

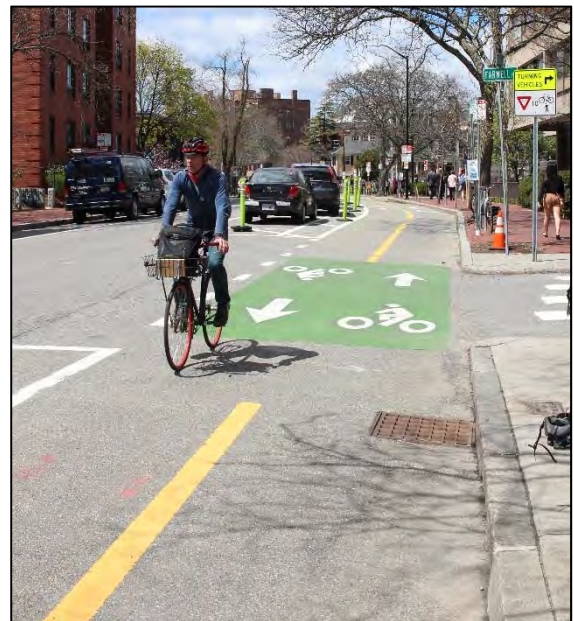
**MEMORANDUM**

**Date:** March 15, 2019  
**To:** Cara Seiderman, Transportation Program Manager  
**Organization:** City of Cambridge, Community Development Department  
**Cc:** Chris Balerna, Kleinfelder  
**From:** Ashley Haire, Ph.D., P.E., Heather Georgallas, EIT, Jesse Boudart, P.E.  
**Project:** Brattle Street – Mason Street to Eliot Street (6085.03B)  
**Re:** Post-Construction Bicycle Count Data Collection Findings

Toole Design has prepared this memorandum to summarize the findings of post-installation conditions bicycle count data collected on Brattle Street between Mason Street and Eliot Street. Within this segment of Brattle Street, a two-way separated bicycle facility was installed along the northeast side of the roadway in August of 2017. The facility was installed based on a long-standing desire for a direct connection from Brattle Street into Harvard Square; this was articulated through the Harvard Square Transportation Study as well as the Cambridge Bicycle Plan. In 2016, an opportunity arose to install separated bicycle lanes in this section of Brattle Street through the Participatory Budgeting Process.

For the assessment of the impact of the new facilities on numbers of people bicycling, standard data collection time periods and locations were used. The purpose of this memorandum is to compare pre-and post-project implementation bicycle count data; several post-project counts were conducted in order to ascertain the patterns for the period.

Based on the data collected, it is clear that the number of people bicycling has increased throughout the study area, while the number of those traveling on the sidewalks has decreased. These findings indicate positive changes to the perceived and actual safety of users along this segment of Brattle Street.



*Figure 1. New Separated Bicycle Facility Along Brattle Street*

## Methodology

A two-way separated bicycle facility was implemented along the northeast side of the roadway in August of 2017 along Brattle Street between Mason Street and Eliot Street. Pre- and post-installation bicycle counts were collected along Brattle Street near the American Repertory Theater during the following time periods:

*Table 1. Data Collection Time Periods*

Weekday Morning	7:30AM – 9:30AM
Weekday Evening	5:00PM – 7:00PM
Saturday Midday	12:00PM – 2:00PM

Both the number and direction of travel of bicyclists riding along Brattle Street at this location were recorded. Bicyclist travel was differentiated between those riding on the sidewalk and those riding on the street.

The original 2017 pre-implementation bicycle counts were collected on Wednesday, May 3, and Saturday, May 13, 2017. Post-construction bicycle counts recorded on October 7, 2017; Tuesday, April 24 Saturday; April 28, 2018; May 3, 2018; and May 23, 2018.

## Comparison of Bicyclist Volumes

Pre- and post-implementation bicycle counts are summarized in Table 2, illustrated graphically in Figure 2 (eastbound travel), Figure 3 (westbound travel), and Figure 4 (both directions of travel).

Table 2. Pre-and Post-construction Bicyclist Counts

Brattle Street at the American Repertory Theater and Appian Way			Pre-Construction Bicycle Counts											Post-Construction Bicycle Counts														Post-Construction Percent Change Over Pre-Construction Counts				
			Sept 2016				May 2017				Pre-construction AVERAGE			Oct 2017				April 2018				May 2018				Post-construction AVERAGE						
			Sidewalk	Roadway		Total	Sidewalk	Roadway		Total	Sidewalk	Roadway		Total	Sidewalk	Roadway		Total	Sidewalk	Roadway		Total	Sidewalk	Roadway		Total	Sidewalk	Roadway				
				EB	WB			EB	WB			EB	WB			EB	WB			EB	WB			EB	WB			EB	WB	EB	WB	
			(9/20/2016)				(5/3/2017)												(4/24/2018)				(5/3/2018)									
Weekday	7:30 - 8:30 AM	1	29	10	40	2	25	11	38	2	27	11	39	--	--	--	--	1	67	11	79	2	60	13	75	2	64	12	77	0%	135%	14%
	8:30 - 9:30 AM	3	19	11	33	4	25	15	44	4	22	13	39	--	--	--	--	2	65	17	84	0	74	20	94	1	70	19	89	-71%	216%	42%
		(9/20/2016)				(5/3/2017)												(4/24/2018)				(5/23/2018)										
	5:00 - 6:00 PM	2	3	72	77	3	2	94	99	3	3	83	88	--	--	--	--	3	18	106	127	1	37	109	147	2	28	108	137	-20%	1000%	30%
	6:00 - 7:00 PM	1	8	62	71	1	6	59	66	1	7	61	69	--	--	--	--	1	20	93	114	2	17	87	106	2	19	90	110	50%	164%	49%
							(5/13/2017)								(10/7/2017)				(4/28/2018)													
Saturday	12:00 - 1:00 PM	--	--	--	--	12	5	17	34	12	5	17	34	0	21	35	56	4	29	35	68	--	--	--	--	2	25	35	62	-83%	400%	106%
	1:00 - 2:00 PM	--	--	--	--	5	3	29	37	5	3	29	37	3	20	42	65	2	19	32	53	--	--	--	--	3	20	37	59	-50%	550%	28%

Weekday peak-hour direction highlighted in blue

Data collection dates:

Pre-construction

Post-construction

Sept. 20, 2016 (Tues)

Oct. 7, 2017 (Sat)

May 3, 2017 (Wed)

Apr. 24, 2018 (Tues)

May 13, 2017 (Sat)

Apr. 28, 2018 (Sat)

May 3, 2018 (AM peak) (Thurs)

May 23, 2018 (PM peak) (Wed)

It is notable that approximately 50 bicyclists in the two hour period were observed riding eastbound on Brattle Street during the morning peak hours prior to implementation of the two-way separated bike lane. These bicyclists were riding against traffic on a street with no dedicated bikeway in either direction.

Another important takeaway from Table 2 is the general reduction in sidewalk riding. This reduction is especially apparent for the Saturday counts. This change may reflect the comfort of people riding in the street, or that those riding on the sidewalk were traveling in the direction against traffic and therefore did not want to ride in the road.

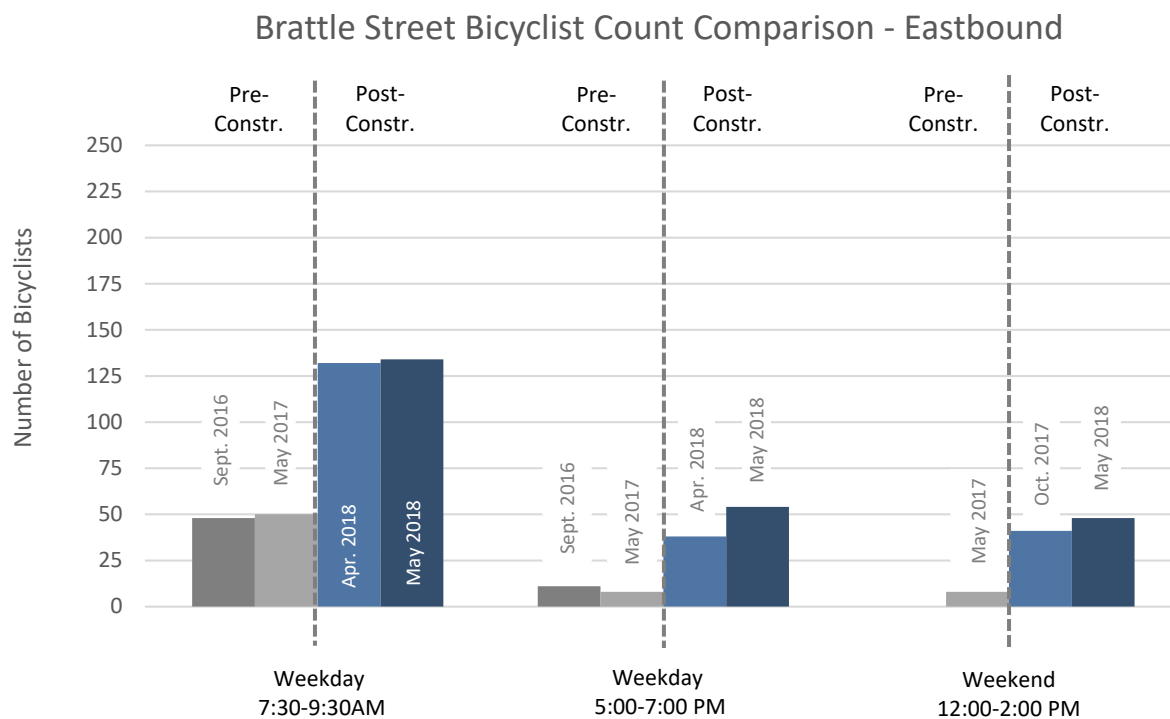


Figure 2. Pre- and Post-Construction Bicyclist Counts on Brattle Street – EASTBOUND

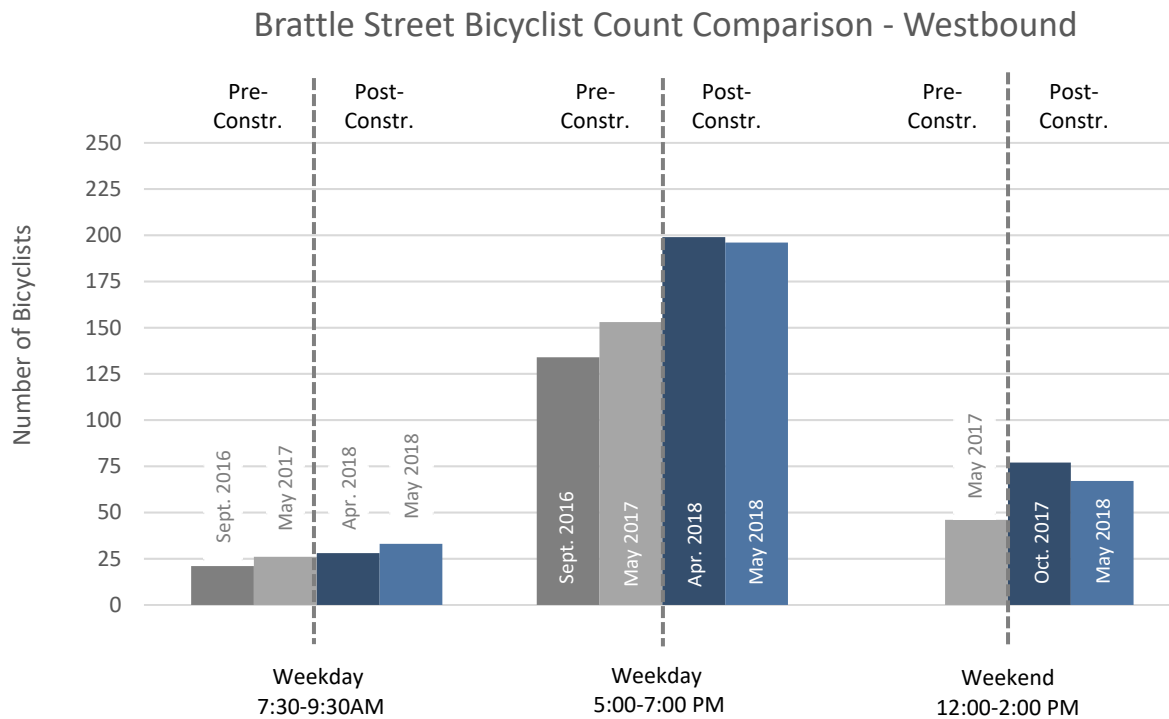


Figure 3. Pre- and Post-Construction Bicyclist Counts on Brattle Street – WESTBOUND

Reviewing Figures 2 and 3 reveals that the volume of bicyclists using Brattle Street has grown with the addition of the two-way separated bike lane. This growth is particularly noticeable for weekday peak-hour travel. The right-most columns of Table 2 shows percentage change in bicyclist counts for the post-construction condition; ridership has grown on Brattle Street in both directions for all time periods. In addition to weekday peak-hour travel, figures 2 and 3 indicate that the number of people riding bicycles on Brattle Street grew exponentially on weekends as well. Ridership doubled for the westbound direction, and quintupled for the eastbound direction.

The magnitude of the eastbound growth illustrates that latent demand for an eastbound connection existed prior to construction of the two-way separated bike lanes.

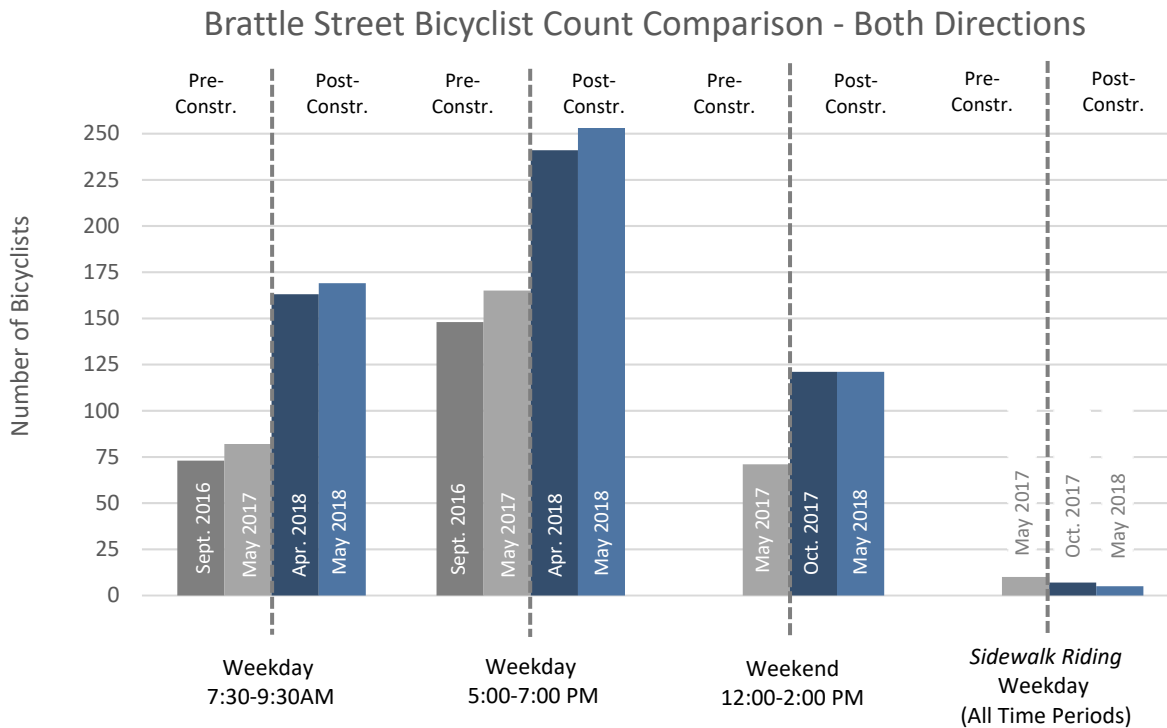


Figure 4. Pre- and Post-Construction Bicyclist Counts on Brattle Street – BOTH DIRECTIONS OF TRAVEL

Figure 4 combines the counts for eastbound and westbound travel, which shows changes in total bicycling activity for Brattle Street. Looking at the blue bars in Figure 4, it is apparent that the number of people riding bicycles on Brattle Street is higher following the installation of the two-way separated bike lane. Also, there is a decrease of sidewalk riding in both directions when the two-way separated bike lane was installed.

## Conclusions

A two-way separated bicycle facility was implemented along the northeast side of Brattle Street between Mason Street and Eliot Street. Post-construction bike count data indicate that bicycle use has grown for travel in both directions along this segment of Brattle Street, along with a general reduction in sidewalk riding. Sidewalk riding on weekends shows the most notable decrease.

Importantly, the eastbound bike lane on the two-way separated bike lane has provided a needed link in the bikeway system. Prior to construction of the two-way bikeway, some bicyclists would ride against traffic on Brattle Street, which had no bicycle facility in the pre-construction condition. This demand can now be served by the dedicated eastbound lane, along with additional latent demand that existed for the eastbound link. For these reasons, eastbound ridership shows the largest gains along this segment of Brattle Street.