Washington Avenue
Post-Installation Study Year 2

Grays Ferry Avenue to 4th Street

April 2025

Prepared For:

City of Philadelphia

Prepared By:

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EXECUTIVE SUMMARY

The purpose of the Washington Avenue Post-Installation Year 2 Study was to collect and analyze traffic operations and safety data on Washington Avenue and specified parallel routes. This data was compared to year 1 and pre-installation data to see how the corridor is performing two years after completion in March 2023. The year 1 study can be found here. The year 2 study analyzes traffic data and studies traffic conditions along Washington Avenue and parallel routes. It also provides updates on recommendations made in the previous study. Data analyzed for the year 2 study included travel time data, vehicular volumes, bicycle volumes, pedestrian volumes, and speed data.

The table below provides a high-level comparison of traffic safety outcomes to the original project goals:

PROJECT GOALS	OUTCOME YEAR 1		OUTCOME YEAR 2	
Reduce speeding on Washington Avenue to make it safe for all users	Mixed		Positive	
Install significant traffic calming between Broad Street and 4th Street without operational impacts to Washington Avenue or parallel roadways	Positive		Positive	
Increase safety for people riding bikes on Washington Avenue	Positive		Positive	

Key findings and recommendations from the traffic analyses are summarized on the following pages of the Executive Summary. For more detailed discussion of the methodology, analysis, and results, please refer to "Section I Traffic Analysis."

Traffic Analysis – Key Findings

Travel Times

- **Travel times along Washington Avenue for the AM and PM peak periods, when analyzed as separate sections – east (13th Street to 4th Street) and west (Grays Ferry Avenue to 15th Street) – did not result in a statistically significant change.** When looking at the full corridor, eastbound travel times along Washington Avenue generally decreased by one to two minutes and westbound travel times generally increased by one to two minutes. Delays in travel times were observed at the Broad Street intersection during most peak period full corridor travel time runs.

- **Saturday peak travel time eastbound east of Broad Street exceeded the PM weekday peak by about 3.5 minutes (or 74%) in year 2.** This was not observed in the year 1 report. Observational data suggests that this is a result of congestion around 9th Street. Vehicles traveling eastbound on Washington Avenue midday Saturday exhibited difficulty turning left onto 9th Street due to limited gaps in traffic traveling westbound, vehicles queueing back into the intersection from 9th Street, and large groups of pedestrians crossing 9th Street. Observed congestion at 9th street showed queues back to 11th and 12th streets at times.

Vehicular Volumes

- **There was not a significant change in vehicle volumes along Washington Avenue from year 1 to year 2, and vehicle volumes generally have yet to return to pre-COVID levels**. The initial decrease in vehicular volumes from pre-implementation to post-implementation year 1 appears to follow the citywide post-COVID trend along roadways of the same functional class (PennDOT Highway Statistics Reports, 2018-2023).

- **Vehicle volumes increased at parallel route intersections west of Broad Street but did not increase east of Broad Street where the road diet was implemented**. Increases in vehicle volumes were observed on Christian Street during the Weekday PM peak hour as well as Ellsworth Street during both AM and PM peak hours.

Bicycle Volumes

- **Bicycle volumes continue to increase along Washington Avenue.**
- **Increases in weekday peak hour bike volumes were heavily concentrated on blocks with separated bike lanes**, specifically between 4th Street and 9th Street, with AM increases ranging between 100% to 265% depending on the block, from pre-implementation to year 2.

Pedestrian Volumes

- **Pedestrian volumes on Washington Avenue increased more on the east side of Broad Street versus the west side of Broad Street.**
- **Pedestrian volumes at intersections along Washington Avenue increased from pre-implementation to year 2 during most peak hours.** The highest pedestrian volume increase was during Saturday peak hour, increasing by about 60%. Weekday peak periods saw increased pedestrian activity by over 20%.

Speed Analysis

- **Off-peak speeding has decreased, especially near the 600 block of Washington.** Year 1 data found mixed off-peak speed results east of Broad Street and suggested that this could be due to the revised 90-second signal. Following this finding, signal changes were made from 13th Street to Front Street to shorten signal cycles on Washington Avenue during off-peak times to prevent a 'green wave' when congestion is minimal.
- **The percentage of people driving above the posted speed limit was lower on the east side of Washington Avenue compared to the west side of Washington Avenue in year 2.**

Traffic Analysis – Recommendations

Recommendations for improving traffic operations along Washington Avenue are summarized below and more thoroughly addressed in "Section II."

- ***Assess data in 2026.*** When sufficient crash data is available (typically 3 years post-implementation), the City should evaluate crash data for the pre-Implementation phase as well as post-implementation to analyze the impacts of the road diet and other improvements on the overall safety of the corridor.

- ***Examine the 9th Street intersection to determine how to alleviate congestion.*** The observed travel time delay east of Broad Street on Washington Avenue during Saturday peak time is primarily a result of congestion and increased activity around 9th street on Saturdays. A left turn prohibition was removed in 2023 and drivers are exhibiting difficult turning left from Washington Avenue onto 9th Street; congestion at 9th Street spills back along Washington Avenue to Broad Street. The City should take a closer look at this intersection to determine whether left turns should be prohibited from Washington Avenue onto 9th Street, especially during periods of high congestion.

- ***Track progress of previous recommendations from the Year 1 report.*** The year 1 study provided recommendations for Parking & Loading and Traffic improvements. We recommend maintaining an updated record of the status of these recommendations.

	Year 1 Study Recommendation	February 2025 Status
Parking & Loading	Coordinate with the Philadelphia Parking Authority (PPA) to provide additional enforcement of parking and loading regulations along Washington Avenue, with a focus on promoting adequate turnover in loading zones and discouraging sidewalk parking.	PPA's bike unit actively enforces this corridor. From September 2024 through February 2025, a total of 231 citations were issued.
	Coordinate with PPA to make sure that Tow-Away Zone signs are installed along the corridor.	There are no Tow-Away Zone signs posted on this corridor.
	Coordinate with PPA to correctly reinstall parking restriction signage that was incorrectly placed on utility poles instead of new posts along the north side of Washington Avenue between S. 7th Street and Passyunk Avenue.	PPA has re-installed signage between 7th Street and Passyunk Avenue.
	Coordinate with Department of Streets to revise the pavement markings and signage in front of 833 Washington Avenue (Giordano Fruit and Produce) to provide additional loading spaces where the fire hydrant was removed.	This was reviewed by the Department of Streets and determination was made that signs, markings, and delineators remain in place.
	Based on the success of the new regulations east of Broad Street, similar regulations west of Broad should be considered to improve occupancy/duration/turnover metrics and reduce instances of illegal parking.	Regulations west of Broad Street remain the same as when the project was installed. Legislation would be necessary to enable the Department of Streets to enact curbside regulations.
Traffic Analysis	To help control speeds in this section, the Streets Department should consider revising the signals from Front Street to S. 3rd Street to operate 60-second cycle lengths, matching the overnight double-offset operation. The intersection of Washington Avenue at S. 4th Street should remain as a 90-second cycle length due to the lane drop at S. 5th Street.	Signal changes were made following the year 1 findings of off-peak (midday and overnight) speeding. Signal changes from 13th Street to Front Street help deter nighttime speeding while still maintaining traffic flow during the day when Washington Avenue is more congested. The PM program now ends at 7PM instead of 8PM from 13th to Front.
	Due to the reduction in volumes from the pre-pandemic volume collection effort, the Streets Department should consider extending the times for the double-offset program and extending the side street splits where there is excess capacity along Washington Avenue.	Split adjustments were made to favor the side streets and limit excess green light time for Washington Avenue intersections during the midday program.
	The Streets Department should consider revising the signal timing along Christian Street west of Broad Street to support a progression at or below the speed limit to discourage speeding. Alternatively, it is understood that the Streets Department is considering converting some of these traffic signals to all-way stops. This could also help to control speeding if the all-way stops meet warranted criteria.	The Streets Department conducted a study and provided results to the community. The study indicates that there would be safety benefits to converting some traffic signals to all-way stops.

	The status of installing emergency preemption along the corridor should be provided to the stakeholders along the corridor.	There have been no adverse impacts to emergency response on Washington Avenue since the project was installed.
	The Streets Department and OTIS should consider reduction of the speed limit to 25 mph along the entirety of Washington Avenue.	Posted speeds remain 25MPH east of Broad and 30MPH west of Broad.
	There are several locations where flexible delineator posts have been removed or were not initially installed by the contractor. The Streets Department and OTIS should coordinate to install/reinstall them.	The City reinstalled flexible delineator posts (flex posts) at locations recommended in the year 1study. The City has a program to monitor and replace flex posts as needed. Any contracting work that impacts flex posts must replace and return to prior condition.

I. TRAFFIC ANALYSIS

A. Introduction

The purpose of the **Washington Avenue Post-Installation Study Year 2 (year 2)** was to analyze traffic data two years after the installation of a selective road diet and other associated improvements along Washington Avenue. The study area included Washington Avenue from Grays Ferry Avenue to 4th Street. Traffic conditions along parallel routes to Washington Avenue were also studied to understand operational impacts on the surrounding street network.

B. Project Background and History

The City of Philadelphia requested the completion of this traffic study to analyze the traffic conditions along Washington Avenue from Grays Ferry Avenue to 4th Street following the implementation of a road diet and various traffic calming measures implemented along the corridor in Fall 2022 and completed March 2023. In this report, there are three main periods of for analysis: the **pre-installation** period based on the analysis completed before the Washington Avenue project was implemented, the **post-implementation year one (year 1)** study that was released in March 2024, evaluating the corridor's improvements one year after implementation, and this report, the **post-implementation 2 two (year 2)** study, which analyzes the safety and functionality of the corridor in its current improved condition as road users have become more acquainted with the roadway improvements.

Figure 1: *Washington Avenue Project Extents*

C. Travel Time Analysis

Travel time runs were conducted along Washington Avenue from Grays Ferry Avenue to 4th Street, Ellsworth Street from Grays Ferry Avenue to Broad Street, and Christian Street from Grays Ferry Avenue to 4th Street for eastbound and westbound directions (where applicable) to compare the impact of the improvements on travel times in the project area. Travel times from pre-implementation (2019), post-implementation year 1 (2023), and post-implementation year 2 (2024) were compared. Travel time data collection periods are listed in **Table 1**.

Travel time runs were completed in accordance with the Institute of Transportation Engineer's (ITE) Manual of Transportation Engineering, utilizing the latest Tru-Traffic software (Version 10.0) via GPS units using the 'floating car' method where the driver attempts to operate like an average driver. After completion of the travel time runs, all GPS data points were verified in Tru-Traffic and subsequently used to calculate the average travel time (including delay) between each intersection.

Table 1: *Travel Time Data Collection Schedule*

Corridor	Peak Period	Time Periods	Date	Phase
Washington Avenue	AM & PM	7-9 AM 4-6 PM	Tuesday, April 23, 2019	Pre-Implementation
			Wednesday, April 24, 2019	Pre-Implementation
			Tuesday, October 3, 2023	Post-Implementation (Y1)
			Wednesday, October 4, 2023	Post-Implementation (Y1)
			Thursday, October 5, 2023	Post-Implementation (Y1)
			Thursday, November 7, 2024	Post-Implementation (Y2)
			Tuesday, November 12, 2024	Post-Implementation (Y2)
	Saturday	10 AM – 2 PM	Saturday, April 13, 2019	Pre-Implementation
			Saturday, September 30, 2023	Post-Implementation (Y1)
			Saturday, November 9, 2024	Post-Implementation (Y2)
	Sunday	10 AM – 2 PM	Sunday, April 14, 2019	Pre-Implementation
			Sunday, October 1, 2023	Post-Implementation (Y1)
			Sunday, November 10, 2024	Post-Implementation (Y2)
Christian Street	AM & PM	7-9 AM 4-6 PM	Thursday, January 30, 2020	Pre-Implementation
			Wednesday, February 12, 2020	Pre-Implementation
			Tuesday, September 20, 2023	Post-Implementation (Y1)
			Wednesday, September 21, 2023	Post-Implementation (Y1)
			Thursday, November 7, 2024	Post-Implementation (Y2)
Ellsworth Street	AM & PM	7-9 AM 4-6 PM	Thursday, January 30, 2020	Pre-Implementation
			Tuesday, September 20, 2023	Post-Implementation (Y1)
			Wednesday, September 23, 2023	Post-Implementation (Y1)
			Thursday, November 7, 2024	Post-Implementation (Y2)

Table 2 shows travel times by year for Washington Avenue east of Broad Street (where the road diet was implemented) while **Table 3** shows the same information for west of Broad Street (both excluding the intersection of Broad Street and Washington Avenue). **Table 4** includes travel time data by year for the Washington Avenue corridor. Corridor-wide travel times along Washington Avenue Eastbound generally decreased from year 1 to year 2 while travel times generally increased along Washington Avenue Westbound. Most of the changes in travel time along the full Washington Avenue corridor between year 1 and year 2 can be attributed to the Broad Street intersection, where almost all peak periods saw a spike in travel times. Long-term construction occurred during travel time runs on Christian Street between Grays Ferry Avenue and 24th Street, limiting the amount of data collected along that block. Ellsworth Street did not see a significant change in travel time from year 1 to year 2. Travel Time Graphs can be found in **Appendix A**.

Another noteworthy observation includes the high year 2 travel time for Washington Avenue eastbound east of Broad Street during the Saturday peak. Upon further investigation, it appears that the increase in travel time is primarily a result of congestion and increased activity around 9th Street where the market is located. A left turn prohibition was removed in 2023, and drivers are exhibiting difficulty turning left from eastbound Washington Avenue onto 9th Street due to congestion on 9th Street and westbound traffic on Washington Avenue. The congestion at 9th Street spills back along Washington Avenue to Broad Street. This intersection should be examined further to determine how to best alleviate this congestion surrounding the Market on Saturdays.

Saturday peak travel time eastbound east of Broad Street exceeded the PM weekday peak by about 3.5 minutes (or 74%) in year 2.

Table 2: *Travel Time Comparisons (East of Broad Street, 13th Street to 4th Street)*

Road	Direction	Peak	Time Pre-Install (mins)	Time Post-Install Y1(mins)	Time Post-Install Y2 (mins)	Change (Pre-Install – Y1)	Change (Y1– Y2)	Change (Pre-Install – Y2)	Statistically Significant Change (Pre-Install – Y2)?
Washington Ave.	EB	AM	3.54	3.92	3.93	0.38	0.01	0.39	No
		PM	5.00	5.30	4.73	0.30	-0.57	-0.27	No
		Sat.	5.50	5.18	8.23	-0.32	3.05	2.73	**Yes**
	WB	AM	3.29	4.21	4.18	0.92	-0.03	0.89	No
		PM	3.26	3.78	4.22	0.52	0.44	0.96	No
		Sat.	3.31	4.13	5.27	0.82	1.14	1.96	No

Travel times west of Broad Street typically decreased from pre-Implementation to year 2 in the eastbound direction and slightly increased in the westbound direction.

Table 3: *Travel Time Comparisons (west of Broad Street, Grays Ferry Avenue to 15th Street)*

Road	Direction	Peak	Time Pre-Install (min)	Time Post-Install Y1 (min)	Time Post-Install Y2 (min)	Change (Pre-Install – Y1)	Change (Y1– Y2)	Change (Pre-Install – Y2)	Statistically Significant Change (Pre-Install – Y2)?
Washington Ave.	EB	AM	4.06	4.51	3.57	0.45	-0.94	-0.49	No
		PM	3.91	4.31	3.68	0.40	-0.63	-0.23	No
		Sat.	4.56	3.93	3.43	-0.63	-0.5	-1.13	No
	WB	AM	4.65	4.59	4.70	-0.06	0.11	0.05	No
		PM	4.64	4.06	4.78	-0.58	0.72	0.14	No
		Sat.	3.88	4.46	4.22	0.58	-0.24	0.34	No

Washington Avenue eastbound travel times slightly decreased from pre-Implementation to year 2 while westbound travel times saw larger increases during that time.

Table 4: *Travel Time Comparisons (Entire Corridor)*

Road	Direction	Peak	Time Pre-Install (min)	Time Post-Install Y1(min)	Time Post-Install Y2 (min)	Change (Pre-Install – Y1)	Change (Y1– Y2)	Change (Pre-Install – Y2)	Statistically Significant Change (Pre-Install – Y2)?
Washington Ave.	EB	AM	8.6	9.47	8.38	0.87	-1.09	-0.22	No
		PM	9.48	11.42	9.47	1.94	-1.95	-0.01	No
		Sat.	9.96	9.10	12.55	-0.86	3.45	2.59	**Yes**
	WB	AM	8.59	9.4	10.93	0.81	1.53	2.34	**Yes**
		PM	8.62	9.21	10.6	0.59	1.39	1.98	**Yes**
		Sat.	8.03	10.45	10.2	2.42	-0.25	2.17	**Yes**
Ellsworth St.	EB	AM	5.00	5.21	5.11	0.21	-0.10	0.11	No
		PM	5.94	5.16	5.15	-0.78	-0.01	-0.79	No
Christian St.	EB	AM	10.22	9.74	10.4	-0.48	0.66	0.18	No
		PM	9.45	11.26	11.82	1.81	0.56	2.37	**Yes**
	WB	AM	9.4	10.28	12.1[1]	N/A	N/A[1]	N/A	N/A
		PM	11.71	10.23	9.81[1]	N/A	N/A[1]	N/A	N/A

[1] Long-term construction was present during travel time runs on Christian Street between Grays Ferry Avenue and 24th Street. Travel time runs were ended at 24th Street.

D. Traffic Volume Comparison

Turning Movement Counts (TMCs)

Pre-Implementation (2019 and 2020), post-implementation year 1 (2023) and post-implementation year 2 (2024) turning movement counts were collected at the times and dates shown in **Table 5**. This followed the same schedule as the travel time runs, allowing consistency across the two-year analysis. Turning Movement Count data was used to collect vehicle volumes along Washington Avenue at each intersection, vehicle volumes crossing Washington Avenue at each intersection, vehicle volumes along parallel routes, bicycle volumes west of Broad Street, and pedestrian volumes at each intersection. The locations where the turning movement counts were obtained are as follows:

- 24 signalized intersections along Washington Avenue between Grays Ferry Avenue and 4th Street
- Christian Street at Grays Ferry Avenue
- Christian Street at S. Broad Street
- Christian Street at S. 11th Street
- Ellsworth Street at S. Broad Street

Table 5*: TMC Data Collection Periods*

Corridor	Peak Period	Time Periods	Date	Phase
Washington Avenue	AM & PM	7-9 AM 4-6 PM	Thursday, April 11 2019	Pre-Implementation
			Tuesday, October 10, 2023	Post-Implementation (Y1)
			Thursday, November 7, 2024	Post-Implementation (Y2)
	Saturday	10 AM – 2 PM	Saturday, April 13, 2019	Pre-Implementation
			Saturday, October 14, 2023	Post-Implementation (Y1)
			Saturday, November 9, 2024	Post-Implementation (Y2)
	Sunday	10 AM – 2 PM	Sunday, April 14, 2019	Pre-Implementation
			Sunday, October 15, 2023	Post-Implementation (Y1)
			Sunday, November 10, 2024	Post-Implementation (Y2)
Christian Street	AM & PM	7-9 AM 4-6 PM	Wednesday, January 29, 2020	Pre-Implementation
			Tuesday, October 10, 2023	Post-Implementation (Y1)
			Thursday, November 7, 2024	Post-Implementation (Y2)
	Saturday	10 AM – 2 PM	Saturday, October 14, 2023	Post-Implementation (Y1)
			Saturday, November 9, 2024	Post-Implementation (Y2)
	Sunday	10 AM – 2 PM	Sunday, October 15, 2023	Post-Implementation (Y1)
			Sunday, November 10, 2024	Post-Implementation (Y2)
Ellsworth Street	AM & PM	7-9 AM 4-6 PM	Wednesday, January 29, 2020	Pre-Implementation
			Tuesday, October 10, 2023	Post-Implementation (Y1)
			Thursday, November 7, 2024	Post-Implementation (Y2)
	Saturday	10 AM – 2 PM	Saturday, October 14, 2023	Post-Implementation (Y1)
			Saturday, November 9, 2024	Post-Implementation (Y2)
	Sunday	10 AM – 2 PM	Sunday, October 15, 2023	Post-Implementation (Y1)
			Sunday, November 10, 2024	Post-Implementation (Y2)

System peak hours were then calculated based on the data collected. **Table 6** shows the system peak hours for Weekday AM, Weekday PM, Saturday, and Sunday, for each of the rounds of data collected (pre-implementation, year 1, and year 2). AM, PM, and Sunday peak hours shifted slightly later than the year 1 peak hours from 2023. Saturday peak hour moved marginally earlier than previous years.

Table 6: *System Peak Hours*

Time	Year	Peak Hour
Weekday AM	Pre-Implementation (2019)	7:45 AM – 8:45 AM
	Post-Implementation Y1 (2023)	7:30 AM – 8:30 AM
	Post-Implementation Y2 (2024)	8:00 AM – 9:00 AM
Weekday PM	Pre-Implementation (2019)	5:00 PM – 6:00 PM
	Post-Implementation Y1 (2023)	4:15 PM – 5:15 PM
	Post-Implementation Y2 (2024)	5:00 PM – 6:00 PM
Saturday	Pre-Implementation (2019)	12:30 PM – 1:30 PM
	Post-Implementation Y1 (2023)	12:15 PM – 1:15 PM
	Post-Implementation Y2 (2024)	12:00 PM – 1:00 PM
Sunday	Pre-Implementation (2019)	12:30 PM – 1:30 PM
	Post-Implementation Y1(2023)	12:15 PM – 1:15 PM
	Post-Implementation Y2 (2024)	12:45 PM – 1:45 PM

These system peak hours were used to demonstrate the comparison of vehicle volumes traveling along Washington Avenue, crossing Washington Avenue, and along parallel routes for pre-implementation, year 1, and year 2 during each peak. The vehicle volumes traveling along Washington Avenue are illustrated in **Figure 2, Figure 3, Figure 4, and Figure 5**. These figures incorporate vehicles entering each intersection from the westbound and eastbound directions along Washing Avenue. **Table 7** shows the percent change in vehicle volumes for each peak period from pre-implementation to year 1 and from year 1 to year 2.

Vehicle Volumes Along Washington Avenue

Figures 2-5 show that there was not a significant change in total vehicle volumes along Washington Avenue from year 1 to year 2 (based on TMC data collected) and illustrate that volumes have yet to return to pre-COVID levels. When examining county-wide data to better understand the post-COVID trends, PennDOT's HPMS VMT data on Other Principal Arterials in Philadelphia indicated a 15 percent decrease in VMT from 2019 to 2020. Vehicle miles traveled bounced back on Philadelphia Other Principal Arterials in 2021 by 26%, exceeding the initial pre-COVID levels. Washington Avenue vehicular volumes appeared to reflect a similar decrease post-COVID, but Washington Avenue has not seen a similar jump back to pre-COVID levels.

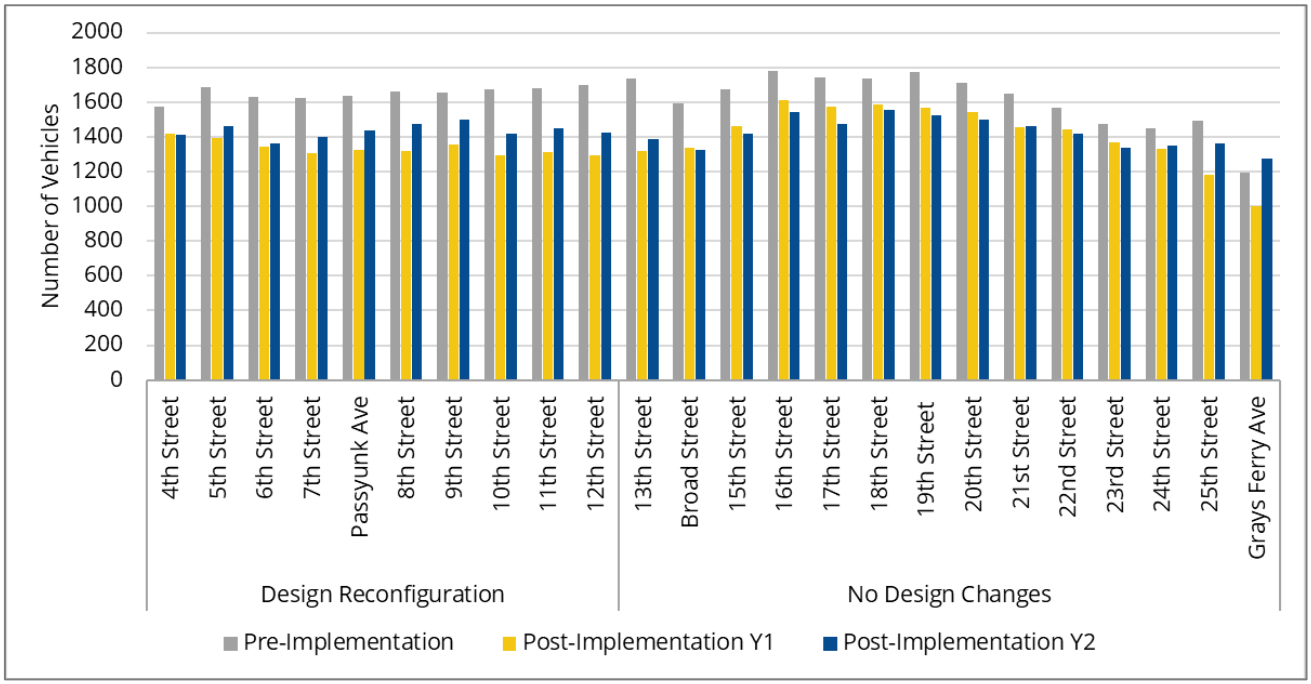
The bulleted list below provides specific observations into each time period:

- **AM Peak Hour:** There was no significant change in year 2 volumes as compared to year 1.
- **PM Peak Hour**: Showed similar volumes in year 1 and year 2 east of Broad Street (where the road diet was implemented), but an increase of about 11% on average west of Broad Street.
- **Saturday Peak Hour**: A slight decrease in vehicle volumes was observed east of Broad Street which may be related to the increase in pedestrian and bicyclist activity during the same time as people may experience increased comfort biking and walking along this improved portion of the corridor.

- **Sunday Peak Hour**: Volumes east of Broad Street decreased by about 9.5% on average but were generally consistent or slightly elevated on the west side when studying year 1 and year 2 data. Overall, post-implementation volumes in year 2 were not significantly different compared to volumes in year, but for both years, the post-implementation volumes were notably lower than that of pre-implementation.

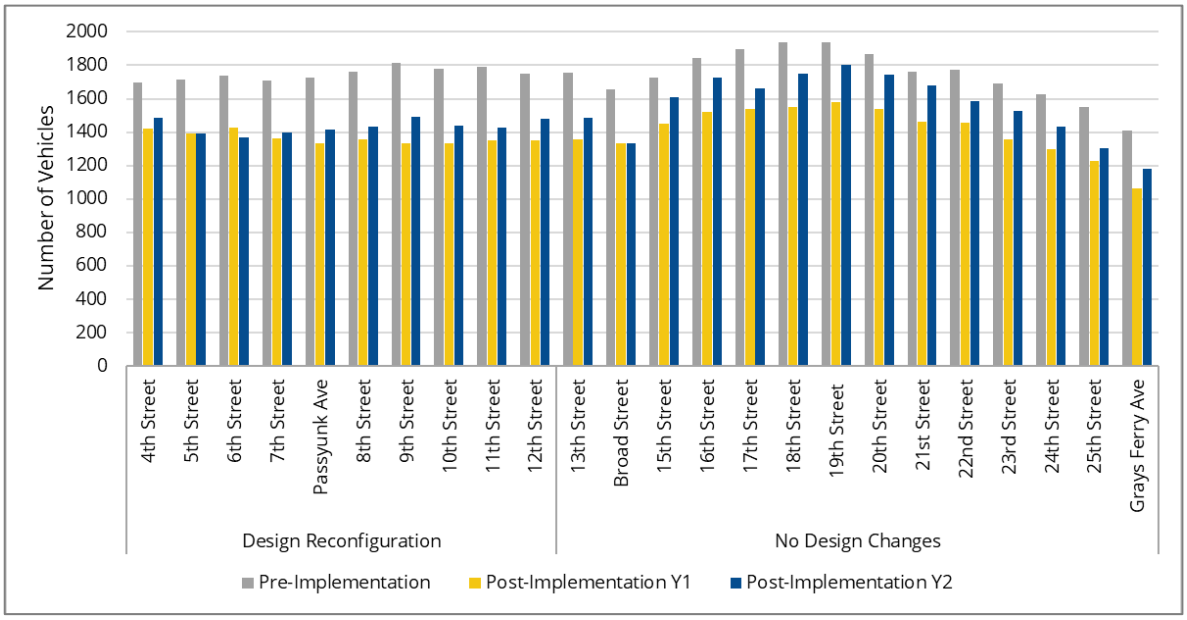
No significant change in vehicle volumes from year 1 to year 2 during AM Peak Hour. Volumes generally have yet to rebound to pre-COVID levels.

Figure 2: *Volumes Along Washington Avenue (AM Peak Hour)*



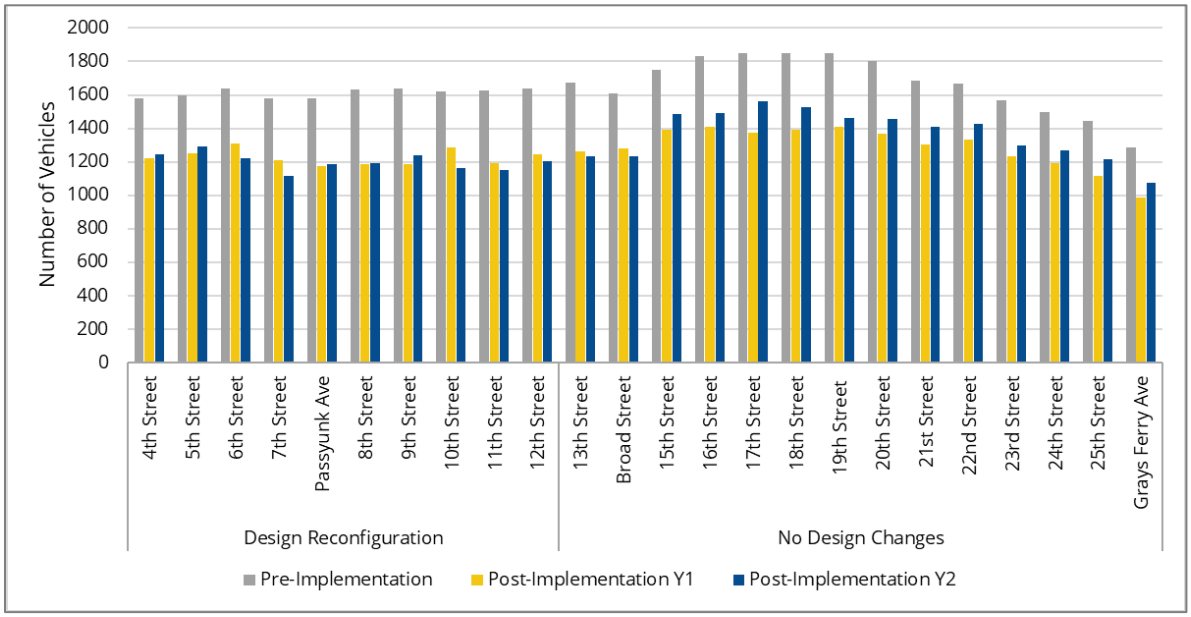
Similar vehicle volumes between year 1 and year 2 east of Broad Street with an 11% average increase in volumes west of Broad Street from year 1 to year 2.

Figure 3: *Volumes Along Washington Avenue (PM Peak Hour)*



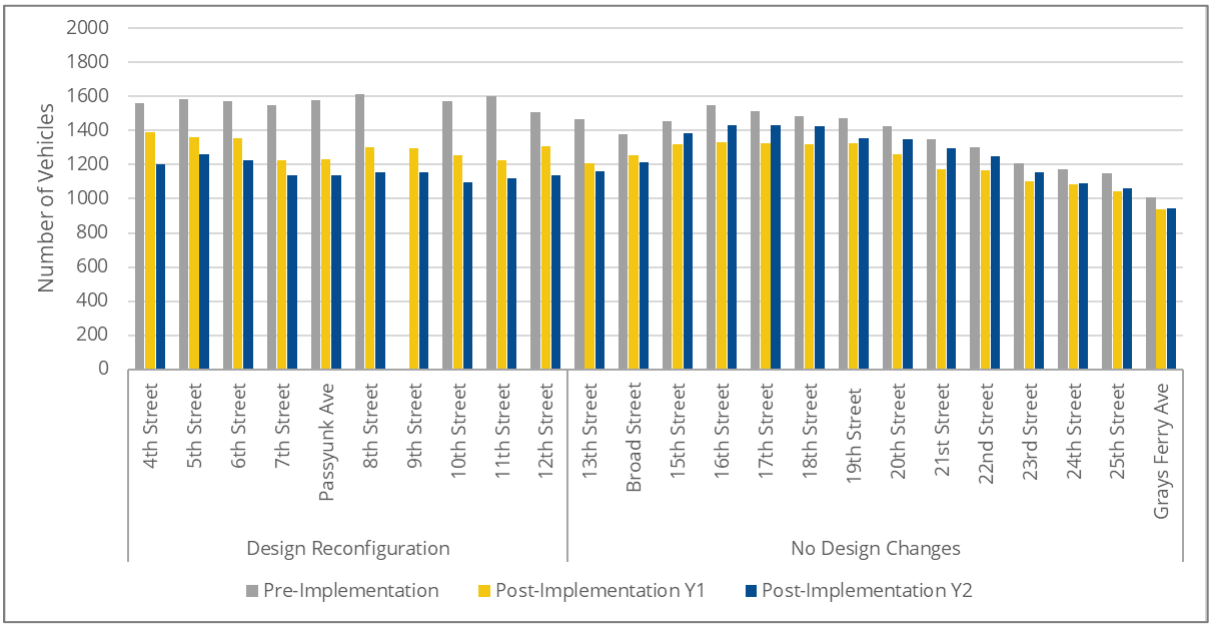
Slight decrease in vehicle volumes east of Broad Street and increase in vehicle volumes west of Broad Street during Saturday peak hour from year 1 to year 2.

Figure 4: *Volumes Along Washington Avenue (Saturday Peak Hour)*



Year 2 Sunday peak hour volumes east of Broad Street decreased by about 9.5% on average but were generally consistent or slightly elevated on the west side, when comparing year 1 and year 2 data.

Figure 5: *Volumes Along Washington Avenue (Sunday Peak Hour)*

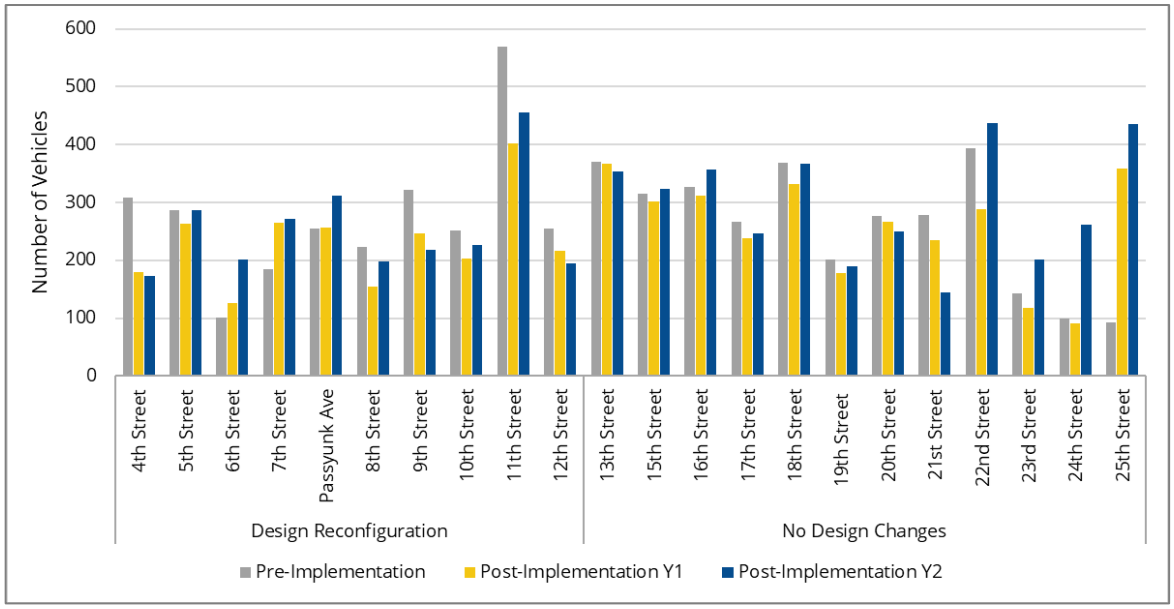


Vehicle Volumes Crossing Washington Avenue

Figure 6, Figure 7, Figure 8, and Figure 9 show the comparison of vehicle volumes traveling across Washington Avenue between pre-implementation, year 1, and year 2. The volumes represent vehicles that enter each intersection from the side streets for each of the peak hours (collected via TMCs). **The peak hour data did not show a statistically significant change between year 1 and year 2.**

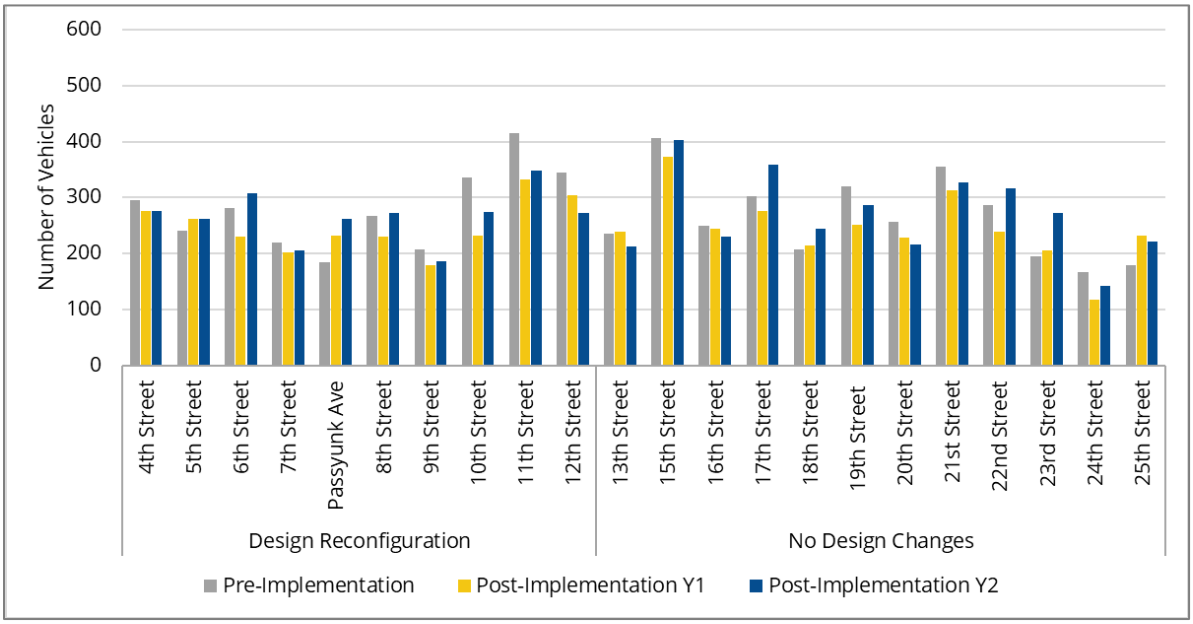
Similar volumes crossing Washington Avenue during AM Peak Hour with large increase observed at 22nd Street, 23rd Street, and 24th Street from year 1 to year 2.

Figure 6: *Volumes Crossing Washington Avenue (AM Peak Hour)*



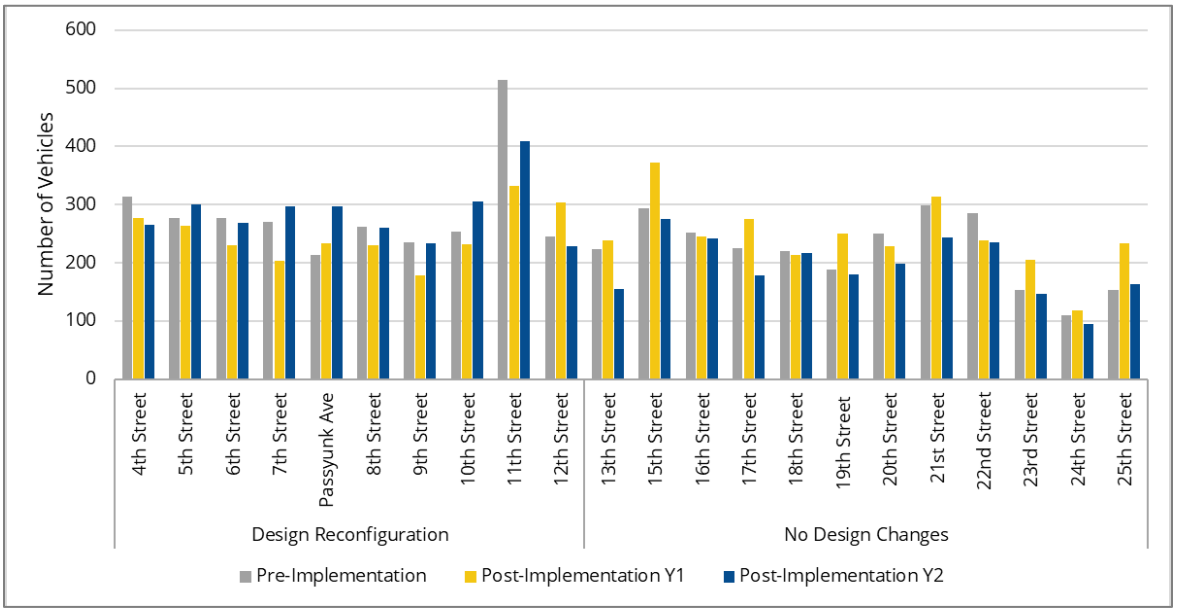
Similar volumes crossing Washington Avenue during PM Peak Hour when comparing year 1 and year 2.

Figure 7: *Volumes Crossing Washington Avenue (PM Peak Hour)*



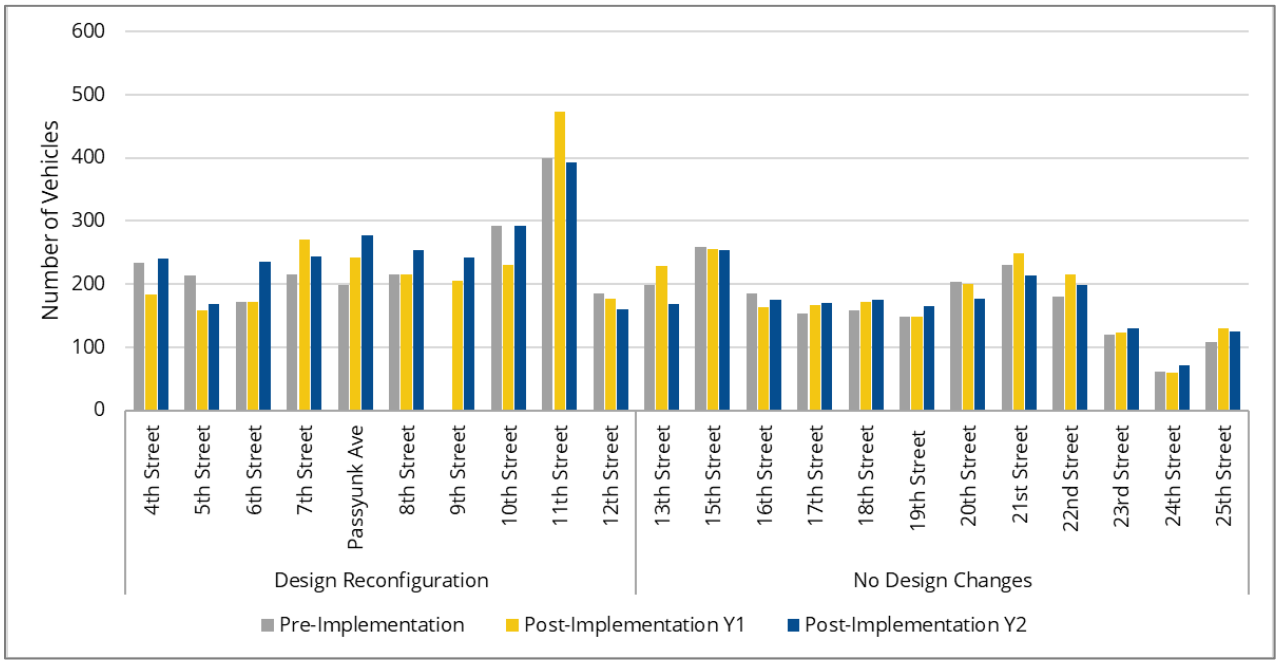
From year 1 to year 2, there were slight increases in vehicles crossing Washington Avenue east of Broad Street and decreases in vehicles crossing Washington Avenue west of Broad Street during Saturday peak.

Figure 8: *Volumes Crossing Washington Avenue (Saturday Peak Hour)*



Similar volumes crossing Washington Avenue during Sunday peak hour in year 1 and year 2.

Figure 9: *Volumes Crossing Washington Avenue (Sunday Peak Hour)*



Vehicle Volumes Along Parallel Routes

Table 7 along with **Figure 10 and Figure 11** show the AM and PM peak hour volumes along routes parallel to Washington Avenue (based on TMC data). During the AM peak hour, volumes along Christian Street at S. 11th Street and at S. Broad Street slightly decreased between year 1 and year 2 while volumes increased in these locations for the PM peak hours. Christian Street at Grays Ferry Avenue and Ellsworth Street at S. Broad Street saw increased volumes during AM and PM peak hours. While the AM peak hour volume for Christian Street at Grays Ferry Avenue increased by 77 percent, a decrease in vehicles was observed at Christian Street at S. Broad Street. This may be a result of an outlier or abnormally low count of 231 vehicles the previous year, resulting in a higher percentage change year to year. Comparing the percentage change from pre-implementation to year 1 and from year 1 to year 2, the increase in vehicles on parallel routes appears less significant due to the initial decreases during the prior year. Overall, while year 2 volumes generally increased along parallel routes in comparison to year 1, **there were no major changes in volumes along Washington Avenue during the AM and PM peak hours. Increases that were observed were mostly located at parallel route intersections west of Broad Street where the road diet was not implemented.**

Vehicle volumes along parallel routes decreased from pre-implementation to year 2 during all peaks except for Christian Street at Grays Ferry Ave during the weekday AM peak and Ellsworth St at S. Broad St during the weekday PM peak.

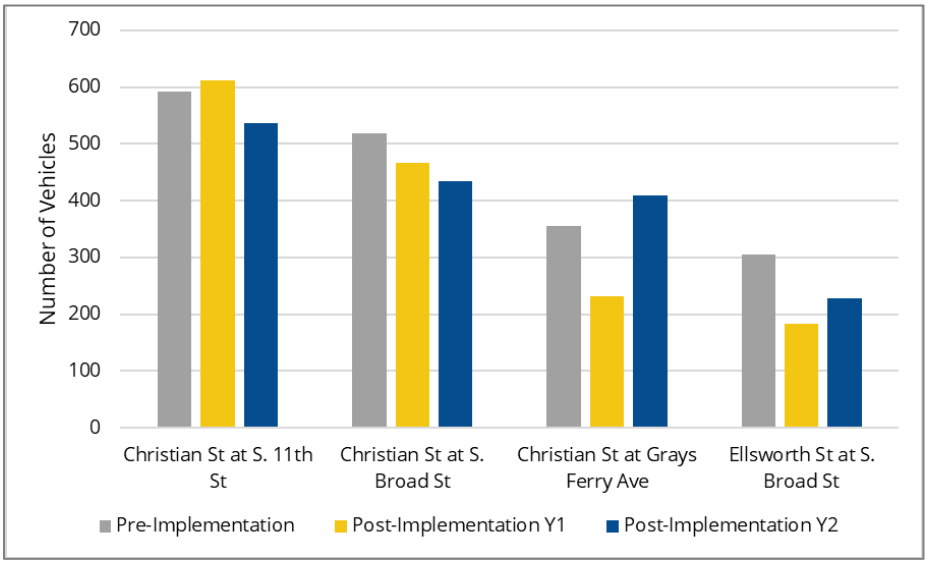
Table 7: *Vehicle Volumes Along Parallel Routes*

Street	Time	Year	Number of Vehicles	Percent Change Pre-Install to Y1	Percent Change Y1 to Y2	Percent Change Pre-Install to Y2
Christian St at S. 11th St	Weekday AM	Pre-Implementation (2019)	592	3.21%	-12.11%	-9.29%
		Post-Implementation Y1 (2023)	611			
		Post-Implementation Y2 (2024)	537			
	Weekday PM	Pre-Implementation (2019)	622	-13.83%	14.74%	-1.13%
		Post-Implementation Y1 (2023)	536			
		Post-Implementation Y2 (2024)	615			
Christian St at S. Broad St	Weekday AM	Pre-Implementation (2019)	519	-10.21%	-6.87%	-16.38%
		Post-Implementation Y1 (2023)	466			
		Post-Implementation Y2 (2024)	434			
	Weekday PM	Pre-Implementation (2019)	526	-22.81%	25.12%	-3.42%
		Post-Implementation Y1 (2023)	406			
		Post-Implementation Y2 (2024)	508			
Christian St at Grays Ferry Ave	Weekday AM	Pre-Implementation (2019)	355	-34.93%	77.06%	15.21%
		Post-Implementation Y1 (2023)	231			
		Post-Implementation Y2 (2024)	409			
	Weekday PM	Pre-Implementation (2019)	366	-22.13%	20.70%	-6.01%
		Post-Implementation Y1(2023)	285			
		Post-Implementation Y2 (2024)	344			
Ellsworth St at S. Broad St	Weekday AM	Pre-Implementation (2019)	305	-40.00%	24.59%	-25.25%
		Post-Implementation Y1(2023)	183			
		Post-Implementation Y2 (2024)	228			
		Pre-Implementation (2019)	195	-18.97%	36.08%	10.26%

	Weekday PM	Post-Implementation Y1 (2023)	158			
		Post-Implementation Y2 (2024)	215			

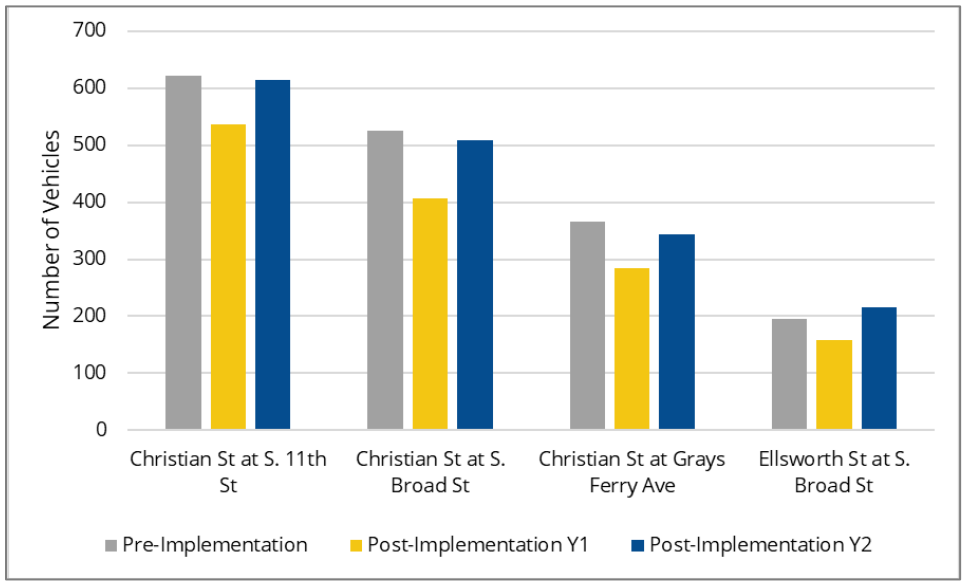
Vehicle volumes increased at parallel route intersections west of Broad Street but did not increase east of Broad Street where the road diet was implemented.

Figure 10: *Volumes Along Parallel Routes (AM Peak Hour)*



Christian Street and Ellsworth Street saw increases in vehicular volumes from year 1 to year 2 and brought the year volumes close to pre-Implementation levels.

Figure 11: *Volumes Along Parallel Routes (PM Peak Hour)*



Annual Daily Traffic Counts

Annual Daily Traffic (ADT) counts were gathered at the same locations in the pre-implementation, post-implementation year 1, and post-implementation year 2 phases. For clarity, these are not the same locations referenced above in **Table 7** and **Figures 10 and 11**. To obtain an average from the sample size, PennDOT's Traffic Data Report, Table 355, *Average Day of Week by Month Factors Compiled for Total Vehicles* was utilized. This converted the ADT to Annual Average Daily Traffic (AADT). **Table 8** shows the AADT values for several blocks along the corridor and highlights the percentage change for AADT over the study years.

There was not a significant change in AADT between pre-installation and year 2. East of Broad Street, where the road diet was implemented, did not experience decreases in AADT. West of Broad Street, there was a 24% increase in AADT from year 1 to year 2.

AADT along Washington Avenue remained steady or decreased from Pre-Implementation to year 2.

Table 8: *AADT Along Washington Avenue*

Section	Block	AADT Pre-Install (2021)[2]	AADT Post-Install Y1(2023)	AADT Post-Install Y2 (2024)	Percent Change Pre-Install to Y1	Percent Change Y1 to Y2	Percent Change Pre-Install to Y2
East of Broad Street	600	16,059	16,502	16,060	2.76%	-2.68%	0.01%
	1000	18,401	15,430	15,663	-16.15%	1.51%	-14.88%
West of Broad Street	2000/2100[3]	20,651	16,316	20,262	-20.99%	24.18%	-1.88%

Table 9 shows the AADT along parallel routes to Washington Avenue. The AADT along the parallel routes to Washington Avenue mostly decreased from year 1 to year 2. The largest drop occurred along routes south of Broad Street—most notably, the 2000 block of Federal Street saw a 41 percent decrease. While this seems significant, the Year 2 AADT remains close to the pre-implementation level. The previous report did not identify a clear reason for the unusually high year 1 count, suggesting it may have been an outlier. In general, the increases in AADT from pre-implementation to year 2 are primarily driven by elevated counts in year 1. The year 1 report noted that pre-implementation data was collected in late June, near multiple schools that were not in session at the time, potentially resulting in lower pre-implementation counts.

[2] Pre-Implementation counts were conducted in February 2020 by NDS and 2021 by DVRPC.
[3] Pre-Implementation and year 1 counts from 2000 block and year 2 counts from 2100 block

AADT along parallel routes showed increases from pre-implementation to year 2 at the 1100 block of Carpenter Street and 2000 block of Federal Street but decreases at the 2000 block of Carpenter Street, 1100 block of Federal Street, and 2000 block of Ellsworth Street.

Table 9: *AADT Along Parallel Routes*

Section	Block	AADT Pre-Install (2021)	AADT Post-Install Y1(2023)	AADT Post-Install Y2 (2024)	Percent Change Pre-Install to Y1	Percent Change Y1 to Y2	Percent Change Pre-Install to Y2
North of Broad Street	1100 Block Carpenter St (one-way WB)	677	866	875	27.92%	1.04%	29.25%
	2000 Block Carpenter St (one-way EB)	1,447	1,358	926	-6.15%	-31.81%	-36.01%
South of Broad Street	1100 Block Federal St (one-way WB)	2,734	2,978	2,488	8.92%	-16.45%	-9.00%
	2000 Block Federal St (one-way WB)	915	1,799	1,055	96.61%	-41.36%	15.30%
	2000 Block Ellsworth St (one-way EB)	1,843	1,497	1,330	-18.77%	-11.16%	-27.84%

Bicycle Volumes

Seasonally adjusted bicycle volumes were counted pre-implementation, year 1, and year 2. DVRPC's seasonal adjustment factors along with a baseline equipment factor were applied to pre-implementation and post-Implementation year 1 and 2 data. **Table 10** shows the AADB values along Washington Avenue.

AADB increased along Washington Avenue from pre-Implementation to year 2.

Table 10: *AADB Along Washington Avenue (Excluding Bicycles on Sidewalks)*

Section	Block	AADB Pre-Install (2021)	AADB Post-Install Y1 (2023)	AADB Post-Install Y2 (2024) [4]	Percent Change Pre-Install to Y1	Percent Change Y1 to Y2	Percent Change Pre-Install to Y2
East of Broad St	600	122[5]	972	638	N/A	-34.36%	N/A
	1000/1100	591	962	870	62.78%	-9.56%	47.21%
West of Broad St	1500	299	489	655	63.55%	33.95%	119.06%
	1800/1900	230	462	526	100.87%	13.85%	128.70%

Table 11: *Average Daily Bicycle Volumes Along Washington Avenue (Excluding Bicycles on Sidewalks; No Seasonal Factor)*

Section	Block	Year	EB	WB	Total	Percent Change Pre-Install to Y1	Percent Change Y1 to Y2	Percent Change Pre-Install to Y2	Statistically Significant Change (Pre-Install to Y2)?
East of Broad St	600	Pre-Implementation (2021)	-	124[5]	124	N/A	36.60%	N/A	N/A
		Post-Implementation Y1 (2023)	-	-	612				
		Post-Implementation Y2 (2024)	319	517	836				
	1000/1100	Pre-Implementation (2022)	-	-	463	40.82%	74.85%	146.22%	No
		Post-Implementation Y1 (2023)	-	-	652				
		Post-Implementation Y2 (2024)	152	988	1140				
West of Broad St	1500	Pre-Implementation (2022)	-	-	344	152.04%	13.49%	186.05%	No
		Post-Implementation Y1(2023)	432	435	867				
		Post-Implementation Y2 (2024)	470	514	984				
	1800/1900	Pre-Implementation (2021)	108	126	234	236.75%	0.00%	236.33%	**Yes**
		Post-Implementation Y1 (2023)	415	373	788				
		Post-Implementation Y2 (2024)	365	422	787				

[4] Bicycle counts east of Broad Street were averaged from the TMC data and factored based on peak hour observations from the Miovision data West of Broad Street.

[5] Only westbound counts were collected for the 600 block of Washington Avenue in 2021.

Bicycle volumes were collected in 2024 and compared to the pre-Implementation and post-Implementation year 1 data, shown in **Table 11**. **Figure 12, Figure 13, Figure 14, and Figure 15** show bicycle volumes by intersection for AM, PM, Saturday, and Sunday peaks. **Bicycle volumes along Washington Avenue generally increased in the AM peak hour and Saturday peak hour when comparing year 1 and year 2 data. Specifically, intersections between 4th Street and 11th Street, where the parking separated bike lane was implemented, saw some of the largest increases.** In the AM Peak Hour, bicycle volumes increased by about 19% in this section of Washington Avenue. PM Peak Hour volumes did not see as significant as an increase but did have some intersections with higher numbers. Sunday Peak Hour volumes also did not significantly differ between year 1 and year 2. As for Saturday Peak Hour, bicycle volumes increased at almost every intersection, with an overall increase of about 88%. While bicycle infrastructure was not upgraded west of Broad Street to the extent it was east of Broad Street, it is important to highlight that bicyclist volumes still increased corridor wide.

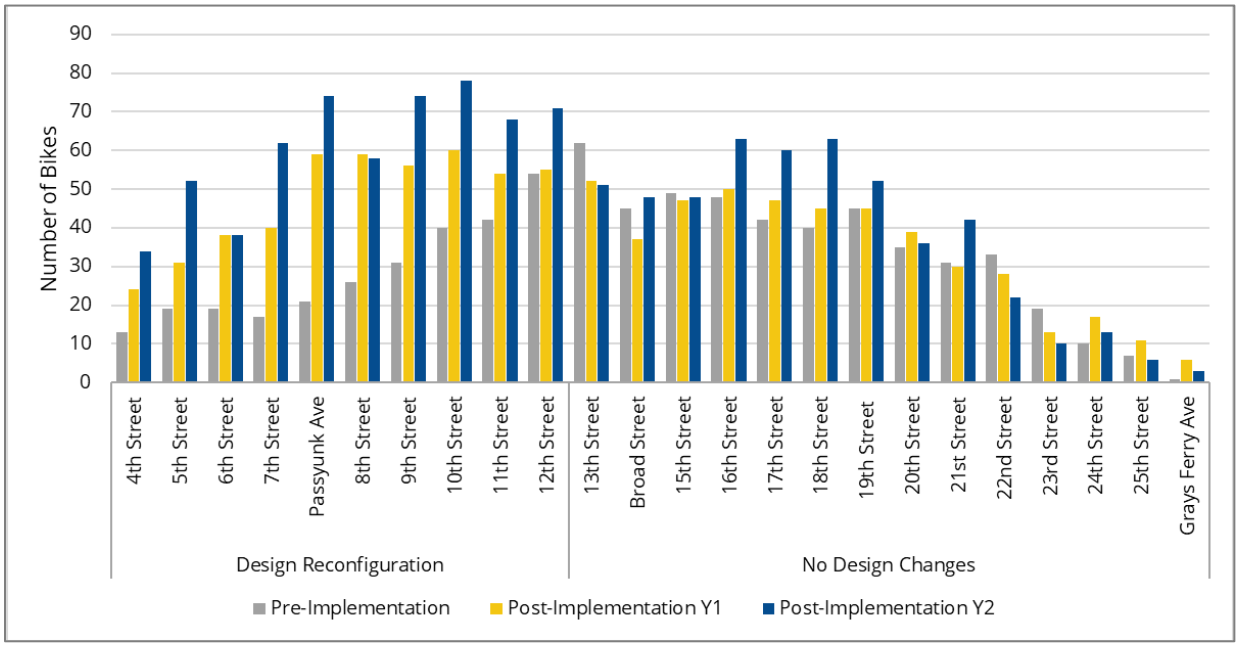
Bicycle volumes along Washington Avenue increased from pre-Implementation to year 2 during the weekday AM and PM peaks.

Table 12: *Cumulative Total of Bicycles Along Washington Avenue at Intersections*

Time	Year	Number of Bicycles	Percent Change Pre-Install to Y1	Percent Change Y1 to Y2	Percent Change Pre-Install to Y2
Weekday AM	Pre-Implementation (2019)	749	25.90%	19.41%	50.33%
	Post-Implementation Y1(2023)	943			
	Post-Implementation Y2 (2024)	1126			
Weekday PM	Pre-Implementation (2019)	992	19.15%	-12.01%	4.84%
	Post-Implementation Y1(2023)	1182			
	Post-Implementation Y2 (2024)	1040			
Saturday	Pre-Implementation (2019)	766	-56.14%	88.39%	-17.36%
	Post-Implementation Y1(2023)	336			
	Post-Implementation Y2 (2024)	633			
Sunday	Pre-Implementation (2019)	666	4.80%	-9.60%	-5.26%
	Post-Implementation Y1(2023)	698			
	Post-Implementation Y2 (2024)	631			

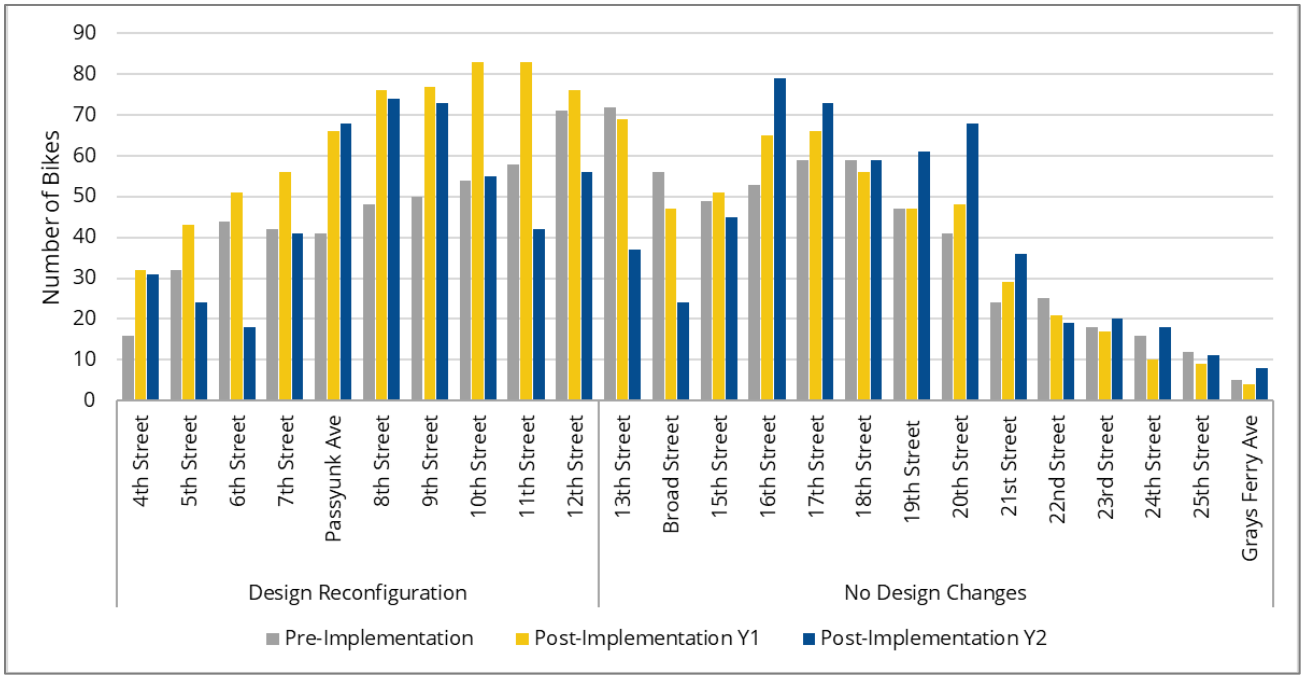
Bicycle volumes generally increased during the AM Peak Hour, with the largest increases observed east of Broad Street. Increases were heavily concentrated on blocks with separated bike lanes, ranging between 100% to 265% depending on the block, from pre-implementation to year 2.

Figure 12: *Total Bicycle Volumes Along Washington Avenue (AM Peak Hour)*



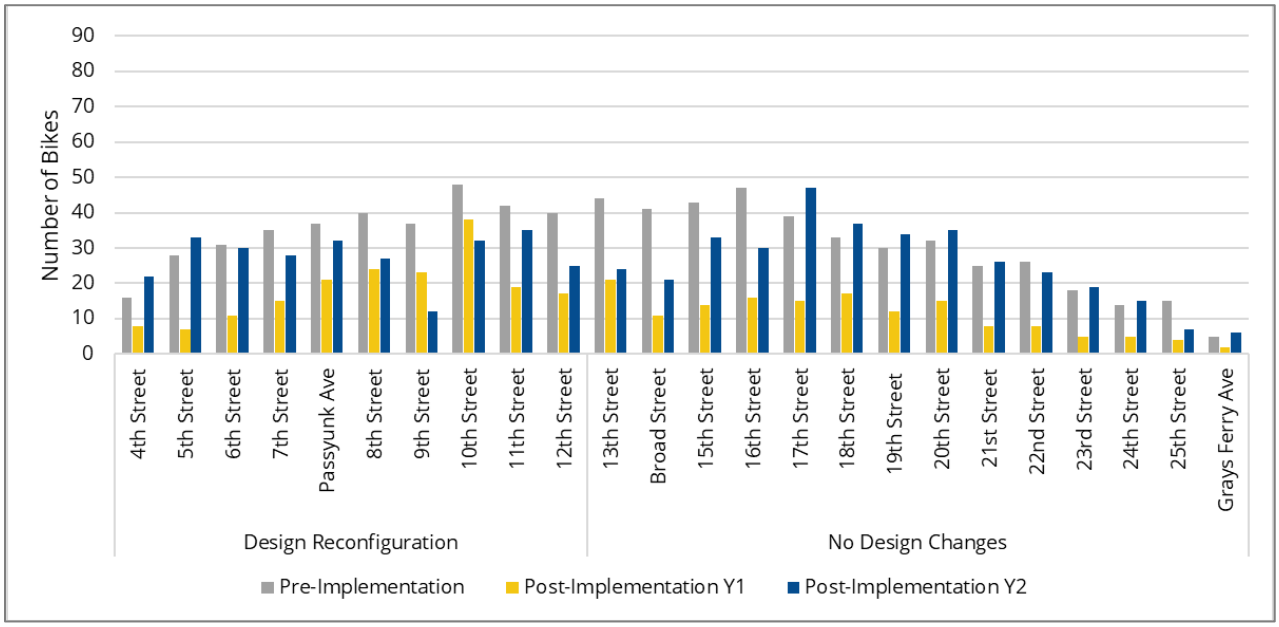
From year 1 to year 2 there was a slight overall decrease in bicycle volumes during the PM Peak Hour with the most significant decreases observed at 6th Street, 10th Street, and 11th Street.

Figure 13: *Total Bicycle Volumes Along Washington Avenue (PM Peak Hour)*



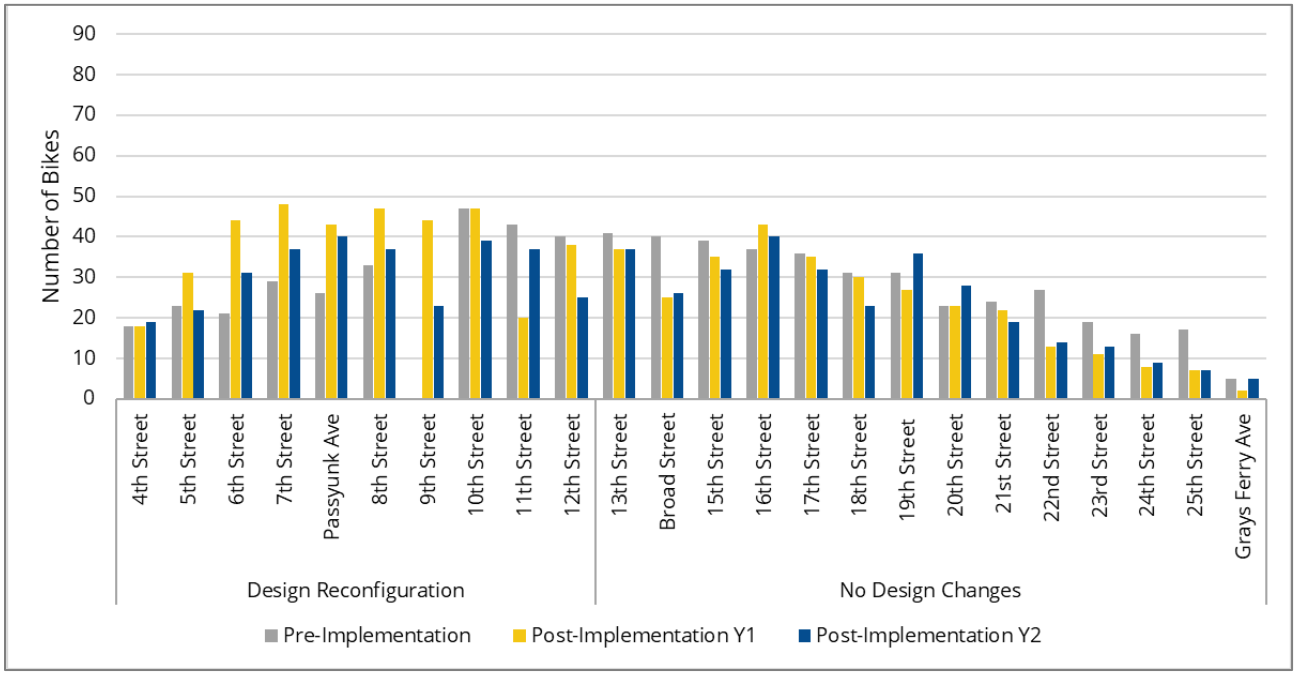
Bicycle volumes on weekend peak hours varied from pre-implementation to year 1 and year 2, increasing in some locations and decreasing in others.

Figure 14: *Total Bicycle Volumes Along Washington Avenue (Saturday Peak Hour)*



Sunday Peak Hour volumes did not significantly differ.

Figure 15: *Total Bicycle Volumes Along Washington Avenue (Sunday Peak Hour)*



Pedestrian Volumes

As part of the TMC data collection effort, pedestrian volumes were counted. This included counts of pedestrians at each intersection during the peak hours as well as counts of pedestrians crossing side streets and Washington Avenue. Below, **Table 13** and **Figure 16**, **Figure 17**, **Figure 18**, and **Figure 19** illustrate the pedestrian volumes at each intersection during each of the peak hours.

Pedestrian volumes are higher at nearly every intersection east of Broad compared to west of Broad. This is a trend that existed pre-implementation and has grown in the years since the project was installed. Corridor wide, pedestrian volumes increased from pre-implementation to year 2 during all peak periods except for Saturday. Pedestrian volumes increased from year 1 to year 2 during all peak periods except for Sundays. Between year 1 and year 2 in the AM peak hour, pedestrian volumes increased by about 25% while PM peak hour increases were about 20%. Saturday pedestrian volumes increased by 60%.

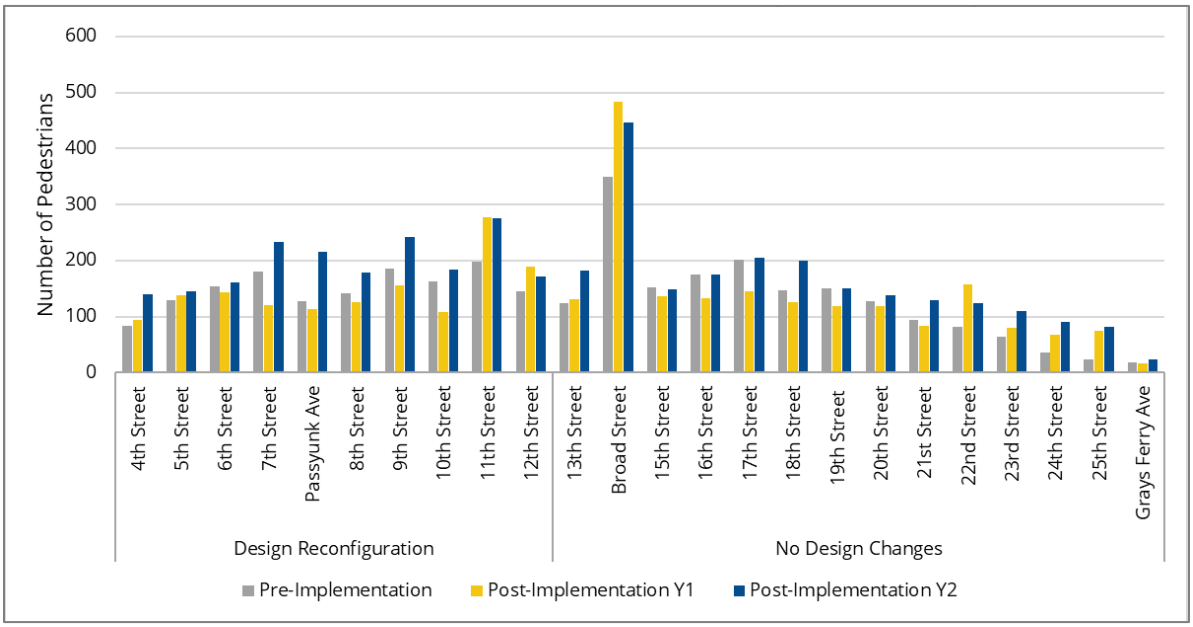
Pedestrian volumes at intersections along Washington Avenue increased from pre-Implementation to year 2 during all peaks except Saturday.

Table 13: *Pedestrian Volumes at Intersections*

Time	Year	Number of Pedestrians	Percent Change Pre-Install to Y1	Percent Change Y1 to Y2	Percent Change Pre-Install to Y2
Weekday AM	Pre-Implementation (2019)	3254	2.58%	24.54%	27.75%
	Post-Implementation Y1(2023)	3338			
	Post-Implementation Y2 (2024)	4157			
Weekday PM	Pre-Implementation (2019)	4793	-4.46%	20.29%	14.92%
	Post-Implementation Y1(2023)	4579			
	Post-Implementation Y2 (2024)	5508			
Saturday	Pre-Implementation (2019)	6057	-40.25%	60.57%	-4.06%
	Post-Implementation Y1 (2023)	3619			
	Post-Implementation Y2 (2024)	5811			
Sunday	Pre-Implementation (2019)	3939	24.35%	-4.78%	18.41%
	Post-Implementation Y1(2023)	4898			
	Post-Implementation Y2 (2024)	4664			

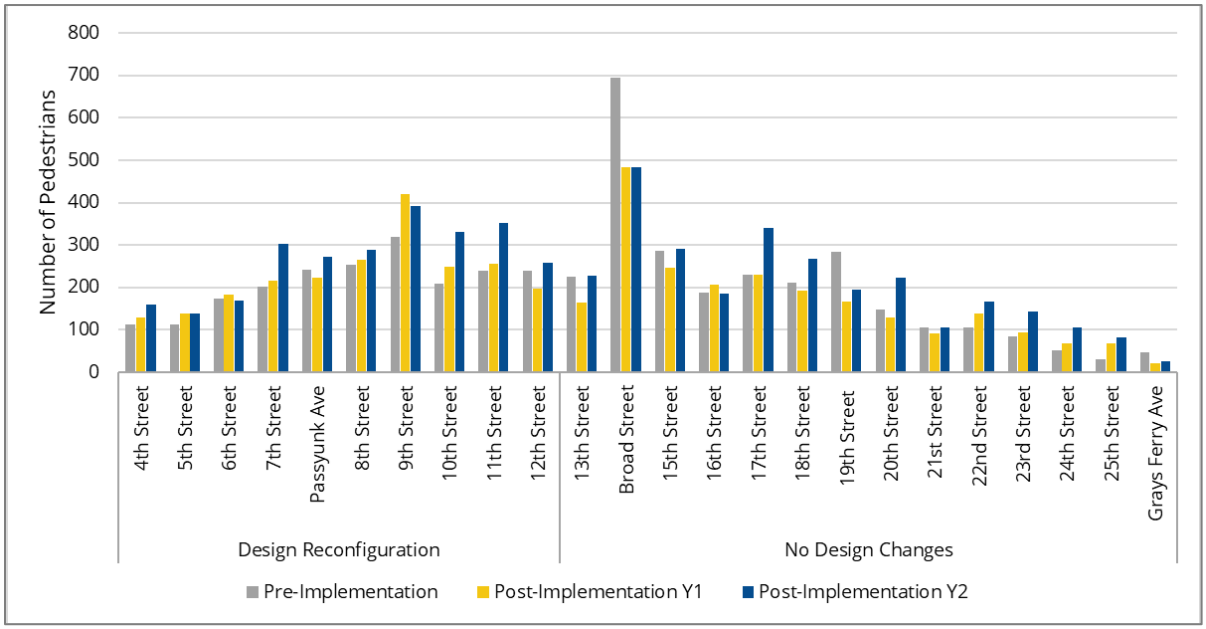
Pedestrian volumes increased by 25% during AM Peak Hour corridor-wide from year 1 to year 2.

Figure 16: *Total Pedestrian Volumes at Intersections (AM Peak Hour)*



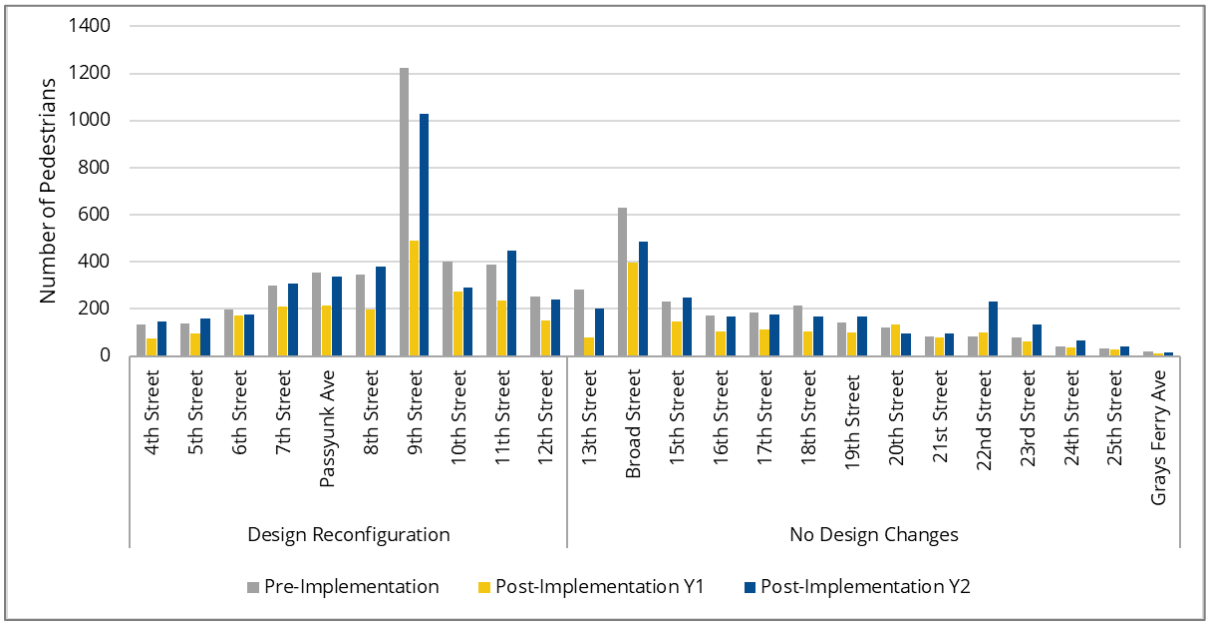
Pedestrian volumes increased by about 20% during PM Peak Hour from year 1 to year 2.

Figure 17: *Total Pedestrian Volumes at Intersections (PM Peak Hour)*



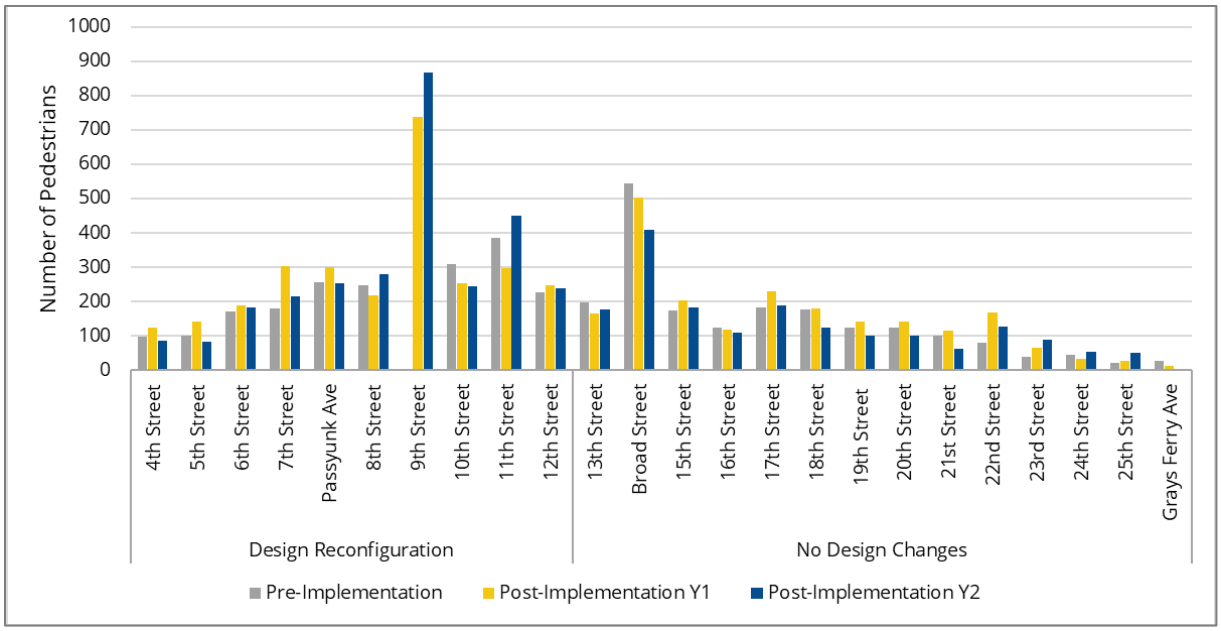
Saturday Peak Hour showed the highest increase in pedestrian volumes from year 1 to year 2. 9th Street had the most pedestrian activity over the Saturday and Sunday peaks.

Figure 18: *Total Pedestrian Volumes at Intersections (Saturday Peak Hour)*



Pedestrian volumes slightly decreased during the Sunday Peak Hour from year 1 to year 2.

Figure 19: *Total Pedestrian Volumes at Intersections (Sunday Peak Hour)*[6]



[6] Pre-implementation pedestrian volumes were not collected at 9th Street and Washington Avenue.

E. Speed Analysis

Speed Data Comparison

Various methods of collecting speed data were utilized across the three periods of data collection. Previous data collection efforts used a combination of manual radar gun data as well as pneumatic tube (ATR) speed data. Post-implementation year 2 speed data was collected via Black Cat radar recorders. Given the mix of data collection vendors and methods, an important caveat to note while drawing any speed related conclusions is listed below:

- Precise tube locations and manual radar gun tracking locations of previous data collection efforts are unknown and therefore may skew some comparisons to the year 2 data. Year 2 speed data was collected mid-block to best collect free flow speed data.

Table 14 and **Table 15** below examine the 85th percentile speeds and percentage of vehicles traveling over the speed limit. **All 85th percentile speeds in year 2 were either equal to or less than the speed limit along Washington Avenue.** We observed significantly lower speed values east of Broad Street where the road diet was implemented, compared to previous years and the speeds on the other half of the corridor. To ensure we were capturing free flow vehicles and making a fair comparison, we removed vehicles traveling 10 MPH or slower with the assumption that they may have been parking vehicles or turning into adjacent driveways and therefore skewing the data to appear slower. Upon removing these vehicles, the 85th percentiles and percentage of vehicles exceeding the speed limit remained similar but increased about one or two percent. Even with the additional analysis, **the year 2 85th percentile speeds along the eastern portion of Broad Street were slower on average than the western portion of Broad Street.** It is important to note that the speed limit is 25 MPH east of Broad Street and 30 MPH west of Broad Street, however, **there was still a higher percentage of vehicles traveling over the speed limit west of Broad Street than east of Broad Street in year 2.**

Table 14: *Speed Data Comparison (Washington Avenue Westbound)*

Location	Block	Year	Speed Limit	85th Percentile (MPH)	% Above Speed Limit
East of Broad St	500/600[7]	Pre-Implementation (2022)	25 MPH	27	31%
		Post-Implementation Y1(2023)		27	27%
		Post-Implementation Y2 (2024)[8]		24	10%
	1000/1100[9]	Pre-Implementation (2019)	25 MPH	32	56%
		Post-Implementation Y1(2023)		26	24%
		Post-Implementation Y2 (2024)[7]		20	2%
West of Broad St	1500	Pre-Implementation (2019)	30 MPH	27	5%
		Post-Implementation Y1(2023)		30	13%
		Post-Implementation Y2 (2024)		28	8%
	1700/1800[10]	Pre-Implementation (2019)	30 MPH	28	29%
		Post-Implementation Y1(2023)		29	12%
		Post-Implementation Y2 (2024)		22	3%

[7] Pre-implementation and year 1 examined the 500 block while year 2 examined the 600 block.
[8] Vehicles traveling 10 MPH and under were removed from this analysis with the assumption that they were likely turning or parking and therefore not free flow vehicles.
[9] Pre-implementation and year 1 examined the 1100 block while year 2 examined the 1000 block.
[10] Pre-Implementation and year 1 examined the 1700 block while year 2 examined the 1800 block.

	2000/2100[11]	Pre-Implementation (2019)	30 MPH	32	19%
		Post-Implementation Y1(2023)		25	2%
		Post-Implementation Y2 (2024)		30	17%

All 85th percentile speeds in year 2 were equal to or less than the speed limit along Washington Avenue.

Table 15: *Speed Data Comparison (Washington Avenue eastbound)*

Location	Block	Year	Speed Limit	85th Percentile (MPH)	% Above Speed Limit
East of Broad St	**500/600[6]**	Pre-Implementation (2019)	25 MPH	30	39%
		Post-Implementation Y1 (2023)		32	47%
		Post-Implementation Y2 (2024)[12]		22	5%
	1000/ 1100[7]	Pre-Implementation (2019)	25 MPH	N/A	N/A
		Post-Implementation Y1 (2023)		N/A	N/A
		Post-Implementation Y2 (2024)[11]		17	1%
West of Broad St	**1500**	Pre-Implementation (2019)	30 MPH	N/A	N/A
		Post-Implementation Y1(2023)		N/A	N/A
		Post-Implementation Y2 (2024)		27	4%
	1800	Pre-Implementation (2019)	30 MPH	N/A	N/A
		Post-Implementation Y1 (2023)		N/A	N/A
		Post-Implementation Y2 (2024)		27	4%
	2100	Pre-Implementation (2019)	30 MPH	N/A	N/A
		Post-Implementation Y1(2023)		N/A	N/A
		Post-Implementation Y2 (2024)		29	12%

Speed data collection also occurred along parallel routes to Washington Avenue to assess whether the improvements to Washington Avenue simply displaced speeding drivers or reduced the number of speeding drivers in the larger project vicinity. **Table 16** shows the percentage of vehicles exceeding the 25 MPH speed limit along these parallel routes. **The percentage of speeding vehicles remains low on parallel routes south of Washington Avenue.**

[11] Pre-Implementation and year 1 examined the 2000 block while year 2 examined the 2100 block.
[12] Vehicles traveling 10 MPH and under were removed from this analysis with the assumption that they were likely turning or parking and therefore not free flow vehicles.

Minor changes were observed in the percentage of vehicles traveling 25 MPH and above on parallel routes from year 1 to year 2.

Table 16: *Percent of Vehicles Traveling 25 MPH and Above on Parallel Routes*

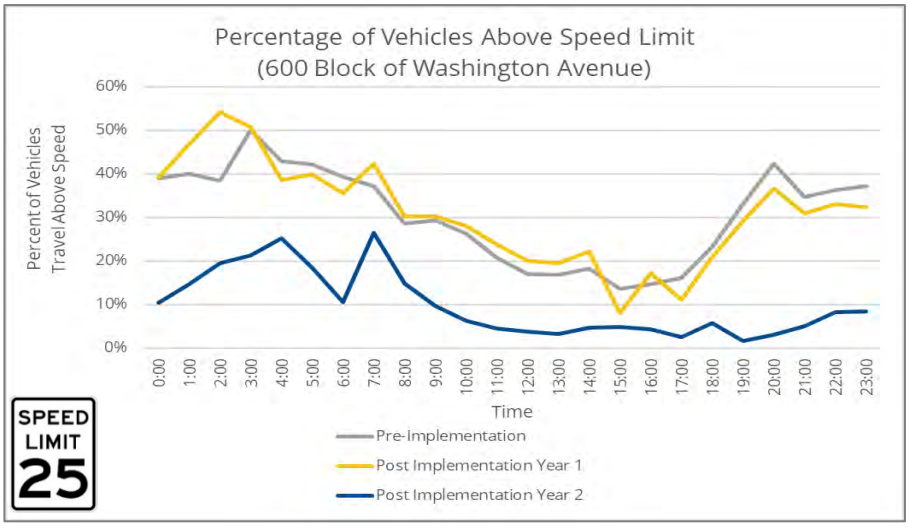
Section	Street and Block	Year	EB % 25+ MPH	WB % 25+ MPH	Percent Change year 1 to year 2
North of Washington Ave	1100 block Carpenter St	Post-Implementation Y1(2023)	N/A	0%	2%
		Post-Implementation Y2 (2024)	N/A	2%	
	2000 block Carpenter St	Post-Implementation Y1 (2023)	1%	N/A	0%
		Post-Implementation Y2 (2024)	1%	N/A	
South of Washington Ave	1100 block Federal St	Post-Implementation Y1 (2023)	N/A	1%	-1%
		Post-Implementation Y2 (2024)	N/A	0%	
	2000 block Federal St	Post-Implementation Y1 (2023)	N/A	5%	-3%
		Post-Implementation Y2 (2024)	N/A	2%	
	2000 block Ellsworth St	Post-Implementation Y1 (2023)	7%	N/A	-6%
		Post-Implementation Y2 (2024)	1%	N/A	

Generally, the speed limit is 25 MPH along Washington Avenue East of Broad Street and 30 MPH west of Broad Street. The graphs below show the average percentage of vehicles speeding by hour for year 1 and year 2. As expected, the percentage of speeding vehicles during early morning and late evening hours is higher than the percentage of speeding vehicles during the day. This is likely due to the lower volumes of road users during these periods.

Figure 20 shows the percentage of vehicles traveling above the speed limit (25 MPH) and 5 miles per hour over the speed limit (30 MPH) in year 1 and year 2. Additionally, it shows the pre-implementation data from 2021. The 600 block of Washington Avenue saw a significant decrease in percentage of speeding vehicles from year 1 to year 2 during all hours of the day.

The percentage of speeding vehicles decreased from year 1 to year 2.

Figure 20: *Speed Analysis - 600 Block of Washington Avenue*



As shown in **Figure 21**, along the 1000 block, year 1 saw a relatively consistent level of about 10-20% of vehicles exceeding the 25 MPH speed limit. In year 2, the percentage of speeding vehicles significantly declined, not exceeding 3% during any given hour.

The percentage of speeding vehicles decreased significantly from year 1 to year 2, not exceeding 3% during any given hour in year 2.

Figure 21: *Speed Analysis - 1000 Block of Washington Avenue*

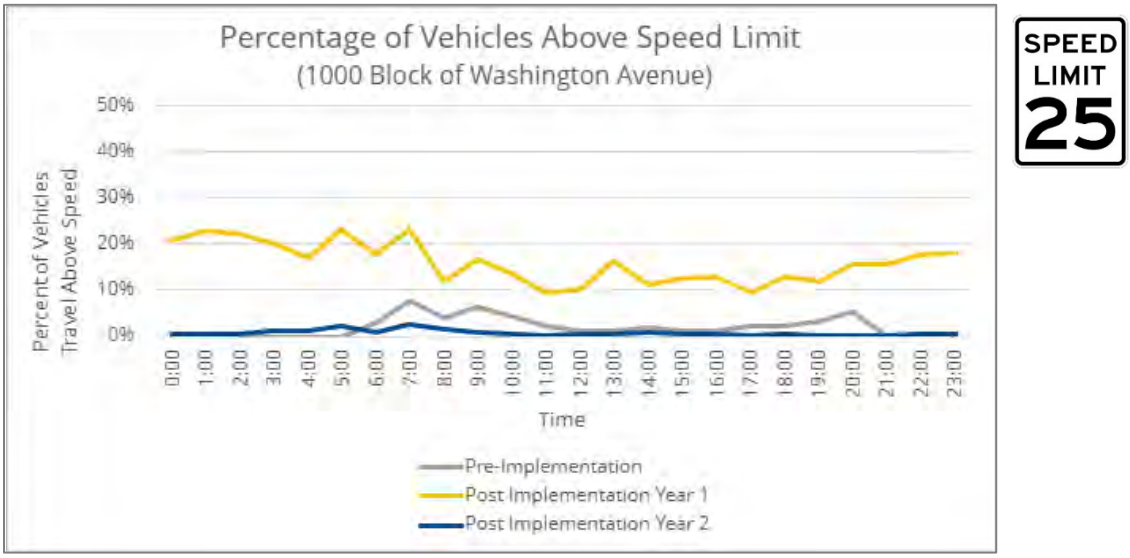
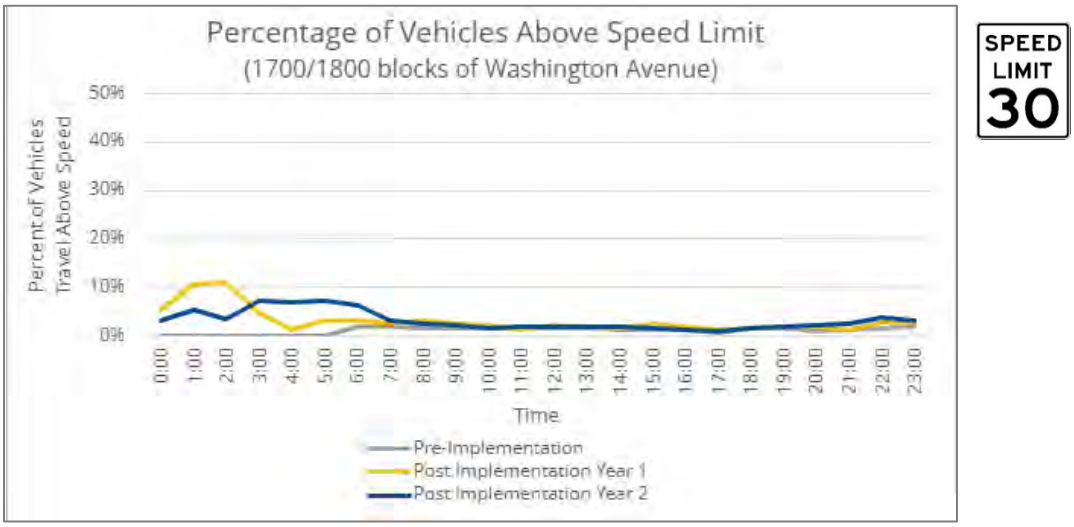


Figure 22 illustrates the percentage of speeding vehicles by hour along the 1700 and 1800 blocks of Washington Avenue. The speed limit increases to 30 MPH in this portion of the study area. In year 1, the percentage of speeding vehicles along the 1700 block were generally highest in the early morning hours. The same trend can be seen in year 2 along the 1800 block. The percentage of vehicles exceeding the speed limit decreased slightly between the hours of 12:00 AM and 2:00 AM but then increased between the hours of 4:00 AM and 6:00 AM from year 1 to year 2. These changes are minimal, while the remaining hours showed stagnant speeding percentages.

The percentage of vehicles exceeding the speed limit fluctuated during the early morning hours, but remained largely the same from 7:00 AM to 11:00 PM, when comparing year 1 and year 2 speed data.

Figure 22: *Speed Analysis - 1700/1800 Block of Washington Avenue*



The speed limit along the 2000 and 2100 blocks remains 30 MPH. The change in percentage of speeding vehicles between year 1 and year 2 is largely insignificant, differing less than 5% and following the same hourly trends year to year, as shown in **Figure 23**.

The change in percentage of speeding vehicles along the 2000/2100 blocks is largely insignificant from year 1 to year 2.

Figure 23: *Speed Analysis - 2000/2100 Block of Washington Avenue*

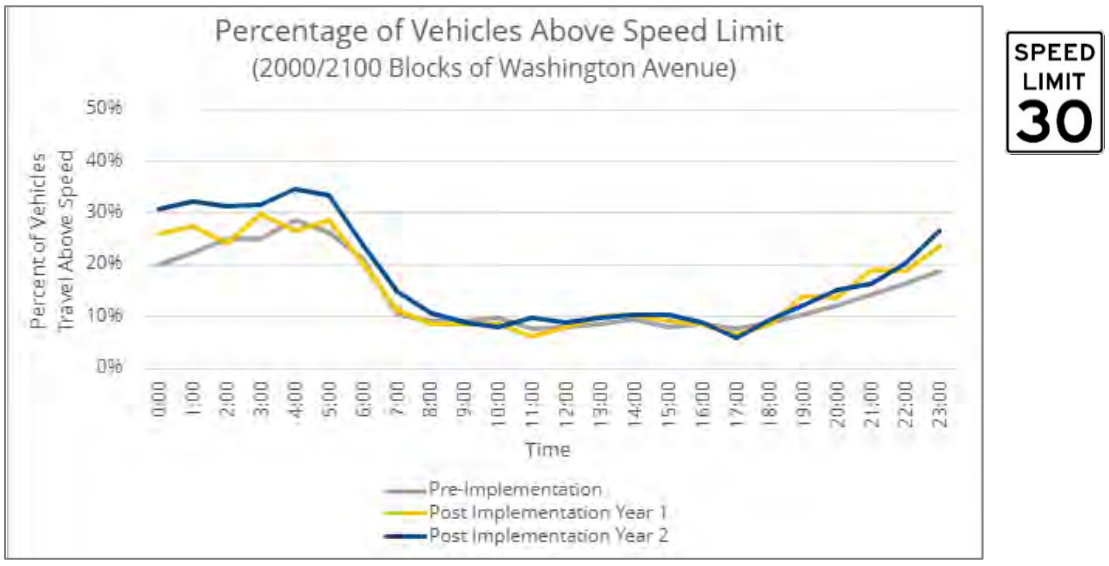
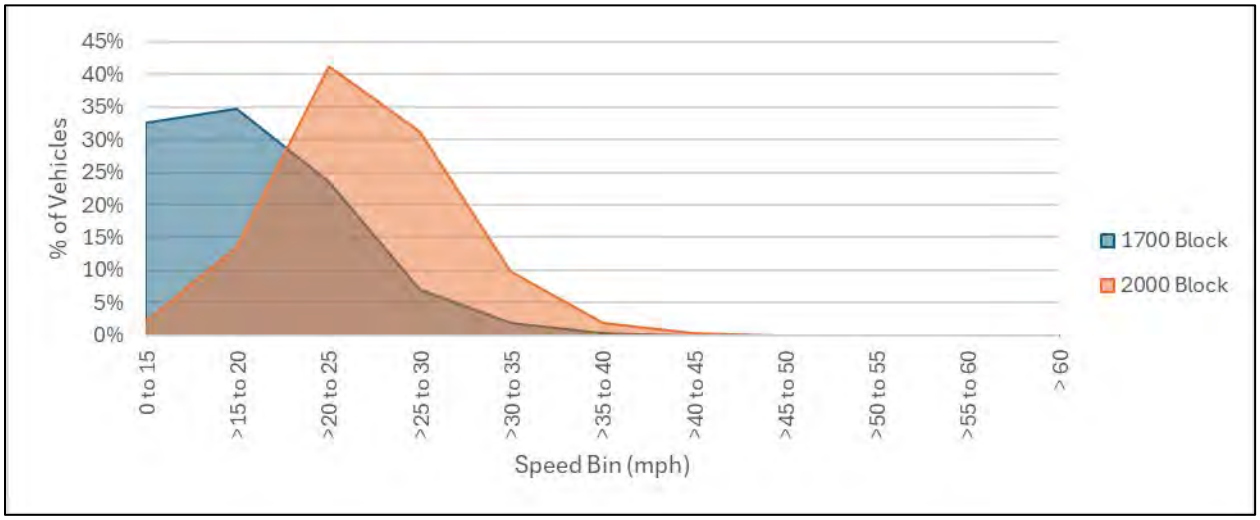


Figure 24 shows the percentage of vehicles by speed range on the 1700 and 2000 blocks of Washington Avenue. These blocks were chosen to compare areas with speed slots (1700 block) to areas without them (2000 block). As expected, vehicles on the 1700 block drove at lower speeds. Fewer cars were seen going over the speed limit on the 1700 block compared to the 2000 block.

Figure 24: *Percent of Vehicles by Speed Bin (1700 Block and 2000 Block, Washington Avenue)*



II. RECOMMENDATIONS

Below is a list of our recommendations for improving the Washington Avenue corridor.

- ***Assess data in 2026.*** When sufficient crash data is available (typically 3 years post-implementation), the City should evaluate crash data for the pre-Implementation phase as well as post-implementation to analyze the impacts of the road diet and other improvements on the overall safety of the corridor.

- ***Examine the 9th Street intersection to determine how to alleviate congestion.*** The observed travel time delay east of Broad Street on Washington Avenue during Saturday peak time is primarily a result of congestion and increased activity around 9th street on Saturdays. A left turn prohibition was removed in 2023 and drivers are exhibiting difficult turning left from Washington Avenue onto 9th Street; congestion at 9th Street spills back along Washington Avenue to Broad Street. The City should take a closer look at this intersection to determine whether left turns should be prohibited from Washington Avenue onto 9th Street, especially during periods of high congestion.

- ***Track progress of previous recommendations from the Year 1 report.*** The year 1 study provided recommendations for Parking & Loading and Traffic improvements. We recommend maintaining an updated record of the status of these recommendations.

Table 17: *Status of Previous Year 1 Study Recommendations*

	Year 1 Study Recommendation	February 2025 Status
Parking & Loading	Coordinate with the Philadelphia Parking Authority (PPA) to provide additional enforcement of parking and loading regulations along Washington Avenue, with a focus on promoting adequate turnover in loading zones and discouraging sidewalk parking.	PPA's bike unit actively enforces this corridor. From September 2024 through February 2025, a total of 231 citations were issued.
	Coordinate with PPA to make sure that Tow-Away Zone signs are installed along the corridor.	There are no Tow-Away Zone signs posted on this corridor.
	Coordinate with PPA to correctly reinstall parking restriction signage that was incorrectly placed on utility poles instead of new posts along the north side of Washington Avenue between S. 7th Street and Passyunk Avenue.	PPA has re-installed signage between 7th Street and Passyunk Avenue.
	Coordinate with Department of Streets to revise the pavement markings and signage in front of 833 Washington Avenue (Giordano Fruit and Produce) to provide additional loading spaces where the fire hydrant was removed.	This was reviewed by the Department of Streets and determination was made that signs, markings, and delineators remain in place.
	Based on the success of the new regulations east of Broad Street, similar regulations west of Broad should be considered to improve occupancy/duration/turnover metrics and reduce instances of illegal parking.	Regulations west of Broad Street remain the same as when the project was installed. Legislation would be necessary to enable the Department of Streets to enact curbside regulations.

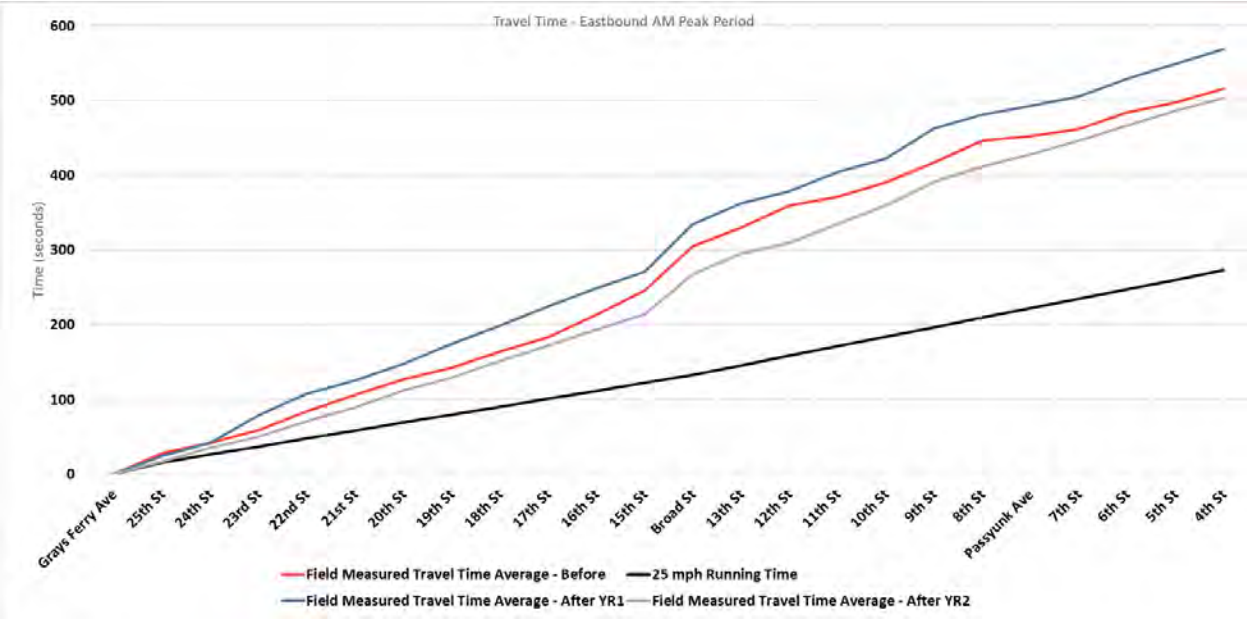
Traffic Analysis	To help control speeds in this section, the Streets Department should consider revising the signals from Front Street to S. 3rd Street to operate 60-second cycle lengths, matching the overnight double-offset operation. The intersection of Washington Avenue at S. 4th Street should remain as a 90-second cycle length due to the lane drop at S. 5th Street.	Signal changes were made following the year 1 findings of off-peak (midday and overnight) speeding. Signal changes from 13th Street to Front Street help deter nighttime speeding while still maintaining traffic flow during the day when Washington Avenue is more congested. The PM program now ends at 7PM instead of 8PM from 13th to Front.
	Due to the reduction in volumes from the pre-pandemic volume collection effort, the Streets Department should consider extending the times for the double-offset program and extending the side street splits where there is excess capacity along Washington Avenue.	Split adjustments were made to favor the side streets and limit excess green light time for Washington Avenue intersections during the midday program.
	The Streets Department should consider revising the signal timing along Christian Street west of Broad Street to support a progression at or below the speed limit to discourage speeding. Alternatively, it is understood that the Streets Department is considering converting some of these traffic signals to all-way stops. This could also help to control speeding if the all-way stops meet warranted criteria.	The Streets Department conducted a study and provided results to the community. The study indicates that there would be safety benefits to converting some traffic signals to all-way stops.
	The status of installing emergency preemption along the corridor should be provided to the stakeholders along the corridor.	There have been no adverse impacts to emergency response on Washington Avenue since the project was installed.
	The Streets Department and OTIS should consider reduction of the speed limit to 25 mph along the entirety of Washington Avenue.	Posted speeds remain 25MPH east of Broad and 30MPH west of Broad.
	There are several locations where flexible delineator posts have been removed or were not initially installed by the contractor. The Streets Department and OTIS should coordinate to install/reinstall them.	The City reinstalled flexible delineator posts (flex posts) at locations recommended in the year 1study. The City has a program to monitor and replace flex posts as needed. Any contracting work that impacts flex posts must replace and return to prior condition.

Appendix A:

Travel Time Graphs

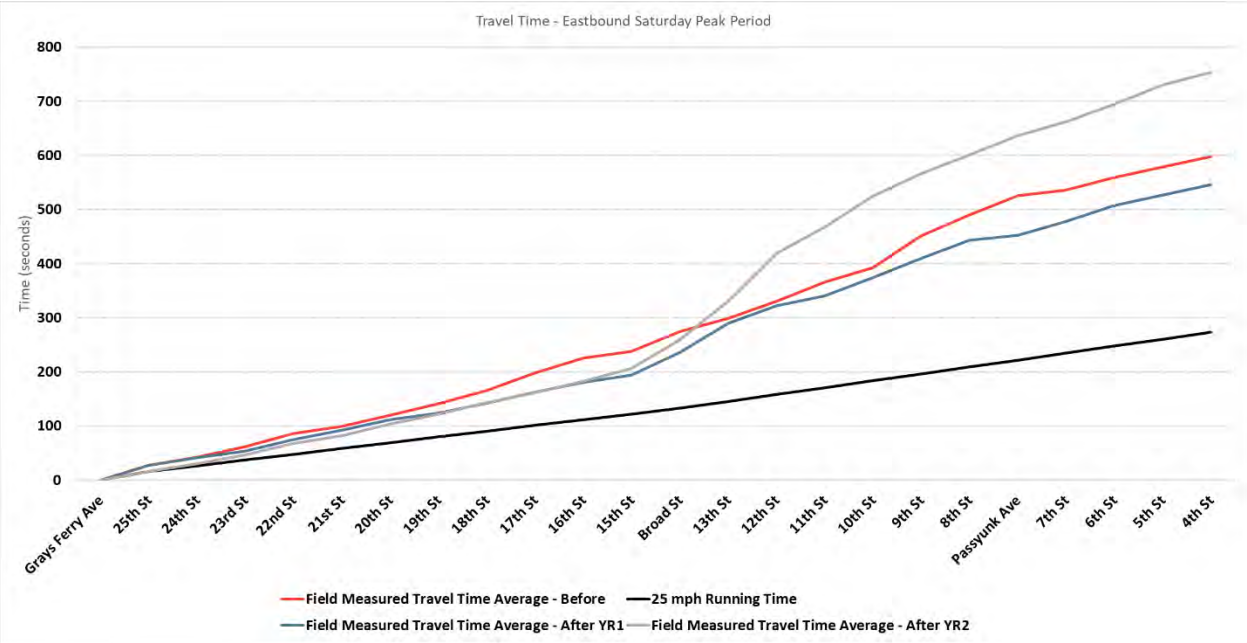
Washington Avenue (Entire Corridor)

1. Eastbound AM Peak Period

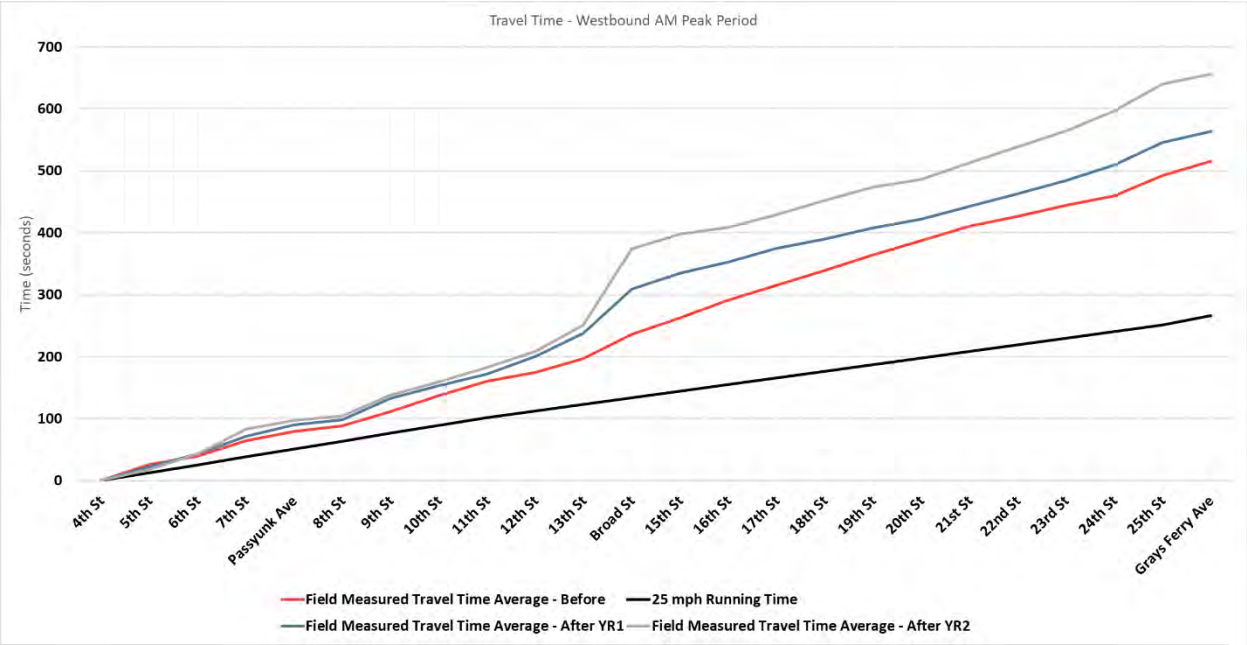


2. Eastbound PM Peak Period

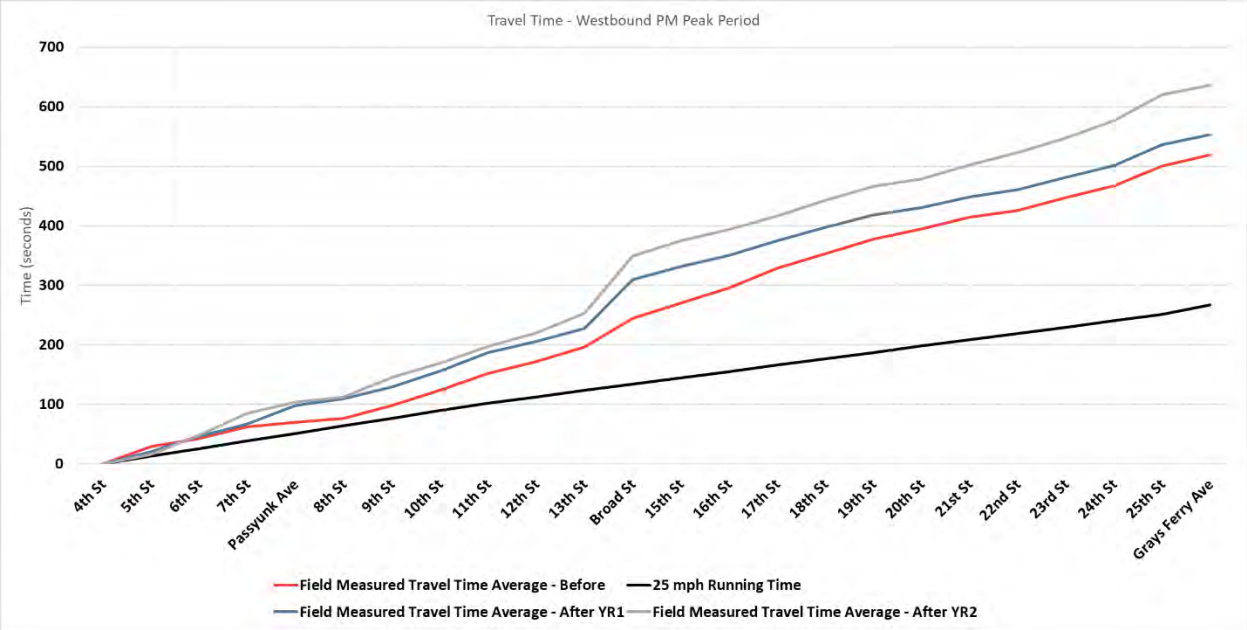
3. Eastbound Saturday Peak Period



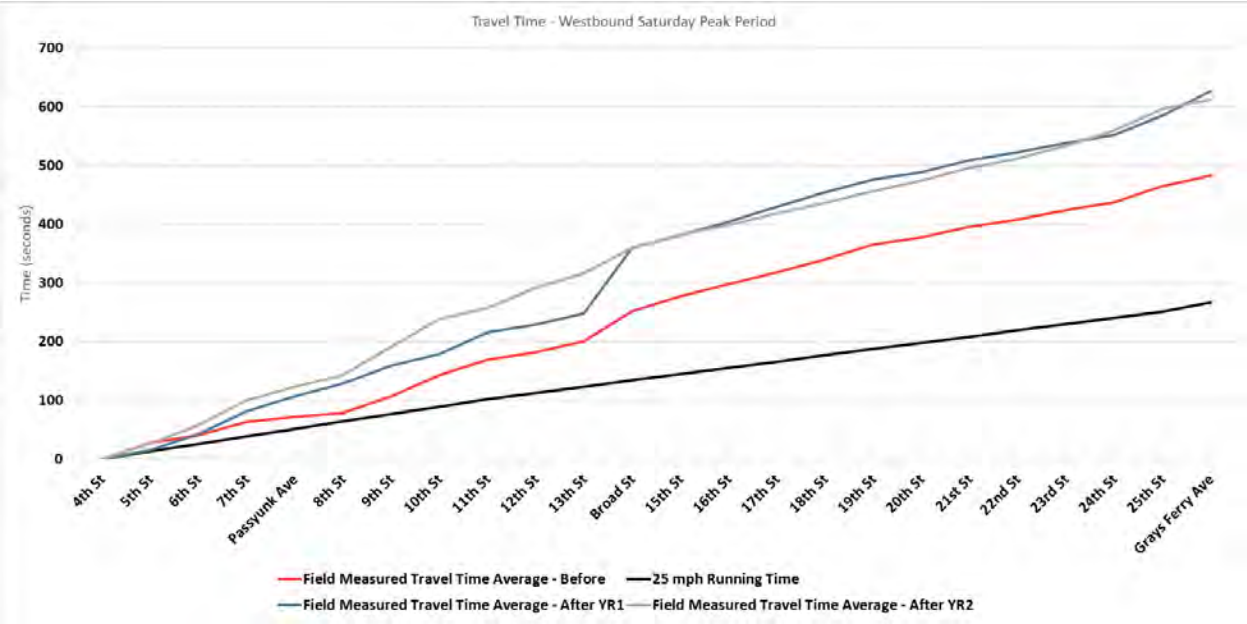
4. Westbound AM Peak Period



5. Westbound PM Peak Period

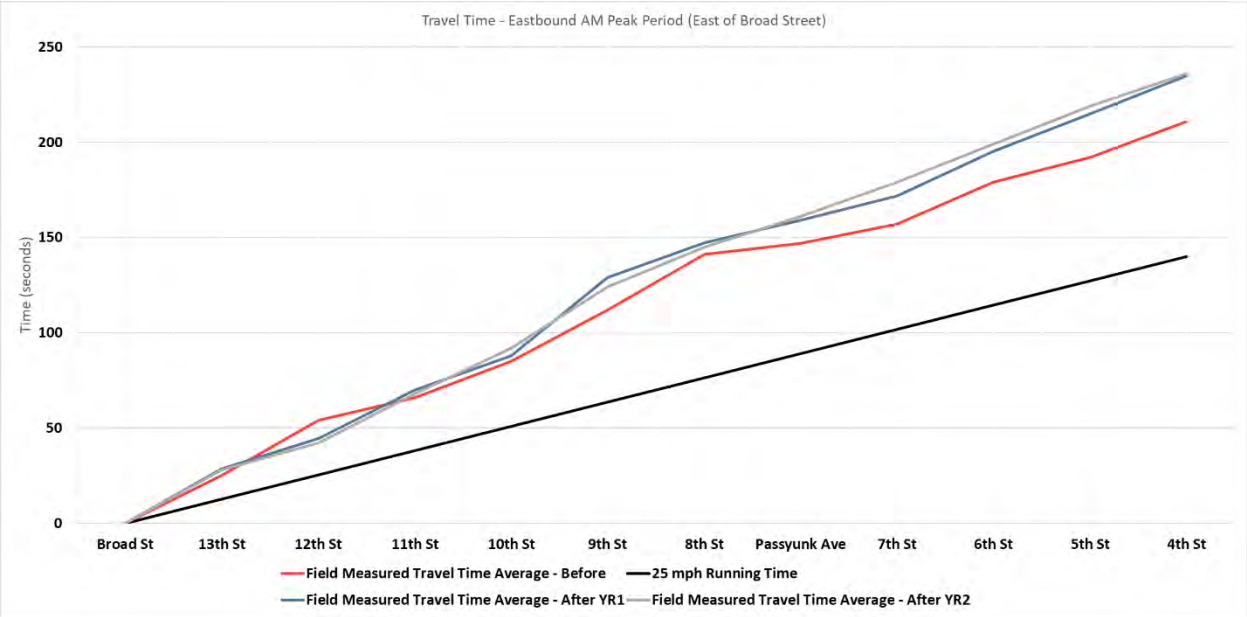


6. Westbound Saturday Peak Period

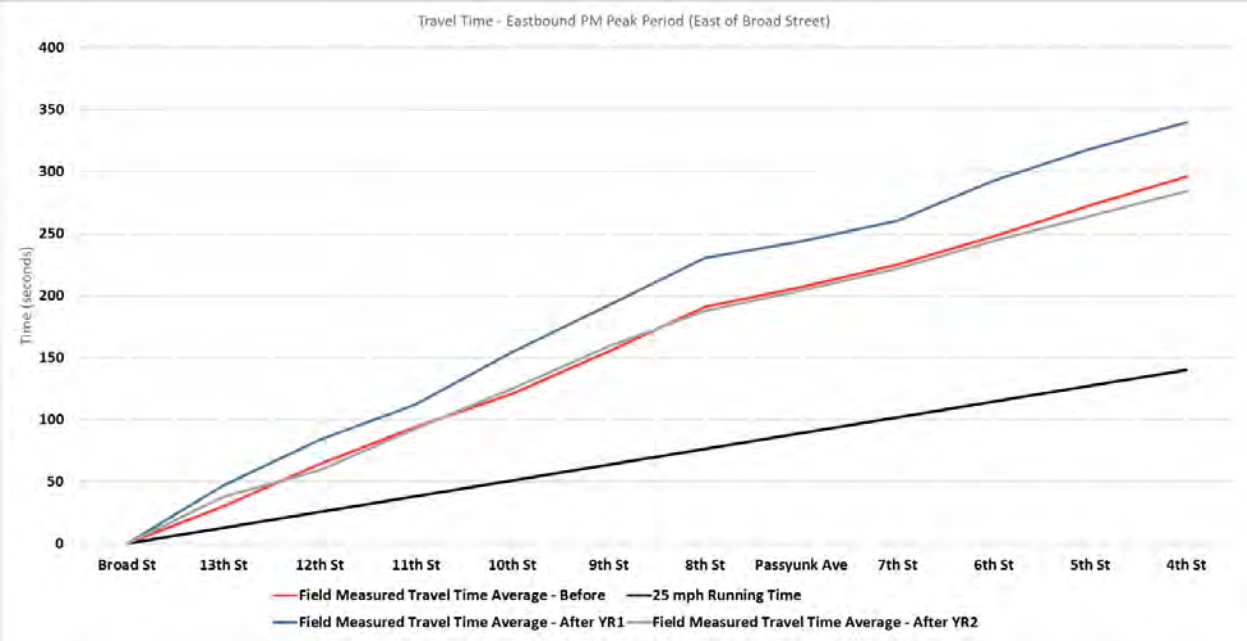


Washington Avenue (East of Broad Street)

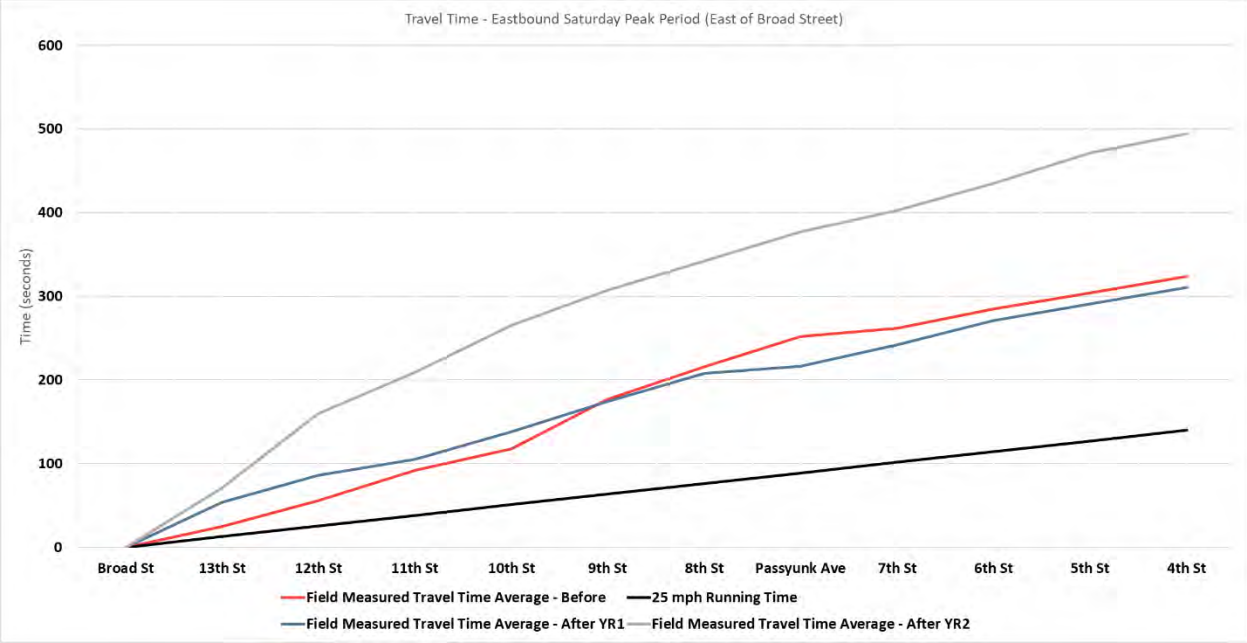
1. Eastbound AM Peak Period (East of Broad)



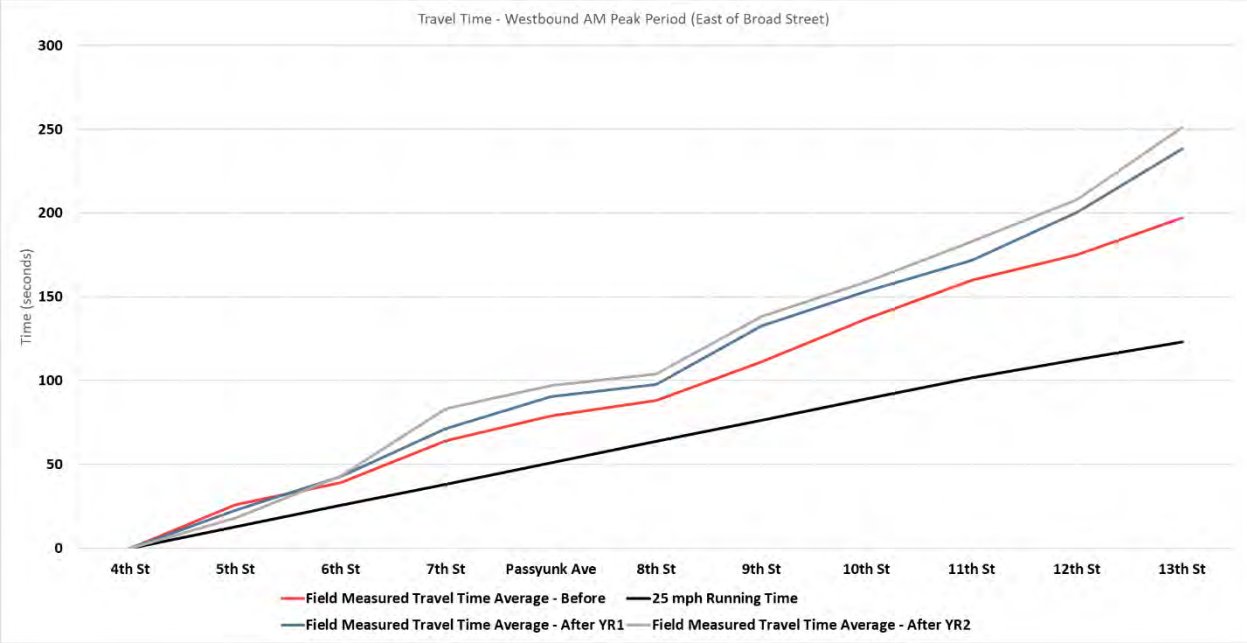
2. Eastbound PM Peak Period (East of Broad)



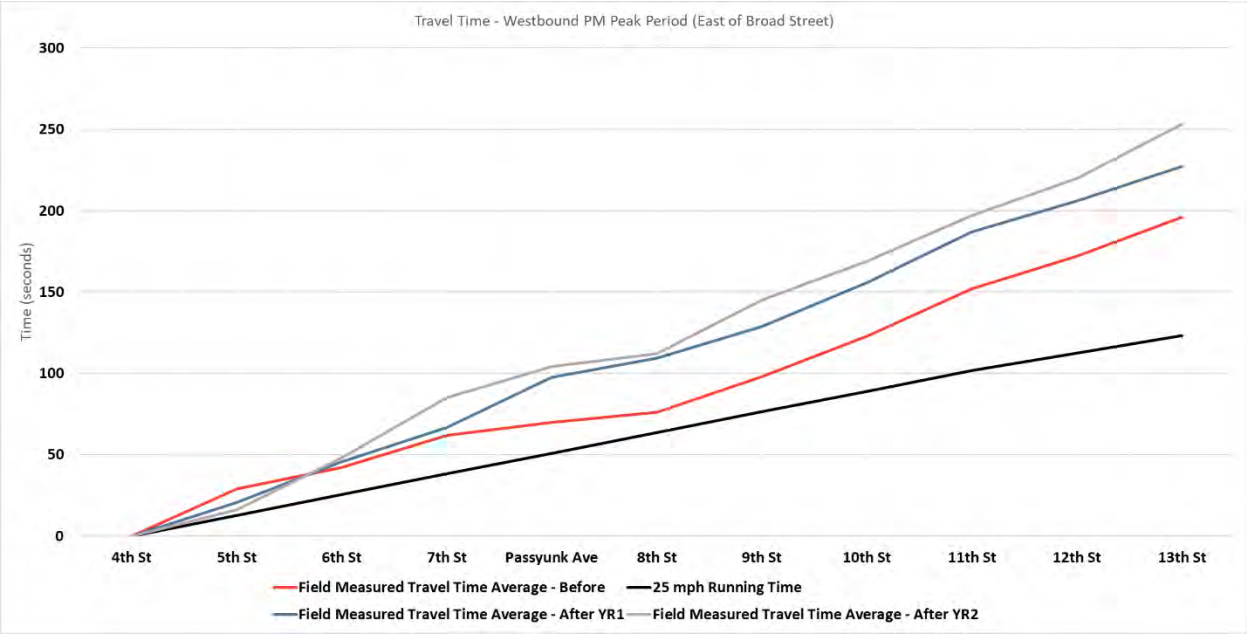
3. Eastbound Saturday Peak Period (East of Broad)



4. Westbound AM Peak Period (East of Broad)



5. Westbound PM Peak Period (East of Broad)



6. Westbound Saturday Peak Period (East of Broad)