

Date: August 7, 2024 Job No.: 11341
To: Nora Loughnane
Cc:
From: Isaac Almy, PE, Merrick Turner, PE
Subject: Traffic Data Comparison Canton Street, Westwood, MA

At the request of the town of Westwood, MA BETA Group has collected traffic data at five locations on and adjacent to Canton Street to compare current traffic volumes with volumes originally collected in 2016 (before the opening of the I-95 NB Exit ramp). The purpose of this evaluation is to compare the traffic volumes on Canton Street before and after the opening of the I-95 NB Exit ramp and to assess traffic impacts. The new I-95 NB Exit ramp to Dedham Street has created a potential for cut-through traffic in the northbound direction, thereby increasing traffic on Canton Street. If the interchange of I-95 and I-93 becomes congested, the addition of the new I-95 off-ramp to Dedham Street allows the possibility for drivers to use the new ramp and subsequently Canton Street or University Avenue to bypass the interchange. Cut-through traffic is primarily a concern on Canton Street, which is a residential neighborhood as opposed to University Avenue which is a commercial roadway. This is particularly a concern in the morning peak hour when vehicles are predominantly traveling in the northbound direction.

BETA Group collected seven days (Thursday April 25th to Wednesday May 1st) of traffic volume and speed data at the following five locations in Westwood:

1. Canton Street, south of Downey Street
2. Canton Street, north of Spellman Road
3. Canton Street, south of Hemlock Drive
4. Everett Street, west of Lyons Drive
5. Forbes Road, south of Spellman Road

For consistency purposes, the ATR units were placed in similar locations to the 2016 data collection locations. In addition to traffic volume and speed data, BETA Group also conducted a digital travel time survey using the Google Maps Python Application Programming Interface (API) to programmatically record live travel times. Travel time data was collected over four weekdays during the morning peak hour.

The following sections of this memo summarize the volume, speed, and travel time data.

SPEED DATA SUMMARY

Speed data was collected with radar equipment for a period of seven days. The speed data was then averaged for a typical weekday and for Saturday.

WEEKDAY SPEED DATA

Weekday speed data is summarized in Table 1 below.

Table 1 - Weekday 85th Percentile Speed Comparison

| Location | Posted Speed | Northbound | | | Southbound | | |
|---------------------------------------|--------------|------------|------|--------|------------|------|--------|
| | | 2016 | 2024 | Change | 2016 | 2024 | Change |
| Canton Street, south of Downey Street | 30 | 37 | 39 | +2 | 36 | 38 | +2 |
| Canton Street, north of Spellman Road | 35 | 38 | 40 | +2 | 38 | 40 | +2 |
| Canton Street, south of Hemlock Drive | 35 | 33 | 37 | +4 | 37 | 38 | +1 |
| Everett Street, West of Lyons Drive | 30 | 34 | 28 | -6 | 35 | 32 | -3 |
| Forbes Road, south of Spellman Road | 30 | 31 | 31 | 0 | 31 | 32 | +1 |

Canton Street (South of Downey St) - 30 mph posted speed limit

- Northbound (NB) vehicle speeds increased by 2 mph to 39 mph.
- Southbound (SB) vehicle speeds increased by 2 mph to 40 mph.
- 2024 speeds have increased and are above the speed limit.

Canton Street (North of Spellman Road) – 35 mph posted speed limit

- Northbound (NB) vehicle speeds increased by 2 mph to 40 mph.
- Southbound (SB) vehicle speeds increased by 2 mph to 40 mph.
- 2024 speeds have increased and are above the speed limit.

Canton Street (South of Hemlock Drive) - 35 mph posted speed limit

- Northbound (NB) vehicle speeds increased by 4 mph to 37 mph.
- Southbound (SB) vehicle speeds increased by 2 mph to 38 mph.
- 2024 speeds have increased and Northbound is slightly above the speed limit, southbound is above the speed limit.

Everett Street (West of Lyons Drive) - 30 mph posted speed limit

- Northbound (NB) vehicle speeds decreased by 6 mph to 28 mph.
- Southbound (SB) vehicle speeds decreased by 3 mph to 32 mph.
- 2024 speeds have decreased and are consistent with a 30-mph posted speed limit.

Forbes Road (South of Spellman Road) - 30 mph posted speed limit

- Northbound (NB) vehicle speeds have not changed and remain at 31 mph.
- Southbound (SB) vehicle speeds increased by 1 mph to 32 mph.
- 2024 speeds have remained the same or increased but are still consistent with a 30-mph posted speed limit.

SATURDAY SPEED DATA

Saturday speed data is summarized in Table 2 below.

Table 2 - Saturday 85th Percentile Speed Comparison

| Location | Posted Speed | Northbound | | | Southbound | | |
|---------------------------------------|--------------|------------|------|--------|------------|------|--------|
| | | 2016 | 2024 | Change | 2016 | 2024 | Change |
| Canton Street, south of Downey Street | 30 | 37 | 40 | +3 | 36 | 38 | +2 |
| Canton Street, north of Spellman Road | 35 | 39 | 40 | +1 | 38 | 40 | +2 |
| Canton Street, south of Hemlock Drive | 35 | 33 | 37 | +4 | 36 | 39 | +3 |
| Everett Street, West of Lyons Drive | 30 | 34 | 28 | -6 | 35 | 32 | -3 |
| Forbes Road, south of Spellman Road | 30 | 31 | 31 | 0 | 30 | 32 | +2 |

Canton Street (South of Downey St) - 30 mph posted speed limit

- Northbound (NB) vehicle speeds increased by 3 mph to 40 mph.
- Southbound (SB) vehicle speeds increased by 2 mph to 38 mph.
- 2024 speeds have increased and are above the speed limit.

Canton Street (North of Spellman Road) – 35 mph posted speed limit

- Northbound (NB) vehicle speeds increased by 1 mph to 40 mph.
- Southbound (SB) vehicle speeds increased by 2 mph to 40 mph.
- 2024 speeds have increased and are above the speed limit.

Canton Street (South of Hemlock Drive) - 35 mph posted speed limit

- Northbound (NB) vehicle speeds increased by 4 mph to 37 mph.
- Southbound (SB) vehicle speeds increased by 3 mph to 39 mph.
- 2024 speeds have increased and Northbound is slightly above the speed limit, southbound is above the speed limit.

Everett Street (West of Lyons Drive) - 30 mph posted speed limit

- Northbound (NB) vehicle speeds decreased by 6 mph to 28 mph.
- Southbound (SB) vehicle speeds decreased by 3 mph to 32 mph.
- 2024 speeds have decreased and are consistent with a 30-mph posted speed limit.

Forbes Road (South of Spellman Road) - 30 mph posted speed limit

- Northbound (NB) vehicle speeds have not changed and remain at 31 mph.
- Southbound (SB) vehicle speeds increased by 2 mph to 32 mph.
- 2024 speeds have remained the same or increased but are still consistent with a 30-mph posted speed limit.

VOLUME DATA

Volume data was collected over a seven-day period. Volume data is then summarized by weekday, Saturday and Sunday.

WEEKDAY VOLUME DATA

Weekday volume data is summarized in Table 3A below.

Table 3A - Weekday Volume Comparison (Both Directions)

| Location | Year | Daily | | | AM Peak Hour | | | PM Peak Hour | | |
|---------------------------------------|------|--------|--------|----------|--------------|--------|----------|--------------|--------|----------|
| | | Volume | Change | % Change | Volume | Change | % Change | Volume | Change | % Change |
| Canton Street, south of Downey Street | 2016 | 9,242 | | | 745 | | | 1,002 | | |
| | 2024 | 9,101 | -141 | -2% | 676 | -68 | -9% | 915 | -87 | -9% |
| Canton Street, north of Spellman Road | 2016 | 7,631 | | | 611 | | | 857 | | |
| | 2024 | 7,614 | -17 | 0% | 571 | -39 | -6% | 772 | -85 | -10% |
| Canton Street, south of Hemlock Drive | 2016 | 6,661 | | | 556 | | | 771 | | |
| | 2024 | 6,670 | 10 | 0% | 538 | -18 | -3% | 663 | -108 | -14% |
| Everett Street, west of Lyons Drive | 2016 | 2,048 | | | 185 | | | 195 | | |
| | 2024 | 1,806 | -242 | -12% | 187 | 2 | 1% | 178 | -17 | -9% |
| Forbes Road, south of Spellman Road | 2016 | 856 | | | 50 | | | 78 | | |
| | 2024 | 847 | -10 | -1% | 67 | 17 | 33% | 89 | 11 | 14% |

Canton Street (South of Downey St)

- Daily volumes decreased by 141 vehicles essentially remaining the same.
- AM peak hour volumes decreased by 68 vehicles.
- PM peak hour volumes decreased by 87 vehicles.

Canton Street (North of Spellman Road)

- Daily volumes decreased by 17 vehicles essentially remaining the same.
- AM peak hour volumes decreased by 39 vehicles.
- PM peak hour volumes decreased by 85 vehicles.

Canton Street (South of Hemlock Drive)

- Daily volumes increased by 10 vehicles essentially remaining the same.
- AM peak hour volumes decreased by 18 vehicles essentially remaining the same.
- PM peak hour volumes decreased by 108 vehicles.

Everett Street (West of Lyons Drive)

- Daily volumes decreased by 242 vehicles.
- AM peak hour volumes increased by 2 vehicles essentially remaining the same.
- PM peak hour volumes decreased by 17 vehicles.

Forbes Road (South of Spellman Road)

- Daily volumes decreased by 10 vehicles essentially remaining the same.
- AM peak hour volumes increased by 17 vehicles.
- PM peak hour volumes increased by 11 vehicles.

Volume data was also summarized in Table 3B specifically for the northbound direction on Canton Street, which is a key interest.

Table 3B – Weekday Volume Comparison (Northbound Direction)

| Location | Year | Daily | | | AM Peak Hour | | | PM Peak Hour | | |
|---------------------------------------|------|--------|--------|----------|--------------|--------|----------|--------------|--------|----------|
| | | Volume | Change | % Change | Volume | Change | % Change | Volume | Change | % Change |
| Canton Street, south of Downey Street | 2016 | 4,033 | | | 374 | | | 373 | | |
| | 2024 | 4,009 | -23 | -1% | 459 | 85 | 23% | 273 | -99 | -27% |
| Canton Street, north of Spellman Road | 2016 | 3,300 | | | 335 | | | 320 | | |
| | 2024 | 3,375 | 75 | 2% | 445 | 110 | 33% | 222 | -97 | -30% |
| Canton Street, south of Hemlock Drive | 2016 | 2,882 | | | 324 | | | 305 | | |
| | 2024 | 2,991 | 109 | 4% | 432 | 108 | 33% | 197 | -109 | -36% |

Canton Street (South of Downey St)

- Daily volumes decreased by 23 vehicles essentially remaining the same.
- AM peak hour volumes increased by 85 vehicles.
- PM peak hour volumes decreased by 99 vehicles.

Canton Street (North of Spellman Road)

- Daily volumes increased by 75 vehicles essentially remaining the same.
- AM peak hour volumes increased by 110 vehicles.
- PM peak hour volumes decreased by 97 vehicles.

Canton Street (South of Hemlock Drive)

- Daily volumes increased by 109 vehicles essentially remaining the same.
- AM peak hour volumes increased by 108 vehicles.
- PM peak hour volumes decreased by 109 vehicles.

Volume data was also summarized in Table 3C specifically for the southbound direction on Canton Street.

Table 3C – Weekday Volume Comparison (Southbound Direction)

| Location | Year | Daily | | | AM Peak Hour | | | PM Peak Hour | | |
|---------------------------------------|------|--------|--------|----------|--------------|--------|----------|--------------|--------|----------|
| | | Volume | Change | % Change | Volume | Change | % Change | Volume | Change | % Change |
| Canton Street, south of Downey Street | 2016 | 5,209 | | | 389 | | | 644 | | |
| | 2024 | 5,092 | -117 | -2% | 311 | -78 | -20% | 662 | 18 | 3% |
| Canton Street, north of Spellman Road | 2016 | 4,332 | | | 354 | | | 541 | | |
| | 2024 | 4,240 | -92 | -2% | 270 | -83 | -24% | 550 | 9 | 2% |
| Canton Street, south of Hemlock Drive | 2016 | 3,779 | | | 330 | | | 473 | | |
| | 2024 | 3,671 | -108 | -3% | 234 | -96 | -29% | 471 | -2 | 0% |

Canton Street (South of Downey St)

- Daily volumes decreased by 117 vehicles essentially remaining the same.
- AM peak hour volumes decreased by 78 vehicles.
- PM peak hour volumes increased by 18 vehicles essentially remaining the same.

Canton Street (North of Spellman Road)

- Daily volumes decreased by 92 vehicles essentially remaining the same.
- AM peak hour volumes decreased by 83 vehicles.
- PM peak hour volumes increased by 9 essentially remaining the same.

Canton Street (South of Hemlock Drive)

- Daily volumes decreased by 108 vehicles essentially remaining the same.
- AM peak hour volumes decreased by 96 vehicles.
- PM peak hour volumes decreased by 2 vehicles essentially remaining the same.

SATURDAY VOLUME DATA

Saturday volume data is summarized in Table 4.

Table 4 - Saturday Volume Comparison (Both Directions)

| Location | Year | Saturday Daily | | | Saturday Peak Hour | | |
|---------------------------------------|------|----------------|--------|----------|--------------------|--------|----------|
| | | Volume | Change | % Change | Volume | Change | % Change |
| Canton Street, south of Downey Street | 2016 | 5,640 | | | 482 | | |
| | 2024 | 7,301 | 1,661 | 29% | 752 | 270 | 56% |
| Canton Street, north of Spellman Road | 2016 | 4,330 | | | 374 | | |
| | 2024 | 6,087 | 1,757 | 41% | 689 | 315 | 84% |
| Canton Street, south of Hemlock Drive | 2016 | 3,380 | | | 288 | | |
| | 2024 | 4,889 | 1,509 | 45% | 589 | 301 | 105% |
| Everett Street, west of Lyons Drive | 2016 | 1,320 | | | 114 | | |
| | 2024 | 1,487 | 167 | 13% | 143 | 29 | 25% |
| Forbes Road, south of Spellman Road | 2016 | 516 | | | 51 | | |
| | 2024 | 623 | 107 | 21% | 72 | 21 | 41% |

Canton Street (South of Downey St)

- Daily volumes increased by 1,661 vehicles.
- Saturday peak hour volumes increased by 270 vehicles.
- Saturday volumes increased but are still less than peak weekday volumes.

Canton Street (North of Spellman Road)

- Daily volumes increased by 1,757 vehicles.
- Saturday peak hour volumes increased by 315 vehicles.
- Saturday volumes increased but are still less than peak weekday volumes.

Canton Street (South of Hemlock Drive)

- Daily volumes increased by 1,509 vehicles.
- Saturday peak hour volumes increased by 301 vehicles.
- Saturday volumes increased but are still less than peak weekday volumes.

Everett Street (West of Lyons Drive)

- Daily volumes increased by 167 vehicles.
- Saturday peak hour volumes increased by 29 vehicles.
- Saturday volumes increased but are still less than peak weekday volumes.

Forbes Road (South of Spellman Road)

- Daily volumes increased by 107 vehicles.
- Saturday peak hour volumes increased by 21 vehicles.
- Saturday volumes increased but are still less than peak weekday volumes.

SUNDAY VOLUME DATA

Sunday volume data is summarized in Table 5.

Table 5 - Sunday Volume Comparison (Both Directions)

| Location | Year | Sunday Daily | | | Sunday Peak Hour | | |
|---------------------------------------|------|--------------|--------|----------|------------------|--------|----------|
| | | Volume | Change | % Change | Volume | Change | % Change |
| Canton Street, south of Downey Street | 2016 | 5,263 | | | 589 | | |
| | 2024 | 5,386 | 123 | 2% | 551 | -38 | -6% |
| Canton Street, north of Spellman Road | 2016 | 4,018 | | | 463 | | |
| | 2024 | 4,359 | 341 | 8% | 473 | 10 | 2% |
| Canton Street, south of Hemlock Drive | 2016 | 3,175 | | | 372 | | |
| | 2024 | 3,580 | 405 | 13% | 381 | 9 | 2% |
| Everett Street, west of Lyons Drive | 2016 | 1,073 | | | 121 | | |
| | 2024 | 973 | -100 | -9% | 103 | -18 | -15% |
| Forbes Road, south of Spellman Road | 2016 | 404 | | | 45 | | |
| | 2024 | 435 | 31 | 8% | 51 | 6 | 13% |

Canton Street (South of Downey St)

- Daily volumes increased by 123 vehicles essentially remaining the same.
- Sunday peak hour volumes decreased by 38 vehicles.
- Sunday volumes increased but are still less than weekday volumes.

Canton Street (North of Spellman Road)

- Daily volumes increased by 341 vehicles.
- Sunday peak hour volumes increased by 10 vehicles.
- Sunday volumes increased but are still less than weekday volumes.

Canton Street (South of Hemlock Drive)

- Daily volumes increased by 405 vehicles.
- Sunday peak hour volumes increased by 9 vehicles.
- Sunday volumes increased but are still less than weekday volumes.

Everett Street (West of Lyons Drive)

- Daily volumes decreased by 100 vehicles.
- Sunday peak hour volumes decreased by 18 vehicles.
- Sunday volumes decreased and are still less than weekday volumes.

Forbes Road (South of Spellman Road)

- Daily volumes increased by 31 vehicles.
- Sunday peak hour volumes increased by 6 vehicles.
- Sunday volumes increased but are still less than weekday volumes.

TRAVEL TIME DATA

Travel time data was collected using the Google Maps Python API. A Python script was created to automatically record the travel time via Canton Street and three alternative routes (see Figure 1). The script retrieves the live travel time from Google Maps and records the information into a spreadsheet in five-minute intervals during the AM peak period (7:00 AM to 9:00 AM). Data was collected on Tuesday 4/30/2024, Wednesday 5/1/2024, Thursday 5/2/2024, and Friday 5/3/2024. The travel times were averaged for each individual day and route and were then compared against each other. Each route had the same start and end points for a fair comparison.

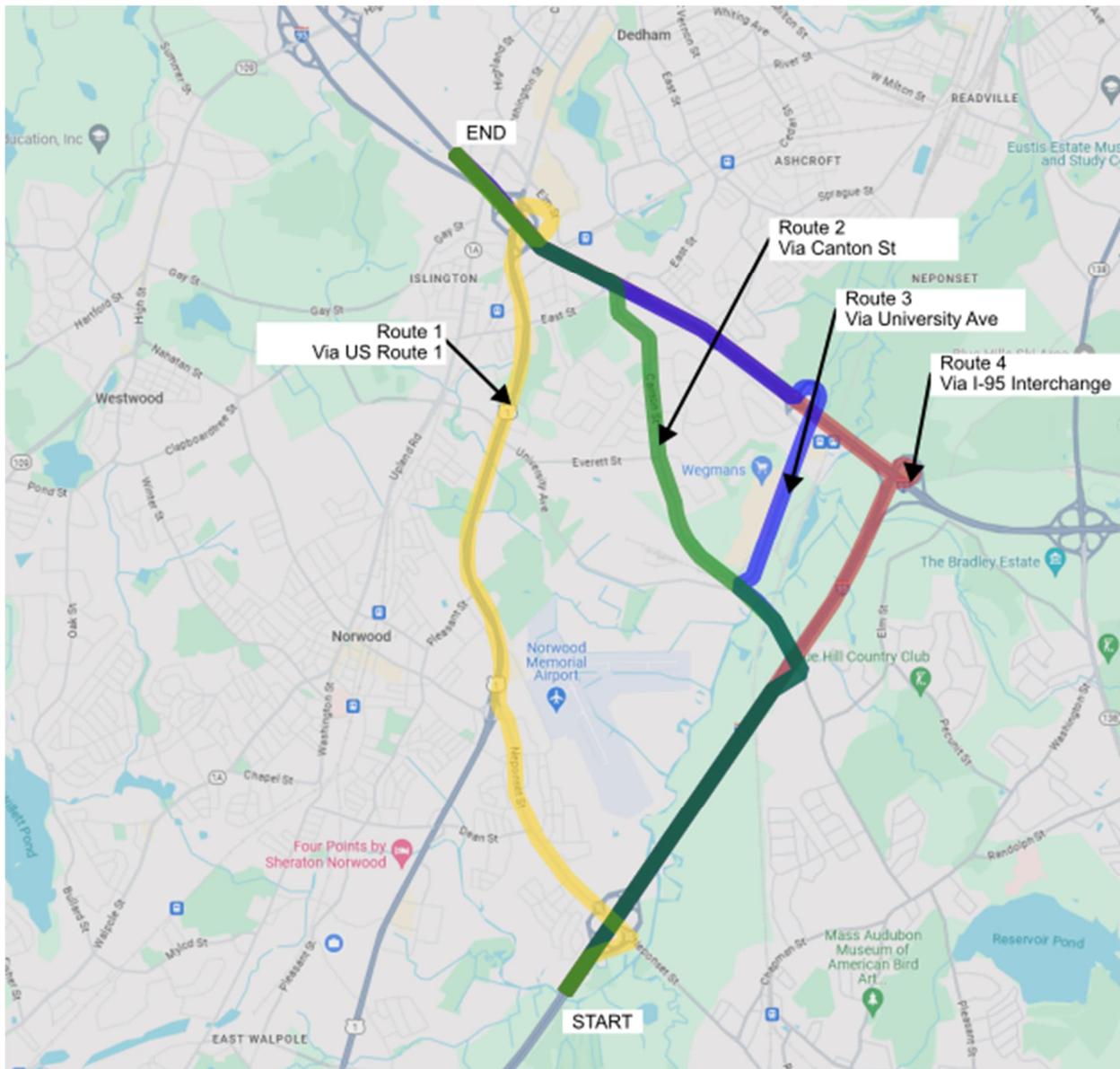


Figure 1 - Travel Time Routes

Bar charts comparing each route to Canton Street are shown in Figure 2 to Figure 4.

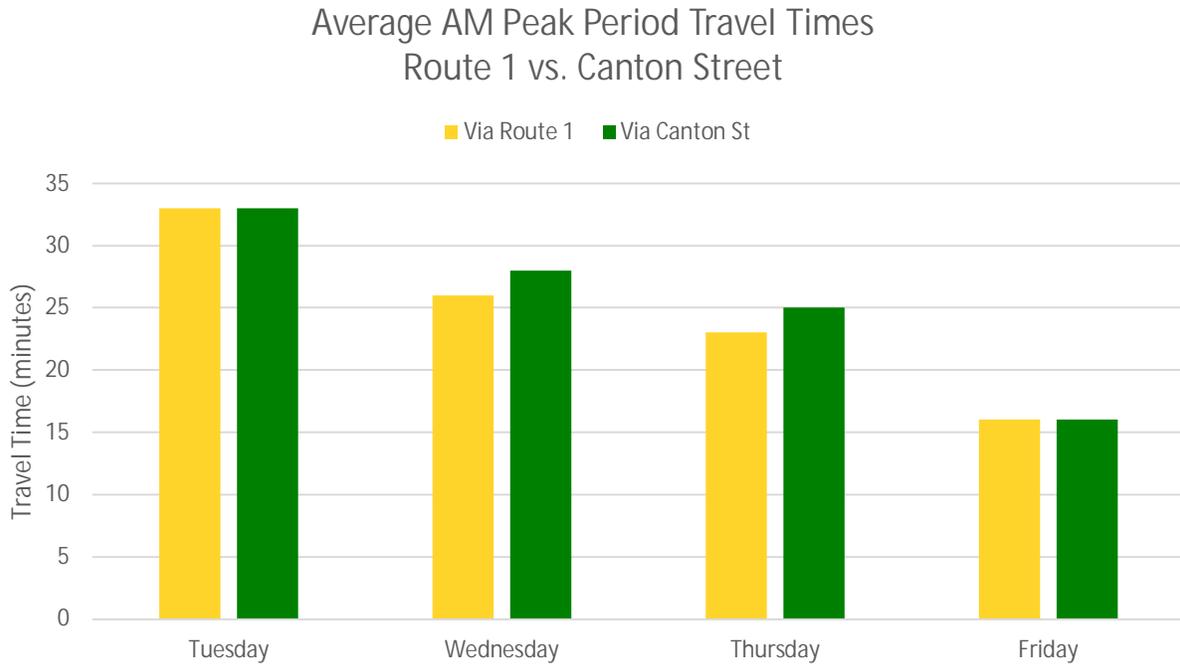


Figure 2 - Travel Time Comparison of Route 1 vs. Canton Street

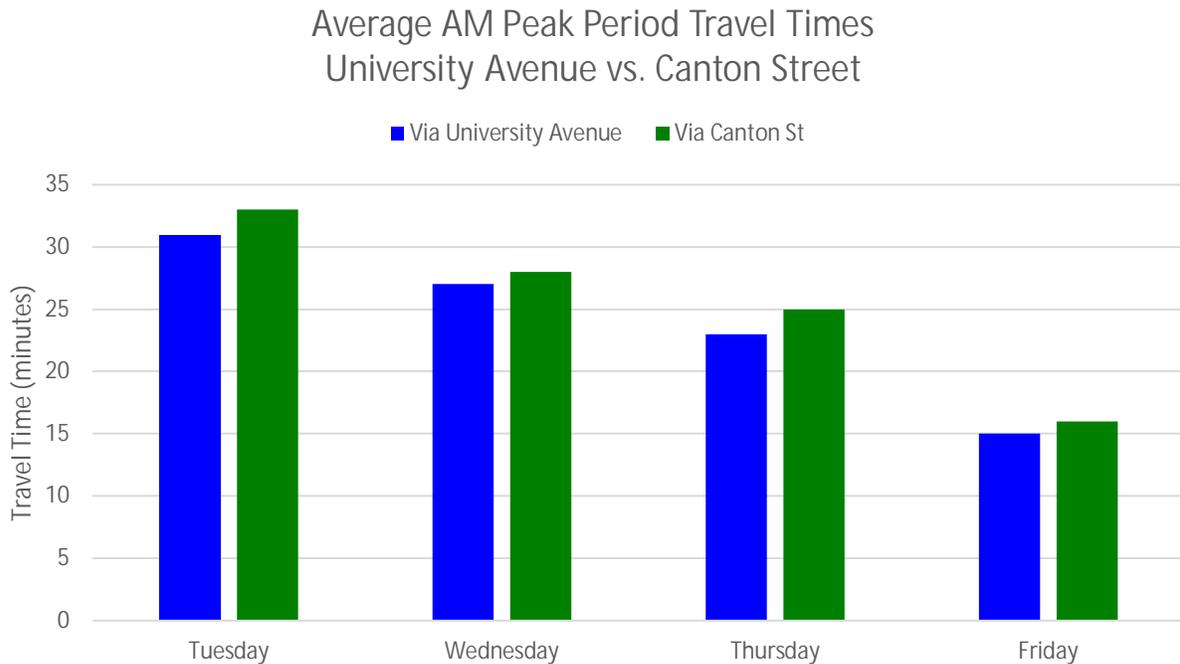


Figure 3 - Travel Time Comparison of University Avenue vs. Canton Street

Average AM Peak Period Travel Times I-95 Interchange vs. Canton Street

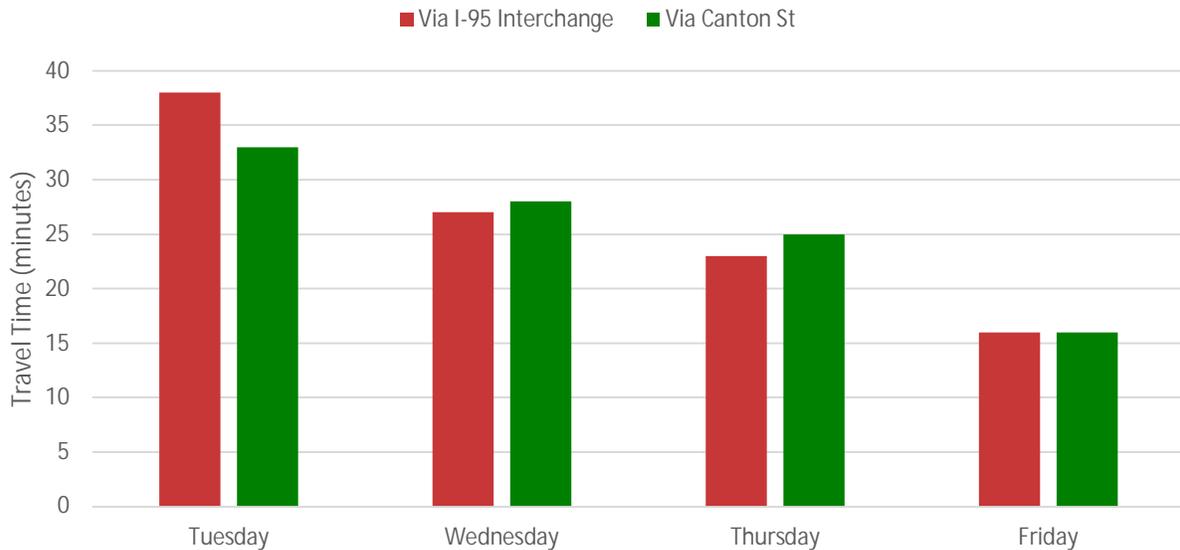


Figure 4 - Travel Time Comparison of I-95 Interchange vs. Canton Street

Route 1 vs. Canton Street

- Travel times using Canton Street on Tuesday and Friday are the same as Route 1.
- Travel times using Canton Street on Wednesday and Thursday are longer than Route 1.

University Avenue vs. Canton Street

- Travel times using Canton Street are longer on all days compared to using University Avenue.

I-95 Interchange vs. Canton Street

- Travel times using Canton Street on Friday are the same as using the I-95 Interchange.
- Travel times using Canton Street on Wednesday and Thursday are longer on than the I-95 Interchange.
- Travel times using Canton Street on Tuesday is shorter than the I-95 Interchange.

CONCLUSIONS

85th Percentile Speeds

- Speeds have increased in most locations by 1 to 4 mph.
- Speeds have reduced on Everett Street between 3 to 6 mph.
- Speeds on Canton Street are above the speed limit.
- Speeds on Forbes Road and Everett Street are consistent with the speed limit.

Volume Data

Weekday, Saturday, and Sunday Daily Volumes

- Weekday Daily Volumes are generally the same between 2016 and 2024.
- Saturday Daily Volumes have increased by 1,509 to 1,661 vehicles on Canton Street.
- Saturday volumes are still less than peak weekday volumes.
- Sunday Daily Volumes have increased by 123 to 405 vehicles on Canton Street.

Weekday Northbound Volumes

- Northbound Daily Volumes are generally the same between 2016 and 2024.
- Northbound AM peak hour volumes have increased by 85 to 110 vehicles. A portion of this volume may be attributable to the opening of the new ramp. An exact determination of the ramp cut through traffic would require an origin destination study.
- Northbound PM peak hour volumes have decreased by 97 to 109 vehicles.

Weekday Southbound Volumes

- Southbound Daily Volumes are generally the same between 2016 and 2024.
- Southbound AM peak hour volumes have decreased by 78 to 96 vehicles.
- Southbound PM peak hour volumes are generally the same between 2016 and 2024.

Travel Time Data

- Except for Tuesday compared to the I-95 Interchange route, the route via Canton Street was either longer or the same as an alternative route.
- Travel times via Canton Street were not the shortest available route.