

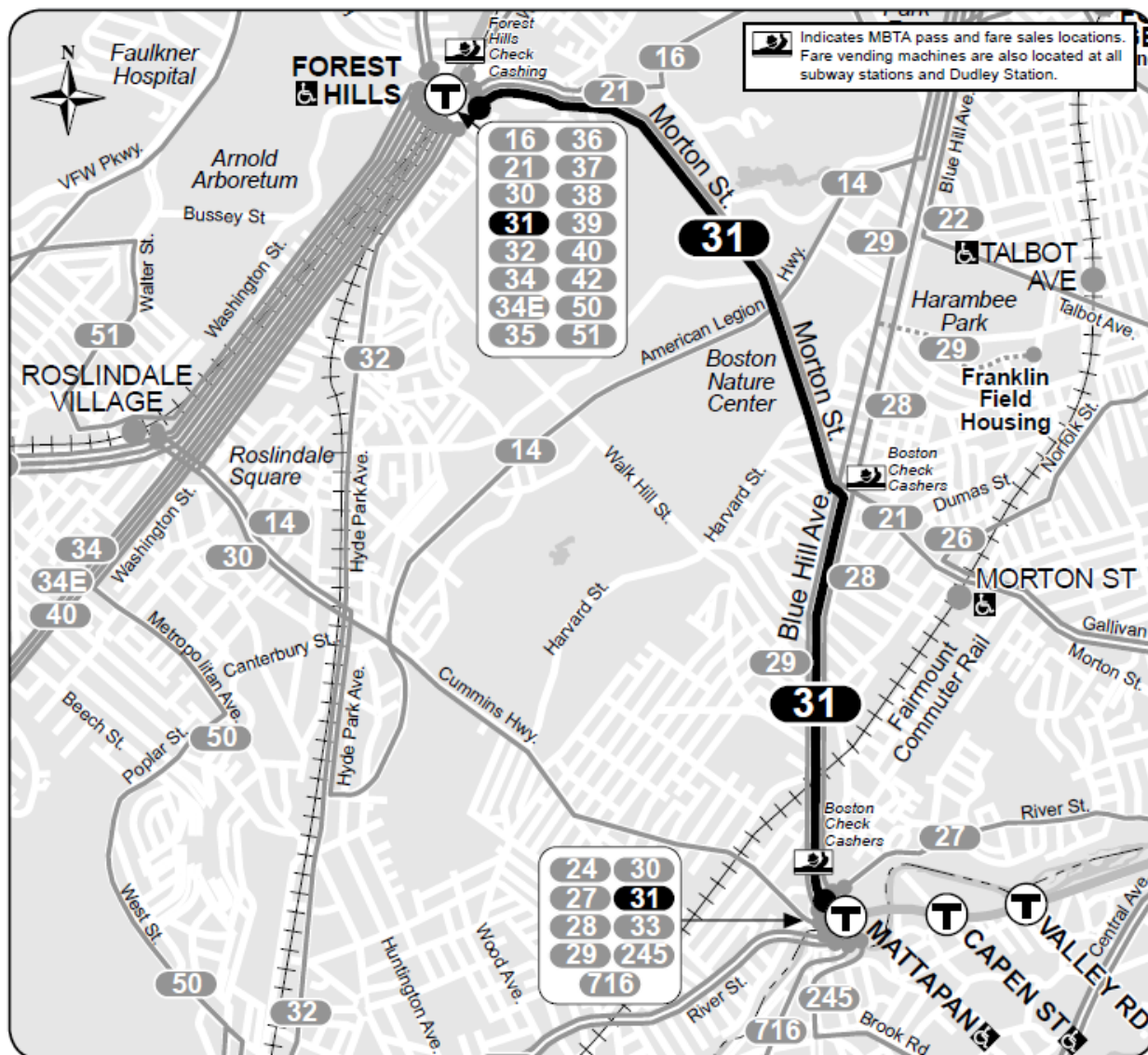
Route 31

Mattapan Station – Forest Hills Station

Route Overview

Route 31 Mattapan Station – Forest Hills Station is a Local route that operates between Mattapan Station and Forest Hills Station, primarily via Blue Hill Avenue and Morton Street. Route 31 and Route 21 Ashmont Station – Forest Hills Station provide coordinated frequent service on Morton Street between Blue Hill Avenue and Forest Hills Station.

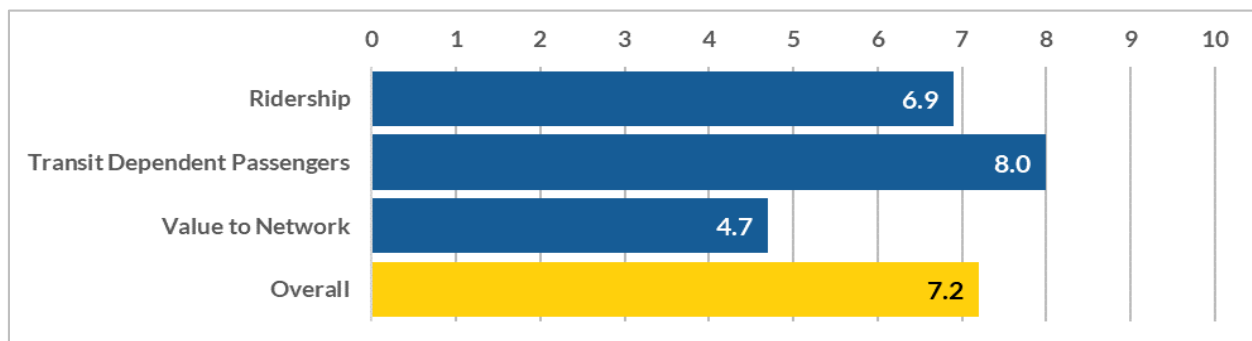
Figure 1 | Service Map



Network Importance

Route 31 is an important route within the MBTA's bus network (see Figure 2). On a relative scale of 0 to 10, the route ranks 6.9 in terms of ridership, 8.0 in terms of transit dependent ridership, and 4.7 in terms of its 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). Its overall score, which gives a 70% weight to overall ridership and a 15% weight to both other measures, is 7.2.

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



Service Overview

Schedule

Route 31 provides frequent service for most of the day every day of the week. On weekdays, it operates from 4:38 AM to 1:18 AM with the following service frequencies (see Table 1):

- Every five to 22 minutes from the beginning of service through 6:00 AM.
- Every five to 13 minutes from 6:00 AM to 10:00 PM.
- Every 10 to 20 minutes from 10:00 PM to the end of service.

In terms of one-way trips, Route 31 provides the third highest level of weekday service, behind only Route 111 Woodlawn-Haymarket Station and Route 32 Wolcott Square/Cleary Square-Forest Hills Station, both of which are Key Bus routes.

On Saturdays, service operates from 4:47 AM to 1:16 AM. Service operates every 13 to 20 minutes for most of the day, and every 30 to 35 minutes after about 10:00 PM. On Sundays, service operates from 5:10 AM to 1:19 AM. For most of the day, it operates every 19 to 21 minutes, with more frequent service before 7:00 AM (every 15 minutes) and less frequent service after 7:00 PM (every 35 to 45 minutes).

Route 31 exceeds the MBTA span of service and frequency standards for Local routes on all days.

Table 1 | Schedule Statistics

SERVICE DAY	SPAN OF SERVICE	FREQUENCY (RANGE)	FREQUENCY (AVERAGE)	DAILY TRIPS (INBOUND/OUTBOUND)
Monday-Friday	4:38 AM to 1:18 AM			146/149
Sunrise	4:38 AM to 5:59 AM	5 - 37	15	5/5
Early AM	6:00 AM to 6:59 AM	5 - 6	5	12/12
AM Peak	7:00 AM to 8:59 AM	5 - 10	6	21/21
Midday Base	9:00 AM to 1:29 PM	6 - 13	10	27/27
Midday School	1:30 PM to 3:59 PM	5 - 10	7	21/21
PM Peak	4:00 PM to 6:29 PM	5 - 12	6	25/26
Evening	6:30 PM to 9:59 PM	9 - 12	10	21/21
Late Evening	10:00 PM to 11:59 PM	10 - 20	11	11/12
Night	12:00 AM to 1:18 AM	15 - 20	18	3/4
Saturday	4:47 AM to 1:16 AM	11 - 40	17	70/69
Sunday	5:10 AM to 1:19 AM	15 - 50	23	51/53

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

Service Patterns

All Route 31 trips operate with a single inbound and outbound service pattern between Mattapan Station and Forest Hills Station via Blue Hill Avenue and Morton Street (see Table 2).

Table 2 | Service Patterns

PATTERN	ORIGIN	DESTINATION	UNIQUE FEATURE	TRIPS PER WKD	TRIPS PER SAT	TRIPS PER SUN
INBOUND				59	52	23
31.0	Mattapan Station	Forest Hills Station	Primary pattern	59	52	23
OUTBOUND				59	52	23
31.0	Forest Hills Station	Mattapan Station	Primary pattern	59	52	23

Ridership

Route 31 carries approximately 6,100 passengers on weekdays, 3,150 on Saturdays, and 2,200 on Sundays. In terms of weekday ridership, it is the MBTA's 20th highest ridership bus route, and has higher ridership than three Key Bus routes.

Ridership by Stop

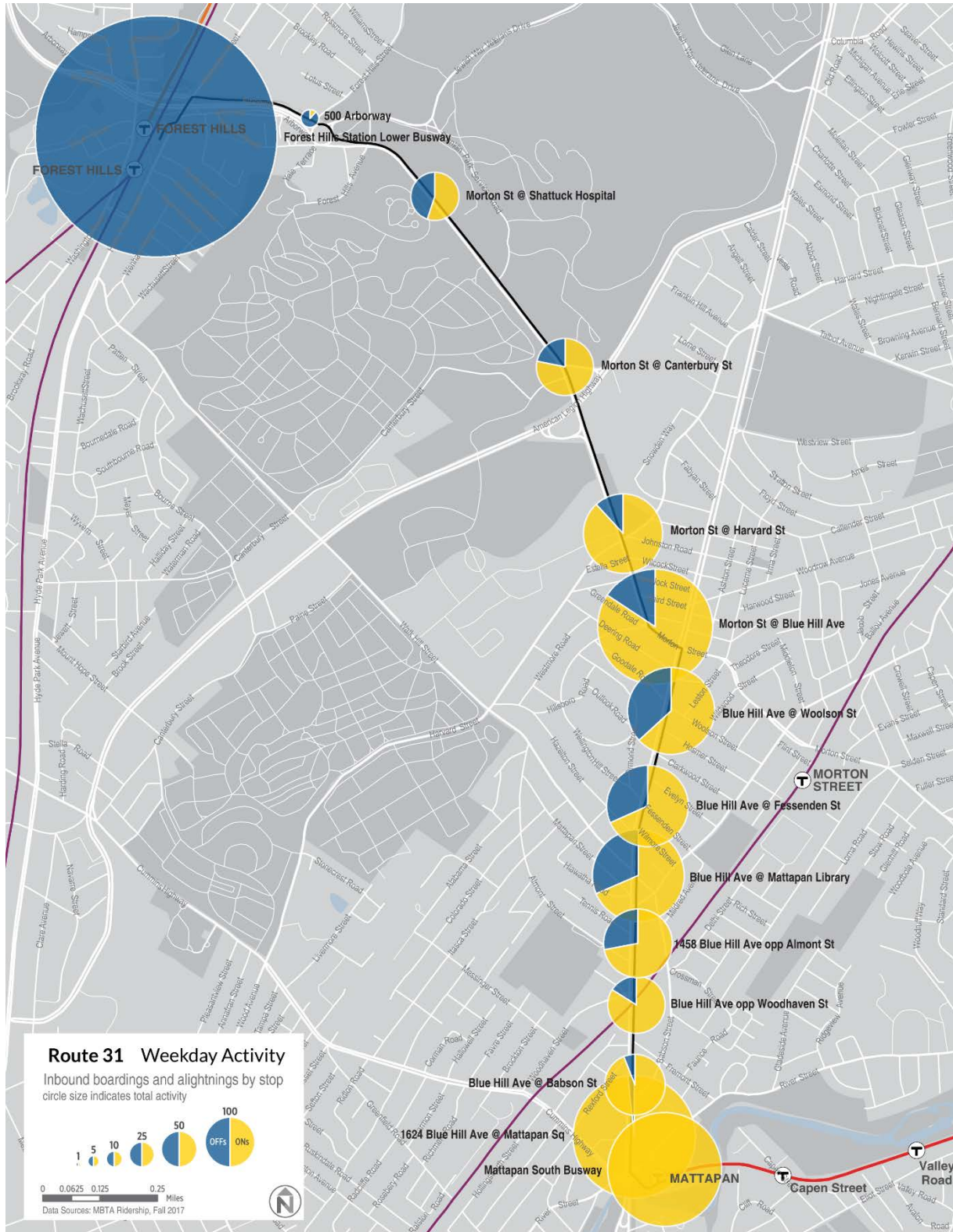
Most route 31 passengers travel to and from Forest Hills Station. On weekday inbound trips (see Figure 3):

- 530 riders board at Mattapan Station.
- 600 riders board at the next stop, at 1624 Blue Hill Avenue in Mattapan Square.

- 1,000 passengers board and 400 alight along Blue Hill Avenue between Mattapan Square and Morton Street.
- 460 passengers board and 85 alight at Blue Hill Avenue at Morton Street. This is a transfer point with Route 21 Ashmont Station-Forest Hills Station, Route 28 Mattapan Station-Ruggles Station, and Route 29 Mattapan Station-Jackson Square Station.
- 385 passengers board and 115 alight at the four stops along Morton Street between Blue Hill Avenue and Forest Hills Station.
- 2,400 passengers alight at Forest Hills Station, or 80% of all inbound passengers.

Outbound ridership patterns are generally the inverse of inbound patterns. Weekend patterns are also similar but with lower passenger volumes.

Figure 3 | Weekday Inbound Ridership by Stop Map



Ridership by Trip

Route 31 ridership per trip is heavily oriented inbound toward Forest Hills Station earlier in the day and outbound later in the day. On weekday inbound trips (Figure 4):

- The highest ridership is on the first trip at 4:53 AM, with 55 passengers, indicating demand for earlier service. This is also the only trip that routinely exceeds the MBTA's loading standard. Ridership on most subsequent trips through 7:30 AM is closer to 40 passengers. Since the completion of this document, the MBTA has added earlier weekday trips to address ridership demand.
- Between 7:30 AM and 9:00 AM, service frequencies improve from every 10 to 15 minutes to every five to six minutes, and ridership per trip declines to fewer than 30 passengers. This indicates that more service is provided between 7:30 AM and 9:00 than is needed.
- Between 9:00 AM and 3:00 PM, most service operates every 10 minutes, and most trips carry 20 to 35 total passengers and maximum loads of fewer than 30. These loads also indicate that slightly less service could be provided.
- From 3:00 PM through the end of service, ridership per trip slowly declines from 30 passengers to fewer than 10 passengers on the last trip at 12:45 AM.

On weekday outbound trips (see Figure 5):

- Ridership increases to around 30 passengers per trip between 1:00 PM and 2:00 PM.
- From around 2:00 PM to 3:00 PM, service operates every 10 minutes, and ridership per trip exceeds 35 passengers.
- From 3:00 PM to 6:30 PM, service operates every five to six minutes, and ridership per trip reaches 30 to 45 passengers, with maximum loads of 30 to 40. These loads also indicate that slightly less service could be provided.
- From 6:30 PM until midnight, most service operates every 10 minutes and ridership per trip declines from around 30 passengers to 10 on the last trip at 1:05 AM.

On Saturdays, ridership is also oriented toward inbound travel earlier and outbound travel later, but with stronger midday ridership. Inbound from the beginning of service until around 8:00 PM, ridership per trip ranges from 20 to occasionally over 40 (see Figure 6). Ridership then declines through the end of service. Outbound ridership grows throughout most of the day until midnight, with very low ridership on the last two trips (see Figure 7).

On Sundays, ridership per trip is similar to Saturdays, but with lower volumes (see Figure 8 and Figure 9). One difference, however, is very high ridership on the first inbound trip, which at 50 passengers, is the highest on any inbound trip. This indicates demand for earlier service. Since the completion of this document, the MBTA has added earlier Sunday trips to address ridership demand.

Figure 4 | Weekday Ridership by Trip: Inbound

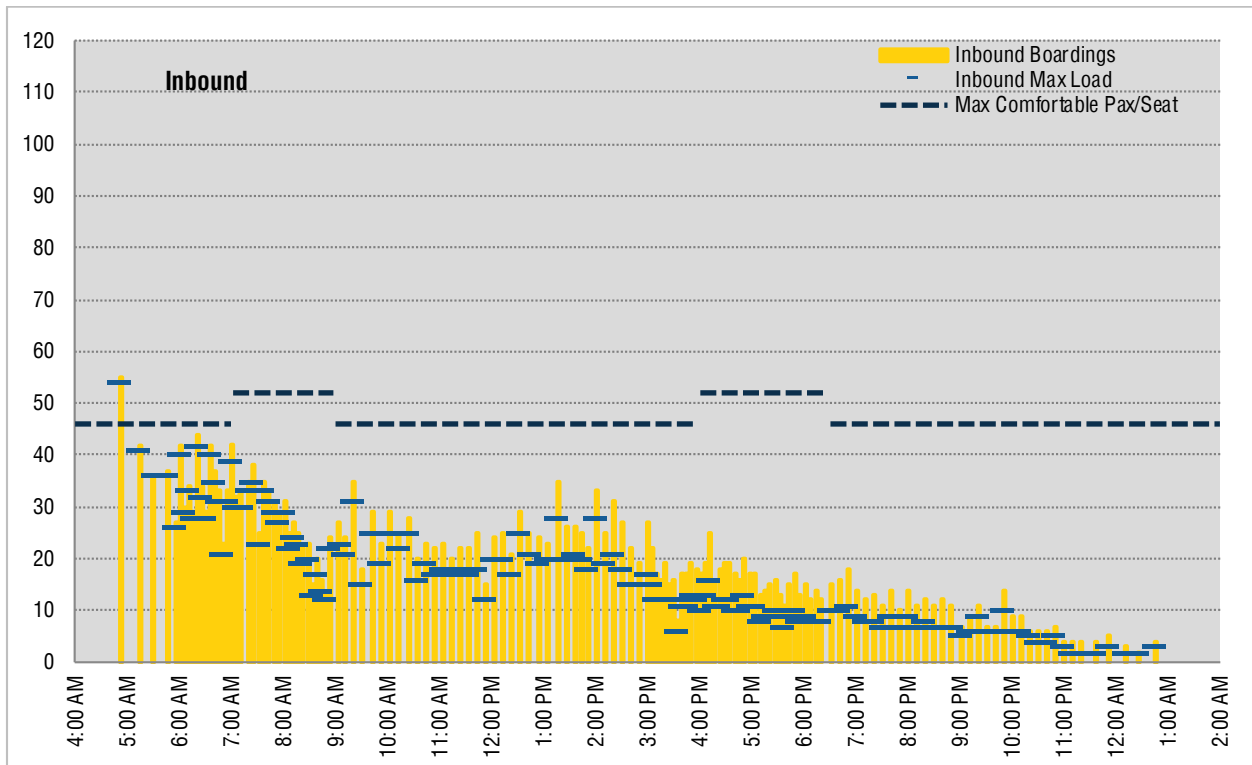


Figure 5 | Weekday Ridership by Trip: Outbound

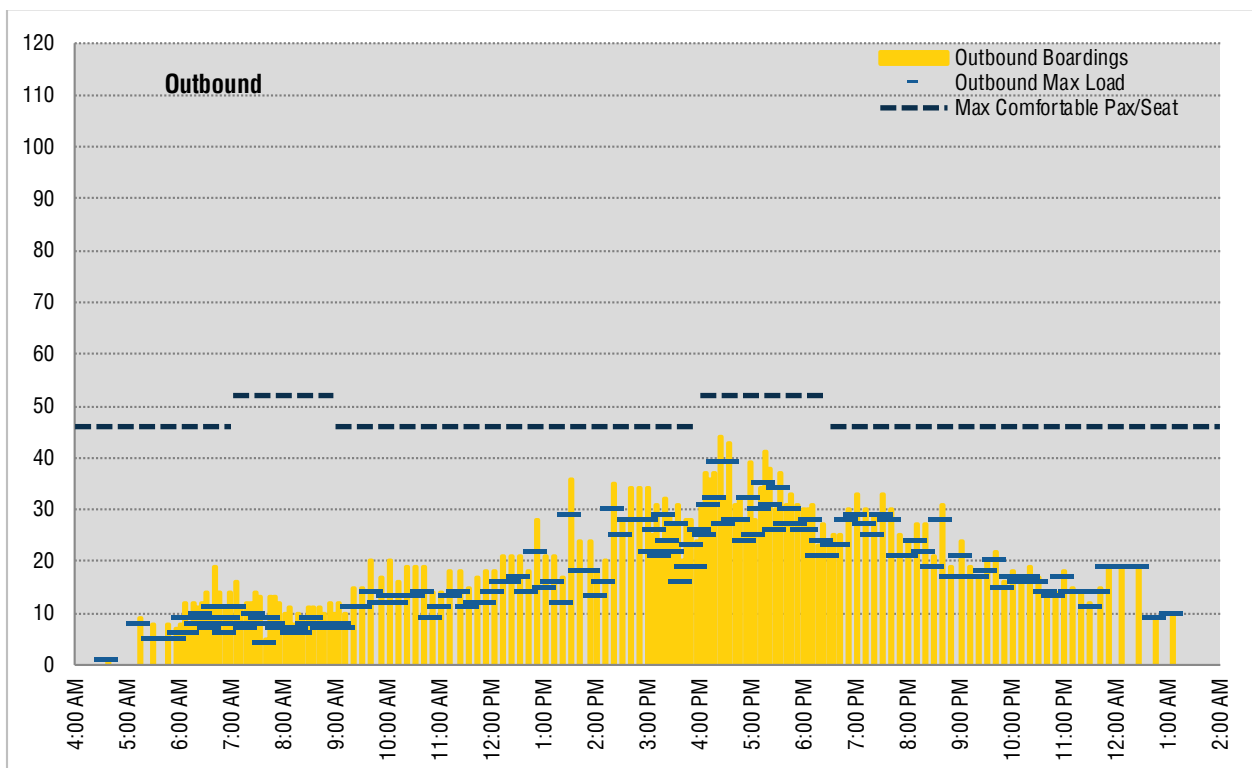


Figure 6 | Saturday Ridership by Trip: Inbound

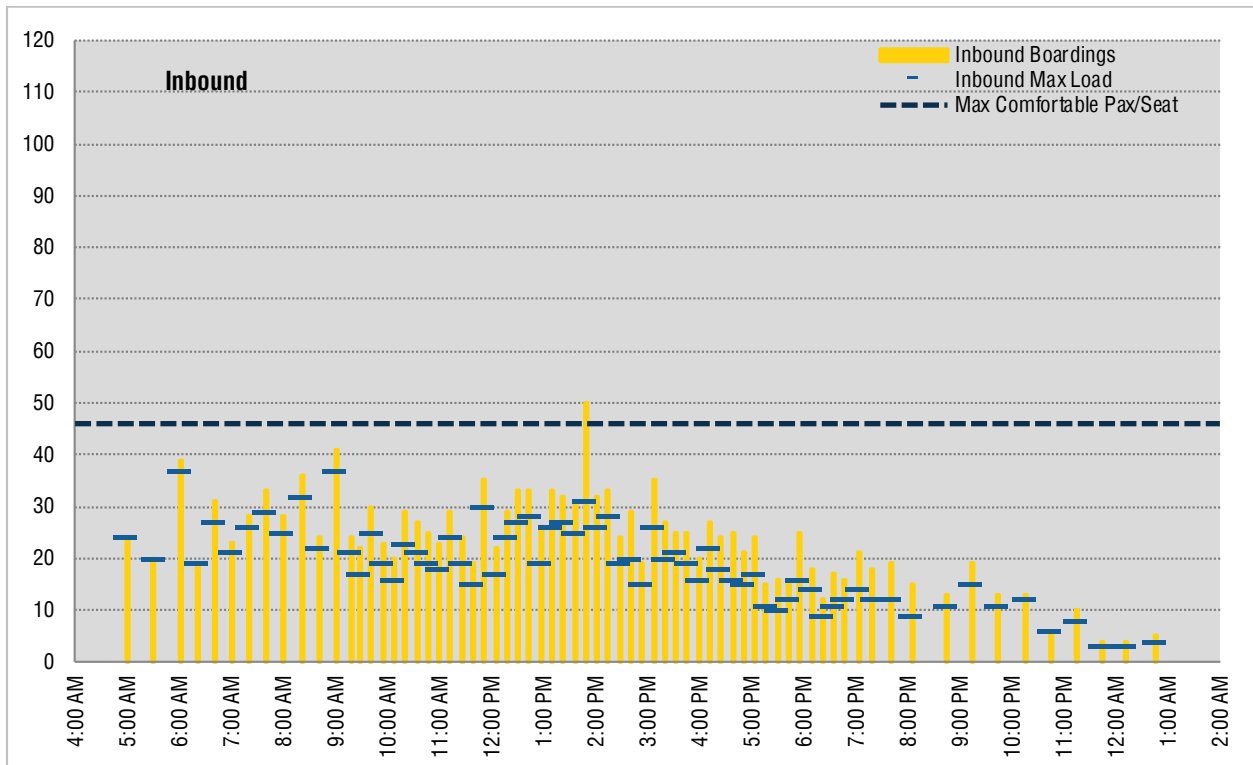


Figure 7 | Saturday Ridership by Trip: Outbound

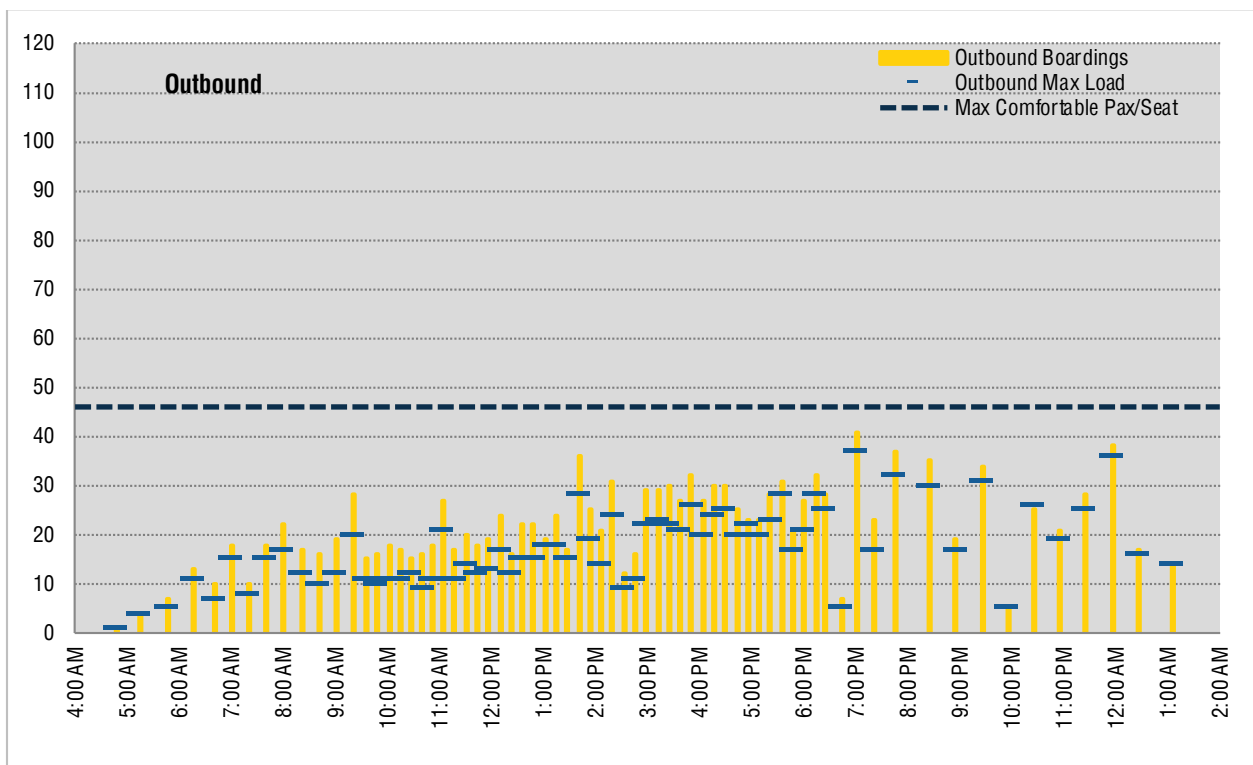


Figure 8 | Sunday Ridership by Trip: Inbound

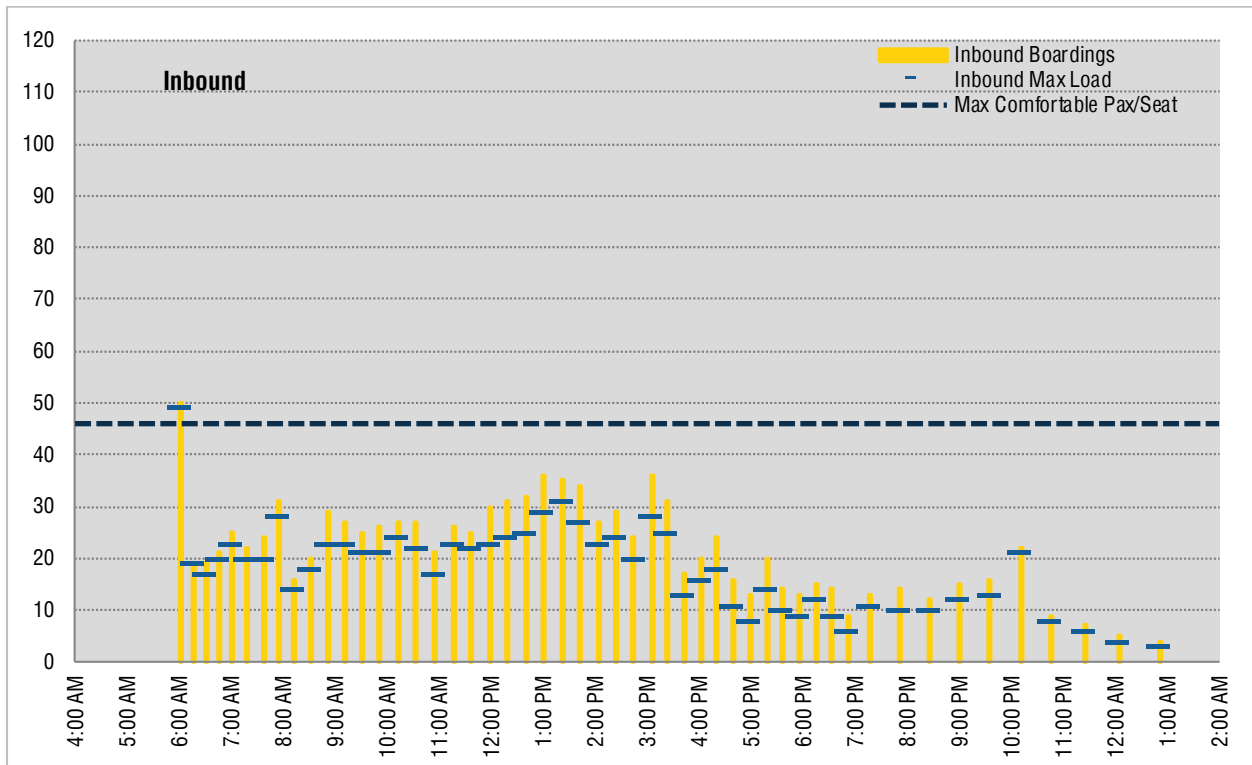
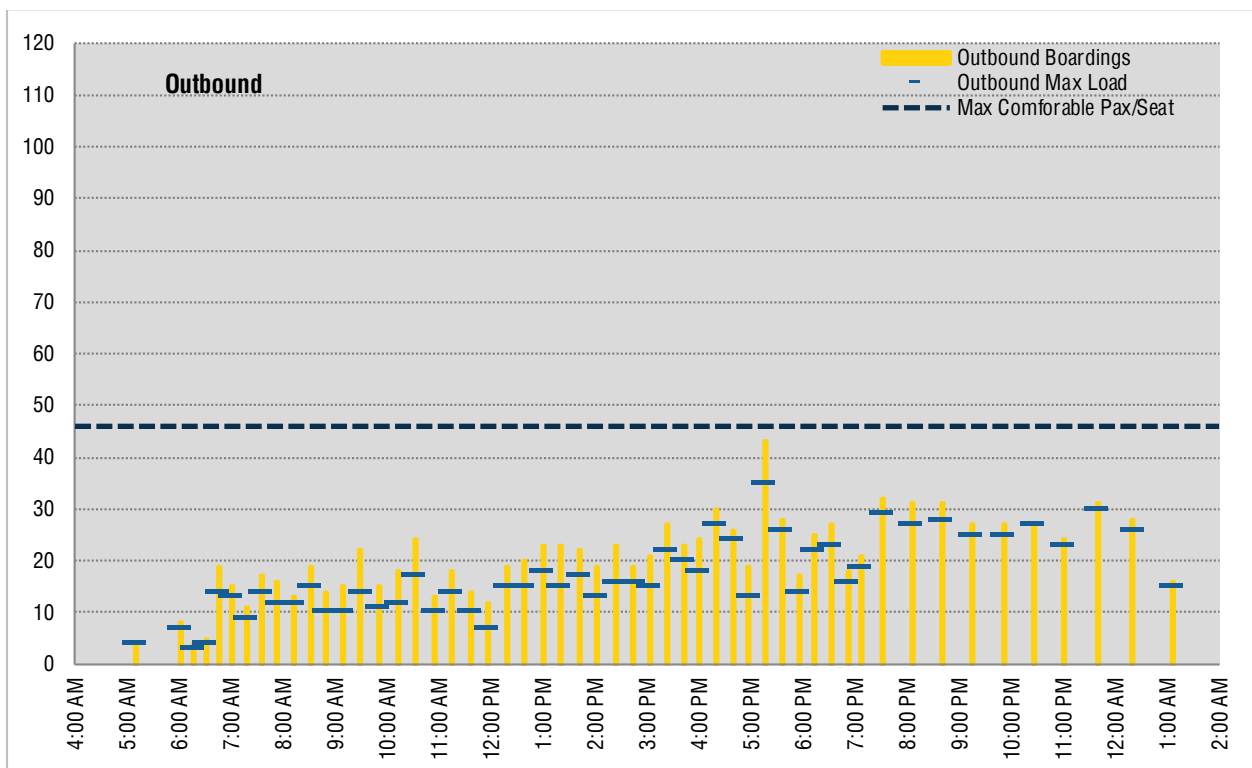


Figure 9 | Sunday Ridership by Trip: Outbound



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 31, 94% of passenger minutes are in comfortable conditions, which is above the minimum standard of 92% but below the target of 96% (see Table 3). As described above, scheduled service generally provides sufficient capacity. However, as described below, Route 31 has one of the highest rates of dropped trips and this is the major reason that some trips are overcrowded.

Table 3 | Passenger Time Spent Traveling in Comfortable Conditions

	WEEKDAYS	SATURDAYS	SUNDAYS
Minimum Standard	92%	92%	92%
Target	96%	96%	96%
Actual	94%	98.6%	99.1%

Reliability and Speed

Reliability

Route 31's overall reliability is 78% on weekdays, 68% on Saturdays, and 67% on Sundays (see Table 4). Reliability is above the target of 75% for local bus routes for weekdays, but below the minimum standard of 70% on Saturdays and Sundays. Dropped trips are a major problem, with 4.3% of trips not operated in Fall 2017. Dropped trips are the major reason for overcrowded on Route 31.

Table 4 | Reliability

SERVICE DAY	ORIGIN/MID-ROUTE ON-TIME PERFORMANCE	DESTINATION ON-TIME PERFORMANCE	OVERALL RELIABILITY	DROPPED TRIPS
Monday-Friday	78%	77%	78%	4.3%
Saturday	69%	63%	68%	-
Sunday	65%	76%	67%	-

Running Times

On weekdays, Route 31 tends to operate faster than scheduled running time during peak periods but longer during off-peak periods (see Figure 10 and Figure 11). Early morning and midday trips in particular consistently operate up to five minutes late.

Stop Spacing

Overall stopspacing along Route 31's alignment is very good, with an average of five stops per mile.

Figure 10 | Scheduled & Median Travel Time by Trip: Route 31 Inbound

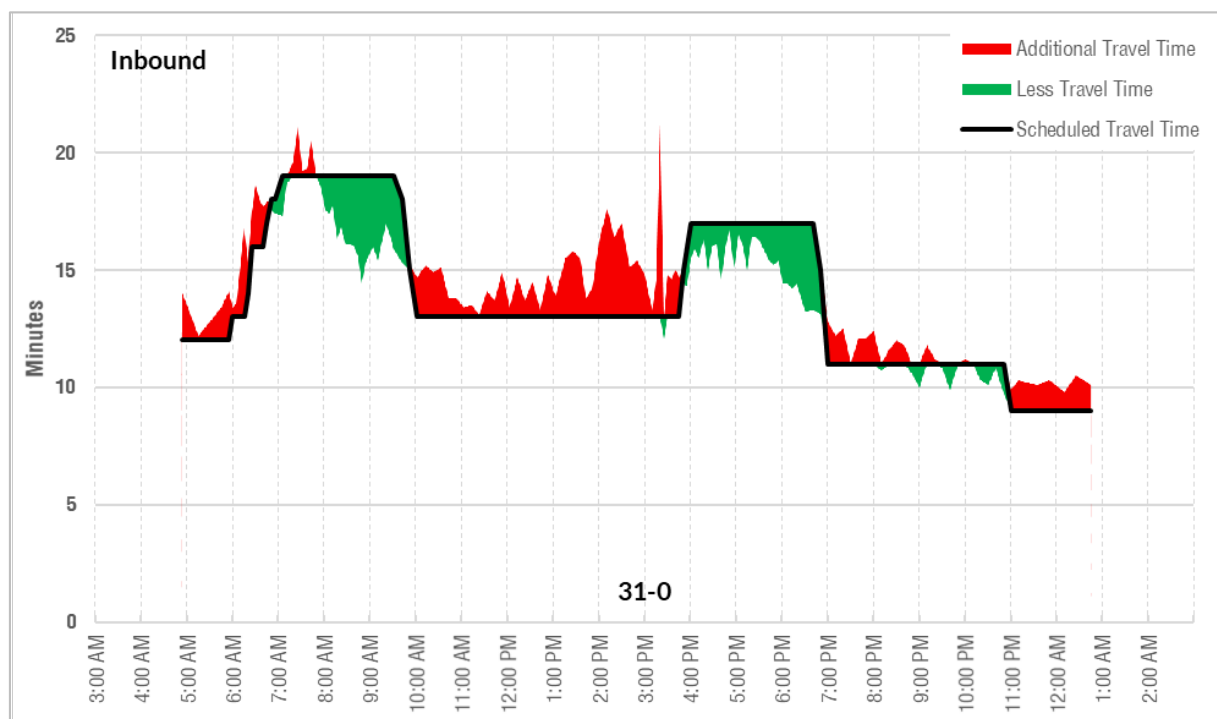
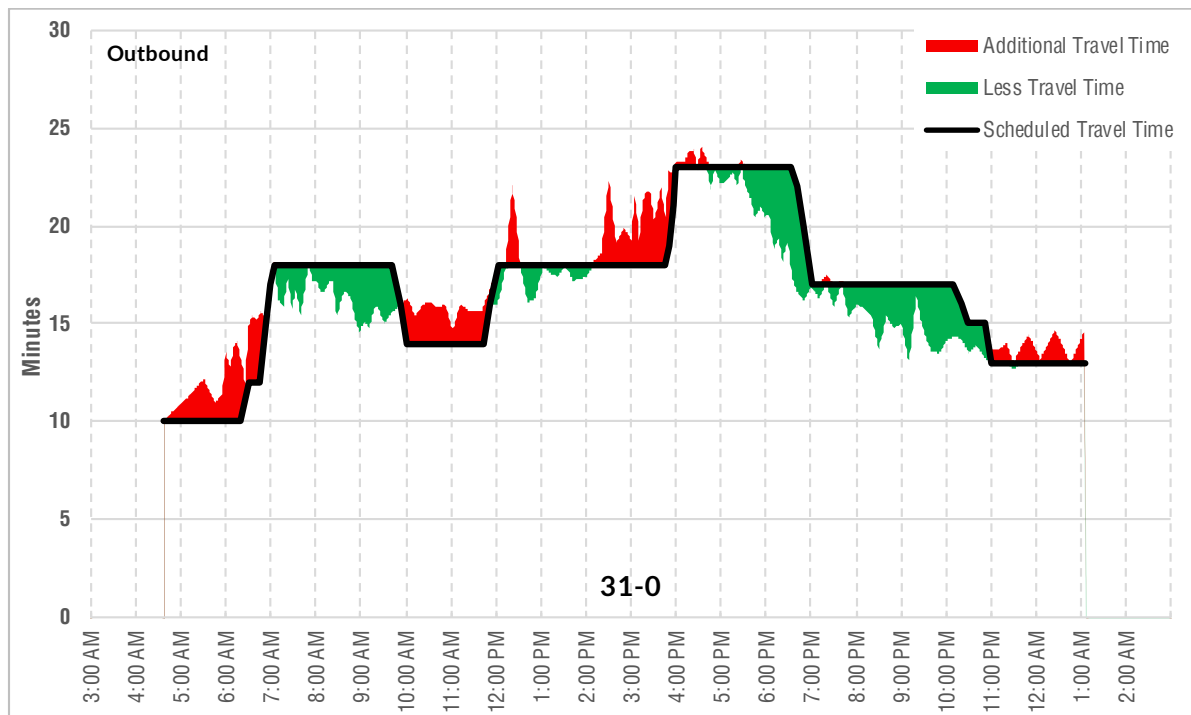


Figure 11 | Scheduled & Median Travel Time by Trip: Route 31 Outbound



Summary

Route 31 provides very frequent and relatively reliable service between Mattapan Station and Forest Hills Station, with most passengers traveling to and from Forest Hills Station. While overall the route is very successful, it is also unusual in two respects:

- It is one of only a few high ridership routes that provides more service than is needed to accommodate demand.
- Actual peak period running times are faster than scheduled times.