

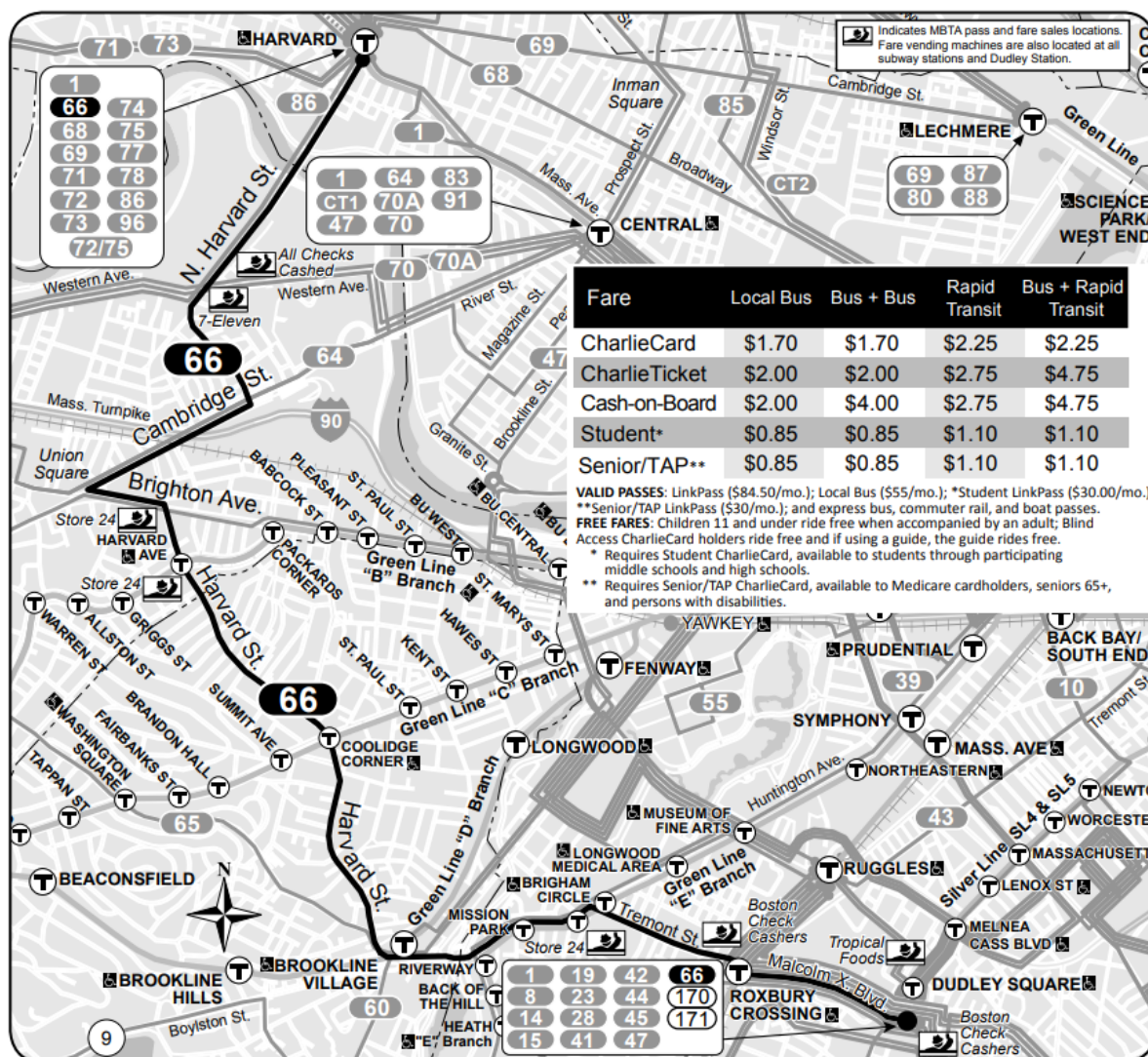
Route 66

Harvard Square – Dudley Station

Route Overview

Route 66 Harvard Square - Dudley Station is a Key Bus route that provides crosstown service between Harvard Square in Cambridge and Dudley Square in Roxbury. It serves Harvard Square, Union Square, Allston, Brookline, the Longwood Medical Area, and Roxbury, and connects with the Red Line, all four branches of the Green Line, the Orange Line, and the Silver Line.

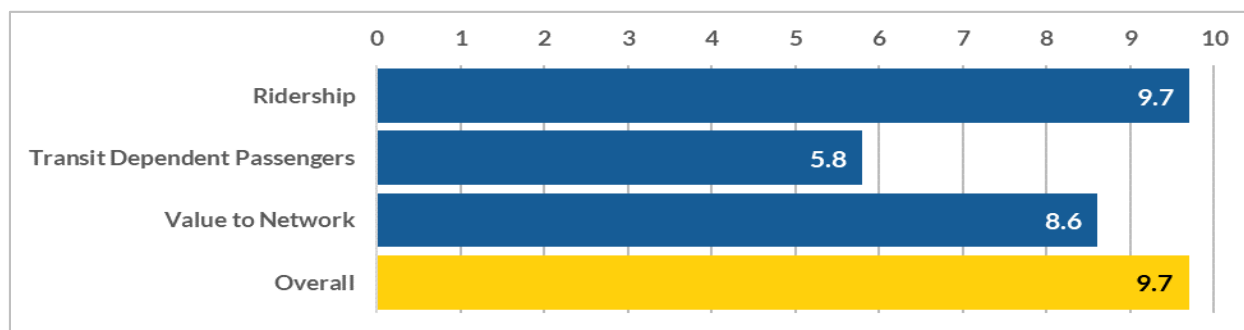
Figure 1 | Service Map



Network Importance

Route 66 is one of the most important routes in the MBTA system (see Figure 2). On a scale of 0 to 10, the route rates 9.7 in terms of ridership, 5.8 in terms of transit dependent ridership, and 8.6 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 9.7.

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



Service Overview

Schedule

Route 66 operates seven days a week (see Table 1). On weekdays, the route operates from 4:45 AM to 1:00 AM with frequent and generally regular service from the early AM through the end of the evening.

Table 1 | Schedule Statistics

SERVICE DAY	SPAN OF SERVICE	FREQUENCY (RANGE)	FREQUENCY (AVERAGE)	DAILY TRIPS (INBOUND/OUTBOUND)
Monday-Friday	5:00 AM to 1:05 AM			98/107
Sunrise	5:00 AM to 5:59 AM	15 - 28	20	3/4
Early AM	6:00 AM to 6:59 AM	3 - 17	8	8/19
AM Peak	7:00 AM to 8:59 AM	9	9	13/14
Midday Base	9:00 AM to 1:29 PM	8 - 16	14	20/18
Midday School	1:30 PM to 3:59 PM	2 - 16	9	16/15
PM Peak	4:00 PM to 6:29 PM	10 - 11	10	14/15
Evening	6:30 PM to 9:59 PM	11 - 20	14	15/13
Late Evening	10:00 PM to 11:59 PM	20	20	6/6
Night	12:00 AM to 1:05 AM	20 - 30	27	3/3
Saturday	4:40 AM to 1:10 AM	13 - 32	17	73/72
Sunday	6:25 AM to 1:00 AM	17 - 35	20	60/63

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

On Saturdays, service operates from 4:40 AM to 1:10 AM, every 13 to 32 minutes, but on average every 17 minutes. On Sundays, service operates from 5:50 AM through 1:00 AM, every 17 to 35 minutes, but on average every 17 minutes.

Route 66 exceeds the MBTA's span of service and frequency standards on all days. Additionally, as part of the MBTA's focus on more late night service Route 66 has received additional span of service.

Service Patterns

Most trips operate service pattern 66.6, which serves the full length of the route (see Table 2). There are also a large number of school trips:

- Pattern 66.1 provides two AM inbound trips and one PM outbound trip serving Madison Park Tech and Boston Latin Academy.
- Pattern 66.5 provides 11 AM outbound trips between Dudley Station and Brighton High School. All 11 trips leave Dudley Station between 6:17 AM and 6:50 AM.
- Pattern 66.7 provides two PM inbound trips between Brighton High School and Dudley Station.

It should be noted that the MBTA has worked to simplify these school related trips. This includes increasing Pattern 66.7 trips, eliminating Pattern 66.1, and creating two new service patterns.

Table 2 | Service Patterns

PATTERN	ORIGIN	DESTINATION	UNIQUE FEATURE	TRIPS PER WKD	TRIPS PER SAT	TRIPS PER SUN
INBOUND				98	73	60
66.1	Union Square, Allston	Dudley Station	Serves Madison Park Tech and Boston Latin Academy	2	-	-
66.6	Harvard Square	Dudley Station	Primary pattern	94	73	60
66.7	Cambridge Street at Warren Street	Dudley Station	PM School trips from Brighton High School	2	-	-
OUTBOUND				107	72	63
66.1	Dudley Station	Union Square, Allston	Serves Madison Park Tech and Boston Latin Academy	1	-	-
66.5	Dudley Station	Brighton High School	AM school trips to Brighton High School	11	-	-
66.6	Dudley Station	Harvard Square	Primary pattern	95	72	63

Ridership

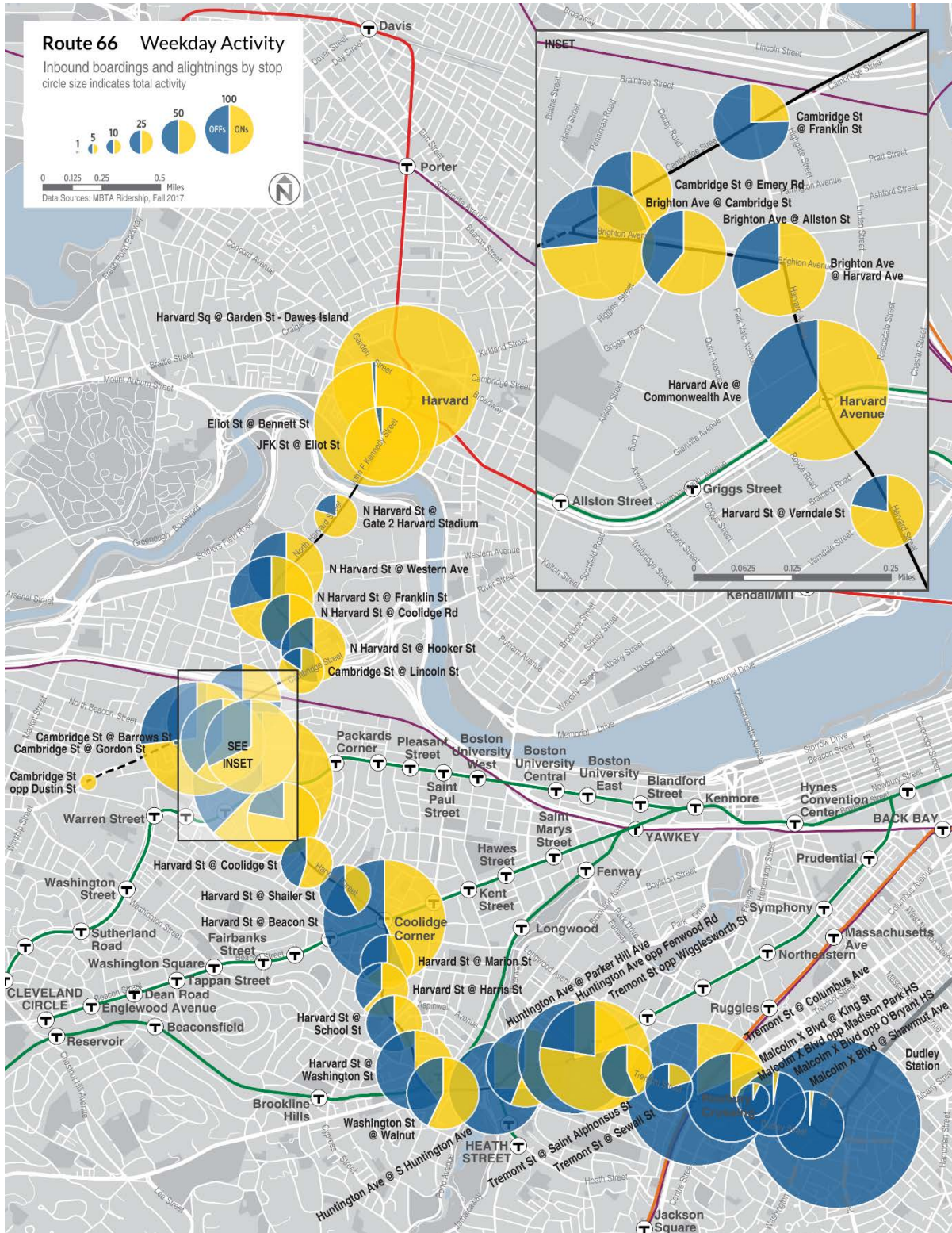
Route 66 carries 12,900 passengers on weekdays, 7,100 on Saturdays, and 5,730 on Sundays. It is the second highest ridership route on weekdays, the fourth highest on Saturdays, and the fifth highest on Sundays.

Ridership by Stop

Route 66 has very high ridership along its entire route. On weekday inbound trips (see Figure 3):

- The first three stops in Harvard Square have nearly 1,800 boardings – more than the entire ridership on most MBTA bus routes.
- Stops on North Harvard Street have a total of 550 boardings and 380 alightings.
- The stops closest to Union Square have 1,000 boardings and 720 alightings.
- 520 passengers board and 310 alight at Harvard Avenue at Commonwealth Avenue, where connections can be made with the Green Line B Branch.
- 280 passengers board and 170 alight along Harvard Street between Commonwealth Avenue and Beacon Street.
- 280 passengers board and 360 alight at Harvard Street at Beacon Street, where connections can be made with the Green Line C Branch.
- 210 passengers board and 160 alight along Harvard Street between Beacon Street and Washington Street.
- 100 passengers board and 160 alight at Harvard Street at Washington Street, where connections can be made with the Green Line D Branch.
- 270 passengers alight at Huntington Avenue at South Huntington Avenue, which is the first stop where connections can be made with the Green Line E Branch.
- 120 passengers board and 420 alight at Huntington Avenue at Fenwood Road, which is the last stop where transfers can be made the Green Line E Branch.
- 400 passengers board and 120 alight at Tremont Street at Wigglesworth Street, which is the route's closest stop to the Longwood Medical Area.
- 160 passengers board and 690 alight at Tremont Street at Columbus Avenue, where connections can be made to the Orange Line at Roxbury Crossing Station.
- 80 passengers board and 870 alight along Malcom X Boulevard.
- 1,190 passengers alight at Dudley Station, which is the single highest activity stop on the route. Connections can be made to the Silver Line.

Figure 3 | Weekday Inbound Ridership by Stop Map



Outbound ridership patterns are very similar to inbound patterns, with boarding and alighting numbers flipped at each stop. Ridership activity follows similar patterns on Saturdays and Sundays, but with lower volumes overall. In addition, commercial districts in Brookline near Coolidge Corner see more activity on weekends.

The 11 weekday AM outbound school trips have 20 boardings and 260 alightings at the unique stops that the trips serve, with 150 of the alightings at Brighton High School. The two PM inbound school trips from Brighton High School (both at 2:11 PM) pick up only 12 passengers at the school. PM school trip service has since been reconfigured and now has higher ridership.

Ridership by Trip

In both directions, ridership is highest between 6:00 AM and 9:00 AM and between 2:00 PM and 7:00 PM (see Figure 4). On inbound AM peak trips, total ridership per trip exceeds 50 passengers. However, because of high ridership turnover along the route, maximum loads are generally below 40, and mostly well below the MBTA's peak period standard of 52 passengers.

On midday trips, ridership exceeds 50 passengers per trip, but average loads are much lower and on average most passengers are provided with a seat. In the late afternoon and PM peak, total ridership frequently exceeds 80 total passengers and one trip averages 111. Again, because of high turnover, maximum loads are much lower, and on average, all except two trips are at or below the MBTA's maximum load standard. In the evening, ridership stays above 40 passengers per trip until about 11:30 PM and then tapers off, with fewer than 20 passengers at 12:30 AM and only four on the last trip at 1:00 AM.

Outbound AM peak ridership generally ranges from 40 to 100 passengers per trip (see Figure 5). Between 6:00 AM and 7:00 AM, when the 11 extra school trips are provided, ridership per trip is the lowest, with most trips carrying 50 passengers or fewer, and with maximum loads very low for peak period service – generally below 40, many below 30, and one trip as low as 20. From 7:00 AM to 8:00 AM, total ridership per trip jumps from 80 to nearly 100 passengers, and buses become much more crowded. Many trips have average maximum loads that approach the crowding thresholds, and many are just below.

During the midday, ridership exceeds 50 passengers per trip, but as on inbound trips, average loads are much lower. In the late afternoon and PM peak, total ridership per trip ranges from 70 to over 100 passengers. Most maximum loads are below the maximum crowding thresholds. However, a few trips are over, and many are just below. In the evening, ridership stays above 40 total passengers until 10:30 PM. It then tapers off to seven passengers on the 1:05 AM trip.

Figure 4 | Weekday Ridership by Trip: Inbound

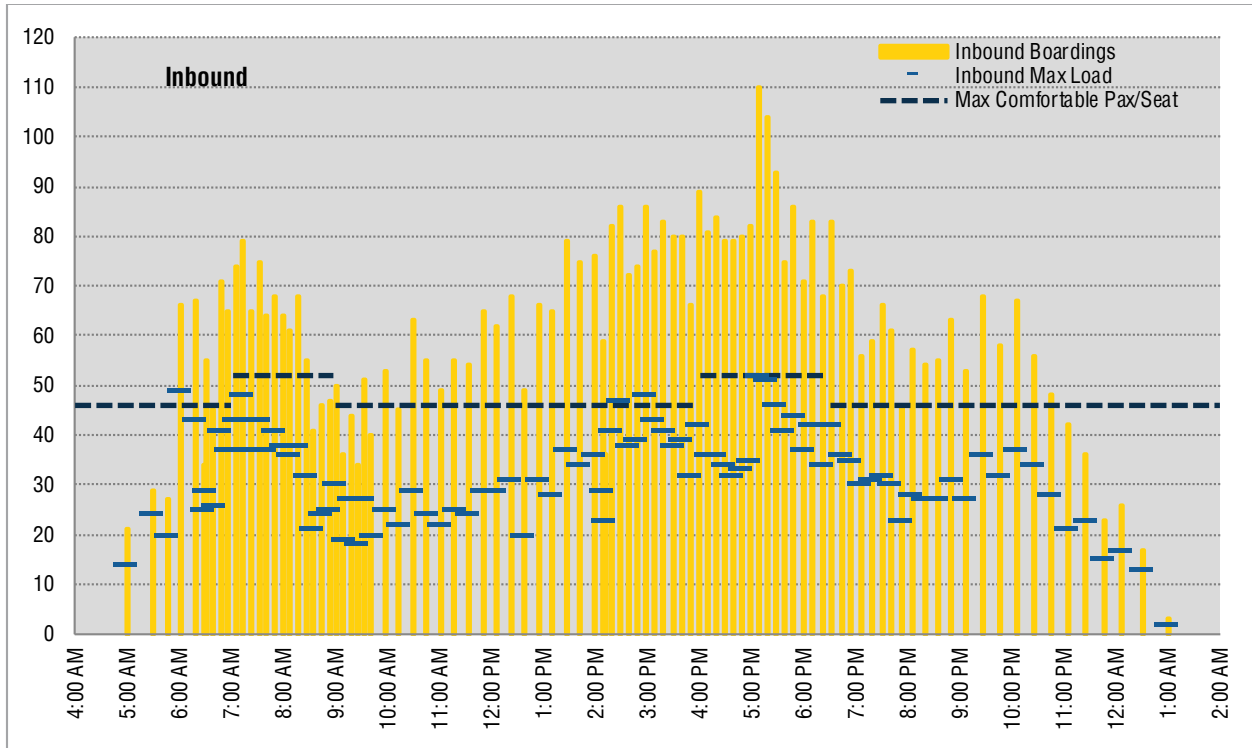
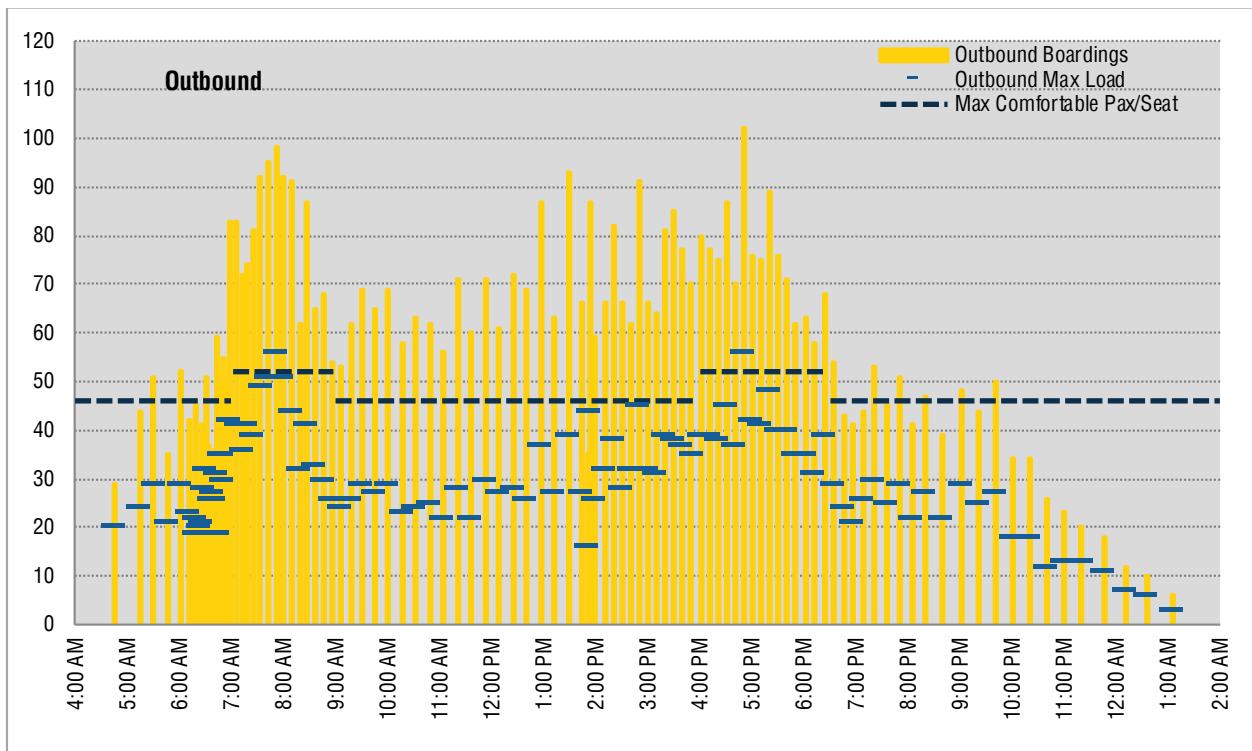


Figure 5 | Weekday Ridership by Trip: Outbound



On Saturdays, ridership is highest during the middle of the day. Inbound service begins with low ridership on the first two trips, and then increases steadily to a peak of over 90 passengers per trip at around 3:30 PM, then declines to around 50 at around 11:00 PM (see Figure 6). Ridership then falls off more sharply to seven on the last trip at 1:00 AM.

Saturday outbound ridership increases more quickly to over 40 passengers per trip by 8:30 AM, and then to nearly 90 at around 2:00 PM (see Figure 7). It then declines to 40 to 50 passengers at 7:30 PM and then finally fewer than five passengers by the end of service. On average, all trips operate within maximum load standards. However, a few trips approach the maximum and there is likely overcrowding during irregular operations.

Sunday ridership patterns are similar to those on Saturdays, with lower but still high ridership per trip (see Figure 8 and Figure 9). There is one inbound trip at 3:19 PM with passenger loads that exceed MBTA standards.

Figure 6 | Saturday Ridership by Trip: Inbound

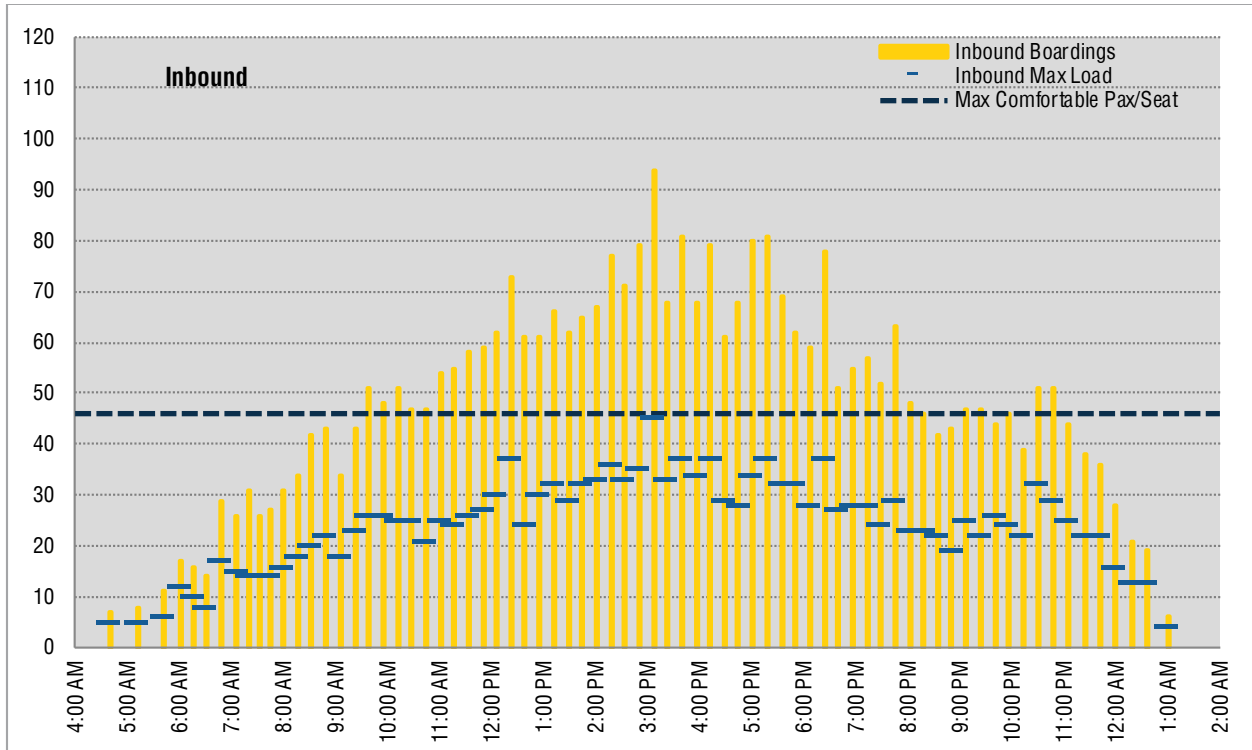


Figure 7 | Saturday Ridership by Trip: Outbound

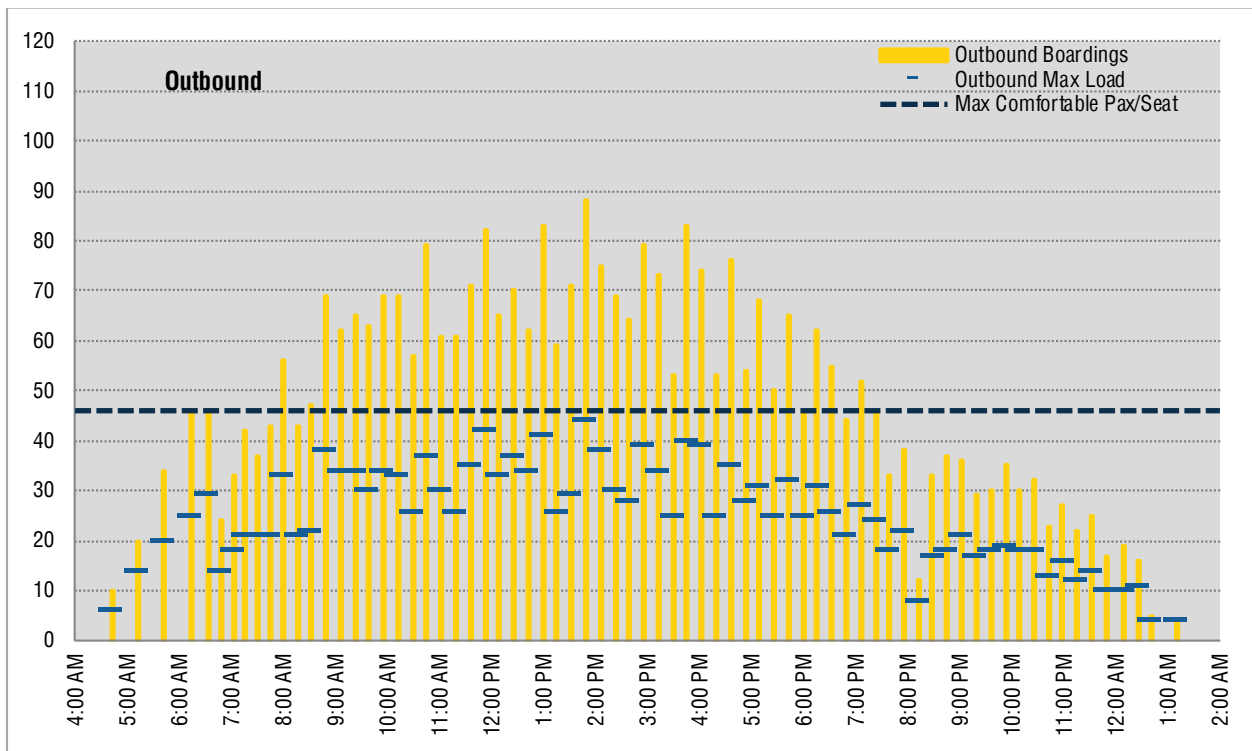


Figure 8 | Sunday Ridership by Trip: Inbound

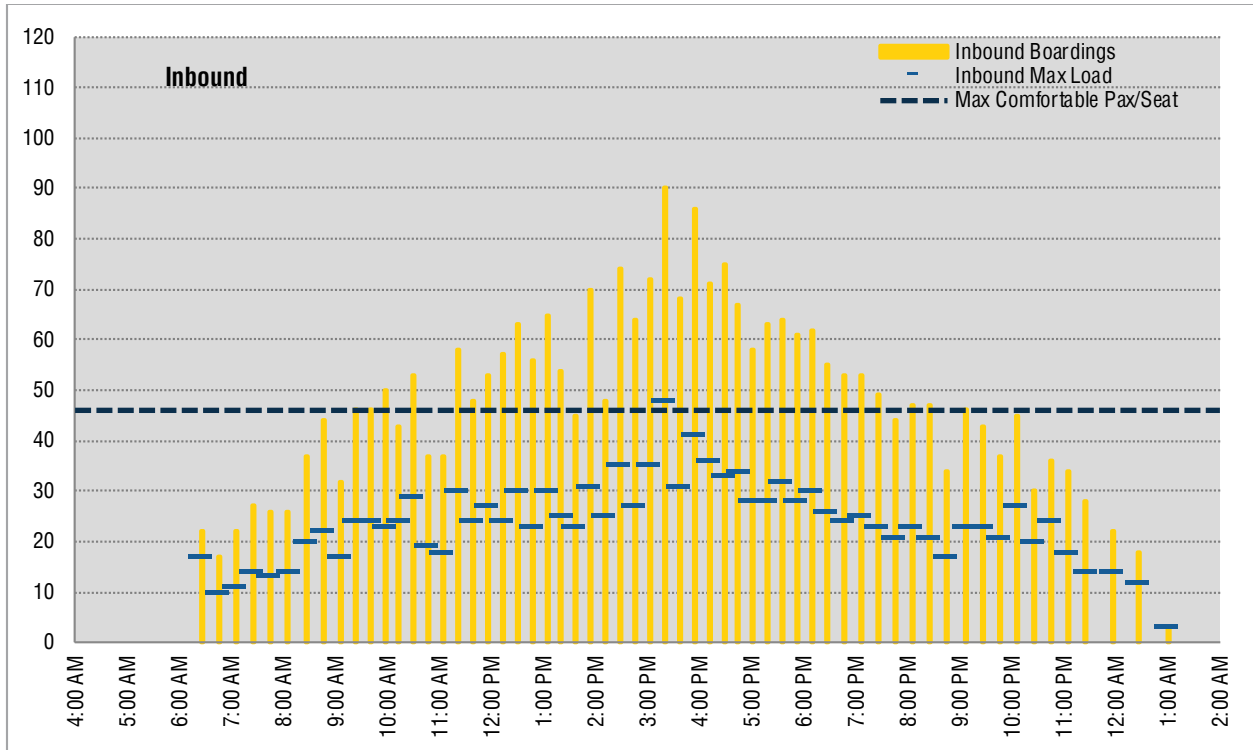
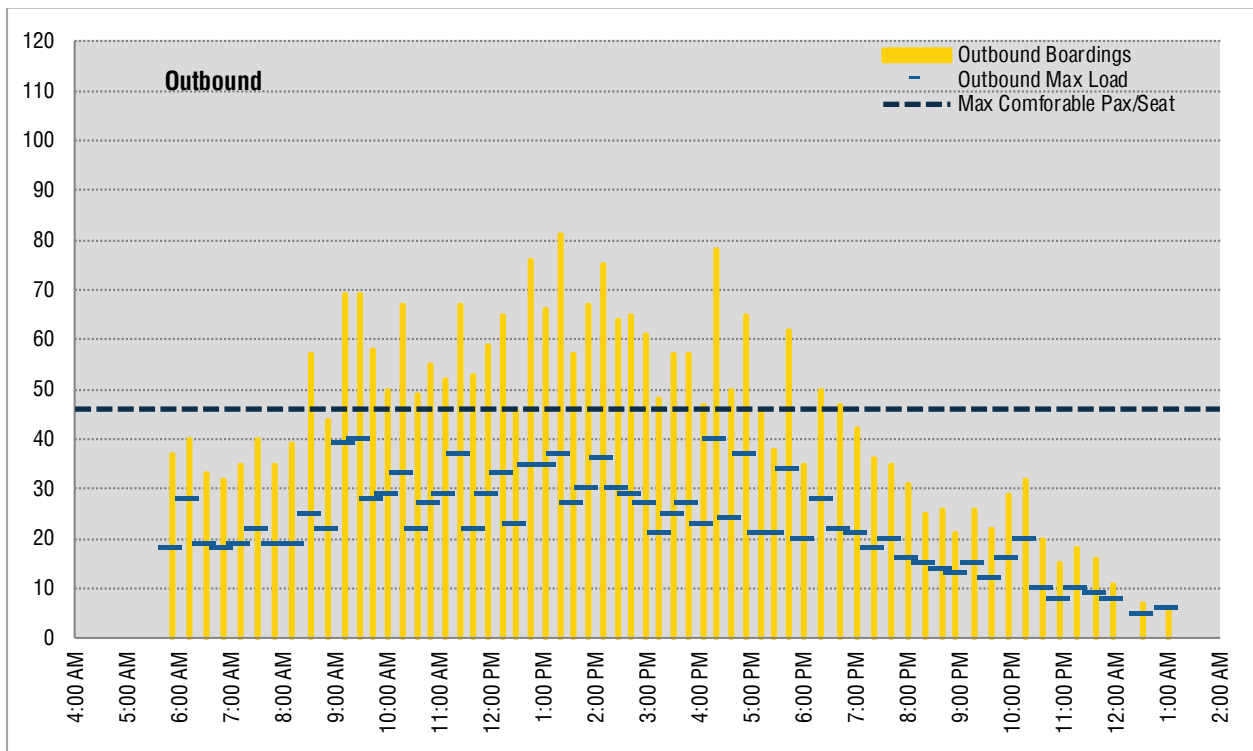


Figure 9 | Sunday Ridership by Trip: Outbound



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. 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 66, 91.3% of passenger minutes are in comfortable conditions, which is just below the minimum standard of 92% and below the target of 96% (see Table 3). Put another way, nearly 9% of passengers are on overcrowded trips. As described above, on average, few trips exceed the crowding/comfort standards. However, actual running times are longer than scheduled running times, and missed trips are a major problem. These factors, and others such as traffic congestion, produce off-schedule service that leads to overcrowding.

Table 3 | Passenger Time Spent Traveling in Comfortable Conditions

	WEEKDAYS	SATURDAYS	SUNDAYS
Minimum Standard	92%	92%	92%
Target	96%	96%	96%
Actual	91.3%	96.5%	97.3%

Reliability and Speed

Reliability

Route 66’s weekday and Saturday reliability of 73% and 74%, respectively, is slightly below the MBTA’s minimum standard of 75% for Key Bus routes (see Table 4). Sunday overall reliability of 75% meets the standard. However, dropped trips, at 2.4%, represent among the highest rate of any MBTA route and are almost certainly a major cause of the high number of overcrowded trips.

Table 4 | Reliability

SERVICE DAY	ORIGIN/MID-ROUTE ON-TIME PERFORMANCE	DESTINATION ON-TIME PERFORMANCE	OVERALL RELIABILITY	DROPPED TRIPS
Monday-Friday	72%	84%	73%	2.4%
Saturday	73%	86%	74%	-
Sunday	73%	92%	75%	-

Route 66 weekday service experiences moderate and sometimes significant differences between scheduled and actual running times, which also negatively impacts on-time performance (see Figure 10). With the exception of service after 10:00 PM, actual inbound running times are generally five minutes to as long as 15 minutes longer than scheduled times. During the morning and afternoon peak period, when inbound frequencies and ridership are highest, trips run an average of more than 10 minutes longer than scheduled. Outbound trips generally operate closer to scheduled running times throughout the day, with exceptions during the middle of the PM peak period and between 9:00 PM and 10:00 PM (see Figure 11).

Figure 10 | Scheduled & Median Travel Time by Trip: Route 66 Inbound

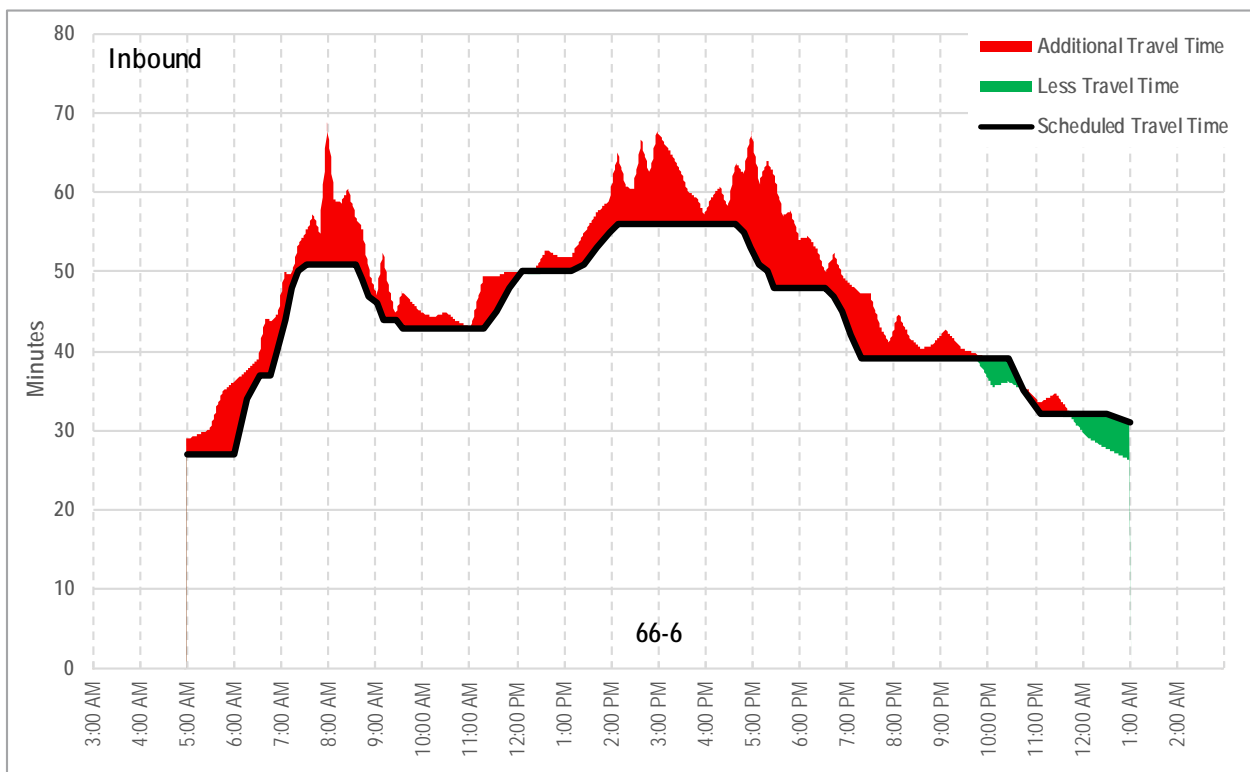
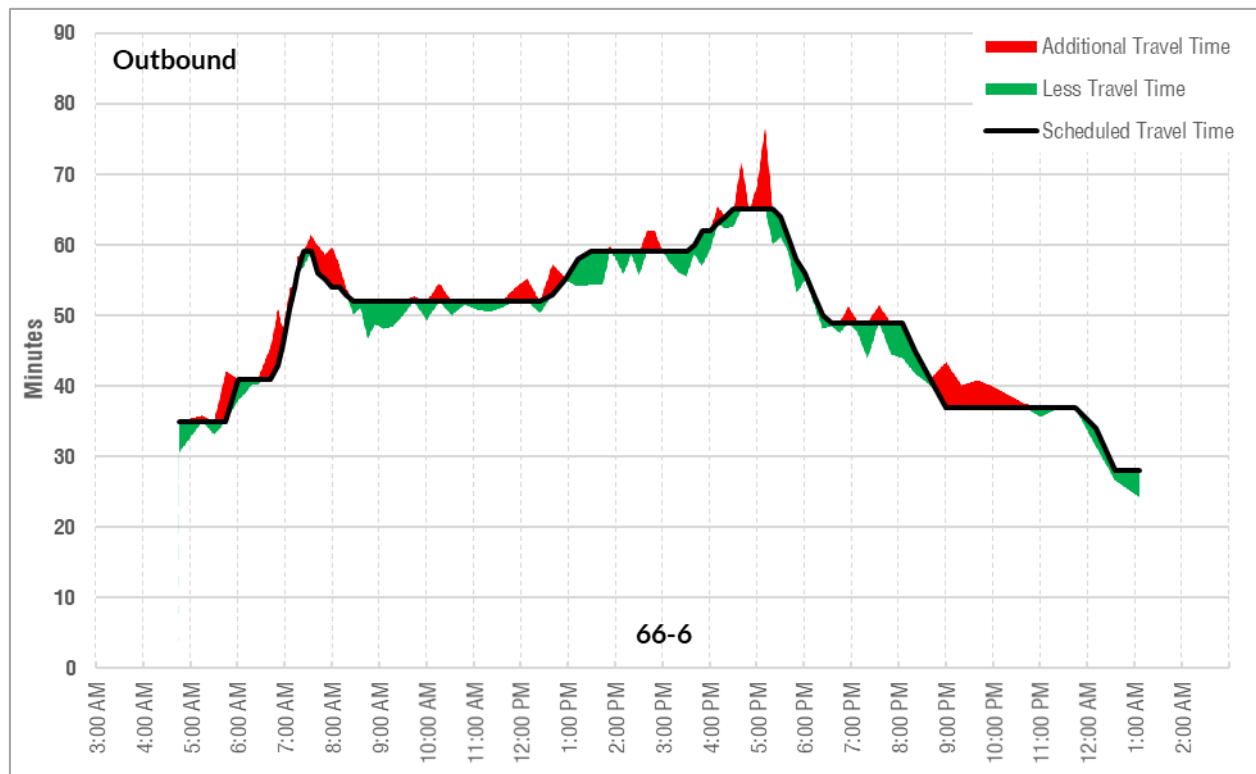


Figure 11 | Scheduled & Median Travel Time by Trip: Route 66 Outbound



Stop Spacing

On average, there are nearly eight stops per mile on Route 66, which is above the MBTA's guideline for Key Bus routes. The high number of stops slows service and degrades reliability. Stops are too closely spaced along the entirety of the route, but especially so in Union Square, along Huntington Avenue, and along Tremont Street and Malcolm X Boulevard between the Green Line E Branch and Dudley Station.

Summary

Route 66 is one of the most important bus routes in the MBTA system, providing unique crosstown service through very high demand areas. It provides very frequent service for long hours and it is the MBTA's second highest ridership route. Major issues are high levels of overcrowding, slow service, and below standard reliability (although only slightly so).