

San Francisco 2009 Collisions Report



SFMTA

Municipal Transportation Agency

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City and County of San Francisco
San Francisco Municipal Transportation Agency
1 South Van Ness Avenue, 7th Floor
San Francisco CA 94103

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EXECUTIVE SUMMARY

- Non-fatal injury collisions totaled 2,877 in 2009. This was the second lowest injury total over the past 10 years.
- Fatal collisions totaled 30 in 2009. Of these fatal collisions, 17 were vehicle-pedestrian collisions and one was a vehicle-bicycle collision.
- For 2009, 31 percent of non-fatal injury collisions were broadsides, while 22 percent were vehicle-pedestrian collisions.
- Unsafe speed is listed as a primary cause in 19 percent of 2009 non-fatal injury collisions.
- There were 531 injury collisions in 2009 involving bicyclists, up 13 percent from the 468 total recorded in 2008.
- The 2009 total of 695 injury collisions involving a pedestrian as a party is down 13 percent from the 799 injury collisions reported in 2008.
- Muni reported injury and fatal collisions were down in 2009 relative to 2006-2008 totals.
- The San Francisco Municipal Transportation Agency (SFMTA) has taken and will continue to take a variety of measures specifically designed to reduce collisions at the high collision intersections identified in this analysis, as well as address other identified safety concerns.

ABOUT THIS REPORT

This report is prepared every year by the SFMTA in order to identify long-term collision trends and intersections with the highest collision totals. This information is used to identify locations that may need special attention and evaluate previous mitigation measures. The intersections in this report are not a list of the "most dangerous" intersections in San Francisco. The volume of vehicular traffic and pedestrian activity play key roles in determining collision totals: the more people that use an intersection, the more likely a collision can occur there. Some of the locations in this report are also some of San Francisco's busier intersections. Short-term annual increases in collisions at any one intersection can also be the result of random yearly variations. Out of the thousands of intersections in San Francisco, in any one year some will have more or fewer collisions than the expected annual average. Focusing on multi-year trends can help reduce confusion caused by these statistical fluctuations.

The source of the collision data is the Statewide Integrated Traffic Records Systems (SWITRS) maintained by the California Highway Patrol (CHP). California Vehicle Code Section 20008 requires that local governments send their police collision reports to the State. The CHP enters this data into database files which are then processed by SFMTA. State SWITRS totals for 2009 were not considered official by the CHP until the first quarter of 2011, thus delaying the preparation of this report. The data used in this report excludes collisions that occurred on San Francisco freeways, in the Presidio, or on private property. It includes collisions on city streets that are classified as state highways (such as 19th and Van Ness avenues).

Due to limited police staff resources, property damage only (non-injury) collisions are generally underreported in San Francisco. Injury and fatal collisions have been reported more consistently over time and are thus the focus of this report.

PART 1: CITYWIDE INJURY AND FATAL COLLISION TRENDS

Reported non-fatal injury collisions in San Francisco totaled 2,877 in 2009. This figure is the second lowest non-fatal injury collision total of the past 10 years (Figure 2). 2009's total was down from that reported in 2008, when 3,010 non-fatal injury collisions were reported. While non-fatal injury collisions steadily declined until 2006, annual totals have remained relatively unchanged since then. The total number of reported victims injured by traffic collisions in 2009 was 3,711.

The number of collisions resulting in fatalities in 2009, 30, was higher than the total of

27 in 2008 (Figure 2). In general, injury collisions are a more reliable indicator of collision trends because fatal collisions, being fewer in number, are subject to sharper fluctuations from year to year. This is illustrated in the higher annual variance seen in Figure 2 compared to Figure 1. Since 2004 annual fatal collision totals below 30 have been more common, a possible indication of an improving trend.

FIGURE 1
San Francisco Non-Fatal Injury Collision Totals (1999-2009)

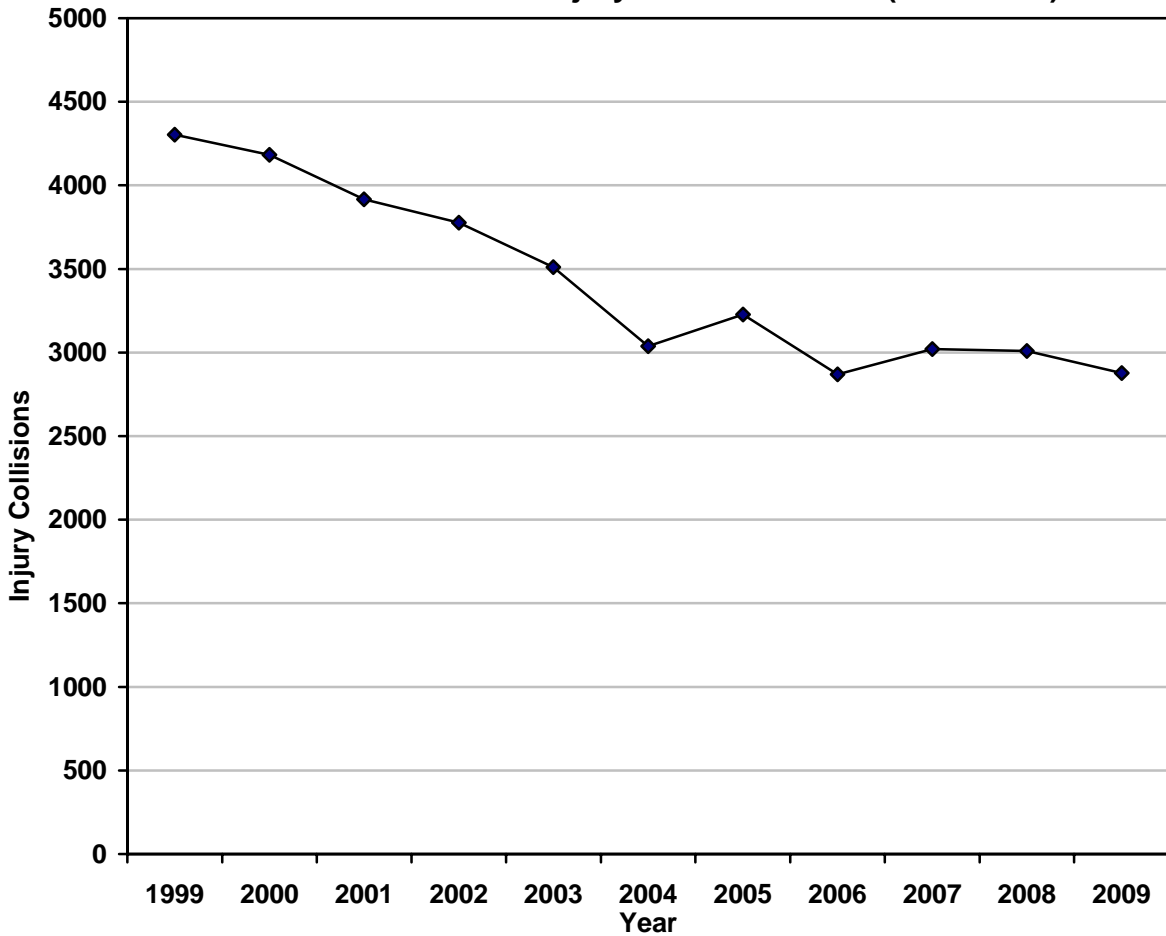


Figure 1: San Francisco Non-Fatal Injury Collision Totals (1999-2009)

Year	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Total	4,304	4,182	3,917	3,777	3,511	3,038	3,227	2,869	3,021	3,010	2,877

FIGURE 2
San Francisco Fatal Collision Totals (1999-2009)

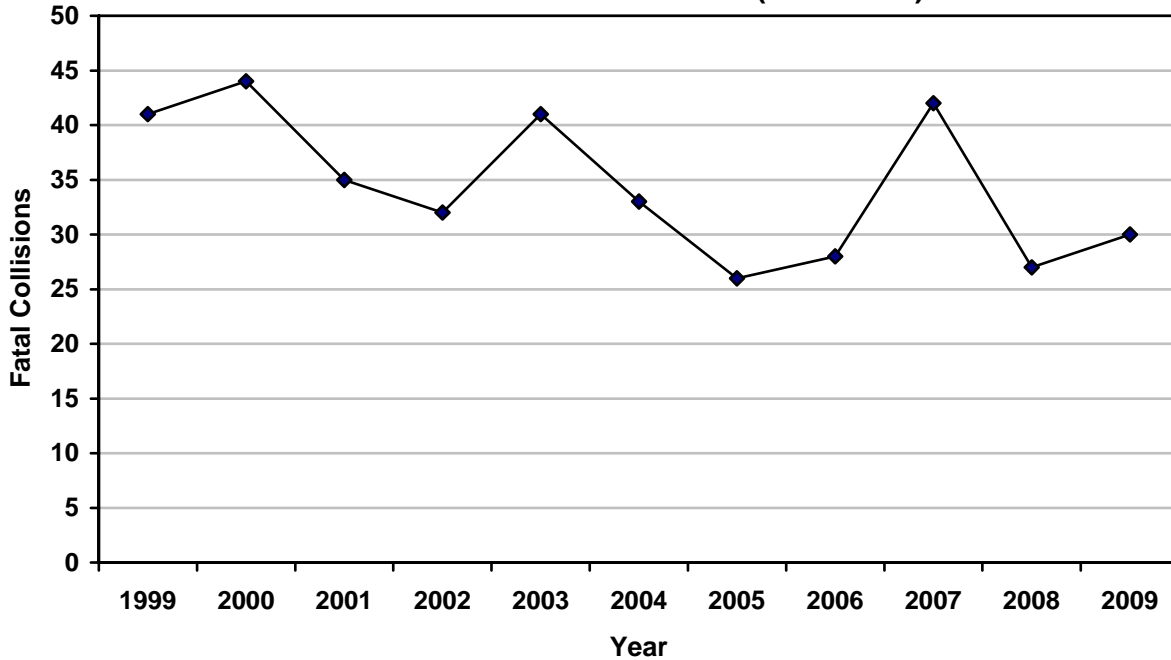


Figure 2: San Francisco Fatal Collision Totals (1999-2009)

Year	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Total	41	44	35	32	41	33	26	28	42	27	30

Table 1 lists the previous five-year non-fatal injury collision totals according to the three non-fatal injury severity categories used by all police departments in the state. The percentage of "Other visible Injury" plus "severe injury" has increased slightly over the past five years, going from 34 percent of the injury total in 2005 to 38 percent in 2009.

TABLE 1
San Francisco 2005-2009 Injury Collision Severity
(With percentage of annual total injury collisions)

Year	Complaint of Pain	Other Visible Injury	Severe Injury	Total
2009	1,782 (62%)	901 (31%)	194 (7%)	2,877
2008	1,889 (63%)	941 (31%)	180 (6%)	3,010
2007	1,937 (64%)	896 (30%)	188 (6%)	3,021
2006	1,895 (66%)	807 (28%)	167 (6%)	2,869
2005	2,118 (66%)	936 (29%)	173 (5%)	3,227

PART 2: COLLISION TYPES AND CAUSES

Tables 2 and 3 show injury collision totals by primary collision type and cause. The two most common types of collisions, broadsides and vehicle-pedestrian, together comprise 53 percent of injury collisions. The top primary collision cause is speeding. Collisions, however, can be the result of more than one single cause or set of conditions.

**TABLE 2
2009 Non-Fatal Injury Collisions by Primary Collision Type (Total of 2,877)**

Type	Collisions	Percent
Broadside (Right-Angle)	885	31%
Vehicle-Pedestrian	626	22%
Rear-End	478	17%
Sideswipe	354	12%
Head-On	163	6%
Other	371	13%

**TABLE 3
2009 Non-Fatal Injury Collisions by Primary Collision Cause (Total of 2,877)**

Cause	Collisions	Percent
Unsafe Speed	544	19
Violation of Traffic Signals and Signs	394	14
Vehicle Right-of-Way Violations	358	12
Driver Violations of Pedestrian Right-of-Way	289	10
Improper Turning	261	9
Violations by the Pedestrian	235	8
Other	826	28

Figure 3 illustrates the trend in broadside (right-angle) injury collisions and injury collisions resulting from violation of California Vehicle Code Section 21453(A), failure by a motorist to obey red light signal indication. 2009 recorded the lowest broadside and red light violation injury collision totals of the past ten years. Traffic signal hardware and timing improvements described in this report appear to have helped reduce these types of collisions at certain intersections. This decrease also coincides with the city’s deployment of red light photo enforcement starting in 1997 and other efforts aimed at reducing the incidences of red light running.

FIGURE 3
San Francisco Injury Broadside and Injury Red Light Violation Collisions (2000-2009)

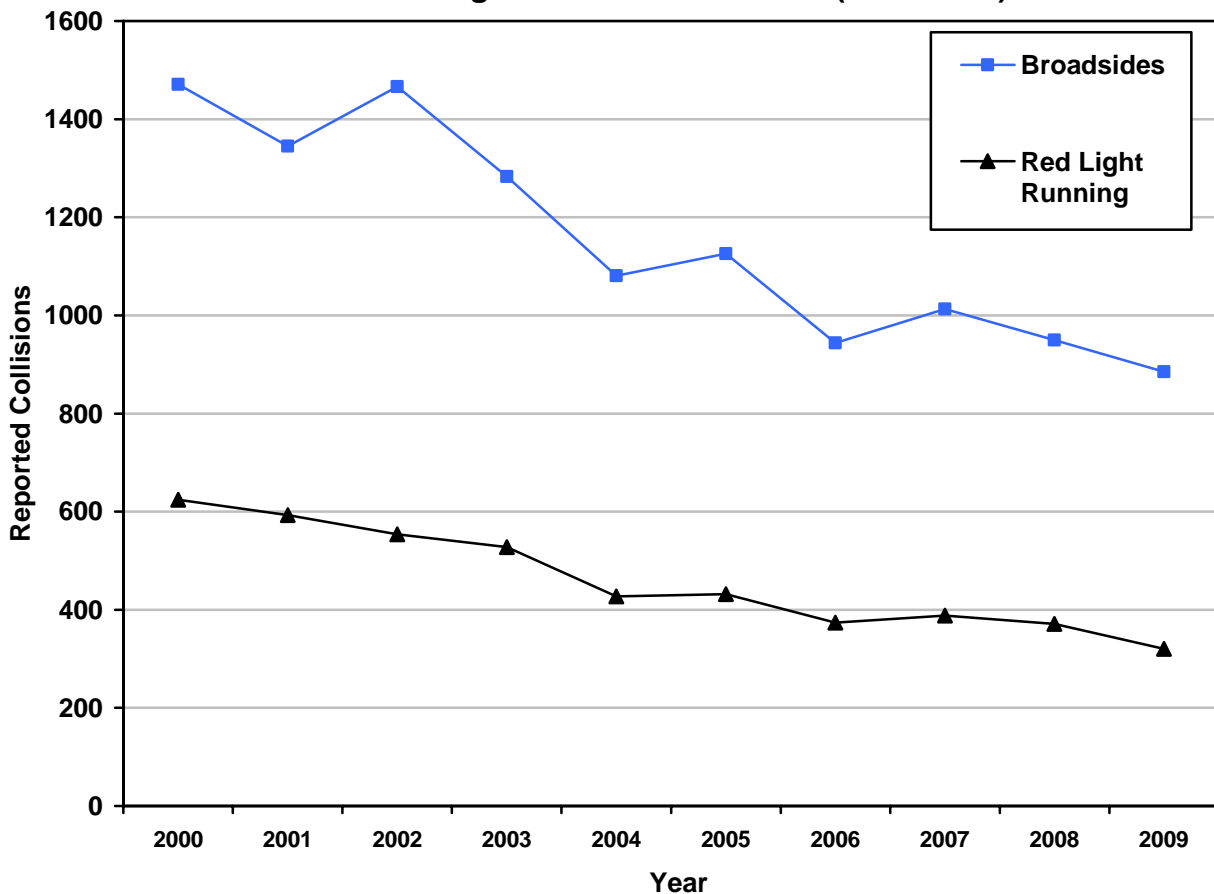


Figure 3: San Francisco Injury Broadside and Injury Red Light Collisions (2000-2009)

Year	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Total Broadside	1471	1345	1466	1283	1081	1126	944	1013	950	885
Total Red Light Running	624	593	554	528	427	432	374	388	371	320

PART 3: HIGHEST COLLISION INTERSECTIONS

The majority of injury collisions in San Francisco occur at intersections. In 2008, two-thirds of injury collisions (1,892) were collisions at or within a few feet of an intersection. As documented in previous annual reports, the number of intersections with double digit annual injury collision totals has decreased, thanks in part to San Francisco’s targeted safety efforts. Table 4 lists the locations with the most collisions reported during 2009 (seven or more collisions resulting in injury to at least one party). The number of locations in this table in 2009 (seven) dropped compared to 2008, when thirteen intersections had seven or more collisions resulting in injury that year.

**TABLE 4
2009 Highest Injury Collision Total Intersections
Intersections with seven or more collisions resulting in injury during 2008**

Street A	Street B	2008 Injury Collisions	2009 Injury Collisions	Change
16 th Street	Potrero Avenue	3	9	+6
4 th Street	Harrison Street	3	9	+6
19 th Avenue	Lincoln Way	3	8	+5
Hayes Street	Van Ness Avenue	3	8	+5
Market Street	Octavia Boulevard	9	7	-2
Arguello Blvd	Fulton Street	1	7	+6
6 th Street	Harrison Street	2	7	+5

The 2008 highest collision location, Market Street at Octavia Boulevard, was the only location to appear again in the 2009 highest collision intersection table. It has had an above-average number of bicycle-involved collisions since 2005. The majority of these collisions are caused by illegal vehicle right turns from eastbound Market Street to the Central Freeway on-ramp. In 2009 six of the seven reported collisions were bicycle-related. This location is discussed further below.

The 2009 highest collision locations of 16th Street at Potrero Avenue and 4th Street at Harrison Street are both new to the list. In 2010 SFMTA installed larger traffic signal heads facing 16th Street to improve visibility. In previous years the Agency had already

completed a major signal redesign that included the addition of pedestrian signals. In 2010 the traffic signal timing was also updated at this intersection. 4th and Harrison Streets and the remaining intersections in Table 4 will be evaluated by SFMTA staff for possible engineering changes.

Table 5 is a list of the highest injury collision intersections for the most recent three-year period, 2007-2009. This extended analysis period identifies locations that have had cumulative higher totals, reducing the effect of statistical anomalies (such as regression to the mean). Figures 4 through 15 describe the ten-year collision pattern for these intersections. Collision patterns at each of these intersections are discussed below.

TABLE 5
Three-Year Highest Injury Collision Intersections, 2007-2009
Intersections with 16 or more injury collisions

Street A	Street B	2007-2009 Injury Collisions
Market Street	Octavia Boulevard	25
6 th Street	Howard Street	20
Bayshore Blvd	Silver Avenue	19
13 th Street	South Van Ness Ave	19
6 th Street	Market Street	17
Essex Street	Harrison Street	17
Fell Street	Masonic Avenue	17
19 th Avenue	Sloat Boulevard	17
19 th Avenue	Junipero Serra Blvd	16
4 th Street	Harrison Street	16
Bayshore Blvd	Paul Avenue	16
Hayes Street	Van Ness Avenue	16

Market Street and Octavia Boulevard

2007-2009 injury collisions: 25

Primary Pattern: Eastbound Market Street illegal vehicle right turns to freeway on-ramp colliding with eastbound bicyclists travelling in bicycle lane

Engineering Changes: Intersection completely redesigned as part of Octavia Boulevard project (opening date September 2005). City took a number of enforcement, signage, timing, and channelizing measures to improve compliance with right-turn restriction on eastbound Market Street. Intersection remains under SFMTA review.

Collision Trend: Increase in collision totals since 2005, with intersection having the overall highest bicycle collision total for the city.

FIGURE 4
Octavia Boulevard and Market Street, Injury Collisions
(2000-2009)

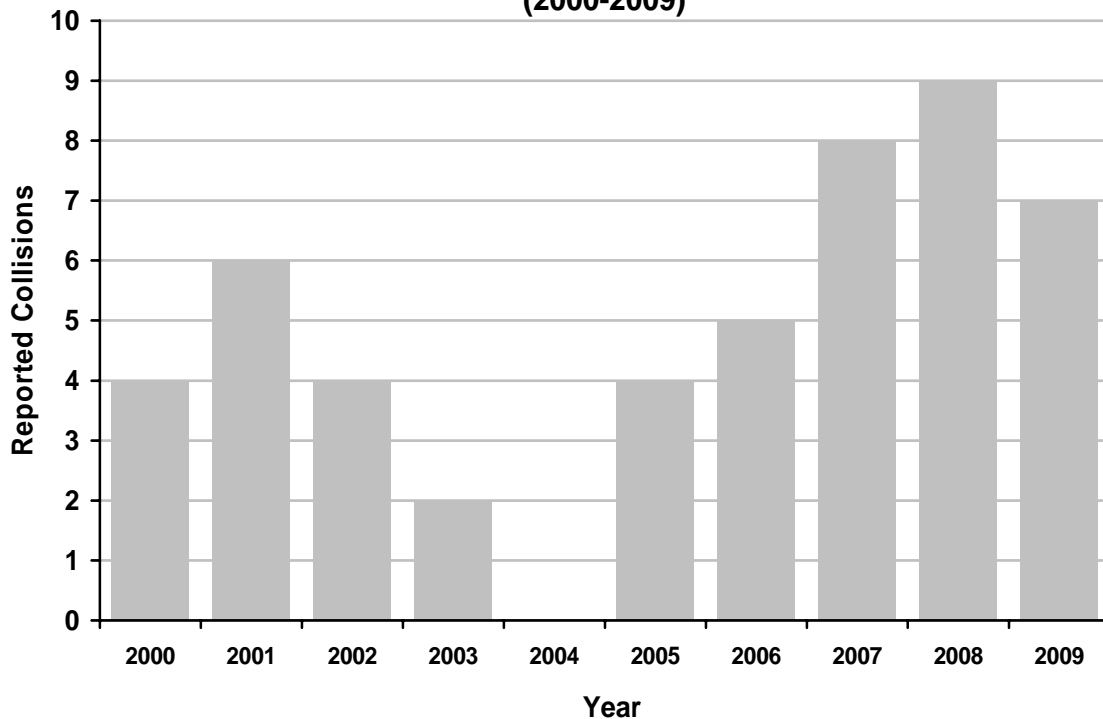


Figure 4: Octavia Boulevard and Market Street, Injury Collisions (2000-2009)

Year	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Total	4	6	4	2	0	4	5	8	9	7

6th Street and Howard Street

2007-2009 injury collisions: 20

Primary Pattern: Turning vehicles and pedestrians.

Engineering Changes: New curb ramps and northeast corner sidewalk extension were completed as part of the City’s 6th Street repaving project. SFMTA modified the traffic signal timing in 2004 to add all-red traffic signal clearance phases and in 2007 to add a pedestrian leading interval. Dual left-turn lane from westbound Howard to 6th Street was removed. New sign to warn turning vehicles to yield to pedestrians installed in 2010. SFMTA also added a red zone on the southeast corner to increase visibility.

Collision Trend: Collision total dropped in 2009 relative to 2007-2008 totals. SFMTA will review signal timing at intersection.

FIGURE 5
6th Street and Howard Street, Injury Collisions (2000-2009)

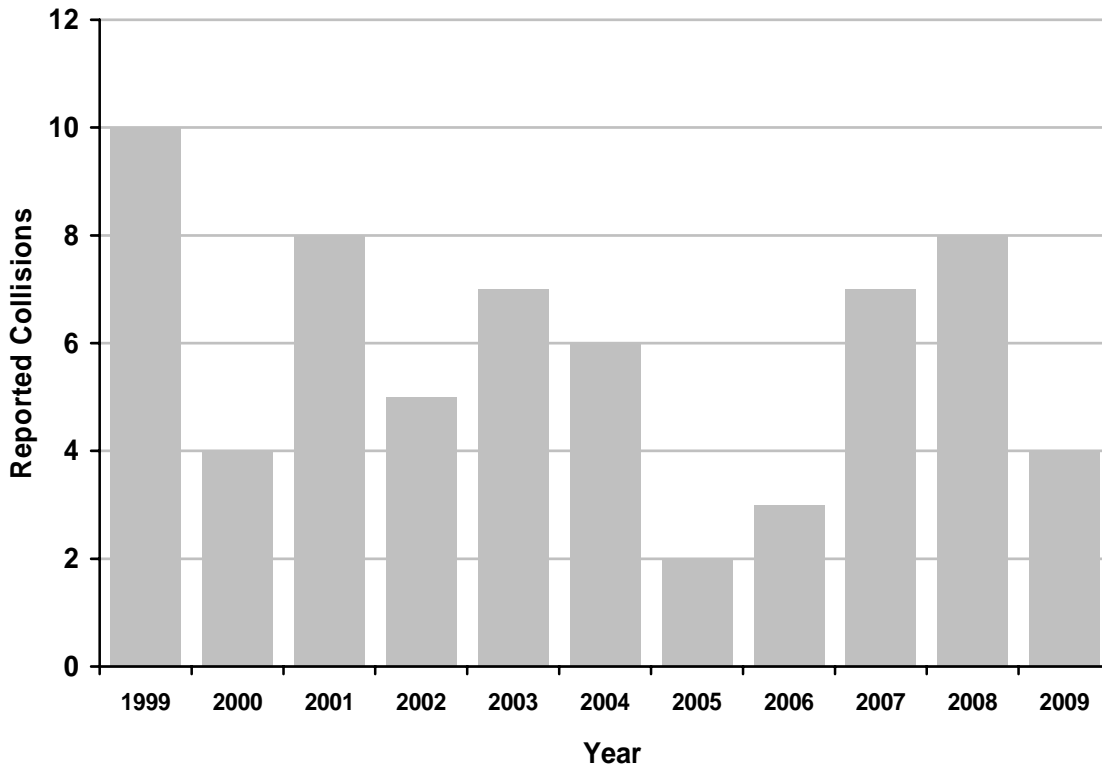


Figure 5: 6th Street and Howard Street, Injury Collisions (2000-2009)

Year	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Total	4	8	5	7	6	2	3	7	8	4

Bayshore Boulevard and Silver Avenue

2007-2009 injury collisions: 19

Primary Pattern: Northbound Bayshore Boulevard left turn movements

Engineering Changes: Traffic signal was under the jurisdiction of the State (Caltrans) until 2007. Caltrans delegated the intersection to the city for operation and maintenance. SFMTA is now preparing traffic signal design modifications that will include a new left turn green signal arrow for northbound Bayshore Boulevard. These changes are in the construction stage.

Collision Trend: After recording one of the highest collision totals for 2000 with 13 injury collisions, intersection totals have fallen within the range of six to seven a year. Planned signal upgrade should help address pattern of left-turn collisions.

FIGURE 6
Bayshore Boulevard and Silver Avenue,
Injury Collisions (2000-2009)

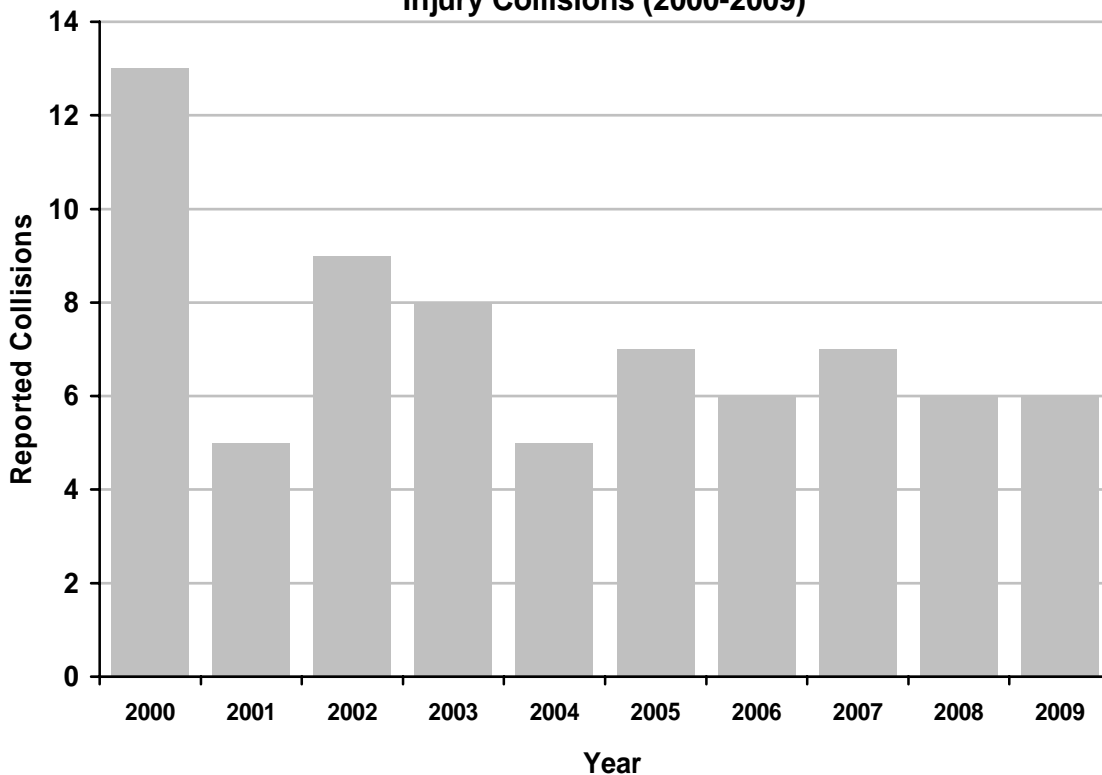


Figure 6: Bayshore Boulevard and Silver Avenue, Injury Collisions (2000-2009)

Year	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Total	13	5	9	8	5	7	6	7	6	6

13th Street and South Van Ness Avenue

2007-2009 injury collisions: 19

Primary Pattern: Southbound South Van Ness Avenue broadsides, left turns, and rear end collisions.

Engineering Changes: Since the closure of the Central Freeway in 1996 various traffic changes have been made here including revised traffic lanes, new left turn and right turn signalization for 13th Street, and longer yellow and all-red clearance phases. SFMTA modified the traffic signal timing in December 2007 to reduce the cycle length after the opening of Octavia Boulevard. In 2008 SFMTA installed pedestrian countdown signals crossing 13th Street.

Collision Trend: Collision total dropped in 2009 relative to 2007-2008 totals, falling back to recent annual average collision totals.

FIGURE 7
13th Street and South Van Ness Avenue,
Injury Collisions (2000-2009)

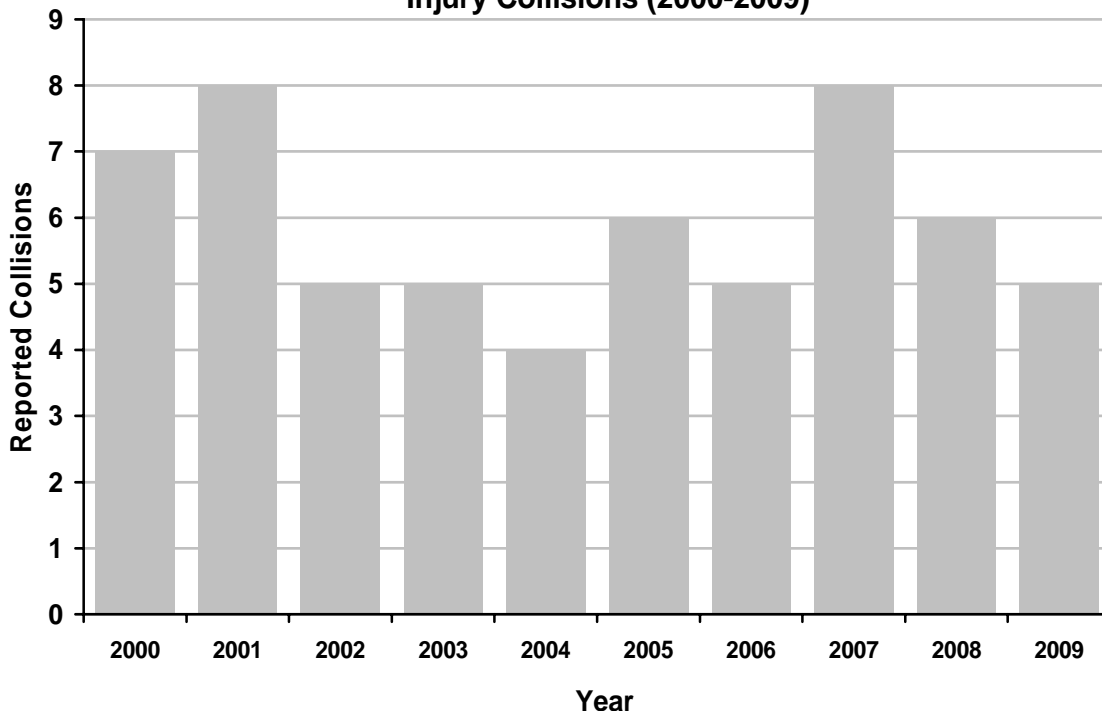


Figure 7: 13th Street and South Van Ness Avenue, Injury Collisions (2000-2009)

Year	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Total	7	8	5	5	4	6	5	8	6	5

6th Street, Golden Gate Avenue, Market Street and Taylor Street

2007-2009 injury collisions: 17

Primary Pattern: Pedestrian collisions

Engineering Changes: Pedestrian countdown signals were installed in 2003. Crosswalks were repainted in 2009. Pedestrian signals were modified in January of 2009 to make them more visible to pedestrians crossing Market Street. SFMTA installed “No Turn on Red” regulation for all approaches in 2009. A 2009 pilot program that requires eastbound traffic on Market Street to turn right at 10th and 6th streets reduced eastbound volumes at this intersection.

Collision Trend: Sharp decrease in 2009 relative to 2006-2008 totals.

FIGURE 8
6th, Golden Gate, Taylor and Market,
Injury Collisions (2000-2009)

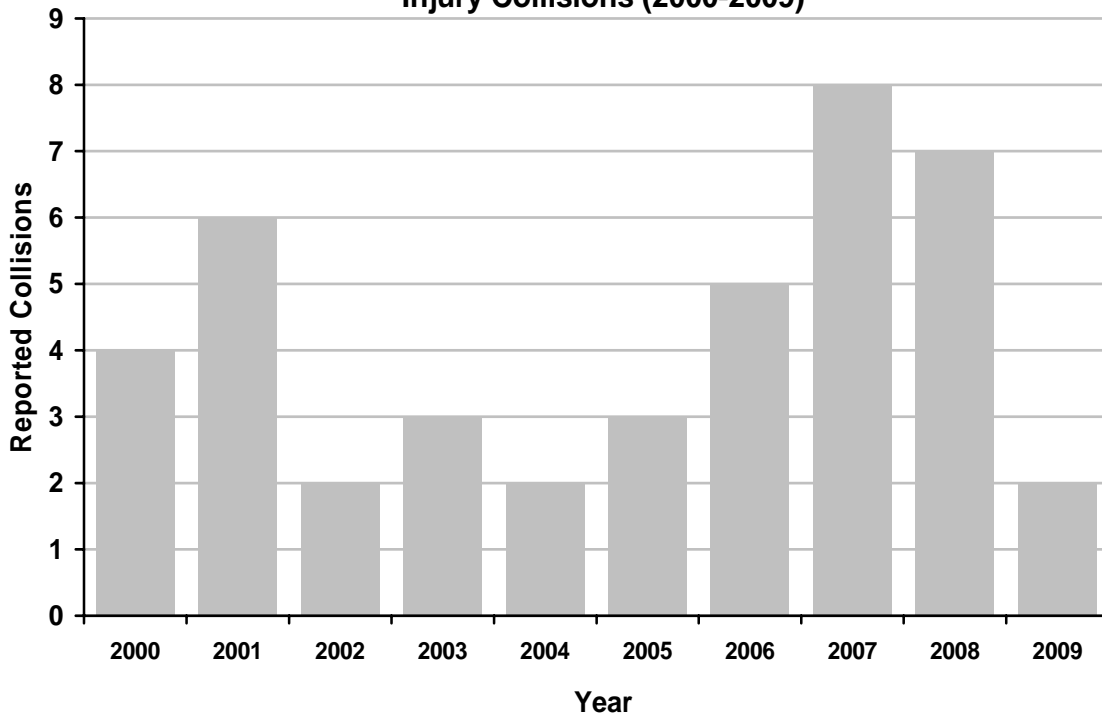


Figure 8: 6th, Golden Gate, Taylor and Market, Injury Collisions (2000-2009)

Year	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Total	4	6	2	3	2	3	5	8	7	2

Essex Street and Harrison Street

2007-2009 injury collisions: 17

Primary Pattern: Westbound Harrison broadsides with southbound Essex Street.

Engineering Changes: Intersection was taken over from Caltrans by the City in 1998. Pedestrian countdown signals and longer yellow phases were added in 2003 and 1.5 second all red phases added in 2007. During the past five years the intersection has been impacted by construction changes related to Caltrans' Bay Bridge retrofit project.

Collision Trend: This location shows a clear upward collision pattern after 2004, with the first reversal noted in 2009 (half the collision total of 2008). Construction at this intersection should be completed in 2011.

FIGURE 9
Essex Street and Harrison Street, Injury Collisions (2000-2009)

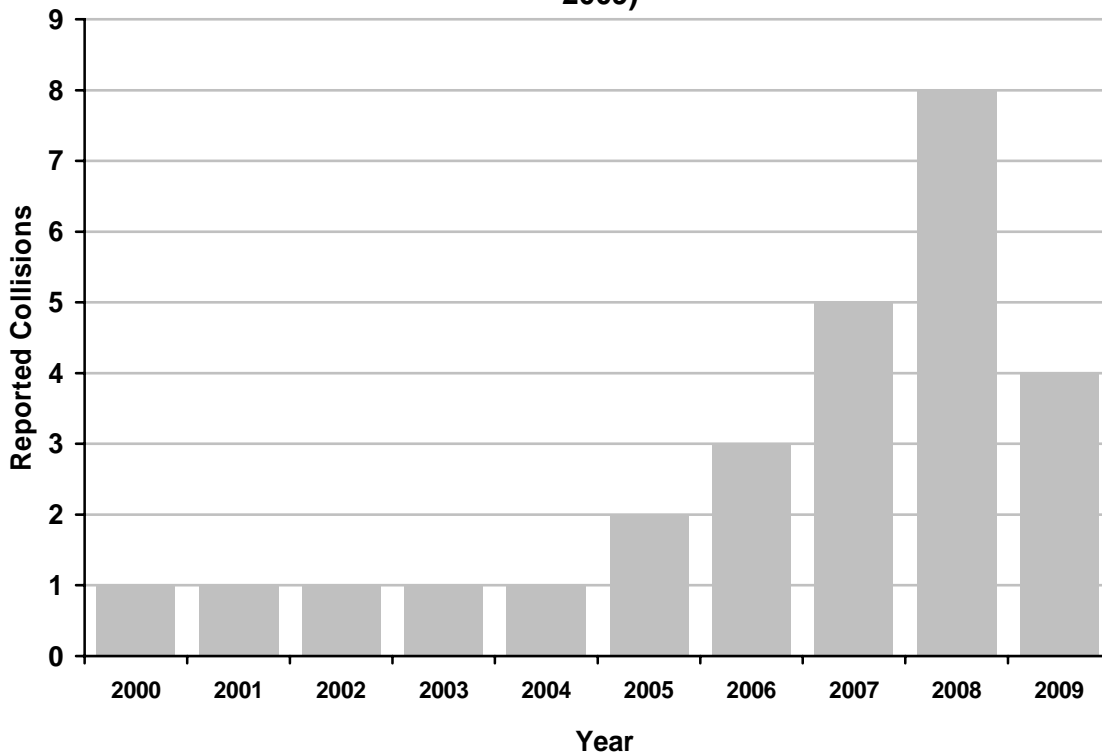


Figure 9: Essex Street and Harrison Street, Injury Collisions (2000-2009)

Year	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Total	1	1	1	1	1	2	3	5	8	4

Fell Street and Masonic Avenue

2007-2009 injury collisions: 17 (Some collisions between vehicles and bicycles here are reported as mid-block collisions due to the offset of the Panhandle path from the intersection.)

Primary Pattern: Westbound Fell Street left turns with Panhandle path bicycles.

Engineering Changes: In 2008 SFMTA installed a bicycle signal treatment that separated Fell Street left-turning motor vehicles from bicycles and pedestrians crossing Masonic Avenue on the south side at Fell Street. Further signal design changes for Fell Street left turns are in the design stage.

Collision Trend: This location has had a stable pattern since 2006 of 6 to 5 reported intersection collisions a year.

FIGURE 10
Fell Street and Masonic Avenue, Injury Collisions (2000-2009)

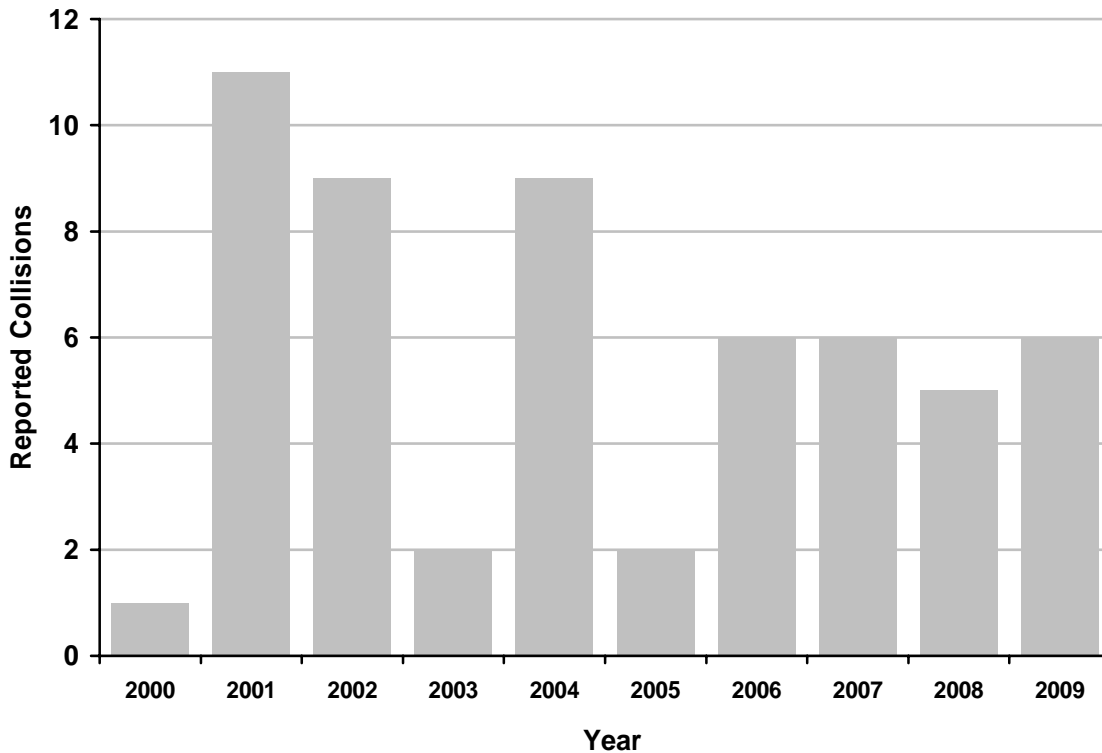


Figure 10: Fell Street and Masonic Avenue, Injury Collisions (2000-2009)

Year	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Total	1	11	9	2	9	2	6	6	5	6

19th Avenue and Sloat Boulevard

2007-2009 injury collisions: 17

Primary Pattern: Sloat Boulevard eastbound left-turn collisions with Sloat Boulevard westbound through vehicles.

Engineering Changes: In the past 10 years the location has been fully upgraded, including addition of mast arm signals, pedestrian signals, red light cameras, and other related improvements. More recently SFMTA obtained Caltrans approval (both Sloat Boulevard and 19th Avenue are State highways) to install a left turn traffic signal green arrow phase for eastbound Sloat Boulevard. These changes were installed by SFMTA in November of 2007.

Collision Trend: Total injury collisions reported for the intersection dropped by half in 2008 compared to 2007. The 2009 total increased by one from 2008.

FIGURE 11
19th Avenue and Sloat Boulevard, Injury Collisions (2000-2009)

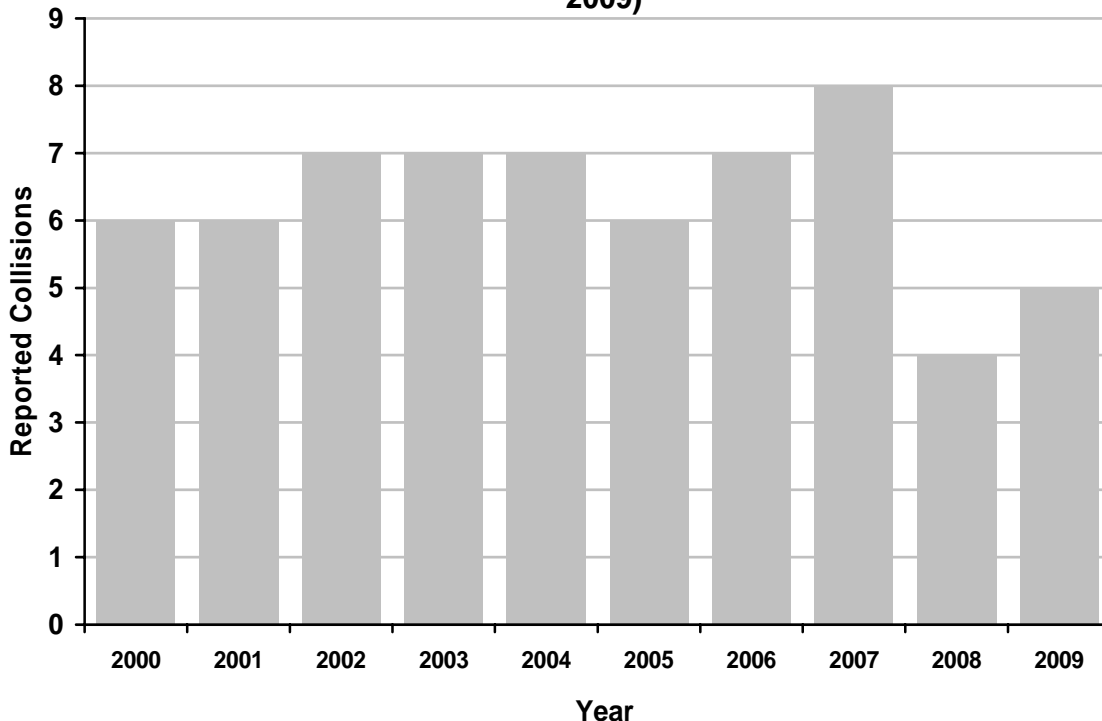


Figure 11: 19th Avenue and Sloat Boulevard, Injury Collisions (2000-2009)

Year	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Total	6	6	7	7	7	6	7	8	4	5

19th Avenue and Junipero Serra Boulevard

2007-2009 injury collisions: 16

Primary Pattern: Rear-end collisions for both Highway 1 approaches.

Engineering Changes: Traffic signal timing has been adjusted in the past to lengthen yellow phase and add all-red clearance phases. Intersection was upgraded as part of Phase 1 of the joint State-City Highway 1 signal project. The project included new overhead mast arm signals and a new signal timing plan in April of 2009.

Collision Trend: Injury collision total in 2009 tied for the lowest in the past ten years. SFMTA will continue to monitor.

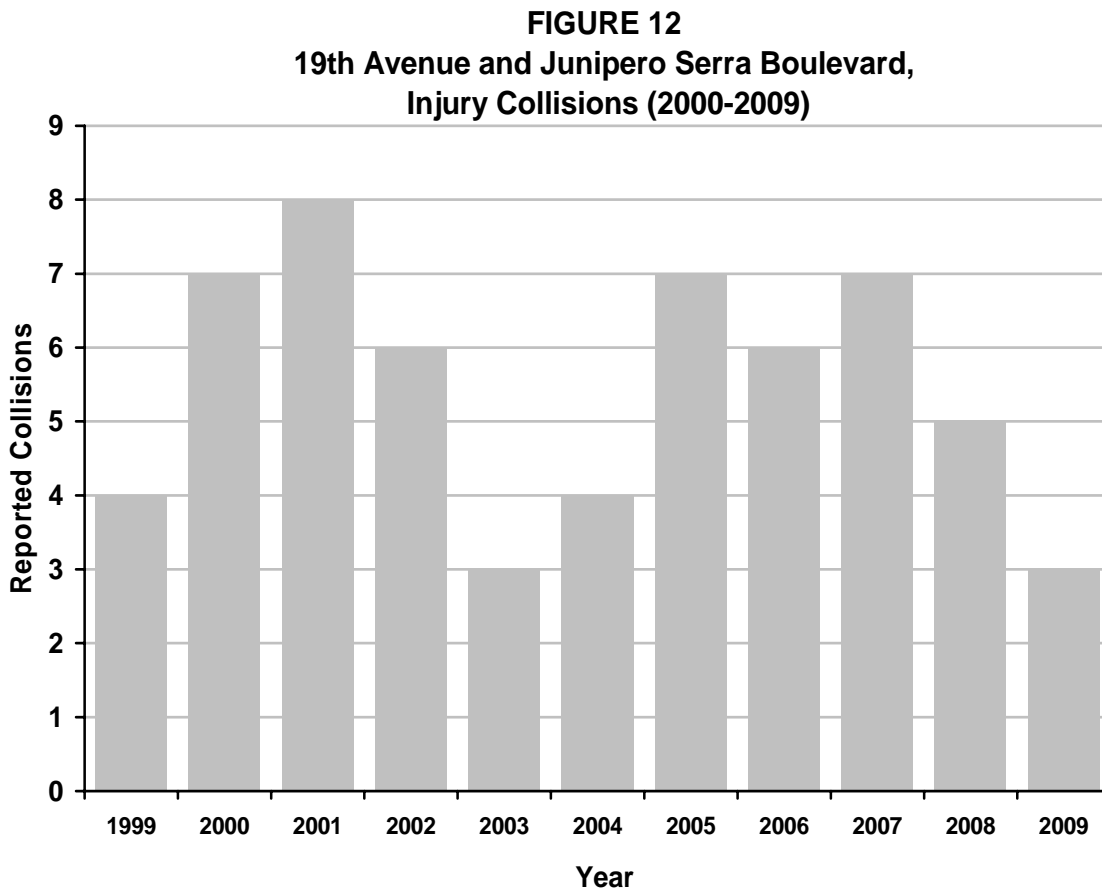


Figure 12: 19th Avenue and Junipero Serra Boulevard, Injury Collisions (2000-2009)

Year	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Total	7	8	6	3	4	7	6	7	5	3

4th and Harrison Streets

2007-2009 injury collisions: 16

Primary Pattern: Southbound sideswipe collisions

Engineering Changes: SFMTA has added mast arm signals to improve signal visibility and overhead mast arm traffic lane signs to clarify which lanes on 4th Street can be used to access the freeway. 4th Street is currently under construction as part of the SFMTA Central Subway project.

Collision Trend: Location saw a sharp drop in collisions after 2000-2001. Staff will review intersection to see why there was a sharp increase in 2009 after lower collision totals from 2004 to 2008.

FIGURE 13
4th and Harrison Streets, Injury Collisions (2000-2009)

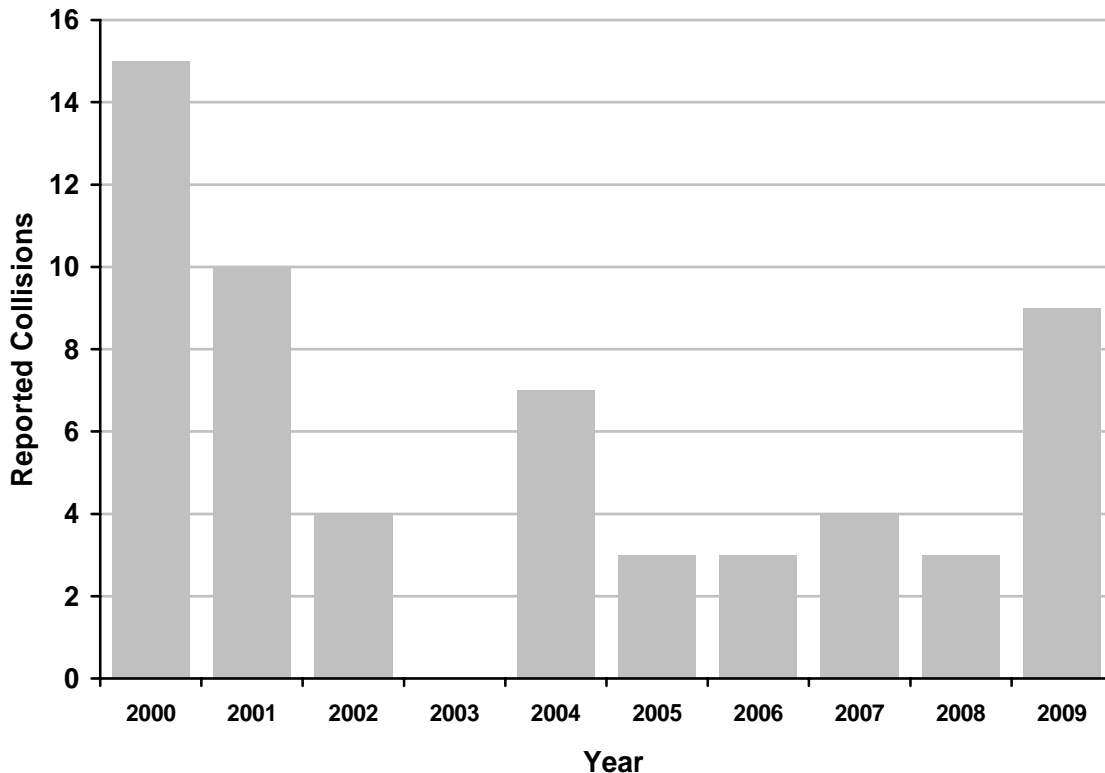


Figure 13: 4th Street and Harrison Street, Injury Collisions (2000-2009)

Year	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Total	15	10	4	0	7	3	3	4	3	9

Bayshore Boulevard and Paul Avenue

2007-2009 injury collisions: 16

Primary Pattern: None

Engineering Changes: SFMTA has modified the signal timing of the intersection to improve safety. SFMTA has obtained funding to completely redesign the traffic signals at this intersection, which will add overhead signal mast arms and pedestrian signals. These changes are currently in the design stage.

Collision Trend: Location has averaged five or more injury collisions during the past ten years.

FIGURE 14
Bayshore Blvd and Paul Avenue, Injury Collisions (2000-2009)

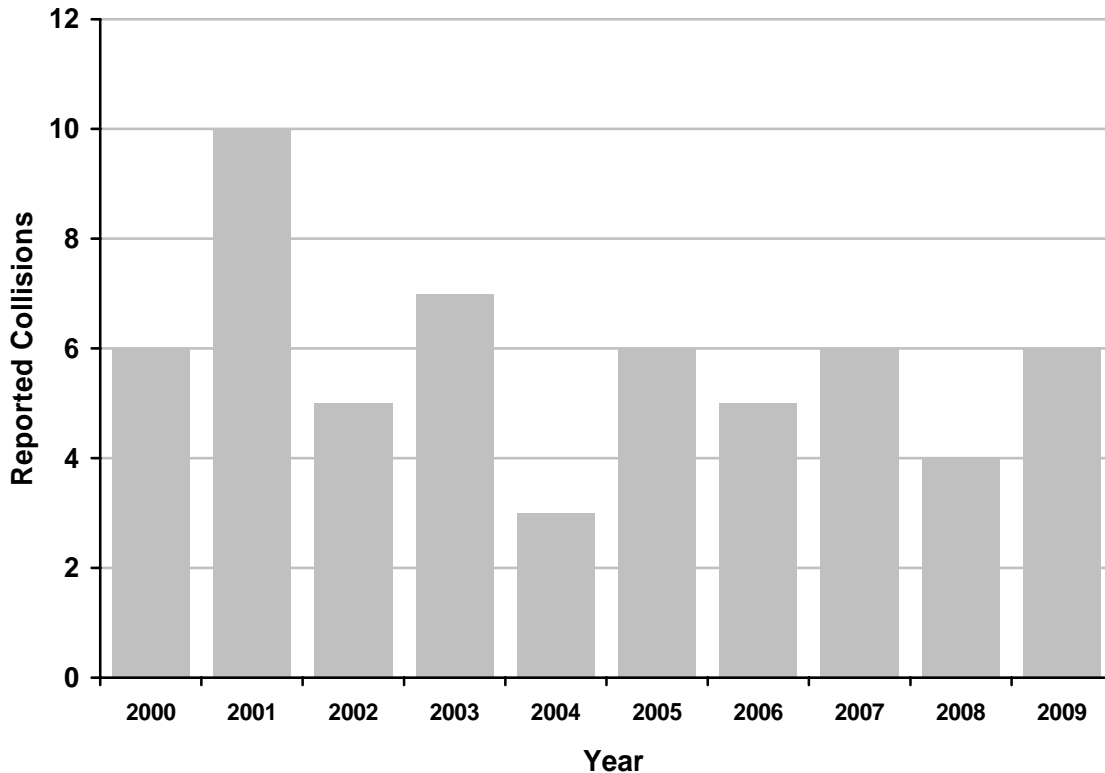


Figure 14: Bayshore Boulevard and Paul Avenue, Injury Collisions (2000-2009)

Year	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Total	6	10	5	7	3	6	5	6	4	6

Hayes Street and Van Ness Avenue

2007-2009 injury collisions: 16

Primary Pattern: Left turn collisions

Engineering Changes: SFMTA adjusted traffic signal timing in 2010 to increase duration of all-red clearance phase. Intersection will be significantly redesigned as part of the Van Ness Avenue Bus Rapid Transit project, currently in the planning stage. Changes will include installation of pedestrian signals and possible changes to Van Ness Avenue left turn controls and medians.

Collision Trend: 2009 had the highest collision total in ten years.

FIGURE 15
Hayes St and Van Ness Avenue, Injury Collisions (2000-2009)

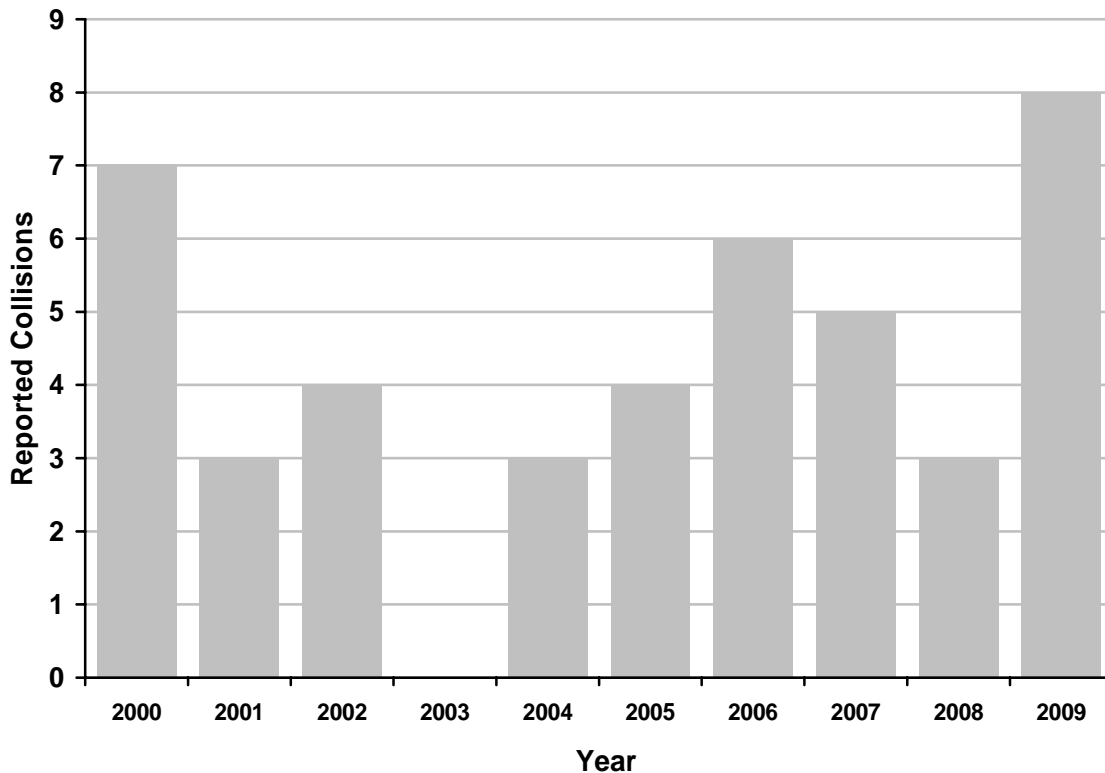


Figure 15: Hayes Street and Van Ness Avenue, Injury Collisions (2000-2009)

Year	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Total	7	3	4	0	3	4	6	5	3	8

PART 4: PEDESTRIAN AND BICYCLE COLLISIONS

A fourth of San Francisco’s 2,877 injury collisions and more than half of the 30 fatal collisions involve pedestrians (Table 6). In 2009 bicycles were involved in 18 percent of injury collisions and three percent of citywide fatal collisions.

**TABLE 6
2009 Non-Fatal Injury and Fatal Collisions by Parties Involved**

Party	Total Injury Collisions	Percent of Injury Collisions	Total Fatal Collisions	Percent of Fatal Collisions
Pedestrian	695	24%	17	56%
Bicyclist	531	18%	1	3%

Table 7 shows collision totals using the SWITRS field “Motor Vehicle Involved With.” Just under half of fatal collisions in 2009 involved a motor vehicle involved with a pedestrian or bicycle. (Different collision totals between Tables 2, 6 and 7 are due to the various ways collisions can be classified using the State collision form.)

**TABLE 7
2008 Non-Fatal Injury and Fatal “Motor Vehicle Involved With” Collisions**

Motor Vehicle Involved With...	Total Injury Collisions	Percent of Injury Collisions	Total Fatal Collisions	Percent of Fatal Collisions
Other Motor Vehicle	1,351	47%	6	20%
Pedestrian	688	24%	17	56%
Bicyclist	464	16%	1	3%
Fixed Object	145	5%	4	13%
Others	229	8%	2	7%
TOTAL	2,877	100%	30	100%

Bicycle Collision Totals

There were 531 injury collisions in 2009 involving bicyclists as a party, up 13 percent from the 468 total recorded in 2008. The 2009 injury collision total is the highest in the past ten years. Bicycle-involved collisions have not declined recently like other collision types, instead going up every year since 2002 (Figure 16). This increase in collisions has coincided with a statistically significant increase in the number of bicyclists riding on various city streets, as measured by annual counts taken by the SFMTA documented in the *Citywide Bicycle Count Report* (December 2010).

Until 2009 the City was under an injunction preventing any bicycle-related infrastructure changes from taking place prior to the completion of extensive environmental analysis. The SFMTA is now making safety upgrades along many important bicycle routes.

FIGURE 16
San Francisco Injury Collisions Involving Bicyclists
(2000-2009)

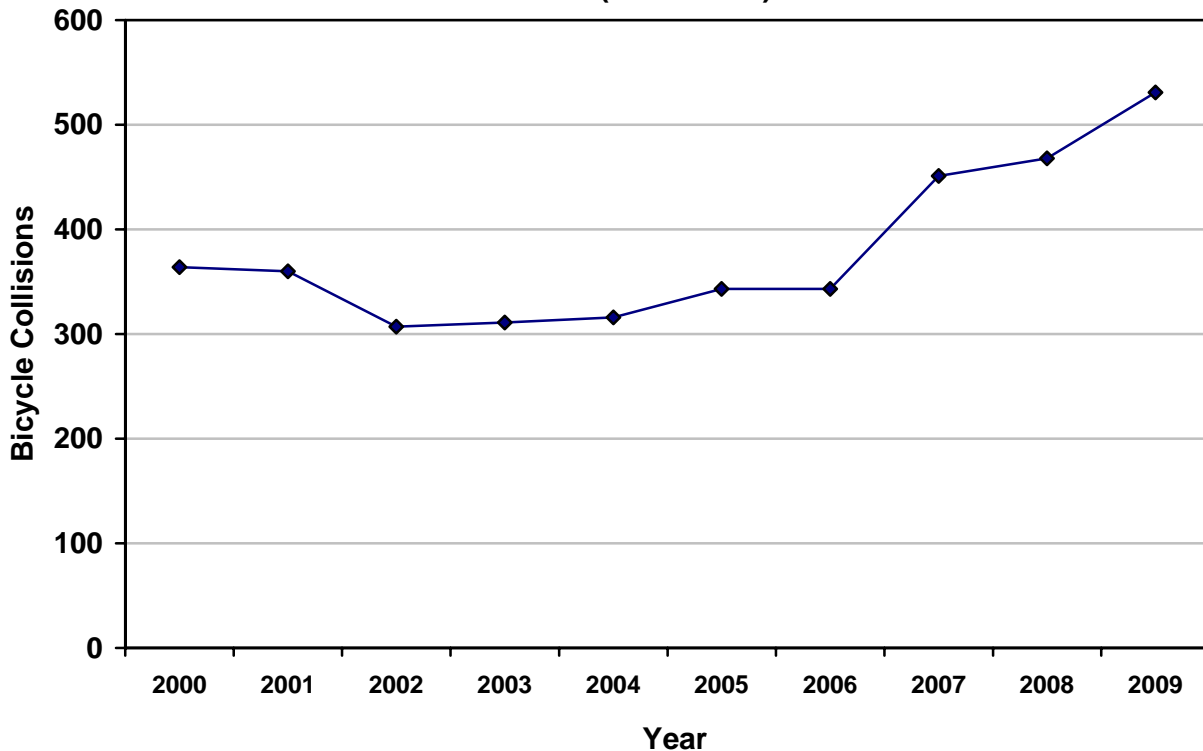


Figure 16: San Francisco Injury Collisions Involving Bicyclists (2000-2009)

Year	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Total	364	360	307	311	316	343	343	451	468	531

Table 8 summarizes fatal bicycle collision totals for 2002-2009. Tables 9 and 10 list collision types and primary causes for collisions in which a bicycle was involved, regardless of who was at fault.

TABLE 8 - Fatal Collisions Involving Bicycles, 2002-2009

Year	2002	2003	2004	2005	2006	2007	2008	2009
Total	1	1	1	2	2	1	3	1

**TABLE 9
2009 Non-Fatal Injury Bicycle Collisions by Collision Types**

Type	Collisions	Percent
Broadside (Right-Angle)	185	35%
Sideswipe	121	23%
Head On	28	5%
Other	197	38%

**TABLE 10
2009 Non-Fatal Injury Bicycle Collisions by Primary Collision Causes**

Cause	Collisions	Percent
Improper Turning	99	19%
Other Hazardous Movement	68	13%
Vehicle Right-of-Way Violations	69	13%
Unsafe Speed	59	11%
Traffic Signals/Signs Violation	55	10%
Other	181	34%

Table 11 is a list of the highest bicycle injury intersections for the last three years on record.

**TABLE 11
Highest “Motor Vehicle Involved with Bicycle” Injury Collision Intersections
5 or more injury reported collisions 2007-2009**

Street A	Street B	2007-2009 Injury Collisions
Market Street	Octavia Boulevard	19
Fell Street	Masonic Avenue	12
Market Street	Valencia Street	10
Geary Street	Polk Street	7
14 th Street	Guerrero Street	5
17 th Street	Valencia Street	5
Polk Street	Turk Street	5

The top two locations, Market Street at Octavia Boulevard and Fell Street and Masonic Avenue, have been previously discussed. SFMTA will make bicycle lane striping changes on Market Street at Valencia Street in 2011.

Additional analysis about these locations and bicycle safety statistics is being compiled in a separate report on bicycle collisions.

Pedestrian Collisions

The 2009 total of 695 injury collisions involving a pedestrian is significantly lower than the figure of 799 injury collisions reported in 2008 (Figure 17). In the first half of the decade pedestrian collisions steadily declined from the over 1,000 incidents recorded annually in the 1990’s. The 13 percent decline in reported pedestrian injury collisions for 2009 compared to 2008 is the sharpest drop since 2004.

FIGURE 17
San Francisco Injury Collisions Involving Pedestrians
(2000-2009)

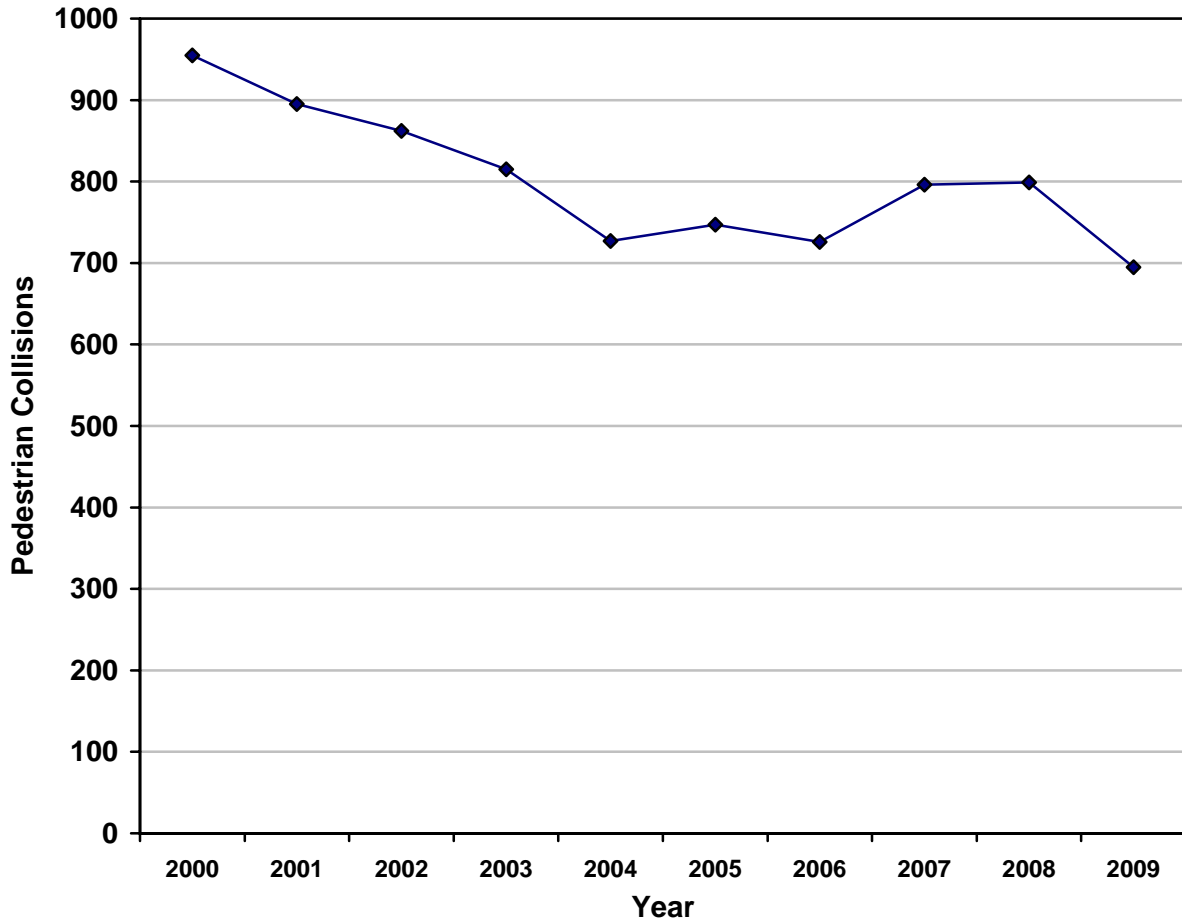


Figure 17: San Francisco Injury Collisions Involving Pedestrians (2000-2009)

Year	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Total	955	895	862	815	727	747	726	796	799	695

The number of fatal collisions involving a pedestrian increased to 17 in 2009, after the lowest total of the decade was recorded in 2008 (Figure 18). The recent trend among pedestrian fatal collisions appears to be down, with the three lowest totals reported in 2005, 2006 and 2008.

FIGURE 18
San Francisco Pedestrian Fatal Collision Totals (2000-2009)

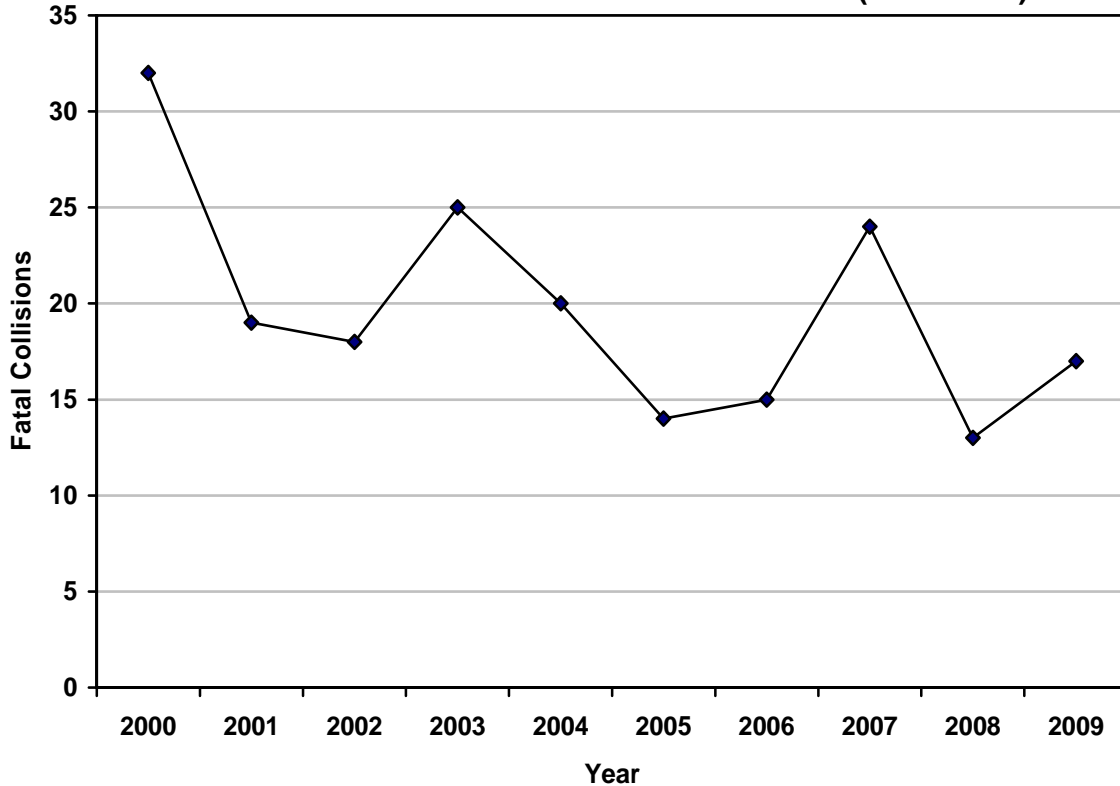


Figure 18: San Francisco Fatal Collision Totals (2000-2009)

Year	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Total	32	19	18	25	20	14	15	24	13	17

Table 12 notes the collision causes as assessed by the SFPD officer at the scene for collisions in which a motorist hit a pedestrian. The plurality of collisions (42 percent) was caused by a violation of the pedestrian right-of-way on the part of the motorist. This most frequently happens when a motorist does not yield to a pedestrian at a crosswalk or when a motorist makes a turn at a signalized intersection without yielding first. Violations on the part of the pedestrian were determined to be the cause of about a third of the total vehicle-pedestrian collisions. These can involve violation of pedestrian traffic signal indications or crossing in any place or manner prohibited by the California Vehicle Code. While driving at unsafe speeds is not a frequently listed primary collision cause for vehicle-pedestrian collisions, it can be a contributing factor both in causing collisions and in increasing their severity.

**TABLE 12
2008 Non-Fatal Pedestrian Collisions by Primary Collision Cause**

Cause	Collisions	Percent
Violation of Pedestrian Right of Way	291	42%
Pedestrian Violation	238	34%
Unsafe Speed	35	5%
Violation of Traffic Signals and Signs	31	4%
Other	100	14%

Table 13 shows highest injury vehicle-pedestrian collision locations for the three-year period 2007-2009. The top two locations are on 6th Street and discussed in more detail in the section on the City’s highest collision intersections. Two of the intersections are located on Market Street. The City is currently beginning a major planning effort looking at possible safety and operational improvements for this important transit, pedestrian and bicycle street. SFMTA will evaluate the collisions at 6th Avenue at Geary Boulevard for possible engineering measures.

**TABLE 13
Three Year Highest Injury Vehicle-Pedestrian Collision Intersections
Intersections with seven or more collisions resulting in injury, 2007-2009**

Street A	Street B	2007-2009 Injury Collisions
6 th Street/Market	Golden Gate/Taylor	11
6 th Street	Howard Street	11
6 th Avenue	Geary Boulevard	7
5 th Street	Market Street	7

At the citywide level, SFMTA has implemented a variety of measures to improve pedestrian safety, including installing new pedestrian signs, crosswalk markings, parking prohibitions, signal timing settings, countdown pedestrian signals, audible signals, traffic regulations, and traffic calming measures. General signal upgrades also benefit pedestrians by installing pedestrian signals at intersections where these devices are not present and by improving the visibility of signal indications to motorists.

Pedestrian and Bicycle Collisions as Percent of Total

Figure 20 shows how pedestrian collisions, though declining, have remained a relatively constant 25 percent of total injury collisions in San Francisco over the past ten years. That is, pedestrian collisions are declining in proportion to the decline seen in injury collisions in general. Injury collisions involving bicyclists, however, have increased as a share of the City’s reported injury total. In 2000, nine percent of collisions involved a bicyclist. By 2009 that figure had doubled to 18 percent.

FIGURE 19 - San Francisco Pedestrian and Bicycle Injury Collisions by Percentage of Year's Total (2000-2009)

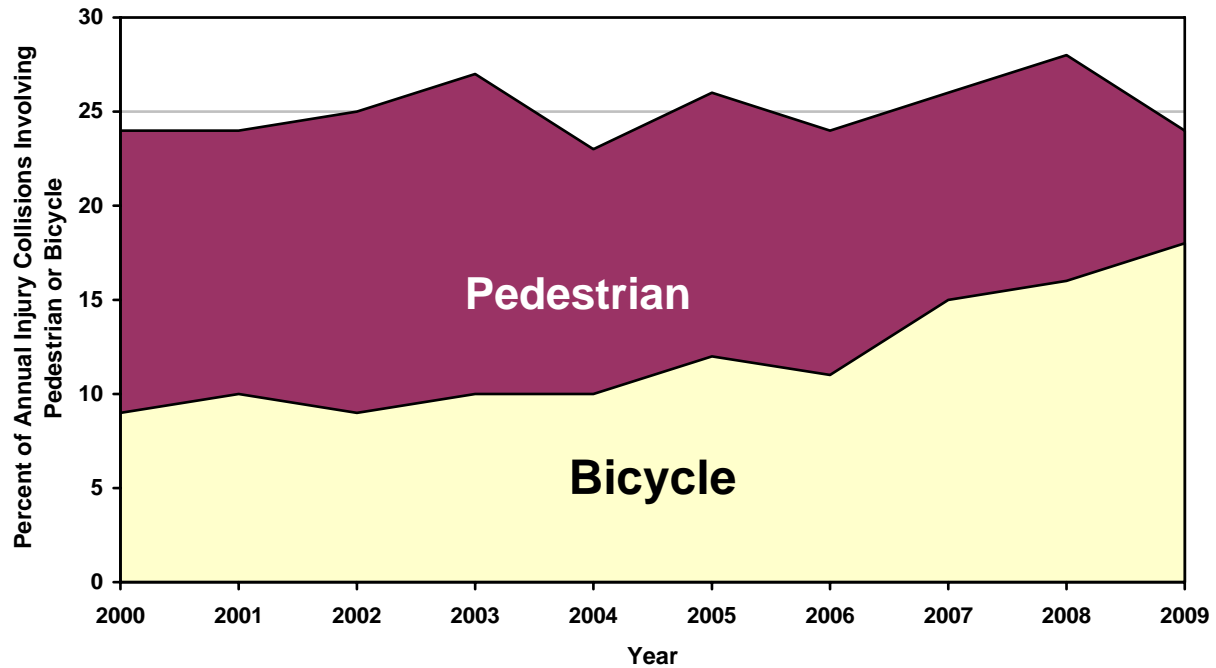


Figure 19: San Francisco Pedestrian and Bicycle Injury Collisions By Percentage of Year’s Total Injury Collisions (2000-2009)

Year	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Total	4,182	3,917	3,777	3,511	3,038	3,227	2,869	3,021	3,010	2,877
Ped %	24	24	25	27	23	26	24	26	28	24
Bike %	9	10	9	10	10	12	11	15	16	18

PART 5: COLLISIONS BY VULNERABLE AGE GROUPS

This section looks at collisions and age, with special emphasis on school-age children and seniors. Figure 20 shows the overall trend of injury collisions reported for ages 5 to 17, broken down by whether the party was a driver, pedestrian or bicyclist. Overall recent trends are positive. Since 2000 injury collisions involving drivers younger than 18 years old have dropped by 60 percent, pedestrian collisions have dropped by 40 percent, and bicycle collisions have declined by 45 percent.

FIGURE 20
San Francisco Injury Collisions Involving Parties Ages 5 to 17
(2000-2009)

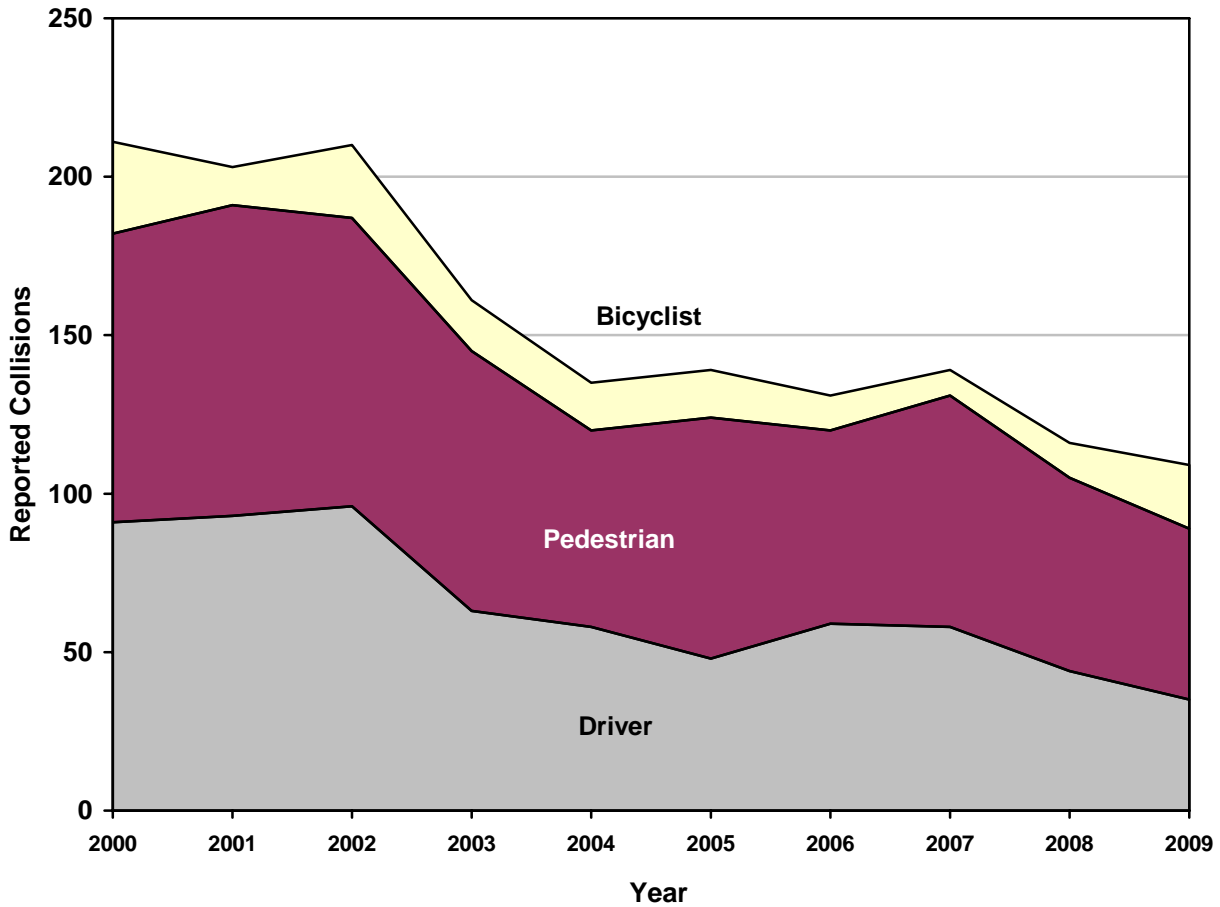


Figure 20: San Francisco Injury Collisions Involving Parties Ages 5 to 17 (2000-2008)

Year	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Driver	91	93	96	63	58	48	59	58	44	35
Pedestrian	91	98	91	82	62	76	61	73	61	54
Bicyclist	29	12	23	16	15	15	11	8	11	20

Figure 21 shows the same injury information for parties ages 65 and older. Trends were positive until 2006, after which there was an increase in collisions involving senior drivers and pedestrians. During this period individuals 65 and older were generally three times as likely to be involved in a collision as a driver than as a pedestrian.

**Figure 21
San Francisco Injury Collisions, Parties Ages 65 and Older
(2000-2009)**

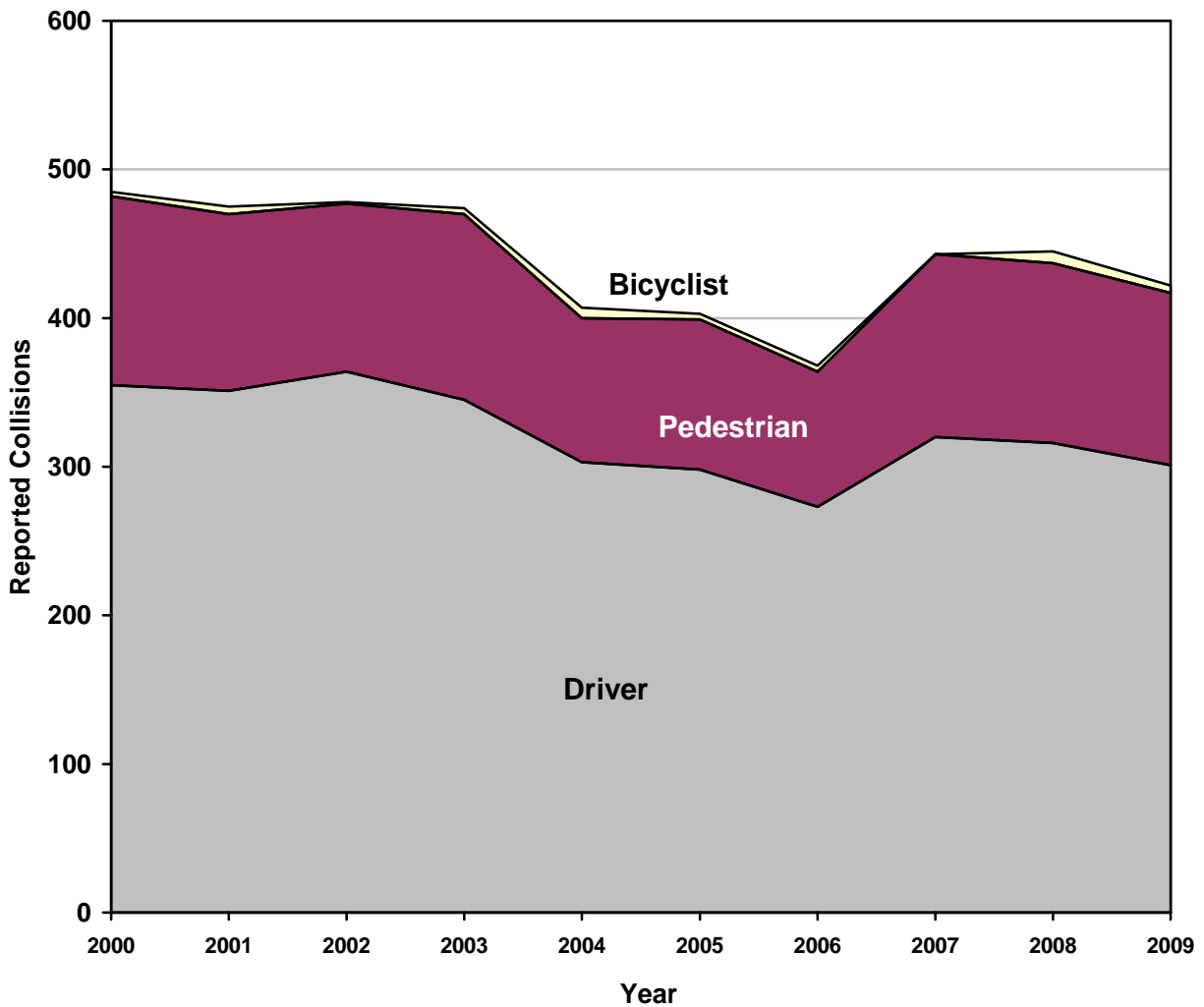


Figure 21: San Francisco Injury Collisions, Parties Ages 65 and Older (2000-2009)

Year	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Driver	355	351	364	345	303	298	273	320	316	301
Pedestrian	127	119	113	125	97	101	91	123	121	116
Bicyclist	3	5	1	4	7	4	4	0	8	5

PART 6: MUNICIPAL RAILWAY COLLISIONS

The source of the collision data for this section is the SFMTA’s TransitSafe database. This database includes all SFMTA-reported safety incidents involving Muni vehicles regardless of whether an SFPD collision report was filed.

Table 14 provides a summary of the collision totals from 2006 to 2009 by degree of severity, including a larger percentage of collisions that did not result in personal injury (property damage only). Reported non-injury collisions involving Muni vehicles totaled 1,296 and non-fatal injury collisions totaled 136 in 2008. The number of collisions resulting in fatalities in 2009, two, was a drop of three collisions from the 2008 total. Compared to previous years, Muni reported collisions declined significantly in all severity categories.

**TABLE 14
Muni Reported Collisions by Severity (2006-2009)**

	2006	2007	2008	2009
Fatal	4	8	5	2
Non-Fatal Injury	191	197	179	136
Non-Injury	1,486	1,417	1,566	1,296

Table 15 shows injury and fatal collisions between Muni and pedestrians. The data is divided into rail and bus modes. The trend for 2009 was positive, with an overall decline in incidents relative to 2006 through 2008 totals.

**TABLE 15
Muni Bus and Rail Reported Collisions Involving Pedestrians (2006-2009)**

	2006	2007	2008	2009
Bus-Pedestrian Fatal	2	4	1	0
Bus-Ped Non -Fatal Injury	31	34	37	27
Rail-Pedestrian Fatal	1	3	3	2
Rail-Ped Non-Fatal Injury	13	17	18	8
TOTAL	47	58	59	37

PART 7: SAFER STREETS FOR SAN FRANCISCO

San Francisco has made progress in reducing injury traffic collision totals in the past two decades. In 1990 San Francisco reported a total of 5,804 injury collisions and 64 fatal collisions. By 2009 those totals had declined by more than half to 2,877 injury and 30 fatal collisions. These totals are still unacceptable, however, and more will need to be done to decrease them. While there are many factors that affect urban collision totals over time, some credit can be given to specific actions that the City has taken to improve roadway safety. Below we highlight a few of the SFMTA safety initiatives.

Regular Collision Totals Review. Since the mid 1990's SFMTA staff has analyzed highest collision locations to determine possible mitigation measures and to prioritize capital investments. Collision analysis software and electronic mapping systems are used to identify higher collision locations and review specific collision patterns.

New Signals and Signal Upgrades. In 1989 San Francisco voters approved a half-cent transportation sales tax which included funding for traffic signal improvements like overhead mast arm signals or new traffic signals at the highest collision intersections. South of Market streets like Bryant, Folsom, Harrison and Howard saw their collision totals drop by 40 to 60 percent in the late 1990's after new pedestrian and larger, more visible overhead signals were installed, helping remove many South of Market intersections from annual highest collision lists. Recent similar traffic signal upgrades have taken place on 19th Avenue, Lombard Street, Mission Street, and Park Presidio Boulevard. General traffic signal upgrades also benefit pedestrians by installing pedestrian signals at intersections where these devices are not present and by improving the visibility of signal indications to motorists.

Pedestrian Countdown Signals. San Francisco was the first major city to replace all its existing pedestrian signals citywide with LED units that had a countdown display. The positive results from these deployment efforts in the past decade led the federal government to consider requiring these devices at all signals. The SFMTA continues to work on installing countdown units at older signals that lack them (about 30 percent).

Pedestrian Safety. At the citywide level, SFMTA has implemented a variety of measures to improve pedestrian safety, including installing new pedestrian safety signs, improved crosswalk markings, leading pedestrian signal intervals, pedestrian only signal phases, STOP signs, audible pedestrian signals, red zones to improve sight distances, and traffic calming improvements such as sidewalk extensions. San Francisco was one of three cities selected by the federal government for experimentation of new pedestrian safety devices in the early 2000's. SFMTA works with local and citywide groups such as the Pedestrian Safety Advisory Committee, Walk San Francisco, and the Senior Action Network on identification of problems and possible improvements.

Educational and Enforcement Efforts. SFMTA works with the Department of Public Health and the San Francisco Police Department on a variety of coordinated safety and enforcement campaigns.

Signal Timing Changes. SFMTA transportation engineers are continually updating signal timing settings. After State guidelines were revised in the mid 1990's, for example, yellow lights were lengthened at over 1,000 intersections. SFMTA has also revised its signals to provide additional time for pedestrians to cross streets and to provide additional all-red clearance phases, brief periods when signal approaches are red in all directions. In the 1990's San Francisco developed a 2.5 feet per second walking speed to determine the total signal time to cross a street that is more stringent than the recently-released federal guideline of 3.0 feet per second.

Traffic Calming Programs. The past two decades have seen the development of new and more robust traffic calming programs in San Francisco. Traffic calming is a community-driven process in which residents work with city staff to identify measures to increase safety for all road users by installing roadway features to reduce vehicle speeds and cut through traffic and increase pedestrian visibility. These programs have leveraged local, state, and federal funds to implement a variety of street improvement projects, from traffic calming projects on major arterials (such as road diets) to the installation of speed humps on lower volume residential streets.

School Safety Program and Crossing Guards. SFMTA has staff dedicated to work on school-related safety initiatives. These include the review of specific school-related safety and parking complaints, working with school staff on traffic safety concerns, and the proactive installation of fluorescent-yellow green school signs and yellow ladder-type crosswalks around all active school crossings. Safe Routes to School grants have funded major improvements near schools such as sidewalk extensions. On a typical school day over 140 SFMTA School Crossing Guards assist school children crossing major intersections.

Bicycle Program. San Francisco has completed a citywide Bicycle Plan and is now implementing major bicycle improvements on key routes across the city. Bicycle projects can have beneficial effects to pedestrians when they reduce the number of motor vehicle lanes that pedestrians have to cross or when they provide an additional buffer between motor vehicles and sidewalks. Reversing the recent increase in bicycle collisions will remain a major area of focus in the coming years.

There is much work that remains to be done. Concerted action to make San Francisco's streets safer is still required.