

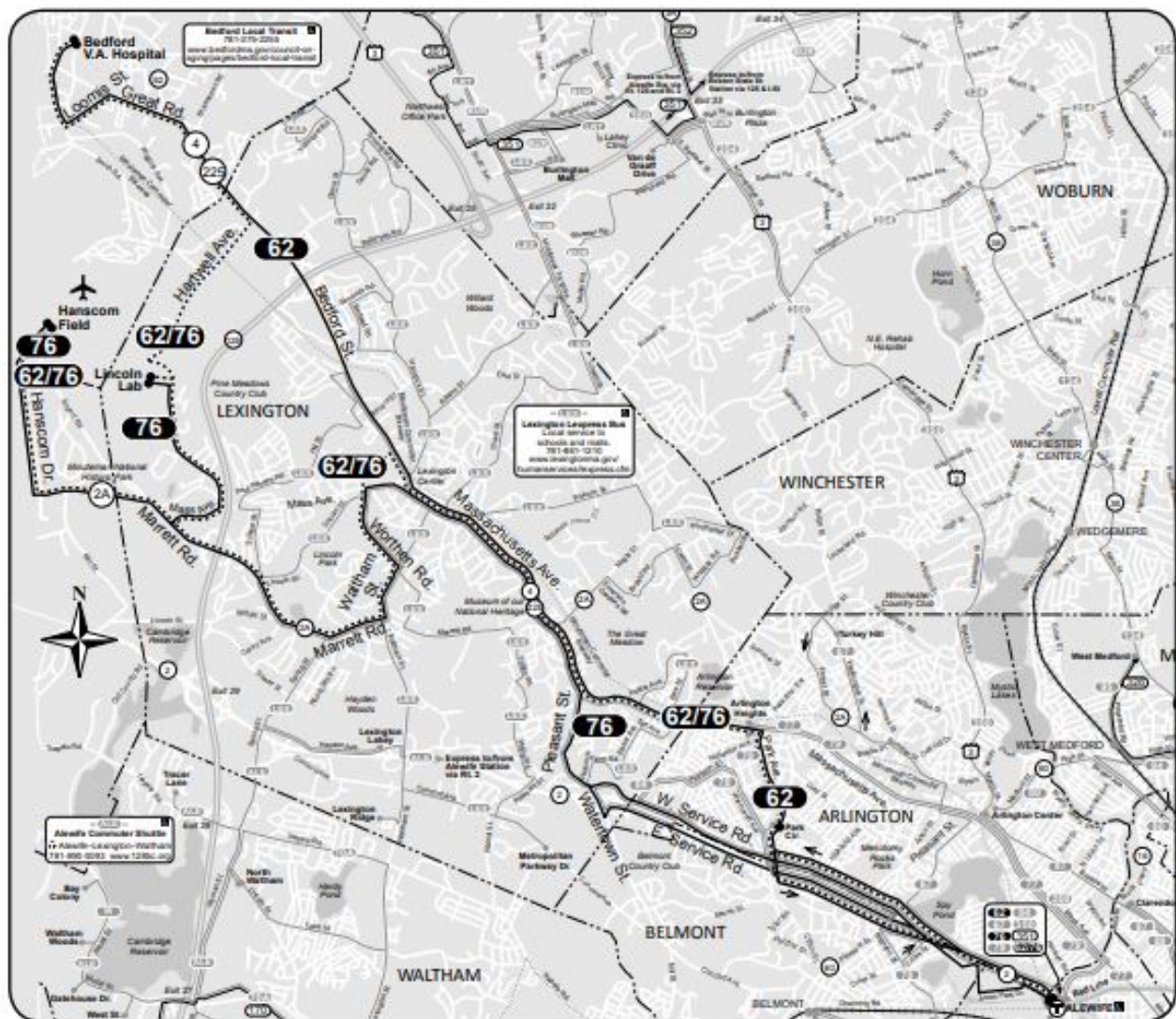
# Route 76

## Hanscom Air Force Base – Alewife Station

### Route Overview

Route 76 provides weekday service between Lincoln Lab and Alewife Station via Lexington and Route 2's service roads. On Saturdays, service is provided by a hybrid of Routes 62 Bedford VA Hospital-Alewife Station and 76 that is presented to the public as Route 62/76.

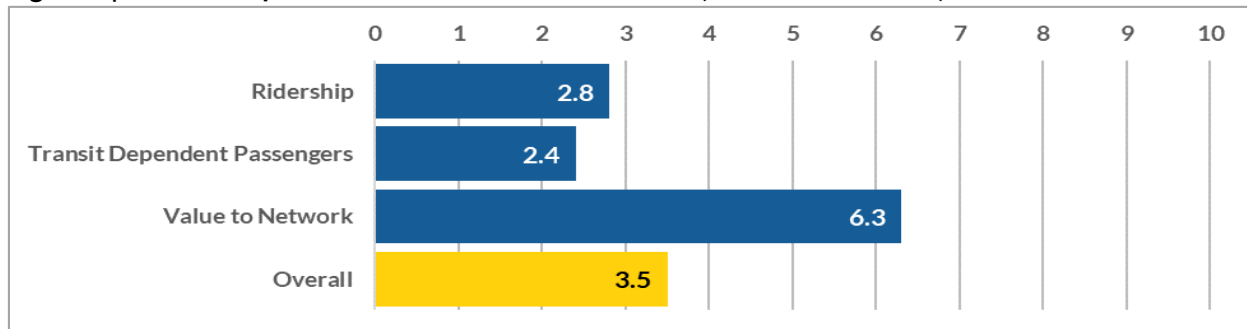
Figure 1 | Route 76 Service Map



## Network Importance

Route 76 is of moderately low importance within the overall bus network (see Figure 2). On a relative scale of 0 to 10, the route rates 2.8 in terms of ridership, 2.4 in terms of transit dependent ridership, and 6.3 in terms of its value to the network k (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% weighting to overall ridership and a 15% weight to both other measures, is 3.5.

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



## Service Overview

### Schedule

Route 76 operates on weekdays between 6:00 AM and 10:39 PMs (see Table 1):

- Every 15 to 40 minutes before 7:00 AM, but mostly every 28 minutes.
- Every 20 to 60 minutes during the AM Peak, but mostly every 35 minutes.
- Every 30 to 70 minutes between 9:00 AM and 4:00 PM, but mostly every 60 minutes.

**Table 1 | Schedule Statistics**

SERVICE DAY	SPAN OF SERVICE	FREQUENCY (RANGE)	FREQUENCY (AVERAGE)	DAILY TRIPS (INBOUND/OUTBOUND)
<b>Monday-Friday</b>	<b>6:00 AM to 10:39 PM</b>			<b>23/22</b>
Early AM	6:00 AM to 6:59 AM	15 - 40	28	2/2
AM Peak	7:00 AM to 8:59 AM	20 - 60	35	4/4
Midday Base	9:00 AM to 1:29 PM	30 - 67	60	5/4
Midday School	1:30 PM to 3:59 PM	35 - 70	59	2/3
PM Peak	4:00 PM to 6:29 PM	25 - 70	30	4/5
Evening	6:30 PM to 9:59 PM	26 - 70	50	5/4
Late Evening	10:00 PM to 10:39 PM	70	70	1/-
<b>Saturday</b>	<b>7:00 AM to 8:47 PM</b>	<b>60 - 70</b>	<b>60</b>	<b>12/12</b>
<b>Sunday</b>	-	-	-	-

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

On Saturday, Route 62/76 operates between 7:00 AM and 8:47 PM, every 70 minutes until mid-afternoon and every 60 minutes after that.

On weekdays, Route 76 meets the span of service standards for local bus routes. However, it fails to meet a number of frequency standards:

- In the AM peak, when much service operates every 35 minutes versus the standard of at least every 30 minutes.
- During the midday when some trips operate 70 minutes apart versus the standard of at least every 60 minutes.
- During the late evening when service operates every 70 minutes apart versus the standard of at least every 60 minutes.

On Saturdays, Route 62/76 fails to meet the minimum service frequency standard for Saturdays, when most service operates every 70 minutes, versus the standard of at least every 60 minutes.

### Service Patterns

Route 76 operates with three different weekday service patterns (see Table 2):

- AM inbound and PM outbound trips deviate to the Hanscom Field Civil Air Terminal (Pattern 76.3)
- AM outbound and PM inbound trips skip the deviation to the Hanscom Field Civil Air Terminal (Pattern 76.0).
- Service after 7:30 PM operates between Five Forks in Lexington and Alewife Station. Except the last outbound trip at 9:35 PM and last inbound trip at 10:15 PM. These are 76.0 trips to/from Lincoln Lab, designed to insure Lincoln Lab passengers are not stranded.

On Saturdays, service operates as a hybrid of Routes 62 Bedford VA Hospital-Alewife Station and 76 between the Bedford VA Hospital and Alewife Station via Hanscom Air Force Base, Lexington Center, and Route 2 (Pattern 62.7).

## Ridership

Route 76 carries 950 riders on weekdays, and Route 62/76 carries 450 riders on Saturdays.

Table 2 | Service Patterns

PATTERN	ORIGIN	DESTINATION	UNIQUE FEATURE	TRIPS PER WKD	TRIPS PER SAT	TRIPS PER SUN
<b>INBOUND</b>				<b>23</b>	-	-
62.7	Bedford VA Hospital	Alewife Station	Saturday service that is a hybrid of Routes 62 and 76	-	12	-
76.0	Lincoln Lab	Alewife Station	Does not serve Civil Air Terminal during the PM peak	11	-	-
76.3	Lincoln Lab	Alewife Station	Serves Civil Air Terminal during the AM period and 12:11 PM trip	10	-	-
76.4	Five Forks	Alewife Station	Shortened run from Lexington to Alewife	2	-	-
<b>OUTBOUND</b>				<b>22</b>	-	-
62.7	Alewife Station	Bedford VA Hospital	Saturday service that is a hybrid of Routes 62 and 76	-	12	-
76.0	Alewife Station	Lincoln Lab	Does not serve Civil Air Terminal during the PM peak	9	-	-
76.3	Alewife Station	Lincoln Lab	Serves Civil Air Terminal during the AM period	11	-	-
76.4	Alewife Station	Five Forks	Shortened run from Alewife to Lexington	2	-	-

## Ridership by Stop

Over 90% of all passengers travel to and from Alewife Station. On weekday inbound trips (see Figure 3):

- 70 passengers board at Lincoln Lab. This is the second highest ridership stop on the route (after Alewife Station).
- 10 passengers board at the eight stops between Lincoln Lab and Old Mass Ave at Marrett Road, which is where many trips begin their deviation to the Hanscom Field Civil Air Terminal.
- Nine passengers board and seven alight on the deviation to and from the Civil Air Terminal (most at the Civil Air Terminal).
- 20 passengers board at the three stops along Marrett Road between Old Mass Ave and Five Forks (Marrett Road at Lincoln Street).
- 90 passengers board and 10 alight at 11 stops along Marrett Road, Waltham Street, Worthen Road, and Mass Ave through to Forest Street.
- 80 passengers board and less than 10 alight at the three stops in Lexington Center. These stops are also served by Route 62 Bedford VA Hospital-Alewife Station.
- 60 passengers board and less than 10 alight at the 10 stops along Mass Ave between Lexington Center and Pleasant Street.
- 40 passengers board and less than 10 alight at the seven stops along Pleasant Street, Watertown Street, and the East Service Road through to Standish Road. Standish Road is the stop before Park Avenue, which is where Routes 62 and 76 come back together.
- 50 passengers board and less than 10 alight at the six stops along the Route 2 East Service Road. These stops are also served by Route 62.
- 20 passengers board and fewer than 10 alight at the five stops along Lake Street and Acorn Park Drive.
- 520, or 92% of all inbound passengers, alight at Alewife Station.

Outbound ridership by stop is roughly the reverse of inbound ridership patterns.

On Saturday inbound trips on the Route 62/76 hybrid (see Figure 4):

- 30 passengers board at the Bedford VA Hospital.
- On average, no passengers board or alight at the six stops along Springs Road.
- Two passengers board and less than one alight at the stop in Bedford Center.
- Four passengers board and two alight at the six stops along South Road and Loomis Street.
- 20 passengers board and fewer than five alight at the nine stops along Great Road and Bedford Street before Hartwell Avenue.
- 45 passengers board and fewer than five alight on the portion of Route 62/76 that serves part of Route 76's weekday alignment:

- Six passengers board at the three stops on Hartwell Road and Wood Street between Hartwell Avenue and Lincoln Lab. These stops are only served on Saturdays and are not served by any routes on weekdays.
- 12 passengers board at the nine stops along Wood Street, Old Mass Ave and Hanscom Field Drive between Lincoln Lab and the Hanscom Field Civil Air Terminal. These stops are served by Route 76 on weekdays.
- Five passengers board and one alight at the Hanscom Field Civil Air Terminal. This stop is served by Route 76 on weekdays.
- 20 passengers board and less than five alight at the 14 stops between the Civil Air Terminal and Bedford Street at Worthen Road, which is where Route 62/76 rejoins the regular Route 62 alignment. These stops are served by Route 76 on weekdays.

Overall, this unique segment serves a similar proportion of riders as Route 62's weekday alignment along Bedford Street. This indicates that the extra length of this segment does not increase ridership; however, the longer length means that service much run every 70 minutes instead of the SDP standard of at least every 60 minutes.

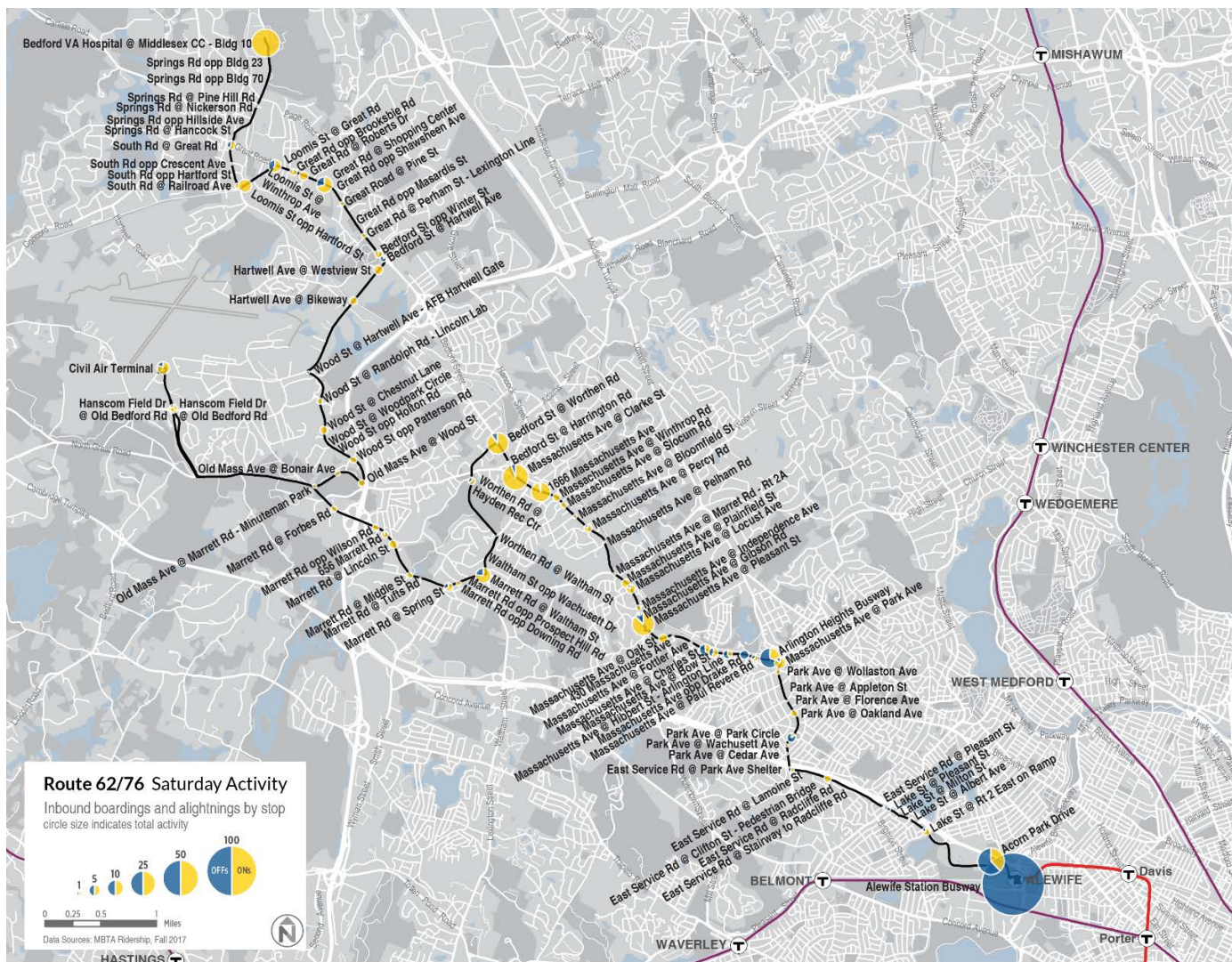
- 40 passengers board and fewer than five alight at the two stops along Bedford Street before Lexington Center.
- 40 passengers board and less than five alight at the three stops in Lexington Center.
- 40 passengers board and 15 alight at the 18 stops along Mass Ave between Lexington Center and the Arlington Heights busway.
- 10 passengers board and 10 alight at the Arlington Heights busway and the next stop on Mass Ave at Park Avenue.
- Fewer than five passengers board at the seven stops on Park Avenue.
- 40 passengers board and less than five alight at the six stops along the Route 2 East Service Road.
- 15 passengers board and 20 alight at the five stops along Lake Street and Acorn Park Drive.
- 160, or 70% of all inbound passengers, alight at Alewife Station.







Figure 4 | Saturday Inbound Ridership by Stop Map





## Ridership by Trip

On weekdays, the highest ridership is inbound in the AM and outbound in the PM, with a slight reverse commute peak and low to moderate off-peak ridership. On inbound trips (see Figure 5):

- Morning ridership is generally high, ranging between 30 and 52 riders per trip between 6:00 AM and 8:30 AM. The 6:45 AM and 7:00 AM trip carry 46 and 52 riders, respectively.
- Between 8:40 AM and 4:00 PM, ridership per trip ranges from 14 to 22 riders.
- A second, albeit lower spike in ridership occurs during the PM peak period between 4:00 PM and 5:30 PM with trips carrying 28 to 32 riders each.
- Ridership during the end of the PM peak is about 15 riders.
- After 6:30 PM, trips carry between four and 10 riders.

On outbound trips (see Figure 6):

- The first two trips each carry 16 riders.
- Between 7:00 AM and 10:00 AM, ridership per trip ranges from 22 to 31 riders. The highest ridership trip during this period occurs at 8:00 AM.
- Between 10:00 AM and 4:30 PM, trips carry between 12 and 26 riders each. The highest ridership during this period occurs at 2:30 PM.
- Between 4:30 PM and 7:00 PM, ridership per trip ranges from 30 to 44 riders. The highest ridership during this PM peak period occurs at 5:30 PM.
- The three trips after 7:00 PM carry 10 to 16 riders.

On Saturday inbound trips, Route 62/76 carries around 20 riders per trip between 8:00 AM and 5:00 PM with a drop to about nine riders per trip after 5:00 PM (see Figure 7).

Outbound, apart from a drop in volume to eight riders per trip around 10:20 AM, ridership is fairly constant throughout the day with volumes of about 18 riders per trip (see Figure 8).

Figure 5 | Weekday Ridership by Trip: Inbound

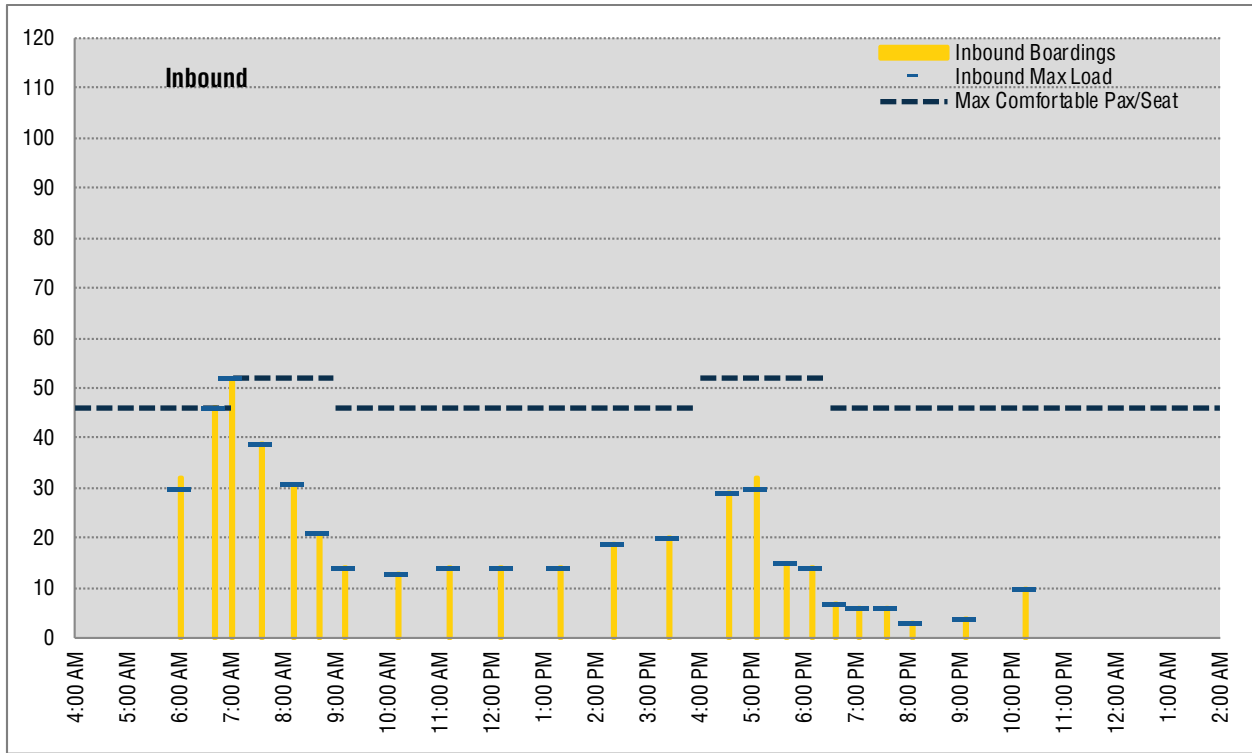


Figure 6 | Weekday Ridership by Trip: Outbound

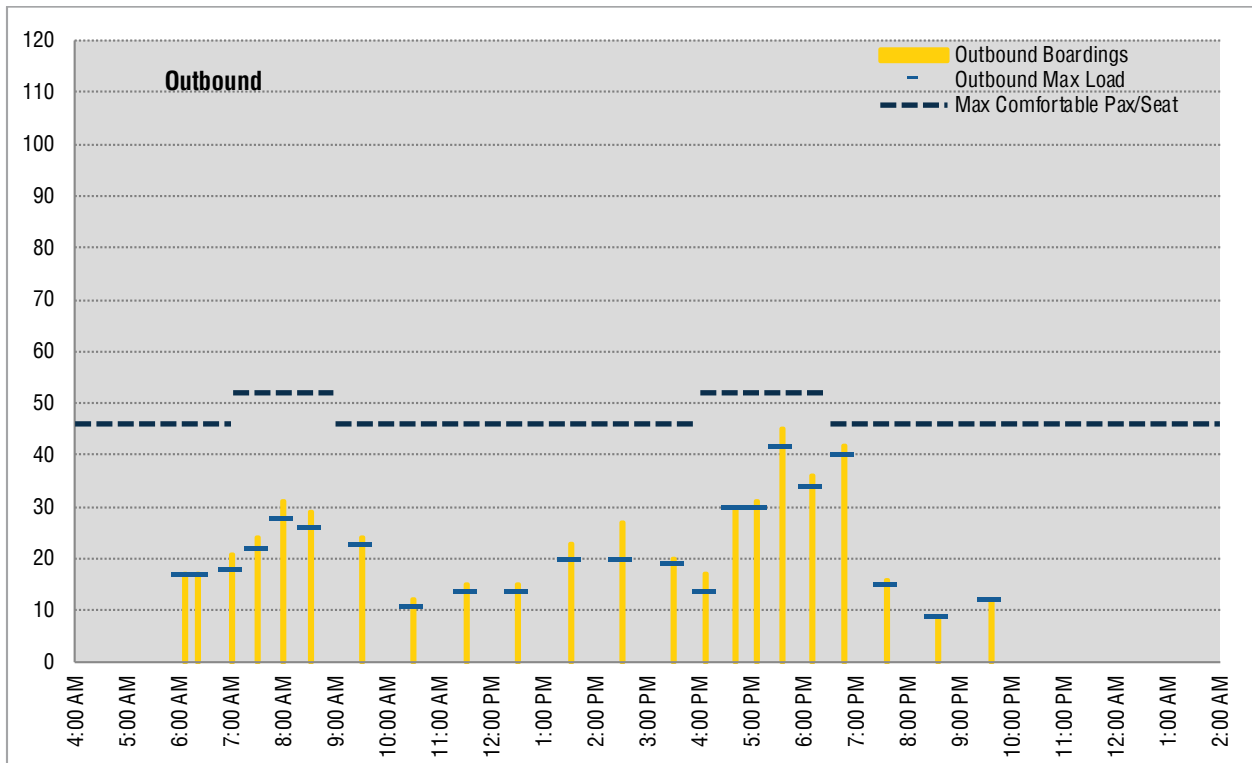


Figure 7 | Saturday Ridership by Trip: Inbound

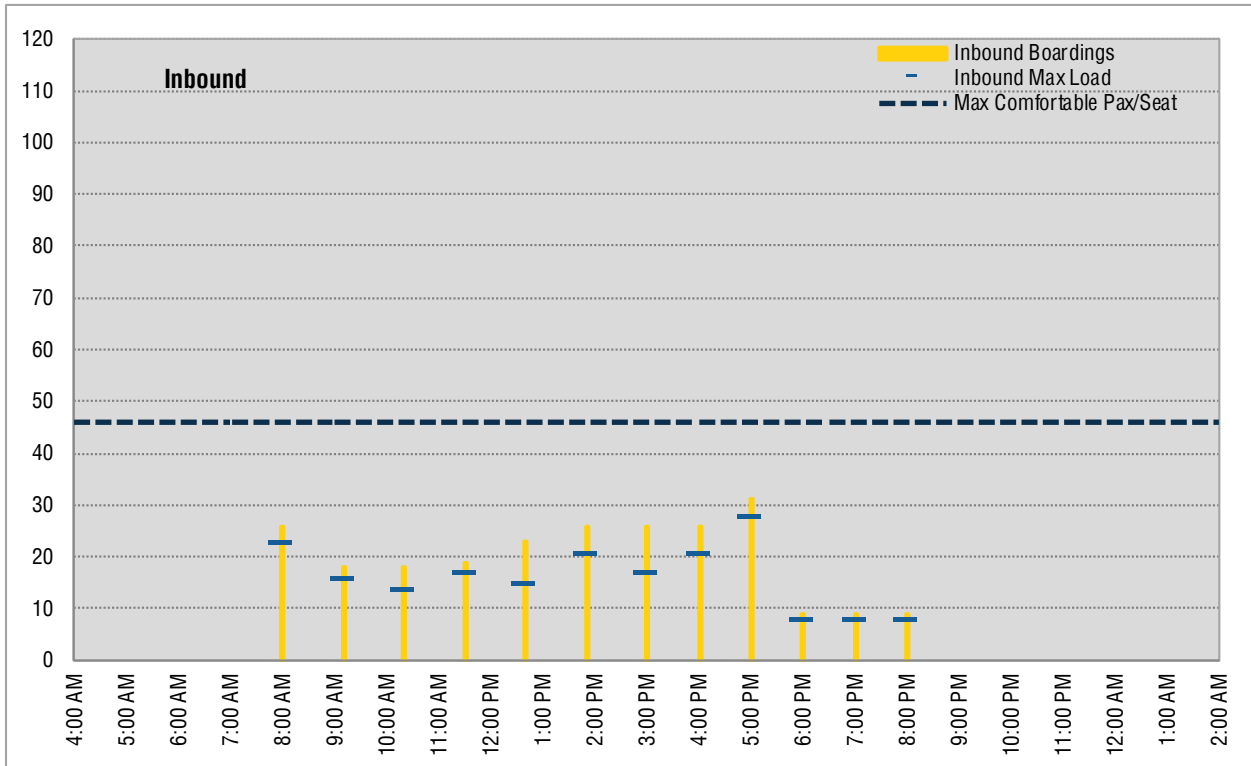
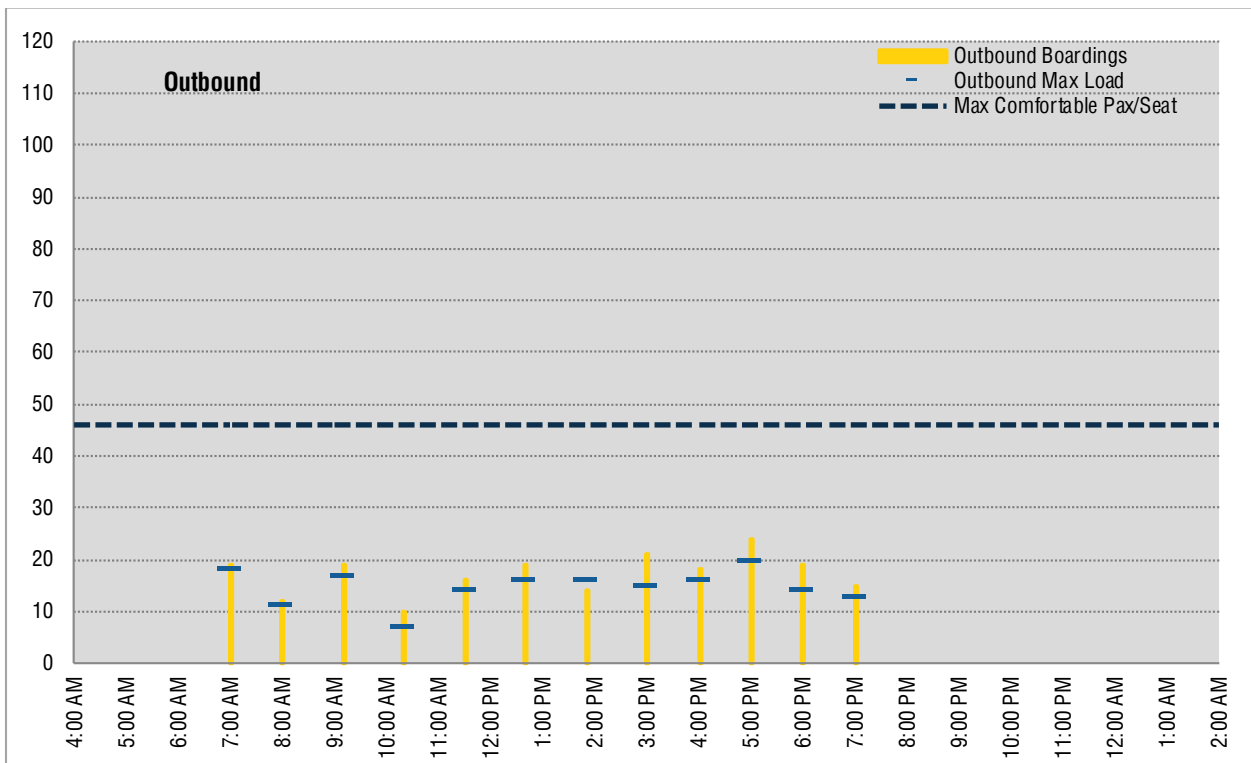


Figure 8 | Saturday Ridership by Trip: Outbound





## 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 76, 95% of weekday passenger minutes are in comfortable conditions, which is above the minimum standard of 92% but below the target of 96% (see Table 4).

Table 3 | Passenger Time Spent Traveling in Comfortable Conditions

	WEEKDAYS	SATURDAYS	SUNDAYS
<b>Minimum Standard</b>	92%	92%	92%
<b>Target</b>	96%	96%	96%
<b>Actual</b>	95%	-	-

## Reliability and Speed

### Reliability

Route 76's overall weekday reliability is 66%, which is below the minimum standard of 70%.

Table 4 | Reliability

SERVICE DAY	ORIGIN/MID-ROUTE ON-TIME PERFORMANCE	DESTINATION ON-TIME PERFORMANCE	OVERALL RELIABILITY	DROPPED TRIPS
<b>Monday-Friday</b>	66%	61%	66%	0.1%
<b>Saturday</b>	-	-	-	-
<b>Sunday</b>	-	-	-	-

### Running Times

Actual running times exceed scheduled running times for most of the day in both directions. Inbound, the differences range from one to eight minutes in the inbound direction, with the largest difference around 5:00 PM (see Figures 9 and 10). Outbound differences range from one to nine minutes in the outbound direction, with the largest difference around 7:30 AM (see Figures 10 and 11).

Figure 9 | Scheduled & Median Travel Time by Trip: Route 76.3 Inbound

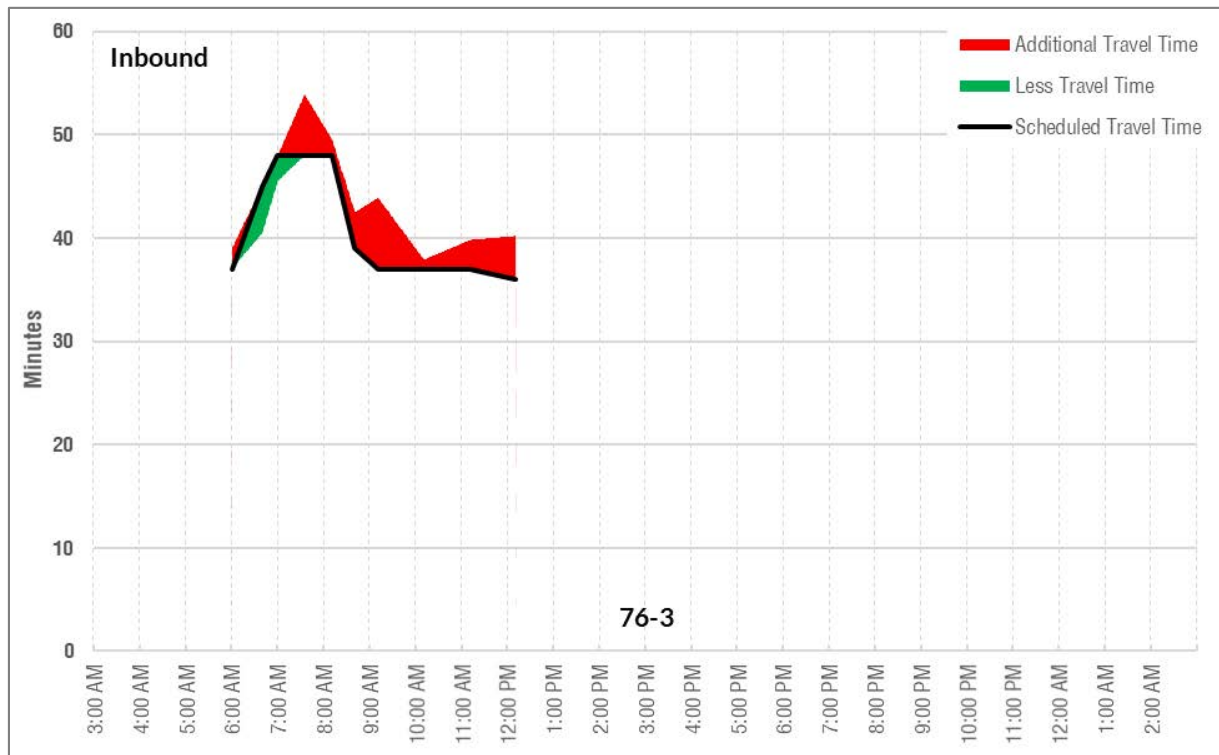


Figure 10 | Scheduled & Median Travel Time by Trip: Route 76.0 Inbound

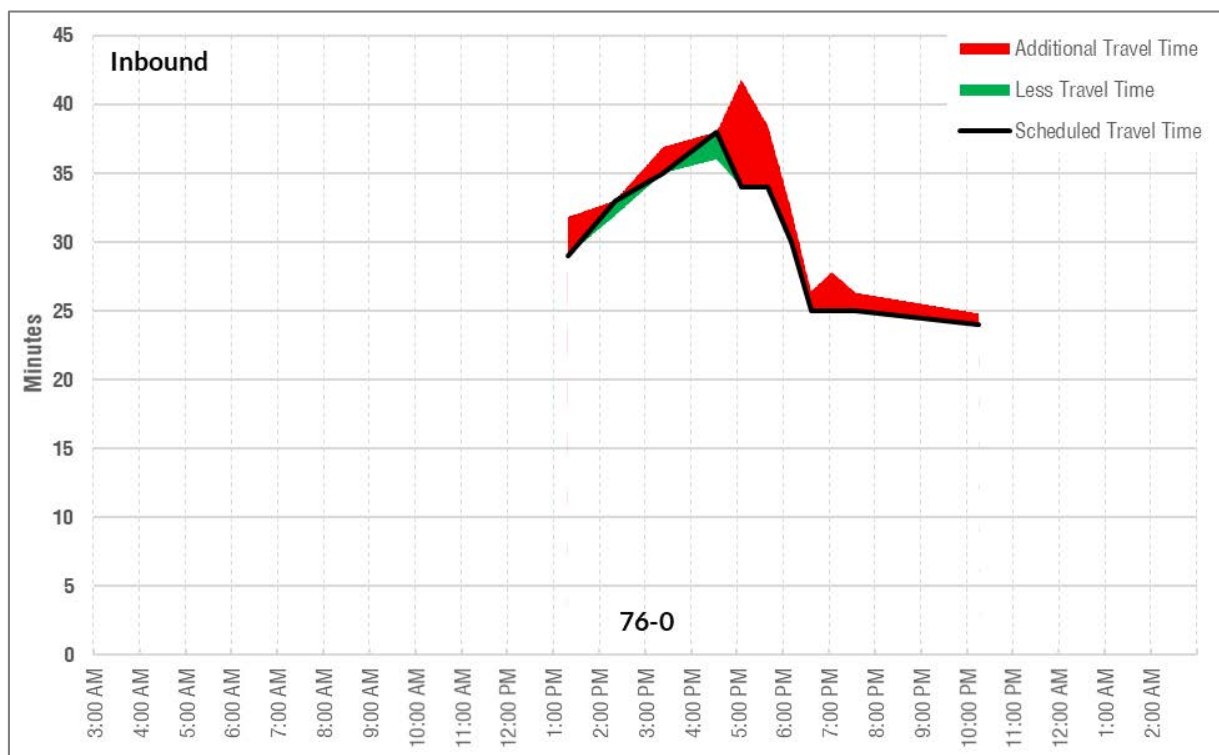


Figure 9 | Scheduled & Median Travel Time by Trip: Route 76.3 Outbound

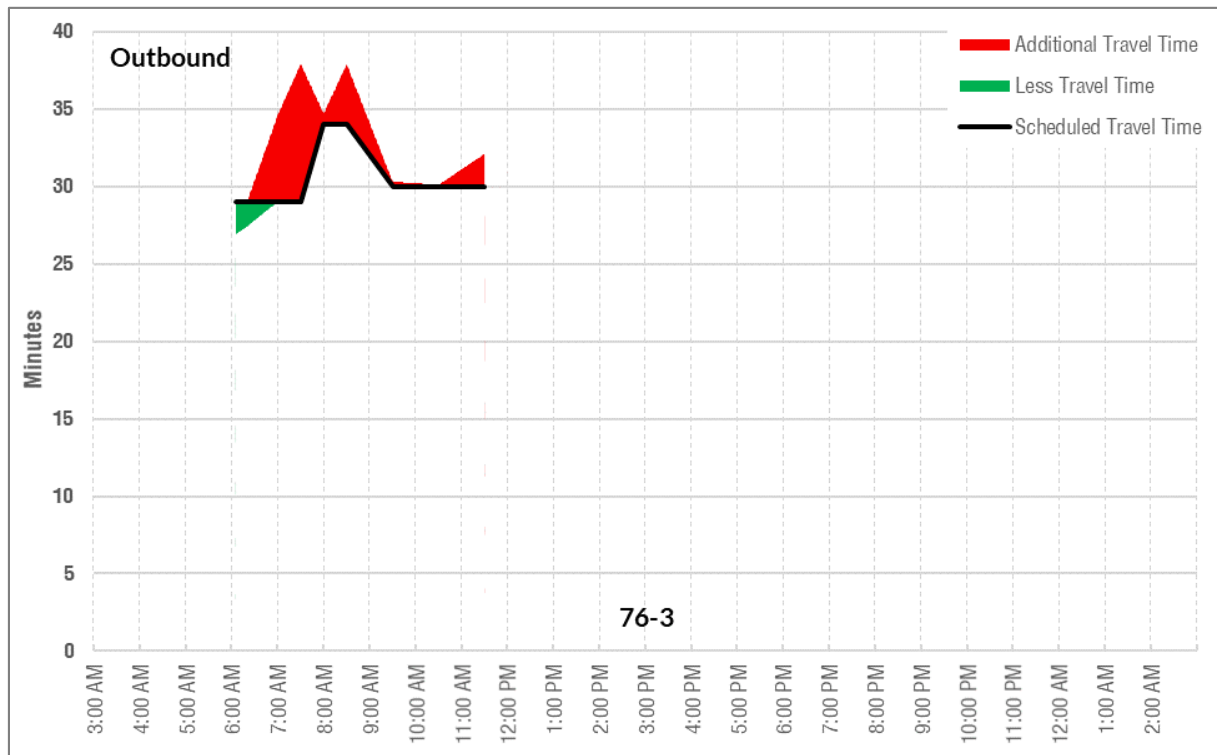
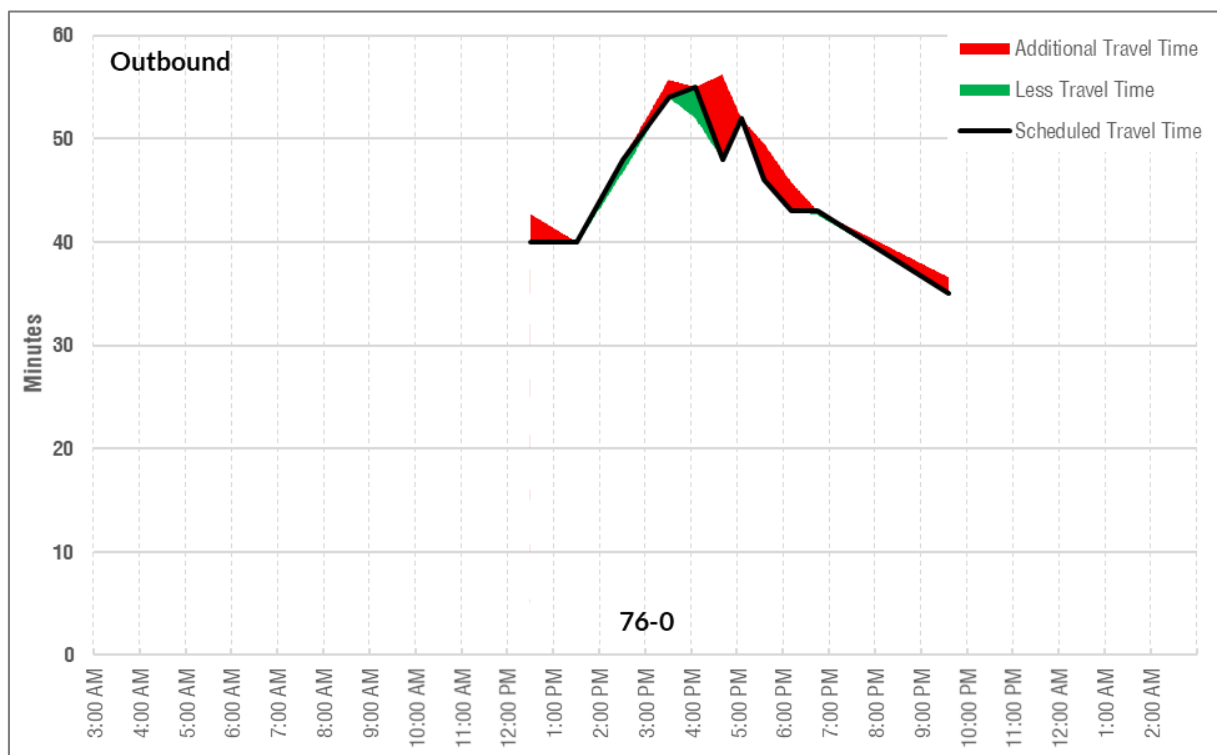


Figure 10 | Scheduled & Median Travel Time by Trip: Route 76.0 Outbound





## Stop Spacing

Stop spacing on Route 76 vary significantly and range from 2.6 stops per mile along the outer end of the route to 13.2 stops per mile in much of Lexington, versus the MBTA's guidelines of four to five stops per mile for suburban areas. The long stop spacing along the outer end of the route reflect operation through undeveloped areas and are appropriate. However, in most of Lexington, stop consolidation could make service faster and more reliable.

## Summary

Route 76 is a long route that primarily connects residents of Lexington with the rapid transit system at Alewife Station. It also connects residents of those communities with the Bedford VA Hospital. Overall, the route performs fairly well. However, issues include:

- On-time performance is below standard, largely due to peak period running times that are longer than scheduled times.
- The route's round trip running time is slightly too long to achieve a 60 minute cycle time, which produces inconvenient headways on weekdays and substandard frequencies for much of the day on Saturdays.
- The Saturday Route 62/76 hybrid increases running times but does not appear to serve more riders than regular Saturday service would (it largely substitutes service for a segment of Route 62 with a segment of Route 76).