



MEMORANDUM

Date: December, 2018
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
Project: Cambridge Street – Quincy Street to Fayette Street (6085.03B)
Re: Post Installation Pedestrian and Bicycle Traffic Count Data Collection Findings

Toole Design Group (TDG) has prepared this memorandum to summarize the findings of post-installation conditions bicycle count data collected on Cambridge Street between Quincy Street and Fayette Street. Separated bicycle lanes were installed on both sides of the roadway along this segment of Cambridge Street in the summer of 2017 as part of the Cambridge Street Bicycle Safety Demonstration Project. Figure 1 shows a photograph of Cambridge Street near Quincy Street prior to installation; Figure 2 shows the same location after the separated bike lanes were implemented.

This memorandum compares post-installation bicycle count data from October 2017, April 2018, and May 2018 and pedestrian count data from April 2018 to pre-installation bicycle and pedestrian count data from April 2017 to quantify whether the project has impacted bicycle and pedestrian activity on Cambridge Street. Based on the data collected, bicycle activity between Trowbridge Street and Roberts Road and west of Irving street has generally increased. Pedestrian activity in the retail block between Trowbridge Street and Roberts Road has remained high.



Figure 1. Cambridge Street at Quincy Street, pre-installation



Figure 2. Cambridge Street at Quincy Street, post-installation

Methodology

Pre- and post-installation bicycle counts were collected at two locations: (1) between Trowbridge Street and Roberts Road and (2) west of Irving Street. Pedestrian counts were collected at location 1. Counts were collected during time periods indicated in Table 1. Post-installation count data were gathered on weekday and Saturday dates, as listed in Table 2.

Table 1. Data collection time periods by location

Locations: (1) Between Trowbridge Street and Roberts Road; (2) West of Irving Street	
Weekday Morning	7:30AM – 9:30AM
Weekday Evening	2:30PM – 7:00PM
Saturday Midday	10:00AM – 2:00PM

Table 2. Post-installation data collection dates by location

Location along Cambridge Street	
Trowbridge Street	Irving Street
April 24, 2018 (Tuesday)	October 5, 2017 (Thursday)
April 28, 2018 (Saturday)	April 28, 2018 (Saturday)
May 2, 2018 (Wednesday)	May 2, 2018 (Wednesday)
May 3, 2018 (Thursday)	May 3, 2018 (Thursday)
May 17, 2018 (Thursday)	

Bicycle volumes and direction of travel were recorded. Roadway and sidewalk bicycle travel were differentiated. Pedestrians were counted by which side of the street they were traveling on, not by direction of travel (i.e. pedestrians on the sidewalk adjacent to the eastbound travel lane were recorded as “eastbound”). Other observations are noted throughout.

Count Volumes

Cambridge Street between Trowbridge Street and Roberts Road

Pre- and post-installation counts of bicyclists and pedestrians were collected along Cambridge Street between Trowbridge Street and Roberts Road for the weekday morning (7:30-9:30 AM), weekday evening (2:30-7:00 PM), and Saturday midday (10:00 AM-2:00 PM) time periods. Data from all counts conducted can be found in Table 3. Figure 3 presents a graphical comparison of total bicycle count data. Pre- and post-installation pedestrian counts are compared in Figure 4.

Weekday bicycle counts indicate the majority of cyclists are traveling westbound in the morning and eastbound in the evening. During the Saturday midday period there was no significant directional trend observed.

Both post-installation counts show an increase in bicycle activity at almost all times of day on weekdays, including increases of 27% (April 2018) and 69% (May 2018) between 7:30 – 9:30 AM. Saturday counts were less consistent, with approximately equal counts between 10:00 – 11:00 AM, higher pre-installation counts between 11:00 AM – 1:00 PM, and higher post-installation counts between 1:00 – 2:00 PM. This inconsistency may be attributable to the variable timing of Saturday events held at the War Memorial, CRLS, or other activity centers along the corridor.

Pedestrian counts along this section of Cambridge Street were consistently high and do not show significant differences between the pre- and post-installation periods, with around 300 pedestrians per hour during weekdays. However, the half-hour period from 2:30-3:00 PM has approximately double the rate of pedestrian activity of other weekday periods. Pedestrian counts were higher on Saturdays, averaging more than 400 pedestrians per hour between 10:00 AM and 2:00 PM before and after installation.

Table 3. Cambridge Street between Trowbridge Street and Roberts Road: Bicycle and Pedestrian Activity Summary

Between Trowbridge Street & Roberts Road		Pre-Installation (April 2017)								Post-Installation (April 2018)								Post-Installation (May 2018)				
		Bikes on Sidewalk		Bikes on Roadway		Total Bikes	# Pedestrians		Total Pedestrians	Bikes on Sidewalk		Bikes on Roadway		Total Bikes	# Pedestrians		Total Pedestrians	Bikes on Sidewalk		Bikes on Roadway		Total Bikes
		EB	WB	EB	WB		EB	WB		EB	WB	EB	WB		EB	WB		EB	WB	EB	WB	
		(4/27/2017)								(4/24/2018)								(5/3/2018)				
Weekday	7:30 - 8:30 AM	2	2	20	26	50	90	145	235	6	1	30	31	68	103	212	315	5	5	39	50	99
	8:30 - 9:30 AM	1	2	23	47	73	61	216	277	0	0	36	52	88	57	211	268	2	2	52	53	109
		(4/27/2017)								(4/24/2018)								(5/17/2018)				
	2:30 - 3:00 PM*	0	1	12	8	21	90	128	218	1	1	12	11	25	80	226	306	0	0	26	15	41
	3:00 - 4:00 PM	2	1	24	11	38	99	193	292	3	3	24	15	45	83	247	330	0	2	22	28	52
	4:00 - 5:00 PM	0	0	18	22	40	74	212	286	3	0	35	23	61	79	213	292	1	0	37	29	67
	5:00 - 6:00 PM	7	2	47	28	84	110	209	319	2	0	40	32	74	95	206	301	4	3	72	42	121
6:00 - 7:00 PM	6	1	35	23	65	130	193	323	2	0	49	28	79	139	218	357	3	0	44	43	90	
	(4/29/2017)								(4/28/2018)													
Saturday	10:00 - 11:00 AM	5	0	10	19	34	239	189	428	5	0	14	14	33	226	225	451	--	--	--	--	--
	11:00 AM - 1:00 PM**	20	10	46	62	138	472	543	1015	2	4	44	52	102	326	508	834	--	--	--	--	--
	1:00 - 2:00 PM	3	1	15	19	38	111	228	339	0	1	33	37	71	124	290	414	--	--	--	--	--

* 1/2-hour period

** 2-hour period

Cambridge Street Between Trowbridge Street and Roberts Road: Total Bicycle Activity

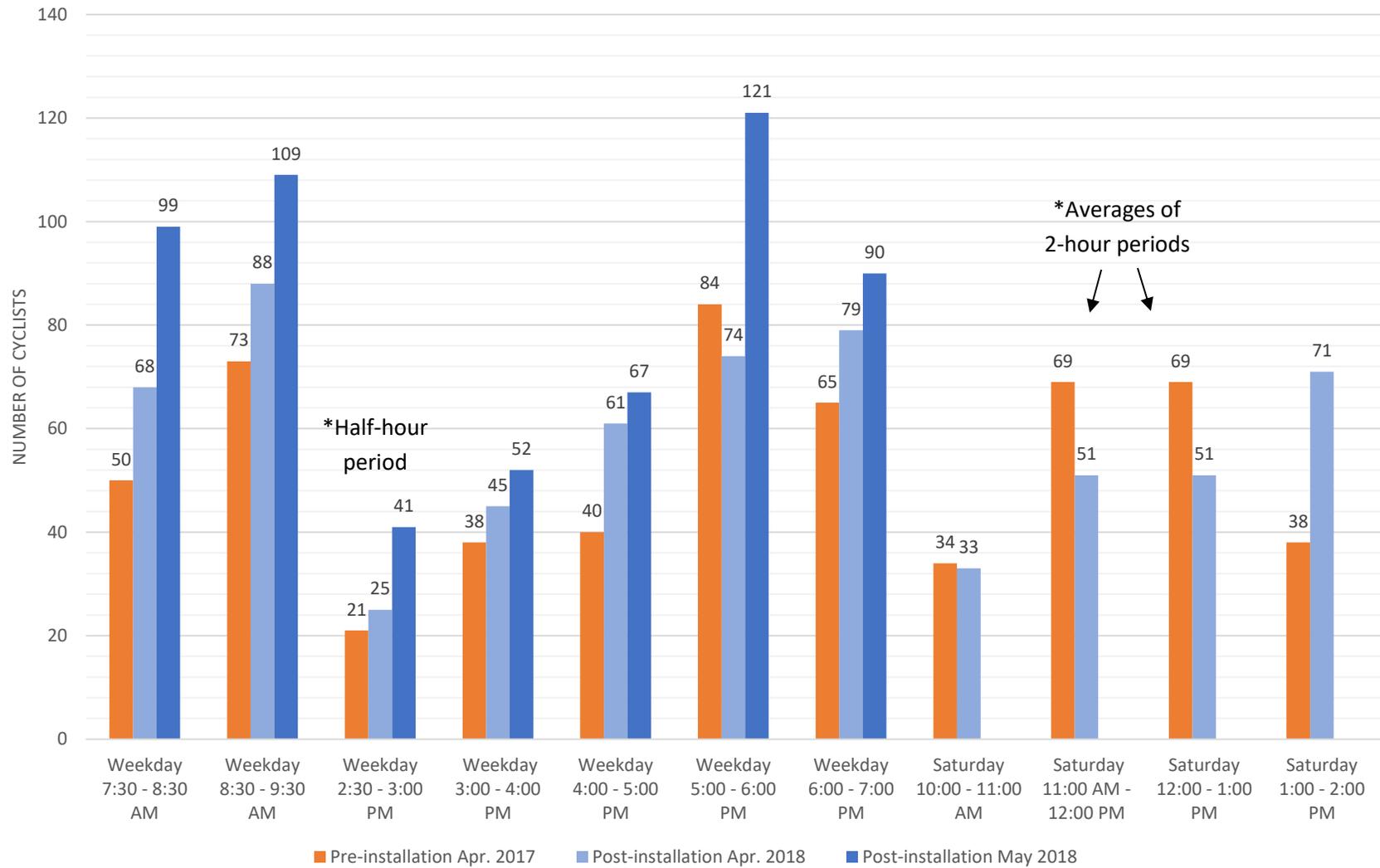


Figure 3. Cambridge Street between Trowbridge Street and Roberts Road: Total Bicycle Activity



Figure 4. Cambridge Street between Trowbridge Street and Roberts Road: Pedestrian Activity

Cambridge Street west of Irving Street

Post-installation bicycle counts were collected for the weekday morning (7:30 AM-9:30 AM), evening (2:30-7:00PM), and Saturday midday (10:00 AM-2:00 PM) along Cambridge Street west of Irving Street. Data from these counts and pre-installation counts can be found in Table 4 and are compared graphically in Figure 5. For the time periods where pre-installation counts are available, bicyclist activity in this location grew between 21 and 59 percent.

It should be noted that Cambridge Rindge and Latin students biking to school on Cambridge Street must ride a short distance on the sidewalk to access bicycle racks for the high school and library. This accounts for the high number of cyclists “on the sidewalk” during the 7:30-8:30 AM period in this location.

Table 4. Cambridge Street west of Irving Street: Bicycle Activity Summary

West of Irving Street		Pre-Installation	Post-Installation	Post-Installation					Post-Installation				
		Total Bikes	Total Bikes	Bikes on Sidewalk		Bikes on Roadway		Total	Bikes on Sidewalk		Bikes on Roadway		Total
				EB	WB	EB	WB		EB	WB			
						(5/3/2018)					(5/2/2018)		
Weekday	7:30 - 8:30 AM	--	--	38**	4	43	41	126	57**	12	54	38	161
	8:30 - 9:30 AM	--	--	6	2	36	57	101	4	1	51	63	119
		(4/27/2017)	(10/5/2017)	(5/3/2018)					(5/2/2018)				
	2:30 - 3:30 PM	54	70	5	3	14	46	68	2	10	19	61	92
	3:30 - 4:00 PM*	--	--	3	2	9	10	24	1	1	8	16	26
	4:00 - 5:00 PM	--	--	10	0	30	32	72	7	5	27	41	80
	5:00 - 6:00 PM	84	112	3	0	35	57	95	2	1	41	54	98
	6:00 - 7:00 PM	65	106	3	2	40	41	86	1	3	61	53	118
				(4/28/2018)									
Saturday	10:00 - 11:00 AM	--	--	3	0	20	25	48	--	--	--	--	--
	11:00 AM - 12:00 PM	--	--	4	1	16	24	45	--	--	--	--	--
	12:00 - 1:00 PM	--	--	7	1	21	39	68	--	--	--	--	--
	1:00 - 2:00 PM	--	--	1	2	28	33	64	--	--	--	--	--

* 1/2-hour period

** Cyclists identified as "on the sidewalk" in this time period were cycling directly from the road to the high school (CRLS)

NB: May 2018 Counts were done on two days: The lower number of cyclists in the chart is due to counts being taken on a day with rain; typically counts are not done in rain, but the data are included here to reveal the differences that can occur with weather impacts.

Cambridge Street west of Irving Street: Total Bicycle Activity

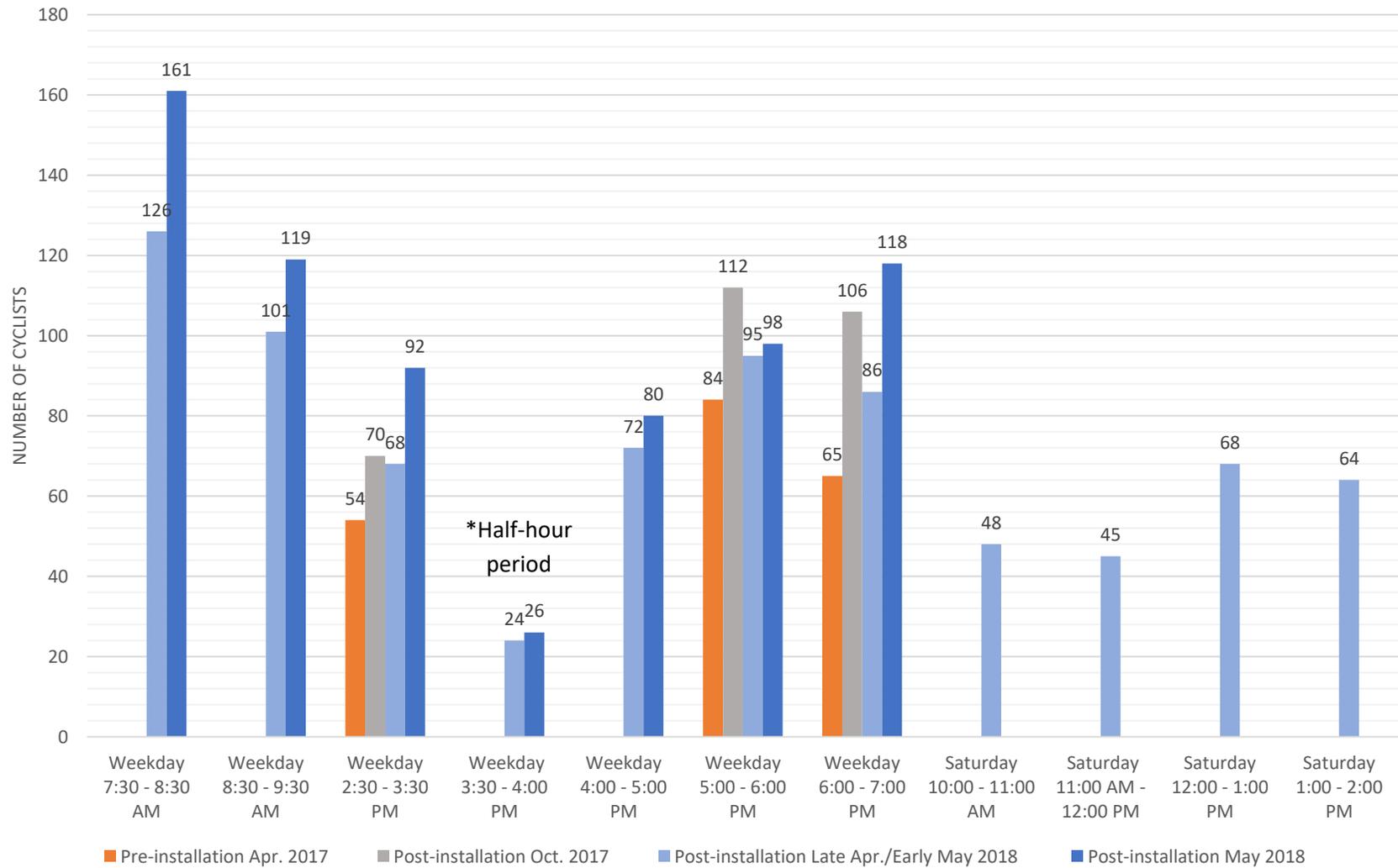


Figure 5. Cambridge Street west of Irving Street: Total Bicycle Activity

Conclusions

Based on the data collected, bicycle activity between Trowbridge Street and Roberts Road and west of Irving street has generally increased. Pedestrian activity in the retail block between Trowbridge Street and Roberts Road has remained high.