

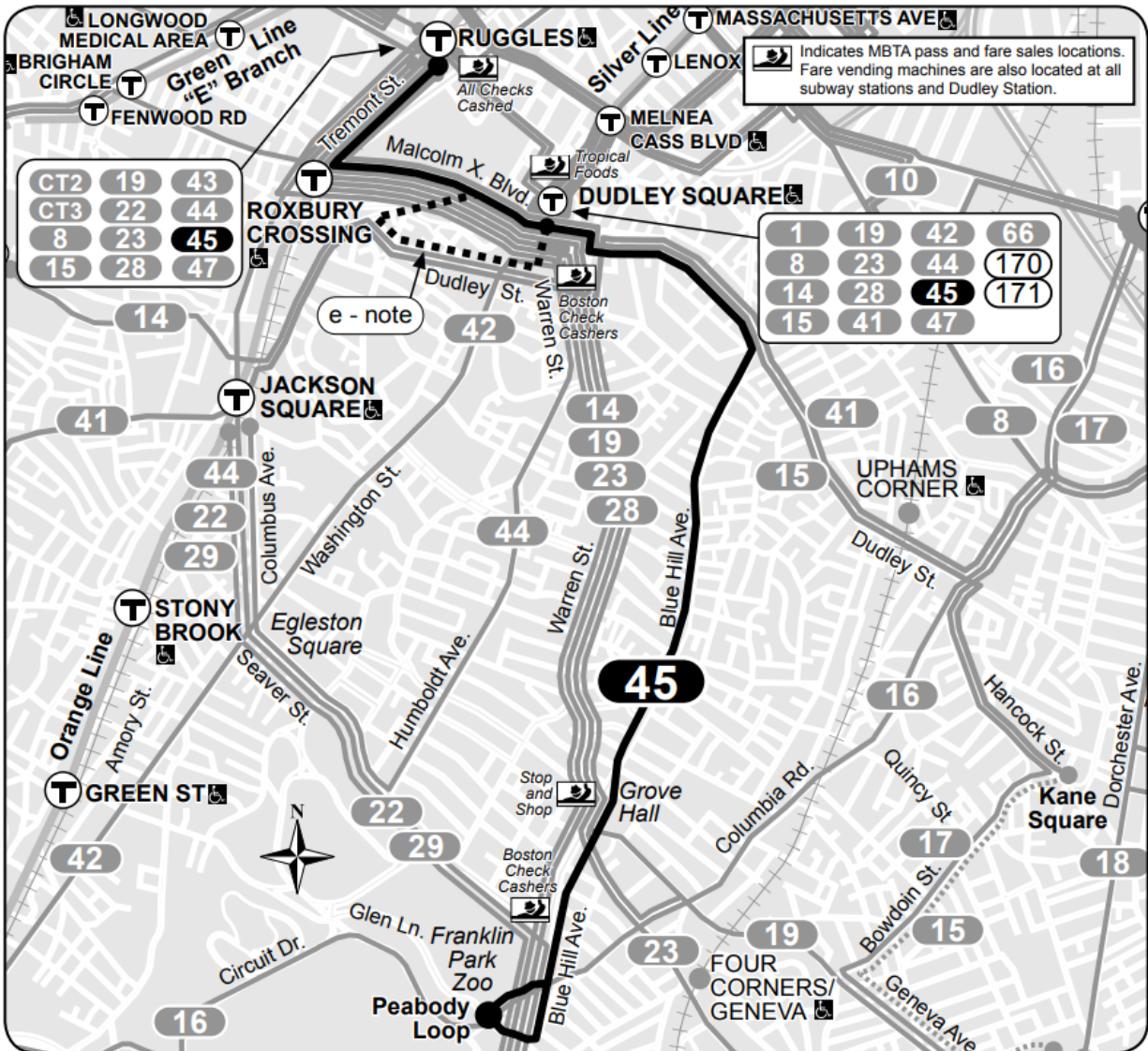
Route 45

Franklin Park Zoo – Ruggles Station

Route Overview

Route 45 Franklin Park Zoo – Ruggles Station is a Local route that operates between Franklin Park Zoo and Ruggles Station via Blue Hill Avenue, Dudley Square, Malcolm X Boulevard, Roxbury Crossing Station, and Tremont Street (see Figure 1).

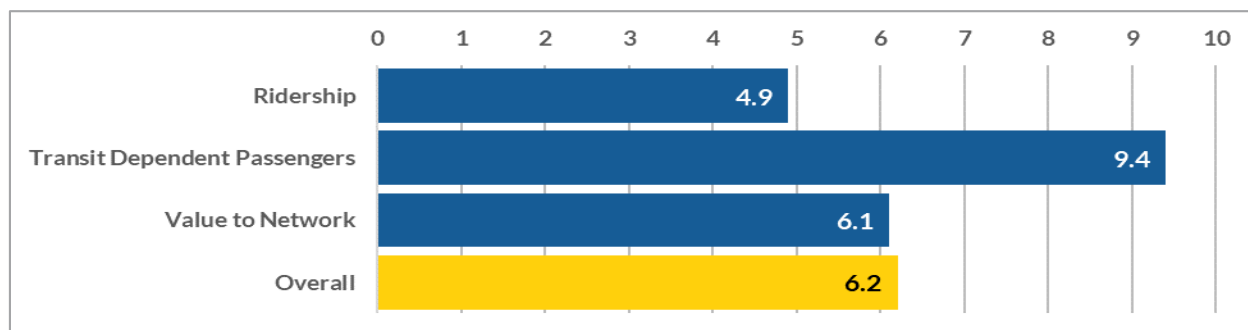
Figure 1 | Service Map



Network Importance

Route 45 is an important route within the MBTA bus network (see Figure 2). On a relative scale of 0 to 10, the route rates 4.9 in terms of ridership, 9.4 in terms of transit dependent ridership, and 6.1 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 6.2.

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



Service Overview

Schedule

Route 45 provides frequent service during peak periods and shoulders of the peaks and infrequent service at other times. On weekdays, service operates from 5:14 AM to 1:00 AM (see Table 1):

- Approximately every 15 minutes in the Sunrise period.
- Every 11 to 16 minutes in the Early AM, with an average of every 13 minutes.
- Every four to 17 minutes in the AM peak, with an average of every 16 minutes.
- Every 17 to 30 minutes in the Midday Base and Midday School periods, with the shorter frequencies earlier and later.
- Every 13 to 16 minutes in the PM Peak, with an average of every 15 minutes.
- Every 13 to 30 minutes in the Evening, Late Evening, and Night periods, but mostly every 30 minutes.

On Saturdays, service operates from 5:00 AM to 1:26 AM. Service frequencies are mostly every 30 minutes until 9:30 AM, every 20 minutes between 9:30 AM and 5:30 PM, and then every 35 minutes. On Sundays, service operates from 6:30 AM to 1:13 AM, generally every 45 minutes until 12:00 PM and then every 55 to 60 minutes until 5:45 PM. After 5:45 PM service runs every 45 minutes until 11:25 PM. There is then a final outbound trip 95 minutes later at 1:00 AM.

Route 45 exceeds the MBTA's span of service and frequency standards on all days and at all times.

Table 1 | Schedule Statistics

SERVICEDAY	SPAN OF SERVICE	FREQUENCY (RANGE)	FREQUENCY (AVERAGE)	DAILY TRIPS (INBOUND/OUTBOUND)
Monday-Friday	5:14 AM to 1:26 AM			63/56
Sunrise	5:14 AM to 5:59 AM	15 - 16	15	3/1
Early AM	6:00 AM to 6:59 AM	11 - 16	13	6/4
AM Peak	7:00 AM to 8:59 AM	4 - 17	16	10/9
Midday Base	9:00 AM to 1:29 PM	17 - 30	27	10/10
Midday School	1:30 PM to 3:59 PM	15 - 30	21	7/8
PM Peak	4:00 PM to 6:29 PM	13 - 16	15	10/9
Evening	6:30 PM to 9:59 PM	13 - 30	21	11/8
Late Evening	10:00 PM to 11:59 PM	30	30	4/4
Night	12:00 AM to 1:26 AM	23 - 30	23	2/3
Saturday	5:00 AM to 1:16 AM	15 - 40	24	50/49
Sunday	6:30 AM to 1:13 AM	45 - 60	57	21/23

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

Service Patterns

The majority of weekday Route 45 trips run the route's full alignment between the Franklin Park Zoo and Ruggles Station as shown in Figure 1 (Pattern 45.0). Exceptions to this operation include (see Table 2):

Weekdays

- An inbound school trip at 7:10 AM operates between the Franklin Park Zoo and Dudley Station (Pattern 45.2).
- From 8:00 PM through the evening, outbound trips deviate between Ruggles Station and Dudley Station via Dudley Street/John Elliot Square (Pattern 45.3). This service, which is shown with the dotted line in Figure 1, is intended to provide service to Dudley Street after Route 14 Roslindale Square-Heath Street Station and Route 41 Centre & Eliot Streets-JFK/UMass Station stop running (even though service is only provided in one direction and Dudley Street is within walking distance of Route 45's regular alignment on Malcolm X Boulevard).
- The last outbound trip continues past the Franklin Park Zoo to Ashmont Station along the alignment of Route 22 Ashmont Station-Ruggles Station (Pattern 45.1).

Table 2 | Service Patterns

PATTERN	ORIGIN	DESTINATION	UNIQUE FEATURE	TRIPS PER WKD	TRIPS PER SAT	TRIPS PER SUN
INBOUND				63	50	21
45.0	Franklin Park Zoo	Ruggles Station	Primary service pattern	52	-	-
45.1	Ashmont Station	Ruggles Station	From Ashmont Station to Franklin Park Zoo via Route 22 alignment	-	1	-
45.2	Franklin Park Zoo	Dudley Station	AM school trip	1	-	-
45.3	Franklin Park Zoo	Ruggles Station	Same as 45.0; linked with 45.3 outbound trips via Dudley Street/John Elliot Square	10	49	21
OUTBOUND				56	49	23
45.0	Ruggles Station	Franklin Park Zoo	Primary service pattern	45	-	-
45.1	Ruggles Station	Ashmont Station	Last outbound trip that continues past Franklin Park Zoo to Ashmont Station	1	1	1
45.3	Ruggles Station	Franklin Park Zoo	Deviates via Dudley Street/John Elliot Square	10	48	22

Saturdays

- The first inbound trip begins at Ashmont Station and operates to Franklin Park Zoo via the alignment of Route 22 (Pattern 45.1).
- Almost all outbound trips deviate between Ruggles Station and Dudley Station to serve Dudley Street/John Elliot Square (Pattern 45.3).
- As on weekdays, the last outbound trip continues past the Franklin Park Zoo to Ashmont Station along the alignment of Route 22 (Pattern 45.1).

Sundays

- As on Saturdays, all outbound trips deviate between Ruggles Station and Dudley Station to serve Dudley Street/John Elliot Square (Pattern 45.3).
- As on weekdays and Saturdays, the last outbound trip continues past the Franklin Park Zoo to Ashmont Station along the alignment of Route 22 (Pattern 45.1).

Ridership

Route 45 serves 3,140 passengers on weekdays, 1,640 passengers on Saturdays, and 750 passengers on Sundays.

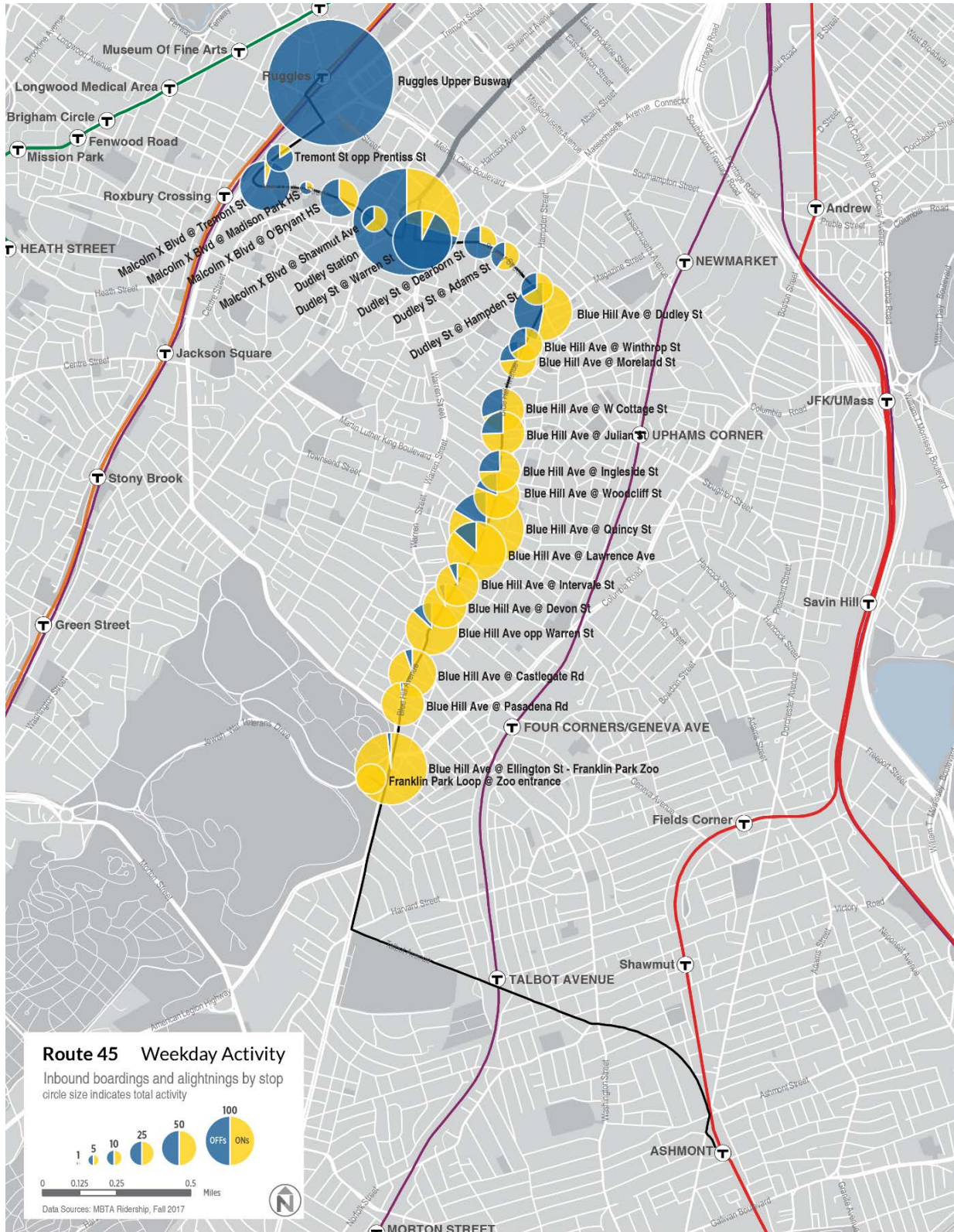
Ridership by Stop

Most passengers use Route 45 to travel to and from Dudley Station and Ruggles Station. On weekday inbound trips (see Figure 3):

- 40 passengers board at the first stop at the Franklin Park Zoo.
- 470 passengers board and 30 alight at the three stops along Blue Hill Avenue between Franklin Park Zoo and Warren Street.
- 940 passengers board and 260 alight at the 12 stops along Blue Hill Avenue from Warren Street to Dudley Street.
- 70 passengers board and 190 alight at the four stops along Dudley Street before Dudley Station.
- 140 passengers board and 330 alight at Dudley Station.
- 50 passengers board and 180 alight at the five stops along Malcolm X Boulevard and Tremont Street before Ruggles Station.
- 650 passengers, or 40% of all passengers, alight at Ruggles Station.

Outbound patterns are similar, but in the reverse. Weekend patterns are also similar, but with lower volumes. One exception, however, is that ridership on the outbound deviation between Ruggles Station and Dudley Station via Dudley Street/John Elliot Square is extremely low: less than one boarding and four alightings on weekday evenings, 12 boardings and nine alightings all day on Saturdays, and six boardings and four alightings all day on Sundays.

Figure 3 | Weekday Inbound Ridership by Stop Map



Ridership by Trip

Weekday ridership generally follows traditional commute patterns, with higher ridership inbound in the AM peak and outbound in the PM peak. Route 45 trips have modest turnover through most of the route, as some passengers ride to and from Dudley Station, Roxbury Crossing Station and local stops on Blue Hill Avenue. AM inbound trips from Franklin Park often have standing loads by the time buses reach Blue Hill Avenue at Dudley Street.

However, due to high turnover at Dudley Station, no trips exceed the MBTA's peak period comfort standard. On weekday inbound trips (see Figure 4):

- The first trip at 5:14 AM carries 37 passengers, which indicates that there is likely demand for earlier service.
- Ridership per trip drops to 14 and 23 passengers on the next two trips before rebounding to 43 passengers on the 6:00 AM trip.
- Ridership per trip is then around 40 passengers per trip until 8:45 AM.
- It is then around 30 passengers per trip until slightly after 5:00 PM. Exceptions are between 1:30 PM and 3:15 PM when some trips carry between 36 and 43 passengers.
- Ridership per trip then declines steadily to around 10 passengers per trip by 6:30 PM and remains at that level until around 10:30 PM.
- Trips carry fewer than 10 passengers through the end of service.

On weekday outbound trips (see Figure 5):

- Ridership per trip is under 10 passengers on the first two trips at 5:34 AM and 6:04 AM.
- It then ranges from 15 to 26 between 6:04 AM and 12:01 PM.
- After noon, it steadily increases to close to 50 passengers at 2:43 PM.
- It then generally ranges from 40 to 50 passengers until 5:45 PM.
- Ridership per trip then drops to around 30 passengers per trip through 9:30 PM.
- It then steadily declines to fewer than 10 passengers on the last trip at 1:00 AM.

On Saturdays, inbound ridership generally around 20 passengers per trip between 9:30 AM and 5:30 PM, but with some trips carrying close to 30 passengers (see Figure 6). Ridership before and after those times is mostly around 10 passengers, but with lower numbers after 10:30 PM. Outbound ridership per trip slowly builds to a high of 30 passengers at 4:37 PM, and then quickly declines to fewer than 20 (see Figure 7). Sunday ridership by trip patterns are similar but with slightly higher loads due to the less frequent service (see Figure 8 and Figure 9).

Figure 4 | Weekday Ridership by Trip: Inbound

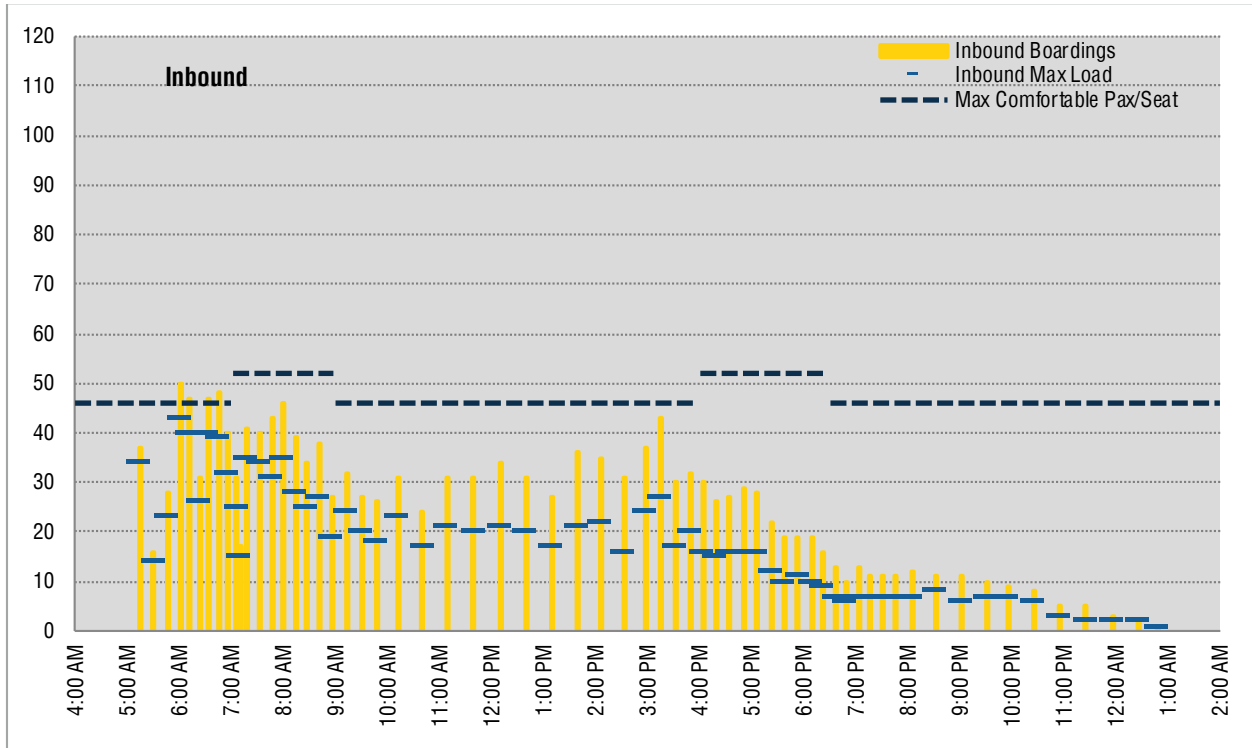


Figure 5 | Weekday Ridership by Trip: Outbound

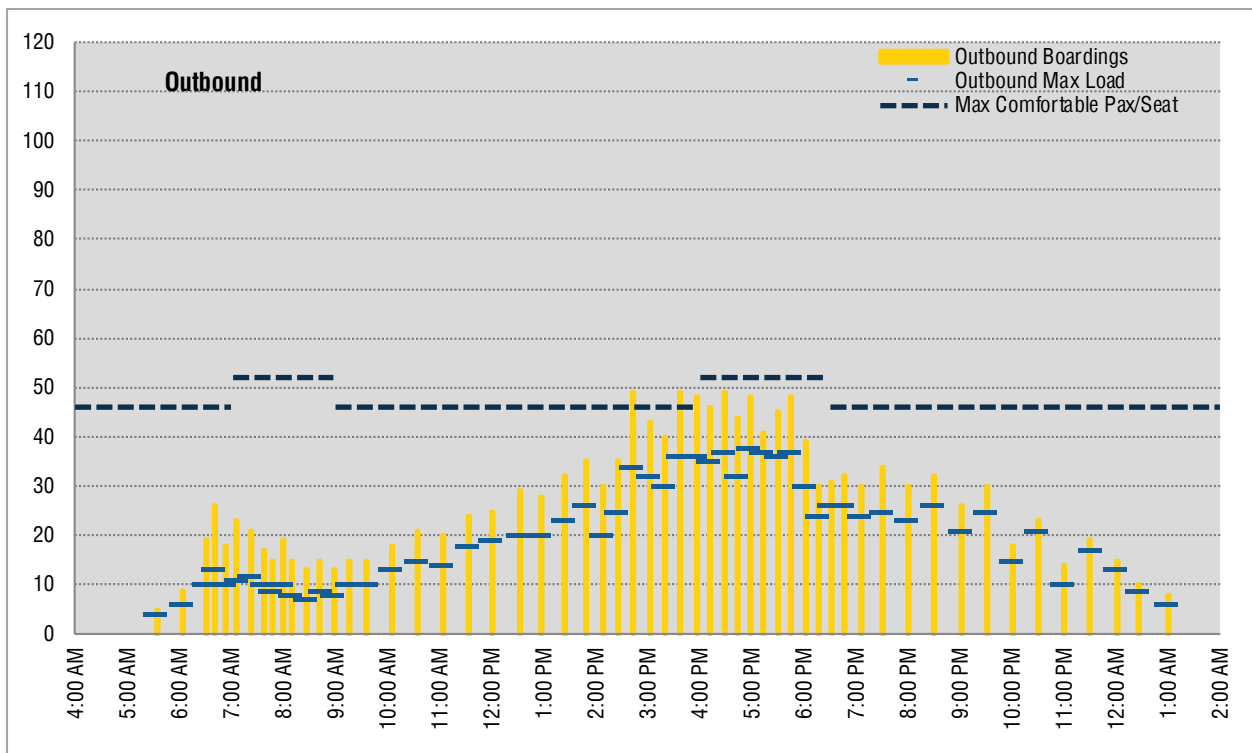


Figure 6 | Saturday Ridership by Trip: Inbound

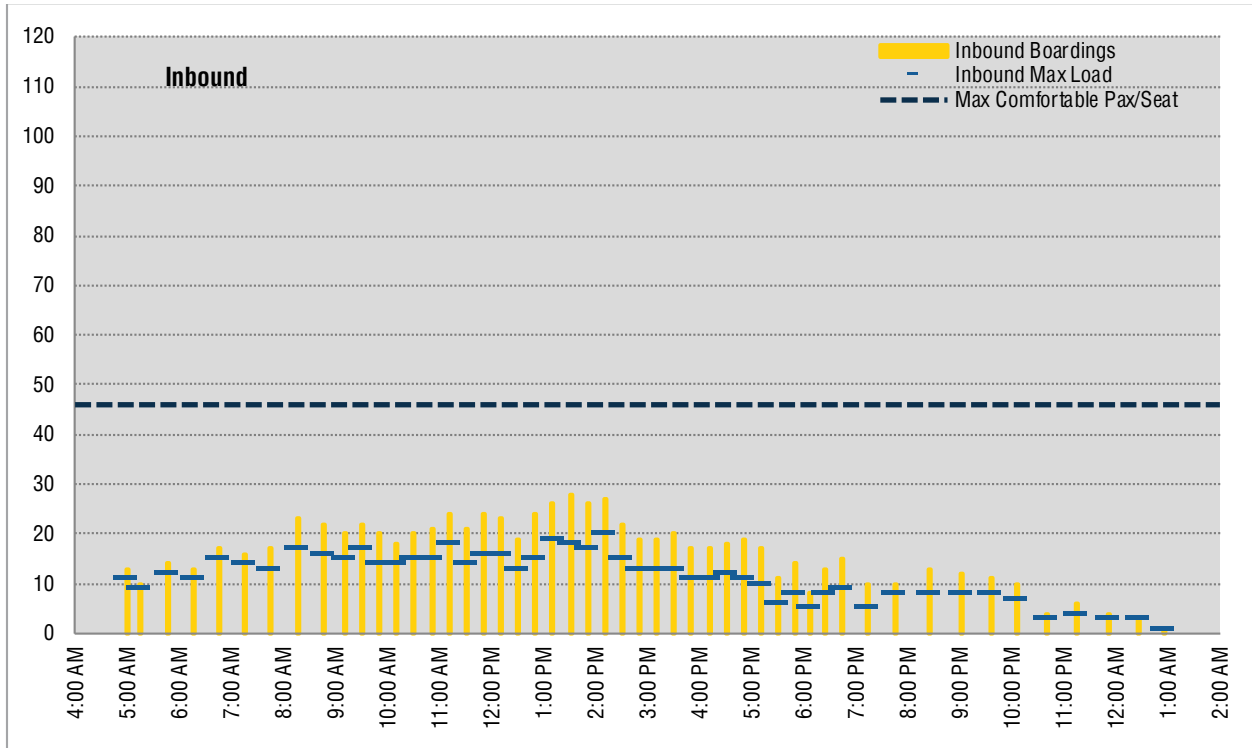


Figure 7 | Saturday Ridership by Trip: Outbound

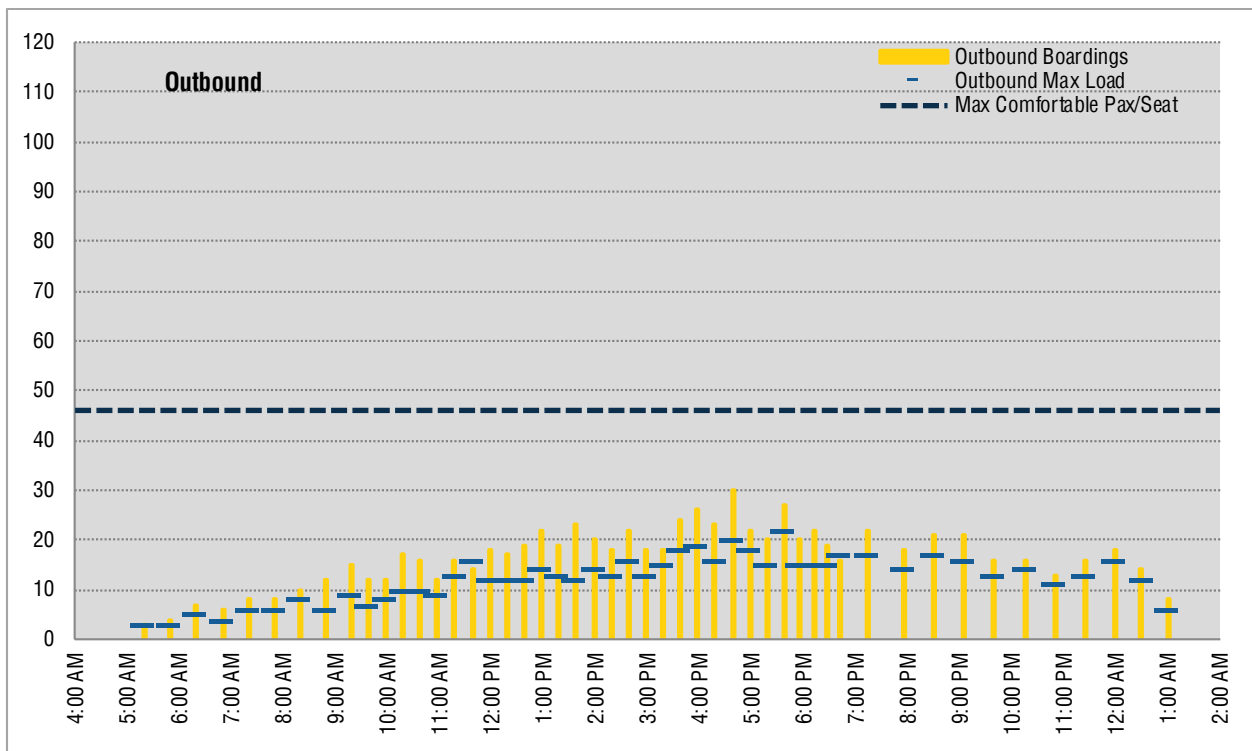


Figure 8 | Sunday Ridership by Trip: Inbound

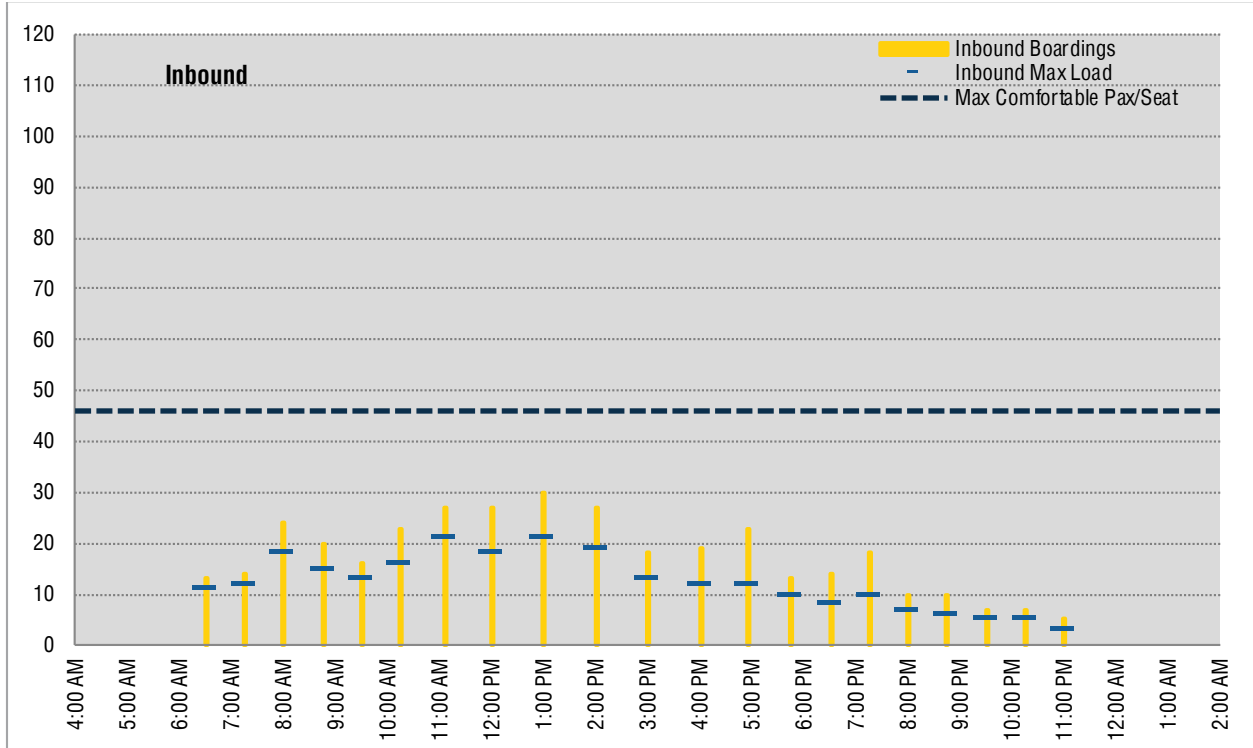
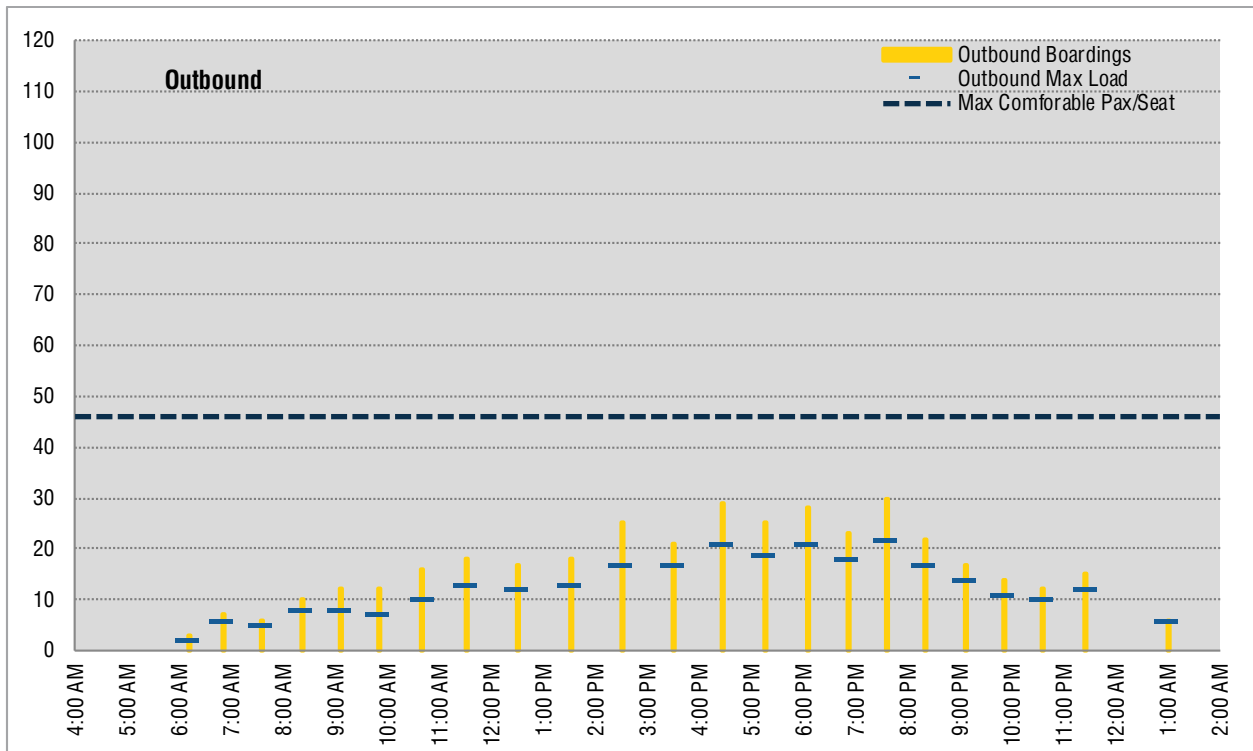


Figure 9 | Sunday Ridership by Trip: Outbound



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 45, 97.1% of passenger minutes are in comfortable conditions, which is above the target of 96% (see Table 3).

Table 3 | Passenger Time Spent Traveling in Comfortable Conditions

	WEEKDAYS	SATURDAYS	SUNDAYS
Minimum Standard	92%	92%	92%
Target	96%	96%	96%
Actual	97.1%	100%	100%

Reliability and Speed

Reliability

Route 45's overall reliability is 68% on weekdays, 63% on Saturdays, and 66% on Sundays (see Table 4). All of these levels are below the minimum standard of 70%. In addition, 1.5% of trips are dropped. The major causes of the below standard on-time performance are actual running times that are longer than scheduled times (as described below) and dropped trips.

Table 4 | Reliability

SERVICE DAY	ORIGIN/MID-ROUTE ON-TIME PERFORMANCE	DESTINATION ON-TIME PERFORMANCE	OVERALL RELIABILITY	DROPPED TRIPS
Monday-Friday	66%	77%	68%	1.5%
Saturday	63%	61%	63%	
Sunday	66%	69%	66%	

Running Times

On weekdays, Route 45's observed running times routinely exceed scheduled running times throughout the day. Inbound differences are greatest during the middle of the day, at five to eight minutes (see Figure 10). Outbound differences are greatest between 2:00 PM and 6:00 PM, when some trips take as much as 15 minutes longer than scheduled (see

Figure 11). Since the development of this document, the MBTA has updated Route 45 schedules to better reflect actual running times.

Figure 10 | Scheduled & Median Travel Time by Trip: Route 45 Inbound

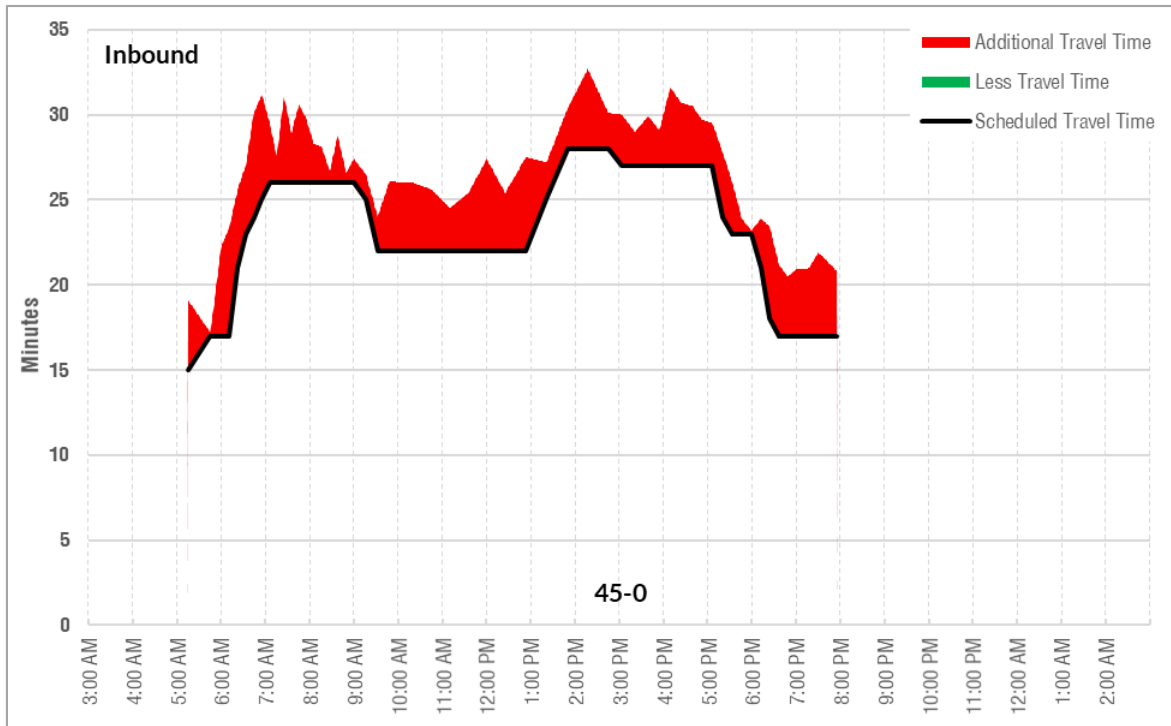
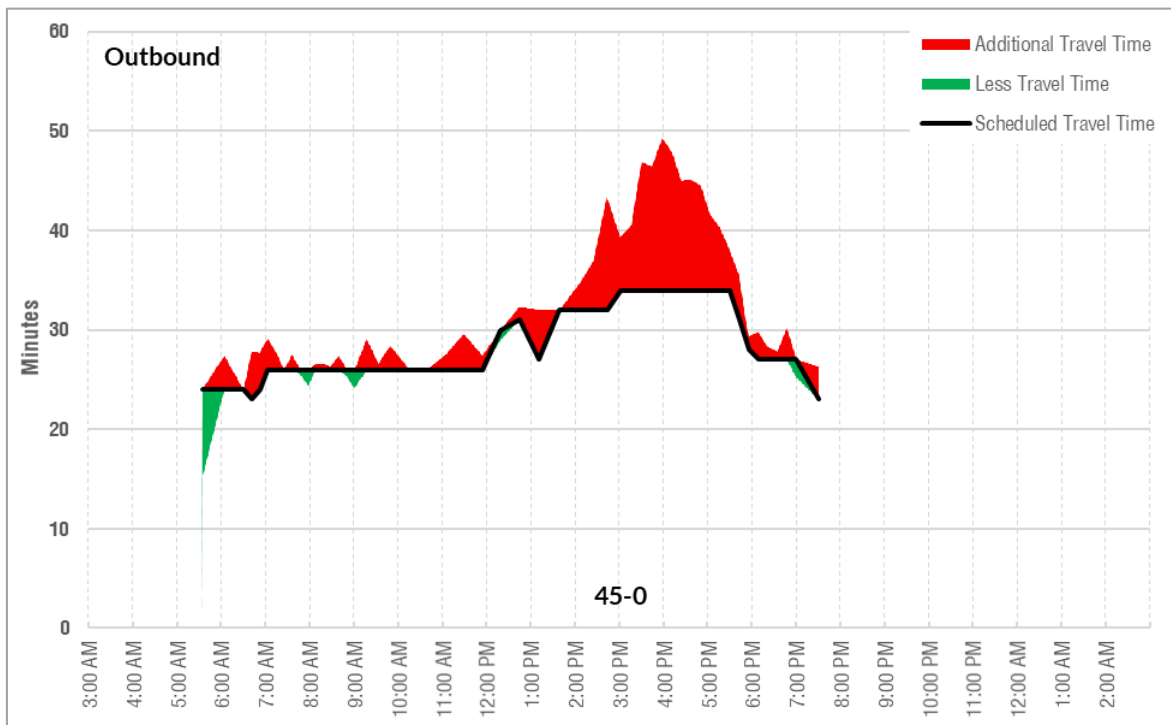


Figure 11 | Scheduled & Median Travel Time by Trip: Route 45 Outbound



Stop Spacing

Route 45 has an average of seven stops per mile, which is at the high end of the four to seven stops per mile recommended for urban areas under MBTA guidelines. Stops are located very close together at three points along the route:

- Stops on Blue Hill Avenue at Lawrence Avenue and at Quincy Street are only 435 feet apart.
- Stops on Blue Hill Avenue at Dudley Street and Dudley Street at Hampden Street are also only 435 feet apart.
- Stops on Blue Hill Avenue at Adams Street and at Dearborn Street are only 510 feet apart.

Summary

Route 45 is a mostly simple and straight-forward route that provides unique service to Blue Hill Avenue between Grove Hall and Dudley Street. Issues with existing service are:

- Below standard on-time performance.
- The outbound deviation from Malcolm X Boulevard to Dudley Street serves stops that are within walking distance of the regular alignment. The deviation serves very few riders but increases travel times and make the route confusing.
- A “missing” outbound trip on Sunday evenings creates a 95-minute gap between the second to last trip at 11:25 PM and the last trip at 1:00 AM.
- There also appears to be demand for earlier weekday service.

Additional issues include demand for earlier weekday service, irregular headways, and infrequent service on Sundays.