

Routes 448/449

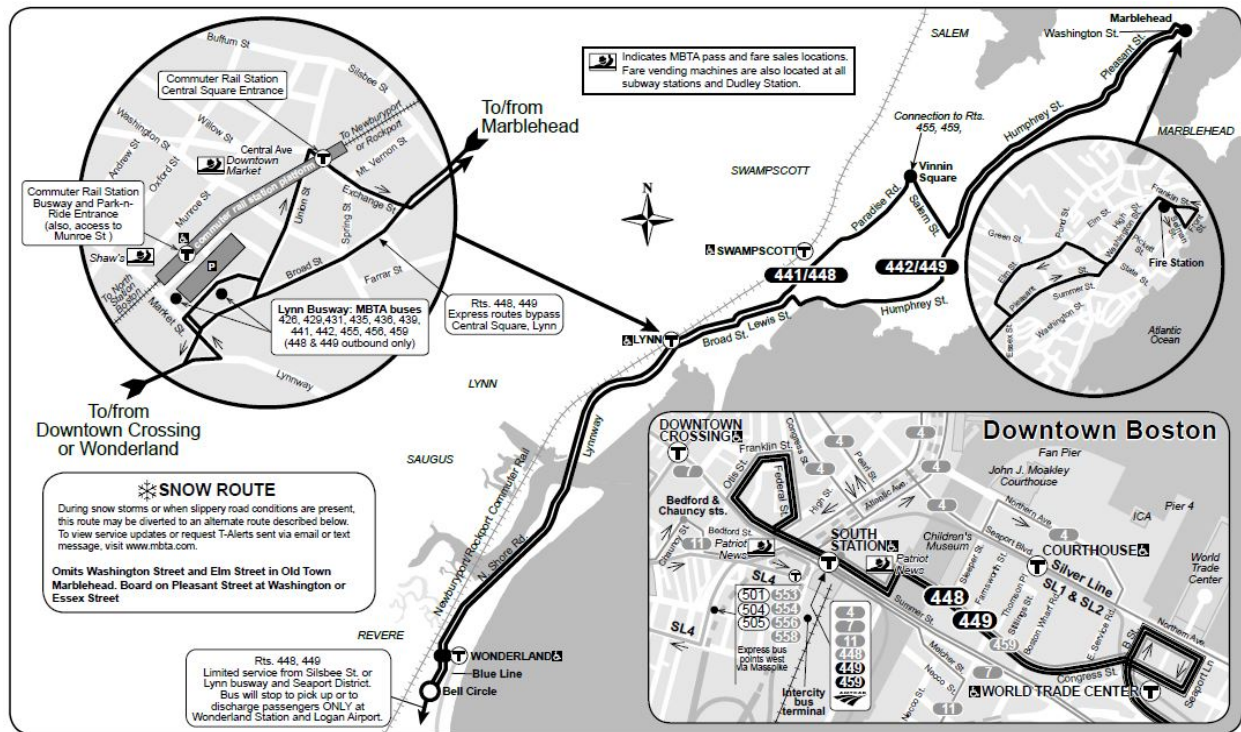
Marblehead – Downtown Crossing

Route Overview

Route 448 and Route 449 Marblehead – Downtown Crossing are Commuter bus routes that operated between Marblehead and Downtown Boston via Marblehead, Swampscott, Lynn, and Revere. Both routes serve Central Square, Lynn; Wonderland Station; and the Logan International Airport. Route 448 also serves Vinnin Square.

Route 448 and Route 449 share the same alignment as combined Route 441 and Route 442 Marblehead – Wonderland until reaching Wonderland where Route 448 and Route 449 continue to Boston.

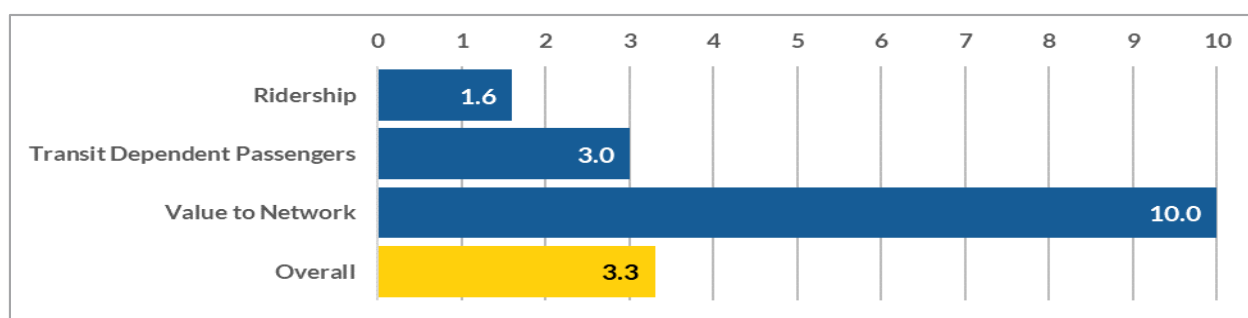
Figure 1 | Service Map



Network Importance

Route 448 and Route 449 are coverage routes that connect the people of Marblehead to downtown Boston. However, these routes are not particularly important to the overall system (see Figure 2). On a relative scale of 0 to 10, both Route 448 and Route 449 rate 1.6 in terms of ridership, 3.0 in terms of transit dependent ridership, and 10.0 in terms of their value to the network (which reflects the number of people who are uniquely served, the number of jobs and other important destinations, and the number of transferring passengers). Their overall score, which gives a 70% weighting to overall ridership and a 15% weight to both other measure, is 3.3.

Figure 2 | Relative Importance within MBTA Bus Network (on a scale of 0 to 10)



Service Overview

Schedule

Route 448 and Route 449 operate Monday through Friday between 6 AM and 7:40 PM with generally infrequent headways. Taking the routes together, headways are typically 30 minutes and range from 28 minutes to 9 hours. Neither route runs inbound service in the afternoon.

Route 448

Route 448 operates weekdays from 6:28 AM until 7:40 PM with infrequent service (see Table 1). There are two inbound trips and three outbound trips.

- In the morning, inbound trips run one hour apart (6:28 AM and 7:28 AM). There is a single outbound trip at 7:45 AM.
- In the afternoon, outbound trips run 70 minutes apart (5:15 PM and 6:25 PM).

Route 449

Route 449 operates weekdays from 6:00 AM until 7:06 PM with infrequent service (see Table 2). There are three inbound trips and three outbound trips.

- In the morning, the route makes three inbound trips with 58 to 60 minutes between 6:00 AM and 9:22 AM. One outbound trip is scheduled for 7:15 AM.

- In the evening, two outbound trips are made at 4:45 PM and 5:45 PM.

Neither route meets the MBTA’s expected Span of Service or Frequency standards for Commuter routes. Service does not run the span of the AM peak or PM peak periods, and fewer than three trips in the peak direction are made during these periods. The routes also fail to meet frequency standards when evaluated as one route.

Table 1 | Route 448 Schedule Statistics

| SERVICEDAY | SPAN OF SERVICE | FREQUENCY (RANGE) | FREQUENCY (AVERAGE) | DAILY TRIPS (INBOUND/OUTBOUND) |
|----------------------|--|-------------------|---------------------|--------------------------------|
| Monday-Friday | 6:28 AM to 7:45 AM 5:15 PM to 6:25 PM | | | 2/3 |
| Sunrise | - | - | - | - |
| Early AM | 6:28 AM to 6:59 AM | 1 trip | - | 1/0 |
| AM Peak | 7:00 AM to 7:45 AM | 1 trip | - | 1/1 |
| Midday Base | - | - | - | - |
| Midday School | - | - | - | - |
| PM Peak | 5:15 PM to 6:25 PM | 60 – 70 | 70 | 0/2 |
| Evening | - | - | - | - |
| Late Evening | - | - | - | - |
| Night | - | - | - | - |
| Saturday | - | - | - | - |
| Sunday | - | - | - | - |

Note: Span of service reflects the time the first bus begins service until the time the last bus finishes service.

Table 2 | Route 449 Schedule Statistics

| SERVICEDAY | SPAN OF SERVICE | FREQUENCY (RANGE) | FREQUENCY (AVERAGE) | DAILY TRIPS (INBOUND/OUTBOUND) |
|----------------------|--|-------------------|---------------------|--------------------------------|
| Monday-Friday | 6:00 AM to 5:45 PM 4:45 PM to 6:21 PM | | | 3/3 |
| Sunrise | - | - | - | - |
| Early AM | 6:00 AM to 6:59 AM | 58 – 60 | 59 | 2/0 |
| AM Peak | 7:00 AM to 9:22 AM | 1 trip | - | 1/1 |
| Midday Base | - | - | - | - |
| Midday School | - | - | - | - |
| PM Peak | 4:45 PM to 6:21 PM | 60 – 70 | 65 | 0/2 |
| Evening | - | - | - | - |
| Late Evening | - | - | - | - |
| Night | - | - | - | - |
| Saturday | - | - | - | - |
| Sunday | - | - | - | - |

Note: Span of service reflects the time the first bus begins service until the time the last bus finishes service.

Service Patterns

Route 448 and Route 449 run from Marblehead to Downtown Boston, serving Swampscott, Lynn, Revere and the Logan International Airport along the way. There are three service patterns for each route.

Route 448 (see Table 3)

- Pattern 448.0 is Route 448's primary inbound pattern, and is identical to Pattern 449.0 until it diverts from Humphrey Street to serve Salem Street and Paradise Road before realigning with Pattern 449.0 in Lynn.
- Pattern 448.2 is Route 448's primary outbound pattern, and serves Central Square, Lynn.
- Pattern 448.1 makes one outbound trip that makes additional stops along McClellan Highway and North Shore Road. These roads are lined by commercial and more industrial properties. This pattern is identical to Pattern 449.1.

Table 3 | Route 448 Service Patterns

| PATTERN | ORIGIN | DESTINATION | UNIQUE FEATURE | TRIPS per WKD | TRIPS per SAT | TRIPS per SUN |
|-----------------|---------------------------------|---------------------------------|--------------------------------------|---------------|---------------|---------------|
| INBOUND | | | | 2 | - | - |
| 448.0 | 7 Franklin Street at Fire House | Otis Street at Summer Street | Primary pattern | 2 | - | - |
| OUTBOUND | | | | 3 | - | - |
| 448.1 | Otis Street at Summer Street | 7 Franklin Street at Fire House | Additional Stops Along N. Shore Road | 1 | - | - |
| 448.2 | Otis Street at Summer Street | 7 Franklin Street at Fire House | Primary pattern | 2 | - | - |

Route 449 (see Table 4)

- Pattern 449.0 travels a direct route between Marblehead and Downtown Boston via Humphrey Street.
- Pattern 449.2 is Route 449's primary outbound pattern, and serves 'Central Square, Lynn.
- Pattern 449.1 makes one outbound trip that makes additional stops along McClellan Highway and North Shore Road. These roads are lined by commercial and more industrial properties. This pattern is identical to Pattern 448.1.

Table 4 | Route 449 Service Patterns

| PATTERN | ORIGIN | DESTINATION | UNIQUE FEATURE | TRIPS PER WKD | TRIPS PER SAT | TRIPS PER SUN |
|-----------------|---------------------------------|---------------------------------|--------------------------------------|---------------|---------------|---------------|
| INBOUND | | | | 3 | - | - |
| 449.0 | 7 Franklin Street at Fire House | Otis Street at Summer Street | Primary pattern | 3 | - | - |
| OUTBOUND | | | | 3 | - | - |
| 449.1 | Otis Street at Summer Street | 7 Franklin Street at Fire House | Additional Stops Along N. Shore Road | 1 | - | - |
| 449.2 | Otis Street at Summer Street | 7 Franklin Street at Fire House | Primary pattern | 2 | - | - |

Ridership

Routes 448 and Route 449 have low ridership with 315 weekday boardings combined. There are 148 weekday boardings on Route 448 and 167 weekday boardings on Route 449.

Ridership by Stop

Ridership by stop is low throughout the route. Wonderland Station is an exception. Many riders served by Route 448 and Route 449 are traveling to and from Wonderland Station. Sixty-one percent of alightings during inbound trips take place at Wonderland. Inbound ridership by stop in more detail:

- At the 28 stops from 7 Franklin Street at Fire House to Humphrey Street at Stanley Road, 62 passengers board and five passengers alight.
- 13 passengers board and one passenger alights at the 16 stops from Humphrey Street at Salem Street to Humphrey Street at Eastern Avenue (Route 449).
- Nine passengers board and three alight at the 20 stops from Salem Street at Humphrey Street to New Ocean Street opposite Rock Avenue (Route 448).
- 74 passengers board and three passengers alight at nine stops between New Ocean Street at Oneida Street to Broad Street at Silsbee Street.
- At Wonderland West Busway 99 passengers alight and seven passengers board.
- At Terminal C at Logan International Airport, three passengers alight the bus.
- 51 passengers alight from Seaport Boulevard at Seaport Hotel to Otis Street at Summer Street.

Outbound ridership by stop is similar to and reverse of inbound ridership by stop. Most outbound trips serve Lynn Commuter Rail Station directly at the Busway. At ' Central Square, Lynn, eight passengers board and 36 alight.

Ridership by Trip

Most trips made by Route 448 and Route 449 have maximum loads approaching their total number of boardings, indicating many people stay on the bus until a common location, Wonderland Station.

Route 448:

Route 448 has low to moderate ridership levels throughout the week.

For inbound trips (see Figure 4):

- There are two weekday morning inbound trips. The first trip at 6:28 AM carries 41 passengers and the second at 7:28 AM carries 30 passengers.

For outbound trips (see Figure 5):

- 21 passengers are carried during the one morning outbound trip at 7:45 AM.
- The two afternoon outbound trips at 5:15 PM and 6:25 PM carry 24 and 32 passengers respectively.

Route 449:

Route 449 has low to moderate ridership.

For inbound trips (see Figure 6):

- The 6:00 AM trip carries 39 boardings. This trip has the highest inbound ridership.
- The following two trips at 6:58 AM and 7:58 AM carry 35 and 21 passengers respectively.

For outbound trips (see Figure 7):

- The first outbound trip at 7:15 AM has particularly low ridership with 16 passengers.
- The second outbound trip at 4:45 PM has the highest outbound ridership, serving 32 passengers.
- The last trip of the day at 5:45 PM carries 24 passengers.

Figure 3 | Weekday Inbound Ridership by Stop

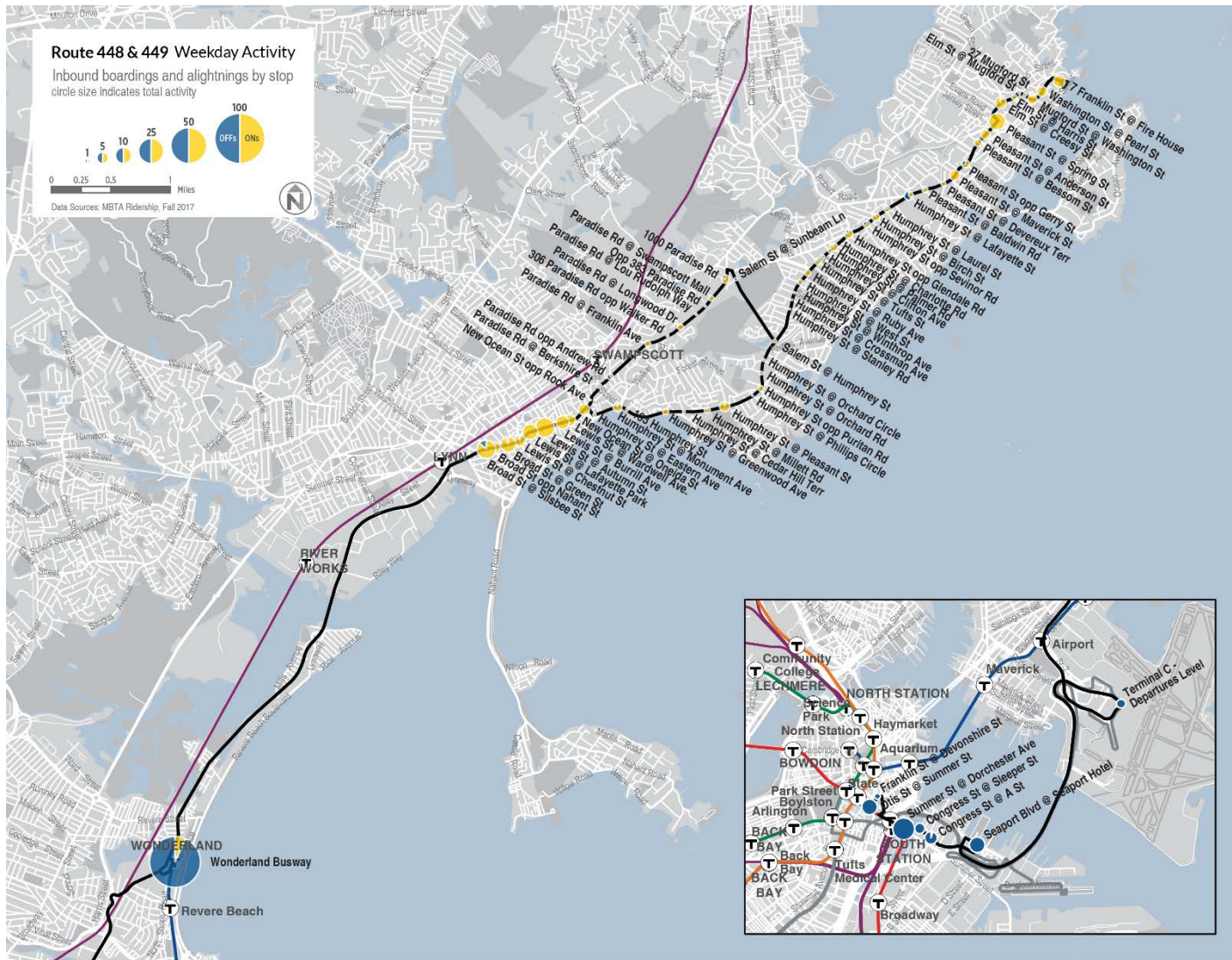


Figure 4 | Weekday Ridership by Trip: Inbound

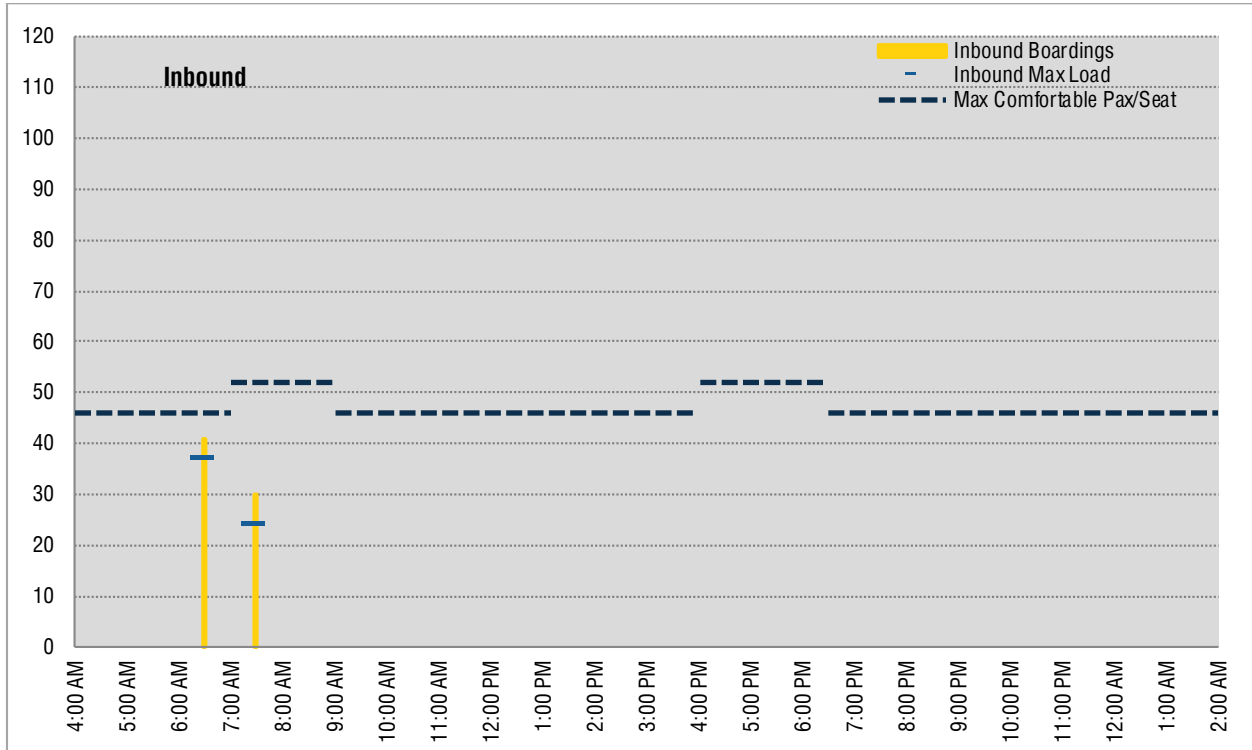


Figure 5 | Weekday Ridership by Trip: Outbound

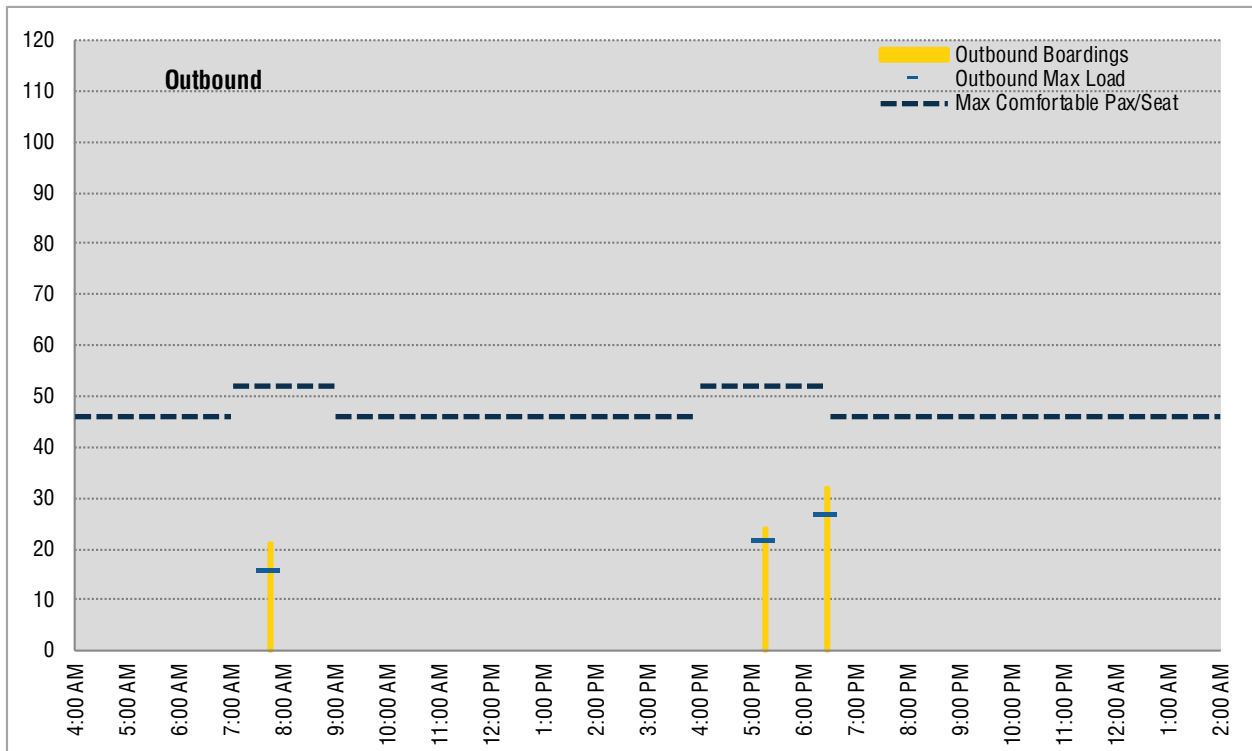


Figure 6 | Weekday Ridership by Trip: Inbound

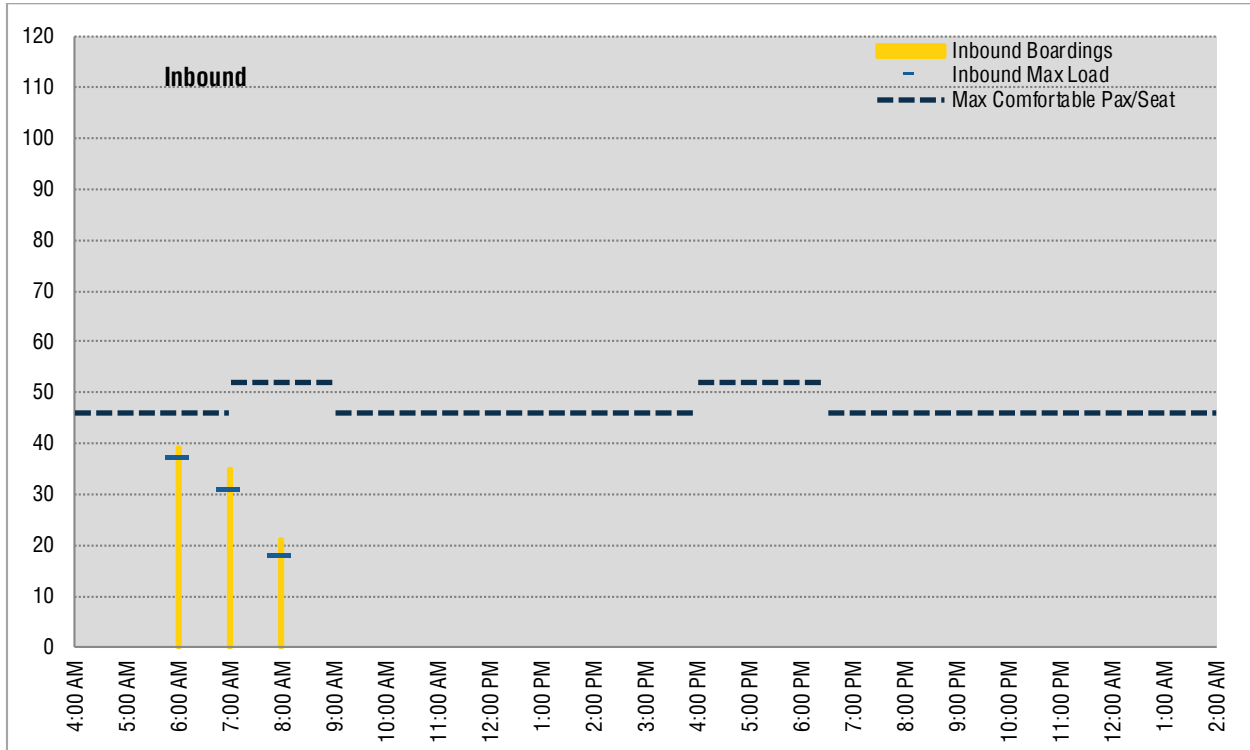
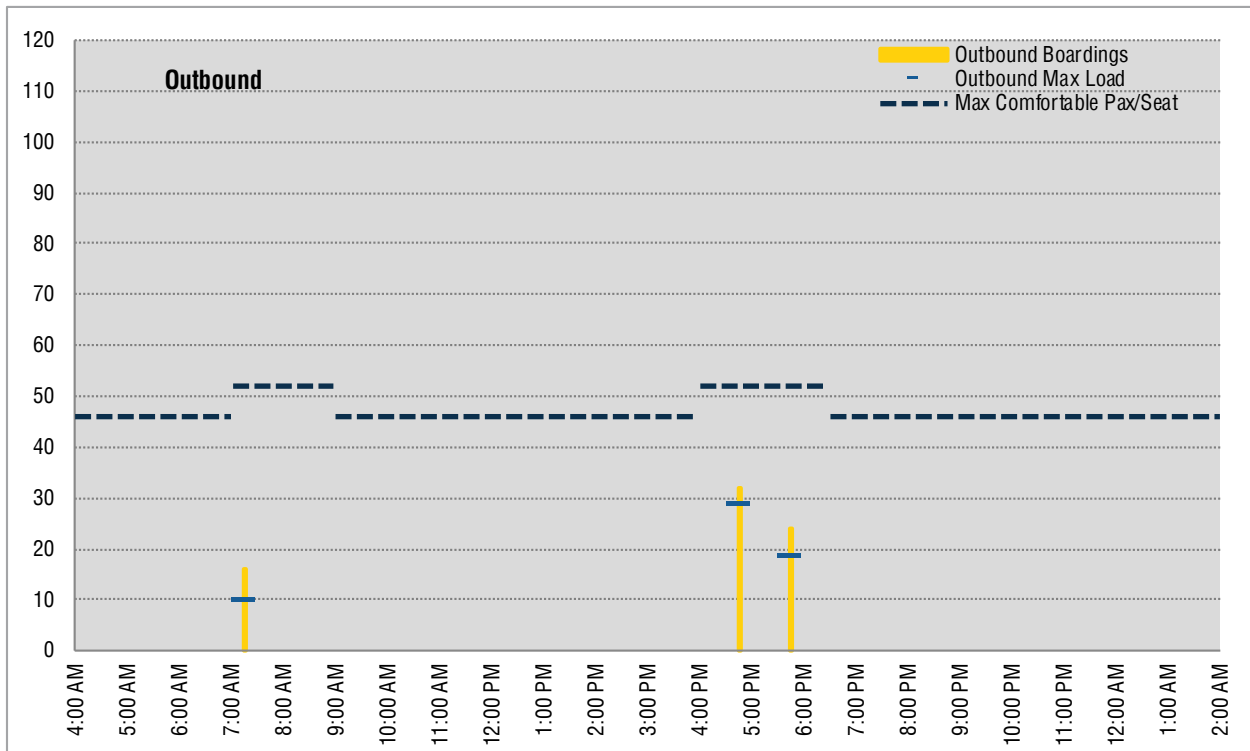


Figure 7 | Weekday Ridership by Trip: Outbound



Passenger Comfort

The MBTA desires that passengers travel in relatively comfortable conditions. At the same time, the MBTA's definition of comfort reflects the very high volume environment in which the MBTA operates, and that some passengers may have to stand for a portion of their trip. More specifically, at least 92% of passengers' travel times should be in comfortable conditions, and ideally, at least 96% of travel times should be in comfortable conditions. Comfortable conditions are considered to be 140% or less of seated capacity during high volume periods and 125% or less during other periods.

On Route 448 and Route 449, 99% and 97% of passenger minutes are in comfortable conditions, respectively, which meets the minimum and target standards (see Table 5).

Table 5 | Passenger Time Spent Traveling in Comfortable Conditions

| | WEEKDAYS | SATURDAYS | SUNDAYS |
|--------------------------|----------|-----------|---------|
| Minimum Standard | 92% | 92% | 92% |
| Target | 96% | 96% | 96% |
| Actual: Route 448 | 99% | - | - |
| Actual: Route 449 | 97% | - | - |

Reliability and Speed

Reliability

Neither Route 448 nor Route 449 are reliable transit routes. Overall reliability is 42% for Route 448 and 40% for Route 449 (see Table 6). This poor performance is not related to dropped trips, which is not a major issue on either route. Note that the scheduled running times will be updated in the Winter 2019 schedules.

Table 6 | Reliability

| SERVICE DAY | ORIGIN/MID-ROUTE ON-TIME PERFORMANCE | DESTINATION ON-TIME PERFORMANCE | OVERALL RELIABILITY | DROPPED TRIPS |
|--------------------------------|--------------------------------------|---------------------------------|---------------------|---------------|
| Monday-Friday Route 448 | 41% | 43% | 42% | 0.1% |
| Monday-Friday Route 449 | 39% | 42% | 40% | 0.1% |
| Saturday | - | - | - | - |
| Sunday | - | - | - | - |

Running Times

Travel times for Route 448 and Route 449 are typically longer than scheduled. There is a trip where the median travel time is approximately 15 minutes longer than the scheduled travel time. These discrepancies contribute to the routes' poor reliability.

Figure 8 | Scheduled & Median Travel Time by Trip: Route 448.0 Inbound

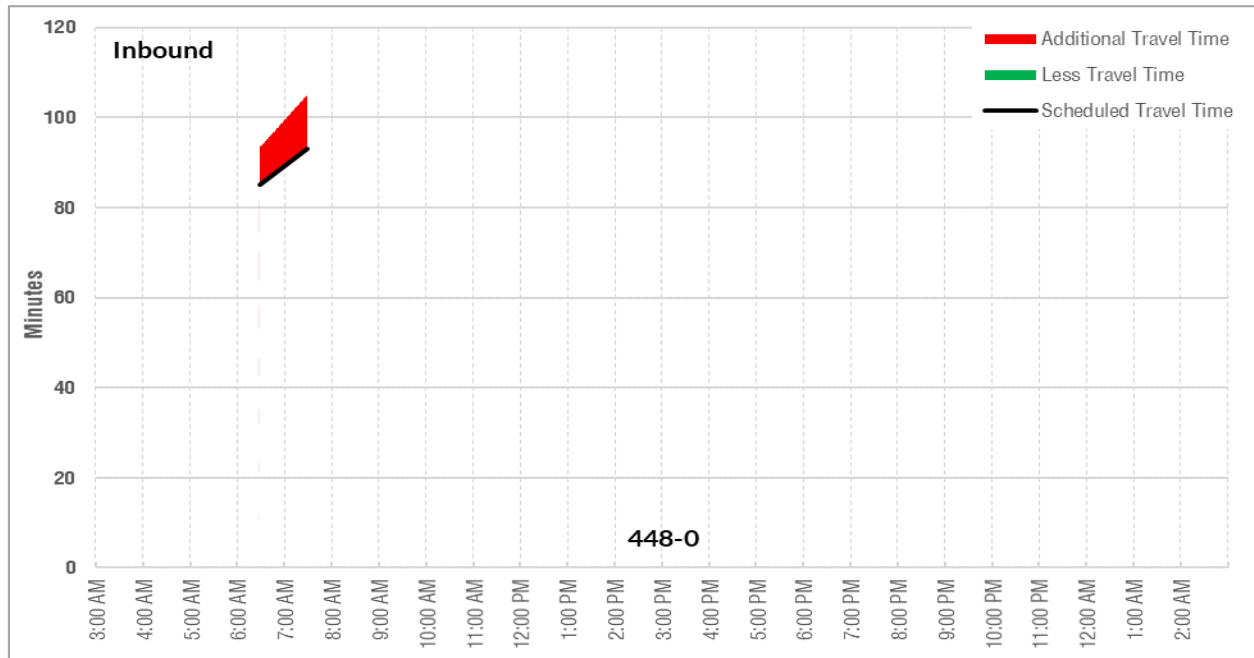


Figure 9 | Scheduled & Median Travel Time by Trip: Route 448.2 Outbound

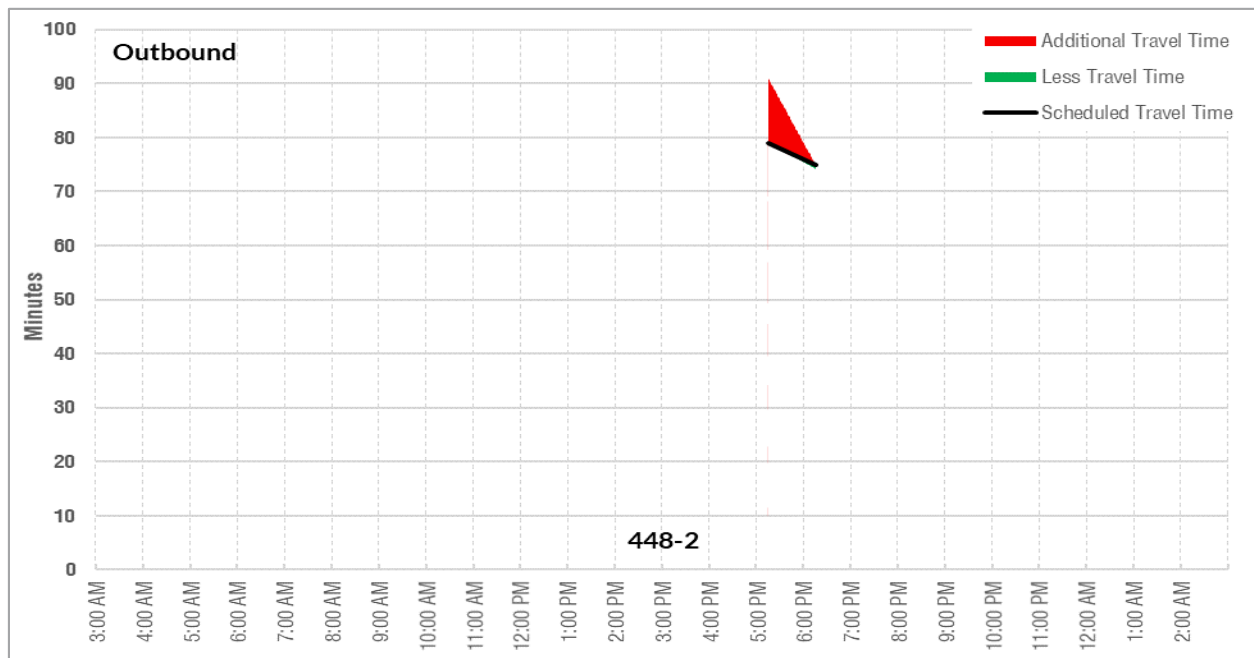


Figure 10 | Scheduled & Median Travel Time by Trip: Route 449.0 Inbound

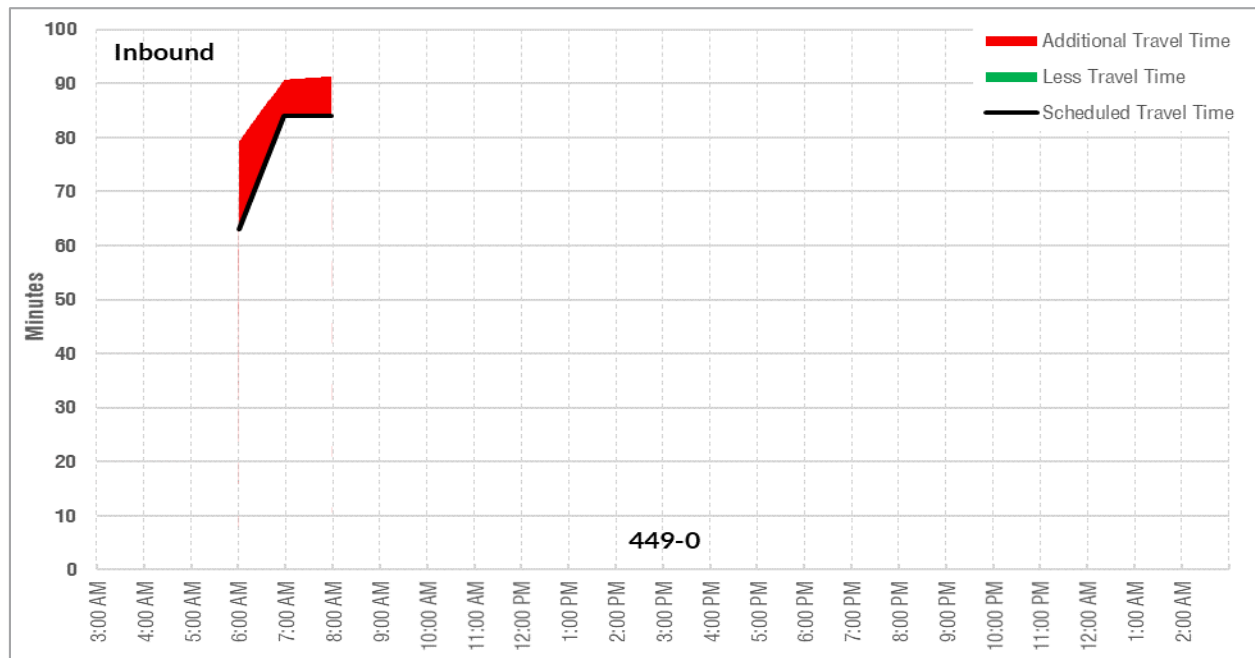
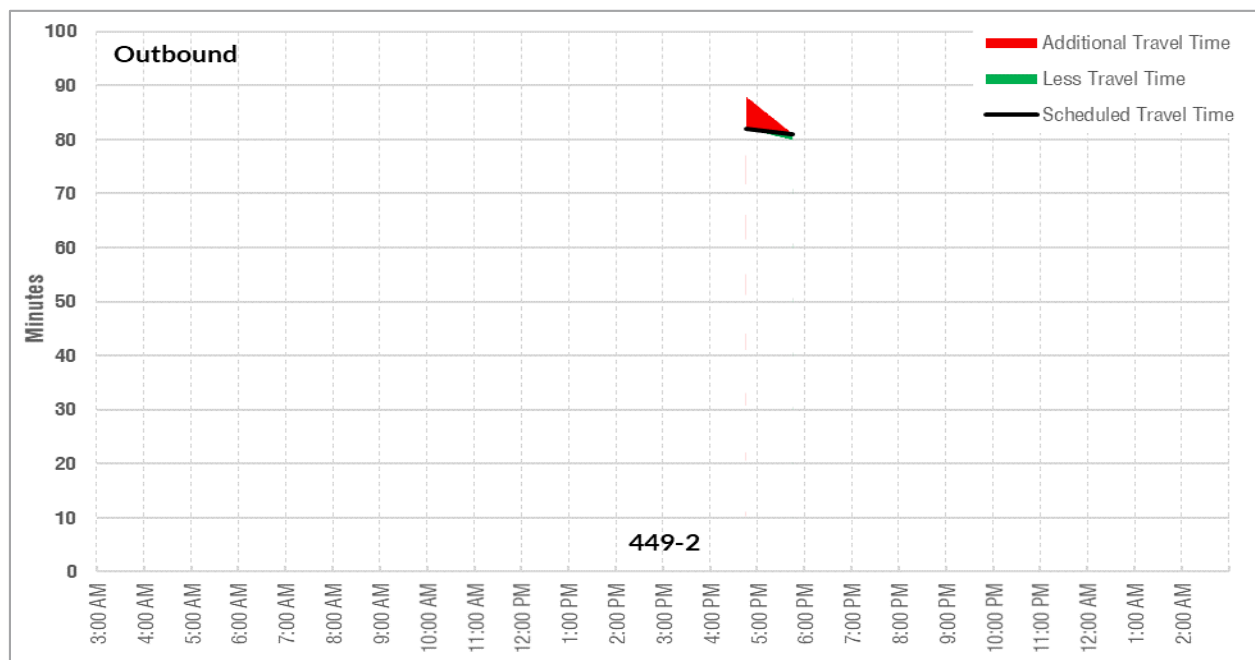


Figure 11 | Scheduled & Median Travel Time by Trip: Route 449.2 Outbound



Stop Spacing

For much of Route 448 and Route 449, there are eight stops per mile. Some stops are particularly close to each other; for example, three stops situated across approximately 700 feet on Humphrey Street at Tufts Street, Clifton Avenue and Palmer Road.

Summary

Route 448 and Route 449 are the Commuter routes for Route 441 and Route 442 Marblehead - Wonderland. These are the only MBTA bus routes to reach Downtown Boston and the Airport from Marblehead. Major challenges with Route 448 and Route 449 are unreliability, low ridership, and stops spaced too close together. The routes also only make two to three trips in either direction and fail to meet the MBTA's frequency and span of service standards.