



CITY OF SAN LUIS OBISPO

2016 Annual Traffic Safety Report



Public Works and Police Department

September 2016

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Executive Summary

The Public Works & Police Departments are pleased to present the 16th cycle of the City's annual traffic safety program. The Annual Traffic Safety Program began in 2002 in an attempt to identify high collision locations within the City. In addition, the program actively pursues corrective measures that may reduce collision rates and improve safety within the City. This program has had continued success with a 62% reduction in citywide collisions since the program began, despite increasing traffic volumes.

This safety program has demonstrated continued success and again in 2016, total collisions are again the lowest on record, down by 9% from 2015. While reducing the overall collision rate continues to be a priority, over time the safety program has continued to increase focus on the most serious collisions—those that result in severe injuries or death. Because injury collisions require a police report and an investigation by a peace officer, these reports provide a clearer picture of the collision circumstances, and can establish a more reliable year-to-year trend as policies change with regard to collision response.

In 2009, the City of San Luis Obispo received the International Public Agency Achievement award from the Institute of Traffic Engineers (ITE) for this program. This award is one of the highest recognitions a public agency can receive for its traffic engineering practices.

There was one fatality on City Right of Way in 2016, however, not on a City Street. A pedestrian was struck in the sidewalk crossing the railroad tracks on Foothill Boulevard near California. Injury collisions decreased by 10% from the previous year and by 36% from 2002 when the safety program began. Severe injury collisions increased by 186% from 2015, with a 54% increase since 2002. There were more severe collisions this year than any other year since the program began. It is unclear why there was a spike in 2016 but Staff will continue to monitor and determine if 2016 was an anomaly in the next Safety Report.

The program also includes thorough evaluations of bicycle and pedestrian safety, as these road users are more vulnerable to serious injury or death from collisions with motor vehicles. Bicycle collision trends have shown an 11% decline from the previous year and a 32% decline from peak levels in 2009. Except for a significant peak in 2013, annual pedestrian collisions have been relatively static since 2008. Although 2016 saw a 17% increase that number only represented 4 additional pedestrian collisions.

The following report displays trends in collision history, traffic citations, and traffic safety measures and identifies high-collision rate locations in 2016. As in previous Traffic Safety Reports, staff reviewed all high-collision rate intersections and street segments and has recommended mitigation measures to increase safety at the top five locations in each category.

Our goal is that the combination of data-driven analysis, appropriate mitigation, and consistent and focused education and enforcement will continue to reduce traffic collisions and improve the safety of our streets for all users.



Introduction

Background

Since its inception in 2002, the annual Traffic Safety Report (TSR) provides an overview of the City of San Luis Obispo's efforts to monitor and improve safety for all road users. Every year, the City prepares a TSR for the previous twelve-month period with the following specific objectives:

- Identify the intersections and street segments within the City associated with the highest collision rates, and thoroughly analyze collision patterns in order to develop potential mitigation measures for the five highest locations that will reduce the potential for collisions—particularly those involving severe injuries and/or fatalities, and;
- Identify the predominant pedestrian and bicycle collision types and high-collision locations, and thoroughly analyze collision data and police reports so as to determine potential mitigation measures for the five highest-rate collision locations that may reduce the potential for collisions, and;
- Report on traffic enforcement efforts, traffic safety education activities, and evaluate the effectiveness of mitigation measures implemented in the previous twelve month period.

The locations mentioned in this report should not be interpreted as a list of dangerous or “least safe” intersections or streets within the City. The specific total of collisions for any location for any year is a function of various factors such as weather patterns, construction, traffic volumes, roadway conditions and driver habits. Many of these factors are often difficult to identify and are most often beyond the ability of the engineer to change or control. However, the City's mitigation program attempts to identify roadway elements that can be modified so as to make the transportation infrastructure more driver friendly, reduce driver confusion, promote bicycle and pedestrian safety and comfort, and limit impact severity.

Moving Towards Vision Zero

Vision Zero is a multi-national traffic safety initiative, first initiated in Sweden, with a straightforward message: No loss of life is acceptable. At its core, Vision Zero seeks the elimination of deaths and serious injuries from our roadways. Since 1997, Sweden and other European countries practicing Vision Zero



have been able to reduce their traffic fatalities by almost 50%.

In recent years, Vision Zero has gained steam throughout the United States, with cities such as San Francisco, New York, Portland and Los Angeles adopting Vision Zero Policies and action plans. According to the National Highway Traffic Safety Administration (NHTSA), motor vehicle traffic crashes are the number one leading cause of death for people ages 13 through 25 and result in over 30,000 deaths per year in the United States alone. By focusing on not only reducing overall traffic collisions, but preventing severe collisions, particularly to vulnerable users such as pedestrians, bicyclists and people with disabilities, communities can achieve real live benefits and save lives.

While the City of San Luis Obispo has not adopted a formal Vision Zero policy, the City has demonstrated a long-standing commitment towards eliminating traffic-related fatalities and serious injuries. Through (a) the data-driven analysis performed in the annual TSR, (b) regular collaboration between City Public Works and Police Departments to identify priorities for focused traffic safety enforcement, and (c) ongoing community education and outreach campaigns, the City is continually striving to improve the safety and efficiency of transportation facilities for all modes and users.

Measuring Progress

Progress towards improving traffic safety for all road users is measured in the TSR using the following metrics:

- Total collisions, fatalities and serious injuries
- Total pedestrian collisions, fatalities and serious injuries
- Total bicycle collisions, fatalities and serious injuries

The traffic safety data for these metrics is obtained from traffic collision reports provided by the San Luis Obispo Police Department. The TSR for a given year will normally be prepared after City collision statistics become available in April or May of the following year; thus, the data analyzed in this TSR is for the 2016 calendar year. Collision data is reviewed for each intersection and roadway segment within the City and entered into the City Public Works Department's traffic collision database. Auto, pedestrian and bicycle volumes are then utilized in conjunction with collision totals to calculate collision rates for all locations in the City. Considering the calculated collision rates, as well as collision severity, locations are ranked for each type of intersection and roadway segment within the City. The five highest-ranked collision locations for each category are analyzed in further detail and mitigation measures are presented, where feasible.

Additional discussion regarding the technical analysis methodology applied in this TSR is provided in the **Appendix**.

How to Navigate this Report

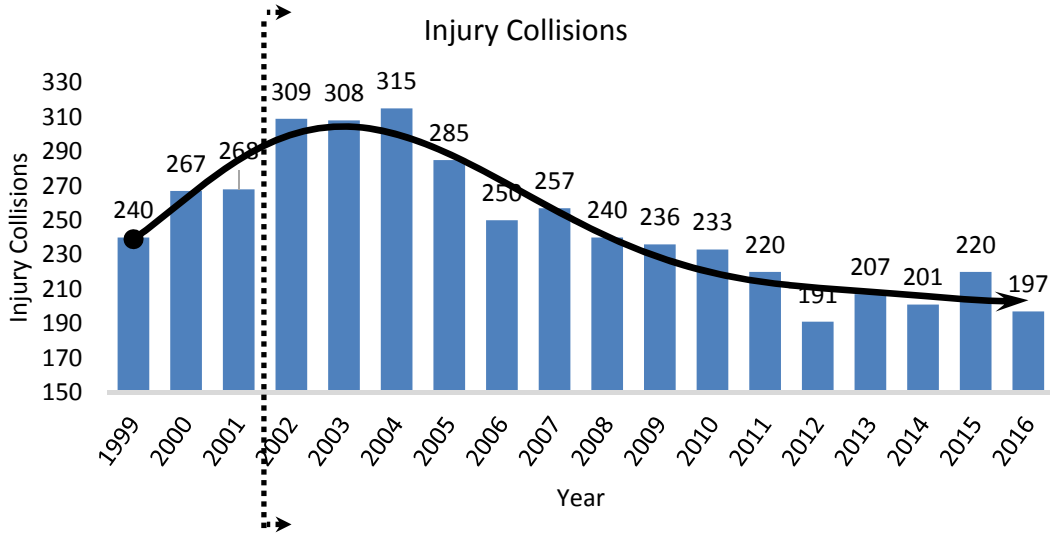
The remainder of the 2016 TSR is organized into the following sections:

- **Citywide Collision Trends – Page 6**
How safe are San Luis Obispo’s streets? This section describes the state of traffic safety in the City, discussing trends in traffic collisions from 1999 to 2016.
- **Traffic Enforcement Measures – Page 11**
This section describes traffic enforcement efforts of the City Police Department, discussing traffic citations, DUI arrests and hazardous driving trends.
- **Ongoing Activities to Make our Streets Safer – Page 14**
How are we making San Luis Obispo’s streets safer? This section describes the ongoing efforts to improve the safety of transportation facilities for all modes of travel within the City.
- **2016 High Collision Rate Locations & Recommendations – Page 18**
What have we learned about traffic safety in 2016? This section describes the high collision rate intersections and roadway segments for 2016, and presents potential mitigation recommendations for high-priority locations.

Citywide Collision Trends

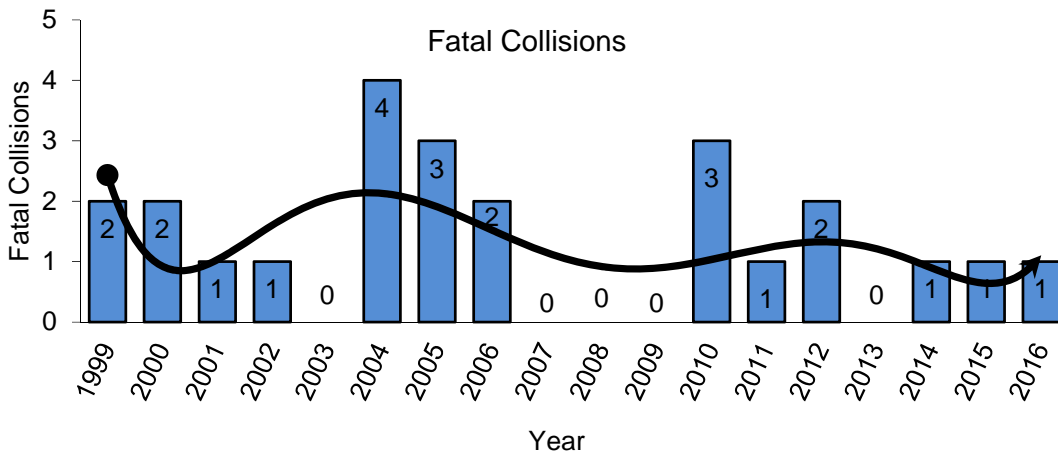
Injury collisions are the most accurate representation of City collision trends because these types of collision are most consistently reported and investigated. In 2016, injury collisions decreased by 10% from 2015. Injury collisions are also 36% lower than 2002 when the safety program began.

Injury Collision Trend

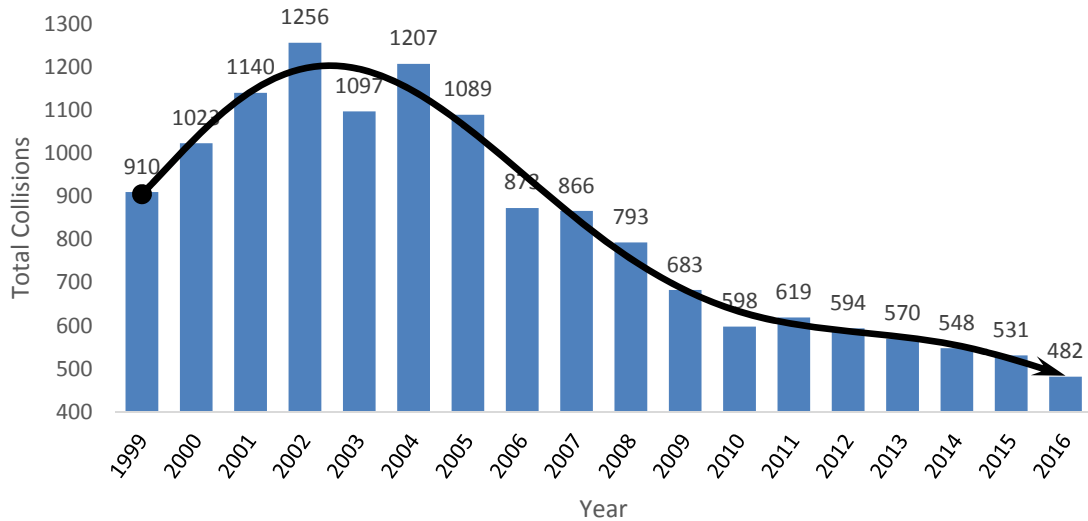


Fatal Collision Trend

It's difficult to identify a trend in fatal collisions because these types of collisions are typically sporadic, uncommon, and occur under unusual circumstances. There was one fatal collision within the City in 2016. A pedestrian was struck in the sidewalk while crossing the railroad tracks on Foothill Boulevard near California. Further, fatal and severe injury collisions decreased by 12% from 2014, with a 43% reduction since 2002.



Overall Collision Trend

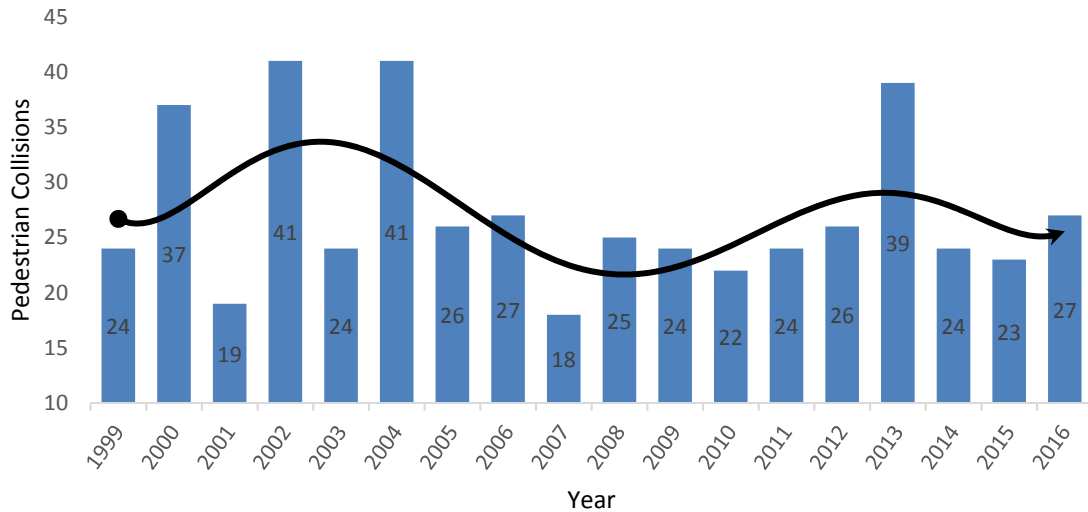


In 2016 there were 482 total reported collisions in the City—the lowest total on record, down 9% from 2015 and down 62% from the introduction of the safety program.

It should be noted that the Overall Collision chart above does not represent all collisions that occur in the City—merely all reported collisions occurring on public streets for which a report is generated. Many collisions are either unreported by the involved parties, reported by the parties without an officer investigation, or there is no response to the collision by emergency services. Therefore, the actual total collisions may vary between years. A more accurate measure are the injury and fatal collision trends, as police always respond to collisions where the reporting party indicates there is an injury.

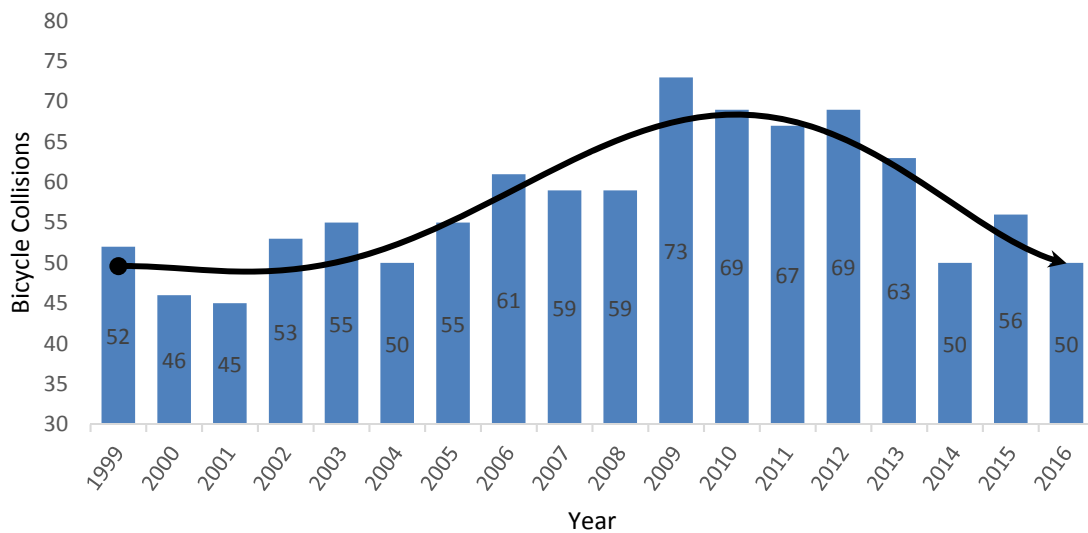
Pedestrian Collision Trend

Despite rising pedestrian volumes, pedestrian collisions have remained relatively static since 2008, with the exception of an unexplained spike in 2013. In 2016, the number of pedestrian collisions rose slightly but have returned to that of the recent trend.



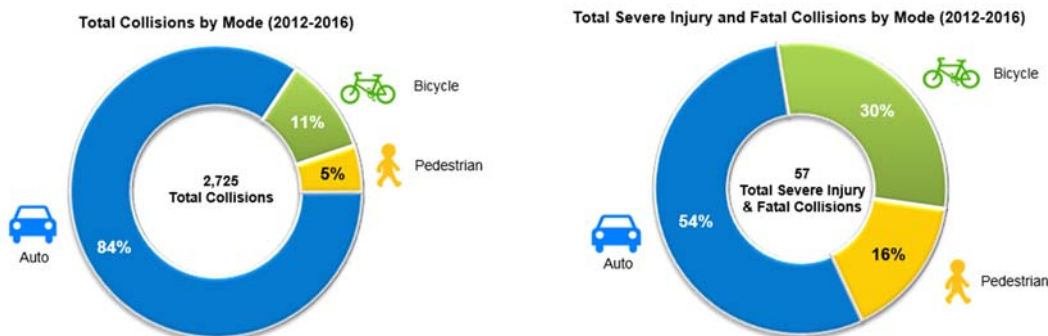
Bicycle Collision Trend

Despite rising bicycle volumes, bicycle collisions have generally been on the decline in recent years. Bicycle collision trends have shown a 32% decline from peak levels in 2009. In 2016, bicycle collision totals returned to the 2014 total which represented an 11% decrease from 2015.



Pedestrian and Bicycle Serious Injuries and Fatalities

Over the past five years (2012-2016), 2,725 traffic collisions have been reported in the City—about 545 per year. Roughly 16% of these collisions involved a bicyclist or pedestrian. However, as illustrated in the graphic below, 46% of the collisions resulting in severe injury or death involved a bicyclist or pedestrian. These trends indicate that bicyclists and pedestrians are overrepresented in collisions that resulted in severe and life-threatening injuries and there is continued need for mitigation strategies that target bicycle and pedestrian collisions.



Human and Economic Impact

Traffic collisions result in direct economic costs to those involved—wages and productivity losses, medical expenses and legal costs, and motor vehicle damages—but, this represents only a portion of total costs associated with collisions. Traffic collisions also have indirect impacts to the families of those involved, employers and society as a whole. A study by the NHTSA found that more than 75 percent of collision costs are born by society in the form of insurance premiums, taxes and congestion-related costs such as travel delay, excess fuel consumption and lost quality of life associated with deaths and injuries.

Comprehensive costs include the economic cost components associated with traffic collisions, but also the indirect societal costs. Using cost estimates by crash severity published in the American Association of State Highway transportation Officials' (AASHTO) *Highway Safety Manual*, adjusted to reflect 2016 dollars, the comprehensive costs associated with the 531 citywide traffic collisions occurring in 2016 were calculated to be more than \$25 million. Comprehensive collision costs for 2016 by collision type are summarized in **Table 1** below.

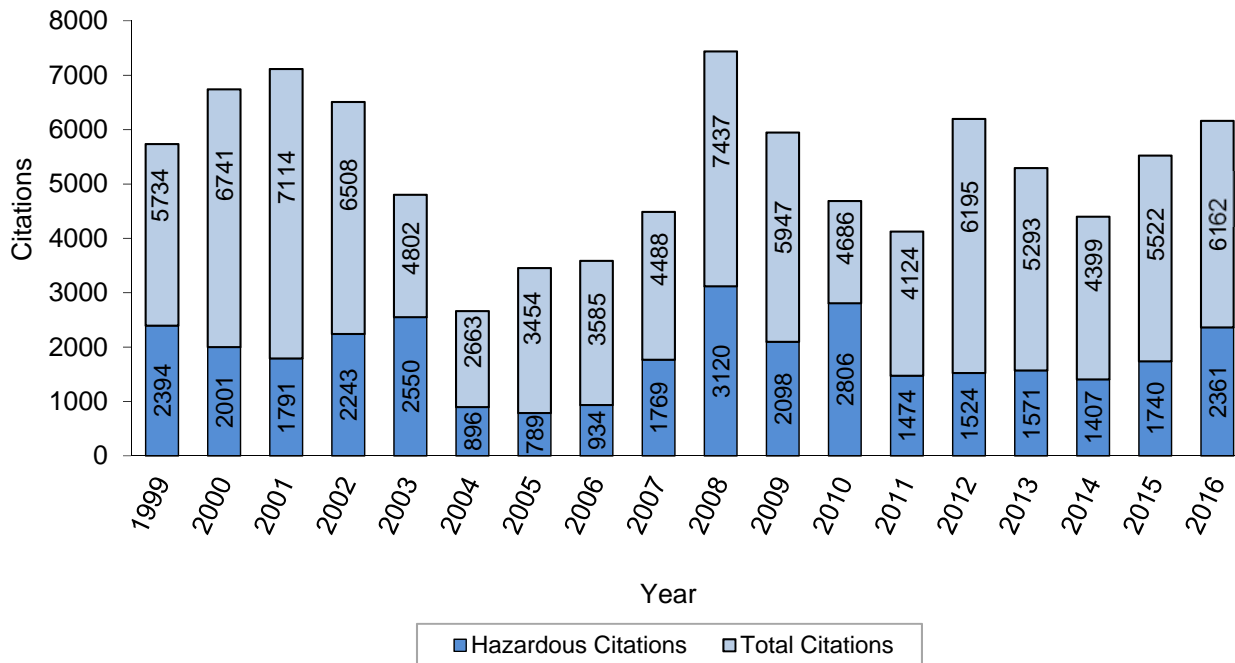
Table 1: 2016 City of San Luis Obispo Comprehensive Collision Costs

Collision Severity	Number of Collisions	Cost per Collision	Cost
Fatal	1	\$5,669,881	\$5,669,881
Disabling Injury	20	\$300,591	\$6,011,820
Non-Incapacitating Injury	138	\$109,811	\$15,153,918
Possible Injury	38	\$61,904	\$2,352,352
Property Damage Only	286	\$10,012	\$2,863,432
Total	483		\$32,051,403
Source: Crash Cost Estimates based on AASHTO's <i>Highway Safety Manual</i> , 2010. Costs adjusted to 2016 dollars based on Consumer Price Index and Employment Cost Index per <i>Highway Safety Manual</i> guidance.			

Traffic Enforcement Measures

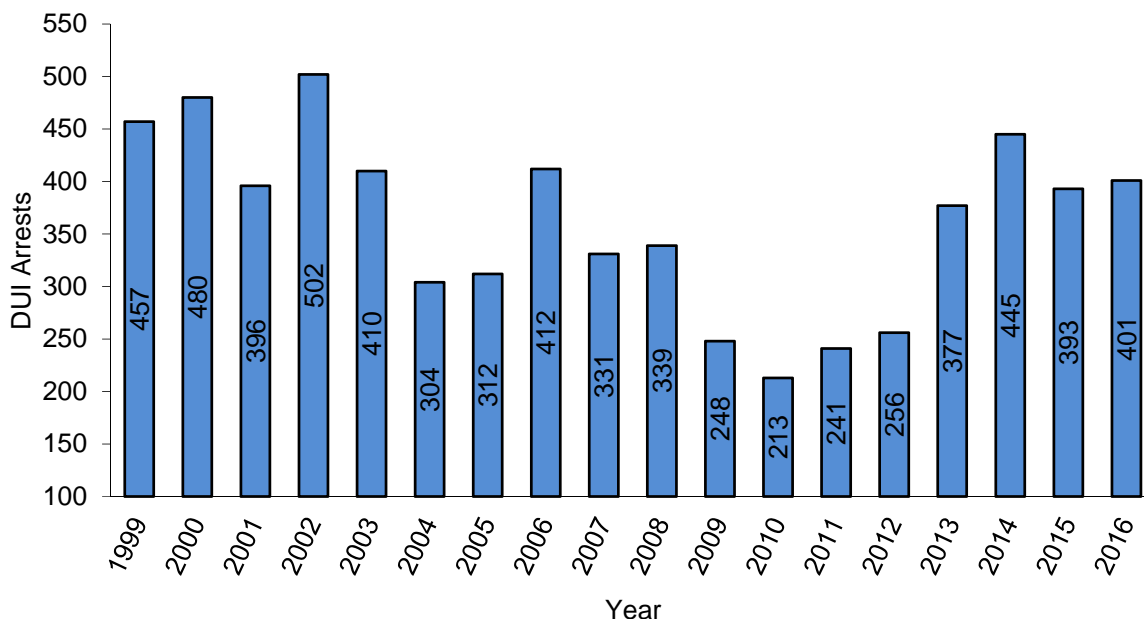
Traffic citations are one method used to promote compliance with the vehicle code and create a safer environment for road users. The vehicle code includes many sections for enforcement. Some vehicle code violations are more serious than others and are designated as “Hazardous Violations”. Vehicle Code Violations are tracked by the Department of Motor Vehicles, and hazardous violations are weighted by a point system. All hazardous vehicle code sections carry at least one point and some carry two points. The point system is used to assess the driving behavior of motorists and place restrictions on negligent drivers, which helps make roadways safer by removing drivers with hazardous driving behavior. The chart below depicts the total citations (hazardous and non-hazardous) by the Police Department since 1999.

Citation Trends

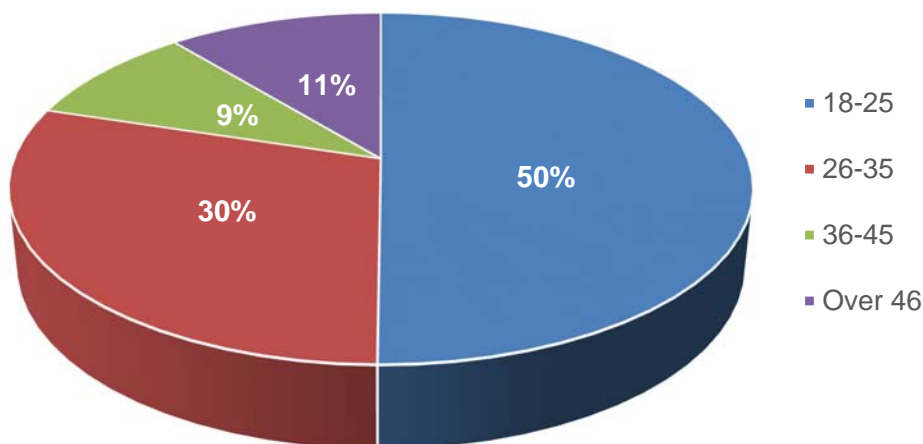


As shown in the chart above, citation trends can fluctuate from year-to-year. These trends are not necessarily a direct reflection of overall driving behavior, but can coincide with the resources and staffing levels of the Police Department.

Dui Arrests



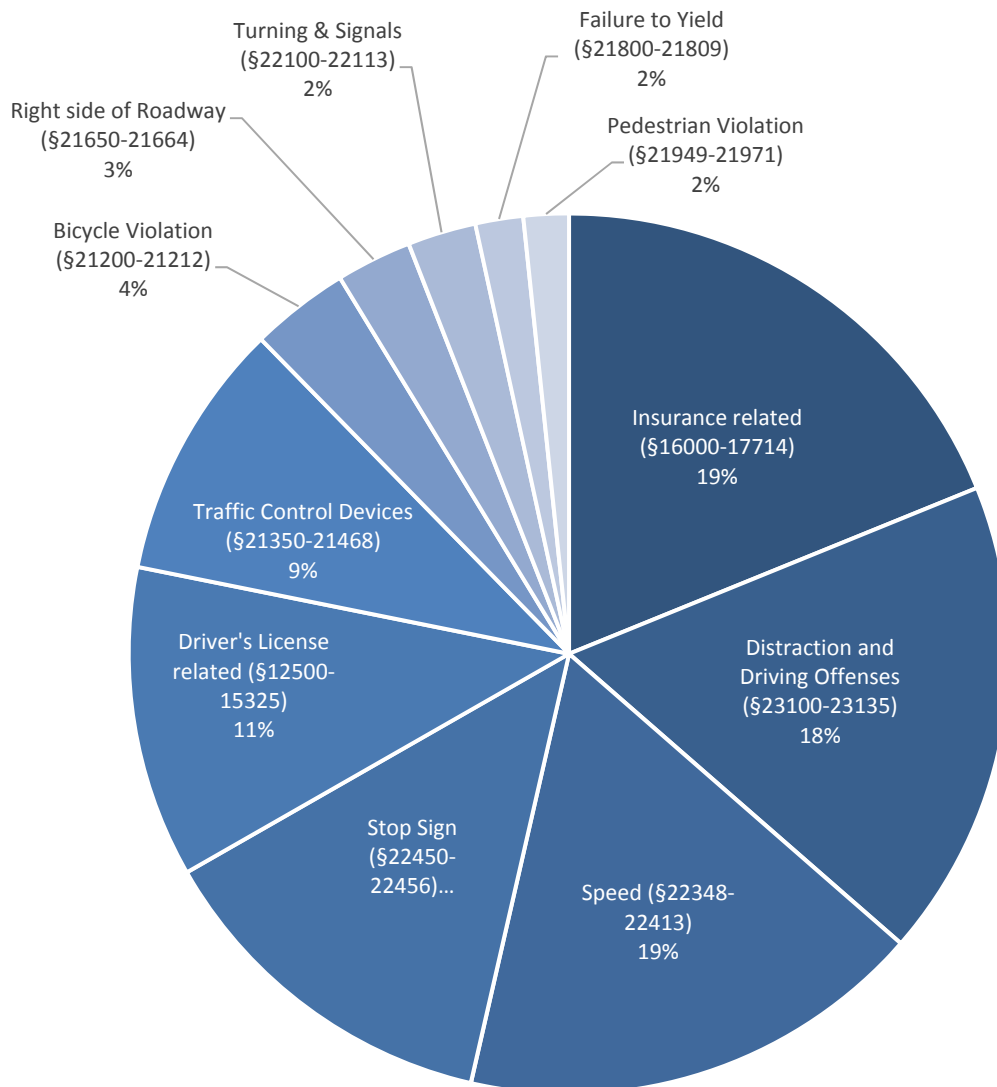
2016 DUI Arrests by Age



Driving under the influence (DUI) violations have been a focal point of enforcement in an effort to reduce injury traffic collisions. Since 1999, the Police Department has averaged 362 DUI arrests each year. Of those arrests, about five to ten drivers each year were arrested for felony DUI after being involved in a collision that causing injury to someone involved. In 2016 the Police Department arrested 401 people for DUI. Half (50%) of the DUI arrests involved drivers who were between 18 and 25 years old and over three-quarters (80%) were between the 18 and 35 years old.

Citations by Vehicle Code Section 2015

The following chart depicts the distribution of vehicle code citations by type for 2016.



Ongoing Activities to Make Our Streets Safer

Completed/Planned Safety Projects & Programs

Transportation safety has always been a priority for the City. Each year the Public Works Department implements traffic safety improvement through a variety of programs and projects. These improvements are usually stand-alone projects, but are often included in other City CIP projects or as part of individual land development projects. Table 2 below identifies notable traffic safety improvements that were completed recently or planned for implementation in the near future.

Table 2: Completed or Planned Transportation Safety Projects

Location	Project Description
Traffic Signal Improvements	
Marsh & Santa Rosa Monterey & Grand Monterey & Santa Rosa	Install Flashing Yellow Left-Turn Arrows. Implementation planned for fall of 2016.
Monterey & Santa Rosa	Implemented Advanced Pedestrian Phasing.
Foothill & Broad Santa Rosa & Mill California & Mill	Upgraded signal indications from 8" to 12".
Monterey & Osos	Construction to be completed in February 2018.
Citywide	Updated traffic signal timings to provide sufficient bicycle clearance intervals.
Pedestrian & Bicycle Improvements	
Highland & Ferrini	Install bike slot through median to allow left-turn movements for bicyclists. To be completed summer 2016.
Higuera & Marsh Lighted Crosswalks	Replace downtown lighted crosswalks on Higuera and Marsh Streets. To be completed fall of 2016.
Santa Rosa Green Bike Lanes*	Installed green bike lanes on Santa Rosa Street between Montalbon and Walnut Streets.
Broad & Orcutt	Installed green bike lane extension through intersection.
Roadway Improvements	
Higuera Street, 500-700 Block	Reconfigured on-street parking stalls that do not conform to current City Standards.
Median at South & Parker	Constructed permanent median along South Street at Parker Street, replacing the temporary median installed in 2014. Completed in spring of 2016.
Broad & Upham Crosswalk	Upgrade uncontrolled crossing at Broad & Upham with enhanced flashers (rapid rectangular flashing beacons) and pavement markings.
Signing & Striping Improvements	
Morro & Pacific	Two-way stop-control orientation reconfigured.
Broad & Orcutt	Striping on NB approach improved.
Chorro & Peach	Lane reconfigurations to Chorro Street implemented between Mill and Walnut.

Location	Project Description
Highland Drive	Centerline striping added as part of 2016 roadway resurfacing project.
Sight Distance Improvements	
Cerro Romauldo & Ferrini	Installed parking restriction.
Cerro Romauldo & La Canada	Installed parking restriction.
Cerro Romauldo & Santa Lucia	Installed parking restriction.
Other Projects/Programs	
Fixilini NTM Construction	Construct permanent traffic diverter at Fixilini Street & Iris Street intersection. Completed in spring 2016.
South Chorro NTM Test Project	Install temporary neighborhood traffic circles at Chorro & Islay, Chorro & Church and Chorro & High. Completed in winter of 2016.
<i>*Project recommended in previous Traffic Safety Report</i>	

Traffic Safety Education Campaigns

Between City-led efforts and activities led by local partners, such as Bike SLO County and SLOCOG/Rideshare, there are a multitude of ongoing traffic safety education and outreach campaigns provided to the community of San Luis Obispo each year. Key education and outreach activities are summarized below:

- Partnership with the California Office of Traffic Safety**
A Selective Enforcement Grant funds a full-time DUI officer position. This officer is utilized specifically for DUI enforcement in an effort to further reduce the number of alcohol and drug related driving incidents.
- Bicycle Rodeo**
The City hosts a hands-on bicycle training class targeting youth teaching bicycle skills & operations.
- Pedestrian Halloween Safety Campaign**
The City provides reflective Halloween bags with safety tips to local schools free of cost.
- Impaired Driver Offender Classes**
City officers attend and supplement DUI offender courses to provide a unique positive opportunity to discuss, face to face, the impacts of driving under the influence.
- Every Fifteen Minutes Program**
The City participates in a multi department and agency event simulating the psychological effects of student fatalities as a result of traffic collisions.

- Child Car Seat Instruction & Assistance
The City provides child safety seat installation and inspection free of cost.
- Channel 20 Public Safety Announcements
- Bicycle Safety Posters
- City of SLO Partnerships:

Bike SLO County

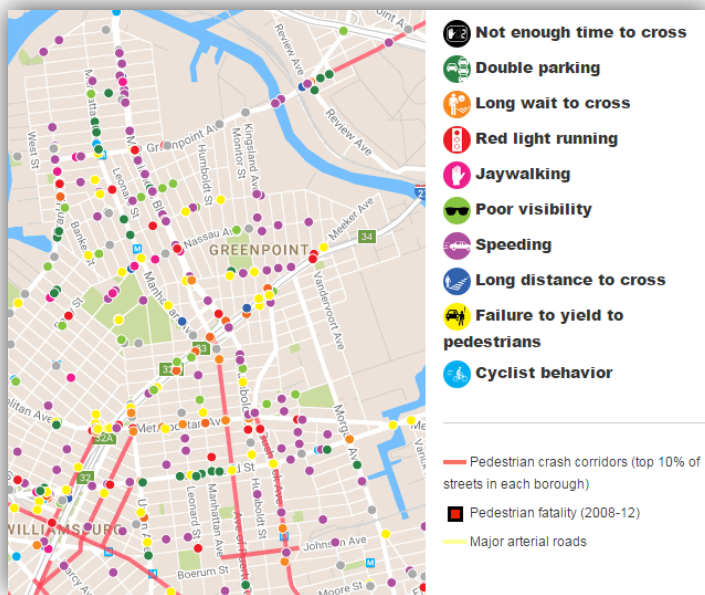
- *Safety Education Courses*
- *Elementary School Safety Assemblies*
- *Safety Brown Bag Lunch at Participating Businesses*

SLOCOG/SLO Rideshare

- *Safe Routes to School Program*

Perception of Transportation Safety – Utilizing Public Input

While the Traffic Safety Program has proven to be a useful tool for identifying citywide collision trends and prioritizing locations for safety improvement projects, the process relies on collisions to occur and be recorded by the City Police Department. An inherent limitation with this process is that locations that may have perceived safety or comfort issues for road users are not identified by City staff unless actual incidents are shown in the collision data. For locations such as a crossing where drivers fail to yield to pedestrians, or a traffic signal where bicyclists are not given sufficient green time to comfortably pass through the intersection, these issues may not be highlighted unless residents submit a specific complaint or an actual collision occurs.



As part of their Vision Zero program, the NYCDOT uses an online transportation safety public input map to allow citizens to identify problem locations in the city.

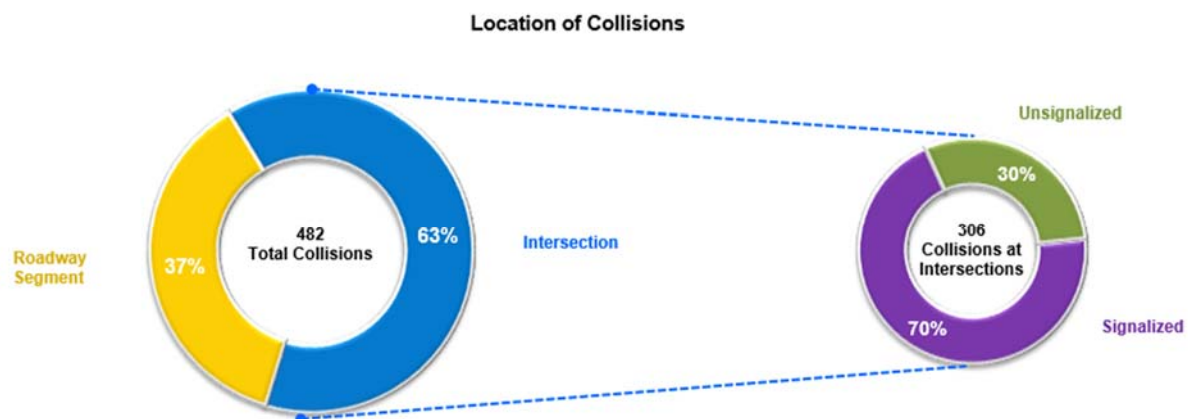
To improve the ability of City staff to appropriately consider locations where the transportation safety or comfort concerns are perceived by the public, the City Public Works Department is in the process of developing an interactive public input map where users can pinpoint locations and provide comments describing safety concerns that they have observed. The New York City Department of

Transportation developed a similar tool as part of their Vision Zero program to solicit public input on various safety concerns throughout the city. Ultimately, this perception map would be utilized by the City of San Luis Obispo to complement the existing Traffic Safety Program to develop a more holistic understanding of the transportation safety and mobility needs of all our road users.

2016 High Collision Rate Locations & Recommendations

Where Collisions are Occurring

Intersections are the most common location for all collisions. As shown in the figure below, 63% of 2016 collisions in the City occurred at intersections, with 70% of those occurring at signalized intersections. This finding highlights the importance of focusing traffic safety efforts on intersections.



All of the traffic collision reported in 2016 are shown on the map in Figure 1. All pedestrian and bicycle collisions reported in 2015 are shown on the maps in Figure 2 and Figure 3, respectively.

High-collision intersections are shown in Figure 4, while high-collision roadway segments are shown in Figure 5.

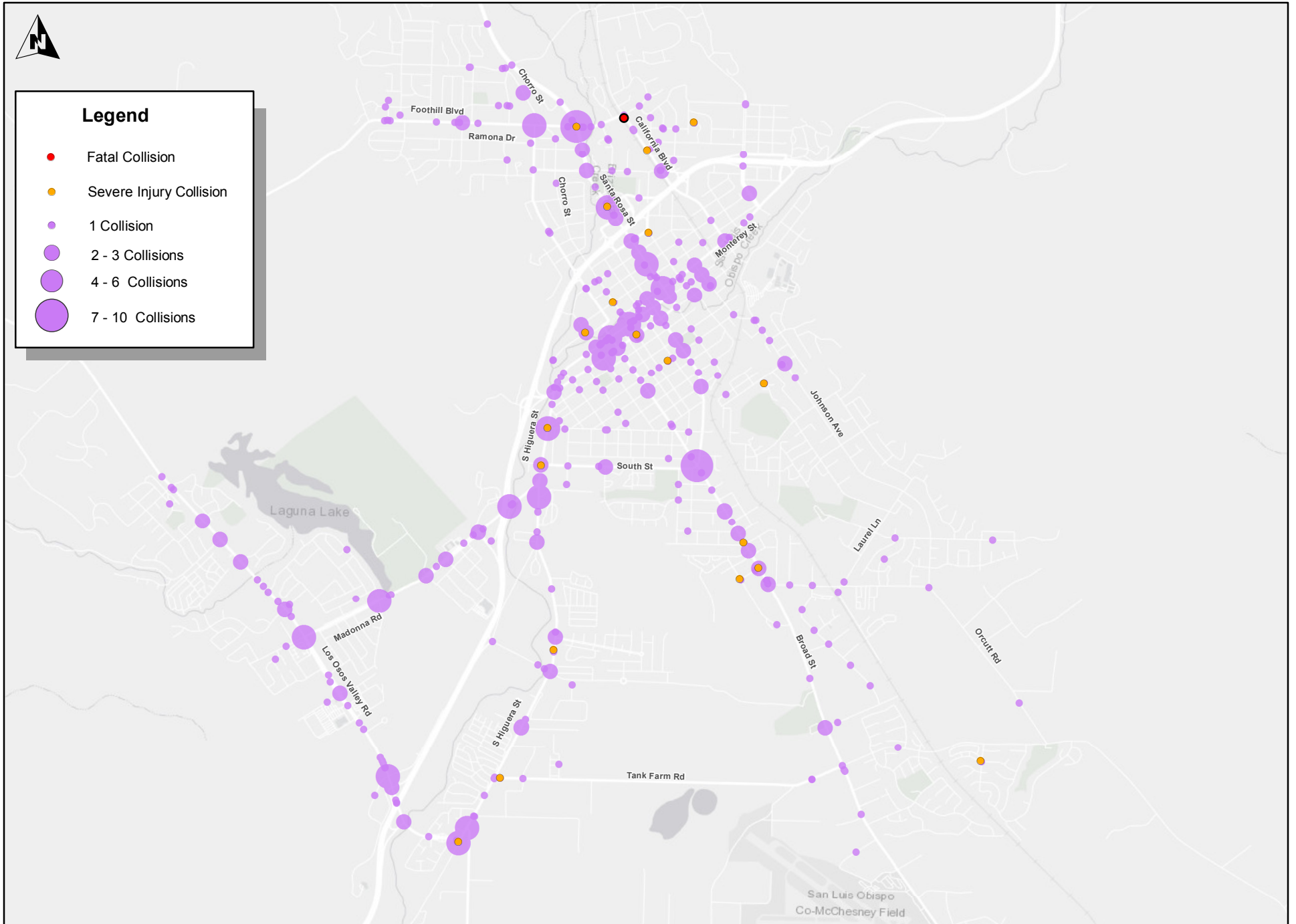


FIGURE 1
2016 CITYWIDE COLLISIONS

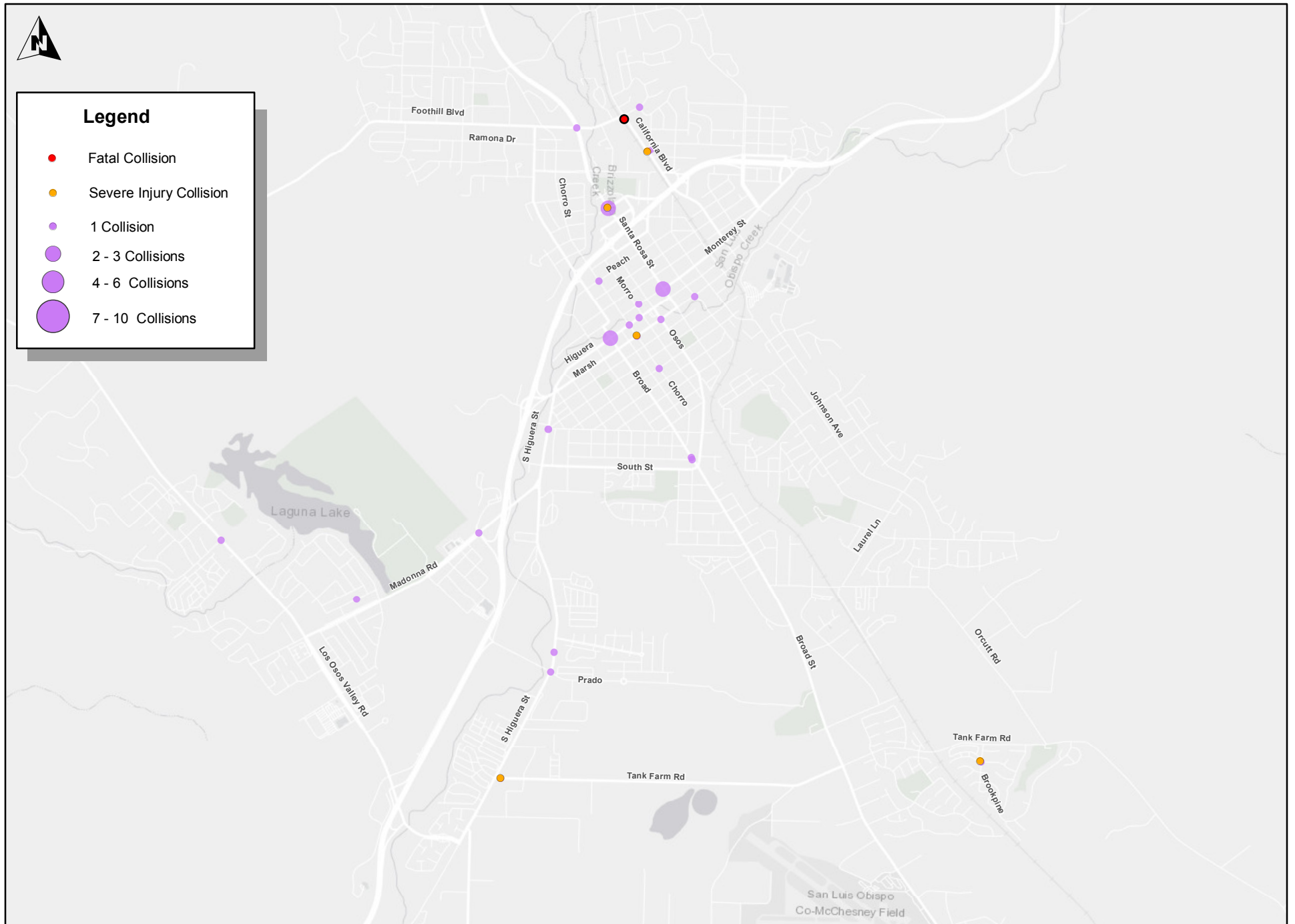


FIGURE 2
2016 CITYWIDE PEDESTRIAN COLLISIONS

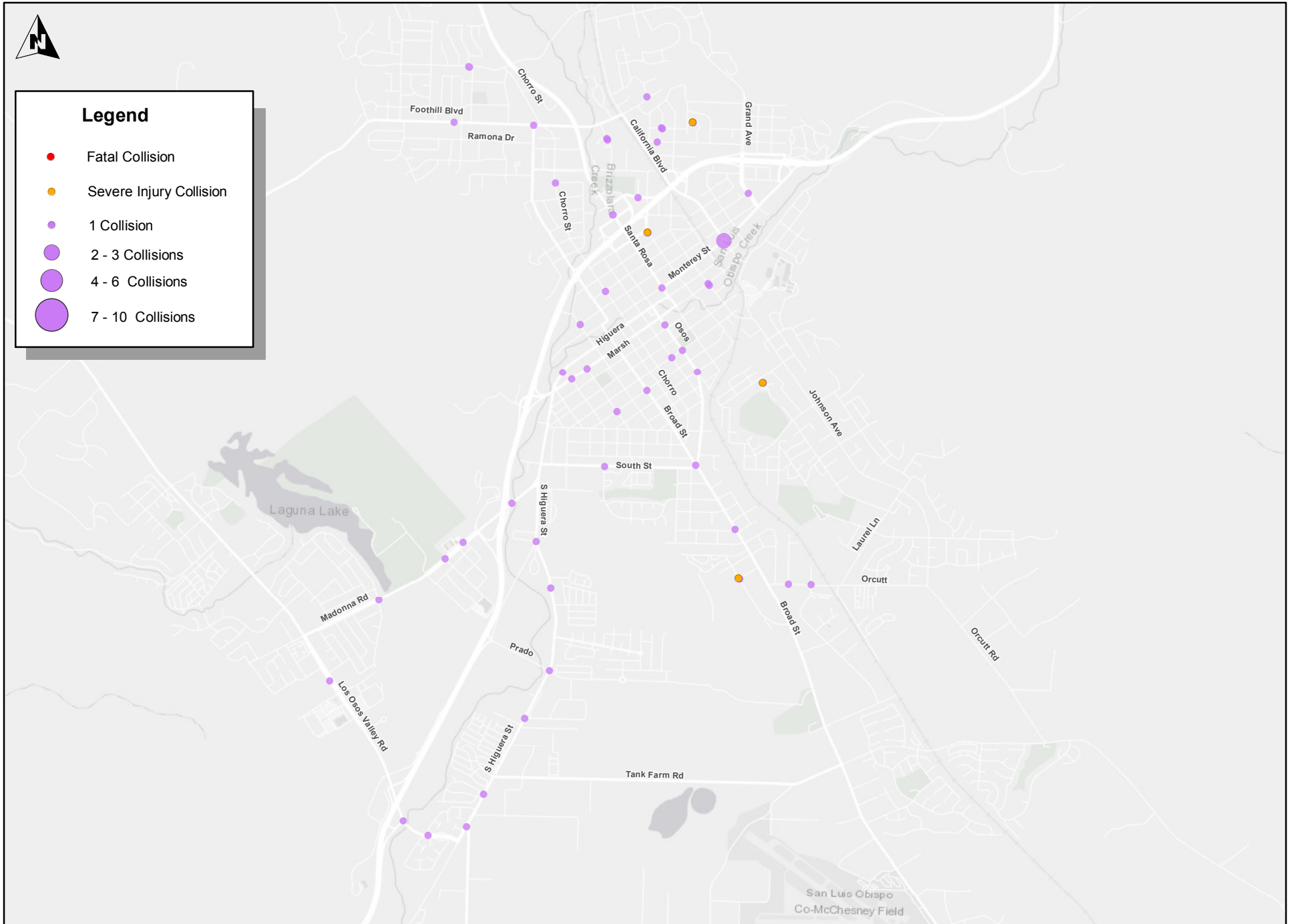
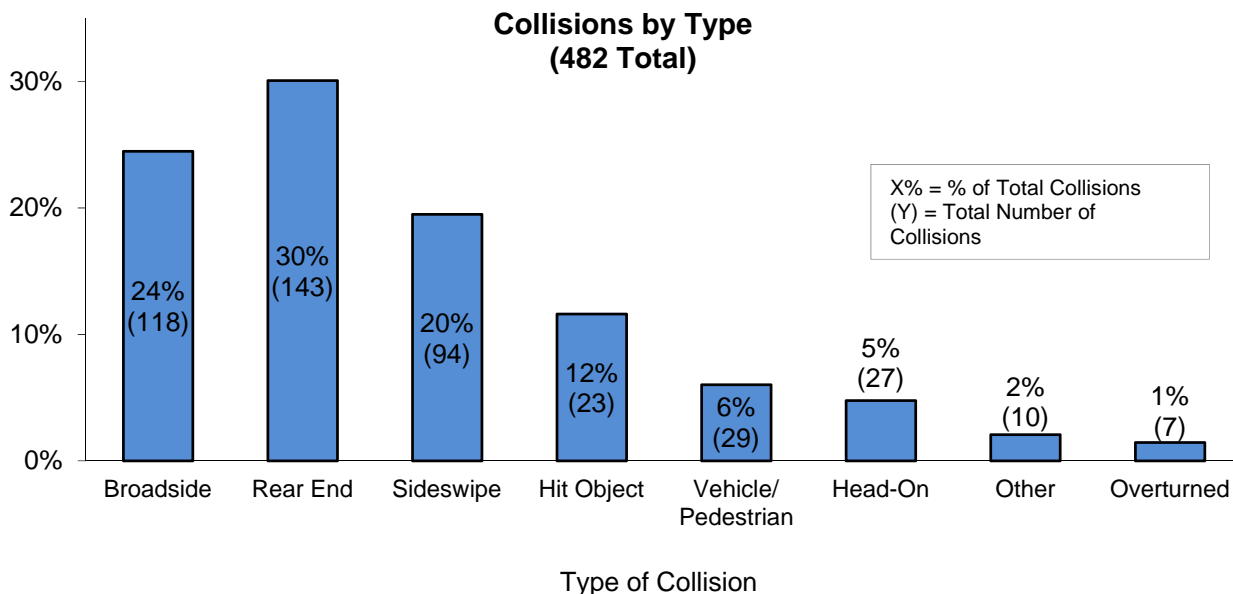


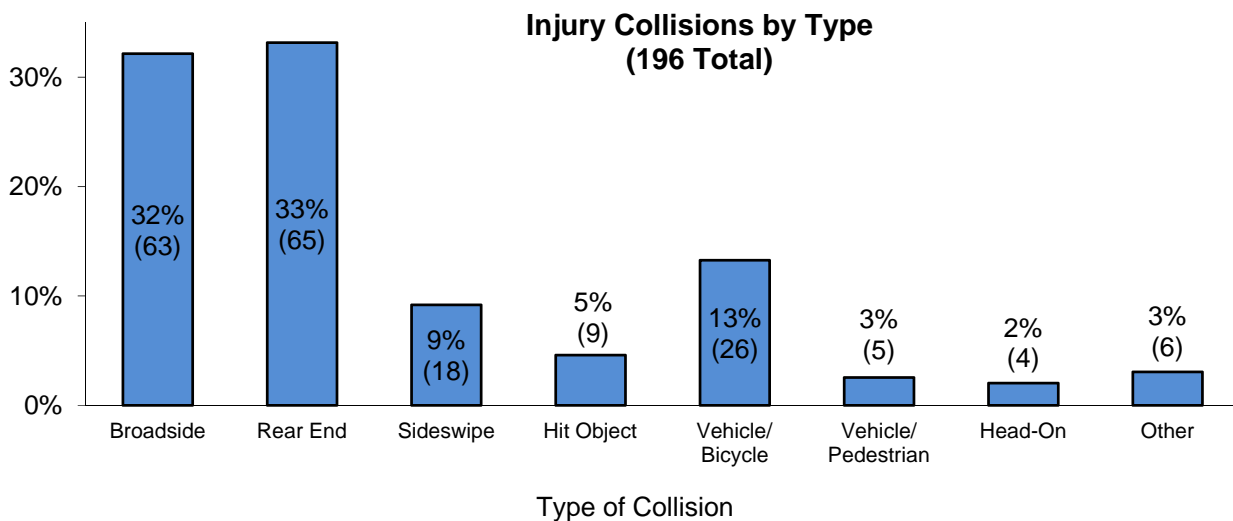
FIGURE 3
2016 CITYWIDE BICYCLE COLLISIONS

Most Common Collision Types and Factors

As shown in the figure below, broadside and rear-end collisions were by far the most common type of collisions reported in 2016, representing 34% and 30%, respectively, of the total recorded incidents.



As shown below, broadside and rear-end collisions were also the most common type of injury collision reported in 2016, representing 32% and 33% of total recorded injury collisions. While collisions involving a vehicles with pedestrians represent only 6% of total collisions in 2016, they account for 13% of injury collisions and collisions involving both pedestrians and bikes make nearly 33% of severe injury collisions. Thus, mitigating these crash types offers the greatest potential for reducing the number of serious injury and fatal incidents.



The most common factors attributed to recorded collisions in 2016 are summarized in **Table 3** below. Improper turning movements and speeding represent the most prevalent factors in overall collisions and injury collisions. Pedestrian Right of Way is not ranked in the top 5 of All Collisions (7th at 4%), but represented 15% of the Severe Injury and Fatal Collisions. DUI along with Unsafe Speed ranks as the other most prevalent factor attributed to severe injury and fatal collisions.

Table 3: Primary Collision Factors

Factor	Rank	%
All Collisions		
Unsafe Speed	1	26%
Improper Turning	2	20%
Unsafe Starting or Backing	3	11%
DUI	4	10%
Traffic Signal/Sign Violation	5	9%
Injury Collisions		
Unsafe Speed	1	32%
Traffic Signal/Sign Violation	2	12%
Improper Turning	3	11%
Pedestrian Right of Way	4	9%
Unsafe Starting or Backing	5	8%
Severe Injury & Fatal Collisions		
Unsafe Speed	1	25%
DUI	2	15%
Pedestrian Right of Way	3	15%
Automobile Right of Way	4	10%
Improper Turning	5	10%

The table below lists the pedestrian collisions by type recorded in 2016, as well as the party at fault. As shown in the table, motorist failure to yield during various movements were the most frequent types of reported pedestrian collisions. The large majority (90%) of pedestrian collisions were the result of motorist fault.

Table 4: Pedestrian Collisions by Type

Pedestrian Collision Type	No.	%	Party at Fault	%
Cyclist on Sidewalk	1	5%	Driver	95%
Motorist Failed to yield	16	80%	Cyclist	5%
Motorist Failed to Stop	1	5%		
Motorist Backing	1	5%		
Motorist Improper Turn	1	5%		
Total	20	100%		

The table below lists the bicycle collisions by type recorded in 2016, as well as the party at fault. Cyclists losing control/hitting fixed objects and failing to yield the right of way to the motorists, and motorist right-turn movements were the most common types of bicycle collisions reported. About 60% of reported bicycle collisions were the fault of the bicyclist.

Table 5: Bicycle Collisions by Type

Bicycle Collision Type	No.	%	Party at Fault	%
Cyclist Lost Control	11	22%	Driver	40%
Cyclist Failed to Yield	8	16%	Bicyclist	60%
Motorist Right-Turn	6	12%		
Motorist Failed to Yield	6	12%		
Motorist Left-Turn	5	10%		
Cyclist Lane Change	4	6%		
Cyclist Under the Influence	3	6%		
Wrong-Way Cyclist	2	4%		
Motorist Overtaking or Sideswipe	2	4%		
Cyclist on Sidewalk	1	2%		
Motorist Starting or Backing	1	2%		
Cyclist no Light	1	2%		
Total	50	100%		

High Collision Rate Locations – Pedestrians

Rank	Prev. Year Rank	Intersection	Control	5 Yr. Collisions	PH Veh. Vol	PH Ped. Vol	REV
1	NR	Santa Rosa & Montalban	SSSC	3	3,347	25	2,008
2	1	Santa Rosa & Walnut	Signal	4	2,741	29	1,890
3	2	Santa Rosa & Olive	Signal	4	3,436	39	1,762
4	3	Foothill & Santa Rosa	Signal	4	4,126	106	778
5	5	Santa Rosa & Monterey	Signal	5	2,166	227	239
6	NR	Foothill & Carpenter	SSSC	3	905	100	136
7	NR	Broad & Higuera	Signal	6	1,158	242	40
8	8	Marsh & Chorro	Signal	3	1,507	988	26
9	NR	Higuera & Chorro	Signal	3	1,315	1,680	12

NR = Not Ranked

SSSC = Side Street Stop-Control

PH = Peak Hour

REV = Relative Exposure Value

Pedestrian Location Recommendations

Rank	Intersection	Control	5 Yr. Collisions	PH Veh. Vol	PH Ped. Vol	REV
1	Santa Rosa & Montalban	SSSC	3	3,347	25	2,008
<p><u>Pattern:</u> Turning traffic failing to yield to pedestrians.</p> <p><u>Recommendation:</u> Paint crosswalks across Montalban on both sides of Santa Rosa to more clearly define the crosswalk and where vehicles should stop and wait.</p>						
2	Santa Rosa & Walnut	Signal	4	2,741	29	1,890
<p><u>Pattern:</u> Turning traffic not yielding to pedestrians and unsafe pedestrian crossings.</p> <p><u>Recommendation:</u> Intersection under State jurisdiction. Forward to Caltrans for study and continue to monitor in 2017.</p>						
3	Santa Rosa & Olive	Signal	4	3,436	39	1,762
<p><u>Pattern:</u> Turning traffic failing to yield to pedestrians.</p> <p><u>Recommendation:</u> Intersection under State jurisdiction. Forward to Caltrans for study and continue to monitor in 2017.</p>						
4	Foothill & Santa Rosa	Signal	4	4,126	106	778
<p><u>Pattern:</u> Turning traffic failing to yield to pedestrians.</p> <p><u>Recommendation:</u> Intersection under State jurisdiction. Forward to Caltrans for study and continue to monitor in 2017.</p>						
5	Santa Rosa & Monterey	Signal	5	2,166	227	239
<p><u>Pattern:</u> Turning traffic failing to yield to pedestrians.</p> <p><u>Recommendation:</u> Yield to Pedestrian signs installed in April of 2011. Advanced Pedestrian Phasing implemented in spring of 2016. Flashing Yellow Arrows were installed in late 2016. No pedestrian collisions occurred after the installation of the Flashing Yellow Arrows. Continue to monitor and report it 2017 Traffic Safety Report.</p>						

High Collision Rate Locations – Bicycles

Rank	Prev. Year Rank	Intersection	Control	5 Yr. Collisions	PH Veh. Vol	PH Bike. Vol	REV
1	2	Santa Rosa & Olive	Signal	4	3,436	19	3,617
2	8	California & Monterey	Signal	7	1,902	38	1,752
3	7	Foothill & Santa Rosa	Signal	5	4,126	70	1,474
4	NR	Broad & South	Signal	3	3,350	41	1,226
5	4	California & 101 N/B Ramps	SSSC	4	1,528	27	1,132
6	3	California & Taft	SSSC	4	1,680	35	960
7	NR	Grand & Mill	SSSC	3	576	9	960
8	NR	Madonna & Oceanaire	Signal	3	2,292	36	955
9	11	Broad & Leff	SSSC	3	1,017	16	953
10	9	California & Palm	SSSC	4	957	30	638
11	10	California & Foothill	Signal	3	2,041	145	211

NR = Not Ranked

AWSC = All-way Stop-Control

SSSC = Side-Street Stop-Control

PH = Peak Hour

REV = Relative Exposure Value

Bicycle Location Recommendations

Rank	Intersection	Control	5 Yr. Collisions	PH Veh. Vol	PH Bike. Vol	REV
1	Santa Rosa & Olive	Signal	4	3,436	19	3,617
<p><u>Pattern:</u> Vehicles travelling NB on Santa Rosa turning right are causing "right hook" collisions.</p> <p><u>Recommendation:</u> Green bike lane extensions through intersections installed along Santa Rosa from Walnut to Montalban in August of 2015 and reinstalled in July 2016. Only collisions in 2016 were due to red light violations. Continue to monitor in 2017.</p>						
2	California & Monterey	Signal	7	1,902	38	1,752
<p><u>Pattern:</u> NB vehicle vs. NB bicyclist right-hook collisions.</p> <p><u>Recommendation:</u> Green bike lanes were reinstalled and only collisions in 2016 were red light violations.</p>						
3	Foothill & Santa Rosa	Signal	5	4,126	70	1,474
<p><u>Pattern:</u> No discernible pattern.</p> <p><u>Recommendation:</u> Intersection under State jurisdiction. Forward to Caltrans for study and continue to monitor in 2017.</p>						
4	Broad & South	Signal	3	3,350	41	1,226
<p><u>Pattern:</u> No discernible pattern</p> <p><u>Recommendation:</u> Continue to monitor in 2017.</p>						
5	California & 101 N/B Ramps	SSSC	4	1,528	27	1,132
<p><u>Pattern:</u> Cyclists vs. NB motorists turning left onto HWY 101 ramp and/or coming from HWY 101 ramps.</p> <p><u>Recommendation:</u> Green bike lanes were installed and there were no collisions in 2016. Continue to monitor.</p>						

High Collision Rate Locations – Arterial/Arterial Intersections

Rank	Prev. year Rank	Intersection	Control	Collisions	Volume	Rate*
1	NR	Broad & Higuera	Signal	4	12,349	0.887
2	5	Higuera & Chorro	Signal	4	12,801	0.856
3	NR	Marsh & Nipomo	Signal	4	13,884	0.789
4	NR	Higuera & Nipomo	Signal	3	12,454	0.660
5	1	Santa Rosa & Monterey	Signal	6	25,936	0.634
6	7	Higuera & Madonna	Signal	7	31,323	0.612
7	3	Marsh & Broad	Signal	3	18,300	0.449
8	10	Marsh & Osos	Signal	3	18,516	0.444
9	NR	Monterey & Johnson	Signal	3	19,224	0.428
10	8	Foothill & Santa Rosa	Signal	7	50,862	0.377
11	4	California & Monterey	Signal	3	22,172	0.371
12	13	Los Osos Valley & Madonna	Signal	5	38,267	0.358
13	NR	Higuera & Los Osos Valley	Signal	3	24,333	0.338
14	NR	Broad & South	Signal	4	36,846	0.297
15	NR	Los Osos Valley & 101 S/B On/Off Ramp	Signal	3	35,036	0.235
16	11	Madonna & 101 N/B On/Off Ramp	Signal	3	35,450	0.232

NR = Not Ranked

Rate = Collision frequency per million vehicles entering the intersection

Arterial/Arterial Intersections Recommendations

Rank	Intersection	Control	Collisions	Volume	Rate
1	BROAD & HIGUERA	Signal	4	12,349	0.887
<p><u>Pattern:</u> Pedestrian being hit by turning vehicles.</p> <p><u>Recommendation:</u> A pedestrian lead time was implemented at this intersection. Pedestrian collisions that in 2016 occurred before a pedestrian lead time had been implemented. Staff will continue to monitor.</p>					
2	HIGUERA & CHORRO	Signal	4	12,801	0.856
<p><u>Pattern:</u> No discernable pattern.</p> <p><u>Recommendation:</u> Continue to monitor in 2017.</p>					
3	MARSH & NIPOMO	Signal	4	13,884	0.789
<p><u>Pattern:</u> Red light violations.</p> <p><u>Recommendation:</u> Upgrade traffic signal to include mast arms for each approach.</p>					
4	HIGUERA & NIPOMO	Signal	3	12,454	0.660
<p><u>Pattern:</u> Red light violations.</p> <p><u>Recommendation:</u> Upgrade traffic signal to include mast arms for each approach.</p>					
5	SANTA ROSA & MONTEREY	Signal	6	25,936	0.634
<p><u>Pattern:</u> Pedestrians being hit by turning vehicles.</p> <p><u>Recommendation:</u> A pedestrian lead time was implemented at this intersection. One pedestrian collision occurred after the pedestrian lead time was implemented. Staff will continue to monitor.</p>					

High Collision Rate Locations – Arterial/Collector Intersections

Rank	Prev. Year Rank	Intersection	Control	Collisions	Volume	Rate
1	12	Higuera & High	Signal	4	15,737	0.696
2	5	Foothill & Broad	Signal	5	20,607	0.665
3	15	Madonna & Oceanaire	Signal	4	26,049	0.421
4	4	Broad & industrial	Signal	5	32,749	0.418
5	30	Santa Rosa & Mill	Signal	3	22,165	0.371

NR = Not Ranked

SSSC = Side-Street Stop-Control

Rate = Collision frequency per million vehicles entering the intersection

Arterial/Collector Intersections Recommendations

Rank	Intersection	Control	Collisions	Volume	Rate
1	Higuera & High	Signal	4	15,737	0.696
<p><u>Pattern:</u> No discernible pattern.</p> <p><u>Recommendation:</u> Continue to monitor in 2017.</p>					
2	Foothill & Broad	Signal	5	20,607	0.665
<p><u>Pattern:</u> Vehicles exiting Blackhorse driveway and failing to yield the right of way at signalized intersection.</p> <p><u>Recommendation:</u> Evaluate signal and driveway modifications with adjacent development.</p>					
3	Madonna & Oceanaire	Signal	4	26,049	0.421
<p><u>Pattern:</u> No discernible pattern.</p> <p><u>Recommendation:</u> Continue to monitor in 2017.</p>					
4	Broad & industrial	Signal	5	32,749	0.418
<p><u>Pattern:</u> Rear end at red lights.</p> <p><u>Recommendation:</u> Upgrade and add signal indicators for more visibility. Investigate the installation of officer assist red light enforcers. Continue to monitor.</p>					
5	Santa Rosa & Mill	Signal	3	22,165	0.371
<p><u>Pattern:</u> Red light violations</p> <p><u>Recommendation:</u> Upgrade and add signal indicators for more visibility. Investigate the installation of officer assist red light enforcers. Continue to monitor.</p>					

High Collision Rate Locations – Arterial/Local Intersections

Rank	Prev. Year Rank	Intersection	Control	Collisions	Volume	Rate
1	NR	Marsh & Toro	TWSC	3	7305	1.125
2	NR	Higuera & Morro	Signal	4	10164	1.078
3	NR	Higuera & Bridge	SSSC	4	17134	0.640
4	9	Higuera & Vachell	SSSC	5	25347	0.540
5	8	Los Osos Valley & Calle Joaquin	Signal	4	34085	0.322
6	NR	Santa Rosa & Montalban	SSSC	4	34338	0.319
7	NR	Madonna & El Mercado	Signal	3	28769	0.286
8	NR	Broad & Sweeney	TWSC	3	30358	0.271
9	10	Los Osos Valley & Froom Ranch	Signal	3	37272	0.221
10	2	Santa Rosa & Olive	Signal	3	40678	0.202

NR = Not Ranked

SSSC = Side-Street Stop-Control

Rate = Collision frequency per million vehicles entering the intersection

Arterial/Local Intersections Recommendations

Rank	Intersection	Control	Collisions	Volume	Rate
1	Marsh & Toro	TWSC	3	7305	1.125
<p><u>Pattern:</u> Stop sign violations from Toro.</p> <p><u>Recommendation:</u> Install advanced "STOP AHEAD" signing and striping. Targeted enforcement and continue to monitor.</p>					
2	Higuera & Morro	Signal	4	10164	1.078
<p><u>Pattern:</u> Drivers hitting vehicles while trying to parallel park.</p> <p><u>Recommendation:</u> Existing parking stalls currently meet City standard. No historical pattern - continue to monitor.</p>					
3	Higuera & Bridge	SSSC	4	17134	0.640
<p><u>Pattern:</u> Drivers being hit while crossing Higuera by vehicles that are "hidden" by traffic stopped for signal.</p> <p><u>Recommendation:</u> Currently working with Caltans to widen Higuera between Bridge and Elks Lane to install a two-way-left-turn-lane.</p>					
4	Higuera & Vachell	SSSC	5	25347	0.540
<p><u>Pattern:</u> Drivers being hit while crossing Higuera by vehicles that are "hidden" by traffic stopped for signal.</p> <p><u>Recommendation:</u> Paint "KEEP CLEAR" in intersection to increase visibility. Avila Ranch development includes improvements at this intersection to restrict access to right in/right out only.</p>					
5	Los Osos Valley & Calle Joaquin	Signal	4	34085	0.322
<p><u>Pattern:</u> Red light violations and failure to yield right of way while making left turn into Calle Joaquin.</p> <p><u>Recommendation:</u> Targeted enforcement and continue to monitor.</p>					

High Collision Rate Locations – Collector/Collector Intersections

No Locations Ranked Under this Category

High Collision Rate Locations – Collector/Local Intersections

No Locations Ranked Under this Category

Local/Local Intersections

No Locations Ranked Under this Category

High Collision Rate Locations – Arterial Segments

Rank	Prev. Rank	Segment	Collisions	Ped-Bike Coll.	Vol.	Seg. Length (mi.)	Rate	Location
1	5	Higuera	4	0	9,275	0.39	3.01	Nipomo to Marsh
2	NR	Monterey	3	0	12,441	0.28	2.39	California to Grand
3	2	California	3	1	17,509	0.28	1.66	Foothill to Hathway
4	NR	Foothill	3	0	17,227	0.30	1.61	SantaRosa to California
5	8	Los Osos Valley	10	1	30,988	0.59	1.50	Froom to Calle Joaquin
6	NR	Madonna	6	1	16,772	0.50	1.96	SB Hwy 101 to Higuera
7	NR	Marsh	3	0	10,994	0.52	1.44	Hwy 101 to Broa
8	NR	Broad	3	0	22,944	0.39	0.92	Tank Farm to Fuller
9	NR	Higuera	5	1	16,384	0.98	0.85	Madonna to Margarita

NR = Not Ranked

Rate = Collision frequency per million vehicle-miles traveled along segment

Arterial Segments Recommendations

Rank	Segment	Collisions	Volume	Seg. Length (mi.)	Rate	Location
1	Higuera	4	9,275	0.39	3.01	Nipomo to Marsh
<p><u>Pattern</u>: No discernable pattern.</p> <p><u>Recommendation</u>: Continue to monitor in 2017.</p>						
2	Monterey	3	12,441	0.28	2.39	California to Grand
<p><u>Pattern</u>: No discernable pattern.</p> <p><u>Recommendation</u>: Continue to monitor in 2017.</p>						
3	California	3	17,509	0.28	1.66	Foothill to Hathway
<p><u>Pattern</u>: No discernable pattern.</p> <p><u>Recommendation</u>: Continue to monitor in 2017.</p>						
4	Foothill	3	17,227	0.30	1.61	SantaRosa to California
<p><u>Pattern</u>: Vehicles coming from 1050 Foothill (The SLO Student Living) driveway causing collisions on Foothill.</p> <p><u>Recommendation</u>: Coordinate with The SLO Student Living facility to move their sign to the other side of the driveway to improve sight distance of westbound traffic. Continue to monitor in 2017.</p>						
5	Los Osos Valley	10	30,988	.59	1.5	Froom to Calle Joaquin
<p><u>Pattern</u>: Collisions result of general traffic congestion including rear ends, merging violations, and cars attempting to exit private driveways.</p> <p><u>Recommendation</u>: Several factors should begin to alleviate some of this congestion. The interchange widening has already decreased congestion along this corridor. Recent striping changes should slow traffic and provide more clear lane assignments. The Prado interchange in the City Master Plan will also alleviate congestion in the long term. Continue to monitor in 2017.</p>						

High Collision Rate Locations – Collector Segments

There were no High Collision Rate Locations for Collectors



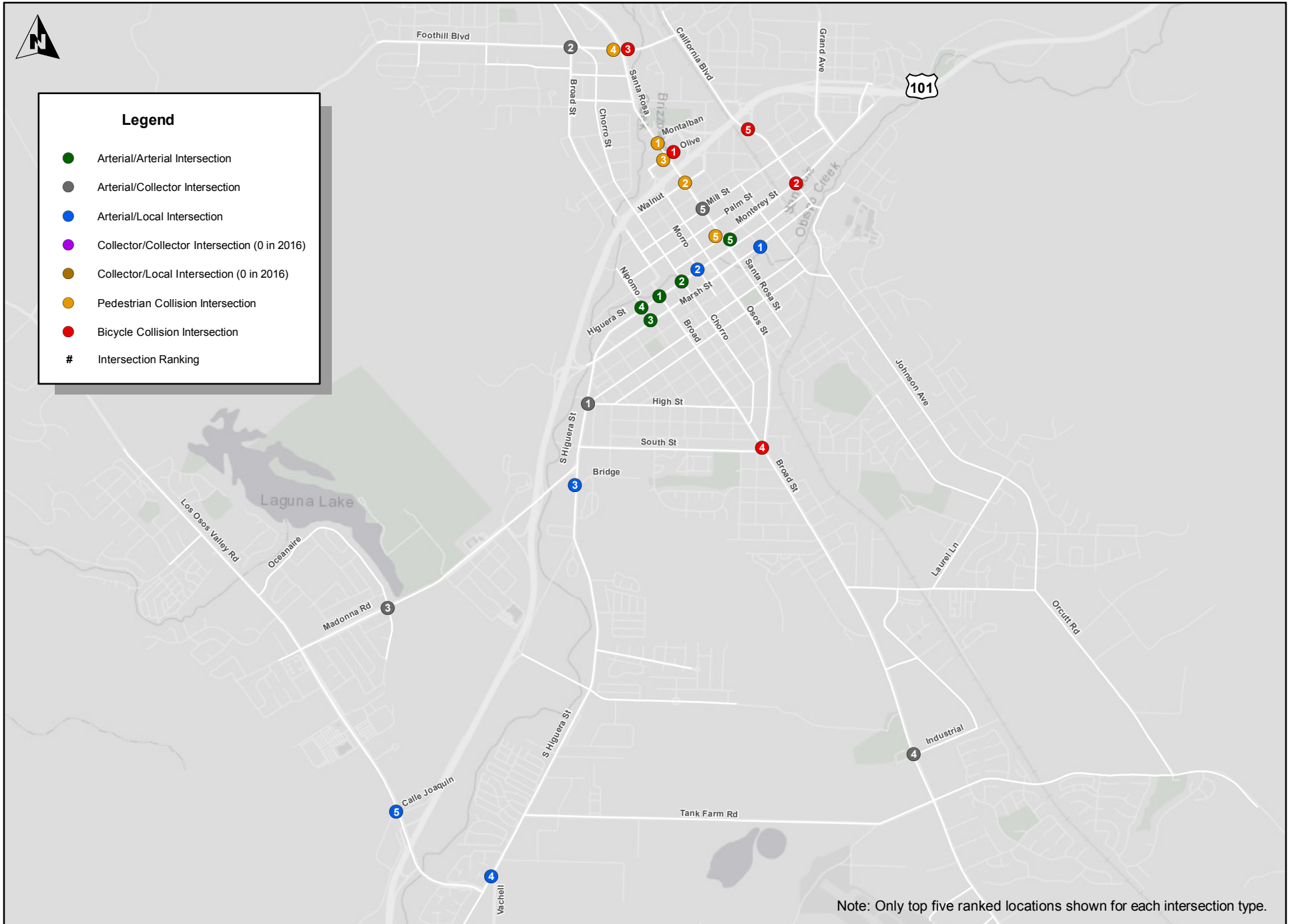


FIGURE 4
2016 HIGH COLLISION INTERSECTION LOCATIONS

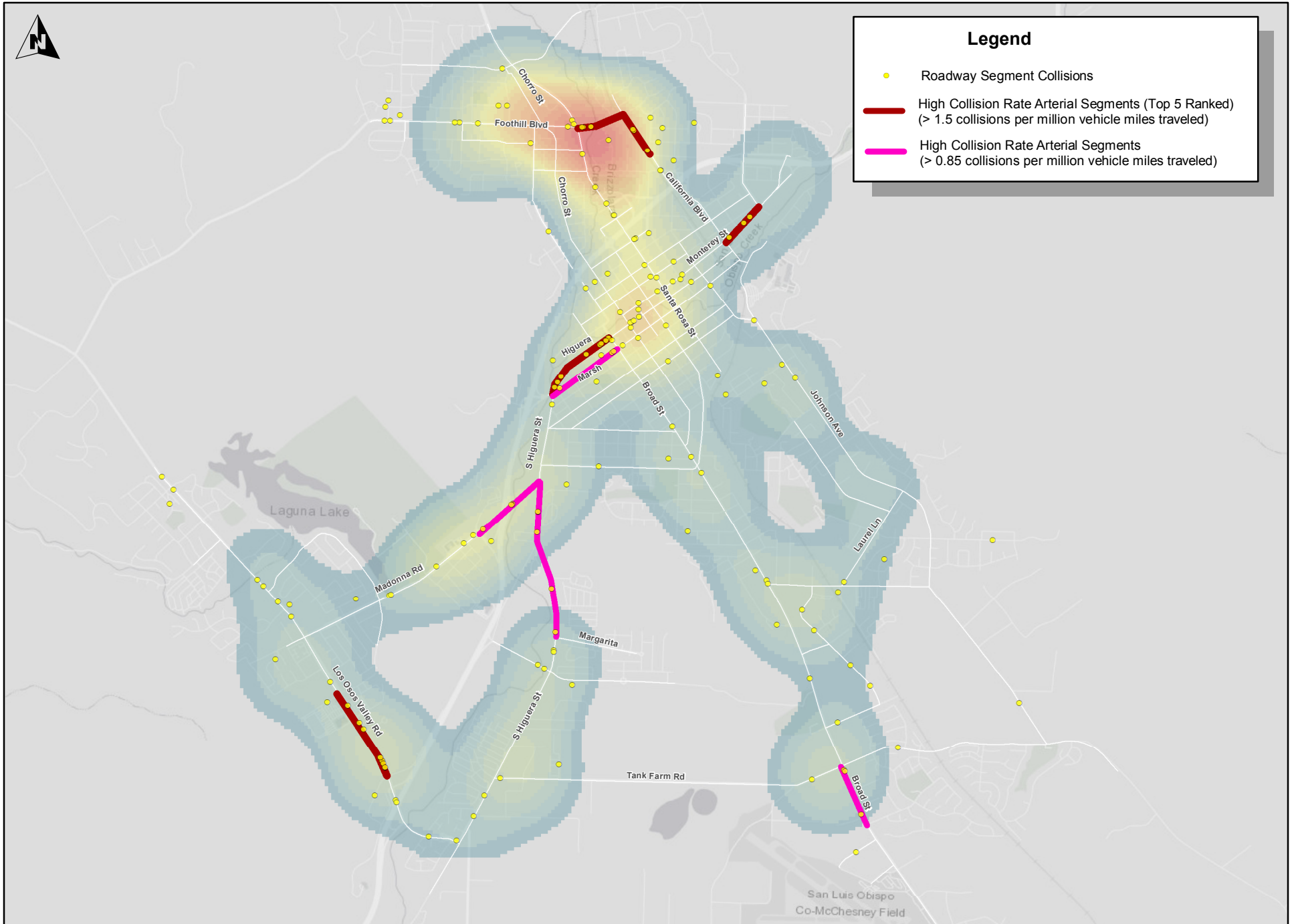


FIGURE 5
2016 HIGH COLLISION RATE ROADWAY SEGMENTS

APPENDIX A

Collision Analysis Methodology

Study Methodology

Collision Data

Reported traffic collisions obtained by the City of San Luis Obispo Police Department are the basis used by the City Traffic Engineering group to evaluate traffic safety¹. Collisions totals are obtained for each intersection and roadway segment within the City and entered into the City's traffic collision database. Collisions occurring on private property or outside of the City Limits are not included in the dataset. Collision locations are then grouped by intersection type (i.e. arterial-arterial, arterial-collector, collector-collector, etc.) and street segment. For locations with at least three (3) total collisions in the past year or at least three (3) bicycle or pedestrian collisions in the previous five-year period, collision rates are calculated and collision diagrams are generated.

Based on the collision patterns for the five highest ranked intersections and roadway segments, as ranked based on collision rate, mitigation measures are formulated where a collision pattern can be identified. Mitigation measures for these sub-categories will be implemented in as projects are designed and funding becomes available.

Traffic Volumes

Vehicle and pedestrian volumes play an important role in calculating collision rates for selected locations within the City. Vehicle volume counts were collected in 2014 as a basis to establish actual conditions in the field environment. Where volume counts were not available, volumes were estimated based on previous experience and engineering judgment.

Collision Rate Calculations

Collision rates were calculated using the following formulas:

Intersections:

$$RI = \frac{N \times 1,000,000}{V \times 365}$$

Segments:

$$RS = \frac{N \times 1,000,000}{365 \times V \times L}$$

¹ It is important to note that the data contained within the Public Works Traffic Collision Database may vary from other sources of collision data such as the California - Statewide Integrated Traffic Records System (SWITRS) or the City's Emergency Dispatch Records System. While SWITRS data is similarly derived from official police collision reports, many times the reports are coded incorrectly due to jurisdictional boundary issues and/or agency reporting inaccuracies. Likewise, City emergency dispatch may receive a call regarding a traffic collision but when the dispatched officer arrives, the vehicles have been moved on or there is no evidence of occurrence. Therefore, statistics derived from this data may be inaccurate for engineering purposes because no official proof or record exists of the actual collision type.

Where:

RI = Intersection Collision Rate = Collision frequency per million vehicles entering the intersection.

RS = Segment Collision Rate = Collision frequency per million vehicle miles traveled along the segment.

N = Number of collisions (collision frequency) of the location.

V = Average daily vehicular volume using the street segment or intersection.

L = Length of street segment (in miles) being analyzed.

For high-rate bicycle and pedestrian collision locations, collision rates were calculated as follows:

Pedestrians:

$$PREV = \frac{5 \times N \times PHVV}{PHPV}$$

Bicycles:

$$BEV = \frac{5 \times N \times PHVV}{PHBV}$$

Where:

PREV = Pedestrian relative exposure value.

BEV = Bicycle relative exposure value.

N = Number of collisions (5-year collision frequency) of the location.

PHVV = Average peak hour vehicular volume.

PHPV = Average peak hour pedestrian volume.

PHBV = Average peak hour bicycle volume.

The pedestrian and bicycle relative exposure value formula is derived from the traditional collision rate calculation, however it factors the volume of either the bicycle or pedestrian with that of vehicles at a given location.

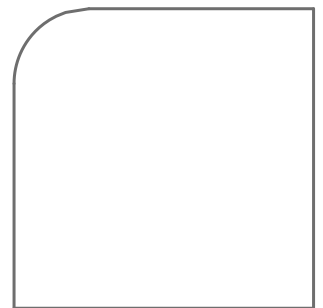
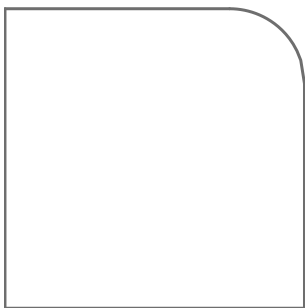
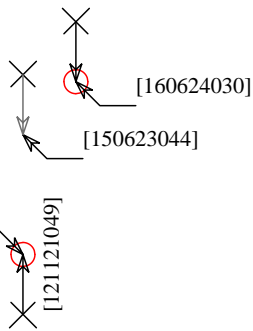
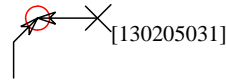
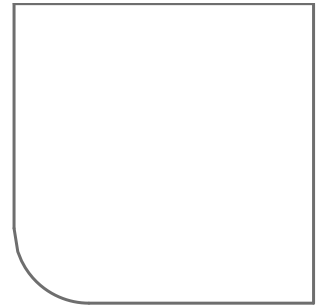
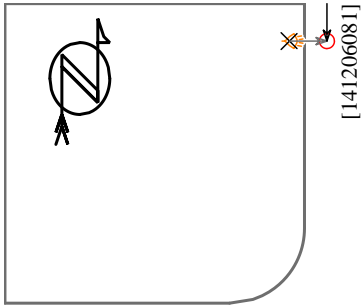
APPENDIX B

2016 Collision Diagrams

Pedestrian Intersections

5 Crashes

Pedestrian Intersection



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- ← Straight
- ←| Stopped
- ← Unknown
- ↔ Backing
- ↔ Overtaking
- ↔ Sideswipe

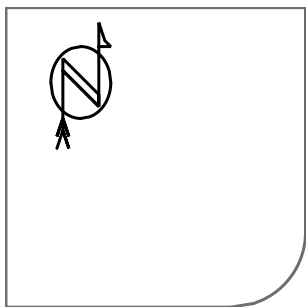
- ▭ Parked
- ↔ Erratic
- ↔ Out of control
- ↗ Right turn
- ↖ Left turn
- ↪ U-turn

- × Pedestrian
- ⊗ Bicycle
- Injury
- Fatality
- 💡 Nighttime
- ⚠ DUI

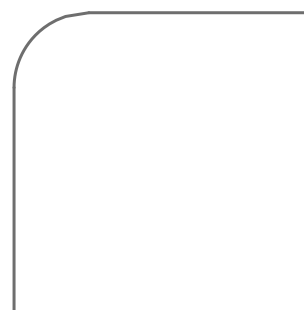
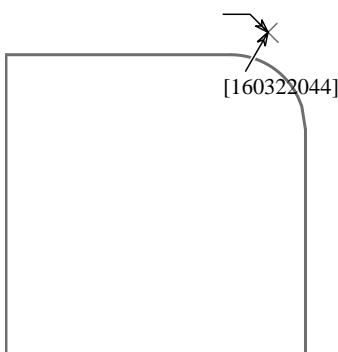
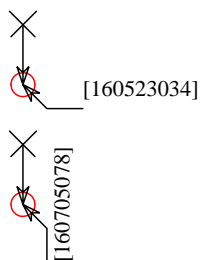
Fixed objects:

- General
- ⊞ Signal
- ⊞ Tree
- Pole
- ⊞ Curb
- ⊞ Animal
- ◁ 3rd vehicle
- * Extra data

3 Crashes



Pedestrian Intersection



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- ← Straight
- ←| Stopped
- ← Unknown
- ↔ Backing
- ↔ Overtaking
- ↔ Sideswipe

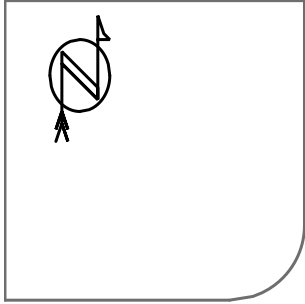
- ▭ Parked
- ←~ Erratic
- ←~ Out of control
- ↘ Right turn
- ↙ Left turn
- ↻ U-turn

- × Pedestrian
- ⊗ Bicycle
- Injury
- Fatality
- ⚡ Nighttime
- ⚠ DUI

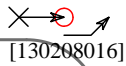
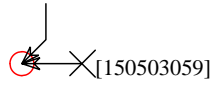
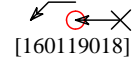
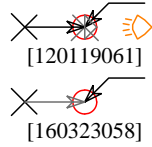
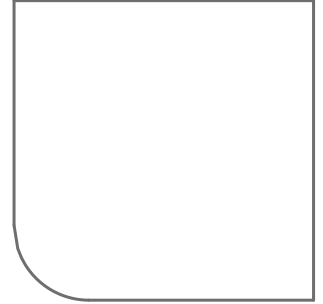
Fixed objects:

- General
- ⊞ Signal
- ⊞ Tree
- Pole
- ⊞ Curb
- ⊞ Animal
- ◁ 3rd vehicle
- * Extra data

5 Crashes



Pedestrian Intersection



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- ← Straight
- ←| Stopped
- ← Unknown
- ↔ Backing
- ↔ Overtaking
- ↔ Sideswipe

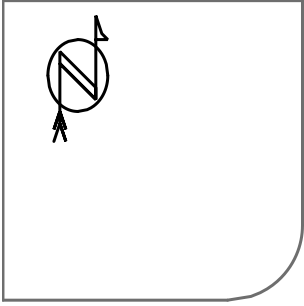
- ▭ Parked
- ↔ Erratic
- ↔ Out of control
- ↗ Right turn
- ↖ Left turn
- ↪ U-turn

- × Pedestrian
- ⊗ Bicycle
- Injury
- Fatality
- ⚡ Nighttime
- ⚠ DUI

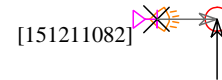
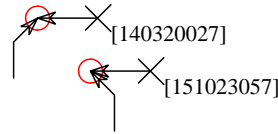
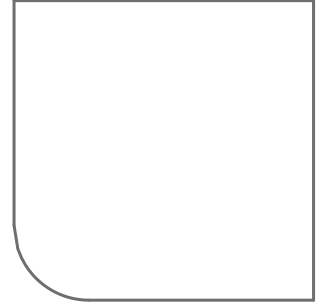
Fixed objects:

- General
- ▣ Signal
- ⊠ Tree
- Pole
- ▣ Curb
- ⊠ Animal
- ◁ 3rd vehicle
- * Extra data

4 Crashes



Pedestrian Intersection



(0) crashes could not be placed in this schematic

- ← Straight
- ←| Stopped
- ← Unknown
- ↔ Backing
- ↔ Overtaking
- ↔ Sideswipe

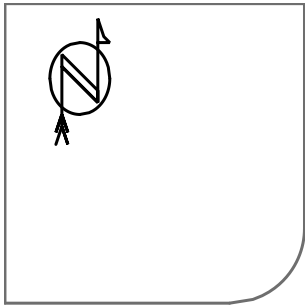
- ▭ Parked
- ←~ Erratic
- ←~ Out of control
- ↘ Right turn
- ↙ Left turn
- ↻ U-turn

- × Pedestrian
- ⊗ Bicycle
- Injury
- Fatality
- ⚡ Nighttime
- ⚠ DUI

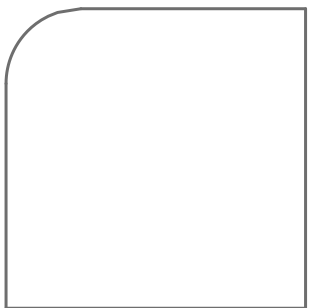
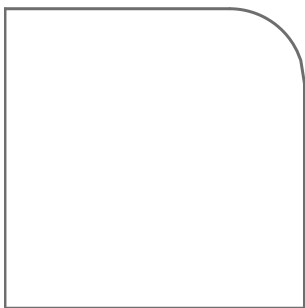
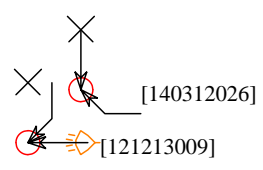
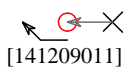
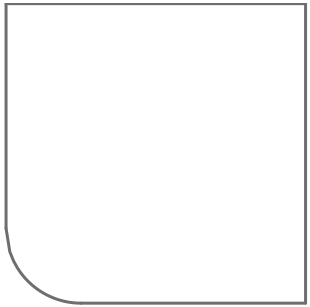
Fixed objects:

- General
- ▣ Signal
- ▣ Tree
- Pole
- ▣ Curb
- ⊗ Animal
- ◁ 3rd vehicle
- * Extra data

4 Crashes



Pedestrian Intersection



(0) crashes could not be placed in this schematic

- ← Straight
- ←| Stopped
- ← Unknown
- ↔ Backing
- ↔ Overtaking
- ↔ Sideswipe

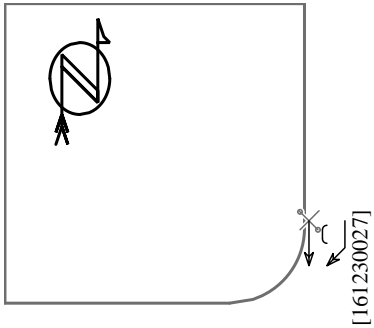
- ▭ Parked
- ↔ Erratic
- ↔ Out of control
- ↗ Right turn
- ↖ Left turn
- ↪ U-turn

- × Pedestrian
- ⊗ Bicycle
- Injury
- Fatality
- ⚡ Nighttime
- ⚠ DUI

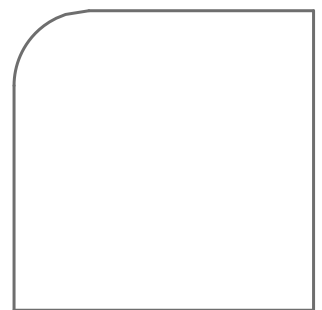
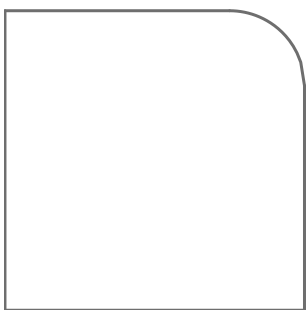
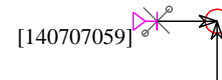
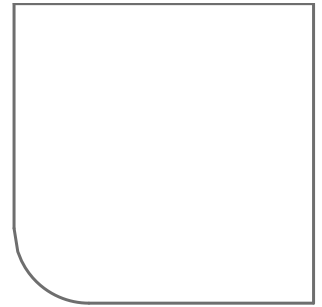
- Fixed objects:
- General
 - ⊞ Signal
 - ⊞ Tree
 - Pole
 - ⊞ Curb
 - ⊞ Animal
 - ◁ 3rd vehicle
 - * Extra data

Bicycle Intersections

2 Crashes



Bicyclist at Intersection



(0) crashes could not be placed in this schematic

- ← Straight
- ←| Stopped
- ← Unknown
- ↔ Backing
- ↔ Overtaking
- ↔ Sideswipe

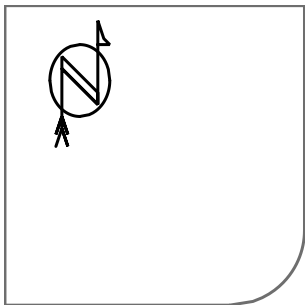
- ▭ Parked
- ↔ Erratic
- ↔ Out of control
- ↘ Right turn
- ↙ Left turn
- ↻ U-turn

- ⊗ Pedestrian
- ⊗ Bicycle
- Injury
- Fatality
- ⚡ Nighttime
- ⚡ DUI

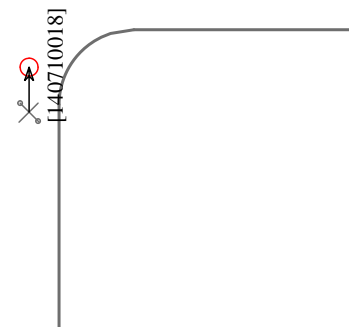
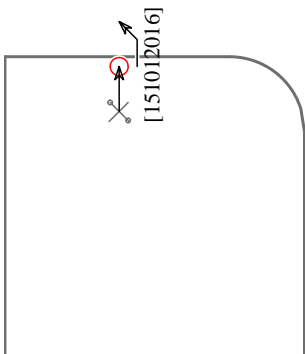
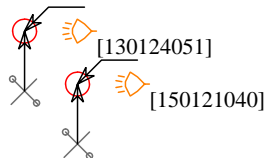
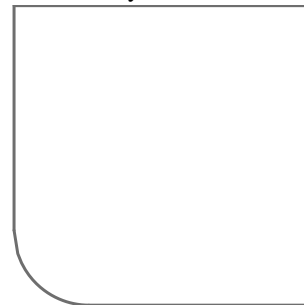
Fixed objects:

- General
- ⊞ Signal
- ⊞ Tree
- Pole
- ⊞ Curb
- ⊞ Animal
- ◁ 3rd vehicle
- * Extra data

4 Crashes



Bicyclist at Intersection



(0) crashes could not be placed in this schematic

- ← Straight
- ←| Stopped
- ← Unknown
- ↔ Backing
- ↔ Overtaking
- ↔ Sideswipe

- ▭ Parked
- ↔ Erratic
- ↔ Out of control
- ↗ Right turn
- ↖ Left turn
- ↪ U-turn

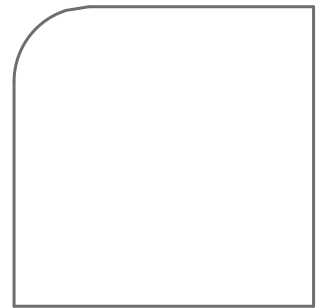
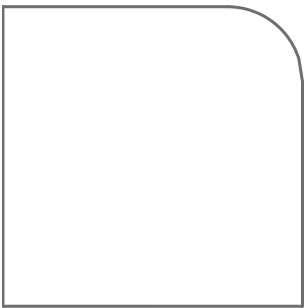
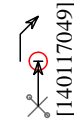
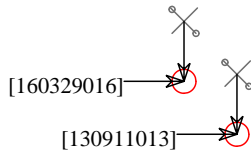
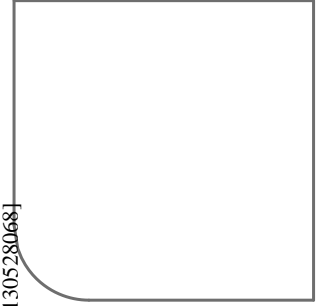
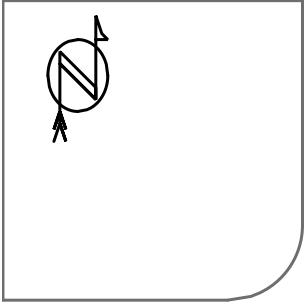
- × Pedestrian
- ⊗ Bicycle
- Injury
- Fatality
- ⚡ Nighttime
- ⚠ DUI

Fixed objects:

- General
- ▣ Signal
- ⊠ Tree
- Pole
- ▣ Curb
- ⊠ Animal
- ◁ 3rd vehicle
- * Extra data

6 Crashes

Bicyclist at Intersection



(0) crashes could not be placed in this schematic

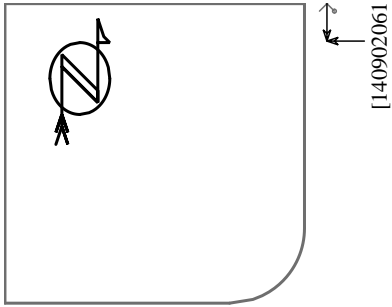
- ← Straight
- ←| Stopped
- ← Unknown
- ↔ Backing
- ↔ Overtaking
- ↔ Sideswipe

- ▭ Parked
- ↔ Erratic
- ↔ Out of control
- ↗ Right turn
- ↖ Left turn
- ↪ U-turn

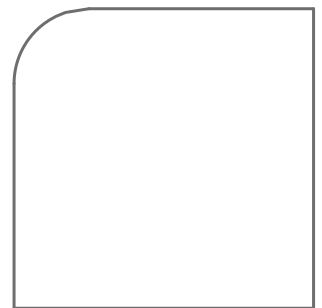
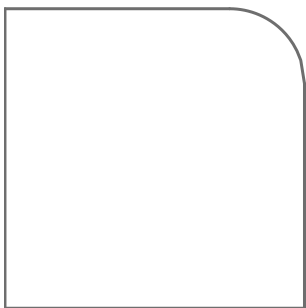
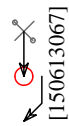
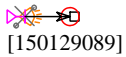
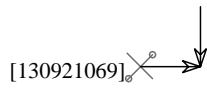
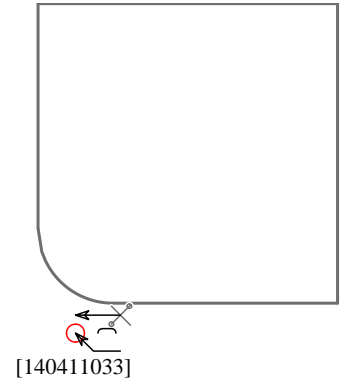
- × Pedestrian
- ⊗ Bicycle
- Injury
- Fatality
- ⚡ Nighttime
- ⚠ DUI

- Fixed objects:
- General
 - ⊞ Signal
 - ⊞ Tree
 - Pole
 - ⊞ Curb
 - ⊞ Animal
 - ◁ 3rd vehicle
 - * Extra data

6 Crashes



Bicyclist at Intersection



(0) crashes could not be placed in this schematic

- ← Straight
- ←| Stopped
- ← Unknown
- ↔ Backing
- ↔ Overtaking
- ↔ Sideswipe

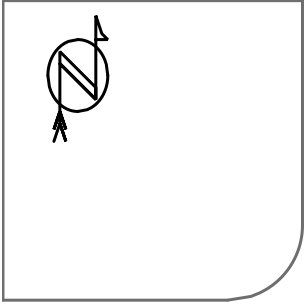
- ▭ Parked
- ↔ Erratic
- ↔ Out of control
- ↗ Right turn
- ↖ Left turn
- ↪ U-turn

- × Pedestrian
- ⊗ Bicycle
- Injury
- Fatality
- ⚡ Nighttime
- ⚡ DUI

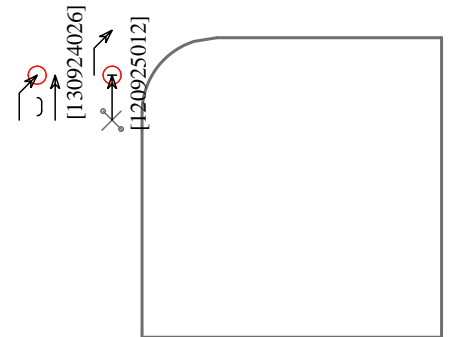
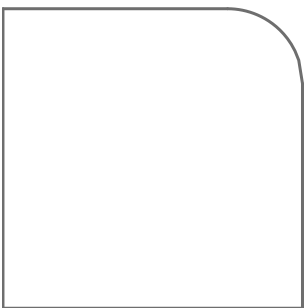
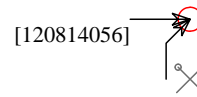
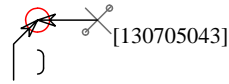
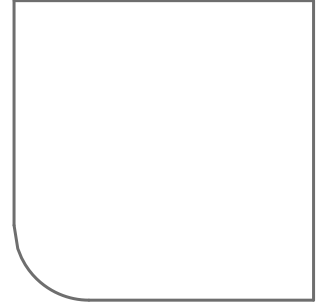
Fixed objects:

- General
- ⊞ Signal
- ⊞ Tree
- ⊞ Pole
- ⊞ Curb
- ⊞ Animal
- ◁ 3rd vehicle
- * Extra data

4 Crashes



Bicyclist at Intersection



(0) crashes could not be placed in this schematic

- ← Straight
- ←| Stopped
- ← Unknown
- ↔ Backing
- ↔ Overtaking
- ↔ Sideswipe

- ▭ Parked
- ↔ Erratic
- ↔ Out of control
- ↗ Right turn
- ↖ Left turn
- ↪ U-turn

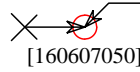
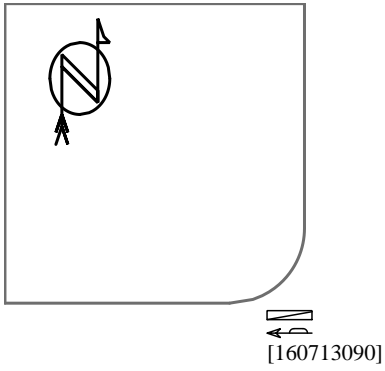
- × Pedestrian
- ⊗ Bicycle
- Injury
- Fatality
- ⚡ Nighttime
- ⚠ DUI

Fixed objects:

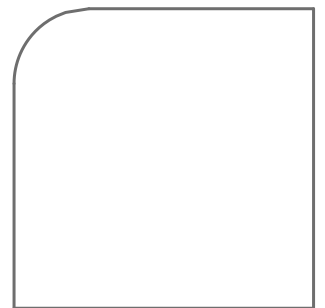
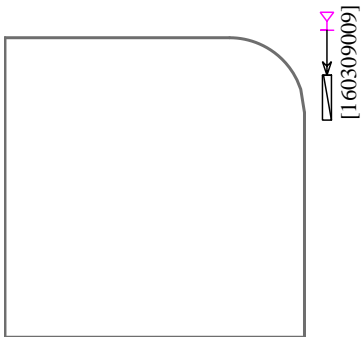
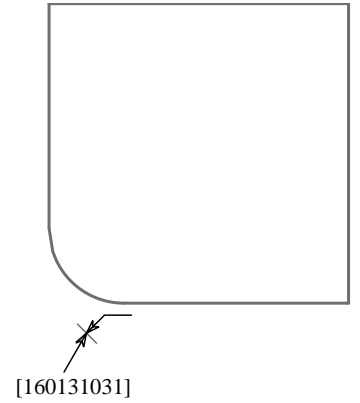
- General
- ▣ Signal
- ▣ Tree
- Pole
- ▣ Curb
- ⊗ Animal
- ◁ 3rd vehicle
- * Extra data

Arterial/Arterial Intersections

4 Crashes



Within 75 ft from Intersection



(0) crashes could not be placed in this schematic

- ← Straight
- ←| Stopped
- ← Unknown
- ↔ Backing
- ↔ Overtaking
- ↔ Sideswipe

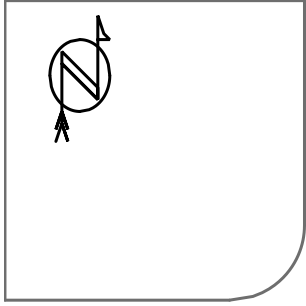
- ▭ Parked
- ↔ Erratic
- ↔ Out of control
- ↗ Right turn
- ↖ Left turn
- ↻ U-turn

- × Pedestrian
- ⊗ Bicycle
- Injury
- Fatality
- 💡 Nighttime
- ⚠ DUI

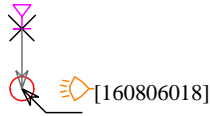
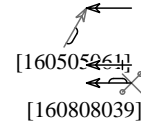
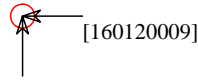
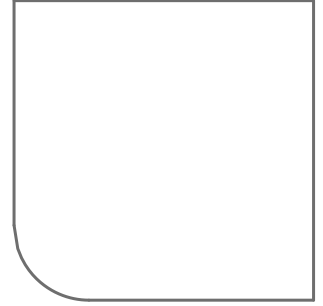
Fixed objects:

- General
- ⊞ Signal
- ⊞ Tree
- Pole
- ⊞ Curb
- ⊞ Animal
- ◁ 3rd vehicle
- * Extra data

4 Crashes



Within 75 ft from Intersection



(0) crashes could not be placed in this schematic

- ← Straight
- ←| Stopped
- ← Unknown
- ↔ Backing
- ↔ Overtaking
- ↔ Sideswipe

- ▭ Parked
- ↔ Erratic
- ↔ Out of control
- ↗ Right turn
- ↖ Left turn
- ↪ U-turn

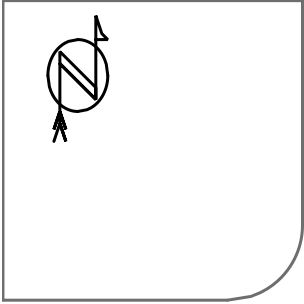
- × Pedestrian
- ⊗ Bicycle
- Injury
- Fatality
- ⚡ Nighttime
- ⚠ DUI

Fixed objects:

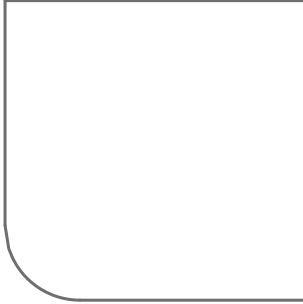
- General
- ⊞ Signal
- ⊞ Tree
- Pole
- ⊞ Curb
- ⊞ Animal
- ◁ 3rd vehicle
- * Extra data

4 Crashes

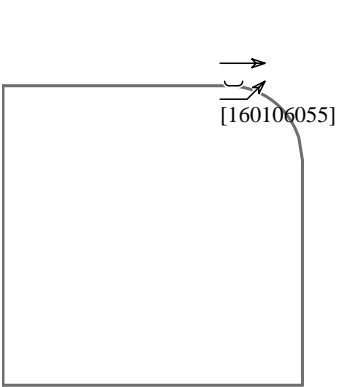
Within 75 ft from Intersection



[161228043]

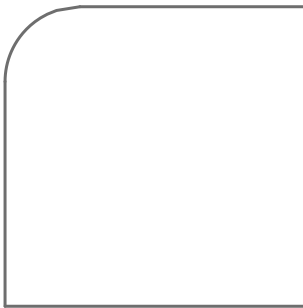


[160920011]



[160106055]

[160319058]



(0) crashes could not be placed in this schematic

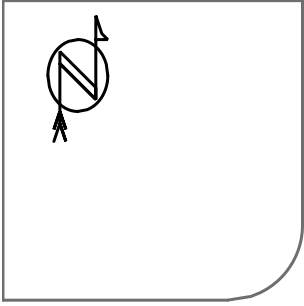
- ← Straight
- ←| Stopped
- ← Unknown
- ↔ Backing
- ↔ Overtaking
- ↔ Sideswipe

- ▭ Parked
- ↔ Erratic
- ↔ Out of control
- ↗ Right turn
- ↖ Left turn
- ↪ U-turn

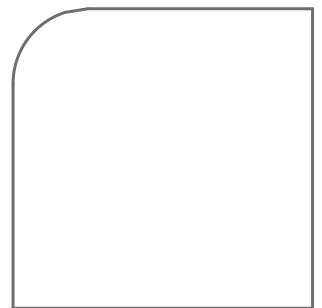
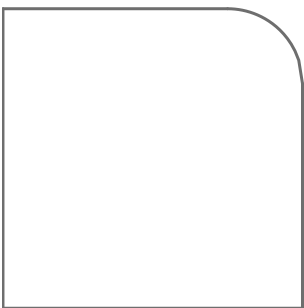
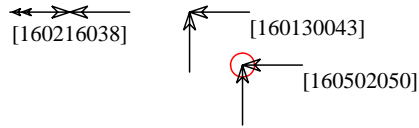
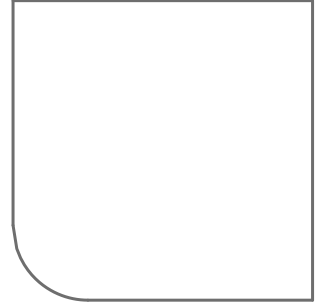
- ⊗ Pedestrian
- ⊗ Bicycle
- Injury
- Fatality
- ⚡ Nighttime
- ⚠ DUI

- Fixed objects:
- General
 - ⊞ Signal
 - ⊞ Tree
 - ⊞ Pole
 - ⊞ Curb
 - ⊞ Animal
 - ◁ 3rd vehicle
 - * Extra data

3 Crashes



Within 75 ft from Intersection



(0) crashes could not be placed in this schematic

- ← Straight
- ←| Stopped
- ← Unknown
- ↔ Backing
- ↔ Overtaking
- ↔ Sideswipe

- ▭ Parked
- ↔ Erratic
- ↔ Out of control
- ↘ Right turn
- ↙ Left turn
- ↻ U-turn

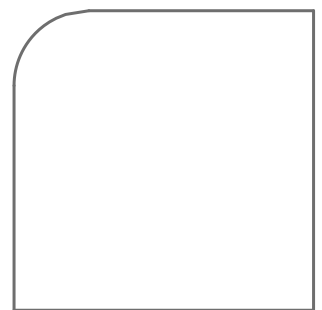
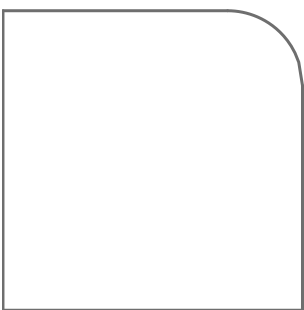
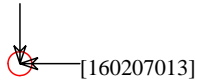
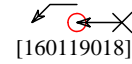
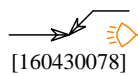
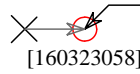
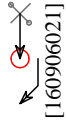
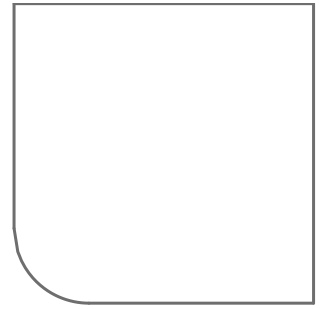
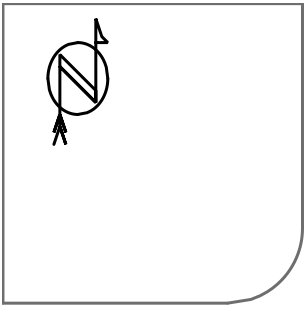
- × Pedestrian
- ⊗ Bicycle
- Injury
- Fatality
- ⚡ Nighttime
- ⚠ DUI

Fixed objects:

- General
- ▣ Signal
- ▣ Tree
- Pole
- ▣ Curb
- ⊗ Animal
- ◁ 3rd vehicle
- * Extra data

6 Crashes

Within 75 ft from Intersection



(0) crashes could not be placed in this schematic

- ← Straight
- ←| Stopped
- ← Unknown
- ↔ Backing
- ↔ Overtaking
- ↔ Sideswipe

- ▭ Parked
- ↔ Erratic
- ↔ Out of control
- ↗ Right turn
- ↖ Left turn
- ↪ U-turn

- × Pedestrian
- ⊗ Bicycle
- Injury
- Fatality
- 💡 Nighttime
- ⚠ DUI

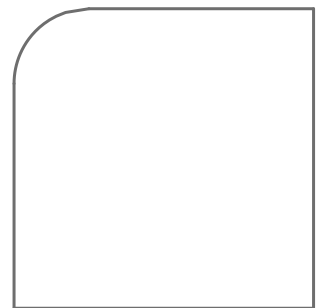
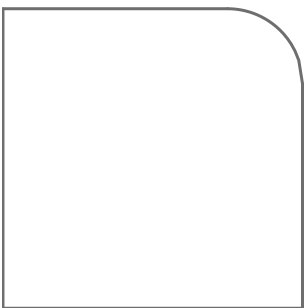
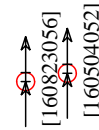
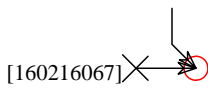
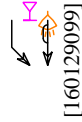
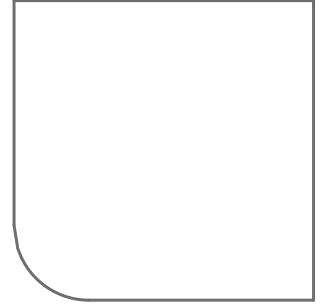
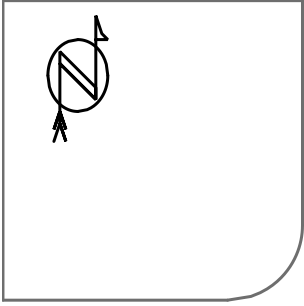
Fixed objects:

- General
- ⊞ Signal
- ⊞ Tree
- Pole
- ⊞ Curb
- ⊞ Animal
- ◁ 3rd vehicle
- * Extra data

Arterial/Collector Intersections

4 Crashes

Within 75 ft from Intersection



(0) crashes could not be placed in this schematic

- ← Straight
- ←| Stopped
- ← Unknown
- ↔ Backing
- ↔ Overtaking
- ↔ Sideswipe

- ▭ Parked
- ↔ Erratic
- ↔ Out of control
- ↗ Right turn
- ↖ Left turn
- ↪ U-turn

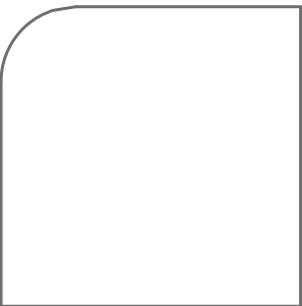
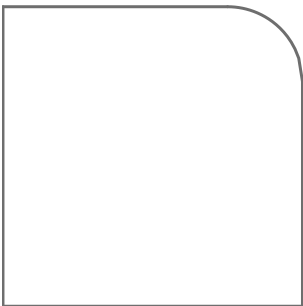
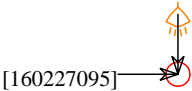
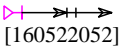
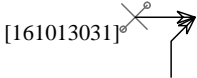
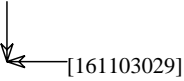
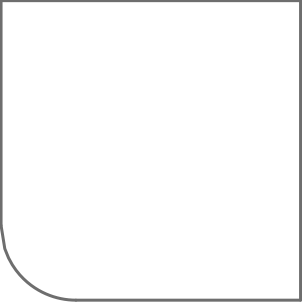
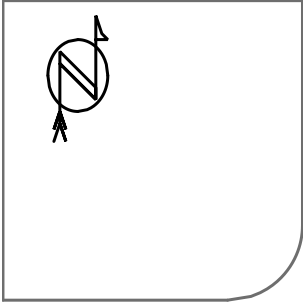
- × Pedestrian
- ⊗ Bicycle
- Injury
- Fatality
- ⚡ Nighttime
- ⚠ DUI

Fixed objects:

- General
- ⊞ Signal
- ⊞ Tree
- ⊞ Pole
- ⊞ Curb
- ⊞ Animal
- ◁ 3rd vehicle
- * Extra data

5 Crashes

Within 75 ft from Intersection



(0) crashes could not be placed in this schematic

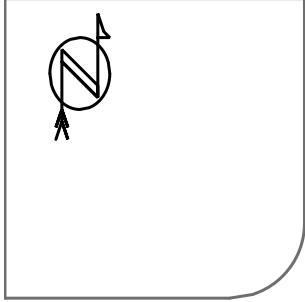
- ← Straight
- ←| Stopped
- ← Unknown
- ↔ Backing
- ↔ Overtaking
- ↔ Sideswipe

- ▭ Parked
- ↔ Erratic
- ↔ Out of control
- ↗ Right turn
- ↖ Left turn
- ↪ U-turn

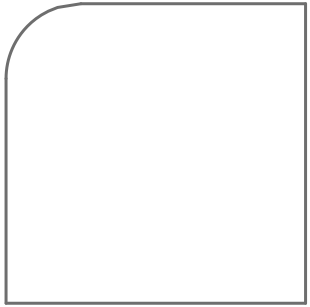
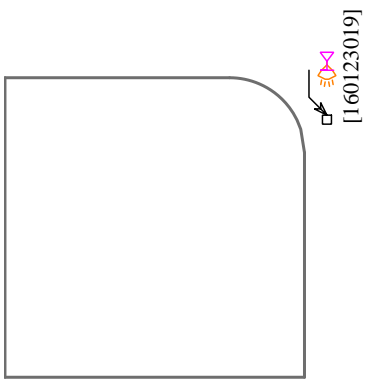
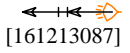
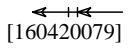
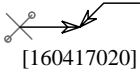
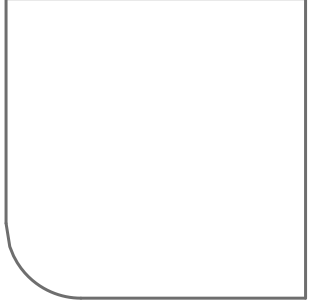
- × Pedestrian
- ⊗ Bicycle
- Injury
- Fatality
- ⚡ Nighttime
- ⚡ DUI

- Fixed objects:
- General
 - ⊞ Signal
 - ⊞ Tree
 - Pole
 - ⊞ Curb
 - ⊞ Animal
 - ◁ 3rd vehicle
 - * Extra data

4 Crashes



Within 75 ft from Intersection



(0) crashes could not be placed in this schematic

- ← Straight
- ←| Stopped
- ← Unknown
- ↔ Backing
- ↔ Overtaking
- ↔ Sideswipe

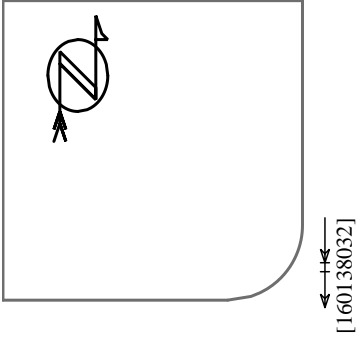
- ▭ Parked
- ↔ Erratic
- ↔ Out of control
- ↗ Right turn
- ↖ Left turn
- ↻ U-turn

- × Pedestrian
- ⊗ Bicycle
- Injury
- Fatality
- ⚡ Nighttime
- ⚡ DUI

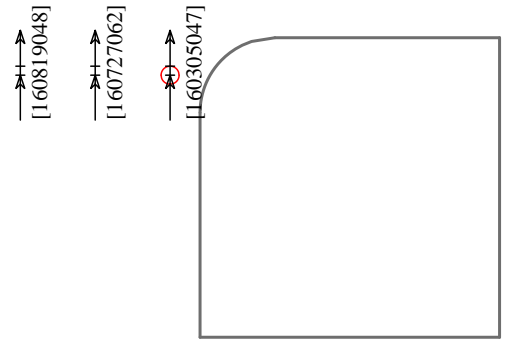
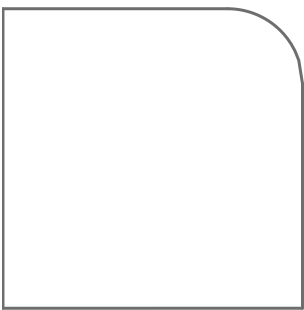
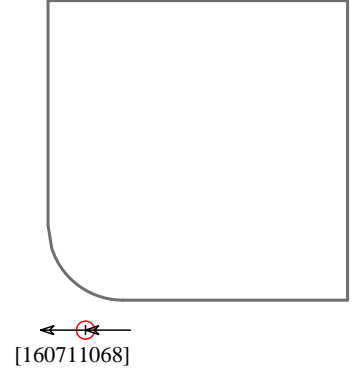
Fixed objects:

- General
- ⊞ Signal
- ⊞ Tree
- Pole
- ⊞ Curb
- ⊞ Animal
- ◁ 3rd vehicle
- * Extra data

5 Crashes



Within 75 ft from Intersection



(0) crashes could not be placed in this schematic

- ← Straight
- ←| Stopped
- ← Unknown
- ↔ Backing
- ↔ Overtaking
- ↔ Sideswipe

- ▭ Parked
- ↔ Erratic
- ↔ Out of control
- ↗ Right turn
- ↖ Left turn
- ↪ U-turn

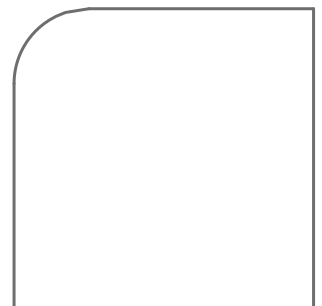
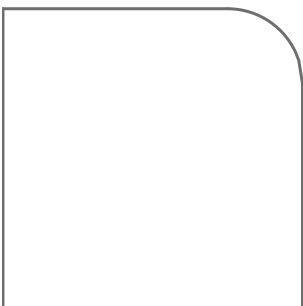
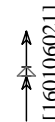
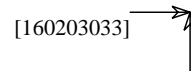
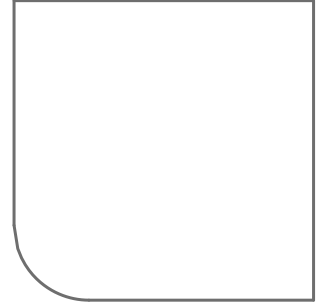
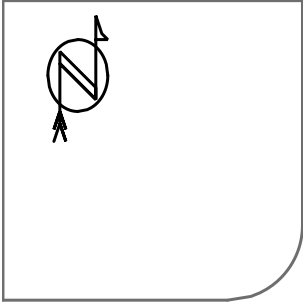
- × Pedestrian
- ⊗ Bicycle
- Injury
- Fatality
- ⚡ Nighttime
- ⚠ DUI

Fixed objects:

- General
- ⊞ Signal
- ⊞ Tree
- Pole
- ⊞ Curb
- ⊞ Animal
- ◁ 3rd vehicle
- * Extra data

3 Crashes

Within 75 ft from Intersection



(0) crashes could not be placed in this schematic

- ← Straight
- ←| Stopped
- ← Unknown
- ↔ Backing
- ↔ Overtaking
- ↔ Sideswipe

- ▭ Parked
- ↔ Erratic
- ↔ Out of control
- ↗ Right turn
- ↖ Left turn
- ↪ U-turn

- × Pedestrian
- ⊗ Bicycle
- Injury
- Fatality
- 💡 Nighttime
- ⚠ DUI

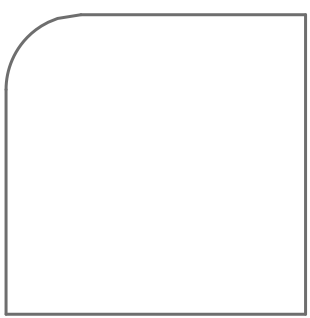
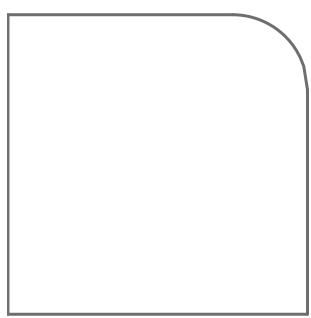
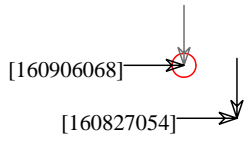
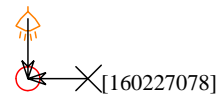
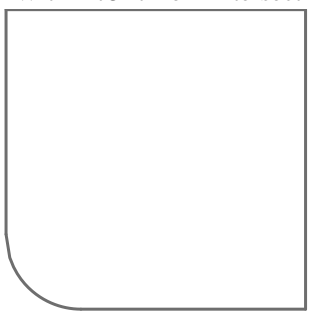
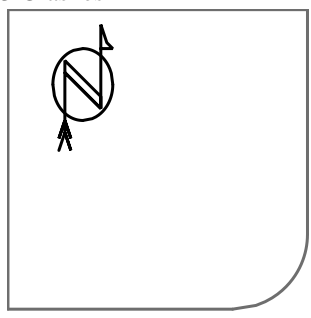
Fixed objects:

- General
- ⊞ Signal
- ⊞ Tree
- Pole
- ⊞ Curb
- ⊞ Animal
- ◀ 3rd vehicle
- * Extra data

Arterial/Local Intersections

3 Crashes

Within 75 ft from Intersection



(0) crashes could not be placed in this schematic

- ← Straight
- ←| Stopped
- ← Unknown
- ↔ Backing
- ↔ Overtaking
- ↔ Sideswipe

- ▭ Parked
- ←~ Erratic
- ←~ Out of control
- ↘ Right turn
- ↙ Left turn
- ↻ U-turn

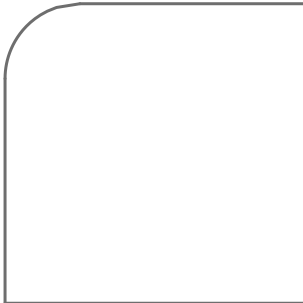
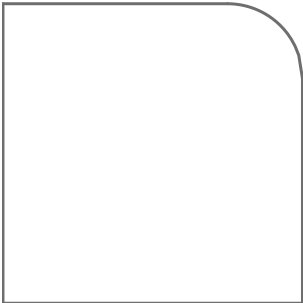
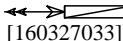
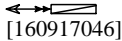
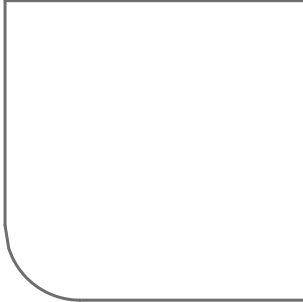
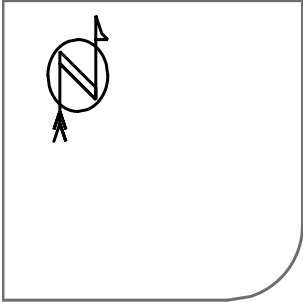
- × Pedestrian
- ⊗ Bicycle
- Injury
- Fatality
- 🔦 Nighttime
- ⚠ DUI

Fixed objects:

- General
- ▣ Signal
- ⊠ Tree
- Pole
- ▣ Curb
- ⊠ Animal
- ◁ 3rd vehicle
- * Extra data

4 Crashes

Within 75 ft from Intersection



(0) crashes could not be placed in this schematic

- ← Straight
- ←| Stopped
- ← Unknown
- ↔ Backing
- ↔ Overtaking
- ↔ Sideswipe

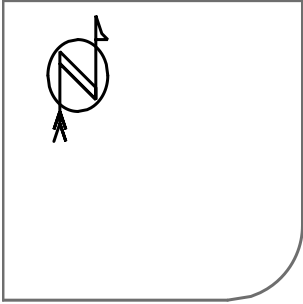
- Parked
- Erratic
- Out of control
- Right turn
- Left turn
- U-turn

- Pedestrian
- Bicycle
- Injury
- Fatality
- Nighttime
- DUI

- Fixed objects:
- General
 - Signal
 - Tree
 - Pole
 - Curb
 - Animal
 - 3rd vehicle
 - Extra data

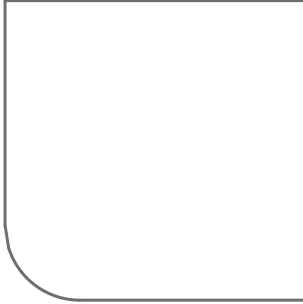
4 Crashes

Within 75 ft from Intersection

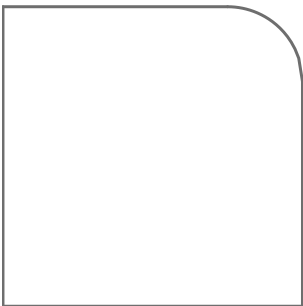


[160303066]

[161208016]



[160422056]



[160303071]

(0) crashes could not be placed in this schematic

- ← Straight
- ←| Stopped
- ← Unknown
- ↔ Backing
- ↔ Overtaking
- ↔ Sideswipe

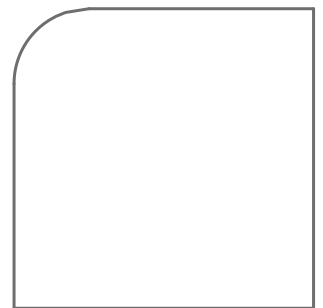
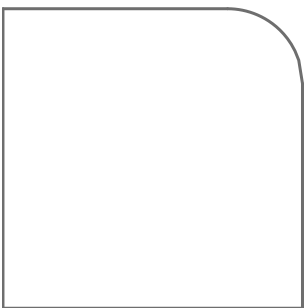
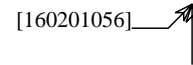
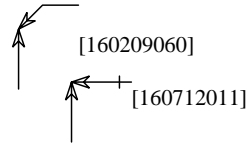
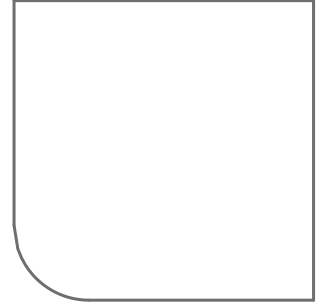
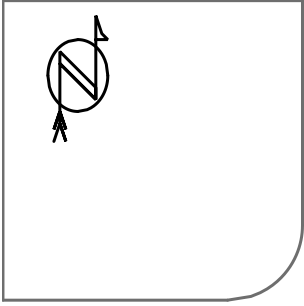
- ▭ Parked
- ↔ Erratic
- ↔ Out of control
- ↗ Right turn
- ↖ Left turn
- ↪ U-turn

- × Pedestrian
- ⊗ Bicycle
- Injury
- Fatality
- ⚡ Nighttime
- ⚠ DUI

- Fixed objects:
- General
 - ⊞ Signal
 - ⊞ Tree
 - Pole
 - ⊞ Curb
 - ⊞ Animal
 - ◁ 3rd vehicle
 - * Extra data

5 Crashes

Within 75 ft from Intersection



(0) crashes could not be placed in this schematic

- ← Straight
- ←| Stopped
- ← Unknown
- ↔ Backing
- ↔ Overtaking
- ↔ Sideswipe

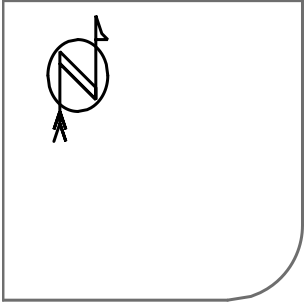
- ▭ Parked
- ↔ Erratic
- ↔ Out of control
- ↗ Right turn
- ↖ Left turn
- ↪ U-turn

- × Pedestrian
- ⊗ Bicycle
- Injury
- Fatality
- ⚡ Nighttime
- ⚠ DUI

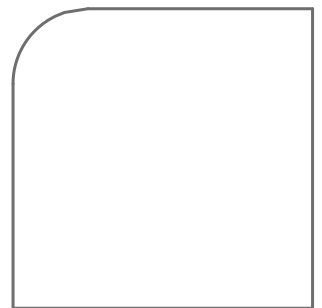
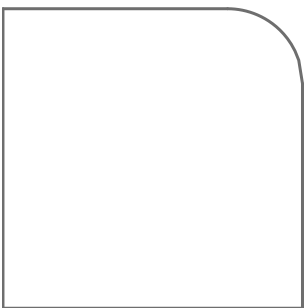
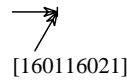
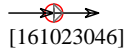
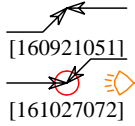
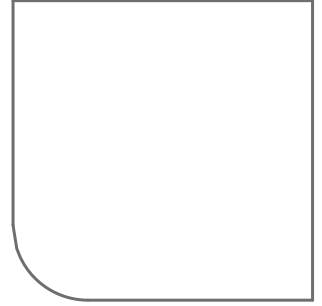
Fixed objects:

- General
- ▣ Signal
- ▣ Tree
- Pole
- ▣ Curb
- ⊗ Animal
- ◁ 3rd vehicle
- * Extra data

4 Crashes



Within 75 ft from Intersection



(0) crashes could not be placed in this schematic

- ← Straight
- ←| Stopped
- ← Unknown
- ↔ Backing
- ↔ Overtaking
- ↔ Sideswipe

- ▭ Parked
- ↔ Erratic
- ↔ Out of control
- ↗ Right turn
- ↖ Left turn
- ↪ U-turn

- × Pedestrian
- ⊗ Bicycle
- Injury
- Fatality
- ⚡ Nighttime
- ⚠ DUI

Fixed objects:

- General
- ⊞ Signal
- ⊞ Tree
- Pole
- ⊞ Curb
- ⊞ Animal
- ◁ 3rd vehicle
- * Extra data