Cambridge Street Bicycle Safety Demonstration Project
Data/Evaluation Summary
December 2018

In spring 2016, the Cambridge City Council adopted a Vision Zero Policy aimed at eliminating traffic fatalities and serious injuries, as well as a formal Complete Streets Policy, which reflects the City's commitment to ensuring that our streets work for people traveling by all modes. Aligned with these commitments and additional City policies (Climate Action Plan, Growth Policy, Vehicle Trip Reduction Ordinance, School Wellness Policy, and others), the City of Cambridge undertook the Cambridge Street Bicycle Safety Demonstration Project, which included installing separated bicycle lanes along Cambridge Street, from Fayette Street to Quincy Street. Cambridge Street is a busy transportation corridor with a variety of uses, providing access to the Cambridge Rindge and Latin School and War Memorial Recreation Center, CHA Cambridge Hospital, local retail shops, and residences. Prior to the project, this corridor was without marked bicycle facilities and had a higher than average rate of bicycle crashes compared to other streets in the city.

The goal of the project was to improve the safety of all users and make this section of Cambridge Street a more attractive corridor for cycling, walking, taking transit, and enjoying the neighborhood. Following a robust community process, changes were implemented in August 2017 as a quick-build project: implemented without construction, using materials like paint, signs, and flexible posts. The current street design includes two travel lanes, one parking lane, and separated bicycle lanes in each direction. For more information, visit the project website: bit.ly/cambridgestreetbicyclelanes.

To evaluate the impacts of the project, the City collected before and after data, with the goal to match the time of year and weather when possible. A post-implementation survey was conducted, which received over 1600 responses. Respondents were self-selecting and most answered the survey on-line; paper copies were also made available at several locations and upon request. An on-street intercept survey was also conducted to capture a random cross section of users; 119 surveys were completed in this way.

The following are some key findings from the review of the project data.

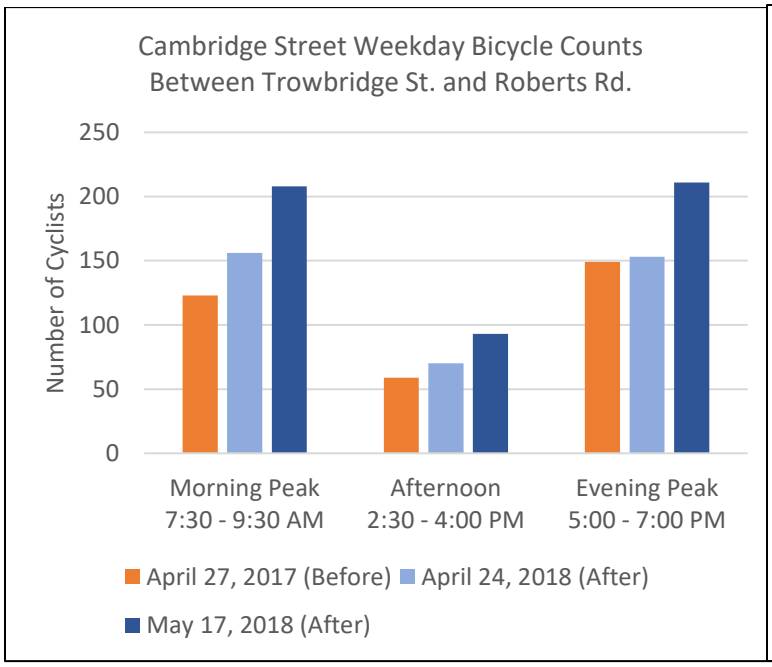
Cambridge Street Bicycle Safety Demonstration Project
Data/Evaluation Summary
December 2018

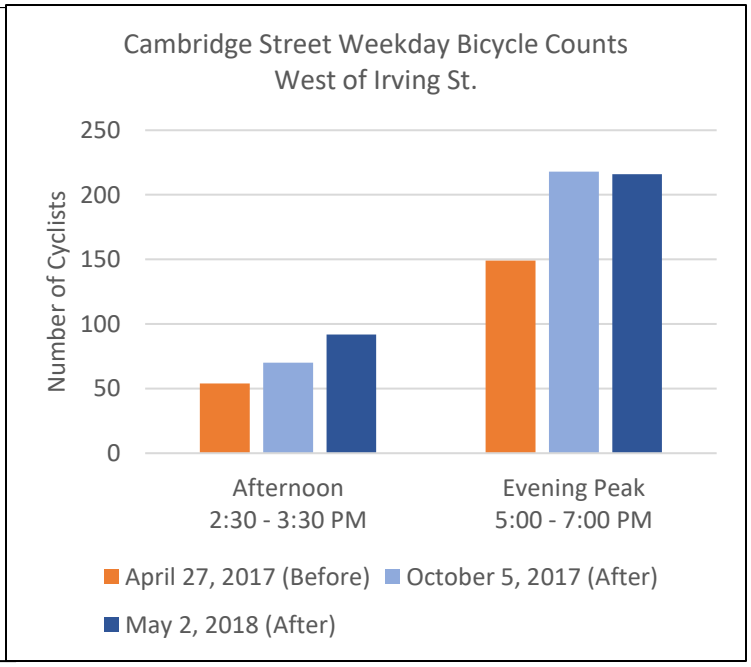
I. Overview: Before & After Implementation

- **Traffic Volumes** – There is no significant difference in motor vehicle traffic volumes before and after implementation (21,034 before/19,942 after from a 48-hour count).
- **Speeds** - Motor vehicle speeds were significantly reduced after the project was implemented. Speed is typically assessed by a standard of the "85th percentile," which is the speed at which 85% of vehicles are traveling at or below. After implementation, the 85th percentile speed for the corridor dropped by 6 MPH, from 31 MPH to 25 MPH. The speed limit on the street is 25 MPH.
- **Parking Utilization** - Overall, parking utilization rates were very similar before and after implementation, with some impacts on Cambridge Street (see Section III for more detail).
- **Bike Counts** – Bicycle counts show increases in people traveling by bicycle on the corridor during all time periods after the implementation of the project. (see Section II for more detail).
- **Pedestrian Counts** – Pedestrian counts remain high and show an 11% increase in pedestrian use during weekdays. On Saturdays, there is no significant change in numbers before and after implementation.
- **Crashes** - Robust traffic crash analysis typically requires 6 years of data (3 before implementation of a project and 3 after) so it is too soon to draw statistical conclusions. However, in the **one-year periods** before and after the project implementation, we see the following numbers:
    - All Crashes:
        - Before: 16 crashes; 15 were moving vehicle incidents
        - After: 13 crashes; half were limited to property damage to parked cars
    - Crashes involving a Pedestrian or Bicyclist:
        - Before: 3 Pedestrian, 5 Cyclist (4 total injuries for the two groups)
        - After: 0 Pedestrian, 2 Cyclist (1 total injury)

II. Bike Counts

Increase in the number of people traveling by bicycle at all time periods.





Cambridge Street Bicycle Safety Demonstration Project
Data/Evaluation Summary
December 2018

III. Parking and Curbside Utilization

On-street Parking Study Area

Comparison of Parking Occupancy Rates

Street/Area	Time of Day	Pre-Construction		Post-Construction		Change in Occupancy	
		Weekday	Saturday	Weekday	Saturday	Weekday	Saturday
Study Area	10:00 AM	74%	75%	74%	74%	0%	-1%
	3:00 PM	72%	68%	72%	67%	0%	-1%
	12:00 AM	78%	73%	77%	71%	-1%	-2%
Cambridge Street	10:00 AM	76%	86%	86%	85%	+10%	-1%
	3:00 PM	73%	78%	87%	77%	+14%	-1%
	12:00 AM	51%	56%	55%	52%	+4%	-4%
North Side Streets	10:00 AM	76%	77%	75%	76%	-1%	-1%
	3:00 PM	75%	65%	75%	64%	0%	-1%
	12:00 AM	74%	67%	73%	66%	-1%	-1%
South Side Streets	10:00 AM	73%	74%	71%	71%	-2%	-3%
	3:00 PM	72%	69%	69%	68%	-3%	-1%
	12:00 AM	78%	80%	81%	76%	+3%	-4%

Findings from the Parking Study

Parking supply:

- Pre: 1,065 spaces
- Post: 971 spaces

- Based on parking inventory observations collected post-implementation, analysis revealed the study area has enough parking supply to meet the demand.
- Parking in the study area is well utilized, with occupancy rates ranging from 52% to a maximum utilization rate of 87%. The maximum occupancy rate for the study area as a whole was 77%, occurring during the weekday midnight period.
- Metered parking is more highly utilized on western end of the project corridor.

General Observations

- Ride-hail drivers utilize buffer space and bus stops to access passengers waiting at the curb.
- Flex-posts and parked vehicles generally prohibit vehicle encroachment into bike lane, except in shared bike/bus space.
- When flex-posts/cones were removed, delivery vehicles occupied curbside bike lane.

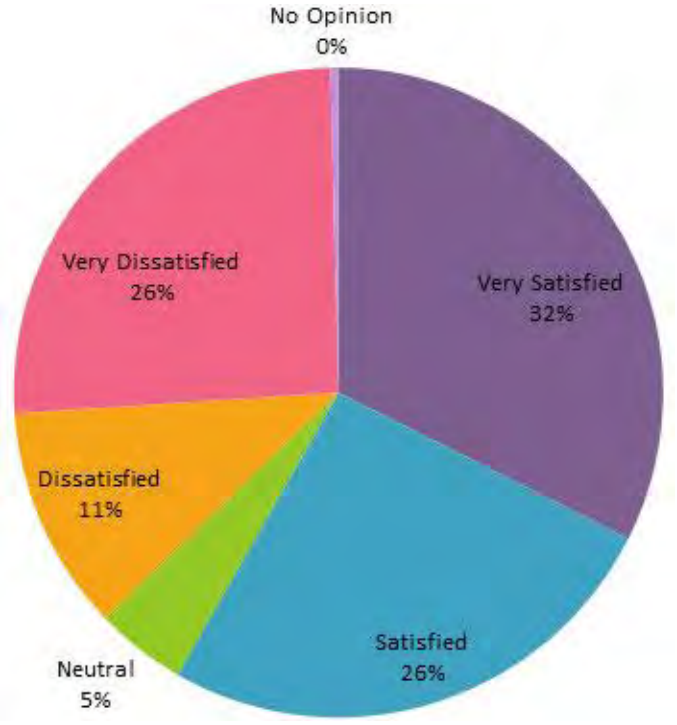
IV. Post Implementation Surveys

There were a variety of opinions, but the majority of responses were positive toward the overall project:

- 58% Satisfied/Very Satisfied; 5% Neutral; 37% Dissatisfied/Very Dissatisfied
- 82% Visiting same frequency or more often
- Approximately 78% respondents were Cambridge residents (based on fully completed responses)
- The on-street Intercept Survey (intended to mitigate selection bias) showed somewhat similar results, with more positive and neutral and fewer negative compared with the self-selected respondents.
    - 61% Positive; 15% Neutral; 24% dissatisfied

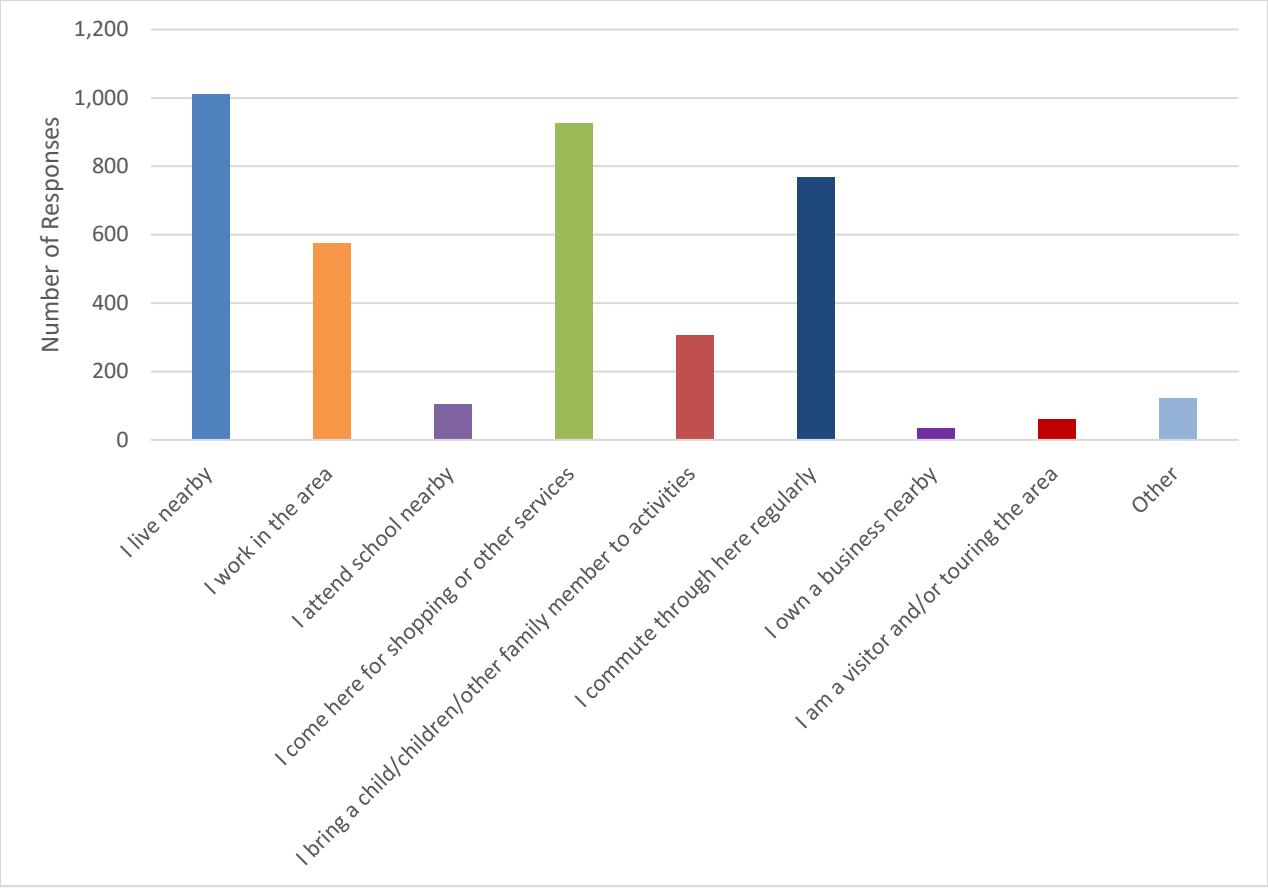
Online Survey Questions:

1. *What is your overall opinion about the new design for Cambridge St?*

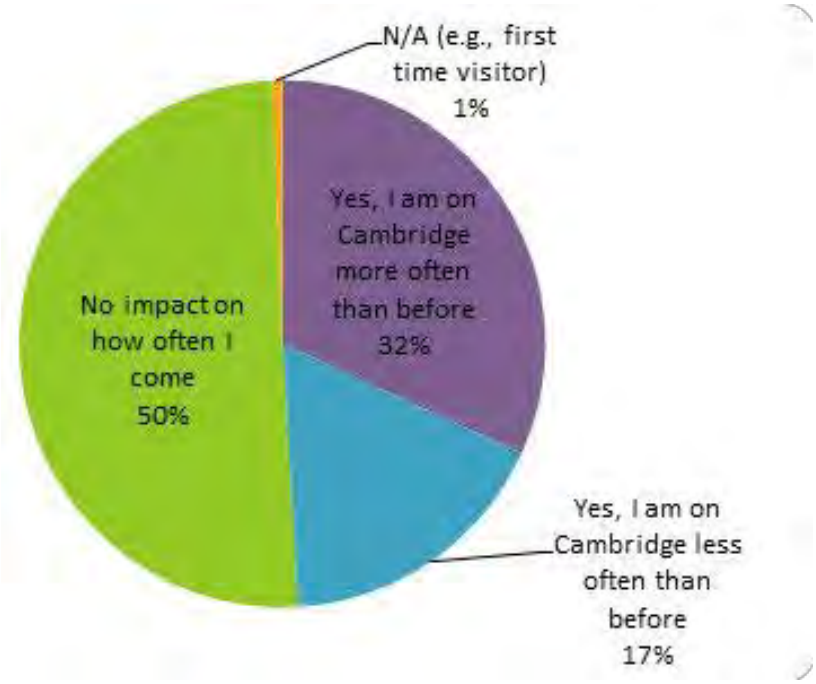


By Mode:
Walking: 78% Positive/Neutral
Bicycling: 95 % Positive/Neutral
Driving: 43% Positive/Neutral
Transit: 78% Positive/Neutral

2. Why do you come to Cambridge Street? (check all that apply)



3. Have the changes influenced how often you come to Cambridge Street?



Many additional comments were received through surveys, direct communication, meetings, etc. General themes include:

- Support for separated bike lanes
- Support for the value of separated bike lanes for children, special mention of high school
- Support for grade-separated bike lanes, such as the one on Western Avenue
- Support for extending separated bike lanes through Inman Square, the rest of Cambridge Street, and other streets
- Concerns about the quality of the pavement in the bike lanes
- Concerns about visibility of cyclists when motorists are turning
- Concerns about pedestrian safety having to cross both the separated bike lane and the street
- Concerns about parking availability
- Concerns about the travel lane not being straight (chicanes)
- Concerns about lack of compliance:
    - Motorists stopping/parking in bike lanes
    - Delivery vehicles in bike lanes
    - Buses blocking bike lanes at school
    - Cyclists not yielding to pedestrians

V. STREET OPERATIONS

STREET CLEANING:

- Performed with flex-posts in place, using smaller equipment
- Requires more frequent emptying at DPW yard due to lower capacity
- Eliminated City's typical "sweeping day" parking restrictions

WINTER OPERATIONS:

- Performance is impacted by flex-posts (additional snow banks; delays in fully restoring parking and bike lane operations)
- Difficult to remove/replace flex-posts on a storm-by-storm basis, so new strategy developed

FLEX-POST DEPLOYMENT:

1. CLEAR ZONES:
    - Locations where it is critical to restrict vehicle parking to ensure that drivers and cyclists can see (typically at intersections and major driveways)
    - Flex-posts to remain year-round
2. BIKE LANE ADJACENT TO TRAVEL LANE (i.e."no parking" side of street):
    - Critical to prevent vehicles parking/standing/stopping in bike lane
    - Flex-posts to remain year-round (distance between posts may be increased)
3. BIKE LANE ADJACENT TO PARKING LANE:
    - Vehicles are generally parked properly in their lane (will monitor)
    - Flex-posts in high-turnover locations only (non-snow-season)
    - Flex-posts to be removed during snow season