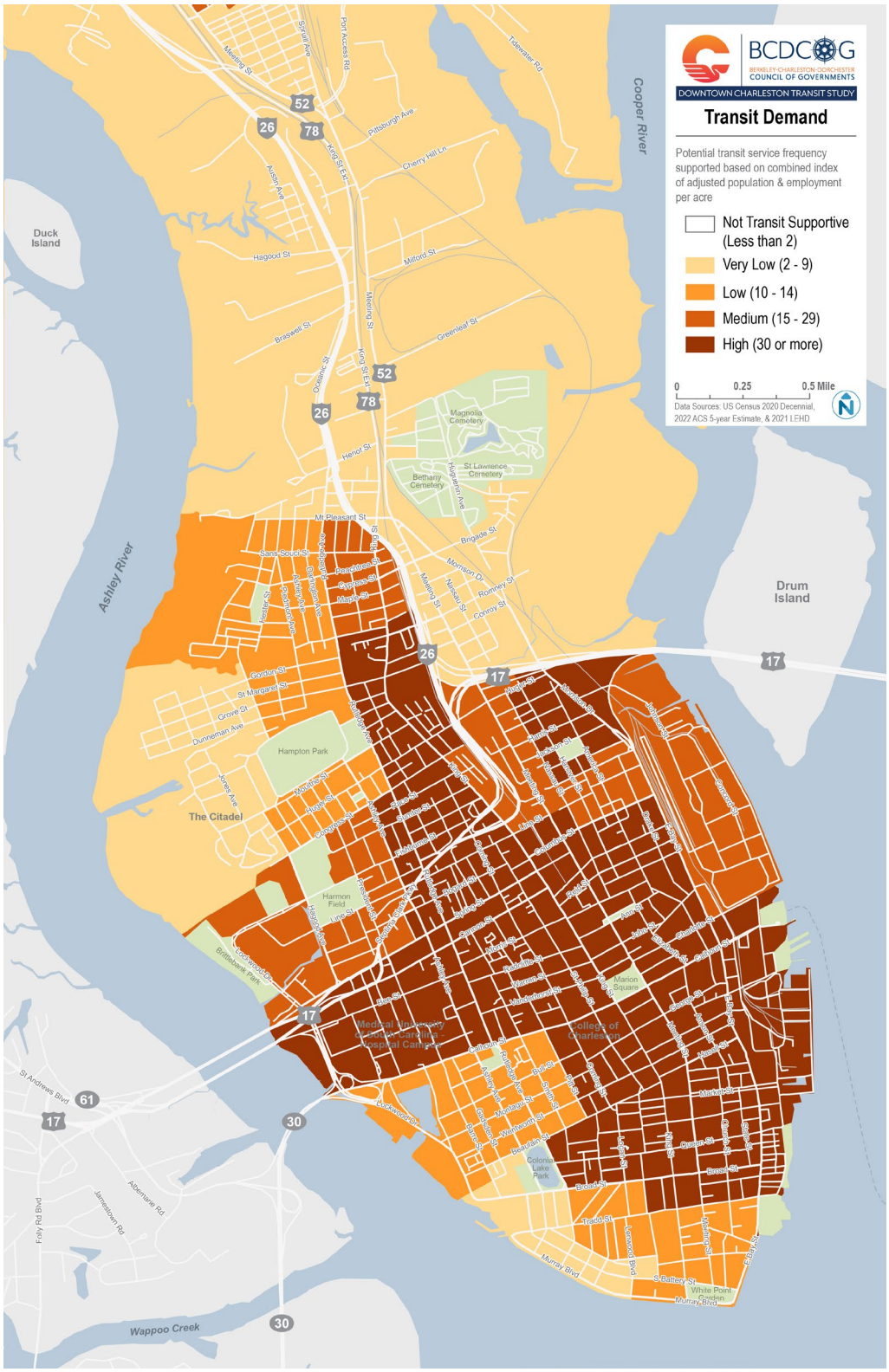


Figure 10 Transit Demand



LAND USE AND ACTIVITY CENTERS

In addition to identifying current population and employment centers through census data, it is necessary to explore the land use patterns that shape travel flows to understand transit patterns in Downtown Charleston. This section will focus on land uses and activity centers that both downtown residents and tourists need to access regularly.

Downtown Resident Needs

Besides individual home and workplace destinations, key trips for Charleston residents include going to banks, grocery stores, hospitals, and schools. These location types provide vital services, and some serve as major employment centers. Of the key employment centers that converge in Downtown Charleston, the most notable include the Medical University of South Carolina (MUSC), Roper St. Francis Healthcare, and College of Charleston. Other employers, such as the Charleston County School District and Publix Supermarkets, have locations within the study area. The largest public and private employers[3] within Charleston County are shown in Figure 11.

Figure 11 Major Employers

Employer Name	Number of Employees	Public/Private	Location
Joint Base Charleston	22,000	Public	North Charleston
Medical University of South Carolina (MUSC)	16,000	Public	Downtown
The Boeing Company	6,000	Private	North Charleston
Roper St. Francis Healthcare	6,465	Private	Multiple Locations
Charleston County School District	5,900	Public	County-wide
Charleston County	2,700	Public	County-wide
Trident Health System	2,600	Private	North Charleston
Walmart	2,300	Private	North Charleston, West Ashley
College of Charleston	2,000	Public	Downtown
City of Charleston	1,700	Public	County-wide
Robert Bosch LLC	1,600	Private	North Charleston
Mercedes-Benz Vans, LLC	1,600	Private	North Charleston
Publix Supermarkets	1,200	Private	Downtown, West Ashley

[3] Charleston County Economic Development Department, 2022

As seen in Figure 12, the locations of key resident services show areas of the Peninsula that demand higher transit access. Below are details about each resident service throughout downtown that influence transit.

Healthcare

Roper St. Francis Healthcare, the Ralph H. Johnson Veterans Administration (VA) Medical Center, and MUSC form a large medical campus on the western shore of the Charleston Peninsula. An estimated 30,000 people work in, study at, or visit the campus daily across all healthcare facilities. [4] As of 2015, the campus is planned as a defined district within the city under the Charleston Peninsula Medical District Project, with the goal of creating walkable green spaces between facilities that encourage physical and mental healing for staff, patients, and visitors.

Many large employers downtown do not follow traditional business hours and will receive flows of workers and visitors throughout the day. This is especially true in the case of Charleston's sizable medical campus: shifts are needed 24 hours each day, not just 9-to-5, and hospital employees are often scheduled on weekends as well as weekdays. As a result, the difference between peak and off-peak transit ridership to the district is less stark than ridership patterns in business districts with higher populations of office workers.

Although the district is distinct in look and purpose, it is far from isolated within the city; beyond the neighboring banks, schools, and grocery stores, there are other attractions within walking distance from hospitals including several hotels, The Citadel's Johnson Hagood Memorial Stadium, and Brittlebank Park. As such, both medical facilities and their neighbors receive flows of visitors throughout the week and weekend.

This district is serviced by existing CARTA buses (Routes 30, 31, 33, 102, 203, 213, XP1, XP2, and XP3) and the planned LCRT route. CARTA service is free for all MUSC students and employees. West Ashley and Downtown Charleston will soon be linked by the Ashley River Crossing, a future bicycle and pedestrian bridge. The campus is also well-connected to West Ashley by Highway 17, to James Island by Highway 30/James Island Expressway, and to North Charleston by Septima P. Clark Parkway. The abundance of high-capacity roads surrounding the campus is designed to accommodate emergency transportation and large commuter flows. Notably, there are 15 parking lots and garages within the MUSC/Roper campus for visitor and employee use, suggesting many visitors and employees opt to travel to the medical district by car. MUSC employees that cancel their parking pass to use CARTA receive 12 free parking day passes through the Cancel for CARTA incentive program. Within the district itself, the MUSC Health Patient Shuttle offers free service to patients.

Grocery Stores

Although grocery stores visits are often chained with other trips, they can also alter travel patterns. Peak grocery store shopping hours overlap with off-peak transit hours, typically weekday late evenings and weekends.

Grocery stores are strongly clustered in the southern portion of the Peninsula and along King Street. These locations align with population and transit density, but northern communities on the Peninsula are

[4] Roper St. Francis Healthcare, 2015

still required to either travel further south into downtown or to North Charleston, where several larger chain grocery stores are located.

Banks

Although ATM locations abound in the downtown area, most central banks are located within the southeast historic district that hosts the city's densest housing alongside tourist accommodations and attractions. Banks and grocery stores are often co-located for ease of shopping.

Schools

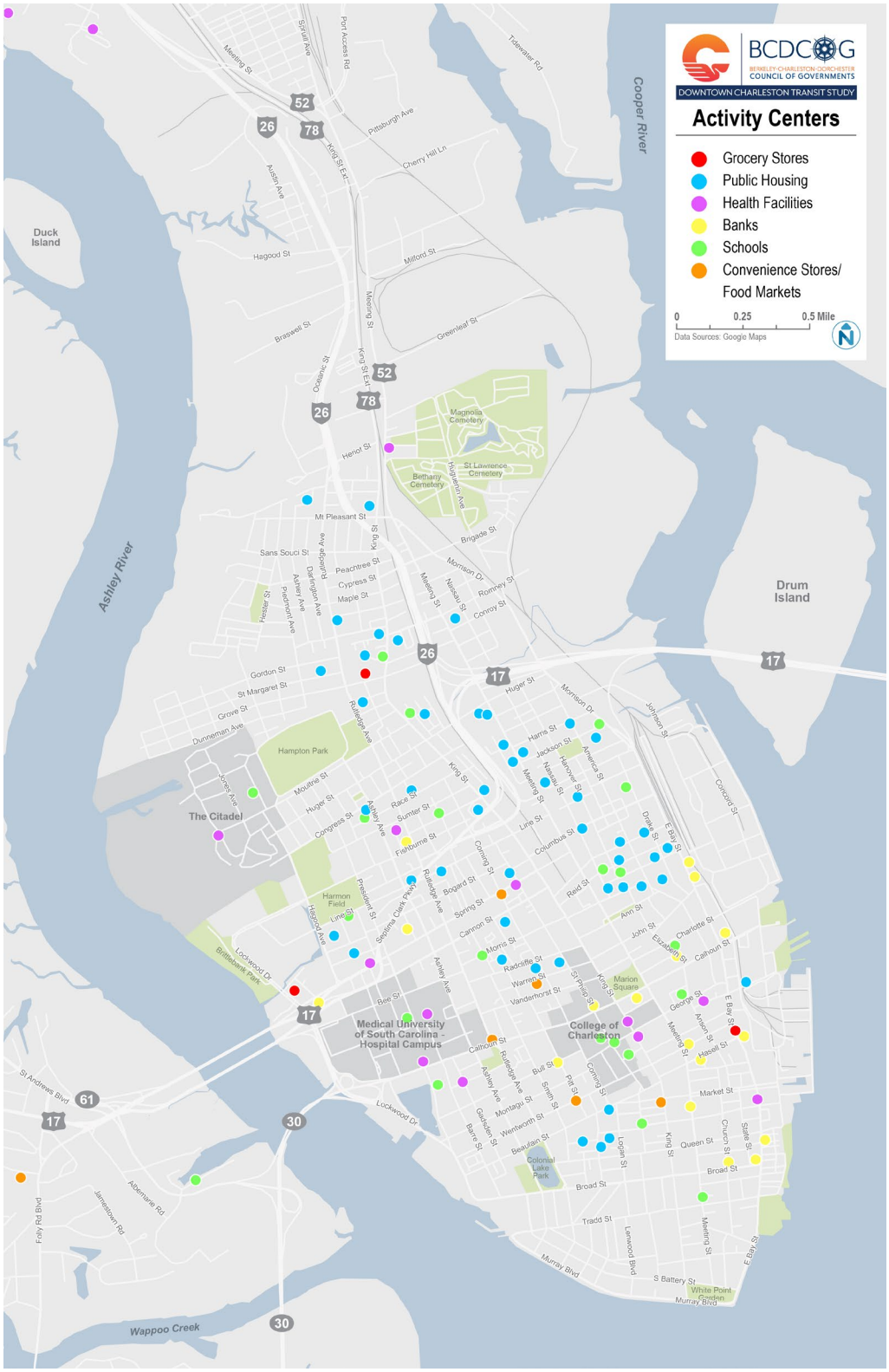
There are several college campuses within Downtown Charleston, notably The Citadel, Trident Tech, College of Charleston, College of Charleston School of Business, Charleston Law School, and MUSC, which is both a hospital network and the state's oldest and largest medical school. The travel dynamics within urban college campuses are broadly understood with a few clear trends emerging across cities and universities. Students take more trips per day overall, often of shorter distances within or just outside campus. Compared to the average working commuter, students are also less likely to own cars given high vehicle maintenance costs and limited campus parking and more likely to rely on active transportation such as bikes, scooters, skateboards and walking for trips within and around campus.

Similar to healthcare facilities, employees of schools, such as the County School District and College of Charleston, also operate on shifted "business" hours. K-12 schools within the district can start as early as 7:25 and end as early as 2:25, with instructional time largely over by 3:30. Most college classes similarly fall between 8 A.M. and 4 P.M., but the flexibility of class schedules means that students and professors will also travel within and beyond campus in that time range.

All campuses are well-serviced by transit networks, though the centrally located College of Charleston and MUSC are more transit accessible than The Citadel campus to the west. For late-night transportation between 11 P.M. and 3 A.M. during the academic year, the College of Charleston also operates the Cougar Shuttle to ensure student safety. This shuttle service is only available to current College of Charleston students and fills the current late night service gap for the demographic most likely to need service at that time. MUSC and College of Charleston students can ride CARTA fare free. Route 210, which serves College of Charleston and East Side, is funded by the College of Charleston.

K-12 schools are distributed throughout the southern Peninsula. Most but not all schools are within walking distance of transit. The Charleston County School District also operates an extensive school bus service to 19,000 kids across 78 schools each year, alleviating transportation burdens for many parents. Registered parents and students within the district also have access to real-time school bus tracking through the First View app, which provides assurance at the level of public fixed route service.

Figure 12 Resident Major Activity Centers



Tourist Considerations

Charleston features a rich tapestry of historical architecture, coastal landscapes, and modern cultural touchstones. Approximately 7.7 million tourists visited in 2022, well above pre-pandemic levels of 2019. Because Charleston has long attracted visitors, the city planning and zoning rules place special emphasis on tourist-facing land uses.

The City of Charleston confines tourist accommodations to its Accommodations Overlay Zone, primarily along Meeting and King streets and within the French Quarter. These limits are set to preserve the City's historic districts and maintain affordability, while still promoting the city's thriving tourism industry. Hotels, inns, motels, Airbnbs, etc. are barred from any area beyond this zone, though small Bed and Breakfasts may apply to the city for special permitting to provide accommodations beyond the zone. Because the vast majority of tourists stay only within the Accommodations Overlay Zone, many tourist transit trips within the city start or end within the bounds of the zone.

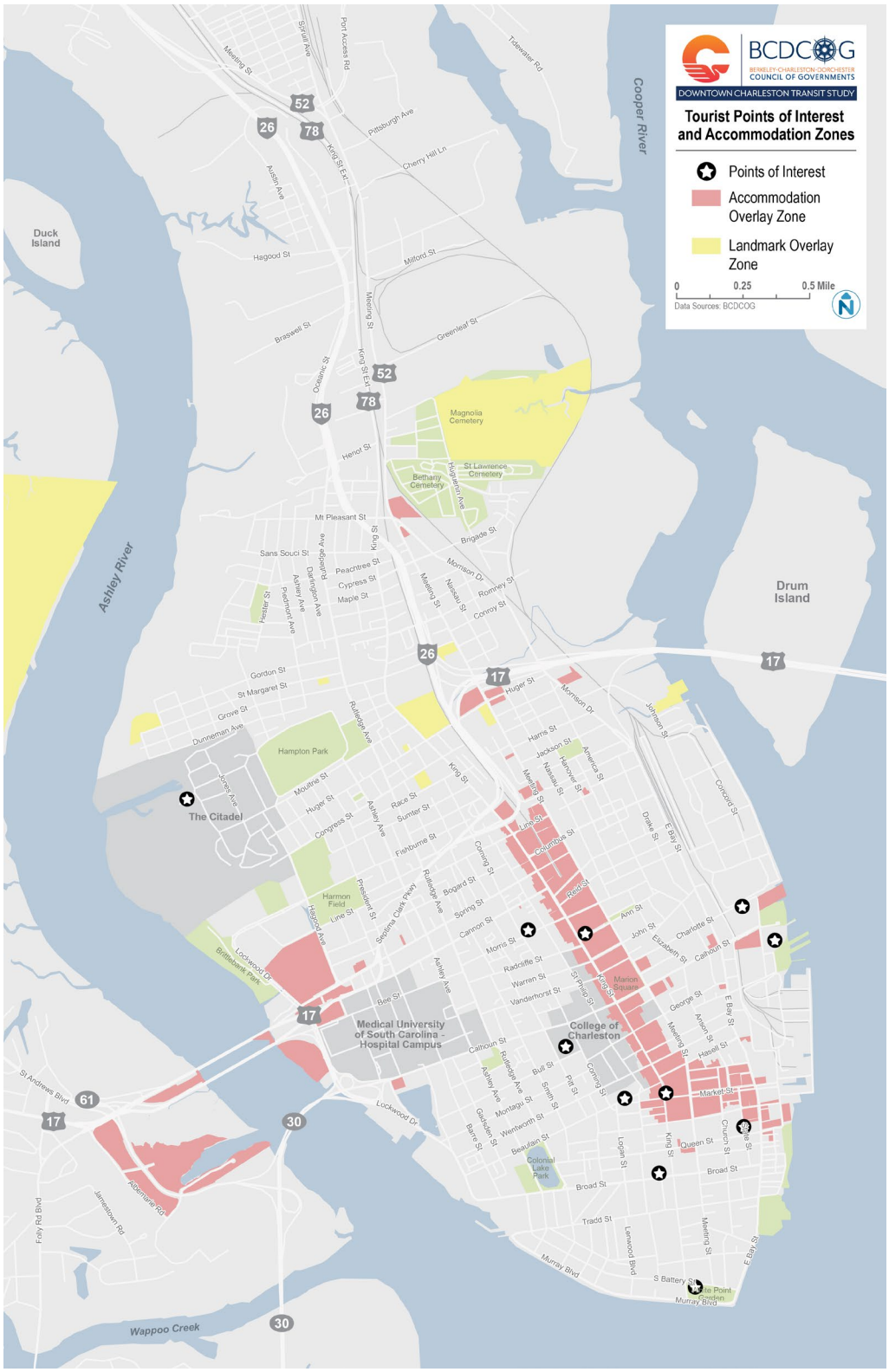
For the purposes of this study, 10 major points of interest for tourists have been identified. These points are taken directly from the DASH visitors' guide and can be seen in Figure 13. Except for The Citadel, these points are clustered along central Meeting and King streets, in the historic French Quarter, and along East Bay Street and Market Street.

Figure 13 Tourist Points of Interest

Points of Interest	
City Market	The Citadel
Visitor Center	Waterfront Park
College of Charleston	Charleston Museum
South Carolina Aquarium	Broad Street Shopping District
Historic King Street	The Battery

Areas designated as part of the Landmark Overlay Zone are often removed from dense housing, accommodation zones, and existing transit lines. Though the Landmark Overlay Zone is designed to protect the special character of historically, culturally, or aesthetically unique areas, these areas are often not regarded as tourist destinations. Many landmark areas are semi-natural spaces or architectural and engineering sites not granted other protections, such as those granted by the National Register of Historic Places. Their protection and assigned significance to Charleston does not necessarily reflect tourist or commercial interest in these areas. The points of interest, Accommodations Overlay Zone, and Landmark Overlay Zone can be seen in Figure 14.

Figure 14 Tourist Points of Interest and Accommodation Zones



Future Development

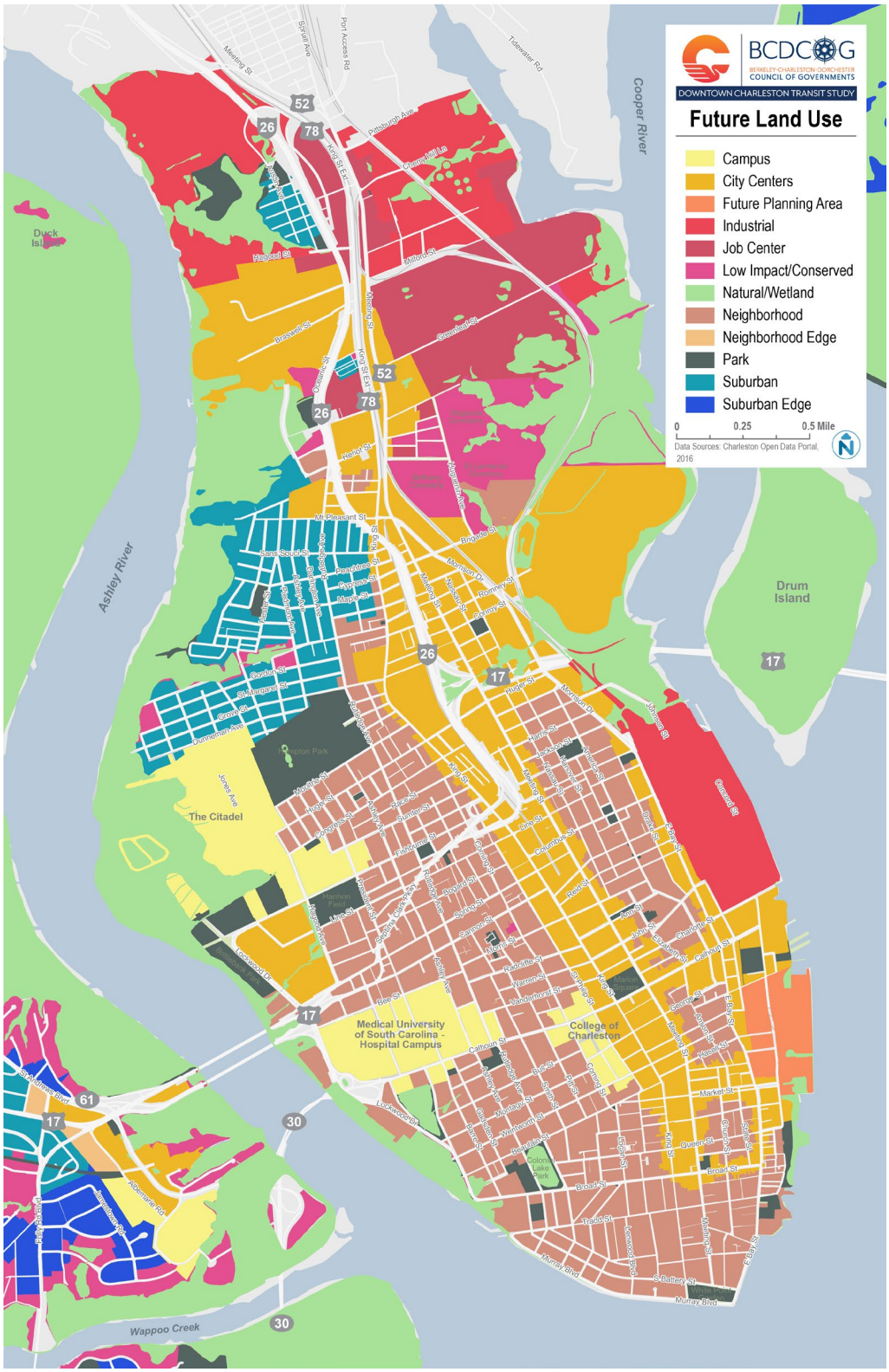
Future land use plans for the City of Charleston emphasize conservation and wetland restoration alongside the development of further mixed-use and medium density housing. These plans are not a drastic departure from existing land uses. Rather, they represent a proposed commitment to coastal resilience and emissions reduction alongside commercial growth. As seen in Figure 15, planned light industrial developments north of Hagood Street seek to reinvigorate the Port Authority and the attendant shipping industry.

The proposed densification of downtown housing in the "City Centers" land use along key roads (King and Meeting streets and East Bay Street/Morrison Drive) also aligns with the city's Transit-Oriented Development plan.[5] The recently built and planned medium-high density mixed-use developments would add riders within the walk and bike shed of the proposed LCRT without displacing long-term residents in the northwest of the Peninsula, largely low to moderate-income Black, Indigenous, People of Color (BIPOC) communities. This plan adequately reflects the high transit demand of the area.

The absence of both planned transit routes and planned densification on the southern tip of the Peninsula (the South of Broad neighborhood) reflects the area's exclusive residential character. South of Broad is home to large, single-family houses dating back to the 18th and 19th centuries. While dozens of these homes have landmark status at the federal, state, or local level and several among them are open to the public, this neighborhood is not optimized for visitors. There is virtually no parking for non-residents, most streets are single-lane or one-way, and zoning does not permit most non-residential developments. Additionally, with an estimated median home value of $2,525,000 and a commitment to preserving history, most proposed street-level or land use changes would likely face strong resident backlash. Given these factors, the South of Broad community generates low transit demand and is unlikely to support transit service.

[5] Charleston Open Data Portal, Future Land Use

Figure 15 Future Land Use

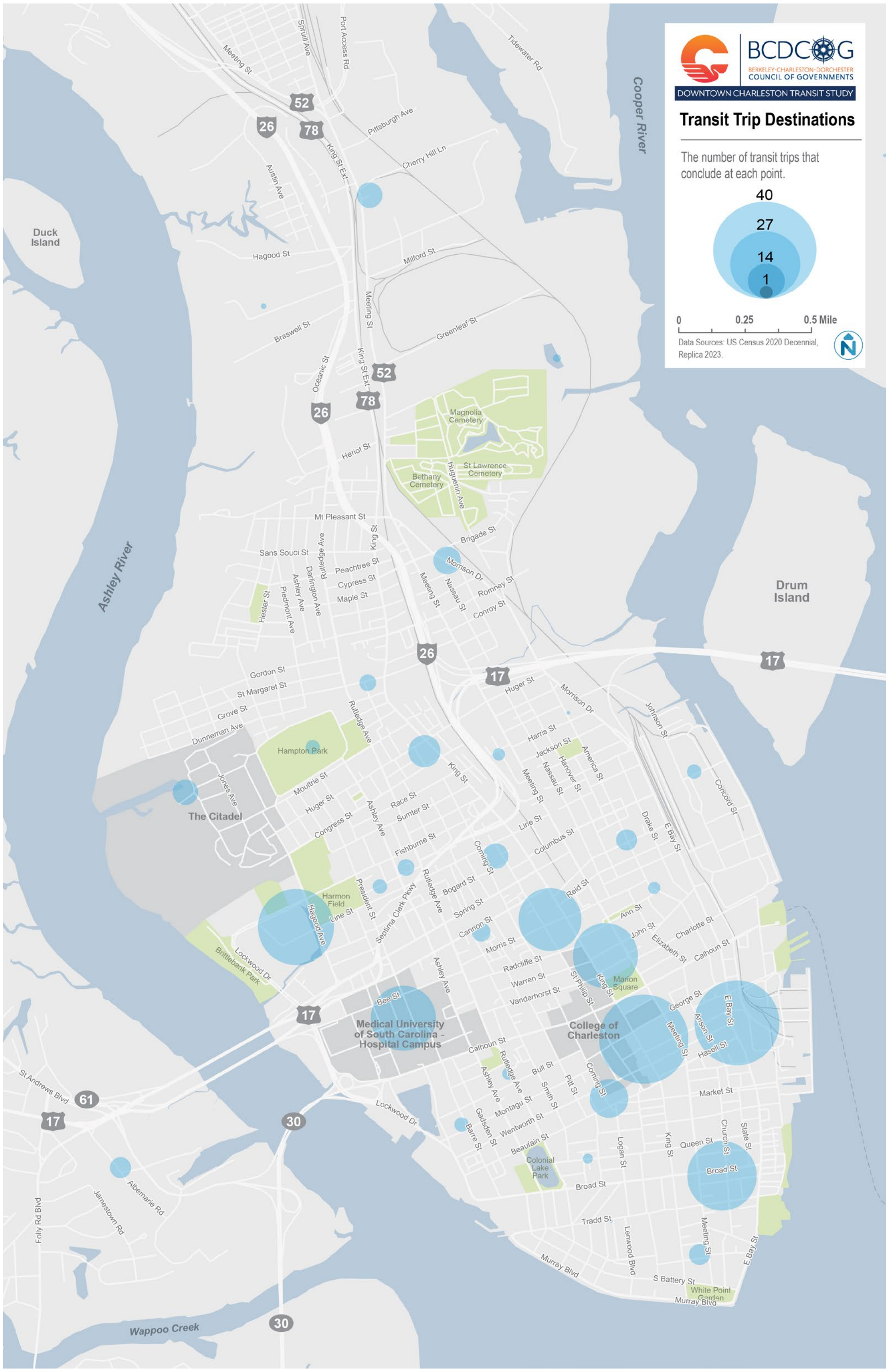


TRAVEL PATTERNS

The last part of the transit market analysis is to look at general travel flows of residents, workers, and visitors. Travel flows show the places that people travel between, within, and outside Downtown Charleston. With data from Replica, a location-based data provider, we can isolate transit trips that terminate or originate in Downtown Charleston and predict travel behavior. The travel shown in Figure 16 includes all trip purposes (work, shopping, school, recreational, etc.) taken by all people between census block groups.

Within Downtown Charleston, several key destinations emerge: the MUSC Hospital campus, the College of Charleston campus, and the downtown commercial district along King Street and Broad Street. The largest destinations are all clustered in the southern Peninsula, aligning with the location of previously identified key activity centers and points of interest. The strongest travel flows occur downtown, particularly between the Visitor Center and other common destinations within the southern Peninsula. This indicates most transit trips are local. Given the lack of transit trips that originate outside of downtown and terminate within, the flows show that many riders rely on other modes of transportation (likely personal vehicles) to reach downtown but use transit to navigate within.

Figure 16 Transit Travel Flow Destinations



4 PUBLIC OUTREACH

During the development of this State of the System report, the consultant team met with CARTA staff, the Technical Advisory Group (TAG), and transit riders to begin a process of information gathering around the key transit issues and concerns in Downtown Charleston. In addition to these in-person meetings and interviews, more than 1,500 Charleston residents responded to an online transit needs' survey, which further assessed areas for improvement downtown and developed recognizable qualitative trends that will inform the project process.

TRANSIT NEEDS AND OPPORTUNITIES SURVEY

Methodology

Between May 4 and July 11, 2023, the CARTA Downtown Charleston Transit Study survey received 1,530 responses from transit riders, local residents, and concerned citizens. By gathering feedback on various aspects of transit usage, the survey sought to inform future decision-making and potential improvement as the study progresses.

This 22-question survey began by asking participants about their interaction with Downtown Charleston, whether they lived, worked, or visited the area. It then delved into transportation modes used to reach downtown and how people typically moved around once they were there. Participants were asked about their frequency of riding CARTA, reasons for choosing public transit, specific routes they used, and the purpose of their downtown trips. The survey also covered satisfaction levels with various aspects of CARTA service, such as safety, on-time performance, and service frequency.

Participants were also encouraged to provide additional comments about CARTA's service and suggest areas of improvement. The survey also asked questions to learn more about vehicle access and factors that would make people more likely to use CARTA's bus network. The survey concluded with demographic questions, such as zip code, household size, age, gender, race/ethnicity, income, and primary language spoken at home.

Survey Distribution

The transit survey used multiple distribution methods to ensure broad participation. A press release was issued to local media outlets, informing them about the survey's purpose and details. To reach the Peninsula's Spanish speakers, a separate Spanish version of the survey was made available online and in-person. In-person conversations took place at downtown bus stops, enabling direct engagement with transit riders and capturing their feedback immediately. Paper surveys were also distributed throughout the city, making them easily accessible to residents who were not present at the bus stops and do not have reliable access to the internet.

For transit riders who do have access to a computer or smartphone, a prominently displayed QR code on CARTA property allowed individuals to scan and access the survey using their mobile devices. Additionally, the survey was promoted through various channels, such as an email blast to the MUSC community, the TAG meeting, and the BCDCOG website. These efforts aimed to reach a wide audience and encourage participation from diverse segments of the population, ensuring comprehensive representation of transit users in Charleston.

Survey Analysis

Due to an uncharacteristically high number of survey responses collected on June 13th, a "trap" question was added to the survey to identify suspected bots. Upon closing the survey, all responses were analyzed to insure legitimacy. Responses were flagged and removed if they met the following criteria:

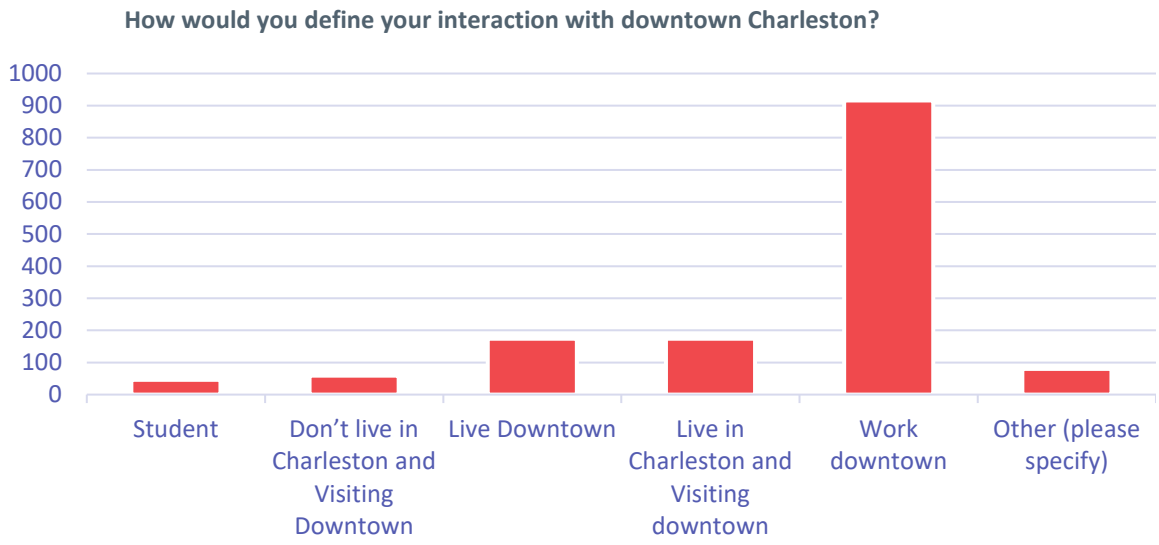
1. Completion time under 30 seconds, OR
2. Response to the trap question was illogical, OR
3. No answer to the trap question (survey completed before it was added) AND no answers to required questions AND non-unique IP address AND no responses to open-end questions

This screening criteria retained 1,449 of 1,527 total surveys, removing 78 suspicious surveys.

Relationship to Downtown

Of all survey respondents, the majority (63%) worked but did not live downtown compared to 12% of respondents who lived downtown.

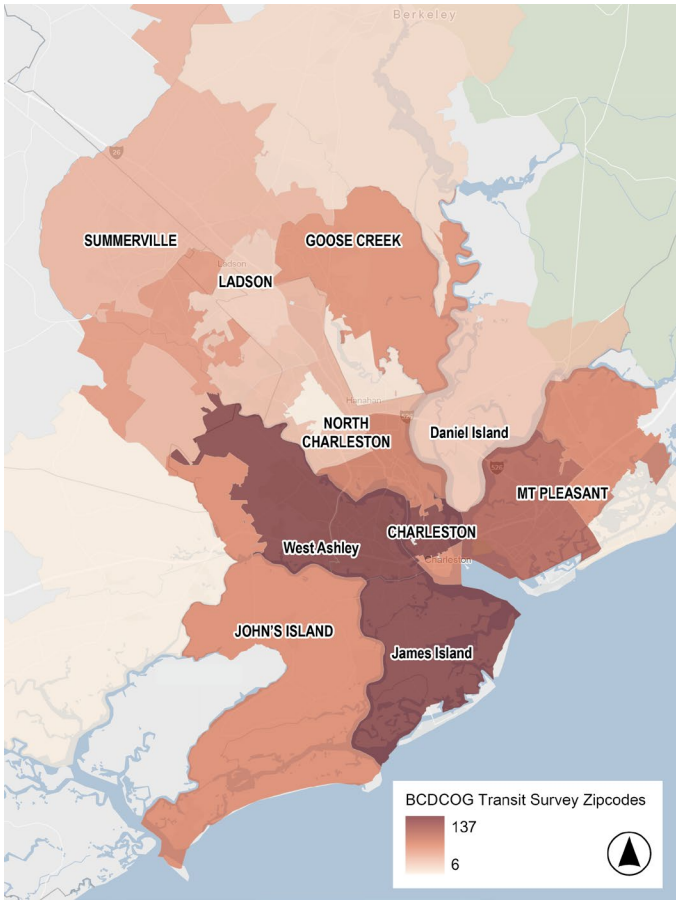
Figure 17 Interactions with Downtown Survey Question



Home Locations

As part of the survey, respondents were asked to provide a home zip code. While a few tourists responded to the survey, most respondents live in the greater Charleston area. Zip codes varied across the greater Charleston area, with 73 unique zip codes listed as home locations. While the majority of respondents live outside downtown, the zip codes with the highest number of respondents included the central area of Downtown Charleston (29403), parts of West Ashley (29407 and 29414), and James Island (29412).

Figure 18 Home Locations of Respondents



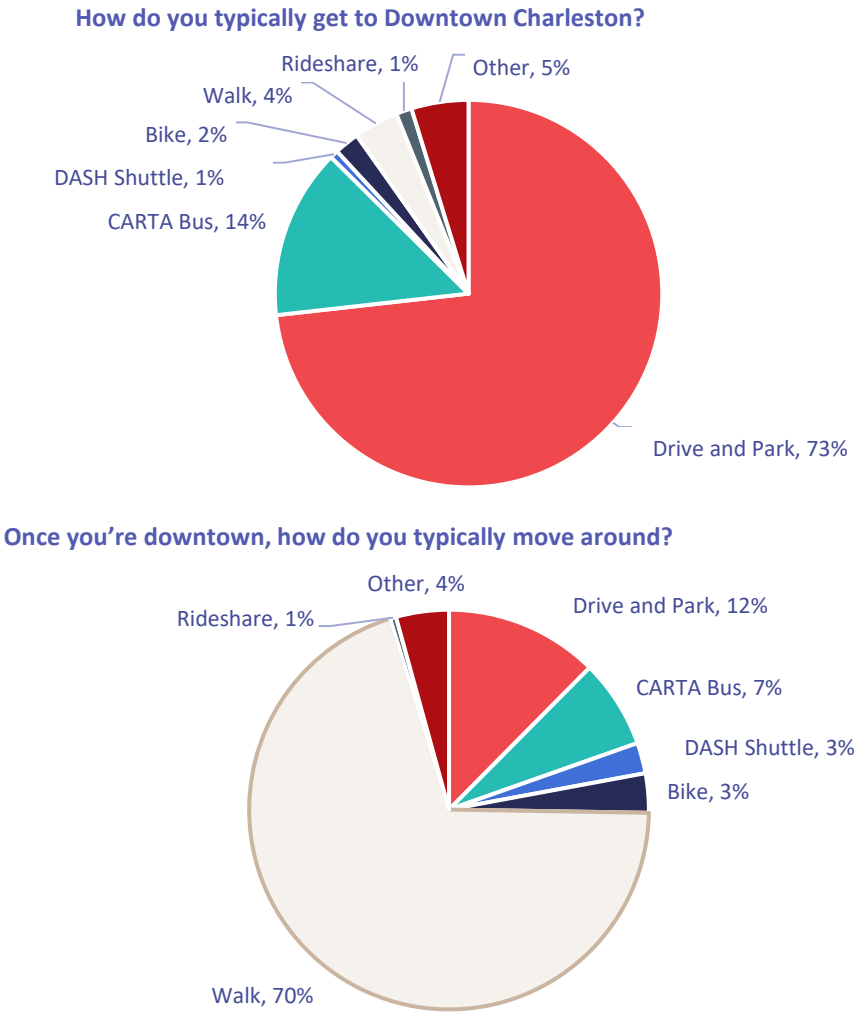
Traveling to and from Downtown

Approximately 73% of respondents opt to drive to downtown Charleston and park compared to 15% who use transit to access downtown from elsewhere. Of the transit riders, 95% (206 total) use CARTA buses as opposed to Downtown Area Shuttle (DASH) buses. Active transportation and micro-mobility are not popular mode choices, with 2% of respondents biking, 4% walking, and 1% utilizing rideshare services like Lyft and Uber.

Traveling around Downtown

Once downtown, 70% of respondents move around Charleston on foot and driving drops to 12%. According to responses to later questions, downtown regularly lacks parking, making walking or transit (preferred by 9% of respondents) more efficient and less frustrating than driving. Of the 408 respondents who answered further questions on their riding experience with CARTA and/or DASH, 62% cited a lack of affordable parking as a key reason they choose transit. The number of people who walk downtown may also reflect the area's comparative walkability or shorter travel distances between downtown destinations compared to distances between homes and downtown locations.

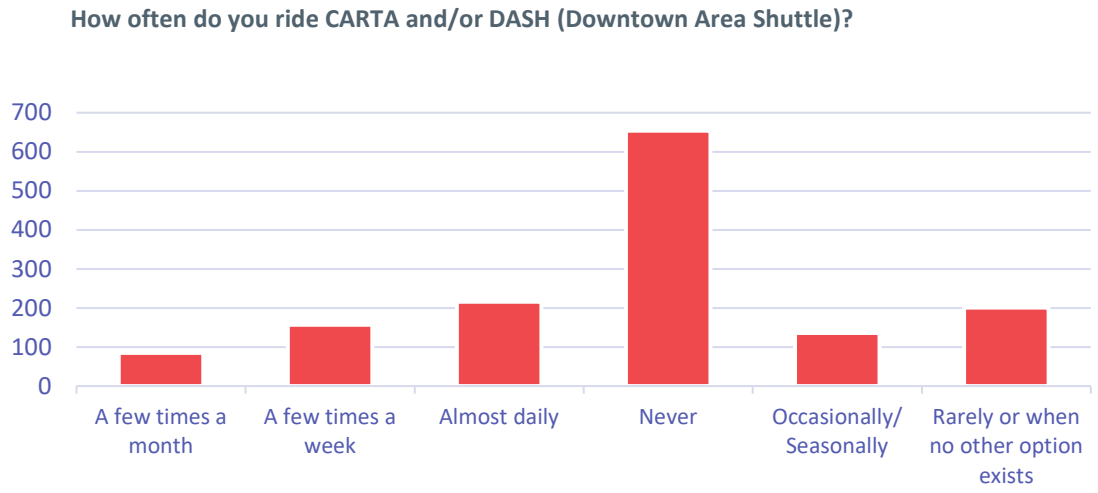
Figure 19 Getting to and around Downtown Charleston



Frequency of Transit Use

As expected with a survey focusing on getting input from transit riders, a fair proportion of respondents are frequent riders, riding almost daily (15%) or a few times a week (11%). The number of frequent riders (here defined as riders who use transit at least a few times a week) varies drastically by socioeconomic status. Within the lowest income bracket of under $25,000 a year, 48% are frequent riders compared to only 4% of the highest income bracket of $200,000 or more. Conversely, the percentage of people who never or rarely ride transit is significantly higher in upper income brackets than in lower income brackets. While 29% of low-income respondents rarely or never ride transit, that number increases to 87% in high-income respondent groups. Overall, a larger percentage of respondents have never ridden public transit in Charleston (45%) or rarely ride transit (14%) than ride regularly.

Figure 20 Transit Rider Frequency Survey Question



Route Usage

The highest number of respondents reported riding Route 203 (Medical Shuttle). This is indicative of the sample but not the reality of the system. The survey was shared widely within MUSC via email, and the Internet Service Provider (ISP) attached to many IP addresses is MUSC itself, implying many respondents answered this survey while connected to institutional Wi-Fi as MUSC employees. Although later fixed route analysis clarifies the true ridership of each route, this survey gives a glimpse into route-to-route trends that might be worth investigating; if, for example, respondents who ride Route 10 largely report feeling dissatisfied with on-time performance, CARTA could channel its efforts into that route first to improve rider experience.

Figure 21 Route Usage Survey Question

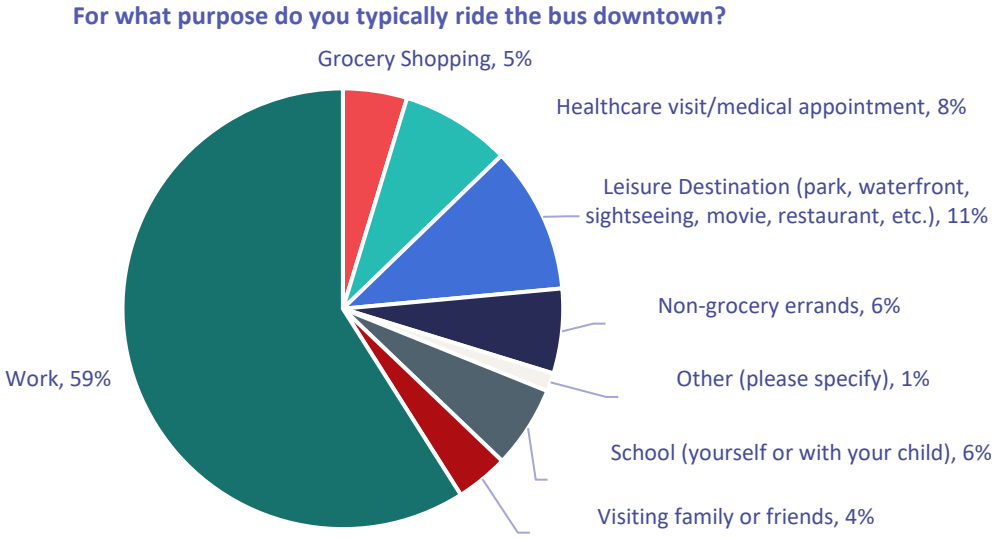
CARTA/DASH Route	
Route 10 (Rivers Avenue)	45
Route 102 (North Neck)	11
Route 11 (Dorchester Rd / Airport)	32
Route 20 (King Street / Meeting)	39
Route 203 (Medical Shuttle)	136
Route 210 (Orange DASH)	17
Route 211 (Green DASH)	33
Route 213 (Purple DASH)	24
Route 30 (Savannah Highway)	43
Route 31 (Folly Road)	28

Route 33 (Saint Andrews / Ashley River Rd)	58
Route 40 (Mt. Pleasant)	30
Route 41 (Coleman Blvd)	18
Route XP1 (James Island - North Charleston)	75
Route XP2 (Mt. Pleasant - West Ashley)	69
Route XP3 (Dorchester Rd / Summerville)	47

Trip Purpose

Transit rider respondents access work most commonly of all destinations. Approximately 59% use CARTA and/or DASH to get to work. All other destination types (leisure destinations, healthcare, non-grocery errands, school, grocery shopping, visiting family) are secondary: between 4% and 11% of all transit rider respondents' destinations. Because several grocery stores and other commercial areas are located outside of downtown in West Ashley, James Island, and North Charleston, it is worth noting that some respondents will not head downtown to access these other locations but may still access them on transit.

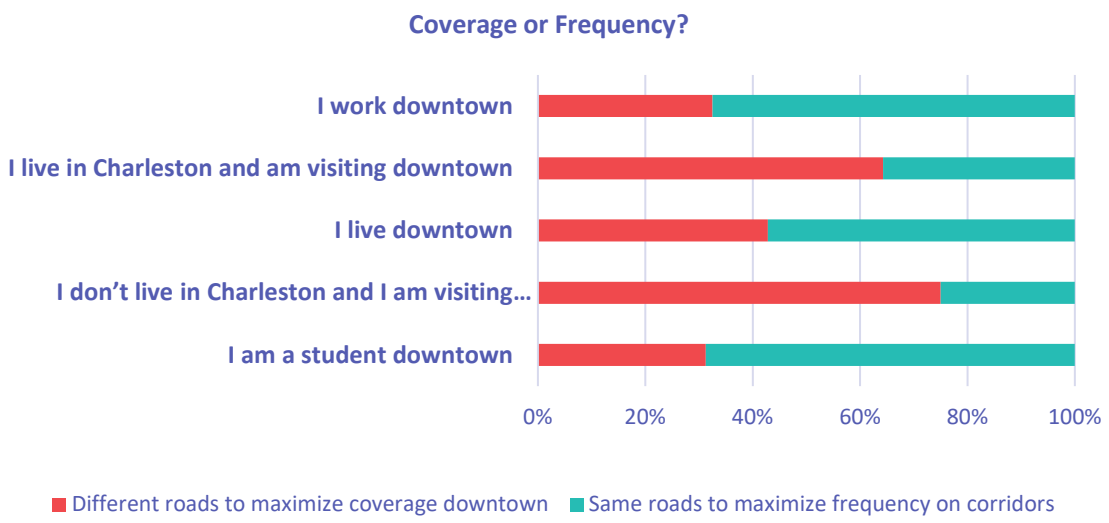
Figure 22 Trip Purpose Survey Question



Service Tradeoff

When thinking about future transit services and constrained operating budgets, one of the most common tradeoffs is serving areas with higher frequency transit or providing more coverage across a service area. When asked to prioritize one over the other, the majority of respondents favored more frequent service on fewer corridor over serving more areas. When broken out by how people interact with downtown, we can see the tradeoff is not the same for all groups. People who live, work, or go to school downtown favor more frequent service, but people visiting downtown, whether they live in Charleston or not, prefer more service coverage.

Figure 23 Service Tradeoff Survey Question



Satisfaction with Transit Services

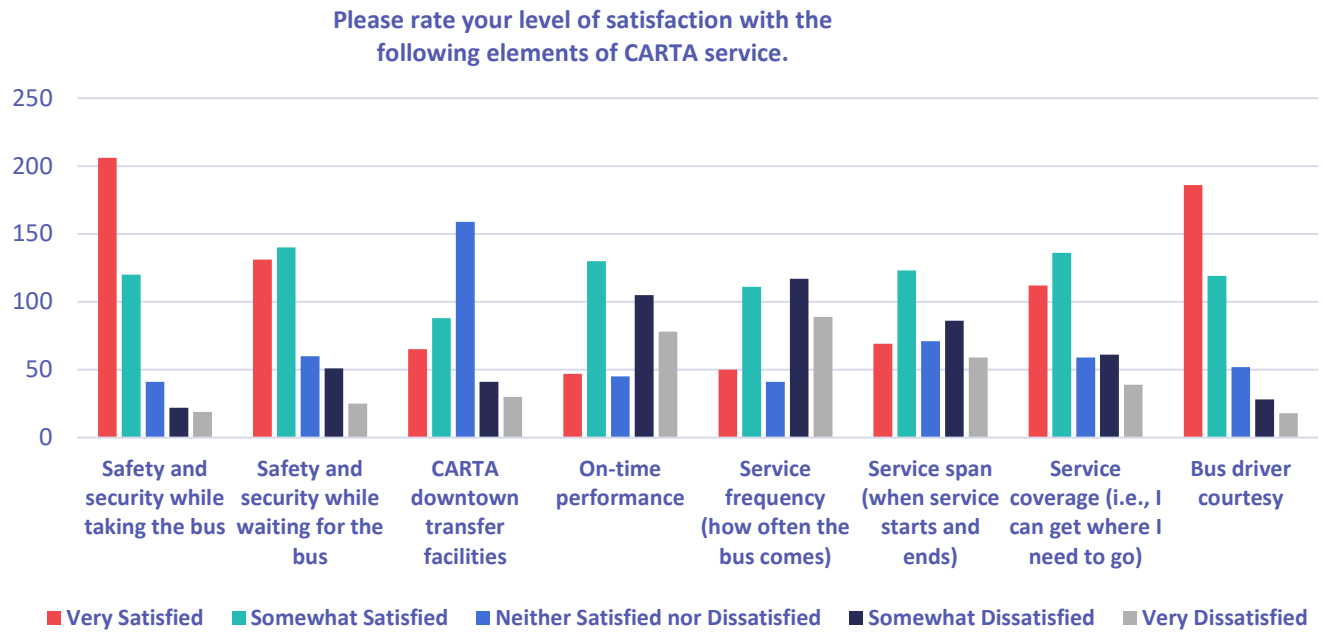
Overall, respondents were satisfied with select elements of CARTA service: safety and security, service coverage, and bus driver courtesy:

> *"I appreciate the drivers and the people behind the scenes that help us get where we need to go!"*
>
> *"The usual driver in the mornings for Express 3 is excellent. She is a great driver- I always feel 100% confident and safe with her, and she always greets everyone with a smile."*
>
> *"My experience with the CARTA service has been wonderful the last 4 years."*
>
> *"Even though MUSC has an employee shuttle, I prefer to utilize CARTA because it levels so I can walk off. My knees sometimes challenge me."*

The largest sources of dissatisfaction include on-time performance, service frequency, and service span. These areas were also frequently mentioned in open-ended responses:

> *"Afternoon service is regularly way off schedule even when traffic seems perfectly usual. I don't understand how the service can get so out of whack. Passengers are long-suffering to a fault."*
>
> *"I would love to take CARTA every day, but I do not find that it is consistently prompt enough to be able to rely on it."*
>
> *"Start running at 5 am for working class people."*
>
> *"For work, I am often leaving after CARTA service is done running for the night, forcing me to walk at hours where it feels less than safe."*
>
> *"Please, please, please extend hours for the 11 bus from the airport."*
>
> *"Rural service frequency is too low and the service span too short to be practical for folks commuting."*

Figure 24 Transit Satisfaction Survey Question



INTERNAL STAKEHOLDER INTERVIEWS

Bus Operators

During meetings with CARTA bus operators, several concerns and suggestions were highlighted. Since bus operators are the eyes and ears of the transit system, they can closely monitor rider concerns to inform future solutions.

Passenger Experiences

CARTA bus operators often hear passengers express frustration with GPS issues, bus service inconsistencies, and inaccurate information on the Transit app. When operators are asked questions about bus frequencies and real-time location from passengers, CARTA bus operators (especially newer ones) struggle to provide helpful answers and are instructed to direct these inquiries to CARTA Customer Service. In addition, passengers commonly complain about infrequent routes, long wait times, making transfers, and difficulties with fare payment. Bus drivers also hear concerns regarding on-time performance, crowded buses during rush hours, and the lack of early morning and weekend service. While there are significant challenges, bus operators felt that CARTA is making progress with its recent decision to replace bus stop signs to improve visibility for both riders and operators.

Downtown Routing

Bus operators also explained the various factors that affect route reliability. Freight trains regularly interrupt routes in the upper peninsula, causing delays of up to an hour that interrupt downtown routes. At the Visitor Center/Bus Shed, unlawfully parked cars prevent buses from exiting, requiring drivers to call dispatch or the police for assistance. Some drivers on Route 10 choose to bring passengers to the bus shed to address the issue, but inconsistency in these unadvertised courtesy stops upsets riders. The Upper King Street one-way restrictions and closures on weekends due to the active nightlife scene pose difficulties for bus operations. Additionally, the presence of FedEx and UPS trucks in the curb lanes creates added congestion.

Route Specific Issues

Bus drivers also highlighted missed connections, such as Route 10 and 13 running along similar corridors but not sharing stops, Route 33 lacking stops between College of Charleston and the Transit Mall, and timing challenges with Route 32 and Route 33 that result in early arrivals and missed transfers. Unhoused individuals occupying bus stops, especially on Route 10, present an ongoing issue. Operating free bus routes (DASH and Route 20) is challenging, as passengers often ride all day and are sometimes impaired. Routes with high numbers of unhoused individuals, like Route 213, put bus operators in difficult positions, and the process of calling dispatch for assistance is inefficient. The operational challenges are compounded by missing bus stop signs and tight turns on streets that are difficult to maneuver (particularly Queen, Ann, Meeting, and John streets). The limited availability of layover points downtown adds to the difficulties, with drivers resorting to unmarked, curb-side parking spots on John Street as a makeshift solution.

Operating Issues

Flooding regularly poses significant challenges, particularly in areas near the Medical Center and streets like Huger, Courtenay, Meeting, and Ashley. When bus operators begin route runs with electric buses, the buses are not always fully charged, contributing to performance issues. Regarding recent changes in ridership, an influx of Spanish-speaking riders on Routes 10, 12, and 13 struggle with the system due to the lack of Spanish-language materials.

Potential Improvements

Bus operators suggested simplifying routes with unnecessary turns, addressing traffic congestion near Jonathan Lucas/Calhoun Street, and implementing bus lanes on Meeting and Calhoun streets to improve service. Additionally, bus operators are hearing a need for additional service at locations like the Greyhound Station and the Durant Avenue/Rivers Avenue intersection. Bus operators also recommended investments such as better bus stop amenities (improved lighting) and increased frequency and span of service to improve reliability.

Service Planners

During the service planning staff meeting, CARTA's transit planners discussed various concerns and suggestions related to bus service on the Peninsula. They identified several locations in need of new or additional service, including the Gadsden Green Homes, the Medical District, and senior living

communities. Additionally, the planners addressed requests for transit service near restaurants, senior living facilities, and breweries and the challenges faced by historically isolated communities such as the Gadsden Green Homes, the Rosemont neighborhood, and the East Side.

Park-and-Ride Services

CARTA service planners also discussed the need for improved pedestrian connections, the impact of COVID-19 on the Hospitality on Peninsula (HOP) route, and park-and-ride services. They mentioned the importance of addressing parking and congestion concerns and expressed the desire for CARTA routes to replace car trips and leave parking spaces available for tourists.

Visitor Center & Bus Shed

The Visitor Center, which is used only for layovers and not for boarding, was a major concern. The tour bus boarding area, known as the "Bus Shed," is used by the City for private events such as weddings and parties, while CARTA only uses it for some layovers. The Visitor Center, originally an 1850s warehouse, was rebuilt using funds from the Federal Transit Administration (FTA), while CARTA was previously under the City of Charleston's authority. The Visitor Center, once CARTA office space, still retains some ownership, which allows CARTA to use it for meetings. Over the years, tour buses have dominated the area, but efforts were made to disperse them by the City Livability Office, resulting in the displacement of CARTA buses. The Visitor Center area is also a source of confusion for riders waiting for buses and transferring between buses, as there are four bus stops in the vicinity of the Visitor Center.

Service Planning

CARTA has a route planning board that convenes when there is a request for service and monitors routes for performance and service planning changes. The service planning team also discussed the importance of Title VI processes for service planning changes, which provide a forum for the public to voice their opinions. Planners mentioned the funding, stakeholder, and community influence over DASH routes and recognized the difficulties in potential consolidation. Also, the CARTA service planning staff addressed efforts to balance coverage and frequency, as well as riders' willingness to trade longer walks for more frequent service services.

Operations Managers

HOP Route

CARTA operations managers identified several concerns and suggestions. One major concern was the need to bring back the HOP route, which was working well but was suspended in 2020 during the COVID-19 pandemic. Since that time, the HOP park-and-ride lot was closed as facilities for the Charleston Tech Center were constructed on the site.

Shortly before its suspension, there was a call to both extend the HOP route to reach MUSC and Broad Street and advertise the existing 203 route in that area to increase ridership. The CARTA operations managers identified the edges of the Peninsula as problematic areas and suggested that a modified HOP route could serve those areas, particularly at night, and could even serve as a hurricane evacuation route.

Operational Issues

In terms of connections, CARTA operations managers noted the challenges bus operators face when turning onto John Street and detouring onto Morris Street. The operations staff acknowledged lighting issues on East Bay Street between Reed and Columbia as areas that need improvement. The operations managers explained that infrequent weekend service leads to low ridership on weekends. As a solution, one supervisor suggested that Sunday service could be improved by switching to the Saturday schedule. The CARTA supervisory staff also noted operational challenges, such as flooding issues, difficult turning movements, unenforced traffic violations by pedicabs and golf carts, and the need for improved safety measures such as lighting and enforcement of traffic regulations. To improve routes with difficult operation turns, operations managers suggested straightening Route 41 using East Bay Street.

TECHNICAL ADVISORY GROUP KICK-OFF MEETING

On May 11, 2023, Nelson\Nygaard and CARTA hosted a project kick-off meeting with the Technical Advisory Group (TAG). The meeting created a forum for speakers representing local organizations to share their insights, ideas, and concerns regarding the city's transit system. Nelson\Nygaard also presented their project strategy and timeline. Meeting attendees focused on addressing issues such as the absence of the HOP service, inadequate express bus stops, frequency challenges, safety, accessibility, and the need for dedicated transit lanes. This kick-off meeting helped identify key concerns and generate potential solutions as the study progresses.

During the meeting, four key ideas were raised by multiple speakers, reflecting their significance in addressing the transit challenges faced by Charleston. The first idea that garnered substantial attention was the need to bring back the HOP service. This sentiment was echoed by several TAG members who emphasized its vital role in addressing the challenges faced by the hospitality industry. The absence of the HOP service has been a hindrance to workforce transportation, and its reinstatement would be crucial for the industry's efficient operation.

Figure 25 Technical Advisory Group Attendees List

Name	Title	Organization
Katie Zimmerman	Executive Director	Charleston Moves
Morgan Gundlach	Director of Civic Design	City of Charleston
Meg Thompson	Director of Business & Neighborhood Services	
Christopher Morgan	Planning Manager	
Tracy McKee	Chief Innovation Officer	
Robert Somerville	Director	City of Charleston Department of Traffic & Transportation
Jill Maynard	Director of Workforce	Explore Charleston
Kenny Grace	Assistant Director of Business Operations	Medical University of South Carolina
Christine von Kolnitz	Sustainability Manager	
Jevonta Henderson	Director of Business Operations	
Jordi Yarborough	Vice President	South Carolina Ports Authority

Improving bus frequency emerged as the second prominent idea. TAG members emphasized the significance of increasing bus frequency, particularly for express routes. By providing more frequent service, the transit system would be better equipped to accommodate employees with irregular working hours and attract more riders, reducing dependency on private vehicles.

The third idea that emerged consistently throughout the meeting was the creation of dedicated transit lanes. TAG members emphasized the importance of allocating exclusive lanes for public transit, prioritizing buses over private vehicles. By implementing dedicated transit lanes, the efficiency and reliability of the transit system would improve, ultimately making it a more attractive option for commuters and reducing congestion on the roads.

Creation of a more transit-friendly environment also received significant attention. TAG members championed a shift away from personal vehicle reliance and advocated for alternative modes of transportation. This concept involved reducing parking spaces dedicated to private vehicles, creating bus-only transit lanes so that buses do not have to compete with general traffic, and encouraging the use of active transportation modes, such as walking and cycling.

These four key ideas - bringing back the HOP service, improving bus frequency, creating dedicated transit lanes, and reducing reliance on personal vehicles - emerged as recurring themes during the meeting. They represented the collective concerns and aspirations of the speakers, highlighting areas where improvements and innovative solutions would be crucial for CARTA's future.

5 FIXED ROUTE ASSESSMENT

CARTA provides transit service for the Charleston metropolitan area with the goal of connecting people with economic and social opportunities across the region. The system is the largest in the state of South Carolina. While the CARTA service area spans east to west from North Mount Pleasant to West Ashley, and north to south from North Charleston to James Island, this study is focused on how transit service currently operates within Downtown Charleston (Figure 26). Routes that do not serve the downtown area are not part of this anaysis.

Data used as part of this analysis was obtained from CARTA and BCDCOG. Ridership and performance data covers the period from September to December 2022. CARTA schedules and route alignments reflect the agency's General Transit Feed Specification (GTFS) from Spring 2023.

SERVICE TYPES

CARTA services can be classified within the following service types and shown in both Figure 27 and Figure 28.

- Fixed Routes are local bus routes that operate on a designated route and schedule. CARTA currently operates 17 regular fixed routes, 10 of which serve Downtown Charleston.
- Express routes are commuter routes that serve outlying areas of the Charleston region and connect them to downtown. They operate along major corridors, primarily during morning and evening peak periods with limited stops.
- Downtown Area Shuttles (DASH) are free circulator routes that operate within the Downtown Charleston Peninsula every day of the week.
- Tel-A-Ride* is CARTA's paratransit service, available to those with a disability that inhibits the use of traditional transit services. Passengers who qualify may be scheduled in advanced for anywhere within ¾ mile of CARTA fixed routes.
- CARTA OnDemand* is a partnership with rideshare companies Uber and Lyft, which seniors and Tel-A-Ride riders can use to schedule rides at discounted rates.
- Lowcountry Rapid Transit (LCRT)* is a proposed 21-mile bus rapid transit corridor that would terminate in downtown Charleston. The route would feature dedicated bus lanes along its middle portion and three potential park-and-ride lots. The final design for the project is currently underway.

**Services not included in this analysis*

Figure 26 CARTA Routes in Downtown Charleston

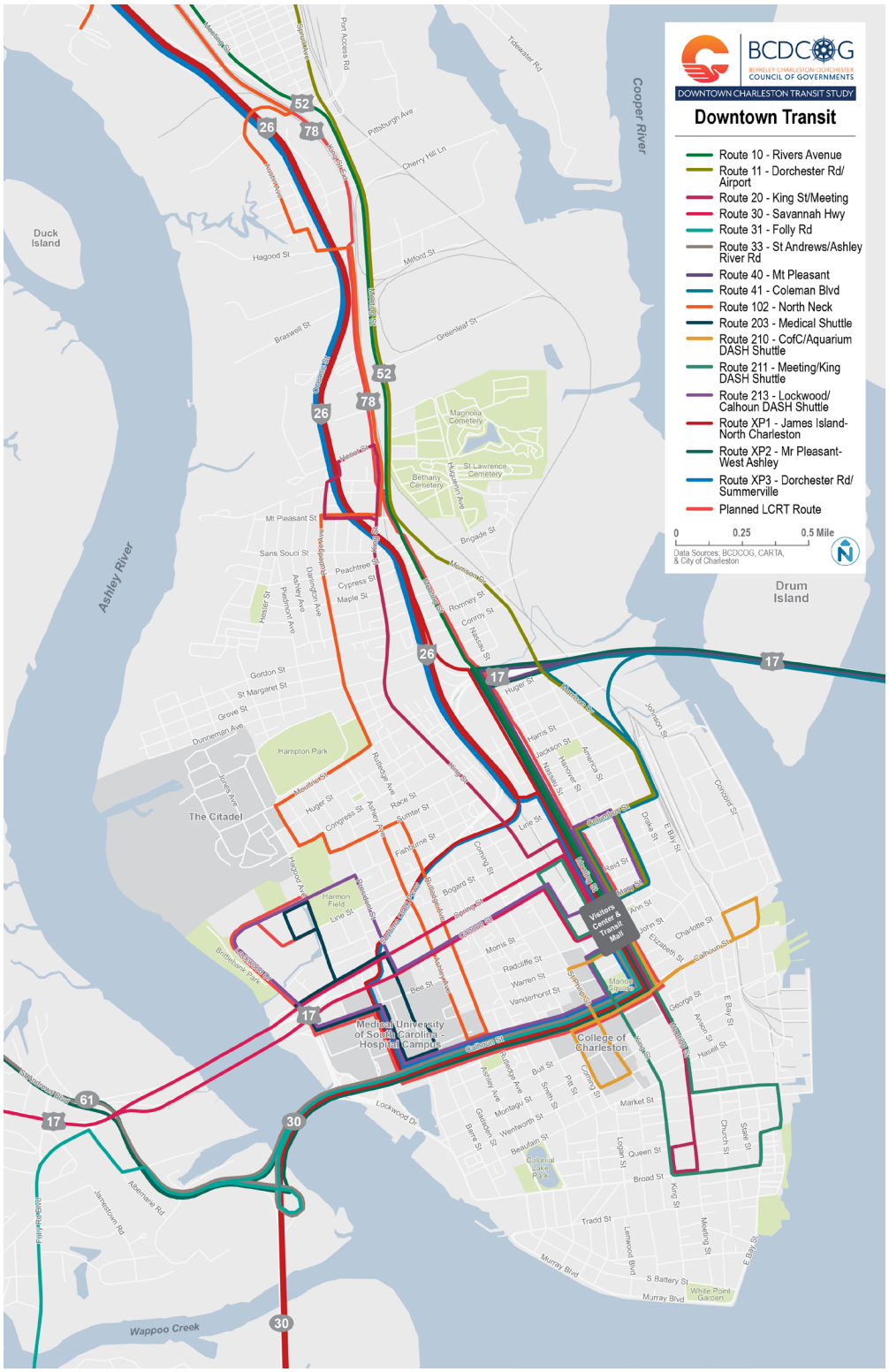
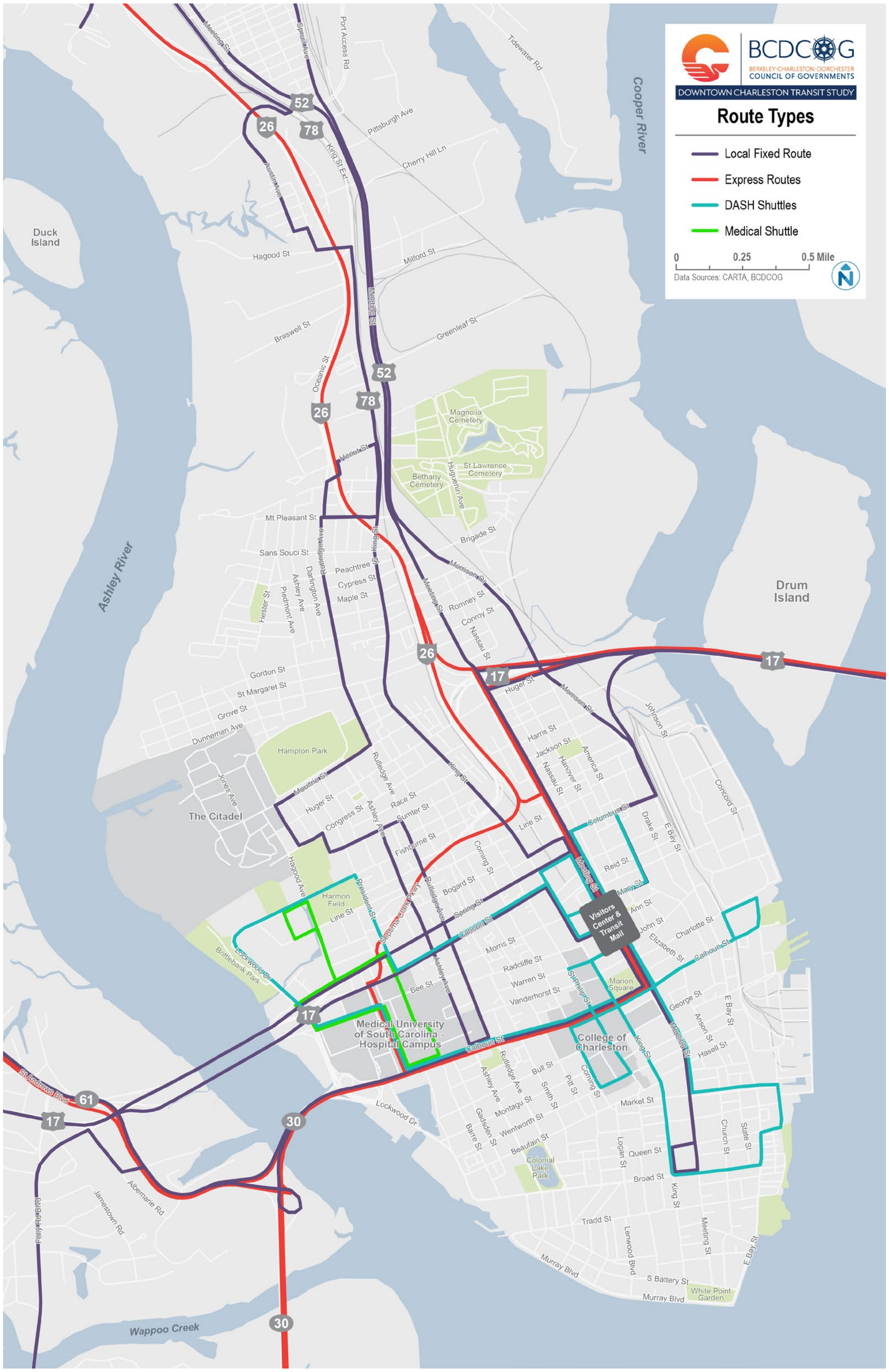


Figure 27 CARTA Fixed Routes in Downtown Charleston

Number	Route Name
Local Fixed Routes	
10	Rivers Avenue
11	Dorchester Rd/Airport
20	King Street/Meeting
30	Savannah Highway
31	Folly Road
33	St Andrews/Ashley River Rd
40	Mt Pleasant
41	Coleman Blvd
102	North Neck
203	Medical Shuttle
DASH Routes	
210	City of Charleston/Aquarium DASH
211	Meeting/King DASH
213	Lockwood/Calhoun DASH
Express Routes	
XP1	James Island-North Charleston
XP2	Mt Pleasant-West Ashley
XP3	Dorchester Rd/Summerville

Figure 28 CARTA Route Types



FARES

CARTA offers customers the option to pay fares using cash, mobile ticketing, or paper passes bought at select locations. Passes may be purchased for a certain number of trips or a certain amount of time. Express routes are considered a premium service and include an upcharge. Passes may be purchased through the mobile app or in-person at one of six locations throughout the city. Cash-only fares may be paid with exact change to operators onboard the vehicles. CARTA also offers discounted fares.

Transfers

Passengers are allowed one transfer per fare free of charge. Transfer passes are issued by operators and can be made to another route of the same type. Transfer passes also list the amount of time passengers have to make their transfer.

Figure 29 CARTA Fares

Pass or Fare	Price
1 Trip Pass (Two-Way)	$3.50
10 Trips (Two-Way)	$16.00
40 Trips (Two-Way)	$56.00
1 Day	$7.00
3 Days	$14.00
Weekly – Regular	$15.00
Weekly – Express	$25.00
Monthly – Regular	$57.00
Monthly – Express	$99.00
One-Way Regular Fare	$2.00
One-Way Express Fare	$3.50

Figure 30 CARTA Reduced Fares

Fare Type	Price
Low Income One-Way Fare	$1.25 per ride
Senior One-Way Fare (55+)	$1.00 per ride
People with Disabilities One-Way Fare	$0.75 per ride
K-12 Students	Free
College Students	$80 per semester

SERVICE AVAILABILITY

CARTA service through Downtown Charleston varies based on day and time. The table below (Figure 31) describes each route's service levels across three-day types – Weekday, Saturday, and Sunday. It also provides each route's frequency of service, or how often a bus arrives to pick up passengers at its stops. Peak periods refer to the morning and afternoon peak travel times, spanning from around 7:00 AM to 9:00 AM and 4:00 PM to 7:00 PM. Off-peak periods include early morning, midday, evening, and late-night service.

Routes are more frequent and operate for longer hours on weekdays. Aside from Routes 10 and 203, most routes end service before 9:00 PM or 10:00 PM on weekdays, which may be too early for some nontraditional commuters working later hours. Service levels decrease on Saturday when the Express routes and the Medical Shuttle do not operate. Most other fixed routes run less frequently than on weekdays except for DASH Routes 211 and 213, which maintain a similar service level every day of the week. Frequency also significantly decreases on Sundays on many routes, while some lower-frequency routes are consistent across weekdays and weekends.

The maps below (Figure 32, Figure 33, and Figure 34) show service availability on Weekdays, Saturdays, and Sundays, illustrating which routes operate each day and how frequently they run. As is typical for transit service, weekday service is the most robust. Major highways that provide connectivity to and from the downtown Peninsula, including I-26, US-52, and US-78 to the north and US-17 to the east, and US-17 and James Island Expressway/SH-30 to the west, are all served by at least one transit route. Due to the geography of the Peninsula, most routes run primarily north and south. Areas to the north of Sumter Street generally lack east to west transit coverage. The most central downtown areas, such as near the King Street district, along Calhoun Street, and around the Medical District are served by the most frequent routes. Calhoun, Spring, and Cannon streets are the primary east to west corridors served by transit. Geographic coverage decreases on Sundays, when Routes 41 and 102 also do not operate.

Figure 31 Frequency and Span - Downtown CARTA Routes

	Weekday			Saturday			Sunday		
Route	**Peak Freq.**	**Approx. Off-Peak Freq.**	**Span**	**Daytime Freq.**	**Approx. Nighttime Freq.**	**Span**	**Daytime Freq.**	**Approx. Nighttime Freq.**	**Span**
10	20 min	60 min	5:50AM-12:57AM	35 min	60 min	6:45AM-12:17AM	35 min	60 min	8:32AM-9:32PM
11	40 min	80 min	5:49AM-9:50PM	40 min	80 min	7:08AM-9:19PM	60 min	60 min	8:18AM-7:50PM
20	25 min	50 min	6:02 AM-8:59PM	50 min	50 min	7:02AM-9:09PM	50 min	50 min	9:02AM-7:49PM
30	60 min	60 min	6:00AM-9:24PM	60 min	60 min	6:45AM-12:09AM	60 min	60 min	8:05AM-6:56PM
31	45 min	45 min	5:25AM-9:30PM	45 min	45 min	7:30AM-8:55PM	80 min	80 min	8:25AM-7:00PM
33	60 min	60 min	6:00AM-8:50PM	90 min	90 min	8:16AM-6:38PM	90 min	90 min	9:16AM-6:28PM
40	60 min	60 min	6:20AM-9:45PM	60 min	60 min	7:10AM-11:43PM	60 min	60 min	9:00AM-7:09PM
41	90 min	90 min	6:00AM-8:50PM	90 min	90 min	8:00AM-9:20PM	-	-	-
102	60 min	80 min	6:00AM-8:33PM	60 min	60 min	8:15AM-8:55PM	-	-	-
203	5 min	20 min	5:02AM-8:12AM, 3:07PM-12:34AM	-	-	-	-	-	-
210	10 min	20 min	6:28AM-10:16PM	20 min	20 min	9:00AM-8:16PM	20 min	20 min	9:00AM-7:56PM
211	15 min	45 min	7:16AM-9:19PM	15 min	45 min	8:16AM-9:21PM	15 min	45 min	8:16AM-9:21PM
213	45 min	45 min	6:20AM-9:15PM	45 min	45 min	8:20AM-9:00PM	45 min	45 min	9:20AM-7:00PM

Figure 32 Frequency and Span - Downtown CARTA Routes (Continued)

	Weekday			Saturday			Sunday		
Route	**Peak Freq.**	**Approx. Off-Peak Freq.**	**Span**	**Daytime Freq.**	**Approx. Nighttime Freq.**	**Span**	**Daytime Freq.**	**Approx. Nighttime Freq.**	**Span**
XP1	30 min	-	5:19AM-9:06AM, 3:07PM-8:06PM	-	-	-	-	-	-
XP2	30 min	-	5:35AM-9:09AM, 3:20PM-8:15PM	-	-	-	-	-	-
XP3	30 min	-	5:20AM-9:01AM, 3:07PM-8:36PM	-	-	-	-	-	-

Figure 33 Weekday Transit Service Coverage

Figure 34 Saturday Transit Service Coverage

Figure 35 Sunday Transit Service Coverage

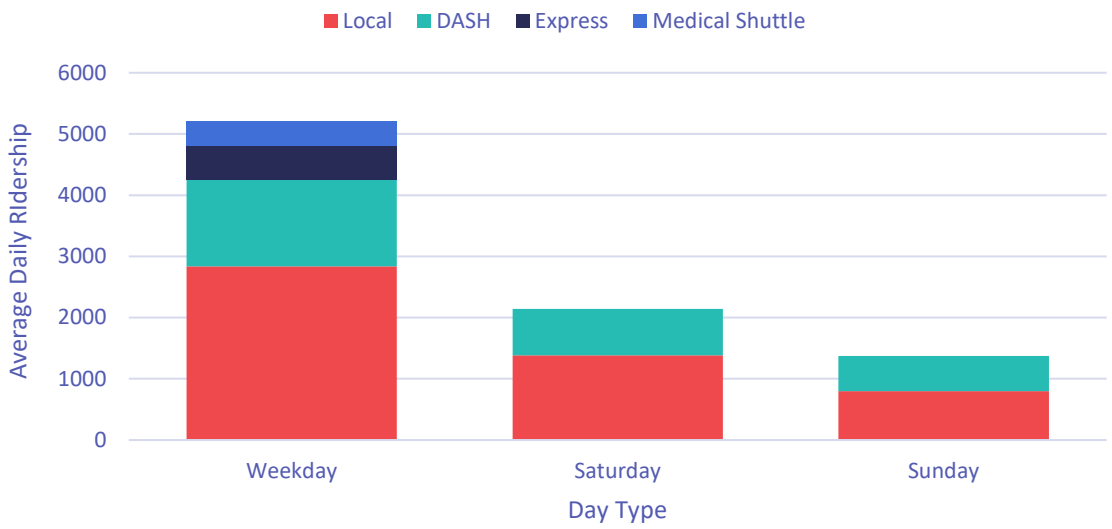
RIDERSHIP

Ridership data discussed in this section covers the period between September 4, 2022 and January 7, 2023. The total number of boardings that occurred on each day type (weekday, Saturday, and Sunday) was divided by the number of days of each type during this period to obtain an average number of boardings, adjusting for holiday service changes and severe weather events that caused service to be suspended. Ridership by day by service type can be seen in Figure 35.

On average, 5,208 people used the downtown CARTA routes each weekday. Most weekday ridership occurred on regular local fixed routes, which has the most routes. DASH routes also made up a large portion of ridership, which may be attributed to the fact that they are free to ride and run frequently.

Due to lower service levels on weekends and typical travel patterns, average ridership on Saturdays was less than half of that on weekdays at 2,143. Boardings on DASH routes made up over one third of Saturday ridership. Ridership was lower on Sundays, with 1,373 boardings, most of which were on regular local routes.

Figure 36 Average Ridership by Day and Service Type (Fall 2022)



Ridership by Route

Ridership across CARTA routes vary due to different levels of frequency, service span, destinations served, and route length (Figure 36 and Figure 37). Routes 10 and 211 showed the highest average ridership on weekdays, Saturdays, and Sundays. Routes 30, 40, and 102 saw the fewest weekday boardings, while Routes 33 and 210 both showed moderate ridership on weekdays and very low ridership on weekends. Routes 30, 40, 41, and 102 had the fewest average boardings across all days.

Figure 37 Average Daily Ridership by Route (Fall 2022)

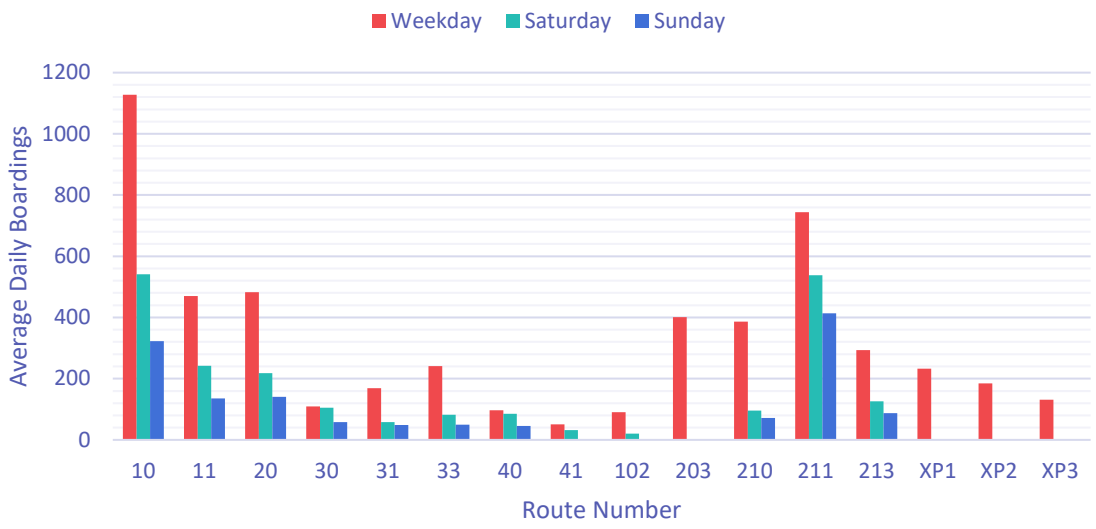


Figure 38 Average Daily Boardings by Route

Route	Weekday	Saturday	Sunday
10	1,127	541	322
11	470	242	135
20	482	219	140
30	109	105	58
31	169	58	49
33	241	82	50
40	97	85	46
41	51	32	-
102	90	20	-
203	401	-	-
210	386	96	71
211	744	538	413
213	293	126	88
XP1	233	-	-
XP2	185	-	-
XP3	131	-	-
Total	5,208	2,143	1,373

Ridership by Stop

CARTA maintains nearly 250 bus stops in Downtown Charleston. These stops range in available amenities depending on factors like ridership, available space, and nearby land use. Evaluating ridership patterns at the stop level shows where people want to travel downtown.

Figure 38 lists the 15 CARTA bus stops located in Downtown Charleston that experienced the highest number of average daily weekday boardings in fall 2022.

Figure 39 Downtown Bus Stops – Highest Average Weekday Boardings

Stop Name	Average Weekday Boardings	Routes Served
Mary St / Meeting St	**419**	10, 11, 213, 30, 31, 33, 40, 41
Visitor Center on John St	**364**	210, 211, 213
Jonathan Lucas St / MUSC Quad	**174**	203
Aquarium (Concord St)	**162**	210
Fishburne St / Horizon St Park & Ride	**137**	203
Calhoun St / St Philip St	**83**	213, 31, 33, XP1, XP2, XP3
Market St / Meeting St	**81**	211
Calhoun St / Jonathan Lucas St (near side)	**80**	31, 33, XP1, XP2
Meeting St / Hasell St	**79**	20, 211
Meeting St / Woolfe St	**75**	10, 20, 211, 30, 40
Calhoun St / St Philip St	**69**	210, 31, 33, XP1, XP2
Calhoun St / Jonathan Lucas St (far side)	**66**	213, 31, 33, XP1, XP2, XP3
Courtenay Dr / Charleston Center Dr	**65**	203
Calhoun St / Ashley Ave	**63**	102, 213, 31, 33, XP1, XP2, XP3
King St / Grove St	**61**	20

Figure 39 through Figure 41 show stop-level ridership within downtown on different day types. The Mary St/Meeting St and Visitor Center on John St stops experience the highest ridership each day. Most other high activity stops are near attractions and activity centers such as the French Quarter, the Aquarium, the College of Charleston, and the Medical District when Route 203 is running.

Figure 40 Weekday Average Daily Ridership by Stop

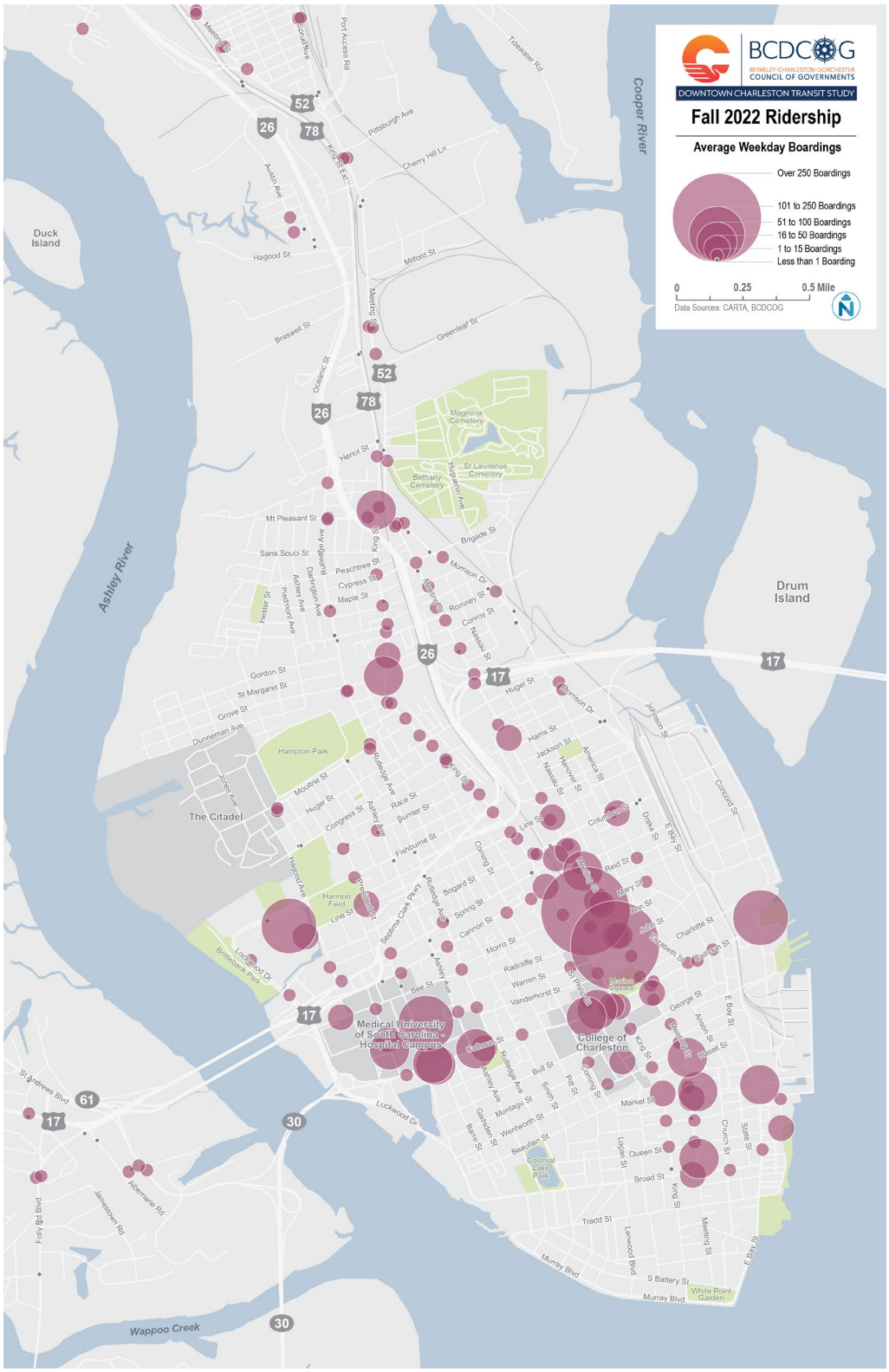


Figure 41 Saturday Average Daily Ridership by Stop

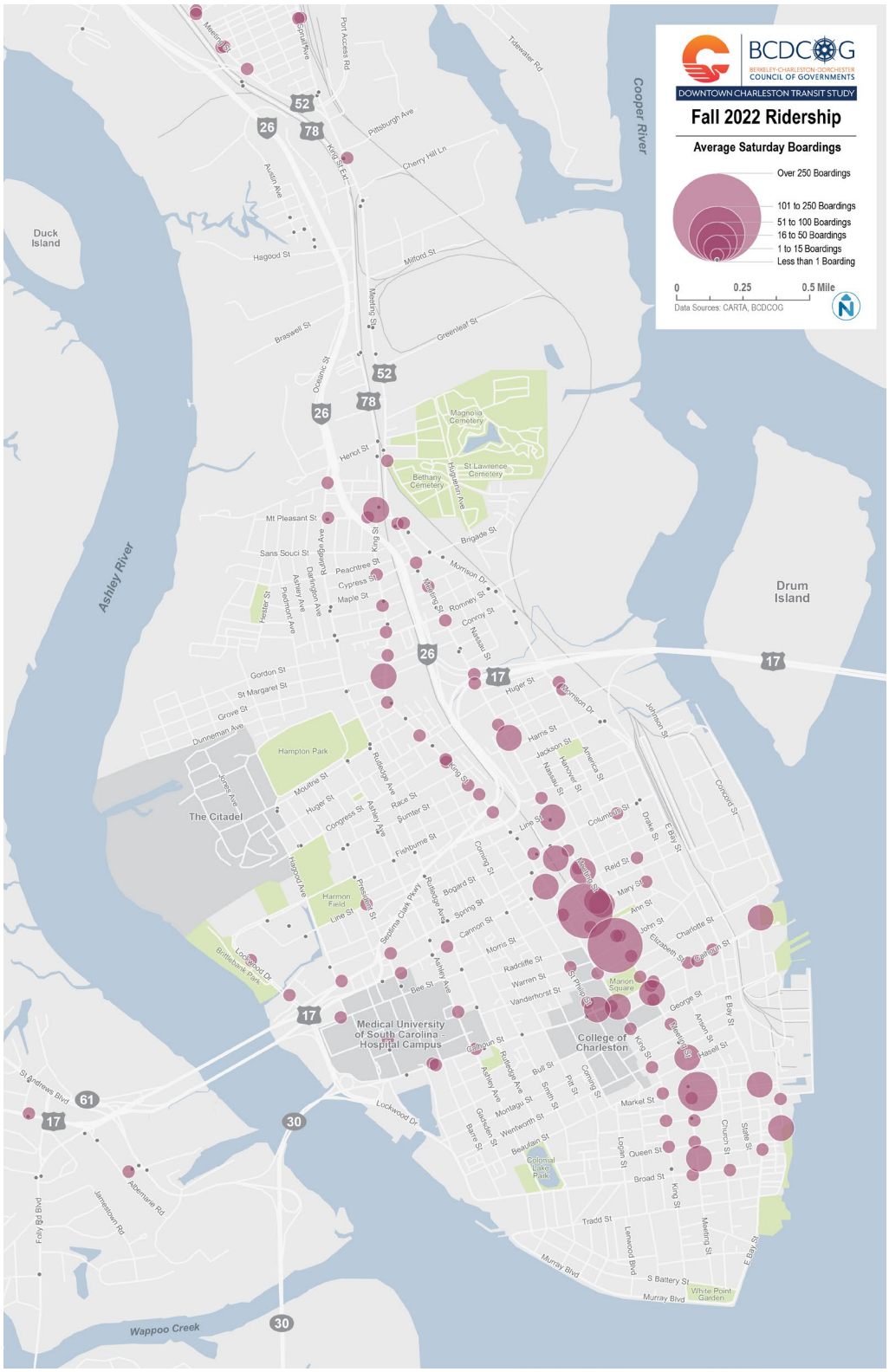
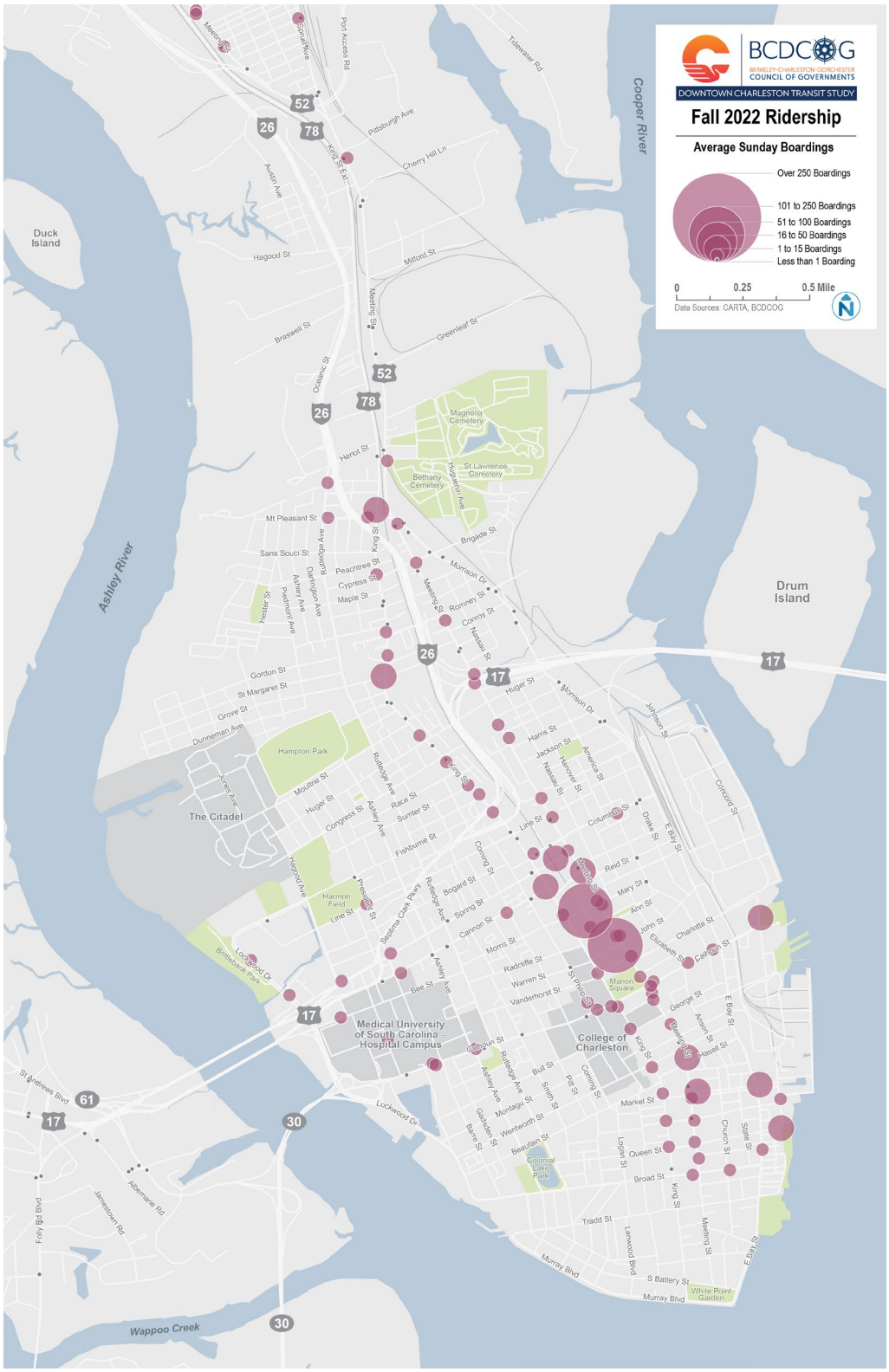


Figure 42 Sunday Average Daily Ridership by Stop



PRODUCTIVITY

A route's productivity can be determined by comparing its total ridership with its revenue hours, or the amount of time a route is running, excluding extra travel time between garages and the route's start or end points. This measures how many riders board the bus each hour it is in service, providing a way to compare route performance that accounts for their differences in length. Revenue hours by route are shown in Figure 42 and productivity is shown in Figure 43.

Route 10 has the highest number of revenue hours followed by Route 11 and Route 211. Routes 30, 40, and 102 each run slightly more revenue hours on Saturdays than weekdays. Route 211 has the most consistency in revenue hours across each day type.

Routes 211, 213, 20, and 203 were the most productive downtown routes on weekdays in fall 2022, while Routes 40 and 41 were the least productive. Routes 211, 20, 213, and 10 had the most boardings per revenue hour on weekends. Route 30 is the only route that was most productive on Sundays. The three Express routes showed very consistent productivity, suggesting that their respective service levels are well matched to their demand. The DASH routes were among the most productive routes each day, which may be attributed to the fact that they are free to ride and serve high-activity areas.

Figure 43 Revenue Hours by Route

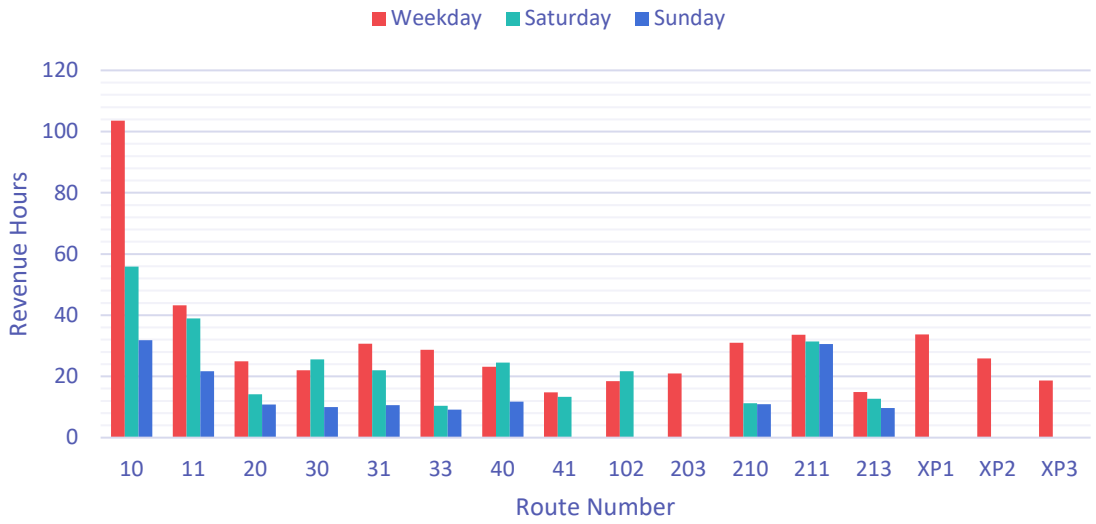
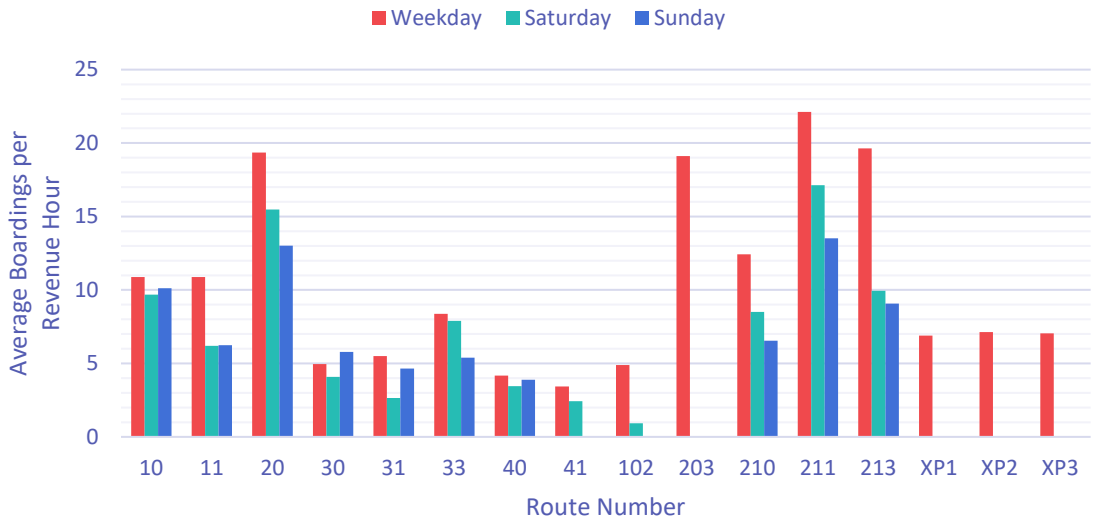


Figure 44 Productivity by Route



ON-TIME PERFORMANCE

On-time performance is an important factor in evaluating service quality, especially when considering the rider's point of view. Reliable transit service makes trips easier for riders to plan and improves their ability to transfer between routes easily. Although some of the factors that cause a bus to be late are beyond the control of the agency, such as traffic congestion or construction along routes, on-time performance is an important metric to ensure a positive rider experience. Routes that are consistently late may require schedule adjustments, additional vehicles, or reductions in frequency to improve consistency of performance. Early departures are also an issue as a bus may arrive at a stop before someone is there, requiring the rider to wait until the next bus arrives. If frequencies are low, riders could be waiting a significant amount of time before another vehicle arrives.

"Early" trips are defined as any that leave before scheduled; "Late" trips are any leaving more than five minutes after scheduled, consistent with the most typical industry standards. The systemwide averages for fall 2022 are provided in Figure 44. Service was slightly more reliable on weekdays than weekends. When not on schedule, vehicles were more likely to be late than early. However, early departures are still frustrating experiences for riders, especially on routes with low frequencies and longer wait times.

On weekdays (Figure 45), on-time performance was most consistent across routes. Routes 30 and 41 were on time the most out of all downtown routes, while Route 20, XP3, 10, and 33 were on time less than 70% of trips. Routes 102, 203, and 211 had significantly more early departures than other routes.

Of routes that ran on Saturdays (Figure 46), Routes 10 and 33 had significantly more late trips, while on time only about 55% and 45% of trips, respectively. Other routes were generally on time less often than they were on weekdays, but followed similar trends.

Route 10 had a much higher percentage of late trips on Sundays (Figure 47), departing on time only about 45% of trips. Most other Sunday routes showed similar performance levels to Saturday on-time performance averages.

Figure 45 Systemwide Average On-Time Performance (Fall 2022)

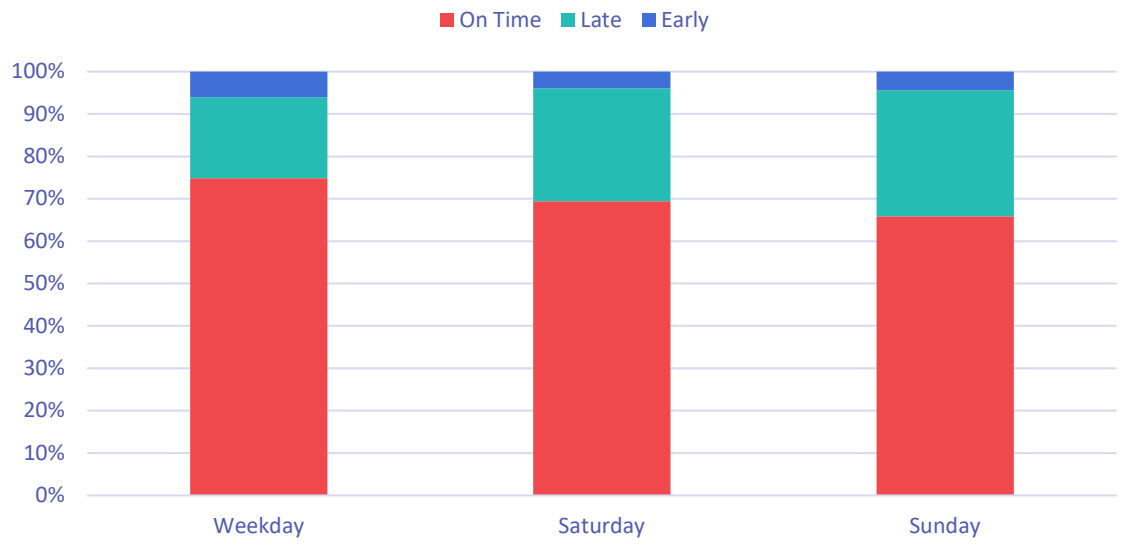


Figure 46 Weekday On-Time Performance by Route (Fall 2022)

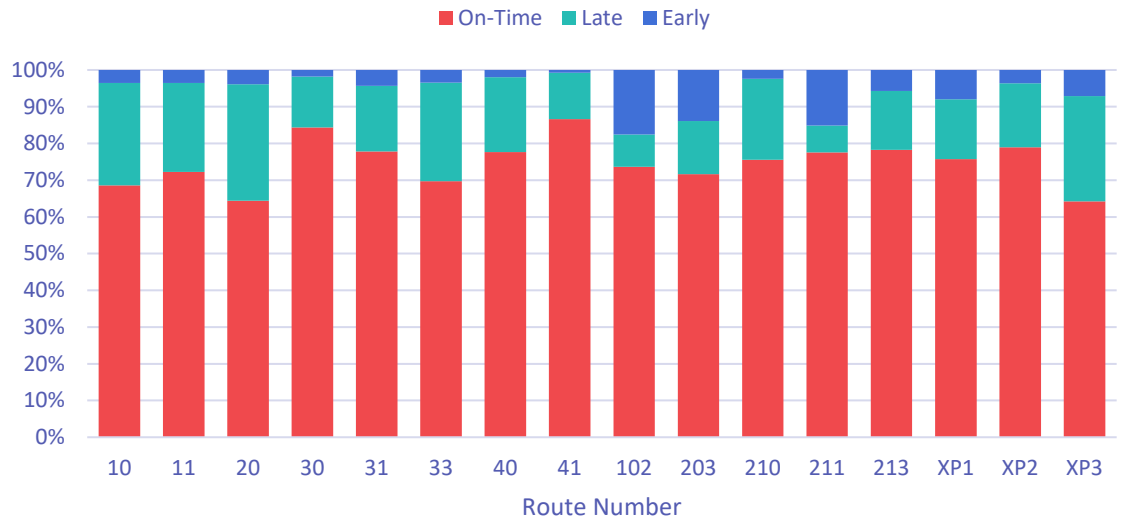


Figure 47 Saturday On-Time Performance by Route (Fall 2022)

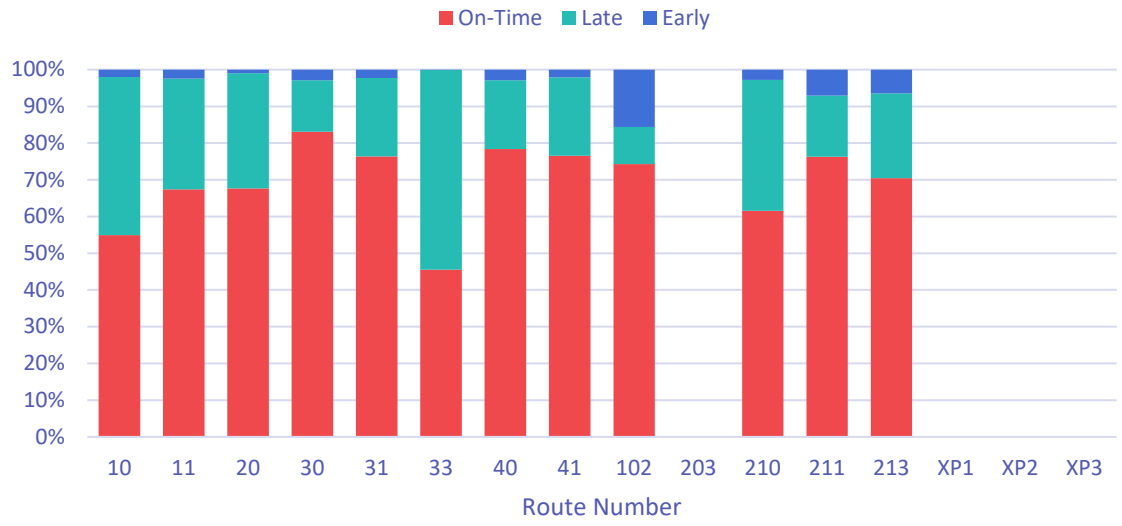
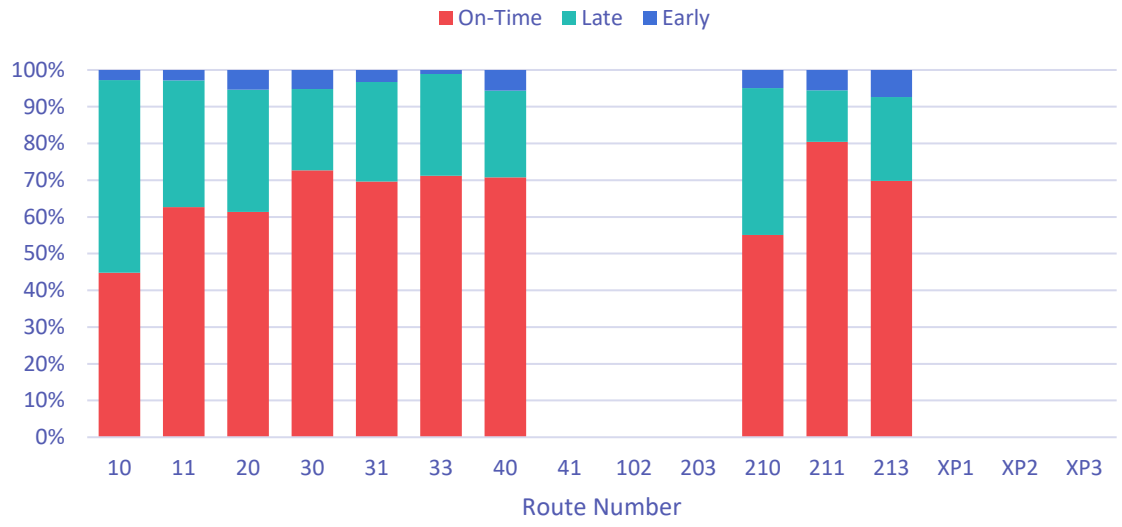


Figure 48 Sunday On-Time Performance by Route (Fall 2022)



DOWNTOWN TRANSFERS

CARTA stops with high ridership and a high volume of transfers are designated as Transfer Centers. The recommended design for Transfer Centers accommodates multiple buses at a time. There are three official transfer centers: Downtown Transfer Center, North Charleston Super Stop, and Citadel Mall. Of these, only the Downtown Transfer Center is within the study area.

The Downtown Transfer Center is made up of four locations within a few blocks of each other: the Transit Mall, Mary Street at Meeting Street, the Visitor Center on Meeting Street (northbound and southbound), and the Visitor Center on John Street. As seen in Figure 50 and Figure 51, the stops with the highest ridership by far are Mary Street at Meeting Street (41% of average weekday ridership) and the Visitor Center at John Street (40% of average weekday ridership). The paired stops by the Visitor Center on Meeting Street make up 13% of average weekday ridership, and the Transit Mall accounts for just 5%.

In some cases, passengers are required to walk from one location to another to catch their next bus. There are continuous, ADA-accessible sidewalks and ramps between these locations. They are between 0.1 and 0.2 miles from each other, adding about 3 to 4 minutes to transferring passengers' journeys, as seen in Figure 48. This is similar to the time it would take to drive another 1.25 miles at 25 miles per hour.

Figure 49 Distance Between Downtown Transfer Center Locations

	Transit Mall	Mary Street at Meeting Street	Visitor Center (Meeting Street)	Visitor Center (John Street)
Transit Mall		500 feet 3-minute walk	1,000 feet 4-minute walk	1,000 feet 4-minute walk
Mary Street at Meeting Street	500 feet 3-minute walk		1,000 feet 4-minute walk	1,000 feet 4-minute walk
Visitor Center (Meeting Street)	1,000 feet 4-minute walk	1,000 feet 4-minute walk		350 feet 1-minute walk
Visitor Center (John Street)	1,000 feet 4-minute walk	1,000 feet 4-minute walk	350 feet 1-minute walk	

In addition to opportunities to improve rider experience at the existing transfer points noted for each in the descriptions below, opportunities to consolidate the four Downtown Transfer Center locations should be considered to reduce the distance between connecting buses and keep travel times to a minimum.

Figure 50 Downtown Transfer Center Stop Locations

Figure 51 Downtown Transfer Center Stop Ridership

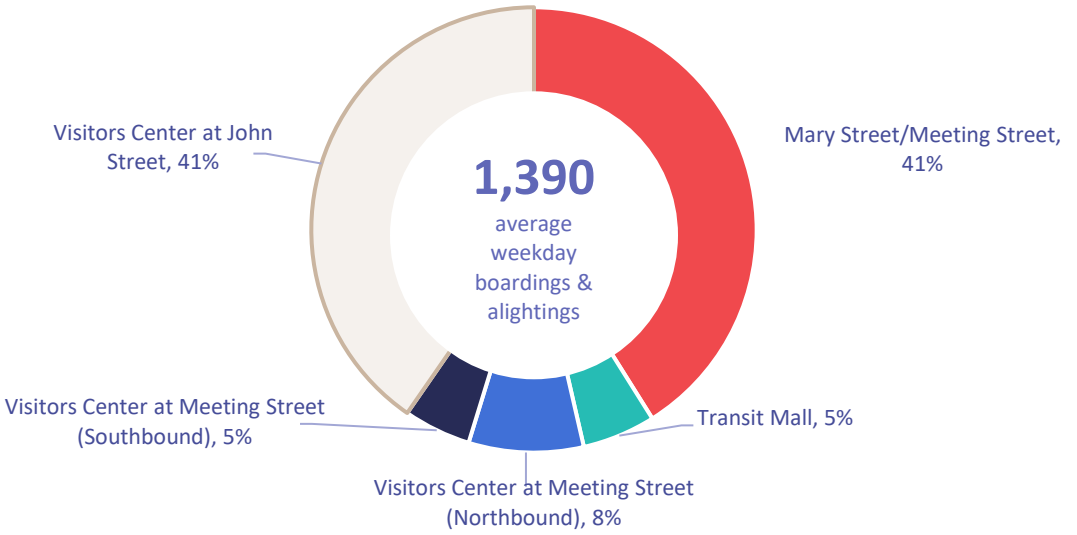
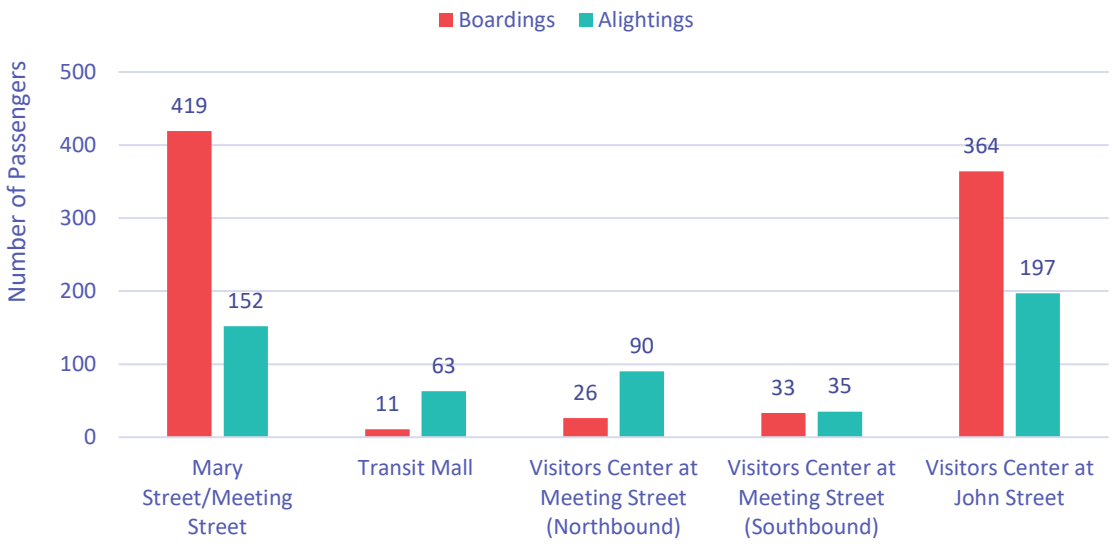


Figure 52 Downtown Transfer Center Stop Boarding & Alighting



Mary Street/Meeting Street

Transfers happen on Mary Street between the Transit Mall and Meeting Street, next to the garage. This stop serves eight routes and with about 419 boardings and 152 alightings on a typical weekday, making it the most heavily used stop in the Downtown Transfer Center. It has a dedicated, brick lane for bus staging. The lane is approximately 190 feet long, but three garage driveways limit the space to fit just two buses. The sidewalks on Mary Street are brick and are generally in good condition, and there are pedestrian scale streetlights and street trees. Some spots appear narrow and ADA accessibility should be confirmed. Part of the adjacent Visitor Center parking garage has been set up with five benches, providing that largest comfortable, covered place for passengers to wait of the three Downtown Transfer Center locations. A sign is posted next to the waiting area noting access to public restrooms upstairs.

Figure 53 Mary Street/Meeting Street Stop Statistics

Routes Served		
10, 11, 30, 31, 33, 40, 41, 213		
Average Ridership		
Boardings	Alightings	
419	**152**	
On-Time Performance		
On-Time	Early	Late
77%	**3%**	**20%**

Opportunities to Improve Rider Experience

- Ensure adequate, warm lighting in the garage waiting area at night to enhance feelings of safety
- Install a more prominent sign to highlight the transfer center
- Add electronic sign with real time information
- Fix any sidewalk bricks that may cause tripping hazards
- Install covered bike racks in the garage near the bus stop

Transit Mall

This one-way street serves CARTA buses and provides vehicular access to the adjacent parking garage. The Transit Mall serves seven routes. Riders are more likely to hop off at this stop than they are to board here, with a weekday average of only 11 boardings but 62 alightings. This may be because the nearby stop at Mary Street serves most of the same routes and has a more comfortable waiting area.

The transit mall street is about 390 feet long and about 22 feet wide—barely wide enough for two buses to pass each other—and could potentially accommodate about six buses at a time. Despite the length of the street, the stop itself is minimal, with only one bench, a standard sign, and a trash can. There are street trees and pedestrian-scale streetlights on both sides of the street. With trees so close to the curb, it would be difficult to widen the street to better accommodate buses without removing mature trees. The street has narrow brick sidewalks on both sides that are generally in good condition, though one side becomes too narrow for ADA access with limited opportunities to widen. As a side street with the garage on one side and few windows facing the street, it has a "back of house" feeling and riders may feel more isolated waiting here.

Figure 54 Transit Mall Stop Statistics

Routes Served		
10, 11, 30, 31, 33, 40, 41		
Average Ridership		
Boardings	Alightings	
11	**63**	
On-Time Performance		
On-Time	Early	Late
77%	**3%**	**20%**

Opportunities to Improve Rider Experience

- Provide shelter to waiting passengers or relocate benches to be sheltered by building awnings or within the parking garage, like on Mary Street
- Increase available seating
- Install catenary lighting to create an inviting atmosphere and enhance visibility at night
- Relocate trash bin area away from bus bench to reduce smells
- Add electronic sign with real time information
- Fix any sidewalk bricks that may cause tripping hazards
- Install more prominent signage to highlight the transit mall

Visitor Center/Charleston Museum on Meeting Street

Transfers also occur on Meeting Street next to the Visitor Center. Paired stops on either side of Meeting Street serve seven routes. This is also the future location of a bus rapid transit station for the LCRT.

The southbound stop has 33 boardings and 35 alightings on a typical weekday. This location has a brick bus pull-off zone on the southbound side that is about 100 feet long, enough space to accommodate two standard buses. There is a wide bus shelter with space for two benches and additional standing room at this stop, along with a trash can. There are wide sidewalks made of stone pavers that are in good condition and pedestrian scale streetlights. There is a bike share rack next to the stop.

Across the street on the northbound side, there is a paired stop in front of the Charleston Museum. It has about 26 boardings on an average weekday and more than three times as many alightings (91). This paired stop is marked with a simple sign and does not have any seating or other amenities. There is a covered plaza with seating at the museum, but it may be difficult for riders in wheelchairs to access and unclear to bus drivers if people sitting there are waiting for a bus.

Figure 55 Visitor Center/Charleston Museum Stop Statistics

Routes Served		
20, 31, 33, 211, XP1, XP2, XP3		
Average Ridership		
Boardings	Alightings	
59	**125**	
On-Time Performance		
On-Time	Early	Late
72%	**5%**	**23%**

Opportunities to Improve Rider Experience

In anticipation of the LCRT station improvements, which will include redesigned seating and shelters, the stops can improve services by:

- Installing additional maps and wayfinding signage, including real-time information
- Add artistic elements or greenery to enhance aesthetics
- Provide outlets for phone charging

Visitor Center on John Street

Transfers next to the Visitor Center also happen on John Street right next to the Visitor Center entrance and the bus shed. This stop has the second highest average daily ridership within the Downtown Transfer Center, with 364 boardings and 197 alightings on a typical weekday. There is a wide bus shelter at this stop with six benches for riders to wait. A trash can and system map poster are also provided. The outer westbound lane on John Street has simple yellow striping and no parking signs to indicate the bus pickup area next to the stop. There is about 95 feet of space reserved for buses, enough to fit two buses. The rest of the lane is used as on-street parking. There are continuous sidewalks connecting to the bus stop that are in good condition and the nearest curb ramps appear to be ADA accessible. The nearest crosswalks are about 640 feet apart. There are some street trees near the bus stop and the shaded plaza next to the stop has benches that could be used by riders with longer wait times. The streetlights in this area are typically at a vehicular scale and spaced farther apart. This stop should be observed at night to determine if lighting is adequate.

Figure 56 Visitor Center on John Street

Routes Served		
210, 211, 213		
Average Ridership		
Boardings	Alightings	
364	**197**	
On-Time Performance		
On-Time	Early	Late
77%	**8%**	**15%**

Opportunities to Improve Rider Experience

- If the restrooms at the Visitor Center are publicly accessible, a sign notifying passengers of their availability could be placed at this stop, similar to at the Mary Street at Meeting Street stop.
- Evaluate lighting conditions at night and enhance pedestrian-scale lighting, if needed.
- Install electronic real-time arrival signage
- Provide outlets for phone charging

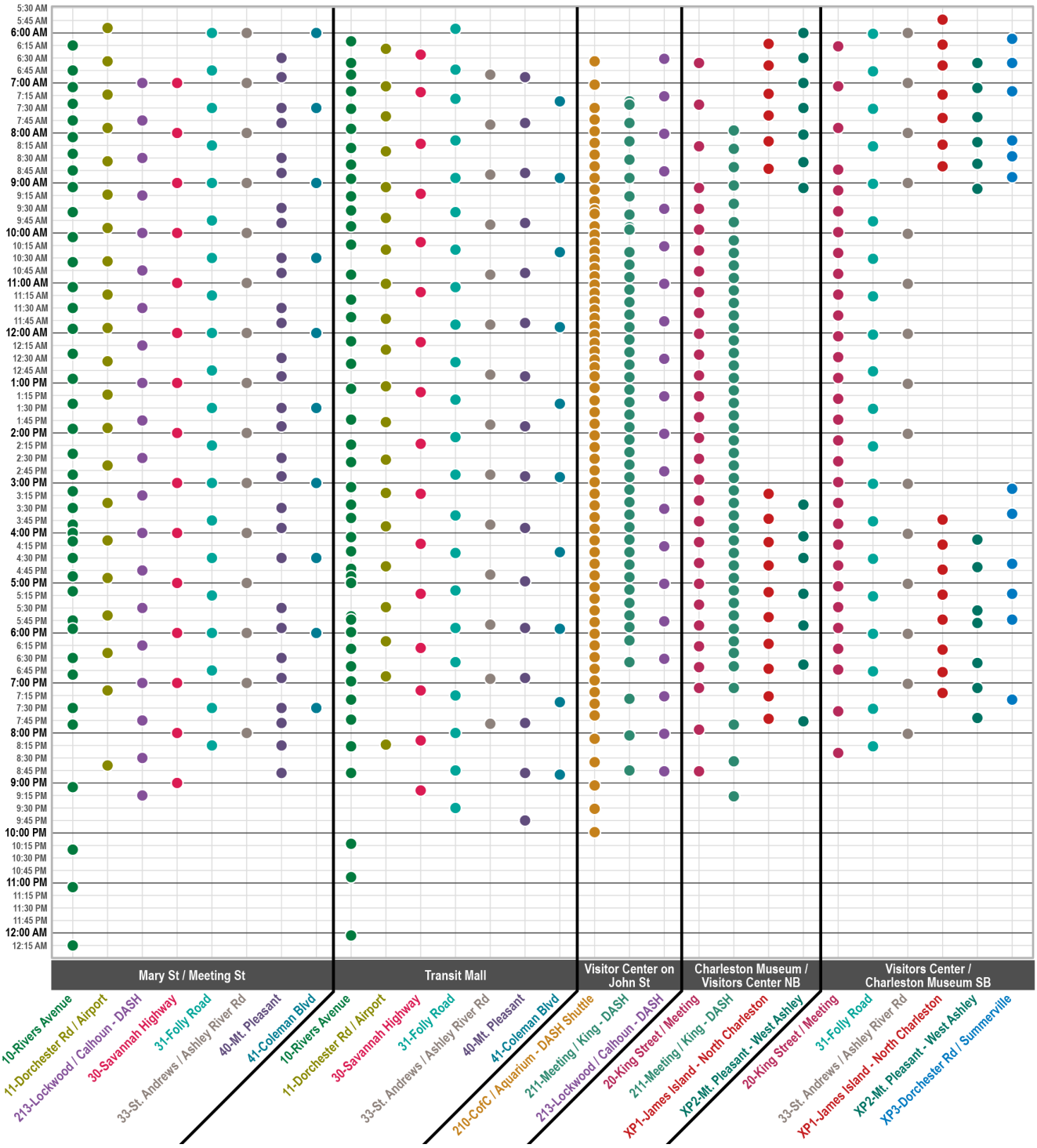
Transfer Scheduling

The stops that comprise the Downtown Transfer Center are the primary places where transfers between routes are available downtown. As described above, these stops are located close together but still require a rider to walk three to four minutes to travel between them. This places extra importance on scheduling routes to allow for easy transfers and accommodate the additional walk time that may be needed. These considerations will allow more riders to utilize CARTA services as a cohesive network that can take them to a variety of destinations conveniently and reliably.

Figure 56 shows the scheduled departures of routes that serve each of the stops that make up the Downtown Transfer Center. Each point in the chart indicates when the route is scheduled to leave the stop, showing when different routes' schedules line up and make transfers possible. Due to the walk distance between the different stops, however, it is more likely that passengers are not able to make transfers timed to leave at the same time if they are transferring between routes that serve different stops. For this group of transit stops to function as one cohesive transfer center, it may be necessary to offset schedules or build in additional dwell time to give passengers time to walk between each stop when needed.

Additionally, scheduled transfers are only accurate and predictable for riders when routes are on time. Delays disrupt even well-timed transfers and, especially on lower-frequency routes, can create long wait times for riders. Routes that often experience issues with delays may need schedule adjustments so that they reflect accurate travel times and allow riders to plan their trip and any required transfers.

Figure 57 Scheduled Departures at Downtown Transfer Locations



TRANSIT VEHICLE CONSTRAINTS

Existing Fleet

CARTA operates buses from New Flyer, Proterra, Gillig, Alexander Dennis, and Ford (Figure 57). New Flyer dominates the fleet with models such as MIDI, XN60, MD30, D35HF, D35LFR, D35LF, D40LF, and XE40. Proterra and New Flyer manufacture CARTA's battery-electric buses (BEBs). while Gillig provides CARTA's commuter buses.

Diesel buses, including those from New Flyer and Gillig, are prevalent, reflecting the traditional choice for public transit fleets. As seen in Figure 58, there is also a notable shift towards environmental sustainability, with CARTA operating battery-electric buses (BEBs) manufactured by Proterra and New Flyer (XE40). These electric buses contribute to CARTA's 2022 Battery Electric Bus Master Plan & Roadmap, with the goal of full fleet electrification by 2040.

As seen in Figure 59, the fleet includes buses from 1996 to 2021, with various upgrades and technological advancements over the years. While newer models, like the Gillig 40' Commuter (2019), Proterra ZX5 (2021) and the New Flyer XE40 (2021), represent the largest share of buses in the fleet, CARTA is still operating nine buses that were manufactured in 1996.

CARTA's fleet includes buses of varying lengths, with 22' cutaway buses and 30', 35', and 40' full-length buses available (Figure 60). This diversity corresponds to the different service routes and passenger capacities required to meet the demands of Charleston's geography.

Figure 58 Number of Buses by Manufacturer

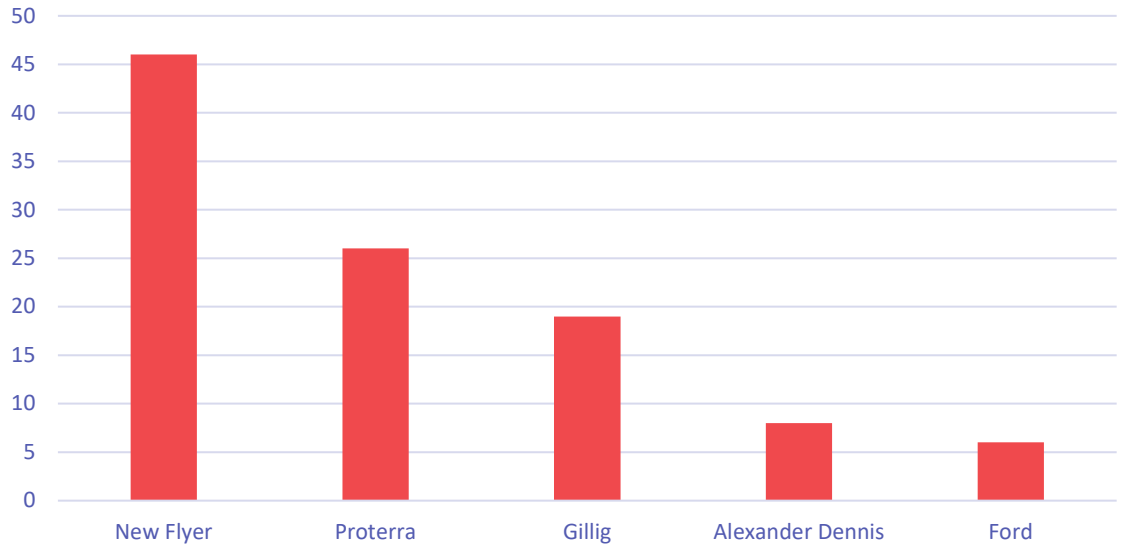


Figure 59 Number and Share of Buses by Fuel Type

Fuel Type	Count	Share of Fleet
Diesel	66	63%
Battery-Electric	33	31%
Gasoline	6	6%

Figure 60 Number of Buses by Manufacture Year

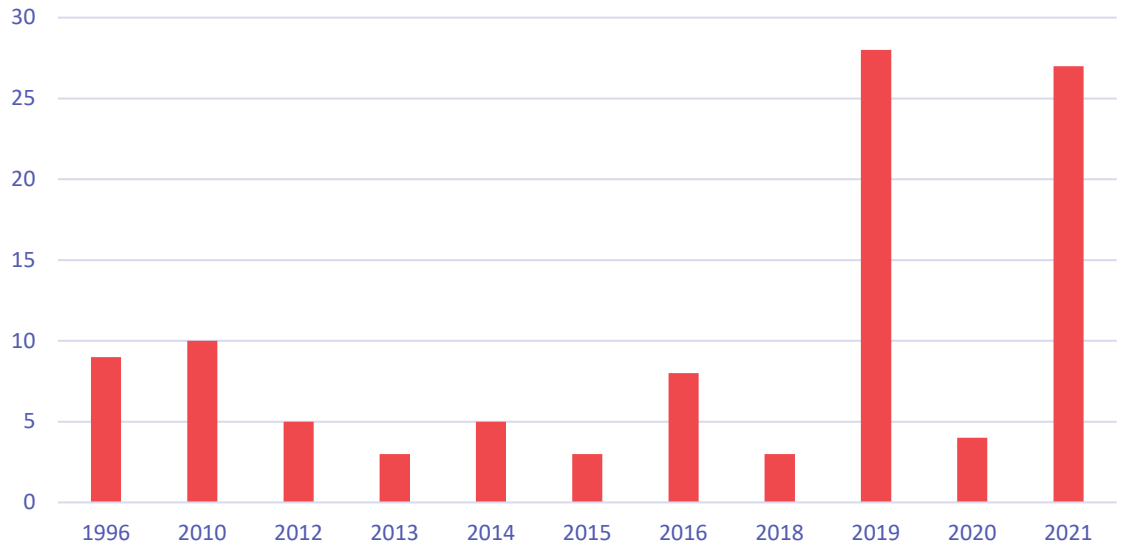
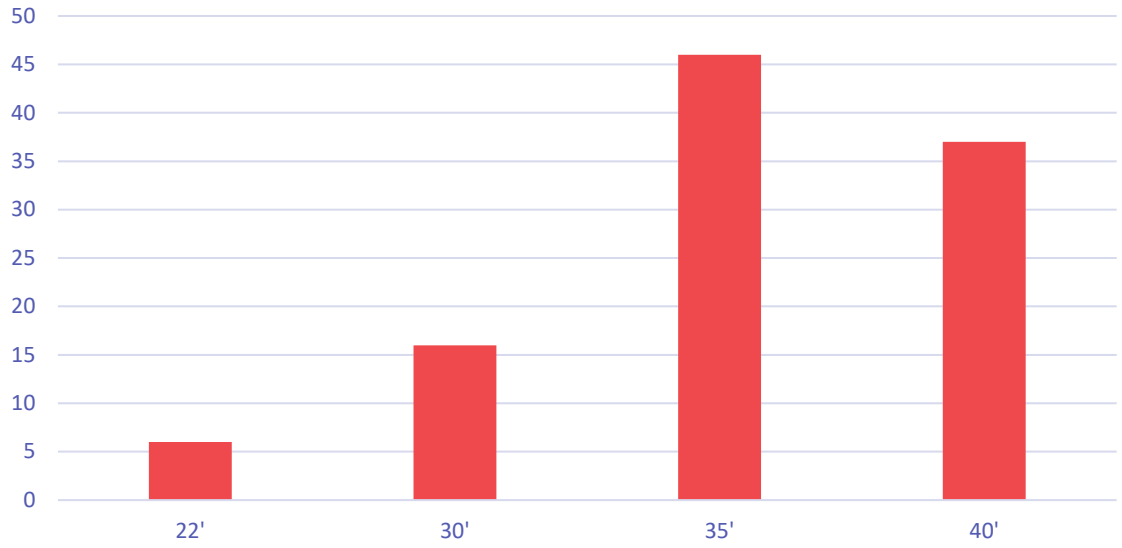


Figure 61 Number of Buses by Vehicle Length



Projecting Fleet Replacement

By 2028, 59% of CARTA's bus fleet will be older than 12 years, which is the average useful life for most public transit buses. These buses will have to be phased out to ensure adequate service. Additionally, CARTA's 2022 Battery Electric Bus Master Plan & Roadmap assumes that CARTA's fleet will grow by 20% to accommodate service improvements and expansion, increasing the need to procure new vehicles on a timely schedule. The Electric Bus Roadmap also assumes that CARTA buses will be replaced in a one-to-one manner from fossil fuel buses to battery electric buses. Looking ahead to 2040, CARTA plans to install 13 electric vehicle charging units and four centralized charging units, providing a combined capacity of 100 dispensers. CARTA's progress on these charging unit goals will directly impact its ability to replace vehicles on-time and meet electrification goals.

Fleet replacement will be informed by the useful life of the existing fleet as well as CARTA's available finances. The procurement of battery electric buses requires an additional expenditure of $27.5 million compared to a replacement schedule that includes only diesel buses. This cost increase is primarily driven by the price differential between battery electric buses and conventional fossil fuel vehicles. Furthermore, there is an additional expense of $16.3 million associated with facility modifications and infrastructure development for charging. While capital costs linked to vehicle overhauls and battery replacements remain comparatively minor when compared to acquisition expenses, the straightforward nature of BEB propulsion systems leads to reduced maintenance costs in contrast to the business-as-usual scenario in which CARTA does not electrify its fleet. However, transitioning to electricity as the primary 'fuel' generates economic advantages, yielding $13 million in savings when compared to traditional diesel and gasoline refueling. Furthermore, the maintenance of BEBs brings about savings of $2.6 million. These cost reductions are a direct consequence of the enhanced efficiency of BEBs compared to fossil fuel technologies.[6]

Service Design Considerations

Several routes in downtown areas have constraints related to the size of buses they can accommodate. The XP1, XP2, and XP3 routes primarily employ 40-foot buses with additional passenger amenities such as reclining seats and USB ports, which operate on main thoroughfares through Downtown Charleston. Route 10 and the future LCRT route also accommodate 40-foot and 60-foot buses with minimal turning problems.

Route 11 presents a different scenario, where 35-foot buses can navigate effectively, but 40-foot buses face challenges at Columbus Street due to turning constraints. Route 20 experiences difficulties with multiple turns, making it unsuitable for 40-foot buses and difficult for even 35-foot buses.

In contrast, Route 30 can effectively accommodate both 35-foot and 40-foot buses, thanks to its favorable turning radii. Route 31, predominantly served by 35-foot buses, encounters turning constraints at Albemarle Road, limiting its suitability for 40-foot buses. Route 33 also faces challenges when transitioning from Bilo to Highway 61, making it less suitable for 40-foot buses.

Routes 40 and 203, which employ 35-foot and 40-foot buses, can accommodate both sizes efficiently, thanks to their turning radii. Conversely, Route 41, primarily served by 20-foot and 25-foot buses,

[6] Battery Electric Bus Master Plan & Roadmap, CARTA

struggles with low branches near Rifle Range, making it unsuitable for 40-foot buses but navigable for smaller buses. Similarly, Route 102, predominantly utilizing 20-foot and 25-foot buses, faces constraints involving multiple turns and low branches, rendering it less suitable for 40-foot buses.

Routes 210, 211, and 213 present challenges irrespective of bus size due to branding, turns, or low branches, making them unsuitable for 40-foot buses. Understanding these nuances in turning radii is vital for any modifications or expansions within the CARTA bus system, particularly when considering the introduction of 40-foot buses to existing routes.

HOP PARK-AND-RIDE AND SHUTTLE SERVICE

Downtown Charleston is a destination for hospitality and tourism, industries supported by large numbers of service workers who commute to the restaurants, bars, hotels, and other destinations downtown. The HOP service is a program created in April 2018 aimed at giving workers in the hospitality industry options to get to work without the stress and expense of parking in Downtown Charleston by providing park-and-ride locations on the edge of downtown with shuttle service to key hospitality locations. The program is a partnership between CARTA, the City of Charleston, Charleston County, the Charleston Area Convention and Visitors Bureau, and BCDCOG. During the COVID-19 pandemic, the City of Charleston lowered parking rates in Downtown Charleston in order to sustain the hospitality industry. While lower parking rates reduced costs for workers, HOP ridership also declined significantly and the HOP service was suspended in 2020 until further notice. Discussions of reviving the program are currently underway.

Figure 62 HOP Shuttle with Headsign

Pre-2020 HOP Service

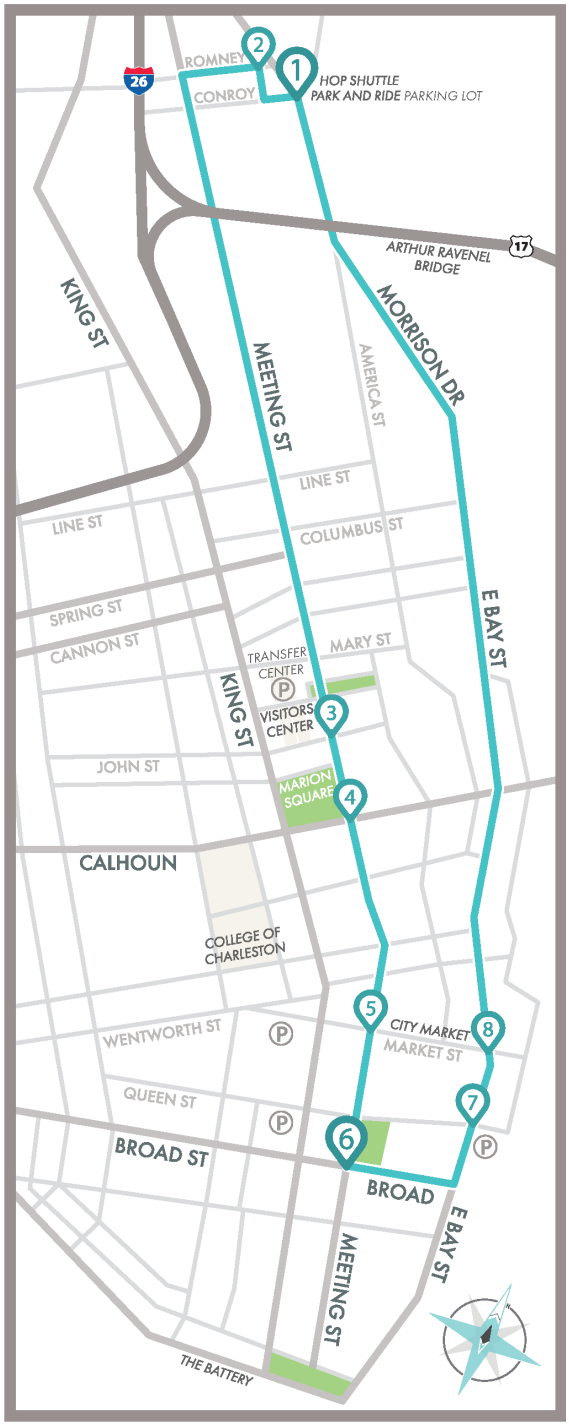
The first HOP park-and-ride lot was located at 999 Morrison Drive, a City of Charleston and Charleston County property on the northeast end of the Peninsula. It offered 170 surface lot spaces, although according to CARTA staff, the lot was rarely at full capacity. Ticket kiosks, shelters, lighting, bike racks, bike share, and an attendant booth were also included on site. The cost to park was $5 per day, but the CARTA operated shuttle service, offered as Route 7 HOP Shuttle (Figure 61), was free. Service was 15 minutes from 6 am to 1:30 am Sunday to Thursday and 6 am to 2:30 am Friday and Saturday. Shuttle vehicle locations could be tracked in real time using the Transit mobile app.

As seen in Figure 62, the shuttle made stops at eight locations along Meeting Street and East Bay Street, including:

- Morrison Dr and Conroy St (Bus Stop #509) (HOP Park-and-Ride Lot)
- Romney St (Bus Stop #510)
- Meeting St and John St (Bus Stop #461)
- Meeting St and Calhoun St (Bus Stop #445)
- Meeting St and Market St (Bus Stop #443)
- Meeting St and Broad St (Bus Stop #511)
- East Bay St and Vendue Range (Bus Stop #512)
- East Bay St and Market St (Bus Stop #513)

This route is focused on the eastern side of the Peninsula, where the majority of commercial and hospitality destinations are located, and parking spaces are at a premium. Destinations on the west side of the Peninsula, like the hotels around the MUSC University Health Center, were not directly served by the shuttle route.

Figure 63 HOP Shuttle Map



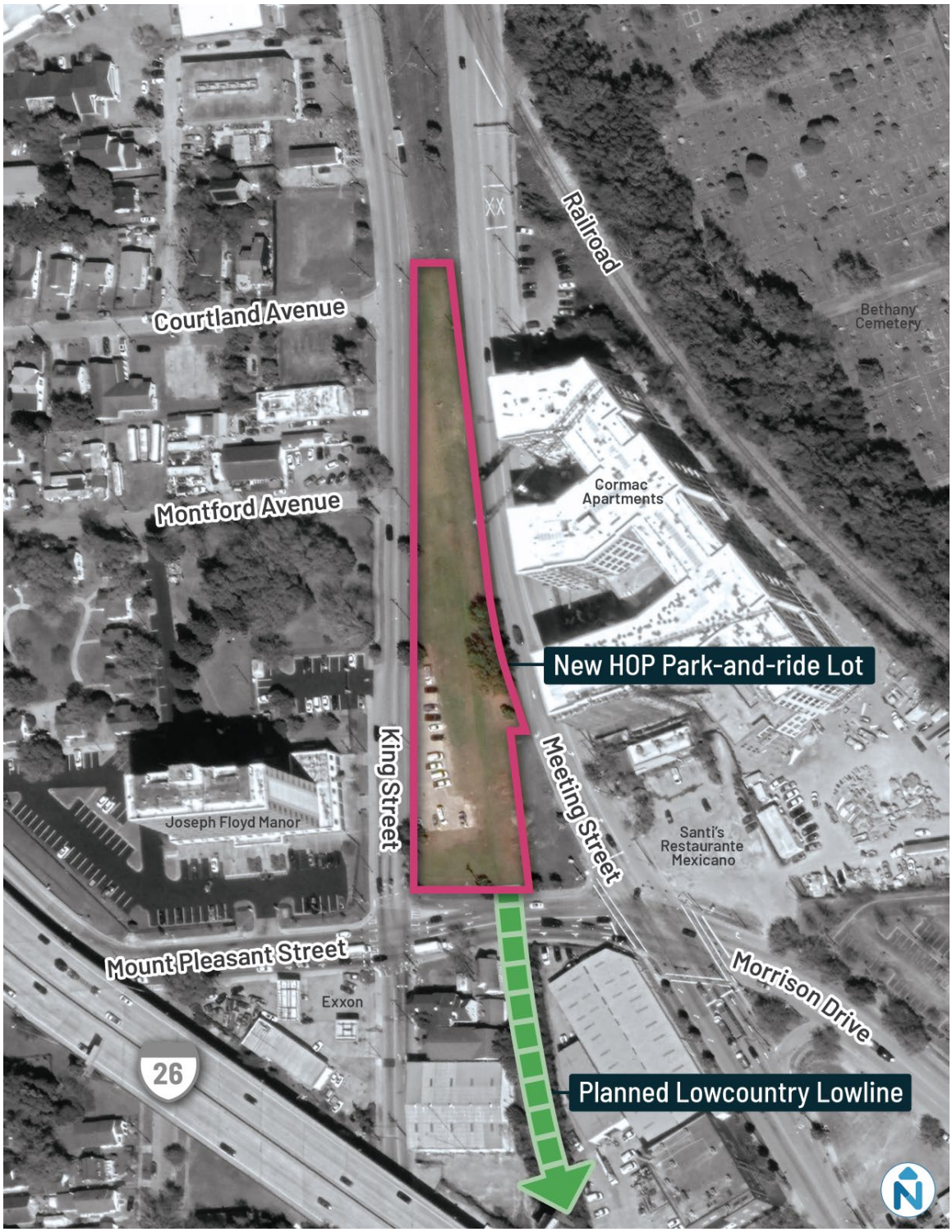
Future of HOP Service

The original HOP park-and-ride lot closed in 2020 as facilities for the Charleston Tech Center were constructed on the site. A new HOP park-and-ride lot is planned at the intersection of Mt Pleasant Street, King Street, and Meeting Street on the upper part of the Peninsula, as seen in Figure 63. Located about 0.6 miles north of the original site, the 1.65-acre site will accommodate 115 parking spaces and was acquired by BCDCOG in 2018. Due to the new lot location, CARTA has not yet determined if a reinstated HOP shuttle route would stop in the same locations as the previous route. Because the new lot is located a few blocks north on Meeting Street, the previous shuttle route focused on Meeting Street and East Bay Street would still be accessible from this location. However, the increased distance to the new lot would increase the cycle time of the route and would either require more resources to provide the same 15-minute frequency or providing less frequent service.

The new location will have transit shelters, bike racks, and parking meter kiosks, an LCRT station, and is planned to connect with the northern end of the planned Lowcountry Lowline, a linear park providing walking and biking connections to the rest of the Peninsula. In addition to the Lowcountry Lowline, bicycle facilities are planned on several of the streets approaching the park-and-ride lot. Along with covered and secure bicycle parking, the construction of these facilities through partnerships with the City of Charleston and Charleston County would help this park-and-ride lot to serve not only people driving to the Peninsula for work, but also people biking to the area.

Some of the sidewalks on the block around the new HOP park-and-ride lot are missing, overgrown, or in poor condition, and several of the intersection approaches have faded or missing crosswalks. These should be upgraded as the new HOP lot is constructed to make it accessible to people who live nearby and may want to walk to the lot to access the shuttle. Additionally, there is no lighting on the site today. While there are vehicular-oriented streetlights on the side of the street opposite the planned park-and-ride lot, pedestrian-scale lighting should be integrated throughout the lot to enhance safety, especially around the passenger waiting area.

Figure 64 New HOP Park-and-Ride Lot Location



6 BUS SUPPORTIVE INFRASTRUCTURE

Physical infrastructure has a major impact on the performance of the transit system, how accessible it is to different types of riders, and the overall experience of getting around Charleston by transit. In anticipation of developing local fixed route service alternatives in the next phase of the project, it is key to understand the additional ongoing efforts that may impact future CARTA services. Key bus supportive infrastructure initiatives to consider include:

- Planned infrastructure investments and new transit stations through the LCRT project
- Pedestrian and bicycle facilities to safely and comfortably access transit stops and stations
- Street design as it relates to transit vehicle constraints and potential conflicts between buses and people walking, biking, or driving
- Bus stop conditions and amenities that make waiting for transit a more pleasant experience

LOWCOUNTRY RAPID TRANSIT (LCRT)

The LCRT is a planned 21.3-mile, regional Bus Rapid Transit (BRT) line that will connect Charleston's northern suburbs to the Peninsula (Figure 64). When operational, it will be the first BRT system in South Carolina. The line will offer premium transit, with LCRT buses arriving every 10 minutes for most of the day. Features like traffic signals that prioritize buses, stations designed for easy boarding, and dedicated, center running bus lanes north of the Peninsula will help keep the buses on schedule. South of Reynolds Avenue, the buses will operate in mixed traffic, primarily on King Street Extension and Meeting Street before turning west and connecting to the MUSC Health University Center. The route will terminate as a stop at Line Street and Hagood Avenue near Brittlebank Park in the Gadsden Green neighborhood.

The project planning began in 2016 and is currently in the design and engineering phase. Construction is expected to take place from 2026 to 2028. There will be several key interactions between the LCRT system and local bus and shuttle service on the Peninsula.

Figure 65 LCRT Route and Stations

Stations

The LCRT stations will be designed for rider comfort and convenience, with shade structures, multiple benches, ticket kiosks, and digital signage with real-time arrival information, as seen in an example in Figure 65. There will be eight LCRT stations located within the Downtown Charleston study area (Figure 66). They will be larger with more amenities than other bus stops available in Downtown Charleston. Because the LCRT route on the Peninsula will operate in mixed traffic, there will be side running stations in this area, meaning the LCRT buses will pick up passengers on the same side of the street as local buses. As seen in Figure 67, there may be an opportunity for local buses to use LCRT stations to pick up passengers when these stations are located next to existing bus stops to offer a more comfortable place for all passengers to wait.

Figure 66 Example LCRT Station

Figure 67 LCRT Stations on the Peninsula

Station	Key Planned Pedestrian and Bicycle Improvements	Local Bus Routes with Adjacent Stops
Line Street & Hagood Avenue	▪ Raised intersection ▪ Build sidewalks ▪ ADA-compliant curb ramps ▪ Rapid flashing beacons	203 (Stop #481)
Courtenay Drive & Doughty Street	▪ Upgrade ADA ramps ▪ Sidewalks behind station platforms	213, XP3 (Stop #479, 569)
Jonathan Lucas Street	▪ Sidewalk reconstruction ▪ ADA-compliant curb ramps ▪ Tree removal to allow ADA access ▪ Left turn lane westbound from Calhoun Street to Ashley Avenue	31, 33, 213, XP1, XP2, XP3 (Stop #575, 502)
Coming Street	▪ Upgrade ADA ramp	31, 33, 210, XP1, XP2 (Stop #547, 574)
John Street	▪ ADA-compliant curb ramps	20, 31, 33, 211, XP1, XP2, XP3 (Stop #461, 476)

Station	Key Planned Pedestrian and Bicycle Improvements	Local Bus Routes with Adjacent Stops
Lee Street	▪ ADA-compliant curb ramps ▪ Eastbound US-17 entrance ramp ▪ New pedestrian crossings near Cedar Street and US-17 entrance ramp	10, 40 (Stop #114, 60)
Mt Pleasant Street Park-and-Ride	▪ Shared-use path on King Street north of Mt Pleasant Street (west side) ▪ Sidewalk on King Street from Heriot Street to Mt Pleasant Street (east side)	20, 102 (Stop #484)
Rosemont/Magnolia	▪ Shared-use path on King Street Extension	102 (Stop #122)

Source: LCRT Walking and Biking Access (2021)

Figure 68 **LCRT Line in Downtown Charleston**

Signal Operations

The signals along the LCRT route will be upgraded to incorporate transit signal priority equipment, and the LCRT buses will have on-board equipment to communicate with the new signals, allowing them to be prioritized as they approach an intersection. In some cases, local bus routes will pass through the same intersections as the LCRT buses. Opportunities to equip the local buses that use these intersections with the same on-board technology as the LCRT buses should be explored to improve the on-time performance of those routes and maximize the value of investing in the new signals.

Pedestrian and Bicycle Facility Improvements

The project will also address ways to improve walking and biking access to the new LCRT stations, considering a 0.5-mile walk and a 1-mile bike ride to each station. A new shared use path is planned parallel to the LCRT route as the primary walking and biking "spine" connecting the stations for the northern end of the route. However, that path will terminate at the park-and-ride lot on the north end of the Peninsula, which is near the planned Lowcountry Lowline path that will continue south. Other pedestrian and bicycle recommendations are planned around stations on the Peninsula, including new sidewalks, shared use paths, curb ramps, ADA compliance, and bicycle lanes. Some of these recommendations are shown as being LCRT-funded (generally pedestrian enhancements a block in either direction of each station), but most are not. In most cases outside of the immediate vicinity of the LCRT stops, separate pedestrian and bicycle improvement projects will still be needed.

Service Duplication

The new LCRT route runs along streets that already offer local bus service on the Peninsula, and it will provide more frequent service than the existing routes. In some segments, such as Meeting Street north of Calhoun Street, there will be multiple routes for riders to choose. However, the local bus routes that currently operate where the LCRT will start and end in different locations. Route 10 has the most similar routing to the LCRT and should be reevaluated and adjusted once the LCRT becomes operational.

Transit-Oriented Development

One goal of the LCRT project is to implement a transit-oriented development strategy to increase the number of people who live and work a short walk from the planned stations. The LCRT Transit-Oriented Development Plan outlines specific conceptual development strategies for each station area to add infill housing and additional employment. Potential impacts of the proposed transit-oriented development strategy include:

- **Increasing Transit-Supportive Densities:** As new development is added around these station areas in the future, the potential for transit ridership around them may increase as new residents and workers move into the area. Over time, this may lead to higher frequency local bus service being warranted to serve these areas.
- **Decreasing Available Parking in Station Areas:** The plans show proposed new development or structured parking on several existing surface parking lots near stations on the southern end of the Peninsula, where parking is currently most constrained and expensive. This will likely add to

the stress and expense of hospitality workers parking near their jobs in that area and may increase demand for the HOP lot and shuttle service. Employees at the Medical District may also have increased demand for transit service and park-and-ride shuttles.

- **Reconnecting Street Grids:** In several station area neighborhoods, street segments have been eliminated over time, breaking the street grid and increasing the time it takes to walk or bike around. As parcels are redeveloped, this plan proposes reconnecting many of those streets, which could make it easier for some people to walk or bike to transit.
- **HOP Lot Redevelopment:** The plan shows development at the new HOP park-and-ride lot as part of the long-term Mt Pleasant Street Station area development concept (Figure 68). The inclusion of structured parking in the redevelopment is mentioned. At a minimum, this would cause a disruption to HOP park-and-ride access during construction and may also increase the cost of parking. Because BCDCOG owns the lot, it is not at risk of being developed by an outside entity without notice. Redevelopment in this area should be monitored and, if the lot is developed, alternative HOP parking should be provided.

Figure 69 Near and Long-Term Conceptual Development near Mt Pleasant Street Station

Near term development of LCRT Station, Hop Lot and intersection improvements

Long term development and buildout of station area including the development of the Hop Lot with the conversion of existing parking into structured parking

PEDESTRIAN AND BICYCLE FACILITIES

To get to transit stops, riders need to either walk, bike, or drive, making sidewalks and bicycle facilities key components of a holistic transit network. People are typically willing to walk or bike about 10 minutes to reach their transit stop, which winds up being about ½-mile walk or a 2-mile bike ride. Prioritizing sidewalk and bike facility improvements within these ranges will have the biggest impact on improving access to transit. On the Charleston Peninsula, almost every block is within ½-mile of a transit stop (98% of street miles). This means continuous sidewalk access and a reasonable, connected network of bicycle facilities throughout the entire Peninsula is needed to support access to transit.

Existing Sidewalks

Today, there are 130.8 miles of streets within the Peninsula study area, not including Interstates or on-ramps. Of these, most have sidewalks on both sides of the street (60%), some have sidewalks on one side (19%), and some (20%) have no sidewalks at all (Figure 69). That includes 26 miles of streets within a ½-mile of bus stops that have no sidewalks on either side of the street. As seen in Figure 70, just 15% of streets with speed limits of 35 miles per hour (mph) or more have sidewalks on both sides, and 42% have none. The City of Charleston, the state, the federal government, and private owners each are responsible for some of the streets on the Peninsula and coordination and commitment from all will be necessary to construct continuous sidewalks throughout (Figure 71).

Figure 70 Study Area Sidewalk Availability

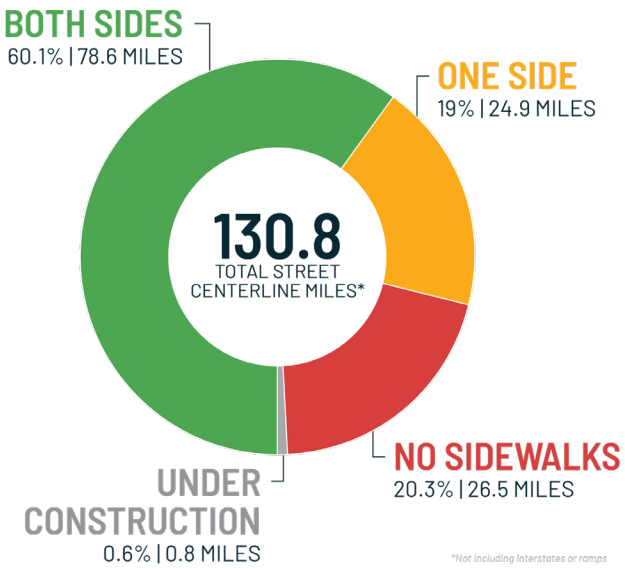


Figure 71 Existing Sidewalks by Street Speed Limit

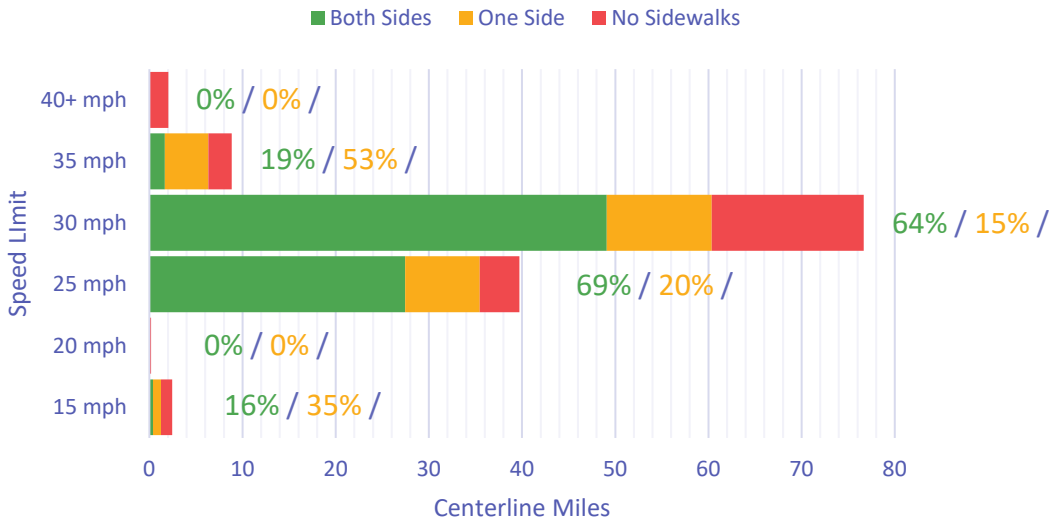
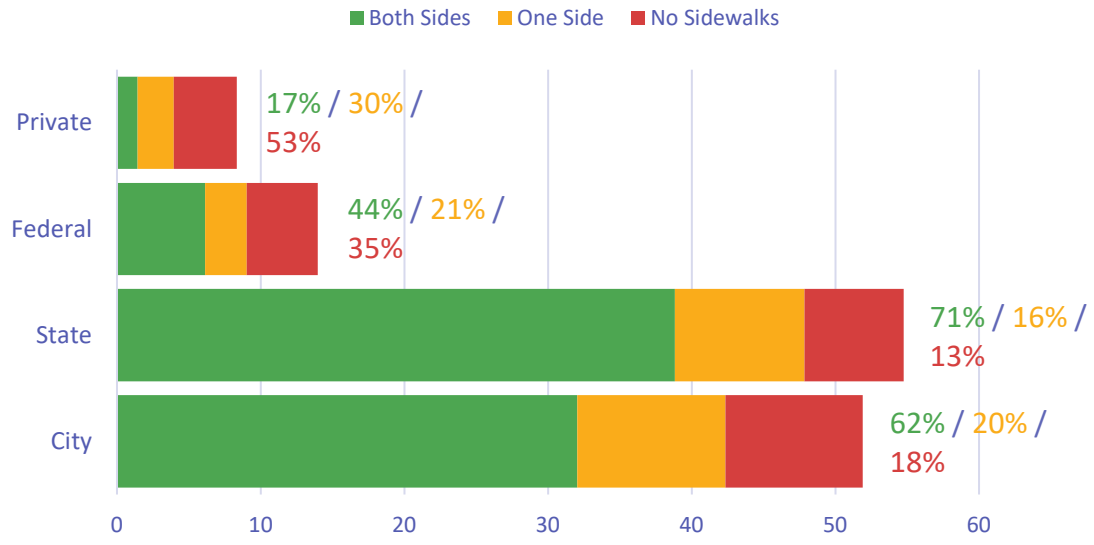


Figure 72 Existing Sidewalks by Jurisdictional Responsibility

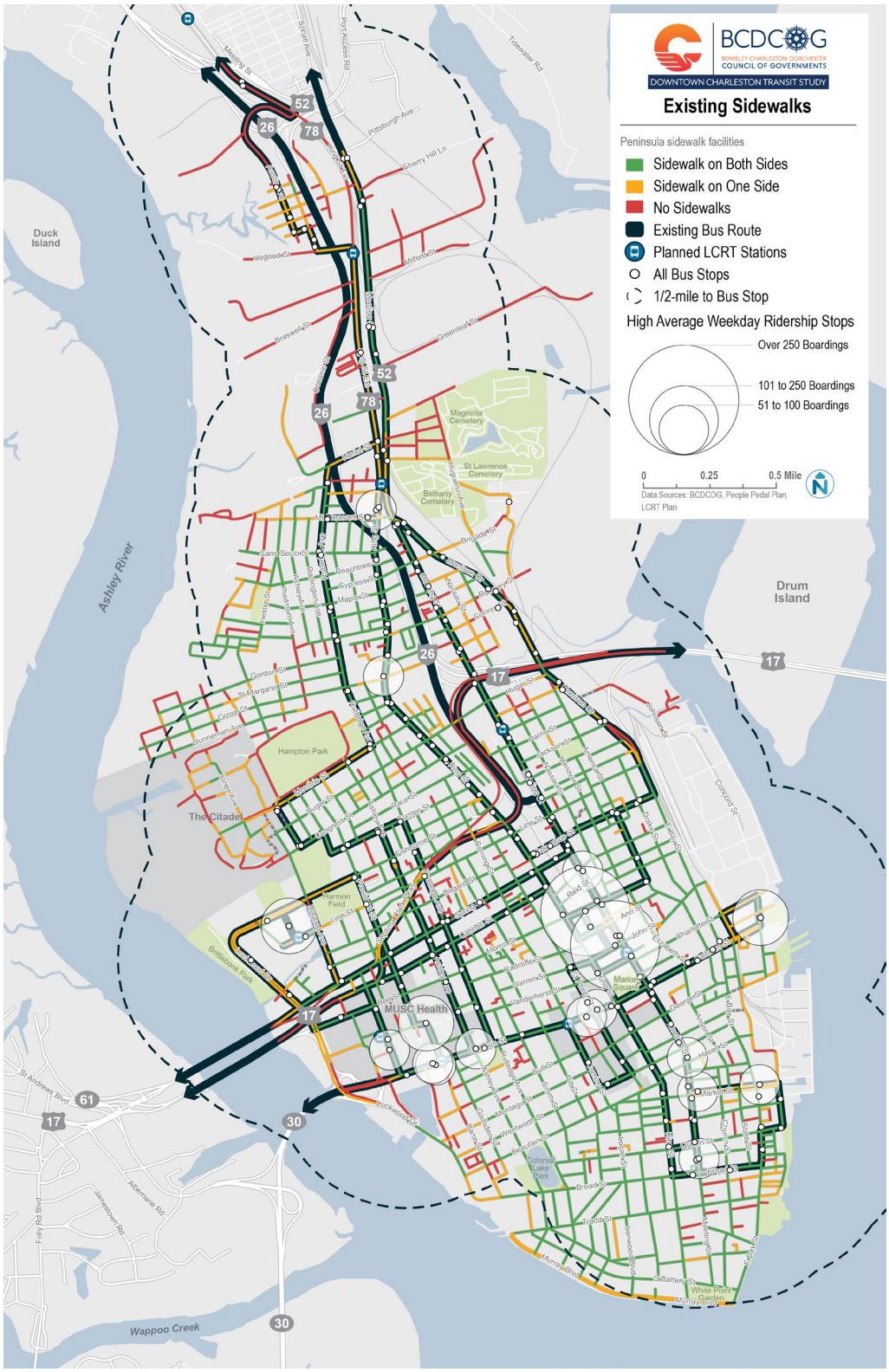


Most of the streets with existing bus routes on the Peninsula have sidewalks on at least one side of the street, as seen in Figure 72. Proposed LCRT stations are all located on streets with existing CARTA and DASH bus service, so pedestrian access for the systems overlap. Streets with bus routes and stops that do not have sidewalks or have sidewalks only on one side and their characteristics include:

- **South Market Street:** Only one side of the median has a formal sidewalk, but bollards were installed to create walking lane on the other side.
- **US 17/Septima Clark Parkway:** Portions of this divided, at-grade highway have sidewalks on only one side.
- **Fishburne Street/Lockwood Drive:** Portions of this street have missing sidewalks, including near destinations like community parks and shopping centers, bus stops with more than 100 average weekday riders, and a planned LCRT station.
- **Hagood Avenue:** Sections with no sidewalks or sidewalks on only one side next to affordable housing, bus stops with more than 100 average weekday riders, and a planned LCRT station.
- **The Citadel:** Several streets on The Citadel campus have missing sidewalks and are near bus routes that run along the edge of the campus. Those streets are controlled by the college.
- **Harleston Village**: This neighborhood south of the Medical District and Calhoun Street has narrow, older streets, many of which are missing sidewalks.
- **Northern Peninsula Routes:** Several streets with bus routes in this area have sidewalks only on one side of the street, including Mt Pleasant Street, King Street, Meeting Street, Herrot Street, and Austin Avenue. This includes the area where the new HOP park-and-ride lot and an LCRT station are planned. The planned shared-use path on King Street Extension north of Mt Pleasant Street as part of the LCRT project will help address some of the issues in this area.
- **Morrison Drive/East Bay Street:** Portions of Morrison Drive/East Bay Street have no sidewalks or a sidewalk only on one side. In addition to being a transit route, this street has many commercial destinations, four or more lanes of vehicular traffic, and higher speeds that make it uncomfortable and dangerous to walk or ride a wheelchair in the street.

Many of these streets are in the neighborhoods with the highest number of households without vehicles, where residents are more likely to walk or bike to access transit. While data about sidewalk width and condition was not available, an assessment is recommended to better understand the quality and accessibility of available infrastructure. Additionally, pedestrians need safe places to cross the street to get to their bus stops. On streets with high volumes of vehicles and higher speeds, marked or signalized crossings near bus stops are especially important.

Figure 73 State of Existing Sidewalks Map



Existing Bicycle Facilities

Bicycle facilities can make it easier and safer for more people to access transit, especially when their destinations are between ½-mile and 2 miles away from stops. On the Charleston Peninsula, every street and potential bicycle facility is less than a mile to a bus stop, making biking a reasonable way to get to and from stops. Bicycle facilities can include bicycle lanes, cycle tracks, shared use paths, and supporting infrastructure like bike racks and bike share stations. The type of bicycle facilities available can have a big impact on who chooses to bike. Most people are not comfortable biking in mixed traffic with vehicles except for on slow neighborhood streets with low volumes. Only the most fearless cyclists will choose to bike without dedicated facilities on busier roads. Protected bicycle lanes or shared use paths that are separated from vehicular traffic are preferred by the widest range of people and are critical to creating an environment where people of all ages and abilities are comfortable biking.

In Charleston, there are few existing bicycle facilities of any kind, as seen in Figure 73. Those that do exist do not form a connected network and do not help many people access bus stops. Today, the only existing bicycle facilities are:

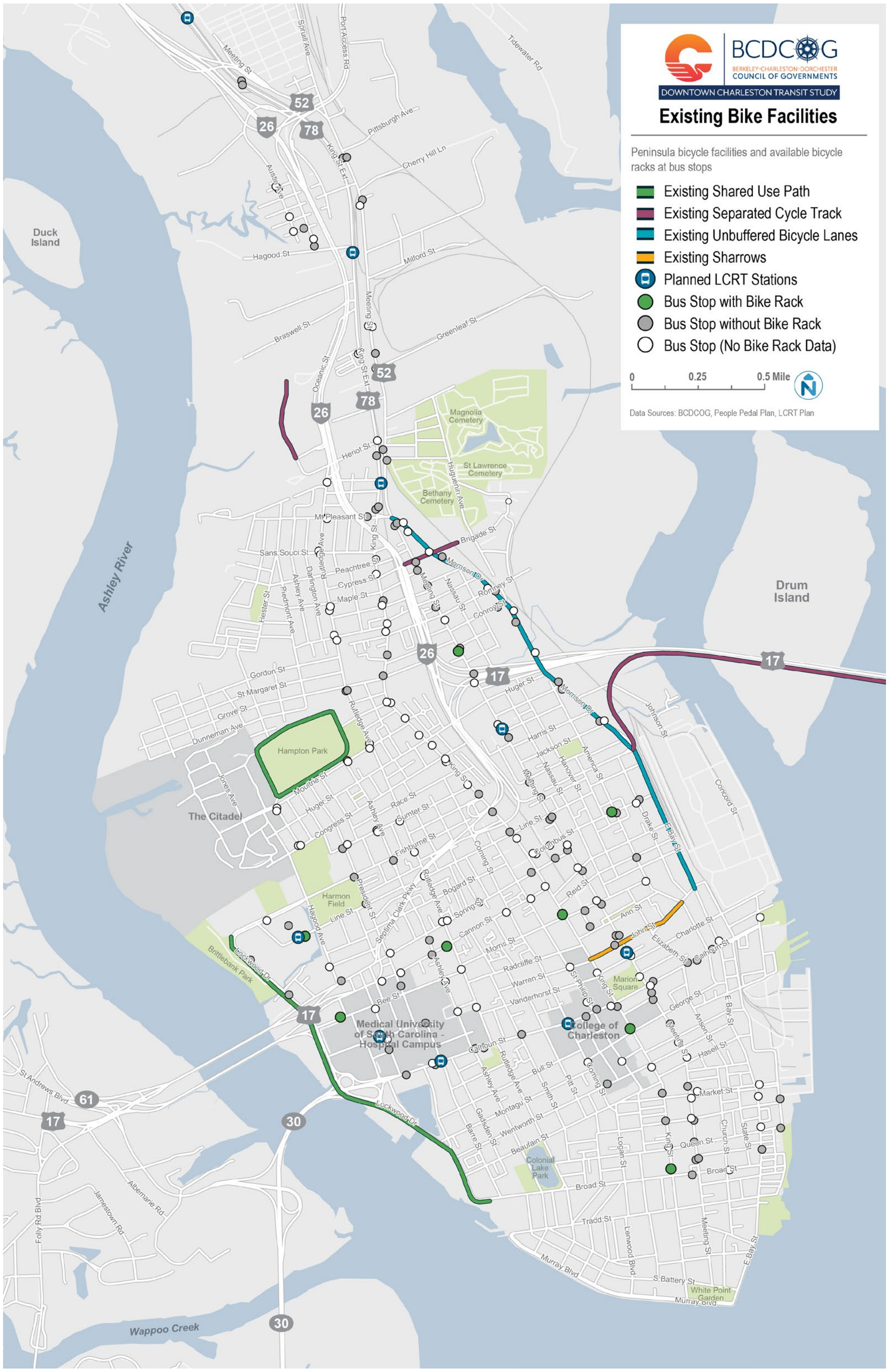
- A recreational bike loop within Hampton Park;
- A cycle track on US 17/Septima Clark Parkway over the Cooper River between Charleston and Mount Pleasant;
- The Brigade Street buffered and protected bike lane;
- A short cycle track on the Petty Street bridge over a marsh to access the planned Magnolia development;
- A mix of unbuffered bicycle lanes and sharrows (paint markings telling drivers to share the lane with cyclists) on Morrison Drive; and
- A waterfront shared use path along Lockwood Drive.

Some additional sharrows exist but are not generally considered comfortable or dedicated bicycle facilities by most potential cyclists. Of the existing facilities, only two connect to existing bus service or planned LCRT stations:

- Morrison Drive (near stops for Routes 10, 11, 20, 41, 102, and 213) and
- Lockwood Drive (near stops for Routes 31, 33, 213).

People who bike to transit need to either park their bike at the bus stop or bring it onboard the bus, if they will be biking on both ends of their trip. Stops next to the few existing bicycle facilities generally do not have bike racks. Outside of DASH buses, all CARTA buses have attached racks that hold up to two bikes at a time. Passengers with folding bikes are also permitted to carry them onboard.

Figure 74 State of Existing Bike Facilities



Planned Bicycle Facilities

There have been several previous plans aimed at building a network of safe bicycle routes through the Charleston Peninsula and surrounding areas, including:

- Charleston City Plan (2021)
- LCRT Walking & Bicycling Access to Stations (2021)
- LRTP Pedestrian and Bicycle Mobility chapter (2019)
- Citywide Transportation Plan (2018)
- People Pedal Plan (2017)
- Walk Bike BCD Plan (2017)
- People2Parks Bike Walk Plan (2016)
- Lowcountry Lowline Plan (2020)
- Ashley River Crossing (2020)

Most of these plans have been for larger areas and specific project recommendations on the Peninsula were limited. The most significant recommendations for new bicycle facilities on the Peninsula came from the People Pedal Plan and the Lowcountry Lowline Plan. The proposed projects in these plans are shown in Figure 74 and would dramatically enhance bicycling infrastructure downtown by creating a signature north-south greenway spine through the center of the Peninsula (the Lowcountry Lowline) and installing a connected network of east-west and north-south bikeways, as recommended in the People Pedal Plan. These bikeways would be a mix of dedicated bicycle lanes, shared use paths, and traffic calming strategies on neighborhood streets. With the planned bicycle routes, every planned LCRT station and most CARTA bus stops could be comfortably accessed by bicycle.

As seen in Figure 75 and Figure 76, several of these projects are planned for streets where bus service operates, and bus-bike interactions should be seriously considered as they advance to the design phase. Due to narrow roadways, many of the planned bike route improvements are focused on adding painted sharrow markings and signage and using traffic calming strategies to make riding in mixed traffic with cars safer and more comfortable.

Few of the proposed bicycle projects could be implemented by simply narrowing vehicle lanes and will often require more substantial reallocation of space. With limited available space, the addition of new bicycle facilities will improve opportunities to safely bike to transit, but the new street designs may also pose challenges in cases where bicycle and bus infrastructure would require the same limited space. Potential conflicts and tradeoffs to consider and design for are shown in Figure 77. In many cases, design solutions exist to create facilities that safely serve both buses and cyclists. Although efficiency is key to high-quality transportation, safety should be the top design priority. CARTA and BCDCOG should proactively coordinate with the City of Charleston and the state to ensure street designs serve all modes—including transit—as plans for new bicycle facilities move forward.

Figure 75 Planned Bike Facilities

Figure 76 Bicycle Facilities Planned on Streets with Bus Service

Street	Number of Lanes	Approx. Curb to Curb Width	Planned Bicycle Facility	Fit with Min. 10.5' Lanes?[1]	Current Transit Service	Future LCRT Service
King Street	2-3	35' - 44'	Bike Lanes (north of Columbus Street) Traffic calming (Columbus Street to Broad Street)	In some locations yes[3], lane reductions needed in some places	20, 102	No
Meeting Street	4-5	66'	Separated cycle tracks (north of Morrison Drive)	In some locations yes, lane reductions needed in some places	10, 11	Yes
Heriot Street	2	30'	Separated cycle tracks (Rutledge Avenue to King Street)	Not within existing roadway	20	No
Morrison Drive	4	60' - 68'	Separated cycle tracks (Meeting Street to Cooper Street)	Lane reduction needed in some locations	11	No
E Bay Street	4-5	45' - 64'	Bike lanes (Cooper Street to Columbus Street)	Lane reduction needed in some locations	11	No
America Street	2	30' - 34'	Bike boulevard (Columbus Street to Mary Street)	TBD[2, 3]	11, 41, 213	No
Calhoun Street	3-4	37' - 64'	Separated cycle tracks (Concord Street to Barre Street)	Lane reduction needed in some locations	31, 210, 213, XP1	Yes
Market Street	2-4	77'	Bike lanes (Concord Street to Meeting Street)	Lane reduction needed in some locations[3]	211	No
Broad Street	3 - 4	44' - 50'	Traffic calming (King Street to E Bay Street)	TBD[2]	20, 211	No
St. Philip Street	2-3	35'	Bike boulevard (Wentworth Street to John Street)	TBD[2, 3]	210	No
Rutledge Avenue	2-4	36' - 44'	Separated cycle tracks (Sumter Street to Calhoun Street)	Lane reduction needed in some locations[3]	102	No
J. Lucas Street	2	40'	Traffic calming (Calhoun Street to Doughty Street)	TBD[2]	203	Yes
Bee Street	3-4	35' - 46'	Bike lanes (Courteney Drive to Lockwood Drive)	Lane reduction needed in some locations	203, 213	No
Hagood Avenue	4	48' - 64'	Bike lanes (Spring Street to Fishburne Street)	Lane reduction needed in some locations[3]	203	Yes
Rutledge Avenue	2	36'	Separated cycle tracks (Moultrie Street to Heriot Street)	Yes[3]	20, 102	No

1) Assumes 12' reallocated for bike lanes or separated cycle tracks;
2) To be determined - bike boulevard and traffic calming designs vary widely;
3) May lose some on-street parking

Figure 77 Bus and Bike Facilities

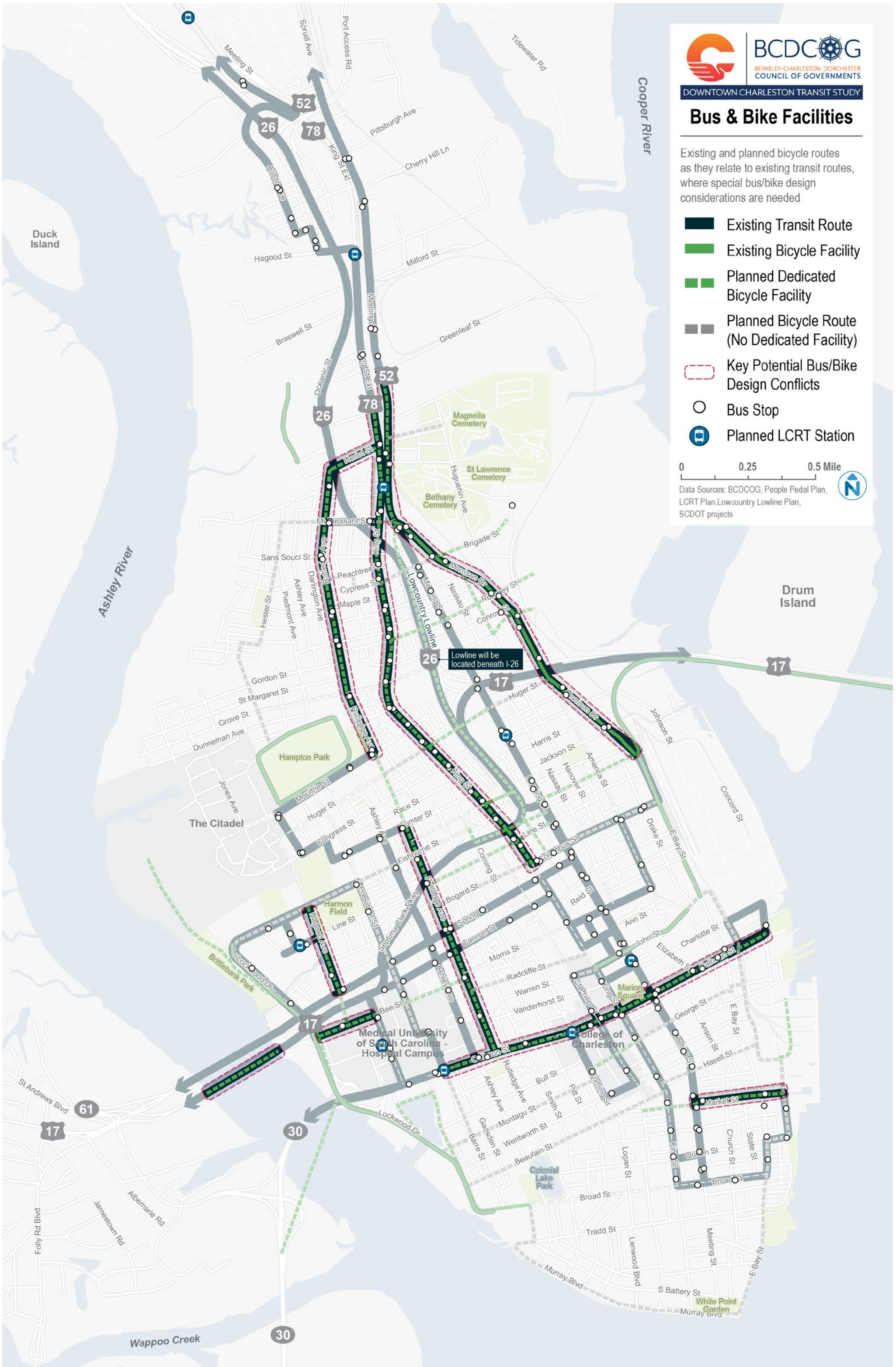


Figure 78 Bus and Bike Conflicts and Treatments

Potential Conflict Examples	Design Considerations and Potential Treatments
Desire to repurpose vehicular lanes as both a bicycle facility and as a dedicated bus lane, with limited available space	▪ Evaluate opportunities on parallel streets to focus high-quality bicycle facilities on one street and high-capacity transit service on another
Vehicular lane widths reduced to accommodate new bicycle facilities	▪ Ensure minimum 10.5-foot lane widths are maintained to accommodate standard CARTA buses
Curbside bicycle lanes next to bus stops create conflict zones when buses pull over	▪ Floating bus boarding islands or curb level bicycle lanes with conflict markings to allow level bus boarding ▪ Ensuring adequate sight lines (e.g., if bicycle lane is buffered by parallel parking) ▪ Bus driver training
Protective barriers for bicycle facilities—such as flex posts or new curb work—reducing turn radii for buses at intersections or block access to bus stops	▪ Consider bus turning radii and bus stop locations when determining the placement of protective treatments for bicycle facilities ▪ Consider using smaller transit vehicles where appropriate
Reducing number of vehicular lanes to accommodate dedicated bicycle facilities may increase travel times for vehicles	▪ Identify opportunities to optimize traffic signals as part of the design process to minimize delays and consider transit signal priority or similar treatments when appropriate

APPENDIX: ROUTE PROFILES

ROUTE 10
RIVERS AVENUE

Route 10 primarily operates along Meeting St through downtown and Rivers Ave to the north, connecting the historical downtown district to Trident Medical Center in North Charleston. Other major destinations along the route include Charleston Southern University, Trident Technical College, and the Charleston Visitor Center. The route also serves the Rivers Ave Park & Ride and the North Charleston SuperStop, where it connects to Routes 11, 12, 13, 32, 102, 103, and 104.

The route has several patterns, deviating to serve SC Works Charleston on most weekday AM peak, midday, and PM peak trips. The first trips of each day only serve the stops between Mary St/Meeting St and the North Charleston SuperStop, while the last trips of the day run between Mary St/Meeting St and the Rivers Ave Park & Ride on Weekdays and Saturdays.

Compared to other routes, Route 10 has the highest average daily ridership on weekdays and Saturdays, and the second highest on Sundays. It is also allocated the most revenue hours in the system and is moderately productive with 10 to 11 passengers per hour each day.

On Meeting St from the Visitor Center to Mt Pleasant St and on Rivers Ave from Reynolds Ave to the north, Route 10 operates on the same alignment as the future Lowcountry Rapid Transit (LCRT) line. With Route 11 also serving Meeting St in the neck of the Peninsula, the majority of Route 10 could be restructured with the implementation of LCRT.

Route 10 Service Characteristics

	Weekday	Saturday	Sunday
Span	5:50 AM-12:57 AM	6:45 AM-12:17 AM	8:32 AM-9:32 PM
Peak Frequency	20 minutes	35 minutes	35 minutes
Off Peak Frequency	60 minutes	60 minutes	60 minutes
Revenue Hours	103.6	55.9	31.8
Revenue Miles	1,400.5	885.0	550.9

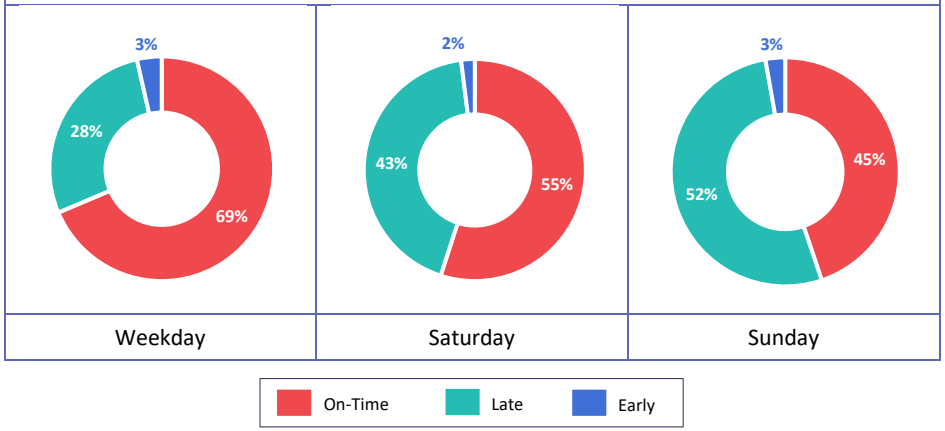
Route 10 Performance (2022)

Average Daily Boardings			Average Boardings Per Revenue Hour		
1,127	541	322	11	10	10
Weekday	Saturday	Sunday	Weekday	Saturday	Sunday

Ridership statistics from September through December 2022

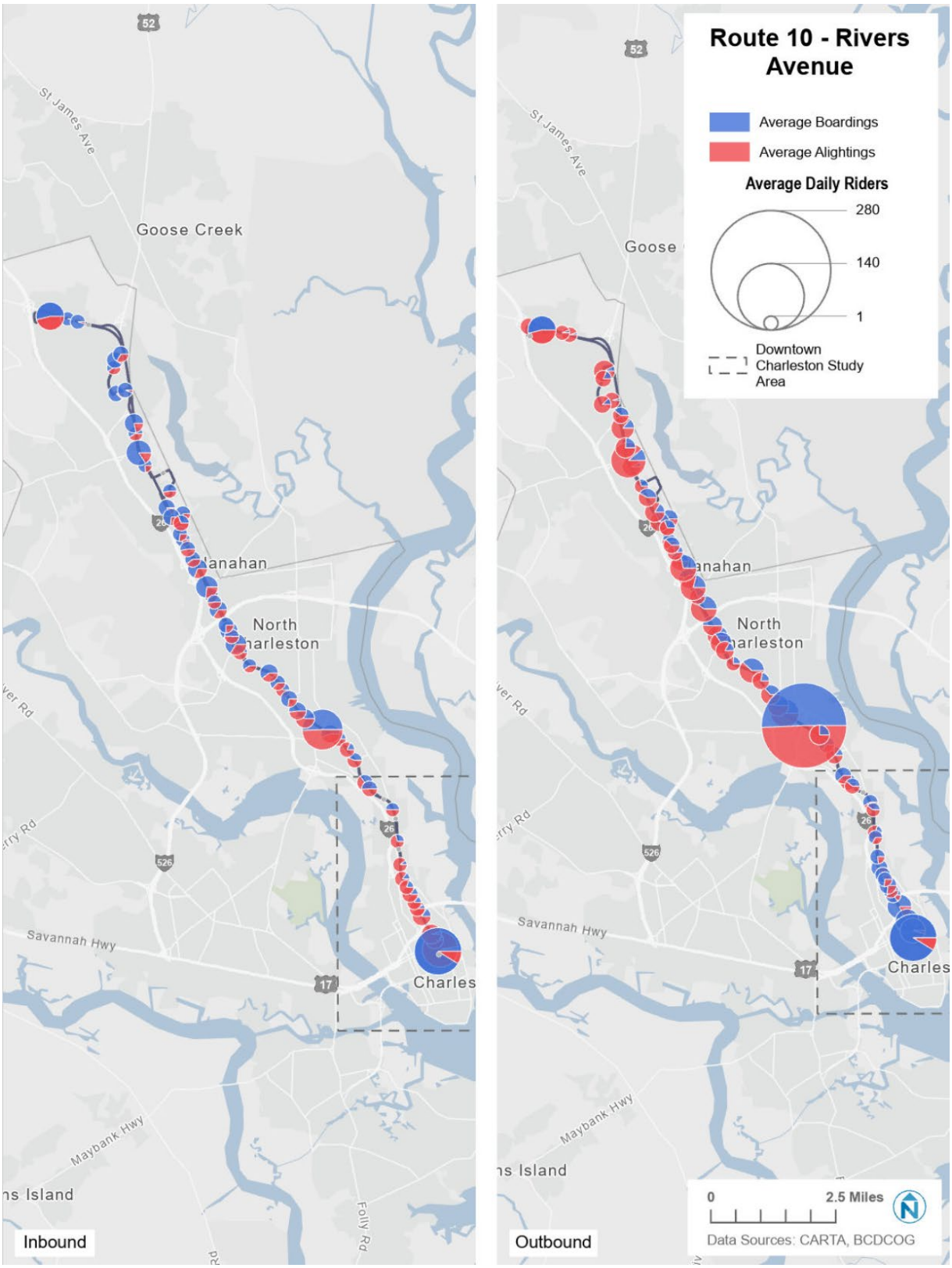
On-Time Performance

"Early" trips are any that leave before scheduled; "Late" trips are any leaving more than five minutes after scheduled



BCDCOG Berkeley-Charleston-Dorchester Council of Governments
DOWNTOWN CHARLESTON TRANSIT STUDY

Route 10 Ridership



Ridership statistics from September through December 2022

ROUTE 11
DORCHESTER ROAD/AIRPORT

Route 11 operates between Downtown and the Charleston International Airport, serving the east side of Downtown Charleston on Morrison Dr and Columbus St. Route 11 provides key connections from areas downtown, like the Charleston Visitor Center, to areas in North Charleson such as the Tanger Outlets, the Charleston Area Convention Center, and the Coliseum & Performing Arts Center. The highest ridership stop on the route is the North Charleston SuperStop for both inbound and outbound trips, where it connects to Routes 10, 12, 13, 32, 102, 103, and 104. Ridership at stops through downtown is slightly lower than that at stops along Dorchester Rd.

Route 11 has several different trip patterns. The first and last trips of the day start and end at the Dorchester Rd/Leeds Ave stop, near the CARTA headquarters and bus depot. The last trips of the day run between the airport and the North Charleson SuperStop rather than continuing through downtown.

Route 11 has the longest cycle time on weekdays at 105 minutes and on the weekends at 95 minutes. It also has the second highest revenue miles for all days of the week. It is moderately productive; on weekdays the average is 11 passengers per hour and on weekends the average is 6 passengers per hour. On-time performance for the routes is close to the systemwide average on all day types.

Route 11 Service Characteristics

	Weekday	Saturday	Sunday
Span	5:49 AM-9:50 PM	7:08 AM-9:19 PM	8:18 AM-7:50 PM
Peak Frequency	40 minutes	40 minutes	60 minutes
Off Peak Frequency	80 minutes	80 minutes	60 minutes
Revenue Hours	43.2	39.0	21.7
Revenue Miles	596.0	571.8	317.8

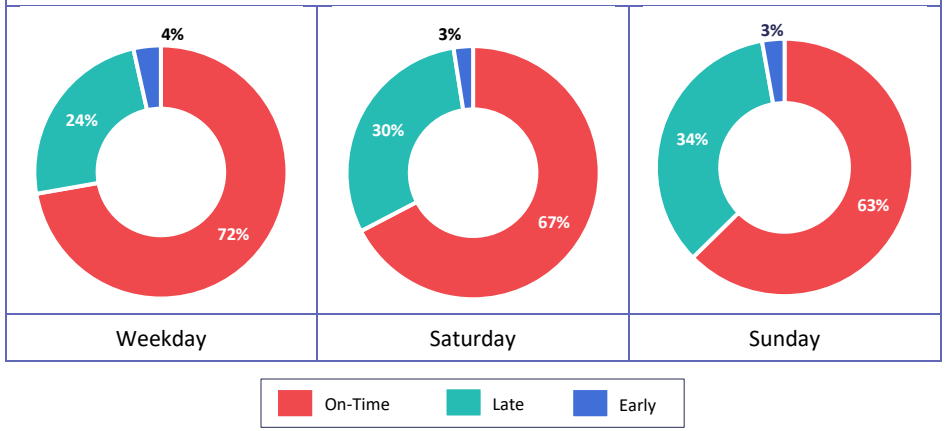
Route 11 Performance (2022)

Average Daily Boardings			Average Boardings Per Revenue Hour		
470	242	135	11	6	6
Weekday	Saturday	Sunday	Weekday	Saturday	Sunday

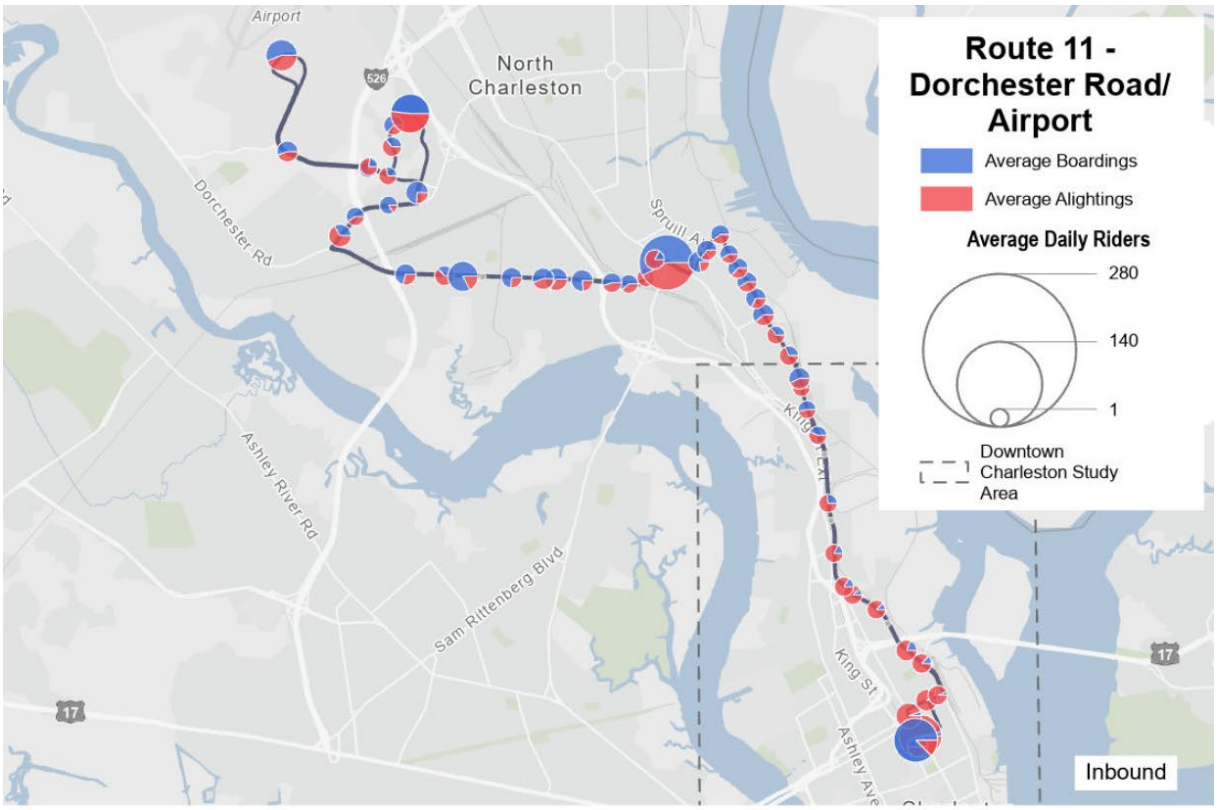
Ridership statistics from September through December 2022

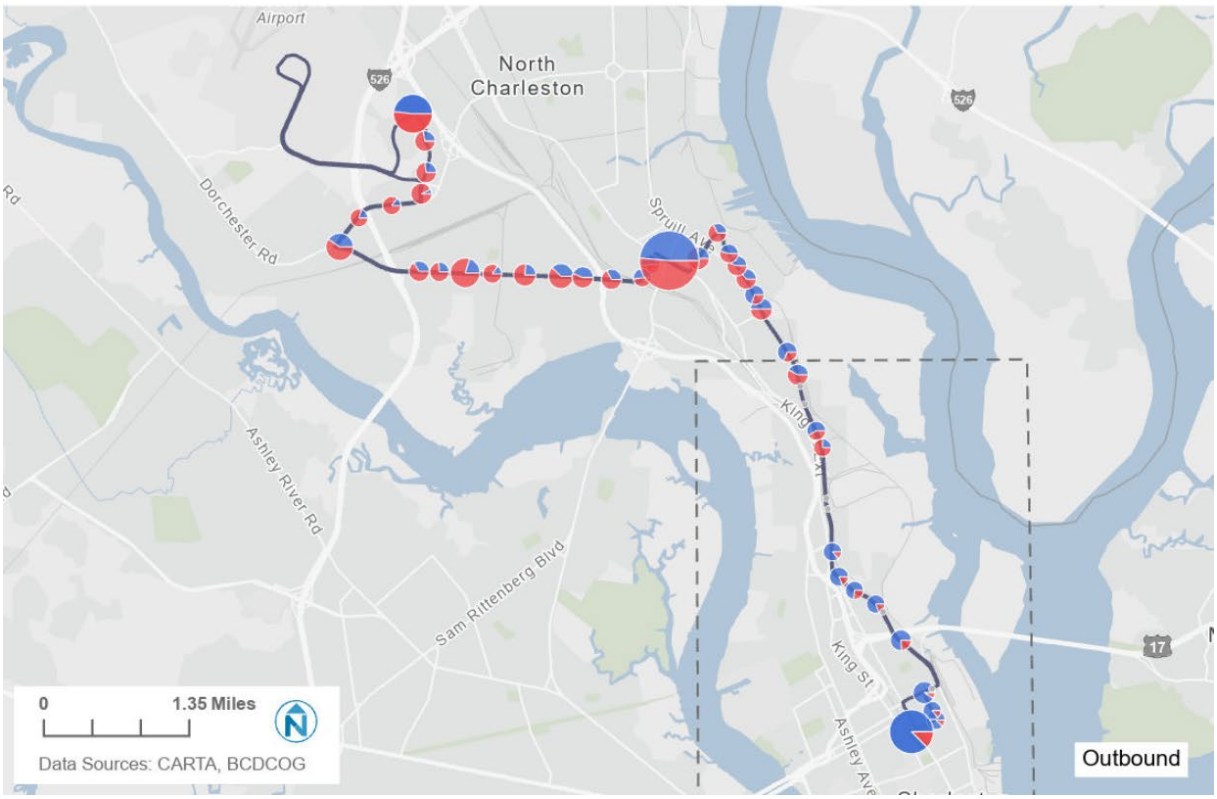
On-Time Performance

"Early" trips are any that leave before scheduled; "Late" trips are any leaving more than five minutes after scheduled



Route 11 Ridership





Ridership statistics from September through December 2022

ROUTE 20
KING STREET/MEETING

Route 20 is a local route that serves Downtown Charleston, providing north-south connectivity along the Meeting St and King St corridors. It connects the historic King Street and French Quarter district to the NoMo neighborhood. The route serves the Charleston Visitor Center, Charleston City Market, and residents from Joseph Floyd Manor and other apartment complexes and senior living centers. Its highest ridership stop is King St/Poinsett St inbound and King St/Grove St outbound, near the King St Food Lion.

Route 20 is relatively productive on weekdays with an average of 19 passengers per hour. Of the local routes, Route 20 has the shortest weekday frequency at 25 minutes, as well as the lowest weekday on-time performance.

Route 20 is the only local route to operate wholly within Downtown Charleston and south of Calhoun Street. Given its alignment on King St, the route is unable to utilize 40-foot buses. It is also operated fare free, partly due to its critical connection to the King St Food Lion. Route 20 connects with two future LCRT stops at the Visitor Center and Mt. Pleasant St with the anticipated Park & Ride lot.

Route 20 Service Characteristics

	Weekday	Saturday	Sunday
Span	6:02 AM-8:59 PM	7:02 AM-9:09 PM	9:02 AM-7:49 PM
Peak Frequency	25 minutes	50 minutes	50 minutes
Off Peak Frequency	50 minutes	50 minutes	50 minutes
Revenue Hours	24.9	14.1	10.8
Revenue Miles	213.0	120.7	92.3

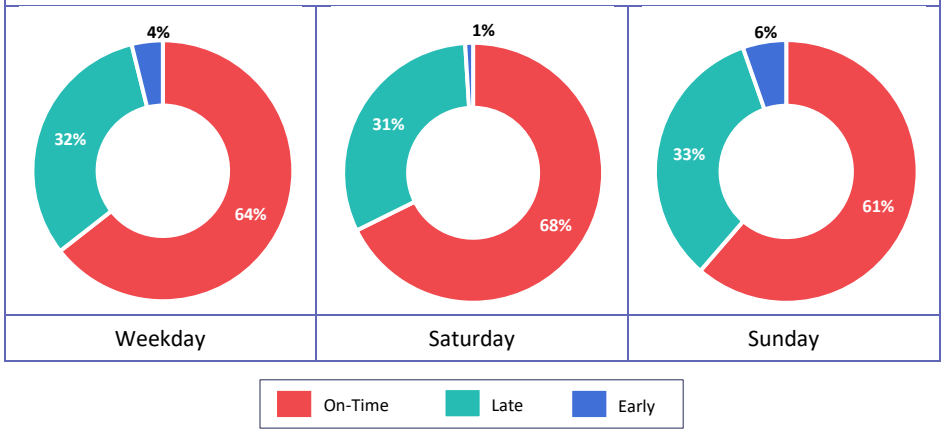
Route 20 Performance (2022)

Average Daily Boardings			Average Boardings Per Revenue Hour		
482	219	140	19	16	13
Weekday	Saturday	Sunday	Weekday	Saturday	Sunday

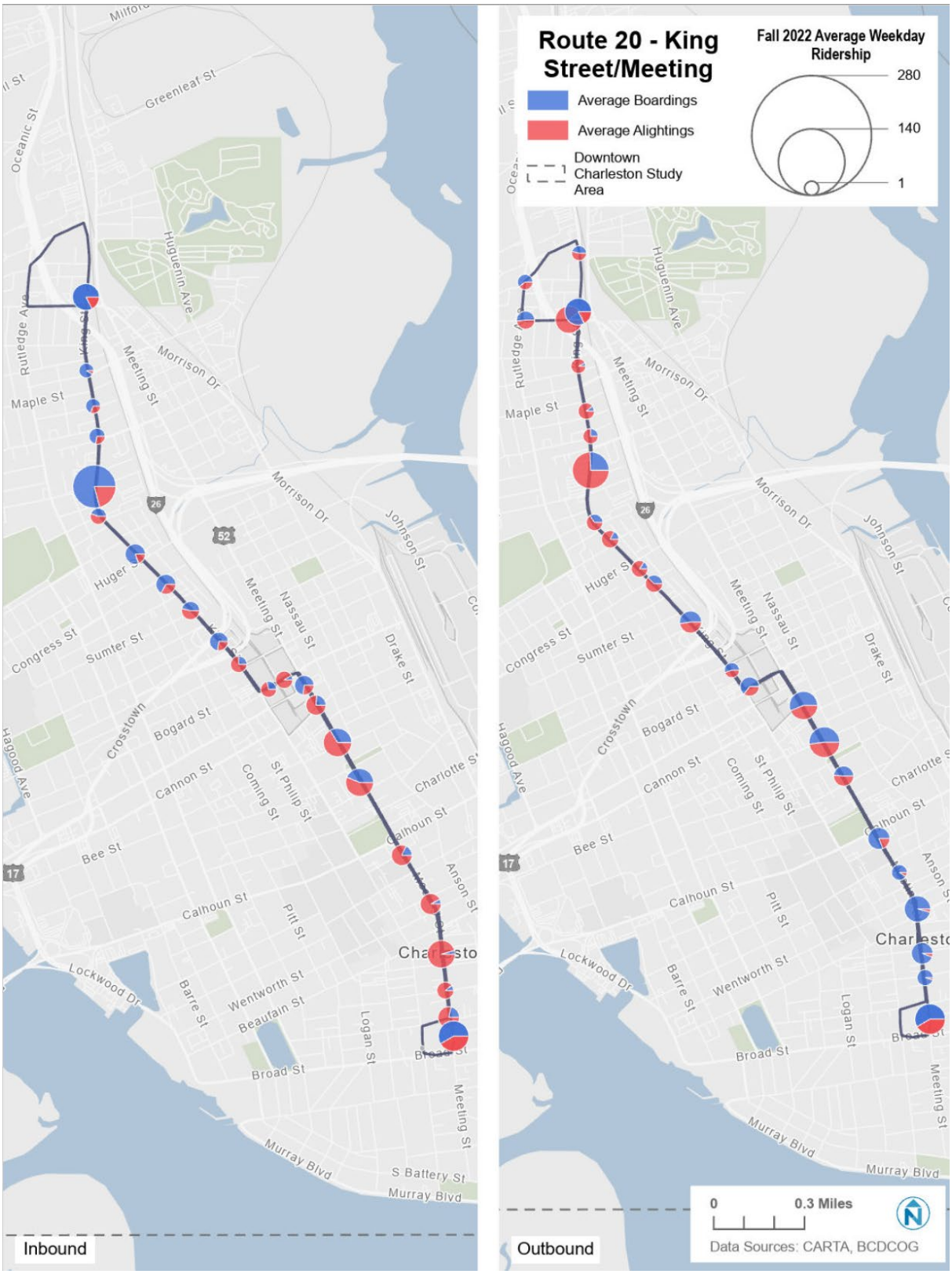
Ridership statistics from September through December 2022

On-Time Performance

"Early" trips are any that leave before scheduled; "Late" trips are any leaving more than five minutes after scheduled



Route 20 Ridership



Ridership statistics from September through December 2022

ROUTE 30
SAVANNAH HIGHWAY

Route 30 is a local route that runs eastbound along Cannon St and westbound along Spring St in downtown and across the Ashley River onto Savannah Highway/US-17. It is one of only three local routes that access the Peninsula from the west. The route connects the Cannonborough and Elliotborough neighborhoods to the Citadel Mall shopping complex.

The highest ridership stop along the route occurs at the Citadel Mall terminus. For inbound trips, more boardings occur west of the river and more alightings are at stops downtown, with the opposite trend in the outbound direction.

Route 30 has relatively low productivity, with an average of approximately 4-6 passengers per hour, with Sundays having the highest productivity rate, due the shorter span of service. Route 30 is allocated the least revenue miles in the system, and a higher than average on-time performance rate on weekdays and Saturdays.

The route connects with Route 33 at the Citadel Mall and also shares its terminal at the Citadel Mall with the Express Route XP2, which also connects with Downtown Charleston, but along Calhoun and Meeting streets.

Route 30 Service Characteristics

	Weekday	Saturday	Sunday
Span	6:00 AM-9:24 PM	6:45 AM-12:09 AM	8:05 AM-6:56 PM
Peak Frequency	60 minutes	60 minutes	60 minutes
Off Peak Frequency	60 minutes	60 minutes	60 minutes
Revenue Hours	22.1	25.6	10.0
Revenue Miles	211.0	238.2	149.6

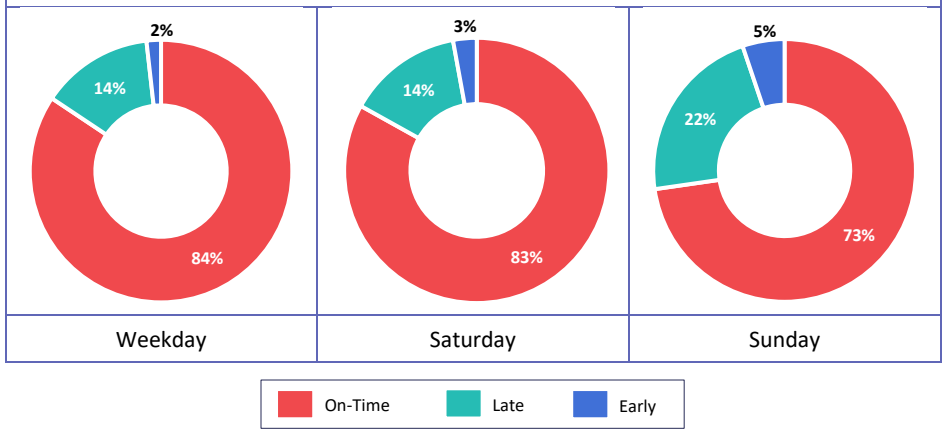
Route 30 Performance (2022)

Average Daily Boardings			Average Boardings Per Revenue Hour		
109	105	58	5	4	6
Weekday	Saturday	Sunday	Weekday	Saturday	Sunday

Ridership statistics from September through December 2022

On-Time Performance

"Early" trips are any that leave before scheduled; "Late" trips are any leaving more than five minutes after scheduled



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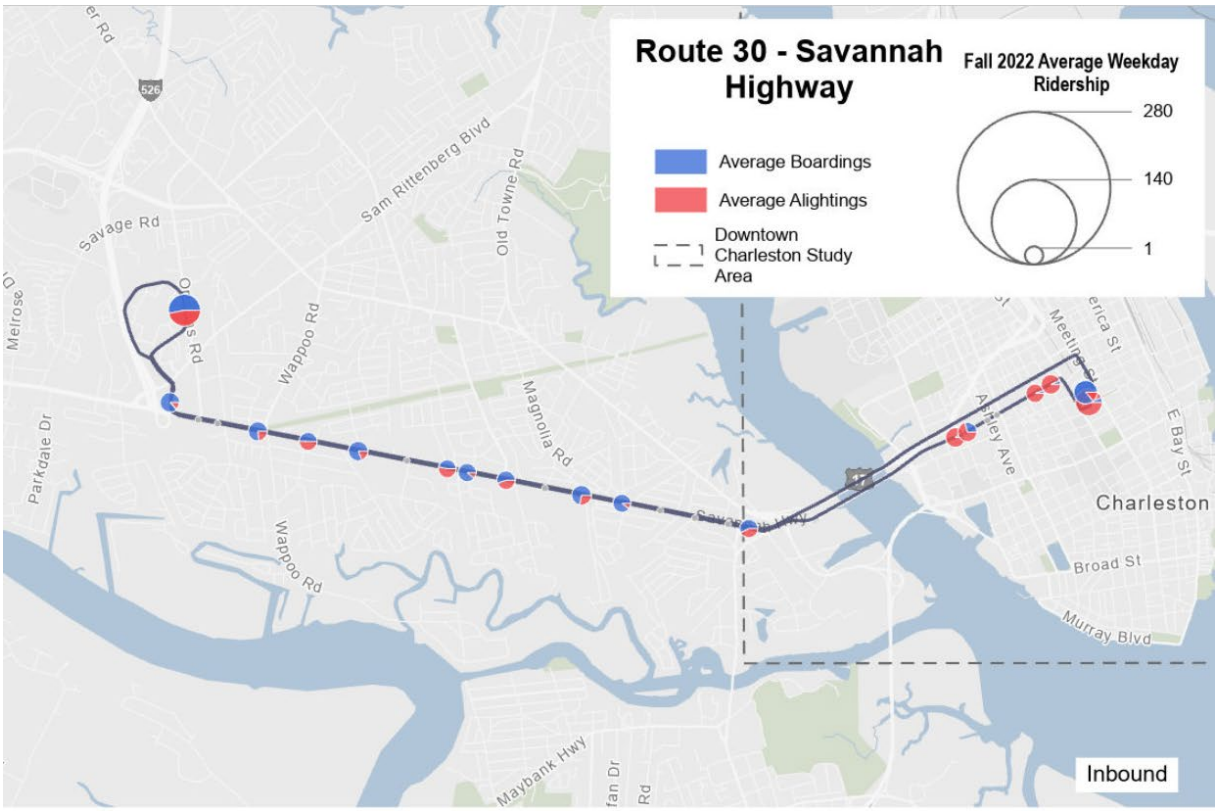
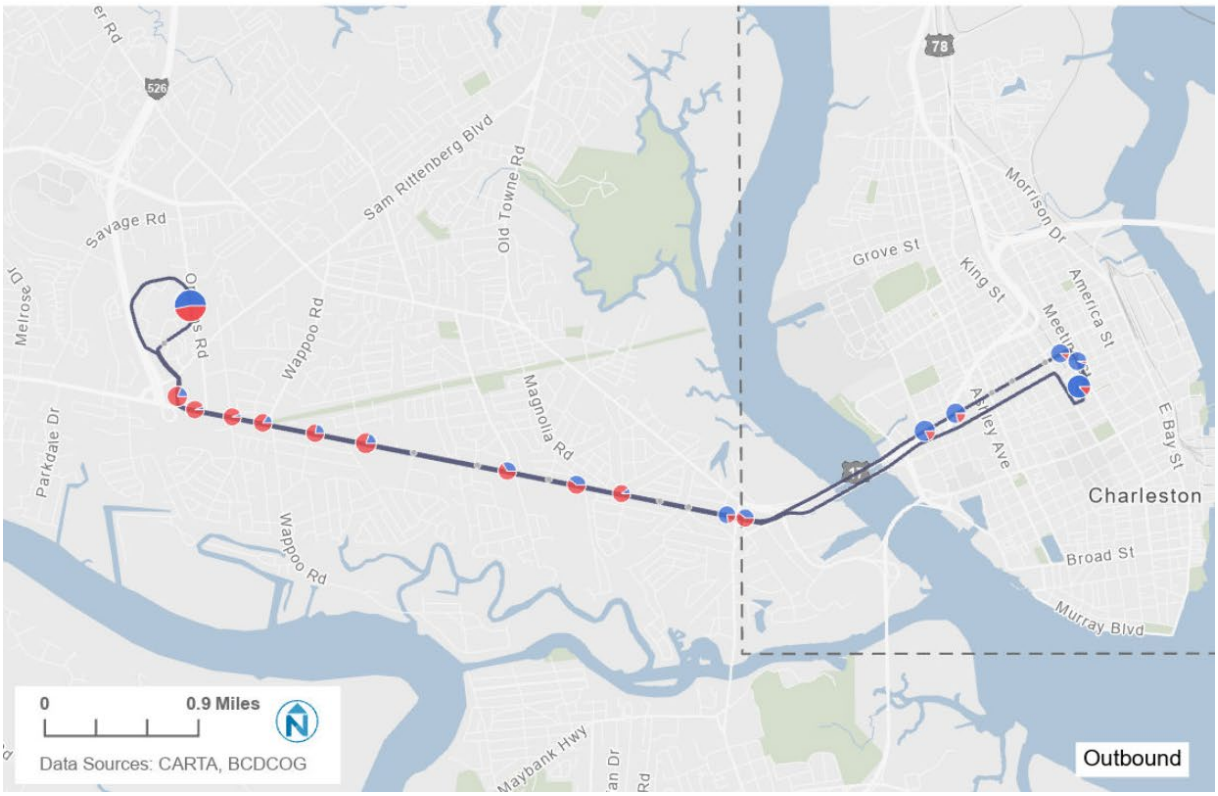
DOWNTOWN CHARLESTON TRANSIT STUDY

Route 30 Ridership





Ridership statistics from September through December 2022

ROUTE 31
FOLLY ROAD

Route 31 is a local route that primarily operates along Calhoun St and Folly Rd. The route provides connectivity between downtown and James Island using the James Island Expressway bridge. Key destinations the route serves include the Charleston Visitor Center, College of Charleston, South Windermere Shopping Center, Marion Square, and various MUSC health centers. The route also provides service to the James Island Walmart Supercenter as well as other grocery options like Harris Teeter and Publix.

Route 31 operates every 45 minutes on weekdays and Saturdays, but only every 80 minutes on Sundays. It has relatively low productivity, servicing around 3-6 passengers per hour during the week. On the route's inbound trips toward downtown, there are more boardings on portions of the route on James Island while there are more alightings once the route reaches downtown. The opposite trend is apparent in the outbound direction towards James Island, showing the route's utility as a connection to and from Downtown Charleston. Route 31 also provides access to some local shopping with an equal number of boardings and alightings near South Windermere Center.

Route 31 overlaps with a short portion of the proposed LCRT route east-west on Calhoun St and with the Express Route XP1, which serves some of the same stops as Route 31 but utilizes the James Island Expressway/Highway 30 to provide limited stop service.

Route 31 Service Characteristics

	Weekday	Saturday	Sunday
Span	5:25 AM-9:30 PM	7:30 AM-8:55 PM	8:25 AM-7:00 PM
Peak Frequency	45 minutes	45 minutes	80 minutes
Off Peak Frequency	45 minutes	45 minutes	80 minutes
Revenue Hours	30.7	22.0	10.6
Revenue Miles	483.4	436.4	215.4

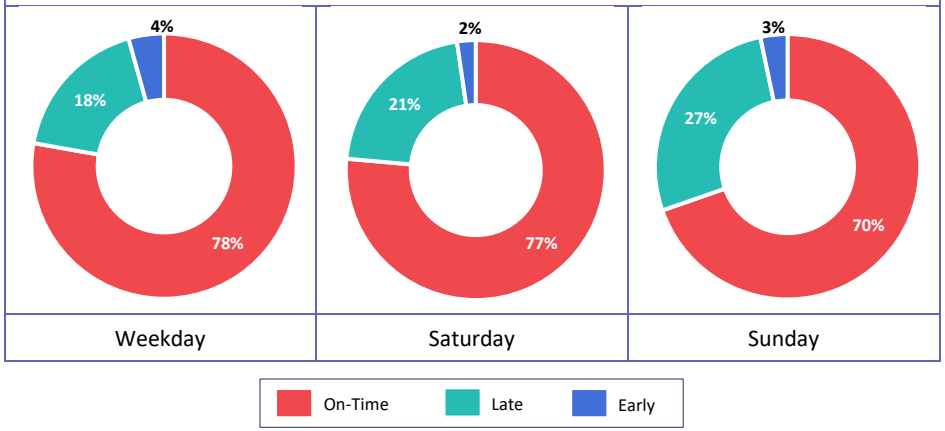
Route 31 Performance (2022)

Average Daily Boardings			Average Boardings Per Revenue Hour		
169	59	49	5.5	3	5
Weekday	Saturday	Sunday	Weekday	Saturday	Sunday

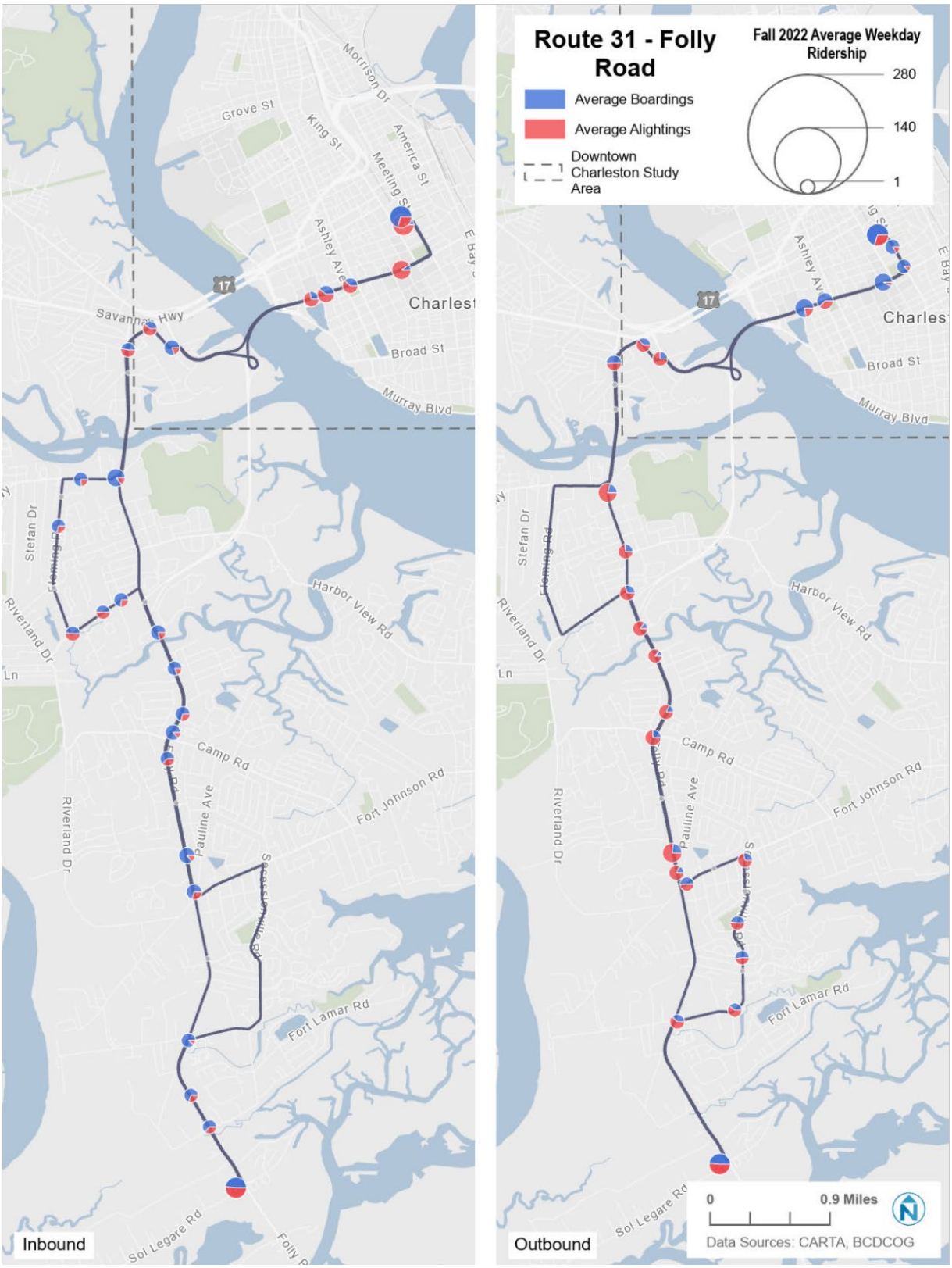
Ridership statistics from September through December 2022

On-Time Performance

"Early" trips are any that leave before scheduled; "Late" trips are any leaving more than five minutes after scheduled



Route 31 Ridership



Ridership statistics from September through December 2022

ROUTE 33
ST ANDREWS/ASHLEY RIVER ROAD

Route 33 primarily operates on St Andrews Blvd/Ashley River Rd and Calhoun St, connecting the Charleston Visitor Center to the West Ashley Lowes Foods. The route deviates to Orleans Rd to serve the Citadel Mall, one of its highest ridership stops. This route is often used as an alternative to the XP2 during peak since travel time is similar. Other key destinations include several downtown MUSC clinics, College of Charleston, and the Tobias Gadson Blvd Social Security office.

Route 33's stop-level ridership patterns show more boardings on the West Ashley portions of the route and more alightings at stops on the downtown Peninsula, with similarly opposite patterns in the outbound direction. This pattern shows how the route is being used as a connection to and from Downtown Charleston, as well as to the Citadel Mall, a stop with largely equal boardings and alightings in both directions.

Route 33 is moderately productive compared to other routes in the system on weekdays and Saturdays. Its on-time performance is significantly worse on Saturdays than weekdays or Sundays, with the lowest in the system on Saturdays. Route 33's productivity is affected by the reduction in vehicles from two on weekdays to one on weekends. This vehicle reduction limits OTP and frequency.

Route 33 overlaps with a short portion of the proposed LCRT route east-west on Calhoun St.

Route 33 Service Characteristics

	Weekday	Saturday	Sunday
Span	6:00 AM-8:50 PM	8:16 AM-6:38 PM	9:16 AM-6:28 PM
Peak Frequency	60 minutes	90 minutes	90 minutes
Off Peak Frequency	60 minutes	90 minutes	90 minutes
Revenue Hours	28.7	10.4	9.2
Revenue Miles	483.4	436.4	215.4

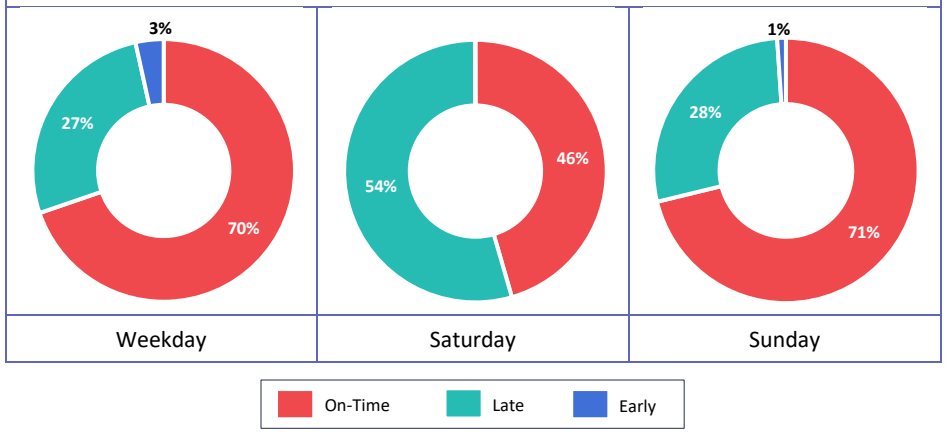
Route 33 Performance (2022)

Average Daily Boardings			Average Boardings Per Revenue Hour		
241	82	50	8	8	5
Weekday	Saturday	Sunday	Weekday	Saturday	Sunday

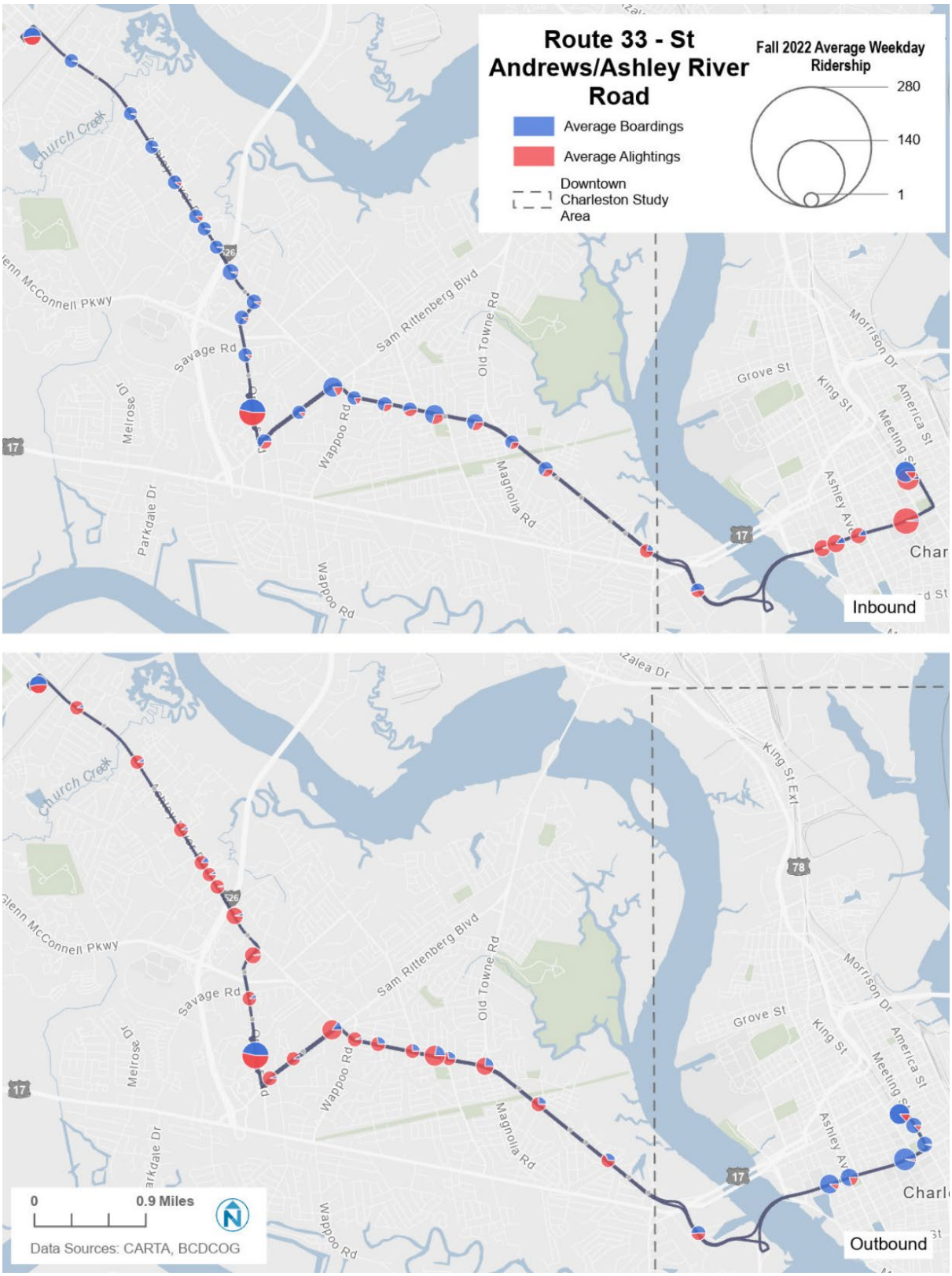
Ridership statistics from September through December 2022

On-Time Performance

"Early" trips are any that leave before scheduled; "Late" trips are any leaving more than five minutes after scheduled



Route 33 Ridership



Ridership statistics from September through December 2022

ROUTE 40
MT PLEASANT

Route 40 is one of two local routes connecting Mt Pleasant to Downtown Charleston. It primarily operates along the Septima P. Clark Parkway, Johnnie Dodds Blvd, and N Hwy 17. Other major destinations along the route include Mt Pleasant Town Centre and the Trident Technical College Mt Pleasant Campus. The route also serves many shopping destinations such as the Wando Crossing shopping center, Patriots Plaza shopping center, the Lansing Dr Trader Joe's, and the Frontage Rd ALDI.

Route 40 has two additional trip patterns depending on the time of day. The route provides service to the East Cooper Medical Center on its first outbound trip of the day and again on the 4:00 PM inbound trip. On weekdays, the last trip of the day also extends past the end of line to serve the Market at Oakland Park & Ride near Walmart.

The route's inbound trips west toward downtown show more boardings east of the Cooper River and more alightings at stops downtown. The opposite trend is seen in the eastern direction, showing how the route is used as a connection to and from Downtown Charleston.

Route 40 has low productivity at an average of 4 passengers per hour throughout the week. It has the third lowest total ridership on weekdays and is slightly above systemwide average on-time performance.

The route shares most of its Highway 17 alignment with Express Route XP2, which shares connections at Wando Crossing and the Market at Oakland.

Route 40 Service Characteristics

	Weekday	Saturday	Sunday
Span	6:20 AM-9:45 PM	7:10 AM-11:43 PM	9:00 AM-7:09 PM
Peak Frequency	60 minutes	60 minutes	60 minutes
Off Peak Frequency	60 minutes	60 minutes	60 minutes
Revenue Hours	23.2	24.6	11.8
Revenue Miles	332.5	353.7	213.0

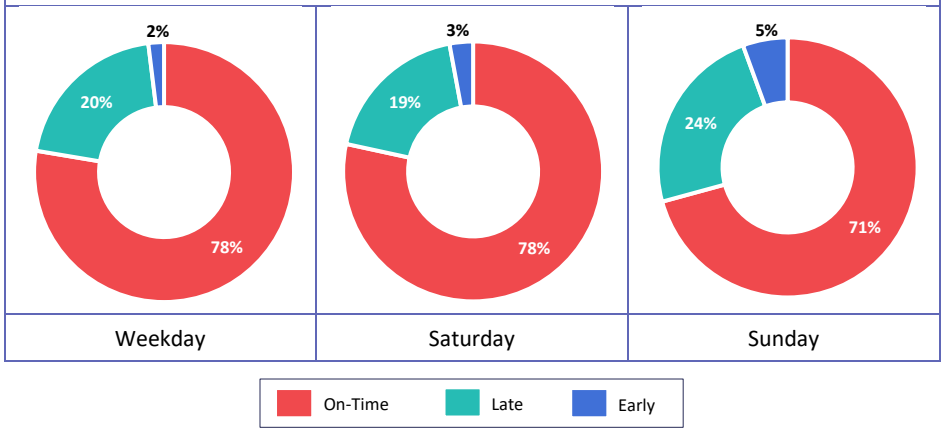
Route 40 Performance (2022)

Average Daily Boardings			Average Boardings Per Revenue Hour		
97	85	46	4	4	4
Weekday	Saturday	Sunday	Weekday	Saturday	Sunday

Ridership statistics from September through December 2022

On-Time Performance

"Early" trips are any that leave before scheduled; "Late" trips are any leaving more than five minutes after scheduled



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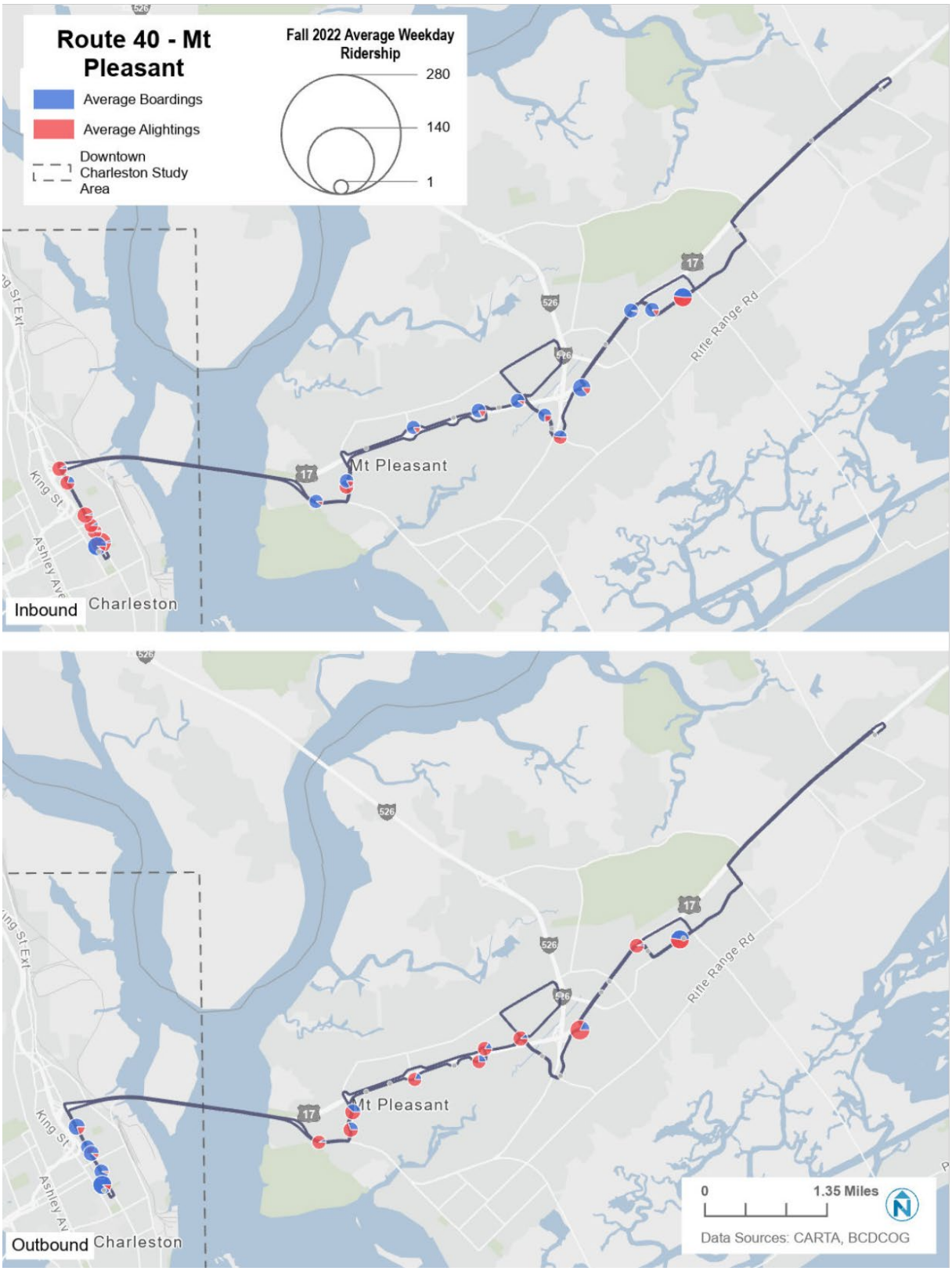
Route 40 Ridership



Ridership statistics from September through December 2022

ROUTE 41
COLEMAN BLVD

Route 41 primarily operates along Highway 17 and Coleman Blvd, providing connectivity between Downtown Charleston and Mount Pleasant. Key destinations along the route include the Charleston Visitor Center, Mount Pleasant Visitor Center, Patriots Plaza shopping center, and Waterfront Park.

Route 41 does not operate on Sundays. Out of all the routes, it has the highest average percentage on-time rate at 86% on weekdays. The route also has the lowest total weekday ridership in the system and has very low productivity at an average of 2-3 passengers per hour.

Route 41 Service Characteristics

	Weekday	Saturday	Sunday
Span	6:00 AM-8:50 PM	8:00 AM-9:20 PM	-
Peak Frequency	90 minutes	90 minutes	-
Off Peak Frequency	90 minutes	90 minutes	-
Revenue Hours	14.8	13.3	-
Revenue Miles	217.0	195.3	-

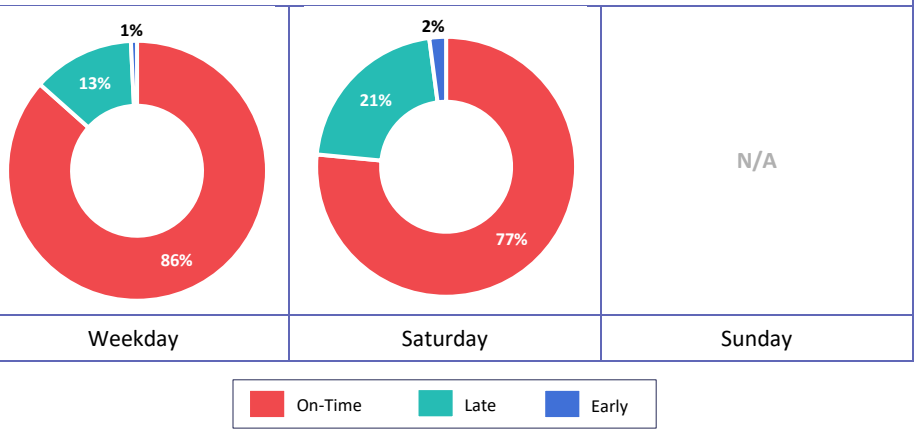
Route 41 Performance (2022)

Average Daily Boardings			Average Boardings Per Revenue Hour		
51	32	-	3	2	-
Weekday	Saturday	Sunday	Weekday	Saturday	Sunday

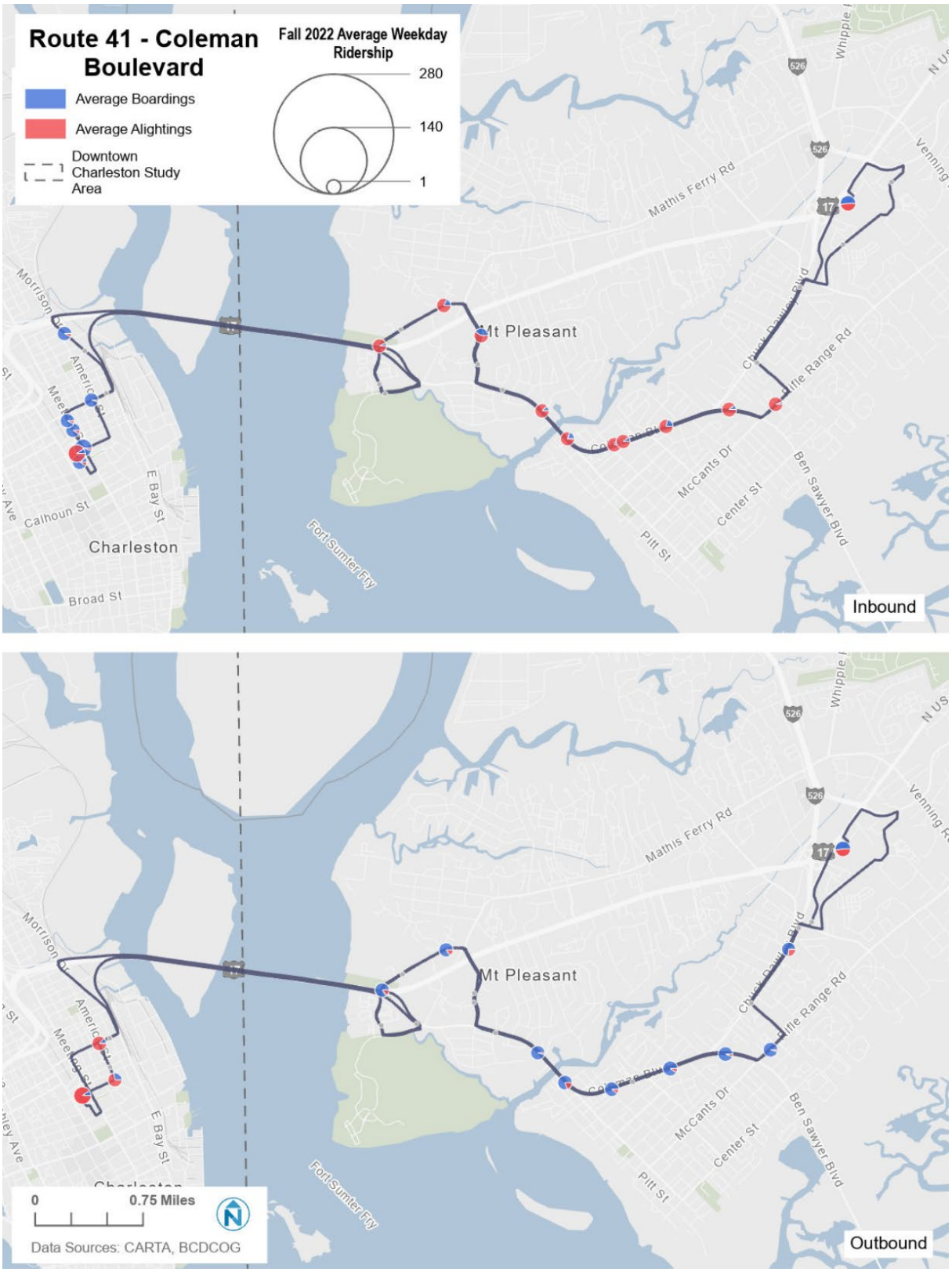
Ridership statistics from September through December 2022

On-Time Performance

"Early" trips are any that leave before scheduled; "Late" trips are any leaving more than five minutes after scheduled



Route 41 Ridership



Ridership statistics from September through December 2022

ROUTE 102
NORTH NECK

Route 102 is a local route that operates on weekdays and Saturdays along Rutledge Ave and Ashley Ave in central downtown as well as along King St and Cosgrove Ave in Charleston Heights and North Charleston. It provides service to the MUSC Health Medical Center, The Citadel, Riverside Health and Rehab, the Rosemont neighborhood, and Burke High School. Route 102's terminus is the North Charleston SuperStop where it connects to Routes 10, 11, 12, 13, 32, 103, and 104.

Route 102 has the second lowest total ridership and low productivity on weekdays at an average of 4-5 passengers per hour and the lowest productivity across the system at under 1 passenger per hour on Saturdays. The route also has a significantly higher number of early departures, with around 17% of all trips leaving earlier than scheduled.

Route 102 Service Characteristics

	Weekday	Saturday	Sunday
Span	6:00 AM-8:33 PM	8:15 AM-8:55 PM	-
Peak Frequency	60 minutes	60 minutes	-
Off Peak Frequency	80 minutes	60 minutes	-
Revenue Hours	18.4	21.7	-
Revenue Miles	226.8	206.8	-

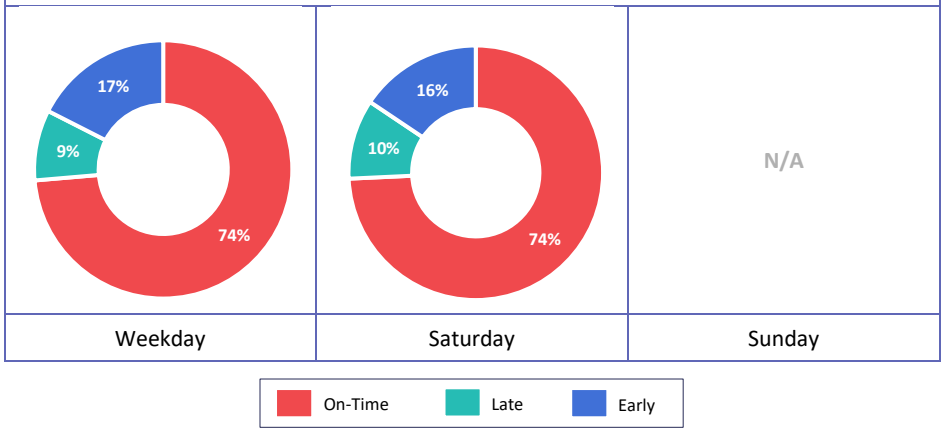
Route 102 Performance (2022)

Average Daily Boardings			Average Boardings Per Revenue Hour		
90	20	-	5	1	-
Weekday	Saturday	Sunday	Weekday	Saturday	Sunday

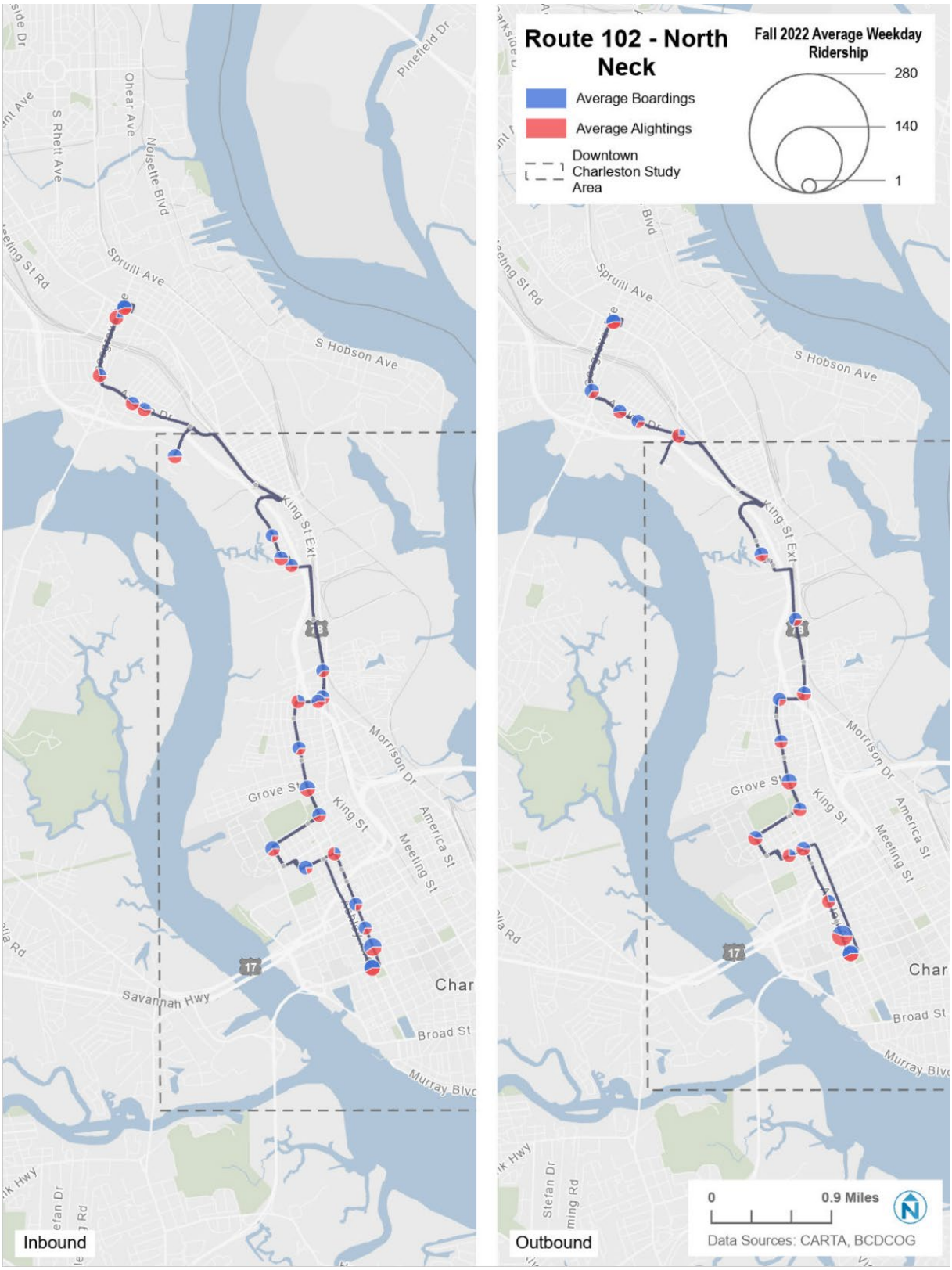
Ridership statistics from September through December 2022

On-Time Performance

"Early" trips are any that leave before scheduled; "Late" trips are any leaving more than five minutes after scheduled



Route 102 Ridership



Ridership statistics from September through December 2022

ROUTE 203
MEDICAL SHUTTLE

Route 203 is a local route that provides service between the MUSC Park & Ride lot at Fishburne St/Horizon St and the Medical District. MUSC pays for the operating cost of the route. The route operates during the weekday morning and afternoon peak periods and late nights to provide service around MUSC work shifts. Key destinations along the route include Roper Hospital, Pinehaven Hospital, McClennan Banks Memorial Hospital, MUSC College of Nursing, MUSC Health Medical Center, and Harborview Tower.

During peak times, Route 203 has the shortest frequency out of all CARTA routes. Route 203 has the third highest productivity with an average of 20 passengers per hour.

Route 203 Service Characteristics

	Weekday	Saturday	Sunday
Span	5:02 AM-8:12 AM and 3:07 PM-12:34 AM	-	-
Peak Frequency	5 minutes	-	-
Off Peak Frequency	20 minutes	-	-
Revenue Hours	21.0	-	-
Revenue Miles	179.6	-	-

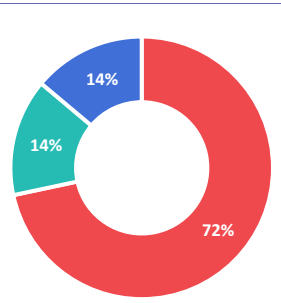
Route 203 Performance (2022)

Average Daily Boardings			Average Boardings Per Revenue Hour		
400	-	-	19	-	-
Weekday	Saturday	Sunday	Weekday	Saturday	Sunday

Ridership statistics from September through December 2022

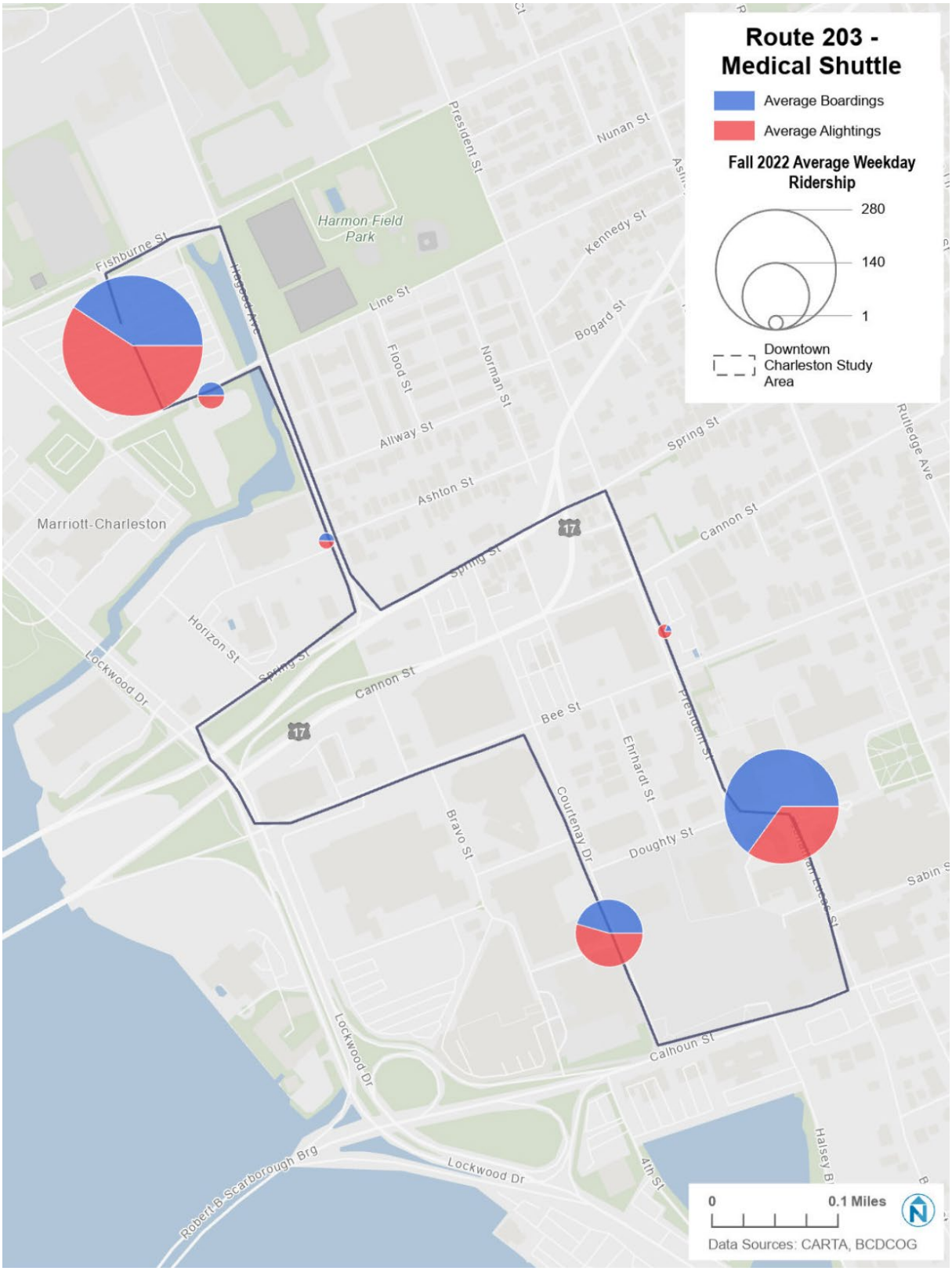
On-Time Performance

"Early" trips are any that leave before scheduled; "Late" trips are any leaving more than five minutes after scheduled



Weekday	Saturday	Sunday
	N/A	N/A

Route 203 Ridership



Ridership statistics from September through December 2022

ROUTE 210
ORANGE DASH
COFC/AQUARIUM

Route 210 is a Downtown Area Shuttle (DASH) route that operates primarily on Calhoun St from the Charleston Visitor Center and College of Charleson to the South Carolina Aquarium. Route 210 is a free circulator shuttle operating every 10 minutes on weekdays and every 20 minutes on weekends during peak hours. The route serves key downtown destinations such as the International African American Museum, the Charleston County Library, Gadsdenboro Park, Marion Square, the College of Charleston, Gaillard Municipal Auditorium, and Kresse Arena.

On weekdays, Route 210 stops at the Wentworth St/Coming St stop at the southern end of the College of Charleston campus but does not do so during the weekend.

Route 210 has a relatively moderate productivity, although it is the lowest performing of the three DASH routes. The highest average ridership along this route occurs at the stop near Gadsden Wharf and the Aquarium. On-time performance is reduced on the weekends with higher tourist traffic on the Peninsula.

Route 210 Service Characteristics

	Weekday	Saturday	Sunday
Span	6:28 AM-10:16 PM	9:00 AM-8:15 PM	9:00 AM-7:56 PM
Peak Frequency	10 minutes	20 minutes	20 minutes
Off Peak Frequency	20 minutes	20 minutes	20 minutes
Revenue Hours	31.1	11.3	10.9
Revenue Miles	183.1	71.4	69.3

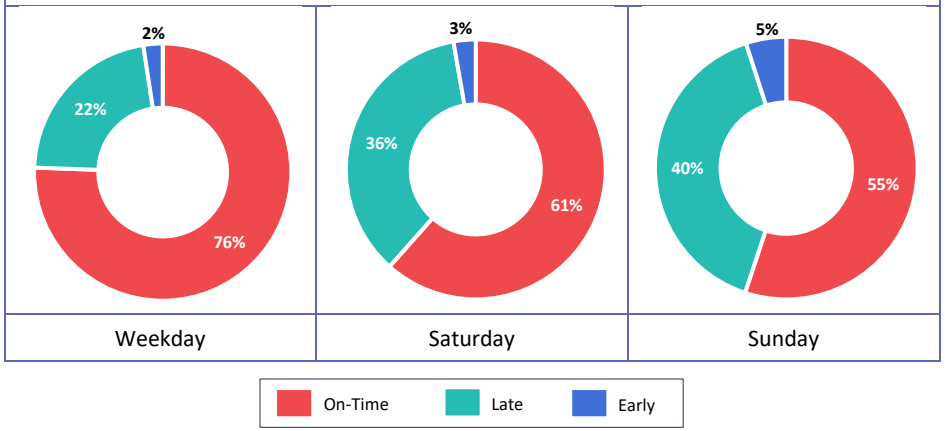
Route 210 Performance (2022)

Average Daily Boardings			Average Boardings Per Revenue Hour		
386	96	71	12	9	7
Weekday	Saturday	Sunday	Weekday	Saturday	Sunday

Ridership statistics from September through December 2022

On-Time Performance

"Early" trips are any that leave before scheduled; "Late" trips are any leaving more than five minutes after scheduled



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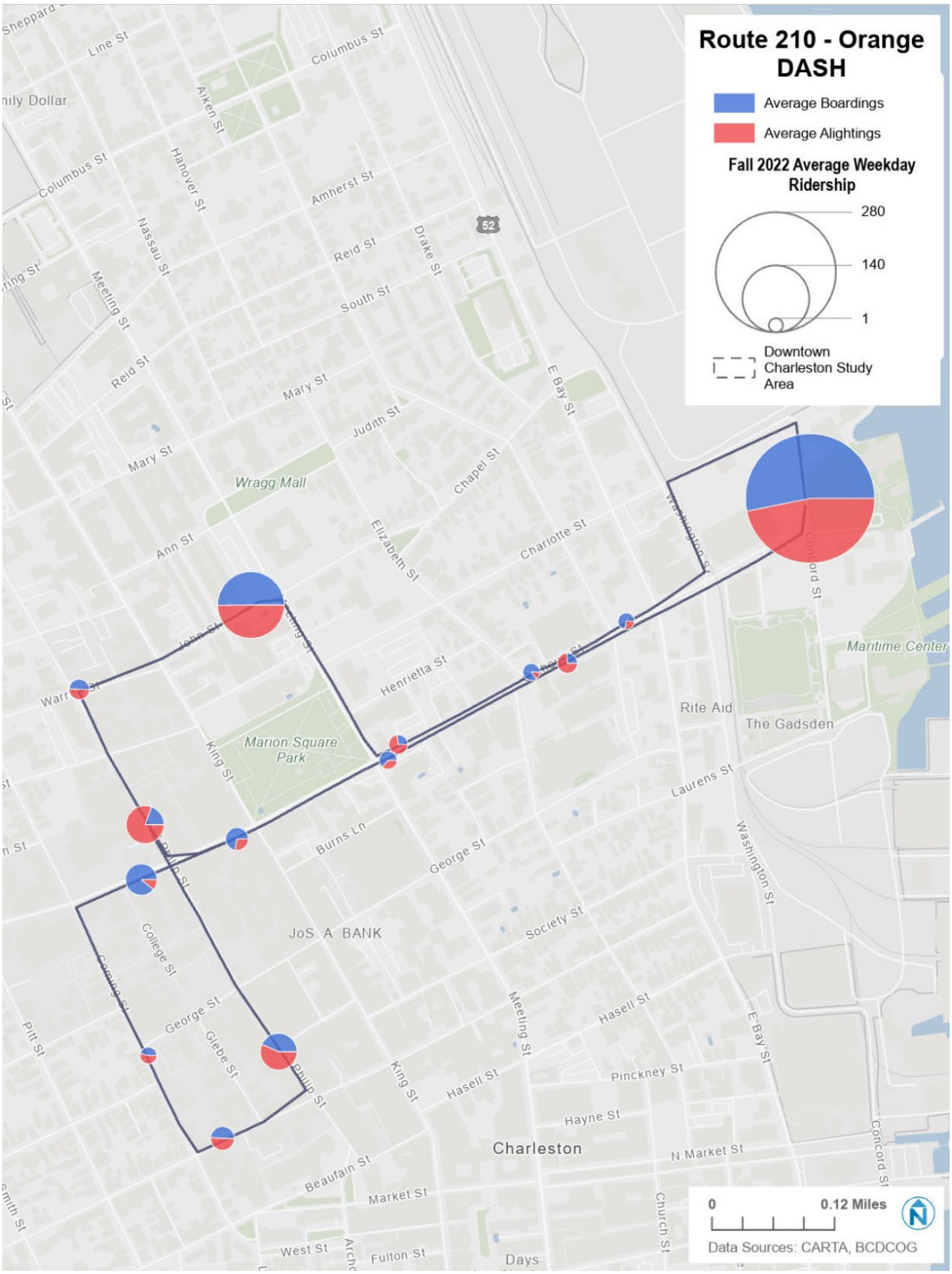
Route 210 Ridership



Ridership statistics from September through December 2022

ROUTE 211
GREEN DASH MEETING/KING

Route 211 is a DASH route that operates through the Downtown Charleston historic district. The route is a free downtown circulator shuttle operating in a one-way loop providing access to the Charleston Visitor Center, City Hall, the French Quarter, and the Charleston Market. Key destinations also include the American Civil War Museum, Waterfront Park, and the College of Charleston.

Route 211 has slight variations in its trip patterns. The route starts operations an hour earlier on the weekdays compared to on the weekends. The first two trips of the day start at the Spring St stop. In the evenings, the route will sometimes end at the Spring St stop instead of at the Visitor Center.

Route 211 is the most productive route in the system on weekdays and weekends and also has the second highest average daily boardings. It is also allocated the most revenue hours of the three downtown shuttles. Its highest average daily ridership occurs at the stop near the Visitor Center, and its on-time performance is above the systemwide average.

Route 211 Service Characteristics

	Weekday	Saturday	Sunday
Span	7:16 AM-9:19 PM	8:16 AM-9:21 PM	8:16 AM-9:21 PM
Peak Frequency	15 minutes	15 minutes	15 minutes
Off Peak Frequency	45 minutes	45 minutes	45 minutes
Revenue Hours	33.6	31.4	30.6
Revenue Miles	175.5	163.8	159.9

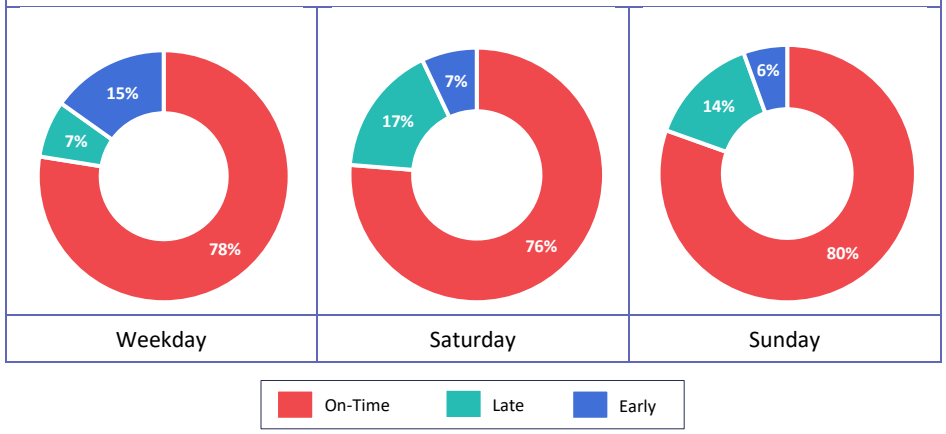
Route 211 Performance (2022)

Average Daily Boardings			Average Boardings Per Revenue Hour		
744	538	413	22	17	14
Weekday	Saturday	Sunday	Weekday	Saturday	Sunday

Ridership statistics from September through December 2022

On-Time Performance

"Early" trips are any that leave before scheduled; "Late" trips are any leaving more than five minutes after scheduled



BCDCOG Berkeley-Charleston-Dorchester Council of Governments
DOWNTOWN CHARLESTON TRANSIT STUDY

Route 211 Ridership

Ridership statistics from September through December 2022

ROUTE 213
PURPLE DASH
LOCKWOOD/CALHOUN

Route 213 is a DASH route that operates primarily along Calhoun St and Cannon St. Route 213 operates in a one-way loop and provides service to the Charleston Visitor Center, TTC Palmer Campus, the Brittlebank VA Medical Center, the Medical University of South Carolina, Roper Hospital, the Charleston Municipal Courthouse, and Brittlebank Park among other key destinations.

Route 213 is a free downtown shuttle. It has the second highest productivity of the three DASH routes with an average of 20 passengers per hour on weekdays, and on-time performance is slightly above the systemwide average for weekdays, Saturdays, and Sundays.

Route 213 Service Characteristics

	Weekday	Saturday	Sunday
Span	6:20 AM-9:15 PM	8:20 AM-9:00 PM	9:20 AM-7:00 PM
Peak Frequency	45 minutes	45 minutes	45 minutes
Off Peak Frequency	45 minutes	45 minutes	45 minutes
Revenue Hours	14.9	12.7	9.7
Revenue Miles	114.0	96.9	74.1

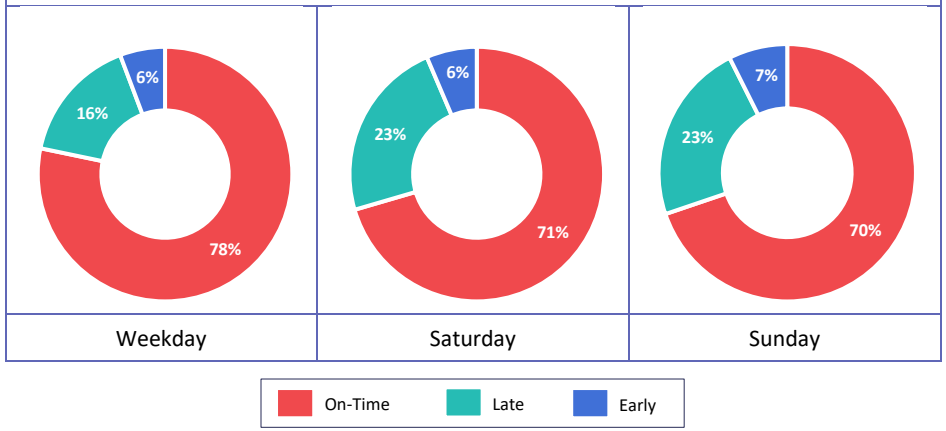
Route 213 Performance (2022)

Average Daily Boardings			Average Boardings Per Revenue Hour		
293	126	88	20	10	9
Weekday	Saturday	Sunday	Weekday	Saturday	Sunday

Ridership statistics from September through December 2022

On-Time Performance

"Early" trips are any that leave before scheduled; "Late" trips are any leaving more than five minutes after scheduled



BCDCOG
BERKELEY-CHARLESTON-DORCHESTER COUNCIL OF GOVERNMENTS
DOWNTOWN CHARLESTON TRANSIT STUDY

Route 213 Ridership

Ridership statistics from September through December 2022

ROUTE XP1
JAMES ISLAND-NORTH CHARLESTON

Route XP1 is an express service that operates from the North Charleston Park & Ride through downtown Charleston to the James Island Walmart, Park & Ride location. It operates on weekdays only, running express service along most of its alignment and making several stops in central downtown.

Route XP1 has a few different trip patterns. The inbound route during the last two trips of the AM period ends at the Calhoun St/Jonathan Lucas St stop. During the PM period, both the inbound and outbound routes skip their first stop and instead depart from downtown.

Route XP1 operates every 30 minutes at peak frequency and is moderately productive. It has the highest total boardings and is allocated the most revenue hours of the three express routes.

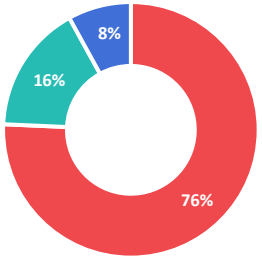
Route XP1 Service Characteristics

	Weekday	Saturday	Sunday
Span	5:19 AM-9:06 AM and 3:07 PM-8:06 PM	-	-
Peak Frequency	30 minutes	-	-
Off Peak Frequency	N/A	-	-
Revenue Hours	33.7	-	-
Revenue Miles	804.1	-	-

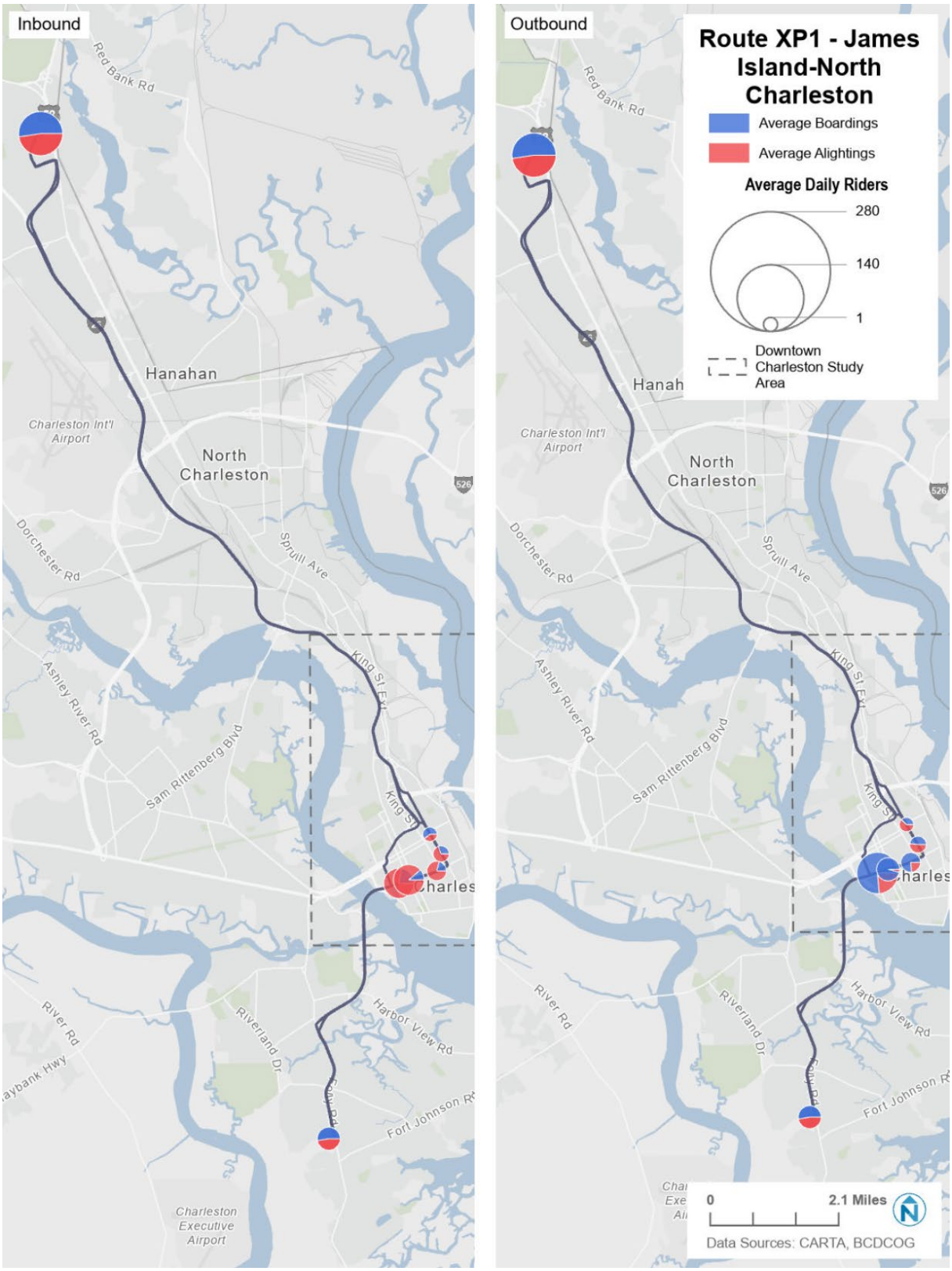
Route XP1 Performance (2022)

Average Daily Boardings			Average Boardings Per Revenue Hour		
233	-	-	7	-	-
Weekday	Saturday	Sunday	Weekday	Saturday	Sunday

Ridership statistics from September through December 2022

On-Time Performance		
"Early" trips are any that leave before scheduled; "Late" trips are any leaving more than five minutes after scheduled		
	N/A	N/A
Weekday	Saturday	Sunday

Route XP1 Ridership



Ridership statistics from September through December 2022

ROUTE XP2
MT PLEASANT-WEST ASHLEY

Route XP2 is an express route that runs from Mt Pleasant through Downtown Charleston to the Citadel Mall. The route runs express service, only making a few stops downtown, and serves the Oakland Park & Ride and the Mt Pleasant Park & Ride.

Route XP2 has a few different trip patterns. During the last two trips in the AM period, both inbound and outbound routes end downtown. The later trips during the PM period of the outbound route start at the Citadel Mall. The first trip of the PM peak period of the inbound route does not provide service to the Oakland Walmart.

Route XP2 operates every 30 minutes at peak frequency and experiences the second most total boardings of the three express routes.

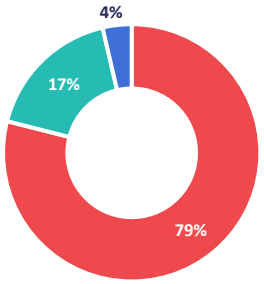
Route XP2 Service Characteristics

	Weekday	Saturday	Sunday
Span	5:35 AM-9:13 AM and 3:20 PM-8:15 PM	-	-
Peak Frequency	30 minutes	-	-
Off Peak Frequency	N/A	-	-
Revenue Hours	28.9	-	-
Revenue Miles	475.9	-	-

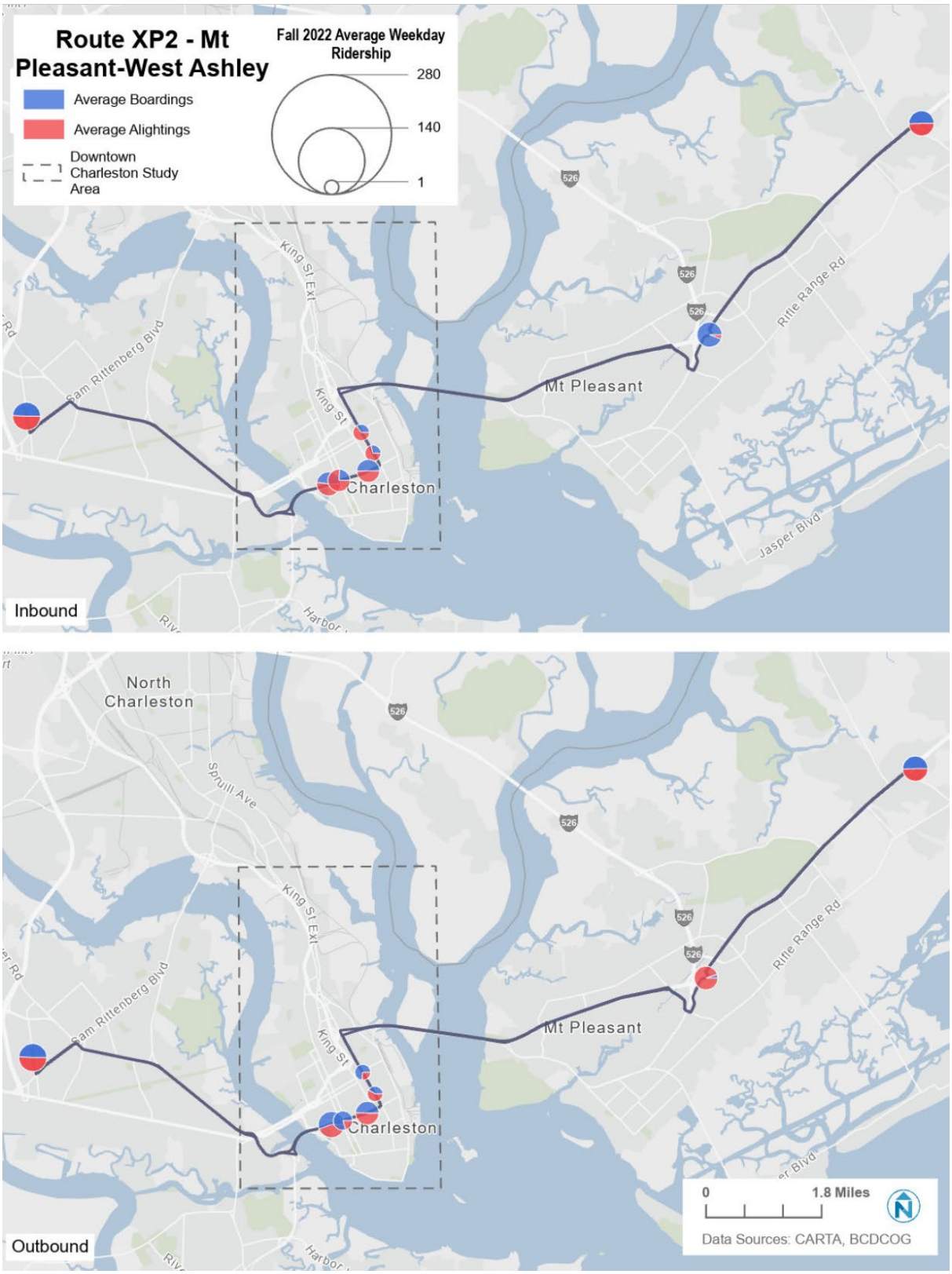
Route XP2 Performance (2022)

Average Daily Boardings			Average Boardings Per Revenue Hour		
185	-	-	7	-	-
Weekday	Saturday	Sunday	Weekday	Saturday	Sunday

Ridership statistics from September through December 2022

On-Time Performance		
"Early" trips are any that leave before scheduled; "Late" trips are any leaving more than five minutes after scheduled		
	N/A	N/A
Weekday	Saturday	Sunday

Route XP2 Ridership



Ridership statistics from September through December 2022

ROUTE XP3 DORCHESTER ROAD/SUMMERVILLE

Route XP3 is an express route that runs from the Dorchester Village Shopping Center Park & Ride in Summerville to Downtown Charleston. The route runs mostly express except for stops at Festival Center Park & Ride, Charleston International Airport, and locations downtown such as the Charleston Visitor Center, MUSC, and College of Charleston.

Route XP3 has several different trip patterns. The AM period trips do not provide service to Boeing in both the inbound and outbound directions. The first trip of the PM period is the only trip that provides service to Boeing for the outbound direction. For the inbound direction during its PM period, the first three trips start at the Charleston Visitor Center ending at Calhoun St/Jonathan Lucas St. The first trips of both the morning and afternoon periods also have an additional stop at the Citadel Mall.

Route XP3 operates every 30 minutes at peak frequency. The route has the fewest boardings and revenue hours of the three express routes. It also has the lowest average on-time performance.

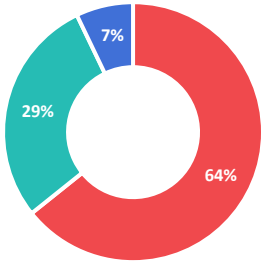
Route XP2 Service Characteristics

	Weekday	Saturday	Sunday
Span	5:20 AM-9:01 AM and 3:07 PM-8:36 PM	-	-
Peak Frequency	30 minutes	-	-
Off Peak Frequency	N/A	-	-
Revenue Hours	18.7	-	-
Revenue Miles	431.6	-	-

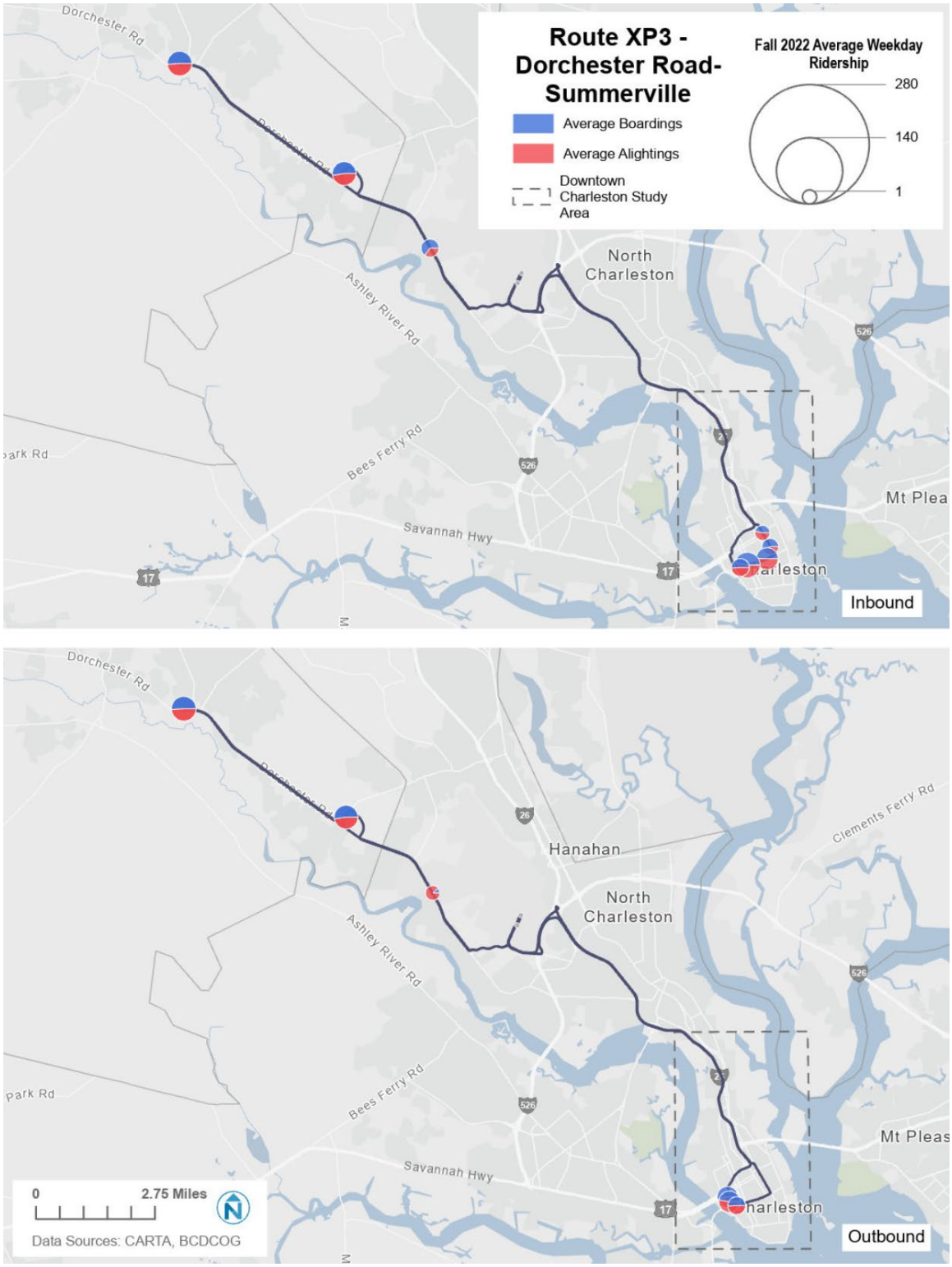
Route XP2 Performance (2022)

Average Daily Boardings			Average Boardings Per Revenue Hour		
132	-	-	7	-	-
Weekday	Saturday	Sunday	Weekday	Saturday	Sunday

Ridership statistics from September through December 2022

On-Time Performance		
"Early" trips are any that leave before scheduled; "Late" trips are any leaving more than five minutes after scheduled		
	N/A	N/A
Weekday	Saturday	Sunday

Route XP3 Ridership



Ridership statistics from September through December 2022