

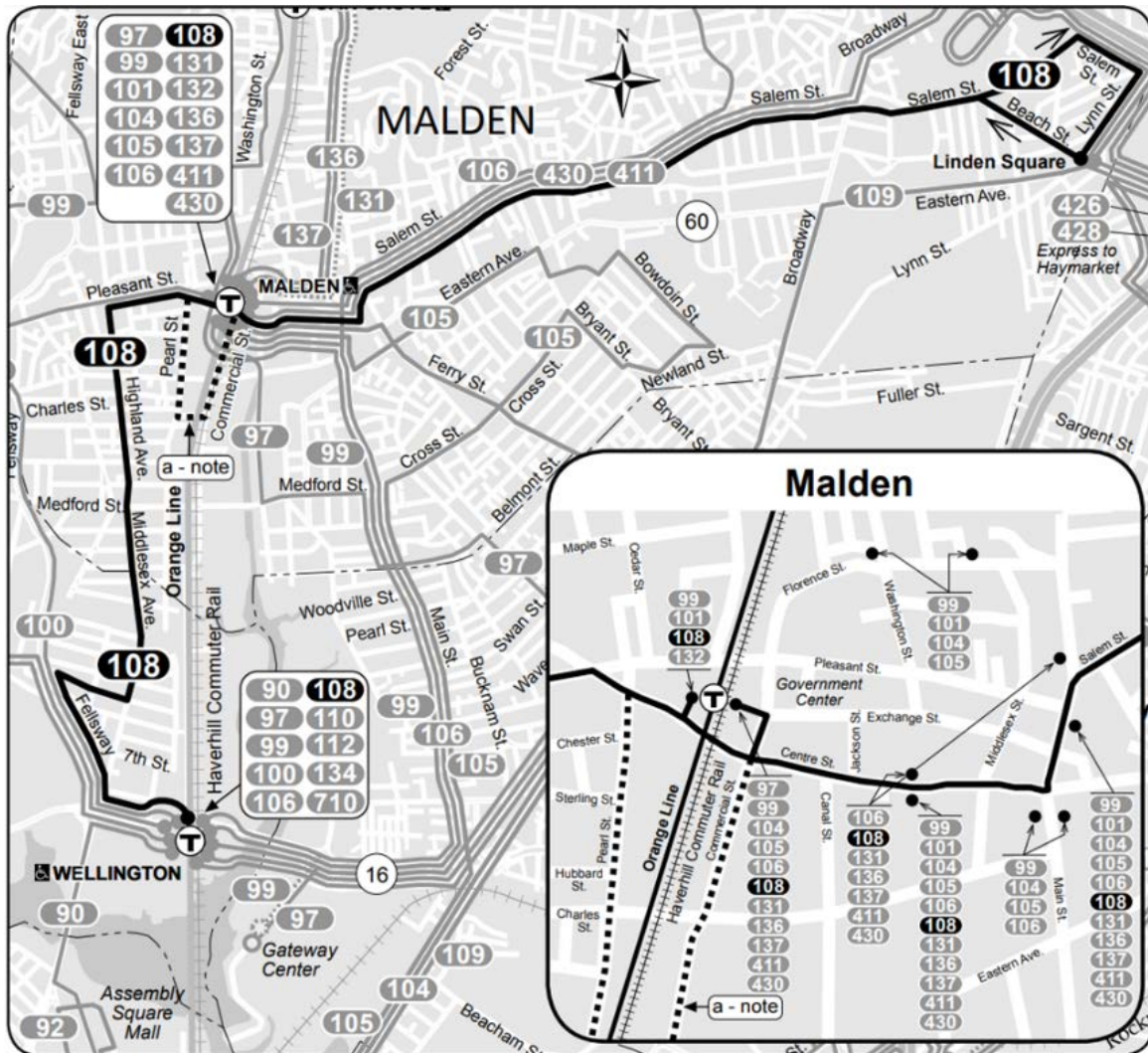
# Route 108

## Linden Square – Wellington Station

### Route Overview

Route 108 Linden Square – Wellington Station is a local route that connects Linden Square with Malden Center Station via Salem Street, and then continues south to Wellington Station via Middlesex Avenue. Route 108 is the primary transit service on the high ridership Salem Street corridor in Malden, complemented by Routes 106 Lebanon Street, Malden-Wellington, 411 Malden Center-Revere/Jack Satter House, and 430 Malden Center-Saugus Center.

Figure 1 | Route Map

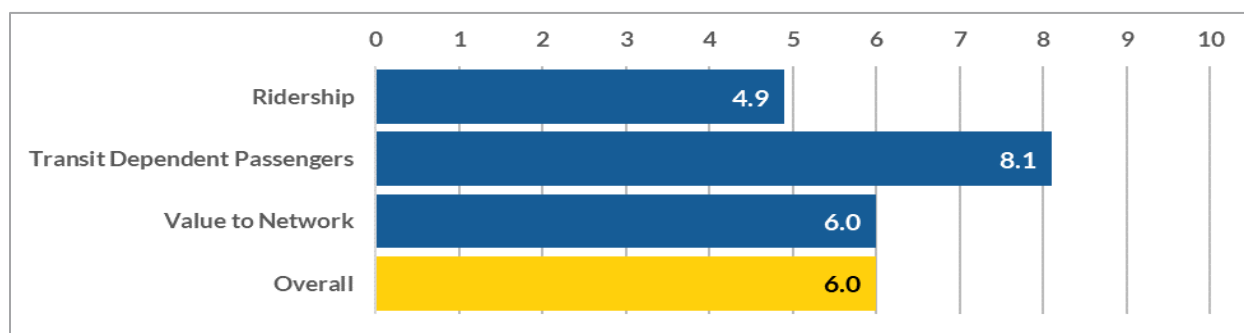


Route 108 serves two distinct transit markets. On Salem Street in Malden, Route 108 connects residential neighborhoods to Malden Center Station, where customers can transfer to the Orange Line and local bus routes to Everett, Medford, and Melrose. Route 108 then continues along Highland Avenue and Middlesex Avenue to Wellington Station, serving residential neighborhoods and several local shopping centers.

## Network Importance

Route 108 is of moderate importance within the overall system (see Figure 2). On a scale of 0 to 10, the route rates 4.9 in terms of ridership, 8.1 in terms of transit dependent ridership, and 6.0 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 destination, and the number of transferring passengers). Its overall score, which gives a 70% weighting to overall ridership and a 15% weight to both other measures, is 6.0.

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



## Service Overview

### Schedule

Route 108 provides moderately frequent service from early morning until after midnight on weekdays and Saturdays (see Table 1). On weekdays, it operates from 5:10 AM to 1:27 AM, with trips every 10 to 20 minutes during the AM and PM peaks. Weekday early morning and evening service is significantly less frequent, with trips running every 30 to 60 minutes. Route 108 operates with a similar span of service on Saturday, with trips every 30 minutes before noon and every 35 to 60 minutes in the afternoon and evening. Sunday service is significantly more limited, with hourly trips between 9:10 AM and 7:08 PM.

Route 108, Route 106 Lebanon Street, Malden-Wellington, Route 411 Malden Center-Revere/Jack Satter House, and Route 430 Malden Center-Saugus Center combine to provide high frequency service on Salem Street in Malden. During the weekday AM Peak, trips depart Lebanon Street at Salem Street for Malden Center Station every 5 minutes on average.

**Table 1 | Schedule Statistics**

SERVICE DAY	SPAN OF SERVICE	FREQUENCY (RANGE)	FREQUENCY (AVERAGE)	DAILY TRIPS (INBOUND/OUTBOUND)
<b>Monday-Friday</b>	<b>5:10 AM to 1:27 AM</b>			<b>45/41</b>
Sunrise	5:10 AM to 5:59 AM	25	25	2/1
Early AM	6:00 AM to 6:59 AM	10 – 35	22	3/3
AM Peak	7:00 AM to 8:59 AM	7 – 25	14	9/6
Midday Base	9:00 AM to 1:29 PM	25 – 45	39	7/7
Midday School	1:30 PM to 3:59 PM	5 – 45	15	10/9
PM Peak	4:00 PM to 6:29 PM	10 – 45	23	6/7
Evening	6:30 PM to 9:59 PM	30 – 60	48	5/4
Late Evening	10:00 PM to 11:59 PM	60	60	2/2
Night	12:00 AM to 1:27 AM	60	60	1/2
<b>Saturday</b>	<b>5:30 AM to 1:22 AM</b>	<b>30 – 60</b>	<b>36</b>	<b>32/31</b>
<b>Sunday</b>	<b>9:10 AM to 7:08 PM</b>	<b>60</b>	<b>60</b>	<b>11/11</b>

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

Route 108 meets the Span of Service and Service Frequency Standards for Local Bus routes during all service days and periods.

### Service Patterns

Pattern 108.6 makes about two-thirds of Route 108 weekday trips and all weekend trips, and runs the full route from Linden Square to Wellington Station via Malden Center Station. There are three additional weekday-only patterns (see Table 2):

- Pattern 108.7 runs some weekday AM and PM peak trips, operating between Linden Square and Malden Center Station, but not continuing on to Wellington Station. These trips run towards Malden Center during the AM peak and towards Linden Square during the PM peak, providing additional service on the most crowded section of the route.
- Pattern 108.1 runs weekday mid-day trips one block south via Pearl Street and Commercial Street instead of continuing straight down Center Street to/from Malden Center Station. This service pattern serves low-density commercial complexes and the Italian-American Citizens Club. These trips serve the busway on the east side of Malden Center Station, rather than the west side busway served by all other patterns.
- Pattern 108.2 makes one weekday outbound school trip, beginning at Malden High School (Salem Street at Sprague Street) and then following the main service pattern to Linden Square.

Table 2 | Service Patterns

PATTERN	ORIGIN	DESTINATION	UNIQUE FEATURE	TRIPS per WKD	TRIPS per SAT	TRIPS per SUN
<b>INBOUND</b>				<b>45</b>	<b>32</b>	<b>11</b>
108.1	Linden Square (Lynn Street at Beach Street)	Wellington Station	Via Pearl Street and Commercial Street	12	-	-
108.6	Linden Square (Lynn Street at Beach Street)	Wellington Station	Primary Pattern	26	32	11
108.7	Linden Square (Lynn Street at Beach Street)	Malden Center Station	Short-turn to Malden Center Station	7	-	-
<b>OUTBOUND</b>				<b>41</b>	<b>31</b>	<b>11</b>
108.1	Wellington Station	Linden Square (Lynn Street at Beach Street)	Via Pearl Street and Commercial Street	11	-	-
108.2	Malden High School (Salem Street at Sprague Street)	Linden Square (Lynn Street at Beach Street)	School Trip	1	-	-
108.6	Wellington Station	Linden Square (Lynn Street at Beach Street)	Primary Pattern	26	31	11
108.7	Malden Center Station	Linden Square (Lynn Street at Beach Street)	Short-turn from Malden Center Station	3	-	-

## Ridership

Route 108 has relatively high ridership, ranking in the top 25 bus routes that are not part of the Key Bus route network. The route serves about 3,000 riders per weekday, 1,600 riders on Saturdays, and about 500 riders on Sundays. Route 108 has a greater drop off in ridership between weekdays and weekends than many other bus routes with comparable weekday ridership, likely due its comparably limited weekend service.

### Ridership by Stop

Route 108 has significantly higher ridership between Linden Square and Malden Center than between Malden Center and Wellington Station, reflecting the different markets served by each route segment.

On weekdays, inbound between Linden Square and Malden Center:

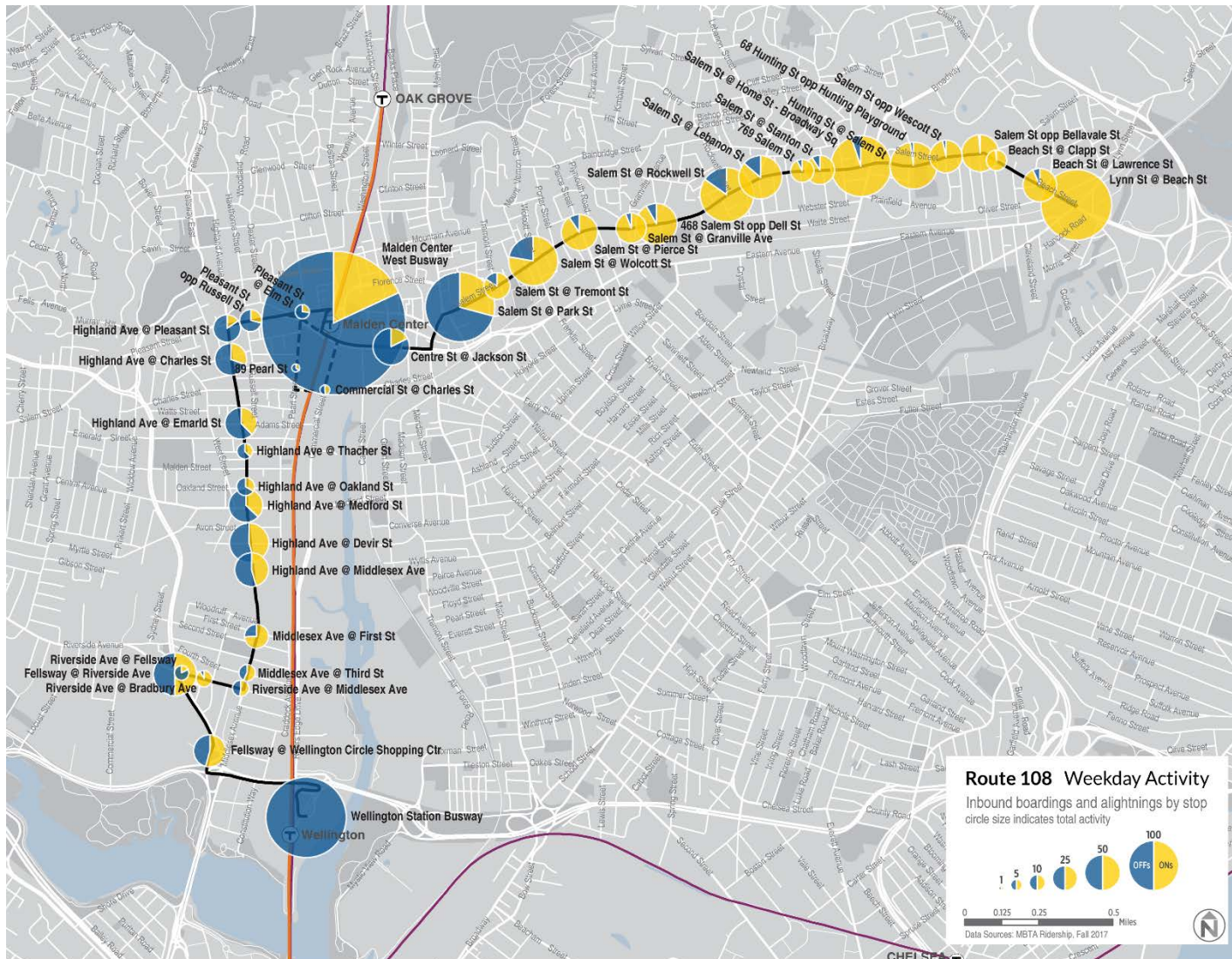
- Ridership is relatively evenly distributed across all stops, with most stops serving between 35 and 60 boardings each day.

- The highest ridership stops are at Linden Square (Lynn Street at Beach Street), which is the start of the route and has multiple bus connections, and at Salem Street at Home Street and Salem Street at Rockwell Street, both of which serve higher density housing complexes and neighborhood retail. These stops all serve over 100 boardings each day.
- Nearly 85% of riders that board Route 108 between Linden Square and Malden Center exit the bus before or at Malden Center Station. Apart from the Orange Line station, Malden High School (Salem Street at Park Street) has the most inbound alightings.

Inbound between Malden Center and Wellington Station:

- All Route 108 stops on this route segment serve less than 30 boardings per day, with the exception of the Fellsway Plaza stop (Fellsway at Riverside Ave), which serves about 40 passengers.
- Route 108 ridership is strongest along Highland Ave between Medford Street and 1<sup>st</sup> Street. This corridor is farther from Route 100 and includes the Townline Plaza shopping center.

Figure 3 | Weekday Inbound Ridership by Stop Map



The 23 one-way trips on the midday deviation via Pearl Street and Commercial Street, which is designed to serve the Italian-American Citizens Club and adds up to three minutes of travel time and serves only 10 passenger per weekday, or less than 0.5 per bus trip.

### Ridership by Trip

Route 108 ridership generally follows typical commuting patterns, with high ridership inbound during the AM peak and outbound during the PM peak. On weekdays, both inbound mid-day trips and outbound evening trips have comparable ridership to peak trips. While passenger loads do not exceed the MBTA standard, high ridership during these periods may indicate a demand for more frequent off-peak service.

Route 108 trips have higher overall passenger turnover than many MBTA bus routes. However, most of this turnover occurs halfway through the route at Malden Center Station, where the vast majority of riders begin or end their trip. Inbound trips have limited turnover along Salem Street, since most passengers ride through to Malden Center. Some weekday peak trips have standing passengers on Salem Street, however, few trips typically exceed MBTA standards for uncomfortable conditions.

Figure 4 | Weekday Ridership by Trip: Inbound

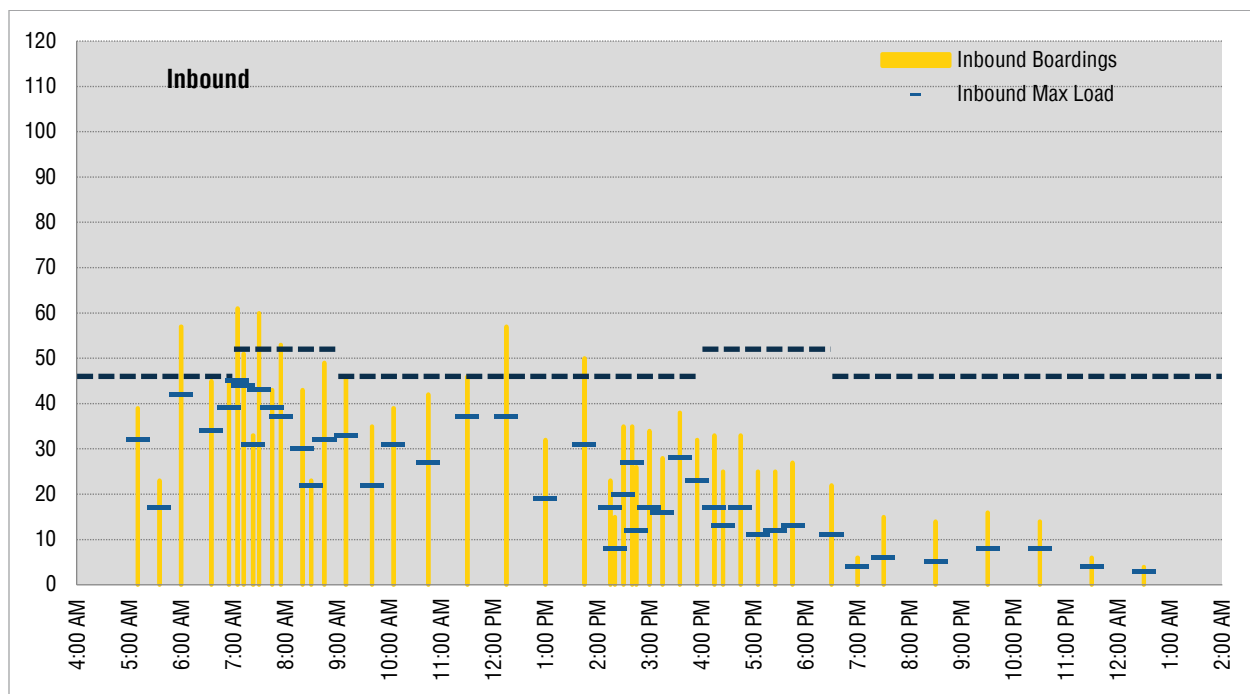
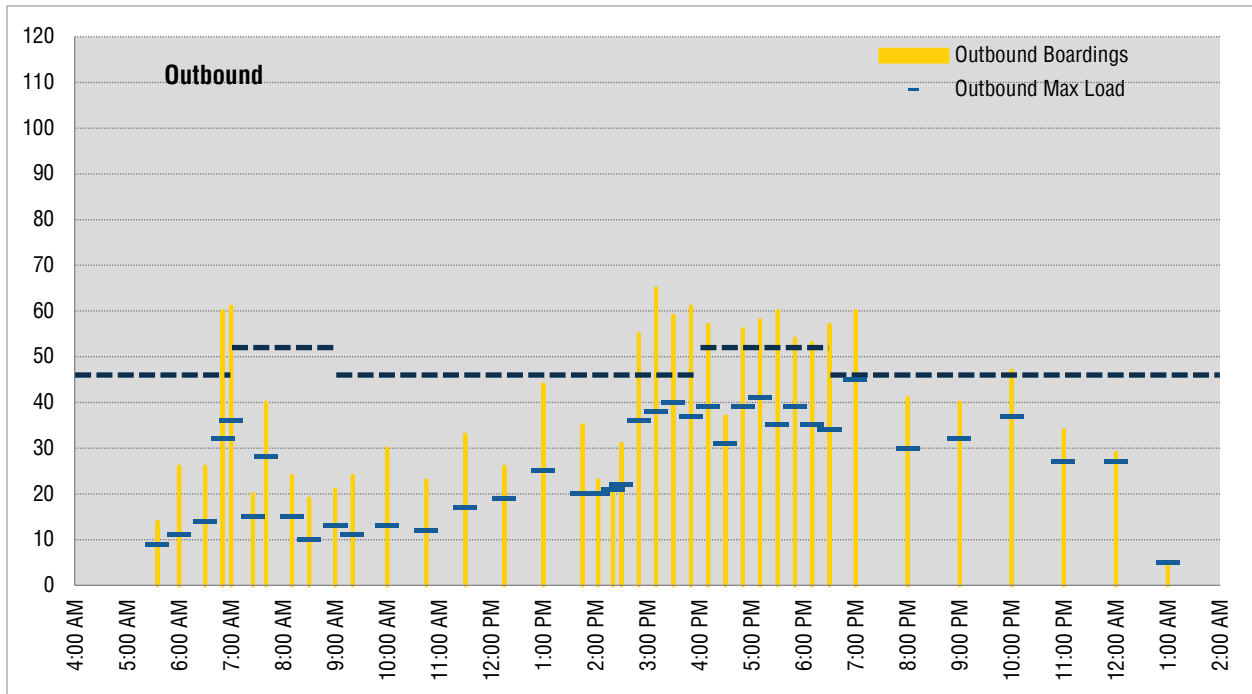


Figure 5 | Weekday Ridership by Trip: Outbound



On Saturdays, inbound ridership is higher in the morning through mid-day, with very few passengers on late night trips. Outbound ridership is stronger during mid-day and evening service.

Figure 6 | Saturday Ridership by Trip: Inbound

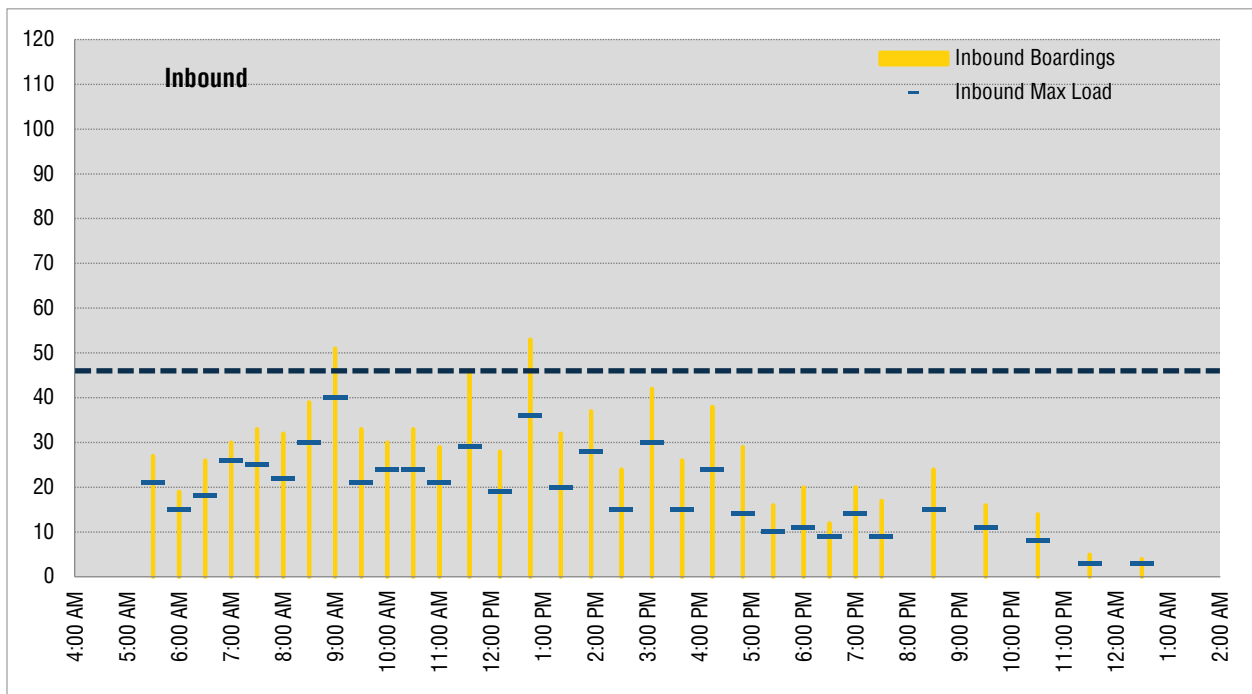
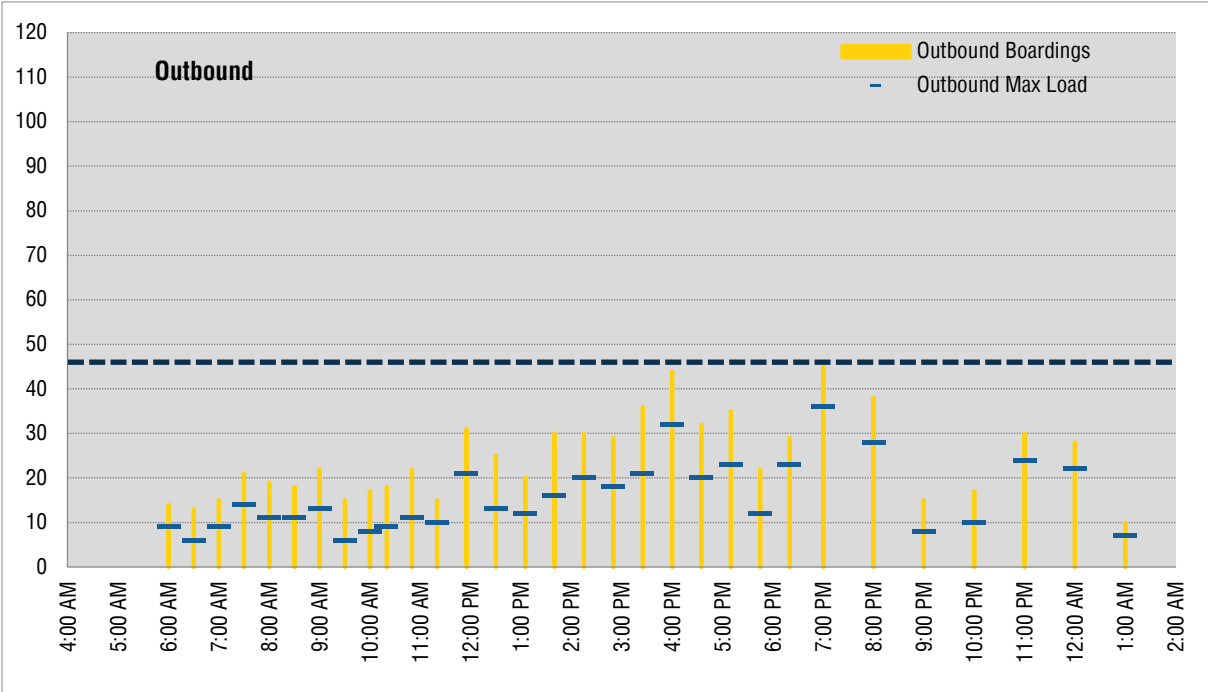




Figure 7 | Saturday Ridership by Trip: Outbound



Sunday inbound ridership is strong at the start of service, indicating demand for earlier trips, and decreases significantly after 5pm. Outbound trips is relatively even throughout the limited service span.

Figure 8 | Sunday Ridership by Trip: Inbound

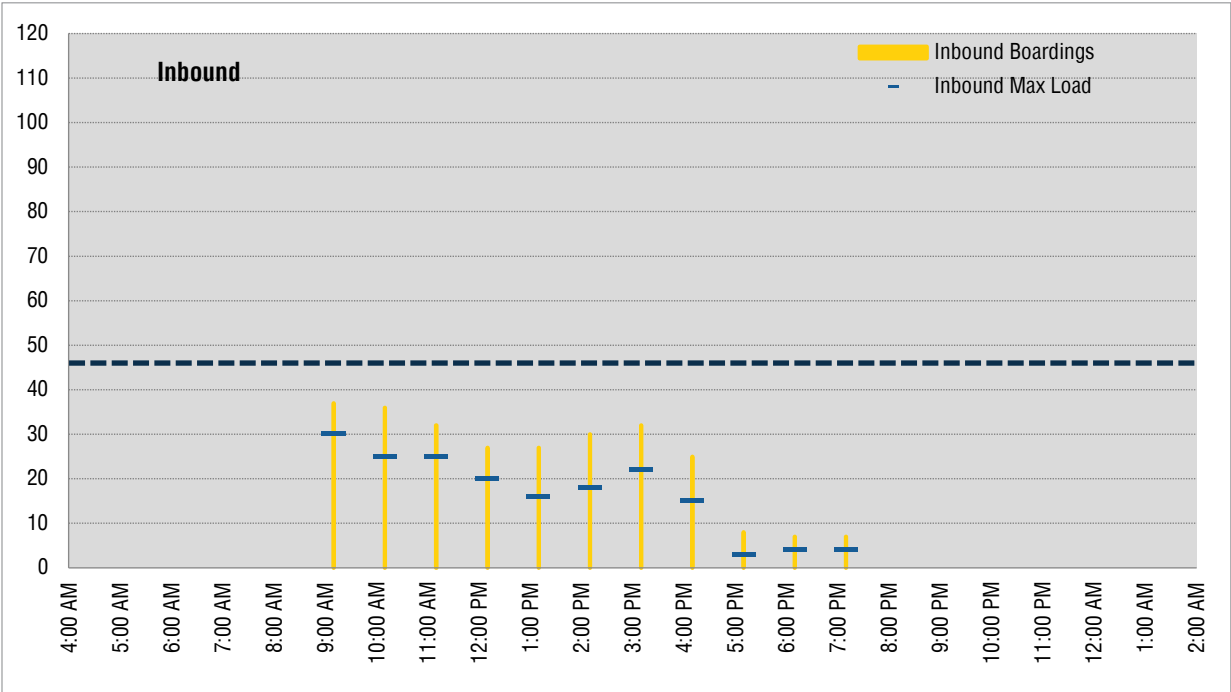
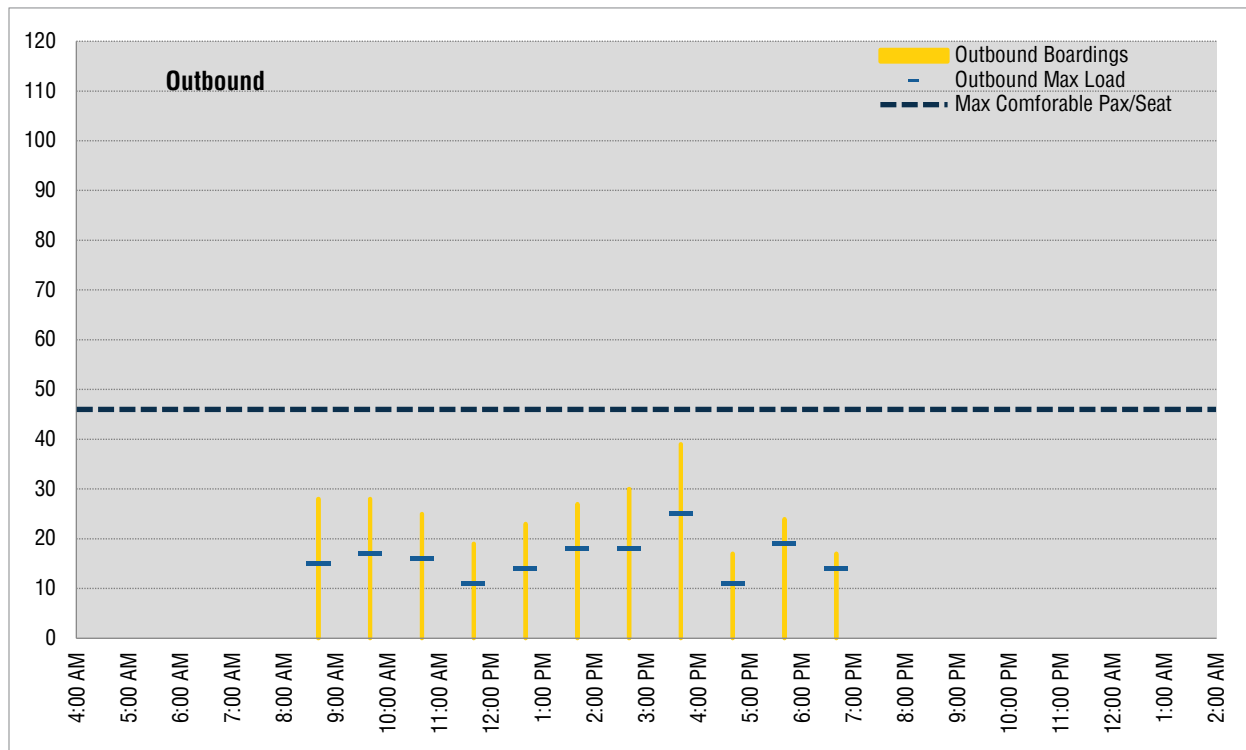


Figure 9 | Sunday Ridership by Trip: Outbound



### 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 108, 94.8% of passenger minutes are in comfortable conditions, which is below the target of 96%, but above the minimum standard of 92% (see Table 3). Weekend service exceeds the comfort target.

Table 3 | Passenger Time Spent Traveling in Comfortable Conditions

	WEEKDAYS	SATURDAYS	SUNDAYS
<b>Minimum Standard</b>	92.0%	92.0%	92.0%
<b>Target</b>	96.0%	96.0%	96.0%
<b>Actual</b>	94.8%	99.7%	99.9%

## Reliability and Speed

### Reliability

Route 108 provides very unreliable service, especially on weekdays and Sundays (see Table 4). On weekdays, less than 40% of trips are completed on time, with service often running behind schedule and at uneven frequencies. Trips in both directions run an average of three to eight minutes behind schedule during afternoon and evening service. Dropped trips are a moderate issue on Route 108, with approximately 0.5% of trips not operated in Fall 2017.

Table 4 | Reliability

SERVICE DAY	ORIGIN/MID-ROUTE ON-TIME PERFORMANCE	DESTINATION ON-TIME PERFORMANCE	OVERALL RELIABILITY	DROPPED TRIPS
Monday-Friday	54%	39%	51%	0.5%
Saturday	68%	54%	66%	-
Sunday	39%	31%	37%	-

Route 108 trips regularly exceed their scheduled running time, especially during mid-day and evening service. PM peak trips typically run about four to eight minutes behind schedule, and mid-day trips regularly operate about five minutes behind schedule.

Figure 10 | Scheduled & Median Travel Time by Trip: Route 108 Inbound

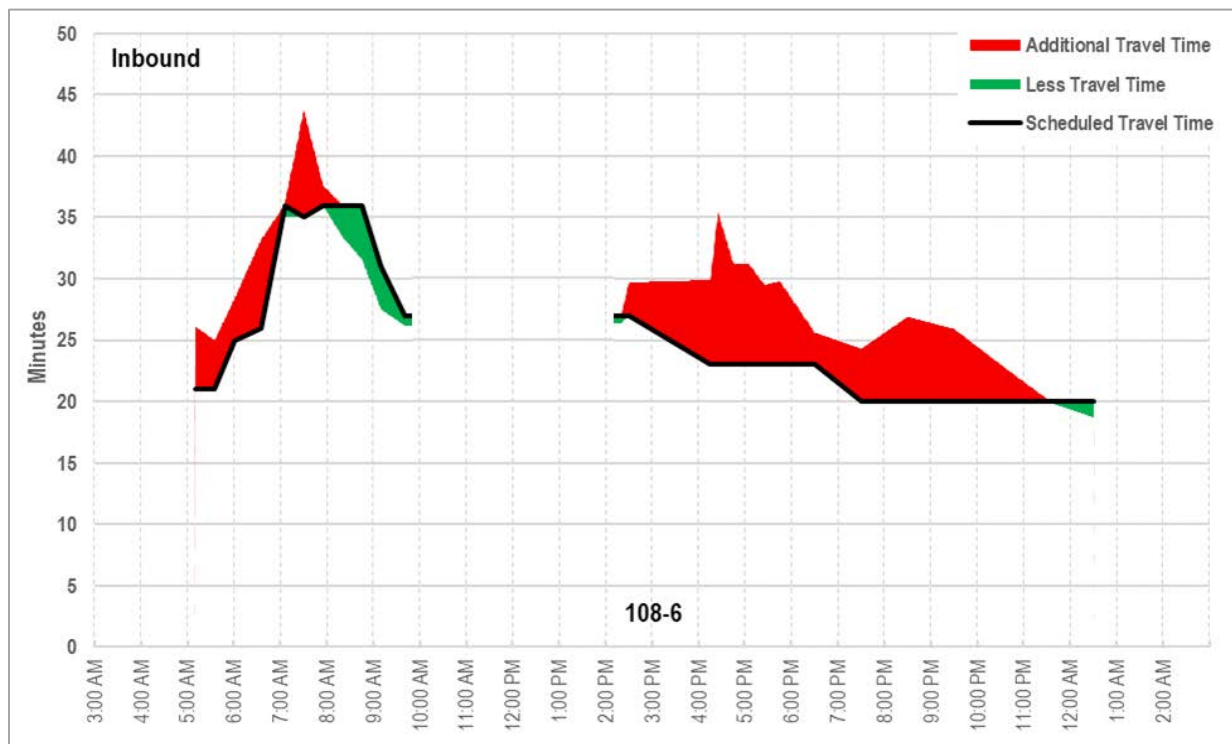
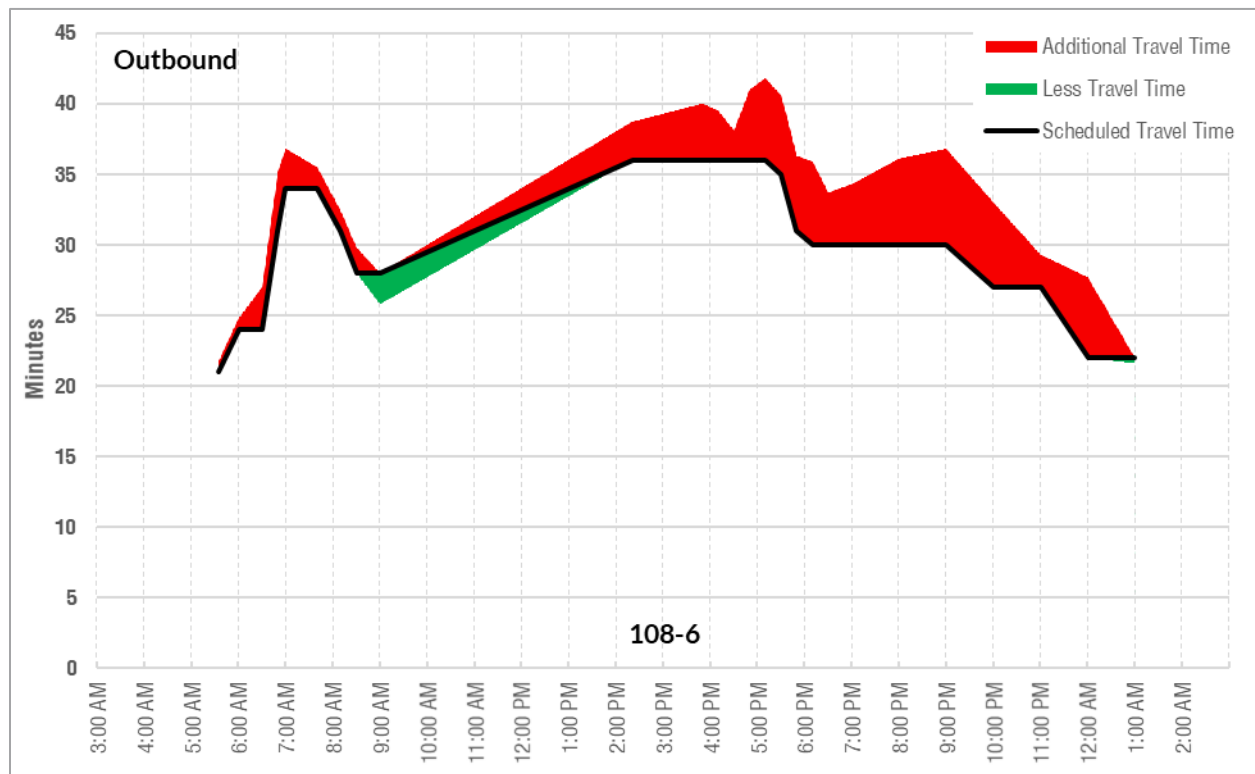


Figure 11 | Scheduled & Median Travel Time by Trip: Route 108 Outbound



### Stop Spacing

Route 108 has relatively close stop spacing in both directions. The route has approximately eight stops per mile, in excess of the four to seven stops per mile recommended for urban areas under MBTA guidelines. Customers can walk between stops with this spacing in about 2 to 3 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.

## Summary

Route 108 provides frequent weekday service on the high demand Salem Street corridor in Malden, generating ridership that is among the highest non-Key Bus routes in the MBTA network. However, service is very unreliable on both weekdays and weekends. Weekend service frequency and span is also very limited for a high ridership bus route.