

RIDOT Commuter Rail Planning Assistance

Fall 2019 On-Board Passenger Survey
Key Findings

Final Report

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Prepared for:



Prepared by:



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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 commuter rail use questions are provided in Chapters 2-4 while a high-level discussion of trends and themes that emerged from the final open-response question is included within 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 through a comparison of current and previous responses collected within the 2016 Inbound AM Peak-only on-board passenger survey (OBS).

The report creates a fairly accurate profile of MBTA Commuter Rail passengers in Rhode Island before the COVID-19 pandemic disrupted travel patterns and caused significant ridership declines in public transportation systems across the United States. The results discussed herein would probably differ if the survey were conducted today.

1.1 Methodology

In Fall 2019, an OBS was conducted over the course of three consecutive days from Tuesday October 8th through Thursday October 10th 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 3.¹

Table 1. Staff Deployment

Day	Time Span on Site	Collector	Distributor	Driver
Tuesday, October 8 th	4:45 AM – 10:19 AM	4	4	3
Wednesday, October 9 th	11:15 AM – 4:40 PM	1	4	2
Thursday, October 10 th	5:20 PM – 10:59 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 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 MBTA trains with Amtrak station personnel at least 20 minutes in advance of the next Inbound train's scheduled departure. This ensured that field staff knew the correct stairwell at which they needed to distribute the forms prior to the public announcement of the upcoming Inbound train's track number. 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, demographic, and other information. Responses for which any of the following origin-destination variables were not provided were carefully reviewed. If the respondent provided sufficient information to reasonably infer the missing answer, the response was accepted using the best inference. Otherwise, the response was omitted from the results that follow: boarding station, boarding time, origin place type, origin location, ingress mode, ingress duration, alighting station, alighting mode, alighting duration, destination place type, and destination location. The screening of demographic information was accomplished by verifying that questions regarding age, sex, race, household size, household income,

¹ The schedule used was published by Keolis/MBTA Commuter Rail and went into effect on May 20, 2019.

and Hispanic status were completed by the respondent. The screening of other elements consisted of checking that there was an answer to the remaining questions, including fare type used, weekday commuter rail use frequency, weekend commuter rail use frequency, household usable vehicles, Limited English Proficiency (LEP) status, preferred language, and reasons for using commuter rail.

After a respondent's survey passed the three 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 destination origin-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 proposed mode? If a respondent claims to have used transit service between two points, is service actually available to complete that trip?). A survey was considered "wholly valid" if it passed all three 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 displayed in this chapter.

In order 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 town/city names were reviewed and aggregated to the municipal level as needed. (For example, Hyde Park was adjusted to Boston, Wakefield was adjusted to South Kingstown.)
- For ingress/egress trip travel modes, answers were adjusted among categories to maintain consistency. (For example, if the respondent chose "Other" and then wrote "Lyft", it would be adjusted to "Dropped off by: Taxi/Rideshare Service".)
- For ingress/egress trip travel time/duration, some of the responses appeared to report the travel time of the whole trip instead of the ingress/egress trip travel time (e.g., they reported time from origin location to destination location, inclusive of the train trip). These answers were adjusted based on travel time queries from Google Map, accounting for 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 example, survey #87 was missing the answer for origin station, which was estimated given the reported origin place and boarding time.)
- For the questions that included a "Prefer Not to Say" option, any missing 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 three screenings), and the resulting retrieved margin of error for each boarding station. The completion rate for the Rhode Island segment of the Providence/Stoughton Line as a whole was

approximately 90%, with similar rates observed at Providence Station (91%) and Wickford Junction (92%) and a lower rate at T.F. Green Airport (84%).

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	352	338	329	345	321	5.1%
T.F. Green Airport	61	56	53	57	51	12.3%
Wickford Junction	59	57	57	58	54	12.1%
TOTAL	472	451	439	460	426	4.4%

Relative to the 90% confidence goals established for the survey, wholly valid responses significantly exceeded the line's state-level aggregate sample size requirements (187 responses beyond the 239 required), achieving a very high confidence level of over 95%.

At the individual station level, the 10% margin of error sample size requirements were similarly exceeded at Providence Station by a very wide margin (225 responses beyond the 96 required) for a confidence level of nearly 95%. However, station-level requirements for 90% confidence were not achieved at T.F. Green Airport (19 responses below the requirement) or Wickford Junction (19 responses below), with responses allowing for an 88% confidence level at each station.

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 and Providence Station in particular, which accounts for the bulk (80%) of Inbound passenger traffic in Rhode Island, as well as the socio-demographic factors recorded at Providence Station, can be confidently generalized at a margin of error of nearly 5%.

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 relatively close to those at Providence Station. Furthermore, while sample size is a function of both 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 491 average Inbound ons and offs across the two stations requires 143 surveys for 10% versus 96 completes to generalize behavior for 1,993 average movements at Providence Station).

2 Trip-Related Information

Based on the 426 wholly valid responses collected, this chapter presents summary observations for the initial questions which focused 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 MBTA Commuter Rail journey. The questions have been grouped into two categories based on which trip end is being investigated (i.e., origin or destination). 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 2019 OBS are provided in Attachment 4.

2.1 Origin Information

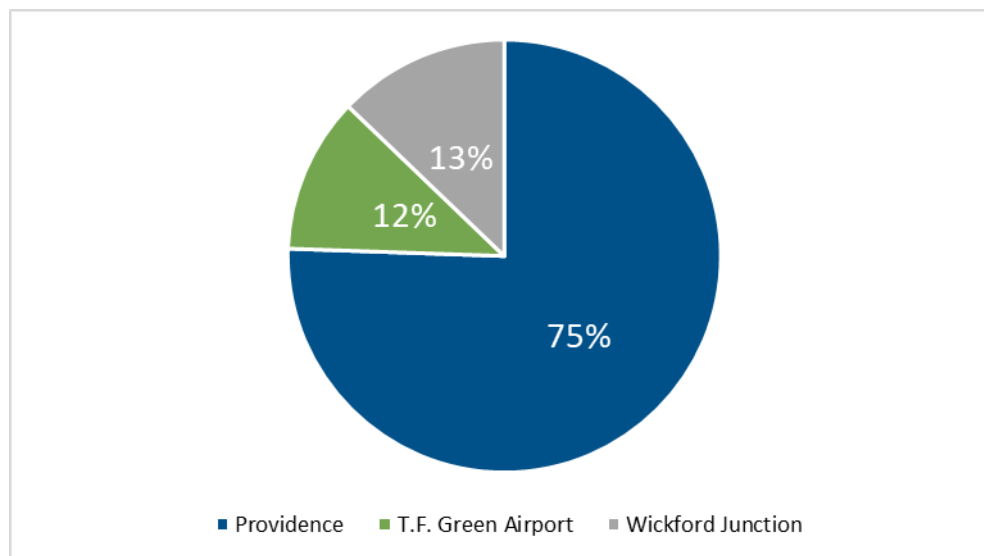
This section reviews responses pertaining to the first six questions of the OBS, which focused on Inbound MBTA Commuter Rail passengers' origin information for the one-way trip (i.e., the initial segment of the trip between the origin location and the boarding station).

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



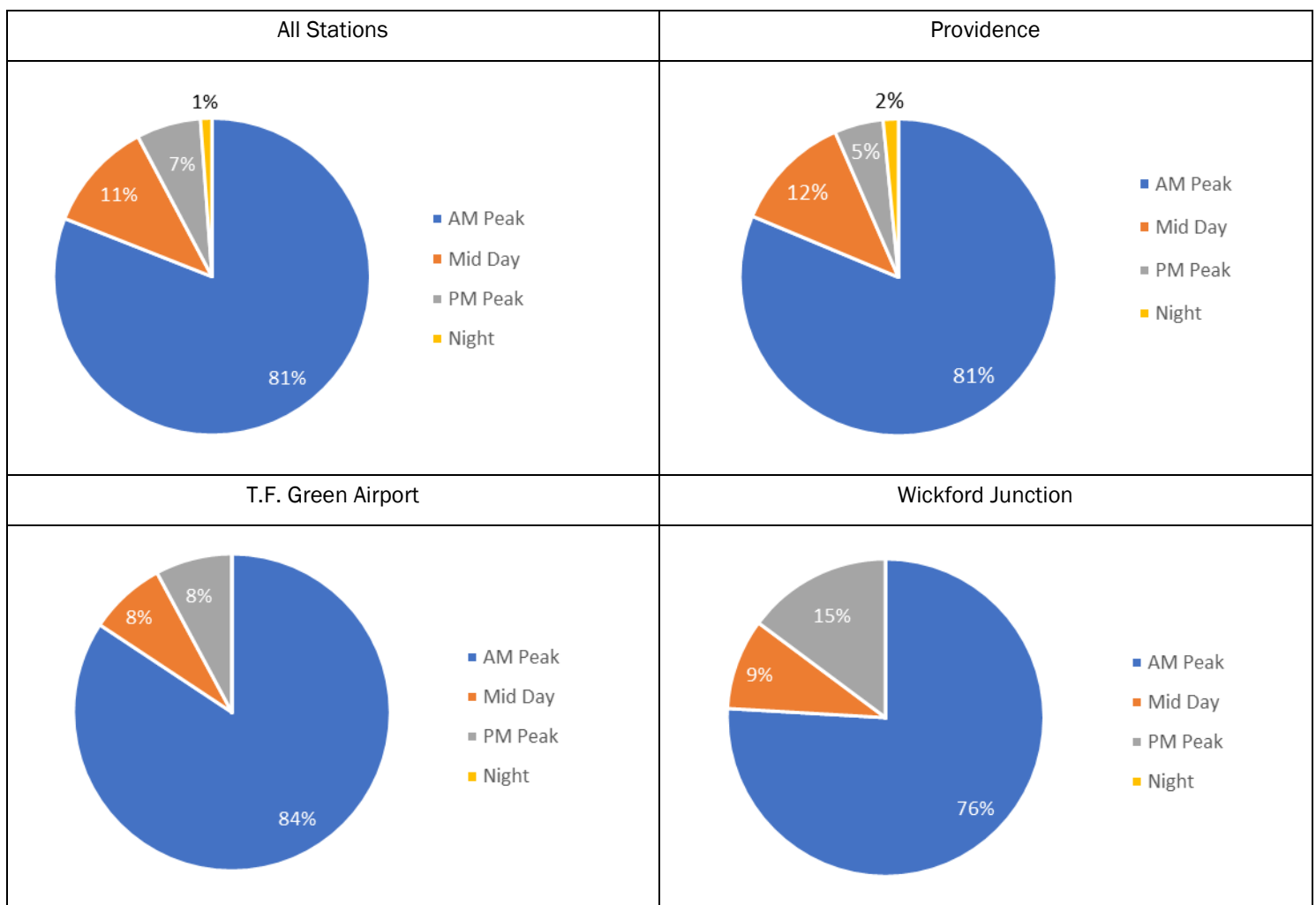
Based on the accepted responses, this survey reflects a sample in which approximately three respondents (75%) boarded the train at Providence Station for every passenger boarding at either T.F. Green Airport (12%) or Wickford Junction (13%). In other words, for every eight passengers riding an Inbound MBTA Commuter Rail train in Rhode Island, six board at Providence Station, one leaves from T.F. Green Airport, and another departs from Wickford Junction.

A review of boardings data from quarterly weekday counts conducted between October 2018 and October 2019 indicated that, for every ten passengers riding an Inbound MBTA Commuter Rail train in Rhode Island, eight boarded at Providence (80%), one left from T.F. Green Airport (9%), and another departed from Wickford Junction (11%). 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 T.F. Green Airport and Wickford Junction relative to those leaving from Providence Station.

2.1.2 Boarding Time

"About what time did you board the train?"

Figure 2. Boarding Time by Boarding Station



Approximately one in five (81%) survey respondents boarded during the AM Peak (Figure 2), with nearly one in ten (11%) in the Mid Day, 7% within the PM Peak and 1% during the Late Night period. With the exception of Wickford Junction, this survey sample places a relatively greater emphasis on the trip-

making habits and socio-demographic characteristics of Inbound riders who travel during the AM Peak period, mostly at the expense of those boarding in the PM Peak and Mid Day (Figure 3 and Table 3).

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

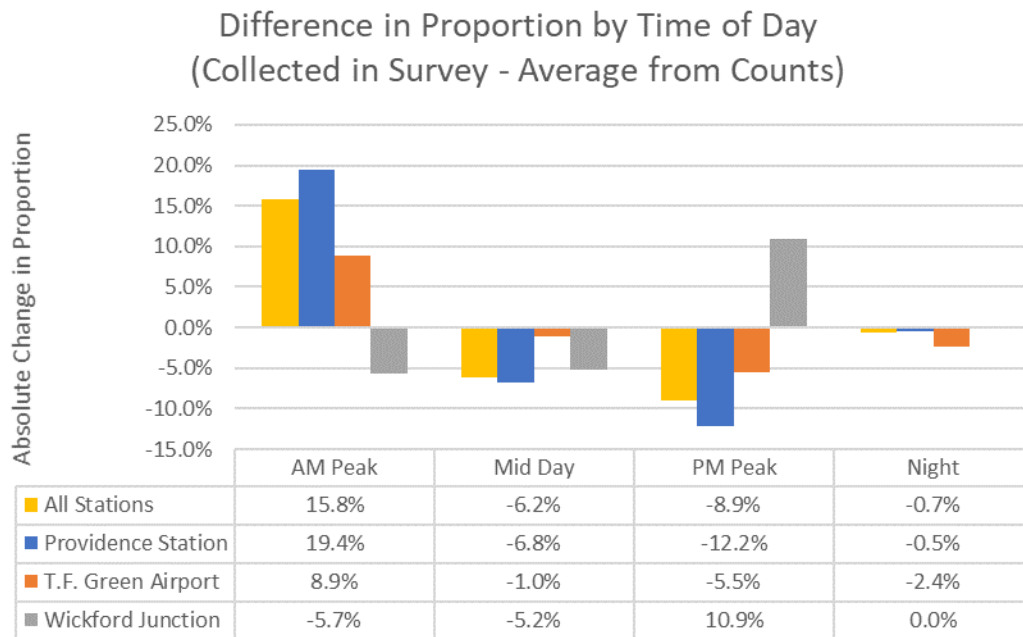


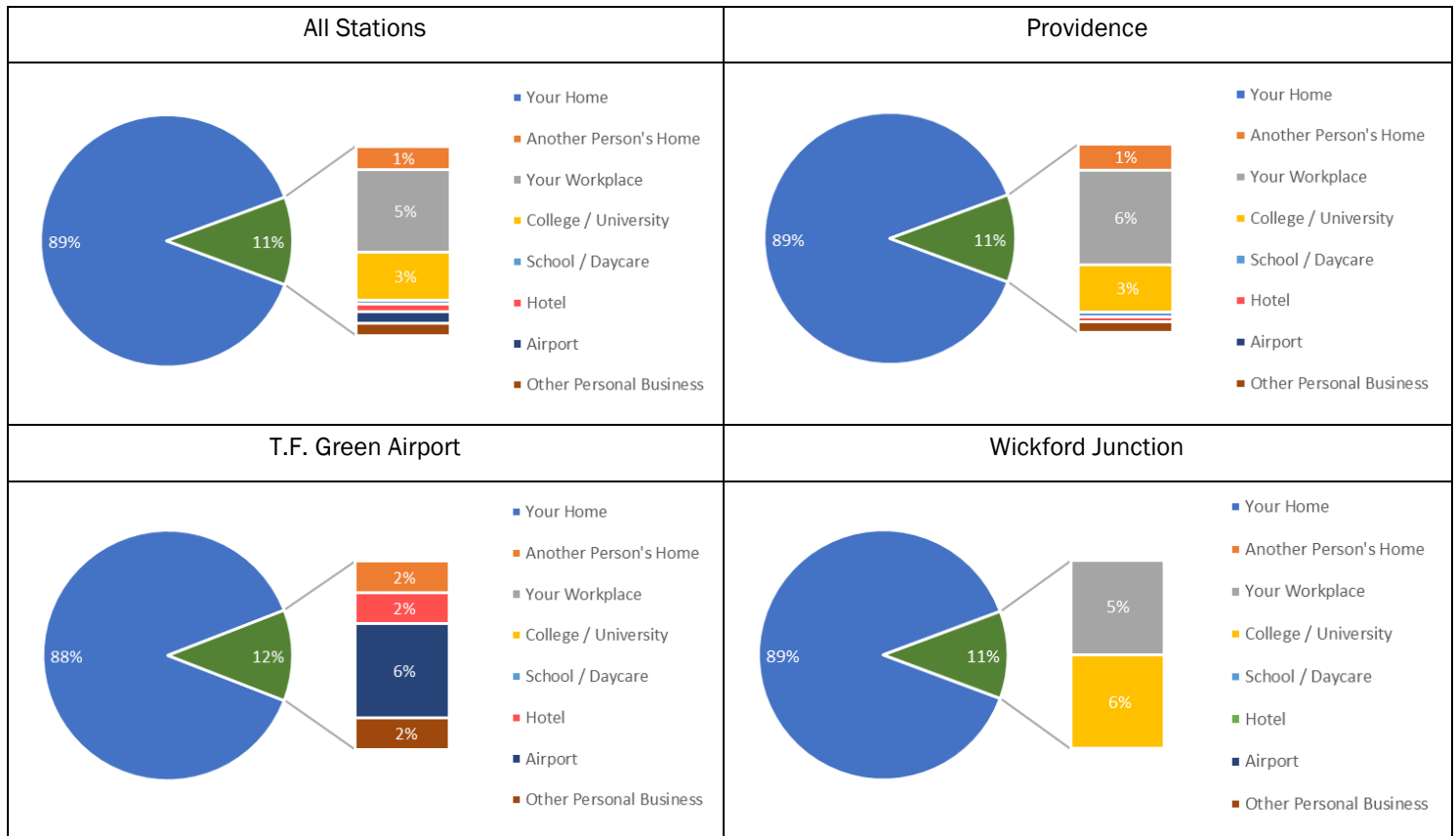
Table 3. Comparison of Observed Ridership and Survey Responses by Boarding Time Period

BOARDING TIME OF DAY	STATISTIC	PERCENTAGE OF INBOUND ONS			
		All Stations	Providence	T.F. Green Airport	Wickford Junction
AM Peak	Counts Average	65.2	61.9	75.4	81.7
	Survey Proportion	81.0	81.3	84.3	75.9
	Difference (Survey – Counts)	15.8	19.4	8.9	-5.7
Mid Day	Counts Average	17.5	18.9	8.9	14.4
	Survey Proportion	11.3	12.1	7.8	9.3
	Difference (Survey – Counts)	-6.2	-6.8	-1.0	-5.2
PM Peak	Counts Average	15.5	17.2	13.3	3.9
	Survey Proportion	6.6	5.0	7.8	14.8
	Difference (Survey – Counts)	-8.9	-12.2	-5.5	10.9
Late Night	Counts Average	1.9	2.0	2.4	0.0
	Survey Proportion	1.2	1.6	0.0	0.0
	Difference (Survey – Counts)	-0.7	-0.5	-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, 89% of Inbound passengers were at their residence prior to arriving at their boarding station. The second most common origin prior to boarding was Your Workplace (5%), followed by College/University (3%), and Another Person's Home (1%). School/Daycare, Hotel, Airport and Personal Business each accounted for less than one percent of aggregate responses.

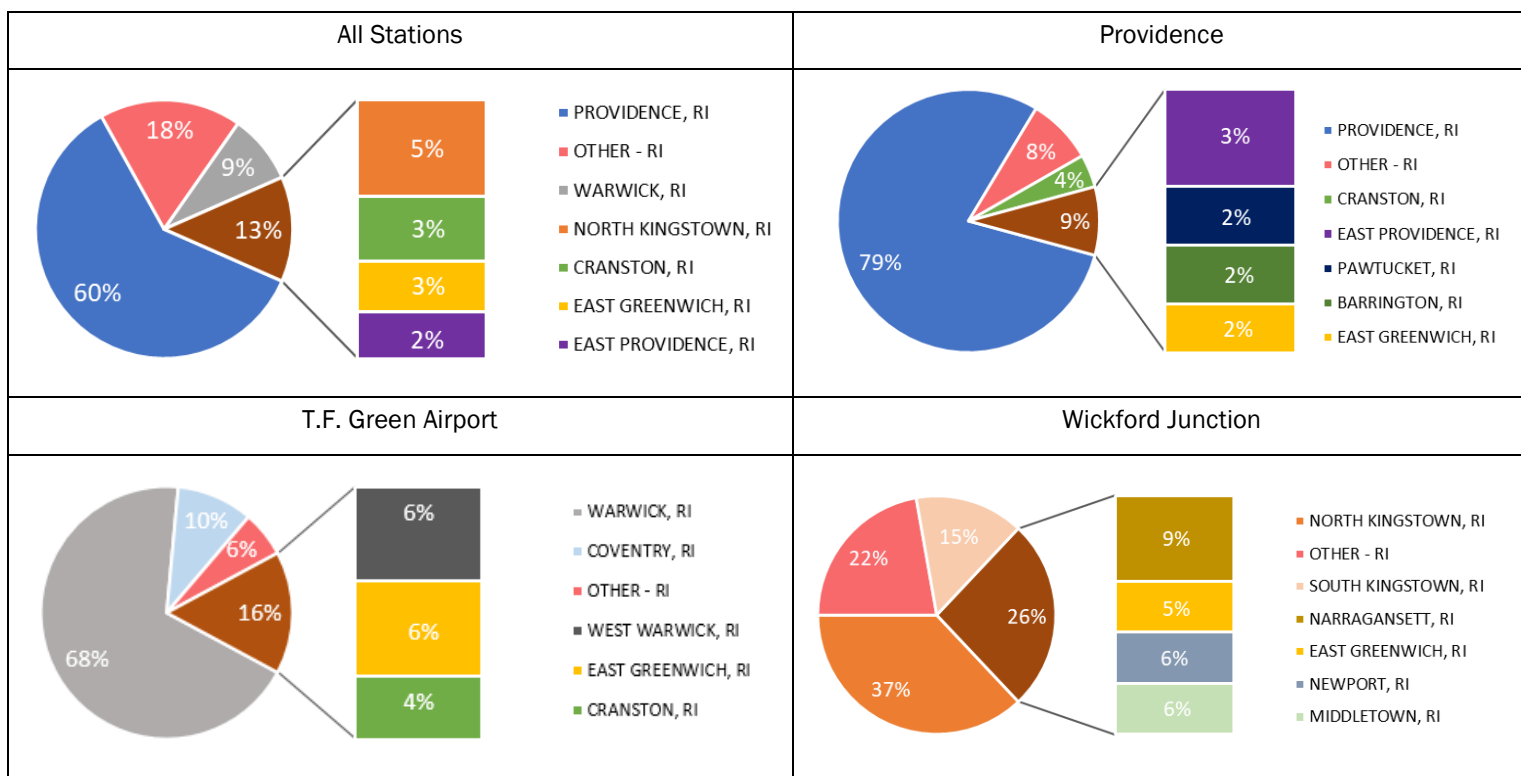
Given that it accounted for the bulk of the responses, it is not surprising that the distribution at Providence Station was similar to that of the Rhode Island segment. While identical proportions of Inbound passengers began their one-way trip at their residence (89%), an institution of higher learning (3%), or another person's home (1%), Providence Station featured a relatively greater share of those who had recently departed from their place of employment (6% compared to 5% overall), which reflects commuters from Massachusetts who work at one of the many employers within walking distance of the station. Responses collected at T.F. Green Airport and Wickford Junction showed similar overall results, with the majority of passengers (88-89%) 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 these two stations is markedly different. As a result of its proximity to an international airport, T.F. Green Airport featured a significantly greater proportion of Airport responses (6%), followed by Hotel and Other Personal Business, each garnering 2% of responses, along with higher shares of Another Person's Home (2% compared to 1% overall). The distribution at Wickford Junction was by far the least varied, with only three origin place types represented; however, it featured the greatest proportion of College/University responses, which are likely from individuals associated with the University of Rhode Island (URI).

2.1.4 Origin Location

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

Figure 5. Origin Location by Municipality



Based on the results presented in Figure 5, all the Inbound passengers boarding stations along the Rhode Island segment originated within the State of Rhode Island. Home markets at each station constitute three of the top four municipalities represented, with Providence in first with an overall share of 60% (79% of Providence Station boardings), Warwick in third with 9% (66% of T.F. Green Airport boardings), and North Kingstown in fourth with 5% (37% of Wickford Junction boardings).

The "Other - RI" designation was used as a catch-call for cities and towns that, when taken individually, represented a minor share of overall traffic at the station level (i.e., municipalities that did not rank among the top five or six at any particular station). Approximately one in five (18%) MBTA Commuter Rail passengers boarding in Rhode Island reported a one-way trip origin that fell within this

miscellaneous category, including 22% of origins at Wickford Junction and 8% each at T.F. Green Airport and Providence Station.

Other common points of origin for Inbound passengers departing from Rhode Island include:

- Cranston (3% overall, including 4% at each of Providence Station and T.F. Green Airport);
- East Greenwich (3% overall, including 6% at T.F. Green Airport, 5% at Wickford Junction, and 2% at Providence Station); and
- East Providence (2% overall accounting for 3% of origins at Providence Station).

Aside from nearly four out of five (79%) Inbound passengers originating from the eponymous municipality, other popular origins for MBTA Commuter Rail riders boarding at Providence Station included Cranston (4%), East Providence (3%), Pawtucket and Barrington (2%), and East Greenwich (1%). While over two-thirds (68%) of Inbound passengers leaving from T.F. Green Airport began their one-way trip from a point within Warwick, 10% arrived from Coventry, 6% from West Warwick and East Greenwich, and 4% from Cranston.

The distribution for Wickford Junction was by far the most varied, with the home municipality, North Kingstown, accounting for just over one-third of the responses (37%), followed by 15% from South Kingstown. The coastal communities located near the transition between Narragansett Bay and the Atlantic Ocean accounted for 26% of boardings at Wickford Junction, including 9% of Inbound riders having left from Narragansett and 6% from each of East Greenwich, Newport, and Middletown. Since Wickford Junction operates as the southern terminus of the Providence/Stoughton Line, it had the highest proportion of responses in the Other – RI category at a total of 22% of all Inbound riders.

A series of maps showing the relative distribution of Inbound passengers' origin locations by boarding station is provided on the following four 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.

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

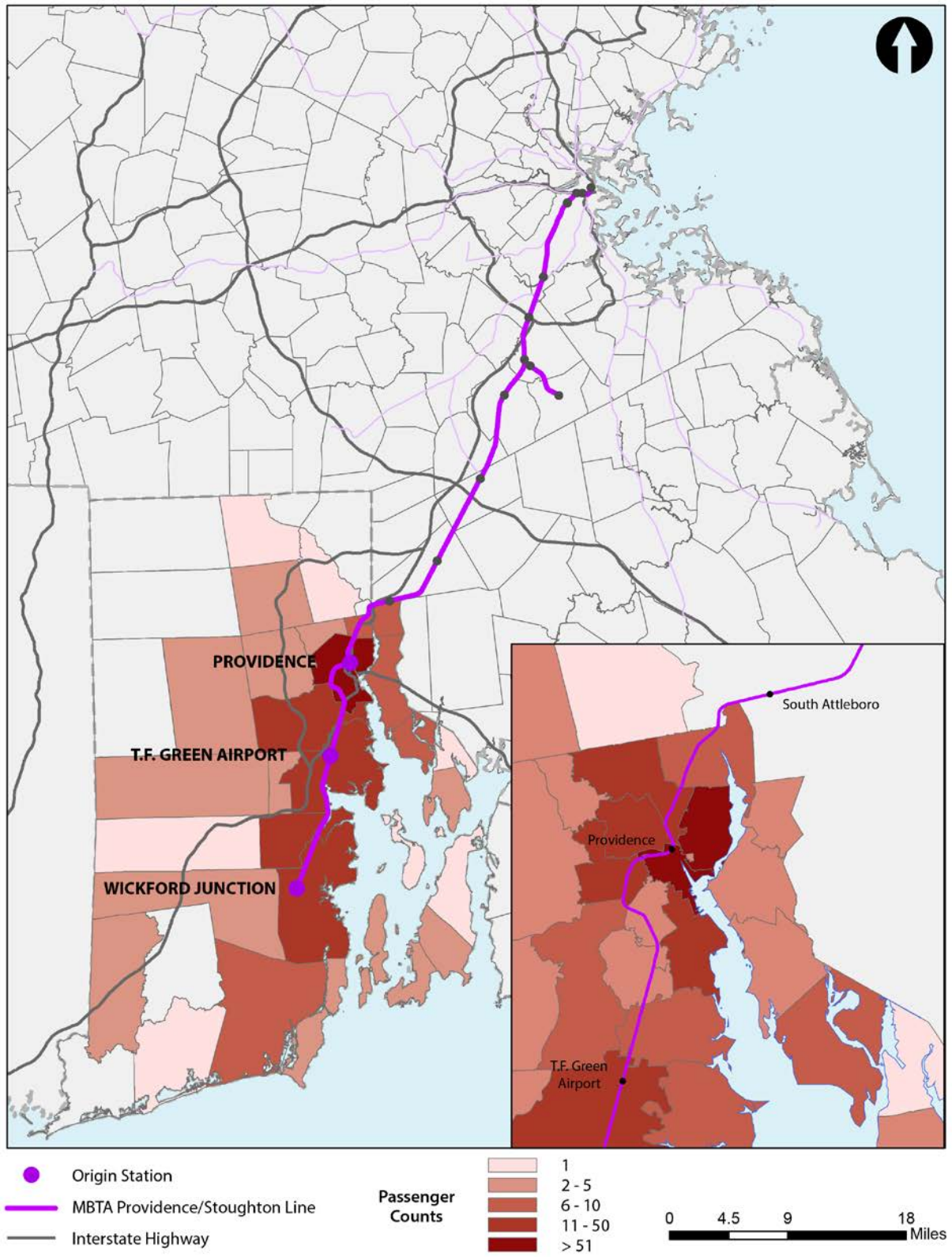


Figure 7. Inbound Passenger Origins by Boarding Station – Providence Station

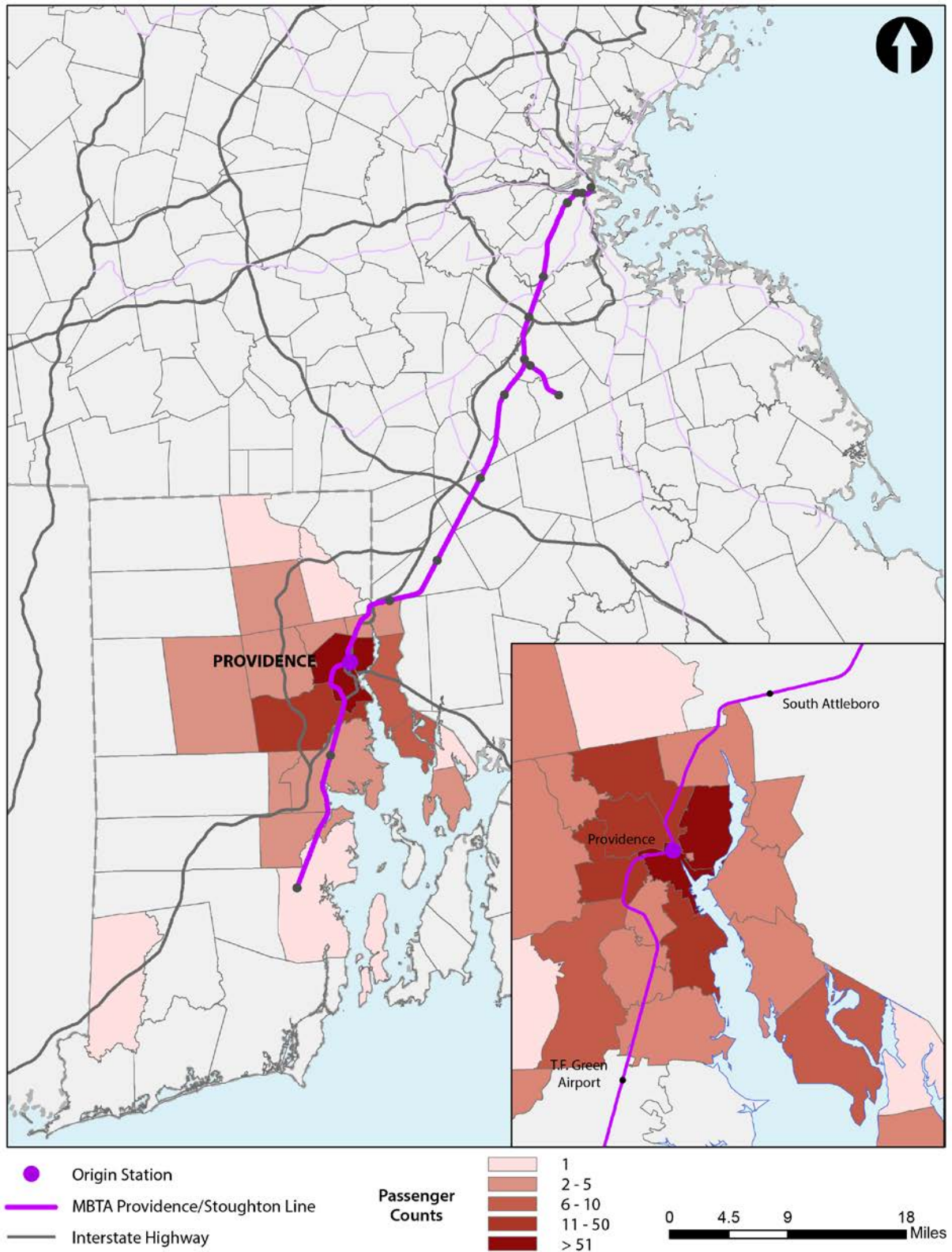


Figure 8. Inbound Passenger Origins by Boarding Station – T.F. Green Airport

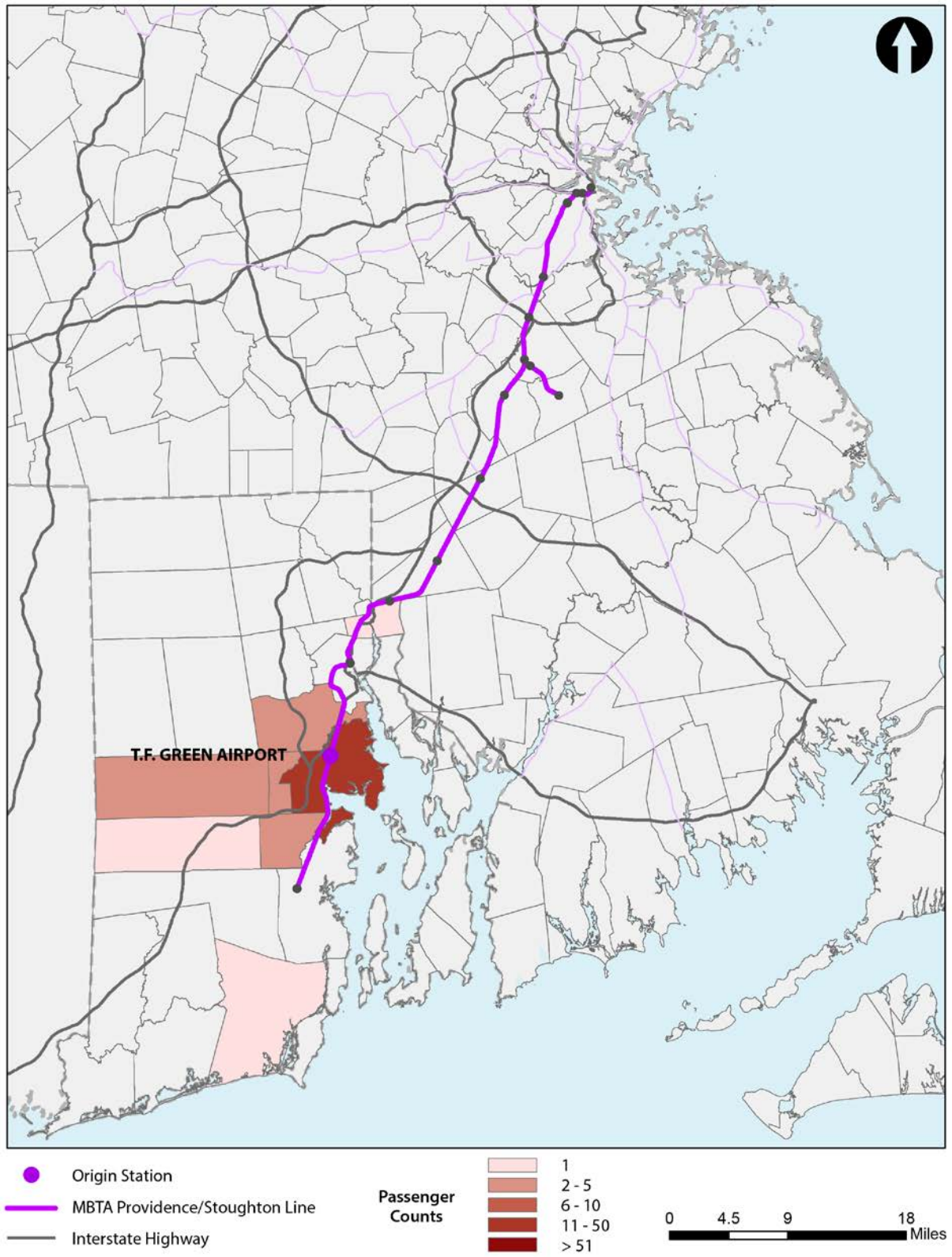
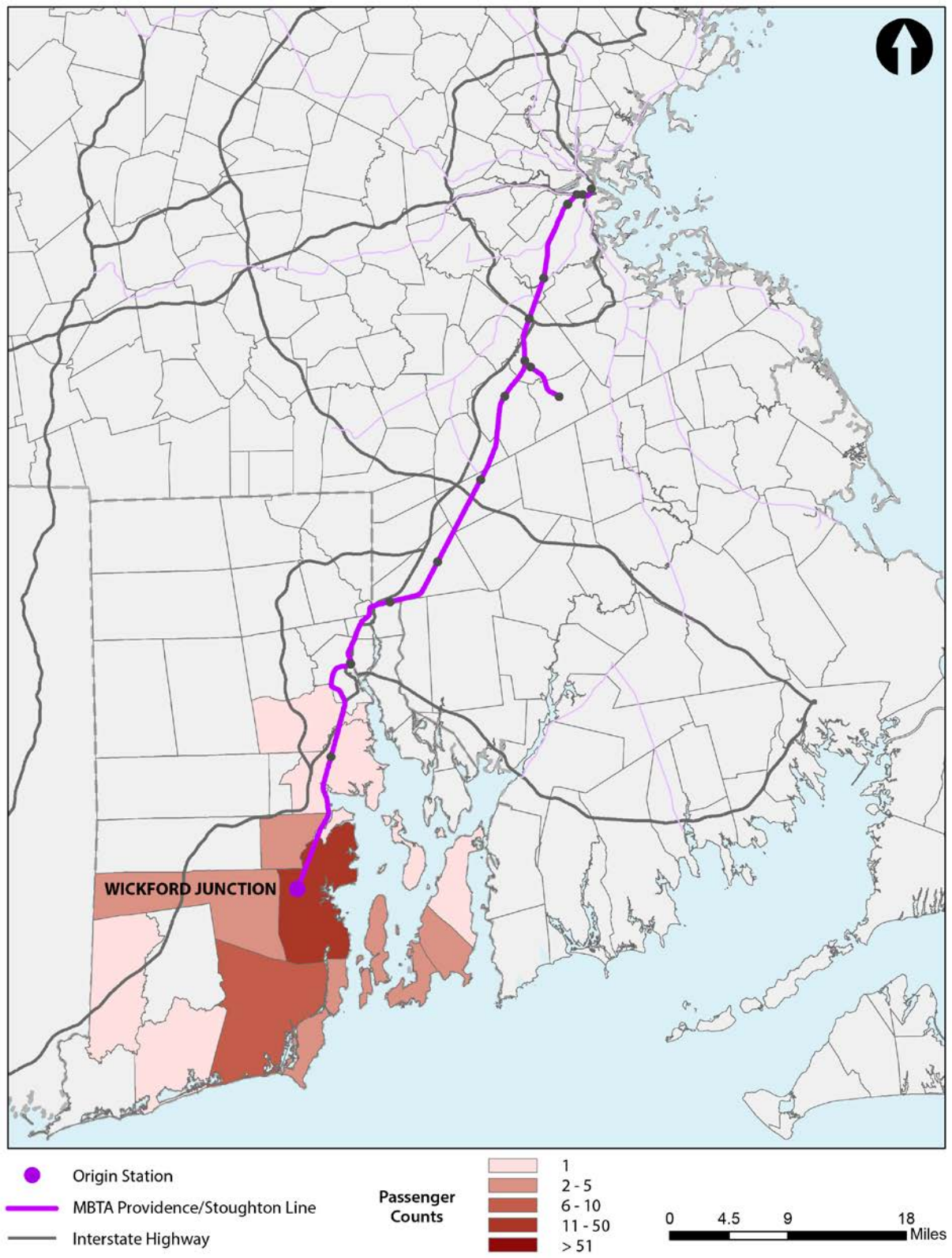


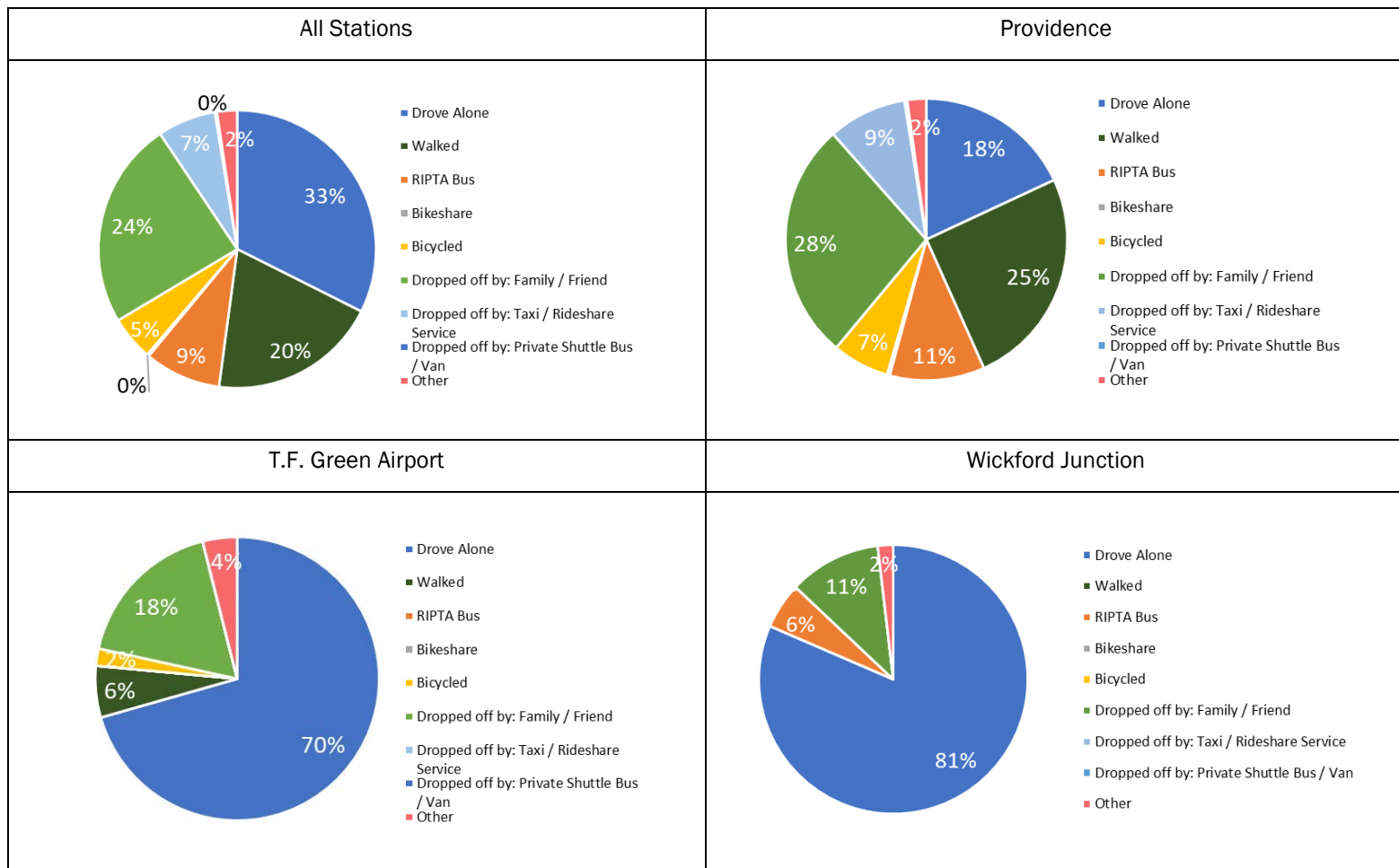
Figure 9. Inbound Passenger Origins by Boarding Station – Wickford Junction



2.1.5 Ingress Mode

"Please tell us how you got to the Commuter Rail station today:"

Figure 10. Ingress Mode



As seen in Figure 10, the majority of passengers (57%) boarding along the Rhode Island segment arrived to their boarding station via the use of a personal (i.e., not-for-hire) automobile, with 33% reporting having driven a vehicle to the station and 24% being dropped off by a family member or friend. However, active transportation modes accounted for one in every four trips to MBTA Commuter Rail stations in Rhode Island, with Walking fulfilling 20% of origin trips and Biking enabling 5%. Transit use amounted to 9% of overall arrivals to boarding stations, followed closely by Taxi/Rideshare services at 7%, and finally Private Shuttle Bus / Van (less than 1%). Other modes amounted to 2% of all responses and consisted of RIDOT's Providence-based pilot autonomous service (five at Providence), Airplane (two at T.F. Green Airport), Amtrak (one transfer at Providence Station), and Electric Unicycle (one at Providence).

Given its relatively dense, urbanized built environment, Providence Station, as expected, had the lowest proportion of passengers arriving by personal (not-for-hire) automobile and the highest proportion of those who reached the station via Active Transportation (one in every three trips), Transit (11%), or Taxi/Rideshare (9%). Nevertheless, the use of a personal vehicle still accounted for 46% of

all arrivals to Providence Station, with over a quarter having arrived via Family / Friend (28%) and the remainder (18%) Drove Alone. One in four (25%) Inbound passengers at Providence arrived on foot, 7% arrived via (personal) Bicycle, and one respondent arrived via Bikeshare. It should be noted that respondents at Providence Station were responsible for over 96% of Walking and Biking, 92% of Transit, and 100% of Taxi/Rideshare and Private Shuttle Bus / Van trips recorded within this OBS. Interestingly, RIDOT's autonomous pilot, the Little Rody Shuttle, accounted for just over one percent of arrivals (five trips) to Providence Station and served Inbound train departures in the AM Peak spanning from 7:10 to 8:25 AM.

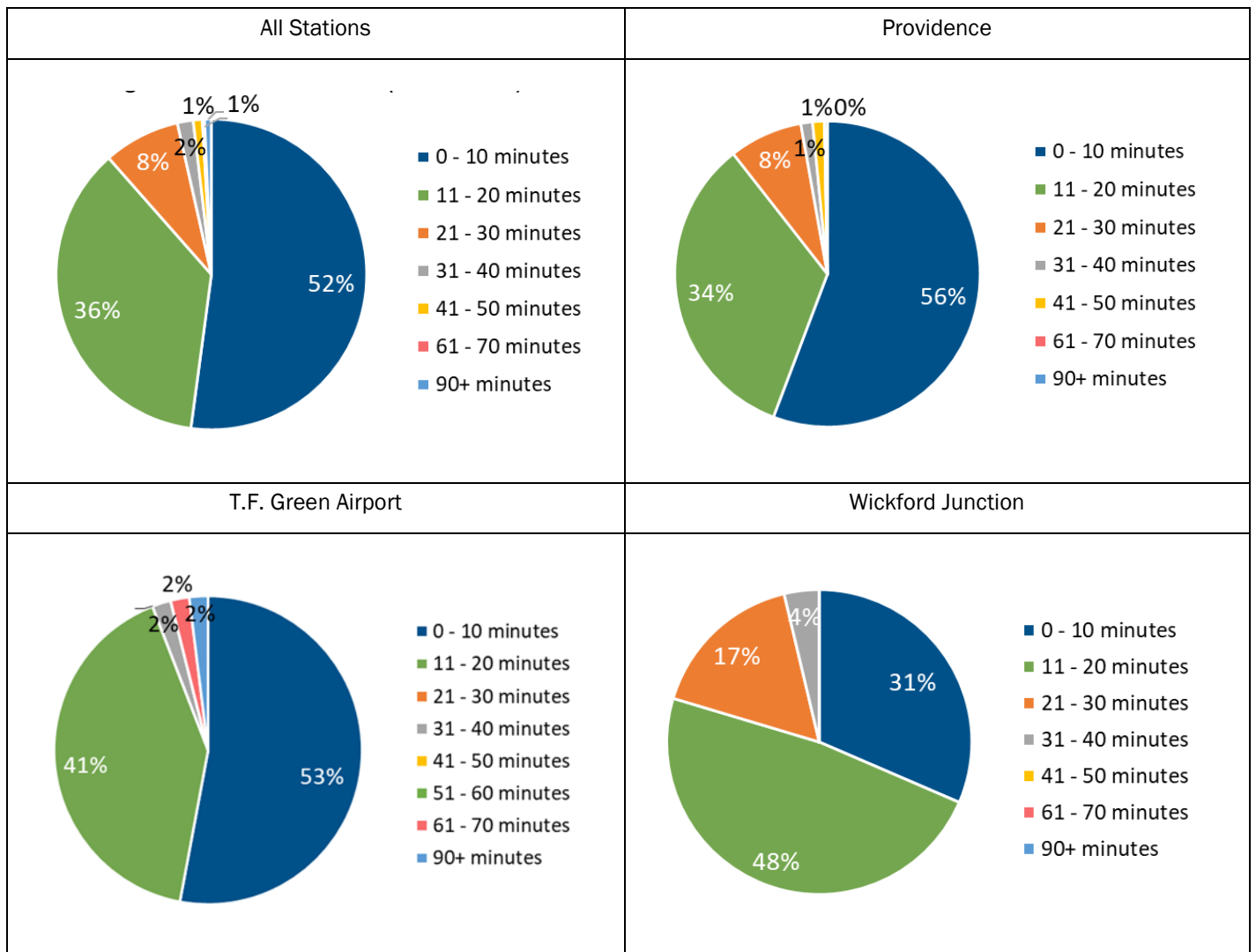
Given the fundamentally different built environment contexts and surrounding land uses at the two stations to the south, as expected, Inbound passengers boarding at T.F. Green Airport and Wickford Junction reported placing a greater emphasis on the use of private automobiles relative to those arriving to Providence Station. At T.F. Green Airport, 88% of all arrivals were served by personal vehicle, with 70% Drove Alone and 18% Dropped off by: Family/Friend, and among the 94% of Wickford Junction's arrivals, 83% Drove Alone and 11% arrived via family member or friend. Interestingly, the preference among non-personal vehicle options differed significantly between the two southerly stations. At T.F. Green Airport, 8% of Inbound arrivals were facilitated by Active Transportation while none of the respondents reported using Transit. The trend was reversed at Wickford Junction, which saw 6% of Inbound riders arrive via Transit, with zero respondents indicating they Walked or Biked to the station.

One factor behind this discrepancy could be the level of bus service at each station. The TF Green Airport train station is only served by RIPTA's 8X, whose 13 daily trips are primarily oriented towards reverse commuters from Providence to Warwick. The airport terminal has much more frequent service, but its bus stop is an approximately 13 minute walk to the train station. These factors make the bus a relatively unattractive access mode for train passengers. Wickford Junction's bus stop is co-located with the train station, has frequent service all day (RIPTA Routes 62 & 66), peak direction express service (RIPTA Route 65X), and provides connections from URI and smaller South County Park & Ride lots.

2.1.6 Ingress Duration

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

Figure 11. Origin Duration



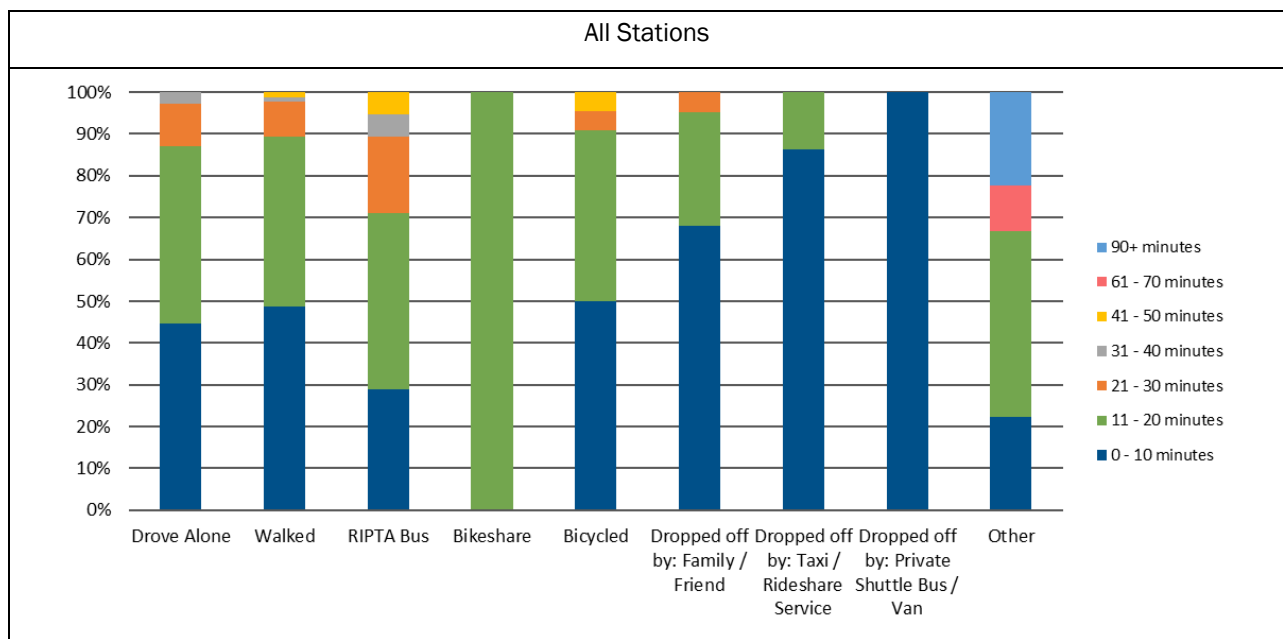
For the Rhode Island segment as a whole, 96% of those surveyed indicated that their journey to the station took no more than 30 minutes and 89% stated that it took no more than 20 minutes. As seen in Figure 11, station ingress times less than 10 minutes were the most common (52%), followed by travel times of 11 to 20 minutes (36%). Long ingress trips (i.e., those taking more than 30 minutes) were relatively uncommon and the majority of those trips took no more than 40 minutes (98%).

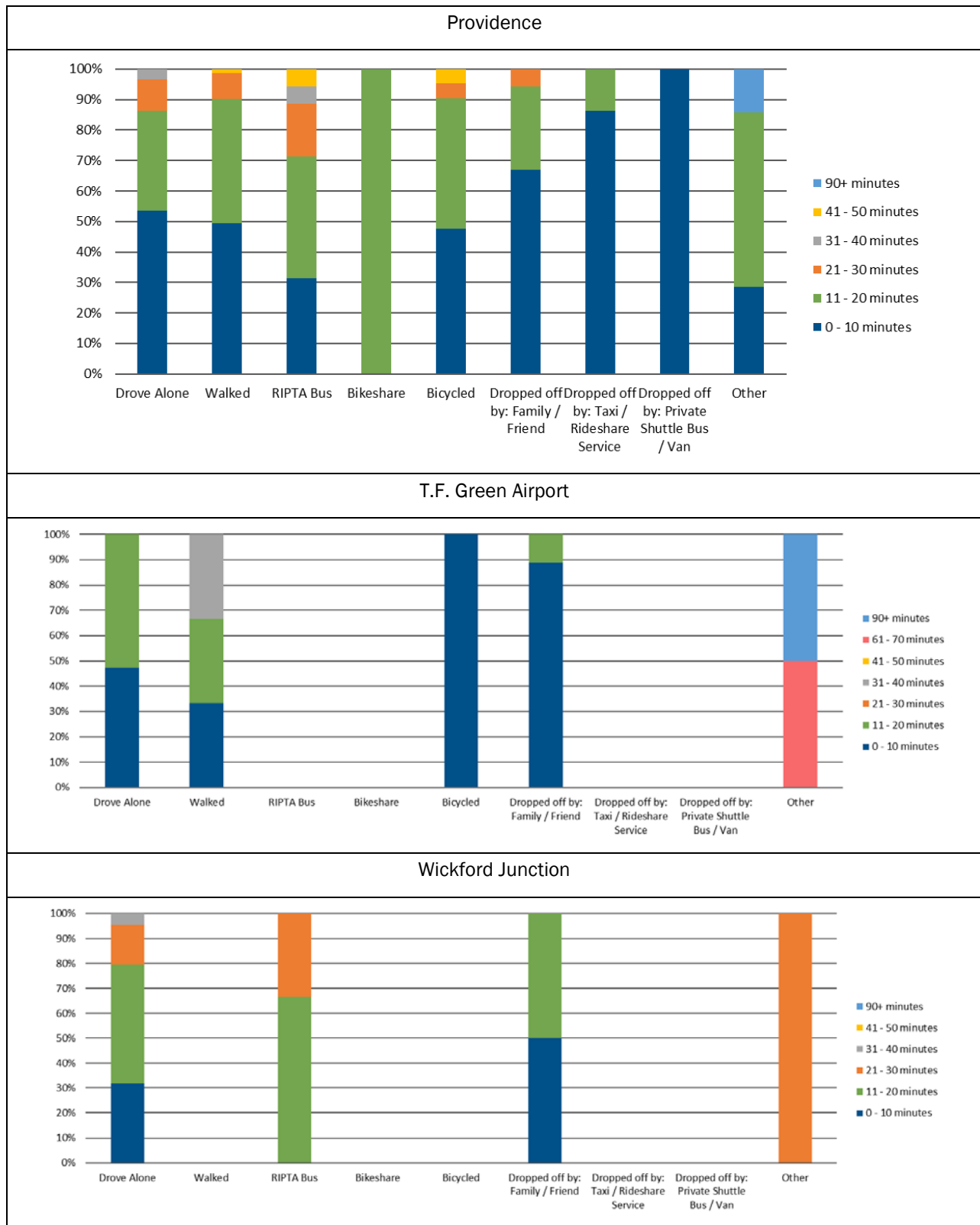
The distribution of station ingress trip times at Providence Station is remarkably similar to the state as a whole, with a slightly higher share of trips lasting less than 10 minutes (4% more), along with a lower proportion of 11 to 20 minute journeys (2% less). Relative to the statewide profile, T.F. Green Airport had a comparable level of trips lasting less than 10 minutes (1% more) but featured a significantly greater share of ingress trips lasting 11 to 20 minutes (5% more). The 90+ minute trips consist of passengers who had taken a plane to T.F. Green Airport and then began their commuter rail journey

at that station. Inbound passengers arriving to Wickford Junction reported the lowest proportion of station ingress trips lasting less than 10 minutes (31%) and, as a result, featured the highest proportion of trips lasting greater than 10 minutes, including 48% spanning 11 to 20 minutes, 17% ranging from 21 to 30 minutes, and 4% taking up to 40 minutes.

Figure 12 shows the relative distribution of ingress trip durations by arrival mode for Inbound MBTA Commuter Rail riders at each station in Rhode Island. Across all stations, short trips taking less than 10 minutes constituted a significant or majority share of the ingress trips within the following modes: Dropped off (in any form, but particularly Private Shuttle Bus/Van and Taxi/Rideshare), Walked, Bicycled, and Drove Alone., and Other (which was dominated by the pilot Little Roady autonomous shuttle). While only 12% of ingress trips lasted more than 20 minutes, these longer trips were not evenly distributed among the modes. Approximately 29% of Transit arrivals involved an ingress trip longer than 20 minutes, compared to 13% of those who Drove Alone, 11% of those who Walked, and 9% of those who Bicycled. Active Transportation and Transit arrivals accounted for the majority of ingress trips lasting longer than 30 minutes, including 100% of the study's entries within the 41 to 50 minutes category.

Figure 12. Ingress Time Distributions by Boarding Mode





As over half of Providence Station passengers who drove alone and parked at the station and between 67%-86% of Providence Station passengers who got dropped off at the station by a family member, friend, taxi, or TNC involve a vehicle journey of 10 minutes or less, there exists a real opportunity to shift a substantial proportion of these ingress trips to active modes. Initiating this transition towards greater reliance on walking and biking will necessarily require greater levels of investment towards improving multimodal access (i.e., projects focused on enhancing sidewalks, curb ramps, and bicycle facilities).

As shown in Table 4, which provides average ingress trip duration by mode at each station, it took the average Inbound MBTA commuter Rail passengers approximately 17 minutes to reach their boarding station from their origin location.² Transit riders reported the longest average commute times (22 minutes), which is four minutes longer than those who Drove Alone (18 minutes), five more than Active Transportation users (17 minutes), and nearly ten minutes slower than the typical Drop Off passenger (13 minutes).

Table 4. Average Ingress Trip Time by Mode & Station

Mode	All Stations	Providence	T.F. Green Airport	Wickford Junction
Drove Alone	17.8	16.4	17.8	19.6
Walked	16.5	16.3	23.3	-
RIPTA Bus	21.6	21.4	-	23.3
Bikeshare	20.0	20.0	-	-
Bicycled	16.8	17.1	10.0	-
Dropped off by: Family / Friend	13.7	13.9	11.1	15.0
Dropped off by: Taxi / Rideshare Service	11.4	11.4	-	-
Dropped off by: Private Shuttle Bus / Van	10.0	10.0	-	-
Other	41.1	28.6	85.0	-
ALL MODES	16.9	16.1	19.4	19.3

² 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.

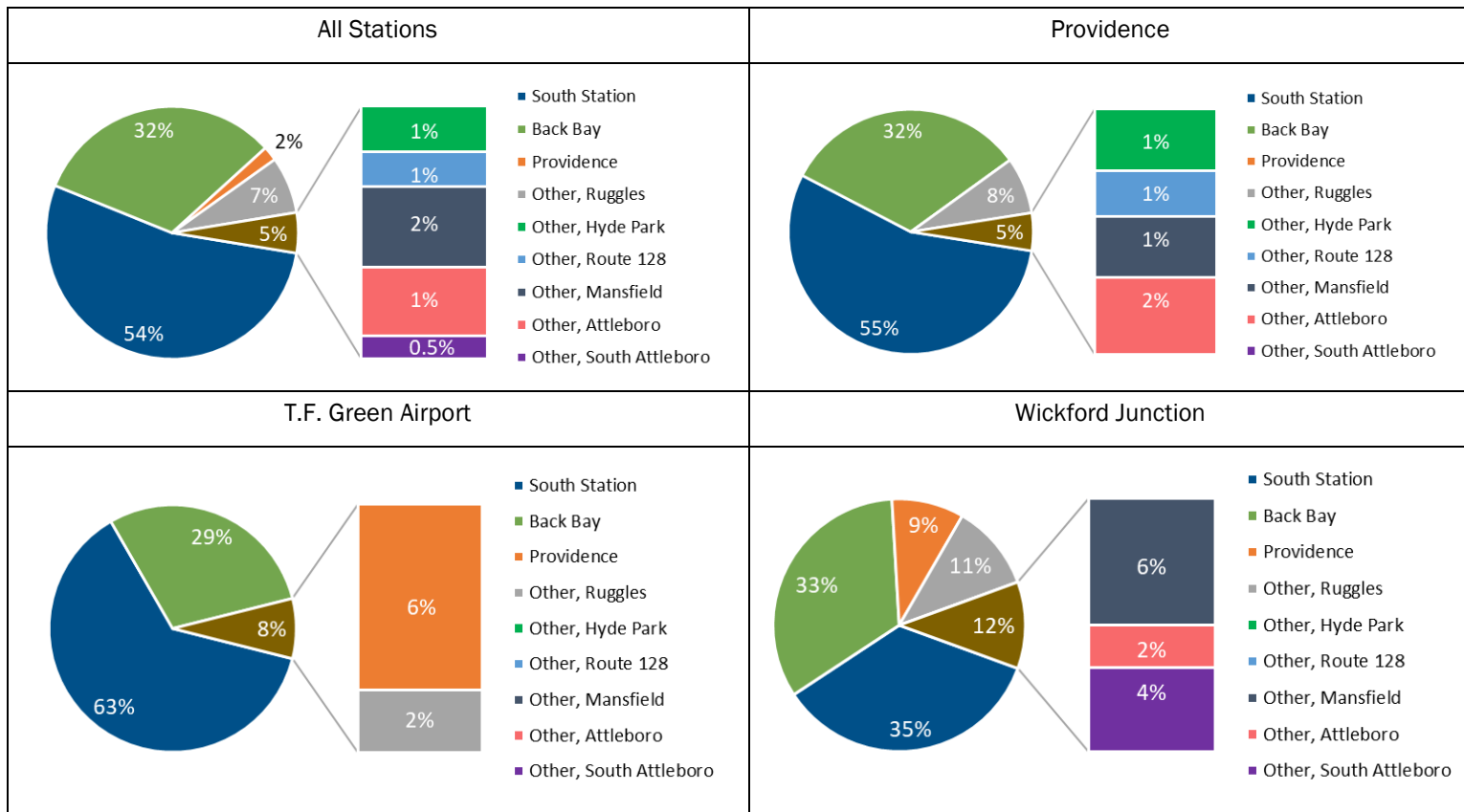
2.2 Destination Information

This section reviews responses pertaining to Questions 8-12 of the OBS which focused on Inbound MBTA Commuter Rail passengers' destination information for the one-way trip (i.e., the final segment of the trip between the alighting MBTA Commuter Rail station and the 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, 94% of Inbound passengers surveyed along the Rhode Island segment stated that they were alighting at an MBTA Commuter Rail Station located in Boston. This region is particularly well-aligned to leverage commuter rail service given the long-standing presence of a robust rapid transit system, transit-supportive development, severe highway congestion, and expensive parking. South Station (54%) and Back Bay (32%) Stations, which are also served by Amtrak, accounted for 86% of all alightings. Ruggles, which is also an MBTA Orange Line Rapid Transit station situated near a major employment center that is anchored by the world-renowned Longwood Medical Center (Boston Children's Hospital, Beth Israel Deaconess, and others) and several institutions of higher learning (Harvard Medical School, Northeastern University, Massachusetts College of Art and Design and the Wentworth Institute of Technology) and Fenway Park, served as the alighting station for 7% of passengers.

A small percentage of riders boarding within Rhode Island used the service to fulfill a trip to a less congested destination south of Boston. When taken together, travel to MBTA Commuter Rail stations in southeastern Massachusetts (i.e., Attleboro, South Attleboro, Mansfield, and Route 128) accounted for nearly 4% of all Inbound trips.

Providence Station was the fourth most common alighting station (2%), serving as the destination for three passengers departing from T.F. Green Airport (6%) and five passengers (9%) disembarking from Wickford Junction. In aggregate, these wholly internal, Rhode Island-based trips accounted for nearly 8% of the survey responses from those boarding south of Providence Station. It should be noted that, based on a review of quarterly weekday counts of Inbound offs, approximately 17% of all trips originating from Wickford Junction and T.F. Green Airport were internal, with 96% of those passengers alighting at Providence Station.

The distribution for Providence Station was quite similar to that of the line as a whole, with 55% of passengers alighting at South Station, 32% getting off at Back Bay, and 8% stopping at Ruggles. Nearly 3% of Inbound passengers leaving from Providence Station used the service to complete what were, from a commuter rail perspective, semi-local trips between the state capital and markets just beyond the border in southeastern Massachusetts, including 2% alighting at Attleboro and 1% at Mansfield.

While all three stations had a similar proportion of riders alighting at Back Bay (29-33%), the proportion traveling to South Station was surprisingly variable, with a maximum of 63% at T.F. Green Airport, followed by 55% at Providence, and a mere 35% at Wickford Junction. Although zero trips between T.F. Green Airport and stations in southeastern Massachusetts were reported, Mansfield, Attleboro, and South Attleboro served as the destination for 11% of all Wickford Junction trips. Interestingly, 11% of Wickford Junction Inbound riders were headed to Ruggles and the majority were reporting to work. As noted previously, only six of the 20 Inbound weekday trips service Ruggles, with many of the available timepoints clustered in the AM peak to facilitate employment access to the adjacent Longwood Medical Area and growing Fenway/Kenmore employment district. Four of those trips originate at Wickford Junction, including three AM peak trains. This makes Wickford Junction and TF Green Airport stations unique for the Providence Line in that 75% of their inbound AM Peak service stops at Ruggles.

A series of maps showing the relative distribution of Inbound passengers' final destinations by boarding station is provided on the following four pages. Figure 14 shows aggregated destination results for those boarding along the Rhode Island segment of the Providence/Stoughton Line while Figure 15 through Figure 17 display the destinations for those boarding at Providence Station, T.F. Green Airport, and Wickford Junction, respectively.

Figure 14. Inbound Passenger Destinations by Boarding Station – All Stations

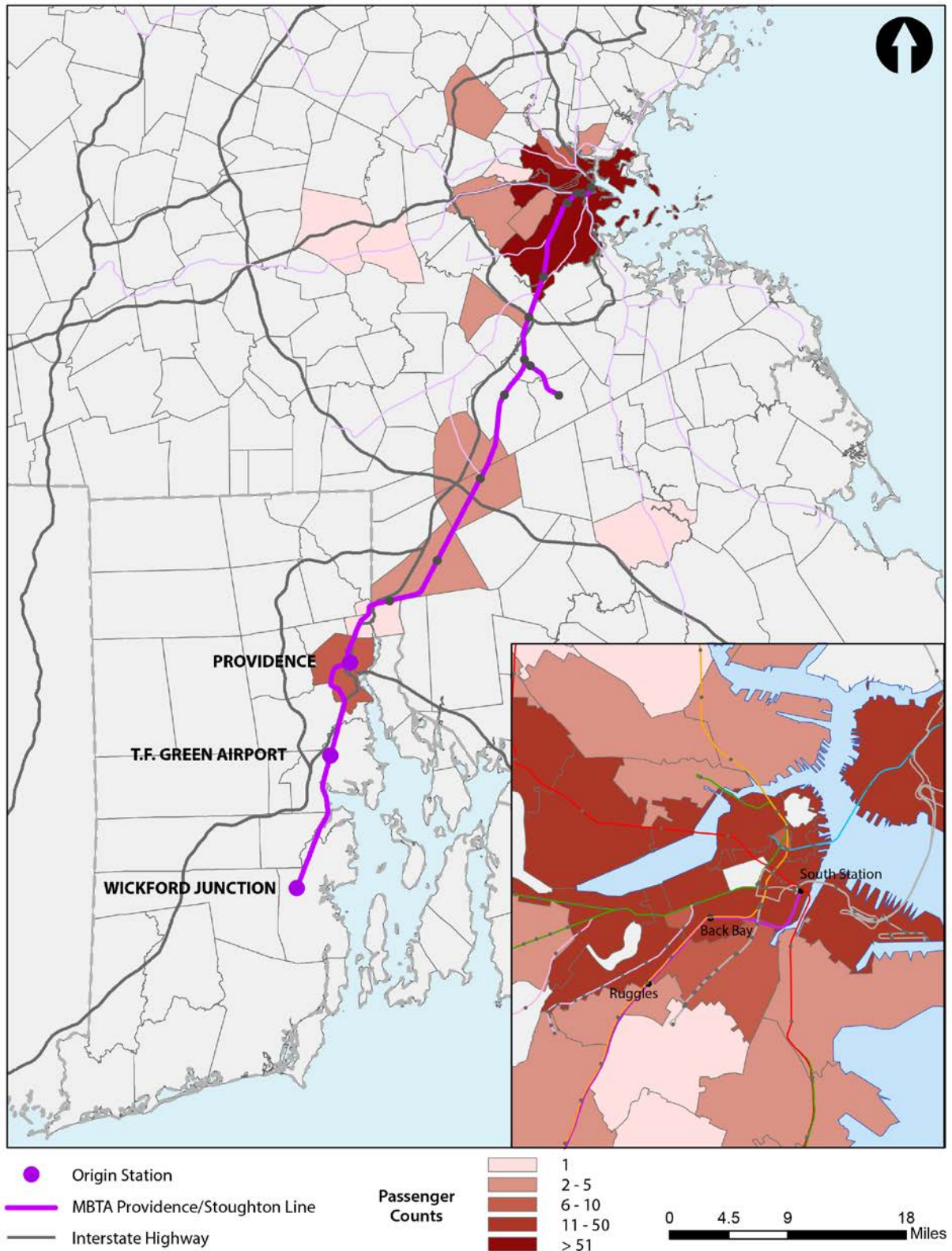


Figure 15. Inbound Passenger Destinations by Boarding Station – Providence Station

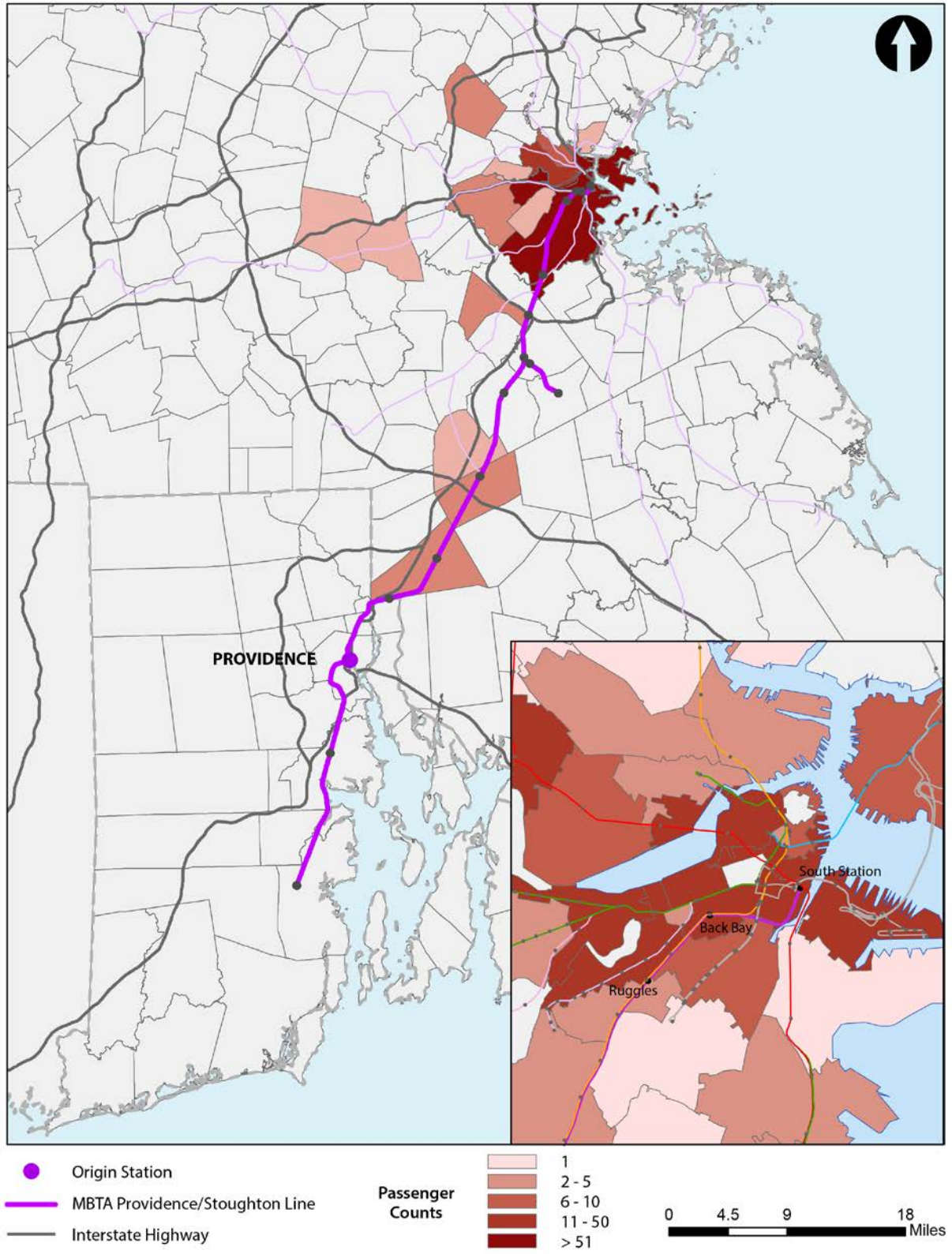


Figure 16. Inbound Passenger Destinations by Boarding Station – T.F. Green Airport

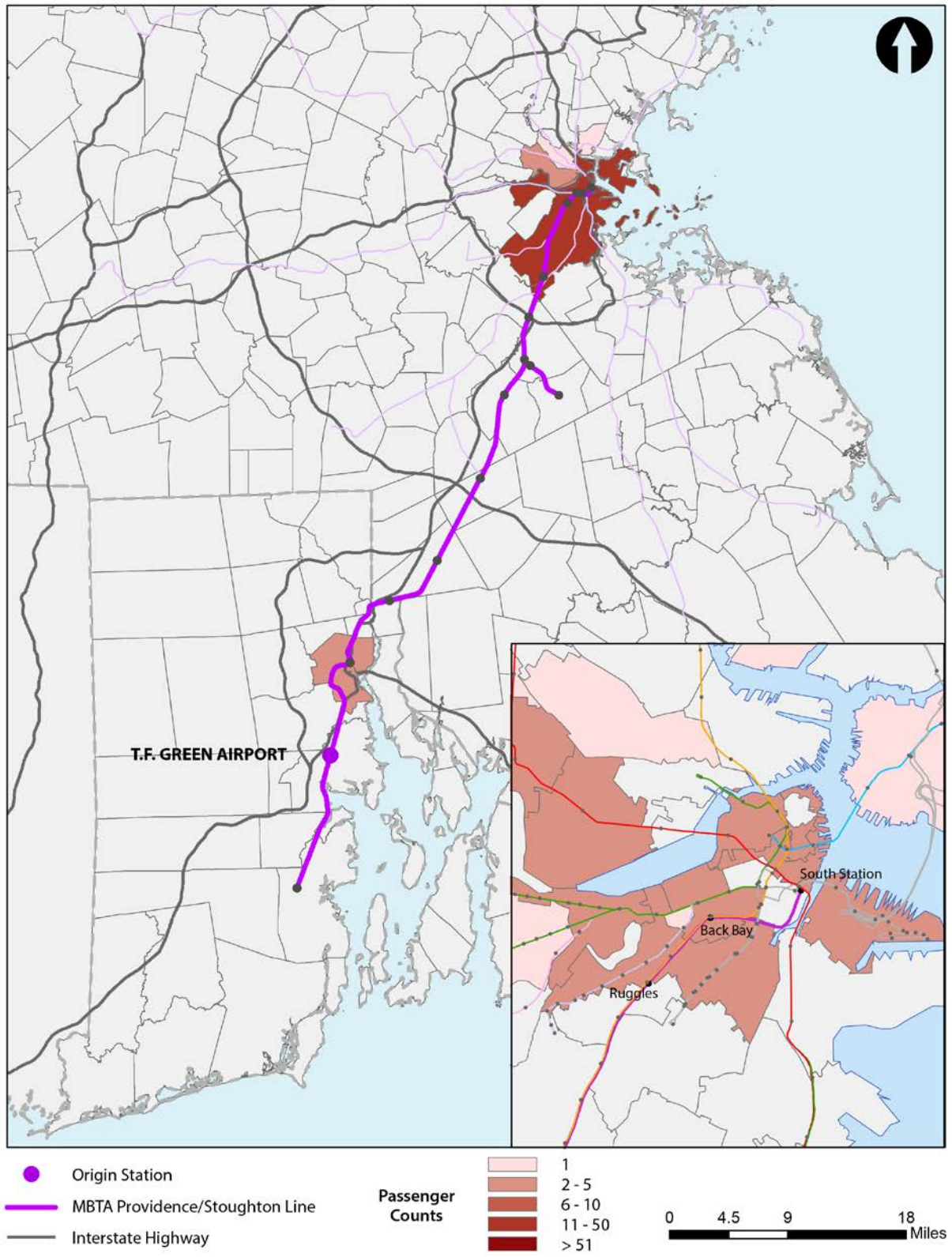
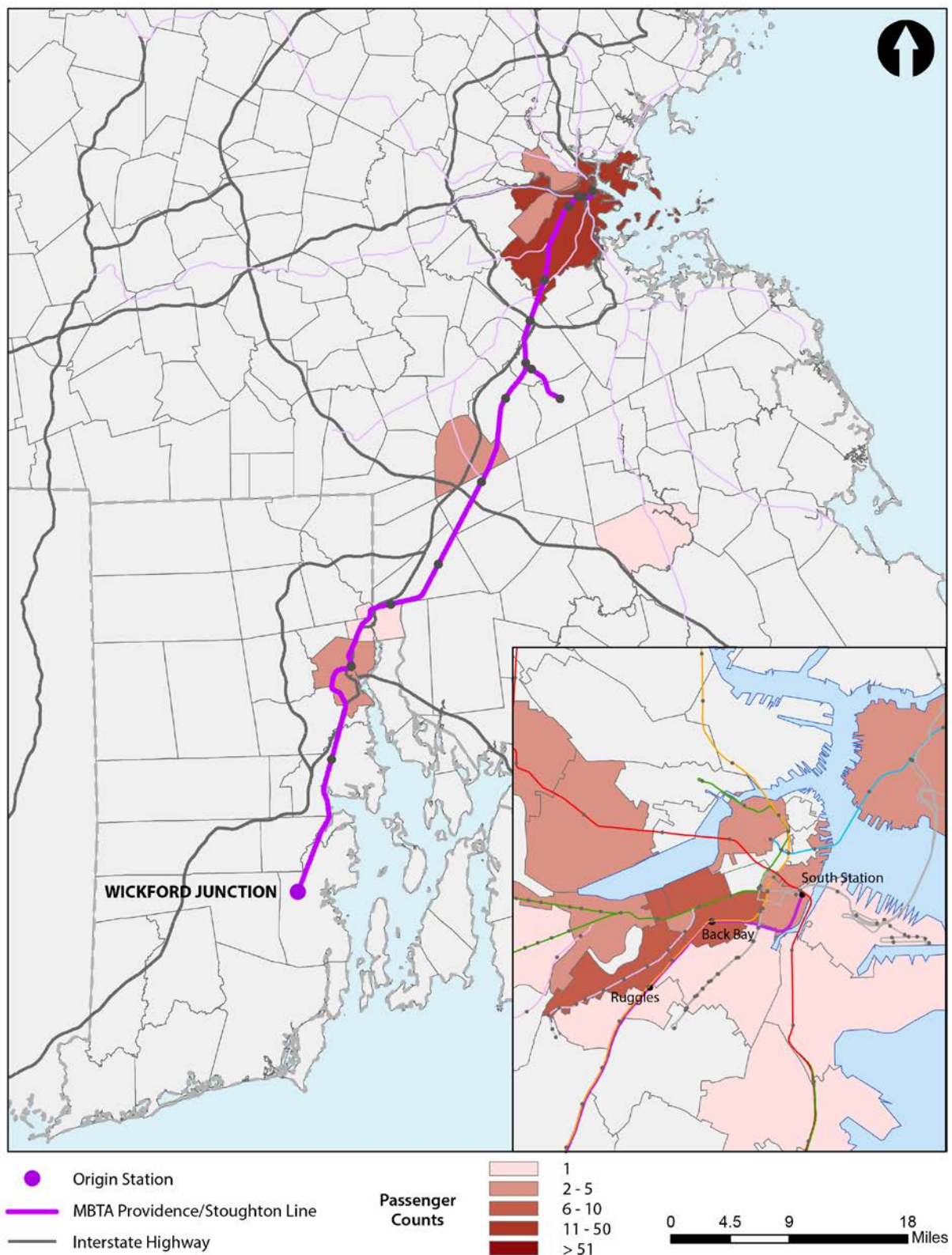


Figure 17. Inbound Passenger Destinations by Boarding Station – Wickford Junction



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 18. Egress Mode by Alighting Station

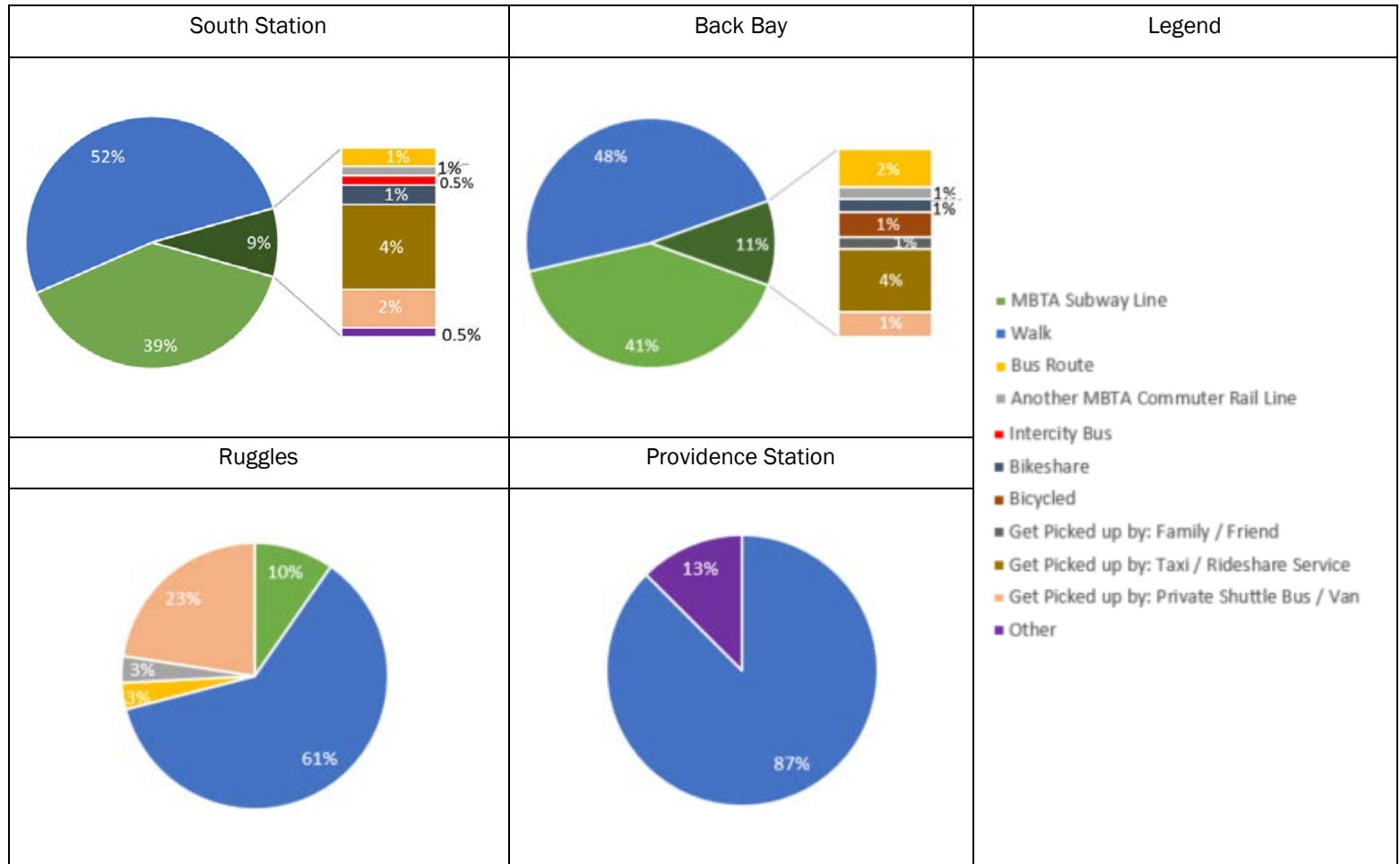


Figure 18 presents the egress mode distributions for the top four alighting stations. At South Station the majority of alighting passengers (52%) reported that they walked to reach their final destination, followed by MBTA Subway Line (39%). Taxi/Rideshare served 4% of alighting passengers at South Station while private shuttles carried 2%. MBTA Bus and Bikeshare each served 1%, with Other MBTA Commuter Rail Line, Intercity Bus, and Other each reported by a single respondent.

Back Bay had a modal split similar to South Station, with a minor shift between the proportion of those walking to their final destination (48%) and those transferring to an MBTA Subway Line (41%). Consistent with South Station, approximately 4% of Inbound passengers alighting at Back Bay relied on a Taxi/Rideshare service to reach their final destination while just under 2% reported using a private shuttle or Bicycling/Bikeshare.

Given the proximity of major medical facilities and educational institutions, 61% of those alighting at Ruggles completed the rest of their trip on foot. In addition to the large proportion of walkers, Ruggles

modal split is notable in that 23% (7 out of 31) of respondents reported using a private shuttle (mostly MASCO Shuttle services) and 10% reported transferring to an MBTA Subway Line.

Among the eight Inbound passengers surveyed who alighted at Providence Station, all but one of them, who reported using the Little Rody autonomous shuttle, 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 your reported in Question 8?”

Figure 19. Egress Duration by Alighting Station

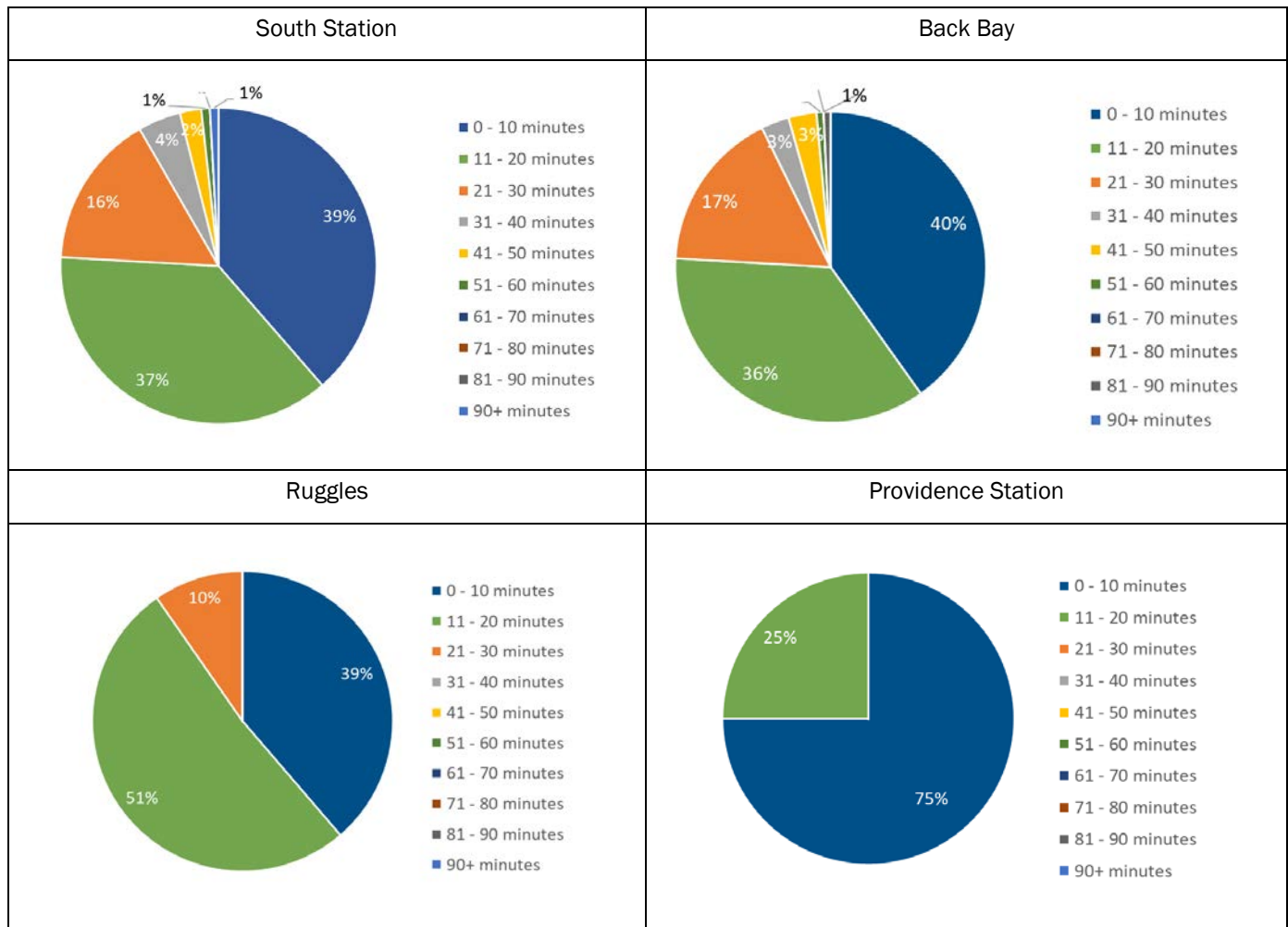


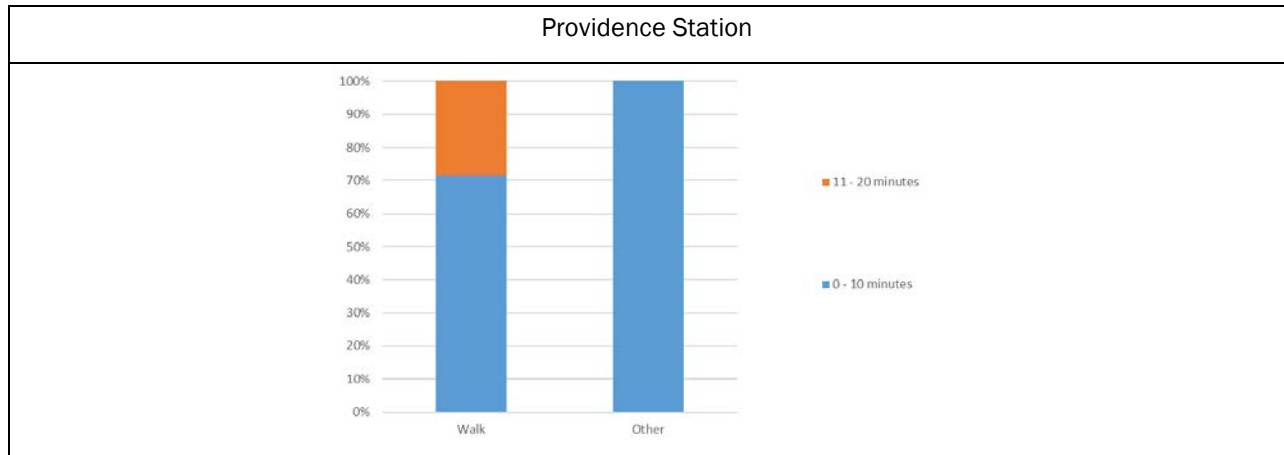
Figure 19 shows the distribution of egress times from the top four alighting stations reported by Inbound passengers. At South Station 92% of egress trips to final destinations were reported as taking no longer than 30 minutes and 76% of egress trips took no more than 20 minutes. Out of the top four alighting stations, only South Station and Back Bay included records for egress trips longer than one hour.

Figure 20 displays the distribution of egress times at each of the top four alighting stations based on the alighting mode that was reported. As seen in the figure, the clustering of long haul trips at South

Station is more a function of the wide range of long-distance connections that are offered at South Station than Boston's built environment.

Figure 20. Egress Time Distribution by Alighting Mode





Egress time from Back Bay station is similar to South Station. 93% of egress trips from Back Bay were completed within 30 minutes and 76% took no longer than 20 minutes. 1% of egress trips were reported as having taken between 51 and 60 minutes and 1% took between 81 and 90 minutes.

At Ruggles all of egress trips to final destinations were completed in no more than 30 minutes and 90% 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.

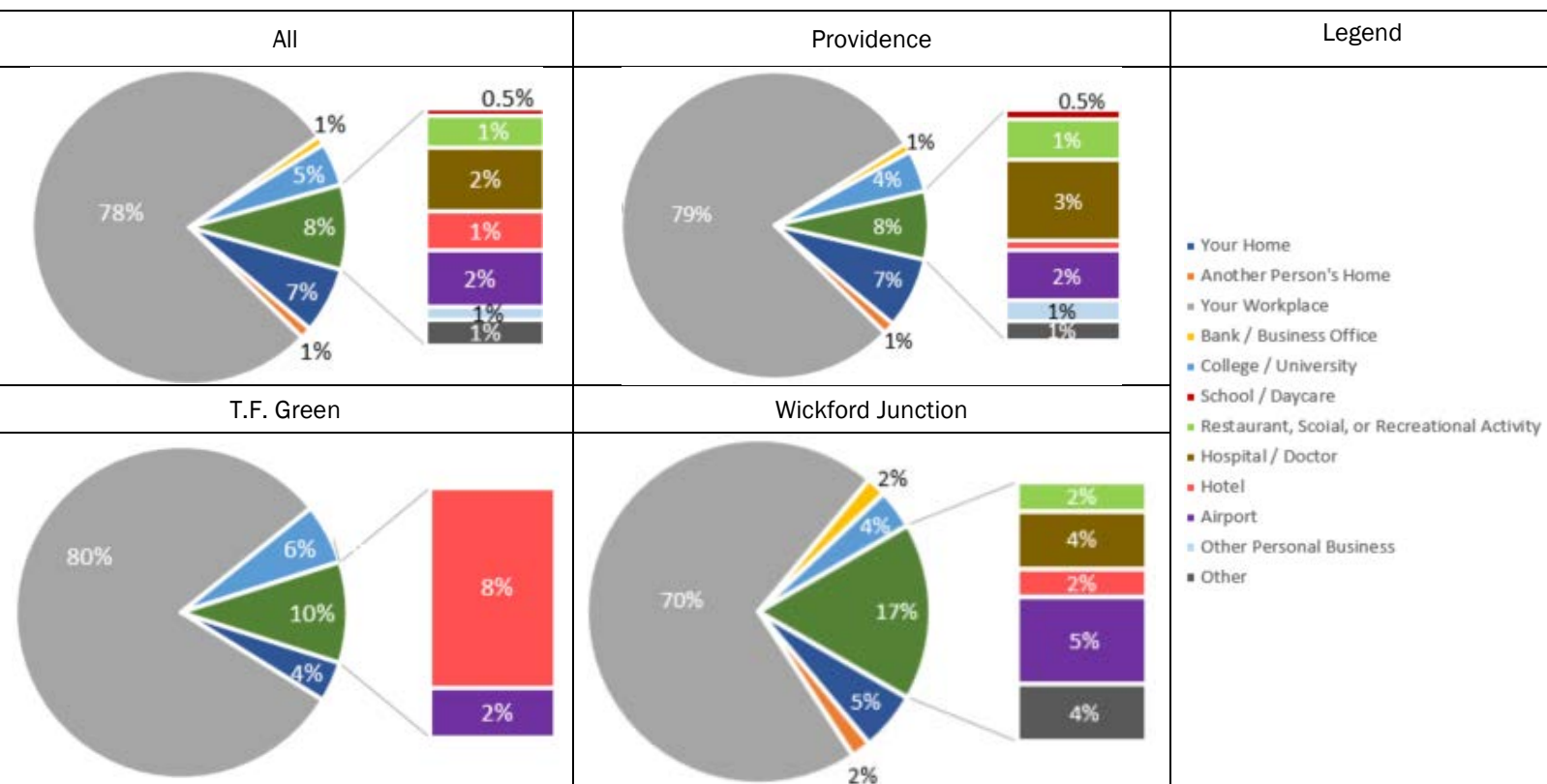
Egress times at Providence Station are, as expected, the lowest of the top four stations. Three quarters of passengers alighting in Providence reached their final destination in no more than 10 minutes and the other 25% reported that it took them no longer than 20 minutes to complete their trip.

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2.2.4 Destination Place Type

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

Figure 21. Destination Place Type by Origin Station



As seen in Figure 21, the majority of Inbound passengers at each of the boarding stations were en route to their place of work. Aside from Wickford Junction Station, ingress trips to a college or university were either the second or third most popular destination place type.

Trip destination types had the highest variety in Providence and least in T.F. Green. T.F. Green also had the highest proportion of passengers going for work (80%) while Wickford Junction had the lowest (70%). Wickford Junction also had the highest share of passengers traveling to an airport (5%) and all of these respondents reported traveling to Logan Airport, not T.F. Green.

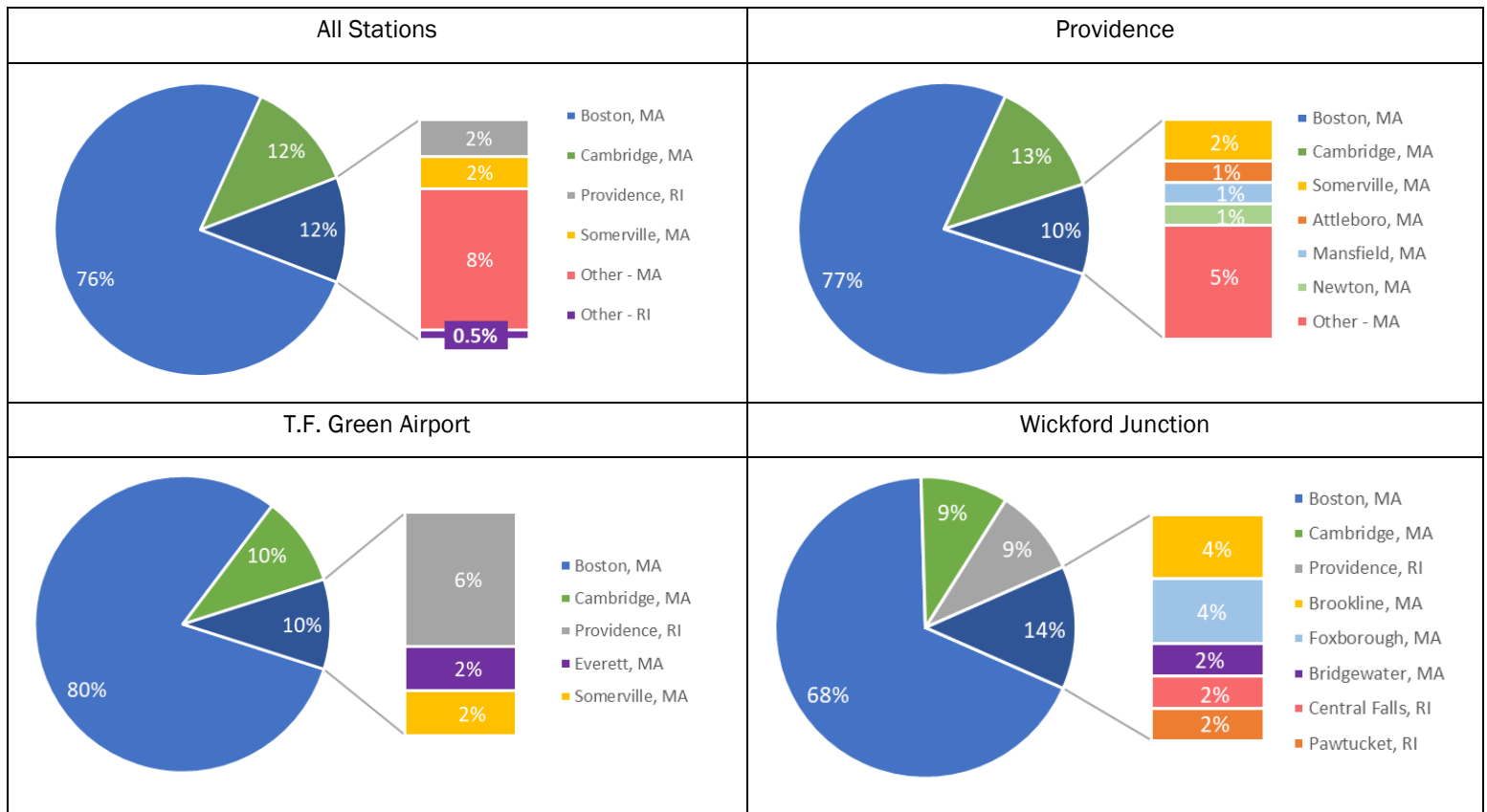
For a more detailed discussion of the responses to this question, refer to Section 4.2.1 (Weekday Use Frequency & Trip Purpose) on page 53.

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

Figure 22. Destination Place by Municipality



To understand where passengers from each of the stations surveyed are ultimately traveling to, Figure 22 shows the distribution of destination cities by boarding station. For the Rhode Island segment as a whole, 76% of Inbound passengers were destined for Boston, followed by 12% en route to Cambridge, and 2% completing local trips from T.F. Green Airport or Wickford Junction to Providence.

At Providence Station, 92% of those who boarded were headed to Boston (77%) or the adjacent cities of Cambridge (13%) or Somerville (2%). Destinations in Attleboro, Mansfield and Newton each generated 1% of the trips surveyed at Providence Station while other destinations within Massachusetts accounted for the remaining 5% of those who boarded in Providence.

80% of those who boarded at T.F. Green Airport were headed to Boston, along with 10% en route to Cambridge. The neighboring districts of Everett and Somerville each accounted for 2% of the destinations. 6% of passengers boarding from T.F. Green are heading to Providence.

Given that it is the station located furthest away from Boston, passengers boarding at Wickford Junction, as expected, had relatively less demand for trips to the regional center Boston (68% as opposed to around 80%) and Cambridge (9% as opposed to 12%) than those that boarded at T.F. Green Airport or Providence Station. Local trips to Providence Station accounted for 9% of all boardings surveyed at Wickford Junction. Travel to local activity centers in Pawtucket and Central Falls from other MBTA stations was limited to two Wickford Junction passengers.

2.2.5.2 Alighting Station

A series of maps showing the relative distribution of Inbound passengers' final destinations by alighting station is provided on the following four pages. Figure 23 shows aggregated destination results for those boarding along the Rhode Island segment of the Providence/Stoughton Line while Figure 24 through Figure 27 display the destinations for those alighting at South Station, Back Bay, Providence Station, and Ruggles, respectively.

Interestingly, despite Ruggles only serving six of the 20 Inbound Weekday trains departing from Providence, with no stops serviced past 12:19 PM at the time of deployment, this alighting station provided comparable levels of access to destinations in its immediate proximity (Figure 27) as that of the higher-frequency Back Bay Station (Figure 25), including ZIP codes associated with the Longwood Medical Area, growing job centers at Fenway/Kenmore, and higher education institutions (Northeastern University, Wentworth Institute of Technology, and graduate departments anchored at LMA).

The majority of in-state commuter rail passenger trips to Providence Station end at the zip code containing the train station (02903; 62.5%), followed by Smith Hill/Valley/Elmhurst (02908; 25%) and the East Side (02906; 12.5%). No passengers alighting at Providence Station ended their trips in any other zip code.

The destination neighborhoods for Rhode Island commuter rail passengers traveling to Boston were, as expected, more varied. The top zip codes for those alighting at South Station are in the nearby Financial District and Waterfront (02110; 15.4%), Seaport (02210; 13.2%), Chinatown (02111; 8.8%), Beacon Hill (02108; 8.3%)_and Cambridge's Harvard Square/Alewife neighborhoods (02138; 8.3%). Four other neighborhoods – the West End, East Boston, Central Square/MIT, and Kendall Square – each attracted 5.3% of passengers.

The top zip codes for passengers alighting at Back Bay Station were its namesake neighborhood (02116; 31.4%), the Longwood/Huntington Ave. area (02115; 13.1%), the Fenway/Commonwealth Ave. area (02215; 10.9%), the South End (02118; 5.1%) and the West End (02114; 5.1%). Three of these zip codes – Longwood, Fenway, and the South End – are geographically closer to the Ruggles Commuter Rail station than to Back Bay, especially for Rhode Island riders coming from the South. As these zip codes comprise nearly 30% of Rhode Island-based trips alighting at Back Bay Station, this represents a significant number of passengers who “double-back” south and west after alighting at Back Bay. This is probably because the Providence Line has limited service to Ruggles and the existing service is not well-aligned with passengers' schedules. As discussed in Section 6 of this report, survey takers' requests to add stops at Ruggles supports this notion.

There is currently inadequate infrastructure at Ruggles Station to accommodate additional train service, but MBTA's ongoing Ruggles Station Platform Project will add a new platform to accommodate additional service. Given the popularity of destinations near Ruggles Station, additional Providence Line service to Ruggles would be extremely beneficial to Rhode Islanders traveling to Boston.

The top zip code destinations for Rhode Island-based commuter rail passengers who alight at Ruggles are the Longwood/Huntington Ave. area (02115; 34%) followed by the Fenway/Commonwealth Ave. neighborhood (02215; 11.3%) and Roxbury (02120; 5.7%). The share of passengers traveling from Ruggles to the Fenway area doubled since RIDOT's 2016 passenger survey.

Since RIDOT's 2016 survey, smaller shares of respondents alighting at Providence, South Station, and Ruggles report their destination in a zip code at or nearby these stations. The share of passengers alighting at Providence Station traveling to destinations downtown fell from 79% in 2016 to 62.5% in 2019. Fewer South Station passengers report going to a destination in the Financial District (15.4% vs. 20% in 2016), the Seaport (13.2% vs. 20% in 2016), and Chinatown (8.8% vs. 16%). And a smaller share of Ruggles passengers report going to a destination in Roxbury (7% vs. 17% in 2016) or the Longwood/Huntington Ave. area (34% vs. 67% in 2016). The declines at Ruggles could be due to the growing popularity of passengers using Ruggles to reach the Fenway neighborhood.

This trend did not hold true at Back Bay, which generally featured a similar concentration of destination zip codes.

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

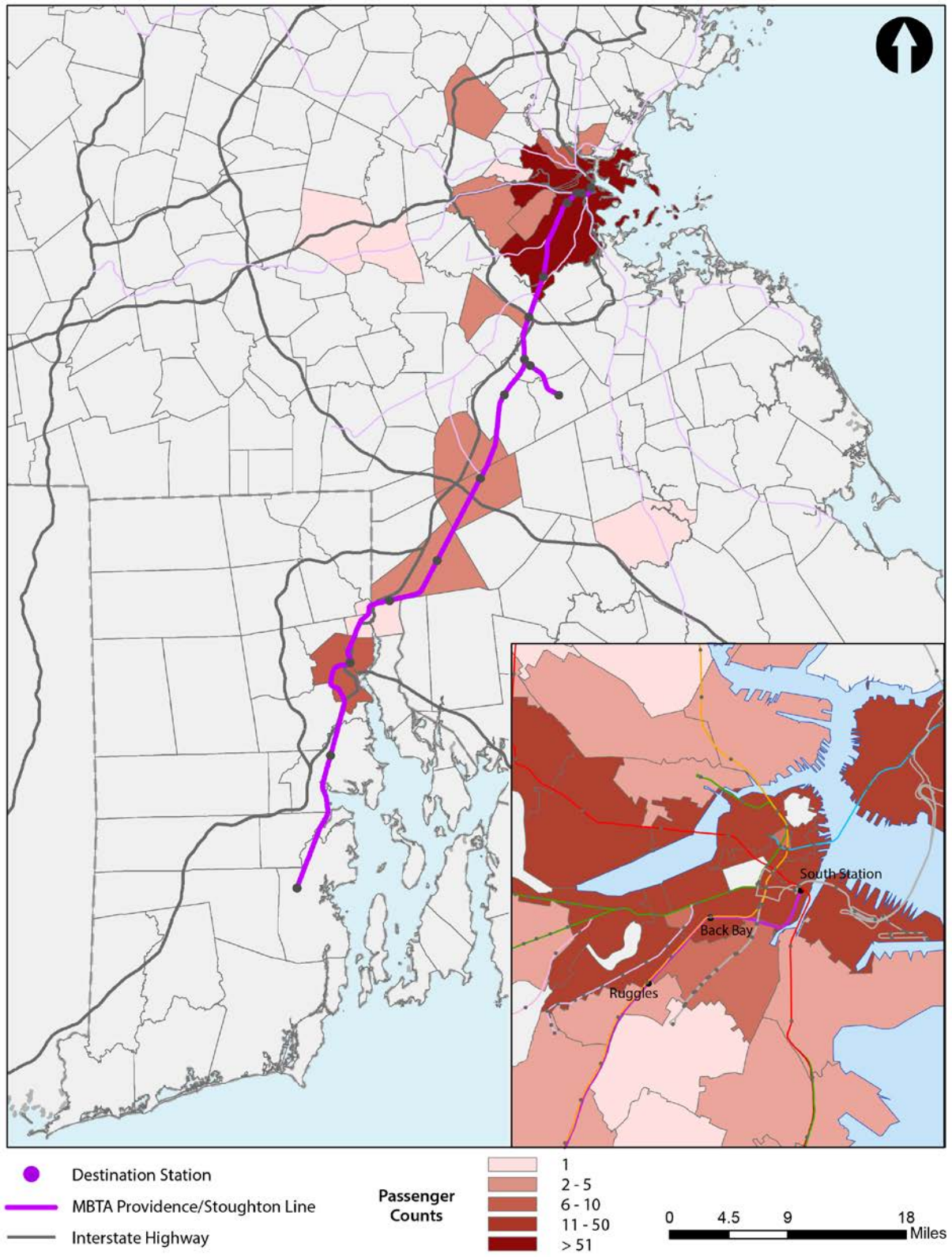


Figure 24. Inbound Passenger Destinations by Alighting Station – South Station

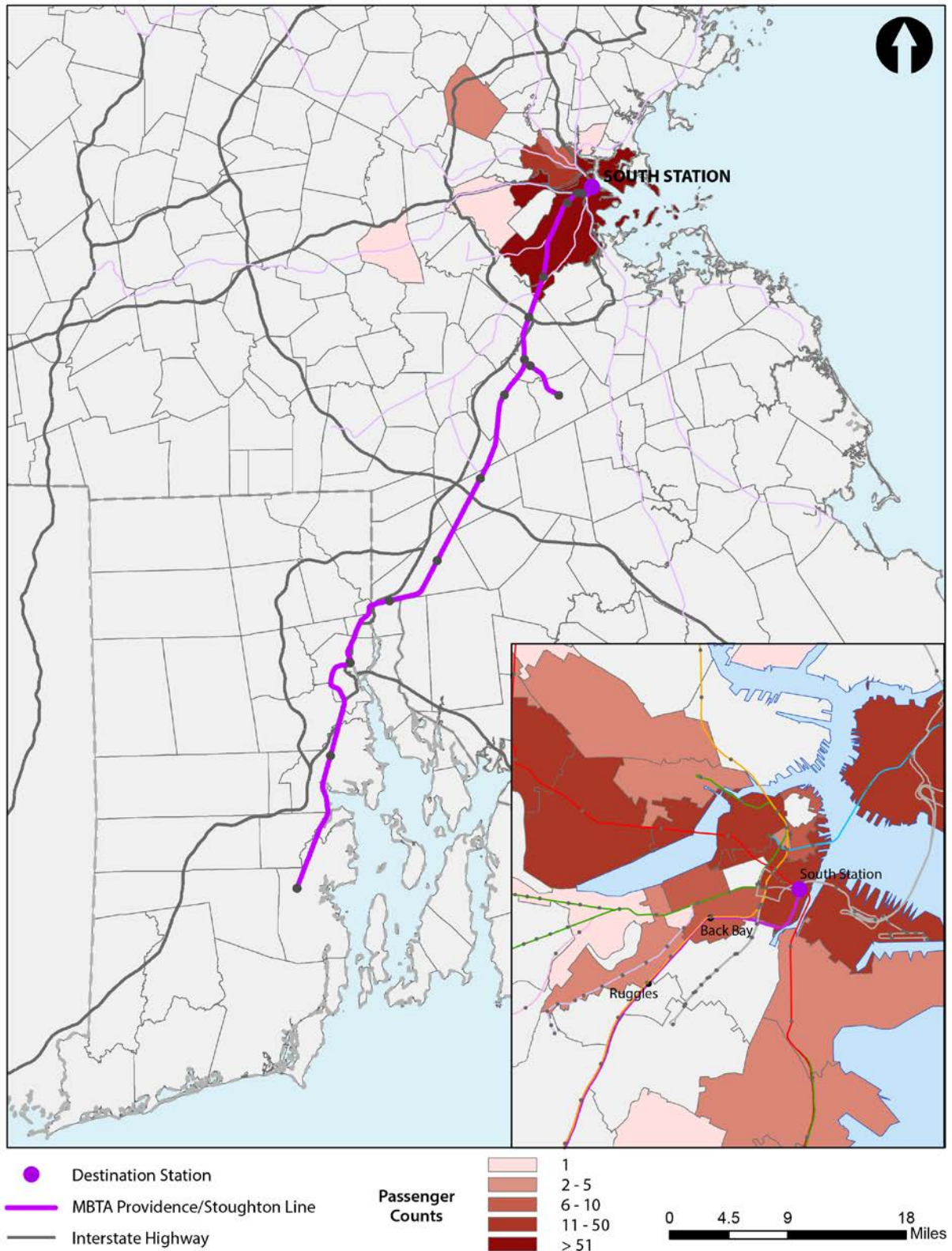


Figure 25. Inbound Passenger Destinations by Alighting Station – Back Bay

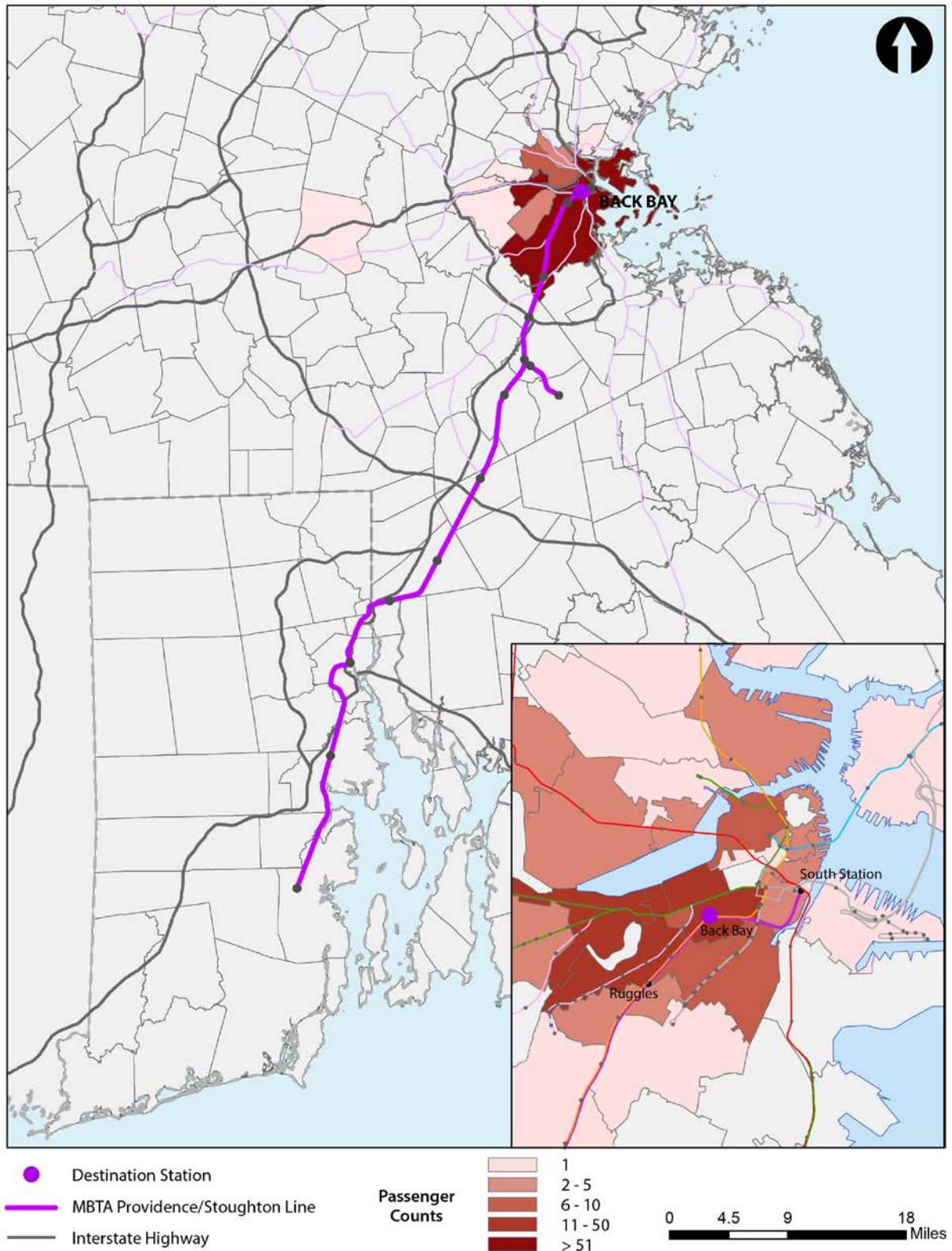


Figure 26. Inbound Passenger Destinations by Alighting Station – Providence Station

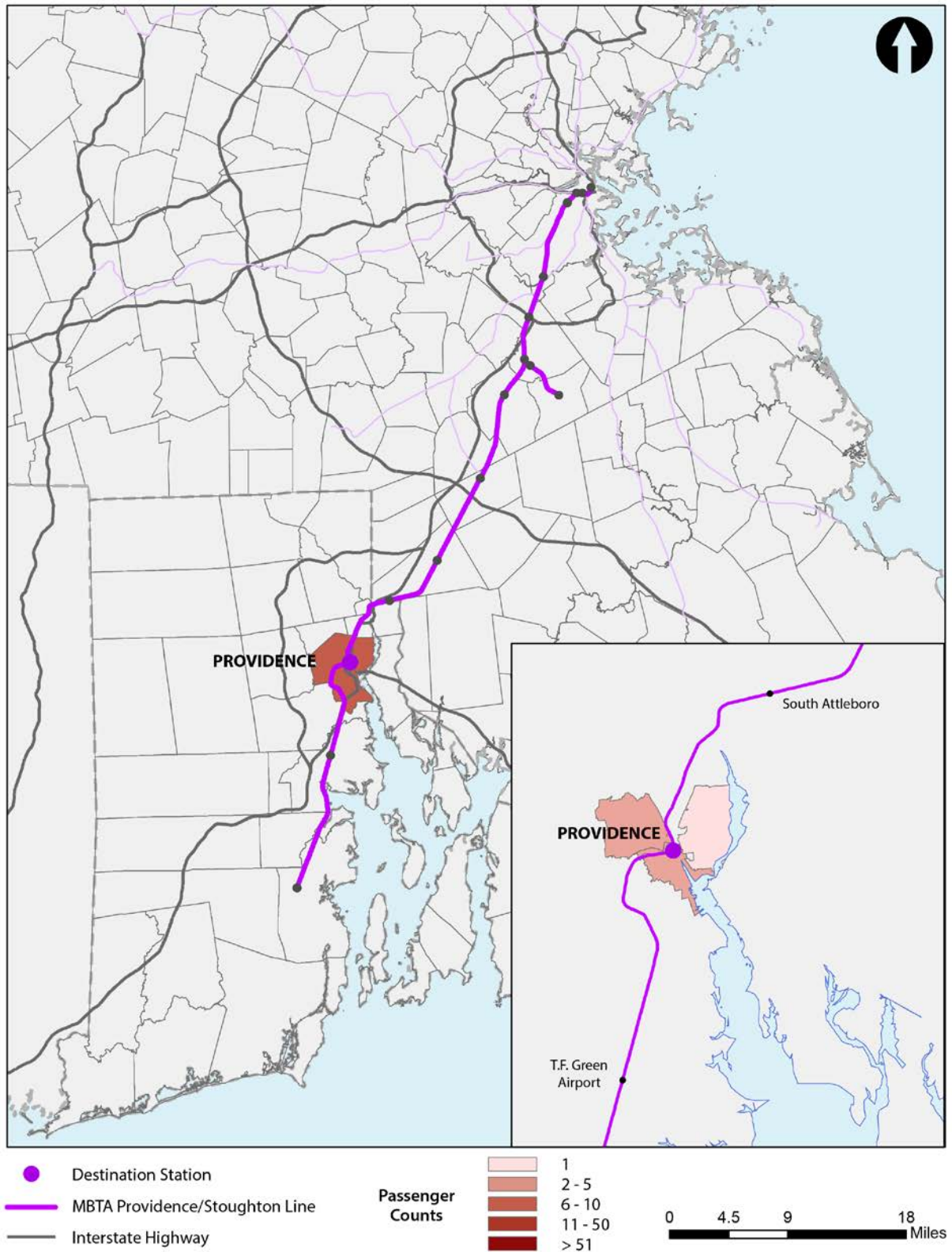
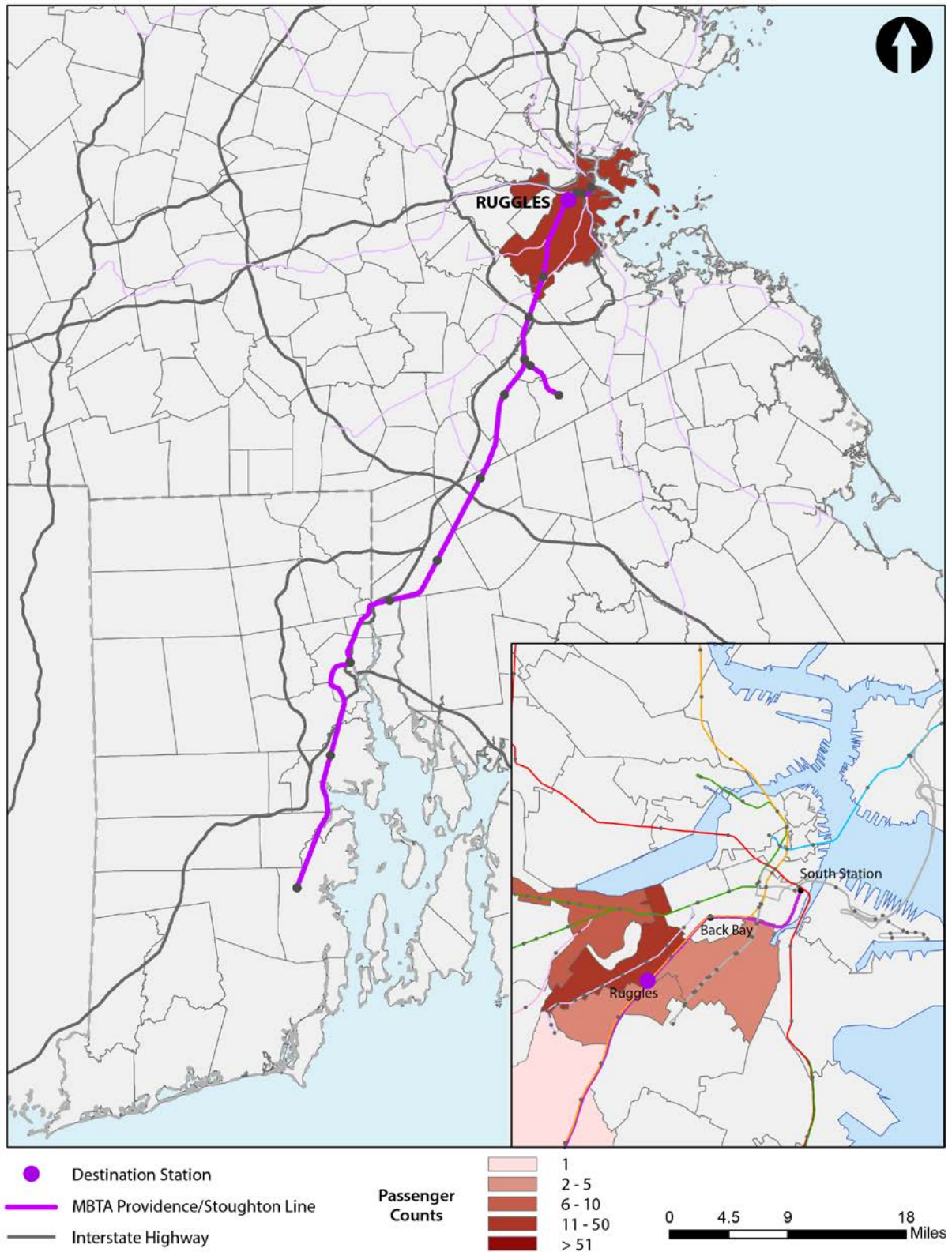


Figure 27. Inbound Passenger Destinations by Alighting Station – Ruggles



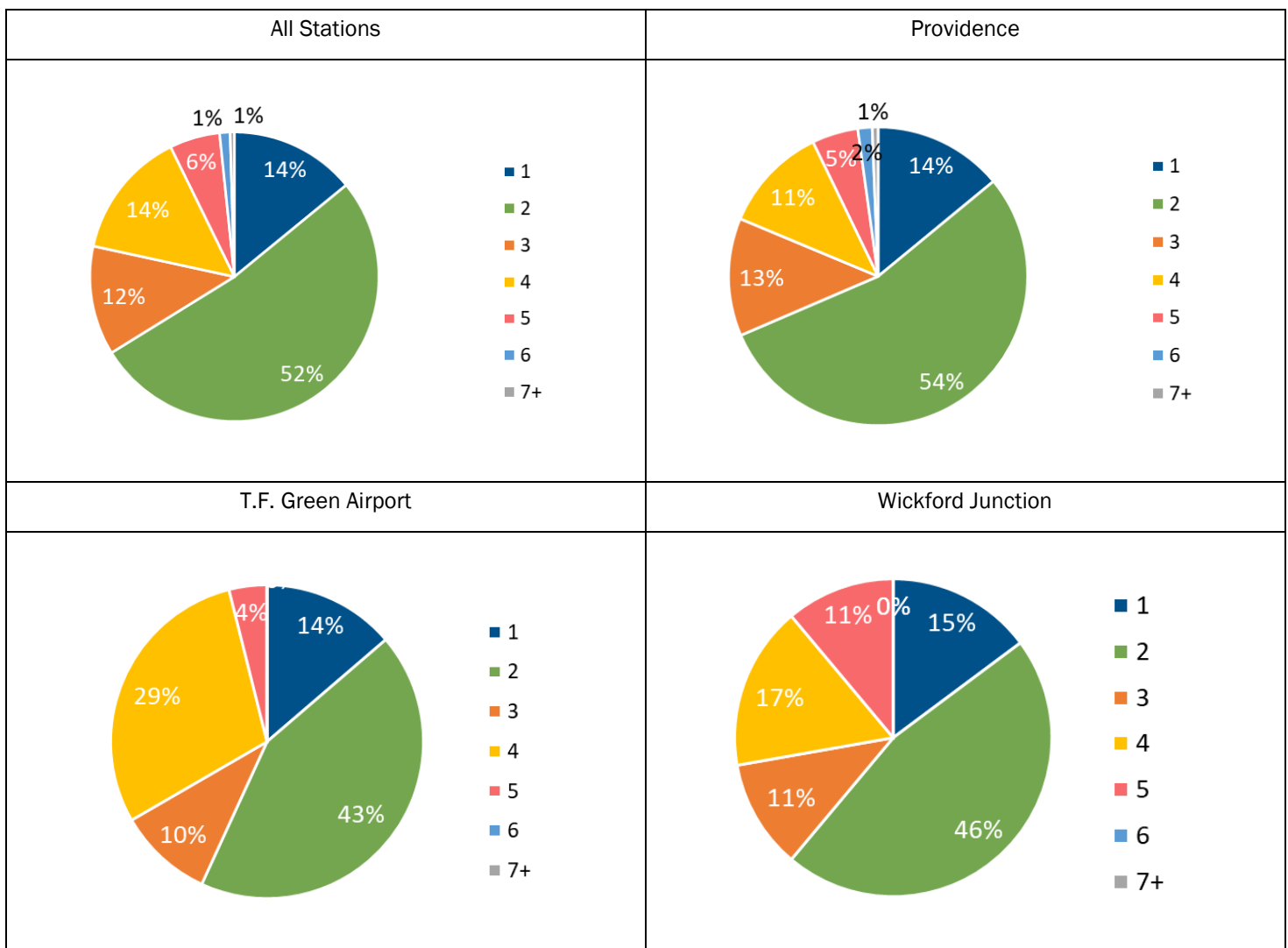
3 Demographic Information

This section reviews answers to Questions 16-26 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, and access to a smartphone and driver's license. As cautioned in Section 1.2 – Response Rate and Confidence Level, the socio-demographic traits presented in this chapter can be confidently generalized at a margin of error less than 5% for Providence Station. 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 less than 15%.

3.1 Household Size

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

Figure 28. Household Size by Boarding Station



On the Providence Line as a whole, 86% of respondents surveyed stated that they share a household with at least one other person while 14% reported living by themselves. As seen in Figure 28, the most common response was a two-person household (52%), followed by a four-person household (14%). Three-person households (12%) came in fourth and 6% of the survey population lived in a household with at least five members. The household size distribution for Providence Station was similar to that of the Rhode Island segment (2.46 versus 2.51 persons per household) except there was a slightly lower representation of four-person households. T.F. Green Airport had by far the highest proportion of four-person households (29%) while Wickford Junction had the highest proportion of five-person households (11%), with T.F. Green (2.63) and Wickford Junction (2.64) featuring a slightly larger average household.

3.2 Household Income

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

Figure 29 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 30 reports the proportions of each household income bracket.

Figure 29. Distribution of Household Income by Boarding Station

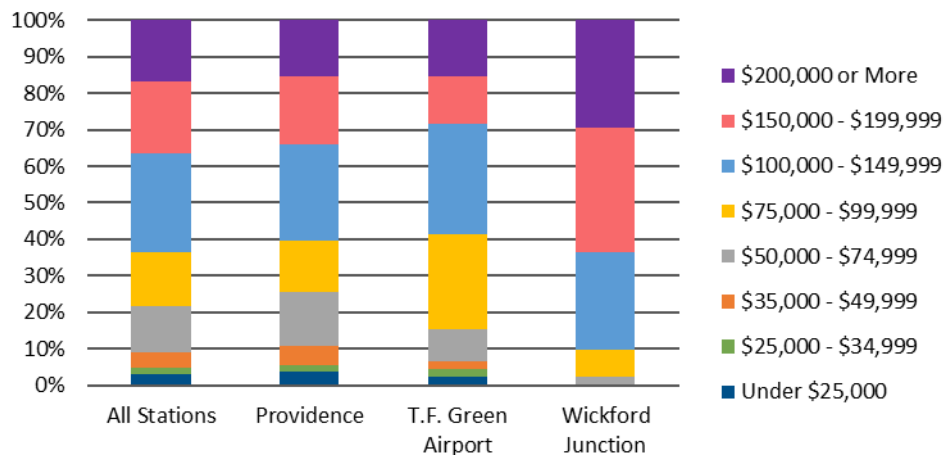
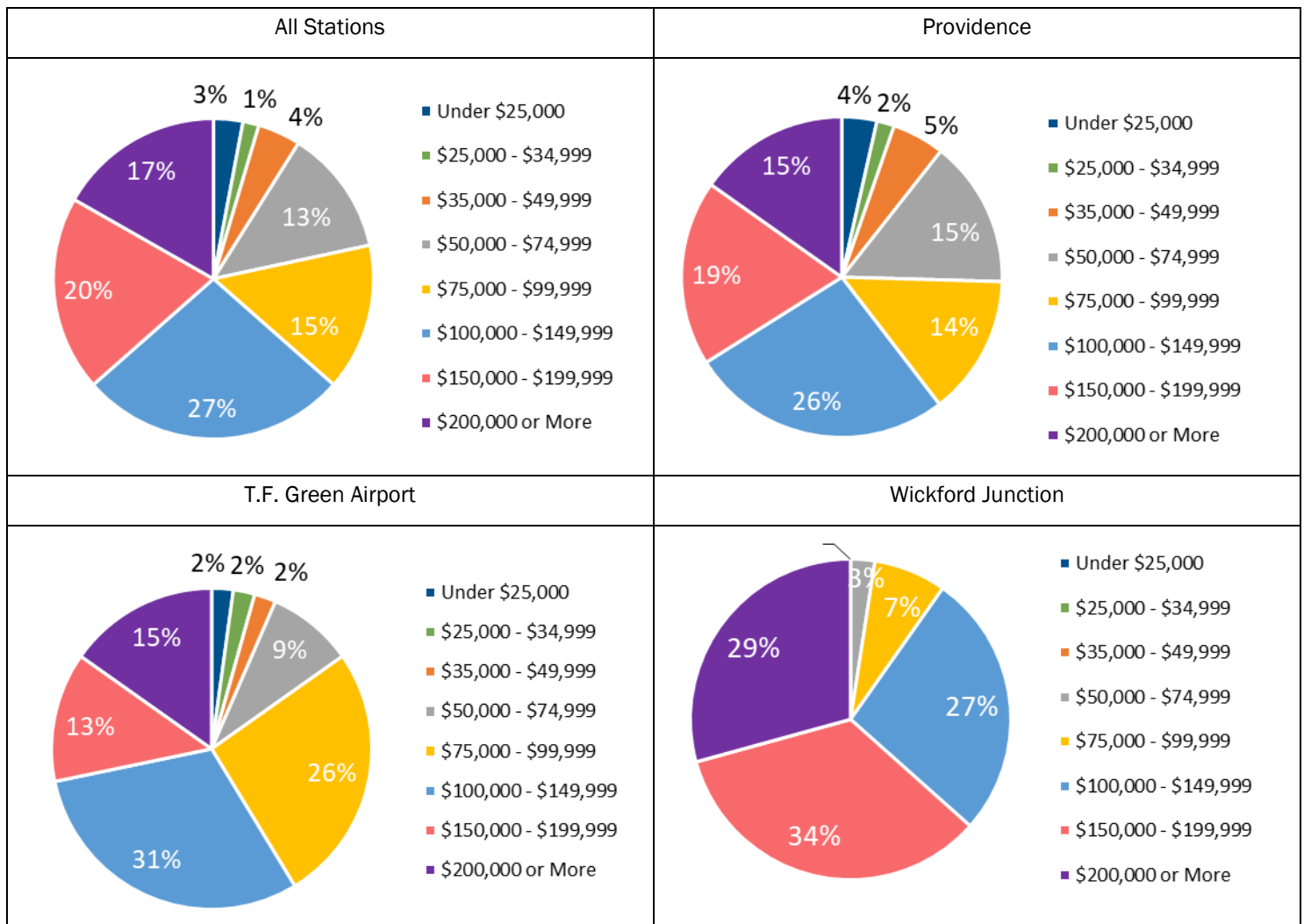


Figure 30. Household Income by Boarding Station



Inbound passengers living in low-income households constituted a relatively minor share of overall ridership, with 9% of all riders reporting incomes of less than \$50,000, including 3% earning less than \$25,000. Providence Station had the highest proportion of households earning less than \$50,000 annually at 11% compared to the study's average of 9%. Over three quarters (79%) of Inbound passengers surveyed along the Rhode Island segment of the line reported an annual household income of at least \$75,000 and high wage households (i.e., those earning at least \$100,000 annually) accounted for nearly two in three (64%) Inbound riders.

While the distributions of household income at Providence and T.F. Green Airport were comparable to the statewide average, income levels at Wickford Junction were significantly greater. In addition to 90% of their households being considered high wage, Inbound riders departing from Wickford Junction reported earning \$150,000 or more at essentially the same rate as the survey's population as a whole claimed annual household incomes of \$100,000 or more (63% compared to 64% statewide). Given these high incomes and the lack of respondents with annual household incomes less than \$50,000, Wickford Junction had the highest average annual household income at approximately \$167,000

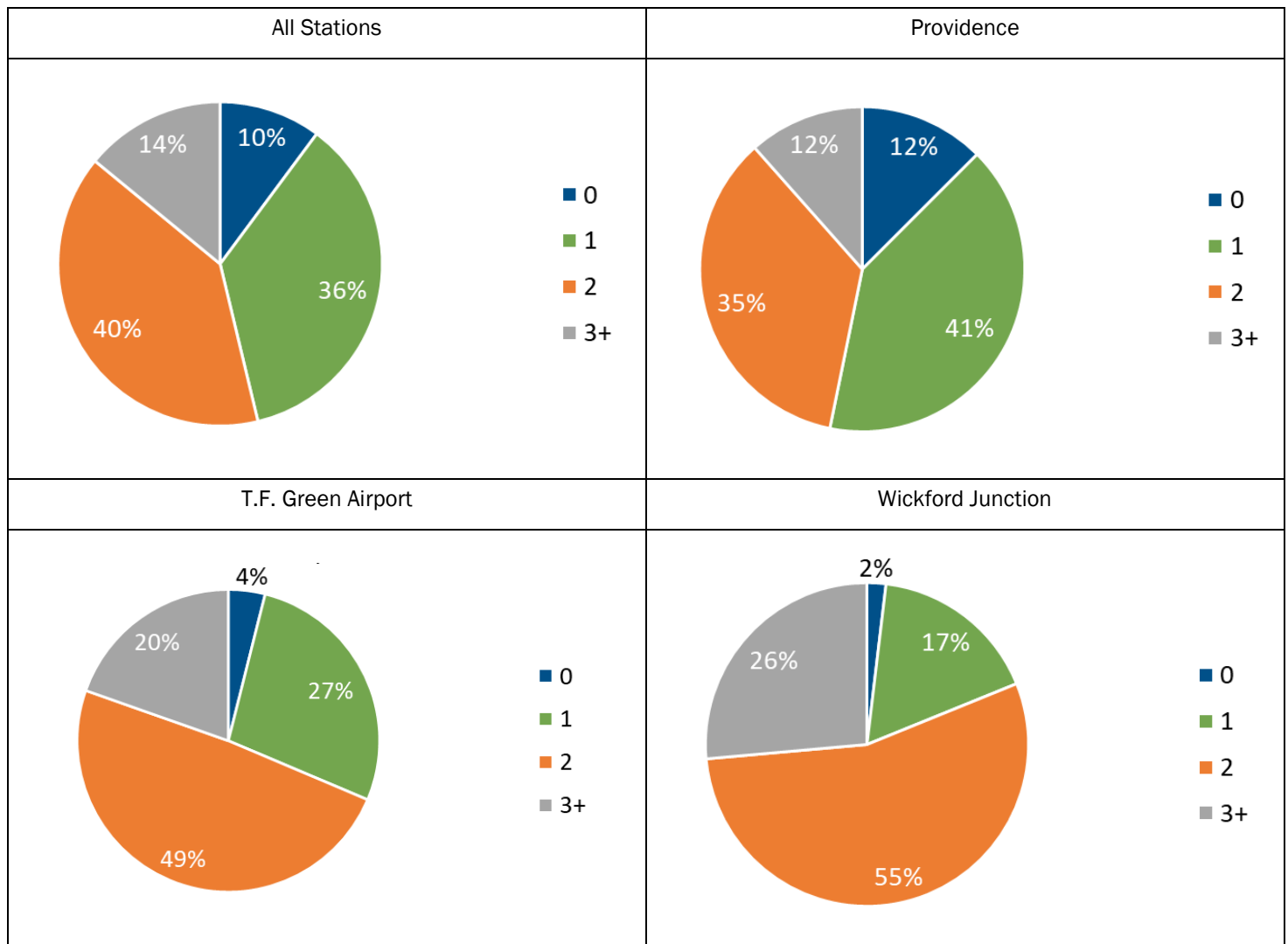
compared to the survey population's overall average of \$130,000 and Providence Station's value of \$125,500.³

As is common in passenger surveys, household income was the most frequently refused question, with an overall refusal rate of 13%. When comparing the stations, it is clear that refusal rate was positively correlated with annual household income (e.g., refusal rate at Providence was 12% while Wickford Junction was 25%).

3.3 Household Usable Vehicles

"How many usable vehicles does your household have access to?"

Figure 31. Household Vehicles Available by Boarding Station



³ 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.

Of the Inbound weekday passengers boarding in Rhode Island, 90% responded that they had at least one usable (i.e., it reliably starts and is capable of safe operation) vehicle within their household. The most common response for the line as a whole was two usable vehicles (40%), followed closely by one usable vehicle (36%). Approximately one in seven (14%) of Inbound riders owned three usable vehicles amongst their household. As a whole the average household surveyed contained 1.65 vehicles.⁴

As seen in Figure 31, Providence Station had the highest proportion of zero-vehicle households (12%) while only 4% of respondents at T.F. Green Airport and 2% of respondents at Wickford Junction were members of a zero-vehicle household. At Providence Station, the relatively greater proportion of zero- and one-vehicle households is likely more a function of higher development densities and inner core residents' desire for car-free or car-light living than it is attributable to income. The importance of the built environment becomes apparent when comparing automobile ownership rates at two stations which have comparable average annual household incomes, but very different land use and transportation environments – Providence (1.5 vehicles per household member) and T.F. Green Airport (1.9 vehicles). However, the influence of income can be seen when comparing the ownership rates among stations with a similar land use profile but dramatically different income levels – T.F. Green Airport (1.9 vehicles per household member) and Wickford Junction (2.1 vehicles). Overall, it is apparent that most MBTA Commuter Rail passengers in Rhode Island have the financial means and vehicle(s) available to drive alone to their destinations but find MBTA to be a more attractive option.

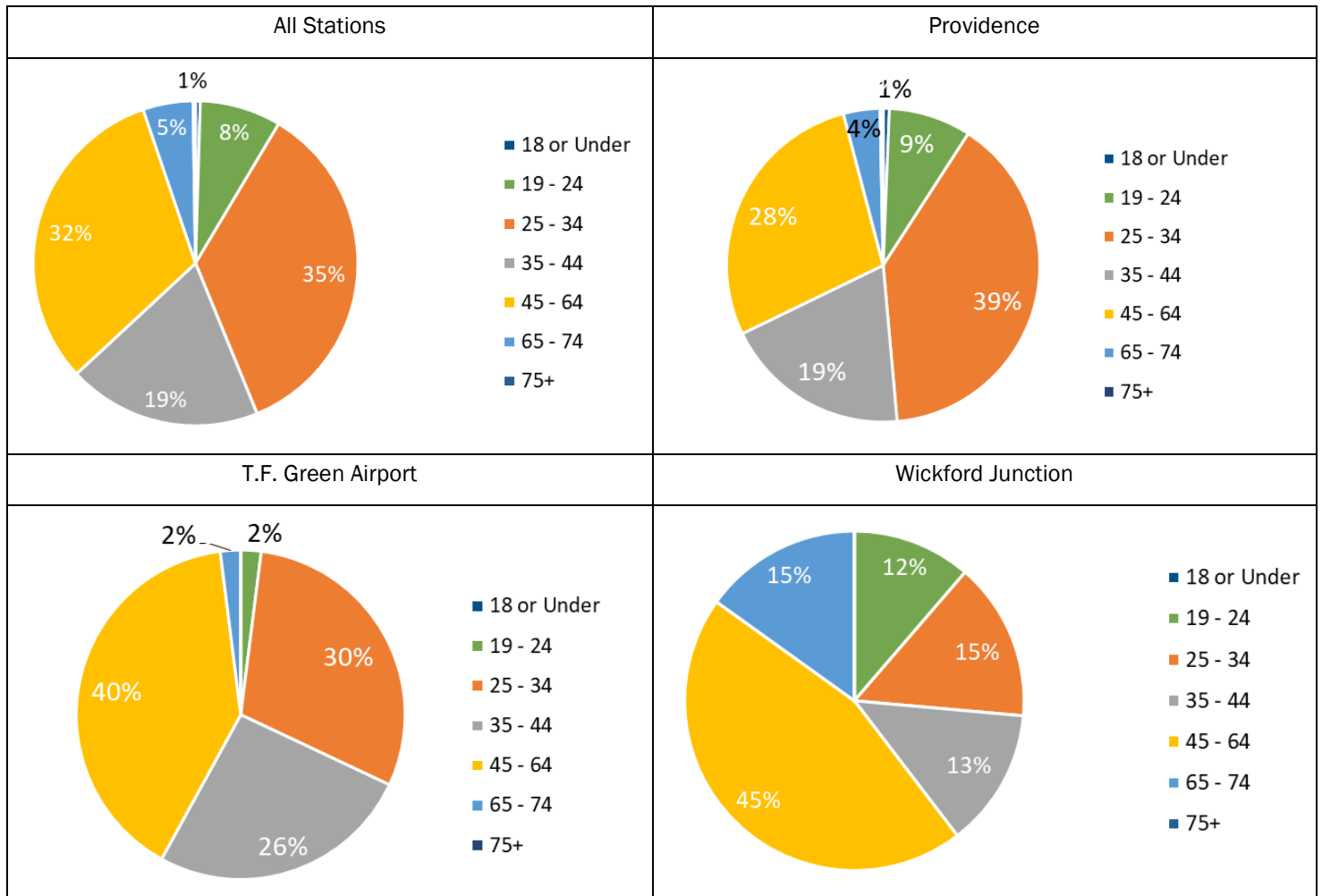
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⁴ Calculations of average automobile ownership rates were based on the number of vehicles reported in each answer choice and did not incorporate/reference household size at the individual response level. This was done as a way to minimize the influence of the 3+ option for household vehicles available. Within the average calculations, a value of 3.5 vehicles per household was applied in the 3+ cases.

3.4 Age

“What is your age?”

Figure 32. Age by Boarding Station



In terms of respondent age, 86% of all respondents reported were between the ages of 25 and 64. The most common age cohort for the Rhode Island segment of the line were young adults between the ages of 25 and 34 (35%), followed by those whose age ranged 45 to 64 (32%), and 35 to 44 year olds (19%). Senior ridership accounted for 6% while those between the ages of 19 and 24 represented 8% of respondents.

As seen in Figure 32, there is a discernible difference in the age distributions across the stations. Providence Station skews more towards the younger segment of the workforce, with 40% of respondents ages 25 to 34, while T.F. Green Airport and Wickford Junction serving the older segment of workforce, with 40% and 45%, respectively, of respondents ages 45 to 64. Though Providence and T.F. Green Airport had comparable proportions of those ages 25 to 64 (86% versus 96%), Wickford attained only 73% within that age cohort. This was driven by the significant showing from seniors aged 65-74 (15% compared to 2-4% at the other stations) and those ages 19 to 24 (12% compared to 9%

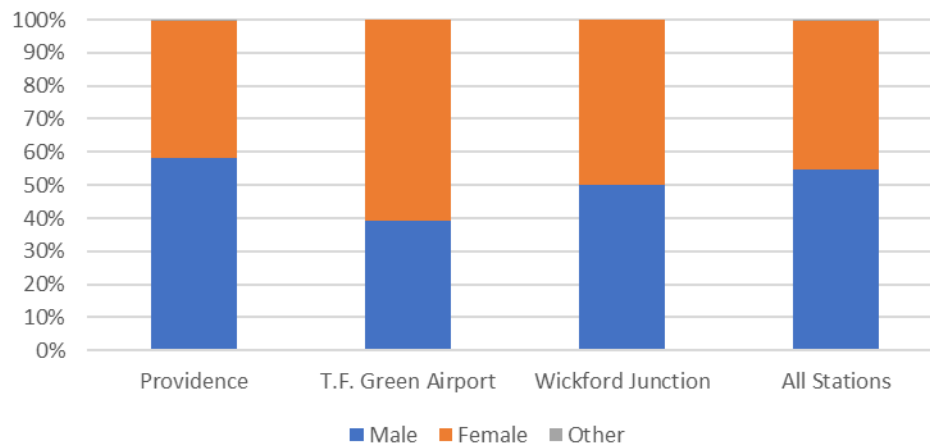
at Providence and 2% at T.F. Green Airport) at Wickford Junction. Based on age, ridership composition is by far the most varied at Wickford Junction.

Across the entire survey population, non-response to the age question was 1.4%.

3.5 Gender

“How do you identify by gender?”

Figure 33. Gender by Boarding Station



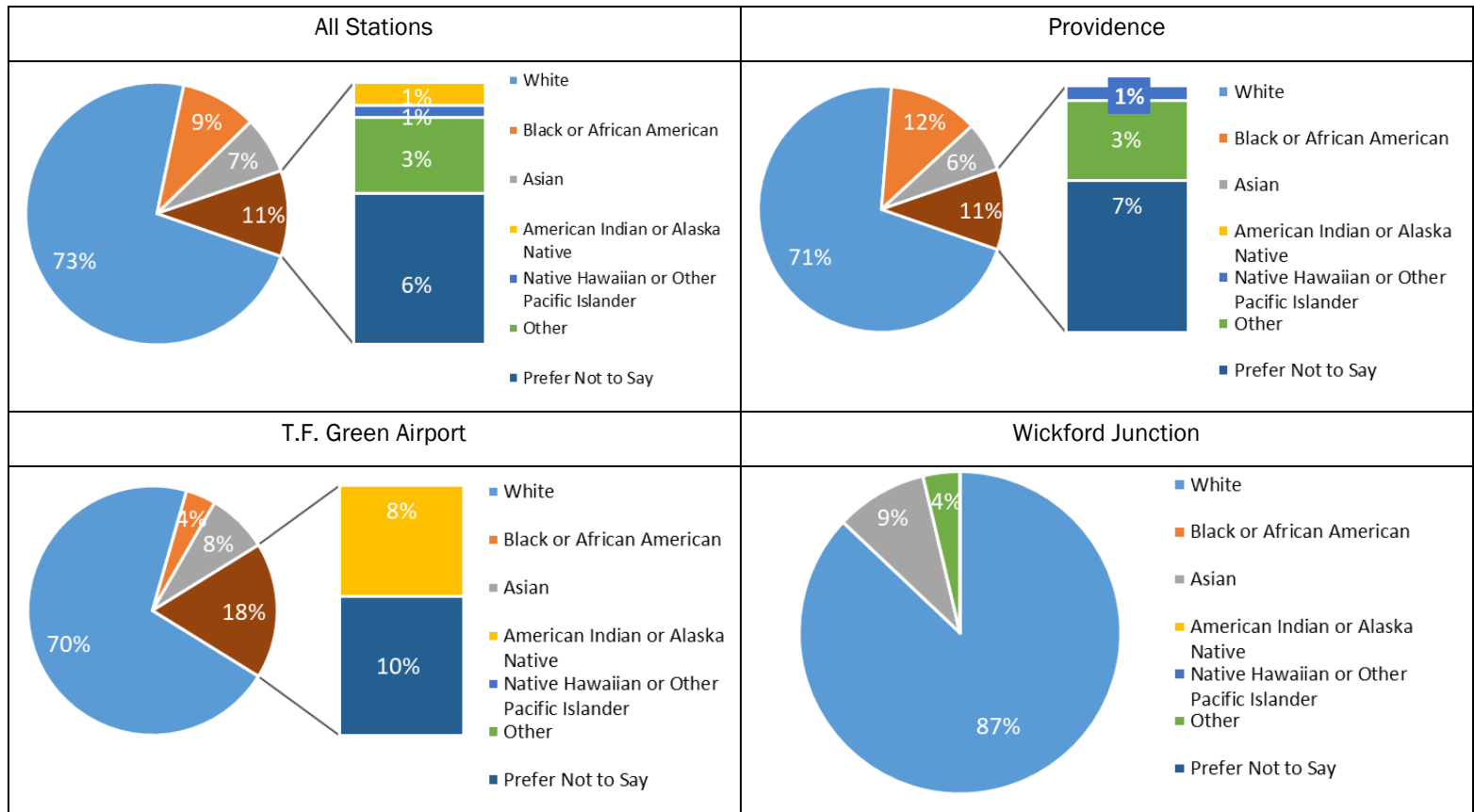
For the Rhode Island segment as a whole, the gender distribution was relatively even among Inbound MBTA Commuter Rail riders. As seen in Figure 33, Male responses were most common at Providence Station (58%) while Female was most often reported at T.F. Green Airport (61%). The distribution was even at Wickford Junction. One respondent at Providence Station chose Other with a value of “non-binary.”

Across the survey population, non-response to the Gender question amounted to 1%, with 100% of non-response submissions recorded at Providence Station.

3.6 Race

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

Figure 34. Race by Boarding Station



Overall 73% of the Inbound passengers surveyed stated that they were White, with the second most frequent response being Black or African-American (9%). Other racial groups represented include Asian (7%), Other (typically multi-racial) (3%), American Indian or Alaska Native (1%), and Native Hawaiian or Other Pacific Islander (1%). Passengers reluctant to self-identify their race accounted for 6% of the total responses. Across the different stations, Wickford Junction had the least varied composition (87% White and three categories represented) while Providence Station as is typical of more urban centers, was the most diverse with representation in every category.

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 5. 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 5. Comparison of Survey Respondents Racial Characteristics with Statewide Averages

RACE	% SURVEYED	% SURVEYED (EXCLUDING NON-RESPONSE)	5-YEAR ACS STATEWIDE AVERAGES ⁵
White	73.0%	77.8%	80.9%
Black or African American	9.4%	10.0%	6.6%
Asian	7.0%	7.5%	3.4%
American Indian or Alaska Native	0.9%	1.0%	0.5%
Native Hawaiian or Other Pacific Islander	0.5%	0.5%	0.1%
Other	3.1%	3.3%	5.7%
Two or More Races	N/A	N/A	3.1%
Prefer Not to Say	6.1%	N/A	N/A
TOTAL	100.0%	100.0%	100.0%

3.7 Hispanic Status

“Are you Hispanic/Latino/Latina?”

Table 6. 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
Yes	29	6.8%	25	7.8%	2	3.9%	2	3.7%
No	374	87.8%	278	86.6%	45	88.2%	51	94.4%
Prefer Not to Say	23	5.4%	18	5.6%	4	7.8%	1	1.9%
TOTAL	426	100.0%	321	100.0%	51	100.0%	54	100.0%

As seen in Table 6, approximately 7% of all Inbound weekday passengers identified themselves as Latinx or Hispanic. Providence Station had the highest representation of Latinx or Hispanic with 8% while T.F. Green and Wickford Junction each had nearly 4%.

⁵ US Census Bureau. 2014-2018 American Community Survey 5-Year Estimates.

3.8 Limited English Proficiency (LEP)

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

Table 7. 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	422	99.1%	318	99.1%	50	98.0%	54	100.0%
Often	4	0.9%	3	0.9%	1	2.0%	0	0.0%
Sometimes	0	0.0%	0	0.0%	0	0.0%	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%
TOTAL	426	100.0%	321	100.0%	51	100.0%	54	100.0%

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, only 1% of Inbound weekday passengers stated that they were not always able to understand basic directions spoken or written in English. However, as seen in Table 7, all respondents within this group reported that they were often able to understand basic directions spoken or written in English.

3.9 Preferred Language

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

Table 8. 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	424	99.5%	319	99.4%	51	100.0%	54	100.0%
Spanish	1	0.2%	1	0.3%	0	0.0%	0	0.0%
English & Spanish	1	0.2%	1	0.3%	0	0.0%	0	0.0%
TOTAL	426	100.0%	321	100.0%	51	100.0%	54	100.0%

As seen in Table 8, more than 99% of those surveyed reported a preference to receive information about riding MBTA Commuter Rail in English. Both respondents who stated that they would prefer information in a language other than English were boarding the train at Providence Station and accounted for less than 1% of Inbound weekday passengers surveyed at the station. Of the two

respondents, one preferred information to be transmitted to Spanish only while the other preferred to receive materials in both English and Spanish.

3.10 Smartphone

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

Table 9. 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	423	99.3%	318	99.0%	51	100.0%	54	100.0%
No	3	0.7%	3	1.0%	0	0.0%	0	0.0%
TOTAL	426	100.0%	321	100.0%	51	100.0%	54	100.0%

As seen in Table 9, virtually all (99%) of the Inbound MBTA Commuter Rail riders surveyed reported routinely using a smartphone, including all respondents departing from T.F. Green Airport and Wickford Junction. All three respondents who stated that they do not currently use a smart phone boarded from Providence Station, accounting for 1% of the responses at the station.

3.11 Driver's License

“Do you currently have a driver's license?”

Table 10. 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	394	92.5%	291	90.7%	49	96.1%	54	100.0%
No	32	7.5%	30	9.3%	2	3.9%	0	0.0%
TOTAL	426	100.0%	321	100.0%	51	100.0%	54	100.0%

As seen in Table 10, about 93% 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 (9%). T.F. Green station only had two passengers that do not have a driver's license (4%), and 100% of Inbound passengers boarding at Wickford Junction, the study's least urbanized area, possessed a driver's license.

4 Commuter Rail Use Information

This chapter discusses responses to Questions 7, 13-15, and 27 of the OBS which solicited input from passengers regarding how often, when, and why they typically use MBTA Commuter Rail services, alternate transportation options that could 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 35. Fare Type by Boarding Station

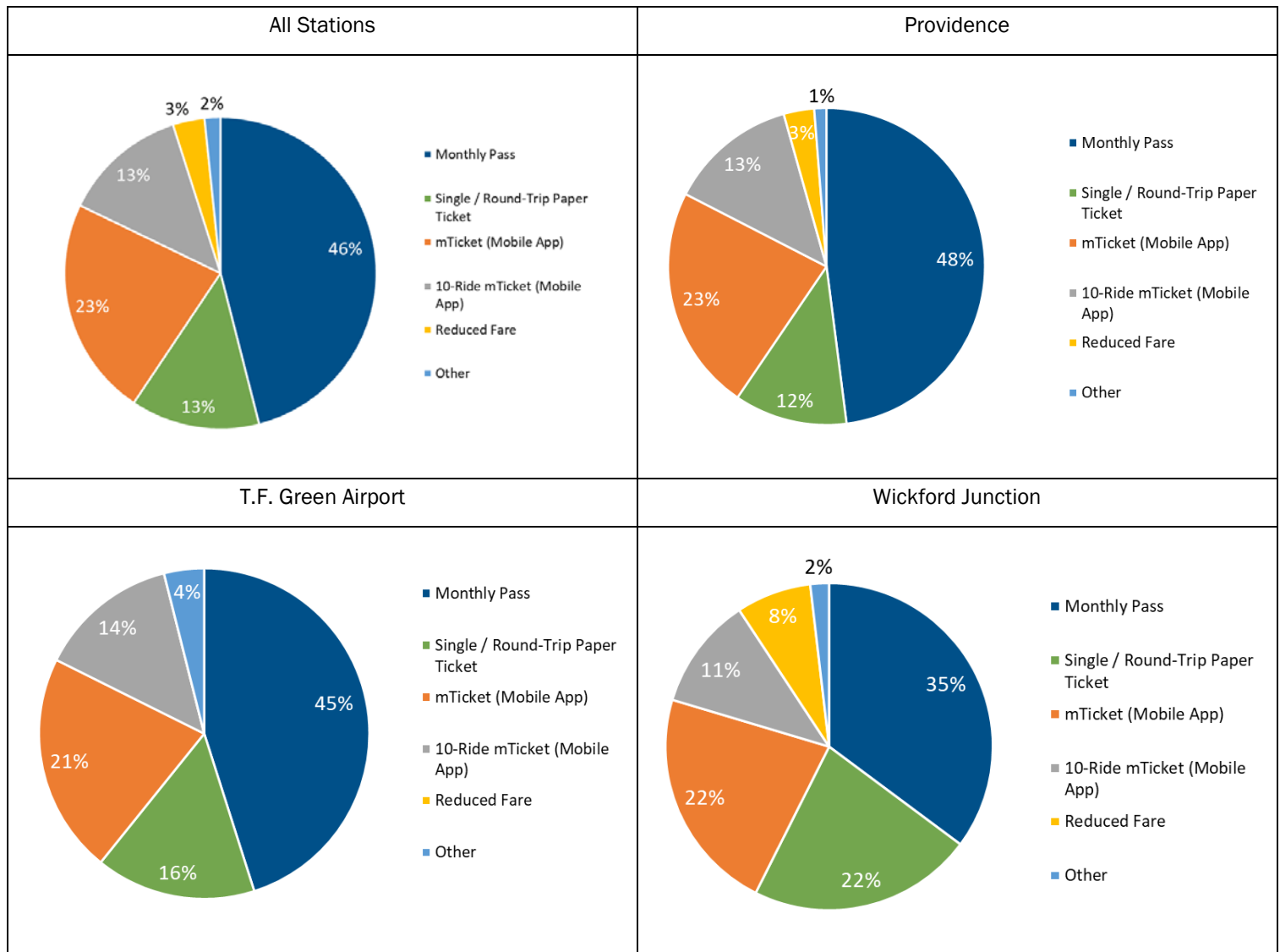


Figure 35 presents the proportion of fare products used by passengers. For the Rhode Island segment as a whole, the majority of passengers (46%) paid their fare via a monthly Commuter Rail pass. Other

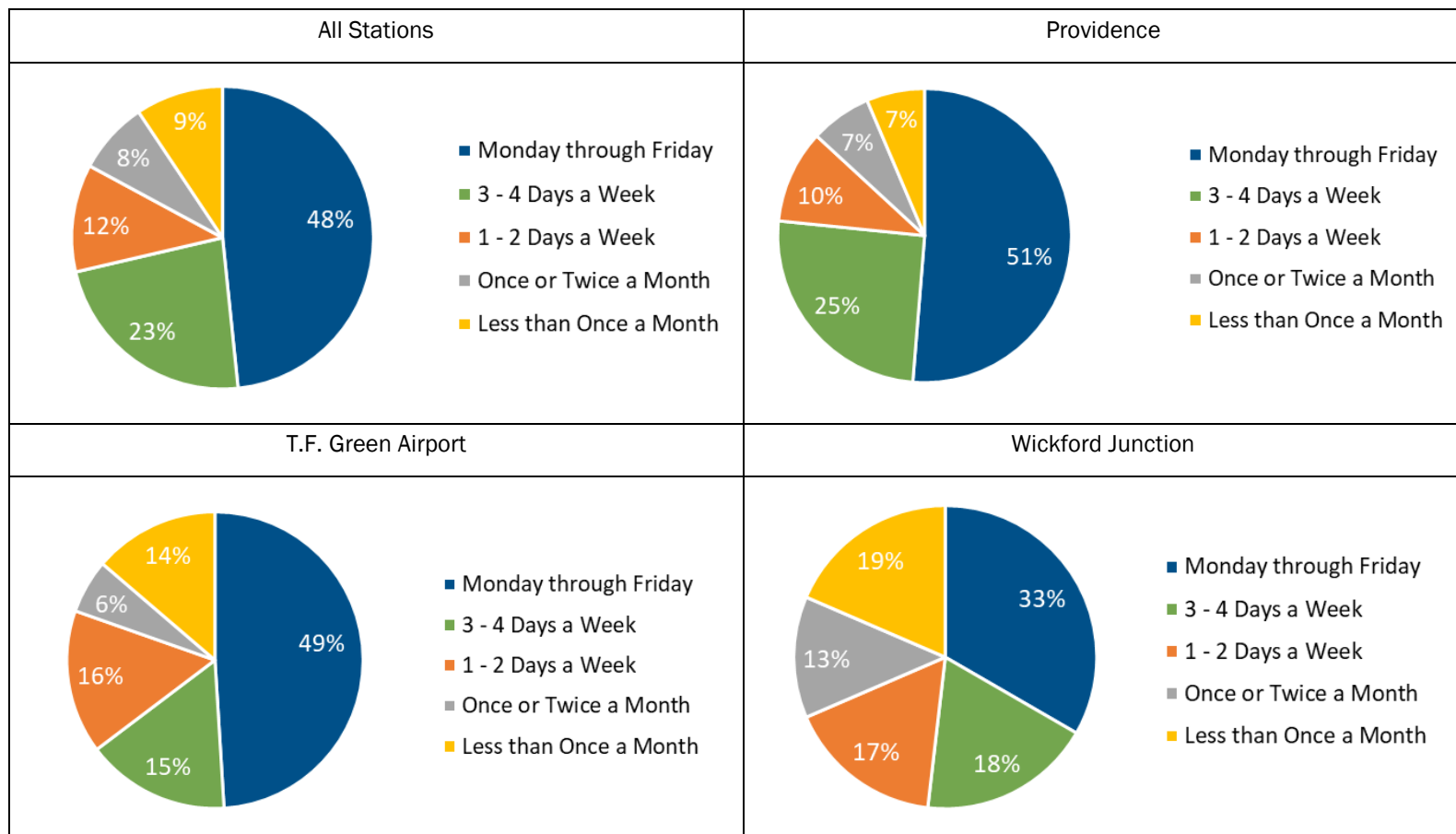
popular options included cash-based paper tickets (13%), single fares purchased via the MBTA mTicket mobile phone application (23%), and 10-ride passes purchased via the mTicket application (13%). Patrons using reduced fare products (i.e., seniors, persons with disabilities, and public school students) accounted for 3% of the line's total. The Other category reflects passengers who rode for free because they were either blind, visually impaired, or active military personnel.

The distributions for Providence Station and T.F. Green Airport are quite similar to the distribution for the Rhode Island segment; however, none of the passengers at T.F. Green Airport reported using a reduced fare. The distribution at Wickford Junction is unique in that there was significantly lower portion of the respondents using a monthly pass and higher portion of single/round-trip paper ticket.

4.2 Weekday Frequency

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

Figure 36. Weekday Commuter Rail Use Frequency by Boarding Station



Across the Rhode Island segment of the Providence/Stoughton Line 83% of Inbound passengers responded that they use the MBTA Commuter Rail weekday service at least once a week, including 48% who use it on a routine basis (i.e., Monday through Friday) and another 23% who use it three to four days a week. As seen in Figure 36, occasional riders (i.e., those that use the service no more than once or twice a month) accounted for 17% of respondents, with 8% stating they use the service once or twice a month and 9% responding that they use it less than once a month.

In terms of frequent use of the weekday service, Providence Station has the largest proportion of passengers using the service at least three days a week (76%), and passengers using it on a routine basis (51%). Wickford Junction had the highest proportion of occasional riders (32%) while this user type accounted for only 14% 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 75-90%) destined for their workplace, followed by attending a college or university, returning home, or visiting a hospital or doctor.
 - Monday through Friday – 91% were destined for their workplace, with 5% returning home, 2% to a college or university, 1% to a hospital or doctor, and one to airport.
 - 3-4 Days a Week – 90% headed to work, 4% attending college or university, 3% visiting a hospital or doctor, and 3% returning home. Those reporting to work within this group likely work from home on occasion or could be part-time workers.
 - 1-2 Days a Week – 73% to work, with returning home and attending college or university each garnering 12% and one response for bank or business office visit. 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 88% of Inbound traffic reported by those who ride once or more per week (83% 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 traffic.
- Among those who reported using the weekday service less than one day each week (17% 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 represented within the “frequent user” group responses summarized directly above.
 - Business-related trip purposes (19% versus zero among frequent users)
 - Airport (11%) and Hotel (8%)
 - Returning home (14% compared to 5%)
 - Social Needs (14% compared to zero)
 - Another person's home (7% compared to zero)
 - Restaurant, social, or recreational activity (7% compared to zero)
 - Personal Errands (12% compared to virtually zero)
 - Other (5%), Other Personal Business (3%), and Bank or business office (4%)
 - Visiting a hospital or doctor (7% compared to 1%)
 - Attending a college or university (7% versus 4%)
- T.F. Green Airport featured the least variation in responses (i.e., responses covered the fewest categories), with 67% destined for a hotel and 16% bound for a college or university. Aside from Other Personal Business and School/Daycare, responses from those boarding at Wickford Junction, like those who reported leaving Providence Station, spanned the entire range of trip purposes/destination place types.

4.2.2 Weekday Use Frequency & Boarding Time

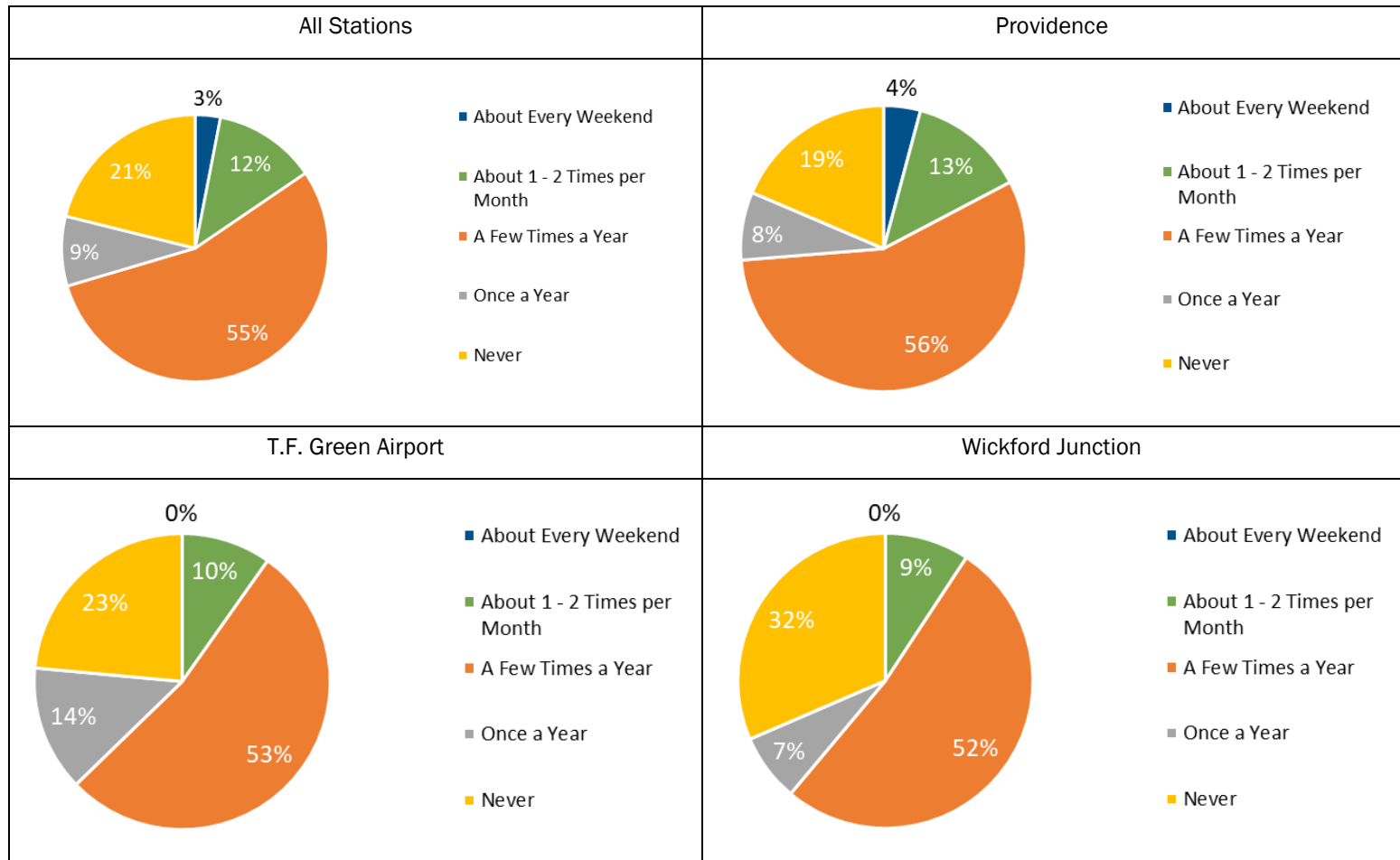
A comparison of the weekday frequency responses with the time-of-day boarding information summarized previously lends the following insights, organized by destination place type:

- Your Workplace (78% of all trips, 332 responses)
 - 97% of work-bound passengers boarded during the AM Peak, followed by 3% Mid Day and 1% Late Night
 - 94% of work-bound passengers use the weekday service at least once each week
 - Overall 57% reported daily usage, followed by 27% using it three or four days per week, and 11% once or twice per week
 - All of the work-bound respondents who reported using weekday commuter rail service less than once each week (6%) boarded during the AM Peak period
- Your Home (7% of all destinations, 29 responses)
 - 55% of home-destined passengers boarded during the PM Peak, followed by 34% during the Mid Day, 7% in the Late Night, and 3% during the AM Peak
 - Relative to those reporting to work, home-destined passengers were more likely to use the commuter rail less often
 - Only 66% use weekday service at least once per week
 - 34% reported daily usage, followed by 10% using it three or four days per week, and 21% once or twice per week
 - Overall 34% of home-destined passengers reported utilizing weekday service less than once a week, with 21% boarding in the Mid Day, and the AM Peak and Late Night periods each accounting for 3%
- College or University (4% of all destinations, 19 responses)
 - 58% of college-bound passengers boarded during the Mid Day, followed by 37% in the AM Peak, and 5% during the PM Peak
 - 74% of college-bound passengers use the service at least once each week
 - Overall 21% reported daily usage, followed by 21% using it three or four days per week, and 32% once or twice per week
 - Overall 26% of college-bound passengers reported utilizing weekday service less than once a week, with 16% boarding during the Mid Day and the remaining 10% departing during the AM Peak
- Hospital / Doctor (2% of all destinations, 10 responses)
 - 60% of medical-bound passengers boarded during the AM Peak, followed by 30% in the Mid Day, and 10% during the PM Peak
 - 50% of medical-bound passengers use the service at least once each week
 - Overall 20% reported daily usage and 30% using it three or four days per week
 - Overall 40% of medical-bound passengers reported utilizing weekday service once or twice per month, with the remaining 10% of passengers using the service less than once a month

4.3 Weekend Frequency

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

Figure 37. Weekend Commuter Rail Use Frequency by Boarding Station



As seen in Figure 37, 85% 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 3% stated that they use it about every weekend. The majority of passengers use the service a few times a year (55%) and the second most common response was 1-2 times per month (12%).

Comparing the responses by boarding station, it becomes evident that passengers boarding Inbound trains at stations that currently lack weekend service (i.e., Wickford Junction and T.F. Green Airport) are approximately half as likely to use weekend service on a monthly basis. Monthly use at Providence Station constituted 17% of respondents while monthly use was reported as 10% and 9% for T.F. Green Airport and Wickford Junction passengers, respectively.

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. 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 38. Other Travel Options by Boarding Station

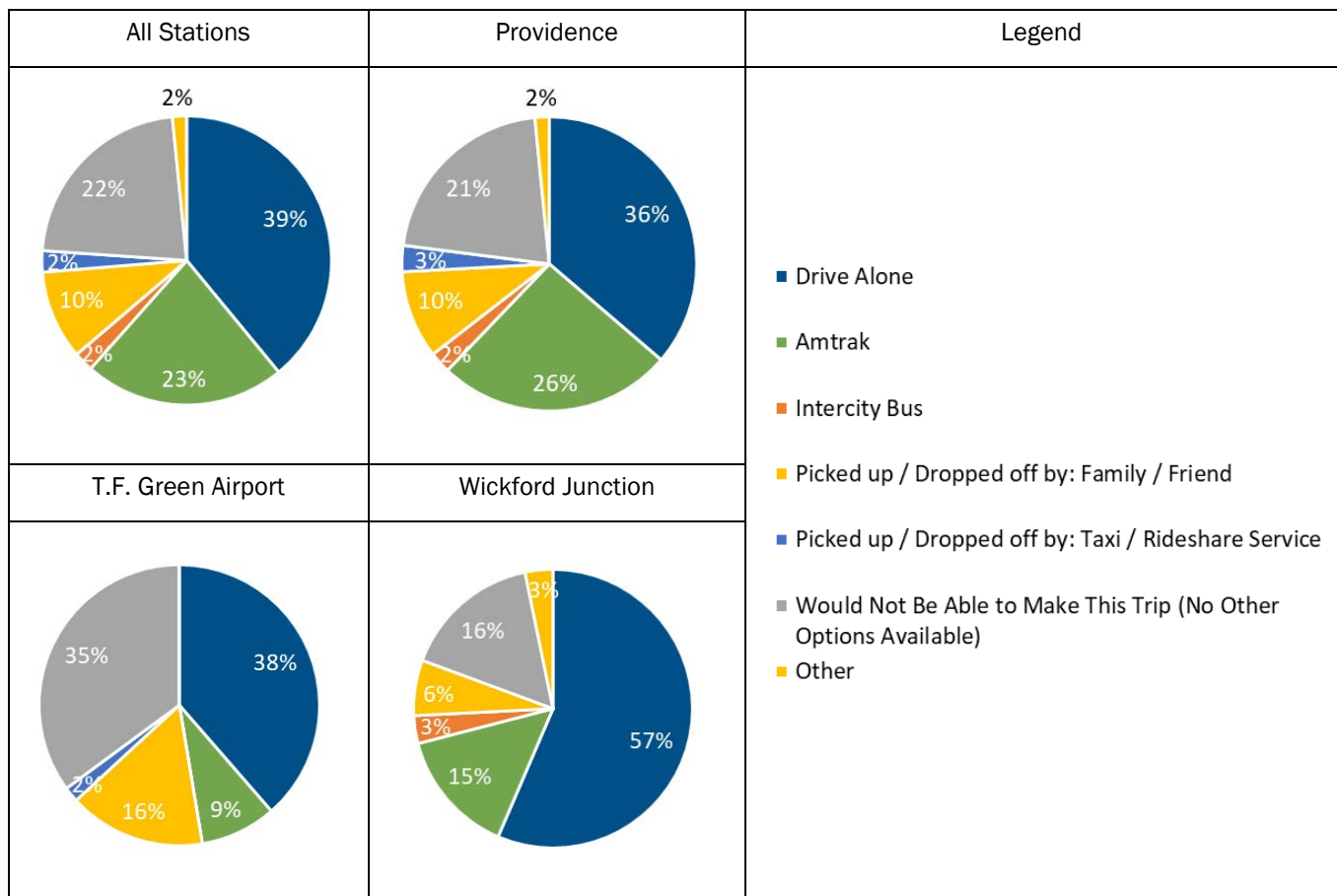


Figure 38 shows which alternative travel options could be used in place of commuter rail for the line as a whole, as well as at each station. It should be noted that passengers were able to select more than one option (i.e., there were 502 total responses among the 426 respondents). Approximately 39% of the responses (46% Inbound passengers) indicated that driving alone would be a viable alternative. 23% of responses (27% of passengers) reported that the trip could be completed using Amtrak. Drop-off/pick-up accounted for 12% of responses (15% of passengers). Intercity bus and taxi/rideshare service each provided about 2% of responses (3% of passengers), and around 2% chose “Other.”

Comparing the responses by boarding station, Wickford Junction had the highest proportion of passengers that would chose to drive alone as an alternative option (57%), while Providence Station had the lowest (36%). T.F. Green had more than one third of passengers that would not make this trip without commuter rail.

As indicated by 22% of responses (112 of 502), 26% of Inbound riders confirmed that they would not be able to make this trip without MBTA Commuter Rail. Although the proportion was nearly double the overall rate of 10%, only 19% of respondents (21 responses) within this group reported being members of zero-vehicle households. Furthermore, as shown in the next section, only 3% of respondents overall identified the commuter rail as being their only viable mode of travel. Therefore, it can be inferred that 91 of the respondents who reported that they would not have made their trip and did not have Amtrak as an alternative (21% of all surveyed) 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 this 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 to live somewhere else.

The sizable minority of MBTA passengers at Providence Station who sometimes take Amtrak indicates that passengers are using Amtrak as an extension of the MBTA Commuter Rail schedule, whether 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 program similar to those in place 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 39 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 40 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 (22%), followed by being able to read or work on the train (16%), its convenience (15%), and the ability for passengers to avoid parking at their final destination (14%). Approximately 3% 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 amongst the stations, with similar proportions for each line of reasoning 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 39. Distribution of Reasons for Using Commuter Rail by Boarding Station

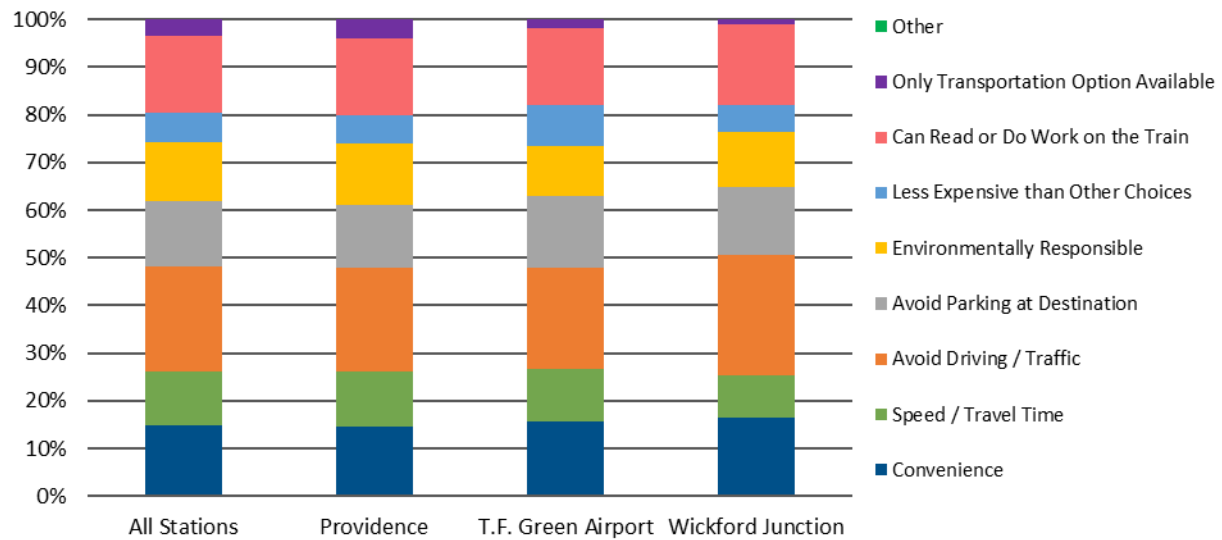
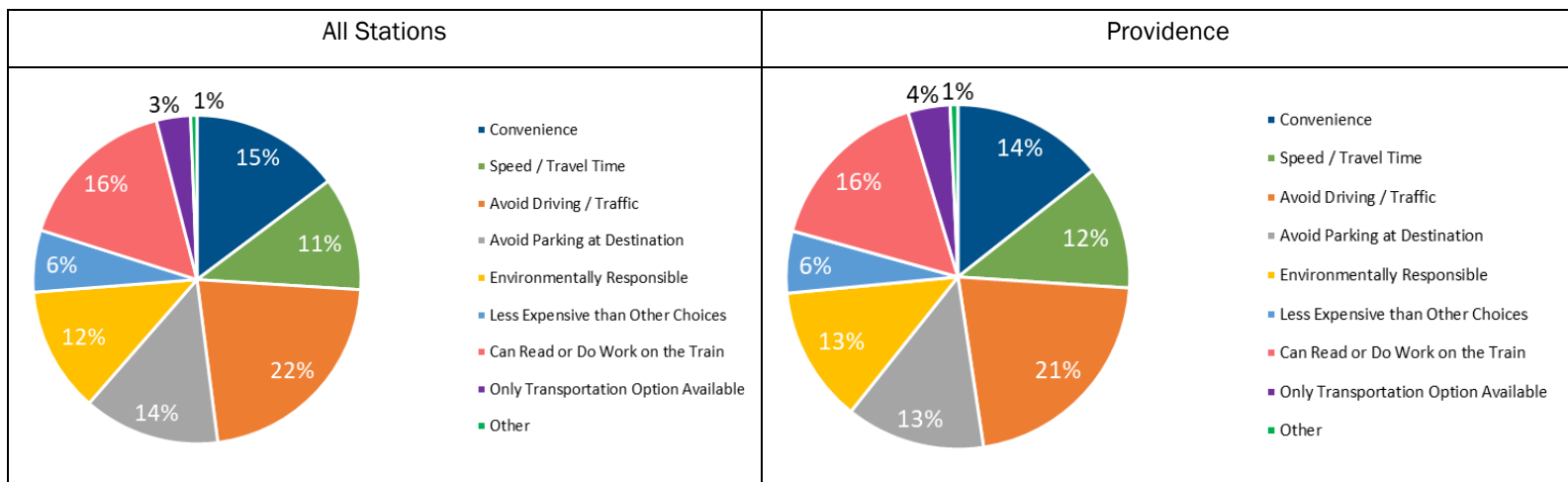
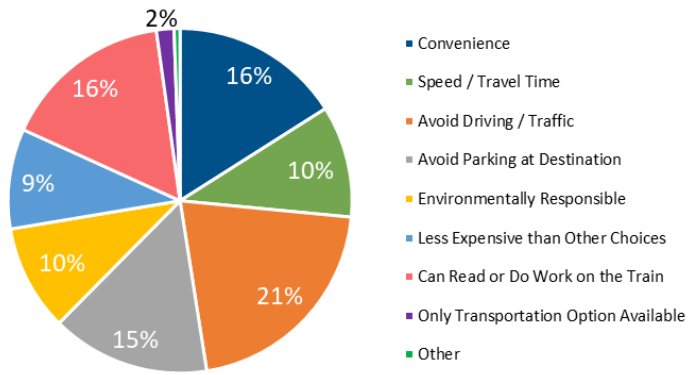


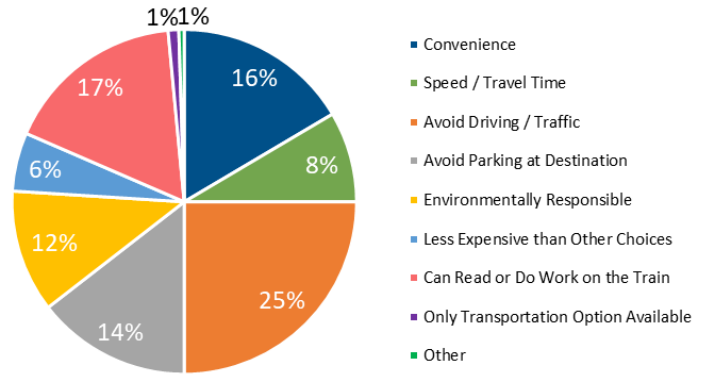
Figure 40. Reasons for Using Commuter Rail by Boarding Station



T.F. Green Airport



Wickford Junction



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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 to produce a total of 117 comments and suggestions collected across the three MBTA Commuter Rail stations in Rhode Island. Table 11 provides a ranked list of the most frequent comments and suggestions (categories that appears more than once) collected along the Rhode Island segment of the Providence/Stoughton Line, as well as counts for each category at the individual stations.

Table 11. Comments and Suggestions Received from Inbound Passengers

OVERALL RANK	COMMENT/SUGGESTION	PVD COUNT	TFG COUNT	WFJ COUNT	TOTAL COUNT
1	Add Frequency	12	8	4	24
2	Add Express Train	15	1	3	19
3	Add Cars/Capacity	13	0	0	13
4	Positive Feedback	4	3	3	10
4	Price Complaint	8	1	1	10
6	Coordinate RIPTA & Commuter Rail	8	0	0	8
7	Add Weekend Service	0	4	3	7
7	Station Improvements	5	1	1	7
7	Wi-Fi Complaint	7	0	0	7
7	Add Equipment (Power Outlets, Table, etc.)	7	0	0	7
11	Delay Complaint	5	1	0	6
12	More Quiet Cars	4	0	1	5
13	Add Frequency - Ruggles	3	0	1	4
13	Improve Service - Generally	3	1	0	4
13	Trains Too Slow	2	0	2	4
13	Timely Updates on Train Status	2	1	1	4
17	Ticket Checking	2	0	0	2

The top five responses accounted for 45% of all comments and suggestions provided by Inbound weekday passengers in Rhode Island. The top ranked comment overall is add frequency, with 12

comments from Providence, eight from T.F. Green Airport, and four from Wickford Junction. Many of them mentioned that the currently available times are limited and could not meet their commute need. Among the Providence comments, nine of them want more trains during rush hour, with two passengers suggested adding a train specifically between 6:20 AM and 7:13 AM.

The second most frequent comment, add express train service, appeared 19 times with 15 from Providence Station. It is also the top ranked comment in Providence. Most of them suggest adding an express train from Providence to Boston, and one passenger from Wickford Junctions suggested adding express train from Wickford Junction to Boston.

13 Passengers from Providence stated that the rush hour trains are too crowded and should have more car or seat to expand the capacity. Some stated that passengers it's difficult to find a seat after work and need to keep standing on the train. Providence is the only station where passengers mentioned capacity concerns.

Ten respondents stated that they value the service that the MBTA and RIDOT provide along the Providence/Stoughton Line, making it the fourth most frequent comment received. As this category had the second highest ranking at Wickford Junction, passengers there appear to still appreciate RIDOT's decision to extend commuter rail service to South County. Meanwhile, four respondents from T.F. Green Airport and three from Wickford Junction suggested adding weekend service to these two stations.

The fifth most frequent comment that passenger mentioned (Price Complaint) garnered nearly 6% of all responses. 8 of all 10 comments came from those boarding at Providence Station. Passengers also mentioned that they tried to work from home or use employer supplements to reduce the commuting cost.

Eight passengers from Providence suggest better coordination between RIPTA and MBTA to provide a more seamless connection between buses and commuter rail, including make it possible to use commuter rail passes on RIPTA buses (note: RIPTA currently accepts MBTA monthly passes on its buses, but this policy is not advertised), coordinate RIPTA bus schedules with train arrival/departures, and provide better access between nearby RIPTA stops and residential developments and Providence Station.

Seven comments on better Wi-Fi, more electric outlet and tables are all focusing on making the train a better environment for working or reading on the road, which is the second ranking reason for people to choose commuter rail over other transportation mode.

Seven respondents also suggested station improvements including high platforms; better bathroom facilities at Providence, T.F. Green, and Ruggles; and enhanced signage at Providence, Attleboro, and Ruggles, as well as on-board quiet car trains.

6 Conclusions

This chapter provides a discussion of major themes derived from an analysis of MBTA Inbound weekday riders' responses to the Fall 2019 OBS. It should be noted that RIDOT will continue to conduct quarterly weekday and bi-annual weekend ridership counts through at least April 2022 (i.e., the end of state fiscal year 2022) and that COVID-19 would have certainly changed some of the results of this survey.

6.1 Sample Size & Confidence Levels

Based on the number of “wholly valid” responses collected from Inbound passengers, the behavioral trends captured across the Rhode Island segment of the line as a whole and Providence Station, along with the socio-demographic characteristics reported at Providence Station, can be confidently generalized (i.e., are accurately representative) to a margin of error of approximately 5% while the results collected at T.F. Green Airport and Wickford Junction can be generalized with 88% confidence.

Relative to boarding station, 75% of Inbound respondents boarded at Providence Station, with 12% boarding at T.F. Green Airport and 13% at Wickford Junction. However, quarterly weekday counts data shows that for every ten Inbound passengers departing from Rhode Island, eight boarded at Providence (80%), one left from T.F. Green Airport (9%), and another departed from Wickford Junction (11%). Thus, this survey's overall statewide results tend to emphasize the trip-making behaviors and characteristics of passengers embarking from T.F. Green Airport and Wickford Junction relative to those leaving from Providence Station. Furthermore, with over 80% boarding during the AM Peak, this survey sample places a relatively greater emphasis on the trip-making habits and socio-demographic characteristics of Inbound riders who travel during the morning rush, mostly at the expense of those boarding in the PM Peak and Mid Day.

6.2 Trip-Related Information

6.2.1 Origin Trip End

In terms of origin location prior to arriving at the MBTA Commuter Rail station, 89% of passengers were at their residence prior to arriving at their boarding station. All passengers surveyed originated within the State of Rhode Island, led by station-based anchor municipalities in Providence (60%), Warwick (9%), North Kingstown (5%), as well as other cities that generated demand across multiple stations (e.g., East Greenwich and Cranston at 3%).

Approximately 96% of those surveyed indicated that their journey to the boarding station took no more than 30 minutes and 89% stated that it took no more than 20 minutes. Based on the responses to the ingress mode question, there is a heavy reliance (57%) on the use of personal vehicles en route to the stations, with 33% reporting Drove Alone and 24% that chose Dropped off by: Family/Friend. Active transportation modes were the third most popular option, with walking accounting for 20% of origin trips and biking nearly 5%. Transit use accounted for 9% of arrivals to boarding stations. Finally, taxi/rideshare accounted for about 7% of arrivals, and the Little Roady Autonomous Shuttle accounted for about 2% of all the passengers.

Table 12 summarizes when Inbound riders typically board their trains based on type of trip being taken.

Table 12. Boarding Time Distribution for Major Trip Purposes

OVERALL RANK	DESTINATION PLACE TYPE / TRIP PURPOSE	OVERALL TRIPS	AM PEAK	MID DAY	PM PEAK	LATE NIGHT
1	Your Workplace	78%	97%	3%		1%
2	Your Home	7%	3%	34%	55%	7%
3	College / University	5%	37%	58%	5%	
4	Hospital / Doctor	2%	60%	30%	10%	

6.2.2 Destination Trip End

94% of those surveyed along the Rhode Island segment stated that they were alighting at a station in Boston, with South Station (53%) leading, followed by Back Bay (32%), Ruggles (8%), select suburban stations between Providence Station and the City of Boston (6% across Attleboro, South Attleboro, Mansfield), Providence Station (2%), and Hyde Park (1%). Internal trips accounted for nearly 8% of the survey responses from those boarding south of Providence Station; however, quarterly weekday count records indicated nearly 17% of those Inbound passengers alighting at Providence Station.

For the Rhode Island segment as a whole, 76% of Inbound passengers were destined for Boston, followed by 12% to Cambridge, 2% to Somerville, 8% to other municipalities in Massachusetts, and 2% to Providence Station (i.e., local trips from T.F. Green Airport or Wickford Junction). Relative to those boarding further north, Inbound riders departing from Wickford Junction showed less attraction to the Boston region, but were responsible for the two trips recorded to local activity centers near the future commuter rail station in Pawtucket and Central Falls.

In terms of alighting station, it's worth noting that Ruggles, which did not feature an Inbound stop past 12:19 PM at the time of survey, provided comparable levels of access (i.e., similar magnitude of trips) to/from adjacent destinations, including the Longwood Medical Area, employment opportunities at Fenway/Kenmore, and colleges (Northeastern University, Wentworth Institute of Technology, and graduate departments anchored at LMA).

6.3 Demographic Information

In terms of household characteristics, over half of respondents were members of two-person households (52%), followed by 14% either living alone or within a four-person unit, with three-person households accounting for 12%. Inbound passengers living in low-income households constituted a relatively minor share of overall ridership (9% reported earning less than \$50,000) while almost two in three Inbound riders were members of high wage households (67% earned at least \$100,000).

Overall 90% responded that they had at least one usable vehicle within their household, with two vehicles being the most frequent response (40%), followed by one (36%). Thus, for the 10% of Inbound riders within zero-vehicle households, the MBTA Commuter Rail is providing a connection (likely a medium- to long-range one) 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).

Those between the ages of 25 and 64 accounted for 86% of all respondents across the Rhode Island segment, with the most common age cohorts being 25 to 34 (35%), 45 to 64 (32%), and 35 to 44 year olds (19%). The youth/college age cohort (19 to 24) amounted to 8% of the sample and seniors contributed the remaining 6%.

After eliminating the non-responses for the race question, over 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 substantially higher rates (i.e., 10% versus 7% and 8% versus 3%). Approximately 7% of all Inbound weekday passengers identified themselves as Latinx or Hispanic. Relative to language proficiency, only 1% of Inbound passengers noted having occasional difficulty understanding basic directions spoken or written in English, with only one respondent at Providence Station noting a preference for complementary Spanish-based commuter rail information.

The majority of passengers surveyed possess a smartphone (99%) and driver's license (93%). Relative to driving status, Wickford Junction (100%) and T.F. Green Airport (96%) had notably higher rates of possession than Providence Station (91%).

6.4 Commuter Rail Use Information

In terms of frequent weekday MBTA Commuter Rail use, 83% of Inbound passengers responded that they use the service on weekdays at least once a week, including 48% who use it on a daily basis, another 23% who use it three to four days a week, and 12% who ride once or twice. Comparing the weekday use data with trip purpose and time of boarding reveals the important trends below.

- 88% 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 75-90%, with the remainder of trips oriented towards a college or university (2-12%), hospital or doctor (1-3%), or home
- Trip purposes among the less frequent rider group were substantially more varied, with several responses that were not selected by frequent users, including business-related (19%), social needs (14%), personal errands (12%)
- Relative to frequent users, the less frequent group was also more likely to report returning to their home (14% versus 5%), which suggests that the service functions as a useful substitute mode for those who typically rely on other options but find themselves stranded at the moment
- Weekday Use Frequency by Trip Purpose
 - The overwhelming majority of work-bound passengers (94%) use the weekday service at least once each week, with 84% using it at least three times per week
 - Nearly three-quarters (74%) of those traveling to a college/university use the service at least once a week, including 42% who use it at least three times per week

- Half of those headed to a doctor/hospital use the service at least three times each week, with 40% using rail once or twice a month for this purpose

79% of those surveyed reported using the service on the weekend at least once a year while only 3% stated that they use it about every weekend. Surprisingly, Inbound riders boarding at the two southernmost stations, both of which currently lack weekend service, reported comparable levels of relatively frequent weekend commuter rail use, with proportions for About 1-2 Times per Month ranging from 9% (Wickford Junction), 10% (T.F. Green Airport), and 13% (Providence Station).

When prompted to explain why they choose commuter rail, about 47% of passengers replied, in some form or another, that taking the service allows them to avoid the hassles of driving (22% selected “avoid driving/traffic,” 14% said “avoid parking at final destination,” and 11% noted “speed / travel time”) while the convenience of the service accounted for another 31% of responses (15% chose “convenience” and another 16% selected “can read or do work on the train”). Only 3% 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, 6% recognized that it was “less expensive than other choices.”

In terms of alternatives, nearly half of Inbound passengers (46%) indicated that driving alone would be a viable option if the commuter rail was not available, followed by over one quarter (27%) who could complete their trip via an Amtrak train. Drop-off/pick-up accounted for 12% of responses (15% of passengers). Intercity bus and taxi/rideshare service each provided about 2% of responses (3% of passengers), and around 2% chose “Other.”

Over one quarter (26%) 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 21% of Inbound respondents 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 (46%) paid their fare via a monthly Commuter Rail pass, which closely aligns with the share of passengers who use MBTA Commuter Rail every weekday (48% across the three stations). Aside from these frequent users, 36% reported using single-fare products (23% from mTicket and 13% cash-based paper), 13% leveraging the 10-ride mTicket pass, and 3% relying on reduced fares.

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 passengers desire from the service. The most frequently received comment was that the MBTA should increase train frequencies and/or to expand the capacity of the vehicles themselves, especially during peak hours, to reduce crowding and provide Rhode Islanders with an opportunity to sit down.

The next most popular recommendation was to initiate a true express service (i.e., no intervening or very limited stops between termini) to shorten the commuting time from Providence to Boston. At least one passenger at each station reported that the price is too high for the service being delivered.

At transit-rich Providence Station, passengers want to see better coordination between the RIPTA bus and MBTA Commuter Rail schedules while those boarding at T.F. Green Airport and Wickford Junction continue to clamor for the extension of weekend trains further south of Providence.

Additionally, many of the riders at stated that they would like to see a better Wi-Fi service, as well as vehicle upgrades to provide modern amenities like readily-accessible power outlets. More quiet cars available is also desired.

6.6 Comparison to 2016 Survey Results

Comparing the 2019 survey to the results gathered in 2016, some of the data distribution for “all stations” shows a different pattern. The primary reason for this change is that the 2019 survey incorporated a higher proportion of survey respondents who boarded at Providence Station, thereby providing a more accurate reflection of the typical travel behaviors along the Rhode Island segment as a whole. Among passengers surveyed in Fall 2019, 75% originated from Providence Station compared to 48% in 2016. Therefore, it is more meaningful to compare the 2016 and 2019 results by origin station instead of at the statewide/line level. Notable differences between the 2016 and 2019 results are provided in the following section, along with major trends identified within the 2019 survey itself.

6.7 Key Takeaways

6.7.1 Providence Station

The capital’s high-density urban environment exerts a strong influence on the results at Providence Station, which show a different pattern than those found at T.F. Green and Wickford Junction.

- Origin Place Type: Higher diversity of origin place types
- Ingress Mode & Time: Shorter ingress time than other two stations and significantly less reliant on personal vehicles. Passengers choose to use public transit and active transportation options (walk, bike) when they can. The Little Rody shuttle is providing a good connection for the people along the route.
- Egress Mode & Time: 75% reached their destination within 10 minutes, with no trips greater than 20 minutes. Among the eight Inbound passengers surveyed who alighted at Providence Station, all but one of them walked to their final destination.
- Fare Type: Higher proportion of monthly pass (49%) and mTicket (23%) than in 2016 (43% and 19%, respectively).
- Weekend Use: Only station where passengers reported using every weekend (4%).
- Household Characteristics: Smaller average household size than in other two stations. Higher proportion of two-people households (54%) than in 2016 (40%).
- Available Vehicles: Significantly higher proportion of passengers that do not have access to a personal vehicle.
- Age: Highest proportion of people from 25 to 34, approximately 40% more than at the other two stations.
- Language Preference: The only station with reported preference for non-English materials.
- Smart Phone: The only station with passengers reporting not using a smart phone.
- Driver’s License: Highest proportion of passengers not having a driver license.

6.7.2 T.F. Green Airport Station

Lying between the urban center of Providence Station and the semi-rural setting of Wickford Junction, T.F. Green Airport Station typically reflected a mix of the trip-making characteristics exhibited to the north and south.

- Ingress Mode & Time: Short ingress trips (less than 20 minutes) takes more than 95% and ingress modes are limited.
- Household Vehicles: Higher proportion of 2+ vehicle households than Providence, but lower than Wickford Junction.
- Age: Proportion of mid-age people (45-64) higher than Providence and lower than Wickford Junction, lower than that in 2016. Lowest proportion of senior passengers (65 and over).
- Other Travel Options: Highest proportion of passengers stating they would not be able to make the trip without the MBTA commuter rail service.

6.7.3 Wickford Junction Station

The distribution of responses at Wickford Junction were markedly distinct from the other two stations.

- Origin Place Type: Least diversity
- Ingress Mode & Time: Highest reliance on personal vehicles (83% drove alone and 11% dropped off by family or friend), none chose to take active transportation (walk or bike) or taxi/rideshare. However, 6% chose RIPTA Bus this round compared to zero in the 2016 survey.
- Fare Type: Highest proportion of single/round-trip paper ticket (22%) and reduced fare ticket (6%) than the other two stations. Higher proportion of monthly pass than in 2016 (36% compared to 22%).
- Other Travel Options: Highest proportion of driving alone and least proportion of not able to make the trip.
- Household Size and Income: Highest proportion of families with five or more people, highest average annual household income (\$167,000), and no household income lower than \$50,000
- Household Vehicles: 98% of all respondents had access to at least one household vehicle and this station also featured the highest proportion of households with two or more vehicles.
- Age: Significantly higher proportion of seniors and elderly persons (15% for Wickford Junction compared to 4% at Providence Station and 2% at T.F. Green Airport)
- Race: Least diverse, with more 87% self-identifying as White
- Driver's License: Only station where all respondents reported possessing a driver's license.

Given these variations relative to the other two stations, it is unlikely that the principles and strategies used to increase ridership in more urban settings like Providence Station or T.F. Green Airport will realize the same degree of success when applied to the more suburban context of Wickford Junction. However, some strategies, such as increasing frequency and having transit-supportive development, will likely be effective at all three stations. Thus, any attempt to grow ridership at Wickford Junction should rely on the use of supplemental, or altogether separate, strategies that are uniquely tailored to suit the demographic composition and land use characteristics of South County.

6.8 Impact of COVID-19

Since this OBS was conducted in October 2019, travel patterns and use of commuter rail have drastically changed across the United States due to the ongoing COVID-19 pandemic. MBTA Commuter Rail ridership plummeted 99%⁶ systemwide at its nadir and, as of late June, has only returned to 3.9% of its February 2020 levels.⁷ Many employees with the ability to work from home continue to do so, leading to a dramatic reduction in peak highway congestion in Rhode Island and Massachusetts. This will likely be the status quo for the short-term. In the long-term, it is likely that ridership on MBTA Commuter Rail will return to its pre-COVID-19 levels, but the characteristics of riders' travel patterns may look different.

It is important to acknowledge that certain questions in this survey would likely yield different responses if it was repeated in the next few years. They are:

- Ingress mode: fewer transit connections, more walking, cycling, and driving
- Egress mode: fewer transit connections, more walking and cycling
- Fare type: fewer monthly passes, more multi-pass tickets
- Weekday frequency: fewer Monday-Friday passengers, more 1-4 day/week riders
- Open-ended responses: more sensitivity towards crowding to maintain social distancing

In addition, the survey's sample size may be less, consistent with lower ridership.

⁶ <https://cdn.mbta.com/sites/default/files/2020-04/2020-04-13-fmcb-14-report-from-general-manager-accessible.pdf>

⁷ <https://cdn.mbta.com/sites/default/files/2020-06/2020-06-22-fmcb-20-report-from-general-manager.pdf>