Pedestrian Safety Action Plan

VISION ZERO

Manhattan

2015


FedEx

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VISION ZERO

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CYCLISTS
TO

Letter from the Mayor

Dear Friends,

Every life in New York City is precious. It is our responsibility, as residents, workers, and visitors of this great city, to save every life we can.

This administration made Vision Zero, and the elimination of traffic fatalities, a priority from day one. The fundamental message of Vision Zero is that death and injury on city streets is not acceptable, and that we will no longer regard severe crashes as inevitable. This is reflected in the Vision Zero Action Plan that set out directives for city agencies, including the New York City Department of Transportation, the New York Police Department, and the Taxi and Limousine Commission.

Traffic crashes can claim the lives of anyone in New York City. They kill people who drive and those who bike, but overwhelmingly, the deadly toll is highest for pedestrians. This Plan acknowledges this injustice toward pedestrians and the synergies that can be realized by improving pedestrian safety for overall traffic safety, well-being, and urban livability.

In close partnership with our community and advocacy groups and our families and friends of lost loved ones, we are dedicating ourselves to ending this epidemic. NYCDOT and NYPD representatives were out in our communities this past summer listening to us, preparing us for the changes that are taking place, and explaining how to be more conscious–and conscientious–street users. Meanwhile, we have been working to improve our collection and understanding of the data behind traffic fatalities, where the 'hot spots' are, and what can be done to erase them from the map. The Pedestrian Safety Action Plans help us do just that.

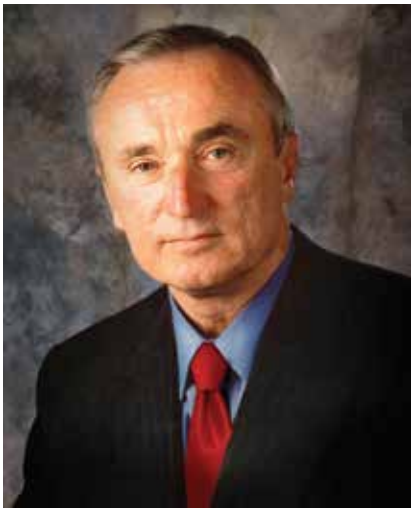
Our recent success in reducing the citywide speed limit to 25 MPH, redesigning intersections and corridors and increasing enforcement of the most dangerous driving behaviors are just some of the ways we are making our city's streets safer. The Pedestrian Safety Action Plans are the next step in achieving Vision Zero in your community.

New Yorkers deserve to feel safe on their streets. Thank you for your input into this process, together we will save lives.

Bill de Blasio
Mayor


SPEED
LIMIT
25
Canal St
SLOW ZONE
MULBERRY ST
摩比利街
ONE
WAY

Letter from the Commissioners



Dear fellow New Yorkers,

We are proud to bring you the Vision Zero Borough Pedestrian Safety Action Plans. These documents represent the highly detailed combination of DOT and NYPD crash data and analysis, over 10,000 online comments via the Vision Zero Public Input Map, and nine public pedestrian safety workshops across the five boroughs. These borough-specific plans outline our current progress and help define the next phase of Vision Zero.

The first year of Vision Zero in New York City proved successful; after two years of increases, the city experienced the lowest number of pedestrian fatalities since record keeping began in 1910. In 2014, the city lowered its speed limit to 25 MPH, completed over 50 major safety engineering projects, and expanded traffic enforcement dramatically, with speeding summons increasing 42% and failure-to-yield summons increasing 126%. DOT and NYPD partnered to form the Vision Zero Street Team, launching a series of two-phase, two-week campaigns focused on pedestrian safety. The first phase of the campaigns included distributing traffic safety literature to the public at collision-prone locations to promote traffic safety. These weeklong efforts to educate the public were then followed by a week of focused, safety-related enforcement to address persistent violations.

With the Borough Pedestrian Safety Action Plans, we will build on this success and continue to improve the way we monitor, design, and govern our streets. The Borough Priority Maps will serve as a guide for our agencies to systematically improve streets with the highest rates of pedestrian fatality and severe injury. By coordinating our planning, engineering, education, and enforcement efforts in these areas, DOT and NYPD can make significant progress toward the vision of eliminating pedestrian fatalities across the five boroughs.

Over the past 30 years, we have made tremendous progress in traffic safety. We have seen large decreases in the number of fatal crashes, including fatal pedestrian crashes. Motor vehicles, however, continue to seriously injure or kill a New Yorker about every two hours. Each of these tragedies compels us to come together and deliver a safer future for our city. There is plenty of work still ahead of us.

Polly Trottenberg
DOT Commissioner

William Bratton
NYPD Commissioner

Executive Summary
Manhattan Borough Profile

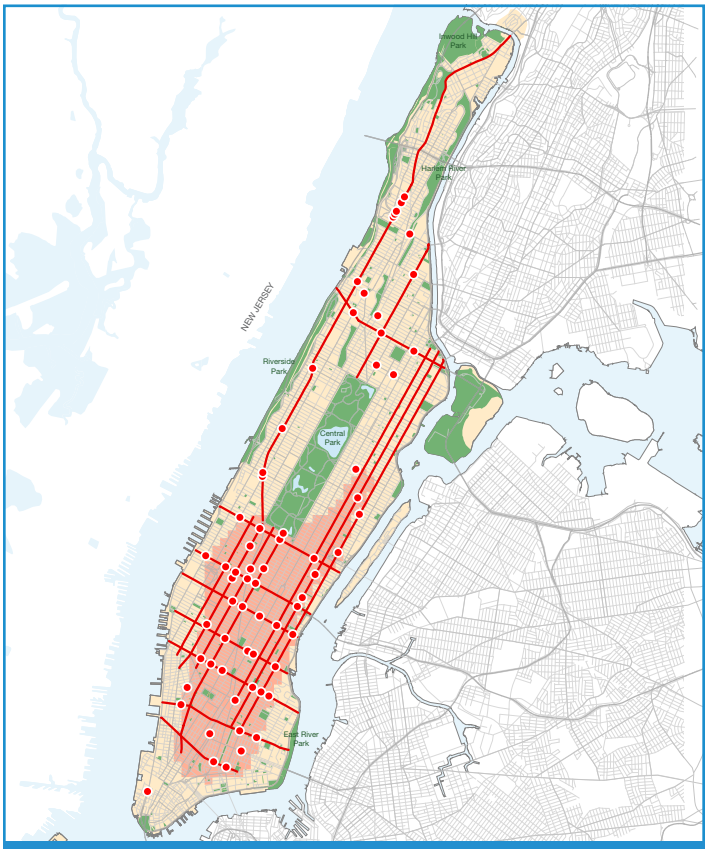
Findings

- Pedestrian fatalities in Manhattan have fallen by 60% in the past three decades
- Manhattan's pedestrian fatality rate is 2.1 fatalities per 100,000 residents, the highest of the five boroughs, but just 1.1 fatalities per 100,000, the lowest of the five boroughs, when taking into account the higher daytime population
- **Where**: Manhattan's pedestrian fatalities and severe injuries are most heavily concentrated below 59th Street
- **When**: Nighttime (9pm to midnight) pedestrian fatalities account for a greater share in Manhattan (21%) than in all New York City (15%)
- **Who**: In Manhattan, seniors account for only 14% of the borough's population but 41% of its pedestrian fatalities
- **What**: Trucks are involved in pedestrian fatalities in Manhattan at a far higher rate (25%) than in any other borough (12% for all NYC)
- **How**: Dangerous driver choices and dangerous pedestrian choices contributed equally to Manhattan's pedestrian fatalities (43% vs 43%)

Priority Corridors, Intersections, and Areas

	Share of Borough	Borough	% of Borough	Share of Ped KSI*	Total Ped KSI	% of Total Ped KSI	% of Total Ped Fatalities
Priority Corridors	17 corridors (56 miles)	490 miles	11%	815	1,615	50%	51%
Priority Intersections	66 intersections	3,728 intersections	2%	244	1,615	15%	12%
Priority Areas	6.0 sq miles	23 sq miles	26%	807	1,615	50%	41%
Combined Total	—	—	—	**1,129**	—	**70%**	**67%**

*Ped KSI: Pedestrians Killed or Severely Injured



Manhattan Priority Map

Priority Intersections

Priority Corridors

Priority Areas

Community Dialogue and Input

- 2,785 Manhattan pedestrian safety issues were shared and mapped digitally
- Failure to yield (23%) and speeding (14%) were the most frequently cited issues
- 74% of workshop attendees viewed wide arterial streets as the most important areas for pedestrian safety improvements
- 46% of issues shared fall outside of the Priority Corridors, Intersections, and Areas

Action Plan

Engineering and Planning

- Implement at least 50 Vision Zero safety engineering improvements annually at Priority Corridors, Intersections, and Areas citywide, informed by community input at project locations
- Significantly expand exclusive pedestrian crossing time on all Manhattan Priority Corridors by the end of 2017
- Add exclusive pedestrian crossing time to all feasible Manhattan Priority Intersections by the end of 2017
- Modify signal timing to reduce off-peak speeding on all feasible Manhattan Priority Corridors by the end of 2017
- Install expanded speed limit signage on all Manhattan Priority Corridors in 2015
- Drive community input and engagement at Manhattan Priority Corridors, Intersections, and Areas
- Consider area-wide policies for Midtown
- Continue to expand the off-hours delivery program to reduce truck conflicts with pedestrians
- Coordinate with MTA to ensure bus operations contribute to a safe pedestrian environment
- Expand a bicycle network in Manhattan that improves safety for all road users
- Proactively design for pedestrian safety in high-growth areas in Manhattan including locations in the *Housing New York* plan

Enforcement

- Implement the majority of speed cameras at Priority Corridors, Intersections, and Areas
- Focus enforcement and deploy dedicated resources to Manhattan NYPD precincts that overlap substantially with Priority Areas
- Prioritize targeted enforcement at Manhattan Priority Corridors, Intersections, and Areas annually
- Focus failure-to-yield enforcement on nighttime hours (9pm to midnight)
- Initiate a series of targeted truck enforcement blitzes to reduce failure to yield and keep large trucks on truck routes

Education and Awareness Campaigns

- Target child and senior safety education at Manhattan Priority Corridors and Areas
- Target Street Team outreach at Manhattan Priority Corridors, Intersections, and Areas

Why a Pedestrian Plan?

Pedestrian fatalities have grown as a share of all traffic fatalities

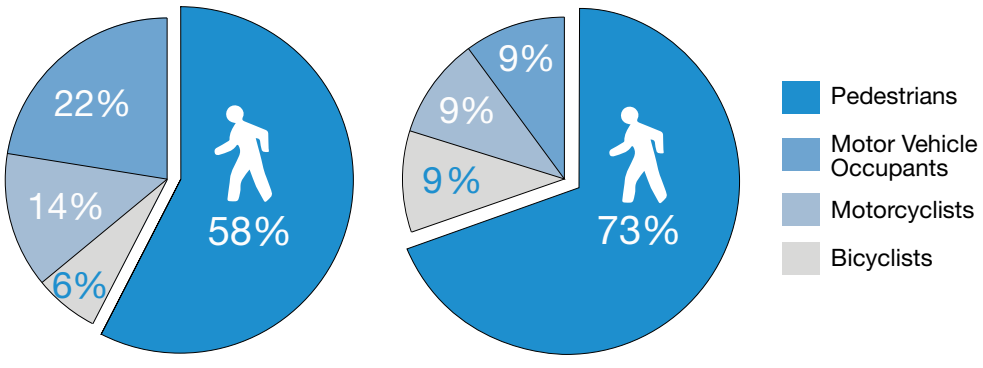
Between 2007 and 2013 pedestrian fatalities grew from 51% of all traffic fatalities to 58%

Vision Zero seeks to eliminate all deaths from traffic crashes regardless of whether on foot, bicycle, or inside a motor vehicle. This Borough Plan is one of 63 Vision Zero initiatives advancing that goal for all street users. Despite aggressive pedestrian-oriented street re-engineering between 2007 and 2013, citywide pedestrian fatalities have not declined. In fact, they increased in 2012 and 2013 while fatalities to other street users fell. Comparing the periods of 2005-2007 to 2011-2013, pedestrian fatalities actually rose by 2% while fatalities to all other users fell by 24%. At the same time, the pedestrian share of overall fatalities rose from 51% to 58%. Nationwide, pedestrians make up just 14% of all traffic fatalities.[1] In Manhattan, pedestrians are 73% of all fatalities.

The challenge of an aging city

Additionally, the baby-boom generation has begun to hit retirement age and New York City will soon experience a rapid growth of its senior citizen population. The city's seniors walk much more than those elsewhere in the United States, and their pedestrian fatality rate is four times that of younger New Yorkers. Without a focused strategy on pedestrian safety to address this need, New York City could potentially see an alarming rise in pedestrian fatalities.

Fatalities by Mode: Manhattan Compared to NYC, 2011-2013 Average, Rounded



	Pedestrian	Bicyclists	Motorcyclists	Motor Vehicle Occupants	Total
All NYC	157	17	37	61	272
Manhattan	34	4	4	4	46

Most pedestrian and cyclist fatalities and severe injuries occur in the same areas of NYC

Since 2007, fatalities of vulnerable road users increased by 1%, while fatalities of motor vehicle occupants fell by 37%

Pedestrian focus improves safety for all users

Street design based around pedestrian safety is also proven to make travel safer for other street users, including bicyclists and motor vehicle occupants. Slower vehicle speeds, less chaotic, better organized traffic, and narrower vehicle lanes make streets safer (and easier to use) for cyclists. A pedestrian oriented project on Delancey Street in Manhattan contributed to a 20% reduction in injuries to cyclists. Similarly, projects and programs aimed at improving safety for pedestrians often improve motor vehicle safety as well. The pedestrian focused re-design of the Madison Square/Flatiron area contributed to a 46% reduction in injuries among motor vehicle occupants. The areas of New York City that accounted for 71% of pedestrians killed or severely injured (KSI) also accounted for 66% of cyclist KSI. Safety interventions at these locations can address safety concerns for both groups of street users.

A comprehensive strategy addressing all modes

New York City will need to go beyond the actions in this plan to address all traffic fatalities, particularly for vulnerable road users: the pedestrians, bicyclists, and motorcyclists that use the streets without the protection of a closed vehicle. These vulnerable road users account for the vast majority (78%) of New York City's traffic fatalities. Again, comparing 2005-2007 to 2011-2013, vulnerable road user fatalities increased by 1%, while fatalities of motor vehicles occupants fell by 37%. In other words, the entire decline in traffic fatalities between 2007 and 2013 came from reductions in fatalities of drivers and passengers inside motor vehicles. Furthermore, there is significant overlap between the high-crash locations for pedestrian and cyclists.

For bicyclists, DOT will work with the New York City Department of Health and NYPD in 2015 to develop a comprehensive update to its 2006 Bicyclist Fatality and Serious Injuries study, highlighting current issues in cyclist safety in New York City and developing new recommendations. DOT is aggressively seeking to increase the amount of cycling in the city by expanding the bike network where it can generate the most ridership and expanding its Citi Bike bike sharing program. More cyclists using city streets has been shown to have a "safety in numbers" effect; while cycling in New York City has approximately quadrupled since 2000, serious injuries have remained low, representing a 75% decrease in the average risk of a serious injury. Also, DOT will release their first motorcyclist safety study in 2015, which will analyze New York City motorcycle crashes and will also put forward a safety action plan. Finally, New Yorkers with disabilities are also pedestrians. As DOT designs safer streets for all vulnerable users, the agency will continue to work with advocacy groups and members of the disabled community to ensure that the City continues to address the needs of New Yorkers with disabilities. A safer city is a more accessible City.

About This Plan

This strategic pedestrian safety plan for Manhattan is one of five borough-level plans created to advance the goals laid out in the 2014 *Vision Zero Action Plan*

Beginning with a borough wide community dialogue and input process, DOT and NYPD worked with community members to identify local pedestrian safety issues. By re-engineering these high-crash streets and intersections, employing strategic enforcement practices, and stepping up education efforts, DOT and NYPD can effectively change the way we perceive city streets and deter the most dangerous behaviors, such as speeding and failure to yield to pedestrians.

This Manhattan Pedestrian Safety Action Plan is one of a set of five documents, each of which analyzes the unique conditions of one New York City borough and recommends actions to address the borough's specific challenges to pedestrian safety. This plan pinpoints the conditions and characteristics of Manhattan's pedestrian fatalities and severe injuries; it also identifies corridors, intersections, and areas that disproportionately account for Manhattan's pedestrian fatalities and severe injuries and strategically prioritizes them for safety interventions. Finally, the Manhattan Pedestrian Safety Action Plan recommends a series of actions to alter the physical and behavioral conditions on Manhattan's streets that lead to pedestrian fatality and injury.

A Five Borough Approach

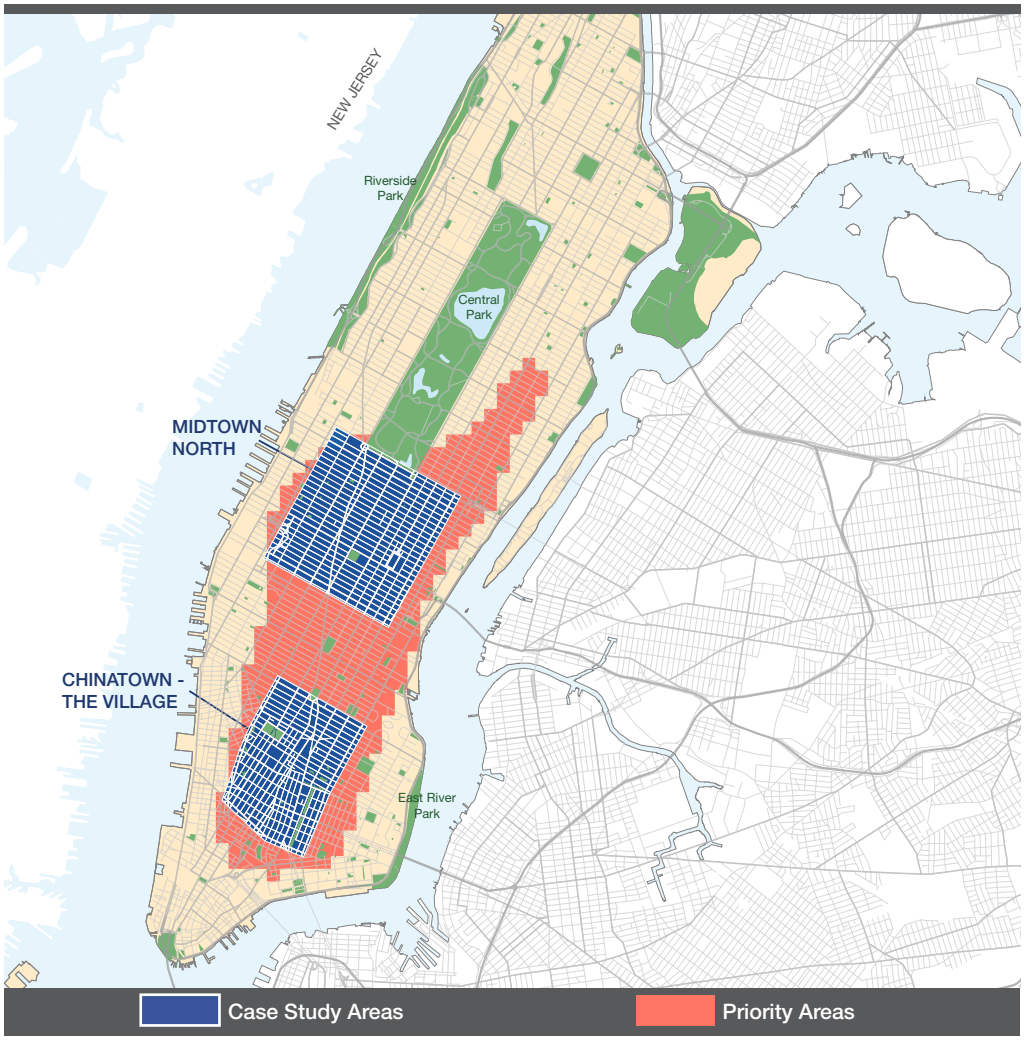
In each borough, heat maps were created to highlight locations with the highest density of pedestrian fatalities and severe injuries. These maps were then used to create borough Priority Maps. Both maps were built on borough crash data, rather than citywide data. Since each borough has a different overall number and density of pedestrian crashes, each borough map is drawn at a different scale. For example, the "red" we observe in the Staten Island maps represents far fewer crashes than the "red" in the Manhattan maps. DOT and NYPD are tasked with addressing road safety for all residents in all boroughs, so creating five separate action plans was the most practical way to develop a robust set of focused, effective actions for each borough.

Case Studies

Two case studies have been selected to represent particular communities that are identified as pedestrian safety priority locations in Manhattan. They enable a more localized look at data, issues, and recommendations that may be difficult to contextualize on a borough-wide level. These case studies will be visited in each section of this plan. The locations (shown in the map below) are:

- Midtown North
- Chinatown-The Village

The case studies also explore location-specific comments received from community members via the Vision Zero Public Input Map and Pedestrian Safety Workshops.



Manhattan Borough Profile

Manhattan is the densest borough

Manhattan's population nearly doubles each weekday

80% of households in Manhattan do not own a car

1.

The birthplace of New York City, designed generations before the advent of the automobile, Manhattan is laid out on a street system that is highly conducive to dense pedestrian volumes. While the earliest urban neighborhoods of Lower Manhattan consist of irregular, curving streets, the majority of the borough is laid out on a tightly organized grid system (created in 1811) in which compact, east-west streets intersect more widely spaced, north-south avenues at right angles. These famous wide avenues were laid out before the arrival of both the street car and the automobile.

The relatively short blocks of this intuitive street system, in conjunction with densely packed mixed-used development, foster the highly walkable urban environment that is the signature of the borough. It is the most densely populated county in the United States and one of the most densely populated urban areas on earth.

Accordingly, more so than any other borough, Manhattan is a borough of pedestrians. One in five Manhattan commuters walk to work, while nearly six out of ten take public transit (typically combined with two trips on foot). Density of transit is extremely high in Manhattan, the only borough where the subway network is comprehensive, with nearly all residents living within walking distance of the subway. Because of these factors and also because of the borough's very limited parking supply, nearly 80% of Manhattan households do not own a car. Moreover, while all other boroughs see their populations decline during the daytime on weekdays, due to high volumes of commuters and tourists, Manhattan's population nearly doubles, vastly increasing the borough's pedestrian activity.

However, the sheer volume of pedestrian trips in neighborhoods across the borough increases the likelihood of conflict between pedestrians and vehicles. This tendency becomes particularly evident in Manhattan's most highly congested corridors (e.g., 42nd Street) and busiest neighborhoods (e.g., Midtown), where pedestrian fatalities and severe injuries are most densely concentrated. Most of Manhattan's 1.5 million weekday commuters are clustered in these areas and nearly all arrive via public transit, creating a huge density of daytime pedestrians in the middle of the island.[2] As a result, pedestrians make up nearly three quarters of all of Manhattan's traffic fatalities (compared to 58% across the City as a whole).

On average, 6 pedestrians are killed or severely injured in Manhattan each week

Manhattan Pedestrian Safety Findings

The Manhattan Borough Profile combines demographic data with crash and fatality data to provide an overview and contextual narrative for Manhattan. Demographic information was collected from the US Census Bureau. Crash and fatality data used throughout this report is based on 2011-2013 fatality data (NYPD/NYCDOT) and 2009-2013 Killed or Severely Injured (KSI) data (DMV/NYSDOT).[3] Estimates of pedestrian activity are based on transit ridership, which is generally proportional.

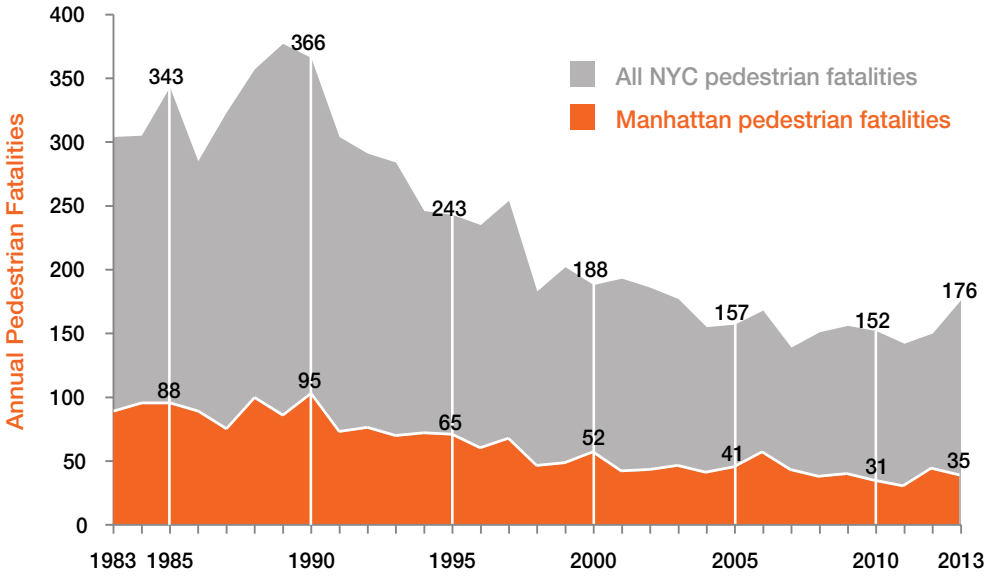
As the most pedestrian-oriented place in New York City—if not the entire United States—it is critical that people can get around Manhattan safely on foot. However, though the number of pedestrian fatalities in Manhattan has declined by 60% over the past three decades, on average more than 300 pedestrians are still killed or severely injured on Manhattan streets each year.[4]

With an average of 34 pedestrian deaths each year, and a population significantly lower than Brooklyn or Queens, Manhattan suffers the highest per-capita pedestrian fatality rate of the five boroughs, with 2.1 pedestrian fatalities per 100,000 residents. However, when taking into account its substantially higher daytime population, Manhattan actually has the lowest per-capita pedestrian fatality rate of the five boroughs (1.1 per 100,000 people during the day).

Manhattan pedestrian fatalities have decreased by 60% over the past 30 years

Applied strategically to high-crash locations across Manhattan, Vision Zero pedestrian safety planning can make Manhattan's streets safer for the millions of pedestrians who rely on them every day.

Pedestrian Fatalities, 1983-2013



Manhattan's pedestrian fatality rate is the highest of all boroughs

Pedestrian Fatalities, 2011-2013, Rounded

Borough	Average Annual Fatalities	Percent Pedestrian Fatalities	Pedestrian Fatality Rate/100,000
Bronx	27	54%	1.91
Brooklyn	46	55%	1.79
Manhattan	34	73%	2.10
Queens	43	54%	1.92
Staten Island	7	48%	1.41
All NYC	157	58%	1.88

Where?

Neighborhoods

As the Manhattan Heat Map shows (page 5), Manhattan's pedestrian KSI crashes are most densely concentrated below 59th Street, particularly inland from the rivers in Midtown, Chinatown, SoHo, and Greenwich Village. These areas account for some of the highest concentrations of pedestrian activity in the City, vastly increasing the likelihood of conflict between pedestrians and vehicles. Often overcrowded sidewalks serve millions of locals, commuters, and tourists from across the globe, and these groups may not always share consistent rules and norms for street usage. However, the area above 59th Street still contains many intersections and corridors (e.g., Broadway, 3rd Avenue, and 125th Street) with high numbers of pedestrian KSI crashes, especially when examined from a citywide perspective. It is important to note that the overall density of Manhattan's pedestrian KSI crashes (as compared to the rest of New York City) is high throughout the borough. Relatively "quiet" neighborhoods such as Harlem, Hamilton Heights, and Washington Heights have pedestrian KSI crash rates similar to most of the high-crash sections of other boroughs. These areas only appear low-crash when compared to Manhattan south of 59th Street.

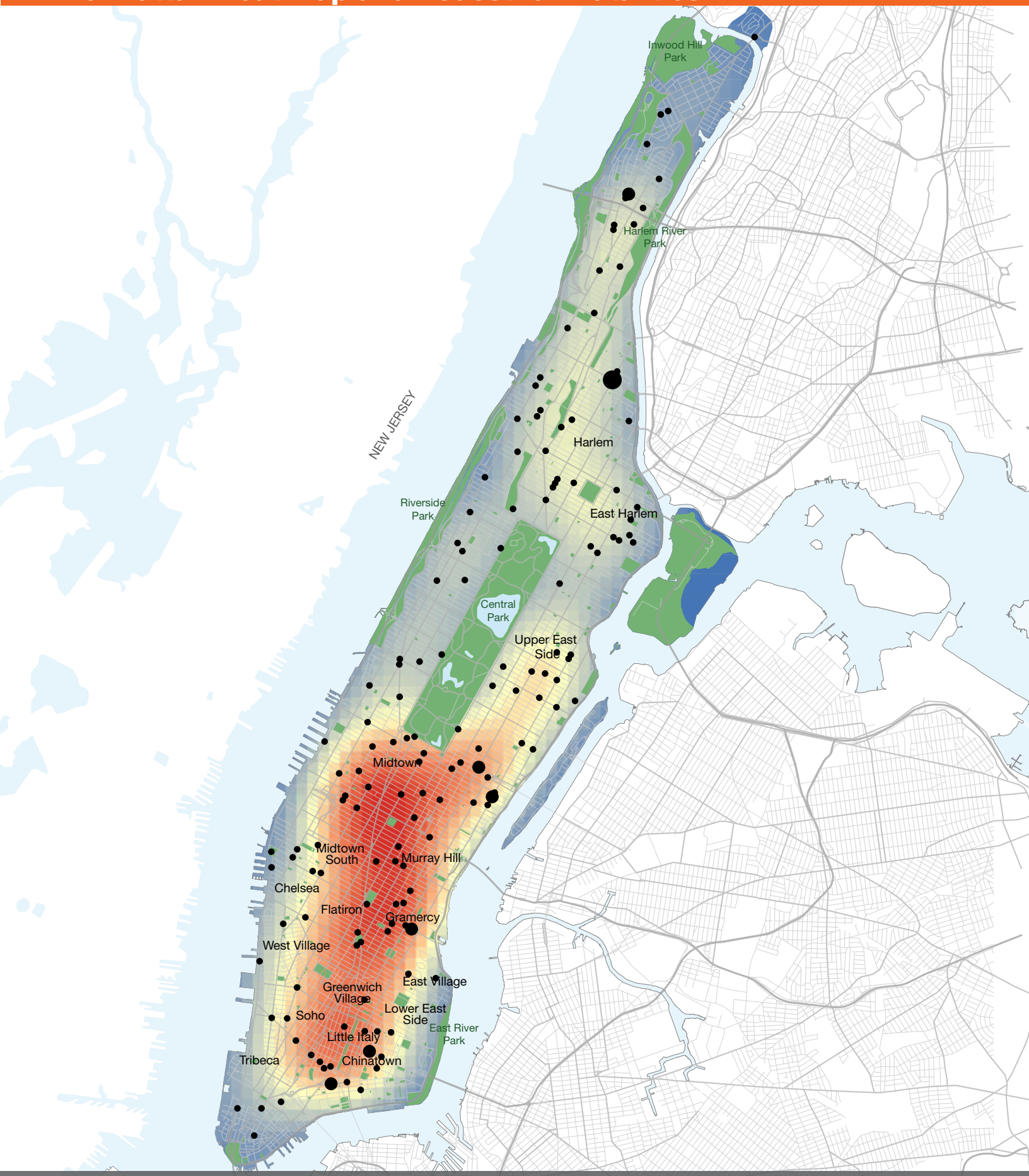
Arterials comprise 30% of Manhattan's streets but 69% of its pedestrian fatalities

Arterial Streets

Though comprising just 30% of Manhattan's total street network, 69% of the borough's pedestrian fatalities occur on arterial roadways (125th Street, 34th Street, and Broadway are all examples of arterials in Manhattan). Pedestrian fatalities are particularly common at intersections along arterial streets (51% versus 44% citywide). Compared to local streets, arterials are typically wider, carry higher volumes of both vehicles and pedestrians, accommodate faster speeds, and have more complex traffic patterns. As a result, arterial streets tend to create particularly high-crash pedestrian environments and can be challenging to improve.

However, many safety improvements can be made. Achieving slower speeds by reducing speed limits and increasing enforcement reduces the risk of injury. Larger-scale engineering projects can provide pedestrians with shorter crossing distances and safer routes to cross the street, while more effectively managing all traffic movements. Leading pedestrian intervals (LPIs)–which give pedestrians a head start to cross wide arterial streets at signalized intersections–may have a particularly powerful impact in Manhattan, where conflicts between turning vehicles and crowds of crossing pedestrians are common. 71% of Manhattan's intersections are signalized, compared to just 25% citywide.

Manhattan Heat Map and Pedestrian Fatalities



Approximate pedestrian KSI per sq mile per year:

0 — 31

Fatalities (2009-2013): 1 2 3

Pedestrian Killed or Severely Injured Kernel Density

A smoothing technique for spatial data where the expected density is calculated for every location on the map with the underlying principal that closer KSI are more heavily weighted than farther KSI. Each location is then assigned a color based on the expected density of KSI, with red showing the highest density of KSI and blue showing the lowest. It is useful for identifying and presenting hotspots.

Severe injury data: NYSDOT/NYDMV Accident Database | Fatality data: NYSDOT/NYPD Reconciled Fatality Database

When?

Nighttime (9 pm to midnight) pedestrian fatalities account for a greater share in Manhattan (21%) than in all New York City (15%).

Off-Peak

Just 18% of Manhattan pedestrian weekday fatalities occur during peak times (7–10am and 4–7pm), although 40% of Manhattan's pedestrian travel occurs during these periods. This discrepancy may be related to rush hour congestion, which constrains vehicle speeds, as well as the "safety in numbers" phenomenon, whereby motorists make safer choices in the presence of higher volumes of pedestrians. The impact of "safety in numbers" may be particularly powerful in Manhattan; not only is it the only borough whose population increases during work days, but Manhattan also has the highest share of peak-hour commuting (74%).

82%

of Manhattan's pedestrian weekday fatalities occur during non-rush hour periods

27% of Manhattan's pedestrian fatalities occur from 12-6am

Overnight

In Manhattan, 27% of all pedestrian fatalities occurred overnight (12–6am). This is especially striking considering that less than 3% of pedestrian activity takes place during these hours. Although street lighting in Manhattan is generally robust, pedestrians are still less visible during these hours. Most importantly, low overnight traffic volumes allow vehicles to accelerate rapidly and reach high speeds. Specific overnight signal timing can help regulate speeds when few vehicles are on the road.

Who?

Pedestrians

Nationwide, motor vehicle occupants comprise the vast majority of traffic fatalities, with pedestrians accounting for about 14% (2010–2012). However, in New York City, where walking is much more common, the figure is significantly higher, making up 58% of traffic fatalities. This trend is particularly evident in high-density, walking-centric Manhattan, where pedestrians constitute 73% of all traffic deaths (the highest share of the five boroughs by a wide margin).

Visitors and Commuters

Each day, the population of Manhattan nearly doubles as visitors and commuters enter the borough. These pedestrians from outside Manhattan also represent a large portion of the borough's pedestrian fatalities. Between 2009 and 2011, 39% of all pedestrians killed in traffic in Manhattan were not residents of the borough.[5]

Seniors make up 14% of Manhattan's population but 41% of its pedestrian fatalities

Seniors

Seniors (aged 65 and older) represent just 14% of Manhattan's population but 41% of its pedestrian fatalities, the highest percentage of all of the five boroughs. This can be partially explained by the large share seniors constitute of Manhattan's population (a higher percentage than any other borough) and also by the borough's extremely low motor vehicle ownership rate; seniors who have never owned a car are likely to keep walking as they grow older, rather than rely more on vehicles as they age. Seniors often require more time and protection when crossing the road than younger pedestrians, and they are also more susceptible to fatal and severe injuries when struck by a vehicle. Through its Safe Streets for Seniors initiative, DOT visits senior centers and community boards to get local feedback on senior pedestrian issues. DOT also implements mitigation measures to improve safety for seniors and other pedestrians, such as extending pedestrian crossing times to accommodate slower walking speeds and making engineering improvements to create safer pedestrian crossings.

Vision Zero means improving street safety for all road users, especially the most vulnerable ones. While seniors benefit in general from DOT's broad efforts to engineer safer streets, DOT also specifically engages with these populations through special safety education programs.

The share of pedestrian fatalities involving trucks is twice the city average

49%

of Manhattan's pedestrian fatalities involve passenger vehicles

What?

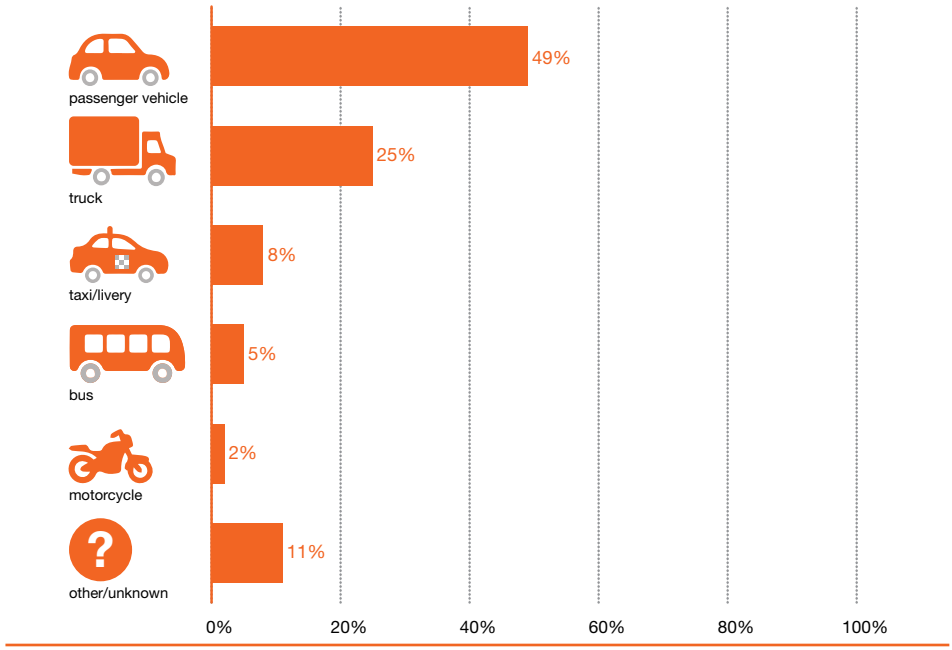
Trucks

Citywide, trucks are involved in just 12% of pedestrian fatalities, while the cars, SUVs, and minivans driven by ordinary New Yorkers, account for the vast majority of pedestrian deaths. However, Manhattan is the commercial core of the metropolitan region and nearly every major north/south avenue is a truck route. Here, commuters and residents experience a much higher amount of day-to-day interactions with truck traffic and the share of truck vs pedestrian fatalities is more than twice as high (25%) as all New York City. To reduce the risk of conflict between pedestrians and trucks, DOT can introduce new regulations that limit truck deliveries and double parking during busy daytime hours and incentivize overnight deliveries.

Taxis

Though taxis account for only a small share (2%) of pedestrian fatalities in New York City as a whole, in Manhattan, where taxis are more prevalent than in any other borough, they are involved in 8% of pedestrian fatalities. To curb the risk that taxis may pose to pedestrians, in May 2014 the New York City Council passed Cooper's Law (Local Law 27 of 2014), which allows TLC to suspend a taxi driver's license when a crash occurs resulting in a critical injury or death and a summons is issued to the driver for a traffic-related violation or crime. Additionally, the TLC license could be permanently revoked if the driver is convicted of such traffic-related violation or crime and it is determined that the violation or crime was a cause of the critical injury or death.

Percent of Pedestrian Fatalities by Mode, Manhattan



How?

Dangerous Choices

Across the City, dangerous driver choices—including speeding, failing to yield to pedestrians, red-light running, distracted driving, and driving under the influence—are by far the most frequent contributors to pedestrian fatalities. More often than not, pedestrians are killed while obeying traffic laws.

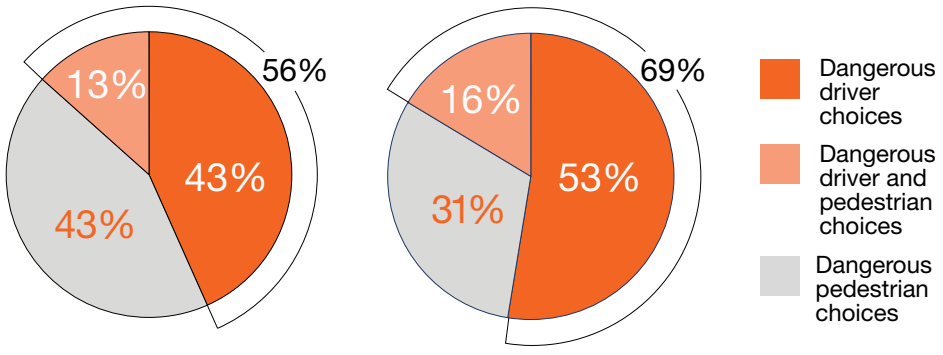
However, Manhattan is the only borough in which dangerous driver and pedestrian choices contribute to an equal share of pedestrian deaths. Dangerous driver choices and dangerous pedestrian choices contributed equally to Manhattan's pedestrian fatalities (43% vs 43%). Frequent and pervasive vehicle congestion in Manhattan, in conjunction with dense pedestrian volumes, tends to limit motorists' ability to reach the driving speeds that are potentially fatal for pedestrians; speeding contributes to pedestrian fatalities at roughly half the rate in Manhattan as in the City overall. Also, Manhattan has a lower rate of hit-and-run pedestrian fatalities than citywide (16% vs 23%), most likely due to its high percentage of professional drivers (e.g., taxi, bus, and delivery drivers) using the streets.

On the other hand, tight competition for limited pedestrian space and double parking may lead to riskier pedestrian behaviors–such as walking in the street and emerging from behind parked cars–than may be seen in other boroughs with less crowded sidewalks. However, the percentage of pedestrians killed or severely injured crossing against the signal in Manhattan was almost identical to citywide (21% vs 20%) and fewer pedestrians in Manhattan were killed crossing midblock than citywide (26% vs 31%).

Dangerous driver choices and dangerous pedestrian choices contributed equally to Manhattan's pedestrian fatalities (43% vs 43%)

The City is working to create a culture of safety through education and public information campaigns that are changing the citywide dialogue on traffic injuries and fatalities. However, street design and traffic enforcement that directly encourage safer choices (or discourage dangerous choices) are also key to reaching Vision Zero. Street design can help to lower vehicle speeds, eliminate conflicts between pedestrians and vehicles, reduce unpredictable traffic movements, and guide road users toward more responsible choices. More visible, targeted, and consistent enforcement reminds street users of the laws of the road and provides a powerful disincentive to risk-taking.

Driver & Pedestrian Choices, Manhattan compared to NYC



CASE STUDY: Midtown North

Home to most of the City's tallest buildings, busiest transit hubs, and iconic attractions, Midtown Manhattan, stretching roughly from 34th street to 59th Street, generates pedestrian activity at all hours of the day and night. However, as evidenced in the Manhattan Heat Map (page 5), Midtown also accounts for one of the densest concentrations of pedestrian KSI in Manhattan. Between 2009 and 2013, there were 2,684 crashes in the area involving pedestrians, resulting in 252 severe injuries and 23 fatalities.

As New York's largest central business district, Midtown's demographics differ significantly from the rest of Manhattan, and the city as a whole. It encompasses a residential population that is more racially homogeneous than Manhattan's, with roughly three out of four residents identifying as white. The average household size in Midtown is notably smaller, which translates to fewer children residing in the area. Moreover, while Midtown's unemployment rate is comparable to Manhattan's, Midtown is home to higher earners than the borough as a whole, accounting for a median household income roughly 25% higher than the borough's.

2,684

Total crashes involving pedestrians between 2009-2013

These crashes resulted in 275 pedestrian KSI:

252
severe injuries

23
fatalities

92%

of all traffic fatalities were pedestrians

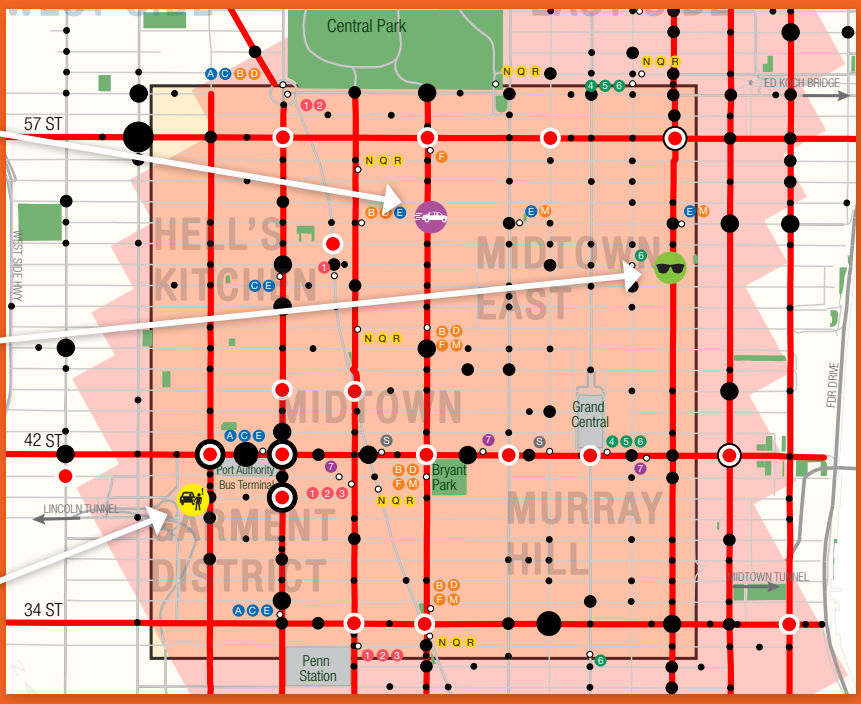
Community Input

Speeding @ 53rd St & 6th Ave: "The upper section of 6th Avenue, between 48th Street and 59th Street is like a speedway, with cars zooming...Very dangerous!"

Poor Visibility @ 51st St & 3rd Ave: "Large vehicles parked right up to the crosswalk make it difficult to see up 51st street without walking into possible oncoming traffic."

Failure to Yield @ 40th St & 9th Ave: "Vehicles turning onto 40th St. often don't yield to pedestrians or to cyclists. There should be separate traffic lights for turning vehicles, as there are on Ninth Avenue below 30th St."

Midtown North Case Study Area



Priority Corridors | Priority Intersections | Priority Areas | Subway Stations | Pedestrian KSI 1 2 3 4 5+

Black outline represents the approximate boundary of the case study area.

CASE STUDY: Midtown North

Pedestrian Safety

Midtown is one of the most transit- and pedestrian-oriented neighborhoods in the United States. Virtually every subway line passes through Midtown, while commuter bus and rail lines converge in one of Midtown's three transit terminals (Penn Station, Grand Central Station, and the Port Authority Bus Terminal), leaving most travelers to continue their journeys on foot. Among neighborhood residents, about four out of ten walk to work (compared to 10% citywide), and an equal share takes transit. Consequently, very few Midtown households own a car.

Street space is at a premium in Midtown and conflicts between competing users (cars, pedestrians, cyclists, buses, delivery trucks, food carts, bike-share stations, parked vehicles, etc.) are common. Midtown attracts Manhattanites, outer-borough and out-of-state commuters, and tourists from across the globe, accommodating diverse expectations and customs of how streets are used. Resulting from these characteristics and demographics is an overwhelming street environment that too often leads to severe and fatal pedestrian crashes.

Community Dialogue and Input

The residential population of Midtown West has increased substantially in recent years. Consequently, arterials, such as 9th Avenue began transforming from industrial uses to restaurants, shops, and other uses that attract pedestrians. This created an environment where pedestrians have to compete with vehicle traffic generated by the remaining industrial buildings and the new retail establishments. Residents felt that this exacerbated the area's existing traffic and pedestrian safety issues. In mid-2005, local residents and community leaders formed The Clinton/Hell's Kitchen Pedestrian Safety Coalition (CHEKPEDS), a community-based organization with the goal of reclaiming 9th Avenue from automobile traffic to restore safety and vitality. CHEKPEDS worked closely with local residents, businesses, and organizations to determine community

priorities and goals for 9th Avenue and published findings in a comprehensive report entitled 9th Avenue Renaissance. With these objectives in mind, through direct advocacy with elected officials, Community Board 4, local businesses, and other civic groups, CHEKPEDS has achieved a number of community safety goals including the installation of pedestrian refuge islands, leading pedestrian intervals (LPIs), speed bumps, and Citi Bike stations in parking spaces (not on sidewalks).[6]

DOT Safety Improvements

In recent years, DOT has worked to create more dedicated spaces for Midtown Manhattan's diversity of street users in order to calm traffic, improve the pedestrian and cyclist environment, and create a safer experience for all.

Green Light for Midtown

Pedestrians injuries fell by 24% throughout the project area

Midtown Broadway (before)

Midtown Broadway (after)

total injuries
↓31%

"Finally, with Vision Zero pedestrian safety will be the overarching goal in redesigning the most dangerous intersections."

—CHEKPEDS

Green Light for Midtown

- While Broadway runs the entire length of Manhattan, its diagonal path through Midtown creates unconventional intersections, which invite conflict between pedestrians and vehicles.
- In 2009, DOT launched Green Light for Midtown to tackle the pedestrian safety issues along Broadway, while simultaneously adding open space, improving mobility, and enhancing quality of life along the corridor.
- By closing sections of Broadway to vehicular traffic, DOT shortened pedestrian crossing distances; simplified intersections; organized traffic better; and developed distinct street space for vehicles, pedestrians, and cyclists by creating pedestrianized streets, plazas, and bike lanes.
- Throughout the entire project area–including portions of Broadway, 6th Avenue, and 7th Avenue–pedestrian injuries were 24% lower after implementation. Times Square and Herald Square experienced large safety improvements, with declines in pedestrian injuries of 33% and 26% respectively. In addition, total injuries declined by 31%, with an even larger decrease (47%) in injuries to motor vehicle occupants.[7]

Priority Corridors, Intersections, and Areas

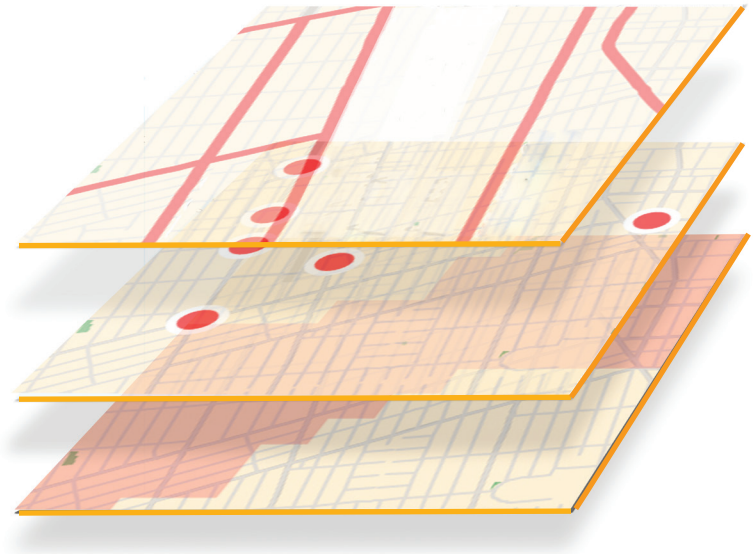
2.

Manhattan has nearly 500 miles of roadway and more than 3,700 intersections. Since resources are always finite, it is necessary for New York City to focus its safety efforts on a reasonable number of high-crash locations that demonstrate a need for focused interventions. Using pedestrian KSI data from the last five available years (2009-2013), DOT developed a process for selecting Priority Corridors, Priority Intersections, and Priority Areas. These locations account for 67% of Manhattan's total pedestrian fatalities.

Pedestrian KSI data was employed in this analysis for two reasons. First, a pedestrian who has been severely injured typically departs the crash scene in an ambulance and often experiences life-changing injuries (e.g., loss of mobility, brain function, limbs). A comprehensive street safety program must address these types of pedestrian injuries as well, not just fatalities. Second, severe injuries are more numerous and less randomly dispersed than traffic fatalities. Thus, severe injuries are more useful and reliable in terms of ranking one corridor, intersection or area.

67%

of Manhattan's pedestrian fatalities occur on Priority Corridors, at Priority Intersections, or in Priority Areas

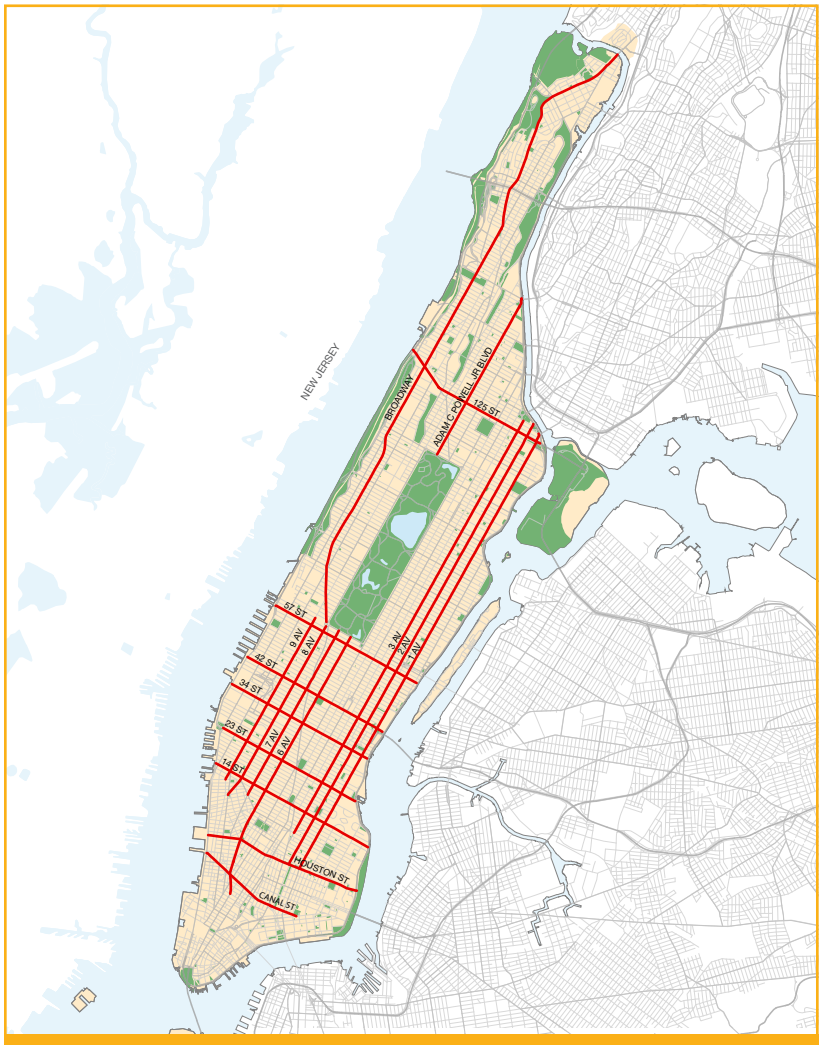


Priority Corridors

Prioritizing corridors (streets measuring at least one mile in length) reflects the fact that pedestrian KSI crashes are concentrated on particular streets (69% of Manhattan pedestrian fatalities are on arterials) and that strings of intersections along certain streets often exhibit similar safety concerns and should be considered together. In addition, an intersection-only analysis would not account for the large share (30%) of Manhattan pedestrian fatalities that occurs midblock.

To determine the Priority Corridors, all corridors in Manhattan were ranked on a pedestrian KSI per-mile basis. Corridors were selected from the top of this list until the cumulative number of KSI reached half of the borough's total. Together, Manhattan's 17 Priority Corridors constitute 11% of Manhattan's total street network but account for 50% of the borough's total pedestrian KSI. See appendix for a complete list of the Priority Corridors.

50% of Manhattan's pedestrian KSI occur on just 11% of the borough's total street mileage



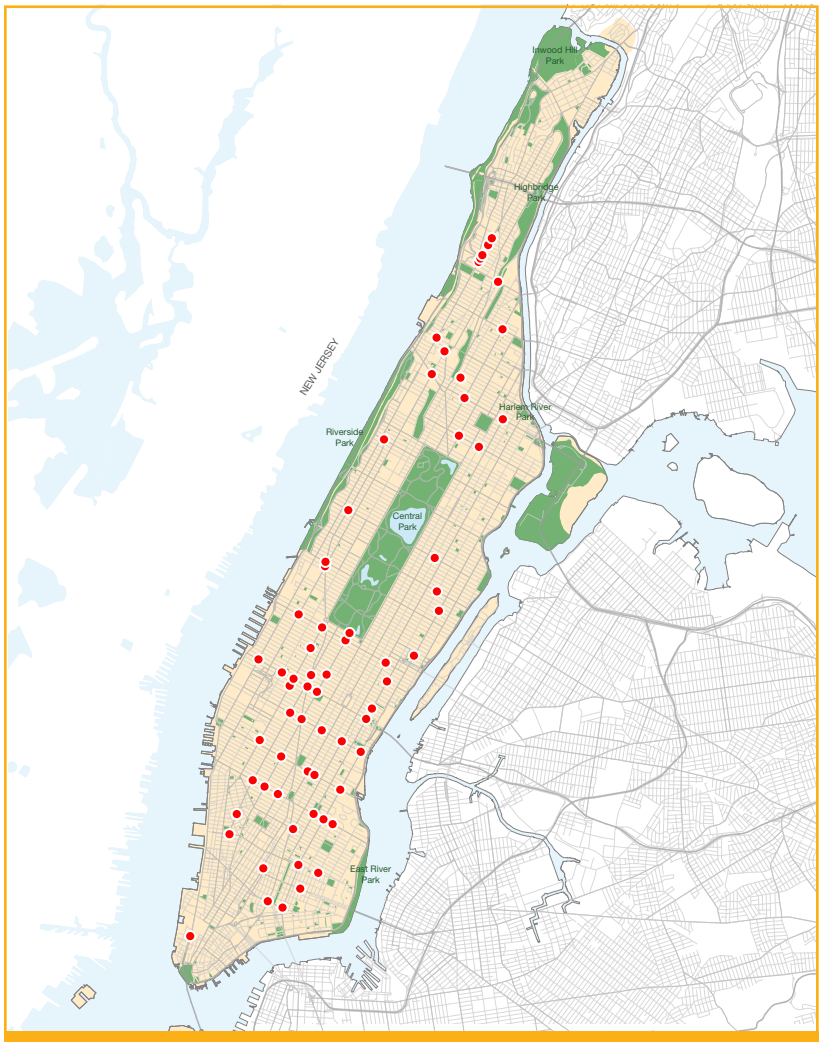
Priority Corridors

Priority Intersections

In order to identify which of Manhattan's more than 3,700 intersections have the highest need and greatest potential safety gains, DOT used an approach similar to the Priority Corridor process. DOT selected the intersections with the highest number of pedestrian KSI that cumulatively account for 15% of the borough's total pedestrian KSI. This is a lower share than that used for corridors and areas because crashes involving fatal or severe injuries to a pedestrian are spread out widely among more than 900 intersections. Not only would such a large number of intersections be impractical to address in the scope of one plan, but at the vast majority of these intersections, only one pedestrian KSI occurs in the data, which may not indicate a systematic need for intervention.

This methodology yielded 66 Priority Intersections across Manhattan. Together, these intersections account for 15% of Manhattan's pedestrian KSI but represent less than 2% of all its intersections. See appendix for a complete list of the Priority Intersections.

15% of Manhattan's KSI occurred at less than 2% of the borough's intersections



Priority Intersections

Priority Areas

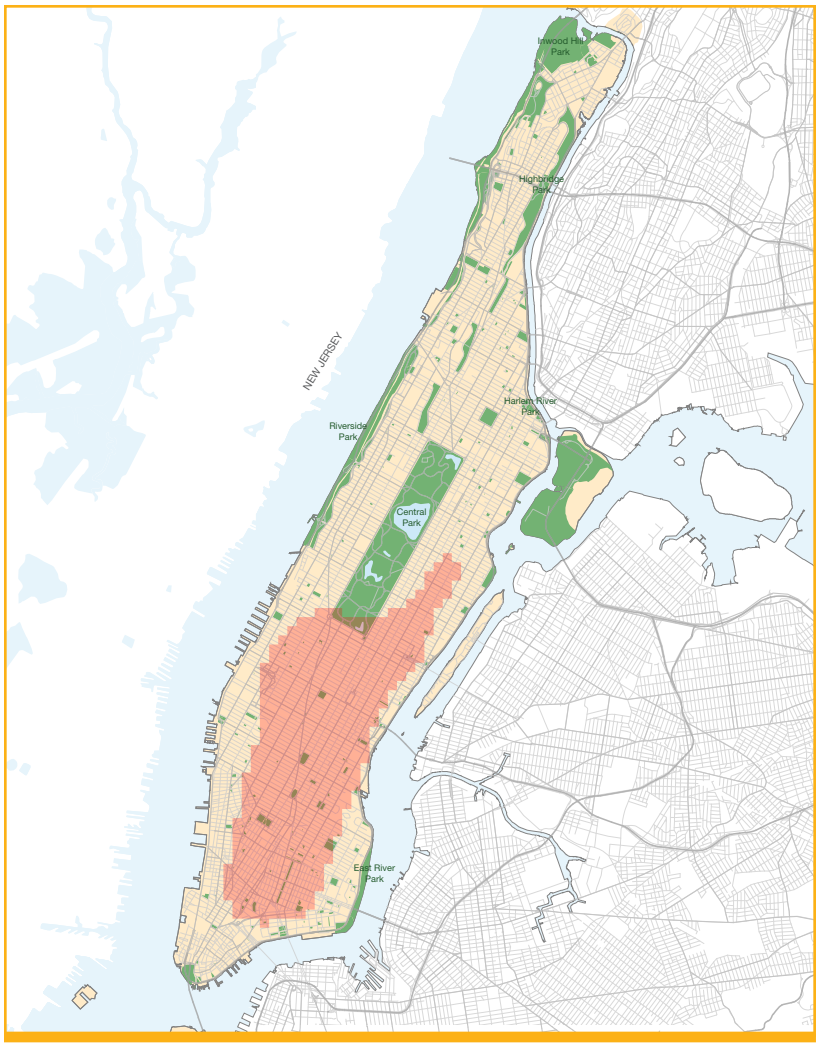
There are 6 square miles of Priority Areas in Manhattan

50%

of Manhattan's pedestrian KSI occur in just 26% of the borough's total land area

Some of the safety issues throughout Manhattan occur systematically at an area-wide level and are not confined to a single intersection or street. To account for these areas, the pedestrian KSI crash dataset was transformed into a kernel density map—or heat map—which indicates where the density of these crashes is highest. The Priority Areas were determined by identifying the "hottest" areas on the map that, when combined, account for half of all of pedestrian KSI in the borough.

In total there are 6 square miles of Priority Areas in Manhattan. Although these areas contain 50% of all pedestrian KSI in the borough, they constitute just 26% of the borough's land area.

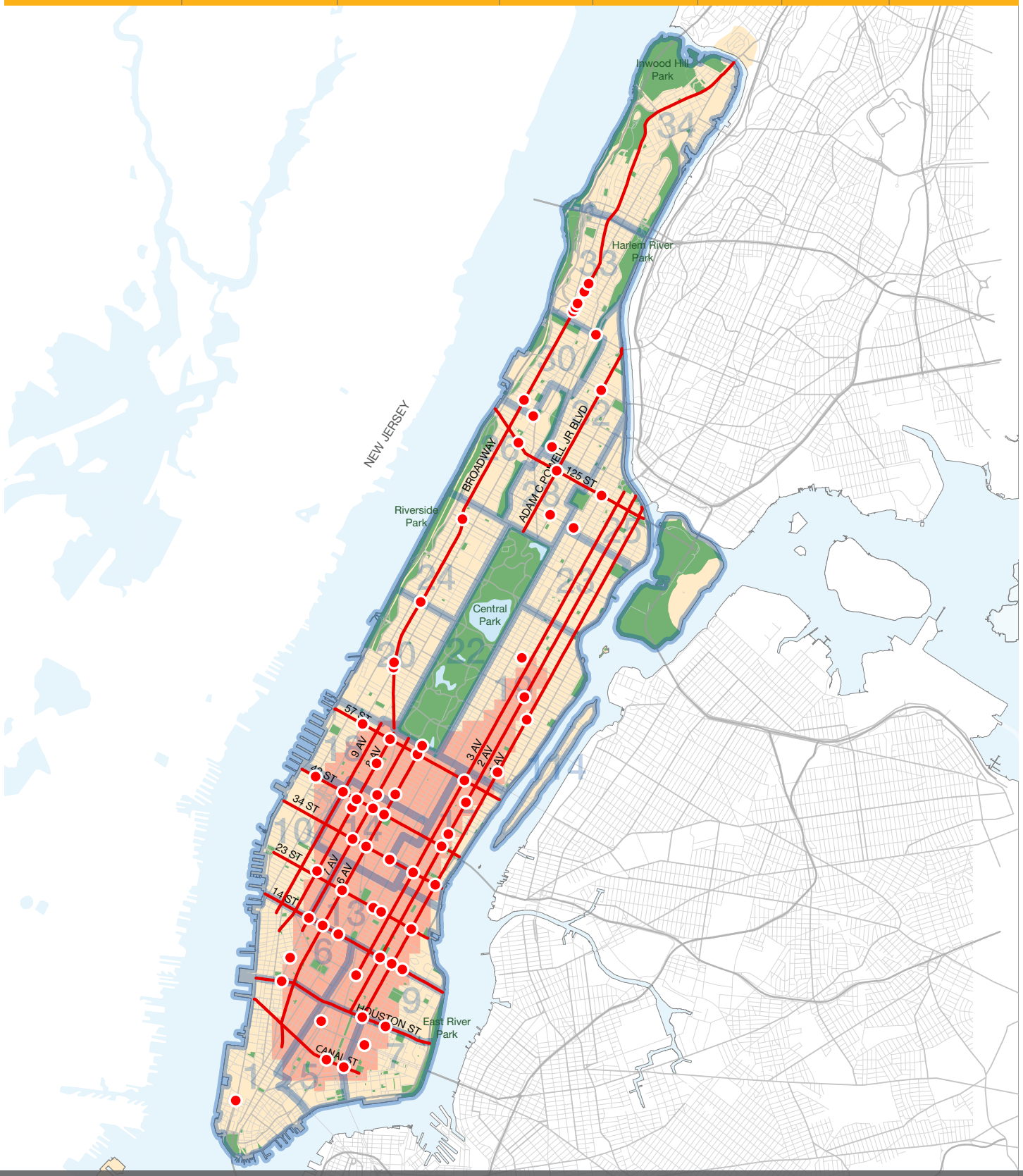


Priority Areas

The combined map of Priority Corridors, Intersections, and Areas covers 70% of pedestrian KSI in Manhattan, and shows where DOT and NYPD interventions are needed most. This map will serve as a guide to where engineering, enforcement, and education measures will be most effective at reducing pedestrian fatalities and severe injuries.

Manhattan Priority Map

	Share of Borough	Borough	% of Borough	Share of Ped KSI*	Total Ped KSI	% of Total Ped KSI	% of Total Ped Fatalities
Priority Corridors	17 corridors (56 miles)	490 miles	11%	815	1,615	50%	51%
Priority Intersections	66 intersections	3,728 intersections	2%	244	1,615	15%	12%
Priority Areas	6.0 sq miles	23 sq miles	26%	807	1,615	50%	41%
Combined Total	—	—	—	**1,129**	—	**70%**	**67%**



NYSDOT/NYDMV Accident Database 2009-2013

CASE STUDY: Chinatown-The Village

The Chinatown-The Village study area is bounded by 14th Street, Allen Street, Canal Street, and 6th Avenue. With a dense residential population, and popular shopping and nightlife destinations, most of the area experiences high pedestrian volumes at all hours of the day and night. This area also accounts for one of the densest concentrations of pedestrian KSI in Manhattan. Between 2009 and 2013, there were 1,273 crashes in the area involving pedestrians, resulting in 171 severe injuries and 10 fatalities.

A diverse population resides within the Chinatown-The Village area. Nearly one-third of the area's residents are foreign-born, the majority of whom emigrated from Asia (mostly China) and live in Chinatown. While the area's median age is slightly younger than Manhattan's overall, it is rather polarized by age group; some sections, such as the environs of New York University, are home to an unusually high percentage of young adults (aged 18–24), while others, such as the section of Chinatown around the Manhattan Bridge, are home to a disproportionately high share of senior citizens over 65 years of age.

1,273

Total crashes involving pedestrians between 2009-2013

These crashes resulted in 181 pedestrian KSI:

171
severe injuries

10
fatalities

71%

of all traffic fatalities were pedestrians

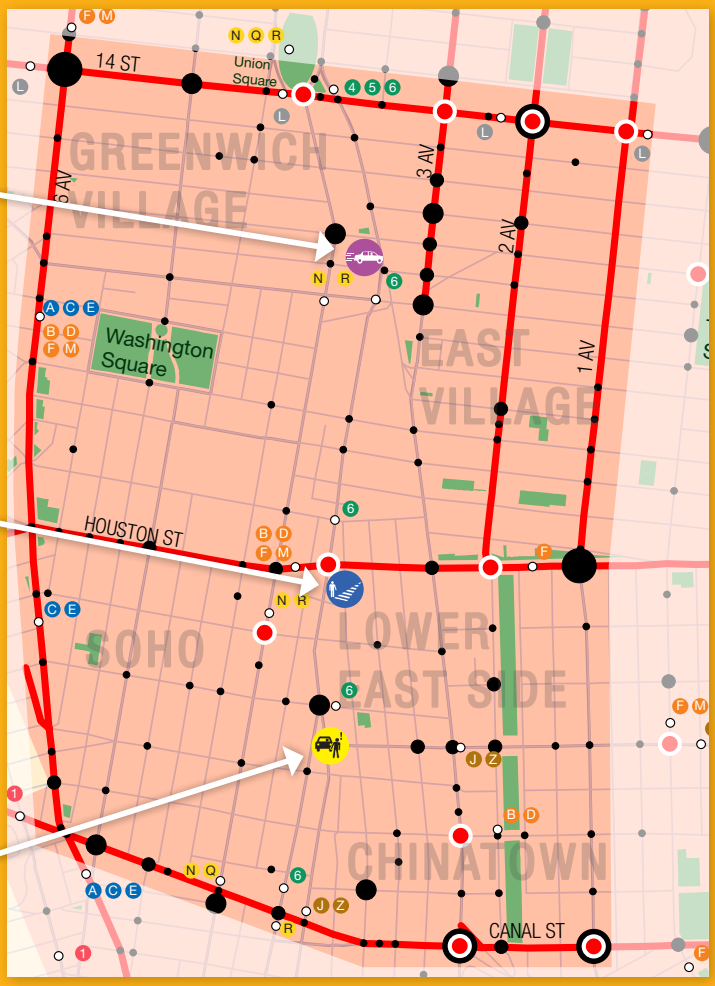
Community Input

Speeding @ 9th St & 4th Ave: "At the north side of this intersection there is currently a painted area that seems intended to direct traffic. It doesn't seem drivers pay much attention to this paint. They also seem to speed onto this section of road. Perhaps a pedestrian refuge that extended through the crosswalk would raise the visibility of this painted road area, slow cars down and provide a place for pedestrians to wait while they navigate this long crossing."

Long Distance to Cross @ Houston & Mulberry: "Not nearly enough time to cross. I can barely make it across Houston in this vicinity walking pretty fast. An older or disabled citizen will probably avoid the [cross]ing altogether."

Failure to Yield @ Centre & Kenmare: "Cars turning right from Centre Street onto Kenmare Street do not yield to pedestrians. The problem is compounded when vehicles make right turns from the left lane (cutting off drivers in the right lane). In this situation, the drivers often become distracted and try to "beat" each other to make the turn, ignoring pedestrians who are in the crosswalk."

Chinatown-The Village Case Study Area



Priority Corridors | Priority Intersections | Priority Areas | Subway Stations | Pedestrian KSI 1 2 3 4 5+

White outline represents the approximate boundary of the case study area.

CASE STUDY: Chinatown-The Village

Pedestrian Safety

Public transportation and walking are essential parts of daily life for most of the area's residents, with the vast majority getting around by transit or on foot. In fact, more than 80% of households do not even own a vehicle, and less than 10% drive to work. Thus, street safety for pedestrians is critical.

However, according to the Vision Zero Public Input Map, pedestrians report a competitive street environment with motorists often disregarding the pedestrian's right of way, particularly on the major east-west arterials (Canal Street, Delancey Street, Houston Street, and 14th Street). Many of the area's extremely wide and often confusing intersections—such as Houston Street and Broadway or Delancey Street and Bowery—pose difficult crossing opportunities for pedestrians, while motorists are frequently seen speeding and running red lights. Double parking is seen as a commonplace infraction across the area while prompting unpredictable vehicle movements, blocking pedestrian visibility of oncoming traffic, and obstructing safe bicycle movement through designated bike lanes.

Community Dialogue and Input

Manhattan's Chinatown is a true marketplace with a vibrant street life. However, with sidewalks packed with vendors and streets clogged with both parked and moving vehicles, pedestrians are often afforded limited space to safely move about the neighborhood. To address space management issues on Chinatown streets, DOT partnered with the Chinese Consolidated Benevolent Association (CCBA) and the Asian American Federation (AAF) to undertake the Chinatown Curbside Management Study (CCMS).

The CCMS relied heavily on innovative community outreach strategies in order to understand the unique needs of Chinatown pedestrians. For instance, in addition to interactive public meetings, DOT held mobile workshops (with translation services provided by the local organization Asian Americans for Equality) in neighborhood parks, in which passersby provided feedback regarding the highest-need locations for parking and street improvements. DOT also assembled an advisory coalition of local stakeholders and residents to offer technical experts a deeper understanding of community needs.

DOT Safety Improvements

Throughout Lower Manhattan, DOT has worked to calm traffic through the introduction of additional pedestrian spaces and bike lanes. Through an array of traffic-calming projects, DOT has better organized traffic flow, improved pedestrian safety, and enhanced quality of life for communities across the area.

Allen/Pike Streets

Pedestrian injuries declined by 14% while all injury crashes declined by 18%

"Thanks to Council Member Margaret Chin, the Mayor's Office and NYC DOT, new slow speed zones and pedestrian safety measures have been implemented throughout our district to save lives."

—Wellington Chen, Chinatown Partnership

Allen/Pike Streets (before)

Allen/Pike Streets (after)

Allen/Pike Streets

In the three years following implementation, crashes with injuries declined by 18%.

- Allen and Pike Streets form a wide, two-way, median-separated arterial that cuts through the Lower East Side and Chinatown, neighborhoods with high pedestrian volumes and large senior populations but minimal public space or pedestrian infrastructure.
- To better organize traffic, shorten crossing distances, and create a safer and more pleasant pedestrian and cycling experience, DOT and the Parks Department transformed two segments of the once crumbling central median into an attractive pedestrian walkway and physically separated bike path.
- DOT closed four low-volume intersections to vehicular traffic to create pedestrian-only plazas complete with street furniture and landscaping. In addition, the corridor is used by the M15 SBS route, making it a truly 'complete street.'
- This design improved safety for all street users on Allen and Pike Streets: in the three years following implementation, all injury crashes declined by 18%, while pedestrian injuries dropped by 14% and cyclist injuries by 31%.

Community Dialogue and Input

3.

Achieving Vision Zero, and truly making New York City's streets safe for all users, hinges upon an active dialogue between the public and the City. While DOT utilized quantitative crash data to determine Manhattan's highest-priority corridors, intersections, and geographic areas, qualitative feedback from community members deeply enriches DOT's understanding of these priority locations. Feedback collected online and via public workshops produced a geographic database of community safety concerns that will allow DOT to design high-quality Vision Zero safety projects that incorporate local knowledge of pedestrian issues.

DOT took a proactive and innovative approach to community engagement to yield a robust dataset of local expertise. This section details the public outreach activities DOT conducted to gather feedback from Manhattan residents.

Facing image:
Vision Zero Pedestrian Safety Workshop, West Village

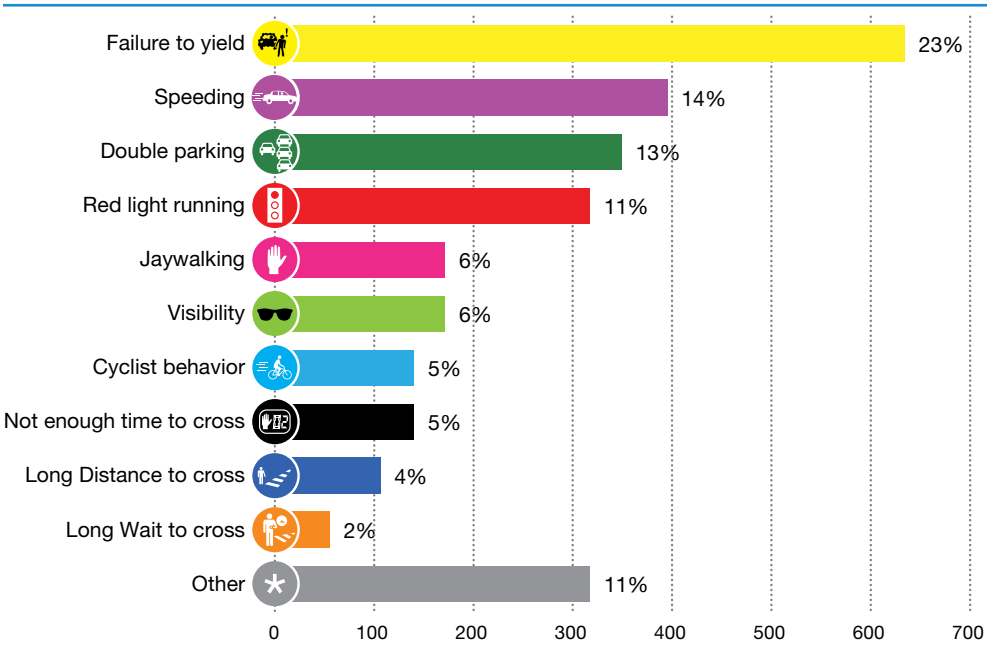
Vision Zero Public Input Map

Manhattan residents shared almost 2,800 pedestrian safety issues

The interactive, online Vision Zero Public Input Map offered New Yorkers the opportunity to identify pedestrian safety issues at any time, from anywhere (even mobile devices). To report a pedestrian safety issue, users panned across a map of New York City and zoomed to an intersection of concern. Clicking on the intersection caused a Google Street View image of the selected intersection to appear. Users then chose one of ten safety issue icons, dragged it to the precise location where the issue occurs, and provided comments detailing their issue (see figure below). Other users could then share additional comments about, or voice their agreement with, existing comments.

37%

of issues shared on the website focus on speeding and failure to yield to pedestrians



The breakdown of issues by category logged on the Vision Zero website closely reflected that of the issues recorded at the Pedestrian Safety Workshops.

Website Findings

"We need to effect a cultural shift in this city, so that people realize [drivers] are handling a deadly weapon when they're on the streets, and they handle it with appropriate care."

– Mark Levine, Council Member

At the close of the three-month online comment period (May–July 2014), location-specific issues collected at the Pedestrian Safety Workshops were geocoded and added to the online map, producing a unified geographic database of residents' pedestrian safety concerns (see Manhattan Community Input Map, page 35). In total, users shared 2,785 issues at 1,264 unique locations (representing nearly 35% of intersections) across Manhattan—an average of 2.2 issues per location. Moreover, Manhattan residents not only engaged with DOT on these issues but with each other as well: users commented on others' issues 845 times and gave clicks of support 1,933 times.

Manhattan is the only borough in which more users expressed concern over drivers failing to yield to pedestrians (23%) than speeding (14%). Consequently, working toward Vision Zero in Manhattan, DOT will pay special consideration to increased enforcement of reckless driving at Priority Intersections, as well as interventions designed to curb speeding such as Slow Zones and speed bumps.

Manhattan residents commented on about 35% of all Manhattan's intersections

Public Events

Spanish public outreach flyer used to advertise the workshops

From March through June 2014, DOT, NYPD, elected officials, and civic organizations hosted six official Vision Zero public events across Manhattan. In the form of participatory workshops and town hall meetings, these events were designed to gather local pedestrian safety concerns, launch an ongoing dialogue about street safety in Manhattan, and instill the message that pedestrian fatalities are preventable and not the inevitable feature of city life they are often perceived to be.

Town Halls

Kicking off Vision Zero outreach in Manhattan, a group of Manhattan's elected officials hosted a town hall meeting at John Jay College on March 26th. Before a packed auditorium of nearly 250 attendees, a panel including DOT Commissioner Polly Trottenberg, City Council Speaker Melissa Mark-Viverito, Manhattan Borough President Gale Brewer, City Council Transportation Chair Ydanis Rodriguez, Councilmember Margaret Chin, NYPD Chief of Transportation Thomas Chan, and other local representatives listened to community members' concerns regarding pedestrian safety in their neighborhoods. Specific topics discussed included escalated enforcement and penalties for unsafe driving, heightened monitoring of Taxi and Limousine Commission (TLC) livery vehicles, an expansion of audible crossing signals for vision-impaired pedestrians, and wider public education of street safety. Similar town-hall meetings were hosted by Senator Liz Krueger and several Manhattan community boards.

"Vision Zero is not simply about achieving a numerical goal; it really is looking at changing our perspective … about pedestrian safety."

— Melissa Mark-Viverito, City Council Speaker

100+

participants attended public workshops in Manhattan

Pedestrian Safety Workshops

Concurrent with the town hall meetings, DOT hosted two public workshops in Manhattan, which drew about 100 participants. As both workshops were designed to address borough-wide safety concerns, their geographically dispersed locations—Our Lady of Pompeii Church in Greenwich Village and the Alhambra Ballroom in Harlem— were selected to attract the widest possible audience. DOT also worked with 75 elected officials, community boards, and civic groups to promote the workshops to a broad range of constituencies across the borough. Spanish and Mandarin interpreters were also available to allow a diverse cross section of Manhattan residents to participate in the workshops.

Discussion of pedestrian safety concerns at the Alhambra Ballroom

Workshop Format

At tables of approximately eight people—including two DOT staff members and one NYPD officer—a DOT facilitator made a brief presentation on Vision Zero safety strategies then led a group discussion around pedestrian safety issues in Manhattan. Next, participants visited a mapping station, where, using ten distinct stickers (which corresponded to the ten issue icons on the Vision Zero Public Input Map), they pinpointed precise locations where pedestrian safety issues occur around Manhattan (see page 35). Participants then recorded these issues and locations on worksheets, which DOT staff collected at the conclusion of the workshop. Finally, participants completed a survey designed to gather both general and specific pedestrian safety concerns and to evaluate DOT's public outreach strategies.

Half of workshop attendees think red light and speed cameras should be used more to combat aggressive driving

Workshop attendees log safety issues at Our Lady of Pompeii Church

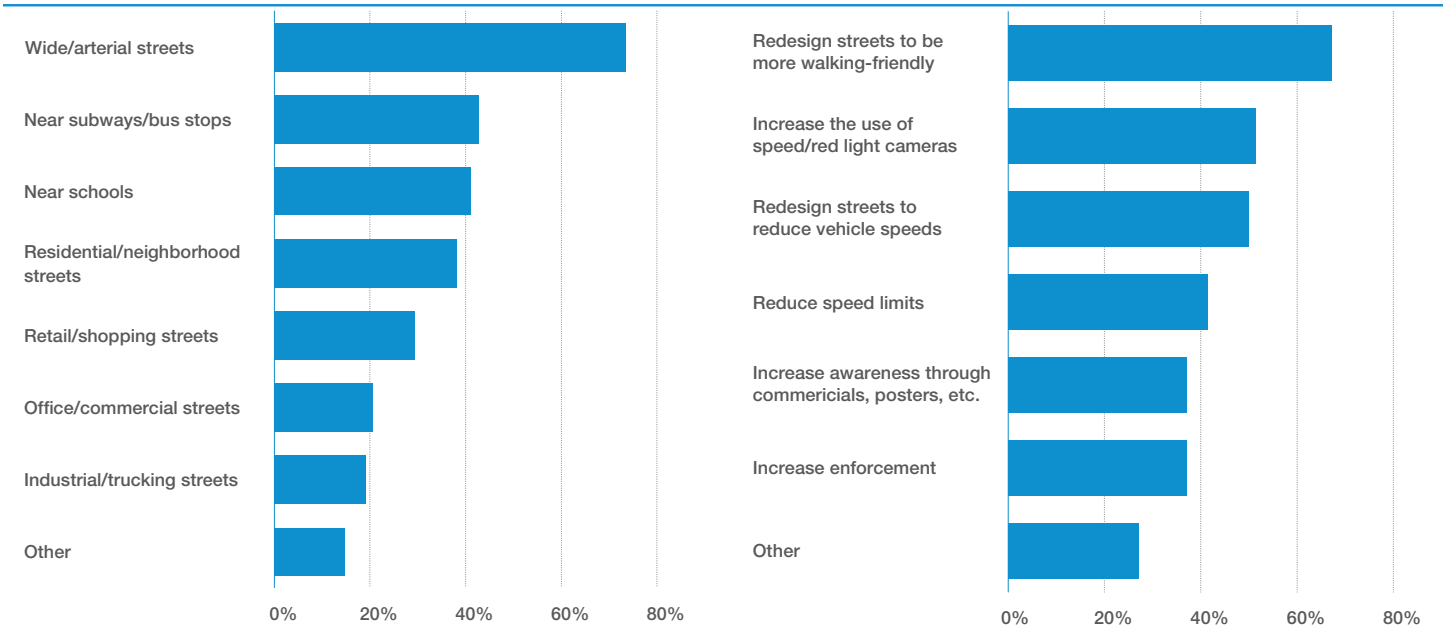
67%

of workshop attendees view making streets more pedestrian friendly as one of the most important strategies for achieving Vision Zero

Workshop Findings

Consistent with the Vision Zero website findings for Manhattan, feedback from the group discussions, worksheets, and surveys shows that aggressive driving behaviors, such as speeding and failure to yield, are the issues of greatest concern to residents. More than 75% of participants rated these issues as problematic and about 50% said they were “major problems” in Manhattan.

Participants stressed the importance of a wide array of measures to help combat these dangerous behaviors including redesigning streets to make them more pedestrian-friendly (67%) and to reduce motorist speeds (50%), as well as increasing the usage of speeding and red light cameras (51%), particularly on wide arterial streets and near transit stops and schools.



Types of locations and interventions workshop attendees would like DOT/NYPD to focus on in the Manhattan, by frequency.

Community Input Influencing Design

46%

of shared issues fall outside of Priority Corridors, Intersections, and Areas

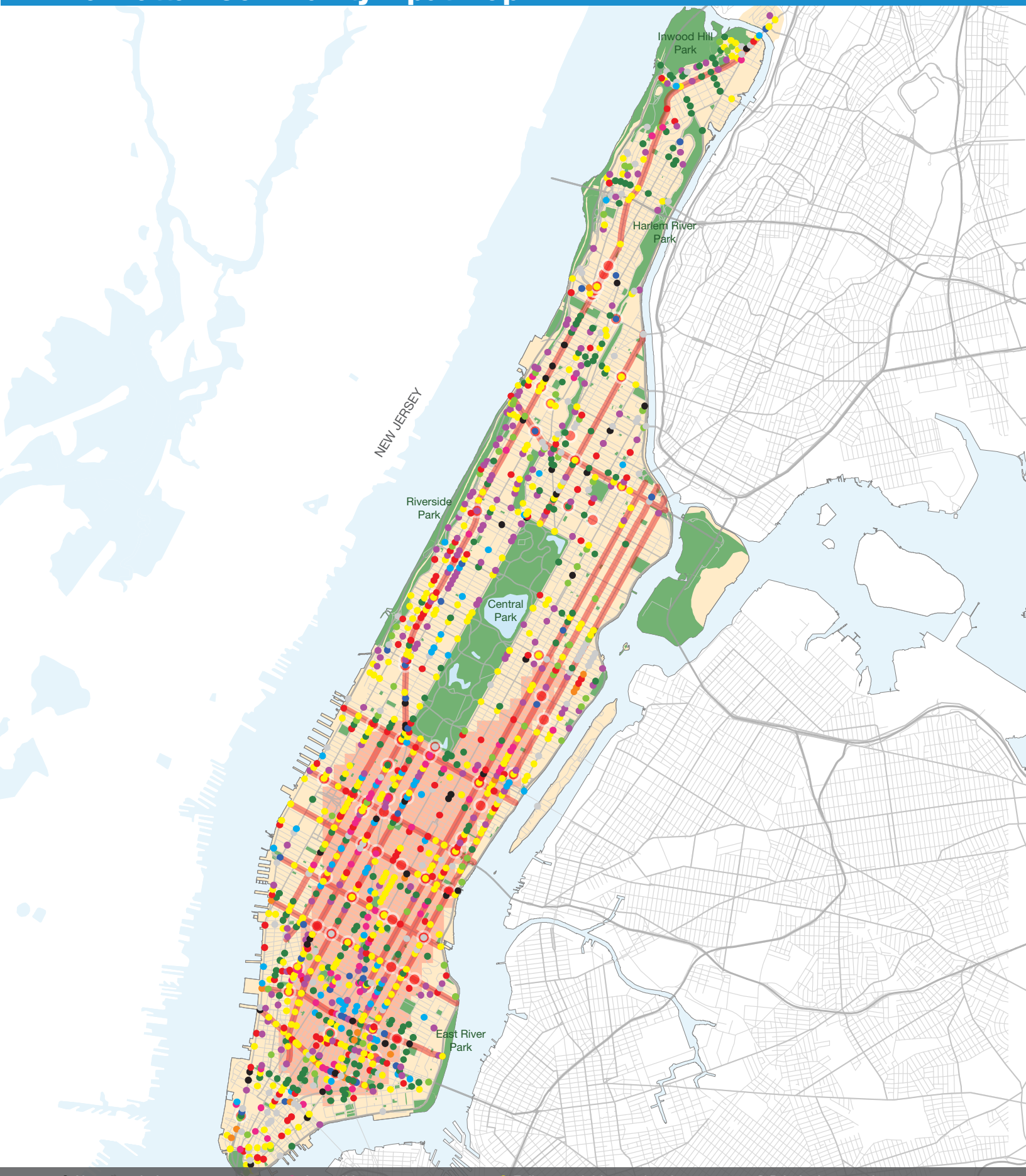
In late summer 2014, following the completion of the final workshop and the closure of the online Vision Zero Public Input Map, DOT compiled all community feedback, pedestrian safety worksheets, participant surveys, completed maps, and issues shared on the Vision Zero website. This information is being maintained and analyzed to support future public outreach, education, enforcement, and engineering. It will also be referenced in the following section of this Plan.

The Community Input Map, combined with the Manhattan Priority Map laid out in Section 2, form a geographically specific knowledge base of both quantitative pedestrian crash data and qualitative community feedback. This allows DOT to integrate local knowledge into Vision Zero project planning in order to foster a proactive, responsive project planning process at the borough's highest-crash locations. A composite priority map for Manhattan is shown on the facing page. This map will serve as the basis of DOT's Manhattan Pedestrian Safety Action Plan.

As the map reveals, the locations with the most public input and high pedestrian-KSI-crash density do not always overlap. There are several factors influencing the likelihood of particular communities throughout Manhattan to log issues, from the strength of local outreach and advocacy groups, to the location of workshops, to language and internet connectivity barriers.

It is vital to the success of Vision Zero in Manhattan that all communities across the borough are given an equal opportunity to share their pedestrian safety concerns. As such, DOT will redouble its outreach efforts to communities with low levels of existing feedback, especially those in high pedestrian-crash areas. Also, DOT and NYPD will ensure that traffic engineering, enforcement, and education work will be conducted in the areas with the highest need, not just those with the loudest voices.

Manhattan Community Input Map



- Not enough time to cross
- Double parking
- Long wait to cross
- Red light running
- Jaywalking
- Poor visibility
- Speeding
- Long distance to cross
- Failure to yield to pedestrians
- Cyclist behavior
- Other
- Priority Intersections
- Priority Corridors
- Priority Areas

Borough Action Plan

4.

Based on the crash findings, prioritization, and community input presented previously in this report, DOT and NYPD have developed a comprehensive set of actions to be implemented in Manhattan. These actions, and the findings that informed their creation, will be reviewed every three years from the release of this plan.

DOT and NYPD use a three-pronged approach to pedestrian safety, including Engineering and Planning actions, Enforcement actions, and Education and Marketing actions. These proposed actions are vital tools in achieving Vision Zero in Manhattan and across New York City.

DOT and NYPD worked closely together, as well as consulting other city agencies, to formulate these actions. Moving forward, the implementation of the proposed actions will require continuing and strengthening these partnerships. This will enable all aspects of pedestrian safety to continue to improve.

Engineering and Planning

Implement at least 50 Vision Zero safety engineering improvements at Priority Corridors, Intersections, and Areas citywide, informed by community input at project locations

The *Vision Zero Action Plan* calls for safety engineering improvements citywide at 50 intersections and corridors annually. Starting with the 2015 construction season, DOT will set the goal of building 50 Vision Zero safety engineering improvements annually at the Priority Corridors, Intersections, and Areas defined in all five Borough Pedestrian Safety Action Plans. This will ensure a laser focus on the chronically high-crash locations where pedestrians are killed and severely injured, where DOT interventions will have a maximum impact. The safety engineering improvements will be informed by Borough Plan outreach findings and, as always, DOT and NYPD will work with communities to shape and develop better safety projects. Lastly, since Vision Zero ultimately means eliminating fatalities for all road users, safety engineering improvements will also include safety-focused bicycle, transit and motor vehicle projects.

Significantly expand exclusive pedestrian crossing time on all Manhattan Priority Corridors by the end of 2017

High-crash corridors for pedestrians tend to be on wide arterial streets with higher speeds and aggressively turning vehicles. DOT will address these issues by installing Leading Pedestrian Intervals (LPIs) at every feasible school crosswalk on all Manhattan Priority Corridors. The LPI is a proven method of reducing pedestrian-vehicle conflicts at high pedestrian crash locations; it is a signal timing treatment that provides pedestrian-only walk time before vehicles receive the green light.

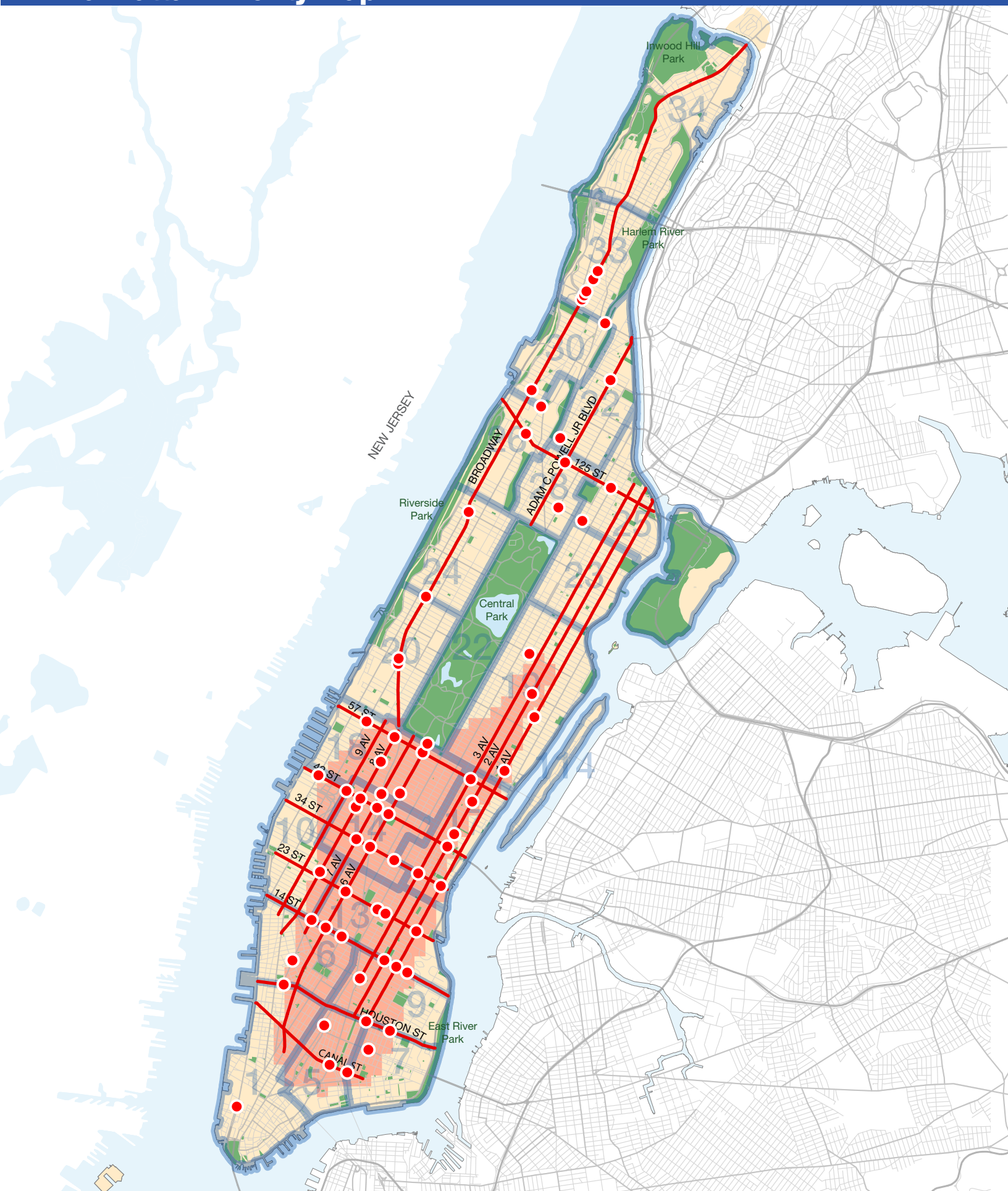
Add exclusive pedestrian crossing time to all feasible Manhattan Priority Intersections by the end of 2017

DOT will install LPIs at every feasible Manhattan Priority Intersection by the end of 2017. As noted previously, the LPI is a signal timing treatment that provides pedestrian-only walk time before vehicles receive the green light.

Modify signal timing to reduce off-peak speeding on all feasible Manhattan Priority Corridors by the end of 2017

At off-peak times, congestion is diminished and vehicle speeds are higher, increasing the risk for pedestrian crashes as well as increasing the severity of those crashes. To better control speeds, DOT will modify off-peak signal timing on all feasible Manhattan Priority Corridors by 2017.

Manhattan Priority Map



Priority Corridors | Priority Intersections | Priority Areas | NYPD Precincts

NYSDOT/NYDMV Accident Database 2009-2013

Install expanded speed limit signage on all Manhattan Priority Corridors in 2015

Effective November 7th, the speed limit on all unsigned streets in New York City was reduced to 25 MPH. However, streets that are signed for 30 MPH (or higher) will be evaluated on a case-by-case basis and switched to 25 MPH where feasible. DOT will evaluate all signage on Manhattan Priority Corridors in 2015 and convert these to 25 MPH where feasible. In addition, signage will be expanded so the speed limit will be posted at a higher frequency along Manhattan Priority Corridors. This will help to increase compliance with the speed limit, better educate the public about the new citywide speed limit, and make NYPD enforcement simpler and less ambiguous.

Drive community input and engagement at Manhattan Priority Corridors, Intersections, and Areas

As discussed earlier in this plan, areas in Manhattan that have the highest incidence of pedestrian fatalities and severe injuries are not always the loudest voices providing input for transportation improvements. DOT commits to reaching out to these sections of Manhattan and soliciting ground-level input from community members. This dialogue will take many forms, including full-fledged planning workshops and charettes; streamlined, mobile meetings at places where community members already gather (libraries, community centers, parks, etc.); community walk-throughs; and direct communication with elected officials and community leaders in Priority Areas. To further facilitate and institutionalize this effort, DOT will hire a dedicated staff member in their Manhattan office. This staff member will be assigned to neighborhoods that have historically been less engaged with the planning process.

Consider area-wide policies for Midtown

Midtown's extremely dense mix of residential and commercial uses generates a highly concentrated amount of overlapping, multi-modal travel activity. The resulting congestion and nearly constant conflicts between pedestrians, motorists, buses, and delivery vehicles make Midtown safety improvements critical to achieving Vision Zero in Manhattan. DOT will investigate the feasibility of various policies, such as limiting left-turns from major two-way streets, to improve safety and circulation throughout the area.

Continue to expand the off-hours delivery program to reduce truck conflicts with pedestrians

In Manhattan, trucks are involved in more than twice the share of crashes resulting in pedestrian KSI compared with the city as a whole. DOT will continue to expand its off-hours delivery program. This program can help to reduce conflicts between large delivery vehicles and pedestrians by encouraging businesses to shift deliveries to overnight hours when pedestrian volumes are lower.

Coordinate with MTA to ensure bus operations contribute to a safe pedestrian environment

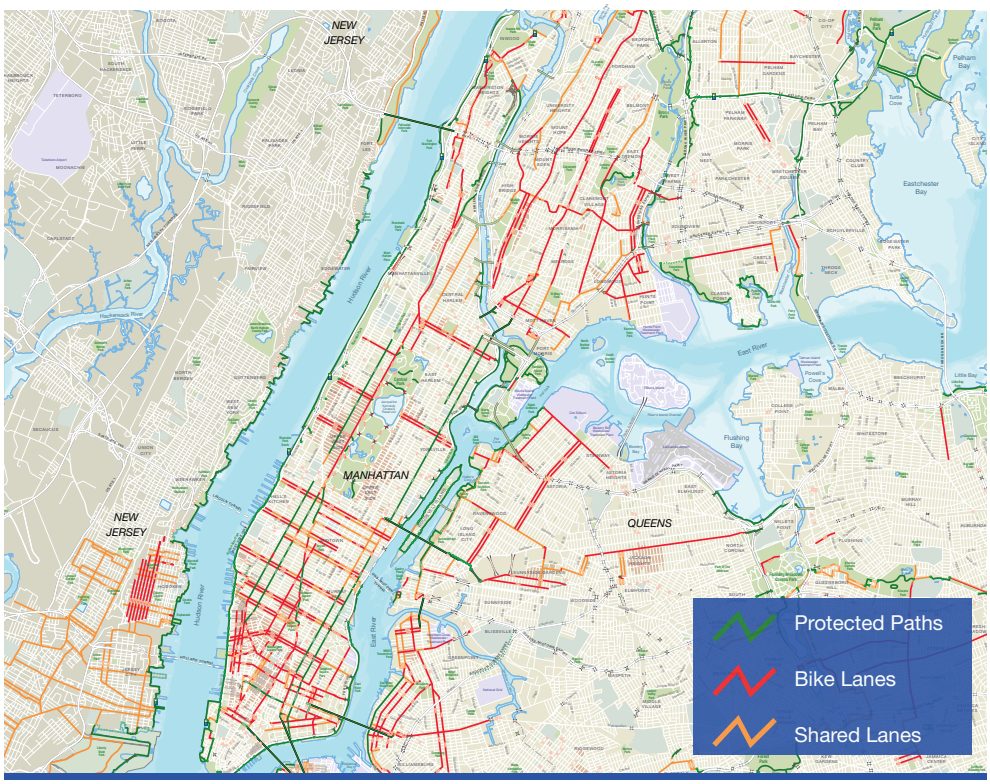
The MTA operates the largest bus system in the United States, with more than twice as many daily riders than the next leading system.[8] Buses are an extremely important part of the city's transportation network and vehicle mix in Manhattan, constantly operating around and interacting with pedestrians (both riders and non-riders), cyclists and other road users. DOT will work closely with the MTA to provide for a safe, efficient and effective transportation network that coexists with pedestrians and other modes, focusing on routes and stops at and around Priority Corridors and Priority Intersections, ensuring that facilities are designed and located to maximize pedestrian safety.

Pedestrian injuries declined 22% on New York City streets with protected bicycle lanes, like this one on Ninth Avenue.

Expand a bicycle network in Manhattan that improves safety for all road users

Vision Zero's focus on vulnerable users—those most likely to be severely injured and killed in event of a crash—is an opportunity for a coordinated, complete streets approach to bicycle and pedestrian planning. Although there has been a marked downward trend in cyclist risk in New York in the past ten years, there were still 52 bicyclist fatalities in the city between 2011 and 2013, including 13 in Manhattan. While this plan identifies priority corridors, intersections, and areas for pedestrian safety improvements, these locations also account for 69% of cyclist KSI in Manhattan, and can represent priorities for bicycle safety as well.

Pedestrian and bicycle planning share many of the same fundamental strategies to increase safety. Both groups benefit from reductions in speeds, efforts to enforce the traffic laws that make streets safe, and comprehensive engineering solutions that better organize traffic flow and reduce conflicts. In addition, well-designed bicycle lanes perform an important traffic calming function by right-sizing streets to the needed capacity and may also include pedestrian refuges that shorten crossing distances. A recent study found that pedestrian injuries declined 22% on New York streets with protected bicycle lanes. That is why DOT will work closely with communities in Manhattan to expand a bicycle network that improves safety for all road users, including constructing an additional 5 lane miles of protected bike lanes per year.



Manhattan Detail from 2014 New York City Bike Map

Proactively design for pedestrian safety in high-growth areas in Manhattan including locations in the Housing New York plan

In his 2014 housing plan—entitled *Housing New York: A Five-Borough, Ten-Year Plan*—Mayor de Blasio has laid out actions to spur affordable housing by increasing density, rezoning neighborhoods, redeveloping underutilized land, adaptively reusing buildings and space, and a host of other tools. Since these new housing locations will often be on vacant and underused sites, they may lack sufficient pedestrian safety infrastructure, and pedestrian activity (and pedestrian crashes) may presently be low.

The City will be proactive and will develop pedestrian safety enhancements around housing development locations. DOT will work with the Department of Housing Preservation and Development (HPD), the Department of City Planning (DCP), the School Construction Authority (SCA) and the Mayor's Office to ensure that housing plan projects incorporate the highest-quality modern standards in pedestrian safety. Development at these locations is an opportunity for New York City to develop streets that are even safer than the status quo.

A notable example of a high-growth area currently under development in Manhattan is Hudson Yards, which is expected to introduce a large amount of new activity to the area west of Midtown.

Enforcement

The *Vision Zero Action Plan* calls for NYPD and DOT to develop a data-driven, citywide strategy for the enforcement of traffic safety violations. This plan will guide that strategy in Manhattan.

Implement the majority of speed cameras at Priority Corridors, Intersections, and Areas

The New York State Legislature recently approved the use of speed cameras at 140 total locations near schools in all five boroughs. In Manhattan, DOT will deploy those cameras by schools in and around Priority Corridors, Intersections, and Areas, unless a higher-crash location is also feasible. As always, speed cameras will only be deployed in accordance with their enabling legislation.

Focus enforcement and deploy dedicated resources to Manhattan NYPD precincts that overlap substantially with Priority Areas

Just as NYPD regularly targets chronically high-crime areas, NYPD will take the same tightly focused approach to chronically high-crash areas. NYPD will focus traffic enforcement at precincts in Priority Areas and provide additional dedicated resources to handle this stepped-up enforcement.

Prioritize targeted enforcement at all Manhattan Priority Corridors, Intersections, and Areas annually

- Prioritize enforcement along all 57 miles of Manhattan Priority Corridors
- Prioritize enforcement at all 60 Manhattan Priority Intersections.
- Prioritize enforcement within all 6 square miles of Manhattan Priority Areas.

To further inform enforcement efforts, DOT will provide detailed crash analyses of Manhattan Priority Corridors, Intersections, and Areas to NYPD precincts. Enforcement will focus tightly on infractions that are particularly threatening to pedestrians, such as speeding and failure to yield.

Similar to crime data, effective evaluation of enforcement data must be conducted geographically (i.e., by street, intersection, or address). Currently, NYPD tracks and monitors activity at “Collision Prone Locations,” which are established using accumulated collision data. On the local level, each precinct conducts extensive analysis and mapping of their enforcement efforts in regards to collision reduction, particularly at Collision Prone Locations. These efforts are further scrutinized at the Department’s TrafficStat forums, wherein the precincts’ Executive Officers and Traffic Safety Teams are called upon to provide in-depth analysis of their traffic safety programs and enforcement efforts. In 2015, the NYPD plans to launch a major technological upgrade to its traffic analysis capabilities which will allow a more in-depth review, tracking, and accounting of collisions and enforcement in Brooklyn’s Priority Corridors, Intersections, and Areas.

Focus failure-to-yield enforcement on nighttime hours (9pm to midnight)

Since the nighttime accounts for a greater share of pedestrian fatalities in Manhattan, NYPD will concentrate enforcement during this time period. Enforcement will focus tightly on infractions that are particularly threatening to pedestrians such as failure to yield.

Initiate a series of targeted truck enforcement blitzes to reduce failure to yield and keep large trucks on truck routes

Due to the special concern trucks pose for pedestrian safety in Manhattan, DOT and NYPD will develop and launch a series of enforcement campaigns in 2015 designed to target truck operators who are not utilizing designated truck routes, driving unpermitted oversized trucks, or who fail to yield properly to pedestrians.

Education and Awareness Campaigns

Target child and senior safety education at Manhattan Priority Corridors and Priority Areas

The *Vision Zero Action Plan* calls for DOT to make effective, age-appropriate safety curricula available to schools throughout the City. This Borough Action Plan will guide that strategy in Manhattan; DOT's Safety Education team will focus their programs at or near Priority Corridors, Intersections, and Areas with a high incidence of child pedestrian injury. Safety Educators will work with schools to deliver comprehensive lessons to all members of the school community as well as utilize Manhattan Safety City, which is a traffic safety program for children that uses a simulated city street. All Vision Zero outreach and education to senior citizens will also be conducted within the Priority Areas and/or near Priority Corridors. In addition, hands-on safety demonstrations such as car safety seat checks, free helmet fittings and giveaways, anti-DWI information sessions, and Saturday table seminars will be made available through Manhattan councilmembers and community groups.

Target Street Team outreach at Manhattan Priority Corridors, Intersections, and Areas

As directed by the *Vision Zero Action Plan*, NYPD and DOT have been conducting intensive street-level outreach on safety issues and traffic laws. This Borough Pedestrian Safety Action Plan will further guide those efforts, as all future street-level outreach in Manhattan will be conducted along Priority Corridors, at Priority Intersections, or within Priority Areas. Locations will be further prioritized based on pedestrian volumes (for efficient outreach) and by historically problematic locations identified by local communities.

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Appendix A

Manhattan

Priority Corridors

DOT identified **17 Priority Corridors** encompassing **50% of Manhattan's total pedestrian KSI** and representing **56 miles (11%) of Manhattan's total street network**:

Street Name	From	To	Ped Fatalities (2009-2013)	Ped KSI (2009-2013)	Miles	Ped KSI per mile (2009-2013)
42 St	FDR Dr	12 Av	1	50	2.0	25.5
8 Av	Hudson St	Columbus Cir	4	58	2.5	23.3
Canal St	E Broadway	West St	5	32	1.5	21.9
14 St	FDR Dr	11 Av	3	44	2.2	20.0
Houston St	FDR Dr	West St	2	37	2.0	18.2
Av Of The Americas	Church St	Central Park S	5	68	3.8	18.1
23 St	Av C	11 Av	4	34	1.9	17.7
3 Av	Cooper Sq	E 128 St	8	106	6.0	17.6
34 St	FDR Dr	12 Av	2	33	2.0	16.8
2 Av	Houston St	Harlem River Dr	9	96	6.4	15.0
Adam C Powell Blvd	Central Park N	W 155 St	9	35	2.4	14.7
7 Av	W 11 St	Central Park S	1	35	2.4	14.6
125 St	Henry Hudson Pkwy	1 Av	3	30	2.1	14.2
Broadway *[north leg]*	Columbus Cir	Broadway Br	18	118	8.4	14.0
1 Av	Houston St	E 127 St	9	88	6.3	13.9
57 St	12 Av	FDR Dr	4	28	2.0	13.7
9 Av	Gansevoort St	Columbus Av	5	31	2.4	13.2

**Nearest cross street, corridor ends at dead-end.*

Appendix B

Manhattan

Priority Intersections

DOT identified **66 Priority Intersections** in Manhattan, which cumulatively encompass **15% of the borough's total pedestrian KSI** and **2% of all its intersections**:*

Intersection	Ped KSI (2009-2013)	Ped Fatalities (2009-2013)
W 125 St & Adam C Powell Blvd	6	0
2 Av & E 14 St	6	0
W 40 St & 8 Av	6	1
Mn Br Appr & Bowery & Canal St	6	1
W 42 St & 8 Av	5	0
W 42 St & 9 Av	5	0
W Houston St & Varick St	5	0
W 14 St & Av Of The Americas	5	0
W 57 St & 10 Av	5	1
E Houston St & Allen St & 1 Av	5	0
Canal St & Allen St	5	0
E Houston St & Clinton St & Av B	5	1
7 Av S & Bleecker St & Barrow St	5	0
W 162 St & Broadway	5	0
E 75 St & 1 Av	5	0
3 Av & E 57 St	4	0
2 Av & E 42 St	4	0
W 23 St & Av Of The Americas	4	0
7 Av & W 14 St	4	0
Lenox Av & W 116 St	4	0
14 St Loop & E 14 St & Av A	4	1
W 145 St & Adam C Powell Blvd	4	3
W 135 St & Broadway	4	0

Intersection	Ped KSI (2009-2013)	Ped Fatalities (2009-2013)
W 106 St & Broadway	4	1
Madison Av & E 34 St	4	1
W 72 St & Broadway	4	1
Frederick Douglass Blvd & W 129 St	4	0
7 Av & W 34 St	3	0
1 Av & E 14 St	3	0
W 125 St & Amsterdam Av	3	0
E 23 St & 1 Av	3	0
W 34 St & Broadway & Av Of The Americas	3	0
Park Av & E 125 St	3	0
3 Av & E 34 St	3	0
Lexington Av & E 86 St	3	0
E 62 St & 1 Av	3	0
W 57 St & 8 Av	3	0
W 42 St & Av Of The Americas	3	0
W 14 St & 5 Av & E 14 St	3	0
2 Av & E 53 St	3	1
W 86 St & Broadway	3	0
W 158 St & Broadway	3	0
7 Av & W 45 St & Broadway	3	0
Delancey St & Essex St	3	2
E 34 St & 1 Av	3	0
Park Av S & E 23 St	3	0
2 Av & E 79 St	3	0
W 42 St & Broadway	3	0

*To select a set of Priority Intersections that account for approximately 15% of pedestrian KSI, a "tiebreaker" system was necessary. To break the tie amongst intersections with three pedestrian KSI, a cut-off at four pedestrian injuries was used. Intersections that had three pedestrian KSI and four or more pedestrian injuries were included; intersections with less pedestrian injuries were excluded.

Appendix B (Cont'd)

Manhattan

Priority Intersections

Intersection	Ped KSI (2009-2013)	Ped Fatalities (2009-2013)
W 42 St & 11 Av	3	0
Madison Av & E 116 St	3	0
Lexington Av & E 23 St	3	0
W 57 St & Av Of The Americas	3	1
3 Av & Cooper Sq & St Mark's Pl	3	0
W 24 St & 8 Av	3	1
Lafayette St & Spring St & Cleveland Pl	3	0
Center Dr & Central Park S & Av Of The Americas	3	0
W 71 St & Broadway & Amsterdam Av	3	1
W 155 St & St Nicholas Pl & Harlem River Driveway	3	0
Ft Washington Av & W 159 St & Broadway	3	0
2 Av & E 45 St	3	0
W 157 St & Broadway	3	0
W 47 St & Av Of The Americas	3	1
W 133 St & Amsterdam Av	3	0
W 51 St & 8 Av	3	0
W 164 St & Broadway	3	1
West St & Albany St & Bk Battery Tun Appr	3	1

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