



# **ROUTE 39 SPEED, RELIABILITY, AND ACCESS NEEDS REPORT**

*Transit Priority Corridor  
Improvements*

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# ABOUT ROUTE 39 TRANSIT PRIORITY CORRIDOR

## PROJECT SUMMARY

The Boston Transportation Department's (BTD's) Route 39 Transit Priority Corridor (TPC) program will improve speed, reliability, and access to transit on Route 39, which is the fourth-highest ridership bus route in the Massachusetts Bay Transportation Authority (MBTA) system<sup>1</sup>. Running entirely within the City of Boston, Route 39 plays an important role in the City's transit network, providing a frequent local bus connection between Back Bay, the Longwood Medical Area, Mission Hill, Jamaica Plain, and Forest Hills. Route 39 is designated as an MBTA Key Bus Route, meaning it has significant importance to the transit system as a high ridership and high frequency route.

The TPC program is a new initiative by the BTD Transit Team to improve speed, reliability, and access on critical bus corridors in Boston. This initiative will upgrade transit and related infrastructure on select bus corridors by adding bus lanes, transit signal priority, and bus stop improvements. The initiative may also improve access to transit by improving the pedestrian and cyclist experience through means such as



Figure 1 Riders boarding an outbound Route 39 bus on Huntington Ave. Photo credit: Nelson\Nygaard

<sup>1</sup> MassDOT OPMI. *Weekly Bus Ridership By Route*. Weekday average ridership for 2022. <https://massdot.app.box.com/s/21j0q5di9ewz10abt6kdh5x8j8ok9964>



upgrading curb ramps and repairing sidewalks. Implementing these improvements will help the City of Boston meet its mobility, safety, access, equity, and carbon emission-reduction goals.

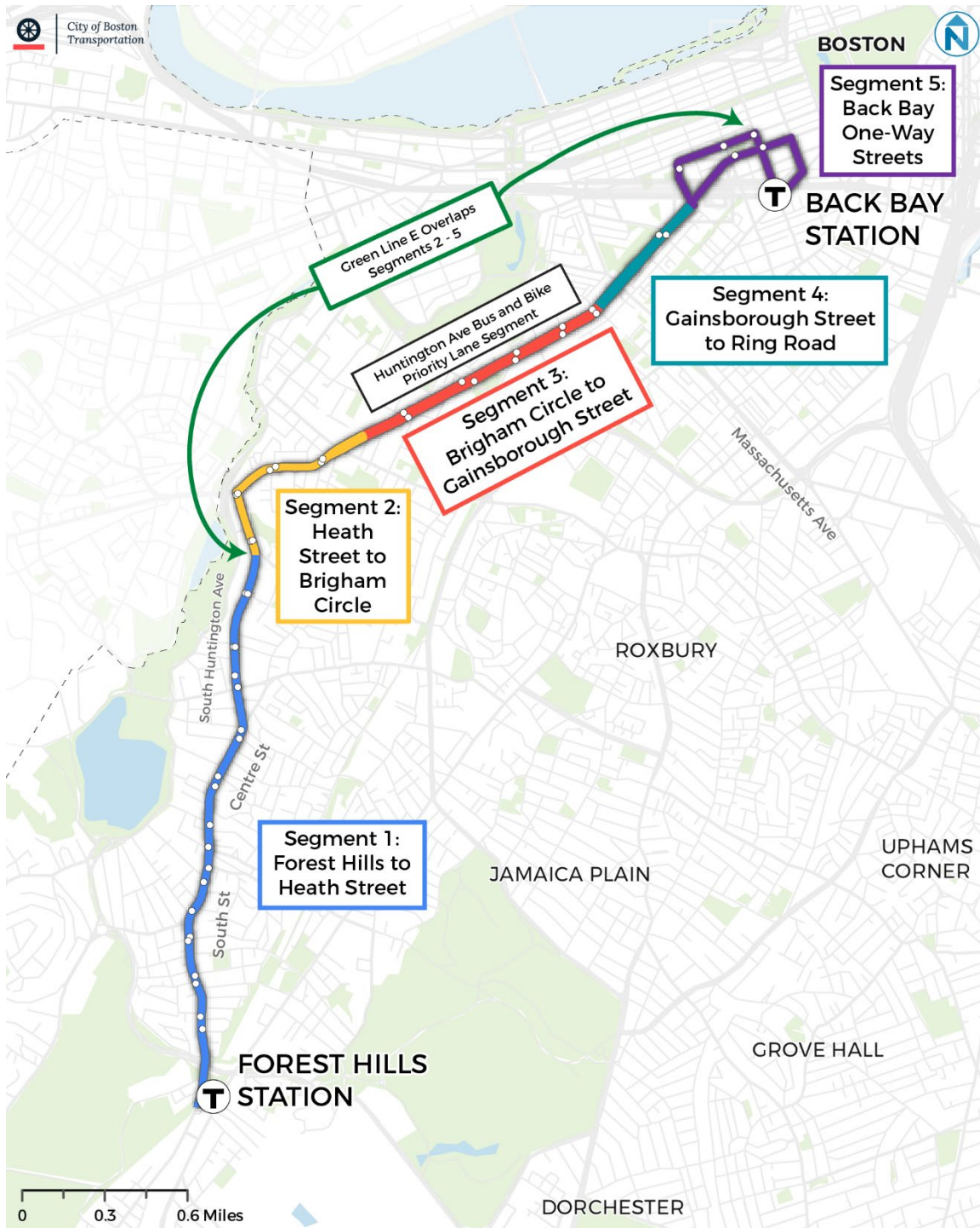
For the purpose of this project, Route 39 was divided into five segments (see Figure 2).

- **Segment 1, from Forest Hills to Heath Street** (South Street, Centre Street, and South Huntington Avenue), where the bus travels in the context of a dense neighborhood-commercial setting.
- **Segment 2, from Heath Street to Brigham Circle** (South Huntington Avenue and Huntington Avenue), where the Green Line is in the middle of the street but not in a protected reservation. The MBTA Route 66, an important crosstown Key Bus Route, also travels on the Huntington Avenue portion of this corridor segment.
- **Segment 3, from Brigham Circle to Gainsborough Street** (Huntington Avenue), where the bus operates in an exclusive bus lane in a primarily institutional setting.
- **Segment 4, from Gainsborough Street to Ring Road** (Huntington Avenue) where the bus operates in mixed traffic in a dense mixed-use setting.
- **Segment 5, Back Bay One-Way Streets** (Ring Road, Boylston Street, Clarendon Street, Columbus Avenue, Berkeley Street, Saint James Avenue, Huntington Avenue), where the bus primarily operates on one-way streets in a dense commercial setting. Some streets in this segment have bus lanes and Route 39 shares part of this route with Route 9, an important crosstown connection.

These segments will be assessed at the end of the document for opportunities to improve accessibility, reliability, safety, and time savings.



Figure 2 Route 39 Speed and Reliability Analysis Segments



## PROJECT GOALS AND BACKGROUND

The City of Boston Transportation Department's Route 39 TPC goals are:

- Accessibility: We want to ensure all bus riders can wait comfortably at their bus stops and board the bus safely.
- Reliability: We will look at street infrastructure and signal improvements to help buses run on schedule.
- Time Savings: We will study where buses and their passengers are currently experiencing delays along the route and explore solutions to save time for bus riders.

Route 39 has connected Forest Hills to Back Bay since December 1985. The route is the replacement (described as "temporary" from 1985 until 2011) for the Green Line E branch streetcar service from Heath Street to Arborway. Route 39 was the first MBTA route to regularly use articulated buses, which were later introduced to several other routes in late 2005.



Figure 3 Arborway Trolley along Centre Street in 1970. Photo credit: Jamaica Plain Historical Society.

## Go Boston 2030

GoBoston 2030 is the City of Boston's comprehensive transportation plan. Completed in 2017, the plan involved a two-year, city-wide public process that worked closely with communities to recommend transportation interventions and 15-year targets for long-term improvements to Boston's transportation system.<sup>2</sup>

The plan received comments from thousands of members of the public and made two recommendations along the Route 39 Corridor:

- Further improve bus service reliability on Route 39 by building exclusive bus lanes, implementing off-board payment systems, all-door boarding and signal priority, and improving bus stops.<sup>3</sup>
- Improve the Jamaica Plain Centre/South Main Streets and Mission Hill Main Streets corridors for pedestrians and cyclists.

## Key Bus Route Program

In 2013 and 2014, the 15 bus routes in the MBTA system with the highest ridership and frequency were the focus of a project to consolidate and improve accessibility and amenities at stops and develop a schedule with more frequent service. These routes are designated as Key Bus Routes, which denotes their significance within the transit system. Key Bus Routes ensure basic geographic coverage with frequent service in the densest areas of the greater Boston area and connect to other MBTA services to give access to other areas throughout the region.

Construction and improvements for Key Bus Routes was completed in 2014—except for minor adjustments—using a \$10 million grant from the American Recovery and Reinvestment Act (MBTA, April 2015). This initial effort was called the Key Bus Route Improvement Project. Route 39 was one of the Key Bus Routes to undergo improvements between 2010 and 2013. Changes included stop consolidation, sidewalk and bicycle improvements, bus stop curb extensions, stop amenity upgrades, updated bus stop signs and new bus stop pavement markings, as well as traffic signal optimization:

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<sup>2</sup> Boston Transportation Department. GoBoston 2030. October 28, 2021. <<https://www.boston.gov/departments/transportation/go-boston-2030>>

<sup>3</sup> Boston Transportation Department. GoBoston 2030, page 166. October 28, 2021. <<https://www.boston.gov/departments/transportation/go-boston-2030>>



- Stop elimination, consolidation and relocation: 11 stops were eliminated, 4 were consolidated, and 7 were relocated.
- Bus stop curb extensions: the curb was extended at four bus stops along Centre Street and South Huntington Avenue.
- Stop amenity upgrades: 13 benches, 29 trash barrels and 10 shelters were added along the route.

## Orange Line Shut Down

The MBTA instituted a full closure of the Orange Line from Oak Grove to Forest Hills beginning Friday, August 19, 2022, through Sunday, September 18, 2022. The closure addressed a maintenance backlog and planned construction investments, all of which were focused on safety improvements and returning the system closer to a state of good repair.

During this time, the MBTA enhanced commuter rail options for commuters traveling to Downtown Boston, ran free shuttle buses between Forest Hills and Back Bay Stations, offered free BlueBikes passes, and encouraged riders to use alternative bus routes to the Orange Line, including Route 39.

The City of Boston aided the planning and monitoring of alternative shuttles and diversions. To mitigate the impacts of the Orange Line shutdown, the City implemented several street changes including two along the Route 39 corridor in Copley Square and Huntington Avenue.

## RECENT AND PLANNED CHANGES

The MBTA has extensive future changes planned for the bus network through the Better Bus Project and the Bus Network Redesign. Although there are limited changes surrounding Route 39 in the final plan, a more efficient and higher frequency bus network could affect Route 39 in terms of rider volume, schedules, and key transfer locations. During the process of designing the Bus Network Redesign, service planners had major changes planned for Route 39, but ultimately decided not to include them after receiving substantial rider feedback pushing back against changes to Route 39.

Two of the changes on Route 39 were made permanent following the reopening of the Orange Line due to their positive impact on traffic flow and public safety. The permanent changes included:

- Copley Square area bus lanes along Boylston Street (Ring Road to Clarendon Street), Clarendon Street (Boylston Street to Columbus Avenue), and St. James





Street (west of Berkeley Street to Dartmouth Street). These bus lanes support Routes 39, 9, and 10.

- Huntington Avenue bi-directional bus and bike priority lane between Brigham Circle and Gainsborough Street. This dedicated lane has improved speed for the Route 39 bus and offers cyclists a less congested travel lane.

Most recently, the City of Boston installed parking-protected buffered bike lanes on South Huntington Avenue between Centre Street and Heath Street. Other changes included shorter and more visible pedestrian crossings, and modifications to on-street parking to increase visibility at driveways and intersections. The City plans to extend these bike lanes between Heath Street and Huntington Avenue before the end of 2024.



Figure 4 A person on a bicycle rides in a new protected bike lane past the Perkins Street bus stop on South Huntington Avenue. Photo credit: StreetsBlog Mass.

# EXISTING ROUTE 39 SERVICE

## EXISTING SERVICE

Route 39 Back Bay Station – Forest Hills Station is an MBTA bus route operating through Back Bay, the Longwood Medical Area, Mission Hill, Jamaica Plain, and Forest Hills. This route has two main sections: an east-west section from Back Bay to Mission Hill and a north-south section from Mission Hill to Forest Hills. The east-west section primarily operates on Huntington Avenue. The north-south portion primarily operates on South Huntington Avenue, Centre Street, and South Street through Forest Hills. Major activity centers along the corridor are the Centre and South Street commercial corridor, the Huntington Avenue & Gainsborough Street area which offers a variety of commercial destinations, the Jamaica Plain VA Medical Center, the many hospitals and educational institutions in Brigham Circle and the Longwood Medical Area, the Museum of Fine Arts Boston, the Prudential Center, and Copley Square (see Figure 5).

Route 39 has a long service span and high frequencies throughout the day (see Table 1). Frequencies range from 6 minutes to 15 minutes with inbound trips running from 5:01 AM to 12:47 AM and outbound trips running from 5:31 AM to 1:08 AM.

Saturday spans are only slightly reduced from weekday spans, with inbound trips from 5:01 AM to 12:31 AM and outbound trips from 5:30 AM to 1:01 AM. However, frequencies are reduced on Saturdays, with the shortest headway being 14 minutes.

Sunday spans are more reduced than Saturday spans, but the frequencies remain similar, with the shortest headways being 14 minutes. On Sundays, inbound trips run from 5:44 AM – 12:21 AM and outbound trips run from 6:12 AM to 12:55 AM.



Figure 5 Route 39 Corridor Points of Interest

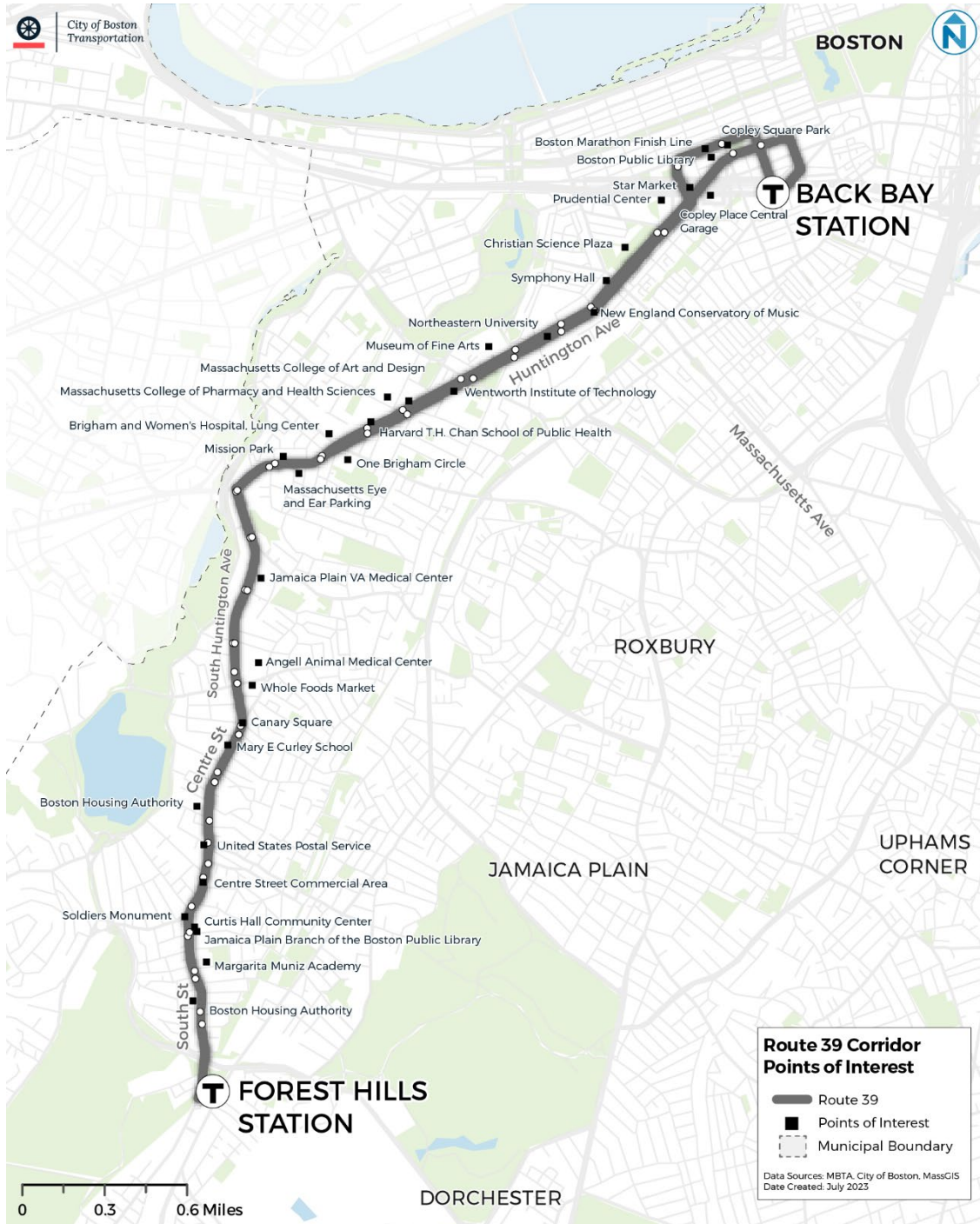
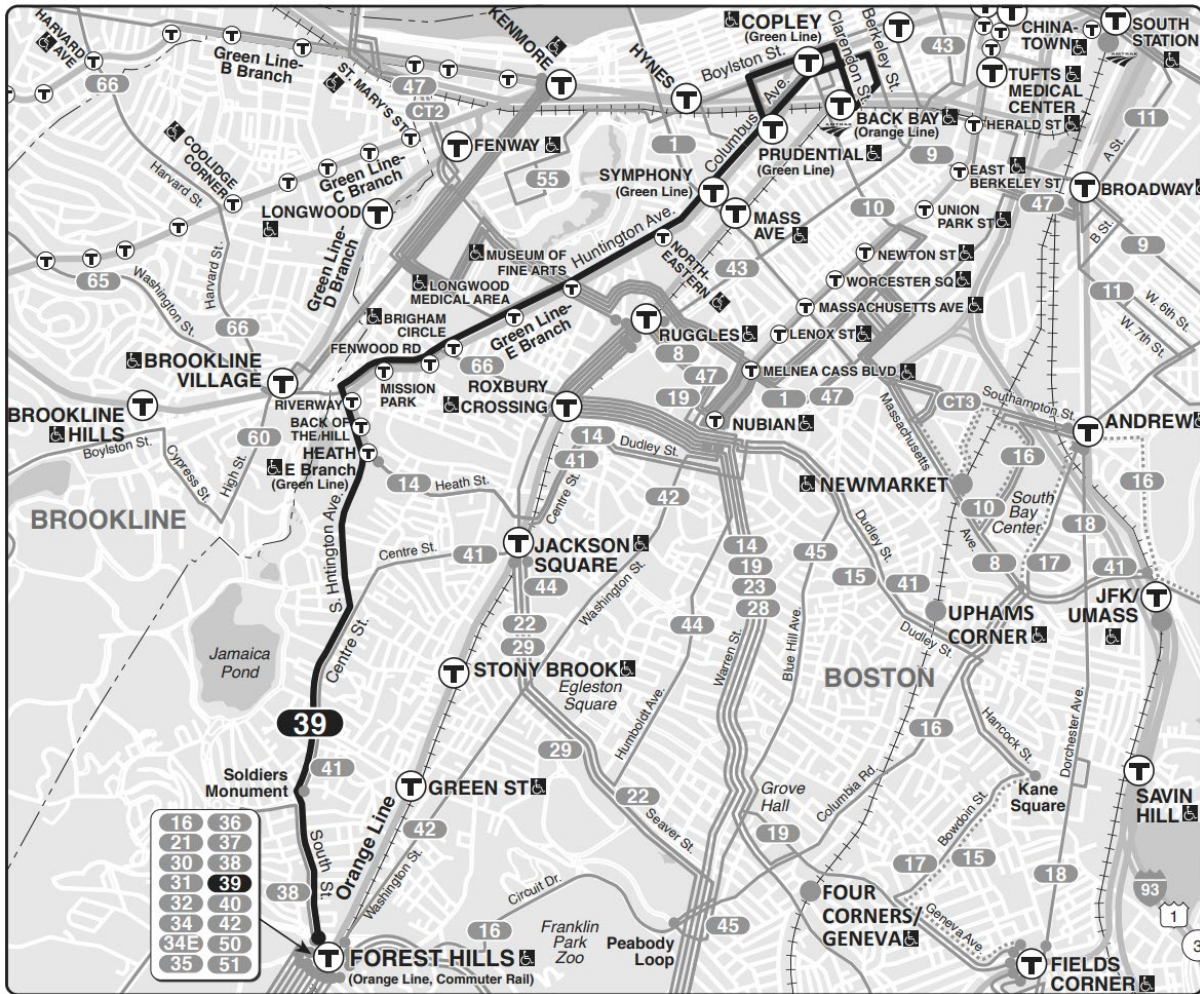




Figure 6 Spring 2023 MBTA Route 39 Schedule Map



Source: [https://cdn.mbta.com/sites/default/files/media/route\\_pdfs/batch\\_6375/39-S1-P3.pdf](https://cdn.mbta.com/sites/default/files/media/route_pdfs/batch_6375/39-S1-P3.pdf)

Table 1 Route 39 Trips by Service Period

| SERVICE DAY     | SPAN OF SERVICE            | FREQUENCY (RANGE) | FREQUENCY (AVERAGE) | DAILY TRIPS (INBOUND/OUTBOUND) |
|-----------------|----------------------------|-------------------|---------------------|--------------------------------|
| <b>Weekdays</b> | <b>5:01 AM to 12:55 AM</b> |                   |                     | <b>111/113</b>                 |
| Sunrise         | 5:01 AM to 5:59 AM         | 6-12              | 9                   | 7/3                            |
| Early AM        | 6:00 AM to 6:59 AM         | 6-12              | 6                   | 10/7                           |
| AM Peak         | 7:00 AM to 8:59 AM         | 7-13              | 8                   | 16/16                          |
| Midday Base     | 9:00 AM to 1:29 PM         | 8-15              | 14                  | 18/20                          |
| Midday School   | 1:30 PM to 3:59 PM         | 4-15              | 10                  | 12/15                          |
| PM Peak         | 4:00 PM to 6:29 PM         | 9                 | 9                   | 17/17                          |



|                 |                           |              |           |              |
|-----------------|---------------------------|--------------|-----------|--------------|
| Evening         | 6:30 PM to 9:59 PM        | 9-13         | 11        | 18/20        |
| Late Evening    | 10:00 PM to 11:59 PM      | 13           | 13        | 9/9          |
| Night           | 12:00 AM to 1:05 AM       | 13           | 13        | 4/6          |
| <b>Saturday</b> | <b>5:01 AM to 1:05 AM</b> | <b>14-19</b> | <b>15</b> | <b>79/79</b> |
| <b>Sunday</b>   | <b>5:45 AM to 1:00 AM</b> | <b>14-19</b> | <b>15</b> | <b>75/75</b> |

## SERVICE PATTERNS

There are only two route variations of Route 39. Most Route 39 service operates along the primary alignment, as shown in Figure 6. The primary alignment runs 112 of 113 weekly trips, while route variation 39.7 provides supplemental trips between Forest Hills Station and Boston Latin High School on weekdays during the school year, one AM inbound and PM outbound trip (see Figure 7 and Table 2).

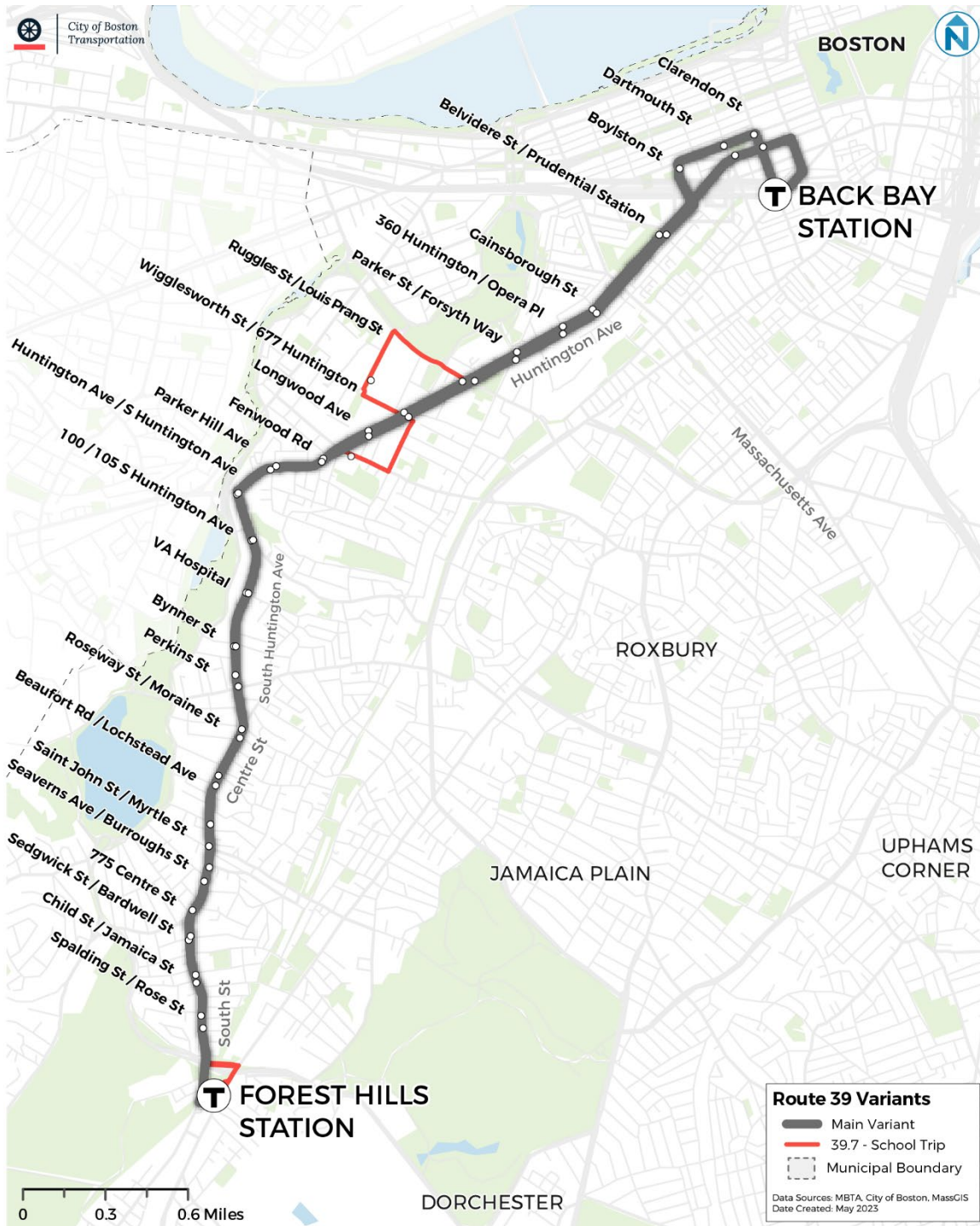
It should be noted that as of Fall 2018, route variation 39.9 and four of five trips on route variation 39.7 were discontinued. That service was replaced by various other routes. This study will focus on the primary alignment only.

**Table 2 Service Patterns**

| Pattern         | Origin                               | Destination              | Unique Feature  | Trips/WKD  | Trips/Sat | Trips/SUN |
|-----------------|--------------------------------------|--------------------------|---|------------|-----------|-----------|
| <b>INBOUND</b>  |                                      |                          |   | <b>111</b> | <b>79</b> | <b>75</b> |
| 39.3            | Forest Hills Station                 | Back Bay Station         | Primary Alignment   | 110        | 79        | 75        |
| 39.7            | Forest Hills Station                 | Boston Latin High School | Supplemental Trips  | 1          | -         | -         |
| <b>OUTBOUND</b> |                                      |                          |   | <b>113</b> | <b>79</b> | <b>75</b> |
| 39.3            | Back Bay Station                     | Forest Hills Station     | Primary Alignment   | 112        | 79        | 75        |
| 39.7            | Huntington Avenue at Longwood Avenue | Forest Hills Station     | Primarily an additional supplemental trip operating near Boston Latin | 1          | -         | -         |



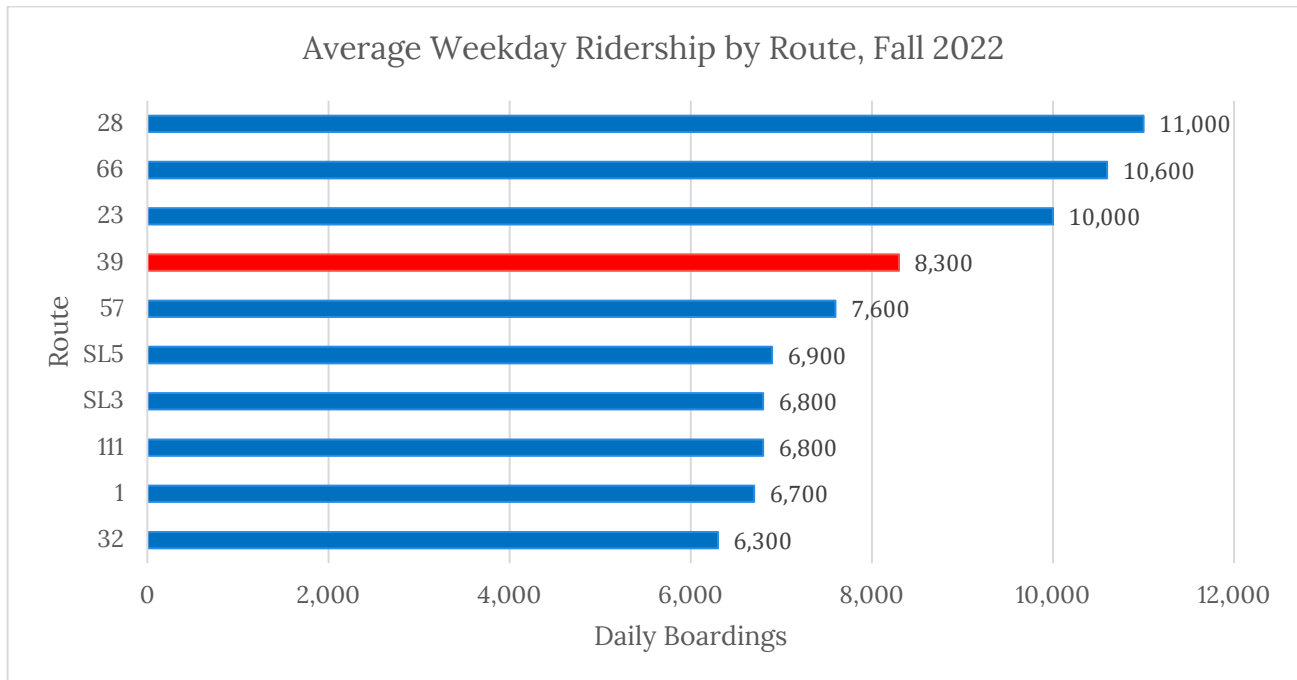
Figure 7 Route 39 Service Pattern Variants



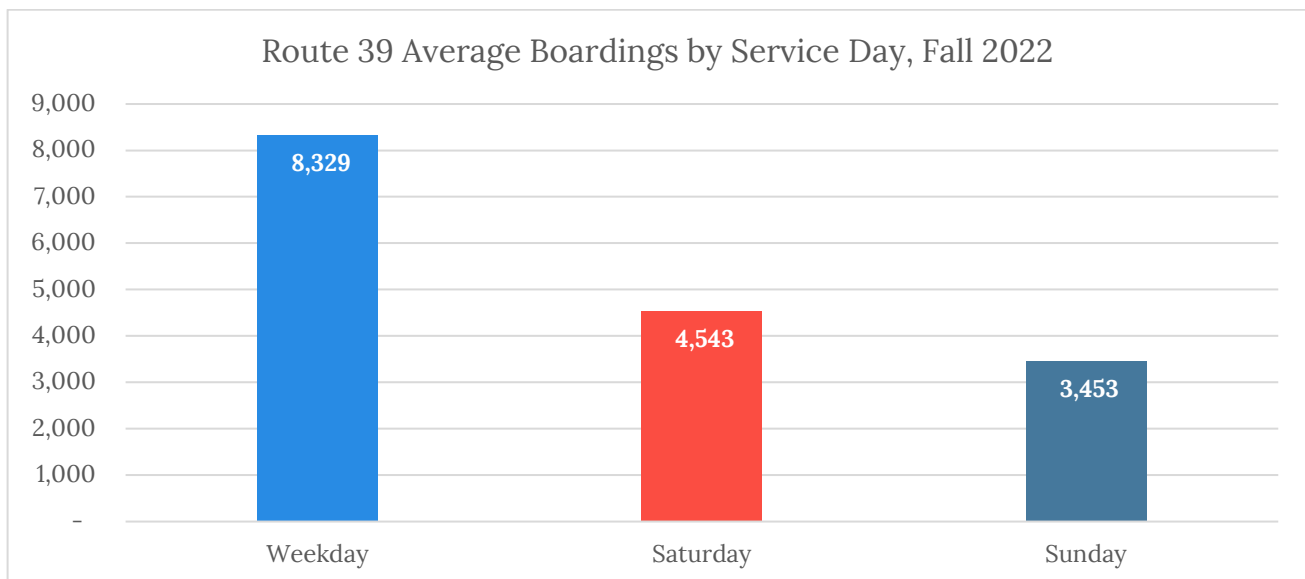
## EXISTING RIDERSHIP

Route 39 is the fourth-highest ridership bus route in the MBTA system, lower than only routes 28, 66, and 23 (see Figure 8). Route 39 carries about 8,300 average passenger trips on weekdays, 4,500 passenger trips on Saturday, and 3,500 passenger trips on Sunday as of Fall 2022 (see Figure 9).

**Figure 8 MBTA Average Weekday Ridership by Route (Fall 2022)**



**Figure 9 Route 39 Average Boardings by Service Day (Fall 2022)**





## Ridership by Stop

Stop-level ridership reveals where most riders are boarding (getting on the bus) and alighting (getting off the bus), helping to focus improvements in areas that are most utilized. These data also highlight where delay may occur due to longer boarding and alighting times, in addition to key destinations or transfer points throughout the route. This section of the report looks at stop-level boardings and alightings for Route 39.

Boardings and alightings are counted using Automatic Passenger Counters (APCs), which are electronic devices mounted above or to the side of doors on the inside of the vehicle. APCs count how many people board and alight the vehicle and associate those data with the relative location of the vehicle, which provides stop-level ridership data.

Ridership is generally consistent throughout the Route 39 corridor, with the highest ridership at the termini and key transfer locations along the route. Ridership is lowest at the stops around Back Bay, along Huntington Avenue after Prudential and before the Harvard School of Public Health, and at several stops from South Huntington Avenue to Forest Hills. The 10 stops with the highest ridership are listed in the table below. It is worth noting that these 10 stops are all stop pairs.

**Table 3: Route 39 Highest Ridership Stops (Average Weekday)**

| Stop Name                             | Boardings | Alightings |
|---------------------------------------|-----------|------------|
| <b>Inbound</b>                        |           |            |
| Forest Hills Station                  | 1,451     | 0          |
| Huntington Ave Opp Fenwood Rd         | 178       | 508        |
| Huntington Ave @ Longwood Ave         | 208       | 334        |
| South Huntington Ave @ Huntington Ave | 205       | 312        |
| Boylston St @ Dartmouth St            | 24        | 427        |
| <b>Outbound</b>                       |           |            |
| Forest Hills Station                  | 0         | 1,507      |
| Huntington Ave @ Longwood Ave         | 471       | 190        |
| Huntington Ave @ Fenwood Rd           | 424       | 176        |
| South Huntington Ave @ Huntington Ave | 365       | 134        |
| Saint James Ave @ Dartmouth St        | 297       | 10         |

The boarding and alighting data show that many people board the bus between Forest Hills and South Huntington Avenue going inbound to Back Bay and alight the bus along the same stretch heading outbound, which shows that many residents are likely using



this bus to reach key connections to other buses along Huntington Avenue or to the MBTA's rapid transit lines around Back Bay Station. However, Back Bay Station is not a top activity stop along the line, showing that people tend to board/alight prior to the arrival there. Forest Hills, on the other hand, is the largest activity stop along the corridor by far, showing a greater demand for transit connections there.

Figure 10 Route 39 Weekday Inbound Boardings by Stop (Fall 2022)

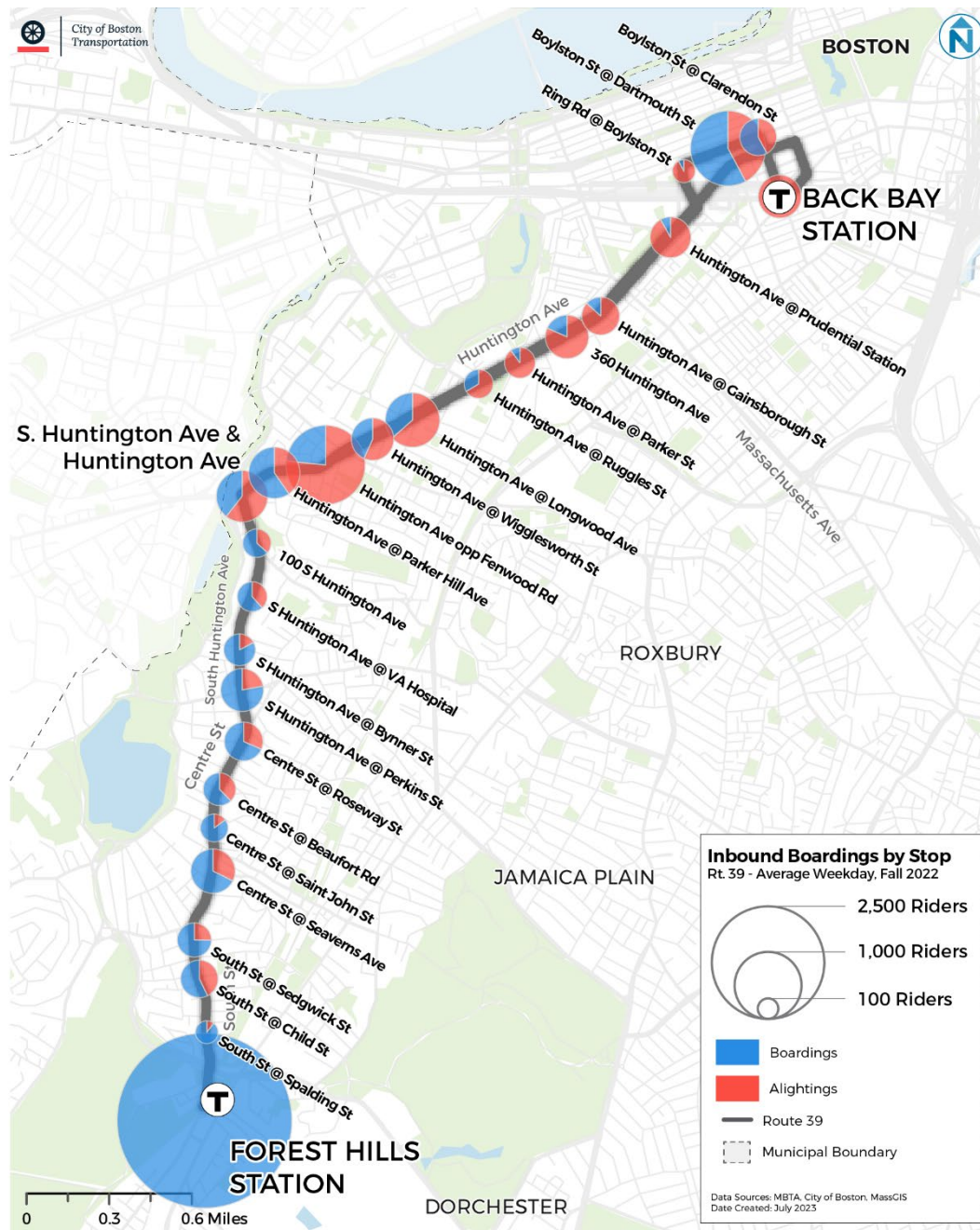
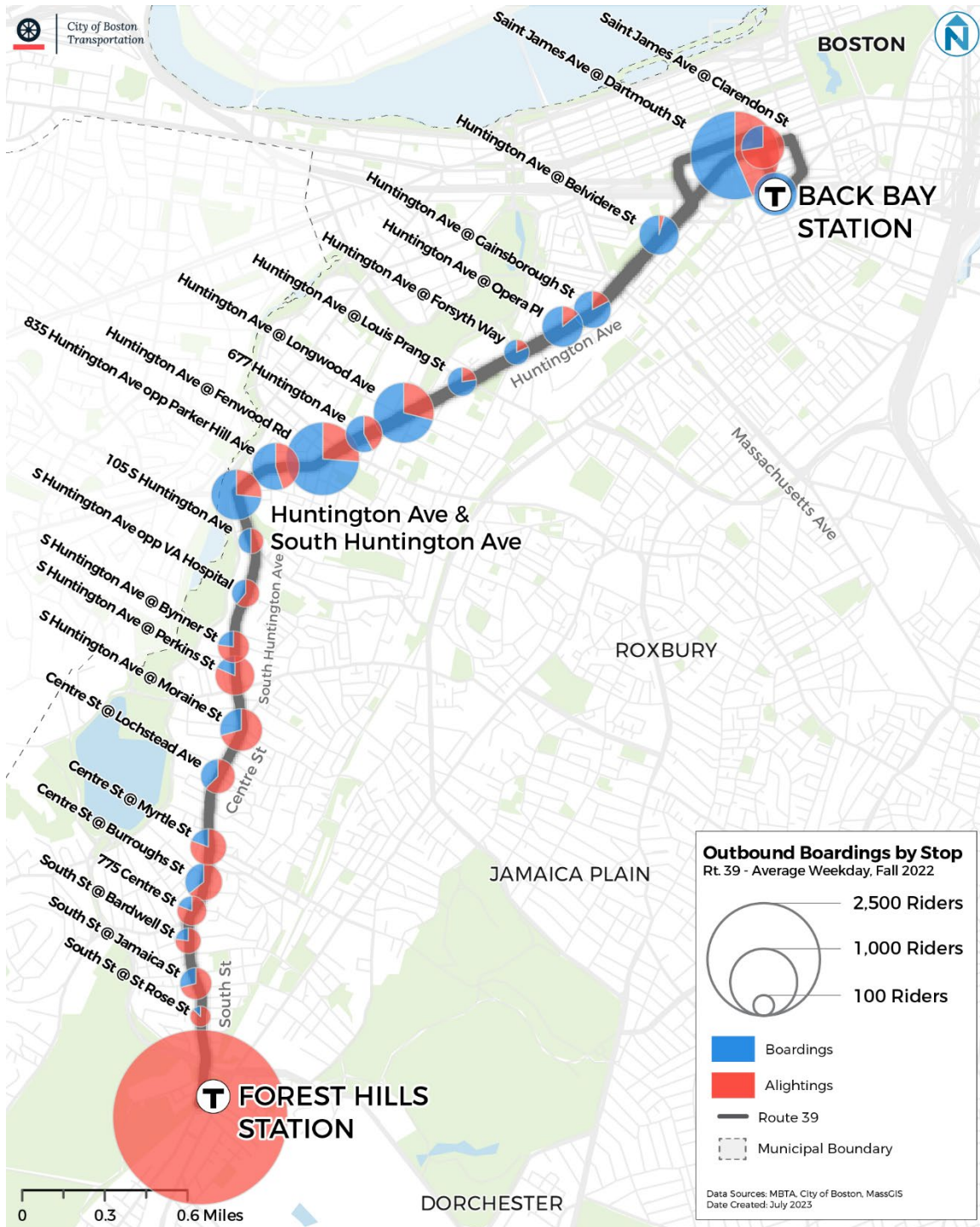


Figure 11 Route 39 Weekday Outbound Boardings by Stop (Fall 2022)



## Passenger Load

Passenger load analysis provides insight as to where the bus is the most crowded, indicating where passengers are getting on and riding through a segment, while not getting off at equal rates. This is important supplementary information in addition to the ridership data since load data provides a look into where people are boarding and how many passengers are on board the bus at any given time or location. Improvements along segments with the highest loads will benefit the most riders.

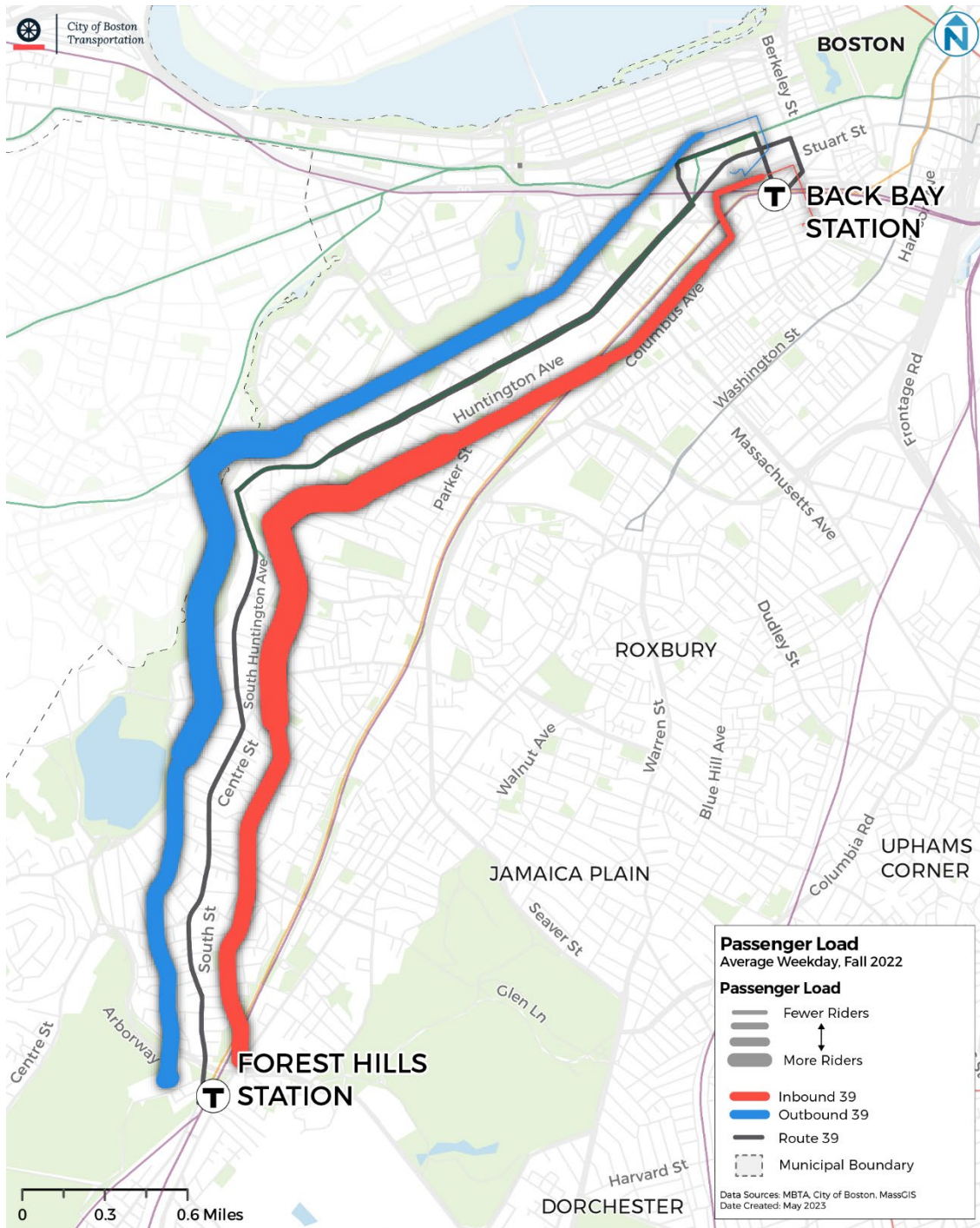
Route 39 has the highest loads around the Huntington Avenue & South Huntington Avenue intersection and for numerous adjacent stops in either direction (see Figure 12). The outbound direction gets most crowded at the Fenwood Road stop at Brigham Circle and sees its passenger load decrease steadily until it arrives at Forest Hills. The inbound direction has its highest load starting at Centre Street and lasting until the Harvard School of Public Health.

These load patterns also indicate that most riders are not riding the full extent of the route, but rather accessing distinct locations along the route. This varies in the inbound and outbound directions, however, as more riders are riding through the outbound direction to Forest Hills than are riding to Back Bay in the inbound direction. This is reflected in transfer patterns discussed later in this section.





Figure 12 Route 39 Weekday Passenger Loads by Segment (Fall 2022)

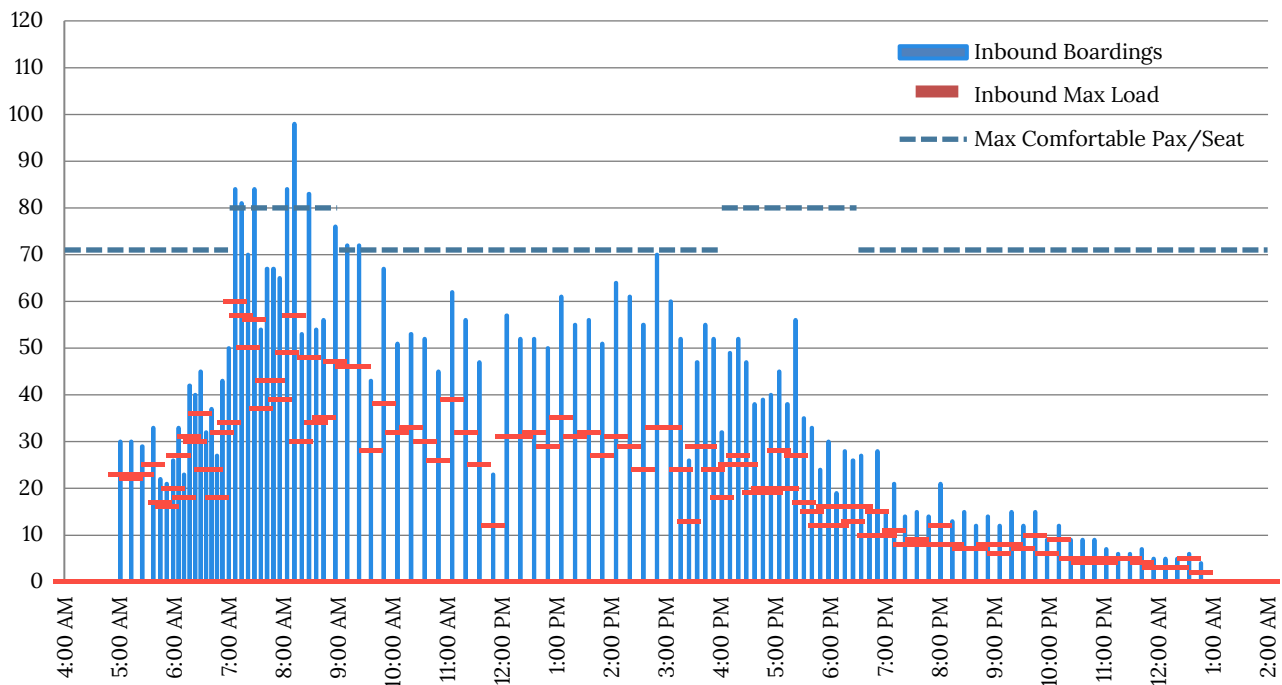


## Ridership by Trip

Trip-level ridership shows when there is demand for service and helps identify when speed and reliability improvements could benefit the most riders. Route 39 has fairly traditional AM and PM peaks in ridership, mirrored by a higher number of trips in certain directions during those periods. The AM Peak is in high demand for trips heading inbound to Back Bay, whereas the PM Peak is in high demand for trips heading outbound to Forest Hills.

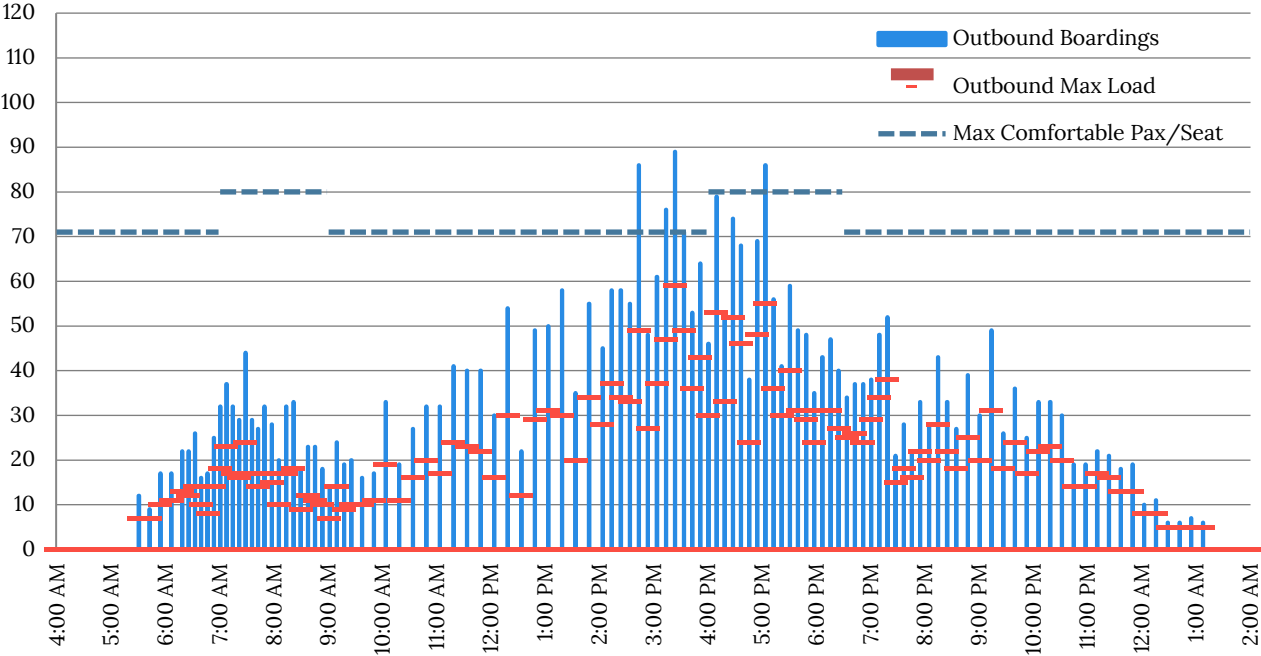
Despite the heavy peak ridership, inbound ridership remains high throughout the day, with most trips exceeding 50 boardings until around 4:30 PM. The Outbound Route 39 has more consistent boardings throughout the evening, exceeding over 50 boardings from about 1:00 PM until about 6:00 PM.

**Figure 13 Route 39 Weekday Inbound Boardings by Trip (Fall 2022)<sup>4</sup>**



<sup>4</sup> Maximum comfortable passengers/seat is a measurement of vehicle size and how many passengers can fit into each vehicle comfortably. It is most useful for noting times of day where the passenger counts exceed the maximum comfortable passengers/seat, as these are trips where the vehicle is overcrowded.

Figure 14 Route 39 Weekday Outbound Boardings by Trip (Fall 2022)



## EXISTING TRANSIT CONNECTIONS AND TRANSFERS

Route 39 connects to 38 unique transit routes, including 32 bus routes, the Green Line B, C, D, and E, the Orange Line, and the Commuter Rail. Most of these connections happen at five general locations:

- Back Bay Station (8 connections)
- Dartmouth Street (8 connections)
- Throughout Huntington Avenue (18 connections)
- South Huntington Avenue to Forest Hills Station (17 connections)
- Forest Hills Station (19 connections).

Of these locations, the highest volume transfer locations are Forest Hills Station, Back Bay Station, Dartmouth Street, and Huntington Avenue & South Huntington Avenue. Approximately 85% of all transfers occur at these four locations.

In addition to providing connections, the Green Line E Branch and Route 66 bus serve overlapping portions of the Route 39 corridor.

Forest Hills Station is the highest transfer point for riders transferring to and from Route 39. 70% of all incoming transfers to Route 39 and 52% of outgoing Route 39 transfers occurred at Forest Hills Station. Other stops with high transfer volumes are:

- South Huntington Avenue @ Huntington Avenue (inbound) accounted for 12% of all outgoing Route 39 transfers. Of the transfers at this location, 40% were for Route 66.
- Boylston Street @ Dartmouth Street (inbound) accounted for 15% of all outgoing Route 39 transfers. Of the transfers at this location, 78% were for the Green Line.
- Route 66 received 16% of all outgoing Route 39 transfers, and 14% of all transfers to Route 39 originated from Route 66.
- Route 32 12% of transfers outgoing from Route 39 were for Route 32, but riders rarely transferred from Route 32 to Route 39 at 0.5% of all incoming transfers.
- The Orange Line accounted for 11% of transfers incoming to Route 39 and 12% of outgoing Route 39 transfers.

**Table 4: Route 39 Transfer Activity by Route**

| Route              | % Transfers to R39 | % Transfers from R39 |
|--------------------|--------------------|----------------------|
| <b>66</b>          | 14%                | 16%                  |
| <b>Orange Line</b> | 11%                | 12%                  |
| <b>34</b>          | 11%                | 5%                   |
| <b>36</b>          | 9%                 | 4%                   |



|                   |    |     |
|-------------------|----|-----|
| <b>Green Line</b> | 0% | 13% |
| <b>34E</b>        | 9% | 4%  |
| <b>32</b>         | 1% | 12% |
| <b>30</b>         | 8% | 3%  |
| <b>9</b>          | 7% | 3%  |
| <b>35</b>         | 5% | 3%  |

Table 5: Route 39 Transfer Activity by Stop

| Route  | Direction | % Transfers to R39 | % Transfers from R39 |
|--|-----------|--------------------|----------------------|
| <b>Forest Hills Station</b>                  | Both      | 71%                | 52%                  |
| <b>Boylston St &amp; Dartmouth St</b>        | Inbound   | 0%                 | 15%                  |
| <b>S Huntington Ave &amp; Huntington Ave</b> | Inbound   | 0%                 | 12%                  |
| <b>Huntington Ave &amp; Parker Hill Ave</b>  | Inbound   | 7%                 | 1%                   |
| <b>Back Bay Station</b>                      | Outbound  | 0%                 | 7%                   |
| <b>Saint James Ave &amp; Dartmouth St</b>    | Outbound  | 6%                 | 0%                   |
| <b>Huntington Ave &amp; Fenwood Rd</b>       | Outbound  | 3%                 | 2%                   |
| <b>Huntington Ave opp Fenwood Rd</b>         | Inbound   | 4%                 | 1%                   |
| <b>South St &amp; Bardwell St</b>            | Outbound  | 3%                 | 0%                   |
| <b>Saint James Ave &amp; Clarendon St</b>    | Outbound  | 3%                 | 0%                   |



Figure 15 Transfer Locations by Route (Inbound, Fall 2022)

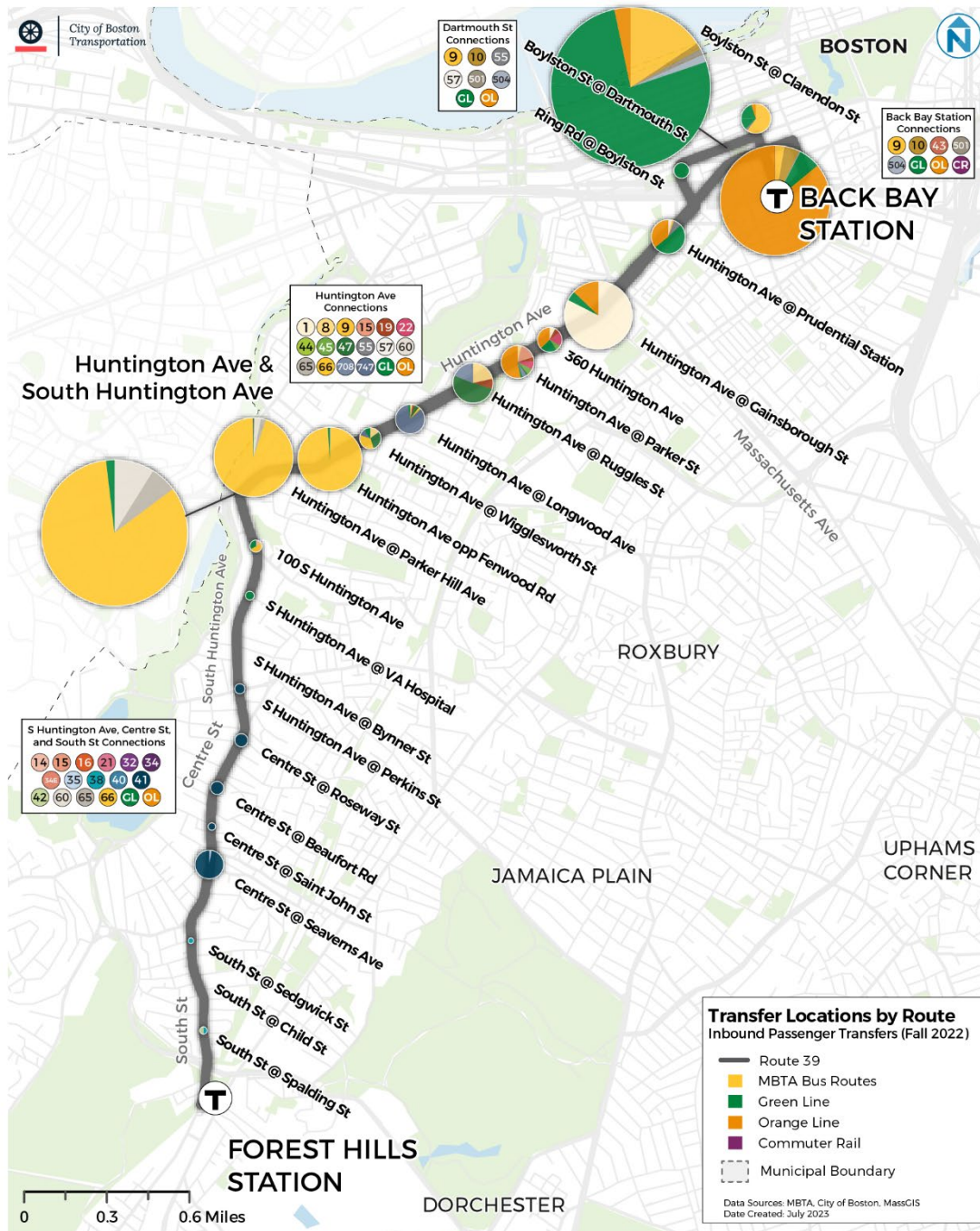
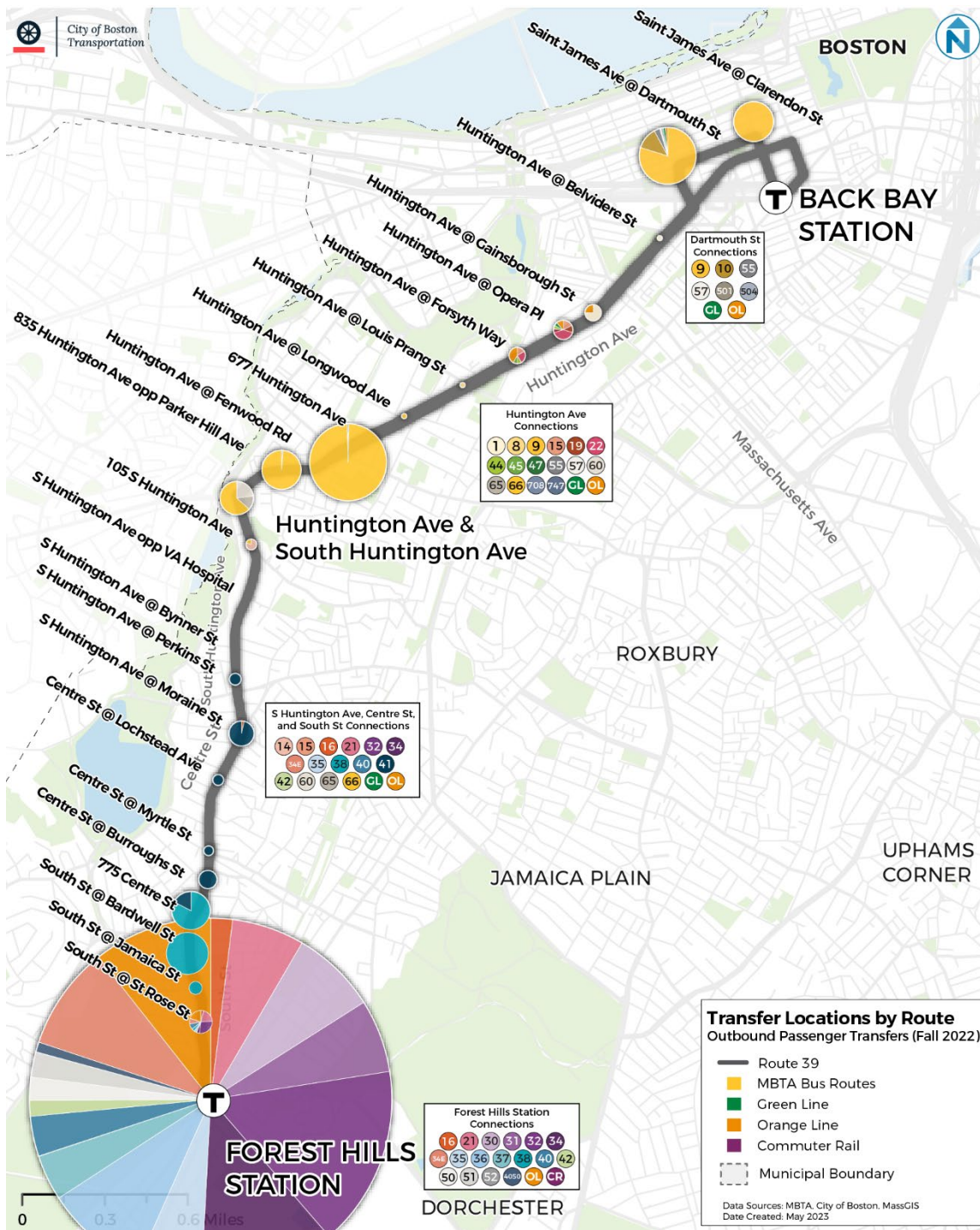


Figure 16 Transfer Locations by Route (Outbound, Fall 2022)



## Stop Spacing

Stop spacing is a key aspect of the efficiency of a bus route. A route with too many stops will likely be slowed down by frequently having to stop for passengers to get on and off. However, a route with too few stops may have lower ridership as a result or force individuals to walk further than the desired distance to reach their stop.

**Table 6 MBTA Stop Spacing Guidelines (2018)**

| Bus Operating Environment              | Average # of Stops per Mile | Average Distance Between Stops |
|--|-----------------------------|--------------------------------|
| Central Business District (CBD)        | 4-5                         | 1,000 - 1,300 feet             |
| Urban outside CBD and Key Bus Routes   | 4-7                         | 750 - 1,300 feet               |
| Suburban                               | 4-5                         | 1,000 - 1,300 feet             |
| Bus Rapid Transit/Limited Stop Service | 2-4                         | 1,300 - 2,600 feet             |

As a Key Bus Route, the stop spacing along the 39 is held to a different standard than non-Key Bus Routes, as shown in Table 4. Key Bus Routes are expected to have stops that are between 750-1,300 feet apart. Land uses and key destinations along a bus corridor should be a factor when determining stop spacing and may necessitate more closely spaced stops in the immediate area (e.g., education centers, employment centers, residential complexes, medical facilities with out-patient care). Spacing may be adjusted in areas where high concentrations of seniors and persons with disabilities live and travel. Figure 17 shows the distance between stops. There are numerous locations throughout the Route 39 corridor that do not meet the MBTA's Key Bus Route stop spacing guidelines, being either over or under the recommended distance.



Figure 17 Route 39 Stop Spacing (ft.)



## EXISTING AMENITIES

Bus stop amenities make riding transit safer and more comfortable, especially in a region subject to frequent inclement weather. Shelters are key for protecting riders waiting for their bus from precipitation, sun, and wind. Benches, trash barrels, bike racks, trees and information displays are also important amenities to provide a more comfortable rider experience.

### Shelters and Benches

The MBTA offers guidelines for shelter placement, including the number of boardings that are recommended for a stop to be considered for a shelter. The minimum number of average weekday boardings that automatically qualifies a stop for a shelter is 70. Two or more forms of additional criteria must be met for stops that have between 25 and 69 average weekday boardings. These additional criteria are:

- An MBTA initiative to strengthen route or stop identity
- Facilities for seniors, disabled, medical, or social services nearby
- Minority and/or low income area
- Bus route transfer/connection point
- Infrequent bus service (less frequent than every 30/60 minutes peak/off-peak)
- Poor site conditions at bus stop (weather exposure, etc.)

Of all the non-station stops along the Route 39 corridor, 63% have benches and 40% have benches and shelters.<sup>5</sup> Of the stops that do not have a shelter, 35% are automatically eligible based on the MBTA's shelter placement guidelines (see Table 5) and 19% could be eligible if additional criteria were to be met and if site constraints or challenges could be overcome (see Figure 18 and Figure 19).

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<sup>5</sup> Based on data collected during on-site corridor walk.

**Table 7 Route 39 Stops that are Eligible for a Shelter (Currently without One)**

| Direction | Stop Name                             | Boardings (Fall 2022) | Bench Available |
|-----------|---------------------------------------|-----------------------|-----------------|
| Outbound  | South Huntington Ave @ Huntington Ave | 365                   | Yes             |
| Outbound  | Huntington Ave @ Gainsborough St      | 228                   | Yes             |
| Inbound   | Huntington Ave @ Longwood Ave         | 208                   | Yes             |
| Inbound   | South Huntington Ave @ Huntington Ave | 205                   | No              |
| Inbound   | Centre St @ Seaverns Ave              | 203                   | Yes             |
| Inbound   | Huntington Ave @ Parker Hill Rd       | 200                   | No              |
| Inbound   | Huntington Ave Opp Fenwood Rd         | 178                   | No              |
| Inbound   | South Huntington Ave @ Bynner St      | 163                   | Yes             |
| Outbound  | 677 Huntington Ave                    | 145                   | No              |
| Outbound  | Huntington Ave @ Louis Prang St       | 119                   | No              |
| Inbound   | Centre St Opp Beaufort Rd             | 108                   | Yes             |
| Outbound  | Huntington Ave @ Forsyth Way          | 105                   | Yes             |
| Outbound  | South Huntington Ave @ Moraine St     | 97                    | No              |
| Outbound  | Centre St @ Burroughs St              | 97                    | No              |
| Inbound   | South St @ Spalding St                | 85                    | Yes             |
| Outbound  | Centre St @ Lochstead Ave             | 83                    | Yes             |

Figure 18 Route 39 Inbound Boardings & Amenities by Stop

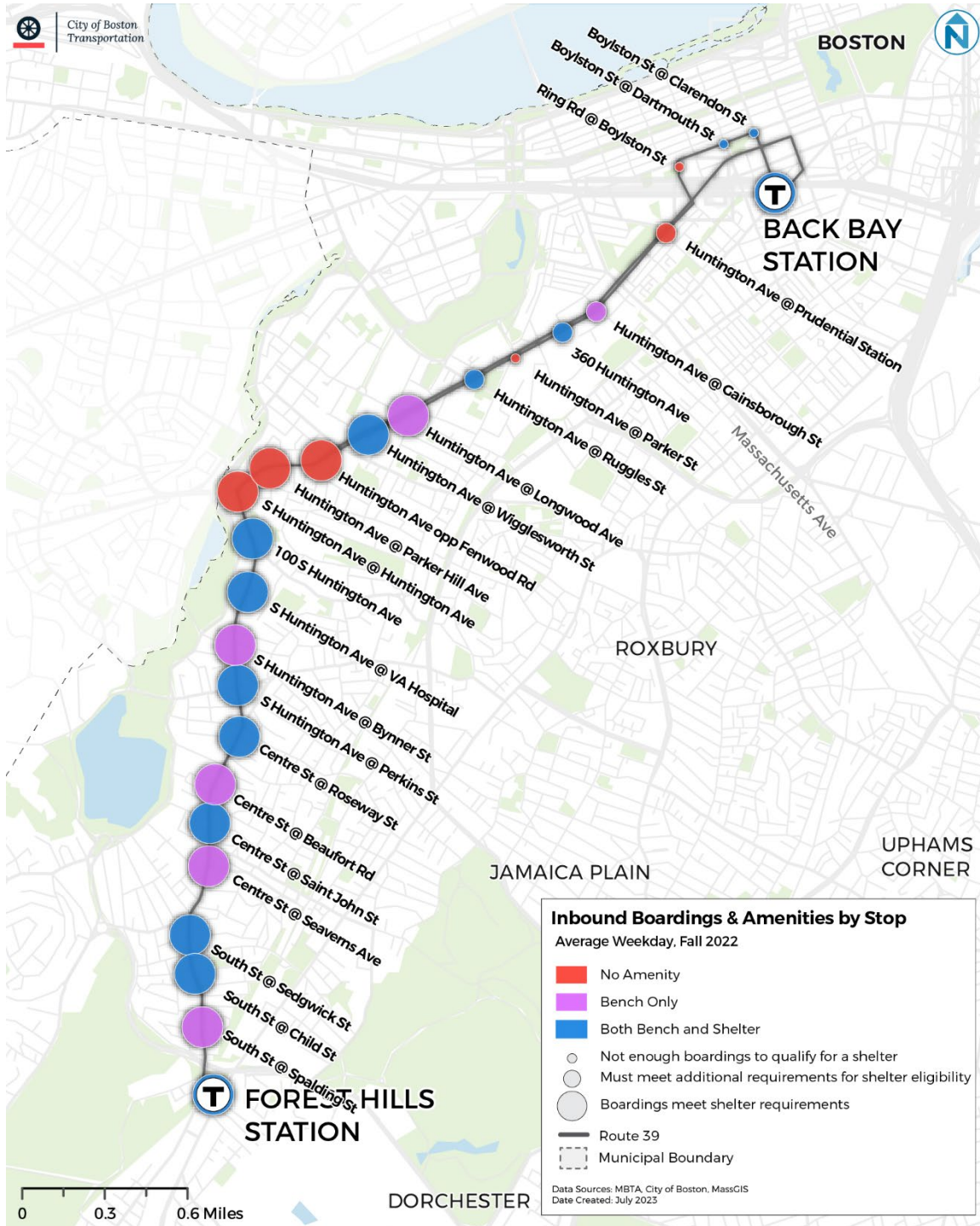
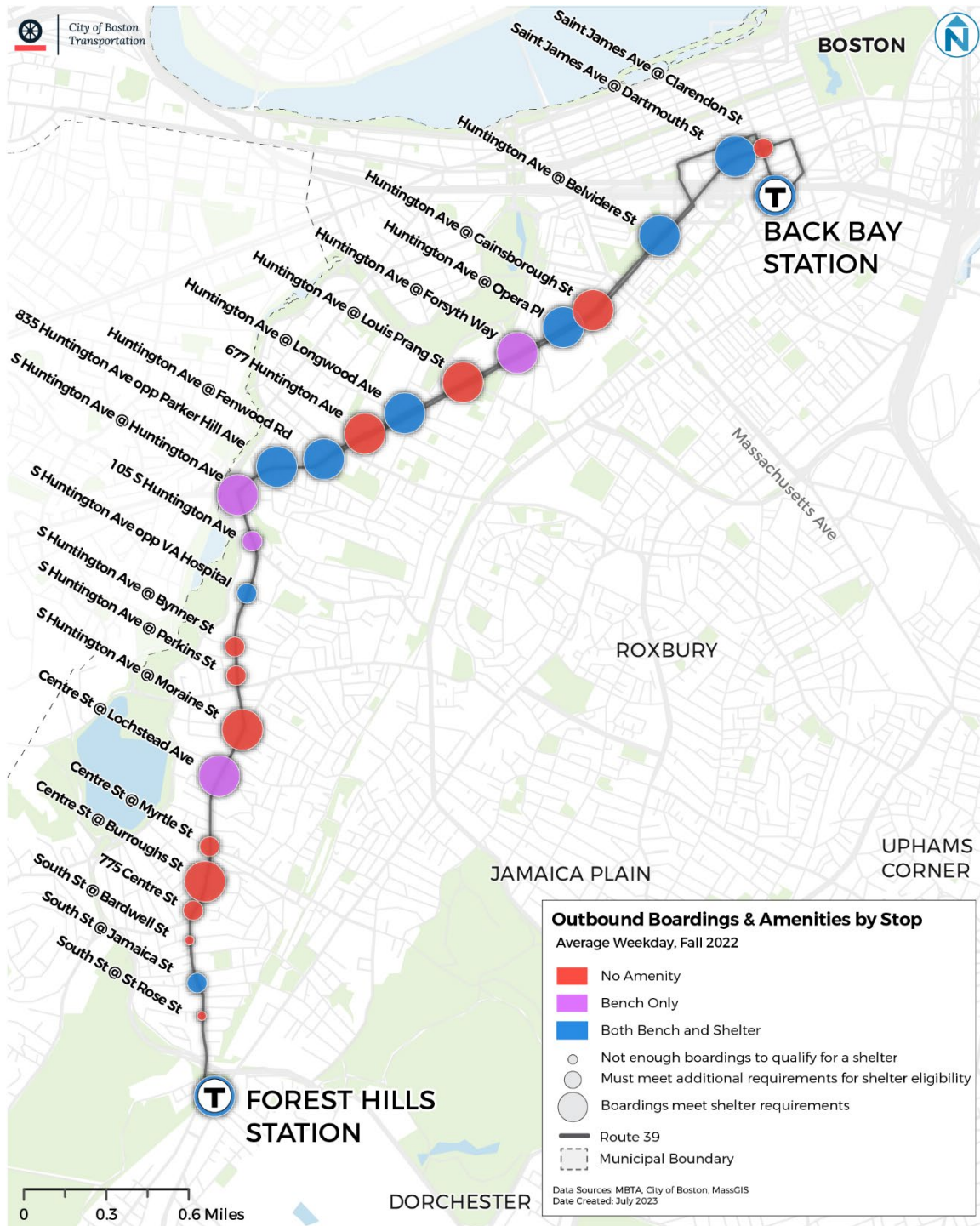




Figure 19 Route 39 Outbound Boardings & Amenities by Stop



## Forest Hills Station Improvements

Forest Hills Station is the highest ridership location along Route 39. In 2019, the MBTA made improvements to the Forest Hills busway and opened a new, fully accessible upper busway. In December 2020, the MBTA began a new project to further improve station accessibility and repair aging infrastructure to lengthen the station's lifespan. The focus of this improvement project is to ensure that the station meets the latest accessibility codes and standards and undergoes repairs to keep the facility safe and efficiently serving users. Project features include upgraded or replaced elevators, fully accessible public restrooms, repairs to walking surfaces, repair or replacement of doors and roofing, improved lighting, and enhanced wayfinding. Improvements are projected to be completed by Fall of 2025.<sup>6</sup>

## EXISTING ACCESS TO TRANSIT

Transit accessibility varies throughout the Route 39 corridor, with some locations having seamless access and others presenting numerous accessibility issues. 46 unique locations with notable pedestrian accessibility issues were noted during a walking assessment of the Route 39 corridor.

The South Street and Centre Street section of both inbound and outbound directions presents numerous pedestrian issues, from cracked sidewalks to misplaced crosswalks. Each of these issues impacts incoming or outgoing riders' ability to traverse the area around the bus stop. Many of these issues are maintenance issues regarding sidewalk quality.

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<sup>6</sup> Forest Hills Station Improvements, MBTA. <https://www.mbta.com/projects/forest-hills-station-improvements>



Figure 20: Protruding Bench Blocking Sidewalk at South St & Spalding St Bus Stop



Figure 21: Misplaced Crosswalk at South St & Hall St





The intersection at Huntington Avenue & South Huntington Avenue is a place of many potential pedestrian and vehicle conflicts. This is an especially important intersection due to the high volume of transfers from Route 39 to Route 66, and vice versa. There are 10 identified potential conflict points for riders looking to make this transfer, creating a potentially hazardous pedestrian environment.

Figure 22 Route 39 Pedestrian Conflicts with Route 66 Transfer



Accessibility improves along Huntington Avenue and through the end of the route, however, many sidewalks were noted with issues, most frequently with missing or deteriorated curb ramps and deteriorated crosswalks. Cracked sidewalks and a lack of curb ramps can affect the ease of mobility to or from a destination.



Figure 23 Crosswalk without Curb Ramps at Huntington Ave & St Alphonsus St



### SAFETY DATA

The City of Boston is committed to a Vision Zero policy of eliminating fatal and serious traffic crashes by 2030. As part of this Vision Zero policy, City planning and roadway design efforts—such as the Route 39 Transit Priority Corridor—look at traffic safety data to ensure plans account for high-crash locations and safety improvements can be made where needed.

The Route 39 Corridor has consistent crashes throughout the corridor (see Figure 21). For this safety analysis, crashes involving only property damage—for example, hitting a

parked car—were filtered out, leaving only crashes involving injuries and fatalities. Figure 21 shows that the most crashes occur at the Huntington Avenue and South Huntington Avenue intersection. Other high-volume crash intersections are at South Street and Arborway, and at intersections near Back Bay Station: Clarendon Street and Columbus Avenue, Berkeley Street and Columbus Avenue, and Huntington Avenue and Stuart Street.

Generally, the highest crash areas along the corridor are centered around turns at complex and expansive intersections, like the Huntington Avenue and South Huntington Avenue intersection. The intersection at Arborway next to Forest Hills also is a notable safety concern. Since 2020, two fatalities have occurred as a result of crashes along the corridor, one near Gainsborough Street, and the other near Forest Hills Station.



Figure 24 Non-Property Damage Crashes by Intersection along Route 39

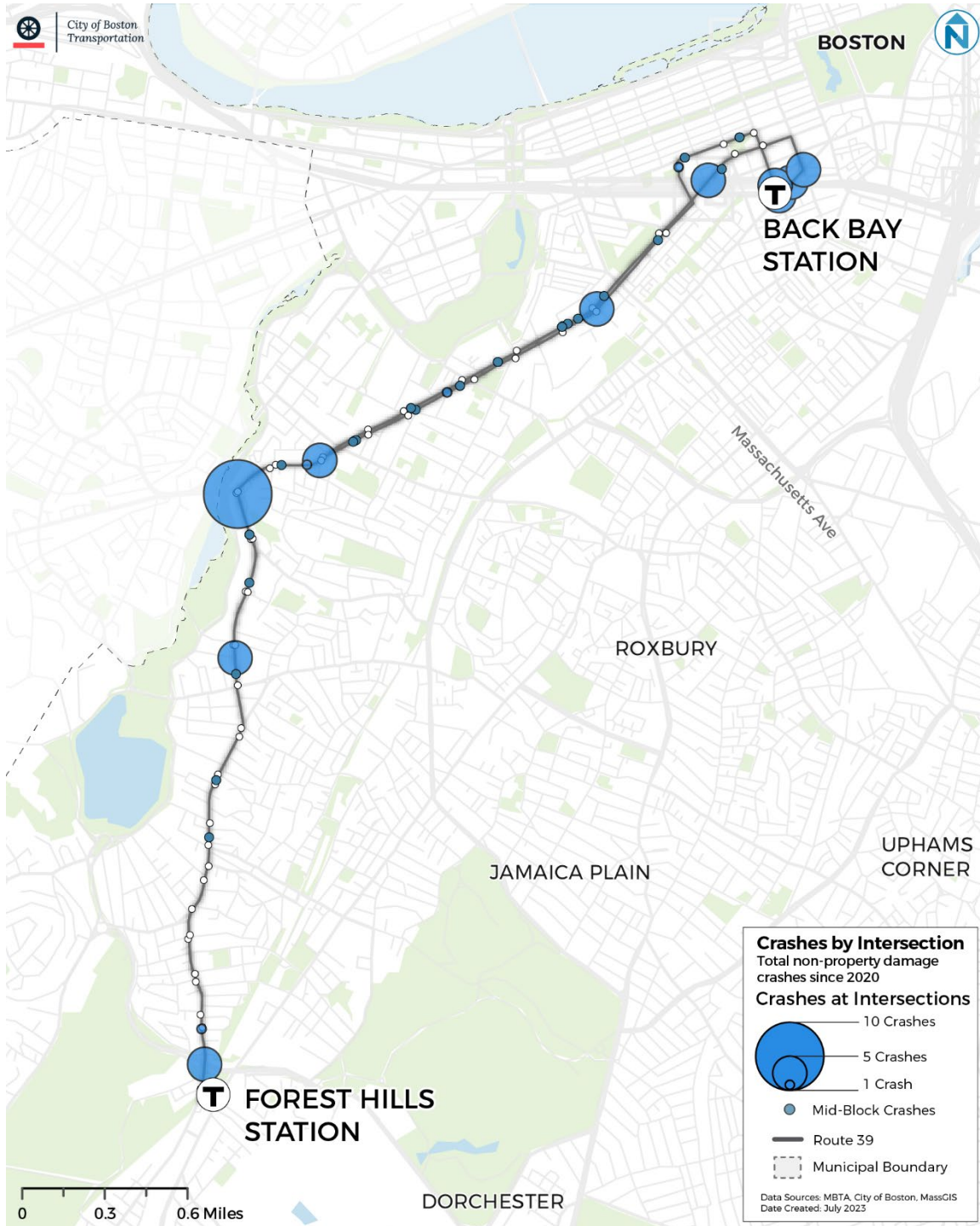
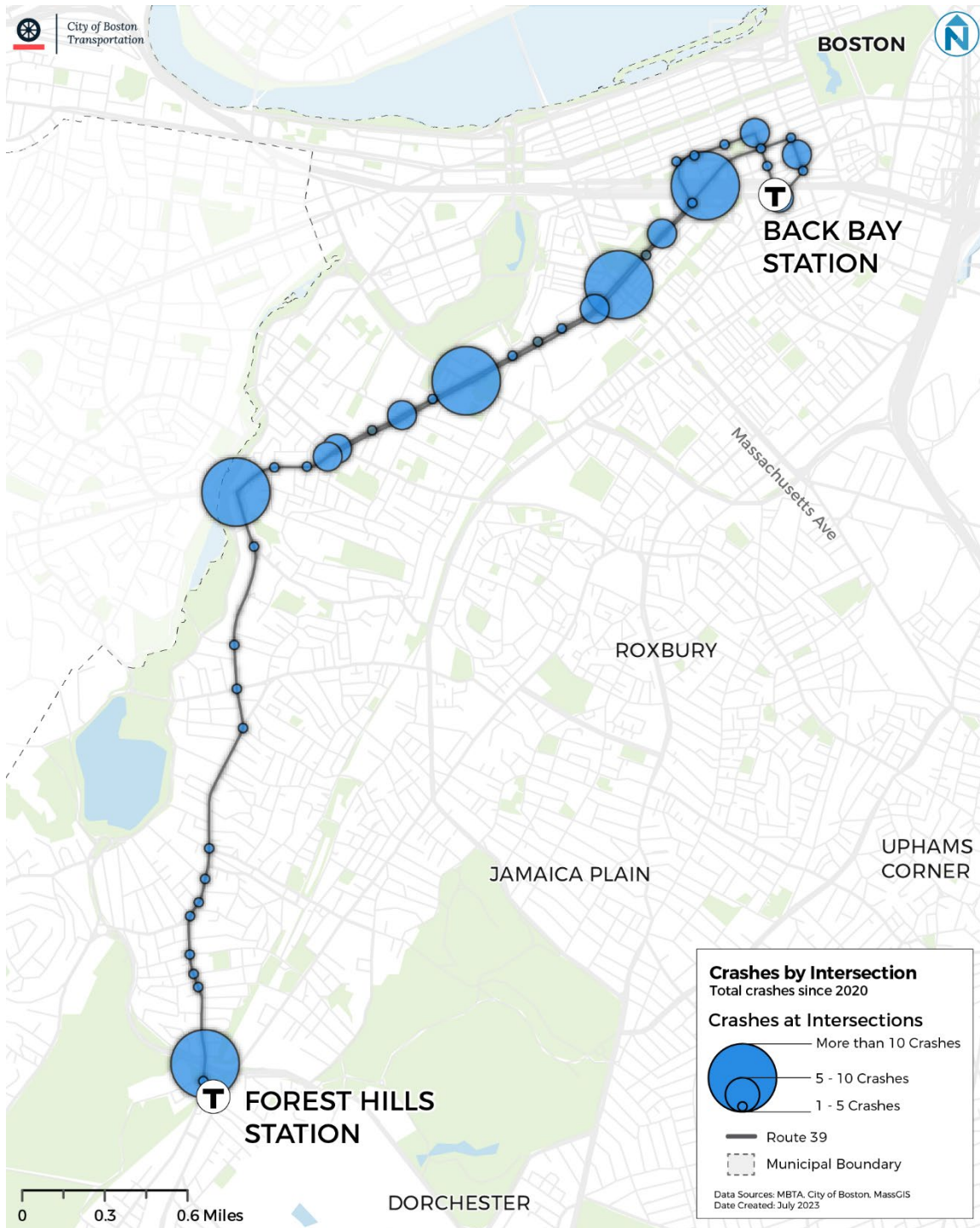




Figure 25 All Crashes by Intersection along the Route 39 Corridor





## OPERATOR FEEDBACK

The first component of the Route 39 Transit Priority Corridor Improvements project was to conduct operator outreach in hopes of gathering feedback about the route itself, including what does and does not work well, specific areas that are difficult to navigate or experience congestion, and information that operators would like to relay to the public. This section synthesizes the feedback that was received by question and the results are visually displayed in Figure 22.

### What works well about operating the 39?

The only specific aspect about Route 39 that operators mentioned was the recently implemented bike/bus lanes on Huntington Ave, which made the route easier to operate. However, almost all operators reported that cars are often parked in the bus lane. Regardless of the parked microtransit and delivery vehicles obstructing the bus lanes—specifically around Gainsborough Street, which is already a limited right-of-way street due to the shared Green Line—operators still said that the lanes improved route operation.

### When operating Route 39, what are your biggest challenges?

Operators most frequently noted the lack of enforcement of bus lanes and bus stops, resulting in cars and delivery vehicles frequently parking and/or driving in the lanes. This is a particularly pertinent issue for Route 39, since operators also noted the higher number of older riders, who may find boarding/alighting the bus more difficult when the vehicle cannot pull up to the curb.

Additionally, operators spoke about the frequent congestion heading southbound near Forest Hills Station, and the difficulties navigating the roads during school drop-off/pickup times.

Lastly, operators highlighted the difficulty of navigating the turn from Huntington Avenue to South Huntington Avenue when the Green Line is making this turn at the same time, as it often is unclear which vehicles has the first right-of-way. This turn can also be very tight heading the opposite direction if cars are parked too close to the turn on Huntington Avenue, which happens often.

### Are there certain streets or intersections where you experience chronic delays due to congestion?

Operators experience chronic delays at numerous intersections, stretches of the route, and stops. The most mentioned section was from South Huntington

Avenue to Forest Hills, along Centre Street and South Street in particular heading outbound. Operators attributed the congestion to the lack of bus lanes, frequent car parking in bus stops, and extensive on-street parking.

Operators also emphasized difficulties navigating along South Huntington Avenue due to poorly parked cars, since the implementation of bike lanes has resulted in narrow travel lanes. The travel lanes are narrow enough that if a car is parked slightly ajar the bus cannot safely pass. Operators often need to cross the center line and drive partly on the opposing lane, which poses a challenge when there is oncoming traffic. In these situations, buses are forced to stop and wait for the other direction to be clear before proceeding.

Operators also brought up the Brigham Circle area, near Forest Hills Station, Huntington Avenue & Louis Prang Street, Gainsborough Avenue, Centre Street, and the turn at Huntington Avenue and South Huntington Avenue as notable congestion areas.

### **Are there certain turns or maneuvers that are difficult for you to make while operating a bus on Route 39?**

Most operators were confident in their driving abilities but mentioned that certain portions of the route that are frequently congested may be uncomfortable for new operators.

One operator noted that the Myrtle Street stop should be moved far-side by the post office since the lane maneuvers can be difficult.

As mentioned previously, the turn from Huntington Avenue to South Huntington Avenue (and vice versa) can be difficult with the Green Line turning at the same time or if there are cars parked too close to the turn.

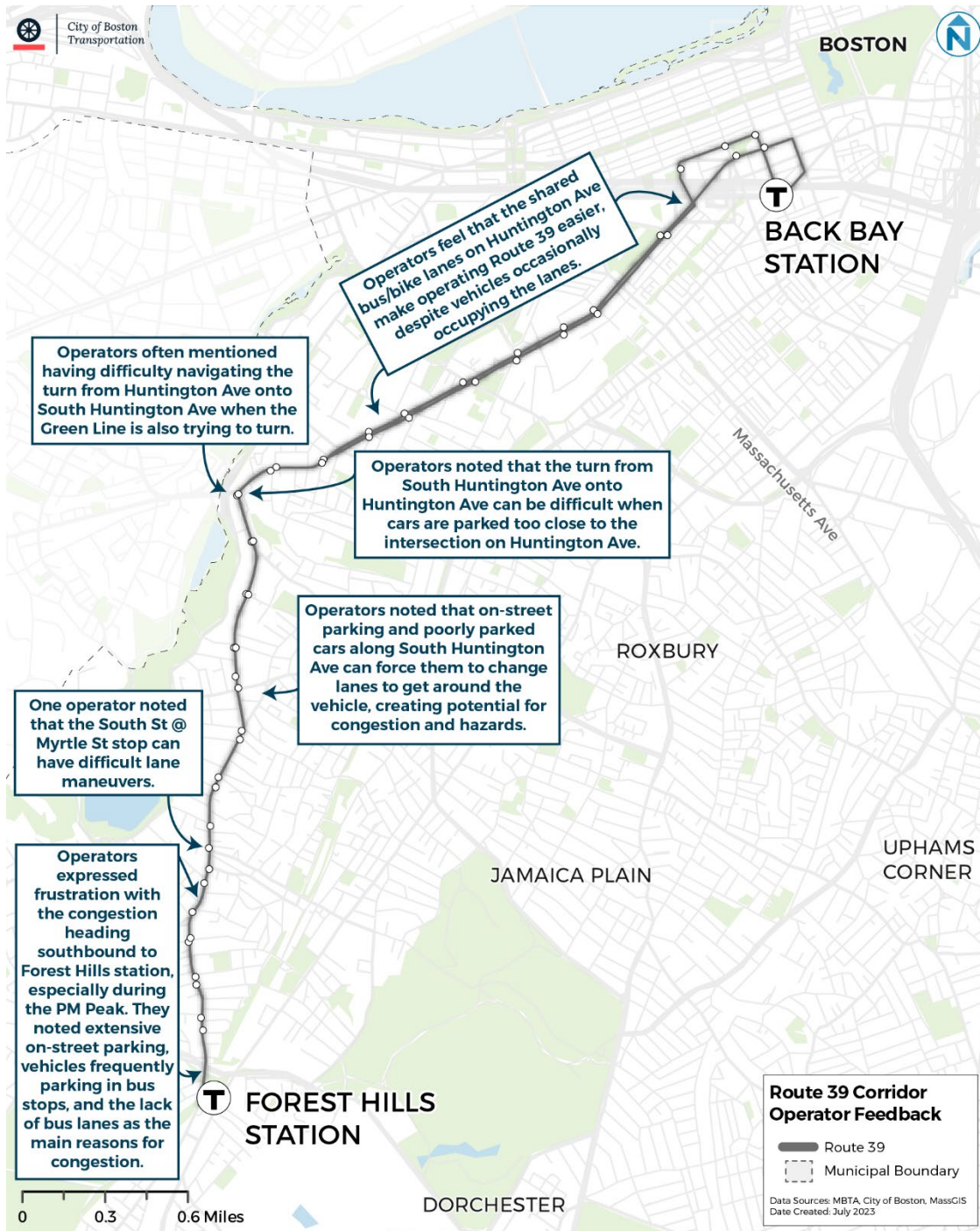
The shared bus/bike lanes were not a major issue for operators, but cyclists in the shared lane creates one more thing that they need to be aware of while driving between stops.

### **What would you like members of the public to know about operating Route 39?**

There was a specific emphasis on the public understanding the importance of allowing the bus to get to the curb. Not being able to get to the curb causes difficulties for riders and can create congestion for other drivers behind the bus. Other operators echoed the fact that the bus is often late because of the traffic and not because of the bus operators themselves.



Figure 26 Route 39 Operator Feedback Callout Map



# SPEED AND RELIABILITY

The speed and reliability analysis conducted in this section is a major focus of the Route 39 TPC Project. This chapter seeks to identify both reliable and unreliable areas of the route in terms of travel time and passenger delay to locate areas in the greatest need of delay and reliability improvements.<sup>7</sup> Decreasing delay and improving reliability is one of the best ways to improve the mobility of current Route 39 riders, as well as attract new riders.

## TRAVEL TIME AND DELAY

Identifying the locations where riders experience the greatest amount of delay is the first step to understanding pain points on the route. This section of the report identifies these locations.

Delay is calculated as the difference between an unconstrained travel time (i.e., the shortest recorded travel time) and an actual travel time. For example, if the shortest recorded time between two stops is four minutes during a time with no traffic, but this same segment takes eight minutes during peak travel times, the delay between these stops at peak periods is four minutes.

- Delay is at its highest in the PM Peak, which is from 4:00 PM – 6:30 PM, with approximately 2,250 minutes of passenger delay on weekdays.
- The stop-to-stop segments that experience the greatest delay are those around the Huntington Avenue and South Huntington Avenue intersection.
  - 835 Huntington Ave Opp Parker Hill Ave to South Huntington Ave @ Huntington Ave
  - Huntington Ave Opp Fenwood Rd to Huntington Ave @ Wigglesworth St
  - Centre St @ Roseway St to S Huntington Ave @ Perkins St
  - S Huntington Ave @ Perkins St to S Huntington Ave @ Moraine St

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<sup>7</sup> Data used for this analysis are from the MBTA's automatic passenger counter (APC) system, which records the time at which the vehicle doors open and close and can be used to calculate dwell time at each stop and speed and travel time between stops. Data were provided to the project team by the MBTA for Route 39 during the MBTA's Fall 2022 rating period. When presented at a time-period level, the following time periods are used: AM Peak: 7:00 AM to 9:00 AM; Midday: 9:00 AM to 4:00 PM; PM Peak: 4:00 PM to 6:30 PM; Early/Late: All other times.



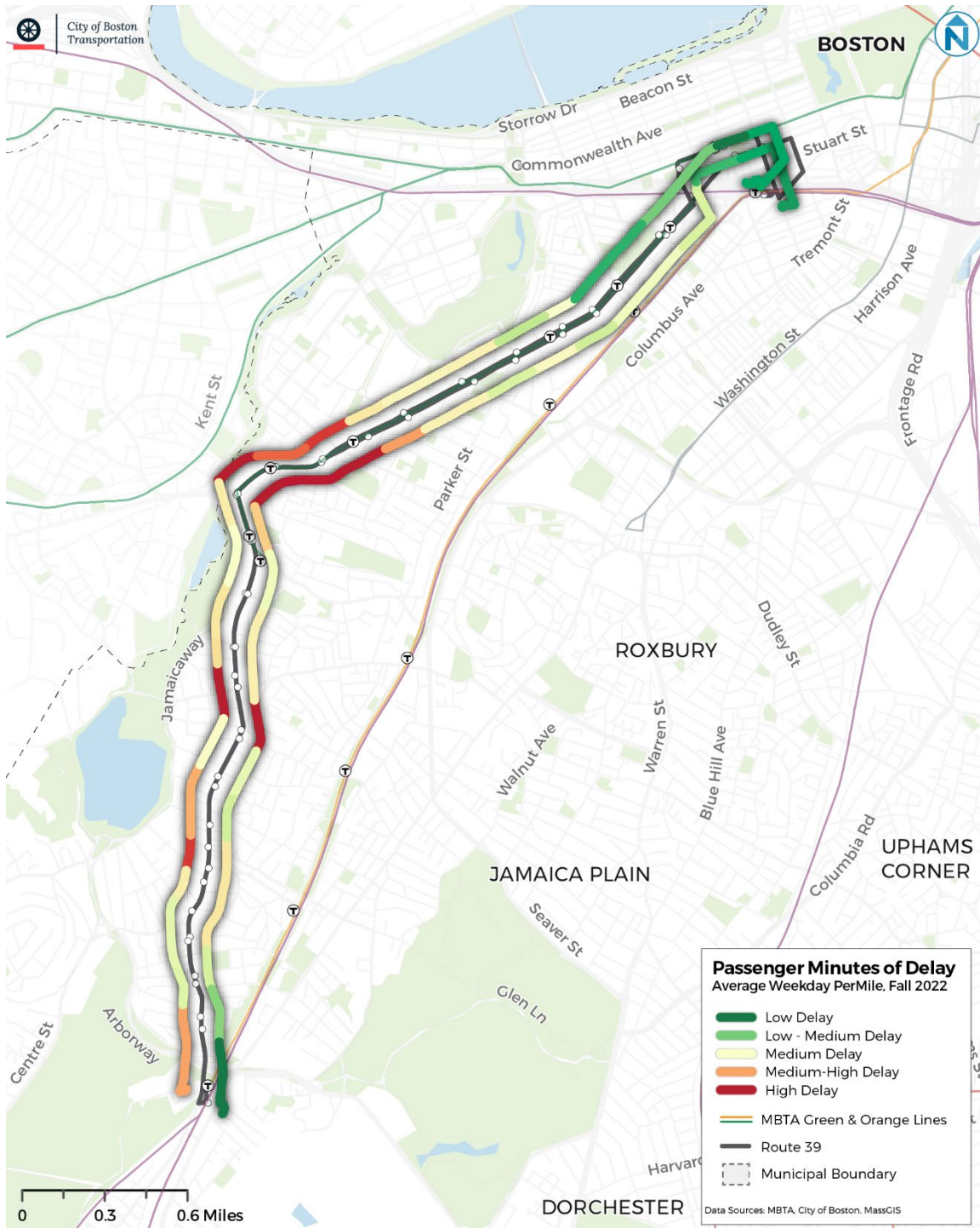
Passenger delay is a way of looking at how many riders are affected by slow bus speeds. Passengers experience over 1,400 hours of delay on average during Route 39 on weekdays. Passenger delay is calculated by multiplying the onboard load by delay (see Figure 23).

The segments that experience the most passenger delay include:

- South Huntington Avenue to Wigglesworth Street along Huntington Avenue has the longest stretch of passenger delay. This section has narrow right-of-way and is where the E-Line, Route 39, and Bus Route 66 all operate in mixed traffic. The segment that includes the turn from Huntington Avenue to South Huntington Avenue heading Outbound has the highest per-mile passenger minutes of delay per weekday, at over 21,000 passenger minutes/mile.
- Another area of high delay is where the bus turns from Centre Street onto South Huntington Avenue. This five-way intersection often causes the bus to stop and wait.
- Another area of delay is along Centre Street at Burroughs Street, which is a signalized intersection in the heart of Jamaica Plain's commercial corridor with heavy vehicle, cyclist, and pedestrian traffic.
- The outbound direction to Forest Hills Station also experiences delay from the major intersection at Arborway and South Street.

Data used for this analysis reflects travel speeds after the implementation of the Huntington Avenue bus lanes. While these sections still experience moderate levels of delay, the end of the bus lanes is where Route 39 experiences the greatest amounts of delay, demonstrating that the bus lanes are improving travel speeds throughout this section of the route.

Figure 27 Passenger Minutes of Delay/Mile (Fall 2022)



## RELIABILITY

Reliability is one of the most important aspects of bus service. Consistency removes the stress from travel, improves the rider experience, and lowers the actual and perceived travel time. Ensuring that the bus arrives at the pickup and drop-off stop within the expected window will make it easier for riders to rely on transit to get to work, class, appointments, and social events on time.

This section of the report examines the speed and reliability of each stop-to-stop segment of the Route 39 corridor to help identify where improvements are needed. Speed is measured as the time it takes for a bus to travel a stop-to-stop segment, including dwell time at the first stop on the segment. Reliability is measured as a ratio of the 90<sup>th</sup> percentile runtime plus dwell time, to the median runtime plus dwell time. This shows where travel times are the most variable, making bus service unreliable for riders. This analysis was conducted for the AM peak (see Figure 24), midday (see Figure 25), and PM peak (see Figure 26). Particularly since the COVID-19 Pandemic, the PM peak sees the heaviest traffic throughout the day, and we see that reflected in speed and reliability along Route 39.

Key takeaways from the speed and reliability analysis are:

- Back Bay, the intersection at Huntington Avenue and South Huntington Ave, and the surrounding area experience slow speeds regardless of the time of day.
- The most unreliable segments are Centre Street opposite Beaufort Road to Centre Street @ Roseway Street in the AM Peak and South Street @ Jamaica Street to South Street @ St Rose Street in the PM Peak.
- Turning either direction at the South Huntington Avenue and Huntington Avenue intersection during the AM/PM Peak results in slow speeds and low reliability.
- The lowest speed and reliability combined is at South Street @ Jamaica Street to South Street @ Rose Street in the PM Peak. This final segment prior to arriving at Forest Hills is approximately 1/10<sup>th</sup> of a mile, has a PM Peak median speed of 5.7 MPH and creates 879 passenger minutes of delay each weekday.
- The segment between 835 Huntington Avenue and South Huntington @ Huntington Avenue has the highest passenger minutes of delay per mile each weekday at 21,484.
- The stop with the most dwell time is South Huntington Avenue @ Huntington Avenue (inbound), which has a median of 21 seconds of dwell time for each weekday trip. Huntington Avenue opposite Fenwood Road has a median of 20 seconds of dwell time for each weekday trip.

- Stop-to-stop segments near Back Bay Station in either direction are some of the most reliable segments on the route, however, these sections also have some of the lowest speeds on the route.
- The stop-to-stop segment with the lowest reliability throughout the day is South Huntington Avenue @ Moraine Street to Centre Street @ Lochstead Avenue.





Figure 28 Speed and Reliability - AM Peak (Weekday, Fall 2022)

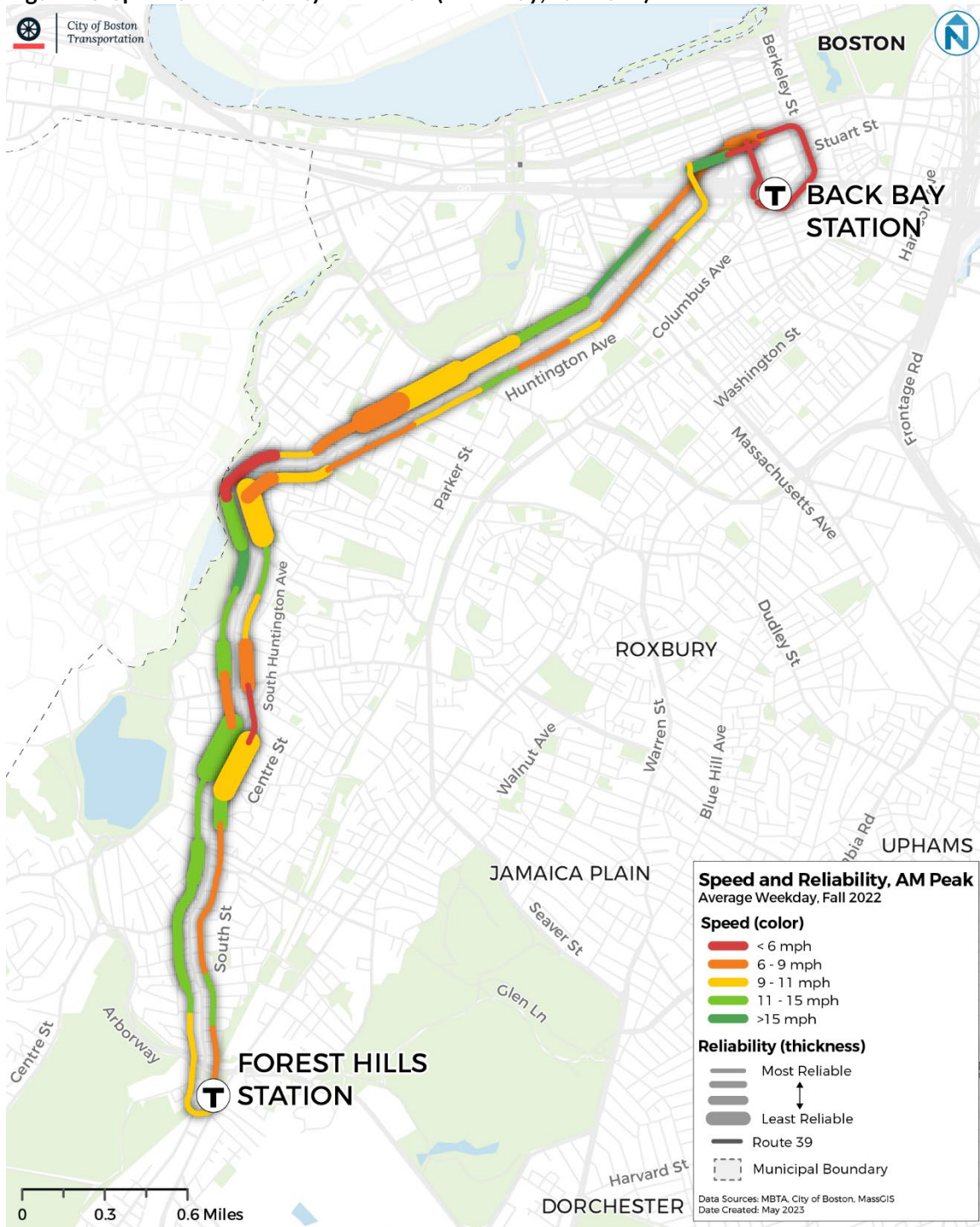


Figure 29 Speed and Reliability - Midday (Weekday, Fall 2022)

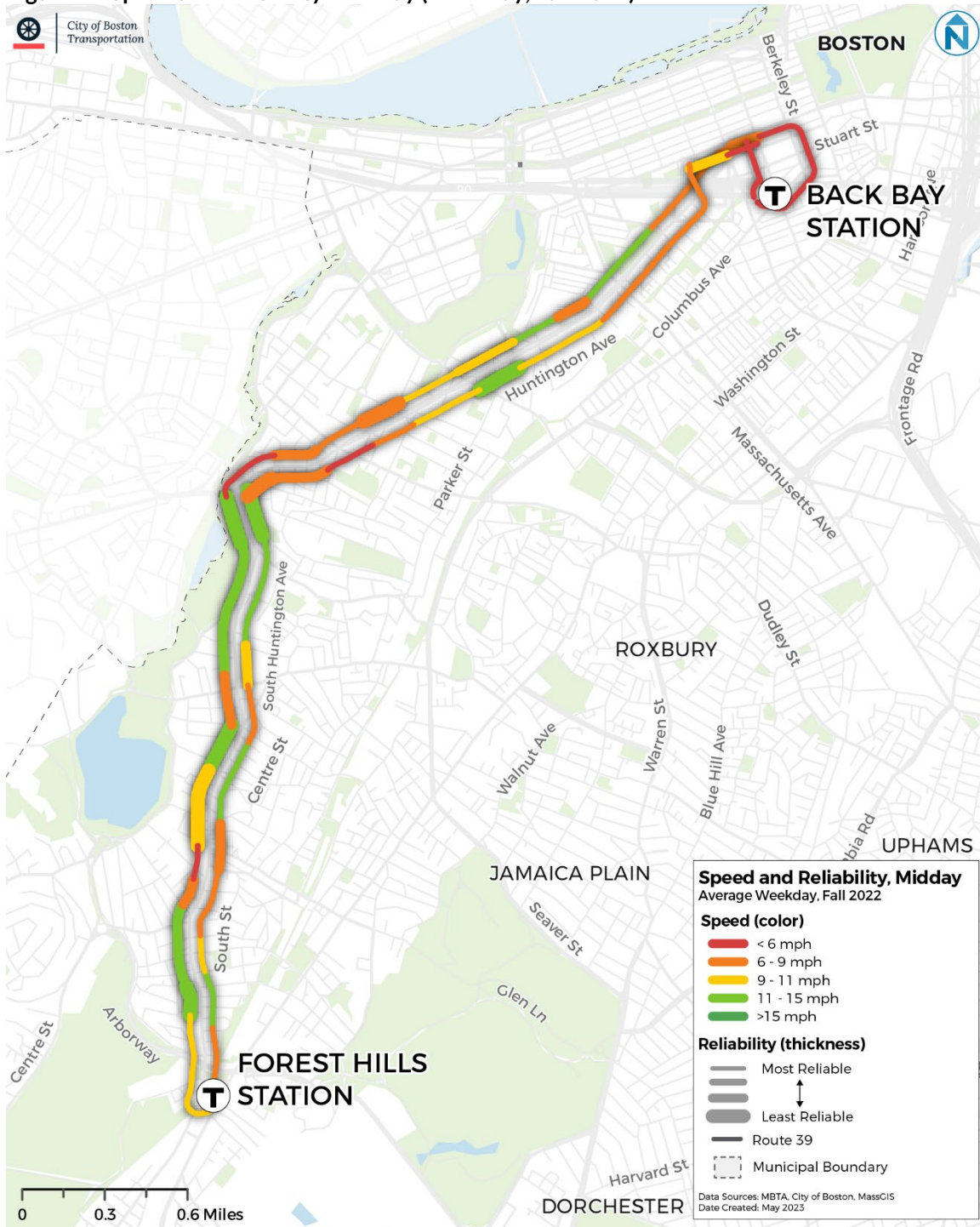
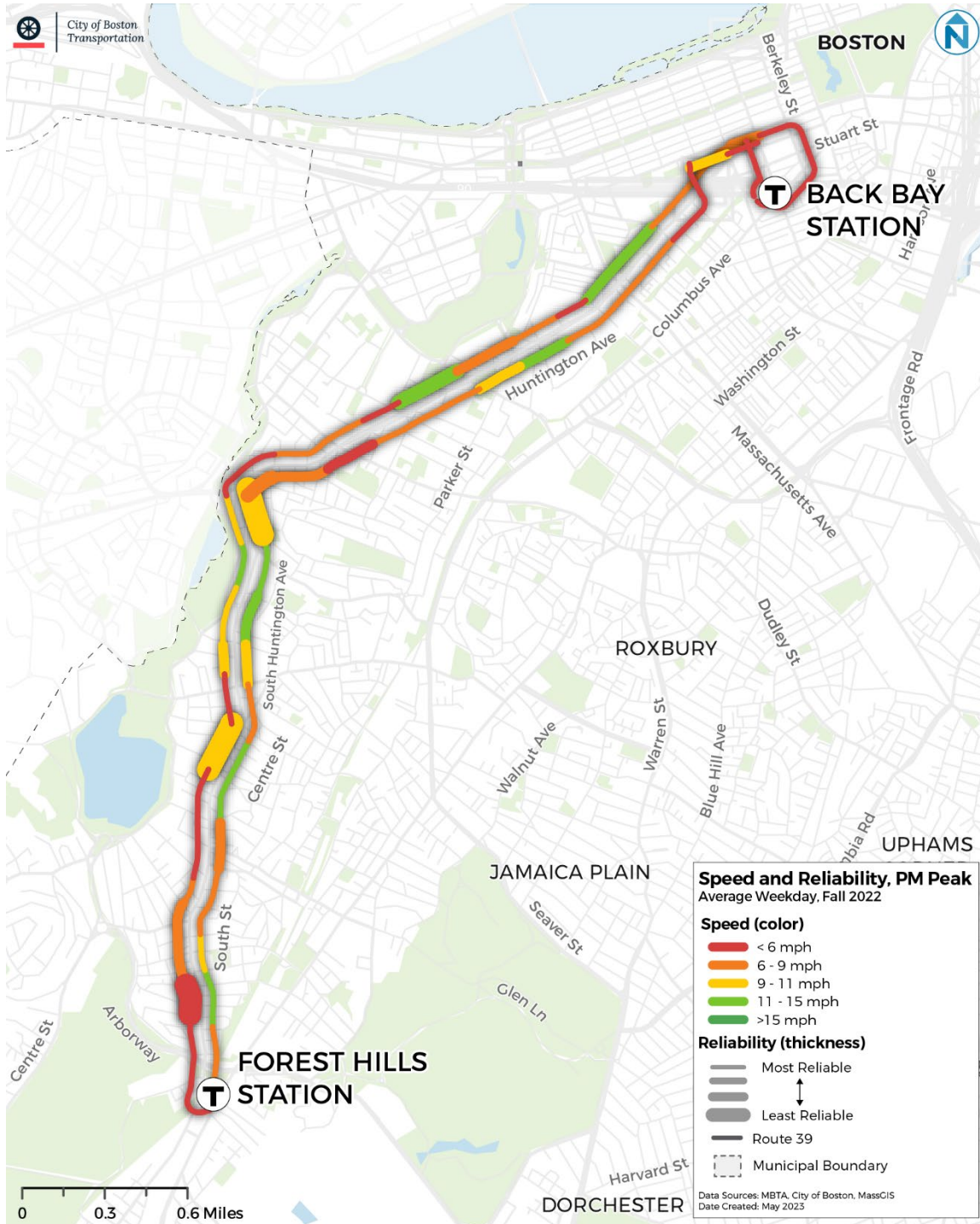




Figure 30 Speed and Reliability - PM Peak (Weekday, Fall 2022)



# NEEDS SUMMARY

This chapter of the report synthesizes findings from the project background, existing service, access to transit, and speed and reliability chapters into a concise segment-level issues and needs summary. Needs highlighted in this section represent findings based on analysis conducted in this study only, striving to account for other planned and ongoing changes to roadways, private developments, and MBTA service.

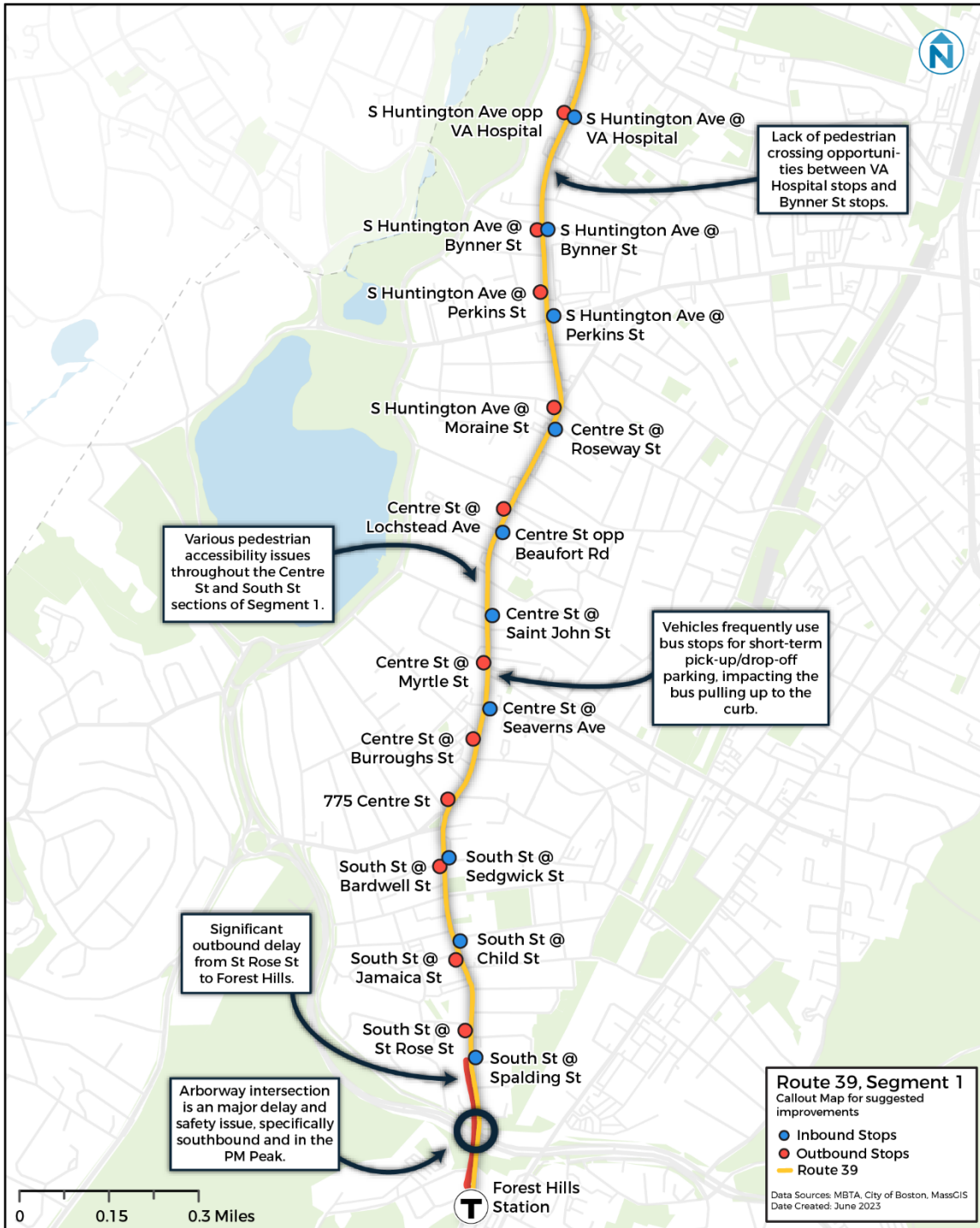
Needs in this chapter are identified such that addressing the needs will support Route 39 Transit-Plus Improvements Project goals to improve accessibility and reliability, ultimately reducing travel times along the corridor for current and future bus riders.

## I. FOREST HILLS TO HEATH STREET

- Consistently unreliable and slow section in the AM and PM Peaks
- Arborway Intersection is an opportunity for improvements in both directions
  - Potential for an inbound queue jump
  - Potential for inbound lane reorganization with a bus-only lane with a single left-turn lane and a combined through-and-right turn lane.
  - Safety, speed, and reliability concern specifically in the PM peak due to vehicles frequently not being able to cross the intersection entirely during a signal cycle.
- Opportunity for an outbound/southbound time restricted (AM/PM Peak) bus-only lane with removal of some on-street parking starting at Spalding Street and ending at Forest Hills Station.
- Turning left into Forest Hills can be delayed if traffic is backed up heading northbound through the Arborway intersection.
- Pedestrian improvements are needed throughout the section, including crosswalk restriping, and addressing cracked or deteriorated sidewalks and curb ramps.
- Potential for an additional crosswalk between VA Hospital and Bynner Street.
- The two stops at Bynner Street and Perkins Street are too close, especially outbound, based on the MBTA's Key Bus Routes stop spacing standards, however, consolidating or moving these stops is not a particularly viable solution.



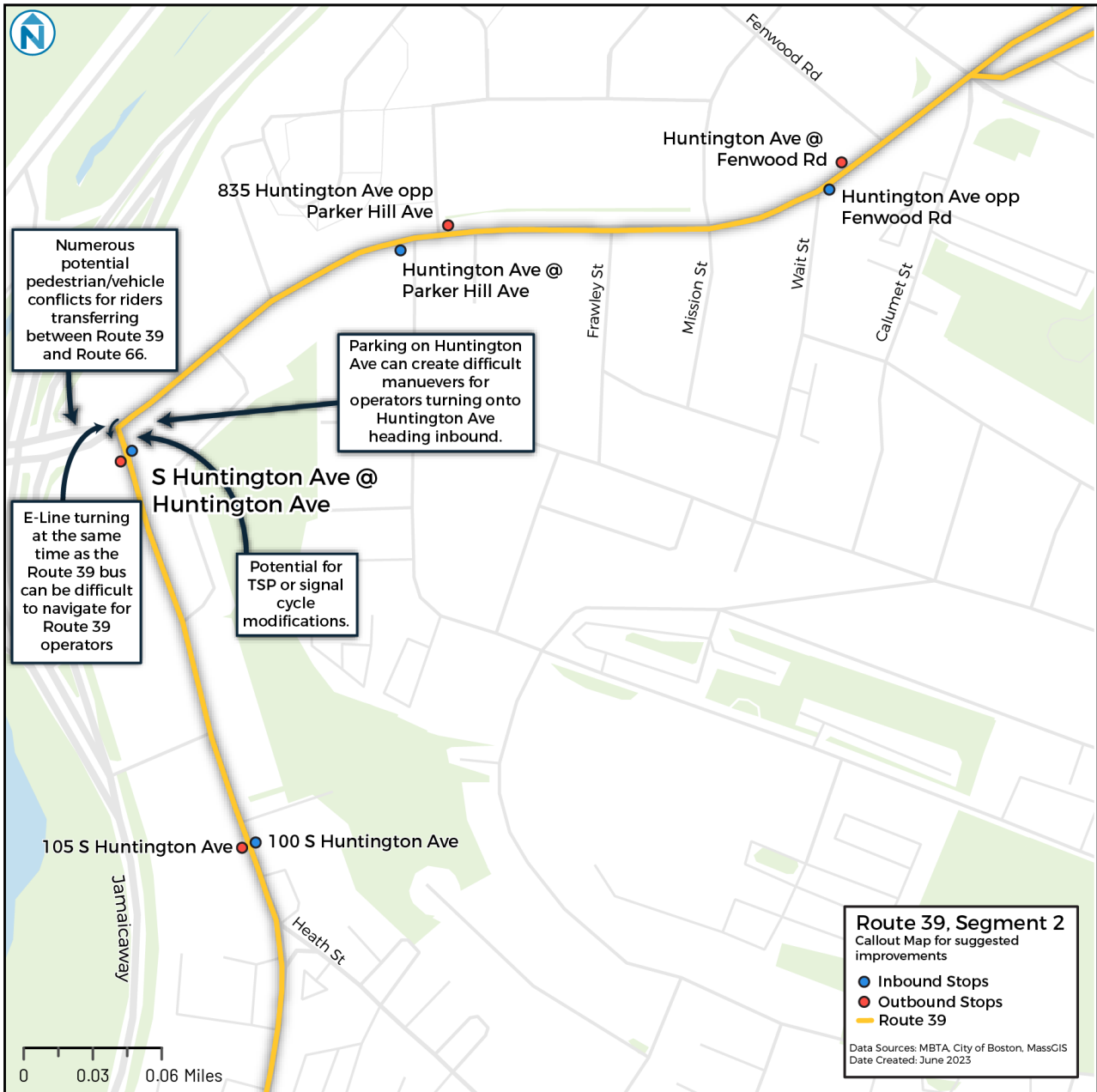
Figure 31 Segment 1 Forest Hills to Heath Street Summary



## II. HEATH STREET TO BRIGHAM CIRCLE

- The intersection at South Huntington Avenue and Huntington Avenue experiences:
  - High crash volumes
  - High transfer location to and from Routes 39 and 66
  - Complicated transit operations because of turning movements of the 39, 66, and E Line
  - Lack of rider infrastructure and amenities
  - Severe pedestrian safety concern due to extensive pedestrian conflict areas
- Huntington Avenue and South Huntington Avenue intersection
  - An opportunity to incorporate Transit Signal Priority to adjust the signal cycles to prioritize the bus when applicable.
  - Inbound (right turn from South Huntington Avenue onto Huntington Ave)
    - Move inbound stop from nearside to farside, allowing the vehicle to get through the turn quicker.
    - Remove on-street parking close to the intersection on Huntington Avenue and replace with a flex post protected bike lane after the bus stop and until Wait Street. Flex posts to be removed at the stop at Parker Hill Avenue for the bus to pull over.
  - Outbound
    - Establish clearer guidelines for right-of-way when the Green Line and Route 39 vehicles are trying to turn at the same time, since this can be crowded and confusing, as noted by operators.
    - Investigate moving the Route 66 stop that is currently under the bridge just west of the Huntington Avenue & South Huntington Avenue intersections closer to the intersection to decrease the potential pedestrian conflicts while transferring between Route 39 and Route 66.
    - Remove one entrance from the gas station on the southwest corner of the intersection, preferably the entrance closest to the intersection on Huntington Avenue.

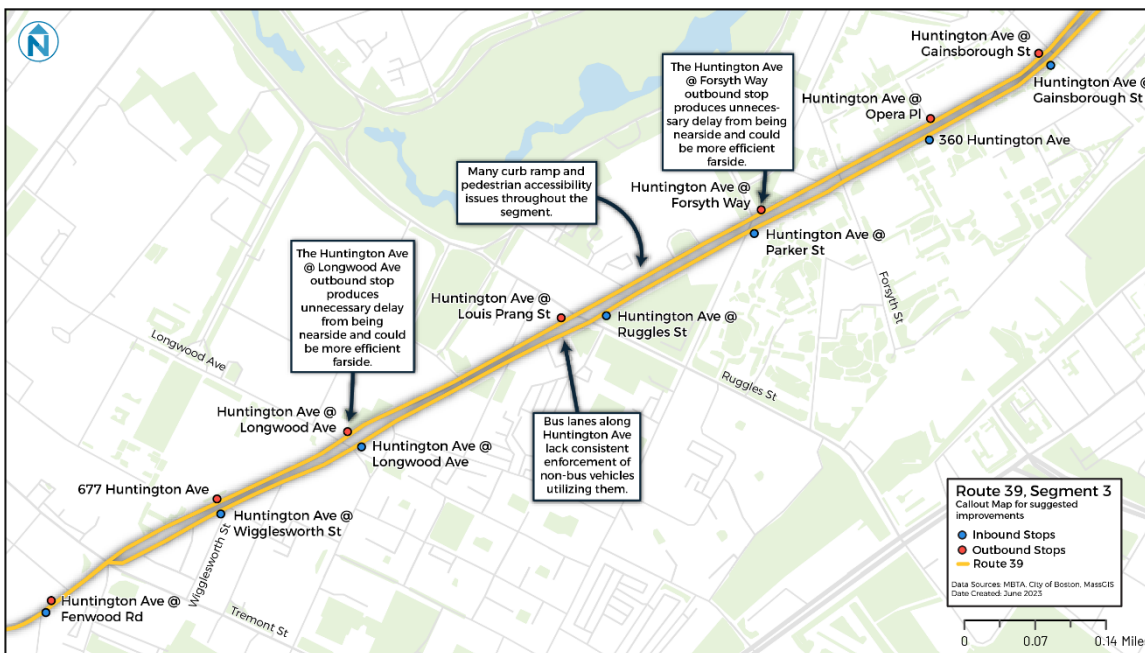
Figure 32 Heath Street to Brigham Circle Summary



### III. BRIGHAM CIRCLE TO GAINSBOROUGH STREET

- Majority of curb ramps throughout this segment are deteriorated or are not present, creating a pedestrian and mobility hazard.
- Opportunity to improve efficiency by moving the outbound stop at Longwood Avenue from nearside to farside.
- Opportunity to improve efficiency by moving the outbound stop at Forsyth Way from nearside to farside.
- Improve enforcement throughout the length of the bus lanes to deter cars temporarily parking—mostly for pickup, drop-off, and deliveries—and cars driving in the lanes.

Figure 33 Brigham Circle to Gainsborough Street Summary



### IV. GAINSBOROUGH STREET TO RING ROAD

- Slow, but reliable section throughout the day
- Limited opportunities for improvement

### V. BACK BAY ONE-WAY STREETS

- Slow, but reliable section throughout the day
- Numerous high-volume crash locations
- Limited opportunities for improvement



Figure 34 Segments 4 & 5 Gainsborough Street to Back Bay Summary

