

Route 424/424W

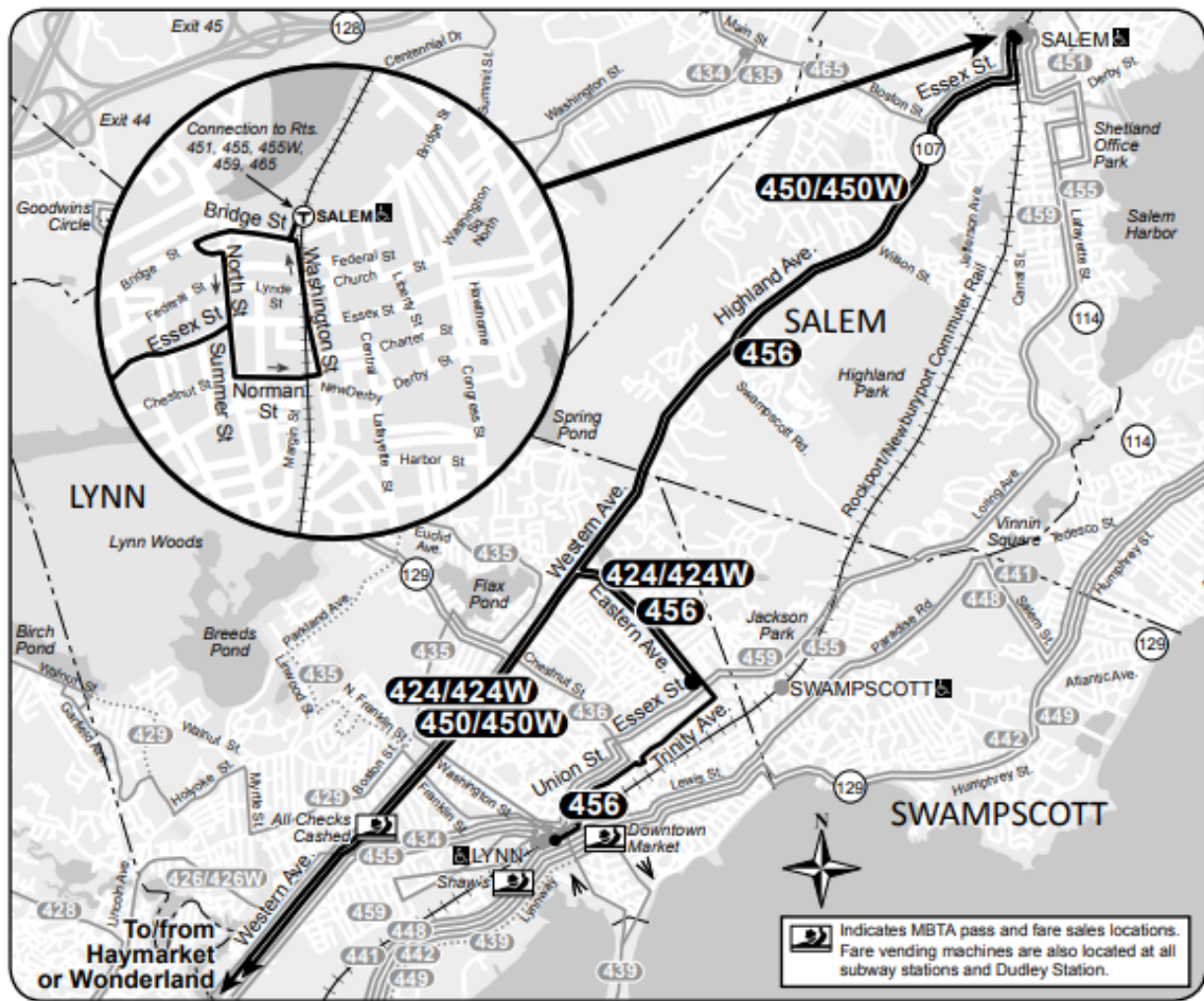
424 Eastern & Essex – Haymarket

424W Eastern & Essex – Wonderland Station

Route Overview

Route 424 Eastern & Essex – Haymarket/424W Eastern & Essex – Wonderland Station is a Commuter route that provides AM inbound service from the intersection of Essex Street and Eastern Avenue near the Lynn/Swampscott border and Wonderland Station (Route 424W), and PM outbound service from Haymarket to the intersection of Eastern Avenue and Essex Streets (Route 424).

Figure 1 | Service Map

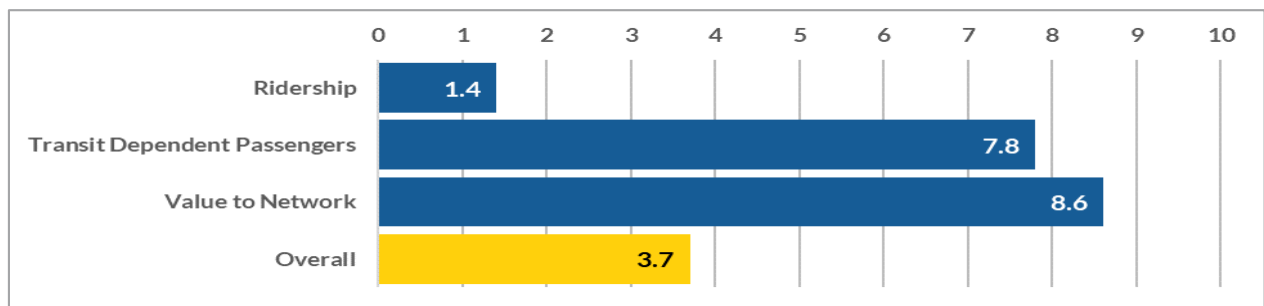


Except for the one mile segment of Eastern Avenue between Essex Street and Western Avenue, Route 424 provides the same service as Route 450/450W Salem Depot - Haymarket or Wonderland. Except for the one mile of service on Eastern Avenue, Route 424/424W exists as a short-turn for Route 450/450W.

Network Importance

Route 424 has low importance within the overall MBTA system (see Figure 2). On a relative scale of 0 to 10, Route 424 rates 1.4 in terms of ridership, 7.8 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 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 3.7.

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



Service Overview

Schedule

Route 424 makes five AM inbound trips between 5:51 AM and 8:01 AM, and four outbound trips between 4:00 PM and 5:40 PM. Most trips operate 30 minutes apart.

Route 424/424W's schedule is mostly integrated with that of Route 450/450W Salem Depot-Haymarket or Wonderland, with trips alternating in both the AM inbound and PM outbound. Schedules are not coordinated in the morning, but are in the afternoon to provide departures from Haymarket every 15 minutes.

Route 424 meets the MBTA's frequency standards but not the span of service standards, which specifies that weekday commuter service should operate from 7:00 AM to 9:00 AM and from 4:00 PM to 6:30 PM.

Table 1 | Schedule Statistics

SERVICE DAY	SPAN OF SERVICE	FREQUENCY (RANGE)	FREQUENCY (AVERAGE)	DAILY TRIPS (INBOUND/OUTBOUND)
Monday-Friday	5:51 AM to 8:01 AM 4:00 PM to 5:40 PM			5/4
Sunrise	5:51 AM to 5:59 AM	40 - 40	40	1/0
Early AM	6:00 AM to 6:59 AM	30 - 30	30	1/0
AM Peak	7:00 AM to 8:01 AM	30 - 30	30	3/0
Midday Base	-	-	-	-
Midday School	-	-	-	-
PM Peak	4:00 PM to 5:40 PM	30 - 40	33	0/4
Evening	-	-	-	-
Late Evening	-	-	-	-
Night	-	-	-	-
Saturday	-	-	-	-
Sunday	-	-	-	-

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

Service Patterns

- Pattern 424.6 operates as Route 424W, and makes all AM inbound trips to Wonderland Station where passengers transfer to the Blue Line for continuing service to downtown Boston.
- Pattern 424.0 operates as Route 424, and makes all PM outbound trips, from Haymarket Station in downtown Boston, and bypasses Wonderland Station.

Table 2 | Service Patterns

PATTERN	ORIGIN	DESTINATION	UNIQUE FEATURE	TRIPS PER WKD	TRIPS PER SAT	TRIPS PER SUN
INBOUND				5	0	0
424.6	Eastern Avenue at Essex Street	Wonderland Station	AM inbound service	5	-	-
OUTBOUND				4	0	0
424.0	Haymarket Station	Eastern Avenue at Sheldon Street	PM outbound service	4	-	-

This unusual use of two service patterns is the result of changes made over time to Route 424. At one point, all Route 424 service operated to and from downtown Boston. Later, morning inbound service was altered to terminate at Wonderland to avoid increasing congestion-related delays. Route 424's schedule was also aligned with that of Route 450 Salem Depot - Haymarket or Wonderland, which continues to operate to downtown Boston could travel to downtown Boston either directly via

Route 450 or via Route 424W and the Blue Line. However, a similar choice is not provided in the PM.

Ridership

Route 424 serves 260 passengers per weekday. Of the 260 total passengers, 170 travel inbound on trips to Wonderland, while only 90 travel outbound on trips from Haymarket. This indicates greater popularity for connecting service with the Blue Line over direct service from Haymarket, which is very delay-prone.

Ridership by Stop

Inbound, most ridership is to Wonderland Station (see Figure 3):

- 20 passengers board at the 10 stops on Eastern Avenue before Western Avenue.
- 140 passengers board and 20 alight at the 31 stops between Eastern Avenue and Wonderland Station. All individual stops serve fewer than 20 total boardings and alightings, and those south of Summer Street in Lynn serve very few. People traveling from this area are also served by Route 450 Salem Depot-Haymarket, which operates to Haymarket.
- 30 passengers alight at VFW Parkway at Wonderland Market, just before Wonderland Station. This is the second highest activity stop.
- 110 passengers, or 65% of all inbound riders, alight at Wonderland Station.

Because outbound service operates from Haymarket, outbound patterns are different:

- 50 passengers, or 50% of outbound riders, board at Haymarket Station.
- 40 passengers board and 70 alight between the Callahan Tunnel and Eastern Avenue. Half of the boardings are at Bell Circle.
- 15 passengers alight along Eastern Avenue.

Ridership by Trip

Inbound in the morning, ridership is highest on the first two trips, with 39 passengers on the first trip at 5:51 AM and 48 on the second trip at 6:31 AM (see Figure 4). Ridership is then 22 to 35 on the next three trips. All trips operate within maximum load standards and the last three all have empty seats. (These are all Route 424W trips to Wonderland).

Outbound, in the PM, the first trip at 4:00 PM carries 29 passengers, which is the highest of all outbound trips (see Figure 5). The next three trips carry 18 to 23 passengers. All PM outbound trips operate with many empty seats. (These are all Route 424 trips.)

Figure 3 | Weekday Inbound Ridership by Stop Map

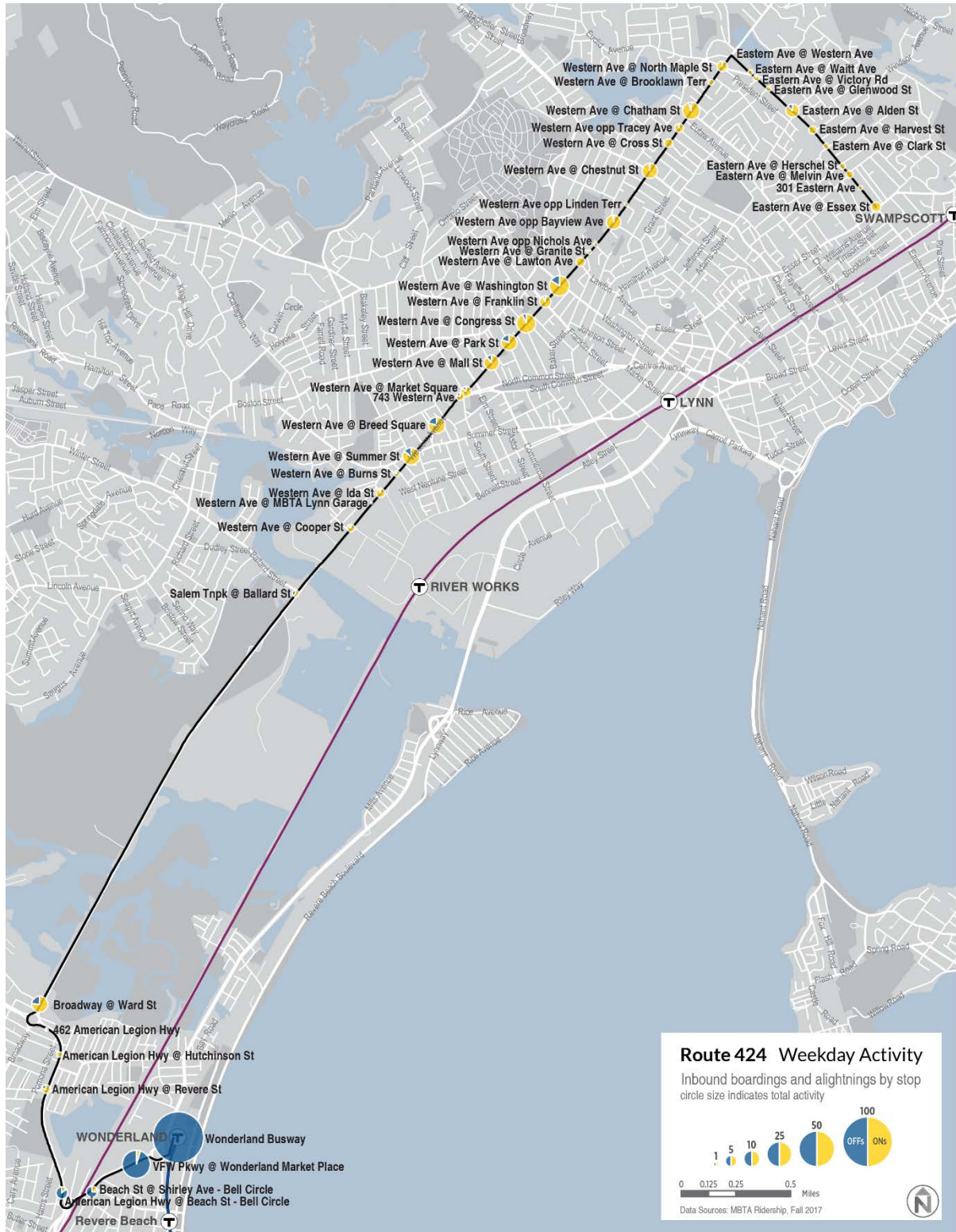


Figure 4 | Weekday Ridership by Trip: Route 424 | Inbound

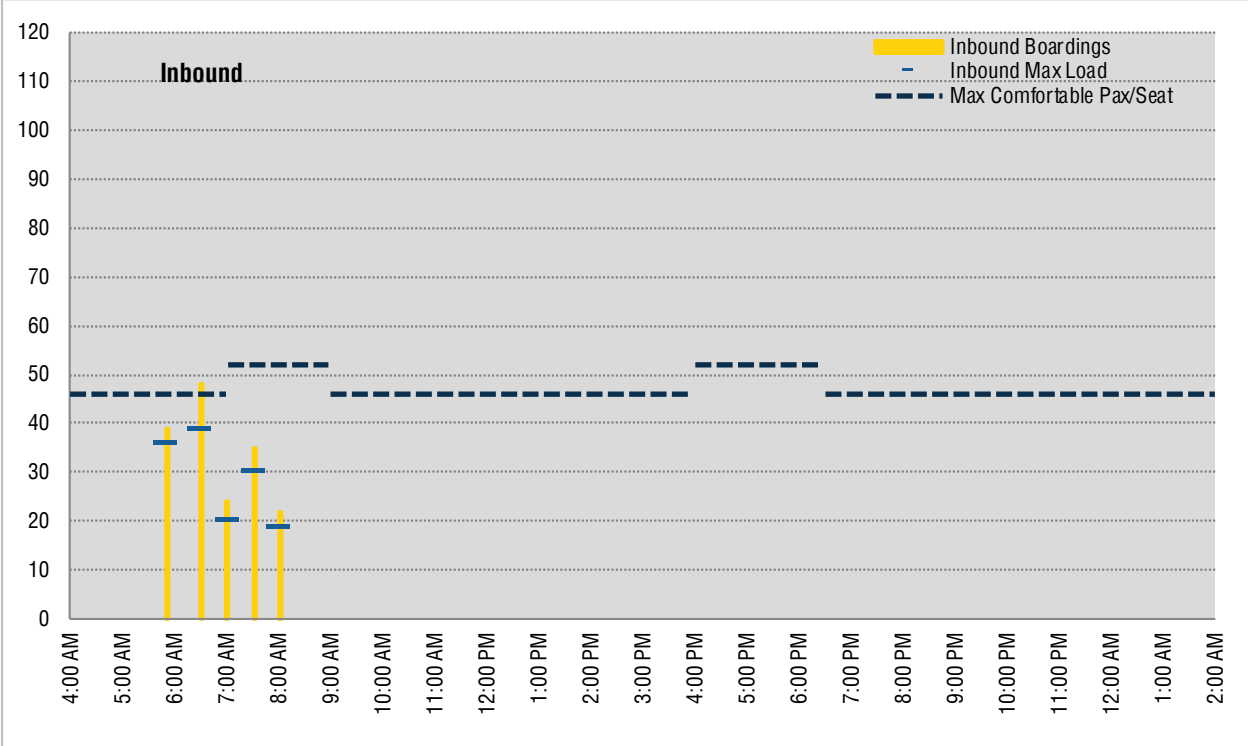
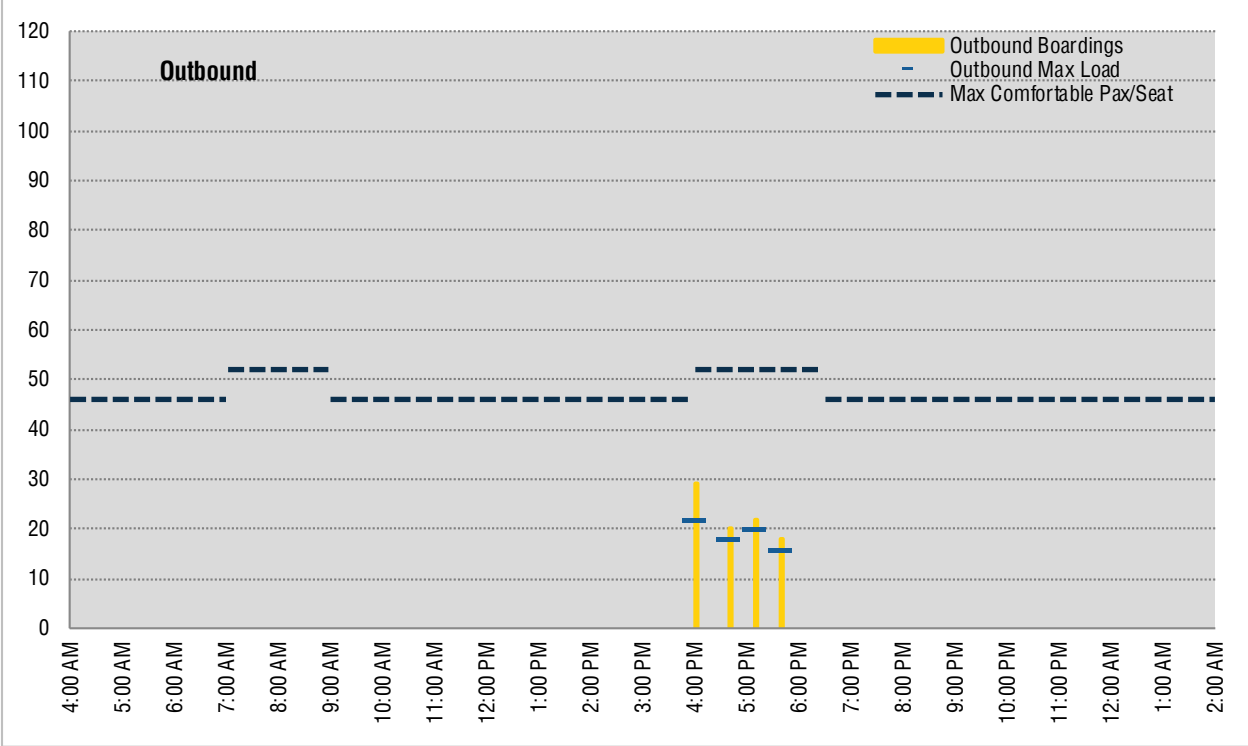


Figure 5 | Weekday Ridership by Trip: Route 424 | Outbound



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 424, 97.1% of passenger minutes are in comfortable conditions, which is above the target of 97% (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%	-	-

Reliability and Speed

Reliability

Route 424's overall reliability is very poor at only 49%. As with all services that operate from downtown, this is due to severe congestion leaving downtown in the afternoon. It is compounded by schedules that do not reflect actual running times.

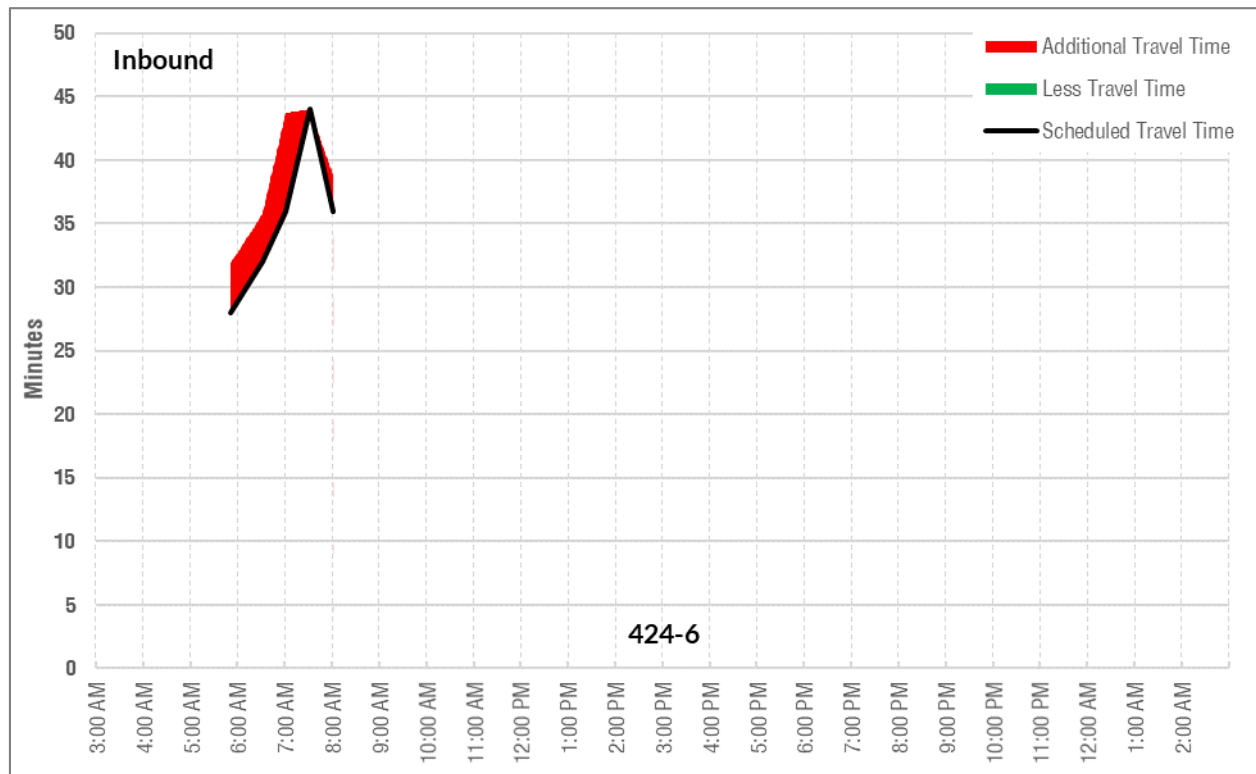
Table 4 | Reliability

SERVICEDAY	ORIGIN/MID-ROUTE ON-TIME PERFORMANCE	DESTINATION ON-TIME PERFORMANCE	OVERALL RELIABILITY	DROPPED TRIPS
Monday-Friday	50%	41%	49%	-
Saturday	-	-	-	-
Sunday	-	-	-	-

Running Times

Route 424's observed running times exceed scheduled running times by approximately three minutes on inbound trips (see Figure 6) and by five minutes on outbound trips.

Figure 6 | Scheduled & Median Travel Time by Trip: Route 424 Inbound



Stop Spacing

Route 424/424W serves an average six bus stops per mile. However, the number of stops per mile ranges from 3.3 to nine. Stops are particularly close together between Western Avenue opposite Buchanan Circle and Western Avenue at Cooper Street with nearly nine stops per mile, which is well above the MBTA guideline of four to seven stops per mile. Stop consolidation could reduce travel times.

Summary

Route 424 is a low ridership commuter route that is very similar to Route 450/450W Salem Depot-Wonderland or Haymarket. It is designed to provide commuter service to a very small unique market (a one mile segment of Eastern Avenue in Lynn) and to supplement Route 450/450W service. In many respects, it is essentially a variant of Route 450/450W.

Route 424/424W is also an unusual route in that it operates inbound to Wonderland in the morning and outbound from Haymarket in the afternoon. It is integrated with Route 450/450W, in that the two routes alternate trips (and headways are not coordinated in the morning, but are in the afternoon). The AM combination is intended to provide riders with the choice of one-seat service to Haymarket or (usually faster) connecting service via the Blue Line.

Major issues with Route 424 are its complexity (its own and within the context of other area services), low ridership on most trips, and very poor on-time performance.