Mid-Valencia Pilot 3-Month Evaluation

December 2023

Executive Summary

The mid-Valencia pilot was a near-term effort to improve traffic safety and transportation on Valencia Street between 15th to 23rd streets. The pilot aimed to address longstanding traffic safety conflicts and vehicle loading challenges exacerbated by the street's status as a major commercial corridor, designation as key north-south bike route in the City's bike network, and existing street design that did not meet the diverse needs of its users.

Pre-pilot assessments highlighted two major issues impacting the usability of the street. First, there was a high occurrence of traffic collisions and injuries as a result of the numerous conflict points along the street. Second, there was a high frequency of vehicle double-parking for loading activity, putting people on bikes at risk and slowing car traffic.

To address these issues, the SFMTA initiated the Valencia Bikeway Improvement project, a long-term capital project. Recognizing the urgency for immediate safety solutions, the project team opted to deliver several pilots along the corridor. This pivot to near-term designs that could be delivered using a Quick-Build model allowed the project team to provide immediate solutions.

In 2019, the project team delivered the northern Valencia pilot (Market to 15th streets), which later became a permanent design. In early 2020, the team worked on the southern Valencia pilot (19th Street to Cesar Chavez), replicating northern Valencia's parking-protected design, but paused project activities during the onset of the COVID-19 pandemic to respond to the public health emergency. With the pandemic receding in 2022, the team restarted near-term efforts, but proposed the mid-Valencia pilot (15th to 23rd streets) due to new considerations on the street from the pandemic and to provide bikeway connectivity to the northern Valencia protected bikeways.

This new section provided new design challenges, including a narrower street, more businesses with diverse loading needs, new outdoor dining parklets, and an existing request from emergency responders for 26 feet of clear width for emergency access and response. These conditions, along with merchant feedback highlighting the importance of curb access, rendered previous pilot designs infeasible.

A new pilot design was developed, consisting of a robust curb management plan, several pedestrian safety improvements, and a center-running protected bikeway. This design could be implemented quickly as an immediate solution to the two major issues and was the most balanced approach in meeting all design conditions and the diverse needs from users of Valencia Street.

Three months into the pilot, the data shows that the pilot design is meeting its objectives in improving traffic safety, especially regarding bicycle safety, and loading access on the street. Key components of the pilot design, like the center-running protected bikeway and curb management plan, have been successful at reducing conflicts between people on bikes and other modes of travel, while also better meeting the loading demand with loading supply. The evaluation also has revealed some issues that can be addressed with revisions to the pilot design and continued coordination with other city partners.

Firstly, regarding bicycle safety, the pilot design has shown to reduce many of the factors that led to traffic collisions in the previous Class II unprotected bike lane condition. Midblock collisions and the factors that led to them have been greatly reduced. In pre-pilot conditions, the bikeway was constantly blocked by vehicle loading, leading to vehicle and bicyclist interactions in the bike lane, or in the vehicle travel lane because people on bikes had to swerve in and out to bypass a double-parked vehicle. Additionally, vehicle dooring was a common occurrence due to the Class II bike lane's position next to parking and loading spaces. From the evaluation findings, the center-running bikeway is rarely blocked by activities such as vehicle loading, and there is a higher level of predictability of where vehicle-bicycle conflicts may occur along the roadway from the pilot design. In pre-pilot conditions, conflicts were less predictable and occurred randomly throughout the roadway.

Other aspects of the bikeway design, like at the intersection, have shown some success in mitigating conflicts. Vehicle left and U-turns are less frequent than pre-implementation conditions, and the turn restrictions have shown a high compliance rate from people driving. This is a key factor, as the intersection can be a major conflict point if compliance is low.

Overall, the pilot conditions have shown an improvement from the pre-pilot condition. People on bikes can ride through the corridor without the constant need to mix with vehicle traffic, which is a vastly improved experience from the pre-pilot conditions. Regularly occurring instances of dodging vehicles entering the bikeway, avoiding doors from parked cars, or swerving around vehicles that block the bikeway in the pre-pilot condition have been significantly reduced. Potential conflicts now in the pilot design are far less frequent, more predictable, and some can be mitigated with further design revisions and increased enforcement.

However, some traffic collision patterns during the pilot indicate that more work needs to be done to further bolster the effectiveness of the center-running bikeway. These collisions are preventable and can be resolved with adjustments to the design and continued enforcement to ensure compliance with the rules and regulations along the street.

The frequency of double-parking before the pilot showed that curb management regulations were not adequately serving the loading demands of the corridor. The curb management plan aimed to balance competing needs at the curb by reallocating the curb space to meet the present-day block-specific loading demands of the businesses that make Valencia such a compelling destination.

From a loading access standpoint, the curb management plan significantly increased loading availability and better matched the regulations to the needs of the corridor for commercial activities. Overall, throughout the day, the frequency of double parking has been significantly reduced. More vehicles are loading in designated loading zones, which is the desired outcome.

Although the curb management plan significantly reduced double-parking during the day, it continues to be an issue in the evening. The evaluation has shown that more curb management work is required to encourage safer loading practices by users of the street.

The table below shows the key findings from the metrics used in the evaluation of the pilot project:

Metric	Key Finding
Review of traffic collision factors	Factors related to the pre-pilot design have been significantly reduced
Vehicle left turn frequency (turn restriction compliance)	1% of through volumes (pre-pilot: 8%)
Frequency of double parking / loading in the bikeway (vehicle loading)	13% / 0.1%
Review of vehicle loading activity and loading characteristics	Implemented loading regulations better match user needs based on higher compliance of loading at the curb and observed vehicle dwell times
Vehicle incursions in the bikeway	1%; 3-4 vehicles per hour
Average daily vehicle speed *Measured at the average, 50th (median) and 85th percentile*	-1 mph
Average daily vehicle volume	-26%

Average daily bicycle volume	+3%
2-hour pedestrian volume (AM and PM peak)	-5%
Bicycle signal compliance / vehicle signal compliance	79% / 98%
Bicycle and pedestrian interactions at the intersection	5% of crossing pedestrians interact with a person bicycling. When compared to the northern design (side-running), there is little difference between post-implementation bicycle-pedestrian interaction rates.
Bike positioning	98% of bicyclists are in biking the in bikeway (pre-pilot: 88%)
Traffic Impacts on adjacent street *Measured by using vehicle speeds and vehicle travel time on parallel neighboring streets*	Insignificant to no change on all metrics evaluated

Some of the metrics were also measured during a 1-month reduced-scope data collection and evaluation effort. More details are available in the detailed sections of each metric below. **Overall, the major finding from the pre-implementation, 1-month post-implementation, and 3-month post-implementation comparison is that the observed positive effects or preferred impacts from the pilot design have improved over time.** Typically, user behavior requires 3 to 6 months post-implementation to stabilize due to an adjustment period to the new design. The comparison over time has indicated that users have started to adjust to the new pilot design.

Introduction and Background

Valencia Street is home to one of the City's most eclectic and culturally diverse set of restaurants, shops, nightlife, and essential services. Other than being a major neighborhood commercial corridor, it is also a place of residence, and one of the City's major north-south bike routes. As such, it attracts residents and visitors of all ages and interests and is a heavily travelled street that is accessed by diverse modes of transportation, supporting workers, families, and individuals. Its diversity sparked a bustling street filled with vibrancy. Yet, without sufficient or appropriate infrastructure to fulfill the varying demands on the street, conflict ensued that impacted usability. Throughout the years, two major issues impacted the street:

1. Traffic safety conflicts between different modes of travel. More specifically, vehicle and bicycle conflicts along the street, which resulted in a high number of traffic collisions; and
2. An imbalance between curb supply and curb demands, which resulted in illegal, dangerous, and inefficient loading activities like vehicles double-parking in the bike lane, travel lane, and center turn lane.

Firstly, Valencia Street is on the High Injury Network, which is made up of the 12% of San Francisco streets that account for 68% of the City's severe and fatal traffic injuries. A main reason for this was a bikeway facility that was outdated and did not match the user demands of the street. Valencia Street is a major north-south route in the bike network due to its direct connection between downtown and several neighborhoods, its relatively flat topography, and its connection to the Valencia commercial corridor. It is one of the most used bikeways in the city. The substandard class II bike lanes did not provide separation from vehicle traffic, a best standard safety practice given the high volume of users and was instead placed between the active vehicle lane and the curb lane. This led to several traffic safety issues from vehicle dooring, which people in parked cars open their doors to oncoming bike traffic, and interactions with vehicles either encroaching the bikeway or bicyclists being forced to move in and out of the travel lane due to bikeway blockages.

The latter factors were the result of an imbalance between curb supply and regulations and the commercial loading demands, which is the second main issue on Valencia Street. Serving as a major neighborhood commercial corridor in the city with several attractions like retail shopping, restaurants, and bars, Valencia Street experiences a high demand of diverse loading needs throughout the day. Between goods deliveries to passenger pick-up and drop-off, primarily carried out by on-demand transportation network companies (Uber, Lyft, DoorDash, etc.) and commercial delivery trucks of all sizes (CISCO, UPS, Amazon, contractors, etc.), there were not enough commercial loading spaces (both physically and temporally) to accommodate the activity. As a result, users double-parked their vehicles in either the painted Class II bike lane, vehicle travel lane, or center turn lane to engage in their loading activities. The bikeway served more as a de-facto loading lane and resulted in people on bikes swerving in and out of the bike lane into the vehicle travel lane, mixing with vehicle traffic, to travel through the Valencia corridor. Or and more dangerously, vehicles would seamlessly and unpredictably enter or exit the unprotected bike lane, to conduct their loading.

The Valencia Bikeway project, a long-term capital effort, was initiated in 2018 to develop and implement a design to solve these issues. However, capital efforts, which provide greater design solutions and tools, required a longer project delivery timeline. With an immediate need to solve the issues quickly, several pilots using the Quick-Build model were proposed as a temporary solution on Valencia Street.

The project team first pursued a pilot between Market and 15th Streets, which was eventually converted into a permanent design in April 2020. The project team planned on applying a similar design on Valencia Street between 19th to Cesar Chavez (southern Valencia pilot) in early 2020 but had to pause project activities due to shifting staff and resources to address the city's traffic safety and circulation needs stemming from the COVID-19 pandemic.

With the pandemic receding in early 2022, the project team restarted project activities on Valencia Street. However, rather than restarting the southern Valencia pilot (between 19th and Cesar Chavez), the team proposed a design between 15th to 23rd streets. This extent allowed the project to tackle more of the High Injury Network and would provide connectivity to the protected bikeways to the north.

This new pilot extents presented several new design challenges and constraints:

1. Widened sidewalks resulted in less roadway space with which to work;
2. Higher concentrations of businesses with competing loading needs
3. Outdoor dining parklets via the Shared Spaces program, which supported businesses during the pandemic took up 20% of the available curb, proliferated; and
4. An existing design condition from the SF Fire Department requiring 26 feet of clear width on the street for emergency vehicle access and operations.

Acknowledging these constraints, the visible commercial demands of the street, and pre-pandemic merchant feedback that stressed the importance of the curb lane in supporting commercial activities, this resulted in the project team developing a new design for the pilot.

The pilot design on Valencia Street between 15th and 23rd streets consisted of a robust curb management plan, several pedestrian safety improvements, and a center-running protected bikeway configuration. It was the alternative that was the most balanced approach that met the design constraints on the street and allowed the design to quickly address the two main issues from the existing conditions – greater separation of bicycle from vehicle traffic, and realigned curb spaces and regulations with the loading demand.

The mid-Valencia pilot officially started in August 2023 and is approved for 12-months. Three months into the pilot, the 3-month evaluation period occurred, and this document presents the analysis and findings from that effort.

Evaluation Framework

The mid-Valencia pilot project has three primary goals:

1. Improve safety for all who travel on Valencia Street;
2. Preserve the economic vitality of Valencia Street; and
3. Ensure movement and access of goods and people.

As part of the pilot, the project team evaluated the design on various key indicators to determine its effectiveness in meeting the project goals, especially the goal related to improving traffic safety. The table below showcases what was measured as part of the evaluation and which goal they relate to, as well as additional metrics that are of interest to the SFMTA and/or community stakeholders.

Metric	Goal 1	Goal 2	Goal 3	Other
Monthly collision rate (baseline/pilot period):	✓			
Vehicle left turn frequency (turn restriction compliance)	✓			
Frequency of double parking and loading in the bikeway (vehicle loading)	✓	✓	✓	
Vehicle incursions in the bikeway	✓			
Average Daily vehicle speed	✓		✓	
Average Daily vehicle volume		✓	✓	
Average Daily bicycle volume	✓	✓	✓	
2-hour pedestrian volume (AM and PM peak)		✓	✓	
Bicycle signal compliance / vehicle signal compliance	✓			
Bicycle and pedestrian interactions at the intersection	✓			
Bike positioning	✓			
Traffic Impacts				✓

Valencia Intercept Survey (will be part of the 6-month evaluation)	✓	✓	✓	✓

Data was collected along several blocks and intersections on Valencia Street and adjacent neighboring streets and intersections. For most of the metrics in this evaluation the analysis compared pre-implementation against post-implementation conditions. For counts and observations, pre-implementation data was collected in mid-fall 2022 (October – November) and post-implementation data was collected in mid-fall 2023 (October – November). Other data sources used include data from the city's traffic collision database, Transbase, and vehicle travel time data derived from mobile phones and GPS (INRIX).

Metric 1 – Review of Traffic Collisions

This metric comprehensively reviews traffic collisions post-implementation to determine collision types, factors, and assess preventability. Collision data that was available at the time of the 3-month evaluation period only included five months post-implementation (August through December 2023). The 6-month evaluation will include more data.

Overall, 20 collisions occurred after the pilot was implemented and officially opened for use. The table below summarizes the collisions by types and factors:

Traffic Collisions and Collision Factors

Collision Month	Modes Involved	P1 movement	P2 movement	Party at Fault	Collision Location	Description of Collision
August	Driver-Bicyclist	SB – U-turn	SB – Thru	Driver	Intersection – Valencia at Sycamore	*Unsafe turn or lane change prohibited – left/U-turn
	Scooter only	NB – Thru	N/A	Scooter	Midblock – Valencia between 18th Street and Sycamore	*Unsafe speed for prevailing conditions
	Driver-Bicyclist	NB – Left	NB – Thru	Driver	Intersection – Valencia at 18th Street	*Violating special traffic control markers – no vehicle left-turn
	Driver-Driver	NB – Thru	Stopped in traffic (facing NB)	Driver	Midblock – Valencia between 20th and Liberty	Improper passing

	Pedestrian-Driver	NB – Thru	NB – Thru		Intersection – Valencia at 21st Street	Pedestrians must yield right-of-way outside of crosswalks
September	Bicyclist-Driver	WB – Left	EB – Thru	Bicyclist	Intersection – 22nd Street at Valencia	Violation of right-of-way – left-turn without yielding to oncoming traffic
	Driver-Pedestrian	WB – Left	EB – Thru	Driver	Intersection – 18th Street at Valencia	Driver failing to yield right-of-way at crosswalk
	Driver-Bicyclist	NB – Left	NB – Thru	Driver	Intersection – Valencia at 18th Street	*Violating special traffic control markers – no vehicle left-turn
	Driver-Scooter	SB – U-turn	SB – Thru	Driver	Intersection – Valencia at Sycamore	*Violation of right-of-way – no vehicle left/U-turns
October	Driver-Scooter	SB – U-turn	SB – Thru	Driver	Intersection – Valencia at Sycamore	*Illegal U-turn in business district
	Scooter-Driver	EB – Thru	WB – Left	Scooter	Intersection –17th Street at Valencia	Unsafe speed for prevailing conditions; failure to yield to the right-of-way
November	Driver-Bicyclist	NB – Left	SB- Thru	Driver	Intersection – Valencia at 21st Street	*Violating special traffic control markers – no vehicle left-turn
	Driver-Driver	SB – Thru	SB – Parked	Driver	Midblock – Valencia between 18th and 19th	Inconclusive/under review - SFFD responding to fire
	Scooter	NB – Thru	N/A	Unknown	Intersection – Valencia at 17th Street	*Unknown/under review

December	Driver (motorcycle)	NB – Thru	N/A	Driver	Midblock – Valencia between 16th Street and 17th Street	Unsafe speed for prevailing conditions
	Driver (motorcycle)	SB – Left	N/A	Driver	Intersection – Valencia at Sycamore	Hitting fixed object
	Pedestrian-Driver	WB – Thru	NB – Thru	Pedestrian	Midblock – Valencia between Liberty and 21st Street	Pedestrians must yield right-of-way outside of crosswalks
	Driver-Pedestrian	SB – Thru	EB – Thru	Driver	Intersection – Valencia at Hill	Idle vehicle started to back-up vehicle when it was not safe to do so
	Bicycle-Scooter	SB- Thru	NB- Thru	Unknown	Midblock – Valencia between 16th Street and 17th Street	*Inconclusive/under review
	Bicycle-Vehicle	NB-Thru	WB-Thru	Bicyclist	Intersection – Valencia at 17th Street	*Failing to yield right-of-way (red light noncompliance)

Of the 20 collisions recorded in post-implementation conditions, 12 of them involved a person bicycling or scooting, but only ten (denoted by the *asterisk in the table above) occurred along the path of the center-running protected bikeway (mid-block or intersection). Of the ten, six of them were related to illegal left or U-turns committed by people driving, two are unknown for cause, one was due to unsafe speeding from the person scooting, and one was due to a person bicycling failing to comply with a red light and proceeding through the intersection when they did not have the right-of-way.

The six bicycle-related collisions in the center-running protected bikeway path of travel that are due to illegal vehicle left and U-turns show similar patterns in terms of location and collision type. They are mainly concentrated at two intersections, Valencia at 18th Street (33%) and Valencia at Sycamore (50%). Specifically at the intersection of Valencia at Sycamore, there is a break in the bikeway protection material due to SFPD access needs to Mission Station. The project team has met with SFPD to discuss the crash pattern at this intersection and to request approval for the re-installation of protective materials to close the gap in bikeway protection and separation. This design fix would mitigate for three of the six vehicle left and U-turn related collisions. Regarding the other collisions related to no vehicle left-turn and U-turn violations that resulted in a vehicle-bicycle collision, the project team will continue to coordinate with SFPD on additional enforcement to ensure compliance with the posted traffic restrictions.

Moreover, many of the factors that attributed to collisions in the previous unprotected Class II bikeway have been significantly reduced. In pre-implementation conditions, about 44% of collisions occurred mid-block and 56% at the intersection. In post-implementation conditions, only two bicycle/scooter related collision were observed mid-block, and both involved only people bicycling or scooting. One of those collisions was related to user unsafe speed. The remaining bicycle/related collisions were at the intersection. The majority of the collisions post-implementation that were intersection located, bicycle/scooter related, and along the path of the pilot bikeway, were due to a driver violating the no vehicle left or U-turn restriction at the intersection. Compared to the pre-implementation condition, the main reasons for vehicle-bicycle/scooter related conditions were due to:

1. Unsafe turn or lane change (23%)
2. Opening door on traffic side when unsafe (16%)
3. Violation of right-of-way – left turn (13%)
4. Unsafe speed for prevailing conditions (9%)
5. Overtaking or passing unsafely (7%)

Between the two conditions, many of the issues that impacted safety on the unprotected Class II bike lanes have been significantly reduced or were not observed in the 3-month evaluation review of traffic collisions. Mid-block vehicle-bicycle/scooter collisions, specifically due to modal conflicts, have been very significantly reduced.

Regarding pre-implementation intersection-related conditions that involved a bicycle or scooter, they were mainly related to:

1. A right turning vehicle conflict with a thru bicycle/scooter (20%)
2. Vehicles making a left-turn and interaction with a bicyclist from an opposing or conflicting direction (18%)
3. Unsafe speed from either a driver or bicyclist (13%)
4. A bicyclist/scooter not obeying the right-of-way – red light (13%)

Three of the four main reasons are no longer prevalent in post-implementation conditions and for the one that is still relevant (reason 2 - left-turn related), the issue is no longer with opposing traffic, but with traffic of the same direction in post-implementation conditions.

Lastly, none of the pedestrian-related collisions were attributable to the pilot design. One pedestrian collision occurred at the intersection of 18th Street and Valencia and involved a westbound vehicle on 18th Street making a left turn to southbound Valencia. The vehicle failed to yield to a pedestrian who was crossing in the crosswalk.

Another pedestrian-related collision occurred past the intersection of Valencia and 21st Street (mid-block). It occurred outside of the crosswalk and involved a pedestrian in the active roadway near the curb lane interacting with someone who was parked. The pedestrian failed to yield to a moving vehicle.

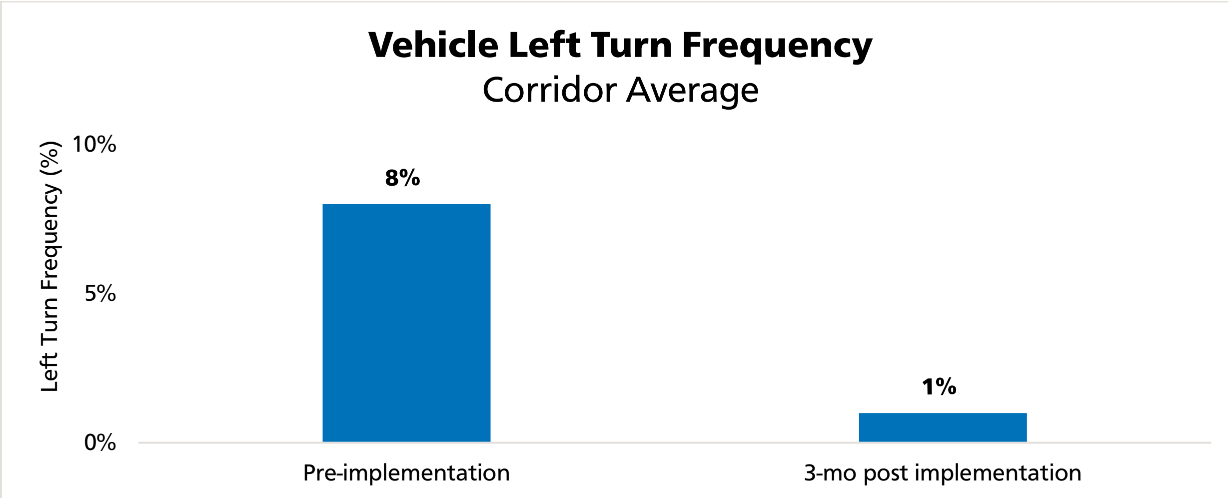
The last two pedestrian-related collisions in the month December occurred either due to a pedestrian not yielding to traffic outside of a crosswalk, or because an idled vehicle committed a backing up movement when it was not safe to do so.

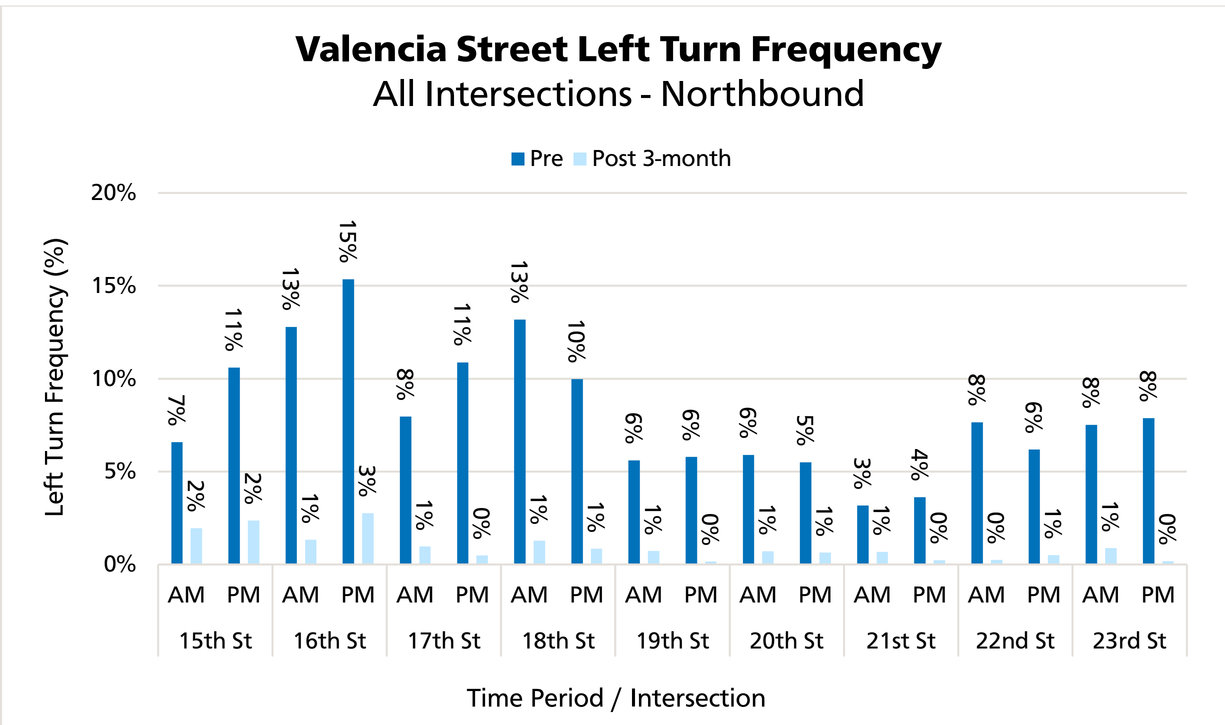
Metric 2 – Vehicle Left Turn Frequency (turn restriction compliance)

A key factor in the success of the center-running protected bikeway design is high user compliance with the pilot area wide left and U-turn restrictions for vehicles. Because the pilot was delivered using a Quick-Build model to provide near-term safety improvements, certain tools, or design scope, such as corridor wide bicycle signal separation, were not feasible. To ensure safety at the intersections for people using the center-running protected bikeway and for pedestrians crossing at the crosswalk, vehicle no left and U-turn restrictions were implemented.

To determine effectiveness in design, vehicle left turn frequency (includes U-turns) was calculated (the number of vehicles turning left or making a U-turn compared to the total directional entering volume). Vehicle turning movement counts were collected during the 2-hour AM and PM peaks, when vehicle volumes are usually the highest.

Overall, vehicle left-turn frequency has decreased. In pre-implementation conditions, the average vehicle left turn frequency is 8% per hour, which about 38 left or U-turn movements in the AM period and 68 in the PM period. In post-implementation conditions, the average vehicle left turn frequency is 1% per hour, about two left or U-turn movements in the AM period and three in the PM period.


Vehicle Left Turn Frequency
Corridor Average
Left Turn Frequency (%)
10%
5%
0%
8%
1%
Pre-implementation
3-mo post implementation


Valencia Street Left Turn Frequency
All Intersections - Northbound
Pre
Post 3-month
Left Turn Frequency (%)
20%
15%
10%
5%
0%
7%
2%
11%
2%
13%
1%
15%
3%
8%
1%
11%
0%
13%
1%
10%
1%
6%
1%
6%
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6%
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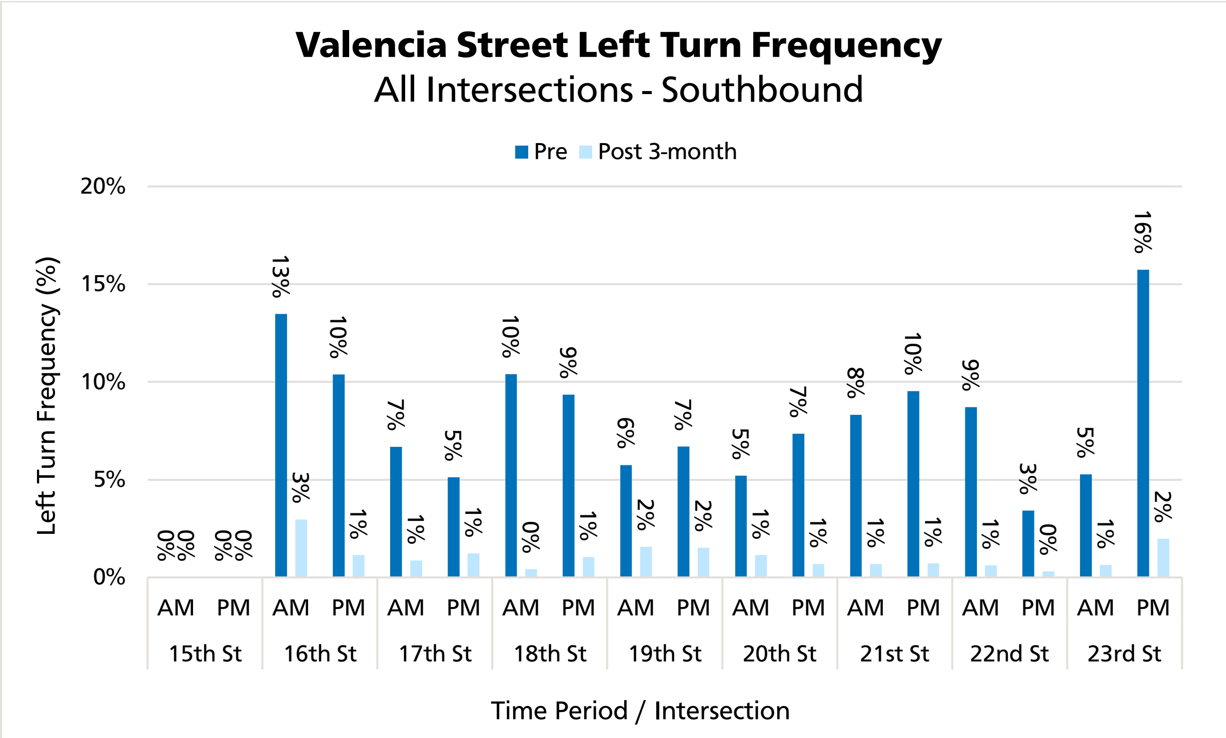
22nd St
23rd St
Time Period / Intersection


Valencia Street Left Turn Frequency
All Intersections - Southbound
Pre
Post 3-month
Left Turn Frequency (%)
20%
15%
10%
5%
0%
0%
0%
0%
0%
13%
3%
10%
1%
7%
1%
5%
1%
10%
0%
9%
1%
6%
2%
7%
2%
5%
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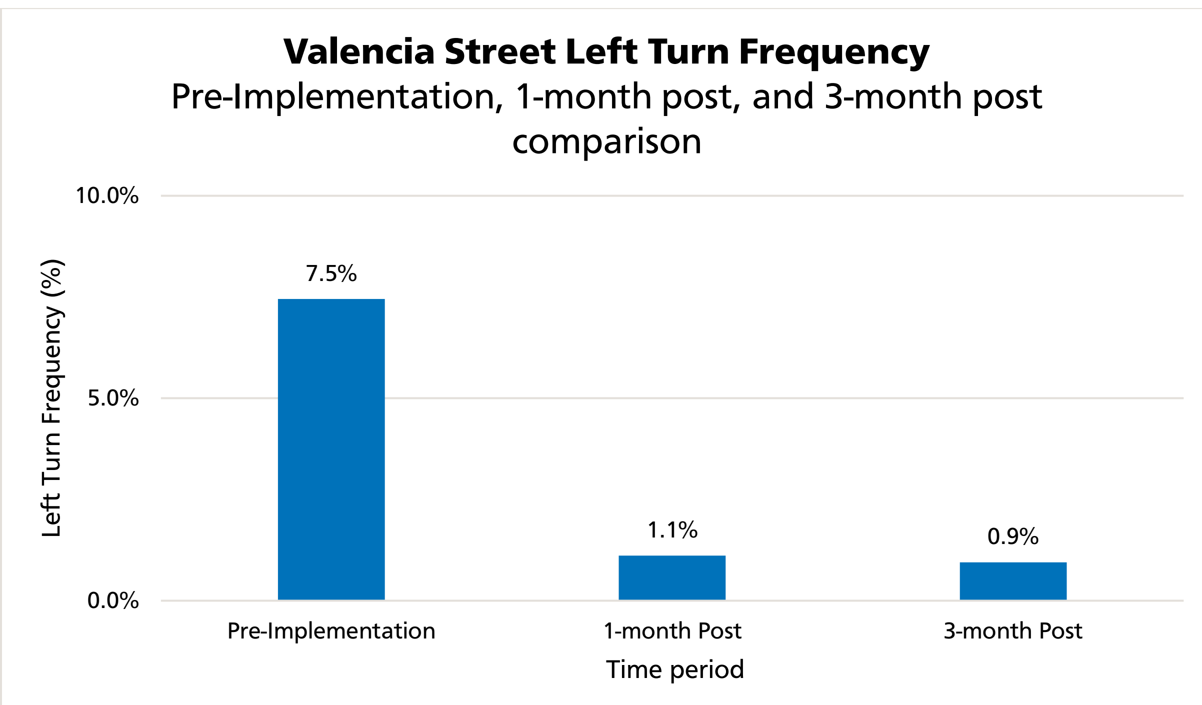
16%
2%
AM PM AM PM AM PM AM PM AM PM AM PM AM PM AM PM AM PM
15th St
16th St
17th St
18th St
19th St
20th St
21st St
22nd St
23rd St
Time Period / Intersection

Comparison to 1-month Data

Data collection and the evaluation process are usually not completed until after 3-months of a new design is implemented. Typically, it takes between 3 to 6 months for user behavior to stabilize due to an adjustment period by the public. However, because the center-running protected bikeway on Valencia Street is the first in the city, a reduced scope of the full evaluation framework was executed 1 month after the pilot officially started. This 1-month snapshot allowed the project team to get a glimpse of what was happening in real-time after implementation and quickly make adjustments to the design as needed.

Left turn frequency was measured during the 1-month reduced scope evaluation. Using the same parameters for comparison, the estimated hourly frequency between time periods (i.e. hours and locations observed), 1-month post-implementation to pre-implementation saw a 6-percentage point reduction, and 1-month post-implementation to 3-month post-implementation showed a small improvement as well.



Metric 3 – Frequency of Double-Parking

Frequency of double-parking is one of the primary metrics to assess the efficacy of the curb management plan. Double-parking occurs when there is not enough space for vehicles to pull up to the curb, either because the curb is fully occupied, and/or because the curb does not provide ample space for the vehicle to easily and quickly pull in and out of the curb. The result is a vehicle illegally and temporarily parked in the bicycle lane, travel lane, or center turn lane.

Double-parking can negatively impact traffic flow or lead to unpredictable and unsafe travel behaviors and conditions. Travelers in vehicles may need to stop, slow down, and/or maneuver around the double-parked vehicle into the center turn lane or the opposing travel lane at a moment's notice. To continue traveling along a corridor by bike, a person approaching double parked vehicle(s) may need to enter and exit the bicycle lane multiple times while avoiding moving vehicles in the parallel travel lane or double-parked vehicles that suddenly stop or start to move again. Vehicle loading in the bikeway was a major safety issue in this project area that caused many of the bicycle-related collisions.

Before this pilot, two-thirds of all loading within the project area was done illegally by double-parking in the bike lane, travel lane, or center turn lane, and 40% of loading obstructed the bike lane. This was most likely due to the imbalance of loading supply to the loading demand. With a center-running protected bikeway, the center turn lane is no longer available for large commercial vehicles in which to double park, and there is no lane on Valencia for vehicles to double-park without completely blocking the flow of traffic, underscoring the critical need to update the curb regulations to the present demands observed along Valencia Street.

To improve loading conditions and balance the curb demand, the project team prioritized the curb uses along Valencia based on the SFMTA's Curb Management Strategy, which describes how curb uses are prioritized on streets in different neighborhoods and why. The project team reallocated the curb and installed a variety of loading zones (6-wheel commercial, general loading zones, and dual-use commercial and general loading zones that could accommodate the high volumes of both small and large commercial vehicles and on-demand delivery vehicles. The new loading zones were longer in length (from roughly 24-48 feet in size to roughly 80-100 feet in size) to accommodate commercial vehicles of all sizes and often extended into the evening and late-night hours to accommodate the high volumes of on-demand courier (i.e., DoorDash, Postmates, etc.) and ride-hail services (Lyft, Uber, etc.).

To measure impacts from the new curb management plan, frequency of double parking and vehicle loading by loading location, vehicle type, and loading activity was observed on a typical weekday (Wednesday) and typical weekend day (Friday) along five blocks in the project area (16th to 17th, 18th to 19th, 19th to 20th, and 20th to 21st streets). Due to budget constraints, the project team was unable to evaluate loading behavior at all blocks, but the team believes that the blocks selected can provide a representative sample of loading behavior. Wednesday was selected as the typical weekday because many businesses along the commercial corridor were closed for business on Mondays or Tuesdays and commercial loading typically happens during normal business hours. Friday was chosen, because of the busy restaurant and nightlife scene on the street. Data was collected during 2-hour periods in the AM, midday, evening, and late-night timeframes.

Overall, of all the loading events observed, double-parking has decreased from 67% to 13% of the time, which is a difference of 54 percentage points and a significant change between pre- to post-implementation conditions.

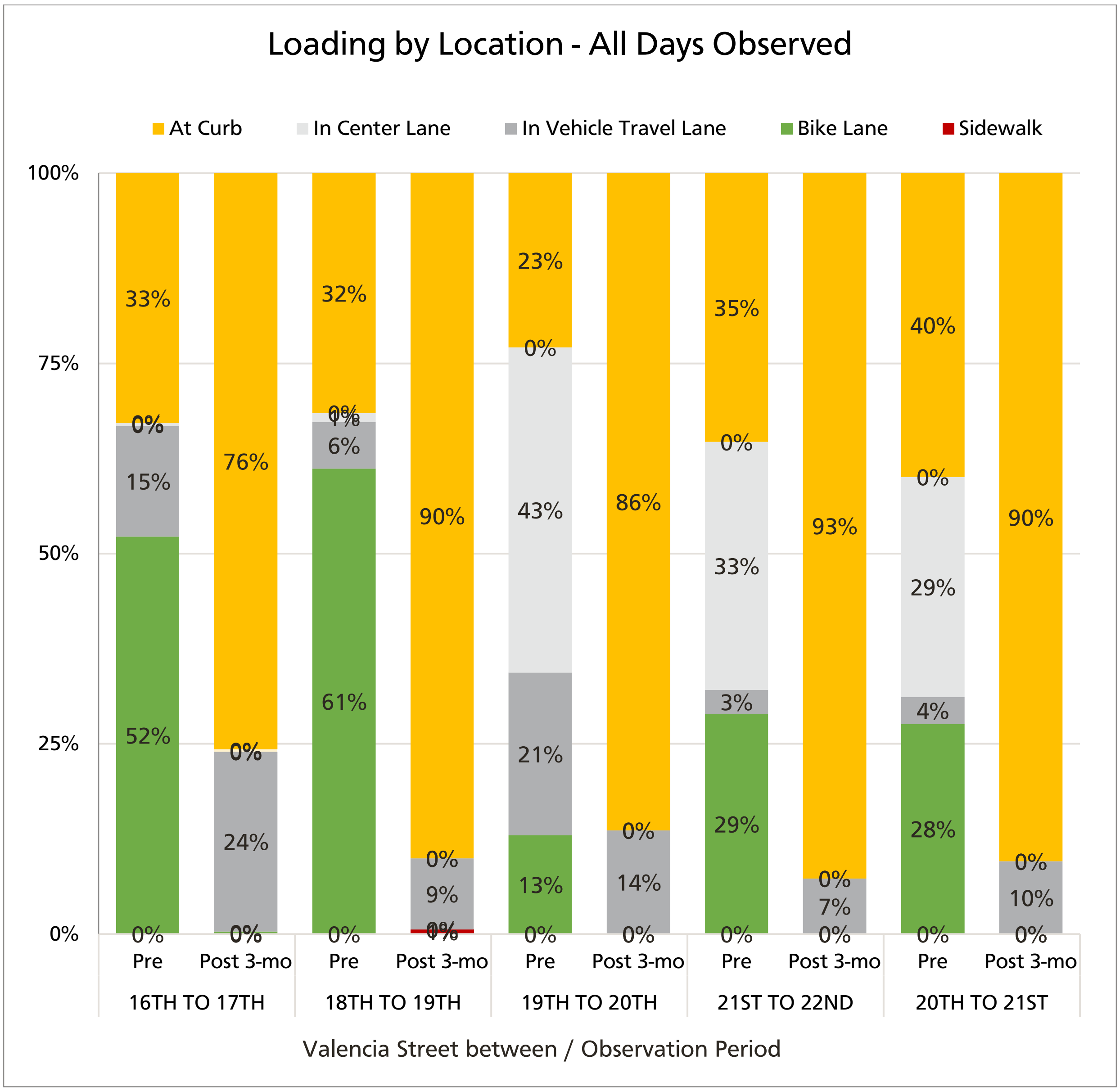
Additionally, vehicles double-parked and loading in the bikeway (a major traffic safety issue in pre-pilot conditions which led to many of the street's bicycle-related collisions) drastically reduced from 40% to 0.1%. In pre-pilot conditions, all vehicle types were observed conducting some double-parking and loading in the bikeway, and the most frequent, of which, were taxis and on-demand delivery and ride-hail companies (i.e., Uber, Lyft, DoorDash, etc.). These vehicle types were observed loading in the bikeway during pre-pilot condition more than 60% of the time while other vehicle types on average only loaded in the bike lane 31% of the time. In the post-implementation condition the 0.1% of vehicles that may still double-park in the center-running bikeway were all made up of large commercial vehicles, which may be due to the vehicles still being too large for the curb space available on that block. This is a significant change and improvement from pre-pilot conditions.

While overall double-parking and more specifically double-parking in the bike lane exhibited significant declines following the implementation of the pilot, double-parking in the vehicle lane still persists in post 3-month conditions, with taxis (27.3% of the time) and TNCs (44.8% of the time) continuing to double-park in the vehicle travel lane most frequently in the evening hours. This may indicate that curb space still does not provide ample supply, especially in the evening. On a block level, most of the blocks observed showed high volumes of vehicles loading at the curb in post 3-month conditions (above 85%), except for Valencia between 16th to 17th streets (76%). This may indicate that the curb supply is still not meeting the block's loading demand.

Note: Loading data does not show events of vehicles entering the center-running protected bikeway to bypass double parked vehicles or to make illegal U-turns mid-block. The events recorded in this metric are only events where a vehicle stops to unload or load goods and passengers. Please refer to metric 4 for bikeway encroachment events that do not involve dwelling in the bikeway facility.

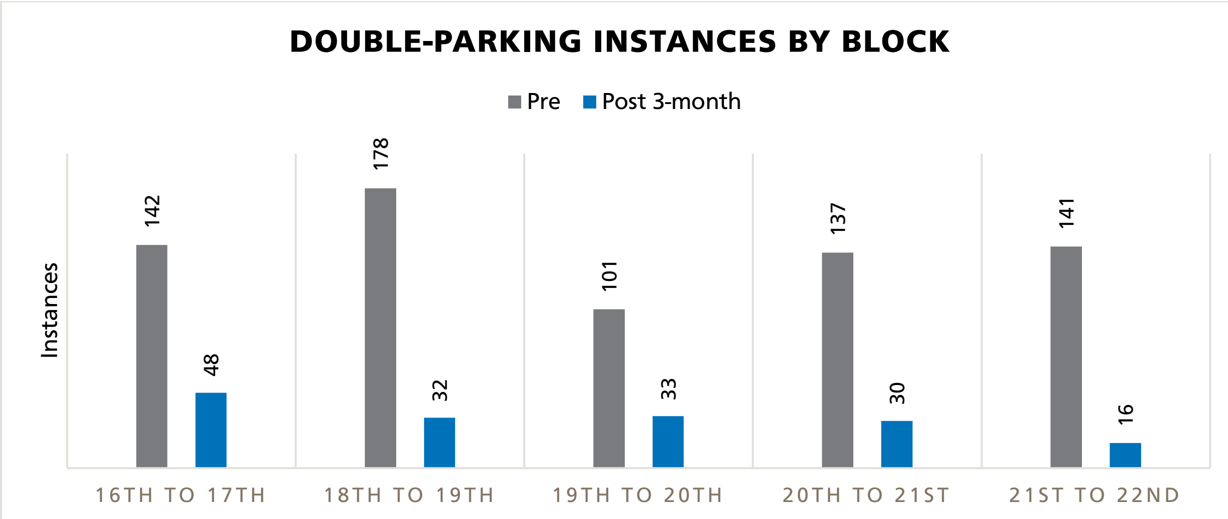
Vehicle Loading by Location on the Street

Loading Location	Pre	Post 3-mo
Double-Parking	66.7%	12.8%
Bike Lane	40.0%	0.1%
In Vehicle Travel Lane	8.9%	12.7%
In Center Lane	17.8%	0.0%
At Curb	33.3%	87.0%
Sidewalk	0.0%	0.1%



Vehicle Loading by Location on the Street and Vehicle Type

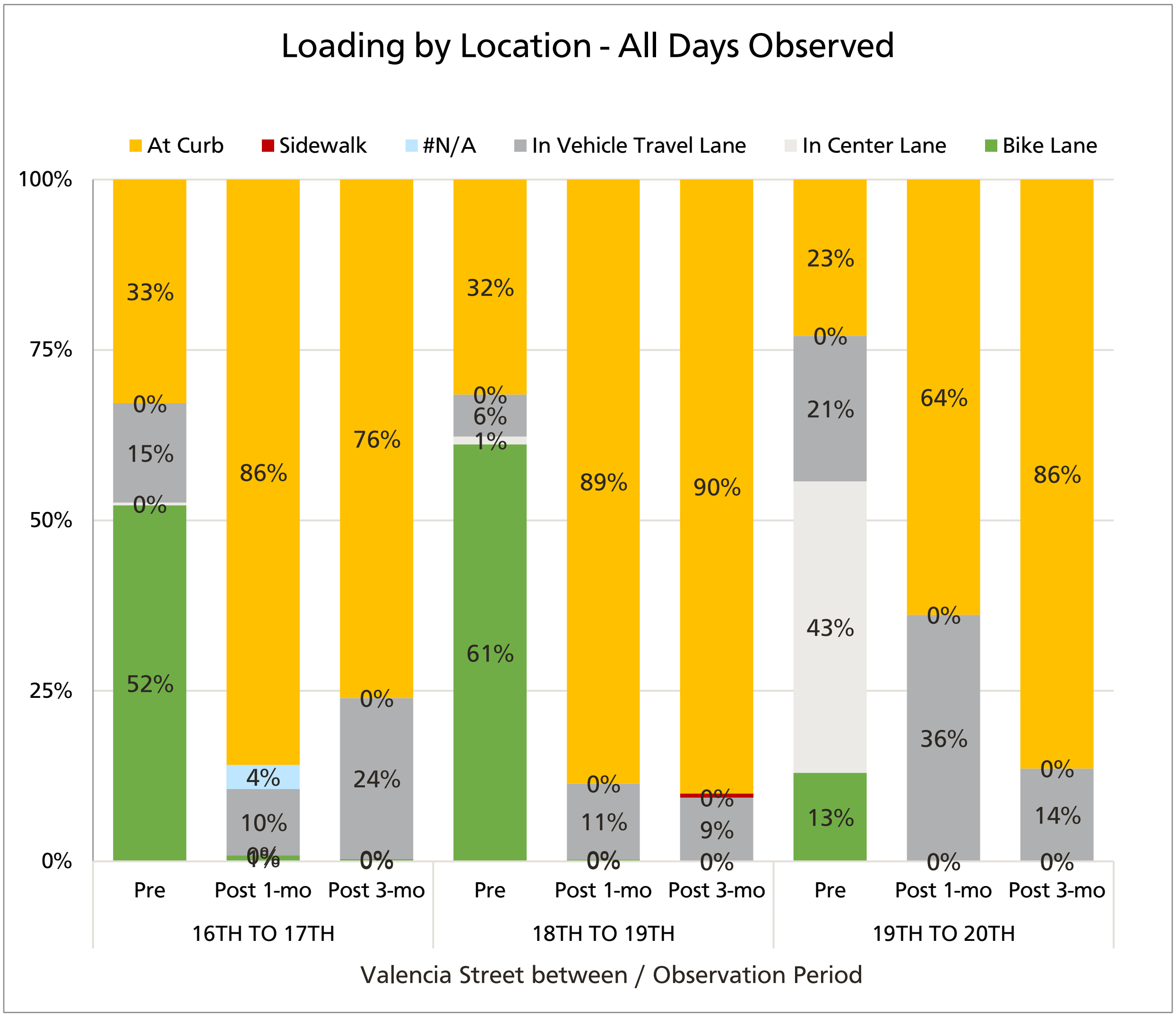
Vehicle Type	Pre				Post 3-mo			
	At Curb	Bike Lane	In Center Lane	In Vehicle Travel Lane	At Curb	Bike Lane	In Vehicle Travel Lane	Sidewalk
Large Commercial Vehicle	29.0%	24.6%	40.6%	5.8%	97.0%	0.0%	3.0%	0.0%
Passenger Vehicle or Pickup Truck	40.8%	36.6%	15.9%	6.7%	96.2%	0.1%	3.5%	0.2%
Small Commercial Vehicle	34.5%	24.8%	35.4%	5.3%	100.0%	0.0%	0.0%	0.0%
TNC (Uber/Lyft/ Food Delivery)	11.8%	64.7%	5.9%	17.6%	55.2%	0.0%	44.8%	0.0%
Taxi	20.0%	60.0%	0.0%	20.0%	72.7%	0.0%	27.3%	0.0%
Other	8.7%	39.1%	30.4%	21.7%	97.9%	0.0%	2.1%	0.0%
Autonomous Vehicle					100.0%	0.0%	0.0%	0.0%
Grand Total	33.3%	40.0%	17.8%	8.9%	87.0%	0.1%	12.7%	0.1%



Comparison to 1-month Data

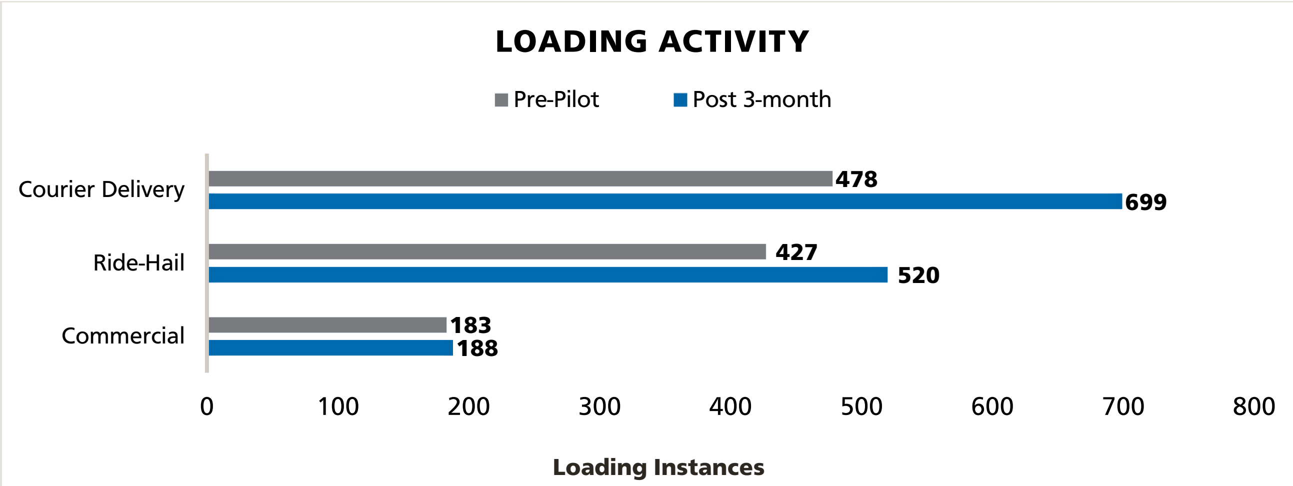
Data collection and the evaluation process are usually not conducted until after 3-months of a new design is implemented. Typically, it takes between 3 to 6 months for user behavior to stabilize due to an adjustment period by the public. However, because the center-running protected bikeway on Valencia Street is the first in the city, a reduced scope of the full evaluation framework was executed 1 month after the pilot officially started. This 1-month snapshot allowed the project team to get a glimpse of what was happening in real-time after implementation and quickly adjust if-needed.

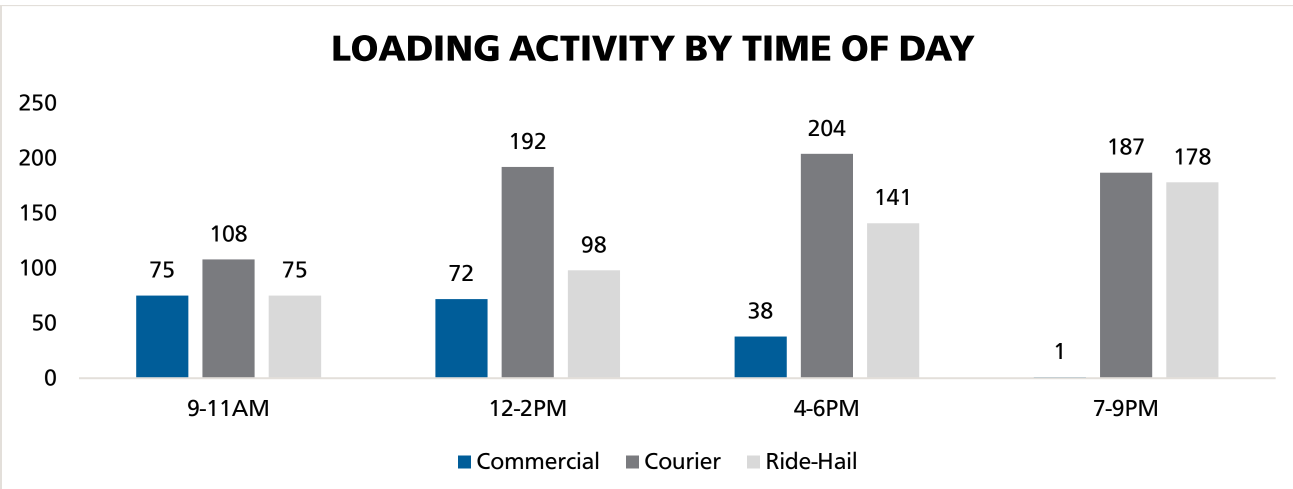
Frequency of vehicle loading by loading location was measured during the 1-month reduced scope evaluation. Using the same parameters for comparison (i.e., hour and locations of observations), the estimated hourly frequency rates between time periods have shown a steady improvement of loading at the curb over time. The average rate of double parking in pre-implementation conditions was 71%. It has since dropped to 19% (1-month) and 16% (3-month). The average rate of loading at the curb has increased from the pre-implementation level of 29% to 79% (1-month), and now 84% (3-month).



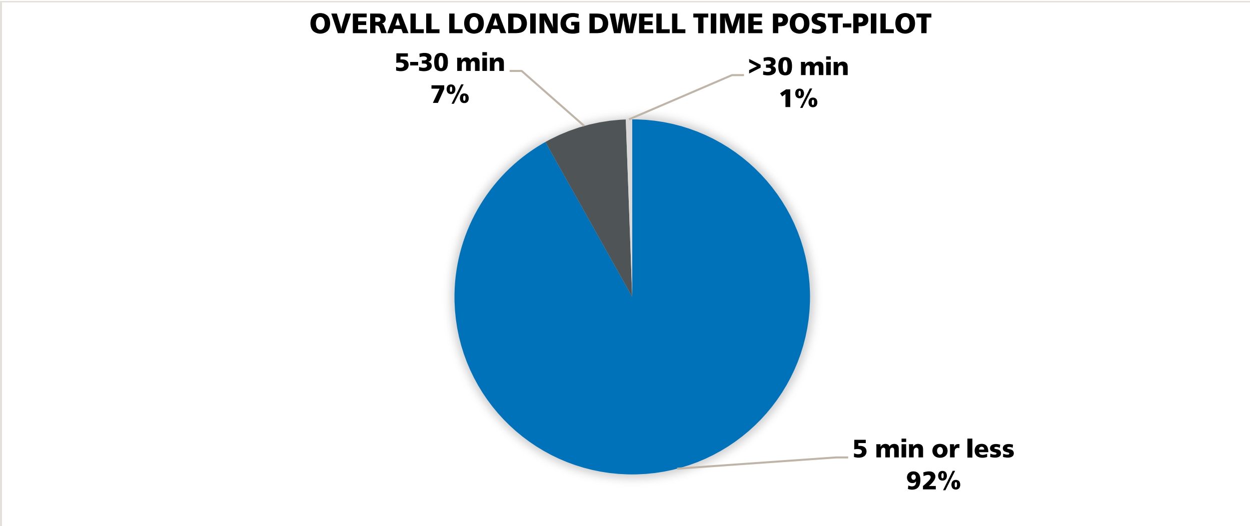
Metric 4 – Review of Vehicle Loading Activity and Loading Characteristics

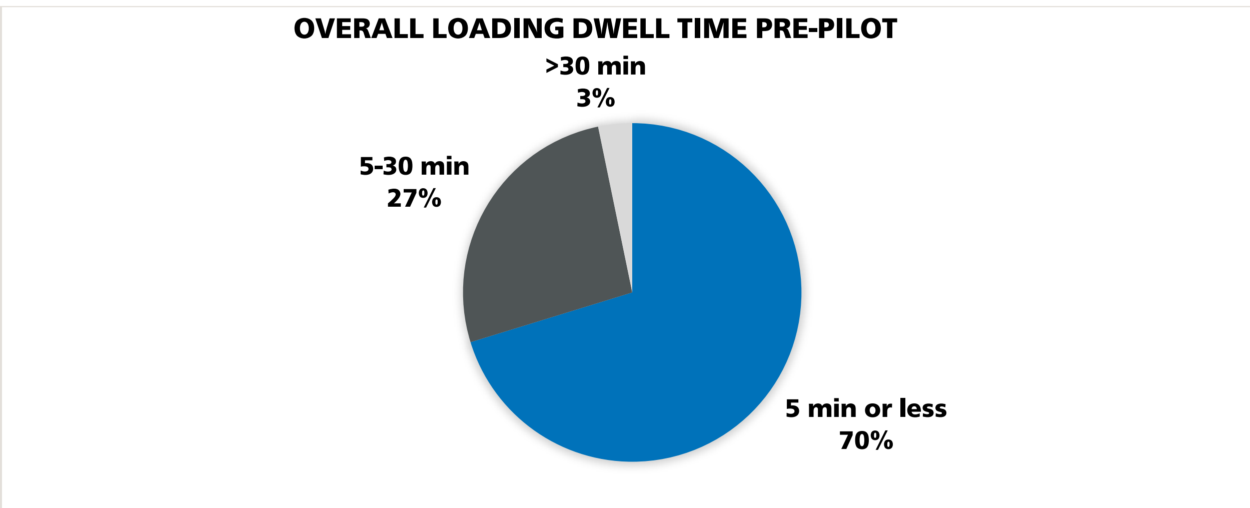
Loading instances increased by 23% three months into the pilot, with 87% of all loading taking place legally at the curb. The temporal distribution of loading, meaning the amount of loading that occurs at different times of day, remained fairly consistent to pre-pilot conditions. Furthermore, the pilot area observed little to no change in the volume of commercial loading on the corridor, but a 46% increase in volume of courier services, primarily consisting of goods pick-up and delivery (i.e., UPS, Amazon, DoorDash, Postmates, etc.), and a 22% increase in ride-hail pick-ups and drop-offs.





Dwell times, or the time it takes for loading vehicles to pull in and out of the curb, also improved since pre-pilot conditions. **The significant increase in loading activity occurring legally at the curb, with shorter dwell times, and the increase in volume of courier and ride-hailing services justifies the reallocation of the curb to better match the present-day nature of loading along Valencia**, which primarily consists of a growing trend of on-demand goods and passenger loading between pre-pilot and post 3-month conditions.





Metric 5 – Frequency of Vehicle Encroachment into the Bikeway

Since the vehicle loading metric only recorded bikeway encroachment from vehicles that were loading goods or people, other incursions, such as for U-turns (not at the intersection), slight/full encroachment to bypass a double-parked vehicle in the travel lane, full encroachment to bypass congestion, or other reasons, were also observed. Data was collected during 2-hour AM, midday, and PM periods.

The hourly incursion rate (number of vehicles compared against total through volume of that hour) was calculated to determine the bikeway encroachment frequency. **On average, about 1% of vehicles, or about 3 to 4 vehicles, encroach the bikeway per hour** for the incursion reasons stated above**.** The max observed number of vehicles per hour at any location or period was 11 vehicles (PM period – Valencia between 18th and 19th streets).

The most common reason for bikeway encroachment (54% of the time) is to make a U-turn on the street.

Vehicle Encroachment - Reason

Row Labels	Bypass a double-parked vehicle	Bypass congestion	To cross the street	U-Turn
VALENCIA ST FROM 16TH TO 17TH	46%	0%	31%	23%
VALENCIA ST FROM 18TH TO 19TH	0%	8%	23%	69%
VALENCIA ST FROM 21ST TO 22ND	0%	13%	50%	38%
Corridor Estimate	11%	7%	28%	54%

Note: U-turns made mid-block on any street in a business district are illegal.

Although encroachment is not desired, the post-implementation condition is still far better than pre-implementation, because previously, there was more encroachment, and these incidences were longer in duration.

In pre-implementation conditions, vehicles mainly encroached into the bikeway for loading activities, which includes dwell time in the bikeway, leading to long-term blockage. Presently, vehicle encroachment incidences resolve faster since they are all movement related.

Additionally, with an unprotected bike facility, encroachment was less predictable and occurred much easier than with the center-running protected bikeway. The design of the center-running protected bikeway includes a rubber curb, which requires a vehicle that is illegally entering the bikeway to slow down before it can do so. This factor enables people bicycling in the bikeway to react and respond better than in an unprotected facility.

The project team will coordinate with SFPD for additional enforcement to ensure illegal moving violations, such as vehicle bikeway encroachment and U-turns in a business district, are enforced to discourage the unwanted behaviors.

Metric 6 – Bicycle Signal Compliance Rate

Bicycle signal compliance is an important metric in measuring design effectiveness at the intersection, especially since signal separation is an important component in the center-running bikeways design. The intersection is the place along a roadway that experiences numerous user conflicts since it is the point where multiple modes of transportation and directions of travel must meet and negotiate right-of-way to continue their trip.

The metric bicycle signal compliance refers to two forms of compliance:

1. People on bicycles obeying a separate bicycle signal at an intersection that gives them the right-of-way.
2. Compliance of vehicles obeying the traffic signals or restrictions when bicycles are given a separate green signal.

With the traditional curbside protected bikeways and bicycle signal separation at the intersection, when people on bicycles have the right-of-way (i.e., green bicycle signal), there would be a no right turn on red restriction (sometimes a blank out LED sign is present) for vehicles.

In the case of the center-running protected bikeway, there are two possible scenarios at the intersection:

1. At the terminus points (i.e., where the center-running protected bikeway transitions to the curbside protected bikeways north of Valencia at 15th Street and curbside Class II bike lanes south of Valencia at 23rd Street), people on bicycles will receive a green bicycle signal, and vehicles will have a red light.
    a. Compliance means: People on bicycles only proceed through an intersection with a green bicycle signal. For vehicles, compliance is only proceeding when they have a green light from the traffic signal, obeying the no vehicle left-turn, and no right-turn on restrictions.
2. Between blocks while in the center-running bikeway (i.e., Valencia Street between 22nd through 16th streets), people on bicycles will use the vehicle signal.
    a. Compliance means: People on bicycles only proceeding through with a northbound or southbound green light. For vehicles, compliance is only proceeding when they have a green light from the traffic signal and obeying the no left-turn restriction.

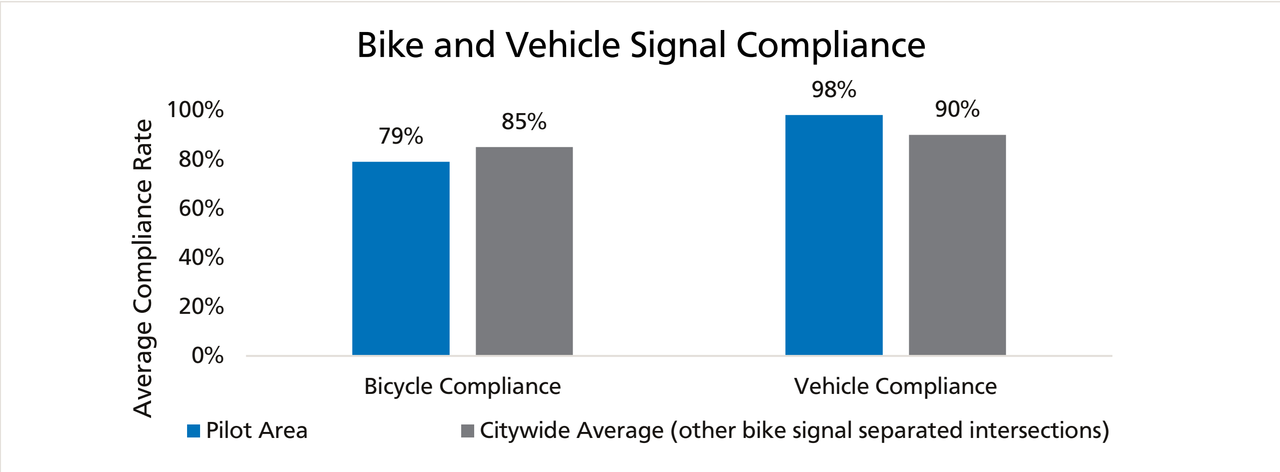
Observations were conducted during 2-hour AM peak, midday, and PM peak periods along several blocks in the project area. Both terminus points (Valencia at 15th Street and Valencia at 23rd Street) where bike signal separation exists, were observed. Additionally, an intersection where people on bicycles utilize the vehicle signal, was also observed to account for the slightly different traffic control device.

Overall, of all observations of people on bicycles passing through the intersections, **79% complied with the traffic control device that gave them the right-of-way**. This means that about one fifth of the time, a person bicycles through an intersection, they are doing so without having the legal right-of-way and potentially creating an interaction and conflict with another mode of traffic. The citywide average at other intersections with bike signal separation is about 85% compliance. So, the compliance rate on this section of Valencia is slightly below average.

In contrast, **vehicles complied with the traffic control device or no left turn and no right turn on restrictions 98% of the time,** which is eight percentage points higher than the citywide average for vehicle compliance at other intersections with bike signal separation. The data does not indicate whether the noncompliance is because of noncompliance with the traffic signal, a vehicle makes a restricted left-turn, or because they make a restricted right turn. It is possible, that the violation is more likely from noncompliance with the turn restriction, since the compliance rate is like that found in the frequency of vehicle left turns metric.

From the user noncompliance by either party (bicycle or vehicle), 56 total interactions were observed and four of those resulted in a close call between a vehicle and bicycle. Zero collisions were observed and the most likely result from an interaction, slightly more than half the time (56%), the person bicycling yields to the vehicle.

Examining by intersection, Valencia Street at 23rd Street is the most problematic and where noncompliance is highest by people on bicycles (32%). It is also the intersection with most observed interactions between bicyclists and vehicles from signal noncompliance (76% of the total observed interactions from all intersections observed). From the data, noncompliance is usually highest when the vehicle volumes are the lowest (AM and midday), but at Valencia and 23rd Street, noncompliance is high throughout the day.



The project team will revisit the signals and make design adjustments as needed to resolve some of these issues.

Metric 7 – Frequency of Bicycle-Pedestrian Interactions and Close Calls at the Intersection

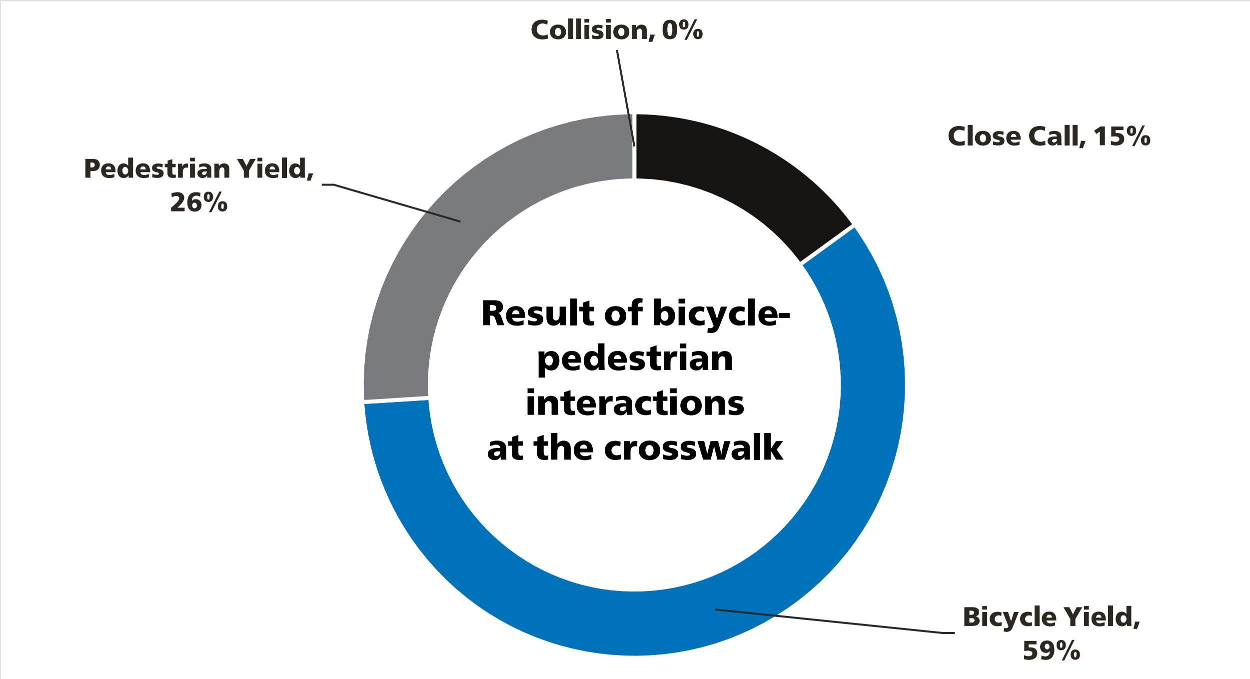
Bicycle-pedestrian intersection interactions and close calls were observed to determine the pilot designs impact on bicycle and pedestrian conflicts at the crosswalk. If all users obeyed the right-of-way, bicycle and pedestrian interactions should be minimal with the pilot design.

Observations were conducted during the 2-hour AM and PM peak periods. The data does not indicate whether an interaction happened because one of the parties violated the right-of-way (I.e., crossing or proceed through when they do not have a green light or walk signal).

On average, 5% of pedestrians crossing at the crosswalk are expected to interact with a person bicycling through the intersection or making a turn from or to a cross street per hour. Bicycle and pedestrian interactions are slightly more likely during the PM peak period. From these interactions, 0% resulted in a collision, 15% resulted in a close call. More than half the time (59%) a person bicycling will yield, and slightly more than a quarter of the time (26%), the pedestrian will yield to avoid conflict.

When compared against the northern Valencia design, it was estimated that in post-implementation conditions a person crossing is expected to interact with a through bicyclist 4% of the time per hour. **The current center-running bikeway pilot design did not more negatively impact the pedestrian-bicycle interaction experience than a curbside bikeway configuration.**

Note: Bicycle-pedestrian interactions at the intersection are also possible on curbside protected bikeways and may be more prevalent because of permissive bicycle right turns onto or from cross streets.



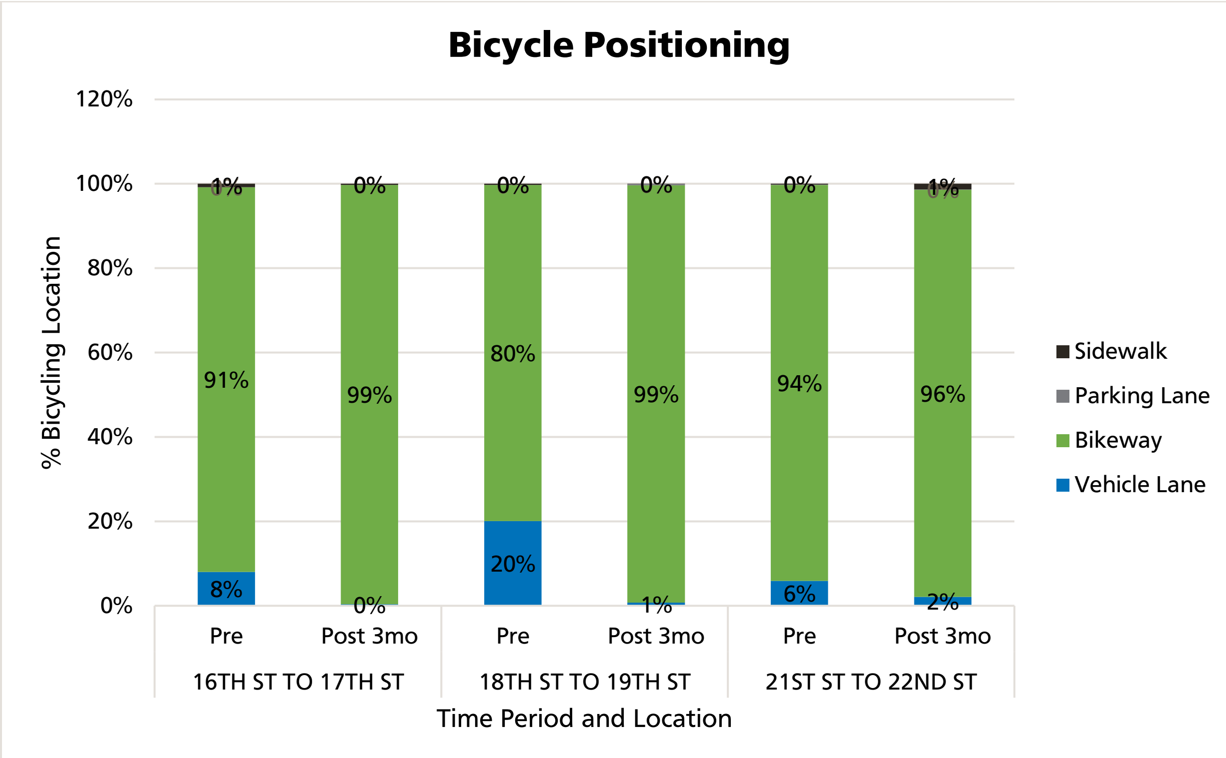
Metric 8 – Bicycle Positioning

Bicycle positioning refers to the location of a bicyclist within the cross section of the street (i.e., within a bike facility, in a vehicle lane, in the curb lane, on the sidewalk, etc.). Bicycle position can be an indicator for the effectiveness of a bikeway in safety, comfort, and sizing. The ideal condition is a high proportion of people on bikes on the street to be bicycling in the lanes of a bikeway.

Bicycle positioning observations were conducted on several blocks along the project area during the 2-hour AM peak and PM peak periods.

Overall, bicycling in the bikeway improved by 12 percentage points. The center-running protected bikeway has significantly reduced a vast majority of bicycling in the vehicle travel lane. **98% of people bicycling in the mid-Valencia pilot project area are doing so in the center-running protected bikeway.** In pre-pilot conditions, about 88% of people on bikes were bicycling in the Class II bike lanes, and 11% were in the travel lane. Bicycling in the travel lane was more prevalent, approximately almost twice as likely, in the sections of Valencia where there was not a center turn lane between 15th and 19th streets. Since the center turn lane between 19th Street and Cesar Chavez was frequently used by large commercial vehicles for loading and there are less instances of loading in the bikeway on this section of Valencia, it is most likely that bicycling in the travel lane in pre-implementation conditions was due to a blocked bike lane from vehicle loading.

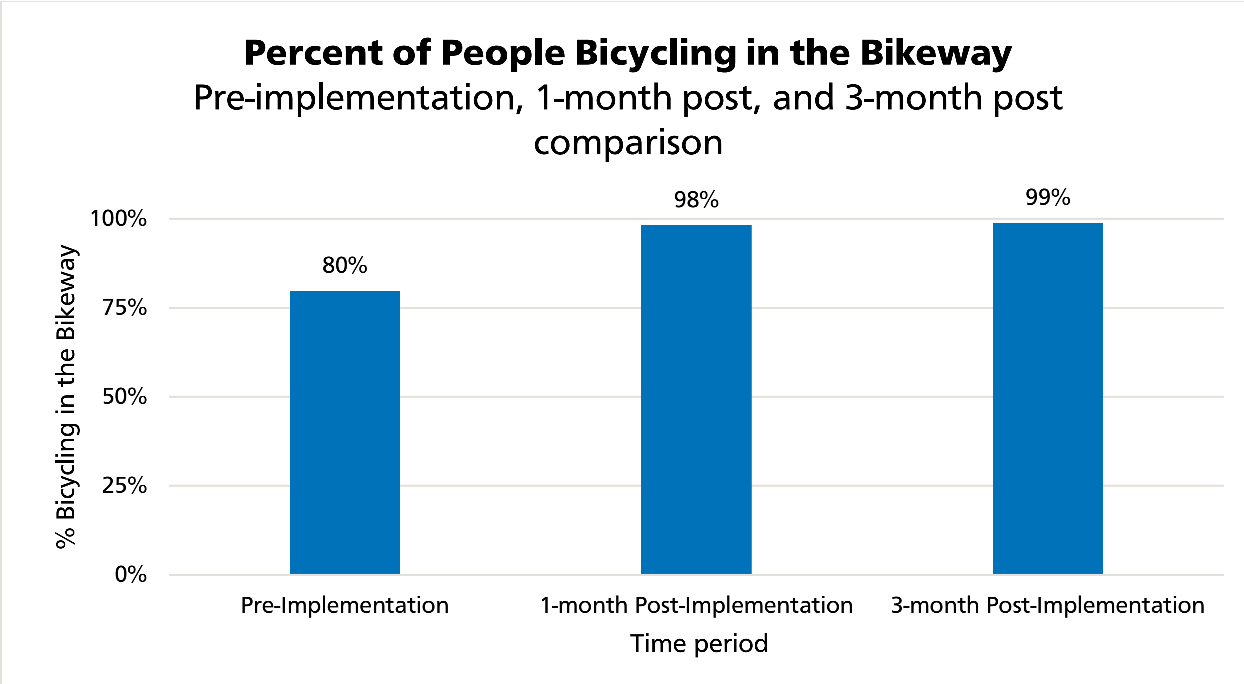
From the vehicle loading data, Valencia Street between 18th and 19th streets experienced the most loading in the bike lanes in the pre-implementation conditions. This is the same block with the highest observed bicycling in the vehicle travel lane in pre-implementation conditions and the largest improvement (19 percentage point increase) of people bicycling in the bikeway in post-implementation.



Comparison to 1-month Data

Data collection and the evaluation process are usually not completed until after 3-months of a new design is implemented. Typically, it takes between 3 to 6 months for user behavior to stabilize due to an adjustment period by the public. However, because the center-running protected bikeway on Valencia Street is the first in the city, a reduced scope of the full evaluation framework was executed 1 month after the pilot officially started. This 1-month snapshot allowed the project team to get a glimpse of what was happening in real-time after implementation and quickly adjust if-needed.

Bicycle positioning was measured during the 1-month reduced scope evaluation. Using the same parameters for comparison (i.e., hours, and locations observed), the estimated proportion of people bicycling in the bikeway between 1-month post-implementation and pre-implementation saw an 18-percentage point increase and 1-month post to 3-month post showed a small improvement as well.



Metric 9 – Typical Daily Vehicle Speed

Typical daily vehicle speed was determined to evaluate safety along the project area. Vehicle speed is a major contributing factor to traffic collisions and severity. Managing vehicle speeds to an appropriate level is a key goal of traffic safety projects.

Daily vehicle speeds were calculated at the average, 50th percentile (median) and 85th percentile. Additionally, the proportion of vehicles egregiously speeding (% exceeding 30/40 mph) was also calculated to measure impacts to improving traffic safety by ensuring safer vehicle speeds.

Most drivers are driving at a safe speed and all speed metrics show at least a 1 mph decrease. Additionally, most drivers are driving at or below the speed limit (20 mph). The median corridor vehicle speed estimate is 18 mph in the post-implementation condition. Also, the proportion of drivers traveling above 30 mph has decreased from 3% to 1%. No vehicles traveled above 40 mph.

Typical Daily Vehicle Speeds

Location - Metric	Weekday	
	Pre	Post
Corridor Estimate		
Mean Speed	20	18

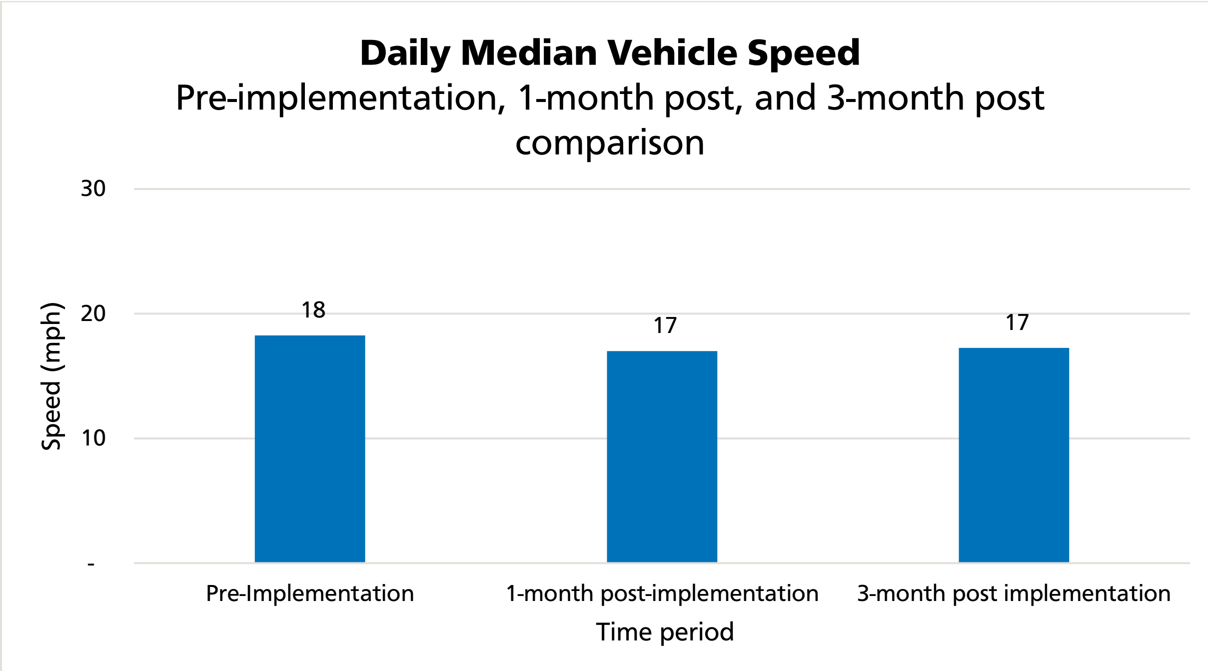
Median Speed	19	18
85th Percentile	24	23
% Exceed 30 mph	3%	1%
% Exceed 40 mph	0%	0%
Valencia St Between 15th St and 16th St		
Mean Speed	20	19
Median Speed	20	19
85th Percentile	26	24
% Exceed 30 mph	5%	1%
% Exceed 40 mph	0%	0%
Valencia St Between 18th St and 19th St		
Mean Speed	19	17
Median Speed	18	17
85th Percentile	24	23
% Exceed 30 mph	2%	1%
% Exceed 40 mph	0%	0%
Valencia St Between 21st St and 22nd St		
Mean Speed	20	18
Median Speed	19	18
85th Percentile	24	22
% Exceed 30 mph	3%	1%
% Exceed 40 mph	0%	0%

Comparison to 1-month Data

Data collection and the evaluation process are usually not completed until after 3-months of a new design is implemented. Typically, it takes between 3 to 6 months for user behavior to stabilize due to an adjustment period by the public. However, because the center-running protected bikeway on Valencia Street is the first in the city, a reduced scope of the full evaluation framework was executed 1 month after the pilot officially started. This 1-month snapshot allowed the project team to get a glimpse of what was happening in real-time after implementation and quickly adjust if-needed.

Vehicle speed was measured during the 1-month reduced scope evaluation. Calculated at the median and using the same parameters for comparison (i.e., hours and locations observed), the

1-month post-implementation observation period saw a 1 mph reduction from pre-implementation, and there is no change between 1-month post-implementation and 3-month post-implementation levels. All values are below the posted speed limit of 20 mph.



Metric 10 – Average Daily Vehicle Volume

Change in vehicle volume was measured to evaluate mobility changes along the mid-Valencia pilot project area. Average daily vehicle volume was determined by taking the average 24-hour volume of several locations along the project area.

The corridor's estimated average daily vehicle volume change between pre- to post-implementation is a 26% decrease. Based on the threshold for typical daily variation (i.e., the daily change in volume that constitutes normal deviations unaffected by seasonality or other variables), this change is considered significant.

Average Daily Vehicle Volumes

Location	Pre-Implementation	3 mo post-implementation	Difference	%Δ
Valencia St Between 15th St and 16th St	9,300	5,400	-3900	-42%
Valencia St Between 18th St and 19th St	8,600	6,800	-1800	-21%
Valencia St Between 21st St and 22nd St	8,200	6,900	-1300	-16%

To compare and using the same parameters, the average daily vehicle volume changes also decreased or increased by an insignificant magnitude on surrounding neighborhood streets like Guerrero Street (+1%) and Mission Street (-4%).

To further study potential pilot design impacts to vehicle volumes. Total loading events and those specifically related to passenger drop-off, were analyzed to determine the change of corridor visitors versus through traffic. For total loading events, there was a 27% increase in all commercial loading between pre- to post-implementation conditions. For loading events related to passenger drop-offs, for the vehicle type taxis and ride hail services (i.e., Uber, Lyft, etc.), and specifically on a Fridays, pre-to-post is estimated to have increased by 126%. If the vehicle type passenger vehicles or pickup trucks, which are vehicle types without an indication of being a transportation network company or taxi is, is included with ride-hail services and taxis, then the change in loading events pre-to-post decreases to a change of 76%. If only passenger vehicles and pick-up trucks are included and we include all days observed, then the pre-to-post change in loading events is an increase of 13%. Nonetheless, it is still a significant change from pre-pilot conditions. This is also a possible indicator that although vehicle volumes have dropped, it may be due to a reduction in through vehicle traffic, rather than travelers with a destination on Valencia Street.

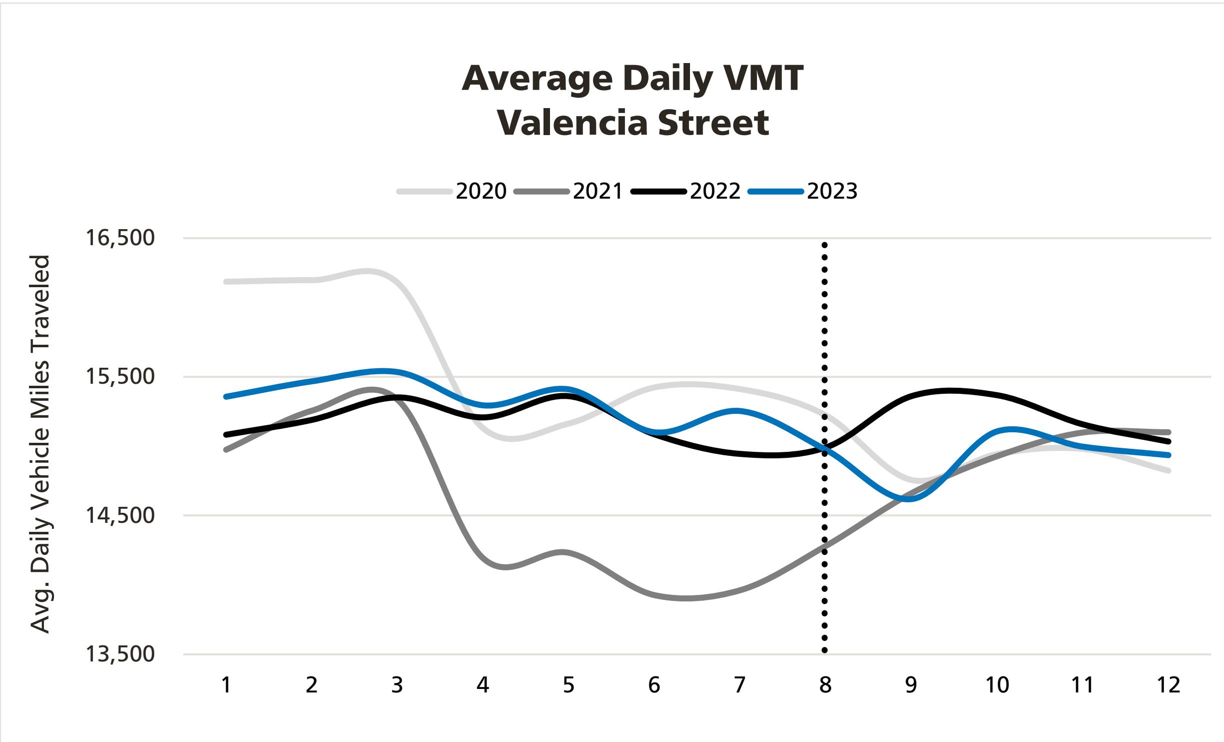
Moreover, goods pick-up, more specifically food deliveries, was also studied to determine if there is a change in how people interact with Valencia Street. This analysis serves to infer if pandemic related travel impacts have changed how people interact with Valencia Street (i.e., less physical visitation, but consumption through other means like delivery services). It should be noted that this analysis should be considered with caution since the data does not accurately distinguish if a good picked up by a transportation network company is a food delivery or another type of commercial good. From the analysis, goods pick up by the vehicle type passenger vehicles – pickup trucks and transportation network companies increased by 43% between pre- to post-implementation conditions.

Vehicle miles traveled (VMT) was also analyzed to further examine the drop in vehicle volumes between pre-implementation and post-implementation conditions. Daily VMT is a tool to estimate or measure how much traffic is flowing through an area. It is not perfectly related to vehicle volume but can help provide insights or explain changes in volume.

Looking at the VMT data, traffic seems to have stabilized in the past couple of years but are still not at levels prior to the COVID-19 pandemic. Average daily VMT dropped significantly after March 2020 with the onset of the pandemic and continued to drop through 2020. In 2021, average daily VMT started to increase at the beginning of the year but fell significantly below pre-pandemic levels. It did not start to stabilize until 2022, which continued through the year and through the first half of 2023.

With the implementation of the mid-Valencia pilot, there was a noticeable decline from the steady trend of stabilization between 2022 through the first half of 2023. This is most likely due to the expected adjustment period with the new pilot design. Recent months have shown that average daily VMT has picked back up along the corridor.

The project team will continue to monitor vehicle volumes during the pilot and respond accordingly.

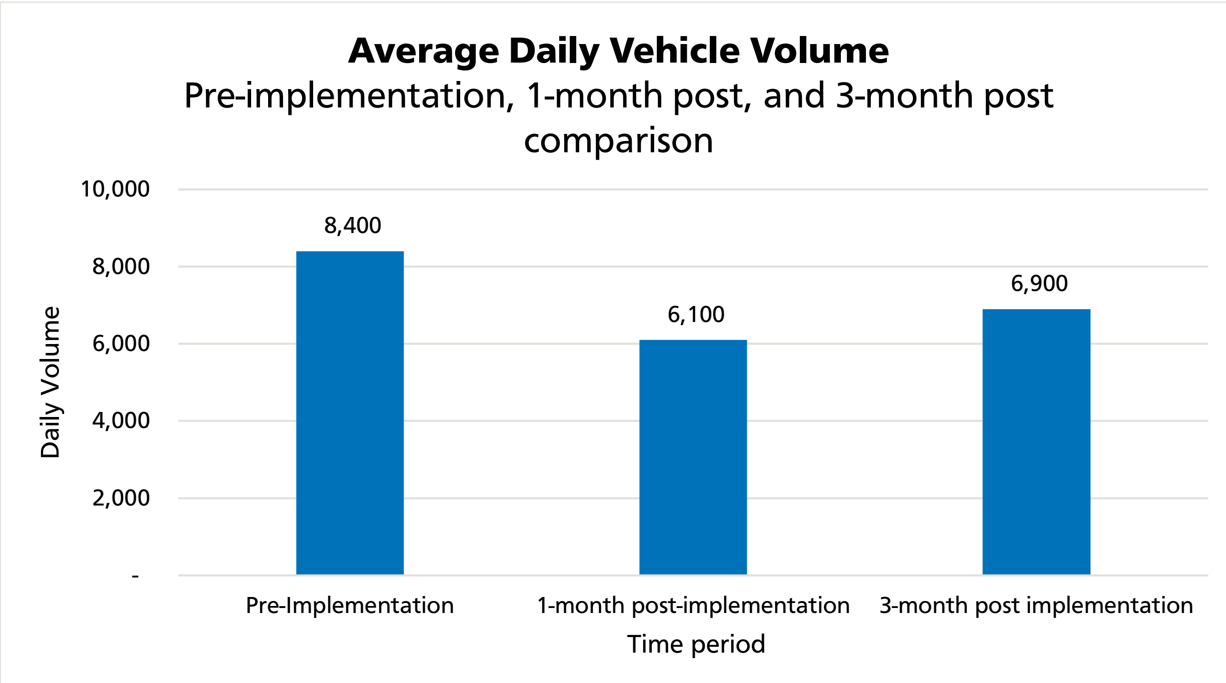


From the data, and analysis of loading events from specific vehicle types and annual changes in average daily VMT, it is reasonable to assume that some level of pandemic related travel behavior change is still present along the Valencia corridor. The current trends may be the new baseline, as it is with the rest of the city since travel patterns have changed due to the pandemic.

Comparison to 1-month Data

Data collection and the evaluation process are usually not completed until after 3-months of a new design is implemented. Typically, it takes between 3 to 6 months for user behavior to stabilize due to an adjustment period by the public. However, because the center-running protected bikeway on Valencia Street is the first in the city, a reduced scope of the full evaluation framework was executed 1 month after the pilot officially started. This 1-month snapshot allowed the project team to get a glimpse of what was happening in real-time after implementation and quickly adjust if-needed.

Vehicle volumes were measured during the 1-month reduced scope evaluation. Using the same parameters for comparison (i.e., hours and locations observed), the estimated average daily vehicle volumes between pre-implementation, 1-month post-implementation, and 3-month post-implementation, the 1-month post observation period saw a reduction (-27%) in daily vehicles in the pilot area. When compared to the latest data from the 3-month evaluation, average daily vehicle volume is higher than the 1-month levels (+13%), but still below pre-implementation.



Metric 11 – Average Daily Bicycle Volume

Change in bicycle volume was measured to evaluate mobility changes along the mid-Valencia pilot project area. Academic literature has shown that daily bicycle volume can be an indicator of safety and comfort. Typically, the more comfortable or safe a facility is perceived to be by users or potential users, the more people are on it.

Average daily bicycle volume was determined by taking the average 24-hour volume of several locations along the project area. **The average daily bicycle volume is estimated to have increased by 3% from pre- to post-implementation conditions.** Based on the threshold for typical daily variation (i.e., the daily change in volume that constitutes normal deviations unaffected by seasonality or other variables), this change is considered not significant. The level of users between pre- and post-implementation conditions are about the same.

Average Daily Bicycle Volumes

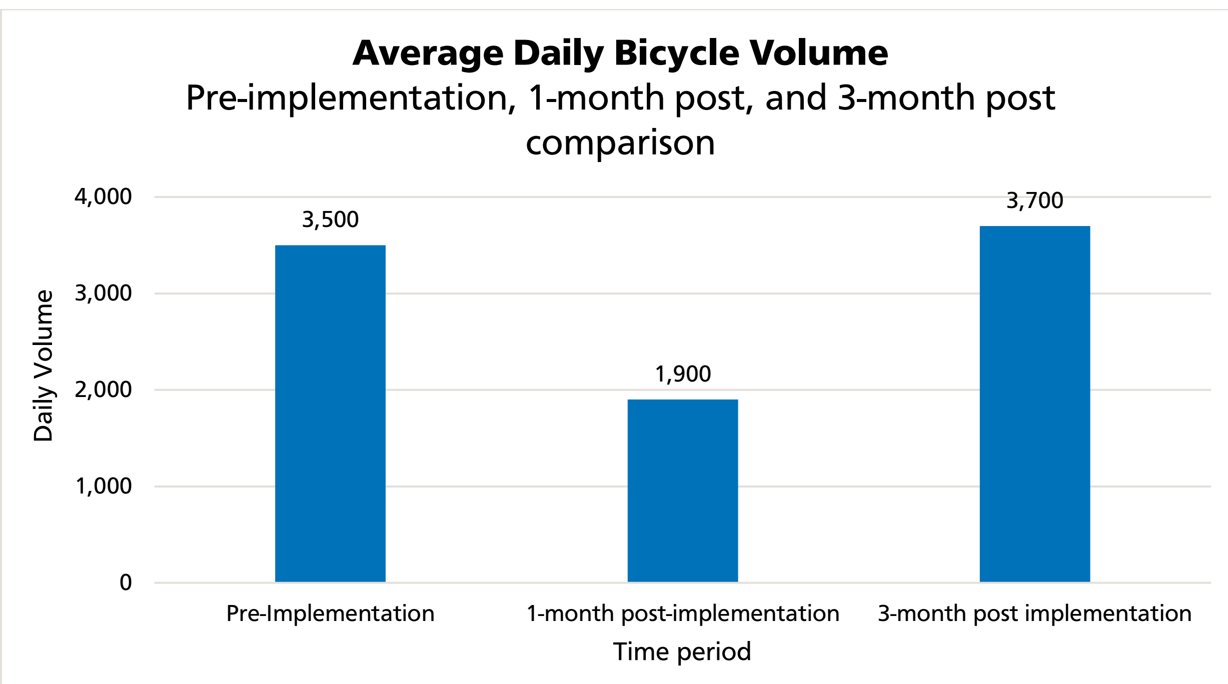
Location	Pre-Implementation	Post-Implementation	Difference	%Δ
Valencia St Between 15th St and 16th St	3,400	3,300	-100	-3%

Valencia St Between 18th St and 19th St	3,500	3,900	400	11%
Valencia St Between 21st St and 22nd St	3,400	3,400	0	0%

Comparison to 1-month Data

Data collection and the evaluation process are usually not completed until after 3-months of a new design is implemented. Typically, it takes between 3 to 6 months for user behavior to stabilize due to an adjustment period by the public. However, because the center-running protected bikeway on Valencia Street is the first in the city, a reduced scope of the full evaluation framework was executed 1 month after the pilot officially started. This 1-month snapshot allowed the project team to get a glimpse of what was happening in real-time after implementation and quickly adjust if-needed.

Bicycle volume was measured during the 1-month post-implementation reduced scope evaluation. Using the same parameters for comparison (i.e., hours and locations observed), the estimated average daily bicycle volumes between pre-implementation, 1-month post-implementation, and 3-month post-implementation, the 1-month observation period saw a significant reduction (-46%) in daily bicycle riders in the pilot area. However, when compared to the latest data from the 3-month evaluation, average daily bicycle volume has returned to levels, like pre-implementation conditions (+95% from 1-month).



Metric 12 – 2-Hour Pedestrian Volume (AM and PM Peak Periods)

Change in pedestrian volume was measured to evaluate mobility changes along the mid-Valencia pilot project area. Using 2-hour turning movement counts during the AM and PM peak periods, total pedestrian volume was compared between pre- to post-implementation conditions. **Overall, it is estimated that the 2-hour pedestrian volumes during the AM and PM peak periods have decreased by 5% from the baseline volume.** Based on the threshold for typical daily variation (i.e., the daily change in volume that constitutes normal deviations unaffected by seasonality or other variables), this change is considered not significant. The 2-hour PM peak pedestrian volume change (-7%) decreased 3 percentage points more than the AM period (-4%) from baseline.

To compare and using the same parameters, the 2-hour pedestrian volumes during the AM and PM peak periods decreased more on surrounding neighborhood streets like Guerrero Street (-13%) and Mission Street (-7%). The higher decrease of pedestrian volumes during the PM peak periods is also present on these two streets.

2-Hr Period Pedestrian Volumes (AM and PM Peak Periods)

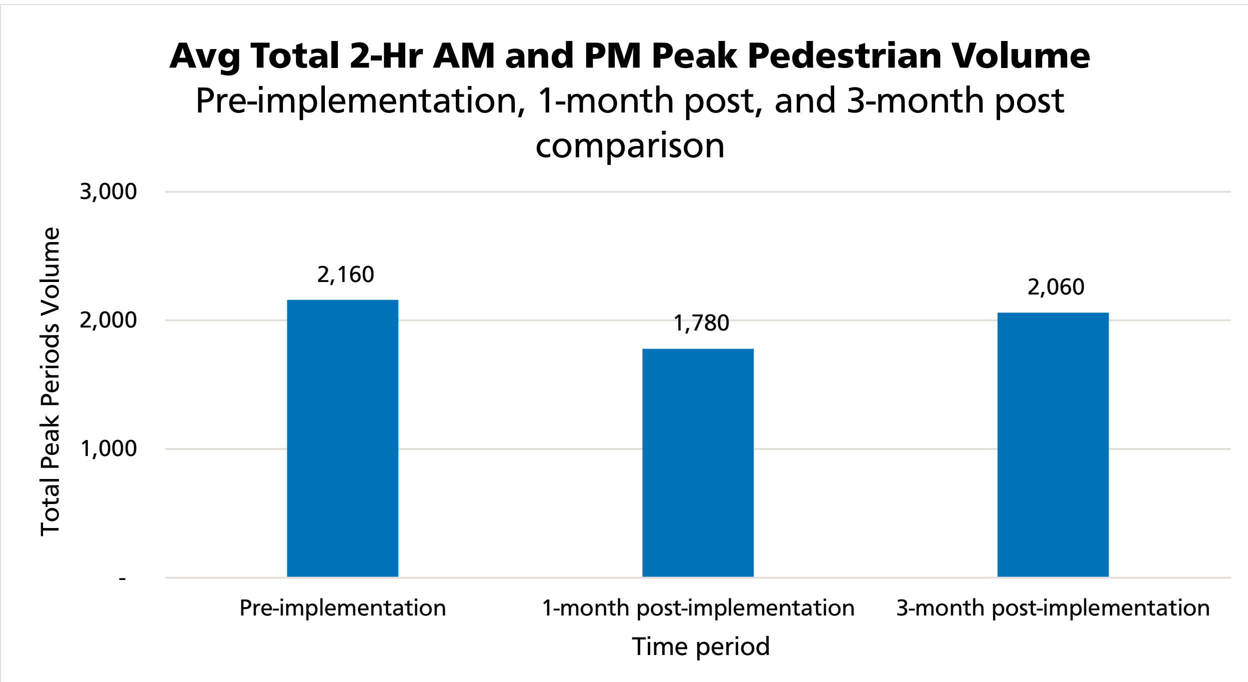
Location and Time Period	Pre	Post	Difference	%Δ
Valencia Street at 15th Street	1,800	1,400	-400	-22%
AM	600	400	-200	-33%
PM	1,200	1,000	-200	-17%
Valencia Street at 16th Street	3,500	3,800	300	9%
AM	1,100	1,100	0	0%
PM	2,400	2,700	300	13%
Valencia Street at 17th Street	2,300	2,100	-200	-9%
AM	600	600	0	0%
PM	1,700	1,500	-200	-12%
Valencia Street at 18th Street	2,900	2,700	-200	-7%
AM	800	700	-100	-13%

PM	2,100	2,000	-100	-5%
Valencia Street at 19th Street	2,400	2,300	-100	-4%
AM	400	500	100	25%
PM	1,900	1,700	-200	-11%
Valencia Street at 20th Street	2,300	2,400	100	4%
AM	500	500	0	0%
PM	1,800	1,800	0	0%
Valencia Street at 21st Street	2,100	1,700	-400	-19%
AM	500	400	-100	-20%
PM	1,700	1,300	-400	-24%
Valencia Street at 22nd Street	2,000	1,700	-300	-15%
AM	500	500	0	0%
PM	1,400	1,300	-100	-7%
Valencia Street at 23rd Street	1,400	1,500	100	7%
AM	400	500	100	25%
PM	1,000	900	-100	-10%

Comparison to 1-month Data

Data collection and the evaluation process are usually not completed until after 3-months of a new design is implemented. Typically, it takes between 3 to 6 months for user behavior to stabilize due to an adjustment period by the public. However, because the center-running protected bikeway on Valencia Street is the first in the city, a reduced scope of the full evaluation framework was executed 1 month after the pilot officially started. This 1-month snapshot allowed the project team to get a glimpse of what was happening in real-time after implementation and quickly adjust if-needed.

Pedestrian volumes at the 2-hour AM and PM peak periods, were measured during the 1-month reduced scope evaluation. Using the same parameters for comparison (i.e., hours and locations observed), the estimated total AM and PM peak period volumes saw a slight reduction (-18%) in pedestrians in the pilot area between the pre-implementation and 1-month post-implementation observation period. However, when compared to the latest data from the 3-month post-implementation evaluation, pedestrian volumes have returned to levels similar to pre-implementation conditions (+16% from 1-month post).



Metric 13 – Traffic Impacts on Adjacent Streets

Traffic impacts were measured on various metrics to evaluate possible increase in congestion on parallel neighboring streets from the pilot design.

One major element of the pilot design that concerned stakeholders were pilot areawide vehicle left turn restriction on Valencia Street. Vehicle left turns constituted 8% of pre-implementation northbound and southbound volumes on Valencia Street. In post-implementation conditions, on average left turns constitute about 1% of daily vehicle volumes, so a 7-percentage point decrease from pre-implementation. Because the volume is so small in pre-implementation conditions, eliminating these movements and forcing right-turns for northbound and southbound traffic on Valencia Street to get to other streets were not expected to cause major impacts on adjacent or nearby streets.

Various metrics were evaluated to determine possible congestion impacts. Each metric compared pre-to post-implementation conditions. **Overall, the findings from each metric show that the mid-Valencia pilot design has not negatively impacted traffic on adjacent neighboring streets.**

Daily Vehicle Speeds

Vehicle speeds can provide insight on congestion impacts since flow is a function of speed and density. The more vehicles there are on a road at the same time, the lower the speed one can expect to travel through a route. An increase or decrease in vehicle speeds is a better indicator than vehicle volume, because roadways may have the capacity to absorb additional users.

Based on data collected on other streets, **vehicle speeds on adjacent streets remained about the same between pre- to post-implementation conditions**. Therefore, pilot design features like the no vehicle left turn on Valencia Street have not impacted the speed at which a vehicle travels through the adjacent streets or have led to increased delay.

Additionally, average daily vehicle volumes decreased or have not changes significantly on most of the streets observed between pre- to post-implementation conditions.

Location	Average Vehicle Speed			Average Daily Vehicle Volume Change
	Pre	Post	Difference	
16th Street	18	20	2	-2%
20th Street	18	19	1	-13%
Capp Street	16	15	-1	-29%
Guerrero Street	25	26	1	1%
Hill Street	17	18	1	-20%
Liberty Street	15	15	0	-20%
Mission Street	20	21	1	-4%
South Van Ness Avenue	22	24	2	2%
Sycamore Street	14	14	0	0%

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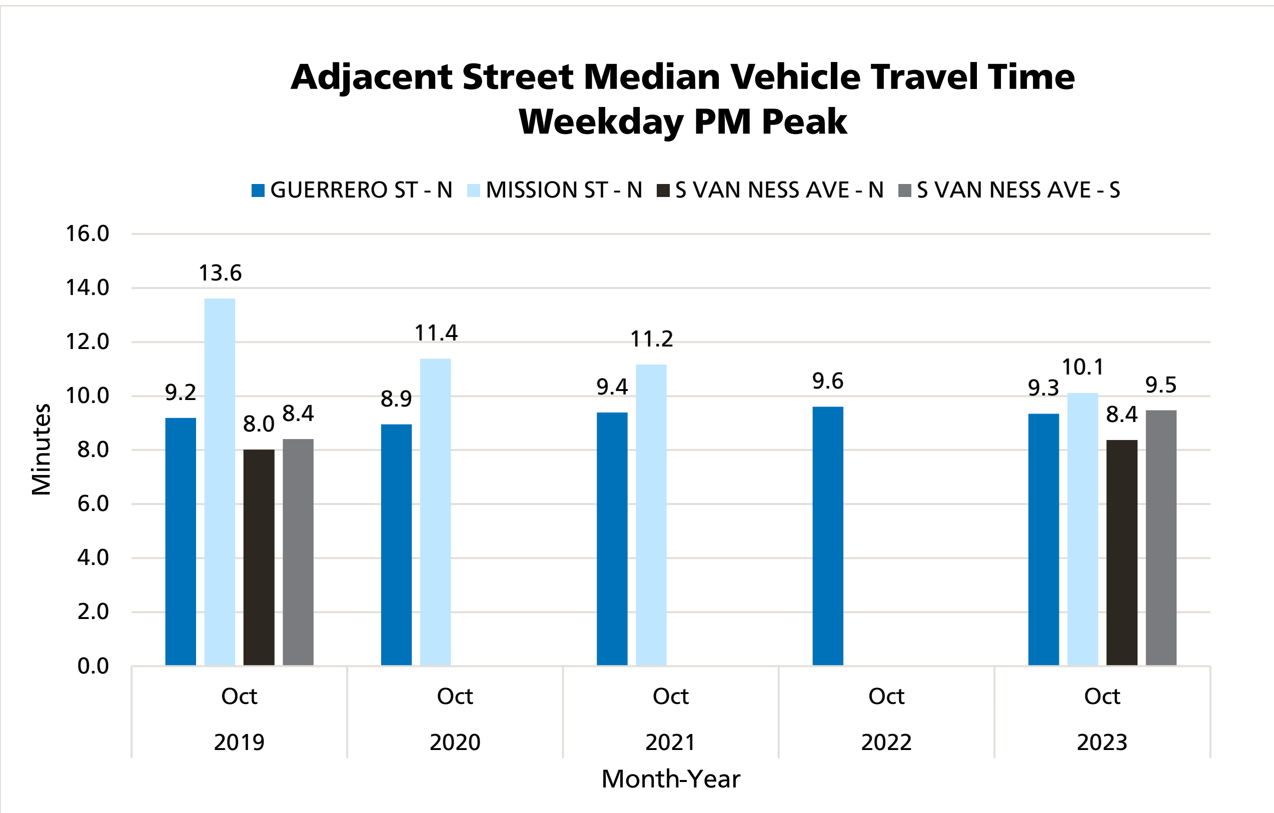
Median Vehicle Travel Time

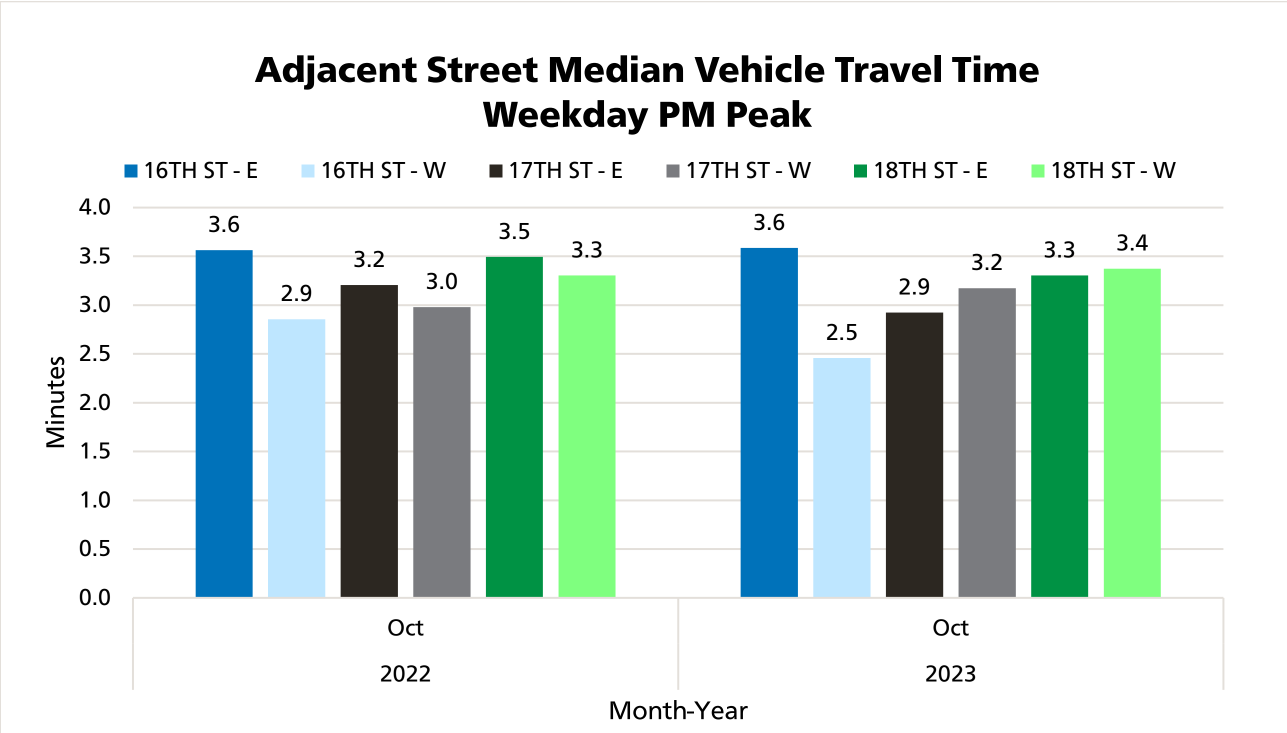
Using mobile phone and GPS data, vehicle travel time was also measured to evaluate potential congestion impacts from the Valencia Street pilot design on adjacent streets between 15th and 23rd streets. If the pilot design had negative impacts, it is expected travel time would have increased from potentially diverted traffic that no longer desired to travel on Valencia Street or because of the vehicle no left turn restrictions that caused additional movements on adjacent streets to get off Valencia Street. Median vehicle travel time was calculated to measure vehicle travel time changes and potential added delay. Data is not available for all years or directions on the streets observed.

Based on the findings, **vehicle travel time changes are insignificant when compared against previous years**. Guerrero Street (northbound), which has the most available data (2019 – 2023), has experienced a quarter minute decrease in 2023, two months since the pilot started, from the previous year (2022), and a very slight increase from pre-COVID-19 conditions (2019). It should be noted that signal timing changes were implemented on Guerrero Street in April 2023 and this may have also added to the change in vehicle travel times. Moreover, South Van Ness Avenue, which is the only street with southbound data available, has seen about a one-minute increase in vehicle travel time when compared to pre-pilot conditions. However, the travel time changes may also be attributed to the recent vehicle travel lane reduction from the South Van Ness Quick-Build project that was completed recently.



Median vehicle travel times were also analyzed for east-west streets (between Mission Street and Valencia Street). These are the sections where diverted vehicle left turns were mostly likely to travel with a right turn to get off Valencia Street to another Street. Data was only available on 16th Street, 17th Street, and 18th Street.

Overall, vehicle travel trends were like the north-south streets and **median vehicle travel time showed little to no change**.



Next Steps in Pilot Evaluation

SFMTA staff will continue to monitor the project area and gather feedback from users and travelers of Valencia Street. The key metrics that are part of the evaluation will be re-evaluated at the 6-month point of the pilot. The 6-month evaluation will also include an intercept survey along the project area, to measure people's perceptions and attitudes on the new the pilot design.