

# RIDOT Transit Master Plan Implementation Support On-Call

Fall 2022 On-Board Passenger Survey  
Key Findings

Final Report

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Prepared for:



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Attachment 1 – On-Board Passenger Survey Instrument

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# 1 Introduction

This chapter begins with an overview of the methodology, instrument, and data processing techniques employed for the on-board MBTA passenger survey, followed by a discussion of response rates and the degree to which results of the on-board passenger survey can be generalized. An overview of responses to the trip-related, demographic, and passenger rail use questions are provided in Chapters 2-4 while a high-level discussion of trends and themes that emerged from the final open-ended response question constitutes Chapter 5. The report concludes with general findings for both the Rhode Island segment of the MBTA Commuter Rail's Providence/Stoughton Line, as well as the individual station-level, and includes a summary of notable changes in behavioral trends, as revealed by a comparison of current and prior responses collected within the 2019 Inbound AM Peak-only on-board passenger survey (OBS).

## 1.1 Methodology

In Fall 2022, an OBS was conducted over the course of three consecutive weekdays from Tuesday, October 18<sup>th</sup> through Thursday, October 20<sup>th</sup> to solicit responses from weekday Inbound MBTA Commuter Rail passengers at Providence Station, T.F. Green Airport, and Wickford Junction. The survey instrument consisted of a paper form that prompted respondents for information on their current one-way trip (e.g., origin-destination location, place type/purpose, and mode), commuter rail use patterns (e.g., weekday and weekend frequency, reasons for riding, fare type), and socio-demographic characteristics (e.g., age, ethnicity, income, linguistic isolation, access to vehicles and smartphone).

To provide respondents with flexibility in completing the survey, a digital, web-based version of the survey instrument that contained identical content to the paper form was also made available via a QR code, which was readily displayed on the front page of the paper-based instrument and also made available via a paper hand-out. Both versions of the survey were made available in English and Spanish. A copy of the paper-based version of the passenger survey instrument is provided in Attachment 1. A detailed description of the methods and logistics used to complete this OBS is provided in Attachment 2.

To deploy the survey, a team of up to four survey distributors, four survey collectors, and three drivers was used on any given day. Distributors were responsible for arriving to each station at least 20 minutes before the first Inbound departure towards South Station, handing out the paper forms (and golf pencils) to potential Inbound passengers, and continuously distributing forms along the platforms until the last train of their scheduled shift of the day departed their station. Inbound passengers who replied that they were interested in providing responses, but were currently pressed for time, were handed a paper link containing a QR code that forwarded to the digital instrument. An overview of the field team deployment schedule used for this OBS is provided in Table 1. This schedule mirrored that which has historically been used for the passenger counts, with Tuesday covering the AM Peak crowd, Wednesday spanning the Mid-Day service period, and Thursday catching the PM Peak and Late Night

travelers. A copy of the MBTA Commuter Rail timetable that was in effect during the OBS is provided as Attachment 3.<sup>1</sup>

**Table 1. Staff Deployment**

| Day                                 | Time Span on Site<br>(Beginning in Providence,<br>Ending at Attleboro) | Collector | Distributor | Driver |
|-------------------------------------|------------------------------------------------------------------------|-----------|-------------|--------|
| Tuesday, October 18 <sup>th</sup>   | 4:00 AM – 10:54 AM                                                     | 4         | 4           | 3      |
| Wednesday, October 19 <sup>th</sup> | 11:00 AM – 3:44 PM                                                     | 2         | 4           | 1      |
| Thursday, October 20 <sup>th</sup>  | 3:58 PM – 10:44 PM                                                     | 3         | 4           | 2      |

Given the high passenger activity at Providence Station and consistent with the guidelines established for the on-going passenger counts, two distributors were allocated to Providence Station at all times while T.F. Green Airport and Wickford Junction were each served by a single distributor. To proactively target Inbound passengers at Providence Station, distributors periodically checked the status of Inbound trains with Amtrak station personnel at least 15 minutes in advance of the next Inbound train's scheduled departure. This assisted field staff in understanding the relevant stairwell at which they needed to distribute the forms prior to the public announcement of the upcoming Inbound train's track. At T.F. Green Airport, overall passenger traffic is generally low, which allowed distributors to screen out the Outbound riders by simply asking, "Are you headed towards Boston or Providence today?" Given that Wickford Junction served as the southern terminus for the line and all departing service is Inbound, screening was not necessary.

Collectors were tasked with boarding trains at their southernmost terminus (i.e., Wickford Junction or Providence Station); riding Inbound until before alighting at Mansfield (located approximately 30 minutes north of Providence via rail); making multiple passes through their train to collect the paper forms while providing respondents from all boarding stations with sufficient time to complete the survey (five to 10 minutes); and distributing the paper forms featuring the QR codes to any passenger on-board who requested to complete the survey. Once on-board collectors waited at least 10 minutes since the previous stop before completing another pass through the train to gather completed surveys.

Drivers were initially used to transport distributors and collectors to the stations in the early morning and were later responsible for repeatedly shuttling collectors between Mansfield and either Providence or Wickford Junction depending on the origin of the line's next Inbound train.

After fielding the survey, the paper-based results were digitized into a spreadsheet for processing and analysis. Each survey was screened for completeness in terms of origin-destination and demographic information. Responses for which any of the following origin-destination variables were not provided were carefully reviewed: boarding station, boarding time, origin place type, origin location, access mode, access duration, alighting station, alighting mode, alighting duration, destination place type, and destination location. If the respondent provided sufficient information to reasonably infer the

<sup>1</sup> The schedule used was published by Keolis/MBTA Commuter Rail and went into effect on October 17, 2022.

missing answer, the response was accepted using the best inference. Otherwise, the response was omitted from the results that follow. The screening of key model-informing socio-demographic information was accomplished by verifying that questions regarding age, sex, race, Hispanic status, Limited English Proficiency (LEP) status, household size, household income, access to usable vehicles within the household, and possession of a driver's license were completed by the respondent.

After a respondent's survey passed the initial screenings, the responses were further scrutinized to ensure that the method by which the passenger reported getting from their origin to their boarding station and from their alighting station to their final destination was realistic (e.g., could one reasonably complete a trip within the duration provided based on the distance between the two points and the mode reported?). A survey was considered "wholly valid" if it passed the initial screenings, as well as the final trip details test. All surveys that did not meet these criteria were set aside and the responses from those surveys have been purposefully omitted from the results shown within Chapters 2, 3, and 4 of this report. Although the responses did not inform the overall development of the conclusions herein, the open-ended feedback provided has been integrated into the Chapter 5 summary.

To retain as many valid responses as possible, several methods, which are outlined below, were used to process the survey data for accuracy, consistency, and simplicity for use in subsequent analyses.

- For origin/destination place information, all the answers were formatted into a geo-codable format, verifying that the estimated location fell within the ZIP code boundaries provided by the respondents. The address information was used to search for the proper ZIP code/municipality in cases with a missing ZIP code, mismatched address, or typo.
- All origin/destination city/town names were reviewed and aggregated to a consolidated grouping of municipalities (e.g., Wakefield adjusted to South Kingstown or Hyde Park adjusted to Boston).
- For access/egress trip travel modes, answers were adjusted among categories to maintain consistency (e.g., if the respondent chose "Other" and then wrote "Lyft", the final data would be adjusted to reflect "Dropped off by: Taxi/Rideshare Service").
- For access/egress trip travel time/duration, some of the responses appeared to report the travel time of the whole journey (i.e., not the time of the individual links within the three segment trip, but the overall time it took to get from origin place to destination place). These answers were adjusted based on travel time queries from Google Maps, based on the reported mode and time-of-day.
- In some cases, a missing response could reliably be inferred based on information provided in other questions.
- For the questions that included a "Prefer Not to Say" option, any missing or empty responses were categorized into "Prefer Not to Say".

## 1.2 Response Rate and Confidence Level

Based on the distribution of responses to Question 1: Boarding Station, Table 2 presents data related to total surveys collected, counts for each screening test, counts of "wholly valid" responses (i.e., those that passed all screenings), and the resulting retrieved margin of error for each boarding station. Viewing the Rhode Island segment of the Providence/Stoughton Line as a whole, the results of this survey can be generalized with a 94.5% confidence interval (i.e., 5.5% margin of error).

Table 2. Summary of Responses and Retrieved Margin of Error by Station

| BOARDING STATION   | TOTAL RESPONSES | RESPONSES PASSING SCREENING |               |                | WHOLLY VALID RESPONSES | RETRIEVED MARGIN OF ERROR |
|--------------------|-----------------|-----------------------------|---------------|----------------|------------------------|---------------------------|
|                    |                 | Trip Details                | Demo-graphics | Other Elements |                        |                           |
| Providence         | 256             | 191                         | 185           | 183            | 183                    | 6.7%                      |
| T.F. Green Airport | 35              | 29                          | 28            | 28             | 28                     | 16.0%                     |
| Wickford Junction  | 69              | 51                          | 47            | 47             | 47                     | 10.8%                     |
| <b>TOTAL</b>       | <b>360</b>      | <b>271</b>                  | <b>260</b>    | <b>258</b>     | <b>258</b>             | <b>5.5%</b>               |

Although the overall behavioral trends and socio-demographic characteristics reflected in the data collected at T.F. Green Airport and Wickford Junction cannot be confidently generalized at a margin of error less than 10%, the behaviors captured across the Rhode Island segment of the line as a whole can be confidently generalized to a margin of error of nearly 5% (i.e., statistics reported are likely to reflect the characteristics, behavior, or attributes of the majority of respondents, or encompass the data within two standard deviations from the statistic's mean value). Travel trends at Providence Station in particular, which accounts for the bulk (over 80%) of Inbound passenger traffic in Rhode Island (and are thus heavily weighted among Inbound riders boarding in the State of Rhode Island overall), can be confidently generalized to a margin of error less than 7%.

Relative to the 90% confidence goals established for the survey, wholly valid responses significantly exceeded the line's state-level aggregate sample size requirements (65 responses beyond the 193 required), achieving a confidence level of 94.5%. At the individual station level, the 10% margin of error sample size requirements were similarly exceeded at Providence Station by a very wide margin (183 responses beyond the 92 required) for a confidence level of 93.3%. However, station-level requirements for 90% confidence were not achieved at T.F. Green Airport (22 responses below the requirement) or Wickford Junction (four responses below), with responses allowing for 84.0% and 89.2% confidence level at each station, respectively.

As shown in subsequent sections/questions, the responses collected at T.F. Green Airport and Wickford Junction were either remarkably similar to one another or riders leaving from one of the facilities reported trends or characteristics that closely mirrored collected at Providence Station.

Furthermore, while sample size is influenced by both population mean (total ridership) and margin of error, attaining a statistically generalizable sample becomes fundamentally more difficult when the total population is substantially smaller (i.e., a combined 203 average Inbound ons and offs across the two southerly stations requires a total of 101 surveys to achieve 10% confidence versus 92 completes to generalize the 1,012 average movements at Providence Station). Given the sharp decrease in MBTA Commuter Rail ridership systemwide in the wake of COVID-19, attaining a sample large enough to permit a 90% confidence interval at T.F. Green Airport and Wickford Junction became even more difficult than it had been in previous surveys (i.e., this survey used an average of 201 Inbound ons and offs across the two stations as the population basis or universe, compared to a value of 491 that was used to derive sample size requirements in 2019).

## 2 Trip-Related Information

This chapter presents summaries of responses to that focus on trip-related details (i.e., boarding/alighting station and origin/destination place type, location, mode, and trip duration) for each participant's one-way Inbound MBTA Commuter Rail journey beginning in Rhode Island. The responses to Questions 1-3, 7-10, 13-16 have been grouped into two categories based on which trip end is being investigated (i.e., origin-to-boarding station within section 2.1, alighting station-to-destination in section 2.2). Within each sub-section the question prompt is reprinted in italicized quotes, followed by a graphic and/or results table, and a discussion of the responses. Detailed results tables for "wholly valid" responses for each question from the Fall 2022 OBS are provided in Attachment 4.

## 2.1 Origin Information

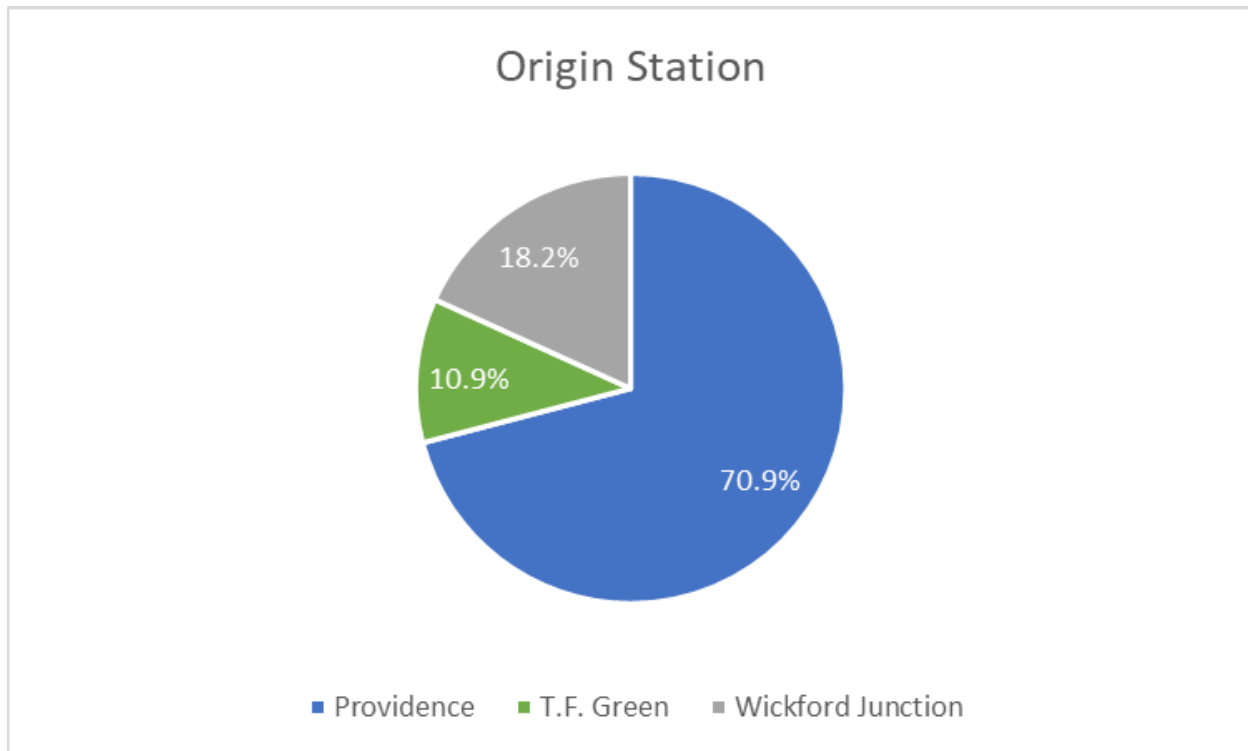
This section reviews responses pertaining to the first six questions of the OBS, focusing on Inbound MBTA Commuter Rail passengers' origin information for the one-way trip (i.e., the initial segment of the trip between the origin location and the boarding station).

### 2.1.1 Boarding Station

Figure 1 summarizes participant responses to the following question prompt:

*"Where did you board the train today?"*

Figure 1. Boarding Station



Approximately 70.9% of the respondents reported boarding the train at Providence Station, 10.9% at T.F. Green Airport and 18.2% at Wickford Junction. In other words, for every 10 passengers riding an Inbound MBTA Commuter Rail train in Rhode Island, seven board at Providence Station, one leaves from T.F. Green Airport, and another two depart from Wickford Junction.

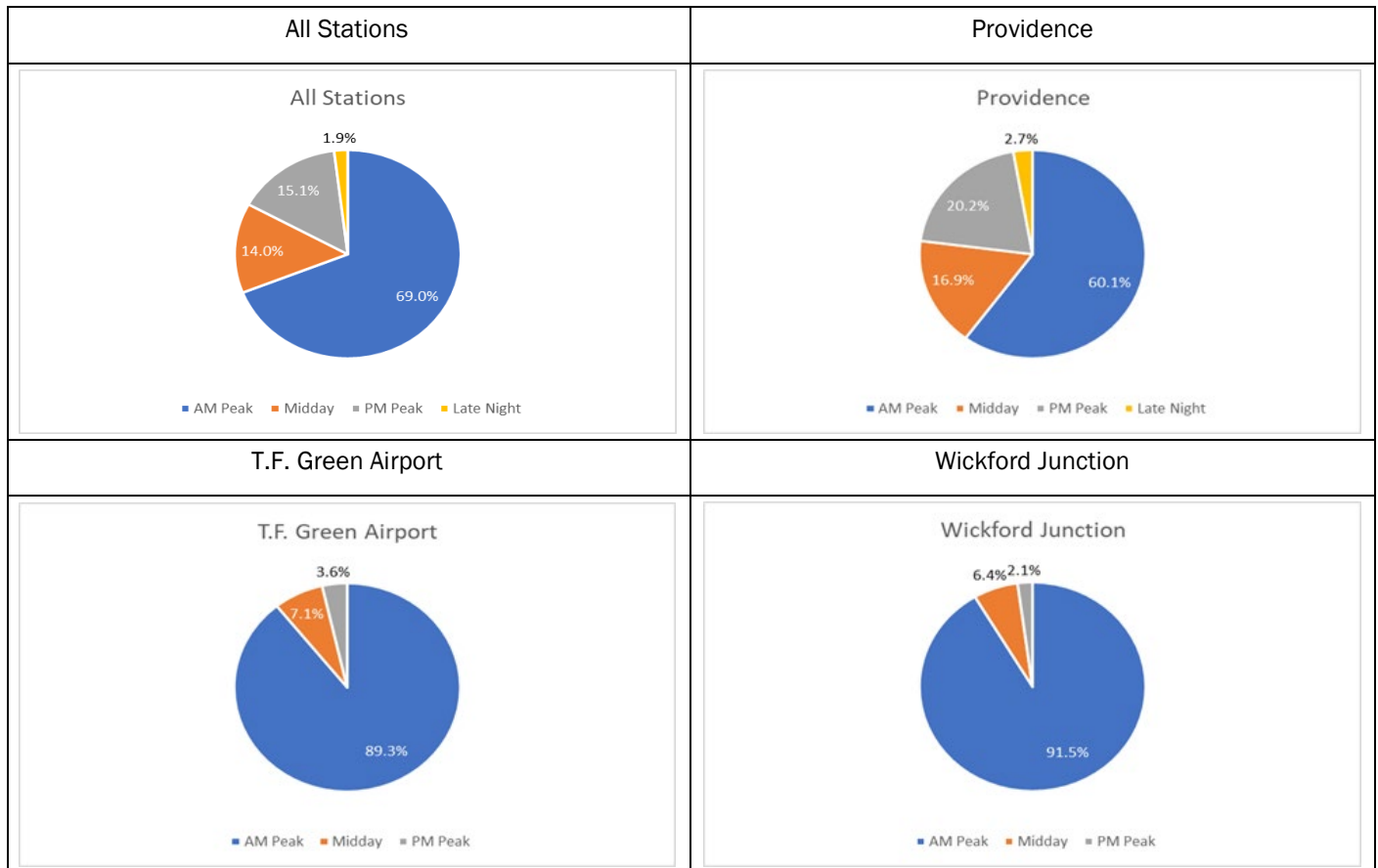
A review of boardings data from the last four weekday counts conducted between October 2021 and August 2022 indicated that, for every 12 passengers boarding an Inbound MBTA Commuter Rail train in Rhode Island, approximately 10 boarded at Providence (83.2%), one left from T.F. Green Airport (8.1%), and another departed from Wickford Junction (8.7%).

Since this study's results have not been aggregated and subsequently weighted so as to minimize potential effects of oversampling at stations south of Providence, the aggregated/overall statewide results presented herein place a slightly greater emphasis on the trip-making behaviors and characteristics of passengers embarking from stations south of Providence Station, particularly Wickford Junction.

## 2.1.2 Boarding Time

*“About what time did you board the train?”*

Figure 2. Boarding Time by Boarding Station



As shown in Figure 2 above, approximately 13 in every 20 (65.0%) survey respondents reported boarding during the AM Peak, with nearly four in 20 (20.1%) traveling Inbound Midday, less than three out of 20 (13.1%) within the PM Peak, and less than one for every 50 (1.8%) disembarking during the Late Night period.

Figure 3 and Table 3 on the following page compare the proportion of responses collected within this survey sample by time of day to the proportion of typical weekday Inbound MBTA Commuter Rail ons recorded during each of the last four quarterly weekday counts (i.e., October 2021, January 2022, April 2022, August 2022). As with 2019, this survey sample places a relatively greater emphasis on the trip-making habits and socio-demographic characteristics of Inbound passengers traveling during the AM Peak period (9.4% more collected than counted overall), mostly at the expense of those boarding in the Midday (10.0% less collected than counted overall). The proportions collected from those boarding during the PM Peak and Late Night were aligned with historical averages.

Figure 3. Comparison of Observed Ridership and Survey Responses by Boarding Time Period

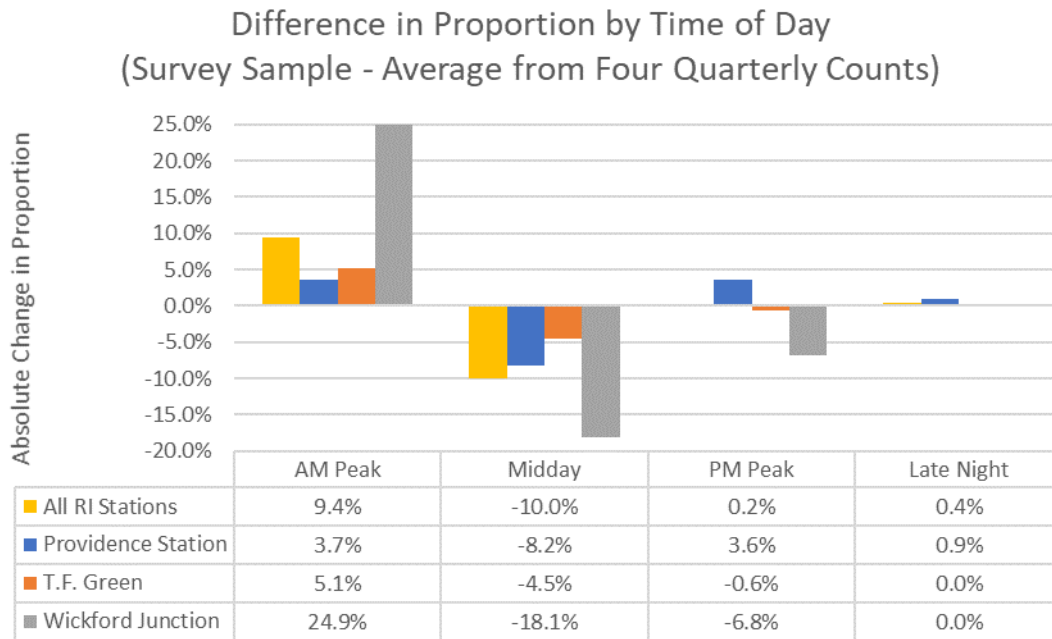


Table 3. Comparison of Observed Ridership and Survey Responses by Boarding Time Period

| BOARDING TIME OF DAY | STATISTIC                    | PERCENTAGE OF INBOUND ONS |            |                    |                   |
|----------------------|------------------------------|---------------------------|------------|--------------------|-------------------|
|                      |                              | All Stations              | Providence | T.F. Green Airport | Wickford Junction |
| AM Peak              | Counts Average               | 59.6%                     | 56.5%      | 84.2%              | 66.6%             |
|                      | Survey Proportion            | 69.0%                     | 60.1%      | 89.3%              | 91.5%             |
|                      | Difference (Survey – Counts) | 9.4%                      | 3.7%       | 5.1%               | 24.9%             |
| Mid Day              | Counts Average               | 24.0%                     | 25.1%      | 11.7%              | 24.5%             |
|                      | Survey Proportion            | 14.0%                     | 16.9%      | 7.1%               | 6.4%              |
|                      | Difference (Survey – Counts) | -10.0%                    | -8.2%      | -4.5%              | -18.1%            |
| PM Peak              | Counts Average               | 15.0%                     | 16.6%      | 4.2%               | 8.9%              |
|                      | Survey Proportion            | 15.1%                     | 20.2%      | 3.6%               | 2.1%              |
|                      | Difference (Survey – Counts) | 0.2%                      | 3.6%       | -0.6%              | -6.8%             |
| Late Night           | Counts Average               | 1.5%                      | 1.8%       | 0.0%               | 0.0%              |
|                      | Survey Proportion            | 1.9%                      | 2.7%       | 0.0%               | 0.0%              |
|                      | Difference (Survey – Counts) | 0.4%                      | 0.9%       | -2.4%              | N/A               |

### 2.1.3 Origin Place Type

“We are interested in knowing more about your current ONE-WAY trip. What type of place were you coming from when you received this survey? Please check one box representing the ORIGIN of your ONE-WAY trip below:”

Figure 4. Origin Place Type by Boarding Station



As seen in Figure 4, for the Rhode Island segment of the Providence/Stoughton Line, 79.8% of Inbound passengers reported departing from where they were at their residence prior to arriving at their boarding station. The second most common origin prior to boarding was the workplace (8.1%), followed by another person's home (3.1%). For the nine percent remaining, College/University (2.7% overall, including five from Brown University, one from New England Tech College, and another respondent who failed to reveal the college or university in their response, Restaurant/Social/Recreational Activity (2.3%), and School/Daycare (1.2%) were common responses among the remaining origin types. The remaining 2.8% of responses consisted of either Hotels, Stores/Retail, Airports, Hospitals, and Personal Business, none of which accounted for more than one percent of total responses for origin location.

Since responses collected from Inbound passengers departing from Providence Station constitute the majority of the sample's population, the distribution of trip origins for journeys beginning from Providence Station closely mirrors trends statewide / across the sample as a whole. However, compared to the two stations to the south, which feature no more than five different responses or origin place type, the relatively dense development near Providence Station presents more

opportunities for riders to originate from a greater variety of establishments (e.g., Hospital / Doctor, Restaurant / Social / Recreational, Hotel, School / Daycare). Reflecting its position at the core of urbanized Rhode Island, Providence Station featured a relatively greater share of those who had recently departed from their place of employment (10.9% compared to 8.1% overall), as well as those leaving from an institution of higher learning (3.3%) or another person's home (3.3%).

In contrast, responses collected at T.F. Green Airport and Wickford Junction showed similar overall results, with the vast majority of passengers (85.7% and 95.7% respectively) having begun their one-way trip from their residence. However, compared to the aggregate statewide and station-level results at Providence, the distribution of non-home-based trip origins recorded at T.F. Green Airport station displays a different trend. As a result of its proximity to an international airport, this station featured a significantly greater proportion of Airport responses (3.6%) and Store/Retail origins (3.6%) than both the overall sample and relative to Providence Station.

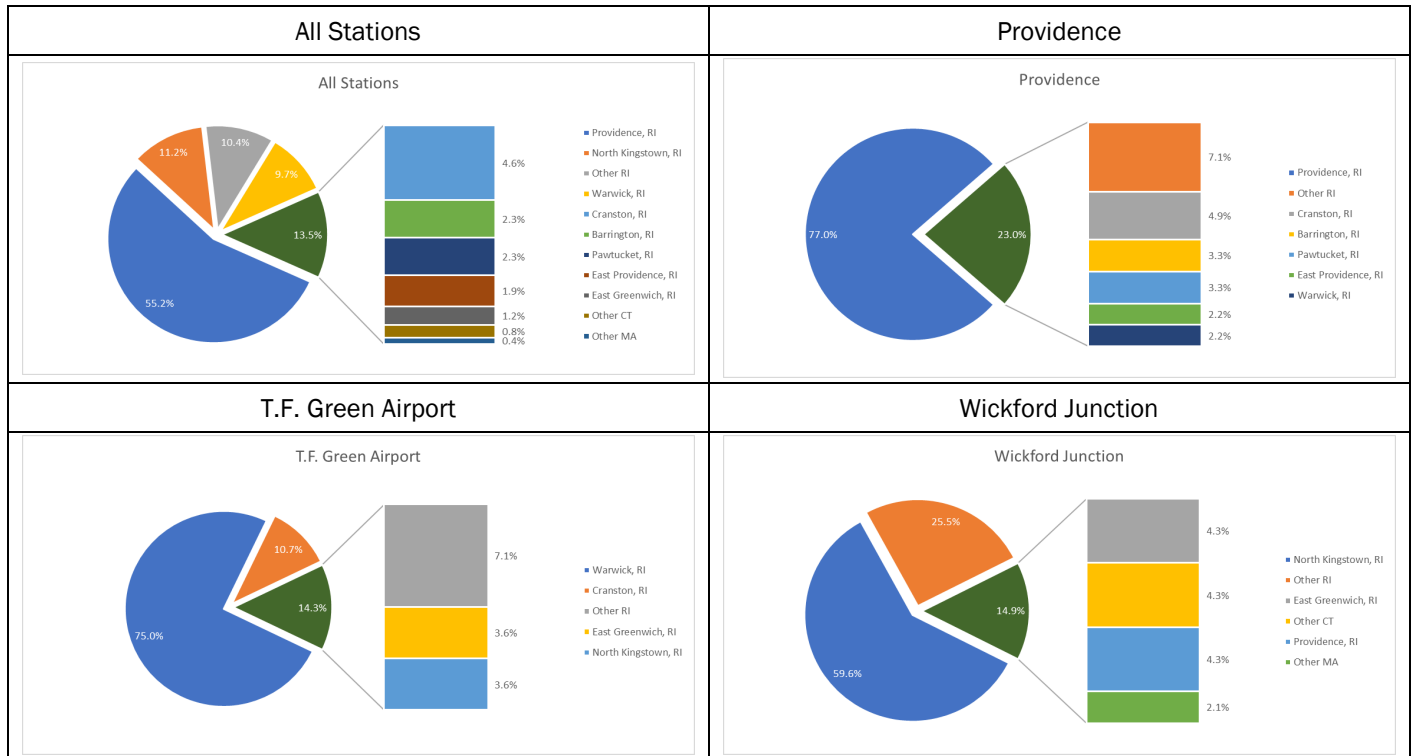
The distribution at Wickford Junction was by far the least varied, with only three origin place types represented. With nearly 96% of trip origins being home-based, all non-based home trip origin types are markedly lower than the statewide sample overall, with a lack of College/University or Store/Retail origins – both of which were observed at each of the two facilities located to the north.

## 2.1.4 Origin Location

“Please tell us the nearest street intersection or landmark of the ONE-WAY trip ORIGIN you checked above:”

### 2.1.4.1 Origin ZIP Codes

Figure 5. Origin Location by Boarding Station



Based on the results in Figure 5, the vast majority of Inbound passengers boarding in Rhode Island originated within the State of Rhode Island. Three trips originated in other states, two in Connecticut and one in Massachusetts. The municipalities home to each of three stations constitute three of the top four municipalities represented, with Providence in first with an overall share of 55.2% (77.0% of Providence Station boardings), North Kingstown in second with 11.2% (59.6% of Wickford Junction boardings), and Warwick in fourth with 9.7% (75.0% of T.F. Green Airport boardings).

The third most frequent response, “Other – RI,” was used as a catch-all for cities and towns that, when taken individually, represented a minor share of overall traffic at the station-level (i.e. municipalities that had fewer than three trip origins). Approximately one in 10 (10.4%) Inbound MBTA Commuter Rail passengers boarding in Rhode Island reported a one-way trip origin that fell within this category, including 7.1% of origins at Providence Station, 7.1% of origins at T.F. Green Airport and 25.5% of origins at Wickford Junction. Among those leaving Wickford Junction and headed north, these origin locations included 12 trips originating from one of the following: Charlestown, Exeter, Jamestown, Narragansett, Newport, Richmond, South Kingstown, Wakefield, and West Greenwich.

Other common points of origin for Inbound passengers are listed below.

- Cranston (4.6% overall, with 4.9% at Providence Station and 10.7% T.F. Green Airport)

- East Greenwich (1.2% overall, with 3.6% at T.F. Green Airport and 4.3% at Wickford Junction)
- Pawtucket (2.3% overall, with 3.3% at Providence Station)
- Barrington (2.3% overall, with 3.3% at Providence Station)
- East Providence (1.9% overall, with 2.2% at Providence Station)

The distribution for Wickford Junction was by far the most varied. Ridership from North Kingstown (59.6%), East Greenwich (4.3%), Providence (4.3%), and the State of Connecticut (4.3%) make up the majority of reported trip origins. Three trips beginning from Wickford Junction Station originated from outside of Rhode Island: two from Connecticut (4.3% overall, with one from Stonington and another from Griswold) and one from Swansea, Massachusetts (2.1%). As Wickford Junction operates as the southern terminus of the Providence/Stoughton Line with ample free parking, it had the broadest catchment area, as reflected in the proportion of responses listed in the Other – RI category (25.5%).

A series of maps showing the relative distribution of Inbound passengers' origin locations by boarding station is provided on the following pages. Figure 6 shows aggregated origin results for Inbound passengers boarding at stations within Rhode Island while Figure 7 through Figure 9 display the origins for those boarding at Providence Station, T.F. Green Airport, and Wickford Junction, respectively. It should be noted that the map inset reflects ZIP code-level geographies while those in the primary frame display municipal boundaries.

Origin trip locations for Inbound MBTA Commuter Rail journeys beginning from Providence Station exhibited the most variation. The top ZIP codes for those boarding at Providence Station were either in the same downtown ZIP code as the station (02903; 43.2%), the high-density residential Blackstone neighborhood (02906; 15.8%), Elmhurst (02908; 6.6%), or the Brown University campus (02912; 6.6%). Each of these ZIP codes had 10 or more respondents originating from them, which reflects over five percent of responses collected at Providence Station. The 11 ZIP codes listed below served as the origin location for at least two Inbound trips by those who boarded in downtown Providence.

- Providence neighborhoods (7.5% total)
  - Wanskuck neighborhood (02904; 2.7%) – located just north of Providence College
  - Washington Park (02905; 1.6%)
  - Elmwood (02907; 1.6%)
  - Olneyville (02909; 1.6%)
- Town of Barrington (02806; 3.3%)
- City of Pawtucket (02860; 3.3%)
- City of Cranston (02910; 2.7%), the City of Warwick (02888; 1.6%)
- Town of Warren (02885; 1.1%)
- City of Woonsocket (02895; 1.1%)
- City of East Providence (02914; 1.1%)

At T.F. Green Airport, only two origin ZIP codes account for more than one respondent's origin location. The vast majority of trips originated in the home ZIP code that encompasses the station (02886; 71.4%), with another two trips sharing an origin located further north in Cranston (02920; 7.1%).

Similarly, at Wickford Junction, nearly six in 10 (59.6%) Inbound passengers came from an origin place located within the same ZIP code in North Kingstown (02852). Only three additional ZIP codes contained at least two origin trips, including three trips from South Kingstown (02879; 6.4%) and two trips from East Greenwich (02818) and Narragansett (02882), each accounting for 4.3%.

Figure 6. Inbound Passenger Origins by Boarding Station – All Stations

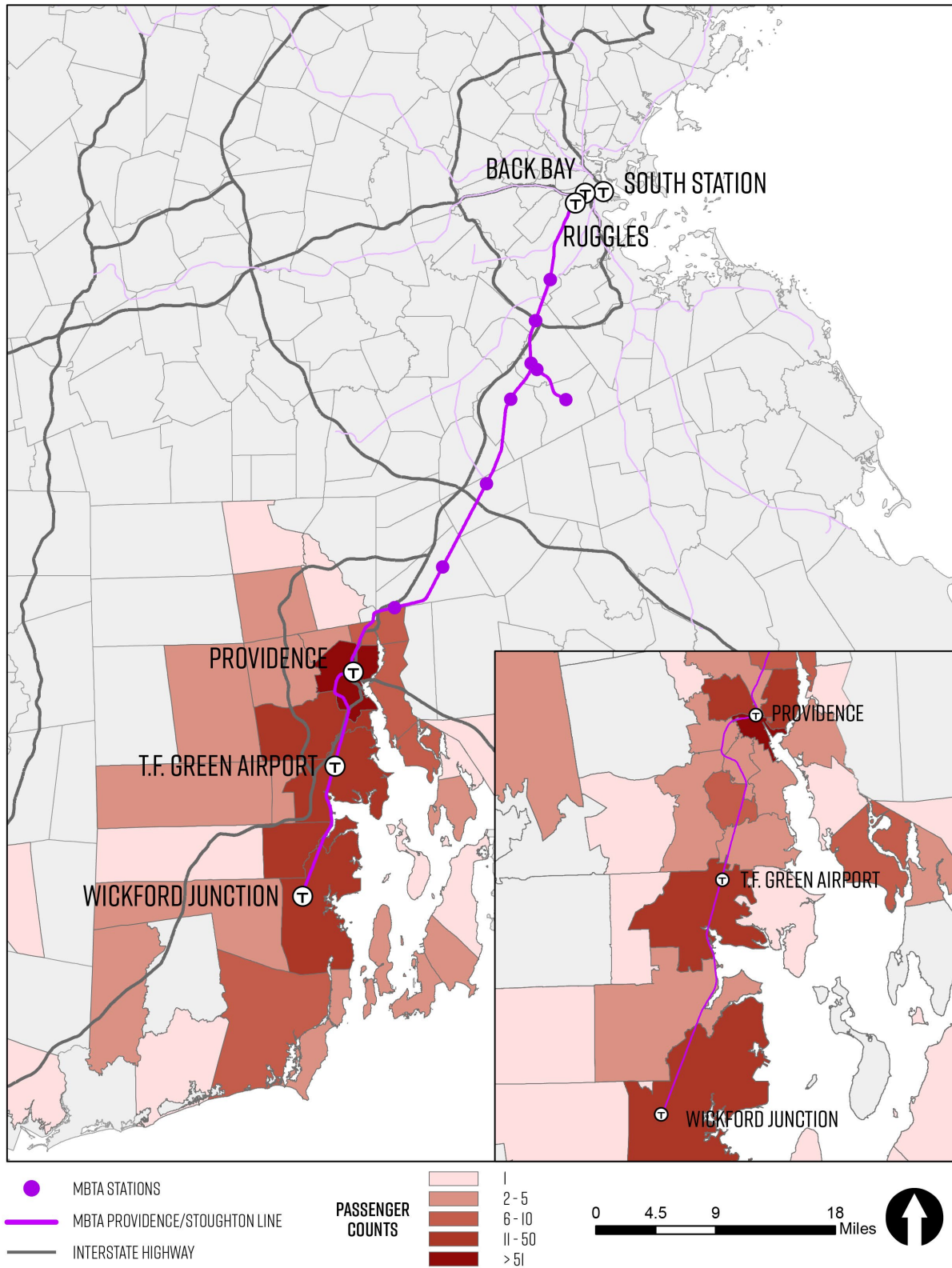


Figure 7. Inbound Passenger Origins by Boarding Station – Providence Station

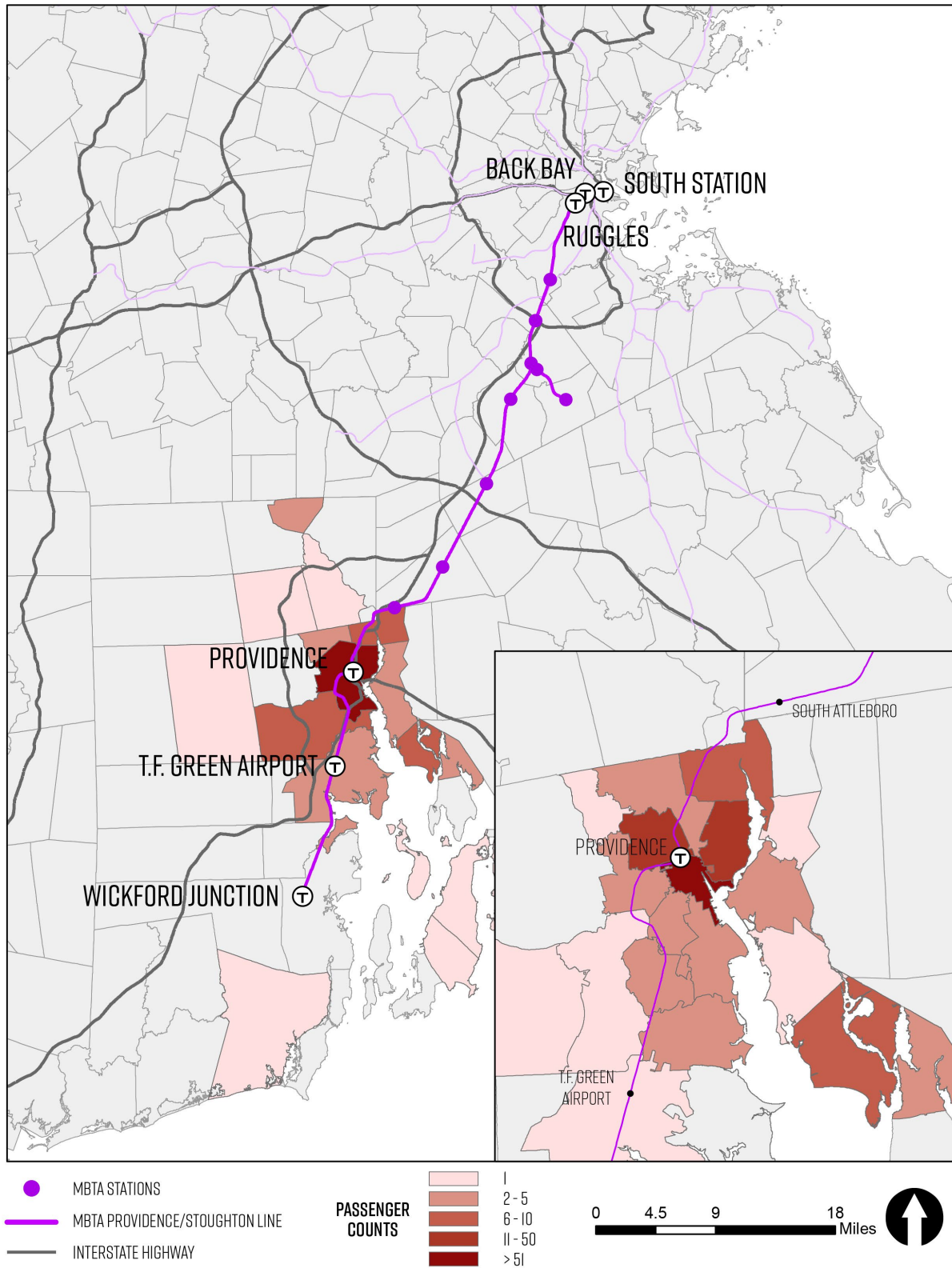


Figure 8. Inbound Passenger Origins by Boarding Station – T.F. Green Airport

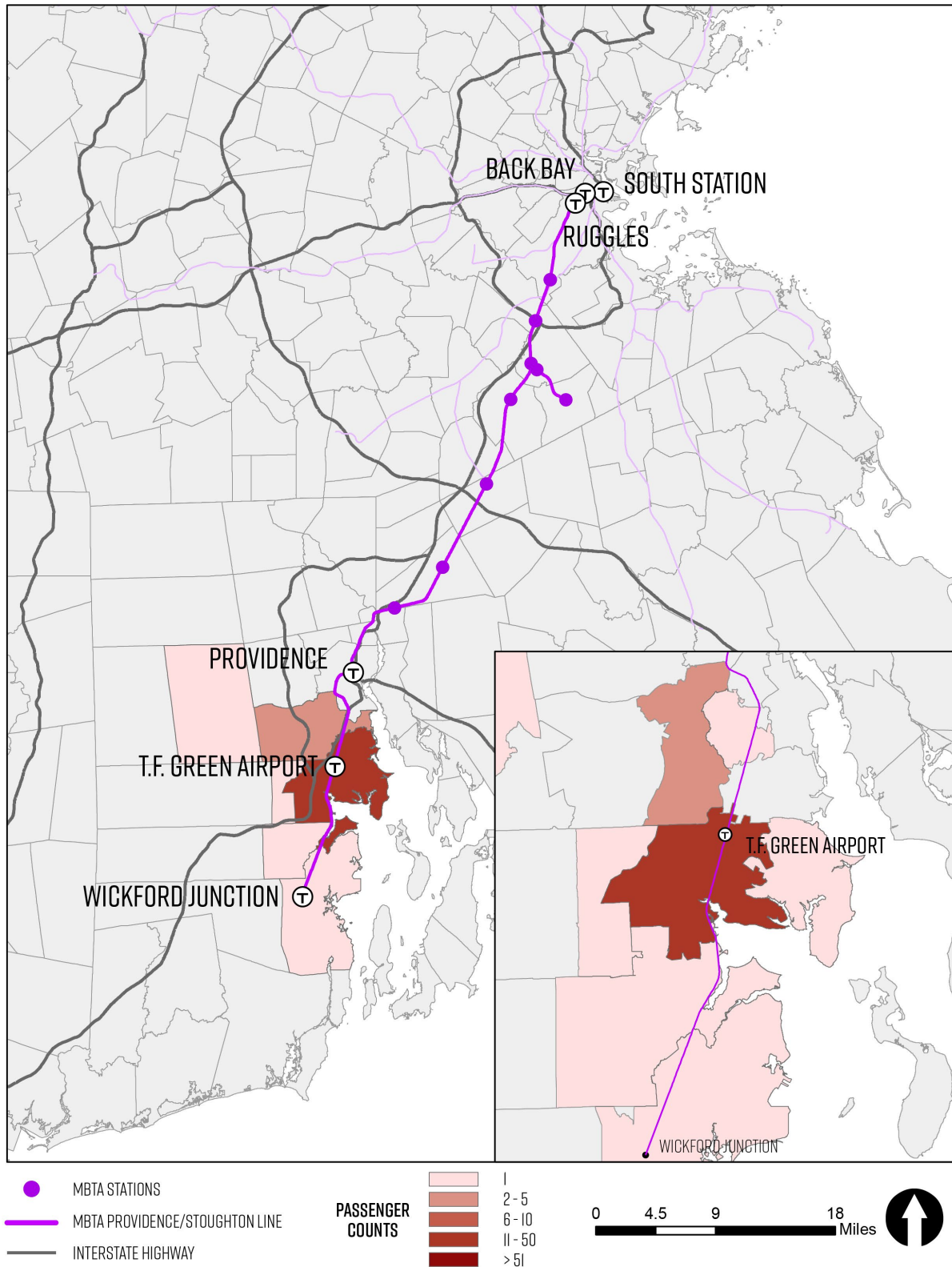
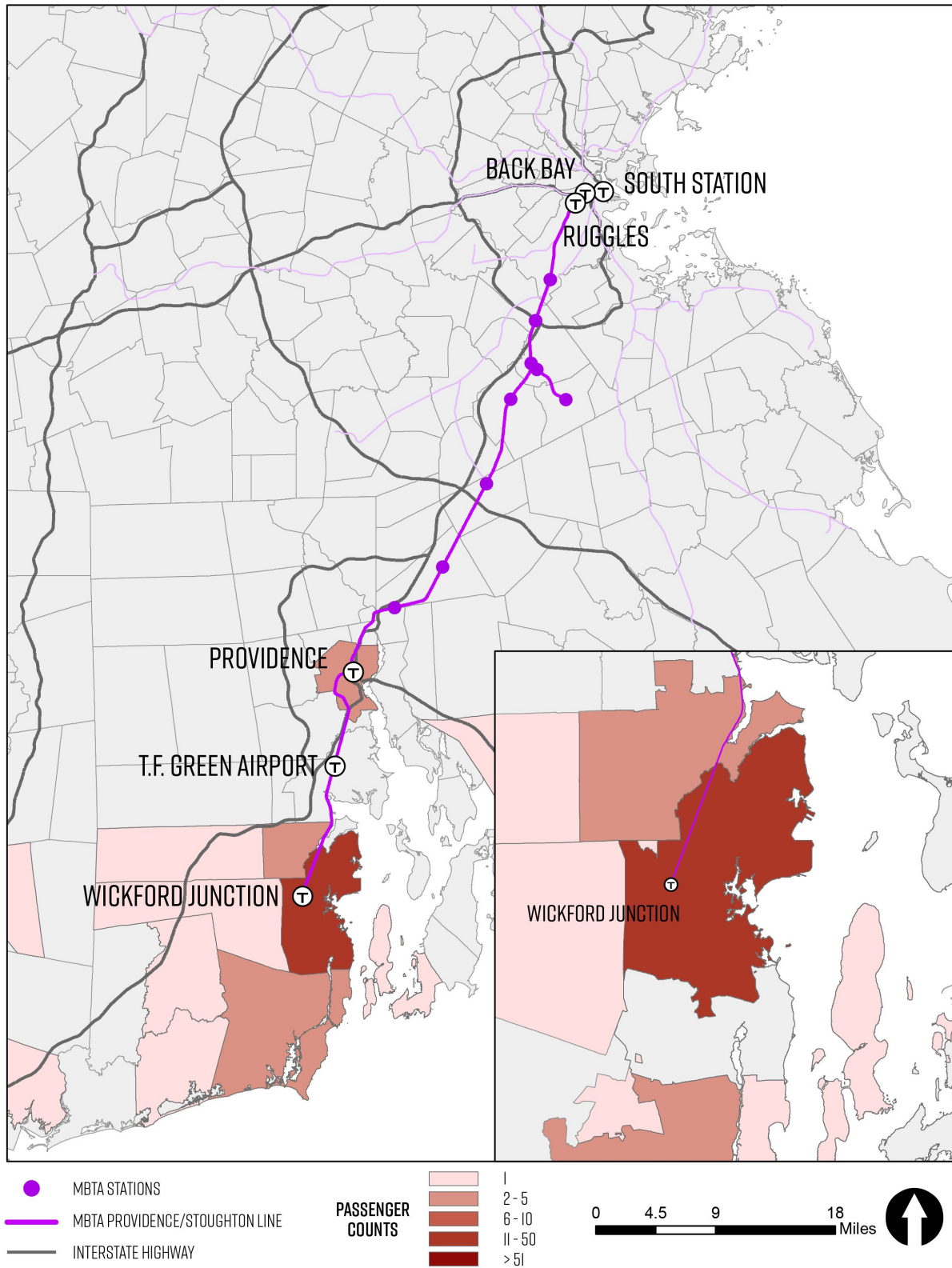


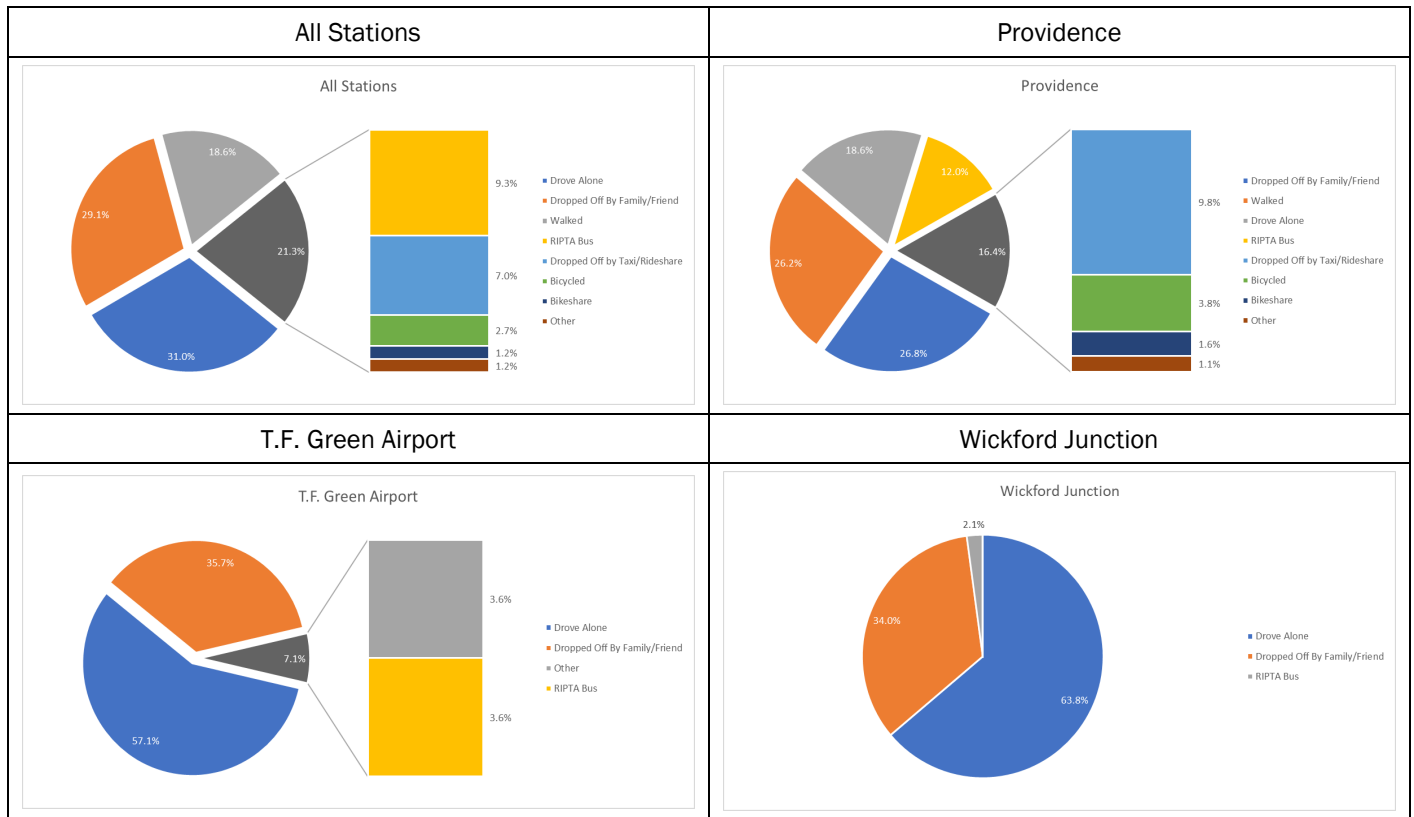
Figure 9. Inbound Passenger Origins by Boarding Station – Wickford Junction



## 2.1.5 Access Mode

*“Please tell us how you got to the Commuter Rail station today.”*

Figure 10. Access Mode



As seen in Figure 10, the majority of passengers (60.1%) boarding along the Rhode Island segment arrived at their boarding station via the use of a personal (i.e., not-for-hire) automobile, with 31.0% reporting having driven a vehicle to the station and 29.1% being dropped off by a family member or friend. Transit use accounted for 9.3% of overall arrivals to boarding stations and was reported at each of the three stations, with Providence Station accounting for 92% of these responses. Other modes, which consisted of entries for school shuttle, Amtrak, and simply “other”, were reported at Providence Station and T.F. Green Airport and equated to 1.2% of all responses.

In addition to the aforementioned access categories above, which were reflected at two or more stations, further responses were recorded only at Providence Station. The Providence-specific trends are summarized below. While these entries are valid and carry substantial weight amongst the overall sample population, it should be noted that they do not, in any sense, reflect the travel choices reported by Inbound respondents who indicated departing from either of T.F. Green Airport or Wickford Junction.

- Active transportation modes accounted for three in every 10 access trips to Providence Station (30.0%), or approximately one in every five access trips surveyed (21.3%)
  - Walking fulfilled 26.2% of access trips to Providence Station (18.6% overall)
  - Biking enabled 3.8% of access trips to Providence Station (2.7% overall)
- Taxi/Rideshare services contributed 9.8% of access trips to Providence Station (7.0% overall)

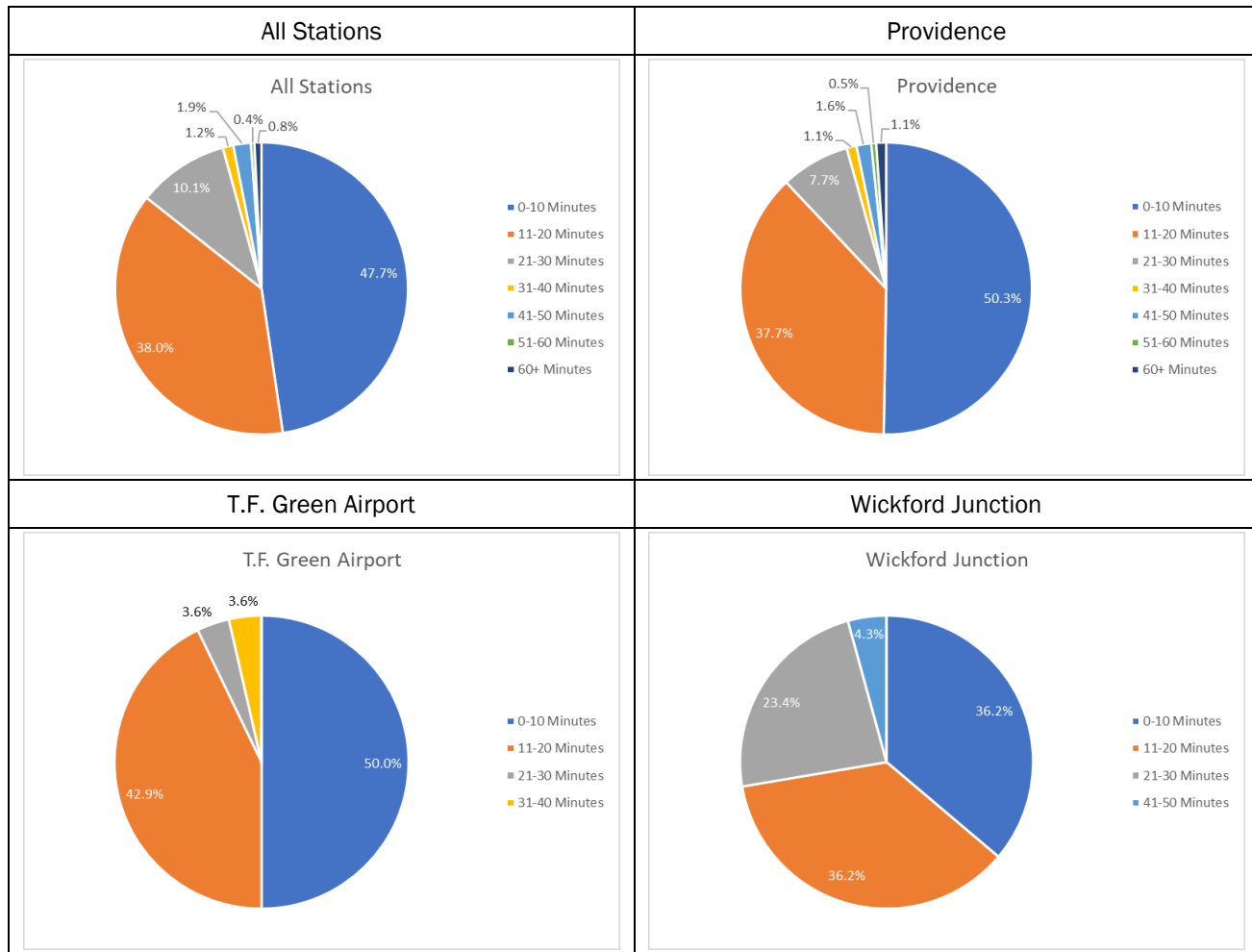
Providence Station was the only station where the minority of passengers arrived by personal (not-for-hire) automobile (45.4%). In fact, responses from Inbound riders boarding at Providence Station were responsible for 100% of Walk and Bike responses, 92% of Transit responses (12.0% of Providence responses, or nearly one in eight Inbound passengers), and 100% of Taxi/Rideshare station access trips recorded within this OBS.

Given the fundamentally different built environment contexts and surrounding land uses at the two stations to the south, Inbound passengers boarding at T.F. Green Airport and Wickford Junction reported placing a greater emphasis on the use of private automobiles relative to those arriving to Providence Station. At T.F. Green Airport, 92.8% of all arrivals were served by personal vehicle, with 57.1% driving alone and 35.7% dropped off by a family member/friend. Wickford Junction saw similar levels of personal vehicle use. Among the 97.8% of Wickford Junction's arrivals, 63.8% Drove Alone and 34.0% arrived via family member or friend. Interestingly, no respondents reported arriving at T.F. Green Airport station via Airplane. Both T.F. Green and Wickford Junction each had one respondent indicating arrival at the boarding station via a RIPTA bus.

## 2.1.6 Access Duration

*“About how long did it take you to get to the station?”*

Figure 11. Origin Duration



For the Rhode Island segment as a whole, 19 of every 20 Inbound passengers (95.8%) indicated that their journey to the station took no more than 30 minutes, with 17 in 20 (85.7%) of journeys to the origin station taking no more than 20 minutes. As seen in Figure 11, station access times less than 10 minutes were the most common at nearly one in two passengers (47.7%), followed by travel times of 11 to 20 minutes (38%). Long access trips (i.e., greater than 30 minutes) were relatively uncommon.

As shown in Table 4, which provides average access trip duration by mode at each station, it took the average Inbound MBTA commuter Rail passenger approximately 15.27 minutes to reach their boarding station from their origin location.<sup>2</sup> Transit riders reported the longest average commute times

<sup>2</sup> Calculations of average ingress duration assumed the upper end of each time range/option (i.e., a trip with a duration of “0-10 minutes” was counted as having taken 10 minutes) and a maximum value of 100 minutes for 90+ Minutes.

(26 minutes), which is ten minutes longer than patrons who Drove Alone (15.7 minutes), fifteen more than Active Transportation users (11.1 minutes), and fifteen minutes slower than the typical Drop Off passenger (11.4 minutes).

**Table 4. Average Access Trip Time by Mode & Station (minutes)**

| Mode                                        | All Stations | Providence  | T.F. Green Airport | Wickford Junction |
|---------------------------------------------|--------------|-------------|--------------------|-------------------|
| Drove Alone                                 | 15.7         | 14.9        | 13.1               | 18.0              |
| Walked                                      | 13.2         | 13.2        | -                  | -                 |
| RIPTA Bus                                   | 26.0         | 26.4        | 15.0               | 30.0              |
| Bikeshare                                   | 8.3          | 8.3         | -                  | -                 |
| Bicycled                                    | 12.0         | 12.0        | -                  | -                 |
| Dropped off by:<br>Family / Friend          | 12.7         | 11.8        | 9.8                | 17.3              |
| Dropped off by:<br>Taxi / Rideshare Service | 10.1         | 10.1        | -                  | -                 |
| Other                                       | 56.7         | 65.0        | 40.0               | -                 |
| <b>ALL MODES</b>                            | <b>15.2</b>  | <b>14.8</b> | <b>12.9</b>        | <b>18.0</b>       |

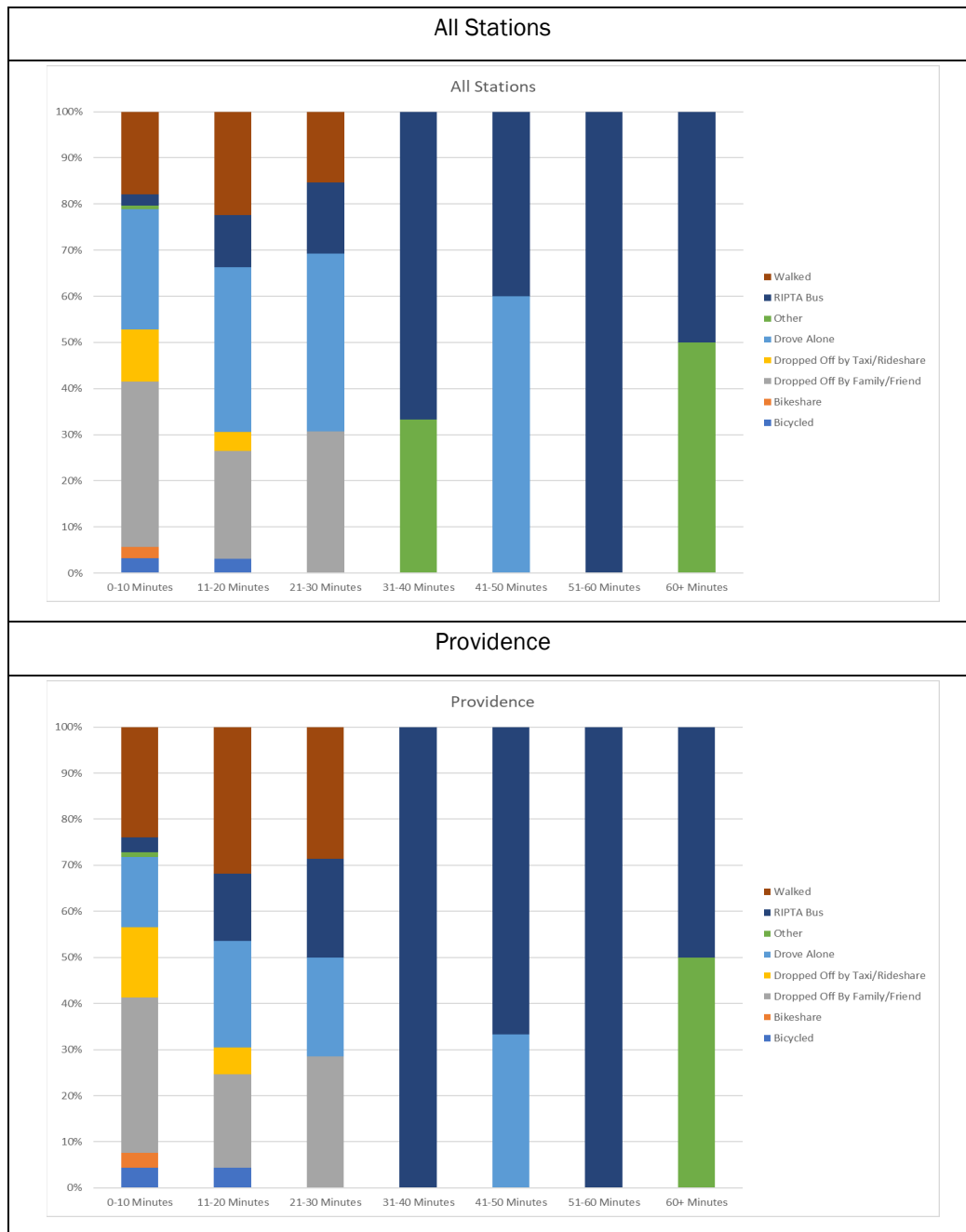
The distribution of station access trip times at Providence Station is notably similar to the those of the overall OBS, with a slightly higher share of trips lasting less than 10 minutes (2.6% more), along with a lower proportion of 11-to-20-minute (0.3% less) and 21-30 minute (2.4% less) journeys. Relative to the statewide profile and Providence Station, T.F. Green Airport had a comparable level of trips lasting less than 10 minutes (2.3% more than statewide) but featured a significantly greater share of access trips lasting 11 to 20 minutes (4.9% more).

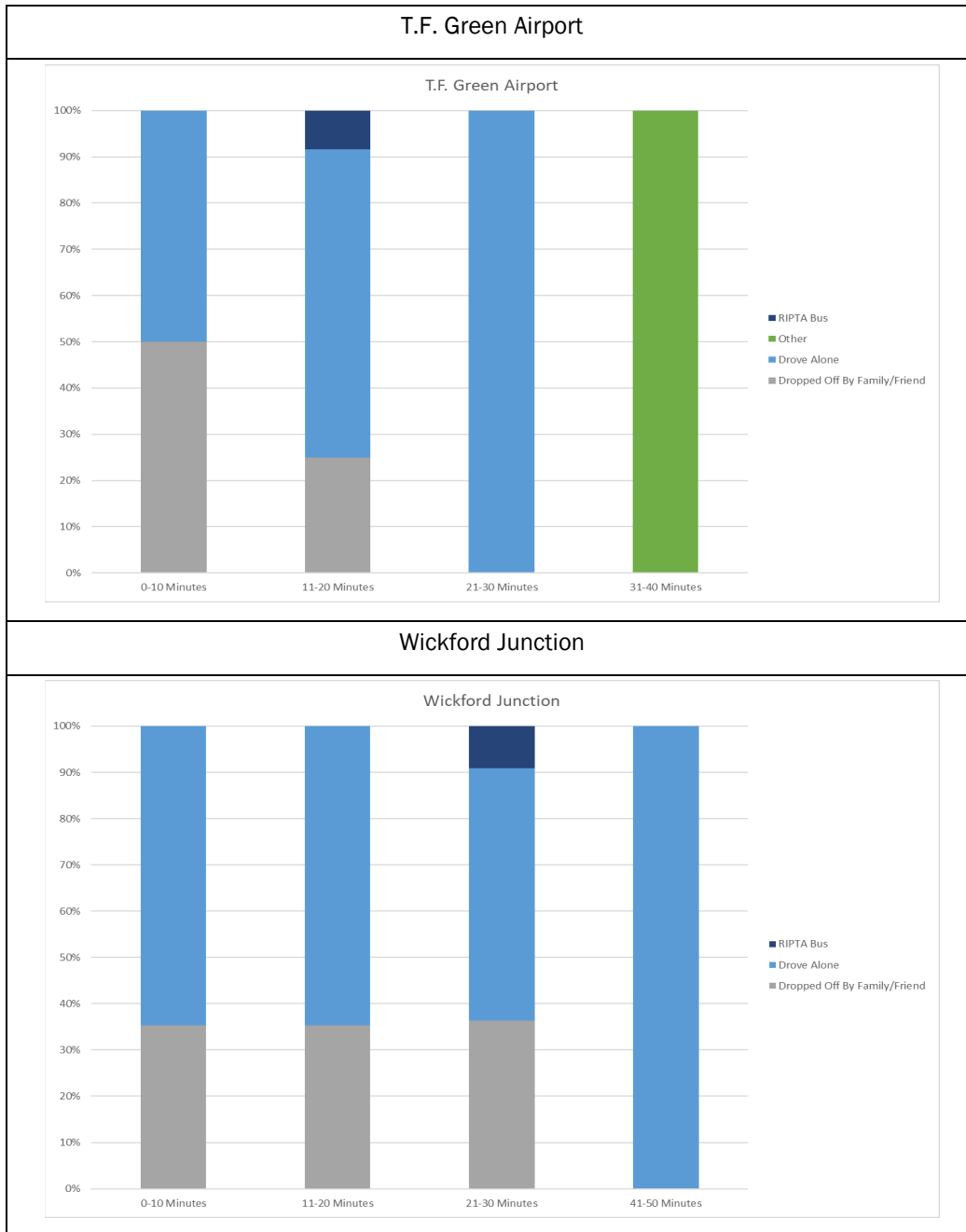
Inbound passengers arriving at Wickford Junction reported the lowest proportion of station access trips lasting less than 10 minutes (36.2%) and, as a result, featured the highest proportion of trips lasting greater than 10 minutes, including 36.2% spanning 11 to 20 minutes, 23.4% ranging from 21 to 30 minutes, and 4.3% taking up to 40 minutes.

Figure 12, which begins on the next page, shows the relative distribution of access modes for Inbound MBTA Commuter Rail riders based on the reported duration of their access trips to the various Rhode Island stations. Across all stations, short trips taking less than 10 minutes constituted a majority share of the access trips within the following modes: Dropped off and bicycled, in both their forms. Drove Alone and walked both had close to 40% of access times taking between 0-10 minutes.

While only 14.3% of access trips lasted more than 20 minutes, these longer trips were not evenly distributed among the modes. Transfer from public transit (Other, Amtrak or RIPTA Bus) was reported as the access mode for the two reported trips that took more than an hour. Approximately 42% of trips involving Transit involved an access trip time of longer than 20 minutes, compared to 16.3% of those who Drove Alone, 8.3% of those who Walked, and 9% of those who Bicycled. Notably, those who biked or who reported being dropped off by a taxi or rideshare did not report any access trips longer than 20 minutes.

Figure 12. Access Time Distributions by Boarding Mode





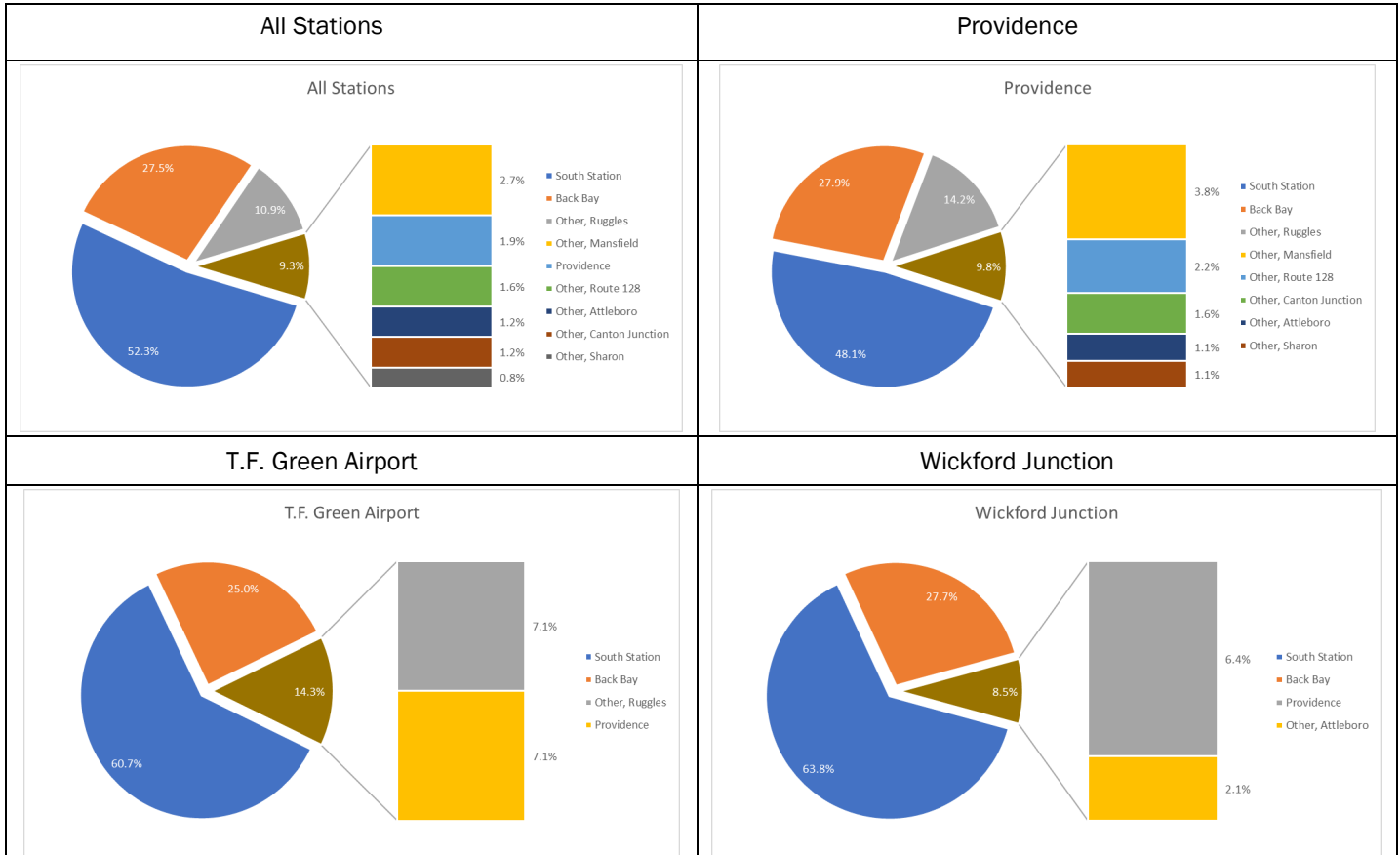
## 2.2 Destination Information

This section reviews responses pertaining to Questions 8-12 of the OBS, which focused on Inbound MBTA Commuter Rail passengers' destination information for their one-way trip (i.e., the final segment of the trip between the alighting MBTA Commuter Rail station and the "final" destination location).

### 2.2.1 Alighting Station

"On this ONE-WAY trip, at which Commuter Rail station will you get off this train?"

Figure 13. Alighting Station



As seen in Figure 13, 90.7% of Inbound passengers surveyed along the Rhode Island segment stated that they were alighting at an MBTA Commuter Rail Station located in Boston. South Station (52.3%) and Back Bay Station (27.5%), each of which is also served by Amtrak's Northeast Corridor operations, accounted for 79.8% of all alightings. While all three stations had a similar proportion of riders alighting at Back Bay (25.0-27.9%), the proportion traveling to South Station was surprisingly variable, with a maximum of 63.8% at Wickford Junction, followed by 60.7% at T.F. Green Airport, but only 48.1% at Providence.

Ruggles, which is also an MBTA Orange Line Rapid Transit station situated near a major employment center anchored by the world-renowned Longwood Medical Center (Boston Children's Hospital, Beth Israel Deaconess, and others), several institutions of higher learning (Harvard Medical School,

Northeastern University, Massachusetts College of Art and Design and the Wentworth Institute of Technology) and Fenway/Kenmore Square, served as the alighting station for 10.9% of passengers.

A small percentage of riders boarding within Rhode Island used the service to make a trip to a destination south of Boston. In aggregate, travel to MBTA Commuter Rail stations in southeastern Massachusetts communities or otherwise “outside of Route 128” (i.e., Attleboro, Canton Junction, Mansfield, Sharon, and Route 128) accounted for nearly 7.5% of all Inbound trips.

Providence Station was the fifth most common alighting station (1.9%), serving as the destination for two passengers departing from T.F. Green Airport (7.1%) and three passengers (6.4%) embarking from Wickford Junction. In aggregate, these wholly internal, Rhode Island-based trips accounted for 6.7% of the survey responses from those boarding south of Providence Station.

The distribution for Providence Station was quite similar to that of the line as a whole, with 48.1% of passengers alighting at South Station, 27.9% getting off at Back Bay, and 14.2% stopping at Ruggles. Nearly 10% of Inbound passengers leaving from Providence Station used the service to complete what were, from a commuter rail perspective, semi-local trips between Rhode Island’s state capital and municipalities just over the border in southeastern Massachusetts or “outside of Route 128”, including 1.1% alighting at Attleboro, 1.6% at Canton Junction, 3.8% at Mansfield, Sharon at 1.1%, and 2.2% at Route 128.

Although no trips between T.F. Green Airport and stations in southeastern Massachusetts were reported, Attleboro did serve as the destination for one Inbound trip from Wickford Junction. Interestingly, no Boston-bound Wickford Junction Inbound were headed to Ruggles – all traveled to either Back Bay or South Station.

## 2.2.2 Egress Mode

“On this ONE-WAY trip, how will you reach your FINAL DESTINATION from the end Commuter Rail station you reported above?”

Figure 14. Egress Mode by Alighting Station

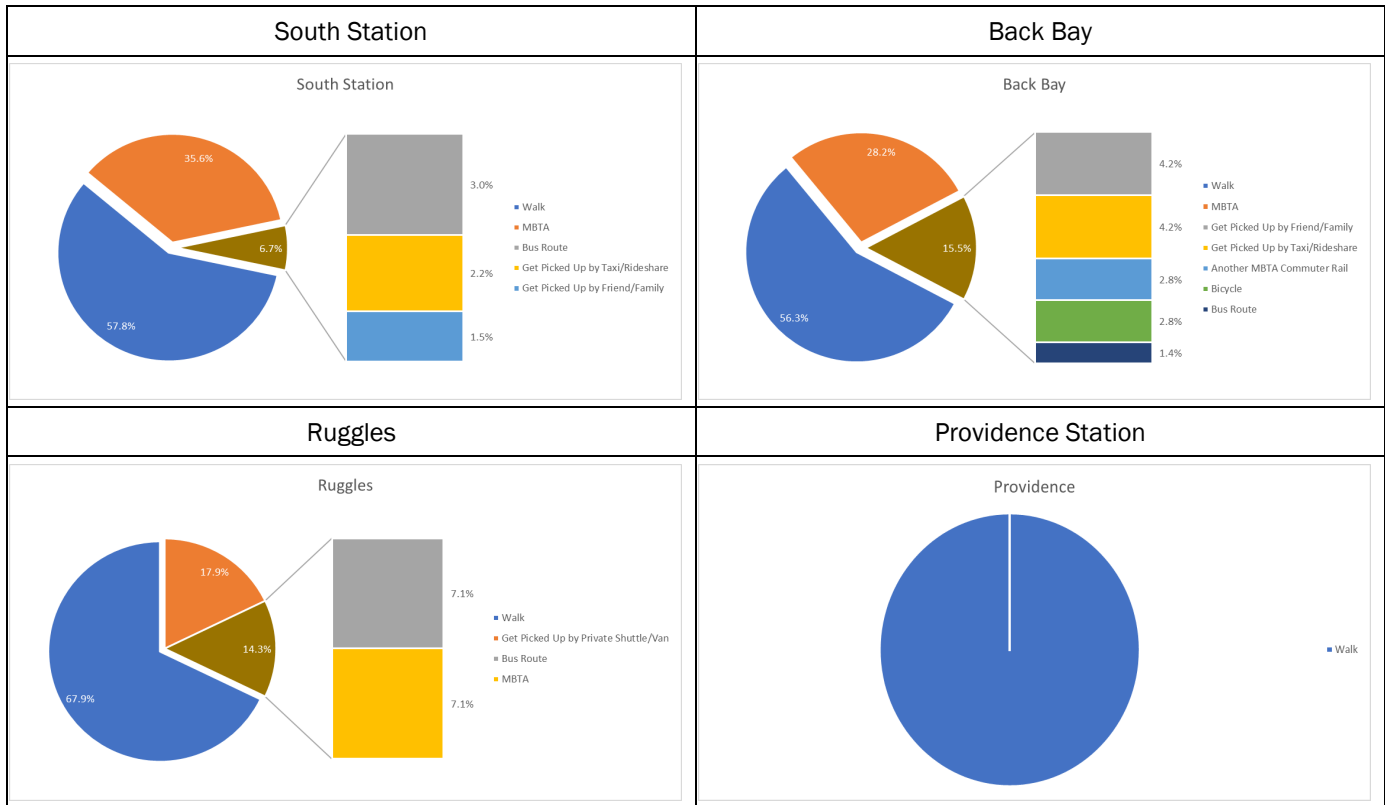


Figure 14 presents the egress mode distributions for the top four alighting stations. At South Station the majority of alighting passengers (57.8%) reported Walk to their final destination, followed by use of an MBTA Rapid Transit line (35.6%). Other options reported include MBTA buses (3.0%), followed by Taxi/Rideshare (2.2%) and Pick-Up by Friend or Family Member (1.5%).

Back Bay had a modal split similar to South Station, with a minor shift between the proportion of those walking to their final destination (56.3%) and those transferring to an MBTA Rapid Transit line (28.2%), as well as representation for Bicycle (2.8%). Greater than at South Station, each of the categories listed below garnered three responses (4.2%) among those who reported alighting at Back Bay Station.

- Taxi/Rideshare service
- Pick-up by Friend or Family Member
- Another MBTA Commuter Rail line

Given the proximity of major employers and points of interest, many of which are located west of and perpendicular to the MBTA's Orange Rapid Transit line, 67.9% of those alighting at Ruggles completed the rest of their trip on foot. In addition to the large proportion of Walk, Ruggles' modal split is notable in that 17.9% of respondents reported using a Private Shuttle to reach their final destination compared to a combined proportion of 14.3% of respondents who selected an MBTA service (7.1% transferring

to an MBTA Subway Line, another 7.1% to bus). This discrepancy relative to the other two Boston-based stations is primarily a function of the myriad transportation demand management services available to Ruggles, which are financially supported by privately-owned institutions based in the Longwood Medical Area (LMA).

Of the five Inbound passengers surveyed who alighted at Providence Station, all walked to their final destination.

### 2.2.3 Egress Duration

*“About how long will it take you to reach your FINAL DESTINATION from the end Commuter Rail station you reported in Question 8?”*

Figure 15. Egress Duration by Alighting Station

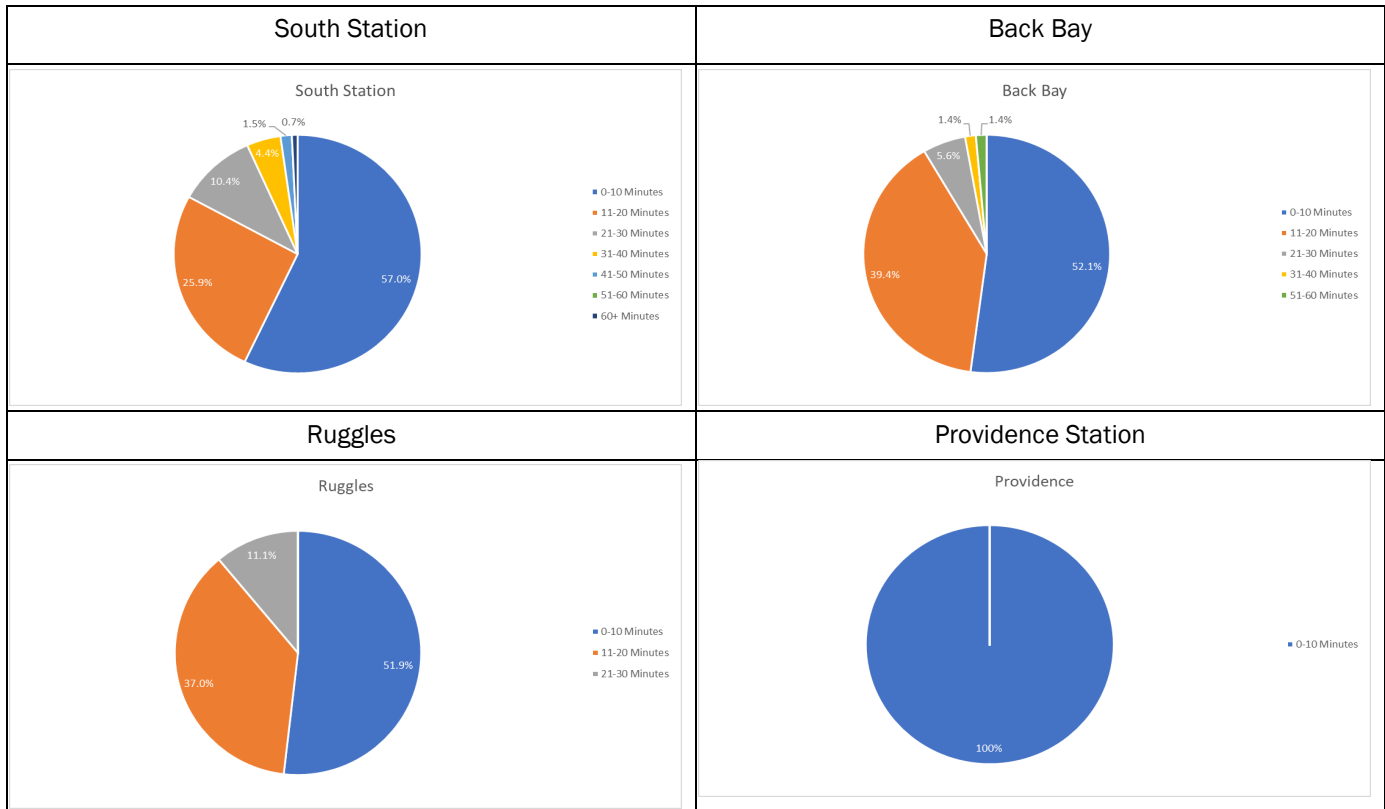


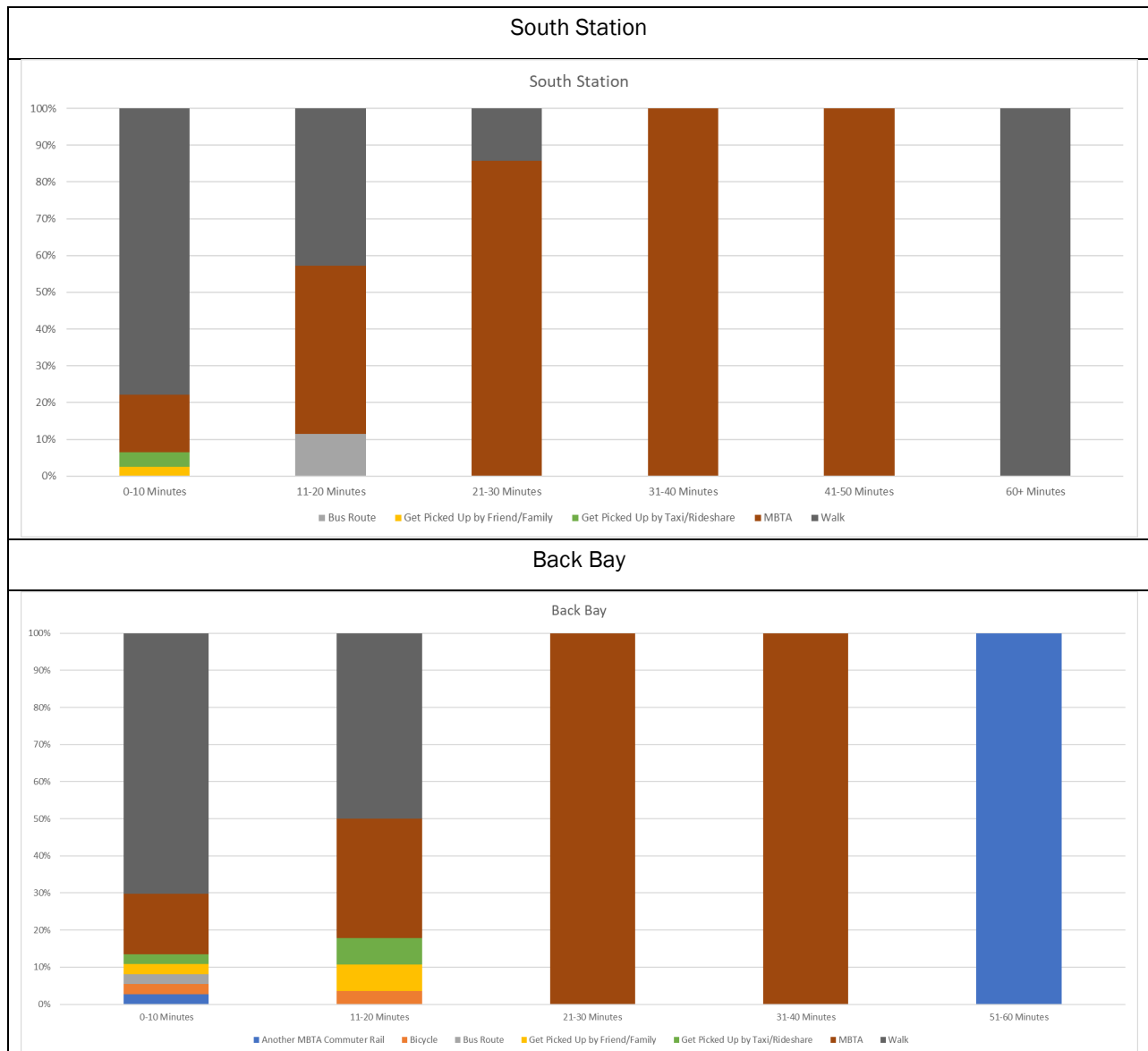
Figure 15 shows the distribution of egress times from the top four alighting stations reported by Inbound passengers. At South Station nearly 19 out of every 20 respondents (93.3%) reported egress trips to final destinations that took no longer than 30 minutes, with approximately 17 in 20 (83.0%) indicating no more than 20 minutes. Out of the top four alighting stations, only South Station and Back Bay contained egress trips longer than 30 minutes. Only one respondent indicated an egress time longer than one hour, which involved arriving to South Station and walking to North Station in order to complete a transfer to a Zone 5 destination accessible from one of the northern Commuter Rail lines.

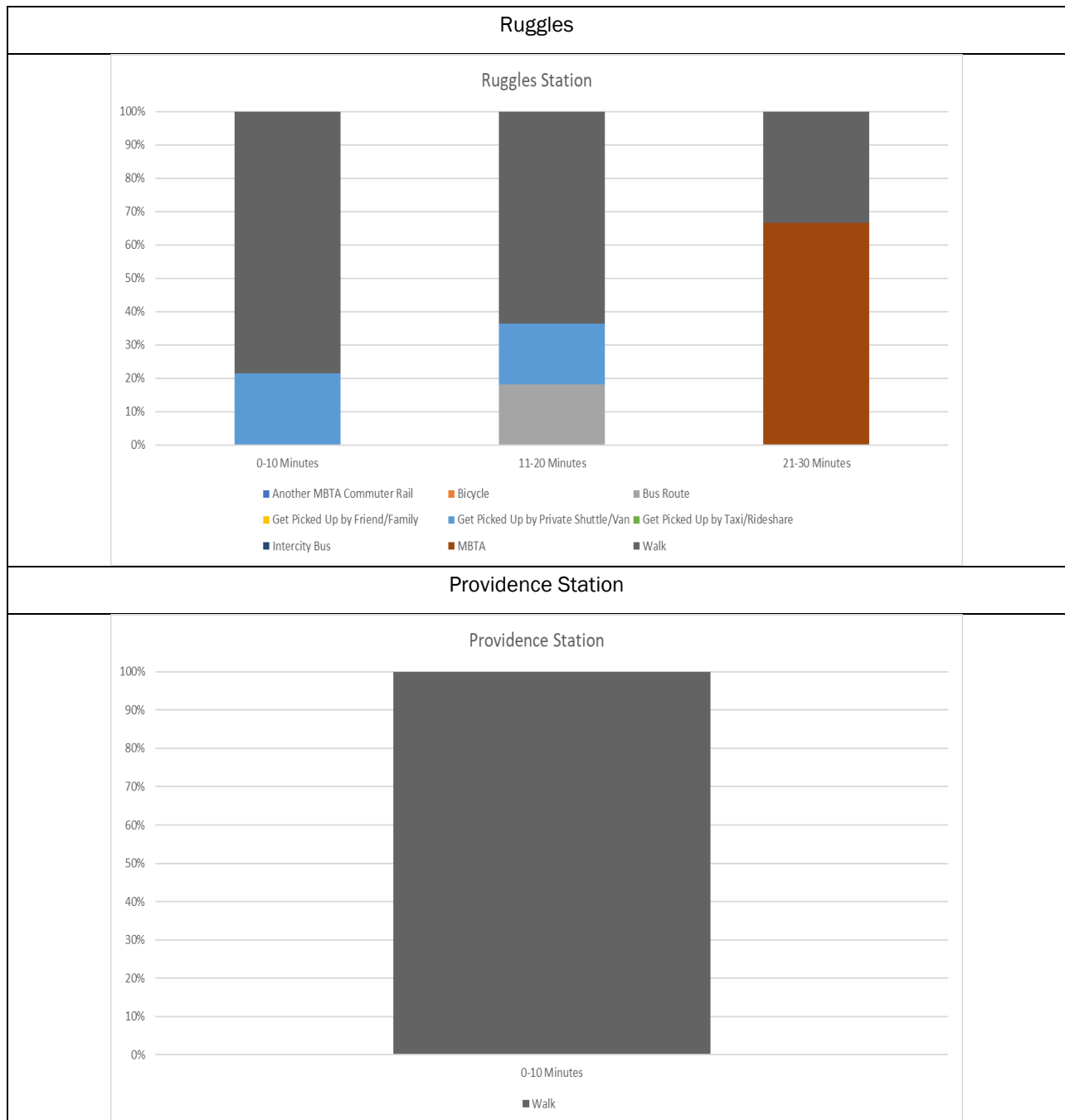
Egress time distributions from Back Bay were similar to South Station, with 97.2% completed within 30 minutes and 91.6% taking no longer than 20 minutes. One egress trip took between 31-40 minutes and another took between 51 and 60 minutes. At Ruggles, all egress trips to final destinations were completed in no more than 30 minutes and 88.9% of egress trips took no longer than 20 minutes. Aside from Providence Station, passengers alighting at Ruggles had the lowest average travel time to their final destinations. Those arriving to Providence Station en route to their final destination reported the lowest average egress times, with the last-mile journey completed in no more than 10 minutes.

Figure 16, which begins on the next page, displays the distribution of egress times for Inbound MBTA Commuter Rail riders at each of the top four alighting stations based on the alighting mode that was reported en route to the final destination. As seen in the figure, connections to other public transit

modes at the destination end, such as the MBTA Rapid Transit network and other Commuter Rail lines, account for the majority of egress times of significant lengths.

**Figure 16. Egress Time Distribution by Alighting Mode**

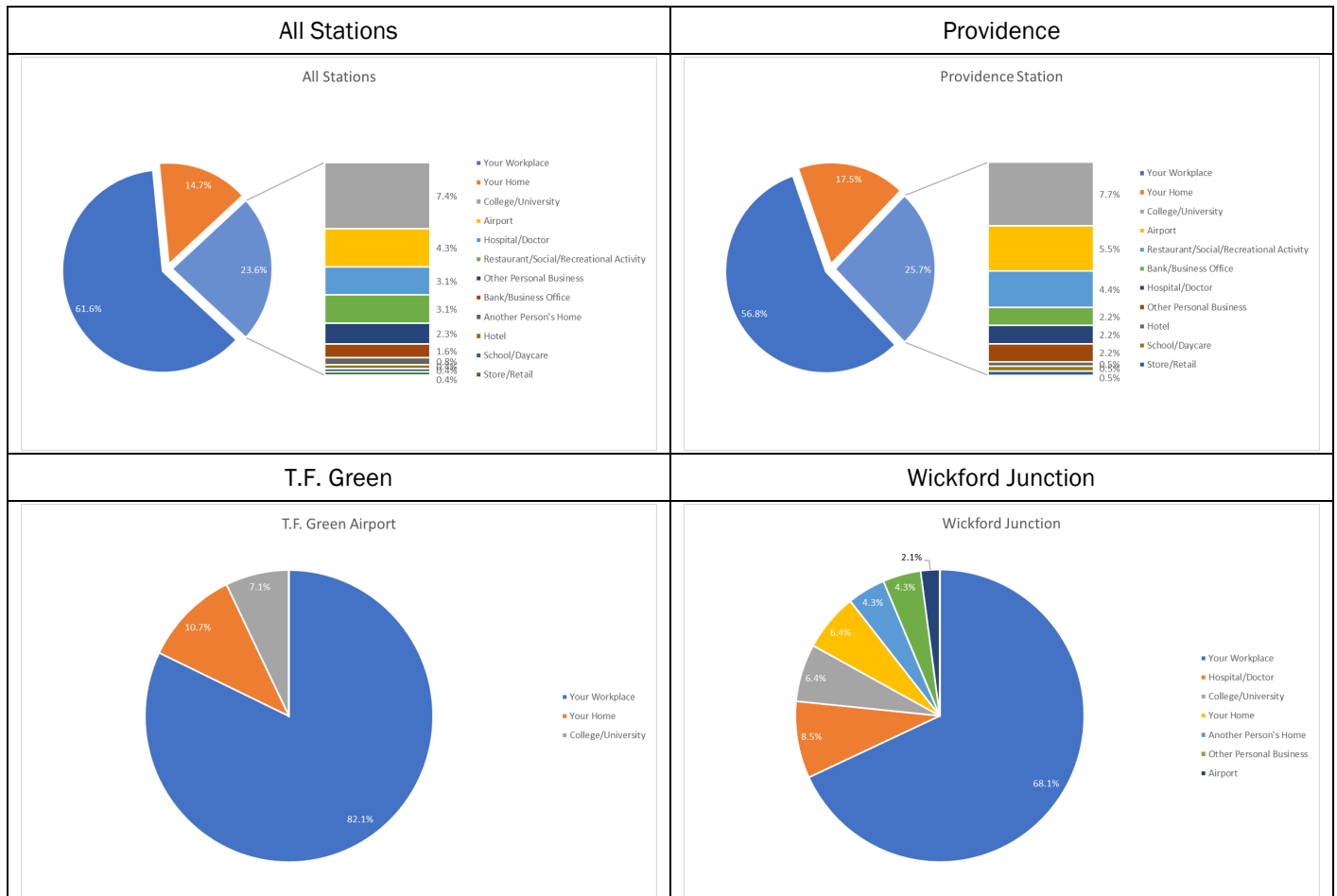




## 2.2.4 Destination Place Type

“What type of place is the FINAL DESTINATION of your current ONE-WAY trip?”

Figure 17. Destination Place Type by Origin Station



As seen in Figure 17, approximately six in 10 Inbound passengers (61.6% overall) reported “Your Workplace” as their final destination, with regional commute-based trips ranging from a high of 82.1% of Inbound respondents leaving from T.F. Green Airport to a low of 56.8% at Providence Station. “Your Home” was the second most popular destination place type for Inbound riders in Rhode Island (14.7% overall), ranging from a high of 17.5% at Providence Station to a low of 6.4% at Wickford Junction. This category reflects respondents that live in Massachusetts and use the service to conduct other activities, such as reporting to work, in Rhode Island. Consistent across each of the three stations, approximately one in every 20 Inbound passengers (7.4% overall) leveraged MBTA Commuter Rail connections in Rhode Island to reach a College/University destination, with a high of 7.7% for those leaving from Providence Station and a low of 6.4% for those departing Wickford Junction.

Responses for destination place type exhibited the widest variety among those beginning their Inbound Commuter Rail journey from Providence Station, with the least variation reported among those leaving from T.F. Green Airport. Providence Station and Wickford Junction also had sizable shares of passengers reporting Airport as their final destination (5.5% and 2.1%, respectively), with all of these

respondents indicating an end at Logan International Airport (4.3% of total). At Wickford Junction, trips to the Hospital/Doctor were the second most popular destination (8.5%), which demonstrates the capacity for this service to fulfill critical needs beyond commuting for work or education.

For a more detailed discussion of the responses to this question, refer to Section 4.2.1 (Weekday Use Frequency & Trip Purpose) on page 65.

## 2.2.5 Destination Location

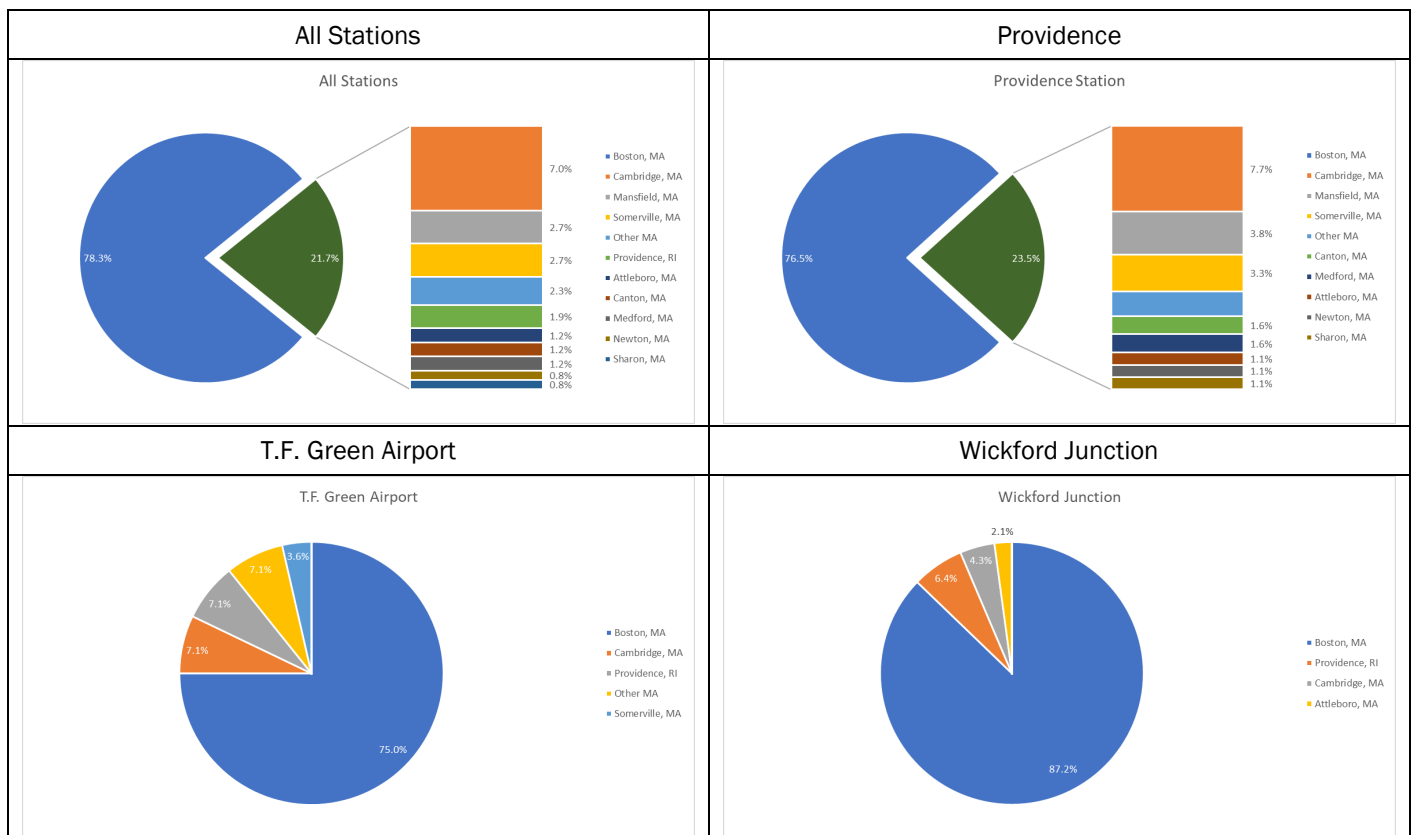
“Please tell us the nearest intersection or landmark of the one-way trip FINAL DESTINATION you checked above:”

### 2.2.5.1 Boarding Station

A series of maps showing the relative distribution of Inbound passengers’ destination locations by boarding station is provided, beginning on page 35. Figure 19 shows aggregates destination results for Inbound passengers boarding at stations within Rhode Island while Figure 20 through Figure 22 display the final destinations for those boarding at Providence Station, T.F. Green Airport, and Wickford Junction, respectively. It should be noted that the primary frame display municipal boundaries.

### Municipal Destinations

Figure 18. Destination Place by Municipality (Boarding Station)



To understand where Inbound passengers from each of the Rhode Island stations are ultimately destined, Figure 18 shows the distribution of destination municipalities by boarding station. For the Rhode Island segment as a whole, approximately nine in every 10 Inbound passengers (90.0%) were destined for places within the Boston region’s core. In addition to sites in Boston representing nearly three-quarters of respondents (78.3%), approximately one in every eight Inbound passengers (12.7%) leaving Rhode Island stations reported using the service to reach the adjacent cities of Cambridge, Somerville, Medford and Newton (7.0%, 2.7%, 1.2%, and 0.8%, respectively). Destinations located in other MBTA Commuter Rail communities in Massachusetts accounted for 7.9% of all responses,

including Mansfield (2.7%), Other Massachusetts (2.3%), Attleboro (1.2%), Canton (1.2%), and Sharon (0.8%). The remainder of the responses (1.9%) reflect local or “internal” trips that began at either T.F. Green Airport or Wickford Junction, and terminated at Providence Station.

At Providence Station, nearly nine in 10 Inbound respondents were headed to Boston (76.5%) or the neighboring cities (13.7%) of Cambridge (7.7%), Somerville (3.3%), Medford (1.6%), or Newton (1.1%). Eclipsing Somerville and two of other core communities, 3.8% of trips were destined for Mansfield. Aside from other Massachusetts Commuter Rail communities, including Canton (1.6%), Attleboro (1.1%), and Sharon (1.1%), other destinations within Massachusetts accounted for the remaining 2.2% of those who boarded in Providence.

One out of every four Inbound respondents (75.0%) who boarded from T.F. Green Airport was headed to a destination located within the City of Boston. Three destination categories each contributed 7.1% of the results, including the cities of Providence, Boston-adjacent Cambridge, and a group of other destinations in Massachusetts consisting of Belmont, Dedham, Quincy, and Wellesley. The neighboring City of Somerville accounted for the remaining 3.6% of destinations for those leaving T.F. Green.

Passengers boarding at Wickford Junction had the highest demand for trips to the regional center Boston (87.2%) and Cambridge (4.3%). This is the opposite of the previous passenger survey, where Wickford Junction had lower percentages of Boston-bound travelers than those that boarded at T.F. Green Airport or Providence Station. Local trips to Providence Station accounted for 6.4% of all boardings surveyed at Wickford Junction. One passenger reported traveling to Attleboro (2.1%) from Wickford Junction.

### ZIP Code Destinations

Similar to the origin ZIP codes for trips originating at Providence Station, respondents also shared a wide variety of destination ZIP codes for their Inbound Commuter Rail trip. The top destination ZIP codes for those boarding at Providence Station were in Boston’s Financial District, which includes South Station (02110; 16.9%), Boston’s Back Bay neighborhood, which includes Back Bay Station (02116; 12.6%), the neighborhood along Huntington Avenue in Boston, which includes part of the Longwood Medical Area (02115; 7.7%), Boston’s Seaport (02210; 7.1%), Boston’s Mission Hill neighborhood, which includes Ruggles Station (02120; 5.5%), and Harvard Square/West Cambridge (02138; 5.5%). Each of these ZIP codes had 10 or more respondents originating from them (i.e., represented over five percent of Inbound trips reported at Providence Station).

Continuing from Providence Station, 16 additional ZIP codes served as the destination location for more than one Commuter Rail trip. These ZIP codes correspond to the following neighborhoods: the Town of Mansfield (02048; 3.8%), the Beacon Hill neighborhood of Boston (02108; 3.8%), East Boston, which includes T.F. Green Airport’s regional competitor – Logan International Airport (02128; 3.8%), Boston’s Chinatown (02111; 3.3%), West End (02114; 3.3%), South End (02118; 2.7%), and Fenway/Kenmore neighborhoods (02215; 2.7%), the western portion of the City of Somerville (02143; 2.2%), the Town of Canton (02021; 1.6%), Kendall Square near the MIT campus (02142; 1.6%), the City of Medford (02155; 1.6%), the Prudential Center in Boston (02199; 1.6%), the Town of Attleboro (02703; 1.1%), the Town of Sharon (02067; 1.1%), portions of downtown Boston and the North End near Faneuil Hall (02109, 1.1%), and Boston’s Jamaica Plain neighborhood (02130; 1.1%).

At T.F. Green Airport, five destination ZIP codes were reported by two or more respondents. These include destinations popular among riders originating at Providence Station, such as Boston’s

Financial District, which includes South Station (02110; 21.4%), the neighborhood along Huntington Avenue, which includes part of the LMA (02115; 14.3%), Boston's Back Bay neighborhood, which includes Back Bay Station (02116; 10.7%), and Boston's Seaport (02210; 10.7%). Two internal Rhode Island trips from T.F. Green Airport Station terminated in downtown Providence (02903; 7.1%).

Destination ZIP codes for trips originating at Wickford Junction displayed patterns similar to the other stations, with 29.8% of trips destined for the Financial District, which includes South Station (02110), 17.0% for Back Bay, which includes Back Bay Station (02116), and 8.5% for Boston's Mission Hill neighborhood, which includes Ruggles Station (02210). The remaining six ZIP codes served as the destination of more than one trip. These include three internal Rhode Island trips from Wickford Junction to downtown Providence (02903; 6.4%), as well as journeys to Beacon Hill (02108, 6.4%), Boston's Chinatown (02111, 4.3%) and West End neighborhoods (02114, 4.3%), the neighborhood along Huntington Avenue adjacent to the LMA (02115; 4.3%) and East Boston – home to Boston's Logan International Airport (02128, 4.3%).

Figure 19. Inbound Passenger Destinations by Boarding Station – All Stations

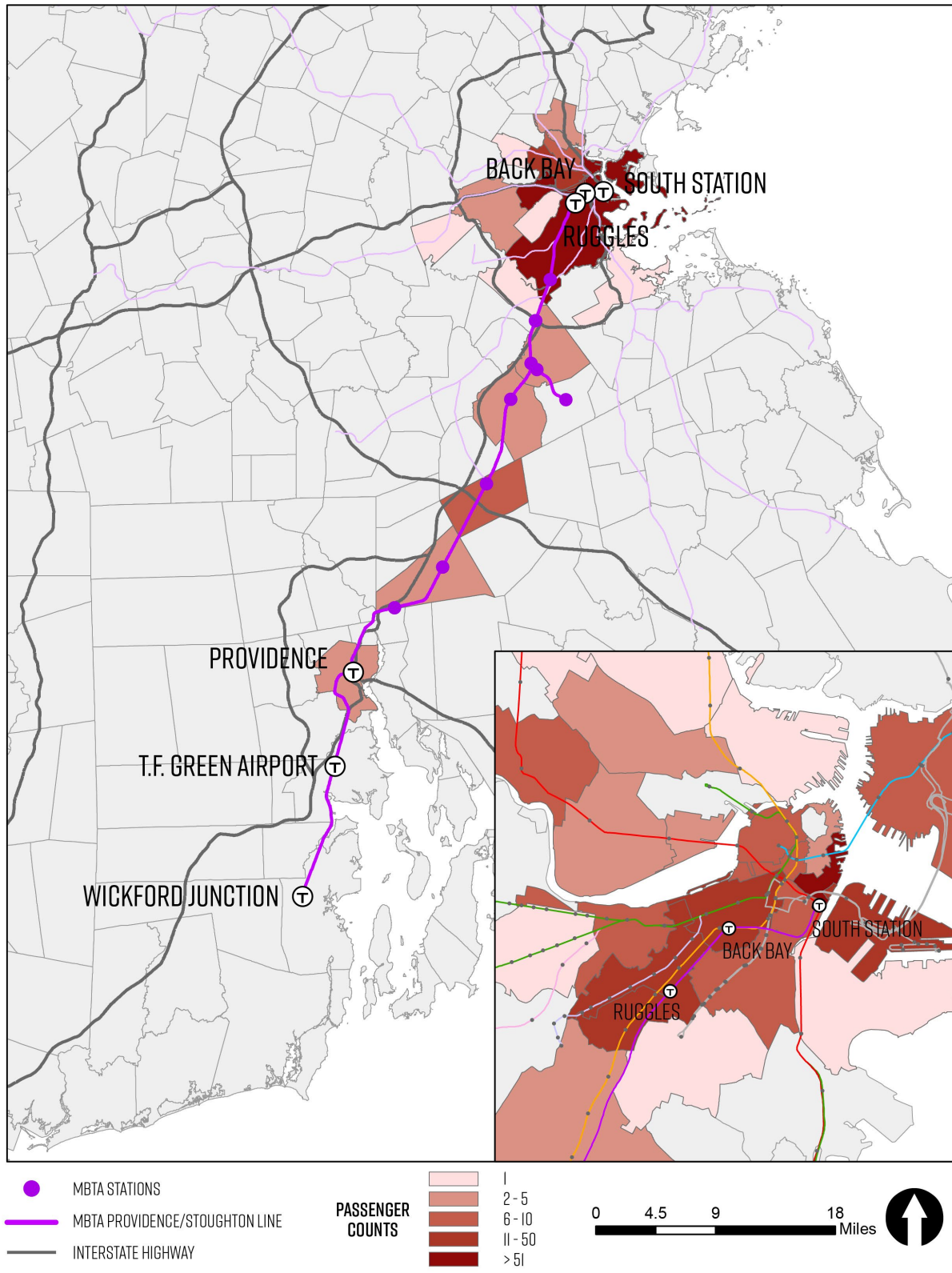


Figure 20. Inbound Passenger Destinations by Boarding Station – Providence Station

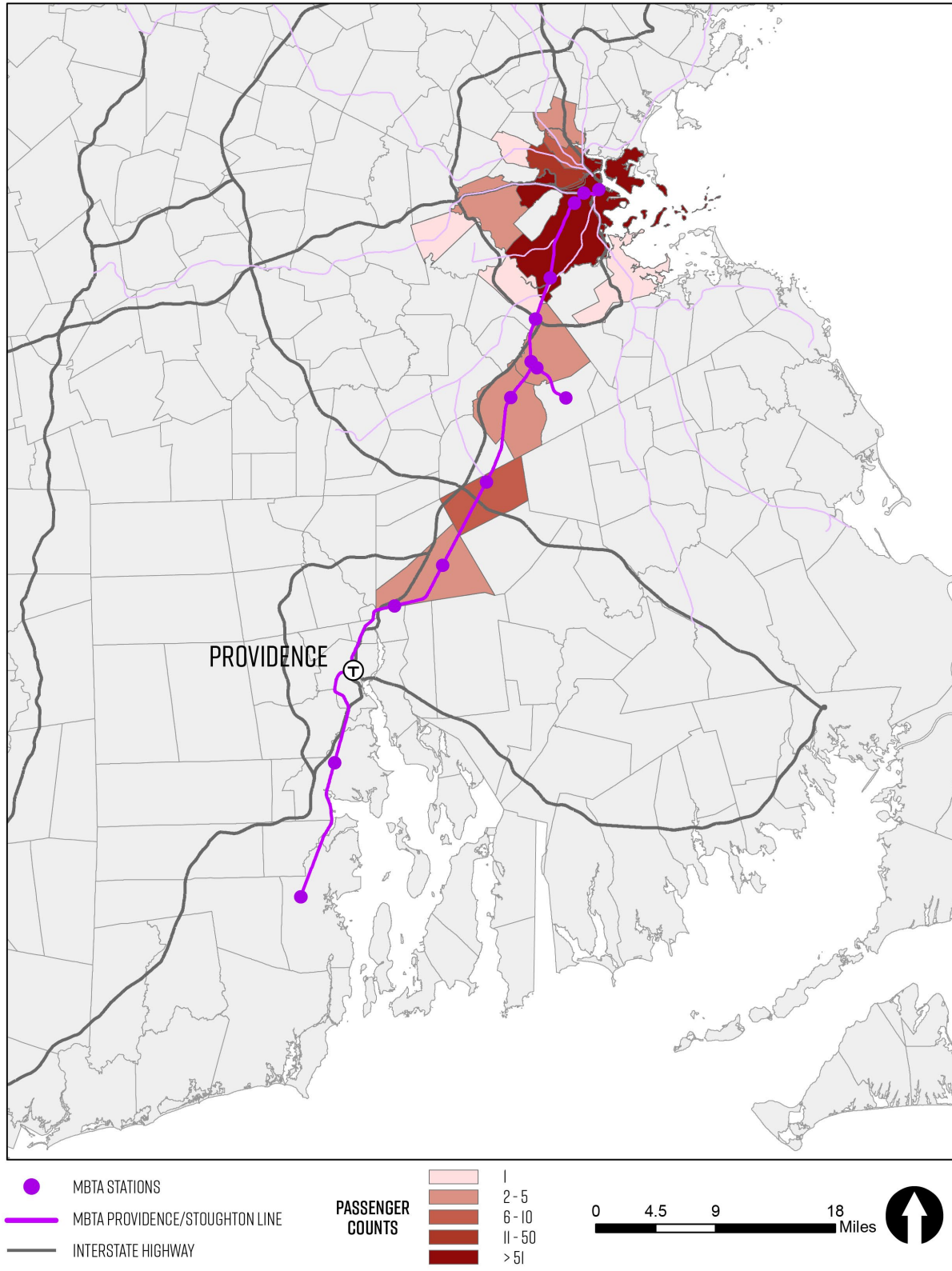


Figure 21. Inbound Passenger Destinations by Boarding Station – T.F. Green Airport

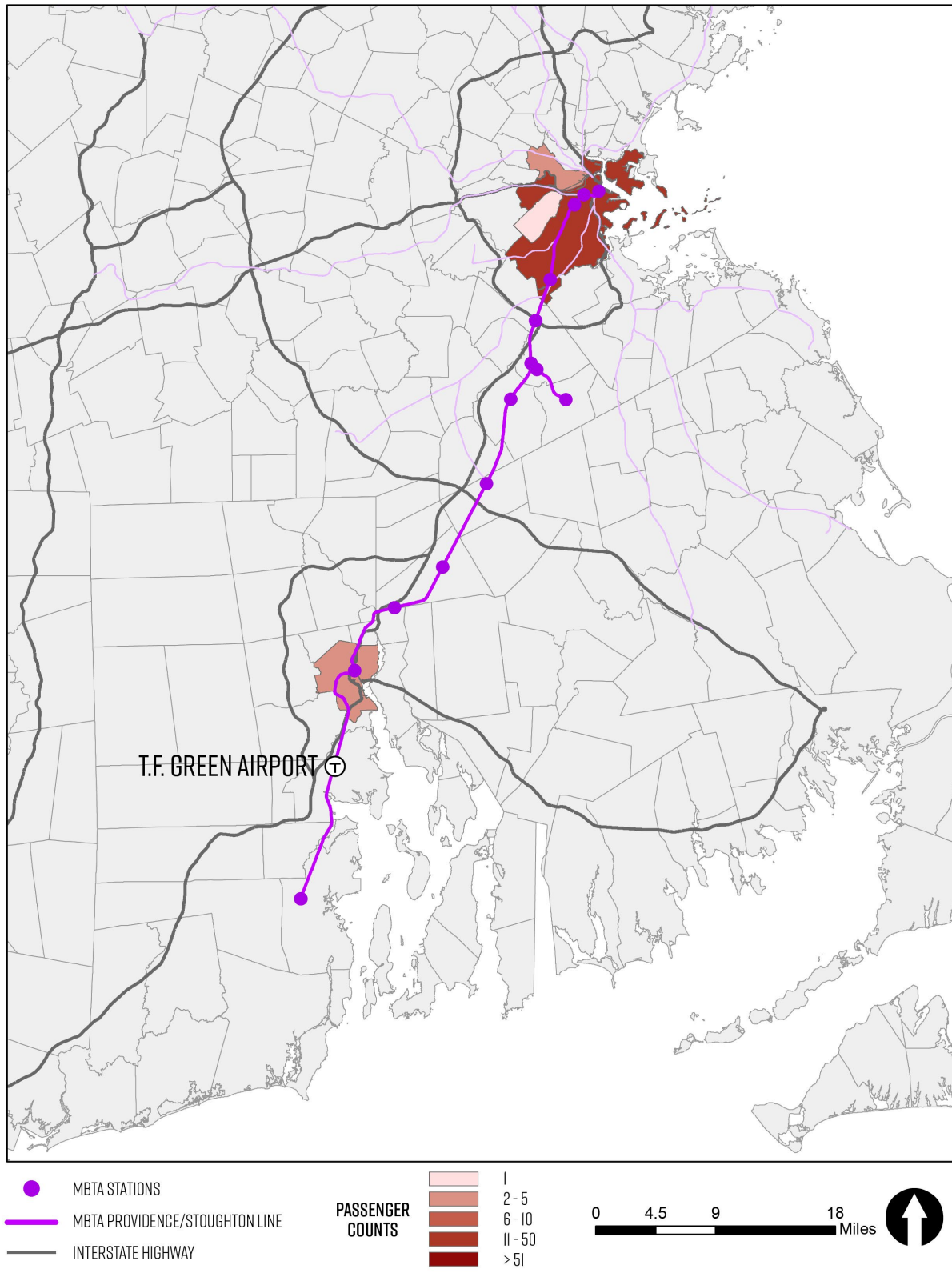
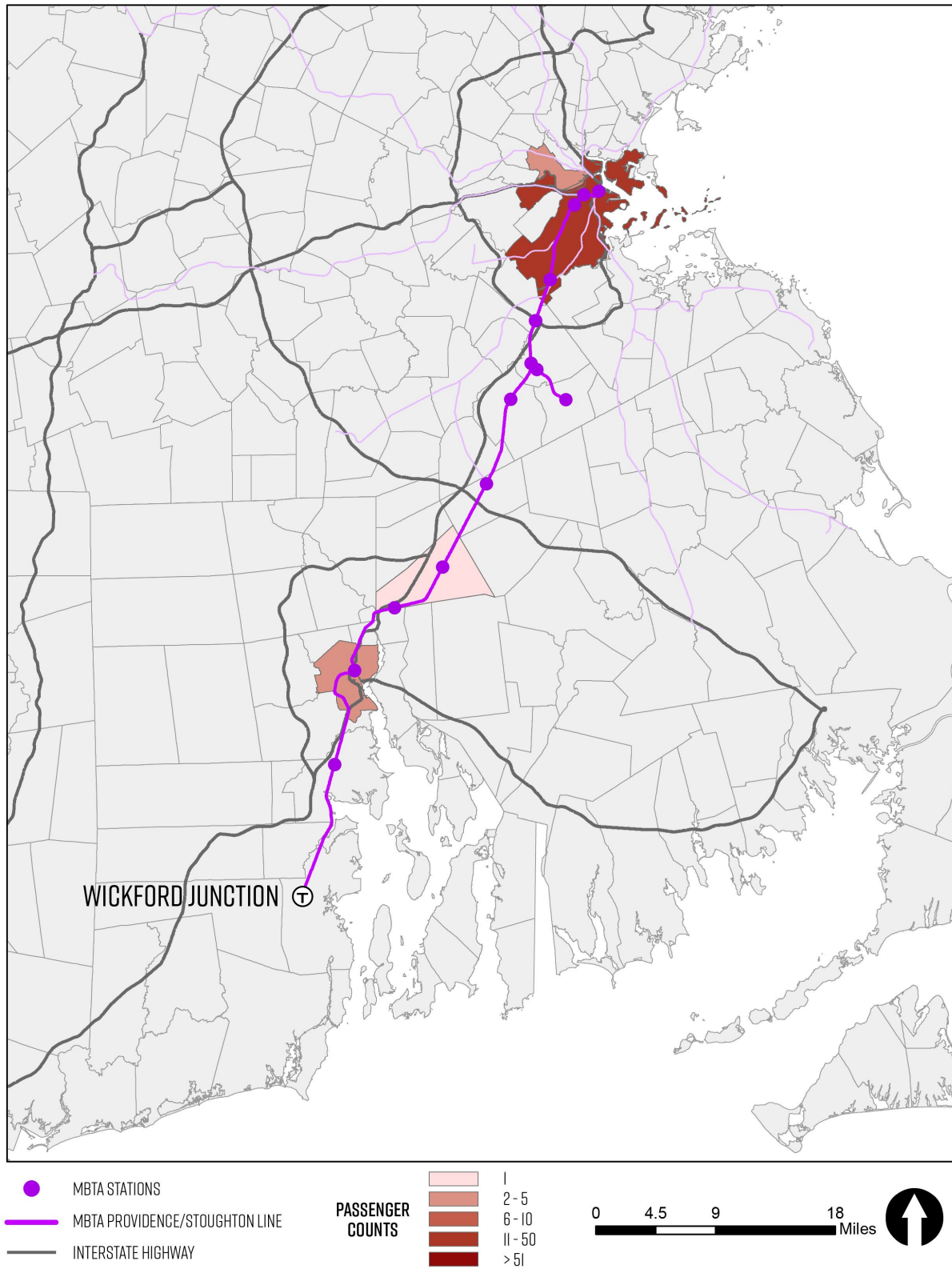


Figure 22. Inbound Passenger Destinations by Boarding Station – Wickford Junction



### 2.2.5.2 Alighting Station

A series of maps showing the relative distribution of Inbound passengers' final destinations based on the top four alighting stations is provided, beginning on the next page. Figure 23 shows aggregated destination results for those boarding along the Rhode Island segment of the Providence/Stoughton Line while Figure 24 through Figure 26 display the destinations for those alighting at South Station, Back Bay, and Ruggles, respectively. To reiterate, the map inset reflects ZIP code-level geographies while those in the primary frame display municipal boundaries.

The destination neighborhoods for Inbound Commuter Rail passengers traveling to Boston from Rhode Island were more varied, which reflects a comparatively denser array of destinations and an easier level of non-motorized access available at the destination end. The top ZIP codes for those alighting at South Station were in the nearby Financial District and Waterfront (02110; 37.0%), Seaport (02210; 37.0%), West Broadway/South Boston (02210; 14.8%), Jeffries Point/East Boston (02128; 6.7%), Beacon Hill (02108; 5.9%), and Cambridge's Central Square/MIT campus (02138). Three other neighborhoods – Chinatown (02111), the West End/Beacon Hill (02114), and Kendall Square (02142) – each attracted between 3.7 – 4.4% of Inbound respondents.

The top ZIP codes for passengers alighting at Back Bay Station were its namesake neighborhood (02116; 43.7%), the Longwood/Huntington Ave. area (02115; 8.5%), the South End (02118; 5.6%) and the West End (02114; 4.2%). Two of these ZIP codes – Longwood and the South End – are geographically closer to the facility at Ruggles compared to Back Bay, especially for Rhode Island riders coming from the South.

Prior to April 5, 2021, there was inadequate infrastructure at Ruggles Station to accommodate additional train service. The delivery of Phase I of MBTA's [Ruggles Station Improvements](#) resulted in the installation of a new side platform that was intended to enable a 60% increase in daily service at the LMA-proximate facility. This 2022 survey deployment reflects the first time that all Inbound trains stopped at Ruggles Station, which had been a rally cry of previous respondents in the 2016 and 2019 passenger surveys. The top ZIP code destinations for Rhode Island-based Commuter Rail passengers who alight at Ruggles are the Longwood/Huntington Ave. area (02115; 48.1%), followed by Roxbury (02120; 25.9%) and the Fenway/Commonwealth Ave. neighborhood (02215; 11.1%).

All of local or "internal" Commuter Rail trips destined for Providence Station end at the ZIP code containing the train station (02903; 100.0%).

Figure 23. Inbound Passenger Destinations by Alighting Station – All Stations

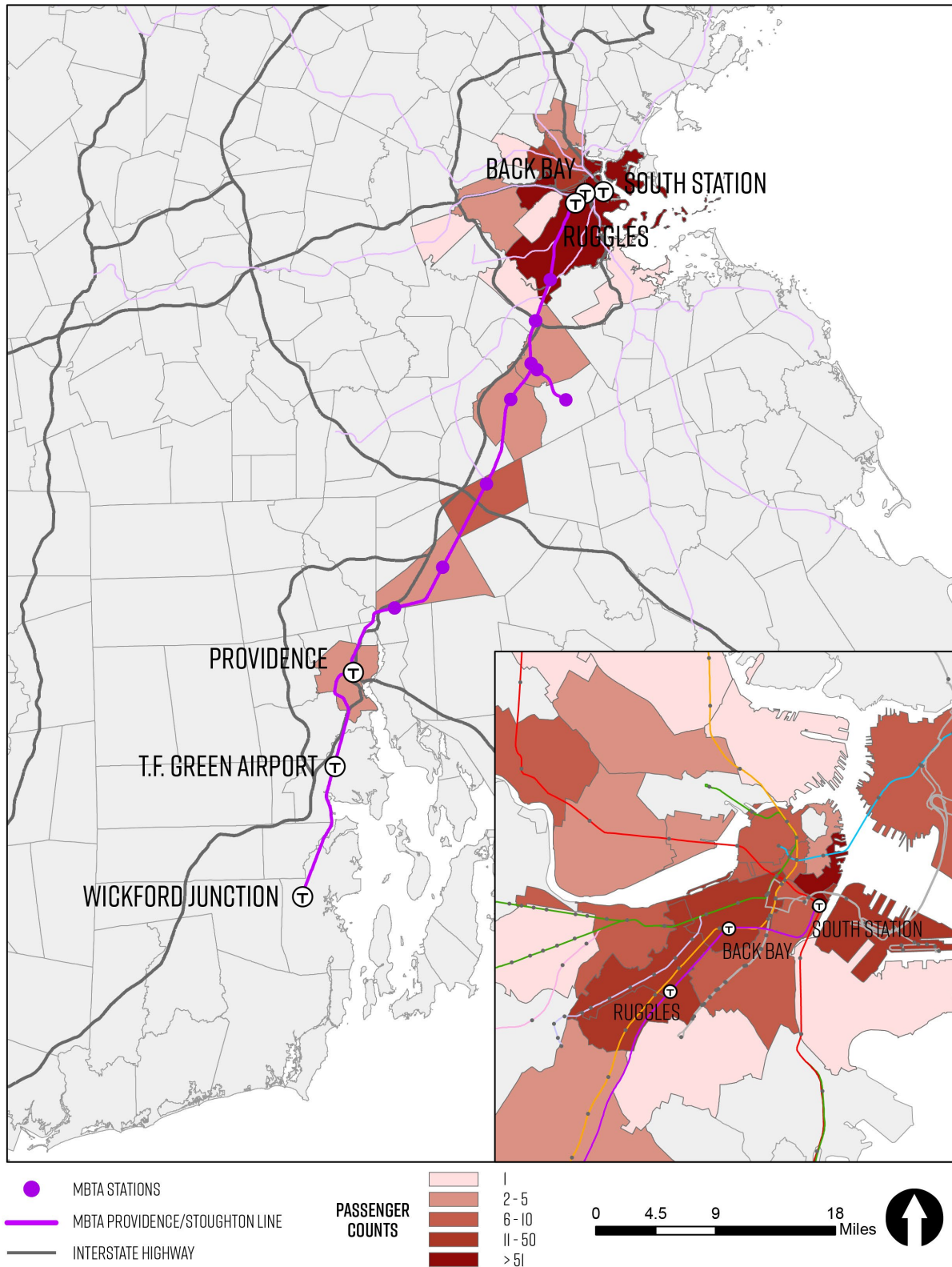


Figure 24. Inbound Passenger Destinations by Alighting Station – South Station

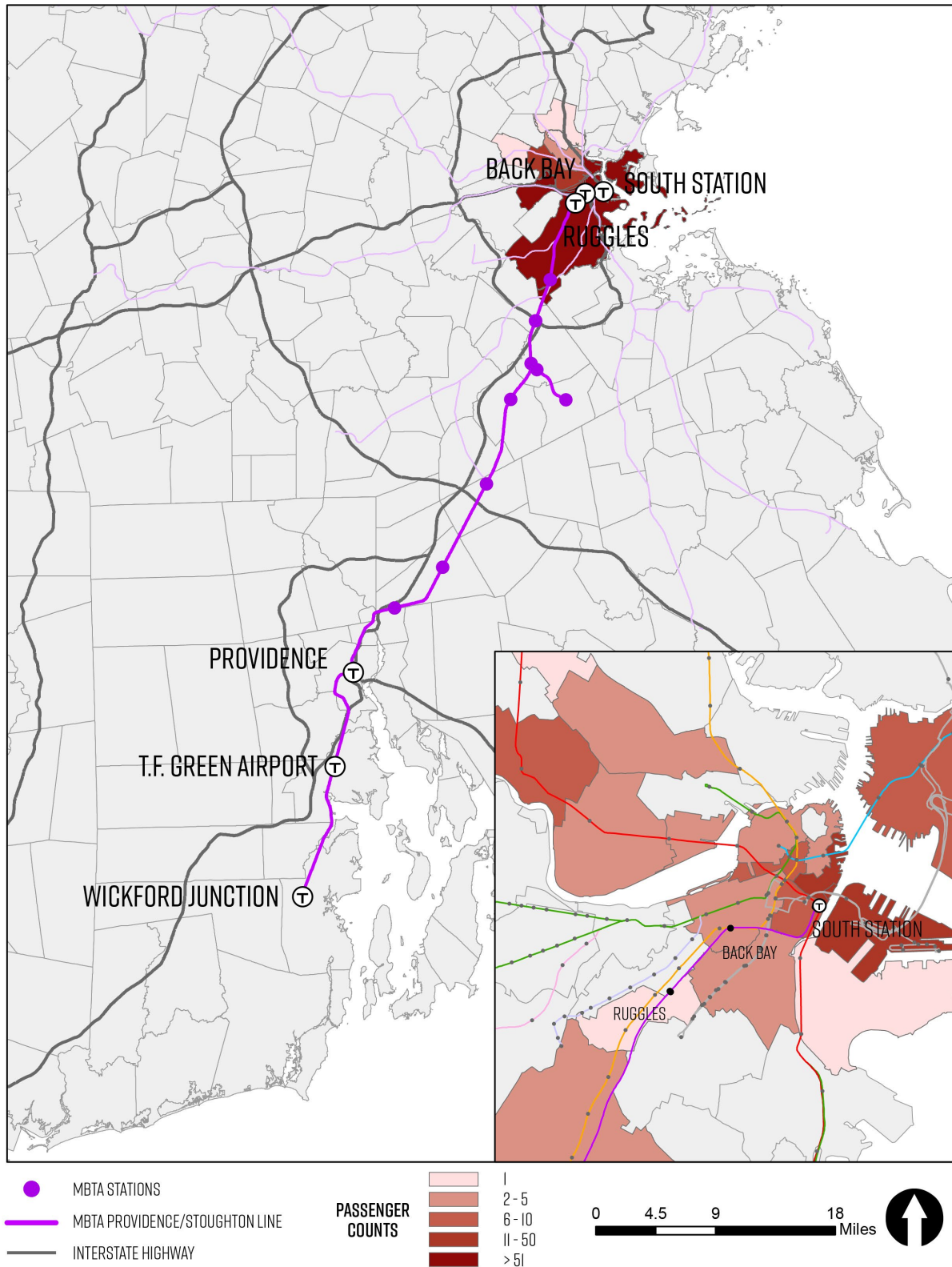


Figure 25. Inbound Passenger Destinations by Alighting Station – Back Bay

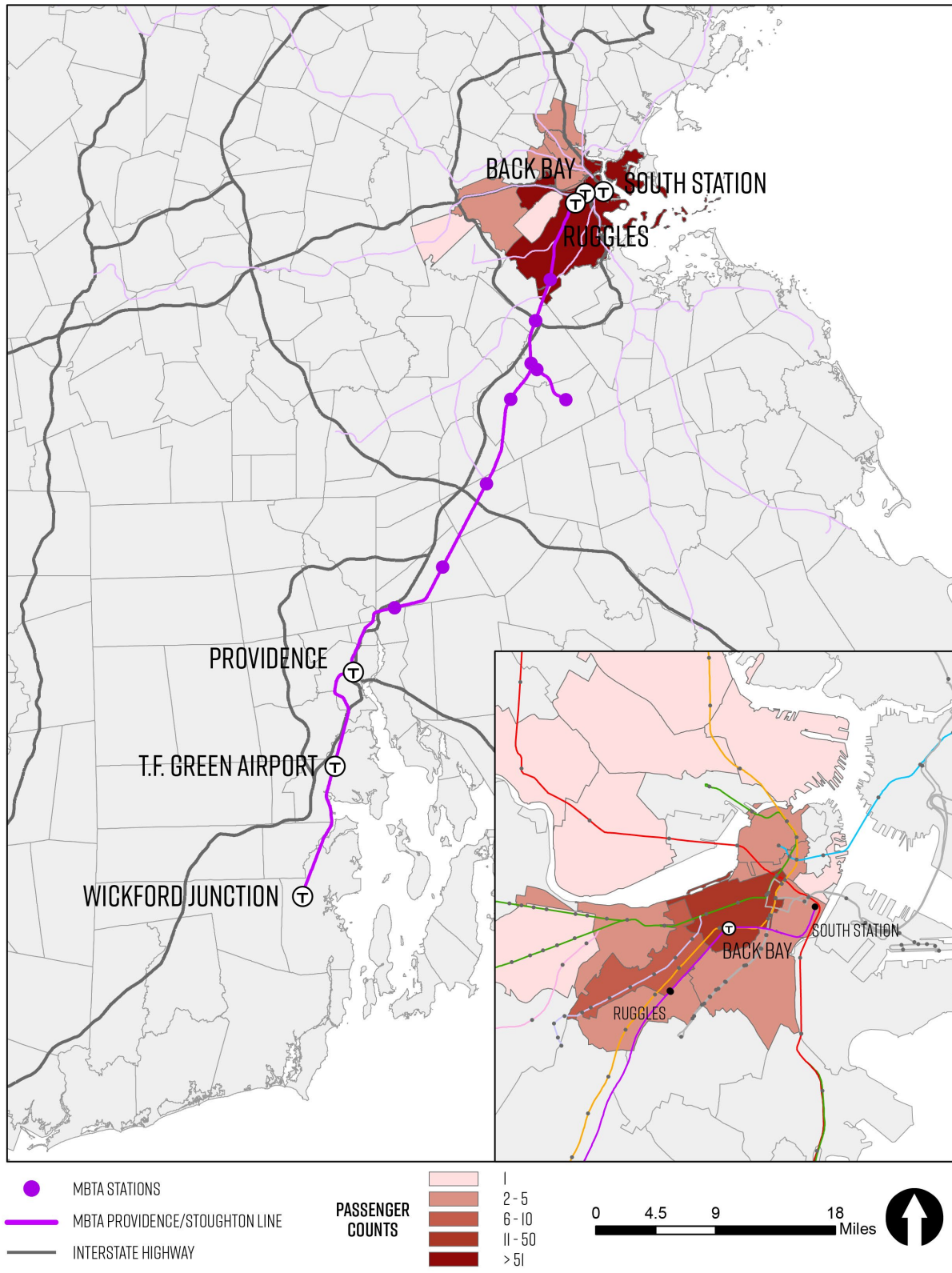
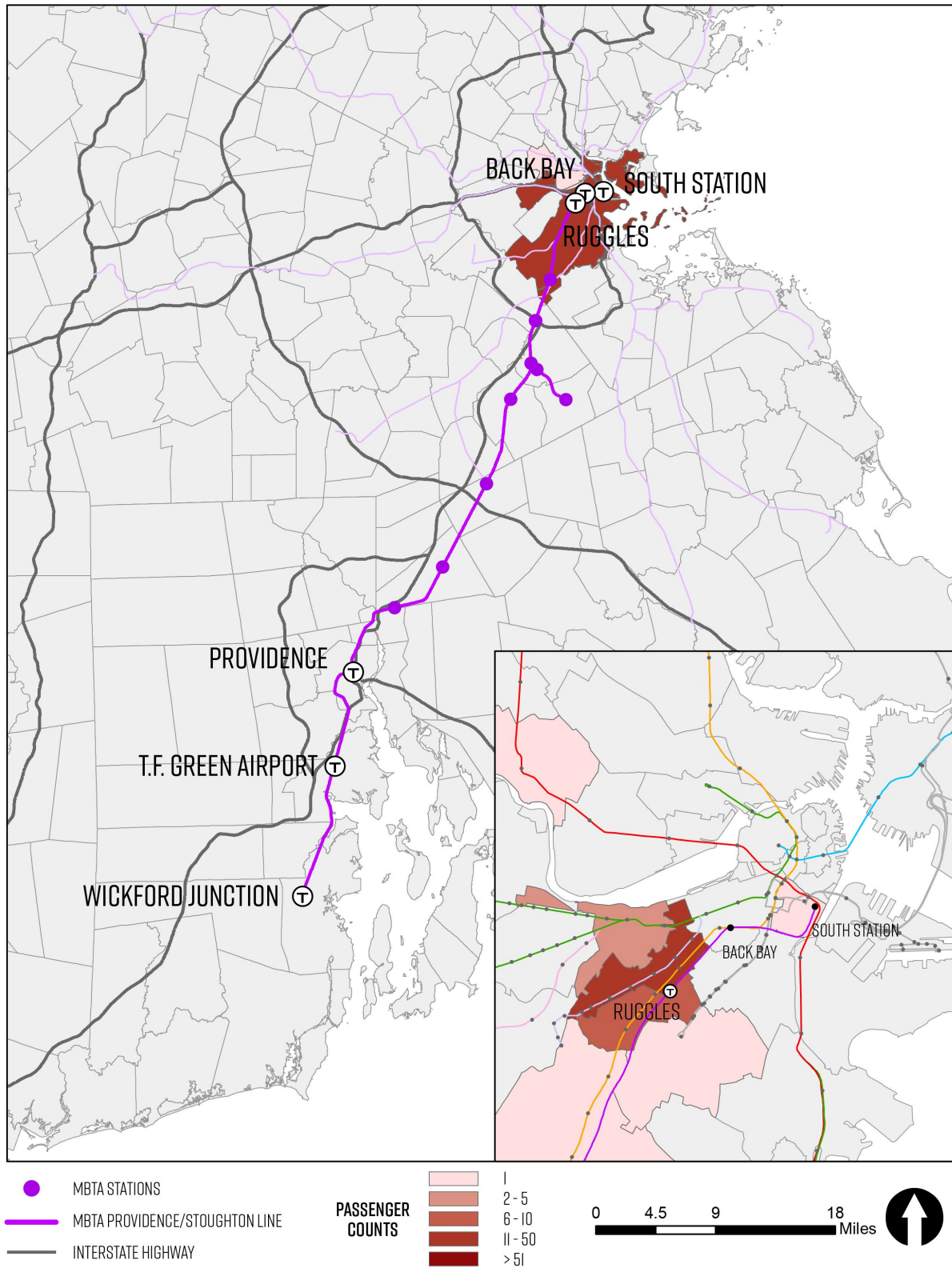


Figure 26. Inbound Passenger Destinations by Alighting Station – Ruggles



### 3 Demographic Information

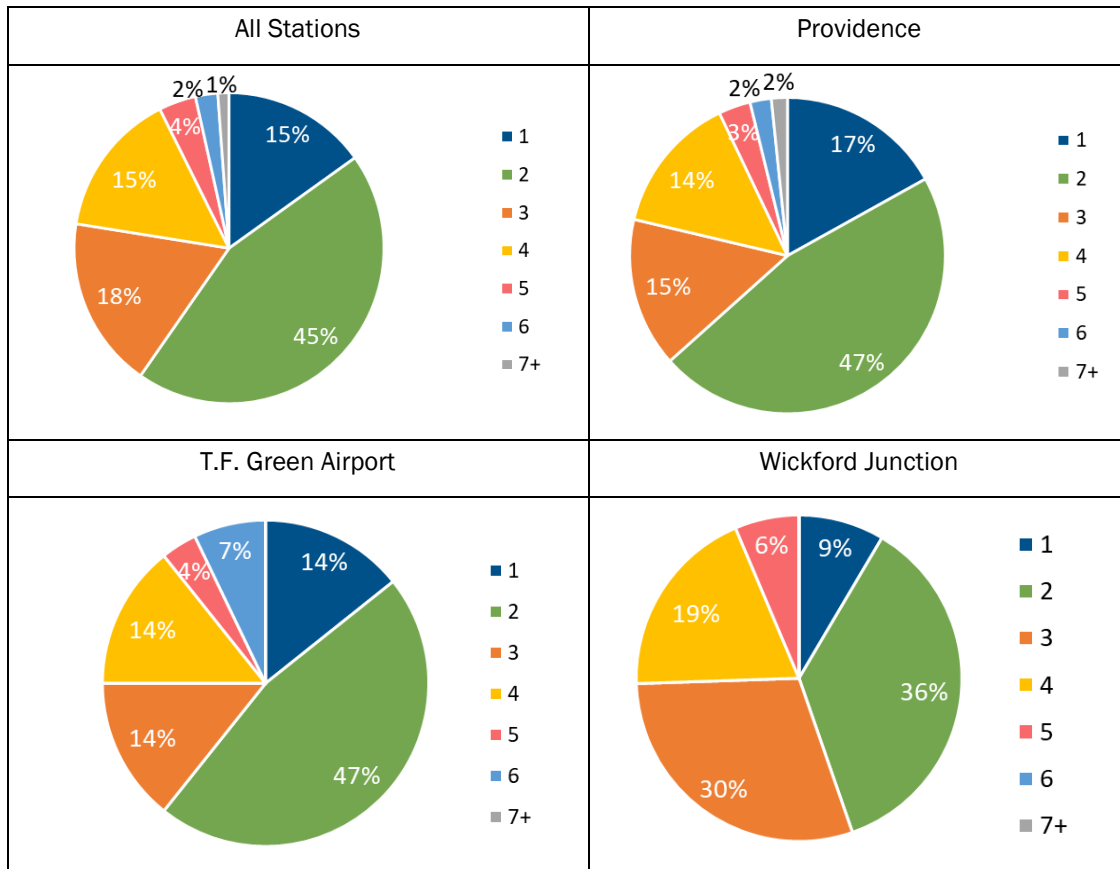
This section reviews answers to Questions 17-28 of the OBS, which focused on Inbound MBTA Commuter Rail riders' socio-demographic characteristics (e.g., individual traits like age and race, along with household income and access to vehicles), linguistic proficiency and preference, access to a smartphone and driver's license, and the extent to which COVID-19 and similar health pandemics influence a rider's propensity to use transit services.

As cautioned in Section 1.2 – Response Rate and Confidence Level, the socio-demographic traits presented in this chapter can be confidently generalized to a margin of error nearly 5% (94.5% confidence interval) for the typical Inbound MBTA Commuter Rail passenger leaving from Rhode Island. Similarly, the sample collected at Providence Station was robust enough to generalize station-level socio-demographic attributes to a margin of error less than 10% (93.4% confidence interval). Although the sample sizes obtained at T.F. Green Airport and Wickford Junction were not sufficient to attain a 90% confidence interval, the results can, nevertheless, be generalized within a margin of error of approximately 84% and 89%.

### 3.1 Household Size

“How many people are in your household (including yourself)?”

Figure 27. Household Size by Boarding Station



On the Providence Line as a whole, 85% of respondents surveyed stated that they share a household with at least one other person while 15% reported living by themselves. As seen in Figure 27, the most common response was a two-person household (45%), followed by three- (18%), and four-person households (15%). Approximately 7% of the survey population lived in a household with at least five members.

Apart from a slightly higher concentration of smaller households (one- or two-person), as well as very large (seven-or-more-person) households, the household size distribution for Providence Station was similar to that of the Rhode Island segment (average of 2.49 versus 2.45 persons per household), and slightly higher than in 2019 survey (2.46). On average, respondents boarding from stations further south reported living in larger households compared with those boarding at Providence Station, with T.F. Green Airport at 2.67 persons per household and Wickford Junction at 2.79.

T.F. Green Airport had a similar pattern to Providence Station, with a slightly lower proportion of single-person households (14%). However, relative to Providence and the state as a whole, Inbound respondents boarding from T.F. Green Airport reported living in larger households (i.e., 11% with at least five individuals, including five-person households accounting for 4% and six-person households at 7%). Compared to the other two stations and the state as a whole, where approximately 60% of

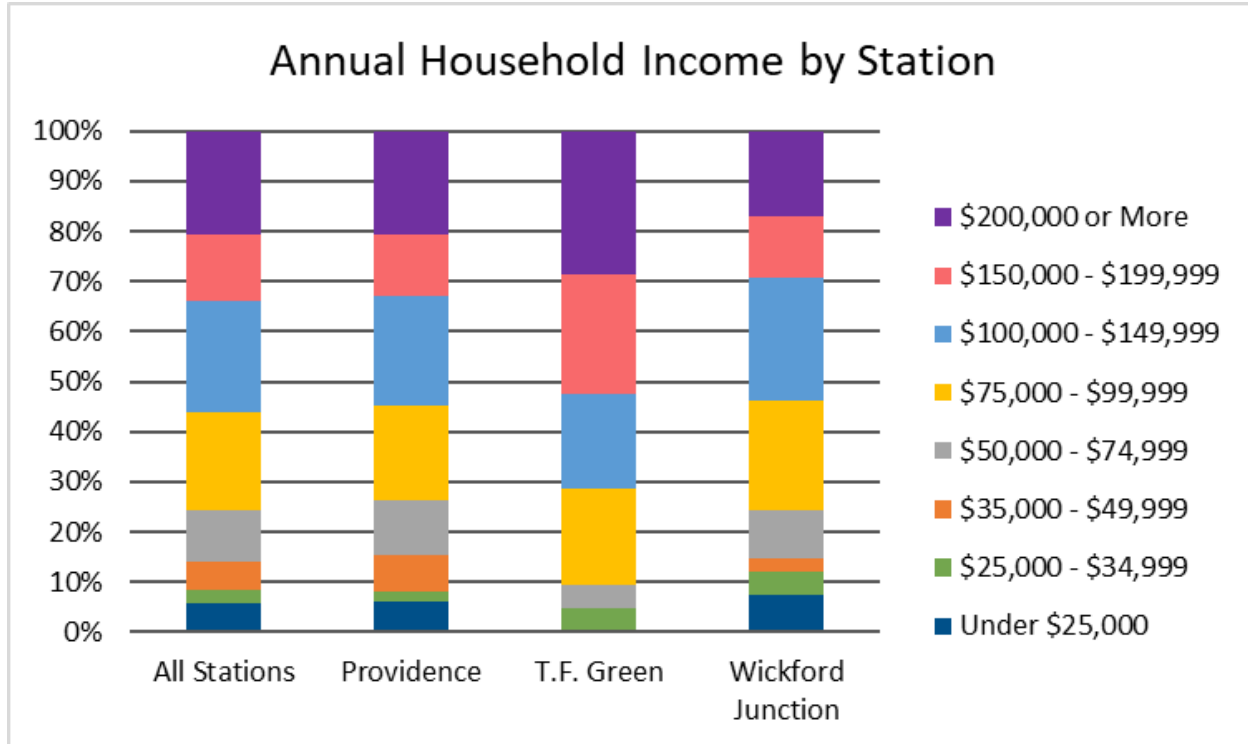
respondents reported living in one- or two-person households, the defining characteristic at Wickford Junction was a strong representation (55%) from household sizes associated with the traditional nuclear family, including three- (30%), four- (19%), and five-person households (6%).

### 3.2 Household Income

*“What is your annual combined household income (before taxes)”?*

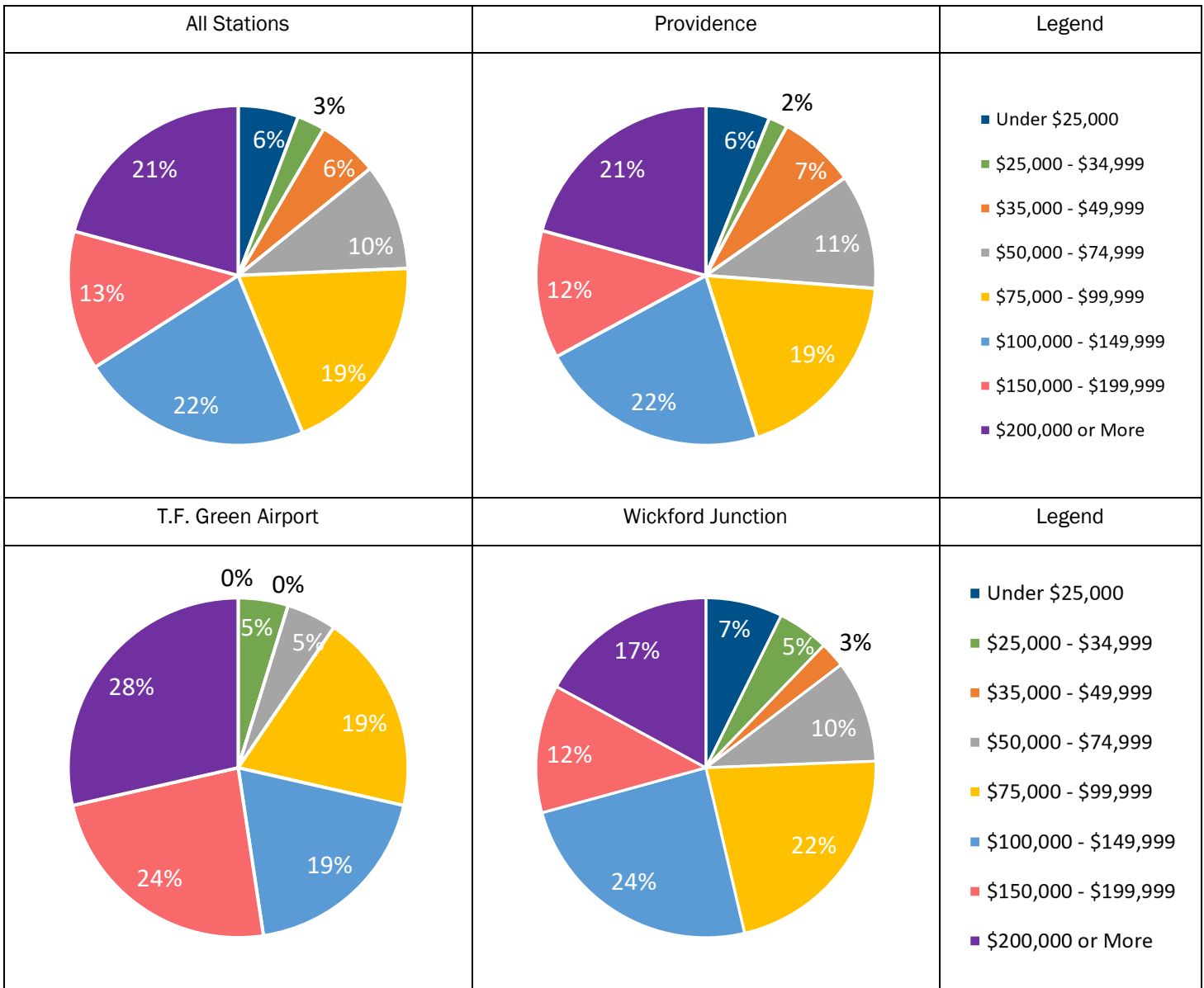
Figure 28 compares the relative share of each household income bracket for the Rhode Island segment of the Providence/Stoughton Line, as well as each of the three boarding stations surveyed, while Figure 29 reports the proportions of each household income bracket.

Figure 28. Distribution of Household Income by Boarding Station



Low-income households constituted approximately one out of every 20 Inbound survey respondents, with 15% of all riders reporting incomes of less than \$50,000 for the line as a whole, including the same proportion at both Providence Station and Wickford Junction. In aggregate, this is a substantial increase relative to the 2019 survey (9% or an increase of two-thirds), with a doubling of those earning less than \$25,000 (6% compared to 3% in 2019). Nearly three-quarters (74%) of Inbound passengers surveyed along the Rhode Island segment reported an annual household income of at least \$75,000, compared to a 2019 finding of 79%. High-wage households accounted for over half of Inbound riders, but contributed a smaller proportion than in 2019 (i.e., 56% reported annual household incomes of at least \$100,000 versus previous 64%).

Figure 29. Household Income by Boarding Station



Aside from a 4% gain among those with annual household incomes less than \$50,000, the results at Providence Station closely resembles those along the line as a whole. The increase in low-income households reporting at Providence Station (15% compared to 11% in 2019) stems from 2% gains in both the Under \$25,000 and the \$35,000-49,999 annual income categories. The distribution of household incomes at Providence Station and Wickford Junction is remarkably similar given the stark contrast in density and mix of land uses that surround the two facilities, with Wickford Junction featuring a slightly lower proportion of those living in very high-wage households (i.e., 21% making \$200,000 or more at Wickford Junction versus 17% at Providence). Those boarding from T.F. Green Airport indicated the highest household incomes, with 52% reporting earning at least \$150,000 or more versus 29% at Providence, 33% at Wickford Junction, and 34% along the line as a whole. In fact, approximately 28% reporting from T.F. Green Airport stated an income of \$200,000 or more.

The following list provides an estimate of station-level average household income based on weighting each response by the midpoint of the specific household income value and rounding the result to the nearest thousand dollars.<sup>3</sup> It should be noted that the values below simply reflect incomes reported by those boarding Inbound from Rhode Island and do not necessarily reflect the socio-economic characteristics of residents living adjacent to the three stations (i.e., not all respondents surveyed had left their home prior to arriving at the boarding station).

- Rhode Island Segment of Providence/Stoughton Line: \$125,000
- Providence Station: \$124,000
- T.F. Green Airport: \$151,000
- Wickford Junction: \$120,000

Among three stations, T.F. Green had the highest average annual household income at approximately \$151,000 compared to the survey population's overall average of \$125,000. Providence Station's average household income was similar to the overall trend ((approximately \$124,000) while Wickford Junction reported the lowest value of \$120,000. It should be noted that the values below simply reflect incomes reported by those boarding Inbound from Rhode Island and do not necessarily reflect the socio-economic characteristics of residents living adjacent to the three stations (i.e., not all respondents surveyed had left their home prior to arriving at the boarding station).

Compared to the responses obtained in 2019, distribution of household income among those leaving from T.F. Green Airport station and Wickford Junction changed substantially, but Providence Station remained relatively consistent. At T.F. Green Airport, there was greater representation from those with higher earnings (52% with at least \$150,000 annually versus 28% in 2019). A similar reversal was observed at Wickford Junction, with 29% reporting at least \$150,000 annually compared with 63% reporting in 2019. Among three stations, T.F. Green had the highest average annual household income at approximately \$151,000 compared to the survey population's overall average of \$125,000. Providence Station's average household income is approximately \$124,000 while Wickford Junction's value is the lowest of \$120,000.<sup>4</sup>

As is common for passenger surveys, household income was the most frequently refused question, with an overall refusal rate (12%) similar to that observed in 2019 (13%).

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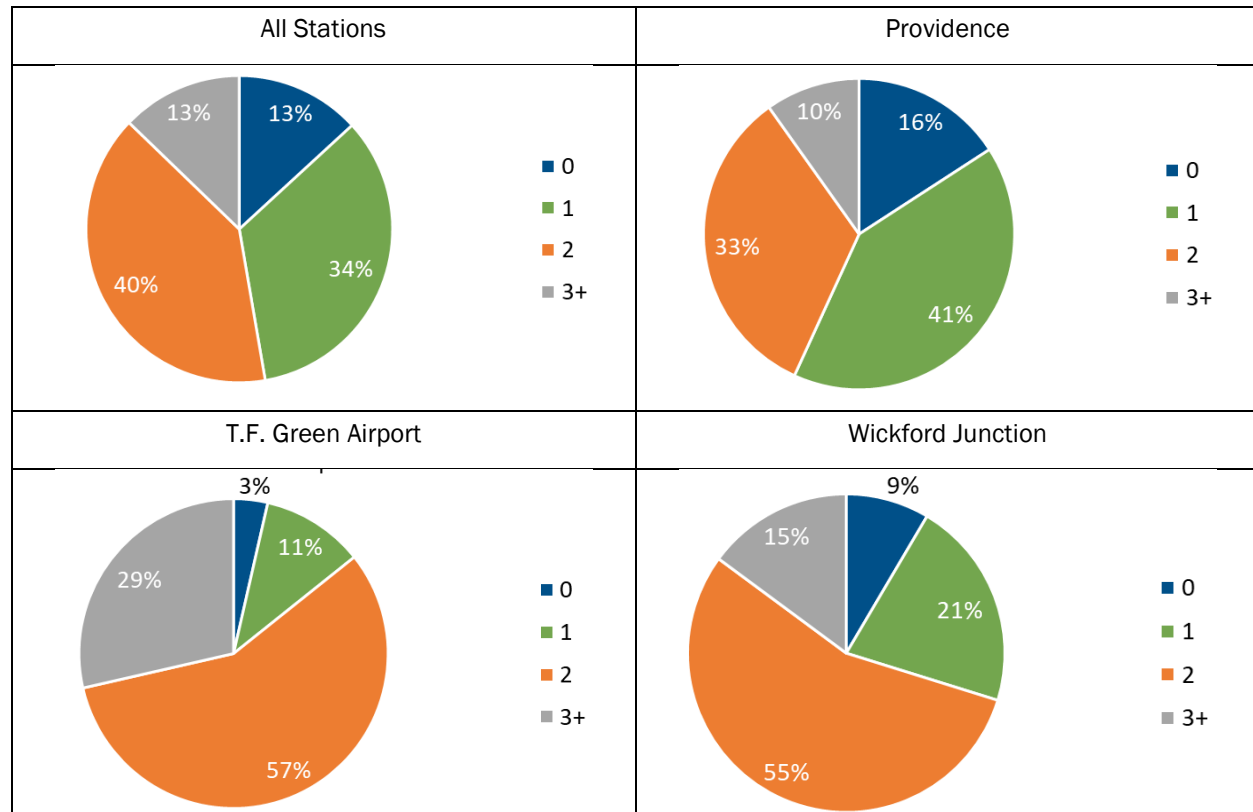
<sup>3</sup> Calculations of average annual household income were based on the midpoint of each income range/choice, as well as specific values of \$20,000 for Under \$25,000 and \$225,000 for \$200,000 or More.

<sup>5</sup> Calculations of average automobile ownership rates were based on the number of vehicles reported in each answer choice and did not incorporate/reference household size. This helped minimize the influence of the 3+ usable vehicles option, which was assigned a default value of 3.5 vehicles per household .

### 3.3 Household Usable Vehicles

*“How many usable vehicles does your household have access to?”*

Figure 30. Household Vehicles Available by Boarding Station



Of the Inbound weekday passengers boarding in Rhode Island, 87% responded that they had at least one usable (i.e., it reliably starts and is capable of safe operation) vehicle within their household. As seen in Figure 30, the most common response in aggregate was two usable vehicles (40%), followed closely by one usable vehicle (34%). Approximately one in eight (13%) of Inbound respondents reported three or more usable vehicles in the household. The automobile ownership rate was similar to, but slightly lower than, the level reported in 2019 (1.59 vehicles versus 1.65).<sup>5</sup>

The COVID-19 pandemic seems to have impacted commute choices, with responses at each station surveyed consistently reflecting greater representation by those with no usable vehicles available (13% overall compared to a 2019 value of 10%). Among the stations, Wickford Junction (9% with zero usable vehicles versus 2% in 2019) showed the greatest increase; however, changes among those boarding at Providence Station were also noteworthy (16% compared to previous 12%). These trends likely suggest a momentary change in the appetite for MBTA Commuter Rail services among a select portion

<sup>5</sup> Calculations of average automobile ownership rates were based on the number of vehicles reported in each answer choice and did not incorporate/reference household size. This helped minimize the influence of the 3+ usable vehicles option, which was assigned a default value of 3.5 vehicles per household.

of “choice” riders who have sufficient vehicles available in their household to complete their trip and, owing to dramatic changes to daily life brought on by the onset of the COVID-19 pandemic, have at least temporarily shifted to driving instead of using public transit.

Providence Station had the highest proportion of zero-vehicle households (16%), followed by Wickford Junction (9%). Only 3% of respondents at T.F. Green Airport were members of a zero-vehicle household. At Providence Station, the relatively higher share of zero- and one-vehicle households is more likely a function of comparatively higher development densities in and around downtown, as well as inner core residents’ desire for car-free or car-light living, than it is attributable to household income. Respondents boarding further south, had higher proportions of two or more usable vehicles (86% at T.F. Green Airport and 70% at Wickford Junction versus 43% at Providence).

### 3.4 Driver's License

*"Do you currently have a driver's license?"*

**Table 5. Driver License by Boarding Station**

| Driver License | ALL STATIONS |               | PROVIDENCE |               | T.F. GREEN AIRPORT |               | WICKFORD JUNCTION |               |
|----------------|--------------|---------------|------------|---------------|--------------------|---------------|-------------------|---------------|
|                | Count        | % of Riders   | Count      | % of Riders   | Count              | % of Riders   | Count             | % of Riders   |
| Yes            | 234          | 90.7%         | 161        | 88.0%         | 28                 | 100.0%        | 45                | 95.7%         |
| No             | 24           | 9.3%          | 22         | 12.0%         | 0                  | 0.0%          | 2                 | 4.3%          |
| <b>TOTAL</b>   | <b>258</b>   | <b>100.0%</b> | <b>183</b> | <b>100.0%</b> | <b>28</b>          | <b>100.0%</b> | <b>47</b>         | <b>100.0%</b> |

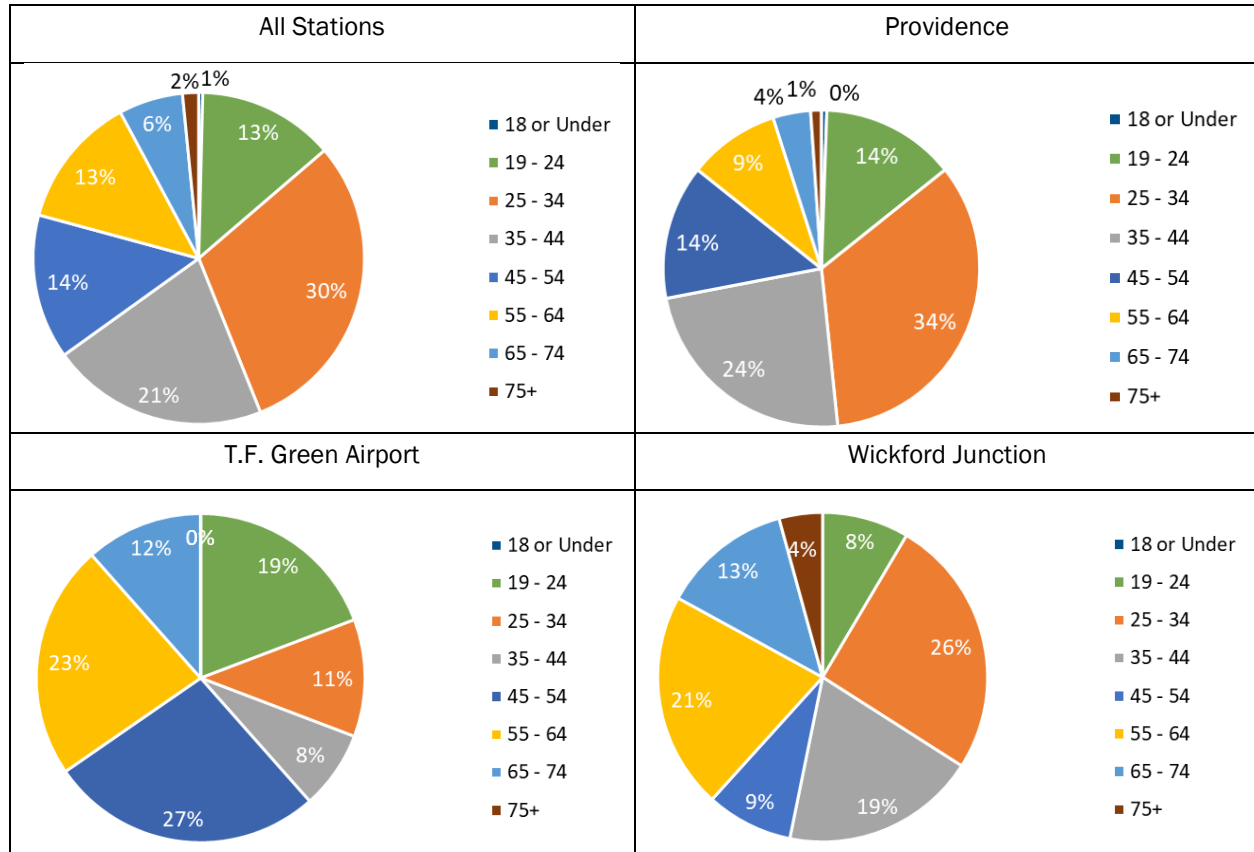
As seen in Table 5, approximately 91% of those surveyed reported having a driver's license. Consistent with patterns in other urban centers, Providence featured the highest proportion of passengers that reported not having a driver's license (12%), which was three percentage points higher than in 2019 (9%). Higher levels of licensure were found further south, with all (100%) of the passengers boarding at T.F. Green Airport station licensed and approximately 96% of those boarding at Wickford Junction.

Among the passengers without a driver's license, around half of them (i.e., 12/22 at Providence Station and 1/2 at Wickford Junction) reported not having access to a usable vehicle within their household. Reviewing these two questions, it is apparent that Inbound MBTA Commuter Rail passengers boarding stations in Rhode Island typically have the financial means and vehicle(s) available to drive alone to their destinations, but find commuter rail a more attractive option.

### 3.5 Age

“What is your age?”

Figure 31. Age by Boarding Station



Around three out of every four respondents (78%) reported as being between the ages of 25 and 64, which represents an absolute decrease of 8% relative to 2019 (86%). For the Rhode Island segment of the line, over half of respondents (51%) reported being between the ages of 25 and 44, with those ages 25 to 34 constituting the largest cohort (30%). Other popular line-level responses included additional working age cohorts (ages 35 to 44 at 21% and ages 45 to 54 at 14%), as well as college aged youth (ages 19 to 24 at 13%). Senior ridership accounted for 8%, led by ages 65 to 74 (6%).

As seen in Figure 31, there is a discernible difference in the age distributions across the stations. Providence Station skews more towards the younger segment of the workforce (nearly half (49%) below the age of 35, including approximately one in seven (14%) between the ages of 19 to 24). T.F. Green Airport and Wickford Junction typically serve the older segment of workforce and seniors, with respondents over age 54 reflecting 35% and 38%, respectively. Compared to other stations, the age distribution at T.F. Green Airport was markedly different, with this station featuring the largest proportion of those ages 45 to 54 (27%), ages 55 to 64 (23%), and ages 19 to 24 (19%). Responses for age among those boarding from Wickford Junction were more evenly distributed.

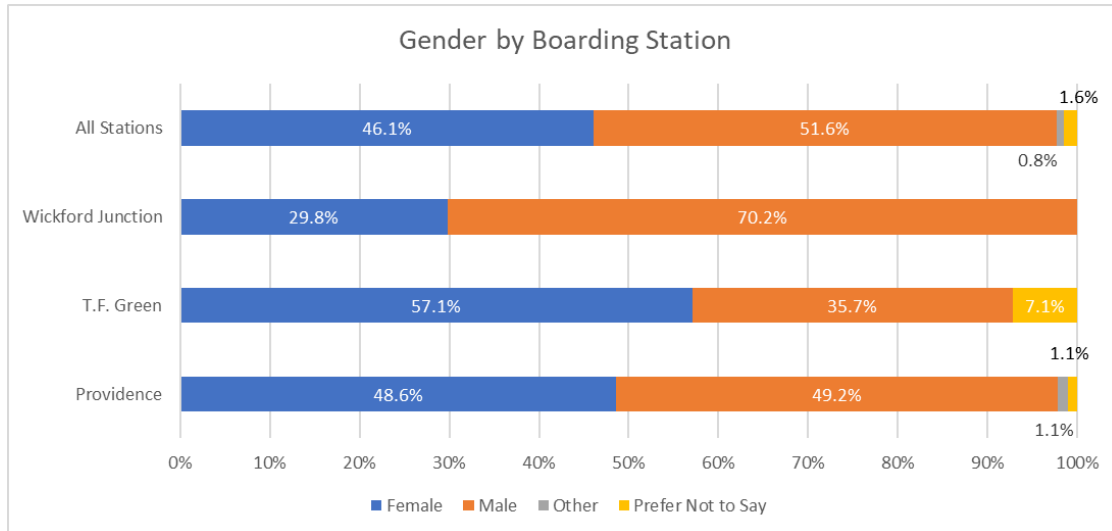
The list below reports trends based on a comparison of these results to the 2019 survey. It should be noted that the prior instrument grouped those ages 45 to 54 with those ages 55 to 64 into a single cohort (age 45 to 64) while this round of the survey incorporated more specificity by using two choices.

- Decrease among the working age cohort between 25 and 64 (78% versus 86% in 2019) was compensated by an increase at either end of the age spectrum
- Increase among those ages 19 to 24 (13% versus 8% in 2019) offset a decrease in those ages 25 to 34 (30% versus 35%), such that the share below age 35 remained similar across surveys
- Growth among ages 65+ cohort (8% versus 6% in 2019)

### 3.6 Gender

*“How do you identify by gender?”*

Figure 32. Gender by Boarding Station



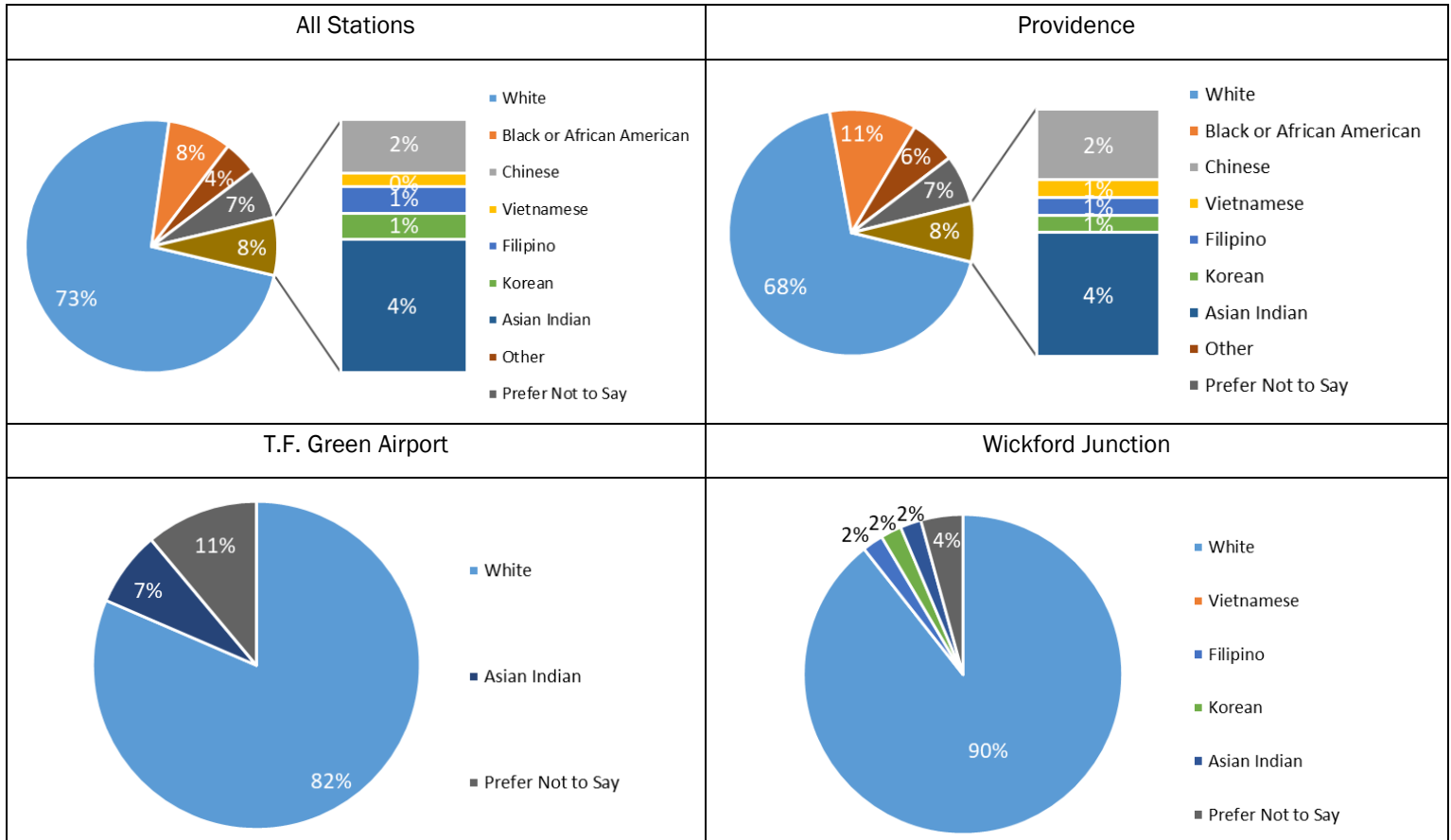
As seen in Figure 32, for the Rhode Island segment as a whole, the gender distribution was relatively even among Inbound MBTA Commuter Rail riders, with the share of those identifying as Male (51.6%) slightly higher than Female (46.1%). Slightly less than one percent (0.8%) reported a non-binary gender identity, including 1.1% of those boarding at Providence Station. Compared to the sample population realized within the 2019 survey, there is a greater share of Female respondents, which produces a more gender-balanced sample overall (48% Female versus 45% collected in 2019). Male responses were most common at Wickford Junction Station (70%) while Female was most often reported at T.F. Green Airport (61%). The distribution was even at Providence Station.

Across the survey population, non-response to the Gender question amounted to 2%.

### 3.7 Race

“How do you self-identify by race? (please check all that apply)”

Figure 33. Race by Boarding Station



Overall 73% of Inbound passengers surveyed stated that they were White, with the second most frequent response being Black or African-American (8%). Additional racial groups represented were Asian (9%) and Other (typically multi-racial) (4%). Reflecting an adjustment to the 2020 Decennial Census, the “Asian” cohort includes those identifying as Asian Indian (4%), Chinese (2%), Filipino (1%), Korean (1%), and Vietnamese (less than 1%). Passengers reluctant to self-identify their race accounted for 7% of the total responses.

Across the different stations, Providence Station had the most diverse representation while T.F. Green Airport had the least. Approximately two in three (68%) Inbound passengers reported their race as White, with responses spanning all racial categories. South of Providence, higher shares of those self-reporting as White were collected, with Wickford Junction at 90% and T.F. Green Airport at 82%. Non-White responses accounted for 7% of responses at T.F. Green Airport (all under Asian Indian) and 6% at Wickford Junction (2% each of Asian Indian, Filipino, Korean).

A comparison of the racial characteristics of Inbound passengers who responded to the survey with those of the Rhode Island population as a whole is provided in Table 6, which reports the values realized in the 2019 survey in the far right column. Based on the most recent five-year averages from

the Census' American Community Survey, coupled with an imputation of racial characteristics via removal of those not responding (i.e., Prefer Not to Say), the racial composition of the population surveyed was relatively aligned with the racial composition of the State of Rhode Island as a whole.

**Table 6. Comparison of Survey Respondents Racial Characteristics with Statewide Averages**

| RACE                                       | % SURVEYED    | % SURVEYED<br>(EXCLUDING<br>NON-<br>RESPONSE) | 2020<br>Decennial<br>Census<br>STATEWIDE<br>AVERAGES <sup>6</sup> | % SURVEYED<br>(EXCLUDING<br>NON-<br>RESPONSE)<br>[2019] |
|--------------------------------------------|---------------|-----------------------------------------------|-------------------------------------------------------------------|---------------------------------------------------------|
| White                                      | 73.5%         | 78.8%                                         | 71.3%                                                             | 77.8%                                                   |
| Black or African American                  | 8.2%          | 8.8%                                          | 5.7%                                                              | 10.0%                                                   |
| American Indian and Alaska Native          | --            | --                                            | 0.7%                                                              | 1.0%                                                    |
| Asian <sup>7</sup>                         | 7.4%          | 7.9%                                          | 3.6%                                                              | 7.5%                                                    |
| Native Hawaiian and Other Pacific Islander | --            | --                                            | 0.1%                                                              | 0.5%                                                    |
| Other                                      | 4.3%          | 4.6%                                          | 9.4%                                                              | 3.3%                                                    |
| Two or More Races                          | N/A           | N/A                                           | 9.3%                                                              | N/A                                                     |
| Prefer Not to Say                          | 6.6%          | N/A                                           | N/A                                                               | N/A                                                     |
| <b>TOTAL</b>                               | <b>100.0%</b> | <b>100.0%</b>                                 | <b>100.0%</b>                                                     | <b>100.0%</b>                                           |

<sup>6</sup> US Census Bureau. 2020 Decennial Census DEC Redistricting Data (PL 94-171)

<sup>7</sup> Includes Chinese, Vietnamese, Filipino, Korean, Asian Indian, and Other Asian

### 3.8 Hispanic Status

“Are you Hispanic/Latino/Latina?”

Table 7. Hispanic Status by Boarding Station

| HISPANIC STATUS                              | ALL STATIONS |               | PROVIDENCE |               | T.F. GREEN AIRPORT |               | WICKFORD JUNCTION |               |
|----------------------------------------------|--------------|---------------|------------|---------------|--------------------|---------------|-------------------|---------------|
|                                              | Count        | % of Riders   | Count      | % of Riders   | Count              | % of Riders   | Count             | % of Riders   |
| No                                           | 219          | 84.9%         | 152        | 83.1%         | 23                 | 82.1%         | 44                | 93.6%         |
| Yes<br>(Mexican/Mexican<br>American/Chicano) | 5            | 1.9%          | 5          | 2.7%          | 0                  | 0.0%          | 0                 | 0.0%          |
| Yes (Puerto Rican)                           | 8            | 3.1%          | 6          | 3.3%          | 1                  | 3.6%          | 1                 | 2.1%          |
| Yes (Cuban)                                  | 2            | 0.8%          | 2          | 1.1%          | 0                  | 0.0%          | 0                 | 0.0%          |
| Yes (Other)                                  | 17           | 6.6%          | 14         | 7.7%          | 1                  | 3.6%          | 2                 | 4.3%          |
| Prefer not to say                            | 7            | 2.7%          | 4          | 2.2%          | 3                  | 10.7%         | 0                 | 0.0%          |
| <b>TOTAL</b>                                 | <b>258</b>   | <b>100.0%</b> | <b>183</b> | <b>100.0%</b> | <b>28</b>          | <b>100.0%</b> | <b>47</b>         | <b>100.0%</b> |

As seen in Table 7, approximately 15% of all Inbound weekday passengers self-identified as Latinx or Hispanic, which represents nearly a two-fold increase relative to the sample obtained in 2019 (7%). Wickford Junction Station had the lowest representation of Latinx or Hispanic at around 6% while Providence Station and T.F. Green Airport each garnered 17% and 18%, respectively. Among the “Yes (Other)” responses, specific classes reported include Spanish, Dominican, Brazilian, Columbian, Venezuelan, and Cape Verdean. It should be noted that prior Census (and passenger survey) instruments did not differentiate Hispanic Status by ethnicity, which prevents further direct comparison to 2019 among those self-reporting as Hispanic.

### 3.9 Limited English Proficiency (LEP)

*“Are you generally able to understand basic directions spoken or written in English?”*

**Table 8. Limited English Proficiency Populations by Boarding Station**

| LIMITED ENGLISH PROFICIENCY | ALL STATIONS |               | PROVIDENCE |               | T.F. GREEN AIRPORT |               | WICKFORD JUNCTION |               |
|-----------------------------|--------------|---------------|------------|---------------|--------------------|---------------|-------------------|---------------|
|                             | Count        | % of Riders   | Count      | % of Riders   | Count              | % of Riders   | Count             | % of Riders   |
| Always                      | 253          | 98.1%         | 180        | 98.4%         | 26                 | 92.9%         | 47                | 100.0%        |
| Often                       | 3            | 1.2%          | 2          | 1.1%          | 1                  | 3.6%          | 0                 | 0.0%          |
| Sometimes                   | 2            | 0.8%          | 1          | 0.5%          | 1                  | 3.6%          | 0                 | 0.0%          |
| Never                       | 0            | 0.0%          | 0          | 0.0%          | 0                  | 0.0%          | 0                 | 0.0%          |
| Prefer not to say           | 0            | 0.0%          | 0          | 0.0%          | 0                  | 0.0%          | 0                 | 0.0%          |
| <b>TOTAL</b>                | <b>258</b>   | <b>100.0%</b> | <b>183</b> | <b>100.0%</b> | <b>28</b>          | <b>100.0%</b> | <b>47</b>         | <b>100.0%</b> |

Individuals with Limited English Proficiency (LEP) are those who do not speak English as their primary language and who have a limited ability to read, speak, write, or understand English. For the Rhode Island segment of the Providence/Stoughton Line, around 2% of Inbound weekday passengers stated that they were not always able to understand basic directions spoken or written in English (compared to 1% in 2019). As seen in Table 8, all respondents within this group reported that they were either “Often” or “Sometimes” able to understand basic directions spoken or written in English. None of the respondents indicated a frequent difficulty or inability (“Never”) to understand basic direction spoken or written in English. The comparatively high shares of “Often” and “Sometimes” at T.F. Green Airport is likely a function of the facility’s proximity to international air-based connections.

### 3.10 Preferred Language

*“In what language do you prefer to receive information about riding Commuter Rail?”*

**Table 9. Preferred Language by Boarding Station**

| PREFERRED LANGUAGE | ALL STATIONS |               | PROVIDENCE |               | T.F. GREEN AIRPORT |               | WICKFORD JUNCTION |               |
|--------------------|--------------|---------------|------------|---------------|--------------------|---------------|-------------------|---------------|
|                    | Count        | % of Riders   | Count      | % of Riders   | Count              | % of Riders   | Count             | % of Riders   |
| English            | 255          | 98.8%         | 180        | 98.4%         | 28                 | 100.0%        | 47                | 100.0%        |
| Spanish            | 2            | 0.8%          | 2          | 1.1%          | 0                  | 0.0%          | 0                 | 0.0%          |
| Other              | 1            | 0.4%          | 1          | 0.5%          | 0                  | 0.0%          | 0                 | 0.0%          |
| <b>TOTAL</b>       | <b>258</b>   | <b>100.0%</b> | <b>183</b> | <b>100.0%</b> | <b>28</b>          | <b>100.0%</b> | <b>47</b>         | <b>100.0%</b> |

As seen in Table 9, approximately 99% of those surveyed reported a preference to receive information about riding MBTA Commuter Rail in English, which aligns with the 2019 estimate. All three respondents who stated that they would prefer information in a language other than English accounted for around 1% of Inbound weekday passengers surveyed overall. Of the three respondents, all of whom were boarding from Providence Station, one preferred information to be transmitted in Spanish only while the other preferred to receive their materials in French.

### 3.11 Smartphone

*“Do you currently use a smartphone (e.g., iPhone, Android)?”*

**Table 10. Smart Phone Use by Boarding Station**

| Smartphone Use | ALL STATIONS |               | PROVIDENCE |               | T.F. GREEN AIRPORT |               | WICKFORD JUNCTION |               |
|----------------|--------------|---------------|------------|---------------|--------------------|---------------|-------------------|---------------|
|                | Count        | % of Riders   | Count      | % of Riders   | Count              | % of Riders   | Count             | % of Riders   |
| Yes            | 255          | 98.8%         | 182        | 99.5%         | 27                 | 96.4%         | 46                | 97.9%         |
| No             | 3            | 1.2%          | 1          | 0.5%          | 1                  | 3.6%          | 1                 | 2.1%          |
| <b>TOTAL</b>   | <b>258</b>   | <b>100.0%</b> | <b>183</b> | <b>100.0%</b> | <b>28</b>          | <b>100.0%</b> | <b>47</b>         | <b>100.0%</b> |

As seen in Table 10, virtually all (99%) of the Inbound MBTA Commuter Rail riders surveyed reported routinely using a smartphone. Three respondents stated that they do not currently use a smartphone, with the distribution of late adopters evenly distributed among three stations surveyed. The proportions are similar to the results collected in 2019, except all “No” responses collected in the previous survey were clustered at Providence Station.

### 3.12 COVID-19 Effects on Use of Transit

*“Do concerns about COVID-19/pandemics continue to impact your decision to use transit?”*

**Table 11. COVID-19 Impact by Boarding Station**

| COVID-19 Impact | ALL STATIONS |               | PROVIDENCE |               | T.F. GREEN AIRPORT |               | WICKFORD JUNCTION |               |
|-----------------|--------------|---------------|------------|---------------|--------------------|---------------|-------------------|---------------|
|                 | Count        | % of Riders   | Count      | % of Riders   | Count              | % of Riders   | Count             | % of Riders   |
| Yes             | 79           | 30.6%         | 56         | 30.6%         | 11                 | 39.3%         | 12                | 25.5%         |
| No              | 179          | 69.4%         | 127        | 69.4%         | 17                 | 60.7%         | 35                | 74.5%         |
| <b>TOTAL</b>    | <b>258</b>   | <b>100.0%</b> | <b>183</b> | <b>100.0%</b> | <b>28</b>          | <b>100.0%</b> | <b>47</b>         | <b>100.0%</b> |

As seen in Table 11, approximately one-third (31%) of all Inbound MBTA Commuter Rail riders surveyed reported that concerns regarding COVID-19 and/or other potential global health pandemics continue to impact their decision whether to use transit. Respondents boarding from T.F. Green Airport, which is situated less than a mile from an international transportation hub, reported higher rates of concern regarding using transit in the era of COVID-19 (39%) while those leaving the low density environs of Wickford Junction were less often concerned (26%) about using transit at that point in the pandemic.

## 4 Commuter Rail Use Information

This chapter discusses responses to Questions 4-6, 11, and 12 of the OBS, which solicited input from Inbound passengers regarding how often, when, and why they typically use MBTA Commuter Rail services, alternate transportation options that could otherwise be used to complete their current one-way trip, and the type of fare product used on their journey.

### 4.1 Fare Type

“What type of fare did you pay for this ONE-WAY train trip?”

Figure 34. Fare Type by Boarding Station

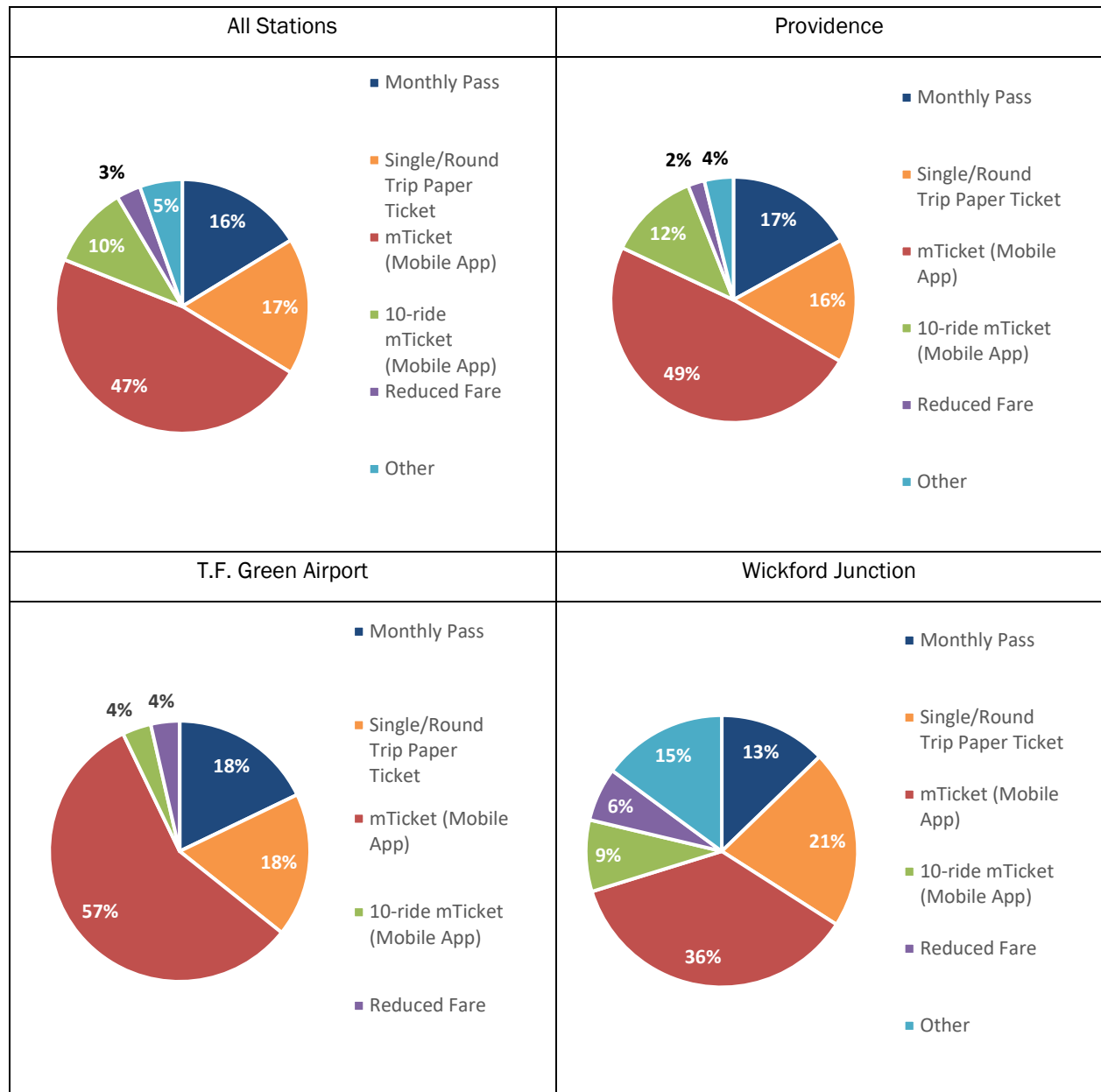


Figure 34 presents the proportion of fare products used by Inbound passengers. For the Rhode Island segment as a whole, the majority of passengers (57%) paid their fare via the MBTA mTicket mobile phone application, with single fares at 47% and digital 10-ride passes at 10%. Other popular options included cash-based paper tickets (17%), a monthly Commuter Rail Pass (16%), and 10-ride passes purchased via the mTicket application (10%). Patrons using reduced fare products (i.e., seniors, persons with disabilities and Medicare cardholders, some public school students, and low-income individuals between the ages of 18 and 25) accounted for three percent of the line's Inbound total. The "Other" category reflects passengers who rode for free because they were legally blind, active military or emergency services personnel, government officials, or an MBTA employee, or they had purchased a five-day flex pass, or otherwise qualified for free fares.

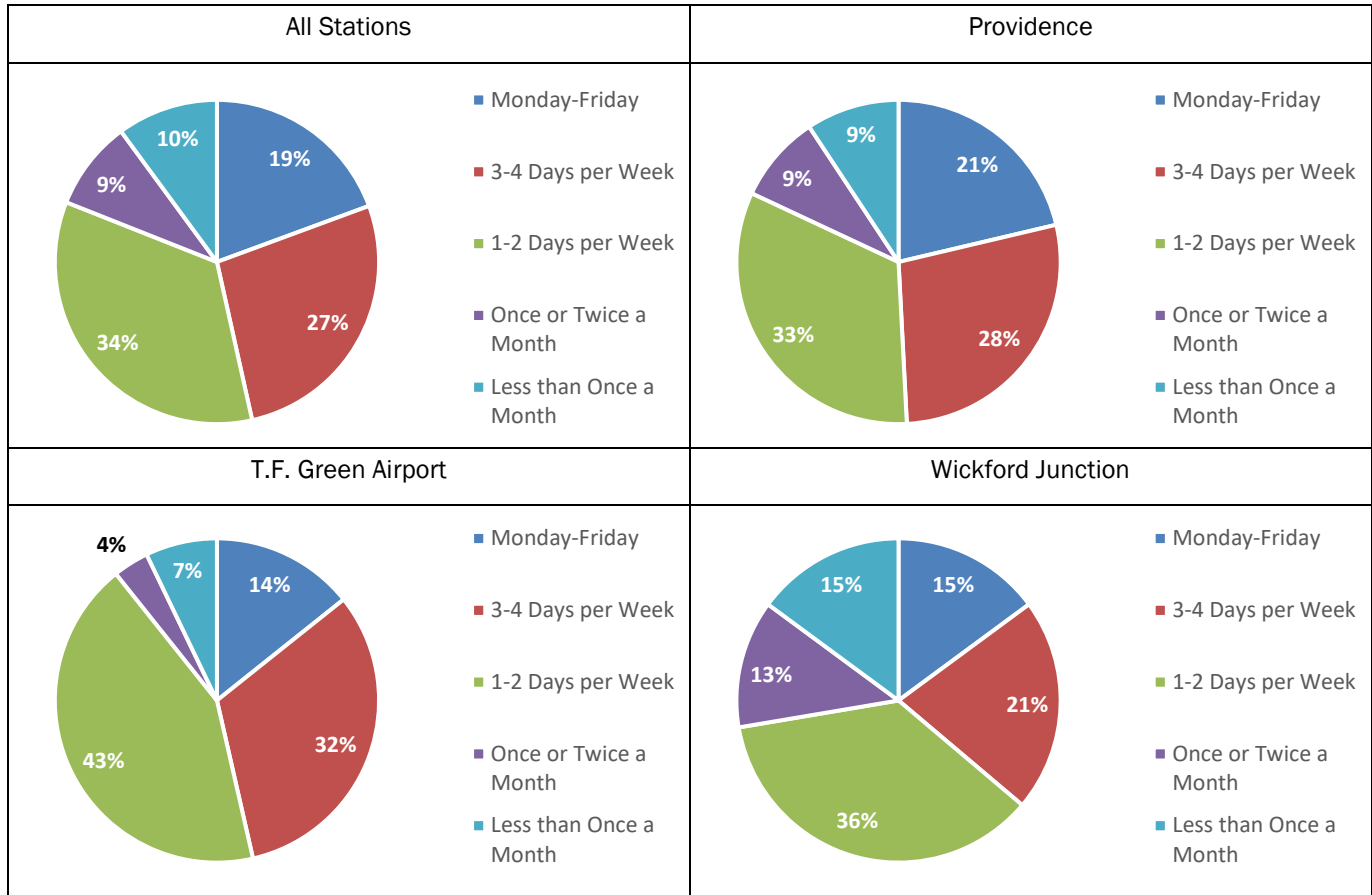
At the station-level, the fare media distributions for Providence Station are quite similar to those of the Rhode Island segment as a whole. Compared to the aggregate sample, T.F. Green Airport passengers reported using a smaller proportion of 10-ride passes (4% versus 10%) and a larger proportion of mTicket passes, with over half of all passengers using this method versus (57% versus 47%). The distribution at Wickford Junction is unique in that there was a smaller share of those using mobile-based ticketing (45% across the two mTicket options versus 57% overall), a lower proportion of monthly passes (13% versus 16%), and nearly three in 20 (15%) indicated a fare type of "Other."

Compared to the 2019 results, the use of mobile ticketing increased by 21 percentage points, reflecting a 58% relative increase from the previous proportion of 36%. The dramatic decrease in the use of monthly pass products (down 30 percentage points from a 2019 value of 46% to 16%) was balanced by gains within mobile ticketing and an increase in single/round-trip paper tickets. The decrease in pass products is likely attributable to a reduced appetite for such all-you-can-ride products among respondents who, as a result of COVID-19, found themselves working from home significantly more often than prior to the pandemic. The rise in mobile ticketing is likely more a function of the media offering riders the ability to pre-purchase fare products, which thereby reduces the level of social interactions, personal contact, and potential risk associated with COVID-19, than it is related to increasing market penetration of smartphones.

## 4.2 Weekday Frequency

“On WEEKDAYS only, how often do you typically ride MBTA Commuter Rail?”

Figure 35. Weekday Commuter Rail Use Frequency by Boarding Station



Across the Rhode Island segment of the Providence/Stoughton Line, 80% of Inbound passengers responded that they use the MBTA Commuter Rail weekday service at least once a week, including 19% who use it on a routine basis (i.e., Monday through Friday), 27% who use it three to four days a week, and another 34% who use the service at least 1-2 days per week. As seen in Figure 35, occasional riders (i.e., those that use the service no more than once or twice a month) accounted for 19% of respondents, with 9% stating they use the service once or twice a month and 10% responding that they use it less than once a month.

In terms of frequent use of the weekday service, T.F. Green has the largest proportion of passengers using the service at least three days a week (46%), while Providence Station has the largest proportion of passengers using it on a routine weekday basis (21%). Wickford Junction had the highest proportion of occasional riders (28%) yet this user type accounted for only 18% of Inbound passengers at the more frequently served Providence Station.

### 4.2.1 Weekday Use Frequency & Trip Purpose

Comparing the weekday frequency responses with the destination place type information reviewed previously yields the following insights:

- Among passengers who reported using the weekday service at least one day each week, the distribution of trip purposes was relatively similar, with the majority of riders (approximately 70%) destined for their workplace, followed by attending a college or university, returning home, or other personal business.
  - Monday through Friday – 74% were destined for their workplace, with 14% returning home, 8% to a college or university, 2% to a hospital or doctor, and 2% on other personal business.
  - 3-4 Days a Week – 70% headed to work, 13% returning home, 11% attending college or university, and 1% each going to the airport, bank/business office, hospital/doctor, or other personal business. Those reporting to work within this group likely work from home on occasion or could be part-time workers.
  - 1-2 Days a Week – 67% to work, with 18% returning home, and 3% each attending college or university or recreational activity, or other. Responses indicating group type of Bank/Business Office (2%), and other personal business or school/daycare), were relatively infrequent with each garnering 1%. Those reporting to work within this group likely either spend most of their time working from home or generally work on a part-time basis.
- In aggregate, trips to work accounted for 70% of Inbound traffic reported by those who ride once or more per week (80% of respondents). However, among those who use the weekday service less than once per week, the results were substantially more varied, with journeys to work accounting for only 27% of Inbound travel.
- Among those who reported using the weekday service less than one day each week (19% of respondents), the sharp decline in work-related trips was counterbalanced by significant gains within more discretionary-oriented place types, many of which were not even represented within the “frequent user” group responses summarized directly above.
  - Business-related trip purposes (22% versus 0.5% among frequent users)
    - Airport (20%) and Hotel (2%)
  - Social Needs (14% compared to zero)
    - Another person’s home (4% compared to zero)
    - Restaurant, social, or recreational activity (8% compared to 1%)
  - Personal Errands (6% compared to 3%)
    - Other (4%) and Bank or business office (2%)
  - Visiting a hospital or doctor (12% compared to 1%)
  - Attending a college or university (8% versus 7%)
- T.F. Green Airport featured the least variation in responses (i.e., responses spanning the fewest categories), with 82% destined for their workplace, 11% bound for home, and 7% bound for college or university. Wickford Junction included seven of the 13 total categories, including one (Another Person’s Home) as the only survey response in that category. Providence Station responses spanned 12 of the 13 categories, and was the only station to include responses for several categories including: Bank/Business Office, Hotel, Other Personal Business, Restaurant/Social/Recreational Activity, School/Daycare, and Store/Retail.

#### 4.2.2 Weekday Use Frequency & Boarding Time

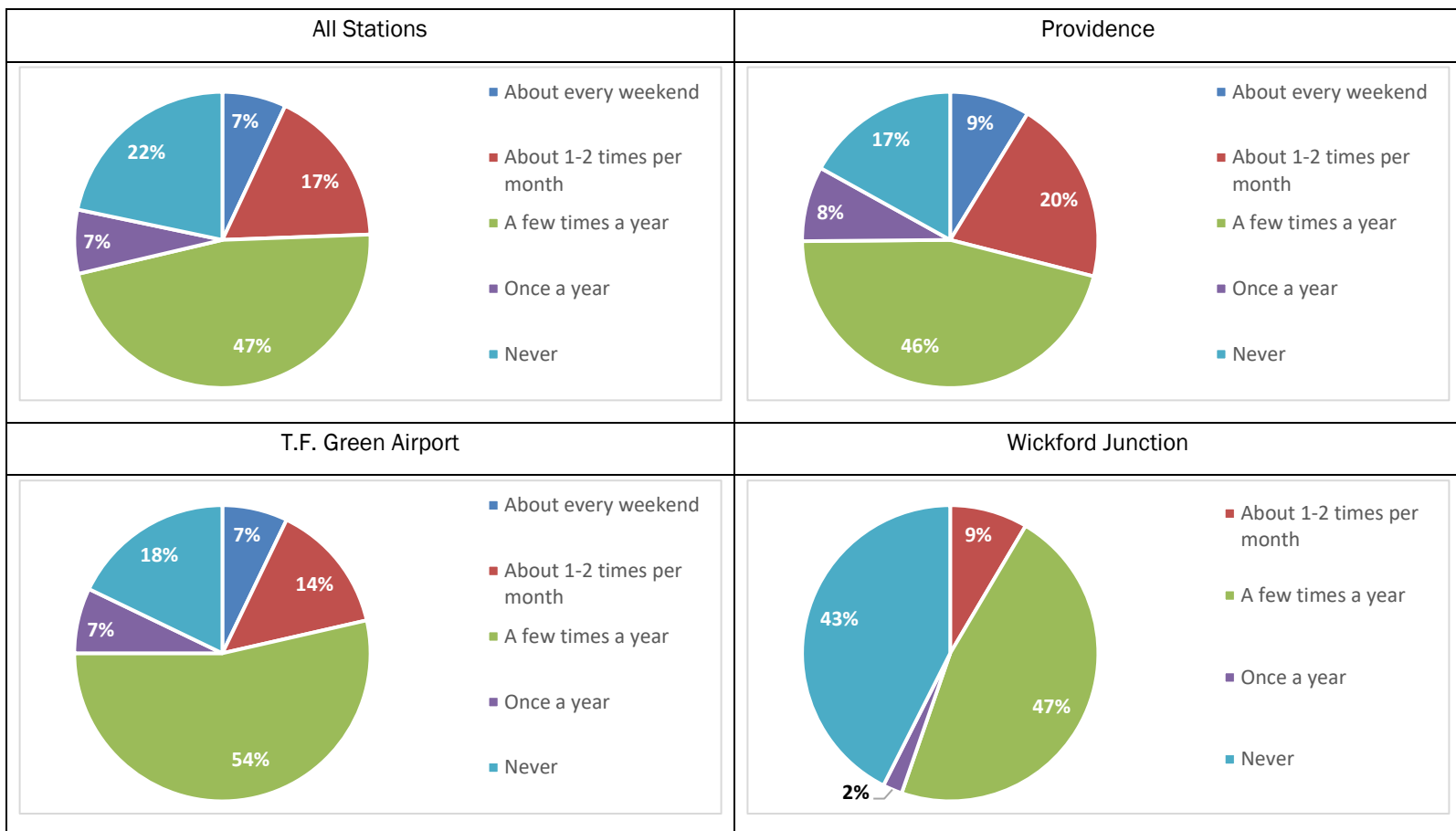
A comparison of the weekday frequency responses with the time-of-day boarding information summarized previously lends the following insights, organized by destination place type:

- Your Workplace (62% of all trips, 159 responses)
  - 92% of work-bound passengers boarded during the AM Peak, followed by 4% Mid Day, 3% PM Peak, and 1% Late Night.
  - 92% of work-bound passengers use the weekday service at least once each week, the highest percentage of any destination category
    - Of this 92%, 23% reported daily usage, followed by 31% using it three or four days per week, and 38% once or twice per week.
  - All of the work-bound respondents who reported using weekday commuter rail service less than once each week (8%) boarded during the AM Peak period.
- Your Home (14% of all destinations, 37 responses)
  - 65% of home-destined passengers boarded during the PM Peak, followed by 22% during the Mid Day, 8% in the Late Night, and 5% during the AM Peak.
  - Relative to those reporting to work, home-destined passengers were marginally more likely to use the commuter rail on a less frequent basis.
    - 86% use weekday service at least once per week, as compared to 92% of work-bound patrons
    - Of this 86%, 19% reported daily usage, 24% reported using it three or four days per week, and 43% once or twice per week
    - 14% of home-destined passengers reported utilizing weekday service less than once a week, with 8% boarding in the PM Peak, the Mid Day and Late Night periods each accounting for 3%, and none during the AM Peak.
- College or University (7% of all destinations, 19 responses)
  - 79% of college-bound passengers boarded during the AM Peak, followed by 16% in the Mid Day period, and 5% during the PM Peak.
  - 79% of college-bound passengers use the service at least once each week
    - Overall, 42% reported using the service three or four days per week, 21% reported daily usage, and 16% reported usage once or twice per week.
  - 21% of college-bound passengers reported utilizing weekday service less than once a week, with 16% boarding during the AM Peak and the remaining 5% departing during the PM Peak
- Hospital / Doctor (3% of all destinations, 8 responses)
  - 75% of medical-bound passengers boarded during the AM Peak, with the remaining 25% represented in the Mid Day period.
  - 25% of medical-bound passengers use the service at least once each week, the lowest percentage of the any destination category
    - Of the 25% , 12.5% reported daily usage and an additional 12.5% reported using the service three or four days per week.
  - Overall, 62.5% of medical-bound passengers reported utilizing weekday service once or twice per month, with the remaining 12.5% of passengers using the service less than once a month. This was the highest percentage for infrequent trip making of any destination category

### 4.3 Weekend Frequency

“Do you use Commuter Rail on Saturdays and Sundays?”

Figure 36. Weekend Commuter Rail Use Frequency by Boarding Station



As seen in Figure 36, 76% of the Inbound passengers surveyed along the Rhode Island segment of the Providence/Stoughton Line reported using the MBTA Commuter Rail weekend service less than once a month while only 7% stated that they use it about every weekend. The majority of passengers use the service a few times a year (47%) and the second most common response was “Never” (22%).

When comparing the responses by boarding station, it is clear that passengers boarding weekday Inbound trains at stations that currently lack weekend service (i.e., Wickford Junction and T.F. Green Airport) are far less likely to use weekend service on a monthly basis. Monthly use at Providence Station constituted 20% of respondents while monthly use was reported as approximately 2% for both T.F. Green Airport and Wickford Junction passengers.

It is interesting to note that, while both stations are not currently served, passengers surveyed at T.F. Green Airport reported never using weekend service at a rate lower than that of those surveyed at Wickford Junction (2% vs. 8%, respectively). This relationship suggests that, given the shorter distance between Providence and T.F. Green Airport relative to the distance between Providence and Wickford Junction, respondents at T.F. Green Airport are willing to travel to Providence Station to make use of the service while those located further south around Wickford Junction either forego weekend trips

that could have otherwise been completed via weekend MBTA Commuter Rail service or, more likely, complete the trip using a different mode. It is important to note that the responses to this question from T.F. Green Airport riders do not reflect the potentially immense latent demand for weekend Commuter Rail service there to serve airport trips.

#### 4.4 Other Options

*“Other ways I sometimes make this ONE-WAY trip include...”*

Figure 37. Other Travel Options by Boarding Station

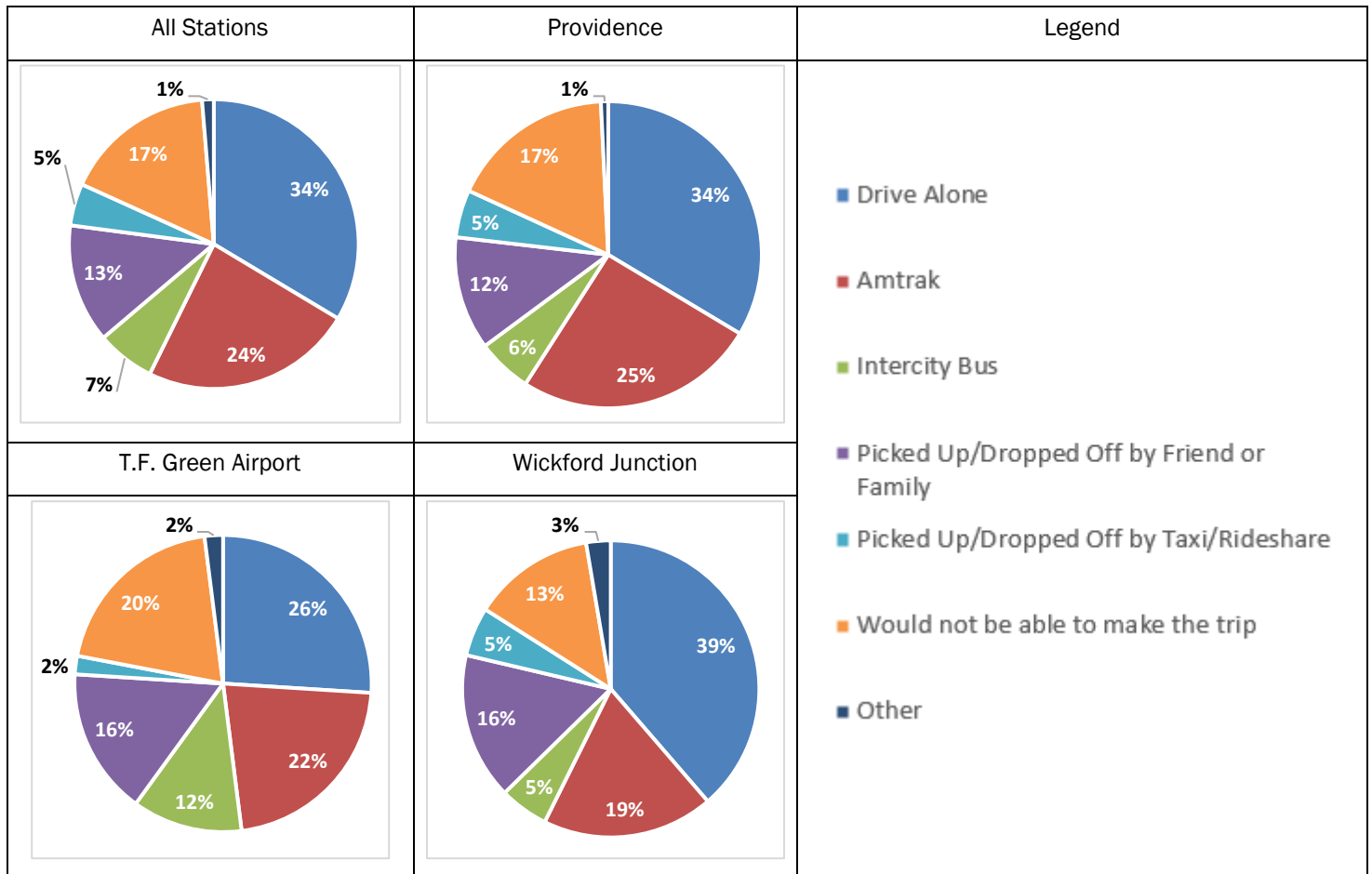


Figure 37 shows which alternative travel options could be used in place of commuter rail for the line as a whole, as well as at each station. It should be noted that passengers were able to select more than one option (i.e., there were 333 total responses among the 258 respondents). Approximately 54% of passengers indicated that driving alone would be a viable alternative. 29% of respondents reported that the trip could be completed using Amtrak. Drop-off/pick-up by a family member or friend was an alternative mode for 16% of responses. Intercity bus was an alternative for 5% of responses and taxi/rideshare service provided an alternative mode for about 4% of respondents.

Comparing the responses by boarding station, T.F. Green Airport Station had the highest proportion of passengers that would choose to drive alone as an alternative option (53%), while Providence had the

lowest (38%). Nearly one fifth (17%) of responses originating at Providence indicated that they would not make this trip without commuter rail.

As indicated by 17% of responses, many Inbound riders confirmed that it is likely they would not be able to make this trip without MBTA Commuter Rail. Nearly 30% of this group are households who do not have access to a vehicle. Furthermore, as shown in the next section, only 4% of respondents overall identified the commuter rail as being their only viable mode of travel. Therefore, it can be inferred that the respondents who reported that they would not have made their trip and did not have Amtrak as an alternative could reach their planned destination by some other non-rail means but, for whatever reason(s), decided that it would not be worthwhile to do so.

The majority of the car-owning group consists of passengers destined for their workplace (86% of group or 18% of all respondents), but it also includes students (7% of group). In terms of income, approximately three-quarters of the car-owning respondents who use MBTA as their discretionary choice reported an annual household income of \$75,000 or more, with nearly a quarter reporting \$150,000 or more. Thus, while the service does play a critical role in meeting the needs of those living in zero-vehicle and/or low- to moderate-income households, weekday commuter rail service is primarily used by workers who, though they find the train convenient, nevertheless, have other options available. It is possible that this group of respondents would choose to move to a place with commuter rail service if it was not available in Rhode Island. This could be considered validation that MBTA Commuter Rail facilitates the ability of people to enjoy Rhode Island's quality of life and comparatively modest home prices who may otherwise live somewhere else.

The sizable minority of MBTA passengers at Providence Station who view Amtrak as an alternative mode (29%) indicates that passengers are using Amtrak in conjunction with the MBTA Commuter Rail schedule, either because the Amtrak trains fit their schedules better or to take advantage of Amtrak's faster, limited stop service between Providence and Boston. There is the potential to formalize this activity through an MBTA-Amtrak cross-honor fare program similar to those in place in other locations along the Northeast Corridor. The respondents at Wickford Junction who indicated they sometimes use Amtrak likely take it from Amtrak's Kingston Station, which is a 15-minute drive to the south.

#### 4.5 Reasons for Using Commuter Rail

*"What are your main reasons for using Commuter Rail? (please check all that apply)"*

Figure 38 compares the distribution of Inbound weekday passengers' reasons for using MBTA Commuter Rail service across the Rhode Island segment and each of the three boarding stations. Figure 39 provides proportions for each potential reason for the line as a whole as well as at each station. Overall, avoiding driving/traffic was the most popular reason for using the service (21%), followed by being able to read or work on the train (15%), its convenience (14%), and the ability for passengers to avoid parking at their final destination (13%). Approximately 4% of all respondents stated that they use the MBTA Commuter Rail to reach their destination because it is the only option available to them.

In general, the reasons that Inbound passengers ride the MBTA Commuter Rail did not vary significantly amongst the stations, with similar proportions observed at each station. Thus, although each station's environs and the socio-demographic composition of its riders may be markedly different, the rail service, more or less, appeals to different groups for the same reasons.

Figure 38. Distribution of Reasons for Using Commuter Rail by Boarding Station

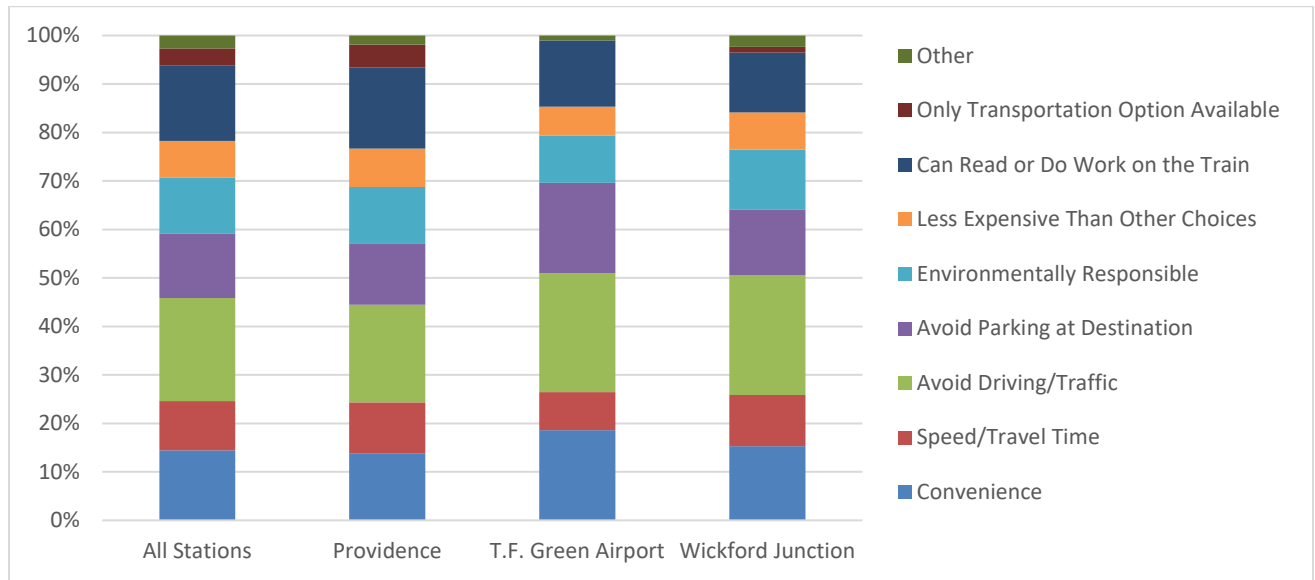
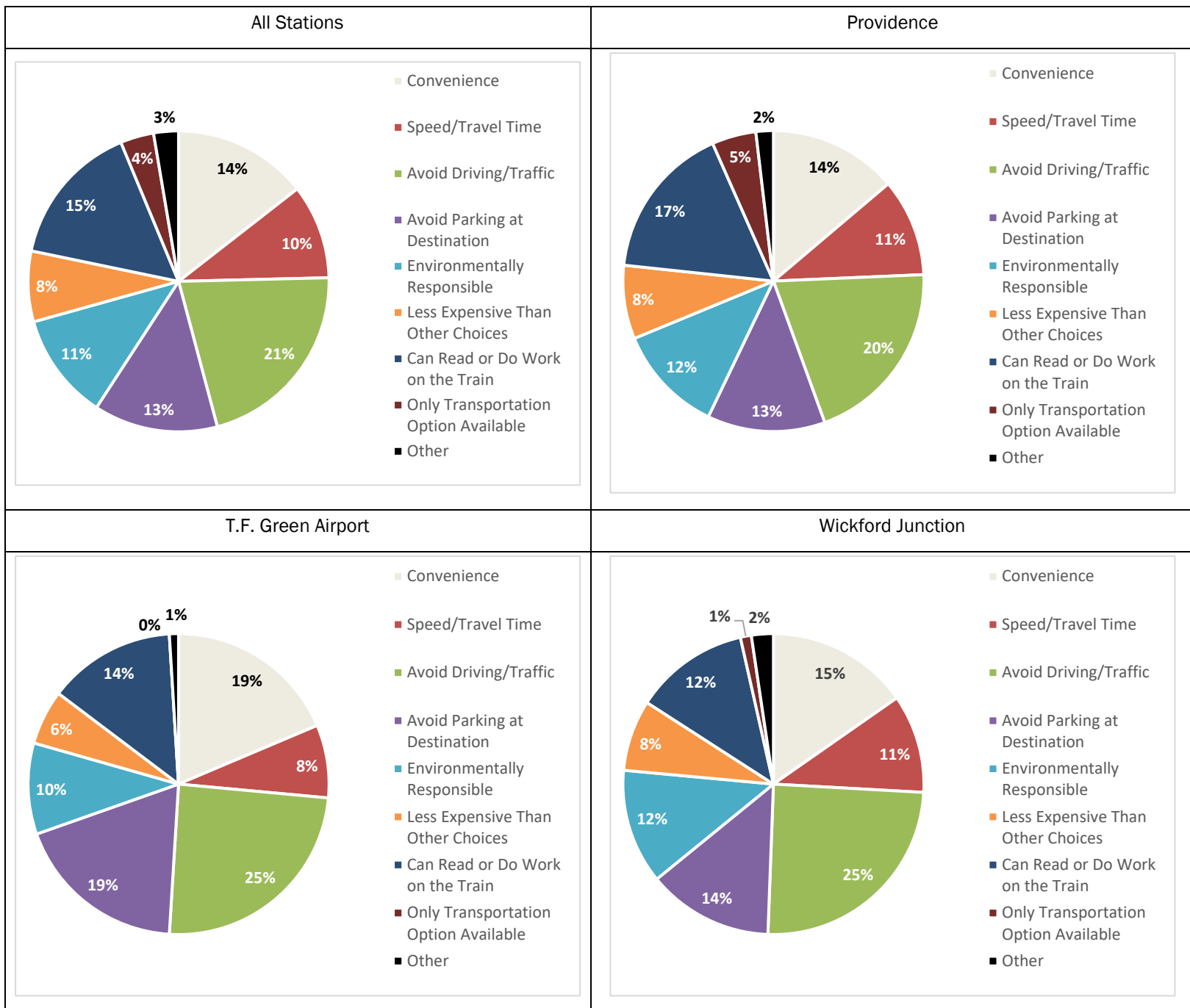


Figure 39. Reasons for Using Commuter Rail by Boarding Station



## 5 Open-Ended Responses

The final prompt of the OBS was an open-ended response box that asked participants for their comments and suggestions. Each open-ended response was reviewed and each element within a given response was classified into one of the general categories shown in Table 12 below to generate a total of 160 unique comments, with input collected across the three MBTA Commuter Rail stations in Rhode Island. The ranked list below summarizes the most frequent comments and suggestions collected from Inbound riders within Rhode Island, as well as station-level tallies within each category. Several comments were broken out into multiple categories, as needed.

**Table 12. Comments and Suggestions Received from Inbound Passengers**

| OVERALL RANK | COMMENT/SUGGESTION                                                   | PVD COUNT | TFG COUNT | WFJ COUNT | TOTAL COUNT |
|--------------|----------------------------------------------------------------------|-----------|-----------|-----------|-------------|
| 1            | Positive Feedback                                                    | 18        | 2         | 7         | 27          |
| 2            | Add Frequency                                                        | 18        | 3         | 3         | 24          |
| 3            | Add Weekend Service                                                  | 2         | 3         | 11        | 16          |
| 4            | Improve Service – Generally                                          | 10        | 1         | 3         | 14          |
| 5            | Price Complaint / More Ticketing Options Desired                     | 10        | 0         | 1         | 11          |
| 6            | Station Improvements                                                 | 6         | 1         | 1         | 8           |
| 7            | Add Cars/Seating Capacity                                            | 4         | 1         | 2         | 7           |
| 7            | Cost / Availability of Parking                                       | 7         | 0         | 0         | 7           |
| 9            | Add Equipment (Power Outlets, Table, Etc.)                           | 3         | 0         | 3         | 6           |
| 9            | More Timely Updates on Train Status                                  | 4         | 0         | 2         | 6           |
| 9            | Other                                                                | 2         | 3         | 1         | 6           |
| 12           | Coordinate RIPTA & Commuter Rail                                     | 5         | 0         | 0         | 5           |
| 12           | COVID-19 Related (Masking, Cleanliness, Etc.)                        | 5         | 0         | 0         | 5           |
| 12           | Expand Service (Cover More Geographies, In-fill Stations, New Stops) | 3         | 0         | 2         | 5           |
| 15           | Extend Service Hours                                                 | 4         | 0         | 0         | 4           |
| 15           | Wi-Fi Complaint                                                      | 4         | 0         | 0         | 4           |
| 17           | Ticket Checking (Request for More Frequent Fare Inspection)          | 3         | 0         | 0         | 3           |
| 17           | Delay-Related Complaint                                              | 1         | 1         | 1         | 3           |
| 17           | Survey Feedback (Layout, Intent, Etc.)                               | 3         | 0         | 0         | 3           |
| 17           | Add Express Train                                                    | 3         | 0         | 0         | 3           |
| 21           | Boston-Related Commentary                                            | 2         | 0         | 0         | 2           |
| 22           | More Quiet Cars                                                      | 1         | 0         | 0         | 1           |

The top five categories accounted for approximately 54% of all comments and suggestions provided by Inbound weekday passengers in Rhode Island. The top ranked comment category overall was “Positive Feedback,” with 18 comments from Providence, two from T.F. Green Airport, and seven from Wickford Junction. Many of the comments praised the service itself or rail travel in general, with others espousing the convenience and flexibility it offers commuters.

The second most popular comment category overall, “Add Frequency,” appeared 24 times, with 18 responses at Providence Station alone. Alongside more trains, “Positive Feedback” was tied for the top ranked comment category among those departing from capital of Rhode Island. At T.F. Green Airport, “Add Weekend Service” and “Other” were in a three-way tie with “Add Frequency”. Most of these comments generally suggested adding train frequency in either of the following ways:

- During a specific interval, particularly in the PM peak period, or
- Between the two major markets of Boston and Providence (i.e., an express train), with one respondent leaving from Wickford Junction requesting an express to Boston.

The third ranked comment category, “Add Weekend Service,” garnered a total of 16 responses related to adding or increasing weekend service, with the vast majority (14 or 87.5%) boarding from stations south of Providence (which were not actively serviced on weekends at the time of deployment). Adding weekend service was, by far, the top response among those boarding from Wickford Junction and also tied for first amongst those leaving T.F. Green Airport. Aside from mentioning the convenience of the service as currently scheduled, respondents from Providence Station indicated that expansion of weekend service in Providence would be welcomed.

Citing potential room for improvement regarding service reliability (on-time performance) and consistency (servicing stops at the specific times, not just at terminating stations), transition to newer and/or electric train sets, improving staffing, and comfort, various ways to “Improve Existing Service” ranked fourth, with 14 total responses.

The fifth most popular comment category (11 responses) referenced fare costs, some of which provided further commentary on ticketing packages. Of the fare-related comments, the vast majority (10) came from those boarding at Providence. Many comments reflected a general consensus among passenger rail users that, although Amtrak is both cheaper and typically faster than MBTA Commuter Rail, customers often simply choose whichever option most closely aligns with their particular arrival time on that day (e.g., “It’s a pity Amtrak for my commute is cheaper, faster, and more comfortable. They are however less reliable. I take whatever lines up with my schedule on a given day.”)

A total of eight (8) comments, the majority contributed by passengers traveling from Providence, highlighted various Station Improvements, resulting in this category being the sixth highest among all comment categories. These improvements varied greatly and recurring themes included, but were not limited to, accessibility improvements (i.e. ramp installations in Providence), adding electrical outlets, improving availability and types of payment options, and improving wayfinding and fare payment signage throughout the stations and parking facilities.

A two-way tie for seventh featured two categories - “Add Cars / Seating Capacity” and “Cost/Availability of Parking.” Alleviating crowding issues, particularly during the AM and PM commute periods, was tied for seventh among the top comments, with seven total responses scattered across each of the three stations surveyed. Respondents suggested that crowd could be addressed through increasing either

the on-board capacity (via new train sets or alterations to the cab) or the length of train consists (add cars).

The “Cost/Availability of Parking” category was also tied for seventh, with all respondents boarding at Providence Station and many citing high cost as the main concern. One parking-related comment noted concerns regarding availability of automobile parking. Another comment pertained specifically to improving the availability of secure bicycle parking at all MBTA Commuter Rail stations.

A three-way tie for ninth included the categories listed below, each of which received six responses.

- “Add Equipment” referenced restrooms, electrical outlets, tables, and moveable seating
- “Timely Updates on Train Status” referenced platform assignments, cancellations, and arrival time accuracy
- “Other” primarily contained comments either not pertinent to rail travel or which otherwise fell outside of a consensus-level category

A three-way tie for 12<sup>th</sup> (five respondents) featured the comment categories summarized below.

- Providence & Wickford Junction
  - “Expand Service” typically reflected a desire to introduce additional stops further south at existing Amtrak stations (one response related to Kingston/URI, another to Westerly) or incorporate stops at existing Orange Line stations in Greater Boston (one response in support of Forest Hills, another for Wellington)
- Providence Station Only
  - “Coordinate RIPTA & Commuter Rail” highlighted the importance of aligning bus service schedules, primarily those of RIPTA, to better meet MBTA Commuter Rail trains. Respondents noted a more timely, convenient and reliable bus-to-rail interface at the MBTA Commuter Rail station would constitute a viable new travel option. Commenters noted that such a new alternative could enable them to complete work-based commutes without having to rely on a personal vehicle or other modes in order to arrive at the boarding station on-time (ahead of their train).
  - “COVID-19 Related” concerns are still prevalent, with several respondents noting that they continue to use a mask while riding the commuter rail, and have hesitations regarding the capacity to socially distance as well as the overall cleanliness of the train.

The remaining categories, each of which was reflected by no more than four respondents, listed below are ordered in terms of ascending frequency.

- “Extend Service Hours” – extension of late night outbound service
- “Wi-Fi Complaint” – availability and quality of Wi-Fi on trains
- “Ticket Checking” – frequency of conductor-based fare inspections
- “Delay Complaint” – frequency of delayed trains and their impact on travel plans
- “Add Express Train” – need for an express Providence to Boston train
- “Survey Feedback” – layout and/or intention of the survey itself
- “Boston-Related Commentary” – stations and service within the City of Boston
- “More Quiet Cars” – availability of quiet car seating

## 6 Conclusions

This chapter provides a discussion of major themes derived from an analysis of MBTA Inbound weekday riders' responses to the Fall 2022 OBS. It should be noted that RIDOT plans to continue conducting quarterly weekday and bi-annual weekend ridership counts for the foreseeable future.

### 6.1 Sample Size & Confidence Levels

Based on the number of "wholly valid" responses collected from Inbound passengers, the behavioral trends and socio-demographic characteristics captured across the Rhode Island segment of the line as a whole can be confidently generalized (i.e., are accurately representative) within a margin of error of less than 5.5% (i.e., 94.5% confidence interval). Station-level trends and characteristics collected from Inbound riders boarding at Providence, T.F. Green Airport, and Wickford Junction can be generalized to a margin of error less than 7%, 16%, and 11%, respectively.

Relative to boarding station, 70.9% of Inbound respondents boarded at Providence Station, with 10.9% departing from T.F. Green Airport and 18.2% leaving from Wickford Junction. However, quarterly weekday Inbound ridership counts data show that for every 12 Inbound passengers departing from Rhode Island, approximately 10 boarded at Providence (83.2%), one left from T.F. Green Airport (8.1%), and another departed from Wickford Junction (8.7%). Thus, this survey's overall statewide results tend to slightly emphasize the trip-making behaviors and characteristics of passengers embarking from stations south of Providence, particularly respondents leaving from Wickford Junction.

In terms of time of day, this survey sample places a relatively greater emphasis on the trip-making habits and socio-demographic characteristics of Inbound passengers traveling during the AM Peak period (9.4% more collected than counted overall), mostly at the expense of those boarding in the Midday (10.0% less collected than counted overall). Proportions for the PM Peak and Late Night period were relatively well-aligned with historic travel trends by time of day (i.e., varied less than one percent).

### 6.2 Trip-Related Information

#### 6.2.1 Origin Trip End

Unsurprisingly, the vast majority of Inbound MBTA Commuter Rail trips from Rhode Island originated from Providence Station (70.9%), during the morning peak period (69.0%) and were home-based (79.8%). These time of day and trip purpose patterns were also reflected at the station level. With double the weekday train frequency of the southerly stations, Inbound trips departing from Providence Station featured more variation by time of day (e.g., only 60.1% of those leaving from Providence reported boarding during the AM Peak compared to 89.3% and 91.5% at T.F. Green Airport and Wickford Junction, respectively).

Aside from journeys beginning from home, which accounted for nearly four in five (79.8%) Inbound trips surveyed, workplace (8.1%) and another person's home (3.1%) were the most common responses, with each of the three selections reported at every station. Though not reported among those boarding from Wickford Junction, College/University was the fourth most common response at 2.7% overall, including 3.3% of all responses collected in Providence.

Reflecting the diversity of adjacent land uses, Providence Station had the greatest variety of origin place types (e.g., Restaurant/Social/Recreational Activity, School/Daycare, Hotel, Hospital/Doctor were only indicated downtown). Owing to the more residential character of the development surrounding the southerly stations, Inbound MBTA Commuter Rail journeys beginning at T.F. Green Airport and Wickford Junction tended to originate from home locations (85.7% and 95.7%, respectively). Notably, at Wickford Junction only three origin place types were reported – your home, someone else’s home, and your workplace. At T.F. Green Airport Station, only one respondent reported originating from the international airport.

All but three passengers surveyed originated within the State of Rhode Island, led by station-based anchor municipalities in Providence (55.2% of all respondents), North Kingstown (10.4%), and Warwick (9.7%). Aside from the home municipalities, the catch-all “Other – RI” category, which contained municipalities for which fewer than three total trip origins were reported, ranked third, followed by other cities that generated demand across multiple MBTA Commuter Rail stations (i.e., Cranston at 4.6% overall via contributions at Providence Station (4.9%) and T.F. Green Airport (10.7%), East Greenwich at 1.2% overall, with entries noted at T.F. Green Airport (3.6%) and Wickford Junction (4.3%). Other popular origins for Providence Station beyond the City of Providence include Barrington and Pawtucket (each with 2.3% overall, 3.3% of station) and East Providence (1.9% overall, 2.2% of station). Those originating outside of Rhode Island came from eastern Connecticut (two) and southern Massachusetts (one), and all boarded Inbound from Wickford Junction.

For the line as a whole, as well as each station, a series of maps shows the origin location (Figure 6 through Figure 9) for each Inbound trip surveyed based on MBTA Commuter Rail boarding station. Origin locations by ZIP code for Inbound passengers boarding at Providence Station exhibited the most variation, with substantial contributions from downtown (02903; 43.2%), Blackstone (02906; 15.8%), other Providence neighborhoods (Wanskuck, Washington Park, Elmwood, and Olneyville combined for 7.5%), Elmhurst (02908; 6.6%), and the Brown University campus (02912; 6.7%). Each of these origin ZIP codes was reported by at least 10 respondents at Providence Station (i.e., at least five percent of the station-level population). At T.F. Green Airport, majority of trips originated in the home ZIP code that encompasses the station in Warwick (02886; 71.4%), with another two trips sharing an origin located further north in Cranston (02920; 7.1%). Aside from 59.6% of those boarding Inbound from Wickford Junction originating from the station’s ZIP code in North Kingstown (02852), other ZIP codes with at least two origin trips reported include South Kingstown (02879; 6.4%), East Greenwich (02818; 4.3%) and Narragansett (02882; 4.3%).

Station access trips for Inbound passengers leaving from Commuter Rail stations in Rhode Island often rely on the use of a personal vehicle (60.1% overall), with 31.0% reporting Drove Alone and 29.1% indicating Dropped off by: Family/Friend. This was particularly true for those leaving from the two southerly stations, where auto-based trips to T.F. Green Airport and Wickford Junction climbed to 92.8% (57.1% Drove Alone) and 97.8% (63.8% Drove Alone), respectively, compared to a combined rate of 45.4% (18.6% Drove Alone, 26.8% Dropped Off by Family/Friend) in Providence. Walking was ranked third overall (18.6%) and accounted for over one out of every four Inbound station trips at Providence (26.2%); however, walking was not reported south of Providence Station. Transit use accounted for 9.3% of arrivals to boarding stations, including 12.0% at Providence, 3.6% at T.F. Green Airport, and 2.1% at Wickford Junction. Taxi/rideshare accounted for about 7.0% of Inbound arrivals, followed by biking at 3.9% (including bikeshare).

Despite varied mode share across the three stations, the average station ingress trip lasted 15.2 minutes, with 85.7% of all respondents indicating trips to rail stations less than or equal to 20 minutes. Those boarding from T.F. Green Airport typically experienced the lowest access times (12.9 minutes on average) while those leaving from Wickford Junction had the highest (18.0 minutes).

Among the modes with at least one Inbound respondent at every station, public transit had the longest average ingress times (26.0 minutes) while dropped off by a friend or family member had the shortest (12.7 minutes). Those who drove alone, which represents the majority of passengers surveyed, especially south of Providence, reported an average station ingress time of 15.7 minutes. Walking (13.2 minutes), biking (12.0 minutes generally, 8.3 minutes for bikeshare), and use of a taxi/rideshare service (10.1 minutes) were only reported at Providence Station but constituted approximately 41.4% of Inbound respondents boarding downtown. On average, those traveling on public transit required approximately 10.3 more minutes to reach their boarding station compared with those who drove alone. As demonstrated in Figure 16, bus-based ingress trips accounted for the vast majority of those taking longer than 30 minutes.

### 6.2.2 Destination Trip End

Major employment centers in downtown Boston, including the Financial District (02110), Back Bay (02116), Huntington Avenue / Longwood Medical Area (02115), and the Seaport (02210), accounted for the majority of final destinations among those leaving from Commuter Rail stations in Rhode Island.

Table 13 summarizes when Inbound riders typically board their trains based on the type of place they reported as their final destination. Of the workplace trips leaving from Commuter Rail stations in Rhode Island (61.6% of trips surveyed), 91.2% of Inbound passengers boarded during the AM Peak, with 3.8% of those reporting for an Inbound train in the PM Peak or Late Night periods. Aside from Rhode Island residents completing AM Peak commutes to jobs located further north, those working near Rhode Island station communities and engaging in afternoon or evening trips back to residences located to the north represent the second most common type of passenger surveyed. Students completing an AM Peak trip to attend classes or other personal business at a College/University located further north constituted another typical passenger profile.

**Table 13. Top Destinations for Inbound Riders, Including Share of Inbound Trips by Time of Day**

| OVERALL RANK | DESTINATION PLACE TYPE                      | PROPORTION OF ALL TRIPS SURVEYED | SHARE OF DESTINATION'S TRIPS BY TIME OF DAY |              |              |            |
|--------------|---------------------------------------------|----------------------------------|---------------------------------------------|--------------|--------------|------------|
|              |                                             |                                  | AM PEAK                                     | MID DAY      | PM PEAK      | LATE NIGHT |
| 1            | Your Workplace                              | <b>61.6%</b>                     | <b>91.2%</b>                                | 5.0%         | 2.5%         | 1.3%       |
| 2            | Your Home                                   | <b>14.7%</b>                     | 5.3%                                        | 26.3%        | <b>60.5%</b> | 7.9%       |
| 3            | College/University                          | <b>7.4%</b>                      | <b>68.4%</b>                                | 26.3%        | 5.3%         | --         |
| 4            | Airport                                     | <b>4.3%</b>                      | <b>36.4%</b>                                | <b>36.4%</b> | 27.3%        | --         |
| 5            | Hospital / Doctor                           | <b>3.1%</b>                      | <b>75.0%</b>                                | 25.0%        | --           | --         |
| 5            | Restaurant / Social / Recreational Activity | <b>3.1%</b>                      | --                                          | 37.5%        | <b>62.5%</b> | --         |
| 7            | Other Personal Business                     | <b>2.3%</b>                      | <b>50.0%</b>                                | 33.3%        | 16.7%        | --         |

| OVERALL RANK | DESTINATION PLACE TYPE | PROPORTION OF ALL TRIPS SURVEYED | SHARE OF DESTINATION'S TRIPS BY TIME OF DAY |         |         |            |
|--------------|------------------------|----------------------------------|---------------------------------------------|---------|---------|------------|
|              |                        |                                  | AM PEAK                                     | MID DAY | PM PEAK | LATE NIGHT |
| 8            | Bank/Business Office   | 1.6%                             | 75.0%                                       | 25.0%   | --      | --         |
| 9            | Another Person's Home  | 0.8%                             | 50.0%                                       | 50.0%   | --      | --         |
| 10           | Hotel                  | 0.4%                             | --                                          | --      | 100.0%  | --         |
| 10           | School / Daycare       | 0.4%                             | --                                          | --      | 100.0%  | --         |
| 10           | Store / Retail         | 0.4%                             | 100.0%                                      | --      | --      | --         |

Just under five percent of trips surveyed (4.3% overall) were bound for Boston's Logan International Airport, with air-based trips generating 5.5% of Inbound trips from Providence Station and 2.1% of those from Wickford Junction. Trips to a Hospital/Doctor formed the second most common destination (8.5%) for those boarding at Wickford Junction, which demonstrates the capacity for this service to fulfill critical needs beyond simply commuting for work or education.

Over 90% of those surveyed along the Rhode Island segment indicated they were alighting at a station in Boston, with South Station (52.3%) leading, followed by Back Bay (27.5%), and Ruggles (10.9%). Select suburban stations between Providence Station and the City of Boston amounted to 7.5% of surveyed destination trip ends, including Mansfield, Route 128, Attleboro, Canton Junction, and Sharon. The remainder of trips (1.9% overall) consisted of internal journeys from the southerly stations to the station located downtown, which amounted to 6.7% of trip ends across T.F. Green Airport and Wickford Junction. This is similar to the overall rate observed in the previous four weekday counts (1.8%), but lower than the rate typically derived from those boarding south of Providence (11.0%).

For the Rhode Island segment as a whole, 90.0% of Inbound passengers were destined for locations within Route 128, including those in the City of Boston (78.3%) and adjacent municipalities (12.7%). Other Massachusetts Commuter Rail communities served as the destination for 7.9% of all Inbound respondents, led by Mansfield (2.7% overall, 3.8% from Providence Station). Local trips from T.F. Green Airport or Wickford Junction to Providence Station accounted for 1.9% of Inbound traffic in Rhode Island. Relative to those boarding further north, Inbound respondents departing from Wickford Junction showed greater attraction to the Boston region than the statewide average.

After alighting the commuter rail, the mode through which respondents arrived at their ultimate destination varied by station but was most often by foot. Every respondent who took an internal trip from south of Providence to Providence Station walked to their final destination. For destination stations in Boston, between one-quarter and one-half of respondents utilized MBTA services, whether that was a bus, rapid transit line, or another commuter rail line.

While rare, longer egress trips were most often reported by those who indicated using the MBTA. Over 50% of passengers alighting at South Station, Back Bay, Ruggles, and Providence reached their destination within 10 minutes, with more than 75% reporting a last-mile less than 20 minutes.

### 6.3 Demographic Information

In terms of household characteristics, less than half of respondents were members of two-person households (45%), followed by 18% living within a three-person family unit, and 15% either living alone or within four-person households. Inbound passengers living in low-income households constituted a relatively minor share of overall ridership (12% reported earning less than \$50,000, which was slightly higher than the 9% reported in 2019). Over half of Inbound riders were members of high income households (56% earned at least \$100,000), a lesser percentage than the percentage reported in 2019 (64%).

The overwhelming number of people surveyed (87%) reported that they had at least one usable vehicle within their household, with two vehicles being the most frequent response (40%), followed by one vehicle (34%). Similarly, 91% of people surveyed reported having a driver's license, a slight decrease from the 93% of the 2019 survey. Relative to driving license status, Wickford Junction (100%) and T.F. Green Airport (96%) had notably higher rates of possession than Providence Station (88%); this is a slight decrease from the 91% reported at Providence station in 2019. For the 34 Inbound riders reporting as residing in zero-vehicle households, 13 of them also do not have a driver's license.

Passengers of working age (between the ages of 25 and 64) accounted for 78% of all respondents across the Rhode Island segment, lower than the 86% reported in the 2019 survey. The most common age cohorts are 25 to 34 (30%), 35 to 44 (21%), and 45 to 54 years of age (14%). The youth/college age cohort (19 to 24) amounted to 13% of the sample, seniors contributed 8%, and the under 18 cohort was 1%. Among the different age cohorts, passengers between 18 and 44 have the highest proportion of respondents living in households that do not have access to a usable vehicle.

For the passengers with no vehicles, the MBTA Commuter Rail provides a connection (likely a medium-to long-range one) for work or other life activities that would either:

- Take significantly longer (e.g., destination is accessible by local/regional bus, but requires transfers across routes and/or operators given the trip's multijurisdictional nature);
- Cost more (e.g., destination is proximate to Amtrak station or requires the use of a for-hire vehicle/TNC service because it is not accessible by local/regional bus and); or otherwise
- Go unfulfilled (e.g., destination is not accessible by local/regional bus and rider is cost-burdened).

After eliminating the non-responses for the race question, slightly less than three-quarters of Inbound respondents self-identified as White. As noted in Table 5, while the sample's proportion of White respondents was well-aligned with the statewide average, the proportion of responses collected from those self-identifying as African American and Asian were collected at notably higher rates (i.e., 9% versus 6% and 8% versus 4%). Approximately 5% of all Inbound weekday passengers identified themselves as Latinx or Hispanic, lower than the 7% reported in the 2019 survey. Relative to language proficiency, only 21% of Inbound passengers noted having occasional difficulty understanding basic directions spoken or written in English, with two respondents at Providence Station noting a preference for complementary Spanish-based commuter rail information, and one respondent at Providence Station noting a preference for French. The overwhelming majority of passengers surveyed possess a smartphone (99%).

Concerns about COVID-19/pandemics were reported to continue to impact rider decision to use transit among passengers. 31% of all respondents at Rhode Island stations reported COVID-19 still having

impact over their choice using transit. The decreased proportion of passengers with access to household vehicles also suggested a diversion of people's choice to use personal vehicles over public transit. The increase in reported low-income riders coupled with the decreases in high income riders also points to a reduction by choice riders.

#### 6.4 Commuter Rail Use Information

In terms of frequent weekday MBTA Commuter Rail use, 81% of Inbound passengers responded that they use the service on weekdays at least once a week, including 19% who use it on a daily basis, another 27% who use it three to four days a week, and 34% who ride once or twice per week. Comparing the weekday use data with trip purpose and time of boarding reveals the important trends below.

- 70% of passengers who use the service at least once a week were traveling to their workplace compared to a mere 27% of those respondents who reported using it less than once per week
- Among the three frequent user groups, trips to work ranged from 67-74%, with the remainder of trips primarily oriented towards a college or university (7%), or home (15%), with less frequent usage for the remaining categories, and some with no representation at all.
- Trip purposes among the less frequent rider group were substantially more varied, with several responses that were either not selected, or selected far less frequently, by frequent users, including airport related (20%), hospital/doctor (12%), another person's home (4%), and hotel (2%), among others.
- Weekday Use Frequency by Trip Purpose
  - The overwhelming majority of work-bound passengers (92%) use the weekday service at least once each week, with 54% using it at least three times per week.
  - More than three-quarters (79%) of those traveling to a college/university use the service at least once a week, including 63% who use it at least three times per week.
  - Over 86% of those traveling home using commuter rail use the service at least once a week, half of which use it at least three times per week.

78% of those surveyed reported using the service on the weekend at least once a year while only 7% stated that they use it about every weekend. Unsurprisingly, Inbound riders boarding at the two southernmost stations, both of which currently lack weekend service, reported lower levels of relatively frequent weekend commuter rail use, with proportions for About 1-2 Times per Month ranging from 9% (Wickford Junction), 14% (T.F. Green Airport), and 20% (Providence Station). Surprisingly, however, T.F. Green exhibited a relatively similar proportion (7%) of passengers using the weekend service "about every weekend" to Providence (9%).

When prompted to explain why they choose commuter rail, about 44% of passengers replied, in some form or another, that taking the service allows them to avoid the hassles of driving (21% selected "avoid driving/traffic," 13% said "avoid parking at final destination," and 10% noted "speed / travel time") while the convenience of the service accounted for another 29% of responses (14% chose "convenience" and another 15% selected "can read or do work on the train"). Only 4% of all respondents stated that they use the MBTA Commuter Rail to reach their destination because it is the only option available to them; however, 8% recognized that it was "less expensive than other choices." A significant proportion (11%) cited environmental responsibility as a primary reason for using commuter rail.

In terms of transportation alternatives, of which respondents were allowed to select more than one option, over half of Inbound passengers (54%) indicated that driving alone would be a viable option if the commuter rail was not available, followed by approximately one-third (29%) who could complete their trip via an Amtrak train. Drop-off/pick-up by a friend or family member accounted for 16% of all responses. Intercity bus (5%) and taxi/rideshare service (4%) combined for 9% of responses.

Approximately one fifth (17%) of Inbound riders confirmed that they would not have made their trip without MBTA Commuter Rail service. After specifically excluding respondents living within zero-vehicle households from this group, it is estimated that approximately 70% of Inbound respondents who selected this as an option could reach their planned destination by some other non-rail means but, for whatever reason(s), decided that it would not be worthwhile to do so.

The majority of passengers (47%) paid their fare via an mTicket from the mobile application, alongside 17% who use a single/round trip paper ticket. Approximately 16% of passengers utilize a monthly pass, with similar numbers of riders who traveled every weekday and 3-4 times per week utilizing this payment option. Additionally, 10% leverage the 10-ride mTicket pass, and 3% rely on reduced fares. Only about 5% of passengers survey utilized some other fare option.

## 6.5 Open-Ended Responses

Aside from the multiple-choice questions, responses to the open-ended comment box also shed some light as to what riders desire from the service. Aside from positive feedback, the most frequently received comment was that the MBTA should increase train frequencies and expand weekend service, particularly by incorporating stations (T.F. Green and Wickford Junction) that do not currently offer weekend service, highlighting demand for increased service levels.

Several passengers highlighted the need for improvements to the overall service, including increased staffing, scheduling and mobile application improvements, and improved timing of service to better align with traditional work schedules, as well as upgrading to new and/or electric train sets.

Many respondents identified the need for ticket pricing modifications/reductions or alternative ticketing options, such as employee discounts, reduced fare for ticket packages, as well as reduced fare for weekday-only travel on a monthly pass. A similar number of responses also requested improvements/upgrades at existing stations including, but not limited to, signage and wayfinding, accessibility improvements, and electrical outlets.

Particularly during the AM and PM peak periods, several responses highlighted the need for additional capacity to accommodate commuters, improve comfort, provide a safer experience, and reduce delayed departures.

## 6.6 Comparison to 2019 Survey Results

Comparing the 2022 survey to the results gathered in 2019, there are some differences in the overall pattern of responses from passengers at each of the three stations. The following list outlines the major findings with regard to variations observed between the two survey efforts.

- A higher percentage of respondents (13%) reported being transit-dependent (lacking access to a car) than in 2019 (10%), with an even higher increase reported at Providence Station (12% to 16%) for this category. This indicates that fewer passengers are choice riders, possibly

the influence of COVID-19/pandemic impact over travel mode choices. The lower average reported household income in 2022 than 2019 reinforces this hypothesis.

- The proportion of park-and-ride passengers is smaller at both T.F. Green Station and Wickford Junction station (57% and 64% compared to 70% and 81%, respectively), also indicating COVID-19 impacts over daily commute mode choices. The average access trip times by park-and-riders are shorter for all three stations (14.9, 13.1, and 18.0 compared to 16.4, 17.8 and 19.6 minutes, respectively), possibly indicating decreases in longer commuting patterns due to work-from-home options.
- Average access trip times are also shorter among passengers accessing stations by walking, biking, and those dropped off by family/friend, but longer among passengers taking RIPTA bus. Average access time for all modes were shorter in 2022 survey than in 2019 survey at all three stations. For all stations, the proportion of passengers using mTicket (Mobile App) is significantly higher (for Rhode Island segment as whole, 47% in 2022 survey compared to 23% in 2019 survey), while the proportion of Monthly Pass users is lower (16% compared to 46%)
- The proportion of every-day commuters (using commuter rail Monday through Friday) is significantly lower in 2022 survey (19% in 2022 compared to 48% in 2019) while there is an increasing amount of passengers reporting using commuter rail 1 – 2 days a week (34% in 2022 compared to 12% in 2019). This is the result of more chances to work from home during and after the COVID-19/pandemic. Frequency of using commuter rail on weekend, on the other hand, remains a similar pattern, with slightly larger proportion of frequent users.