

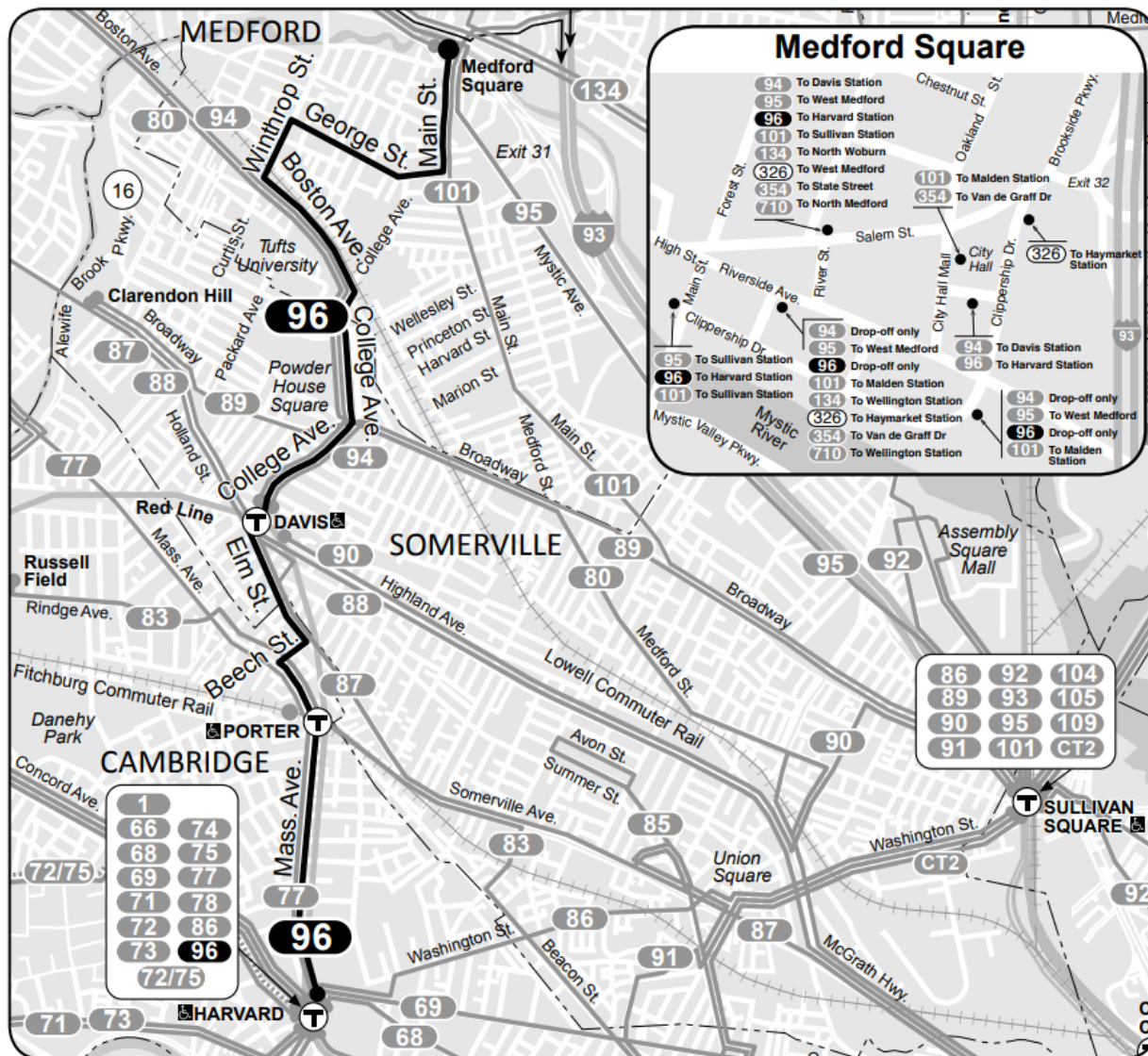
# Route 96

## Medford Square - Harvard Station

### Route Overview

Route 96 Medford Square - Harvard Station is a Local route that connects Medford Square to Harvard Station via Medford Hillside and Davis Square. It operates seven days per week, and provides the most frequent and direct service between Medford Square and the Red Line.

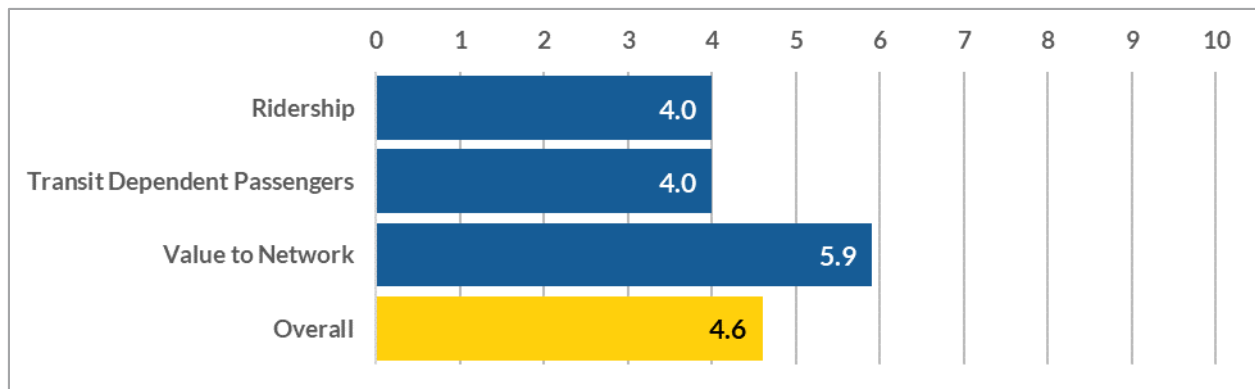
Figure 1 | Service Map



## Network Importance

Route 96 is a moderately important route within the overall MBTA bus network (see Figure 2). On a scale of 0 to 10, the route rates 4.6 in terms of ridership, 4.0 in terms of transit dependent ridership, and 5.9 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 4.6.

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



## Service Patterns

### Schedule

On weekdays, Route 96 provides moderately frequent service from early morning through the AM peak, as well as during the PM peak through 10:00 PM in the evenings (see Table 1). During midday between 9:00 AM and 4:00 PM, and from 10:00 PM until the end of service at 1:00 AM, Route 96 provides infrequent service. On weekends, it also provides infrequent service. The service operates on weekdays from 5:35 AM to 1:22 AM, with the following service frequencies:

- Every 25 minutes from the beginning of service through 6:00 AM.
- Every 12 to 35 minutes from 6:00 AM to 9:00 AM, but mostly every 17 to 20 minutes.
- Every 20 to 35 minutes during midday between 9:00 AM and 4:00 PM, but predominantly every 35 minutes.
- Every 20 to 25 minutes during the PM peak period, but mostly every 20 minutes.
- Every 20 to 35 minutes in the evening between 6:30 PM and 10:00 PM, but predominantly every 30 to 35 minutes.
- Every 35 to 60 minutes after 10:00 PM, but mostly every 60 minutes.

On Saturdays, service operates from 5:20 AM to 1:24 AM, nearly identical to the weekday service span. Most service operates every 50 minutes before 7:00 PM and every 60 minutes after 7:00 PM. On Sundays, service operates from 6:05 AM to 1:15 AM, every 50 to 70 minutes. Service before 9:00 AM operates every 50 minutes, while service from 9:00 AM to 12:00 PM and 7:00 PM to 1:00 AM operates every 60 minutes. Service between 12:00 PM and 7:00 PM mostly operates every 70 minutes.

Route 96 meets the MBTA’s span of service standards on all days and frequency standards for weekdays and Saturdays. However, it does not meet the frequency standard for Sundays, when a large portion of service operates every 70 minutes, versus the agency’s standard of 60 minutes.

**Table 1 | Schedule Statistics**

SERVICEDAY	SPAN OF SERVICE	FREQUENCY (RANGE)	FREQUENCY (AVERAGE)	DAILY TRIPS (INBOUND/OUTBOUND)
<b>Monday-Friday</b>	<b>5:35 AM to 1:00 AM</b>			<b>42/42</b>
Sunrise	5:35 AM to 5:59 AM	1 Trip	1 Trip	1/0
Early AM	6:00 AM to 6:59 AM	20 – 25	20	3/3
AM Peak	7:00 AM to 8:59 AM	12 – 35	19	8/7
Midday Base	9:00 AM to 1:29 PM	35	35	7/8
Midday School	1:30 PM to 3:59 PM	20 – 35	30	5/4
PM Peak	4:00 PM to 6:29 PM	20 – 25	21	7/8
Evening	6:30 PM to 9:59 PM	20 – 35	29	7/8
Late Evening	10:00 PM to 11:59 PM	35 – 60	52	3/2
Night	12:00 AM to 1:00 AM	60	60	1/2
<b>Saturday</b>	<b>5:20 AM to 1:05 AM</b>	<b>25 – 60</b>	<b>48</b>	<b>24/24</b>
<b>Sunday</b>	<b>6:05 AM to 1:00 AM</b>	<b>50 – 70</b>	<b>58</b>	<b>19/19</b>

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

### Service Patterns

Nine out of every 10 weekday trips and all weekend trips on Route 96 run via the primary service pattern (96.0), as shown in Table 2. There is one service pattern (Pattern 96.1) that operates as a short-turn between Medford Square and Davis Square, with four daily weekday trips that operate only during the AM peak.

Table 2 | Service Patterns

PATTERN	ORIGIN	DESTINATION	UNIQUE FEATURE	TRIPS PER WKD	TRIPS PER SAT	TRIPS PER SUN
<b>INBOUND</b>				<b>42</b>	<b>24</b>	<b>19</b>
96.0	Medford Square	Harvard Station	Primary Service Pattern	38	24	19
96.1	Medford Square	Davis Square	Short-turn via College Avenue	4	-	-
<b>OUTBOUND</b>				<b>42</b>	<b>24</b>	<b>19</b>
96.0	Harvard Station	Medford Square	Primary Service Pattern	38	24	19
96.1	Davis Square	Medford Square	Short-turn via College Avenue	4	-	-

## Ridership

Route 96 has moderate ridership, serving about 2,060 riders per weekday, 800 riders on Saturdays, and 510 riders on Sundays. Route 96 has a greater drop-off in ridership between weekdays and weekends than other bus routes with similar weekday ridership, likely due to its infrequent weekend service relative to weekday service levels.

### Ridership by Stop

Route 96 has significantly higher ridership between Medford Square and Davis Station than between Davis Station and Harvard Station (see Figure 3).

On weekdays, inbound between Medford Square and Davis Station:

- Ridership activity is fairly evenly distributed across all stops, with most stops serving between 20 and 70 daily boardings.
- 300 riders typically board at the three Medford Square stops, about 30% of the route's total inbound boardings.
- 300 passengers board and 17 alight between Main Street at Emerson Street and Winthrop Street at Orchard Street.
- Ridership is moderate at stops serving Tufts University. The five stops near Tufts University have 240 boardings and 50 alightings per day. About half of these riders board at Boston Avenue at Winthrop Street.
- The four stops between Powder House Square and College Avenue at Chapel Street have relatively low ridership, with just 44 boardings and 11 alightings.
- Davis Square is the most popular stop, with about 23 boardings and 450 alightings (45% of total inbound alightings).

- About 60% of riders who board between Medford Square and Davis Station alight at or before Davis Station.

Inbound between Davis Station and Harvard Station:

- Ridership activity is low between Davis Station and Porter Station, where the three stops on this segment have just 10 boardings and 27 alightings.
- Between Porter Station and Harvard Station, the four stops on this segment have 80 daily boardings and 140 daily alightings.
- Harvard Station is Route 96's second-most popular destination after Davis Station, serving about 235 daily alightings.

Outbound ridership generally mirrors inbound ridership on weekdays. Weekend ridership patterns are similar, but with lower volumes.

### Ridership by Trip

Route 96 ridership generally follows typical commuting patterns, with high ridership on inbound trips during the AM peak and on outbound trips during the PM peak (see Figure 4). On inbound trips:

- The first trip, at 5:35 AM, carries about 15 riders. Ridership increases through the early morning, reaching 41 riders on the 7:00 AM trip.
- During the AM peak, several trips exceed the MBTA's maximum passenger load standard, indicating issues with overcrowding. These trips occur at 7:17 AM, 7:34 AM, 8:07 AM, and 8:35 AM.
- Ridership falls quickly after the AM peak to about 12 to 20 passengers per trip between 9:00 AM and 7:00 PM, about half of inbound AM peak levels.
- Ridership falls to fewer than 10 riders per trip on all inbound trips after 7:00 PM, with the last inbound trip at 12:35 AM carrying just three passengers.

On weekday outbound trips (see Figure 5):

- Average ridership is below 15 passengers per trip and passenger loads are below 10 passengers through 8:00 AM.
- Passenger loads increase to 24 riders on the 8:12 AM trip and 22 riders on the 8:47 AM trip.
- Ridership falls during midday, between 9:00 AM and 2:00 PM, when typical loads average between 10 and 20 passengers.
- Ridership increases well ahead of the PM peak, to average passenger loads of 37 on the 3:24 PM trip.

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- During the PM peak, ridership increases to between 30 and 55 riders on most trips. The 5:25 PM trip is overcrowded, with typical loads of 56 passengers, well above the maximum passenger load standard.
  - Ridership is moderate in the evenings between 7:00 PM and 11:00 PM, with average loads between 20 and 30 passengers.
  - Ridership falls significantly after 11:00 PM, with typical passenger loads of 12 on the 11:05 PM trip and just six on the last trip at 1:00 AM.

On Saturdays, inbound ridership peaks during the midday between 11:00 AM and 2:00 PM, with typical loads of 20 to 30 passengers (see Figure 6). Outbound ridership peaks during the evening, with 26 passengers on the 5:50 PM trip (see Figure 7). Ridership remains high through the evening, with between 20 and 25 passengers per trip between 9:00 PM and 12:00 AM.

On Sundays, inbound passenger loads average between 10 and 20 riders per trip before 7:00 PM and fewer than 10 riders per trip after 10:00 PM (see Figure 8). Outbound ridership is very low before 11:00 AM, with average passenger loads of fewer than 10 riders per trip (see Figure 9). Ridership increases to between 10 and 25 passengers per trip between 11:00 AM and 10:00 PM, then falls to fewer than 10 riders per trip after 10:00 PM.

Figure 3 | Weekday Inbound Ridership by Stop Map

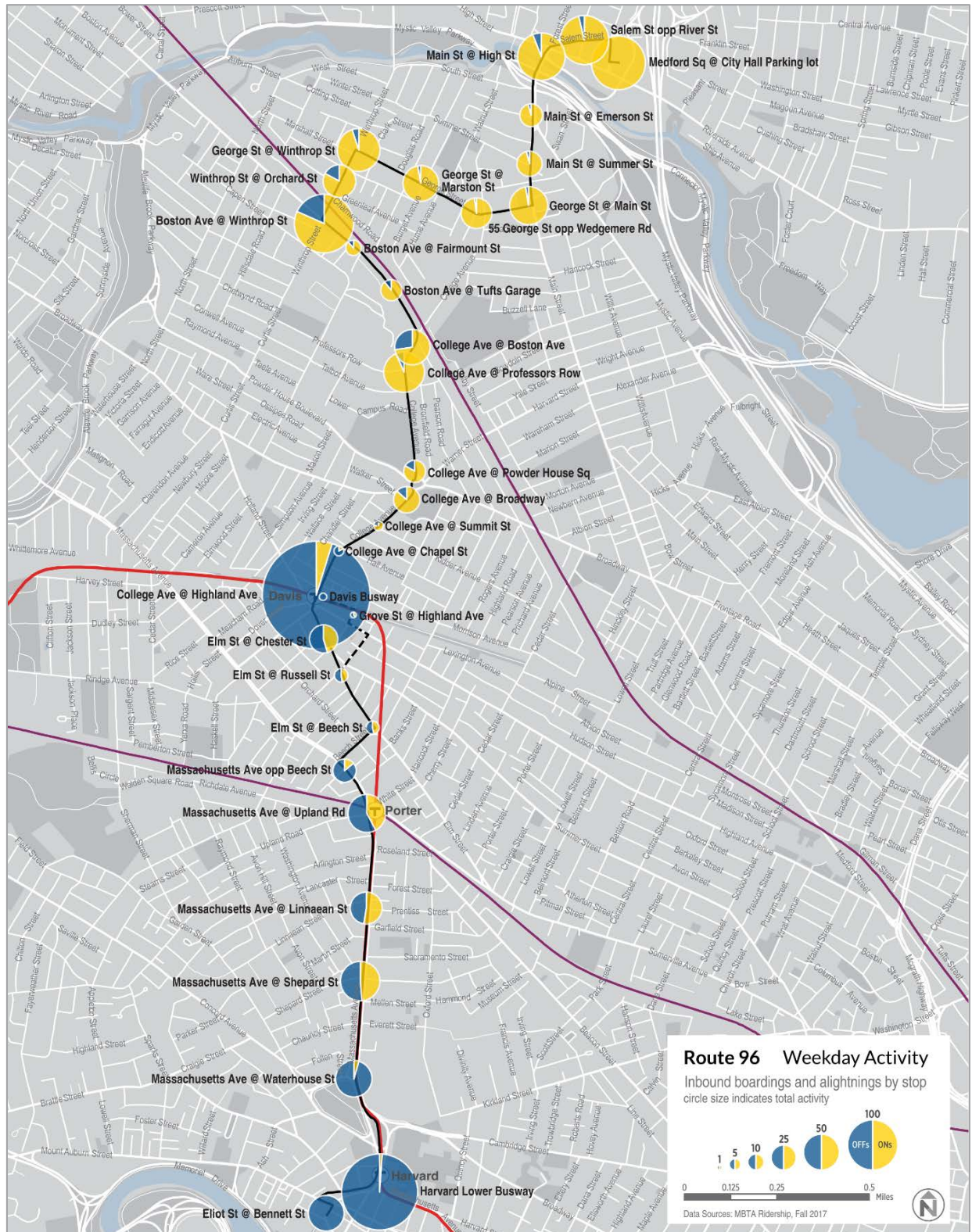


Figure 4 | Weekday Ridership by Trip: Inbound

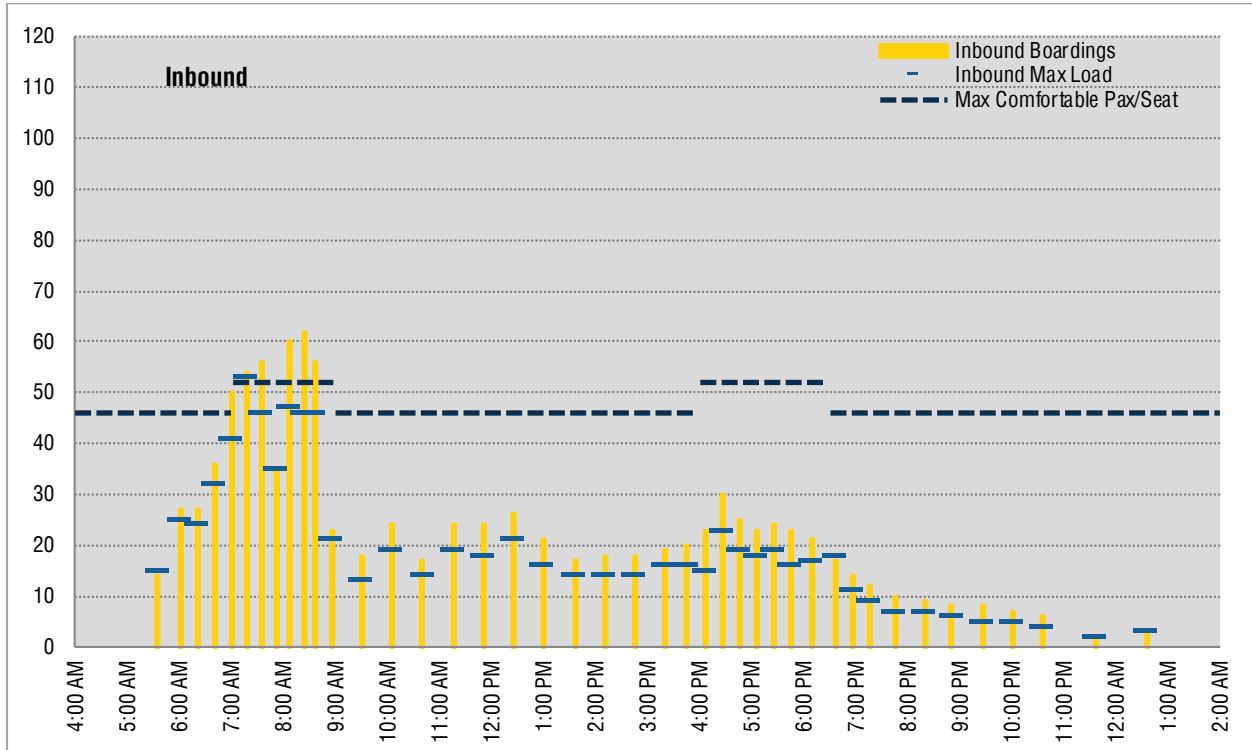


Figure 5 | Weekday Ridership by Trip: Outbound

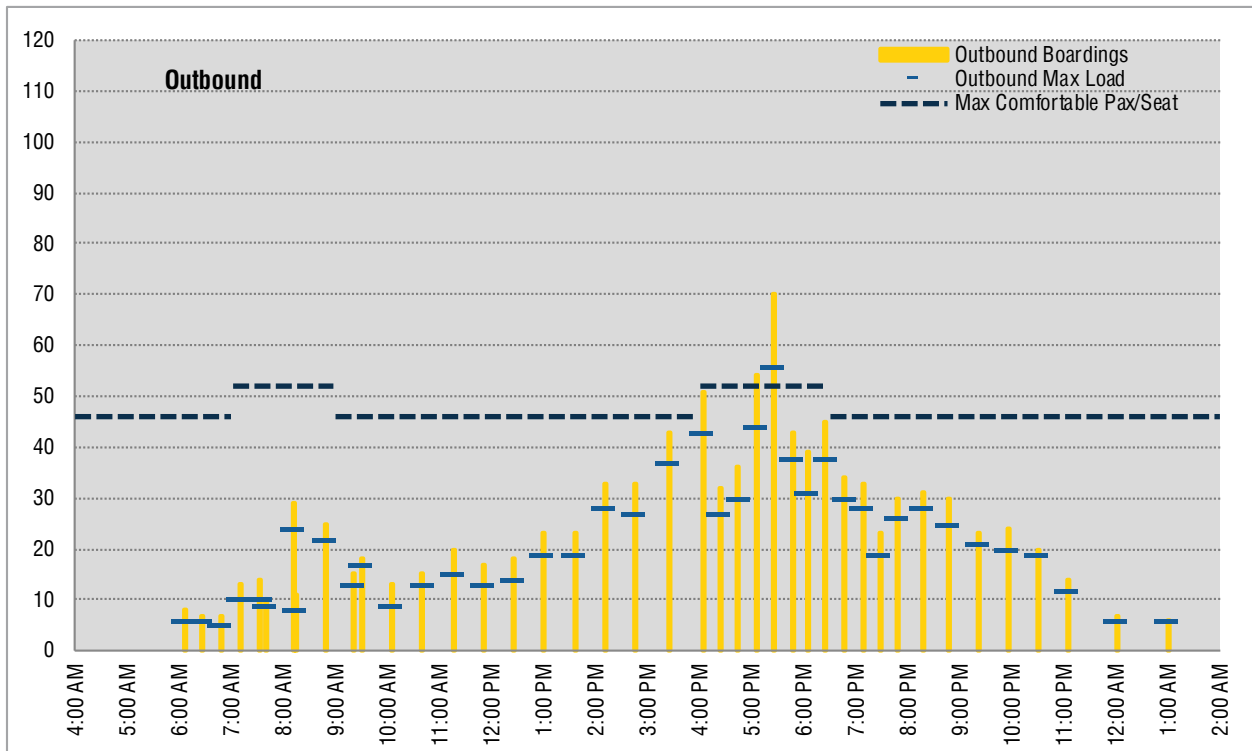




Figure 6 | Saturday Ridership by Trip: Inbound

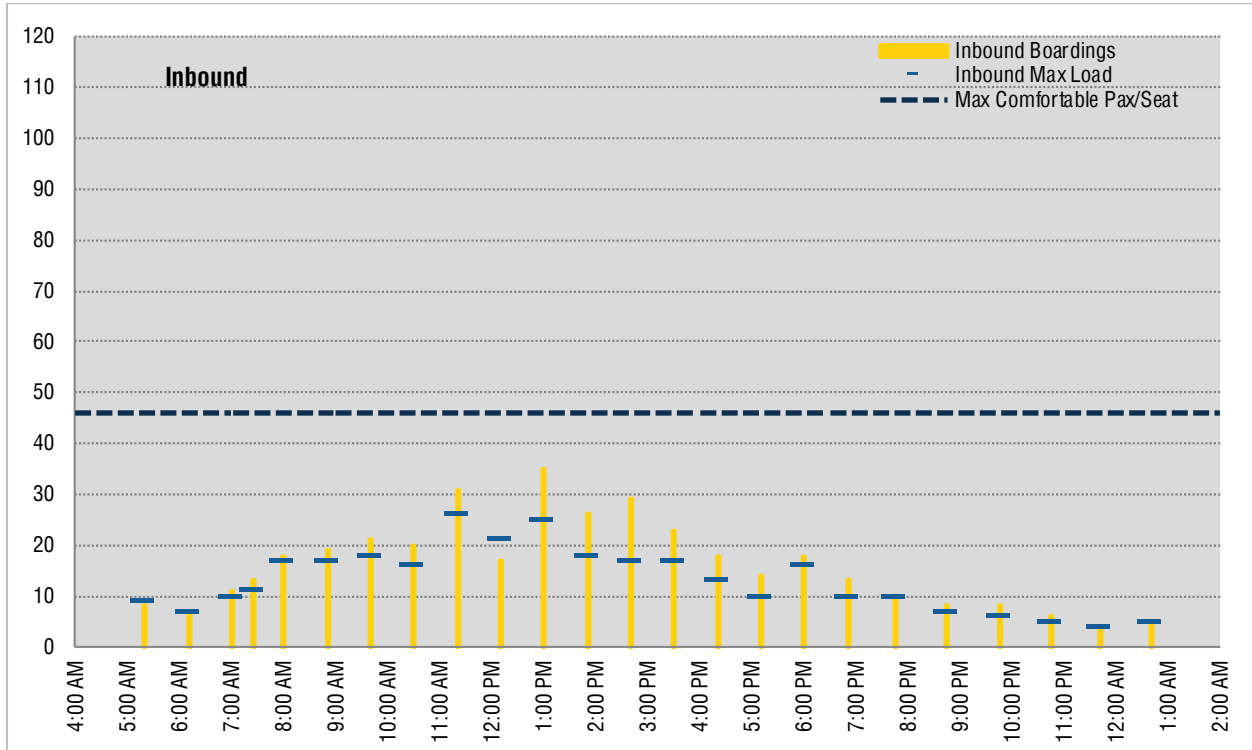


Figure 7 | Saturday Ridership by Trip: Outbound

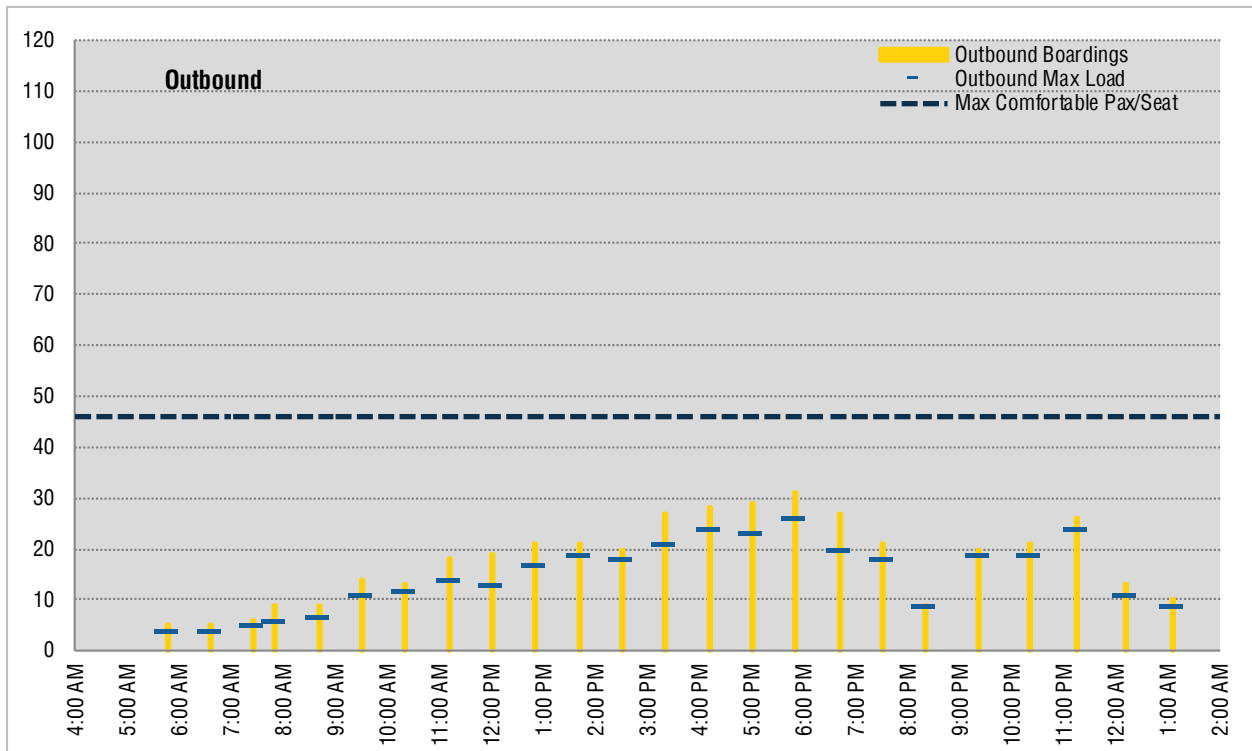


Figure 8 | Sunday Ridership by Trip: Inbound

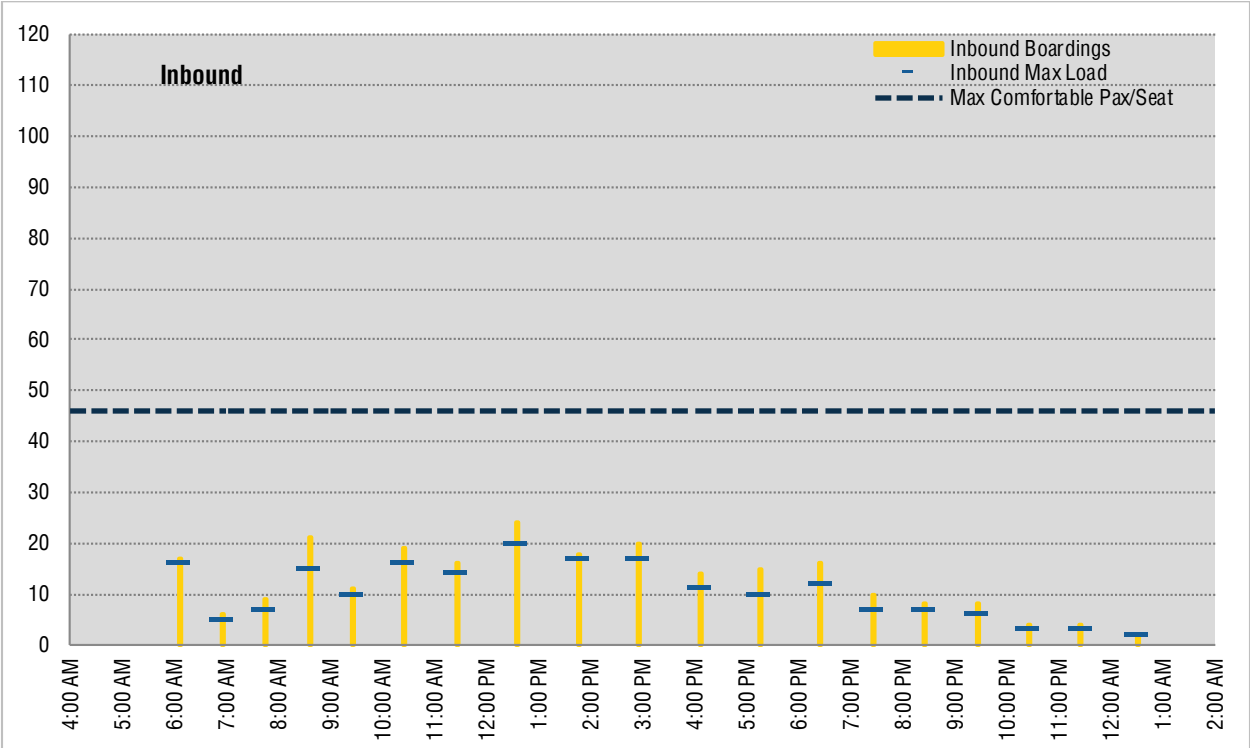
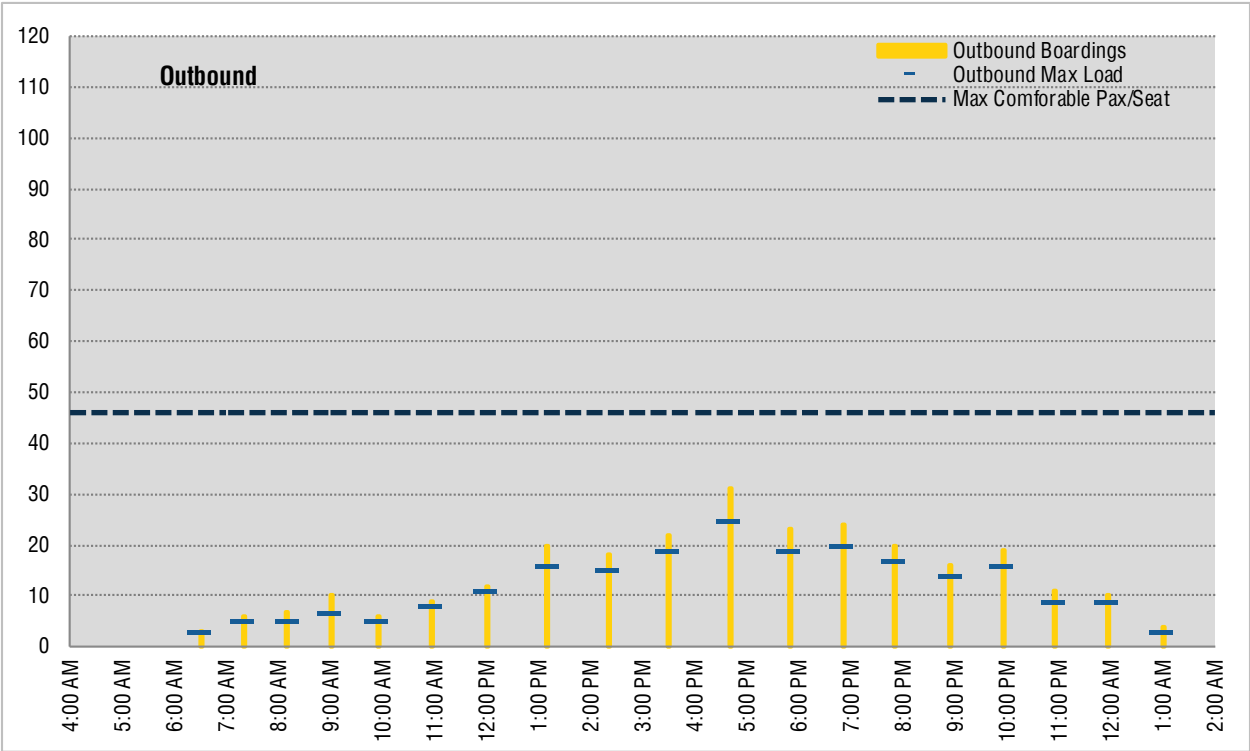


Figure 9 | Sunday Ridership by Trip: Outbound



## 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. 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 96, 95% of weekday passenger minutes are in comfortable conditions, which is above the minimum standard but below the MBTA's target (see Table 3). Route 96 meets the agency's target on Saturdays and Sundays, with 98% and 100% of passenger minutes spent in comfortable conditions, respectively.

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%	98%	100%

## Reliability and Speed

### Reliability

Route 96 provides relatively unreliable service, especially on weekdays. Only 61% of weekday trips are completed on time, well below the minimum standard of 70% for Local bus routes (see Table 4). Saturday service meets this standard, while Sunday service nearly meets it, with 68% on-time performance. As described in the next section, poor on-time performance is largely due to actual running times that exceed scheduled running times.

Table 4 | Reliability

SERVICE DAY	ORIGIN/MID-ROUTE ON-TIME PERFORMANCE	DESTINATION ON-TIME PERFORMANCE	OVERALL RELIABILITY	DROPPED TRIPS
<b>Monday-Friday</b>	61%	62%	61%	0.1%
<b>Saturday</b>	68%	78%	70%	-
<b>Sunday</b>	69%	66%	68%	-

## Running Times

Trips in both directions run three to six minutes behind schedule during the PM peak. Inbound trips operate three to eight minutes behind schedule during the AM peak, PM peak, and through the evening (see Figure 10). During the early morning and midday, Route 96 generally operates on time or ahead of schedule. In contrast, outbound trips operate between three and six minutes ahead of schedule throughout the day, with the exception of the PM peak (see Figure 11).

Figure 10 | Scheduled & Median Travel Time by Trip: Route 96 Inbound

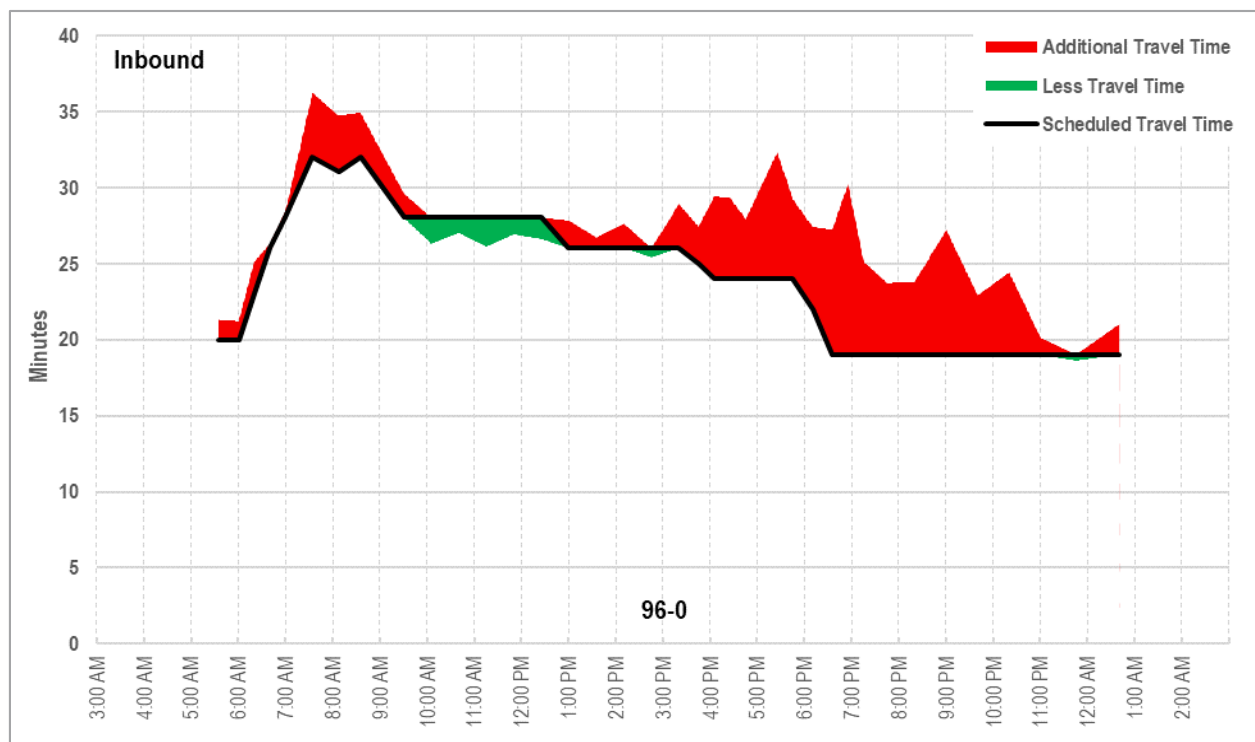
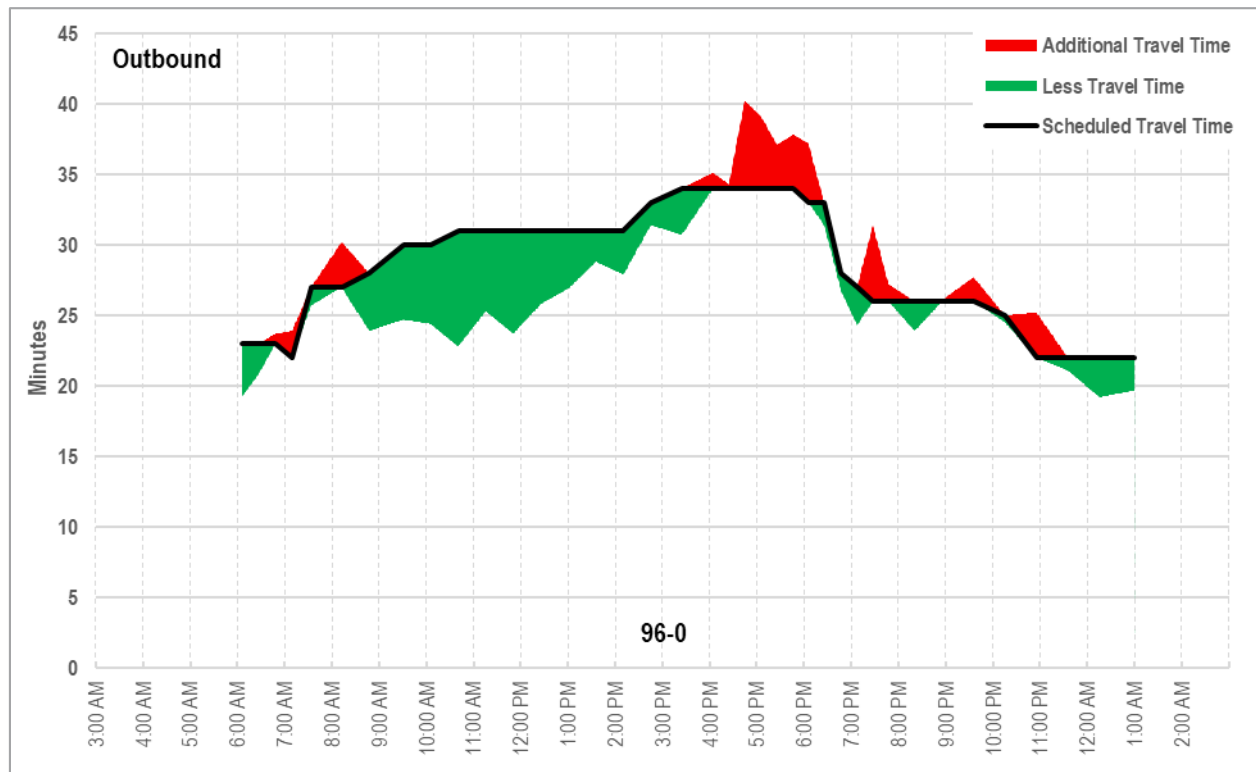


Figure 11 | Scheduled & Median Travel Time by Trip: Route 96 Outbound



## Stop Spacing

Route 96 has relatively close stop spacing in both directions. The route has approximately seven stops per mile, at the upper limit of the four to seven stops per mile recommended for urban areas under MBTA guidelines. There are a number of places where stops are even closer together:

- Outbound stops along Winthrop Street at Chester Avenue and at George Street are just 375 feet apart. The stop at Chester Avenue serves six daily boardings and about 40 daily alightings, somewhat less than the stop at George Street.
- Two inbound stops along College Avenue near Tufts University, at Professors Row at Boston Avenue, are just 400 feet apart. The Professors Row stop serves about 60 daily alightings, nearly double the Boston Avenue stop. The corresponding outbound stops, along College Avenue at Dearborn Road and at Boston Avenue, are also just 400 feet apart. The Dearborn Road stop serves about 70 daily alightings, nearly double the Boston Avenue stop.
- Two inbound stops along College Avenue, at Powder House Square and at Broadway, are just 400 feet apart. The same is true of the corresponding outbound stops at this location.

Stop consolidation could make service faster and improve reliability.

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## Summary

Route 96 provides the most frequent and direct service between Medford Square and the Red Line at Davis Square, before continuing down Massachusetts Avenue to serve Porter Square and Harvard Station. The route has moderate ridership, with about half of passengers traveling from Medford Square and Medford Hillside to Davis Square. Route 96 also serves a fair number of passengers riding through Davis Square to stops on Massachusetts Avenue and at Harvard Station, as well as passengers taking the first available Massachusetts Avenue bus. Route 96 is very unreliable, particularly on inbound PM peak and evening trips.