

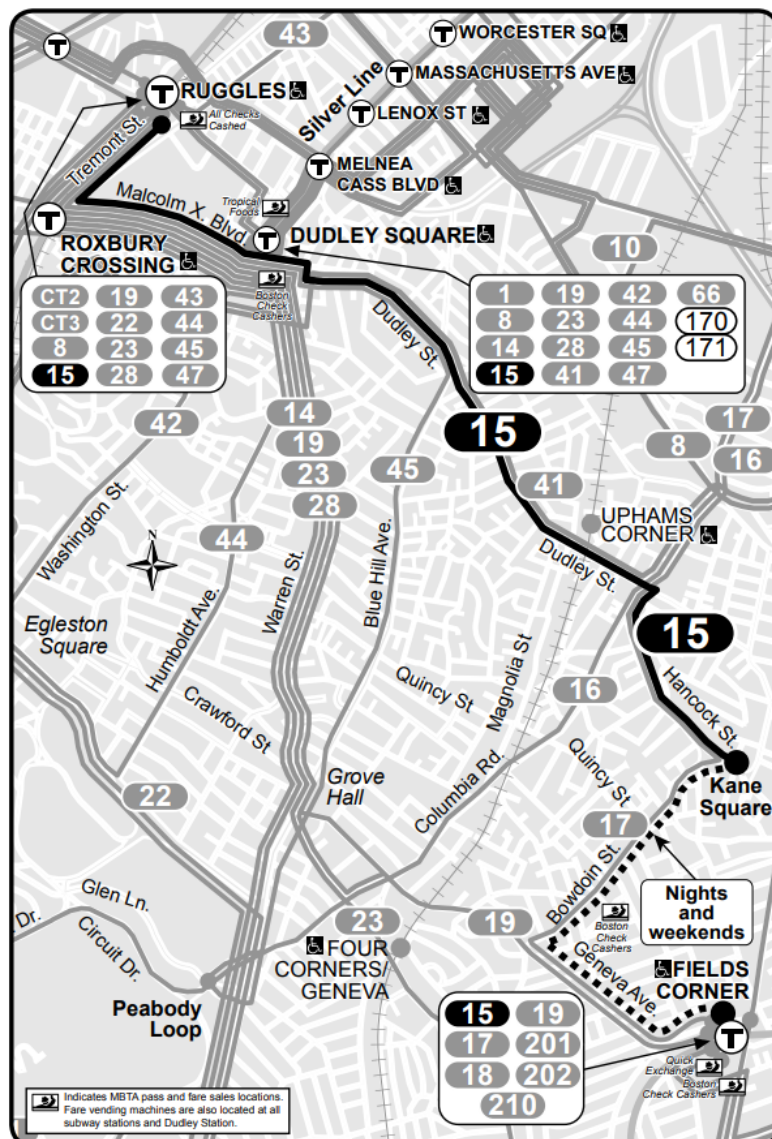
Route 15

Kane Square or Fields Corner Station – Ruggles Station

Route Overview

Route 15 Kane Square or Fields Corner Station – Ruggles Station is a Key Bus route that operates between Kane Square or Fields Corner in Dorchester and Ruggles Station in Roxbury (see Figure 1). Service runs primarily on Hancock Street, Dudley Street, Malcolm X Boulevard, and Tremont Street.

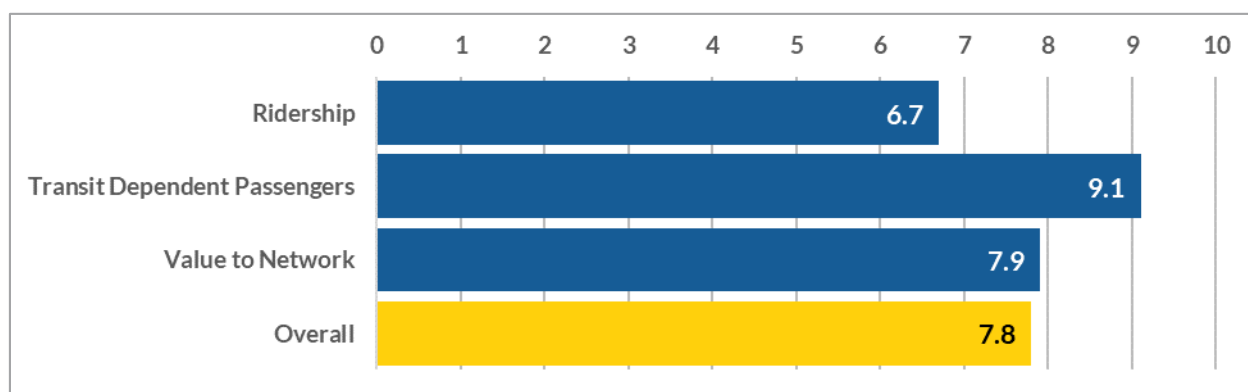
Figure 1 | Service Map



Network Importance

Route 15 is an important route within the MBTA bus network (see Figure 2). On a relative scale of 0 to 10, the route rates 6.7 in terms of ridership, 9.1 in terms of transit dependent ridership, and 7.9 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 7.8.

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



Service Overview

Schedule

Route 15 provides frequent service for most of the day on weekdays and fairly frequent service on both Saturdays and Sundays (see Table 1). On weekdays, it provides one of the longest service spans in the bus network, operating from 3:26 AM to 1:17 AM. Service starts with three very early morning inbound trips at 3:33 AM, 4:02 AM, and 4:56 AM. After that time service operates every 15 minutes through 6:00 AM. After 6:00 AM, service operates with the following frequencies:

- Every three to 10 minutes in the early AM and AM peak.
- Every one to 17 minutes in the midday base and midday school periods.
- Every nine to 11 minutes in the PM peak.
- Every five to 20 minutes in the evening.
- Every 20 minutes in the late evening through the end of service.

On Saturdays, Route 15 operates with a similar span of service as on weekdays. For most of the day, service operates every eight to 20 minutes. Exceptions are the first three early morning trips, which are at similar times as on weekdays, and the last two trips, which operate 30 minutes apart.

On Sundays, Route 15 operates with a similar span as on weekdays and Saturdays. Service operates every eight to 20 minutes for most of the day. Exceptions are the first three early morning trips, which are at slightly different times than on weekday and Saturdays, and the last two trips, which operate 25 minutes apart.

Route 15 meets the span of service and service frequency standards for Key Bus routes on all days.

Table 1 | Schedule Statistics

SERVICEDAY	SPAN OF SERVICE	FREQUENCY (RANGE)	FREQUENCY (AVERAGE)	DAILY TRIPS (INBOUND/OUTBOUND)
Monday-Friday	3:26 AM to 1:17 AM			104/97
Sunrise	3:26 AM to 5:59 AM	10-75	26	6/2
Early AM	6:00 AM to 6:59 AM	3-10	5	11/7
AM Peak	7:00 AM to 8:59 AM	4-10	7	17/17
Midday Base	9:00 AM to 1:29 PM	10-17	14	18/18
Midday School	1:30 PM to 3:59 PM	1-17	9	15/17
PM Peak	4:00 PM to 6:29 PM	9-11	9	16/16
Evening	6:30 PM to 9:59 PM	5-20	16	13/11
Late Evening	10:00 PM to 11:59 PM	20	20	6/6
Night	12:00 AM to 1:17 AM	20	20	2/3
Saturday	3:29 AM to 1:19 AM	15-61	19	66/65
Sunday	3:29 AM to 1:17 AM	20-124	20	58/55

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

Service Patterns

Route 15 operates with six different patterns (see Table 2). On weekdays:

- The first two inbound trips at 3:33 AM and 4:02 AM operate from Ashmont Station to Dudley with continuing service to Andrew Station and Logan Airport via Route 171 (Pattern 15.4). These trips are not illustrated on Route 15’s route map.
- Between 5:00 AM and approximately 9:30 AM, service operates between Kane Square and Ruggles Station (Pattern 15.0). This is considered the route’s primary service pattern.
- Between approximately 9:30 AM and 3:00 PM, service is extended beyond Kane Square to Coppens Square (Pattern 15.2). Coppens Square is not indicated on Route 15’s route map, but is 0.2 miles south of Kane Square along Bowdoin Street (and is listed on Route 15’s schedule as Saint Peters Square).
- From approximately 3:00 PM to 7:00 PM, service again operates between Kane Square and Ruggles Station (Pattern 15.0).

Table 2 | Service Patterns

PATTERN	ORIGIN	DESTINATION	UNIQUE FEATURE	TRIPS PER WKD	TRIPS PER SAT	TRIPS PER SUN
INBOUND				104	66	58
15.0	Kane Square (Hancock Street at Bowdoin Street)	Ruggles Station	Primary Service Pattern	60	12	-
15.1	Fields Corner Station	Ruggles Station	Evenings and weekends to Fields Corner	17	51	55
15.2	Coppens Square (St. Peters Square at Church)	Ruggles Station	Midday service	22	-	-
15.3	Kane Square (Hancock Street at Bowdoin Street)	Dudley Square	School trip	1	-	-
15.4	Ashmont Station	Dudley Station	Early morning trips to Andrew Station and Logan Airport via Route 171	2	2	2
OUTBOUND				97	65	55
15.0	Ruggles Station	Kane Square (Hancock Street at Bowdoin Street)	Primary Service Pattern	55	12	-
15.1	Ruggles Station	Fields Corner Station	Evenings and weekends to Fields Corner	18	53	55
15.2	Ruggles Station	Coppens Square (St. Peters Square at Church)	Midday Service	21	-	-
15.3	Dudley Station	Kane Square (Hancock Street at Bowdoin Street)	School trips	2	-	-
15.6	Madison Park High School	Fields Corner Station	School trip	1	-	-

- In the evening and at night, service is extended from Kane Square to Fields Corner Station (Pattern 15.1). The extended service is shown with the dotted line in Figure 1. Until approximately 10:00 PM, the extended service largely duplicates Route 17 Fields Corner Station - Andrew Station. After that time, when Route 17 ends service, Route 15 provides unique service.
- There are also a number of school trips:

- An inbound trip at 6:46 AM from Fields Corner Station to Ruggles Station (Pattern 15.1).
- An inbound trip at 3:26 PM from Kane Square to Dudley Station (Pattern 15.3).
- An outbound trip at 2:09 PM from Madison Park High School to Fields Corner Station (Pattern 15.6)
- Two outbound trips at 3:05 PM and 3:45 PM from Dudley Station to Kane Square (Pattern 15.3).
- An outbound trip at 3:20 PM from Ruggles Station to Kane Square (Pattern 15.0).

On Saturdays:

- The first three trips of the day provide the same services as on weekdays, but at times that are slightly different (Pattern 15.4).
- Service between approximately 5:00 AM and noon operates between Fields Corner Station and Ruggles Station (Pattern 15.1).
- Service between noon and approximately 6:00 PM alternates between Fields Corner Station and Kane Square (Patterns 15.0 and 15.1).
- After 6:00 PM, all service operates to and from Field Corner Station (Pattern 15.1). (Unusually, with all evening service operating to and from Fields Corner Station and daytime service alternating between Fields Corner Station and Kane Square, more frequent service is provided to and from Fields Corner Station at night than during the day, running every 20 minutes versus every 30 minutes).

On Sundays, The first three trips provide similar service as on weekdays and Saturdays, but at different times (Pattern 15.4). All other service operates between Fields Corner Station and Ruggles Station (Pattern 15.1).

Route 15’s schedule also shows several early-morning and late-night trips that serve part of the route, but that the MBTA considers part of other routes for internal purposes. The MBTA also modified some school trip patterns in Fall 2018.

Ridership

Route 15 carries approximately 5,810 daily passengers on weekdays, 3,700 passengers on Saturdays, and 3,070 passengers on Sundays.

Ridership by Stop

Weekday inbound ridership is described below and shown in Figure 3. Ridership along segments served by non-primary service patterns is as follows:

- Thirteen boardings were recorded between Mattapan and Ashmont Station, which is served by Route 15 as part of Route 191 on one early morning inbound trip.
- Five passengers board at stops between Ashmont Station and Fields Corner Station. This segment is served by Route 15 on three early morning trips.
- 150 passengers board at Fields Corner Station, which is served on evening trips.
- The 11 stops between Fields Corner Station and Coppens Square have three to seven boardings and one to 20 alightings.
- 60 passengers board at Coppens Square.
- 20 passengers board at stops between Coppens Square and Kane Square.

Ridership is much higher between Kane Square and Ruggles Station, which is the core of the route and where all day service is provided.

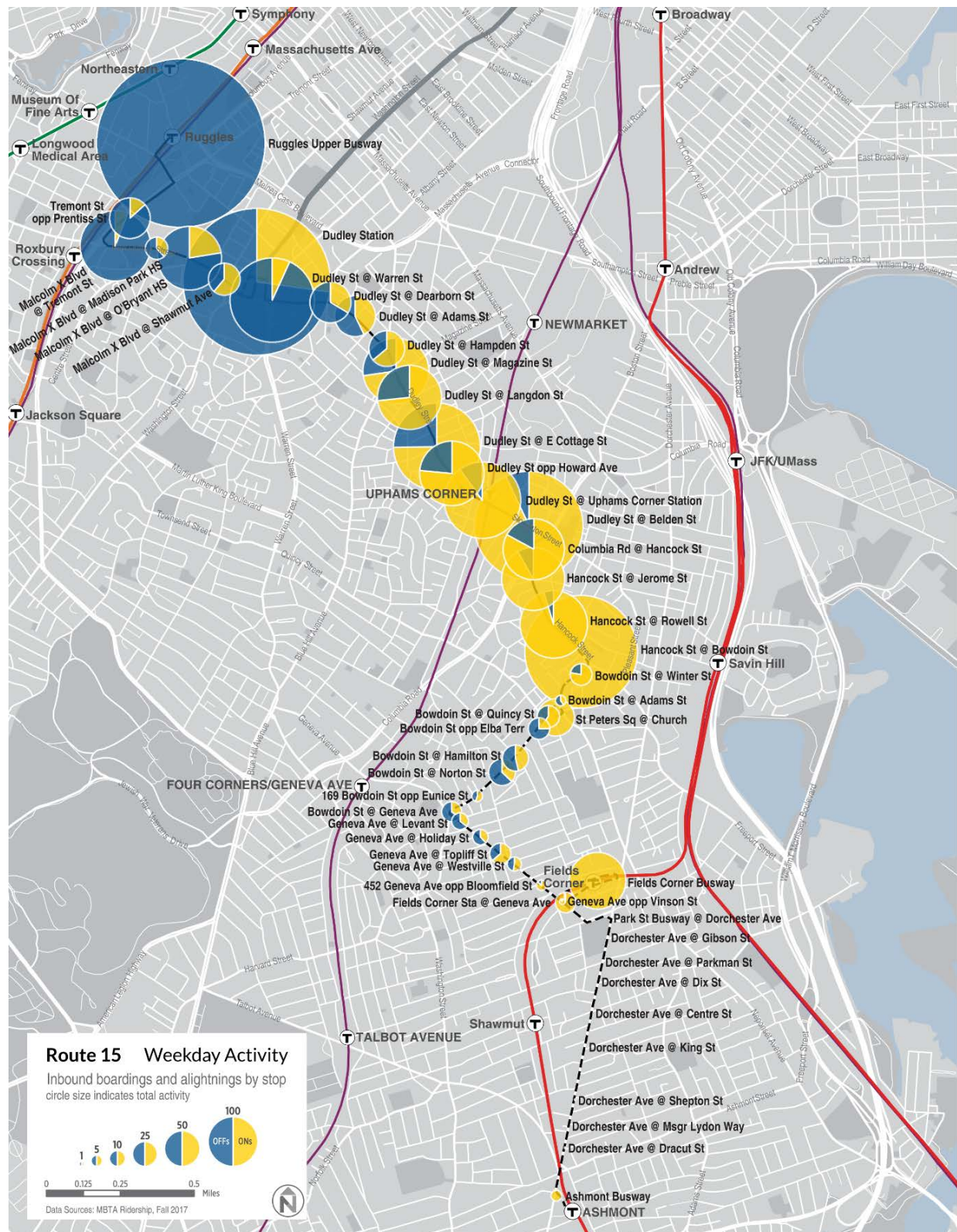
- 520 passengers board at Kane Square.
- The nine stops between Kane Square and Dudley Street at Magazine Street each serve between 130 and 450 boardings and up to 80 alightings.
- The next three stops have relatively low ridership, with 20 to 30 boardings and 20 to 50 alightings.
- Dudley Street at Warren Street in Dudley Square has 20 boardings and 280 alightings.
- 240 passengers board and 650 alight at Dudley Station.
- 12 passengers board and 190 passengers alight at Roxbury Crossing Station.
- 1,170 passengers, or nearly 40% of all riders, alight at Ruggles Station, which is the highest ridership stop on the route.

Weekday outbound patterns are largely the reverse of inbound patterns, but with no ridership south of Fields Corner Station as no outbound service operates to Ashmont Station or Mattapan Station.

On Saturdays, ridership by stop between Fields Corner Station and Kane Square is much higher because service is provided there throughout the day (although only on alternating trips during the midday) (see Figure 4). Total Saturday ridership between Fields Corner Station and Kane Square is 740 boardings on Saturdays versus 300 boardings on weekdays. Note also that boardings and alightings by stop are proportionally closer to boardings and alightings at stops north of Kane Square.

On Sundays, patterns are similar to those on Saturdays, but with an even higher proportion of boardings between Fields Corner Station and Kane Square. This is because all trips operate between Fields Corner and Ruggles Station on Sundays.

Figure 3 | Weekday Inbound Ridership by Stop Map



Ridership by Trip

Route 15's weekday ridership is most strongly oriented to typical commuting patterns, with the highest ridership inbound during the AM peak and outbound during the PM peak (see Figure 4 and Figure 5). Ridership during these periods ranges from 30 to 50 passengers per trip inbound and 30 to 60 outbound. Midday ridership is also strong, with most trips carrying 30 to over 40 passengers. Evening outbound ridership generally stays at 40 or more passengers per trip until around midnight.

On average, all trips except one midday outbound trip operate within maximum load standards, and most are well below it.

On Saturdays, inbound ridership is higher in the morning through mid-day, with fewer passengers on late night trips (see Figure 6 and Figure 7). Outbound ridership is stronger from mid-morning until evening.

On Sundays, similar to weekdays and Saturdays, ridership on the first two inbound trips (at 3:26 AM and 3:56 AM) is very low, with five and three passengers respectively. Otherwise, inbound ridership ranges from 25 to 45 passengers per trip for most of the day and outbound ridership from 20 to 50 (see Figure 8 and Figure 9).

Figure 4 | Weekday Ridership by Trip: Inbound

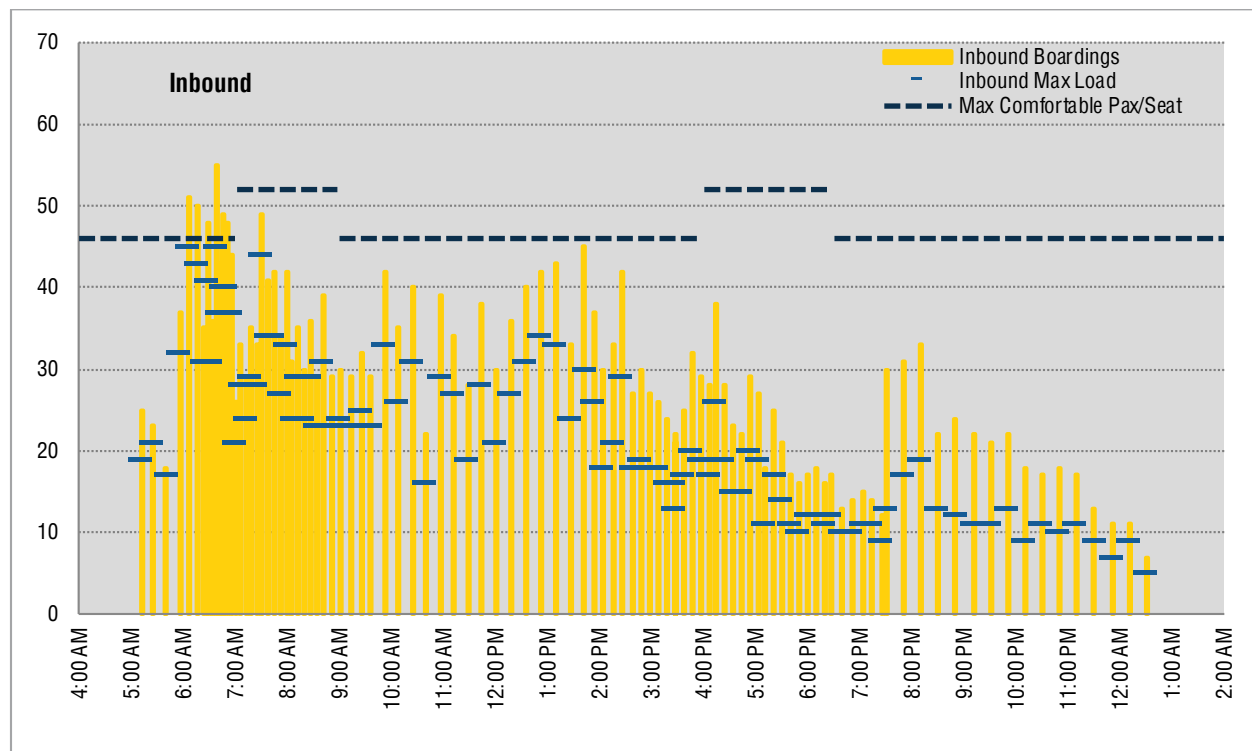


Figure 5 | Weekday Ridership by Trip: Outbound

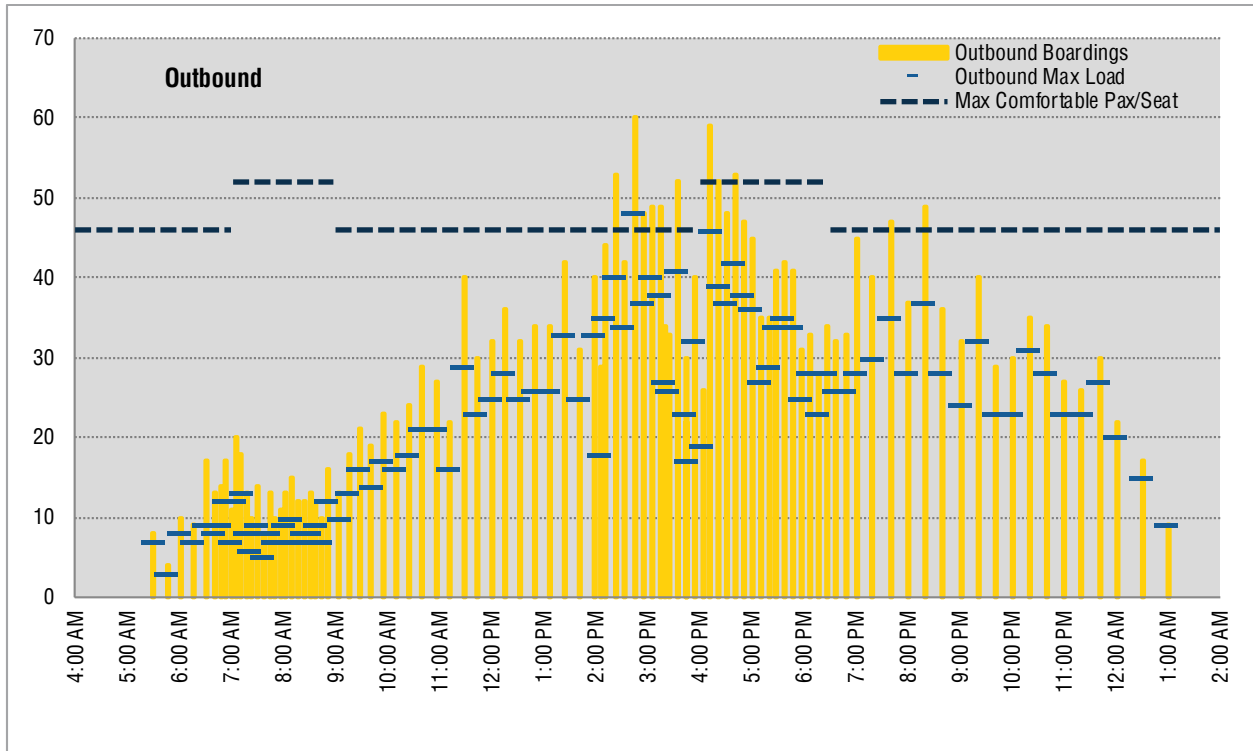


Figure 6 | Saturday Ridership by Trip: Inbound

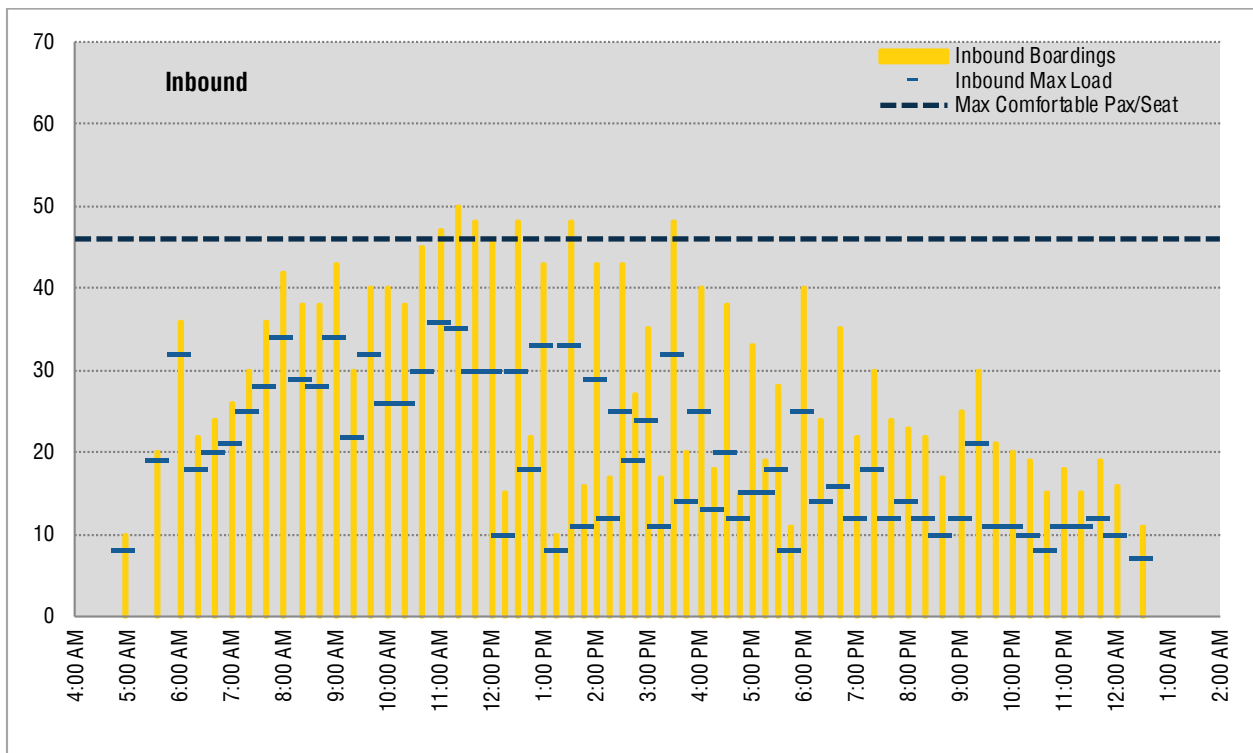


Figure 7 | Saturday Ridership by Trip: Outbound

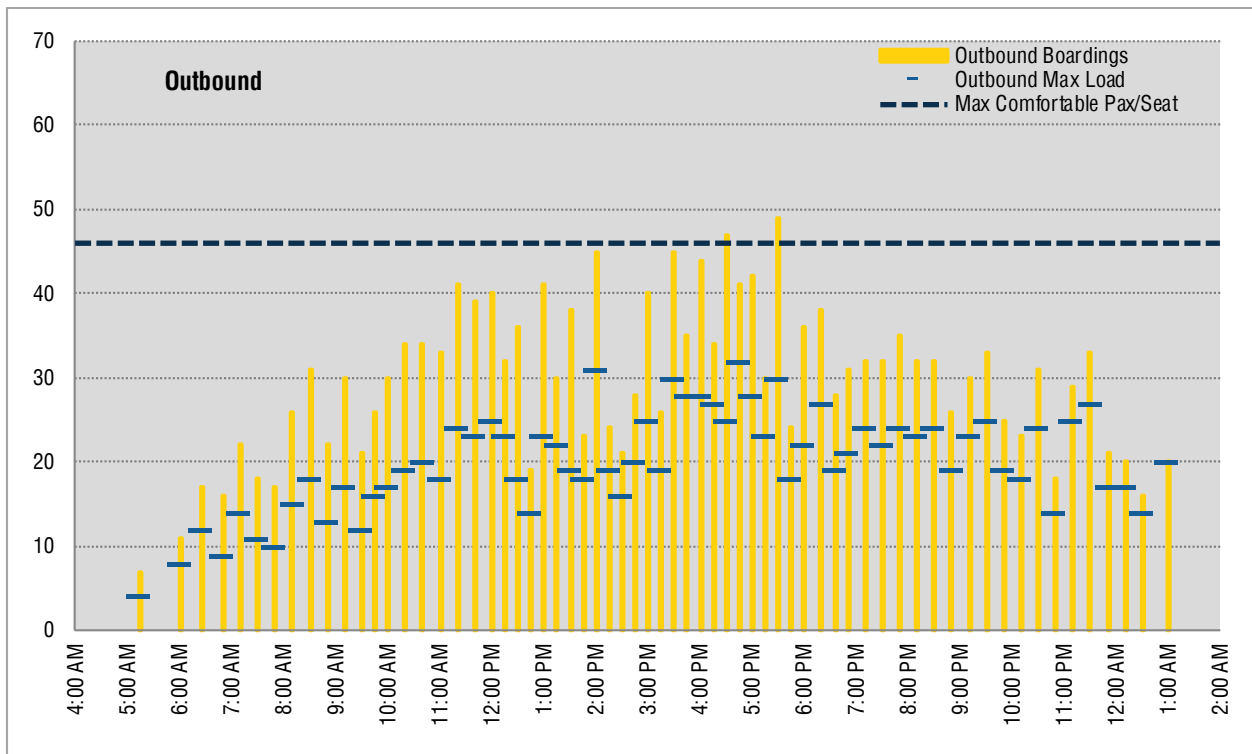


Figure 8 | Sunday Ridership by Trip: Inbound

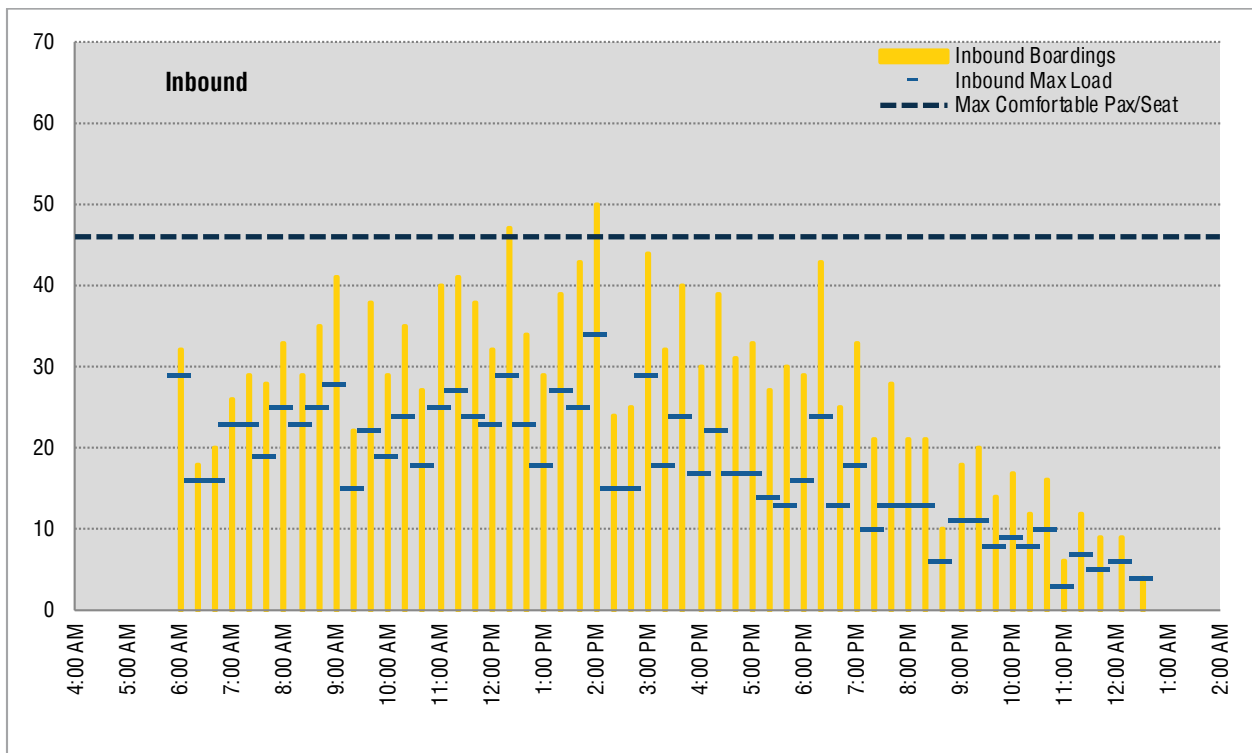
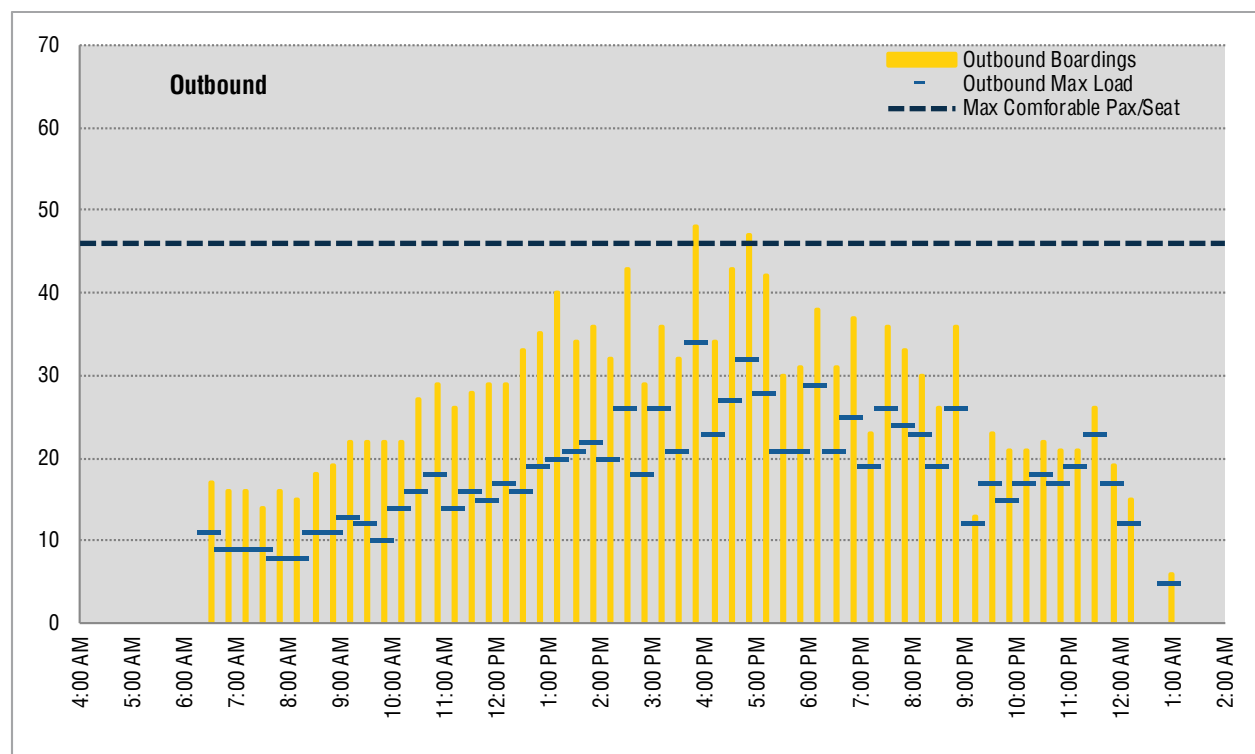


Figure 9 | Sunday Ridership by Trip: Outbound



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 15, 94.2% of weekday 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, on average, all trips except one operate with loads well below capacity. This indicates that crowding problems are caused by off-schedule service, which is discussed further below.

Table 3 | Passenger Time Spent Traveling in Comfortable Conditions

	WEEKDAYS	SATURDAYS	SUNDAYS
Minimum Standard	92%	92%	92%
Target	96%	96%	96%
Actual	94.2%	99.7%	99.7%

Reliability and Speed

Reliability

Passengers using higher frequency services like Route 15 expect buses to arrive on a regular basis. For these services, the MBTA measures reliability based on actual service frequency and the travel time for a given trip. Route 15 trips leave on-time 74% of the time and arrive on-time 69% of the time on weekdays (see Table 4). The overall 73% weekday reliability is below the MBTA's minimum standard of 75% for Key Bus routes. The route performs worse on Saturdays, with an on-time preforms measure of 72%. An average of 2.3% of trips were dropped in the Fall of 2017, which was a major contributor to overcrowding.

Table 4 | Reliability

SERVICE DAY	ORIGIN/MID-ROUTE ON-TIME PERFORMANCE	DESTINATION ON-TIME PERFORMANCE	OVERALL RELIABILITY	DROPPED TRIPS
Monday-Friday	74%	69%	73%	2.1%
Saturday	74%	62%	72%	
Sunday	77%	90%	78%	

Reliability problems are caused in large part by actual running times that are longer than scheduled running times, especially inbound during the evening peak period when trips routinely run more than five minutes late (see Figure 10 and Figure 11). Since the completion of this document, the MBTA has adjusted Route 15 schedules to better reflect actual running times.

Stop Spacing

Route 15 has very close stop spacing in both directions. Overall, the route has up to ten stops per mile, far in excess of the four to seven stops per mile recommended for Key Bus routes under MBTA guidelines. Customers can walk between stops with this spacing in about two to three minutes. As people will typically walk at least five minutes to access a local bus route, this spacing is unnecessarily close, while making service slower and less reliable.

Figure 10 | Scheduled & Median Travel Time by Trip: Route 15 Inbound

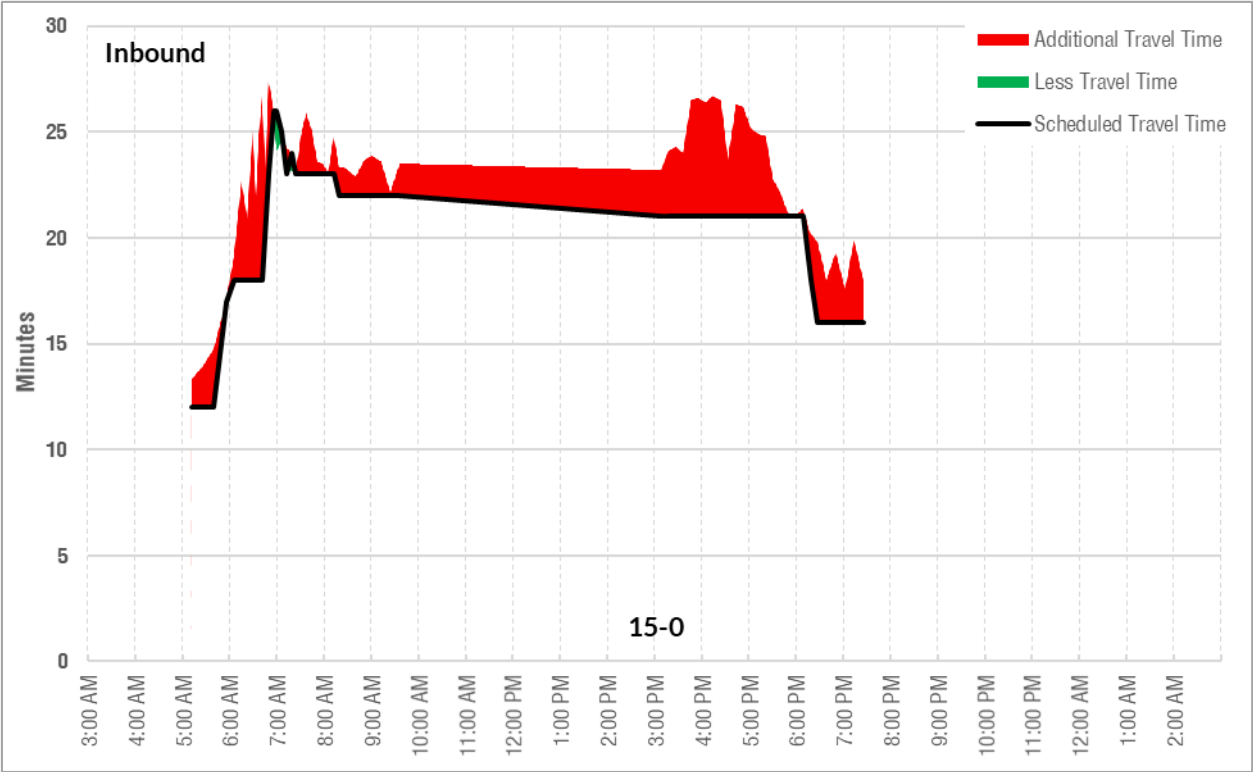
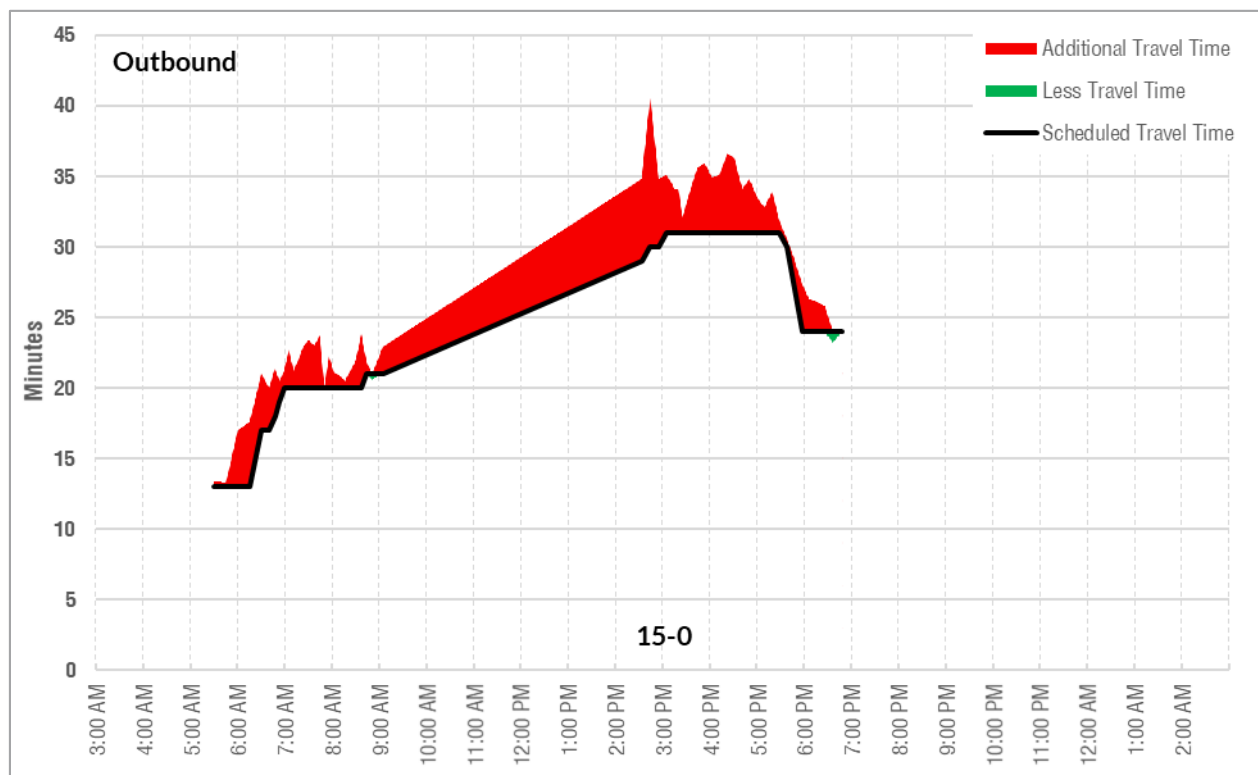


Figure 11 | Scheduled & Median Travel Time by Trip: Route 15 Outbound



Summary

Overall, Route 15 performs well, and meets all Service Design Policy minimum standards. However, there are service design issues that are related to the route’s many different operating patterns. Stops are very close together along much of the route with up to 10 stops per mile, more than the four to seven stops per mile consistent with the MBTA’s bus stop spacing guidelines. Actual running times differ from scheduled running times by up to five minutes on weekdays.