

CITY AND COUNTY OF SAN FRANCISCO
BOARD OF SUPERVISORS
BUDGET AND LEGISLATIVE ANALYST
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Policy Analysis Report

To: Supervisor Eric Mar
From: Budget and Legislative Analyst's Office
Re: Senior Pedestrian Safety
Date: December 15, 2016

Summary of Requested Action

You asked us to review best practices for senior pedestrian safety in other jurisdictions in order to make recommendations on traffic calming measures and other strategies to increase safety for seniors and other people with disabilities

Executive Summary

- The City's Transit First policy provides for enhancement of pedestrian areas to improve the safety of pedestrians. The City's Pedestrian Strategy commits the City to reducing serious and fatal pedestrian injuries by 50 percent by 2021. While the City has implemented programs to increase pedestrian safety, the City needs to do more. The number of injuries and deaths has not changed significantly over the past 10 years and San Francisco has the second highest rate of pedestrian injury and death after New York City. An average of 17 pedestrians has been killed and 86 severely injured in San Francisco each year between 2005 and 2012. Seniors are more vulnerable to collisions than younger adults; while people 65 and older are only 14 percent of the city's population, they made up over one-third of the pedestrian deaths between 2005 and 2012.
- Discrepancies between San Francisco Police Department (SFPD) data and San Francisco General Hospital admissions data indicate that this may understate the number of serious injuries. Additionally, there are problems with the quality of pedestrian level collision data in the database that the San Francisco Police Department (SFPD) Traffic Unit uses to store and analyze pedestrian collisions. The Department of Public Health (DPH), San Francisco Municipal Transportation Agency (SFMTA), and SFPD are working to remedy these data issues including piloting a transportation-related injury surveillance system that links police and hospital data. The system will provide data to City agencies and the public to inform Vision Zero efforts to reduce preventable injuries and deaths.

Budget and Legislative Analyst

- The majority of pedestrian deaths and severe injuries to younger people and seniors occur in crosswalks. In August, 2016, New York City Department of Transportation published a left turn pedestrian and bicyclist crash study that found that left turns are a major cause of pedestrian serious injuries and fatalities and that seniors are disproportionately affected. San Francisco should undertake a similar comprehensive and detailed study including a before/after collision analysis and evaluation of a left turn traffic calming pilot program.
- As part of the City's Vision Zero policy adopted in 2014, SFPD undertook to issue 50 percent of traffic citations for the five driving violations most associated with collisions that involve serious injury and death in a policy called "Focus on Five". Between 2014 and 2015, the Department made substantial increases in issuance of tickets for three Focus on Five violations - Pedestrian Right of Way, Speeding and Failure to Yield violations. However the percentage of Focus on Five traffic citations overall was only 35 percent in 2015. Enforcement of Focus on Five violations was not the same among all police district stations; the Central and Tenderloin stations only issued 17 percent of traffic citations to Focus on Five violations, although these two districts had a high incidence of pedestrian injury and death.

Increased enforcement of the Focus on Five traffic violations would require either increased SFPD Traffic Unit activity and/or increased traffic citation issuance by police assigned to the city's ten district police stations. SFMTA recently implemented the grant-funded Safer Streets Campaign pilot program to reduce speed limit violations. SFMTA will provide 44 Light Detection and Ranging (LIDAR) units to traffic police to increase speed limit enforcement on the City's high injury corridors.

- SFMTA's Sustainable Streets Division is mapping vehicle collisions involving senior pedestrians against senior facilities such as senior centers and residences to determine whether there is a pattern of collisions around these facilities and whether collisions are occurring on residential streets that would be eligible for the program. SFMTA reports that early indications are that a very small group of senior facilities meet these conditions.
- DPH launched the Safe Streets for Seniors Program in April 2016, which includes presentations to seniors to increase their knowledge of and involvement in Vision Zero.

Policy Recommendations

In order to enhance the City's existing pedestrian safety programs especially for seniors, including improvements in data collection and analysis, and in enforcement, the Board of Supervisors should request:

- The Chief of Police and SFMTA Director of Transportation to report to the Board of Supervisors and Police Commission by March 31, 2017 on the preliminary results of the first six months of the Safer Streets Campaign pilot

program, including use by police officers of LIDAR enforcement Safe Streets pilot project to enforce speed limits.

- The Chief of Police to report to the Board of Supervisors and Police Commission by March 31, 2017 on achievement of the Focus on Five goals by police district, and if the goals are not achieved, a plan (including specific police district actions) to meet the goals.
- The Chief of Police, Director of Public Health and SFMTA's Director of Transportation to increase traffic calming and public education projects in neighborhoods, and around intersections and streets with high concentration of senior pedestrians. For example, If the senior pedestrian injury mapping that the Sustainable Streets Division is undertaking indicates that senior serious injury collisions and deaths are occurring on streets and corridors outside the High Injury Network or on streets that currently do not meet the program's guidelines, the Board may want to request SFMTA and SFPD to implement traffic calming enforcement and engineering strategies appropriate for these streets, corridors and intersections.
- The SFMTA's Director of Transportation and the chair of the Vision Zero Task Force Evaluation and Data Subcommittee to expand on the pedestrian safety data analysis presented in the March 2014 report "Walk First ... A Step Towards Vision Zero", and to analyze the data gathered as part of the Safe Speed Campaign, and present to the Board of Supervisors by March 31, 2017 a comprehensive and detailed study similar to New York Department of Transportation's left turn pedestrian and cyclist crash study that includes (1) key findings on degree of injury, frequency of collisions, victim and driver age and gender, location, intersection characteristics, vehicle type etc. (2) a prioritized Action/ Treatment Plan or detailed description of treatments underway and (3) plans for evaluation of the results of treatments .
- The Chair of the Vision Zero Task Force Evaluation and Data Subcommittee to report to the Board of Supervisors by March 31, 2017 on the transportation-related Injury Surveillance System progress on resolving inaccuracy of pedestrian collision data and other data quality issues.
- The SFMTA Director of Transportation to provide up to date and consolidated information to the Board of Supervisors by March 31, 2017 on WalkFirst, Safe Streets for Seniors and other pedestrian safety capital projects completed to date and publish this information on the Vision Zero interactive map.

Transit First and Pedestrian Safety

In 1973, the City adopted the Transit First policy amending the City Charter to establish priority for pedestrians and public transit. The Charter's Transit First policy provides for enhancement of pedestrian areas to improve the safety of pedestrians. Since 1973, this policy has been reiterated in strategic planning documents and ordinances that require the design and operation of the city's transportation system give priority to pedestrians, public transit and, more recently, cyclists. These policies are included in Appendix A.

From 2004 through the first quarter of 2016, 17 pedestrians per year on average have been killed in collisions on the City's streets. Although seniors 65 and older are approximately 14 percent of the City's population, between 2005 and 2012¹ they were more than one-third of these fatalities. Additionally, approximately 86 pedestrians on average have been severely injured each year in collisions between 2005 and, and seniors 65 years of age and older make up about 15 percent of these severe injuries. The City's pedestrian safety policies and programs assume that increased pedestrian safety will benefit seniors since they are disproportionately affected in pedestrian collisions.

Major U.S. cities have adopted Vision Zero plans to eliminate pedestrian collision deaths and severe injuries. The San Francisco Pedestrian Strategy initially committed the City to reducing serious and fatal pedestrian injuries by 50 percent by 2021. San Francisco's Vision Zero supersedes the Pedestrian Strategy and calls for the elimination of traffic deaths and severe injuries by 2024.

The main strategies that pedestrian safety plans nationwide share are (1) increased enforcement of traffic laws -- specifically moving violations, and (2) re-design of city streets and the pedestrian realm to constrain behaviors that cause pedestrian collisions and to create pedestrian refuge and other forms of pedestrian protection. Some cities have "safer streets for seniors" programs that operate in conjunction with Vision Zero programming and planning but specifically target increased safety for senior pedestrians.

Pedestrian Collisions

From 2004 through the first quarter of 2016, 208 pedestrians were killed; and from 2005 through the first quarter of 2016, 959 pedestrians were seriously injured in San Francisco collisions, averaging 17 and 86 pedestrians killed and severely injured annually. Seven pedestrian were killed in the first three months of 2016 -- five over the age of 60 including two who were older than 80 -- putting 2016 thus far ahead of last year's fatality count.

¹ Detailed pedestrian level data for the period 2013 to the present is not yet available.

Table 1: Pedestrians Killed and Severely Injured² in Collisions in San Francisco from 2004 to 2016 (1st Quarter)

Year	Killed	Severely Injured
2005	14	85
2006	15	75
2007	28	87
2008	14	84
2009	18	89
2010	13	82
2011	17	99
2012	19	89
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Subtotal, 2004 to 2012 ^a	138	690
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2013	20	74
2014	21	70
2015	20	75
2016 (1st Quarter)	7	50
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Subtotal, 2013 to 2016 ^b	68	269
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Total	208	959

Source: ^a Statewide Integrated Traffic Records System (2005-2012); ^b San Francisco Department of Public Health (DPH) and San Francisco Police Department (SFPD) Crossroads database (2013 to 1st Quarter 2016)

As in most cities, the number of senior pedestrians killed and seriously injured in collisions in San Francisco is greater than their share of the City’s population. Senior pedestrians sometimes have hearing, visual or mobility impairments and are more vulnerable to death and severe injury in collisions than younger adults. The Alliance for Biking and Walking found that 10-20 percent of pedestrians hit by a car traveling 40 mph survive, but seniors have only an 8 percent chance of survival when hit at this speed.³ The San Francisco Department of Public Health has found that “... the elderly...are more vulnerable to more injury complications from collisions than younger adults.”⁴

There were 58 fatalities involving people 60 years of age and older between 2005 and 2012, averaging 7 fatalities a year for this age group. There were 139 people 60 and older were severely injured between 2005 and 2012 as shown in Table 2 below. The majority of people above 60 killed and injured were 65 or older.

²Less severe injuries are categorized as “complaint of pain” and “injured”

³Alliance for Biking and Walking 2016 Benchmarking Report page 21

⁴Pedestrian injuries in San Francisco: distribution, causes, and solutions; February 15th, 2010; SFDPH

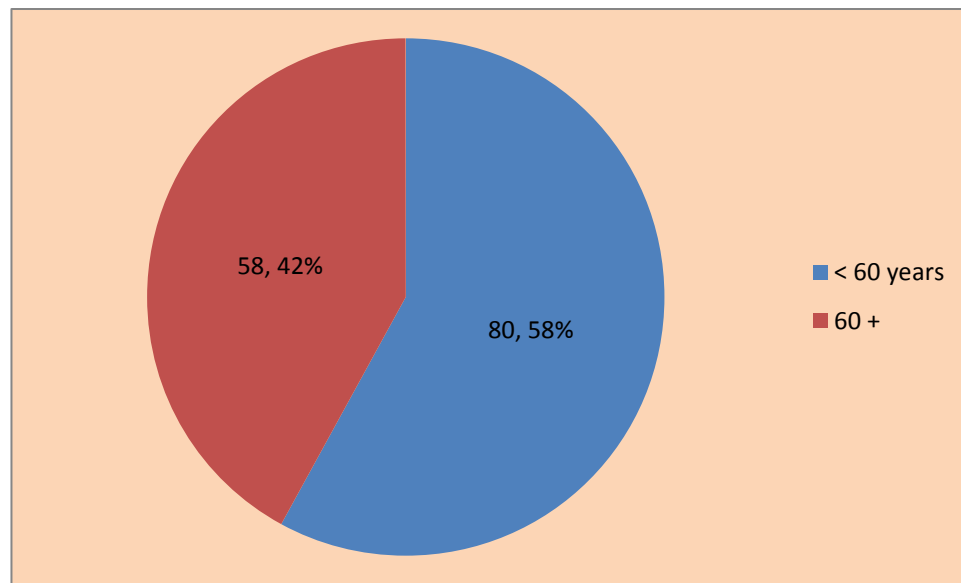
Table 2: Senior Pedestrians Killed or Severely Injured 2005-2012

	Killed	Seriously Injured
Total	138	690
Aged 60 and Older	58	139
Percent	42%	20%
Aged 65 and Older	51	105
Percent	37%	15%

Source: Statewide Integrated Traffic Records System (2005-2012)

As seen in Figure 1 below, from 2005 to 2012 people 60 and older were 42 percent of all pedestrian fatalities.

Figure 1: Pedestrians 60 and Older As Percent of Total Fatalities 2005-2012⁵

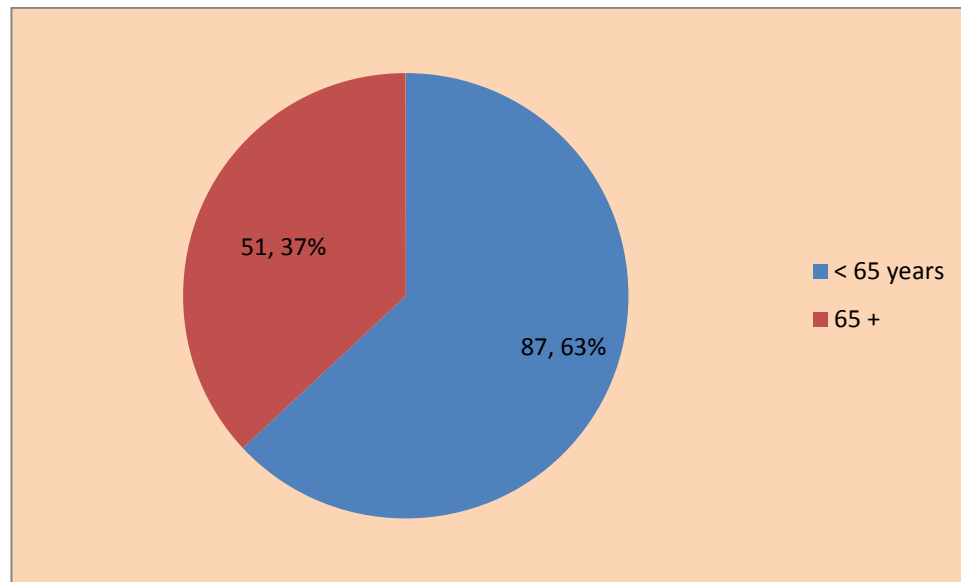


Source: Statewide Integrated Traffic Records System

When the age threshold is raised to 65, senior fatalities as a percentage of total pedestrian fatalities drops, but is still more than one-third, as seen in Figure 2.

⁵ Pedestrian level data such as age is unavailable from either SFDP or SWITTS for the period 2013 to the present.

Figure 2: Pedestrians 65 and Older As Percent of Total Fatalities 2005-2012⁶



Source: Statewide Integrated Traffic Records System

While adults 65 years and older made up 14 percent of the San Francisco population on average between 2005 and 2012, they made up 37 percent of the pedestrians who were killed and 15 percent of the pedestrians who were seriously injured, as shown in Table 3 below. The high percentage of older pedestrians who were killed compared to seriously injured suggests that older adults often die from their injuries.

Table 3: Pedestrians 65 and Older as Percent of All Pedestrians Killed and Severely Injured

	Percent		
	SF population	Killed	Severely Injured
Year	65+	65+	65+
2005	15%	29%	18%
2006	15%	13%	12%
2007	14%	50%	20%
2008	15%	43%	18%
2009	14%	50%	9%
2010	14%	38%	16%
2011	14%	41%	12%
2012	14%	21%	18%
Average 2005-2012	14%	37%	15%

Source: Statewide Integrated Traffic Records System (2005-2012)

⁶ Pedestrian level data such as age is unavailable from either SFDP or SWITTS for the period 2013 to the present.

Pedestrian Fatality Rates in San Francisco Compared to Other Cities

At 17,587 people per square mile San Francisco is the second densest city in the country after New York.⁷ According to the Alliance for Walking and Biking, San Francisco has the third highest percentage of commuters that walk to work among the nation’s most populous cities just behind Boston and Washington, D.C. and ahead of New York and Seattle⁸.

Of the nation’s 50 most populous cities, San Francisco has the third lowest rate of pedestrian fatalities relative to the number of walking commuters as seen in Table 3.⁹ However, as with the other cities with low pedestrian fatality rates relative to the number of walking commuters, San Francisco has a high pedestrian fatality rate as a percentage of all traffic fatalities. At 49 percent, it is the second highest of the 50 most populous cities only behind New York. This percentage was 37 percent in 1990.¹⁰

Table 4: Pedestrian Fatalities in Most Populous Cities in U.S

City	Fatalities Per 10,000 Walking Commuters ¹¹	Pedestrian Fatalities as a Percentage of all Traffic Fatalities 2005-2013
Average of 50 Most Populous Cities	17.5	26%
New York	4	52%
San Francisco	4	49%
Washington, D.C.	3	40%
Seattle	3	29%
Minneapolis	3	22%
Boston	2	34%

Source: Alliance for Biking and Walking: 2016 Benchmarking Report from U.S. Census Bureau American Community Survey three year estimates

⁷ Alliance for Biking and Walking 2016 Benchmarking Report page 120

⁸ Alliance for Biking and Walking 2016 Benchmarking Report; page 40

⁹“The accuracy of fatality rates is limited due to the potential for inaccurate and incomplete reporting of fatalities and the use of commuter data since reported fatalities occur during walking trips other than commuting which the ACS does not count.”

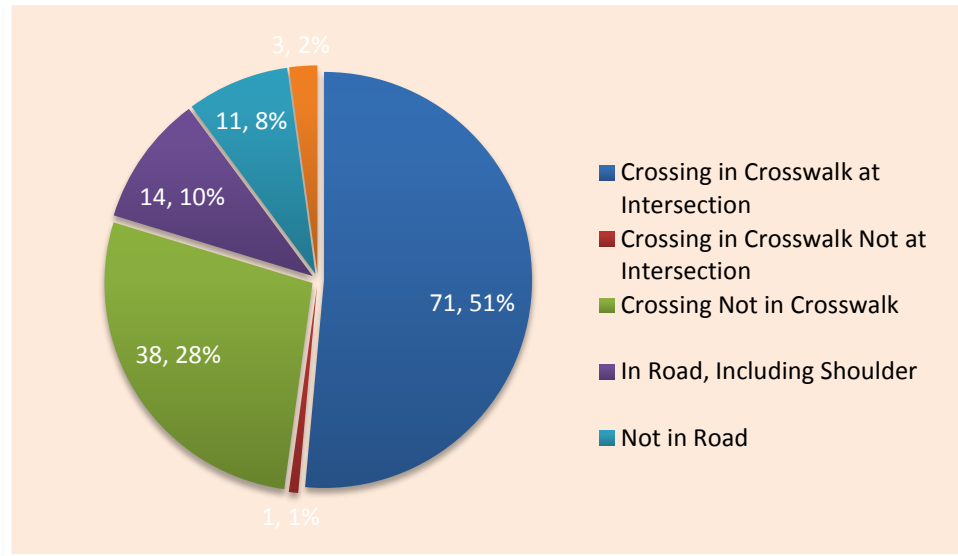
¹⁰ The Pedestrian Safety Project; San Francisco Department of Health Fact Sheet

¹¹ The population rate of injuries is another measure of pedestrian safety. By this measure, San Francisco has a high rate of pedestrian fatalities. The San Francisco Health Improvement Partnership reports that the City’s population rate of injury of approximately 100/100,000 residents, is five times the national target. In a 2010 report, SFDPH Dr. Raji Bhatan reported that the City’s per resident rate of injuries of 97,100,000 was five times the national public health target and that on a per walking trip bases pedestrian collision rates are 30 percent higher than in the U.S. overall.

Driver Violations as the Cause of Most Pedestrian Fatalities in Collisions

More than one-half of pedestrians who are killed by a vehicle collision are killed when walking in a cross walk. As seen in Figure 3 below, 51 percent of pedestrian collision fatalities between 2005 and 2012 involved pedestrians crossing in a crosswalk.

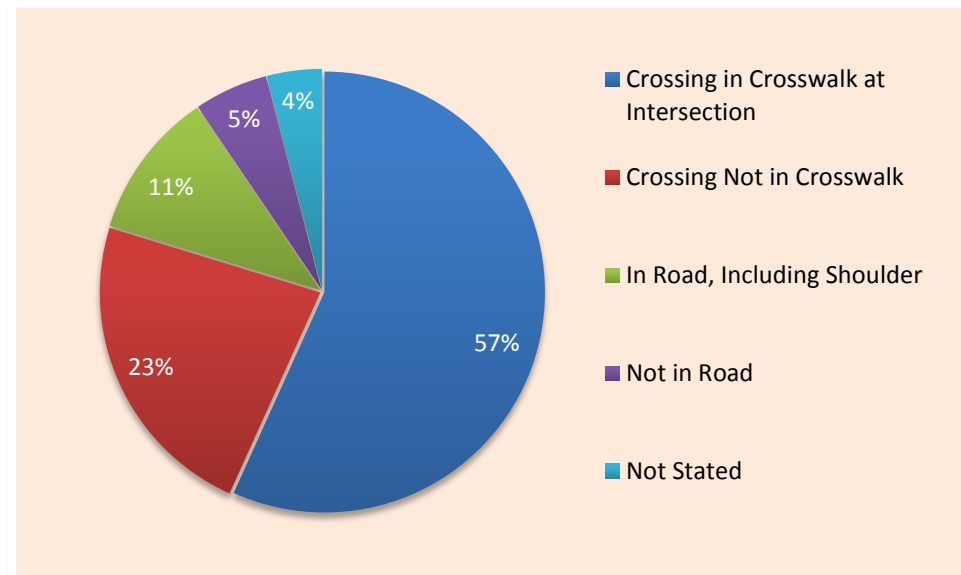
Figure 3: Location of Pedestrian Fatalities for All Ages, 2005-2012



Source: Statewide Integrated Traffic Records System

When only pedestrians 65 years of age and older are considered, the percentage of pedestrian fatalities in crosswalks increases to 57 percent, as seen in Figure 4.

Figure 4: Location of Pedestrian Fatalities for 65 and Older, 2005-2012



Source: Statewide Integrated Traffic Records System

Undercounting of Pedestrian Injuries¹²

In a 2015 report, San Francisco Department of Public Health (DPH) epidemiologists reported a discrepancy between collision victims admitted to San Francisco General Hospital with severe injuries and the number of severe injuries reported by the San Francisco Police Department (SFPD). The number of collision victims admitted to San Francisco General Hospital with severe injuries was greater than the number of severely injured collision victims that the SFPD reported.

The California Highway Patrol (CHP) gathers and disseminates statewide collision data through the Statewide Integrated Traffic Record System (SWITRS). SWITRS has collision data, including pedestrian victim data, for San Francisco up to 2012. According to DPH personnel, there have been delays at CHP in publishing more recent data.

The San Francisco Police Department (SFPD) uses two databases to store crime data:

- (1) Crossroads is a private company that provides free software that allows the SFPD to store collision data. Currently only SFPD Traffic Unit officers can directly enter their reports into Crossroads. All other officers scan their traffic reports and put them in a shared folder that is sent to Crossroads for coding.
- (2) Crime Data Warehouse is an Oracle database that SFPD uses for all other crime reporting. It does not support the Traffic Unit.

In 2013, due to a staffing change, SFPD did not submit all its collision reports to CHP in time. Therefore the SWITRS 2013 numbers of collisions and victims are underreported for San Francisco. In Crossroads, the total number of 2013 collisions is correct but there are victim level data quality issues including duplicate entries and miscoding. DPH is currently working the MTA, SFPD and the Office of the Controller to clean and reconcile this data set.

DPH, MTA, SFPD, and the Office of the Controller are studying options to solve these data issues including a proposal to move collision incident reporting to Crime Data Warehouse.

¹² At the time of this report a Data Subcommittee meeting had been scheduled with DPH, MTA, and SFPD, to discuss the possibility of changing the definition of a pedestrian collision is. Currently a pedestrian collision is defined as an injured party who was a pedestrian involved in the collision.

San Francisco's Practices to Reduce Pedestrian Injury

In San Francisco, the Department of Public Health, Municipal Transportation Agency, and Police Department have responsibility for programs and practices to reduce pedestrian injury and fatality.

High Injury Network

In 2010, DPH identified streets with the highest incidence of fatalities and injuries and created a high injury corridor map that informs the City's pedestrian safety engineering and traffic enforcement efforts. Other cities with Vision Zero plans have done something similar. Appendix B contains annual maps of senior pedestrian fatal and severe injury collisions from 2005 to 2015.

Planned Street Calming For Senior Pedestrian Generating Activity Areas

For the last four years, the SFMTA's Sustainable Streets Division has operated a program whereby residents may apply for the installation of traffic calming speed humps on local residential streets. The program has required residents to initiate the application process. Arterial and Collector streets, which are where most of the High Injury Network is located, are excluded. Applications are assessed on severity of speeding in the neighborhood. Other criteria are collision history, traffic volumes, and adjacent land uses such as parks and schools. In FY 2015-16 SFMTA received over 100 applications and is currently building 40 speed humps in addition to other measures. Program funding is within SFMTA's Capital Plan.

The SFMTA Sustainable Streets Division intends to initiate a proactive traffic calming program in which city staff would proactively identify local residential streets that would benefit from traffic calming. The program would launch in FY 2019-20 when capital funding is available. SFMTA staff is considering whether the program should prioritize streets adjacent to senior centers and/or schools. Staff are now mapping pedestrian collisions against the location of senior pedestrian generating activities such as senior centers, congregate meal sites, senior housing and other senior activity centers to determine whether these senior pedestrian generating activities are occurring on local residential streets that have experienced collisions.

Education and Outreach

Safe Streets for Seniors is an outreach and education program led by the Department of Public Health (DPH) launched in April 2016 to educate seniors and disabled people on Vision Zero and pedestrian safety

Since April 2016, DPH staff have made presentations to 480 seniors and people with disabilities at 16 senior centers. Most participants have been non-English speaking. Presentations have been conducted in English, Spanish, Cantonese, and Mandarin. The goals are to educate seniors and service providers on Vision Zero, how to get involved in traffic safety, and how to stay safe when walking.

Presentations covered the disproportionate burden of traffic-related injury on seniors, the Vision Zero high injury network, the strategies of the citywide Task Force, projects in 2016, reducing speeding campaign, and pedestrian safety tips.

According to DPH staff, participants' main concerns have included (1) inadequate time to cross the street, (2) speeding, 3) drivers not yielding to pedestrians, and 4) uneven/broken sidewalks.]

DPH also administers a grant program to community-based organizations to work in-depth on Vision Zero education and outreach to seniors, especially in monolingual non-English speaking communities. DPH granted seven awards to community-based organizations totaling \$180,000 in both FY 2015-16 and FY 2016-17. Projects range from citywide efforts to neighborhood projects.

DPH reports that in response to the Mayor's August Executive Directive, it is analyzing collision and related data to identify areas where safety investments can improve safety for youth, seniors and people with disabilities and, in collaboration with SFMTA, to recommend projects that target these populations. DPH also reports that the WalkFirst program prioritized improvements for seniors by weighting locations where senior injuries occurred.

Traffic Enforcement

As part of Vision Zero and Pedestrian Safety plans, police departments around the country have begun to focus enforcement on traffic violations most closely associated with fatal and serious injury pedestrian collisions. Since 2014, the SFPD goal has been to issue 50 percent of traffic citations for the five traffic violations most associated with severe and fatal injuries called "Focus on Five".¹³

The violations are:

- Red Light
- Stop Sign
- Pedestrian Right of Way
- Speeding
- Failure to Yield

On August 4, 2016, the Mayor issued Executive Directive 16-03 directing SFPD to "expand its efforts to meet Focus on Five goals and continue quarterly public reports and presentations at the Police Commission."

Between 2014 and 2015, the Department made substantial increases in citations for Pedestrian Right of Way, Speeding and Failure to Yield violations, for an overall increase in Focus on Five citations of 36 percent. As seen in Table 5, this increase included a dramatic increase in the number of Failure to Yield citations.

¹³ <http://sfgov.org/scorecards/percentage-citations-top-five-causes-collisions>

Table 5: Focus on Five Traffic Citations 2014 to 2015

Year	Red Light	Stop Sign	Pedestrian Right of Way	Speeding	Failure to Yield	Focus on 5 Citywide
2014	5,504	13,061	4,415	7,454	390	30,824
2015	5,636	13,657	7,639	10,700	4,195	41,827
% Increase	2%	5%	73%	44%	976%	36%

Source: SFPD

However, as of the second quarter of calendar year 2016, the Department had not yet reached the goal for 50 percent of traffic citations to be Focus on Five citations. The percentage of Focus on Five traffic citations was 35 percent in 2015 and 38 percent for the first two quarters of 2016, as shown in Table 6 below.

Table 6: Focus on Five Citations as % of All Citywide Traffic Citations in 2015 and 2016 YTD¹⁴

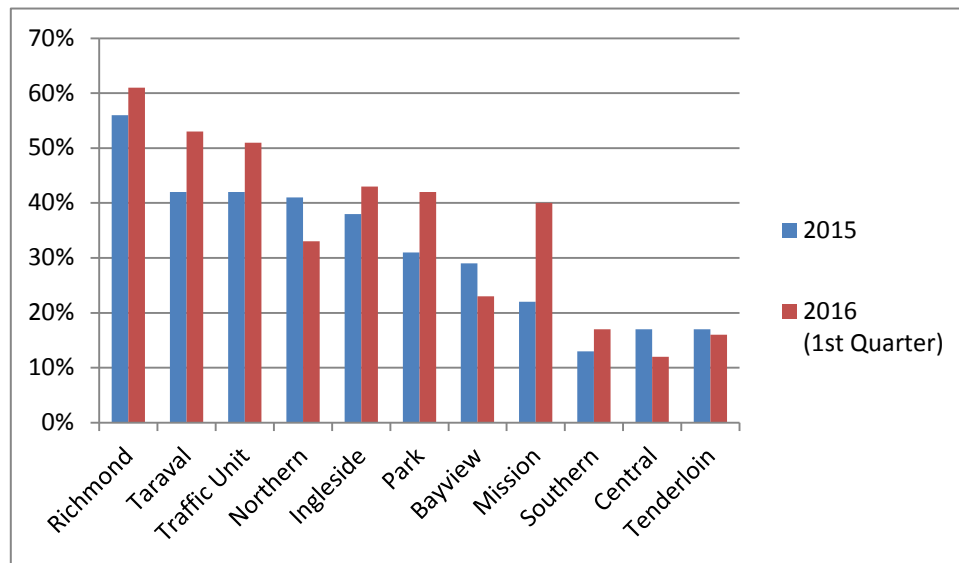
	Total Violations	Focus on Five Violations	Focus on Five %
2015	120,133	41,827	35%
YTD 2016	51,209	19,531	38%

Source: SFPD Vision Zero Enforcement Reports

Enforcement of Focus on Five traffic violations varies among district police stations, as shown in Figure 5 below. According to SFPD Traffic Unit management, this variation is a result of differing priorities and objectives at each station as well as different physical conditions. For example, some station areas have more stop signs than others. However, while more than 50 percent of traffic citations issued by the Richmond district police station were Focus on Five, only 17 percent of traffic citations issued by the Tenderloin and Central district police stations were Focus on Five, although these two districts had high incidences of pedestrian injury and fatalities (see Appendix B maps).

¹⁴ Does not include citations issued by SFPD Tactical Company

Figure 5: Focus on Five Citations as a Percentage of all Traffic Citations by Station



Source: SFPD

Achievement of the Focus on Five 50 percent goal depends on the type, frequency and extent of traffic enforcement operations. According to SFPD management, in addition to traffic enforcement operations on the High Injury Network, each district captain creates a monthly traffic enforcement plan. Two motorcycle police officers are assigned daily to each of the city’s ten stations to support the station’s enforcement plans by working various corridors and “hot spots” which vary daily and are in part based on citizen complaints. These plans have included enforcement around senior housing and senior centers. The remainder of the unit’s officers are assigned to company K, which is the Tenderloin and Southern Police District.

The SFPD Traffic Unit, which has 59 sworn officers, conducted 56 pedestrian yield operations in 2015 and has conducted 55 in 2016 to date.

Plans to Increase Speeding Enforcement and Raise Enforcement Visibility

In SFMTA’s application to the State of California Department of Transportation for an Active Transportation Program grant, SFMTA noted that the City did not have a “sustained” speed enforcement program. SFPD Traffic Unit management report that when more officers are involved with traffic enforcement, the number of citations issued increases and traffic operations can involve a broader geographic area.

SFMTA received the \$2 million Active Transportation Program grant to implement the Safer Streets Campaign program to reduce speeding through increased enforcement on targeted corridors throughout the City. The Safer Streets Campaign program will provide 44 Light Detection and Ranging (LIDAR) units¹⁵ to

¹⁵ LIDAR use a laser beam to measure distance and determine the speed of the vehicle.

traffic officers for a pilot targeting the City's top 11 high injury corridors. A safe road practices educational and outreach campaign for pedestrians, cyclists and drivers will accompany the speed enforcement effort. SFMTA, SFPD and DPH are preparing safety messaging and developing an enforcement approach. The program is distinct from the Department's current efforts in that it proposes a sustained speed enforcement effort throughout the high injury corridor. The program launched in October 2016.

Support for Speed Cameras

Excessive speed is the primary factor in fatal and injury collisions. However, automated speed enforcement is not currently legal in California¹⁶. The Police and Health Commissions has issued resolutions in support of Vision Zero and automated speed enforcement. The San Francisco County Transportation Authority voted to recommend support for automated speed enforcement as San Francisco's key legislative Initiative in support of Vision Zero for the 2016 state legislative session.

Reengineering Streets to Constrain Driver and Pedestrian Traffic Violations

The National Highway Traffic Safety Administration (NHTSA), public health agencies, and transportation system planners have identified transportation system design (engineering)¹⁷ that allows or encourages excessive driving speed, and insufficient or non-strategic traffic violation enforcement as primary causes of pedestrian collision injuries and fatalities including senior fatalities and injuries.

One of the principle objectives of Vision Zero and Safe Streets programs nationwide is to reengineer streets and the pedestrian realm to reduce pedestrian vulnerability and the frequency and severity of pedestrian collisions. This approach reduces reliance on drivers and pedestrians to modify their behavior and instead constrains speed and other vehicle operations and conflicts that lead to pedestrian collisions. Table 8 below describes some of the most widely used reengineering strategies to increase pedestrian safety.

¹⁶ According to SFMTA, automated speed enforcement slows speeds by using fixed or mobile cameras and other equipment to detect and capture images of vehicles traveling at dangerous speeds.

¹⁷ This includes road layout, and design and engineering of crossing facilities.

Table 8: Major Engineering and Design Strategies to Reduce Pedestrian Collisions

Engineering and Design	Purpose
Increase Pedestrian Clearance Intervals	Increases time to cross the street, the primary concern for seniors and people with disabilities
ADA compliant curb ramps	Allows disabled individuals to safely cross the street and a safe place to wait on the sidewalk
Accessible Pedestrian Signals	Increases accessibility for visually impaired individuals by including audible tones, speech messages, and raised buttons
Raised Crosswalks	Increases pedestrian visibility and drivers yielding to pedestrians
Pedestrian Islands	Slows left turning traffic; provides pedestrian refuge
Speed humps and speed cushions	Speed reduction
Reduce number of lanes (Road Diet)	Speed reduction
Sidewalk Extensions and Bulb Outs	Speed reduction: slows turning vehicles
Left Turn Bays and Lanes	Eliminates vehicles waiting behind turning vehicles
Left Turn Restrictions	Eliminates left turn vehicle pedestrian conflicts
Left Turn Only Signals	Eliminates Vehicle-Pedestrian Conflicts
One Way Streets	Eliminates two way left turn conflicts
Leading Pedestrian Intervals	Holds traffic for several seconds at start of pedestrian "Walk" phase allowing pedestrians to establish presence in intersection before turning traffic proceeds
Countdown Signals	Tells pedestrians how much time they have to cross
Daylighting	Increasing pedestrian visibility such as prohibiting parking in advance of crosswalks

Source: Vision Zero programs Boston, Seattle, San Francisco; Portland, New York, and NHTSA; National Complete Streets Coalition

SFMTA Pedestrian Safety Capital Planning

SFMTA's capital needs are included in the City's Capital Plan and referenced in the SFMTA's Capital Plan and Capital Implementation Program (CIP). Data developed by the Department of Public Health is used to direct pedestrian safety capital improvements to the highest injury locations including the High Injury Network. The City's pedestrian safety upgrades are typically integrated with various larger

SFMTA Capital projects thus a discreet estimate of expenditures to date and planned spending that specifically address pedestrian safety is not possible¹⁸.

Moreover, in a 2011 audit of SFMTA’s Sustainable Streets Division, the Controller found that “SFMTA inconsistently and inadequately monitors the status of its projects, potentially reducing the ability of project managers and SSD management to keep projects on budget and on schedule”¹⁹. Since that audit, the agency has implemented a project management system which will track projects currently and into the future; historical data is not available. According to DPH, project tracking is now done for all pedestrian safety projects on and off the Vision Zero High Injury Network and the data summarized and mapped annually.²⁰

The Budget and Legislative Analyst estimates that approximately \$66,000,000 is budgeted for projects that specifically address pedestrian safety over the next five years including design and construction as seen in Table 10. These projects and funding sources are listed in Appendix B.

Table 10: Estimated Expenditures on SFMTA Pedestrian Safety Projects 2017 - 2021 (in millions)

2017	2018	2019	2020	2021	Total
\$18	\$7	\$12.3	\$15.5	\$13.5	\$66.3

Source: Budget and Legislative Analyst, based on SFMTA data

Best Practices in Senior Pedestrian Safety

To gather information on best practices for senior pedestrian safety, we interviewed staff and reviewed Vision Zero reports from Portland, Boston, and New York City; reviewed additional best practices reports from Seattle and Washington D.C. and best practices literature from the National Highway Traffic Safety Administration (NHTSA), the National Complete Streets Coalition, Vision Zero Los Angeles Literature Review Collision Data Analysis, and The Alliance For Bicycling and Walking.

Much of the literature and reporting on best practices focuses on New York, which was one of the first cities to adopt Vision Zero and to use descriptive and multivariate collision analysis to develop engineering and law enforcement responses to pedestrian collisions. In most instances senior pedestrian safety efforts are embedded in a broader law enforcement, engineering and design response to pedestrian collisions although some cities have an explicit senior

¹⁸DPH Environmental Health Section report engineering project improvements on 12.7 miles of the High Injury Network in 2015

¹⁹ Since that audit finding, the agency has implemented a project management system called Ecosys. While Ecosys will track projects currently and into the future, it doesn’t have historical data.

²⁰ The summarized information includes number of miles of street segment improvement and intersection spot improvements completed. In 2015 a total of 10.2 miles of street segment improvements and 4.7 miles of intersection spot improvements were completed on the High Injury Network. Citywide there were 34.2 miles of completed engineering projects.

pedestrian safety program. These practices and programs largely fell into the following seven categories:

1. Identify and Map Locations of Senior Residential Concentrations and Senior Pedestrian Activity and Target These Areas And Corridors for Pedestrian Safety Improvements

New York City

- Used census and collision data to identify Senior Pedestrian Focus Areas (SPFA), Naturally Occurring Retirement Communities (NORC) and location and characteristics of collisions involving seniors. In 2009 New York City's Department of Transportation developed its first SPFA, the Fordham-University Heights Senior Pedestrian Focus Area, and designated the area for improvements to pedestrian safety, particularly for senior citizens. Pedestrian collisions decreased 38 percent while all collisions with injuries decreased 32 percent after three years.
- Mapped pedestrian collisions involving victims 65 and older to identify clusters.
- Mapped senior housing and slated areas for pedestrian safety improvements
- Mapped Naturally Occurring Retirement Communities (NORCS) and made safety improvements on nearby arterials.
- Mapped facilities for visually impaired and slated areas for pedestrian safety upgrades

2. Funding and Programming Senior Pedestrian Safety Outside of Vision Zero

New York City

- Areas with high senior pedestrian injuries can be funded for studies and redesign even when they lie outside Vision Zero priority areas.

Boston (Safe Routes for Seniors)

- Identified safe routes for seniors in three targeted neighborhoods chosen based on ethnic diversity, resource need and high incidence of pedestrian collision.

Portland ("Safe Routes to Senior Centers")

- Engineers mapped the location of senior centers and identified physical barriers for removal and pedestrian safety enhancements to make it easier for seniors to walk to senior centers.

3. Outreach, Education & Partnership with Seniors, Senior Advocates and Senior Centers

New York City

- The New York Department of Transportation and NYPD partner with senior centers and advocates for the visually and hearing impaired to increase communication and get input and feedback from seniors about needed street safety improvements, dangerous intersections and problem

locations, pedestrian safety and to offer special safety educational programs for seniors and the general public on senior pedestrian vulnerability.

- New York City Department of Transportation has developed Borough-level Pedestrian Safety Action Plans that include outreach and education for seniors within each borough's Priority Areas and along Priority Corridors.
- The DOT collaborates with the New York City Department for the Aging and Aging Committees on Community Boards and Age Friendly New York City.

Portland

- A yard sign lender program allows residents to borrow signs that carry messaging advising drivers to watch for seniors and children

4. Restrict Left Turns

New York City

The New York City Department of Transportation analyzed pedestrian and bicycle crash data covering crashes from 2010 to 2014 and found that left turns account for more than twice as many pedestrian and bicyclist fatalities as right turns and over three times as many serious injuries and fatalities. The study found that seniors are more at risk: pedestrians and bicyclists killed by a left-turning vehicle have a median age of 67 while all other fatal crash types have a median age of 50. The study also found that left turn pedestrian and bicyclist injuries are concentrated in the same locations as pedestrian killed and seriously injured in general and that all left turn pedestrian and bicyclist injuries occur at 18 percent of total NYC intersection.

In response New York's DOT has prioritized:

Leading Pedestrian Intervals (LPIs): at school intersections and along Priority Corridors.

Left Turn Traffic Calming Pilot: DOT is undertaking a 100-intersection pilot initiative to test new safer, slower left-turn design

Left Turning Restrictions and Left Turn Signals: taking opportunities to incorporate either left turn restrictions or dedicated left turn signals into broader improvement projects.

Public Information Campaign: The 3rd phase of the "Your Choices Matter" campaign will focus on pedestrian crashes at intersections. DOT will develop "Turn Speed" iconography to illustrate that turns should be taken at 5 mph and roll out a comprehensive failure to yield marketing effort in Fiscal Year 2017.²¹

²¹ "Don't Cut Corners; Left Turn Pedestrian and Bicyclist Crash Study; August 2016

5. Increase and Raise Visibility Of Enforcement / Aggressive Enforcement

New York City

- Inform / Enforce” Vision Zero Street teams are deployed to remind drivers of senior mobility issues followed by enforcement that targets areas identified as having high senior pedestrian travel volumes
- After police-led information campaign, neighborhoods with a high concentration of seniors receive enforcement operations that focus on Vision Zero citations.

Boston

- Vision zero “mock ticket” warnings issued in lieu of tickets. Enforcement operation involves pedestrians, cyclists and drivers.
- High visibility enforcement campaigns against speeding, red light running, and failure to yield focused on high-crash locations
- Considering more police on high crash corridors including hospital locations, senior housing locations.

Seattle

- High Visibility Enforcement Inform / Enforce approach is used in high crash locations targeting risky behaviors including distracted driving, impairment and speeding.

6. Crash Investigation Rapid Response Team

Boston

- A multi-disciplinary Rapid Response Team will analyze and respond to every fatal crash in the city. The team will recommend appropriate street design changes, judicial or legislative follow up and community outreach.

7. Real Time Data Capture for Vision Zero Collision Analysis

New York City

The New York Police Department is moving to real time electronic data collection of collision data in coordination with the New York Department of Transportation to ensure that data is available quickly for collision trend analysis.²²

²² New York Department of Transportation staff indicate that the transition to fully electronic collision data capture has been “slow and complicated” but that the distribution of hand held devices is occurring.

Conclusion

The City's Pedestrian Strategy committed the City to reducing serious and fatal pedestrian injuries by 50 percent by 2021. This strategy has been superseded by a Vision Zero plan to eliminate traffic deaths and severe injuries by 2014. DPH, SFPD and SFMTA have undertaken improvement of senior pedestrian safety through a variety of education, outreach, traffic enforcement and street safety engineering projects.

While the City has implemented programs to increase pedestrian safety, the City needs to do more. San Francisco seniors are disproportionately affected in pedestrian collisions. While people 65 and older are only 14 percent of the city's population, they made up over one-third of the pedestrian deaths between 2005 and 2012. The number of injuries and deaths has not changed significantly over the past 10 years and San Francisco has the second highest rate of pedestrian injury and death after New York City.

Policy Options

In order to enhance the City's existing pedestrian safety programs especially for seniors, including improvements in data collection and analysis, and in enforcement, the Board of Supervisors should request:

1. The Chief of Police and SFMTA Director of Transportation to report to the Board of Supervisors and Police Commission by March 31, 2017 on the preliminary results of the first six months of the Safer Streets Campaign pilot program, including use by police officers of LIDAR enforcement Safe Streets pilot project to enforce speed limits.
2. The Chief of Police to report to the Board of Supervisors and Police Commission by March 31, 2017 on achievement of the Focus on Five goals by police district, and if the goals are not achieved, a plan (including specific police district actions) to meet the goals.
3. The Chief of Police, Director of Public Health and SFMTA's Director of Transportation to increase traffic calming and public education projects in neighborhoods, and around intersections and streets with high concentration of senior pedestrians. For example, If the senior pedestrian injury mapping that the Sustainable Streets Division is undertaking indicates that senior serious injury collisions and deaths are occurring on streets and corridors outside the High Injury Network or on streets that currently do not meet the program's guidelines, the Board may want to request SFMTA and SFPD to implement traffic calming enforcement and engineering strategies appropriate for these streets, corridors and intersections.
4. The SFMTA's Director of Transportation and the chair of the Vision Zero Task Force Evaluation and Data Subcommittee to expand on the pedestrian safety data analysis presented in the March 2014 report "Walk First ... A Step

Towards Vision Zero”, and to analyze the data gathered as part of the Safe Speed Campaign, and present to the Board of Supervisors by March 31, 2017 a comprehensive and detailed study similar to New York Department of Transportation’s left turn pedestrian and cyclist crash study that includes (1) key findings on degree of injury, frequency of collisions, victim and driver age and gender, location, intersection characteristics, vehicle type etc. (2) a prioritized Action/ Treatment Plan or detailed description of treatments underway and (3) plans for evaluation of the results of treatments .

5. The Chair of the Vision Zero Task Force Evaluation and Data Subcommittee to report to the Board of Supervisors by March 31, 2017 on the transportation-related Injury Surveillance System progress on resolving inaccuracy of pedestrian collision data and other data quality issues.
6. The SFMTA Director of Transportation to provide up to date and consolidated information to the Board of Supervisors by March 31, 2017 on WalkFirst, Safe Streets for Seniors and other pedestrian safety capital projects completed to date and publish this information on the Vision Zero interactive map.

APPENDIX A: City Policies to Promote Pedestrian Safety

Official City policy gives priority to pedestrians, public transit and cyclists

Since 1973, a series of city policies, code amendments and strategic plans have repeatedly mandated that the design and operation of the city's transportation system give priority to pedestrians and public transit.

Transit First: In 1973 the Board of Supervisors adopted the "Transit First Policy" amending the City Charter to establish priority for pedestrians, cyclists and public transit in the use of public rights of way.

Better Streets Policy²³: In 2006, the Board of Supervisors adopted the Better Streets Policy adding Chapter 98 to the Administrative Code that states "Decisions regarding the design and use of the city's limited public street space shall prioritize space for pedestrians, bicycles, and public transit over space for automobiles."

Better Streets Plan: In 2010, the Board of Supervisors adopted the Better Streets Plan amending the Municipal Code and General Plan to provide design guidance and regulations intended to calm traffic and decrease pedestrian injuries and fatalities.

Pedestrian Strategy: In April 2013, Mayor Lee issued the Pedestrian Strategy directing City departments to implement solutions to reduce serious or fatal pedestrian injuries by 25 percent by 2016 and by 50 percent by 2021, increase the walkability of San Francisco and make all neighborhoods safer for pedestrians.

Walk First: In March 2014, a Pedestrian Safety Improvement Capital Program was established to prioritize capital improvements needed over the next 5 years to make the city safer for pedestrians.

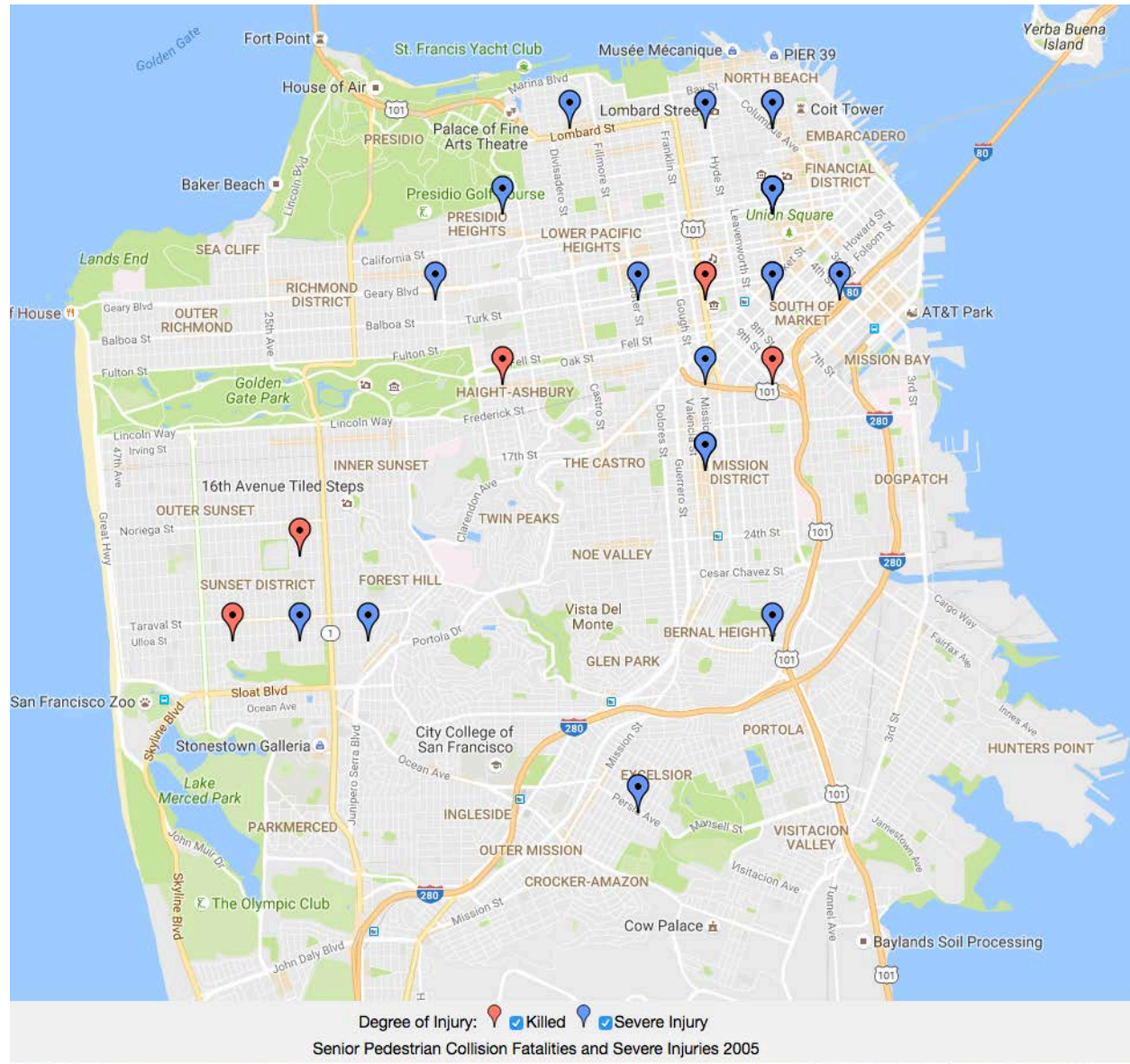
Vision Zero: In 2014 the Board of Supervisors adopted Vision Zero as a policy to eliminate all traffic deaths in San Francisco by 2014.

The Mayor's Executive Directive of August 2016 directs SFMTA to accelerate Vision Zero and Bicycle Strategy project delivery.

²³ Public Works Code Section 2.4.13 directs the City to include pedestrian, bicycle, and streetscape improvements as part of any planning or construction in the public right-of-way.

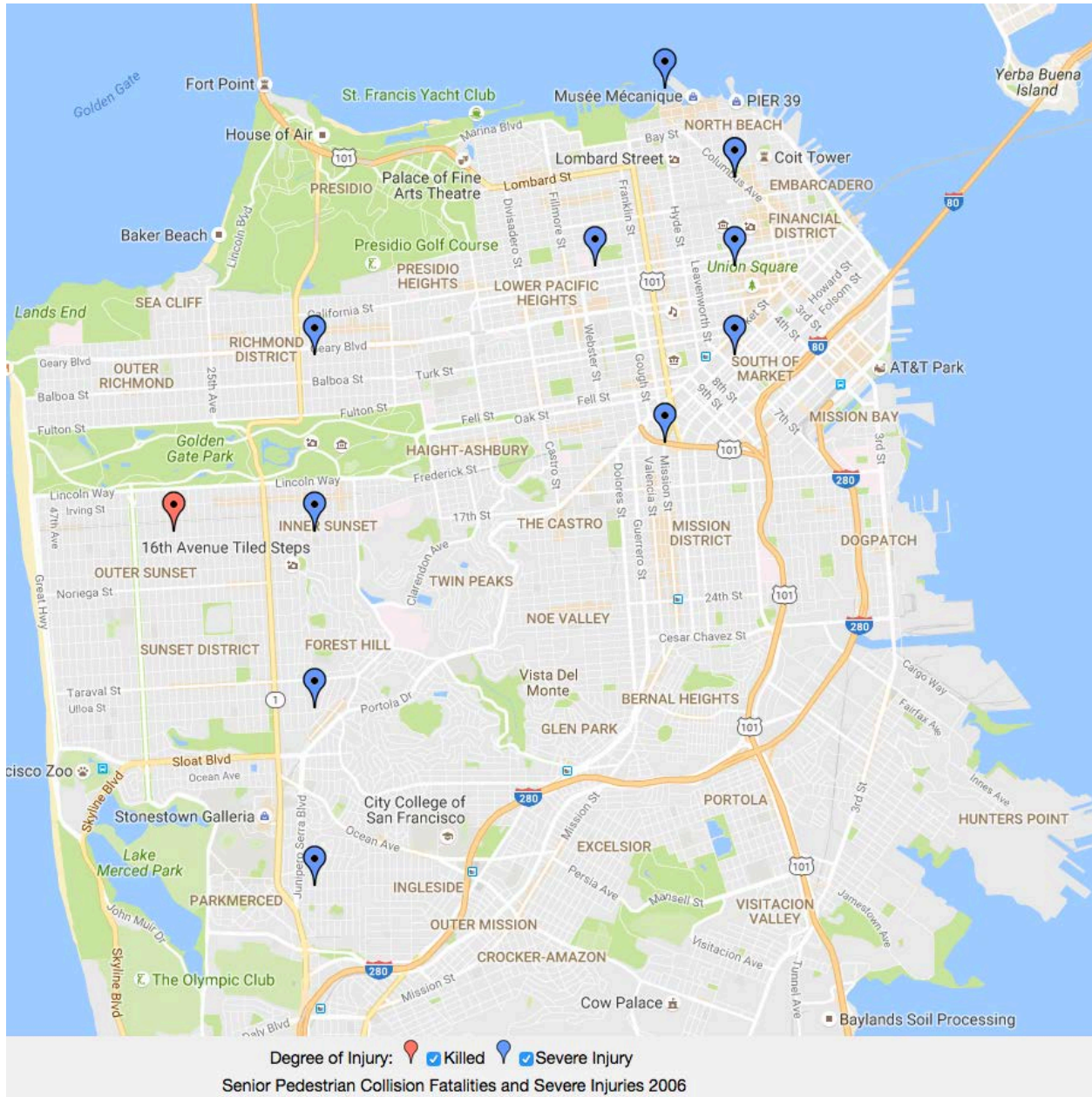
Appendix B: Maps of Senior (60 and older) Pedestrian Fatal and Severe Injury Collisions 2005 to 2012^a

2005

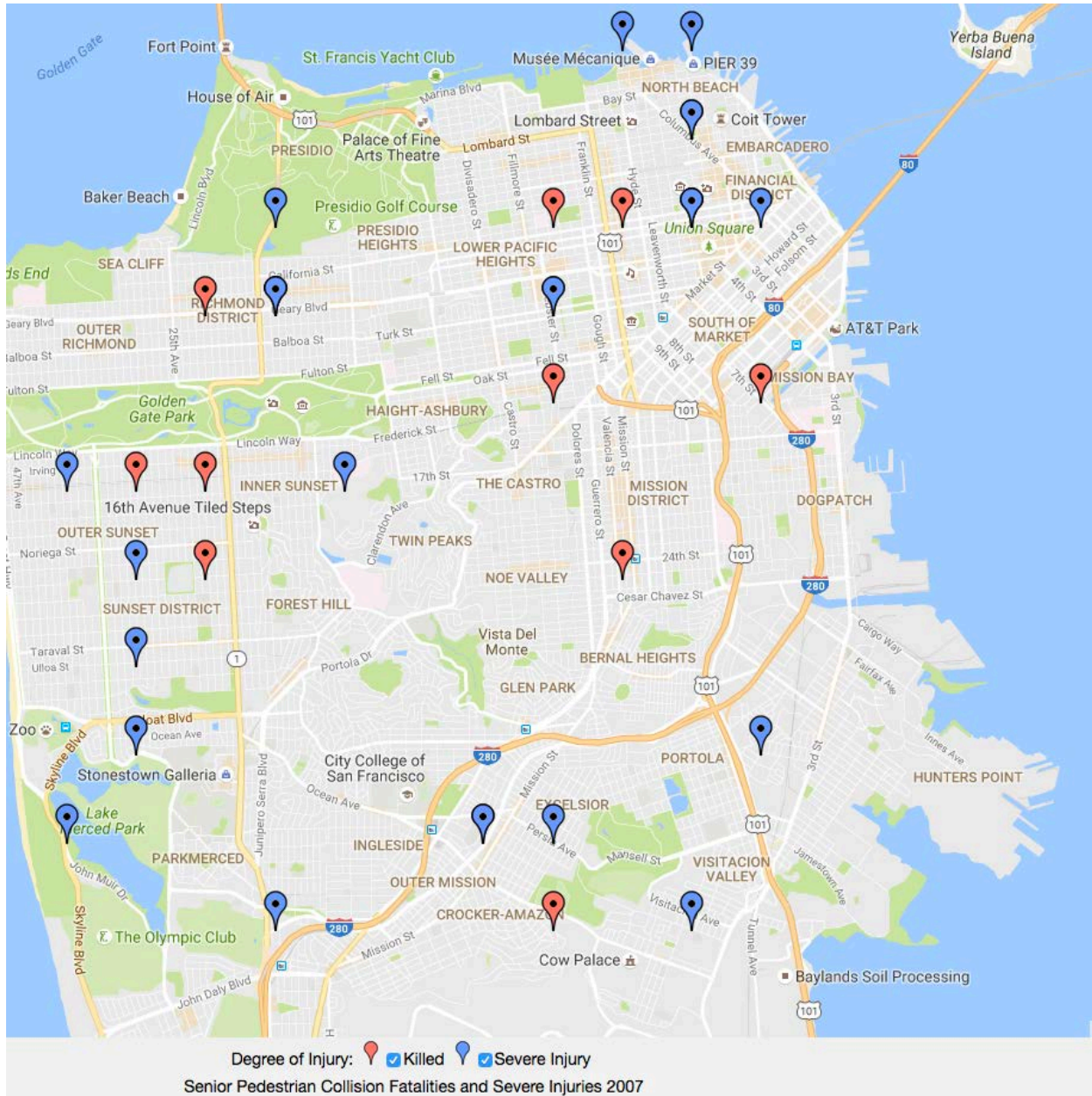


^a From Statewide Integrated Traffic Records System. More than one fatality or injury occurred in some locations.

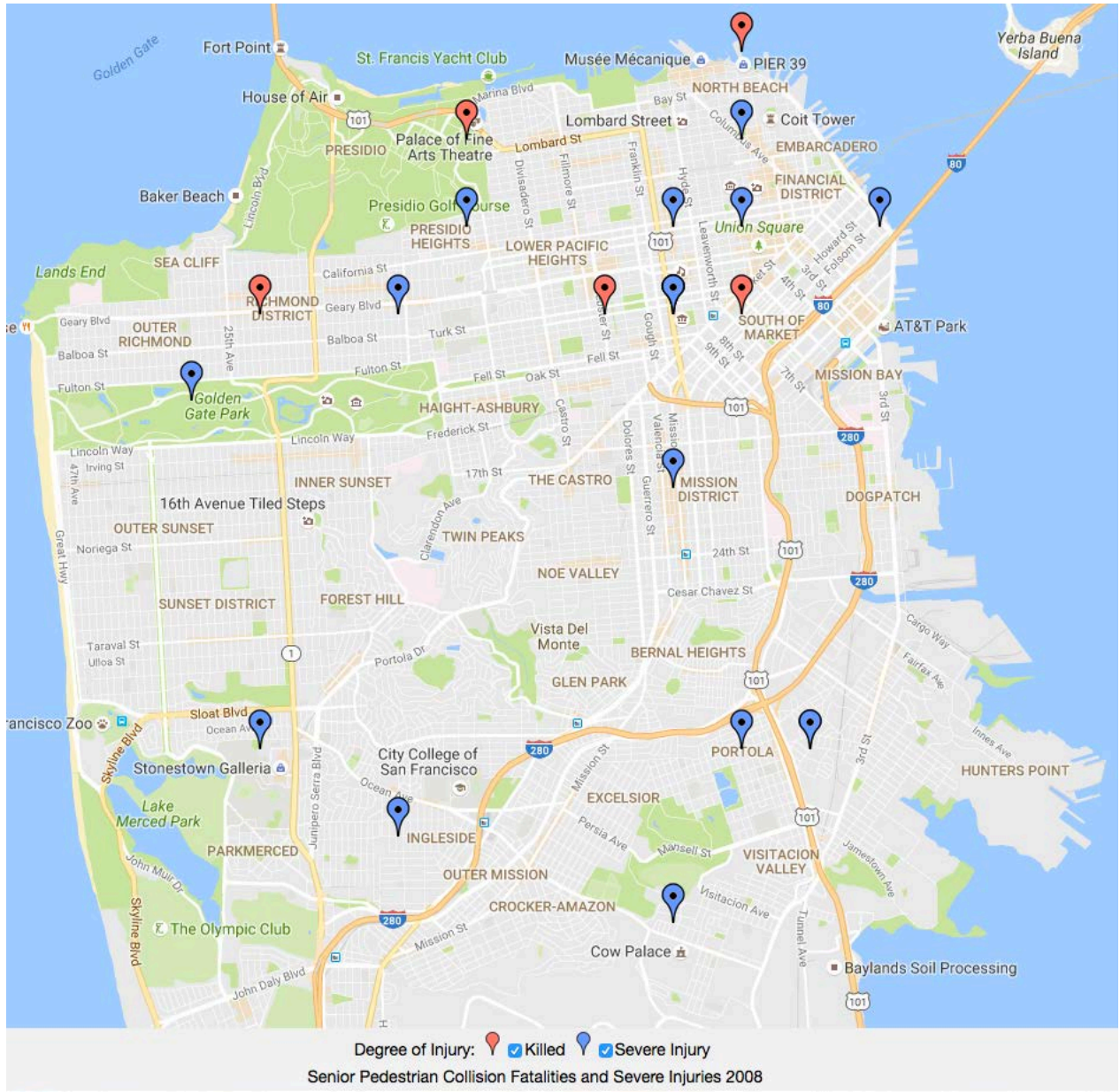
2006



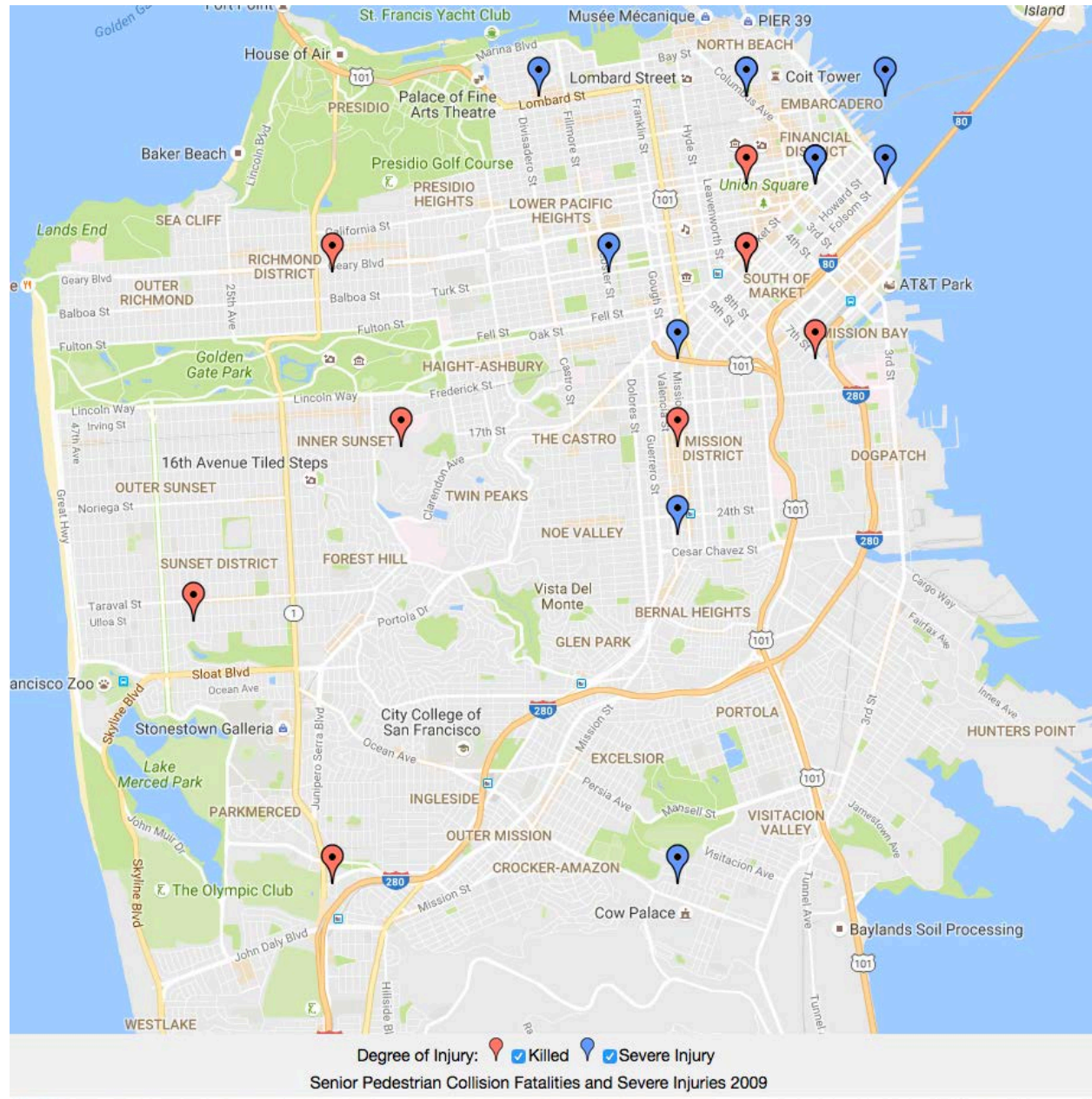
2007



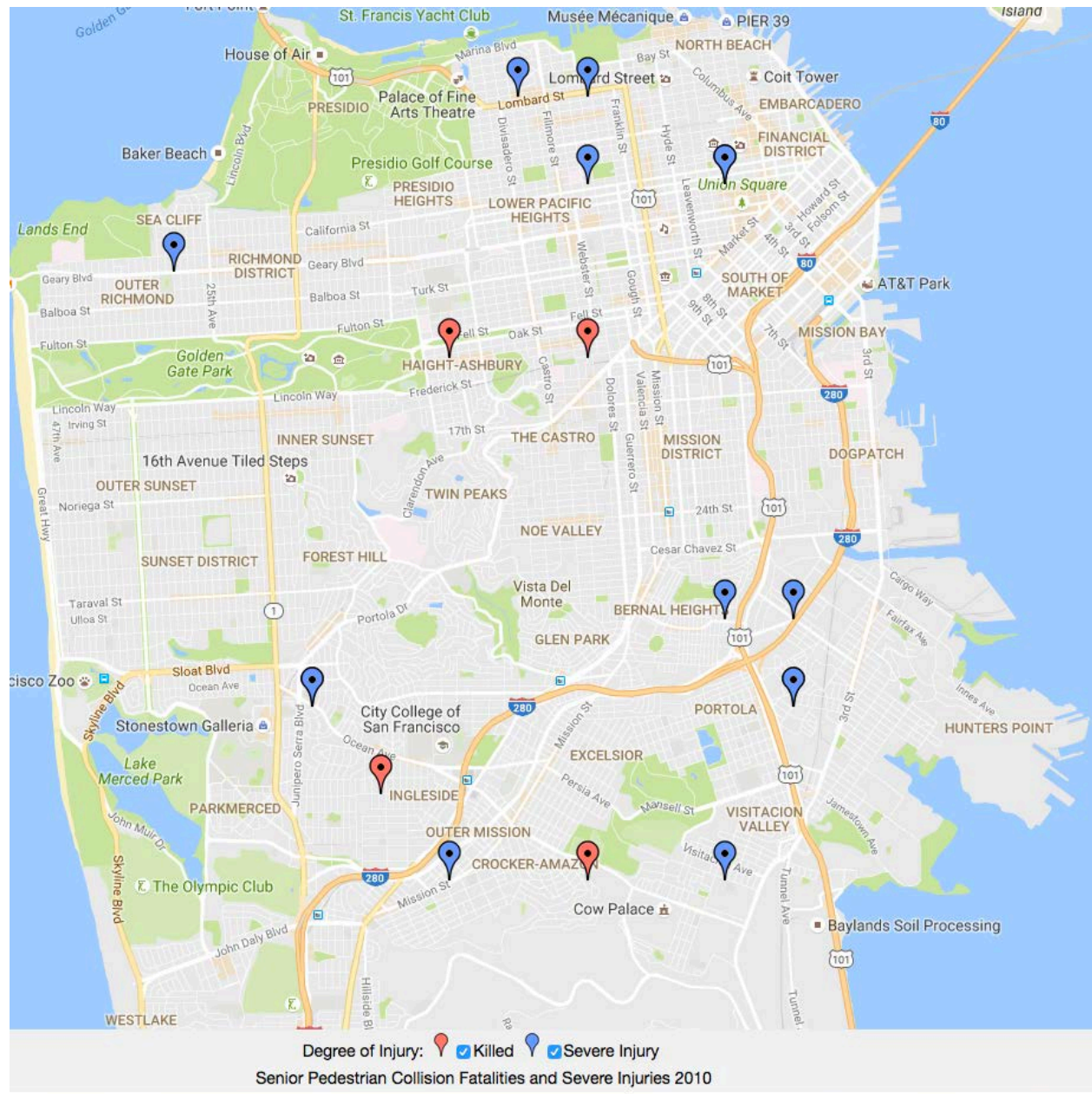
2008



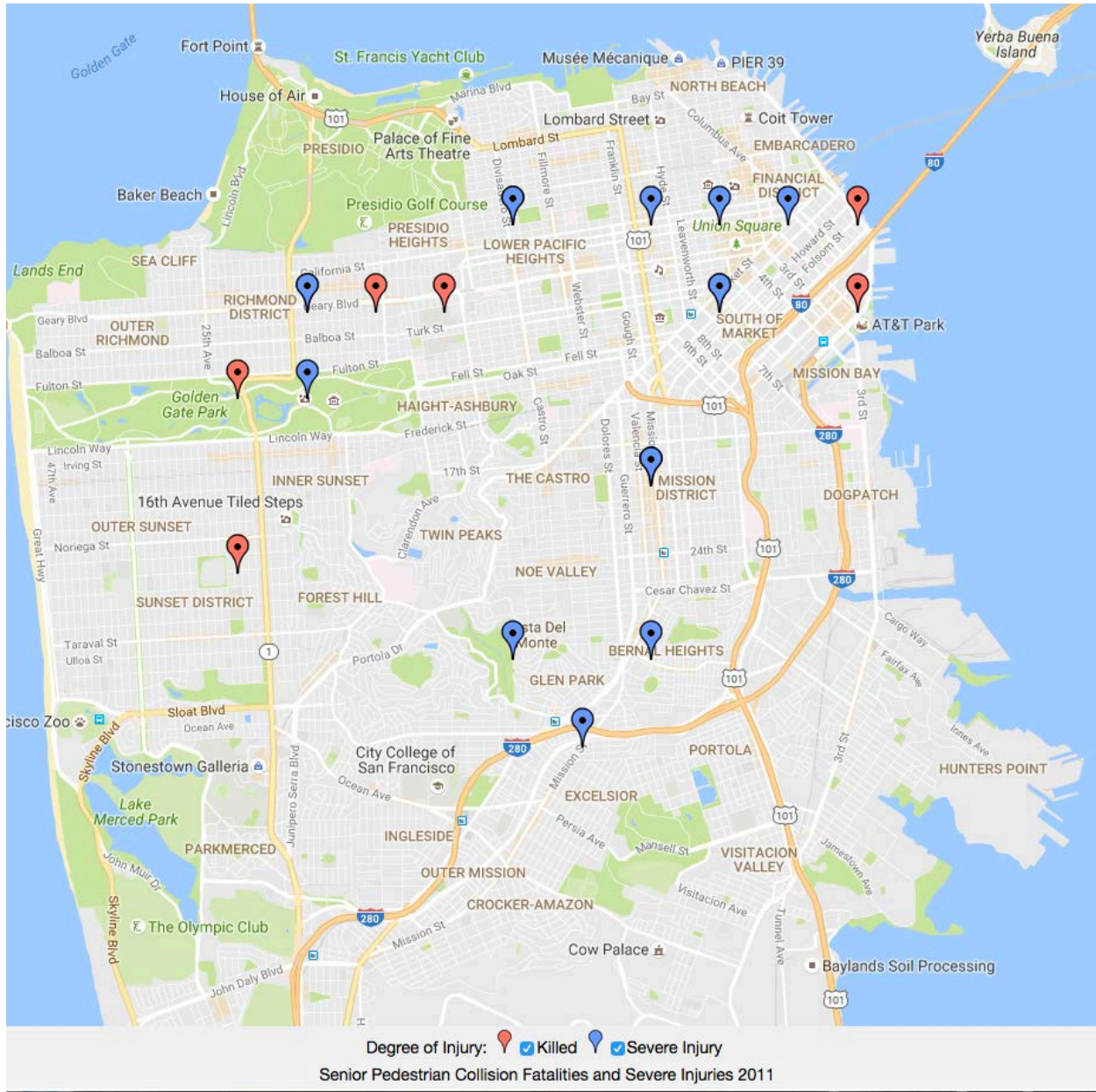
2009



2010



2011



2012

