

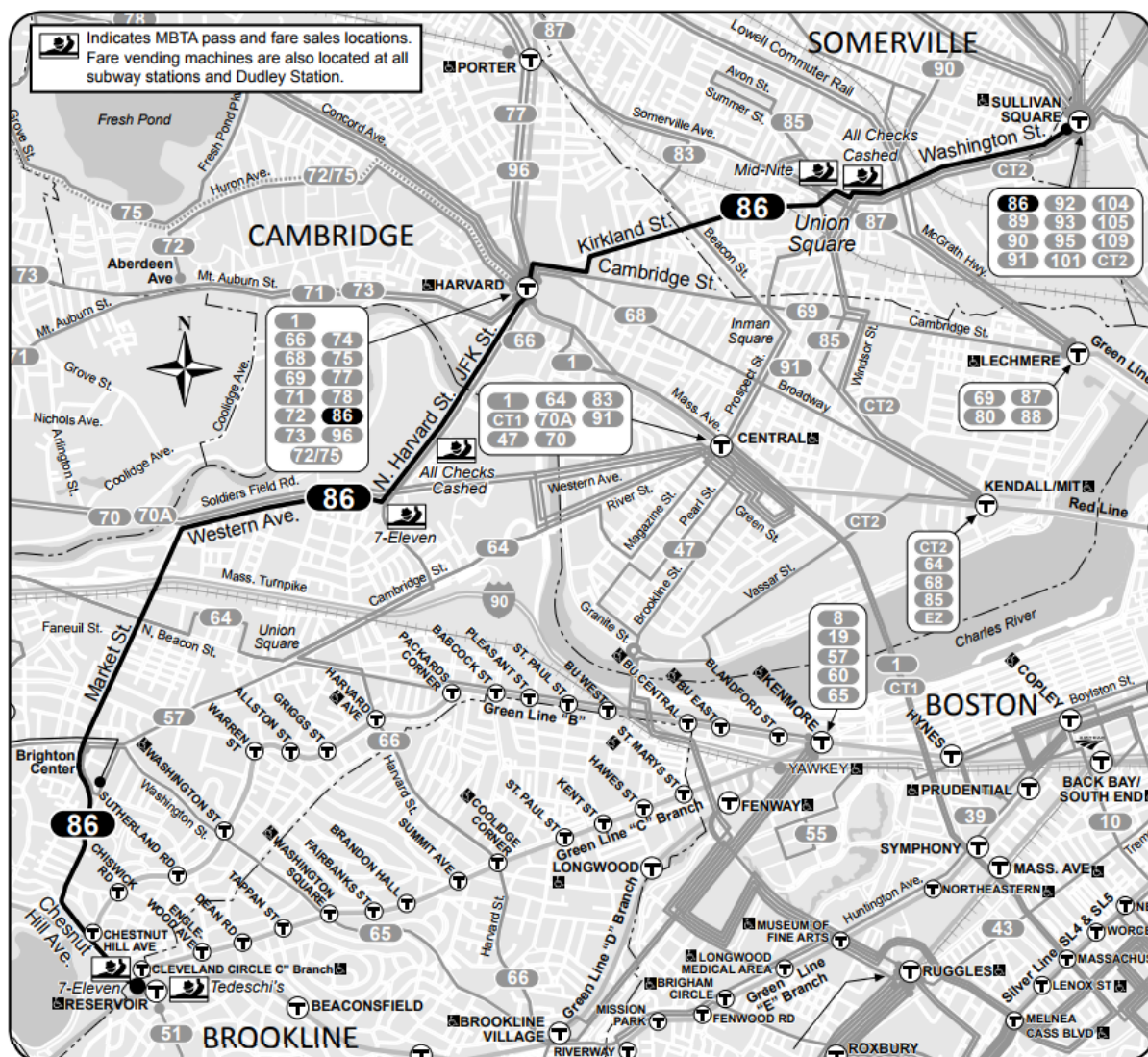
Route 86

Sullivan Square Station – Reservoir Station

Route Overview

Route 86 Sullivan Square Station – Reservoir Station is a Local crosstown route that operates between Reservoir Station and Sullivan Station via Allston/Brighton, Harvard Square and Somerville’s Union Square (see Figure 1). Service operates primarily via Chestnut Hill Avenue, Market Street, Western Avenue, North Harvard Street/JFK Street, Kirkland Street, Washington Street, and Cambridge Street.

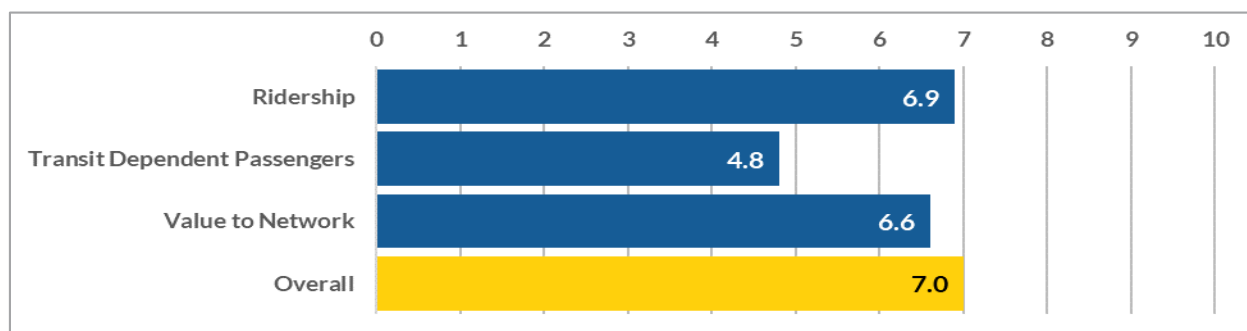
Figure 1 | Service Map



Network Importance

Route 86 is an important route in the MBTA bus network (see Figure 2). On a relative scale of 0 to 10, the route rates 6.9 in terms of ridership, 4.8 in terms of transit dependent ridership, and 6.6 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 7.0.

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



Service Overview

Schedule

Route 86 operates service throughout the day seven days a week (see Table 1). On weekdays, Route 86 operates from 5:00 AM to 12:40 AM. From the beginning of service through the end of the AM peak, the route provides service every eight to 20 minutes. During the midday, service becomes irregular, with gaps in service as long as 40 minutes. During the PM peak, service operates every 12 to 22 minutes, and in the evening and at night it operates every 22 to 45 minutes.

On Saturdays, service operates from 5:00 AM to 12:35 AM, which is essentially the same span of service as on weekdays. However, service is much less frequent, at approximately 30 minutes for most of the morning, slightly less than every 30 minutes for most of the afternoon, and then every 45 minutes until 9:30 PM and then every 75 to 80 minutes until the end of service.

On Sundays, service operates from 7:30 AM to 9:35 PM. Most morning service operates every 30 minutes, most afternoon service operates every 40 minutes, and evening service begins at every 40 minutes and then declines to 75 to 80 minutes.

Route 86 meets the MBTA's span of service standards for local routes on all days. It also meets the service frequency standards most of the time, but not on Saturday and Sunday nights when service operates as infrequently as 75 or 80 minutes versus the standard of 60 minutes. In addition, although the route mostly meets the frequency standards, it

should be noted that frequencies are low considering the route’s very high ridership (which is discussed further below).

Table 1 | Schedule Statistics

SERVICEDAY	SPAN OF SERVICE	FREQUENCY (RANGE)	FREQUENCY (AVERAGE)	DAILY TRIPS (INBOUND/OUTBOUND)
Monday-Friday	5:00 AM to 12:40 AM			56/55
Sunrise	5:00 AM to 5:59 AM	12 - 20	17	4/1
Early AM	6:00 AM to 6:59 AM	8 - 12	10	6/4
AM Peak	7:00 AM to 8:59 AM	8 - 20	14	8/9
Midday Base	9:00 AM to 1:29 PM	13 - 40	26	11/11
Midday School	1:30 PM to 3:59 PM	15 - 20	19	8/7
PM Peak	4:00 PM to 6:29 PM	12 - 22	16	9/9
Evening	6:30 PM to 9:59 PM	22 - 45	33	6/9
Late Evening	10:00 PM to 11:59 PM	40 - 45	42	3/3
Night	12:00 AM to 12:40 AM	40	40	1/2
Saturday	5:00 AM to 12:35 AM	25 - 80	34	34/34
Sunday	7:30 AM to 9:35 PM	30 - 80	52	22/22

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

Service Patterns

Route 86 operates along the same alignment on all trips (see Table 2).

Table 2 | Service Patterns

PATTERN	ORIGIN	DESTINATION	UNIQUE FEATURE	TRIPS PER WKD	TRIPS PER SAT	TRIPS PER SUN
INBOUND				56	34	22
86.0	Sullivan Station – Lower Busway	Chestnut Hill at Reservoir	Departs from lower busway	56	34	22
OUTBOUND				55	34	22
86.0	Chestnut Hill at Reservoir	Sullivan Station – Upper Busway	-	55	34	22

Ridership

Route 86 is a high ridership route that carries an average of 6,150 passengers on weekdays, 3,040 on Saturdays, and 1,840 on Sundays. In terms of weekday ridership, it is the MBTA’s 18th highest ridership route and carries more passengers than four Key Bus routes.

Ridership by Stop

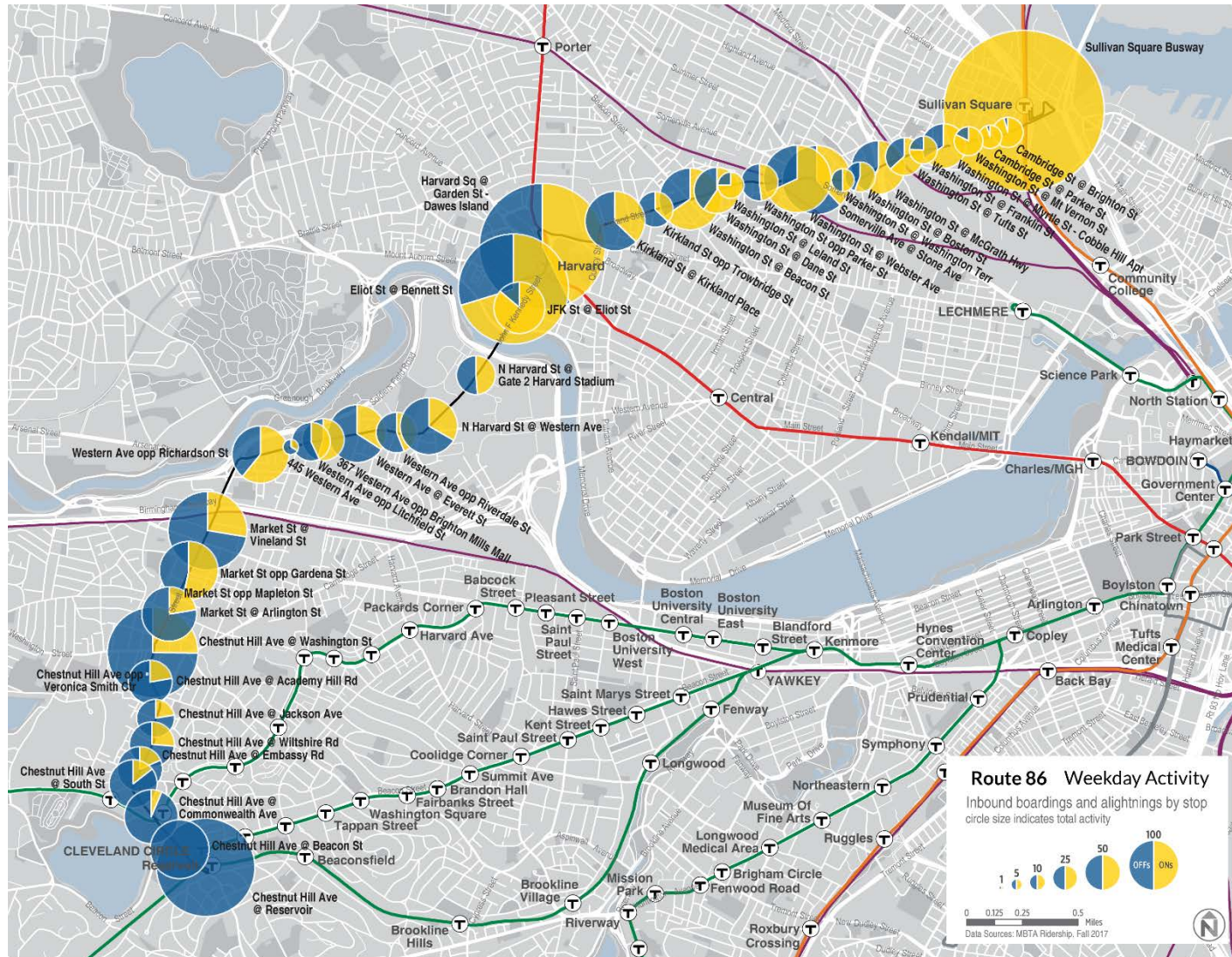
Route 86 has high ridership along its entire length, and particularly where it connects with rapid transit lines, in Union Square, Washington Street at Beacon Street in Cambridge,

Lower Allston, and Brighton Center. On weekday inbound trips from Sullivan Station (see Figure 3):

- 900 passengers board at Sullivan Station.
- 270 passengers board and 120 alight at the six stops along Cambridge Street and Washington Street between Sullivan Station and Somerville's Union Square.
- 230 passengers board and 210 alight at the four stops in Union Square.
- 100 passengers board and 70 alight at the four stops along Washington Street between Union Square and Beacon Street.
- 100 passengers board and 60 alight at Washington Street at Beacon Street.
- 70 passengers board and 130 alight at the two stops along Kirkland Street between Beacon Street and Harvard Square.
- 630 passengers board and 520 passengers alight in Harvard Square.
- 170 passengers board and 140 passengers alight at the three stops along JFK Street and North Harvard Street.
- 230 passengers board and 260 alight at the six stops along Western Avenue.
- 250 passengers board and 400 alight at the four stops along Market Street between Beacon Street and Brighton Center. The highest activity stop is Market Street at Vineland Street, near WGBH, where there are 70 boardings and 180 alightings.
- 90 passengers board and 250 alight at Chestnut Hill Avenue at Washington Street in Brighton Center.
- 80 passengers board and 320 alight at the six stops along Chestnut Hill Avenue between Brighton Center and Chestnut Hill Avenue Station.
- 110 passengers alight at the stop at Chestnut Hill Avenue at Commonwealth Avenue, where connections can be made with the Green Line B Branch at Chestnut Hill Avenue Station.
- 140 passengers alight at the stop at Chestnut Hill Avenue at Beacon Street, where connections can be made with the Green Line C Branch at Cleveland Circle Station.
- 400 passengers alight at the final stop at Reservoir Station, where connections can be made with the Green Line D Branch.

On Saturdays and Sundays, ridership patterns along Route 86 are very similar to the weekdays, but with much lower passenger volumes.

Figure 3 | Weekday Inbound Ridership by Stop Map



Ridership by Trip

On weekdays, Route 86 has very strong peak period ridership in both directions, when ridership per trip frequently exceeds 80 passengers (see Figure 4 and Figure 5). In spite of high levels of ridership turnover, many AM peak outbound trips exceed the MBTA's loading standards, and others come close. Midday ridership is significantly lower, but still exceeds 40 passengers on most trips. Midday ridership levels are also likely depressed by the infrequent service that is provided (as infrequent as every 40 minutes). Evening and night ridership is higher, with 40 to 50 passengers on most trips through nearly 10:30 PM, and probably also somewhat depressed by infrequent service. Ridership then drops off slowly through the end of service.

On Saturdays, ridership on each trip remains consistent throughout the day, with outbound trips averaging about 55 passengers per trip and inbound trips averaging about 45 passengers per trip (see Figure 6 and Figure 7).

On Sundays, ridership per trip is lower, with AM trips averaging about 30 passengers inbound and 40 passengers outbound, and PM trips averaging about 40 passengers in each direction (see Figure 8 and Figure 9).

Figure 4 | Weekday Ridership by Trip: Inbound

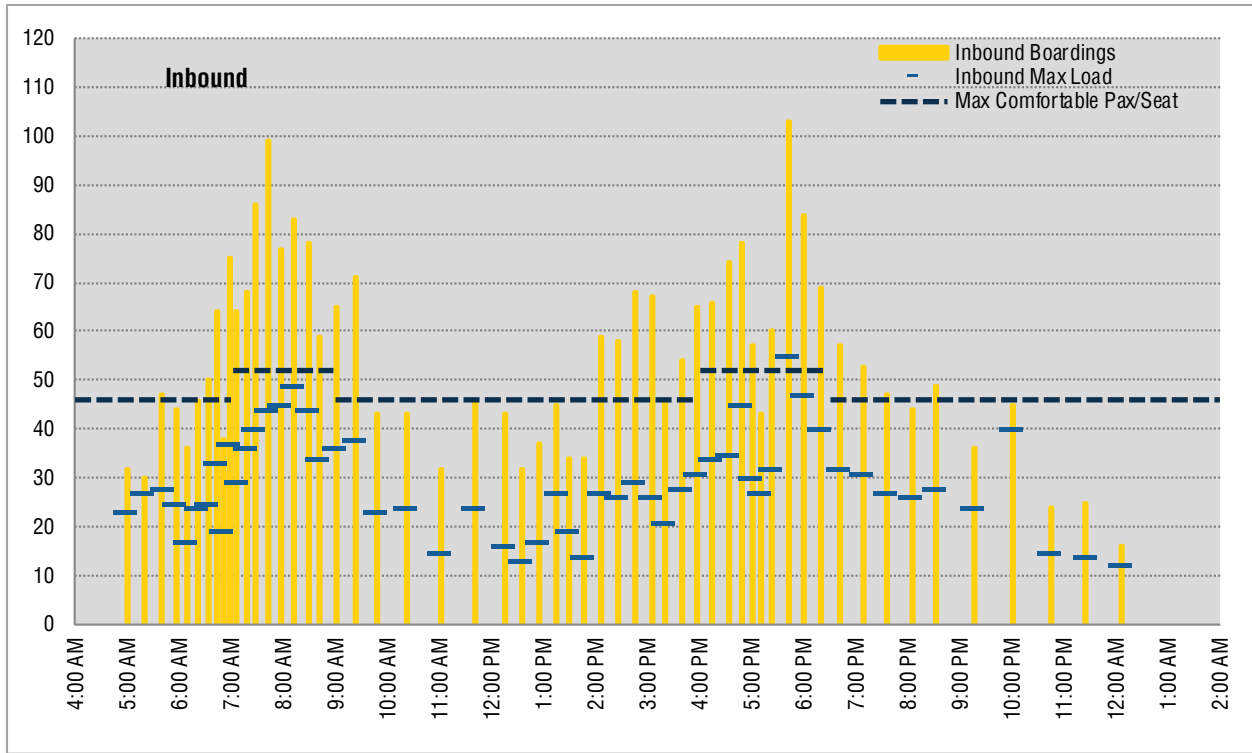


Figure 5 | Weekday Ridership by Trip: Outbound

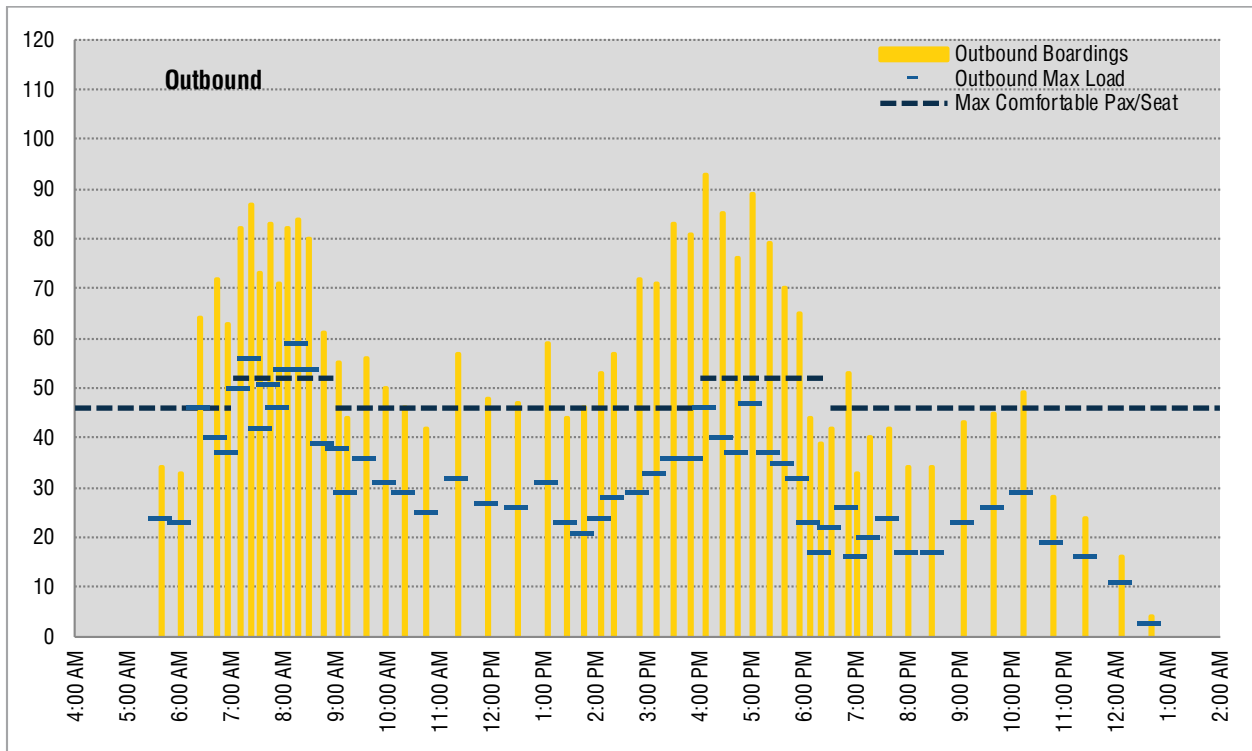


Figure 6 | Saturday Ridership by Trip: Inbound

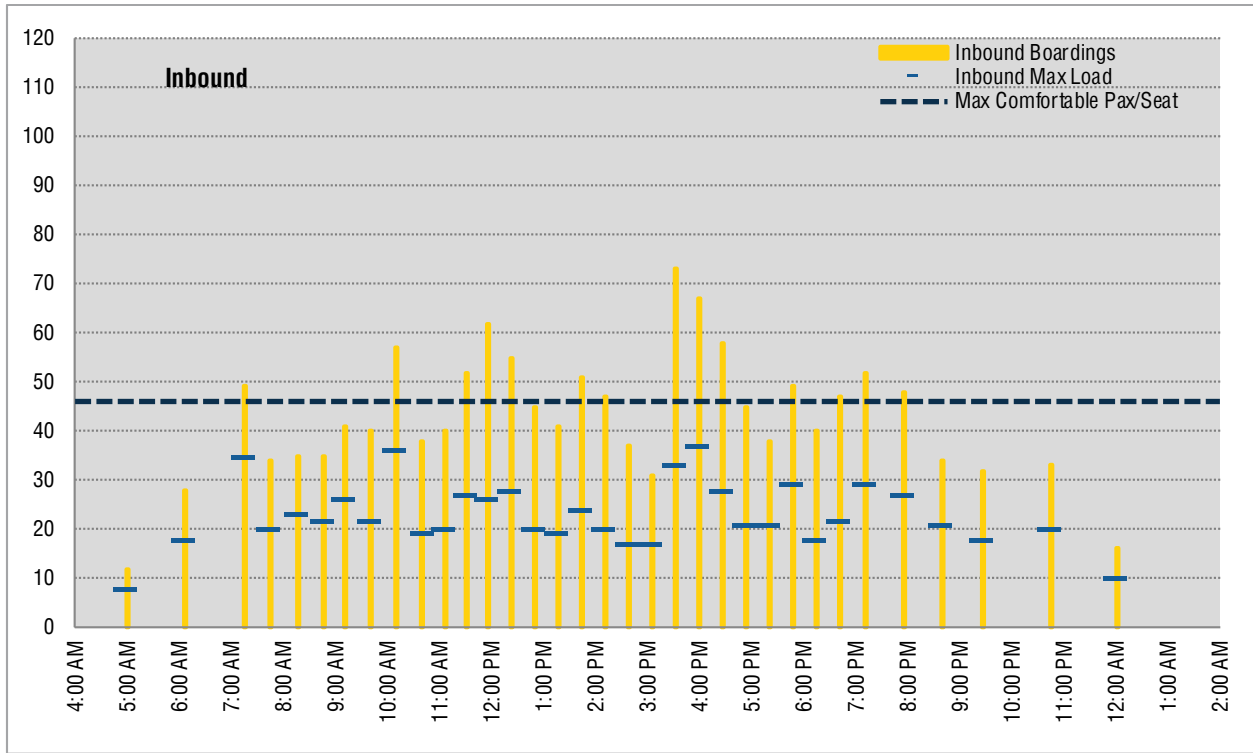


Figure 7 | Saturday Ridership by Trip: Outbound

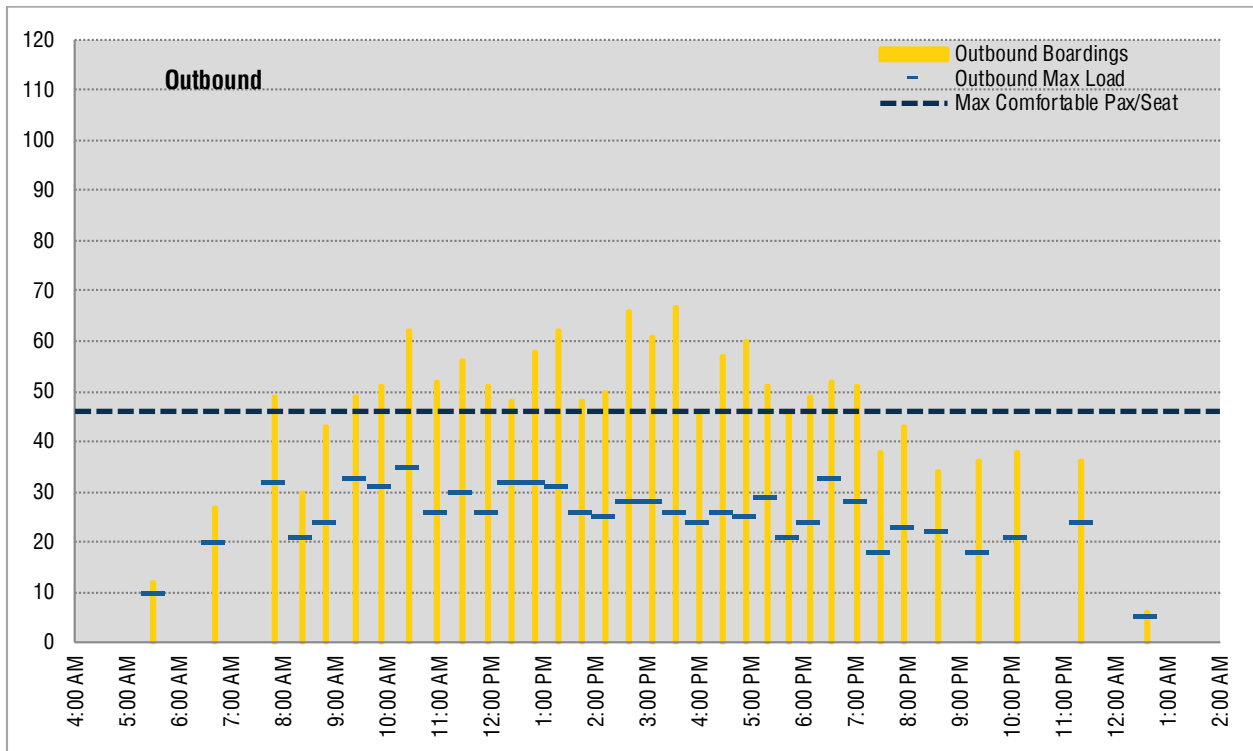


Figure 8 | Sunday Ridership by Trip: Inbound

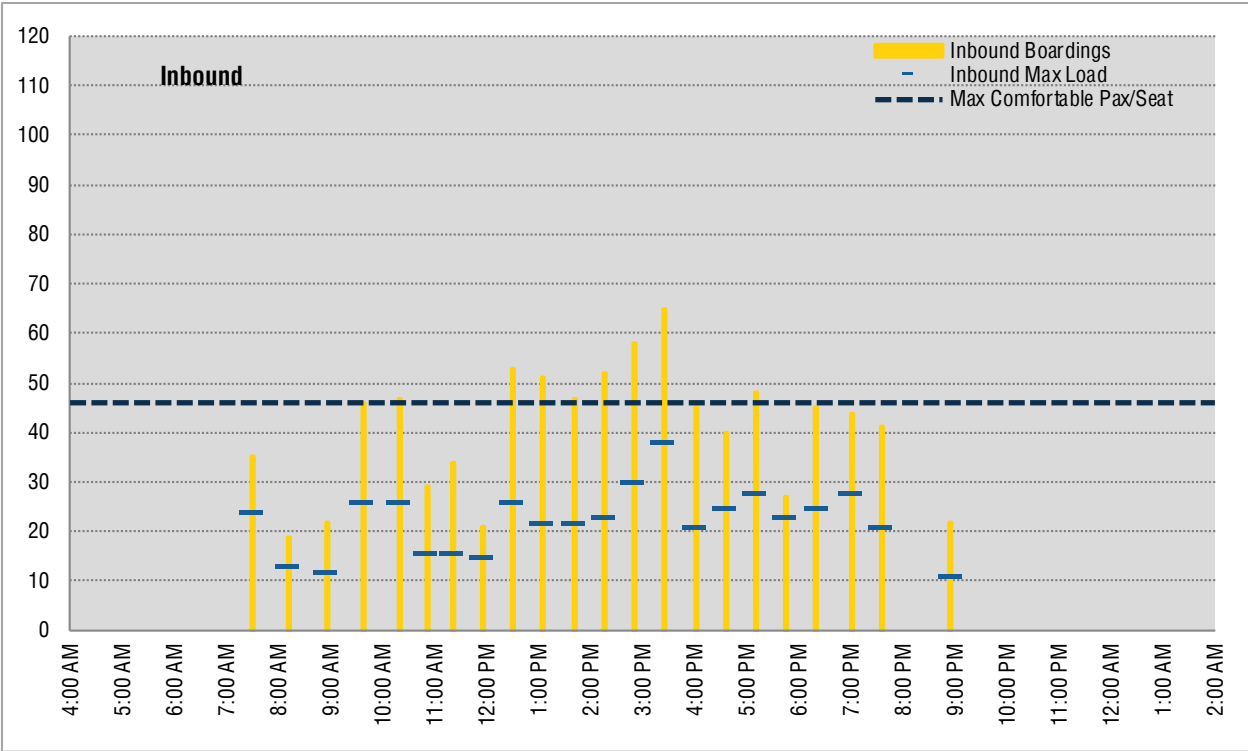
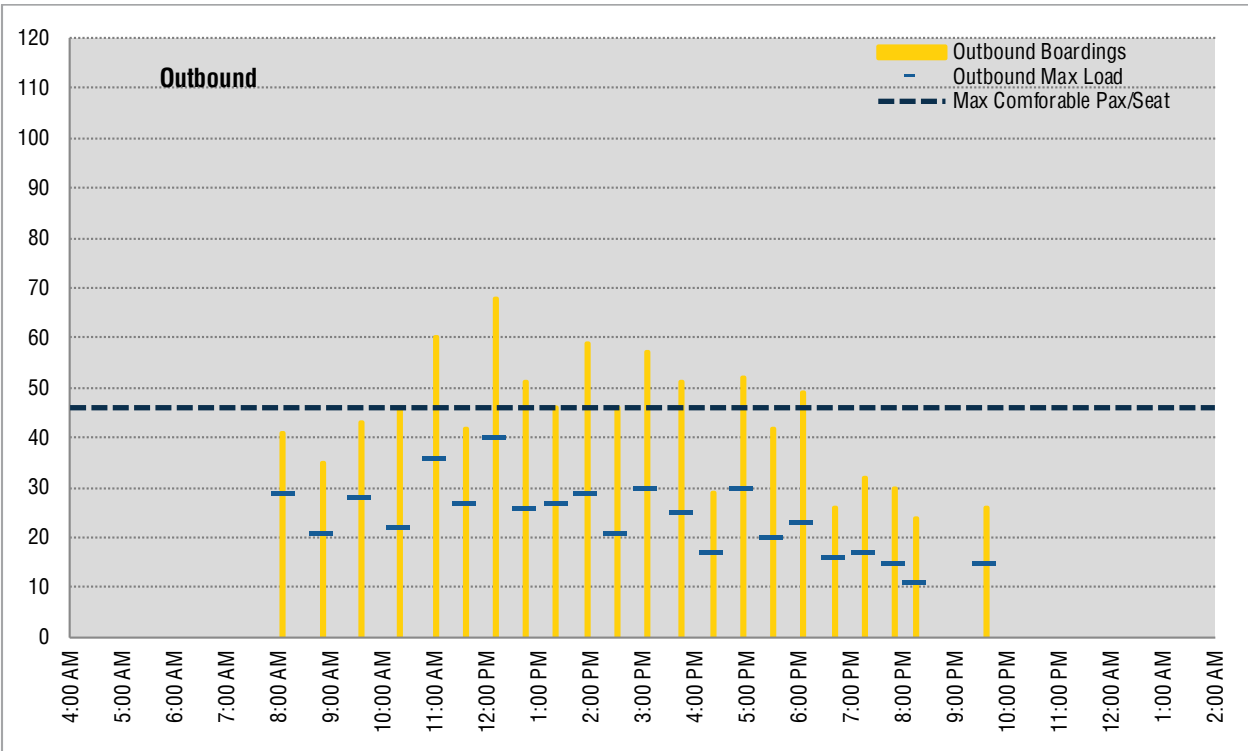


Figure 9 | Sunday Ridership by Trip: Outbound



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. Comfortable conditions are considered to be 140% or less of seated capacity during high volume periods and 125% or less during other periods.

On weekdays, 92.7% of weekday passenger minutes are in comfortable conditions, which is above the minimum standard, but below the target of 96% (see Table 3). On Saturdays and Sundays, comfort levels exceed 98%, and are above the target.

Table 3 | Passenger Time Spent Traveling in Comfortable Conditions

	WEEKDAYS	SATURDAYS	SUNDAYS
Minimum Standard	92%	92%	92%
Target	96%	96%	96%
Actual	92.7%	98.7%	98.1%

Reliability and Speed

Reliability

Route 86's overall on-time performance is 61% on weekdays, 49% on Saturdays, and 59% on Sundays (see Table 4). All of these figures are well below the MBTA's minimum standard of 70% and the target of 75% for local routes.

Table 4 | Reliability

SERVICEDAY	ORIGIN/MID-ROUTE ON-TIME PERFORMANCE	DESTINATION ON-TIME PERFORMANCE	OVERALL RELIABILITY	DROPPED TRIPS
Monday-Friday	61%	65%	61%	0.5%
Saturday	48%	54%	49%	-
Sunday	58%	65%	59%	-

Running Times

A primary cause of poor reliability is that actual running times are significantly longer than scheduled times. Actual inbound running times are longer throughout the day, and up to 10 minutes longer between 7:30 AM and 9:30 AM and 2:30 PM and 3:00 PM (see Figure 10). Outbound running times are longer than scheduled times at the start of service, between 9:30 AM and 12:00 PM, around 7:00 PM, and after 10:00 PM (see Figure 11).

Figure 10 | Scheduled & Median Travel Time by Trip: Route 86 Inbound

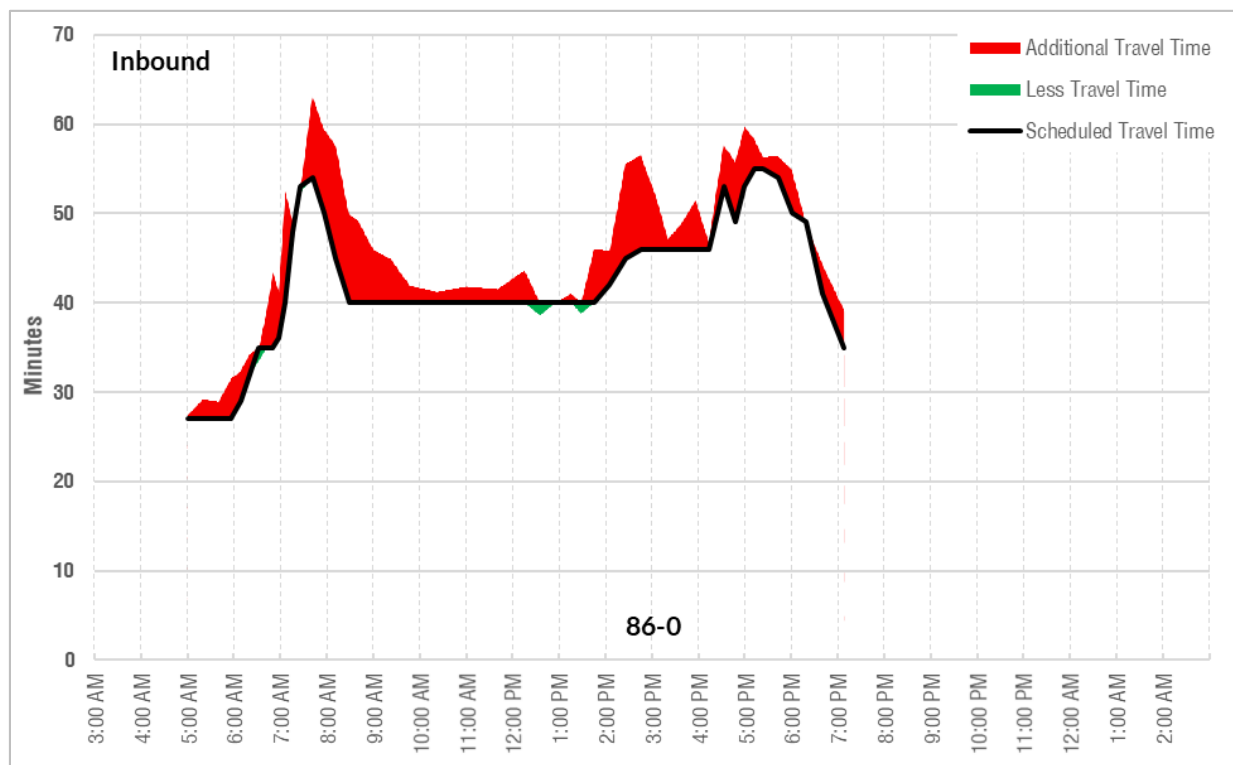
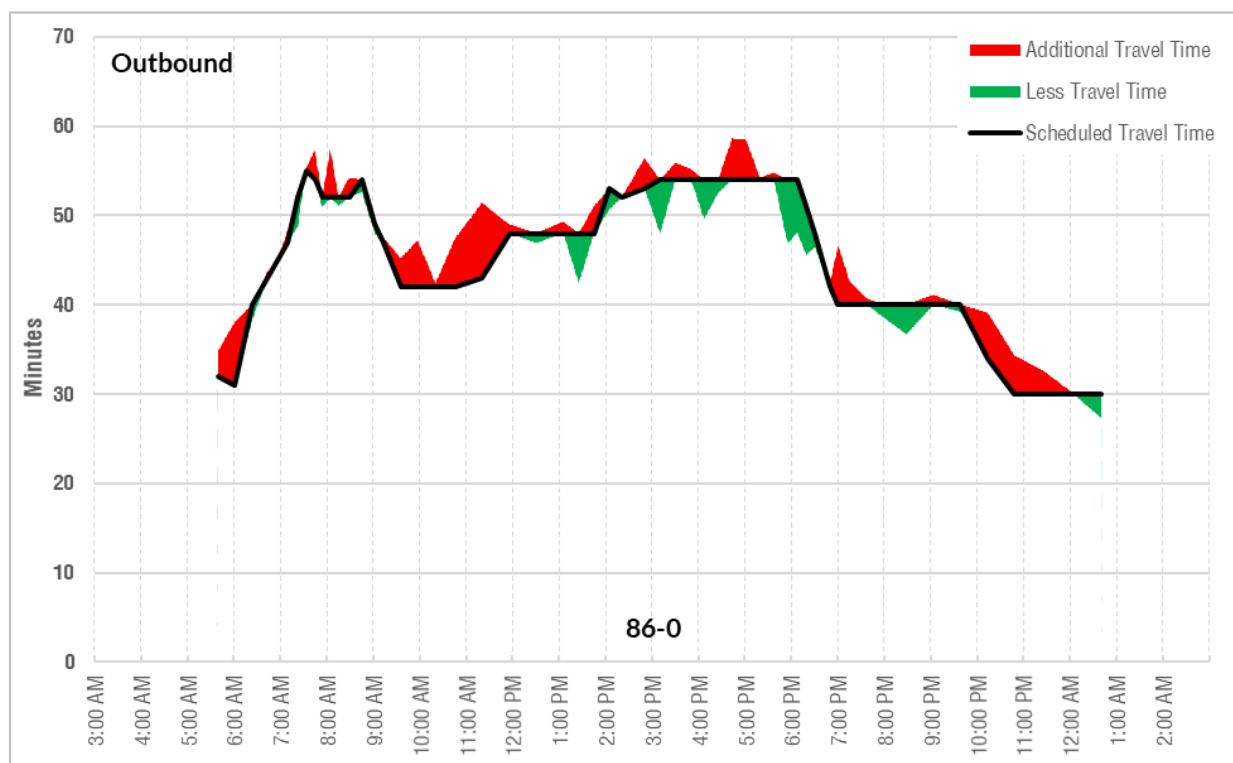


Figure 11 | Scheduled & Median Travel Time by Trip: Route 86 Outbound



Stop Spacing

A third factor contributing to poor reliability is that stops are spaced too close together in some areas. In these cases, fewer passengers board at each stop and most trips do not serve every stop along the route. This makes it difficult to run reliable service, as it is impossible to determine how much time a bus will spend serving stops on a given trip. When stops are spaced evenly and farther apart, buses will serve most bus stops on every trip and service will be faster and more reliable.

On average, Route 86 stops are 800 feet apart, or slightly over six per mile, which is at the high end of the four to seven stops per mile recommended for urban areas under MBTA guidelines. However, the spacing is inconsistent, with some stops very close together:

- The last half mile of Route 86 outbound between McGrath Highway and Sullivan Square has seven stops, with an average spacing of 380 feet.
- 400 feet separate each of the four stops in Somerville Union Square (Washington Street at Boston Street, Washington Street at Washington Terrace, Somerville Avenue at Stone Avenue, and Washington Street at Webster Avenue).
- The distance between Washington Street at Leland Street and Washington Street at Dane Street is 355 feet.
- 290 feet separate Western Avenue opposite Litchfield Street and the stop at 445 Western Avenue, resulting in a large ridership imbalance, with about 120 passengers using the former stop and 20 passengers using the latter stop.
- An average of 530 feet separate each of the 11 stops between Market Street at Vineland Street and Chestnut Hill Avenue at South Street.

Summary

Route 86 is a very high ridership crosstown route that provides very straightforward service and important connections to radial services. However, it does have a number of weaknesses that detract from its effectiveness:

- A poor balance of service to demand, with infrequent service provided during some periods in spite of high ridership (Route 86 is the MBTA's 18th highest ridership route in terms of weekday ridership, but ranks 37th in terms of the number of weekday trips provided)
- Poor on-time performance
- Slow service