

Route CT2

Sullivan Square Station – Ruggles Station

Route Overview

Route CT2 Sullivan Square Station – Ruggles Station is a Local route that operates limited stop crosstown service between Sullivan Station and Ruggles Station via Kendall Square, Boston University (BU), the Fenway, and the Longwood Medical Area (LMA).

Both north and south of the Charles River, relatively little of Route CT2's alignment is entirely unique (in that other routes operate along the same streets). However, it does offer unique and important connections between:

- Sullivan Station and Kendall Square
- Sullivan Station and areas south of the river, including the LMA
- Kendall Square, BU, the LMA, and Ruggles Station

Network Importance

Route CT2 is of moderate importance within the overall system (see Figure 2). On a scale of 0 to 10, the route rates 4.2 in terms of ridership, 2.9 in terms of transit dependent ridership, and 7.0 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 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 4.7.

Figure 1 | Service Map

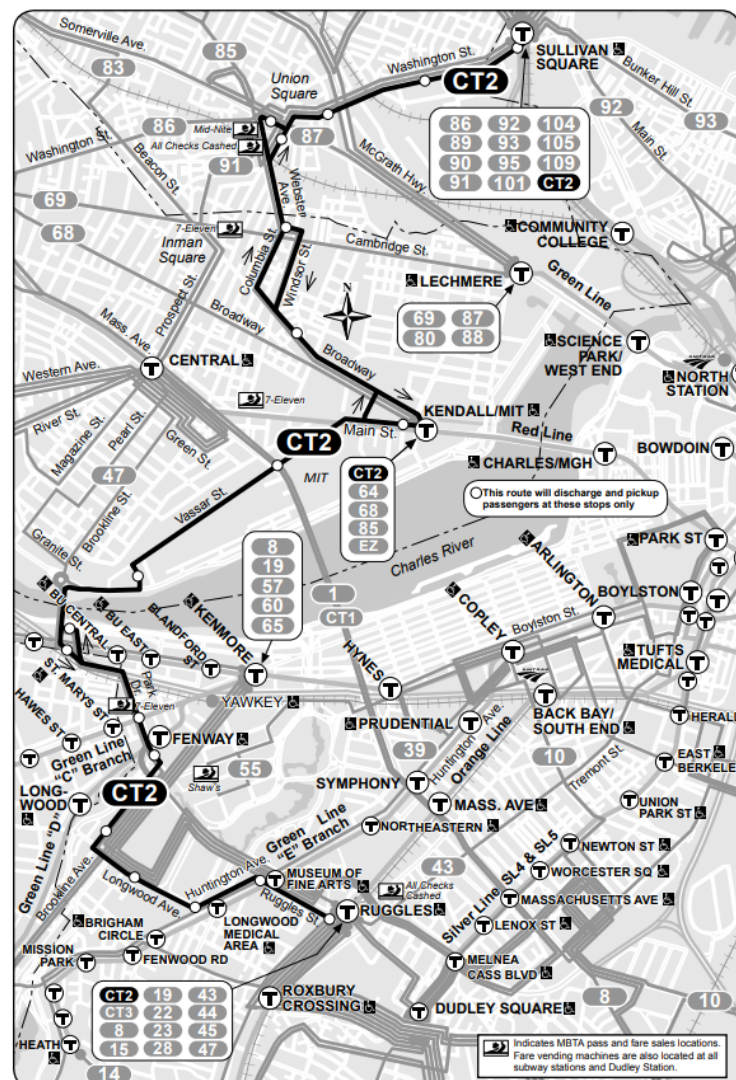
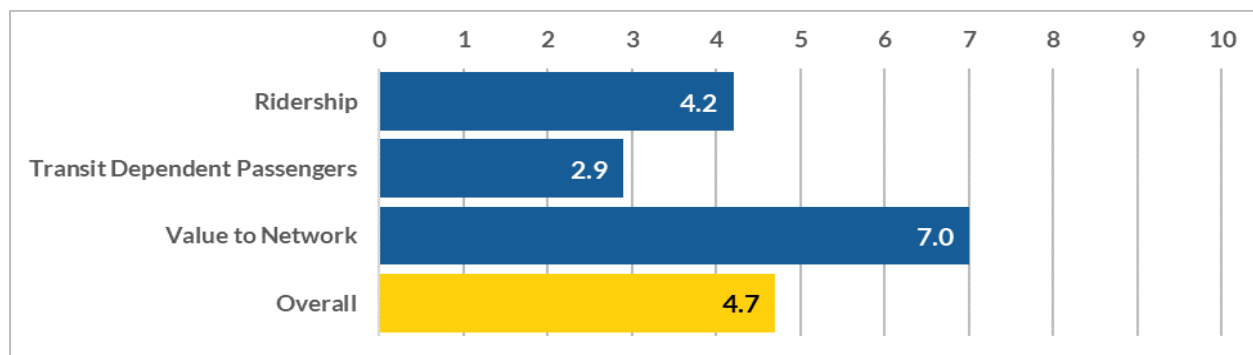


Figure 2 | Relative Importance within MBTA Bus Network (on a scale of 0 to 10)



Service Overview

Schedule

Route CT2 operates only on weekdays, from 5:55 AM to 7:36 PM, every 20 to 25 minutes during peak periods and every 15 to 35 minutes during other times (see Table 1).

Table 1 | Schedule Statistics

SERVICE DAY	SPAN OF SERVICE	FREQUENCY (RANGE)	FREQUENCY (AVERAGE)	DAILY TRIPS (INBOUND/OUTBOUND)
Monday-Friday	5:55 AM to 7:36 PM			29/30
Sunrise	5:55 AM to 5:59 AM	1 trip	-	0/1
Early AM	6:00 AM to 6:59 AM	15 - 20	18	2/2
AM Peak	7:00 AM to 8:59 AM	20	20	6/7
Midday Base	9:00 AM to 1:29 PM	20 - 35	33	8/8
Midday School	1:30 PM to 3:59 PM	25 - 35	29	5/5
PM Peak	4:00 PM to 6:29 PM	25	25	6/6
Evening	6:30 PM to 7:36 PM	30	30	2/1
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.

On weekdays, the route meets the minimum frequency standards of every 30 minutes during peak periods and every 60 minutes during off peak periods. However, it fails to meet the MBTA’s minimum service span standard of 7:00 AM to 7:00 PM, with the last outbound trip departing at 6:45 PM. In addition, per the Service Delivery Policy, routes that operate in dense areas should provide weekend service, which Route CT2 does not.

Since the completion of this document, the MBTA has made minor changes to Route CT2’s schedule.

Service Patterns

Route CT2 operates along the same alignment throughout the day (see Table 2). Inbound service begins at Sullivan Square Station and continues southwest to Somerville’s Union Square, then turns south down Webster Avenue to reach Cambridge’s Inman Square. It then travels eastbound via Kendall Square before turning southwest down Vassar Street to the Boston University Bridge. It then crosses the Charles River, providing access to Boston University and Fenway, before continuing south to the Longwood Medical Area and terminating at Ruggles Station near Northeastern University. Outbound service is similar to inbound service, differing only in the use of one-way street pairs.

Table 2 | Service Patterns

PATTERN	ORIGIN	DESTINATION	UNIQUE FEATURE	TRIPS PER WKD	TRIPS PER SAT	TRIPS PER SUN
INBOUND				29	-	-
CT2.0	Sullivan Station	Ruggles Station	Via Kendall Square	29	-	-
OUTBOUND				30	-	-
CT2.0	Ruggles Station	Sullivan Station	Via Kendall Square	30	-	-

Ridership

The CT2 serves approximately 2,000 riders per weekday.

Ridership by Stop

Route CT2 has high ridership at all stops, with the highest ridership locations at Sullivan Square Station, Kendall Square, the Longwood Medical Area, and Ruggles Station. There is also a mix of boardings and alightings at most stops, indicating that a large proportion of trips are made between intermediate locations rather than to and from one end (see Figure 3). This is typical of crosstown routes.

On inbound trips, 80% of riders board north of the Charles River, and 65% alight south of the river. This indicates that a large proportion of the route’s riders are taking advantage of the unique service that the route provides rather than in areas where other options are also available (for example, south of the river, where Route 47 service is available).

The highest ridership stations and stops are:

- Sullivan Square Station, with 260 boardings.
- Union Square, with 142 boardings and 63 alightings.
- Kendall Square, with 168 boardings and 110 alightings.
- Brookline Avenue at Short Street, which is the first stop in the LMA, with 21 boardings and 102 alightings.

- Longwood Avenue at Blackfan Street, which is the major stop in the LMA, with 98 boardings and 114 alightings.
- Ruggles Station, where 247 passengers alight.

Key ridership patterns include:

- 398 passengers only use the northern half of the route between and within Charlestown, Somerville, and Cambridge.
- Of the 945 passengers who board north of the Charles River, 58% continue to locations south of the river.
- 187 passengers only use the southern half of the route within Boston. These passengers are also served by Route 47, which provides much more frequent but slower service.

Ridership by Trip

Ridership on Route CT2 is very bi-directional, which is typical of a crosstown route. Inbound ridership is high on peak period trips, with 40 to 70 passengers per trip, and significantly lower on midday trips and after 6:00 PM, with about 20 to 30 passengers per trip (see Figure 4). Because turnover along the route is high, maximum loads are much lower than total ridership, generally under 40 during peak periods and under 20 during the midday.

Outbound ridership by trip patterns largely mirror inbound patterns (see Figure 5). However, the PM peak trip at 5:00 PM has 103 total boardings and a maximum load of 65 passengers. This maximum load is well above the MBTA's maximum load standard.

Figure 4 | Weekday Ridership by Trip: Inbound

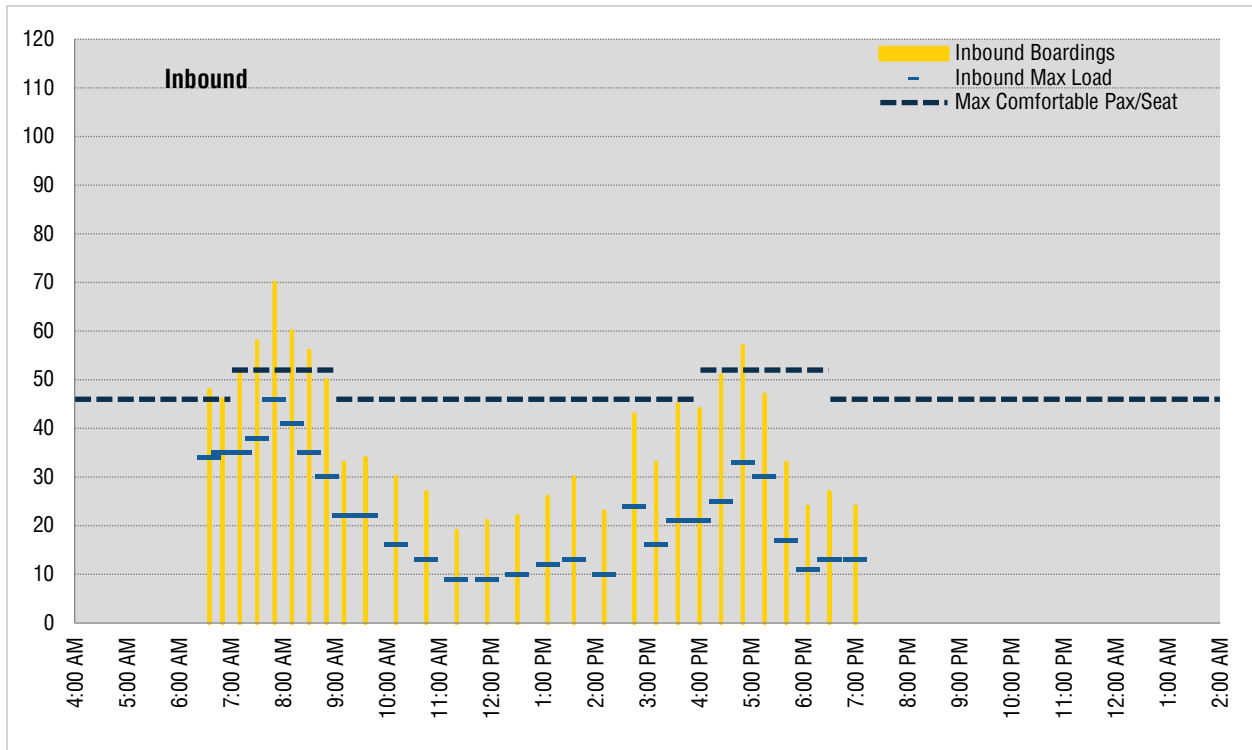
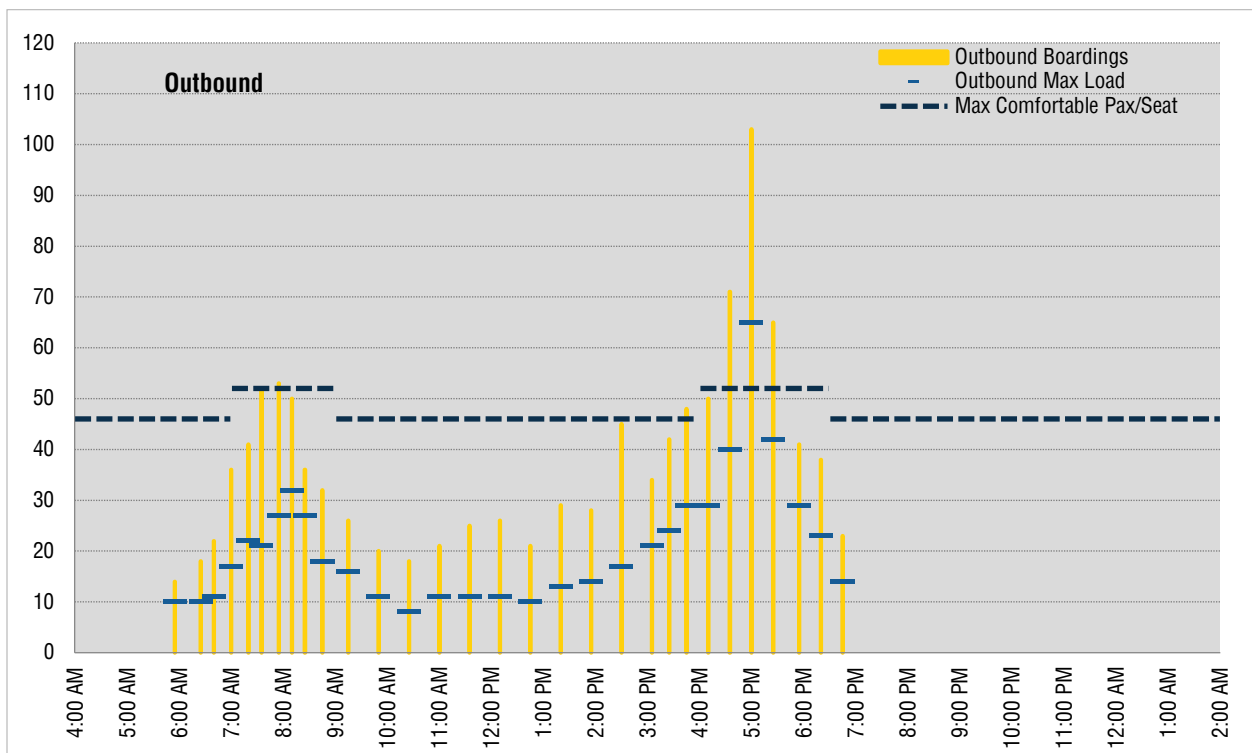


Figure 5 | Weekday Ridership by Trip: Outbound



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% should be. 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 CT2, 96.6% of passenger travel is in comfortable conditions, which meets the target (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	96.6%	-	-

Reliability and Speed

Reliability

Only 43% of trips both depart and arrive on-time. Dropped trips, or trips that are not run due to vehicle or operator unavailability, breakdowns, or other reasons, are a moderate problem.

Table 4 | Reliability

SERVICE DAY	ORIGIN/MID-ROUTE ON-TIME PERFORMANCE	DESTINATION ON-TIME PERFORMANCE	OVERALL RELIABILITY	DROPPED TRIPS
Monday-Friday	43%	45%	43%	1.0%
Saturday	-	-	-	-
Sunday	-	-	-	-

On-time: Trips are considered to be on-time if they depart from their destination zero to three minutes late and arrive at their destinations within five minutes of their scheduled arrival time.

Running Times

The major causes of off-schedule performance are delays along the route. During the AM and PM peaks, actual running times are longer than scheduled (see Figure 6 and Figure 7). During the early afternoon, they are shorter than scheduled. Since the completion of this document, the MBTA has adjusted Route CT2 schedules to better reflect actual running times.

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

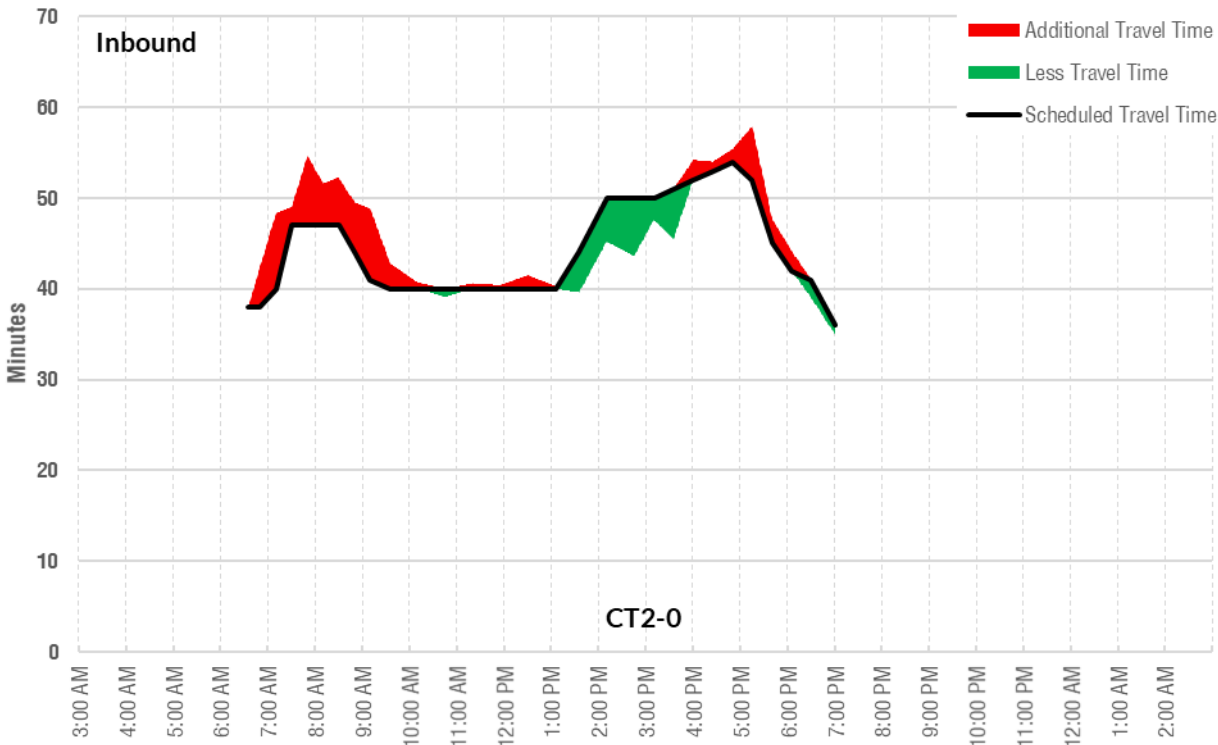
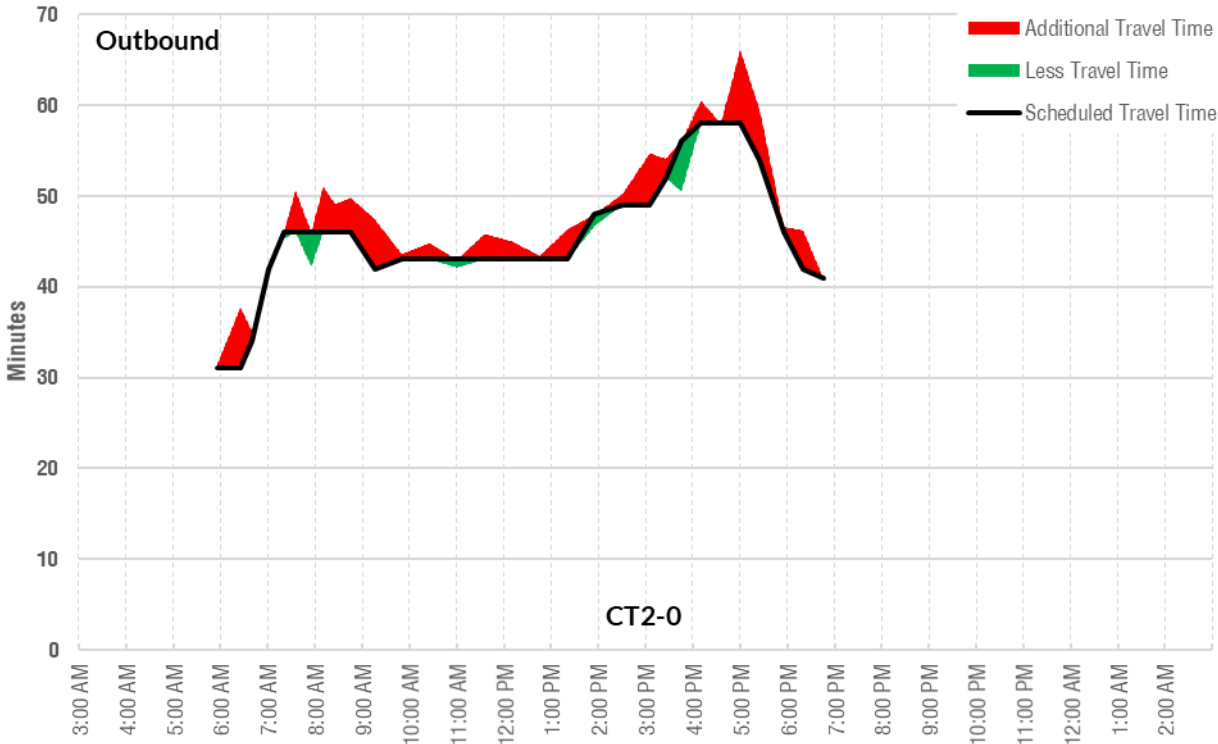


Figure 7 | Scheduled & Median Travel Time by Trip: Outbound



Stop Spacing

Route CT2 has an average stop spacing of 2,200 feet, or 0.4 miles. This is consistent with the MBTA's standard of two to four stops per mile (1,200 to 2,600 feet) for limited stop service. One example of closely spaced stops is on Park Drive, where stops at Beacon Street and at Fenway Station are only 600 feet apart; the stop at Park Drive at Beacon Street has among the lowest ridership activity on the route.

Summary

Route CT2 operates within a unique space in the MBTA's bus network. It was originally implemented as a faster alternative to Route 47, which is the primary reason for its short span of service and relatively infrequent service. However, it was also designed to provide new connections to Kendall Square, and as both Kendall Square and the LMA have grown, Route CT2 has grown into an important link to those areas from Somerville, the Orange Line, and the many bus routes that operate to and from Sullivan Square Station.