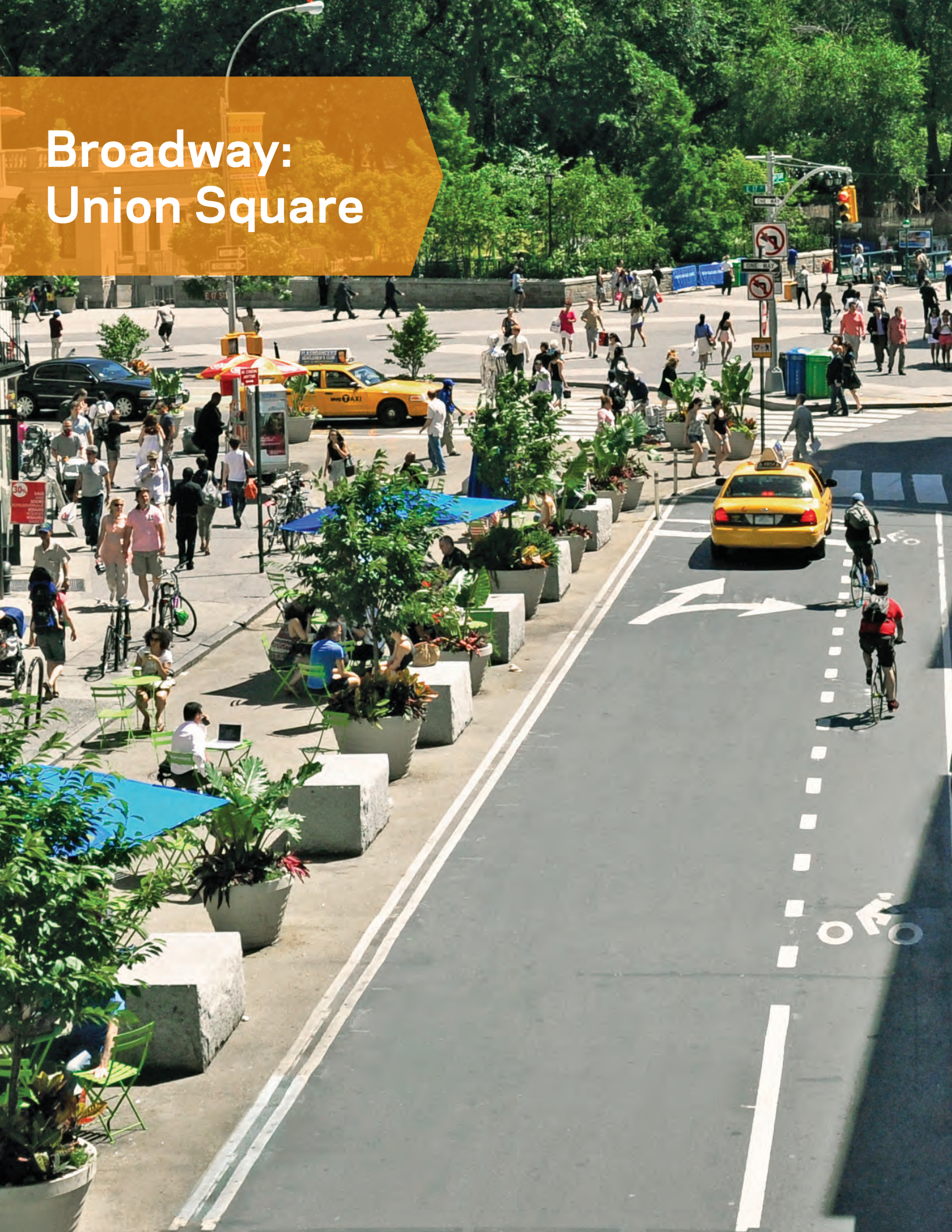


Broadway: Union Square



Purpose

- Increase safety at complex intersections
- Reduce vehicle speeds
- Provide safer pedestrian crossings
- Accommodate pedestrian desire lines
- Improve bicycle lanes
- Increase seating areas and public space

Outreach

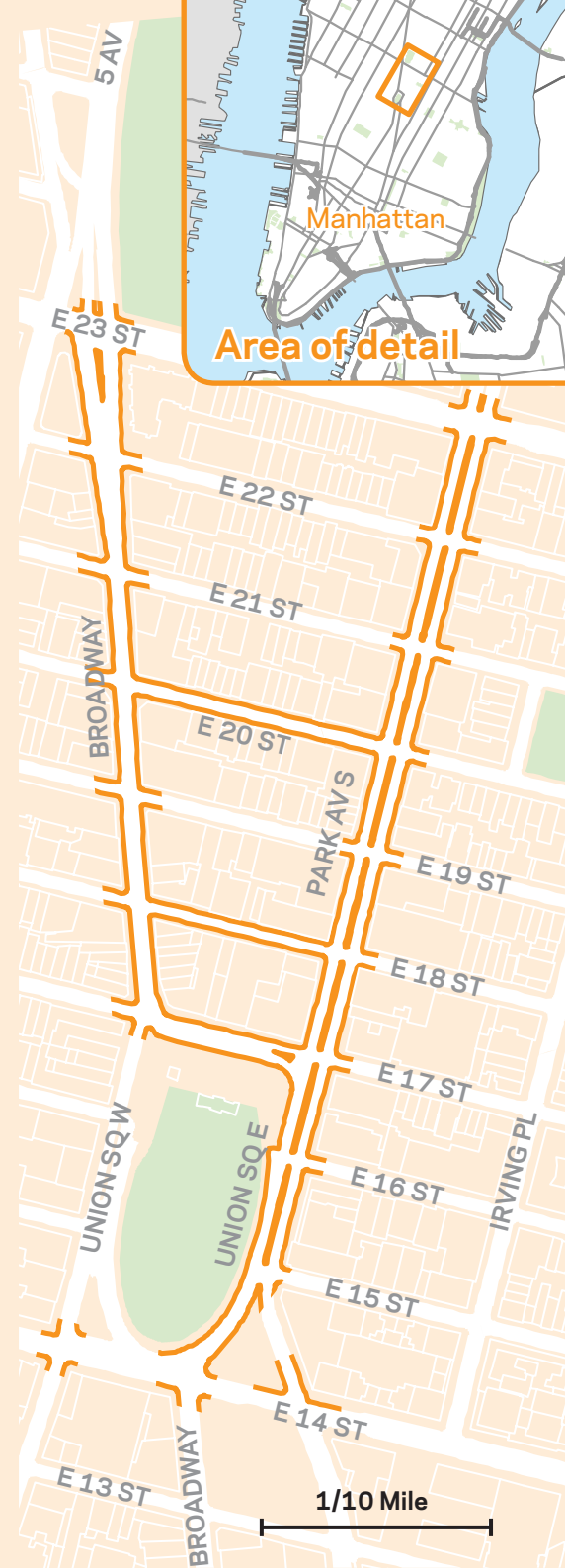
- The community had expressed concerns about safety at Broadway and East 17th Street for many years
- DOT presented an initial safety, greening, and traffic network modification plan to the Manhattan Community Board 5 (CB5) Transportation Committee in April 2010, and modified plans in May and June based on earlier comments
- The refined plan was presented to the Full CB5 Board in July where it voted to support the proposal, noting that DOT had responded to community concerns
- The Union Square Partnership became a strong partner, and is maintaining and programming the new public spaces
- DOT presented a post evaluation study to CB5's Transportation Committee in August 2011

Approach

- Converted East 17th Street from two-way to westbound-only between Union Square West and Park Avenue South
- Eliminated head-on condition at Union Square West at 14th Street by forcing southbound and northbound traffic right-turn only
- Reduced Broadway from two travel lanes to one travel lane plus turn-bays between 23rd Street and 18th Street
- Added pedestrian safety islands between Madison and Union Squares on Broadway
- Positioned the bicycle path between the sidewalk and "floating parking"
- Clarified travel lanes on Union Square East and added southbound bicycle lane between East 17th Street and East 14th Street
- Created pedestrian plaza space in reclaimed roadbed

Results

- 65% reduction in crashes involving motor vehicle occupants and 26% reduction in total crashes involving injuries within the project area
- Percentage of vehicles traveling over the speed limit decreased by 16% on Broadway
- Bicycle ridership on Broadway increased by 18% on weekdays and 49% on weekends
- 74% of respondents to a recent Union Square Partnership survey reported that they like the new traffic configuration
- 20% of store owners and managers report that the plaza spaces have improved business and none have reported a negative impact



The project area is located in the Flatiron neighborhood of Manhattan bounded to the south by Union Square and Madison Square to the north. The land uses are predominantly high rise mixed-use with ground floor retail. The area is a major transportation hub with access to the L, N, Q, R, 4, 5 & 6 subway trains and the M1, 2, 3, 5, 14 and 23 bus lines.

Union Square, one of New York City's most important and historic public places, received safety and quality of life improvements during summer 2010. The changes not only addressed safety issues and enhanced public space in the area but they also completed a continuous corridor of improvements on Broadway that stretches to Columbus Circle.

Improving safety, mobility and economic vitality were the main goals while developing the new design which extends from East 23rd Street to East 14th Street on Broadway, Park Avenue South and Union Square West. The majority of changes were focused around East 17th Street and Broadway, a previously confusing intersection with a history of traffic safety issues. Working with the local Business Improvement District (BID), the Union Square Partnership, and the community, DOT proposed a major reconfiguration of the area that benefits residents, workers and visitors alike.

Project plans were presented to the community several times to explain the project and address issues raised by residents and business owners. DOT modified the initial plan to avoid diverting all southbound Broadway traffic onto 18th Street. Also, DOT kept Union Square West open to traffic at the behest of local business owners. Other changes made in response to the community included shifting the Broadway bicycle facility to the west curb and making improvements to 18th Street to ensure it could handle any traffic diverted from East 17th Street that would no longer have an eastbound movement.

After many meetings with elected officials, business owners, the BID and the CB5 Transportation Committee, the Full CB5 Board voted to endorse the plan with the caveat that DOT make adjustments as needed to ensure the project's success and present a project update within a year of implementation. Adhering to these requests, several small changes were made post-implementation: one at the request of the New York City Fire Department and one the Flatiron BID. Also, DOT reported the results of the project to CB5 in August 2011.

In order to meet the goals of the project a wide range of factors were considered, ultimately resulting in the following changes to the streets around Union Square. Prior to implementation, southbound Broadway traffic was diverted onto East 17th Street eastbound then continued on Park Avenue South which became Union Square East until Broadway began again at East 14th Street. The project removed the eastbound traffic from East 17th Street allowing the signal phasing at Broadway to be simplified and crossing distances here and at Park Avenue South to be shortened, while giving more time to process westbound traffic on East 17th Street. The removal of the eastbound movement also provided space for a continuous sidewalk along the south curb of 17th Street in line with adjacent sidewalks. It also helped to reduce congestion for westbound traffic, and provided space for farmer's market truck parking off of the new plaza.

North of East 17th Street, Broadway's striped bicycle lane was converted to a parking protected path with landscaped pedestrian safety islands. The changes reduced speeding, provided safer pedestrian crossings and greened the corridor. New landscaped plaza spaces were created in the reclaimed roadbed on Broadway between East 18th and East 17th Streets. The unique needs of the four days a week Greenmarket were incorporated in the new plaza designs to ensure flexibility that accommodated daily use as well as public events and Union Square Partnership programming.

Improvements were also made to crosstown streets in the project area to ensure they would be able to handle diverted southbound Broadway traffic and to reduce congestion that pre-dated this project. These improvements included curb-side turn-lanes and modified parking regulations. Turn restrictions were implemented at various locations in the project area including left-turns off Park Avenue South to increase mobility and a new forced right-turn off of southbound Union Square West at East 14th Street eliminating a head-on condition.



17th Street between Union Square West and Park Avenue South was converted from two-way to one-way westbound. New sidewalk connections, a bike lane and farmers' market parking were added to improve safety, mobility and curb-side access.



A parking protected bicycle path and landscaped, pedestrian safety islands were added along Broadway between 23rd Street and 18th Street.

A comprehensive redesign dramatically reduced crashes, increased bike usage and improved business conditions.

The implementation evaluation study assessed traffic safety, mobility and public perception. Overall positive results were found. Most importantly safety for all users in the project area improved. Total crashes with injuries were reduced by 26% and crashes involving injuries to motor vehicle occupants decreased by 65%. Both declines represent statistically significant reductions in crashes and the number of crashes for both injury types was lower than any of the 10 prior years (for crash analysis methodology, see page 68). Crashes with pedestrian injuries went down by 10% when compared to the three years prior to implementation. Injuries to bicyclists decreased by 5% while bike riding rose 18% on weekdays and 49% on weekends.

DOT measured speeds on Broadway using a radar gun during off-peak hours to evaluate speeding. The number of motorists speeding during the off-peak time periods decreased. Before project implementation, 28% of users exceeded the 30-mph speed limit between East 20th and 19th Streets while after implementation only 12% exceeded the limit.

Taxi Global Positioning System (GPS) data indicated that travel speeds throughout the project area were not affected. Internal DOT travel time studies showed a slow down for users using East 23rd Street to Park Avenue South for southbound

travel to East 14th Street. Even though there was a 15% reduction in travel time along this route it still takes drivers less time to get to East 14th Street than it did prior to project implementation if the driver used the Broadway to 17th Street route.

Taxi GPS data also showed that pick-ups and drop offs in the area remained relatively unchanged, indicating that new traffic patterns have not impacted local businesses. In fact, 20% of businesses surveyed by the Union Square Partnership indicated that the new plaza spaces improved their business. None reported a negative effect. Additionally, 74% of all survey takers reported that they liked the new traffic configuration.

Overall the project fulfilled its goals of improving safety, mobility and economic vitality of the area.

Crashes with Injuries within Union Square Project Area

	Before* (three previous years)			After
Total Crashes with Injuries	62	71	66	48.8
Number of Crashes with Injuries to:				
Motor Vehicle Occupants	12	28	24	7.5
Pedestrians	34	28	28	27
Bicyclists	16	15	14	14.3

*Before columns show the crash history for each of the three years immediately prior to project implementation. After column shows number of crashes since implementation (through January 2012) at annual rate. See page 68 for further information on crash data source and analysis methodology. The sum of the three specific categories may not equal "Total Crashes with Injuries" because some crashes involved injuries in multiple categories.

Broadway Traffic Speeds 20th Street to 19th Street (Southbound)

	Before	After	% Change
Average Traffic Speeds (in m.p.h.)	27	25	-7%
Percentage of Vehicles Over the Speed Limit	28%	12%	-16%

Data collected between 7-9 a.m. and 8-10 p.m. on a weekday. Before data collected in July 2010. After data collected in October 2010.

Bike Volumes on Broadway Between 20th Street and 19th Street

	Before	After	% Change
Weekday	1,150	1,362	18%
Weekend	372	554	49%

Before data collected in June 2010. After data collected in July 2010. Volumes shown are for time period 7 a.m.-7 p.m.