

Annual FY 2019 Transportation Systems Monitoring Program (TSMP) Report



November 2019

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Executive Summary

Santa Clara County residents and businesses have made significant investments in its transportation infrastructures. The Transportation Systems Monitoring Program (TSMP) was initiated by VTA's Technical Advisory Committee and approved by the Board of Directors in 2008 to monitor the conditions and performance of selected transportation system networks and assets. The TSMP and annual reports were developed in response to concerns raised by local jurisdictions on the ability and resources needed to maintain the County's transportation infrastructure to acceptable standards.

The primary purpose of this report is to serve as an asset management tool by providing an inventory and general assessment on the conditions and performance of selected key transportation systems on an annual basis in a single report.



Other benefits include:

- Enable the County and external stakeholders to better understand the performance of the County's transportation system and effectiveness of the investments;
- Communicate progress towards stated transportation system goals and objectives;
- Provide additional context for future funding and policy decisions.

In addition, the TSMP follows the goals of Moving Ahead for Progress in the 21st Century and Fixing America's Surface Transportation Act, the federal reauthorization transportation funding programs that emphasizes performance-based management of transportation infrastructure assets at the state and local levels.

Since the inception of TSMP, each annual report has focused on selected areas of the transportation system based on available data and new information. This year's FY 2019 TSMP Report focuses on Street Pavement, Highway Litter, Illegal Encampments and Graffiti, and Roadway Safety.



Street Pavement

Indicators	Previous Period	Current Period	Goal	Goal Met	Trend (Yearly)
Street Pavement Conditions (Avg. Pavement Condition Index (PCI) scale 0 – 100)	70 (2017)	70 (2018)	75	NO	

There are nearly **10,000 lane-miles of roadway pavement in Santa Clara County** maintained by local jurisdictions. This is the greatest number of pavement miles of the nine counties in the Bay Area. **The average Pavement Condition Index (PCI) remained unchanged with a score of 70** since the previous reporting period, indicating the ability of local agencies to maintain their roadways to near Good condition. The areas of the county showing the most needs were in the east, west, and south sections of San Jose, and central section of Gilroy.

A PCI of 70 indicates that the pavement is generally in Good Condition with asphalt showing low levels of distress such as minor cracks. **The overall average PCI for the Bay Area was 68 compared with the region-wide goal of 75.** Roadways that are not maintained to a PCI score of 70 or higher cost more to repair in the future if rehabilitation maintenance is deferred over time.

The improved street pavement conditions can be attributed to local funding from the 2010 \$10 Vehicle Registration Fee Program, where nearly \$75 million over the last four years (FY 2012 to FY 2018) was dedicated to repair and maintain the local streets.



Highway Litter, Illegal Encampments, and Graffiti Maintenance

Indicators	Previous Period	Current Period	Trend (Yearly)
Litter collected by Caltrans clean-ups (Cubic yards (yd ³))	15,186 (2018)	15,398 (2019)	
Litter collected at Illegal Encampments by Caltrans clean-ups (Cubic yards (yd ³))	5,897 (2018)	3,556 (2019)	
Graffiti removed by Caltrans clean-ups (Square feet (ft ²))	773,215 (2018)	998,351 (2019)	

The amount of trash collected along the 307 highway shoulder miles in Santa Clara County continues to increase. **An estimated total of 215 cubic yards of litter or nearly 1,505 30-gallon size trash bags were collected in FY 2019 compared to the previous year.** The “hot spot” locations with the most trash were located along US 101 (Sunnyvale to South San Jose), I-680 (Hostetter/Berryessa areas in San Jose), I-280 (Hwy 17 to Hwy 87), and Highway 85 (Hwy 17 to Hwy 87). On a positive note, 877 cubic yards or 614 less trash bags were collected along State Routes 17 and 87 from the previous year.

The amount of litter collected at illegal encampment sites significantly decreased by 2,341 cubic yards or 16,387 trash bags from the previous year. These sites are typically located near interchanges and on/off ramps. The improvements can be attributed to an aggressive, coordinated multi-jurisdictional prevention effort between Caltrans, California Highway Patrol, City of San Jose Homeless Response Team, and San Jose Conservation Corps.

Controlling graffiti along the highway overcrossings, sound walls, and signs continues to be a challenge. **The amount of graffiti removed significantly increased by 225,136 square feet or nearly 4 football fields from FY 2018 to FY 2019.** The highway segments with the most graffiti were along US 101, State Routes 85 and 87, and I-280.

VTA, in partnership with Caltrans, Keep America Beautiful, Santa Clara Valley Basin Watershed Management’s Zero Litter Initiative, and Valley Water are collaborating to develop a countywide highway litter prevention program called Keep Santa Clara Valley Beautiful. The program includes a community change behavior campaign, installation of illegal litter and encampment enforcement signs at problematic locations, and sponsoring of several clean-up events, including an anti-litter summit, over the next two years. In addition, VTA is also working with Caltrans and local jurisdictions to encourage sponsorship through Caltrans’ Adopt-A-Highway program to supplement current litter clean-up and graffiti removal efforts.



Roadway Safety (Collisions)

Indicators	Previous Period	Current Period	Trend (Yearly)
Total Collisions	17,534 (2016)	15,227 (2017)	
Fatal Collisions	106 (2016)	65 (2017)	
Injury Collisions	7,796 (2016)	6,684 (2017)	

The total number of reported collisions in Santa Clara County, including fatalities and serious injuries, significantly decreased since the previous reporting period covering 2016 to 2017. In 2017, there were 15,227 total collisions. Of these collisions, there were 65 fatalities, 6,684 injuries, and 8,478 property damages. The total number of collisions decreased by 2,307 incidents, 41 fatalities, and 1,112 injuries. It should be noted here that the collision data released from the California Highway Patrol Statewide Integrated Traffic Records System (SWITRS) is two-years behind to insure accuracy of the reports.

The Primary Collision Factor (PCF) by type for all collisions were **Rear-End (43%) and Sideswipe (19%) collisions**. The PCF for the causes of these collisions were **Unsafe Speed (44%), Improper Turning (16%), and Unsafe Lane Changes (9%)**.

There were 889 collisions involving bicyclists and pedestrians. Of these collisions, 40% involved pedestrians, 27% involved bicyclists, and 33% were other types of collisions.

The PCF causes were Pedestrian Right of Way

violations (vehicle driver at fault), Pedestrian Violations (pedestrian at fault), and Vehicle Right of Way violations (bicyclist at fault).

Although the overall number of collisions involving pedestrian and bicyclist represents only 6% of the total number of collisions in the County, these collisions account for 26% of all fatalities.

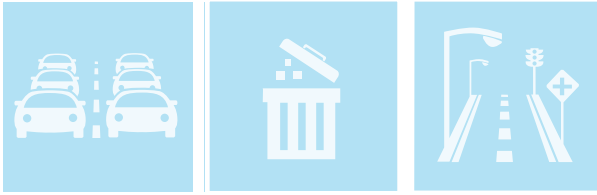
Shown below, is a list of locations with the highest number collision incidents by mode.

All jurisdictions in Santa Clara County have been taking incremental steps, like adopting Vision Zero Initiative policies, incorporating Complete Streets designs, and investing in Crossroads Countywide Traffic Collision Database, to make the roadway network safer for all modes. In addition, VTA was recently awarded a grant from Caltrans to develop a countywide Local Roadway Safety Plan for Santa Clara County.

Additional information on collisions, highway litter and graffiti conditions, and street pavement conditions briefly described here are provided in this report.

Vehicle/Vehicle	SR 17 - Madrone Dr. to Summit Rd.	136 Collisions
Vehicle/Vehicle	San Thomas Expwy/Monroe St. Intersection	3 Collisions
Vehicle/Pedestrian	2nd St./Santa Clara St., Hermocilla Wy./King Rd., Story Rd./Roberts Ave.(San Jose). Castro St./Evelyn Ave. (Mountain View)	3 Collisions (per location)
Vehicle/Bicycle	Various locations throughout county	2 Collisions (per location)

Introduction



The Fiscal Year 2019 Transportation Systems Monitoring Program (TSMP) Report is the 9th edition since the Program was first initiated in 2010. Each published report included additional areas of review of Santa Clara County's transportation network as new information became available:

- 2011 (2nd ed.) introduced monitoring of litter and landscape conditions on the highways.
- 2013 (3rd ed.) featured an inventory of traffic signal systems and introduced monitoring of express lanes.
- 2014 (4th ed.) featured a new dashboard report format, key performance measures table, pavement, bridge, and litter and landscape monitoring sections, new safety section and revised air quality section.
- 2015 (5th ed.) featured an expanded litter and landscape section.
- 2016 (6th ed.) added ramp metering inventory and featured green bike lanes materials and applications.
- 2017 (7th ed.) added a section to track the most frequently reported problems that were highlighted by the local jurisdictions.
- FY 2018 (8th ed.) was renamed to better reflect the reporting period, introduced a Commute and Time Spent in Congestion

About the Data

The data presented in the TSMP Reports are extracted from a variety of transportation resources from local, state, regional, and federal agencies. The performance measures and sources used for this report are listed in the References Section.



section to track performance of major corridors in the County, and new performance metrics for monitoring litter and graffiti along the highways.

- FY 2019 (9th ed.) has been updated using more quantitative metrics, and reformatted to a more visual oriented report that highlights changes in conditions. FY 2019 TSMP Report was also condensed to focus on selected transportation infrastructure areas with more in-depth information. This year's report focusses on the following three areas: **1) Pavement, 2) Highway Litter and Graffiti, and 3) Roadway Safety (Collisions).**

Street Pavement

OVERVIEW

Inventory

10,000 Lane Miles

Conditions

70 PCI (Good)

Sources:

MTC Vital Signs 2018 PCI Scores,

2018 California Statewide Local Streets and Roads Needs Assessment Report



Inventory

There are approximately **10,000 lane miles** of pavement in Santa Clara County maintained by local agencies. The term “lane miles” is a measure of road length which represents the number of miles of every driving lane. This measure is used to better reflect the total amount of pavement that needs to be maintained.

Conditions

PCI Definition

PCI is based on the number and severity of pavement distresses observed during a visual inspection of a roadway and is expressed in numerical index between 0 and 100. Zero is the worst or failed condition and 100 represents a roadway that is in excellent or new condition. Visual examples of the PCI index scale are shown below.

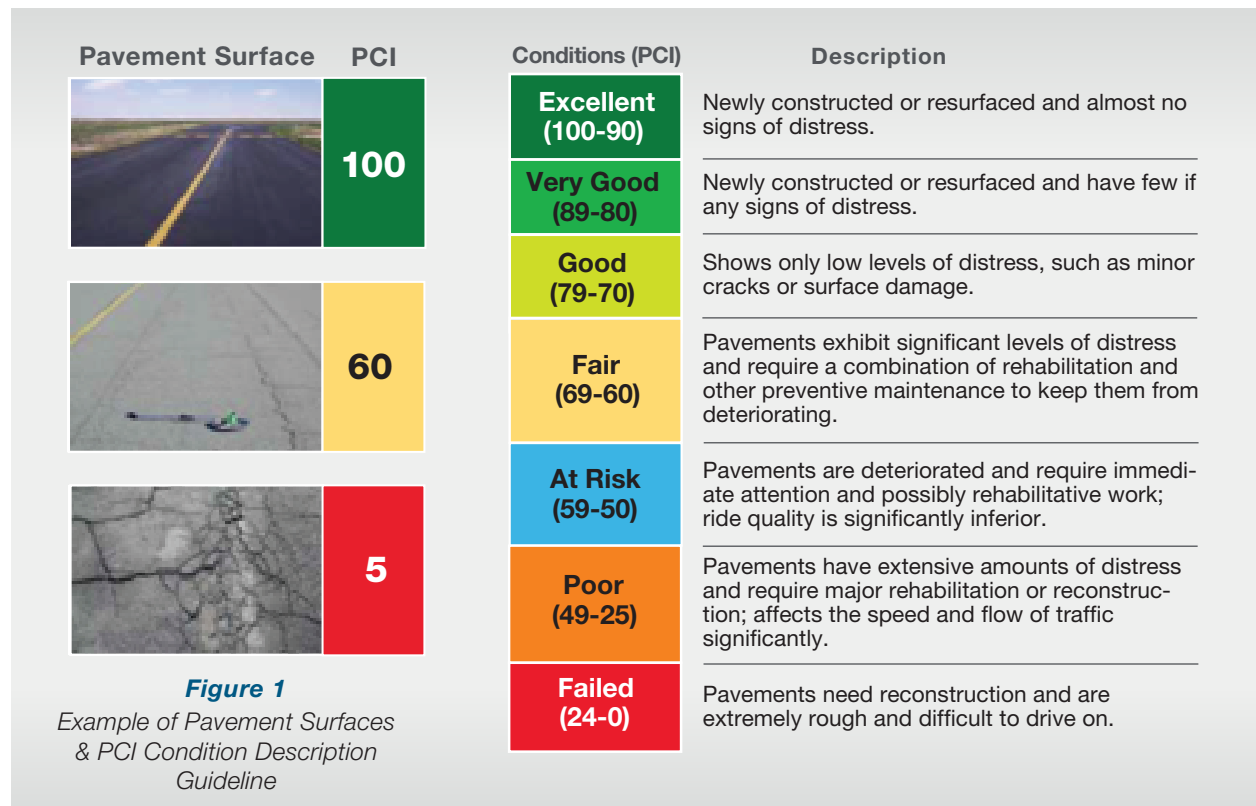


Figure 1

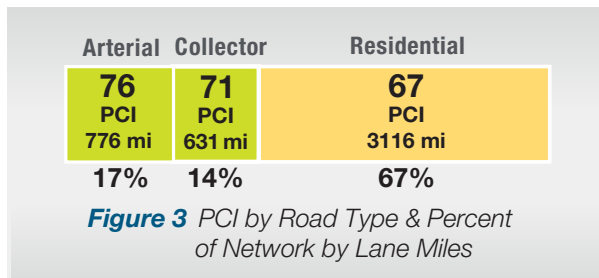
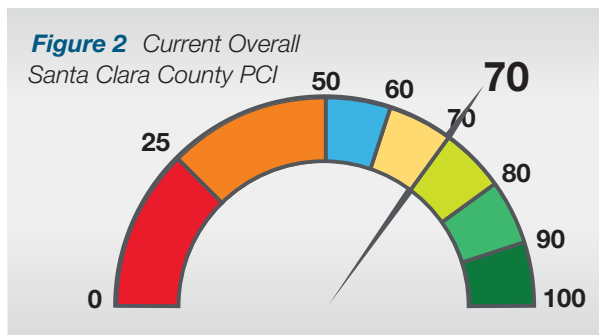
Example of Pavement Surfaces & PCI Condition Description Guideline

Street Pavement

Pavement Condition Index (PCI)

The average PCI score for Santa Clara County's roadways is **70 (Good)**, compared with the Bay Area's regional PCI of 68 (Fair) and the regional goal of 75 (Good).

The PCI score represents a weighted average based on a percentage of the roadway network by category (e.g. arterial, collector and residential). This measurement accounts for incremental wear of roadways over time.



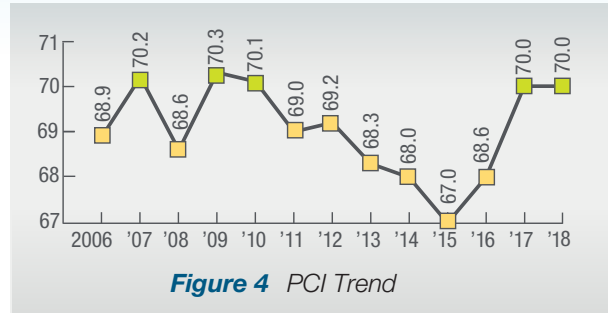
Condition and Pavement Evaluation

PCI is based on visual inspection of the top surface of pavement. Distress areas originating below the surface are not typically noticed until they "make their way up", causing cracks or depressions on the surface. These distressed conditions can originate from deteriorating underlying pavement, base, sub-base, and subgrade layers.

In addition to PCI, there are other methods of determining pavement conditions. However, many of these methods are too detailed and expensive for frequent reporting purposes.

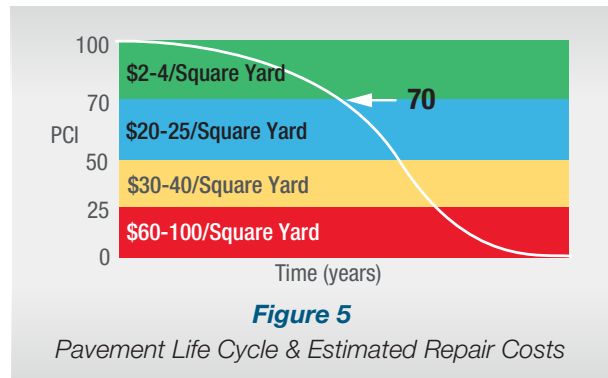
PCI Trend

An annual overall PCI trend is shown in the next column.



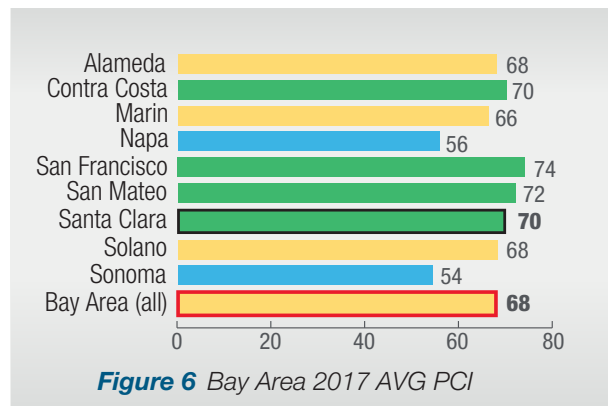
Life Cycle

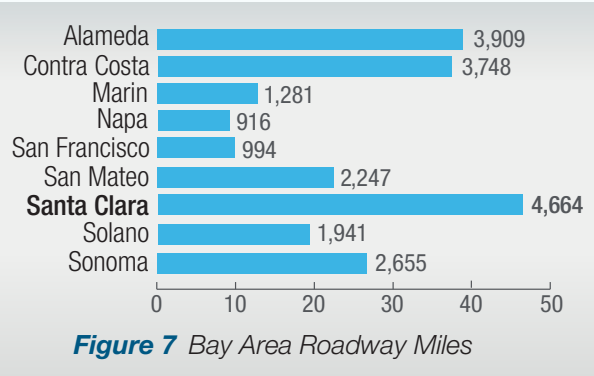
Pavement tends to deteriorate at an increasing rate over time. The current PCI is at the borderline of "Good" to "Fair" conditions with a relatively low need for rehabilitation. However, it is also close to the area on the curve where the need for rehabilitation and repair costs significantly increases. Preventative measures should be implemented to minimize the decline in PCI below 70.



Peer County Comparison

The PCI goal established for the Bay Area's local roadways is 75. Santa Clara County has a PCI score of 70, which is slightly better than the Bay Area's PCI average of 68 (Fair).





Signs” allows access to raw data for personal analysis and visualization. Based on such data, a Santa Clara County 2018 Local Street Pavement Condition Index (PCI) map was generated. The map displays assigned level of PCI for each local road link within the County.

Solutions

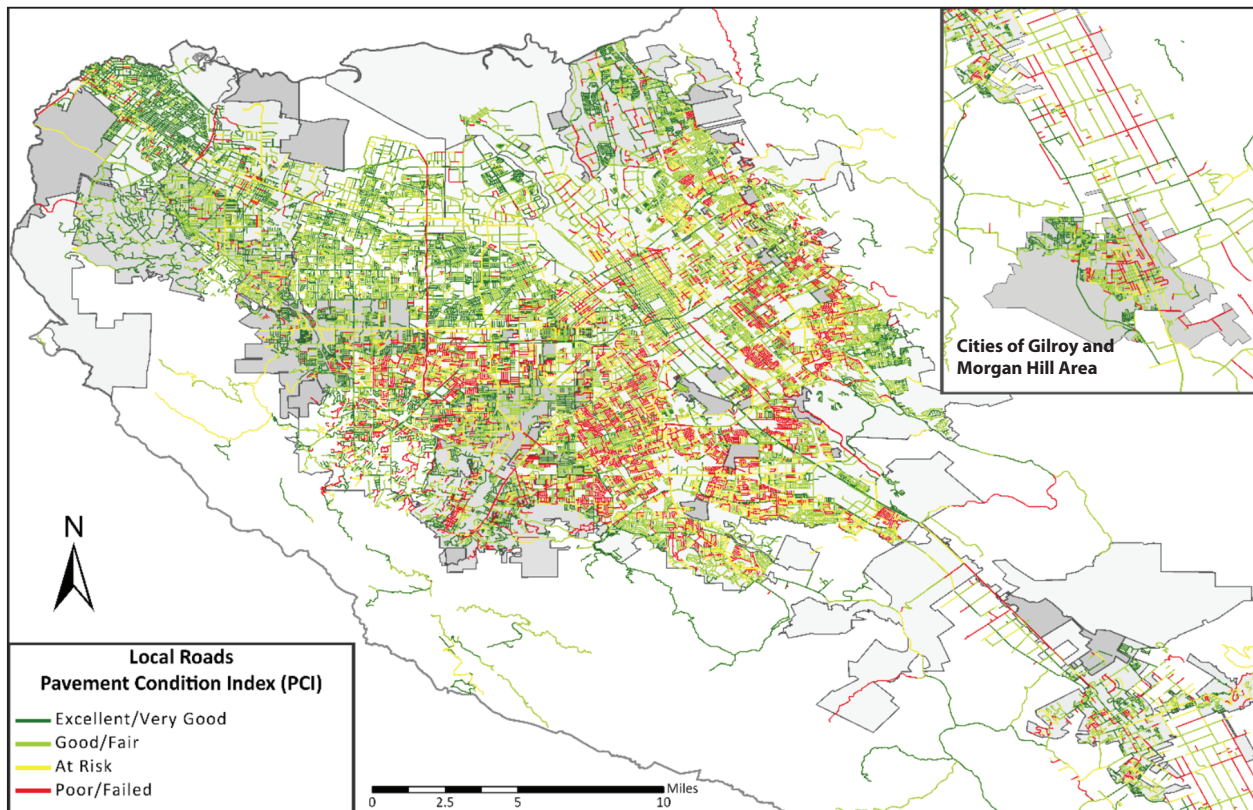
Continue the direct funding collected from VTA’s 2010 Vehicle Registration Fee and the State’s Road Repair and Accountability Act program, to improve pavement conditions to a PCI score of 75 or better to minimize costly rehabilitation repairs from deferred maintenance.

2018 Local Streets PCI Map

MTC’s “Vital Signs” website provides interactive access to detailed and historical pavement conditions data. In addition to pre-generated graphs, MTC’s “Vital



Figure 8
Santa Clara County 2018 Local Streets PCI Map



Highway Litter, Illegal Encampments, and Graffiti Maintenance

OVERVIEW

Inventory

128 Interchanges

307 Highway Roadside Miles

1,193 Acres of Landscape Area

Source: 2008 Litter Control Pilot Program, VTA.



Background

VTA Technical Advisory Committee identified highway litter, landscape, and graffiti maintenance as major roadway maintenance issues. The accumulation of litter and graffiti are viewed as driver distractions and potential hazards, as well as having negative impacts on the environment. The cleanliness of the highways can also be perceived as a quality of life indicator representing the level of community civic pride to local residents, regional travelers, and tourists.

Inventory

There are approximately **307 roadside shoulder length miles** (used to represent the length of the area maintained), **128 interchanges**, and **1,193 acres of landscaped area** on the State's highway system in Santa Clara County requiring regular maintenance.

Conditions

The monitoring of litter and graffiti is a challenging task as the causes are related to human behavior, where the number of incidents is unpredictable and varies yearly. In previous reports, a subjective drive-by approach using a visual assessment scale was used as a performance metric to compare conditions from previous years. This year, a quantitative-based approach was used to assess

the litter and graffiti conditions. The report utilized the actual amounts of litter and graffiti removed by Caltrans clean-up crews throughout the year. Caltrans maintenance crews keep a log of the work completed that includes data on type of clean-up, location, and amounts removed. This information was used to generate the following heat maps.

Litter

Data collected by Caltrans clean-up crews shows that in FY 2019, an estimated 15,398 cubic yards of litter were picked-up along the 307 highway shoulder miles in Santa Clara County. To provide some visual perspective, this equates to approximately 107,786 trash bags (1 cubic yard = 7 of 30-gallon sized trash bags) or approximately 9 football fields (300 ft. length x 160 ft. width) of trash.

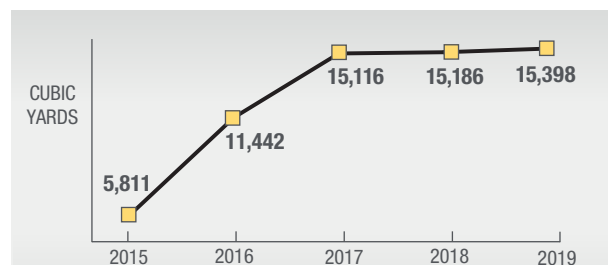


Figure 9 5-Year Total Litter Collection Trend

Compared to FY 2018, the amount of litter picked-up increased by approximately 1.4% or 212 cubic yards (6,360 trash bags).

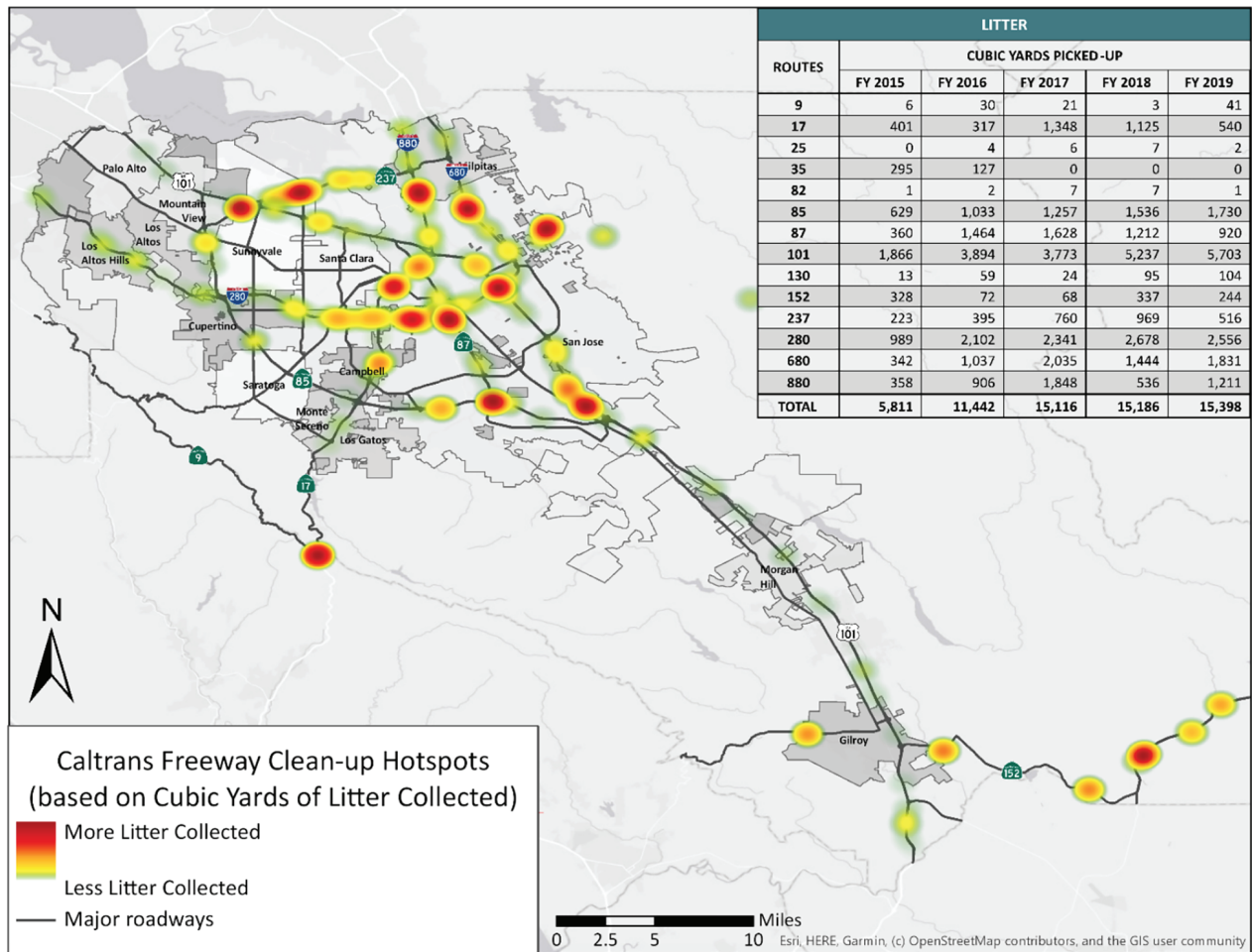
Highway Litter, Illegal Encampments, and Graffiti Maintenance

The hotspot map below depicts the location and amount of litter collected in FY 2019. Caltrans maintenance crews typically clean each highway corridor two times a month throughout the year. The dark orange-reddish spots represent the areas with the most amounts of litter collected. The table shows the changes in amount of litter collected over a 5-year period by corridor routes.

Identifying and tracking high-density littered locations are important for identifying anti-litter strategies. These locations require additional monitoring and possibly a more in-depth investigation study to determine the primary sources of litter and appropriate mitigation measures.

Figure 10

Hotspot Map of Litter in Cubic Yards Picked-up Along Highways in Santa Clara County, FY 2019



Highway Litter, Illegal Encampments, and Graffiti Maintenance

Illegal Encampments

In addition to scheduled cleaning of the highway shoulders, Caltrans also recently started to record the locations of illegal encampments and amount of litter collected at these sites. The encampments clean-up event requires a 72-hour notice for the residents and are often repetitive. The data record shows that in FY 2019 an estimated 3,556 cubic yards of litter were removed from illegal encampments along the highways in Santa Clara County.

Compared to FY 2018, the amount of litter picked-up at illegal encampments decreased by approximately 39.7% or 2,341 cubic yards (70,230 trash bags).

The hotspot map below shows the areas along highways with the largest amount of litter collected

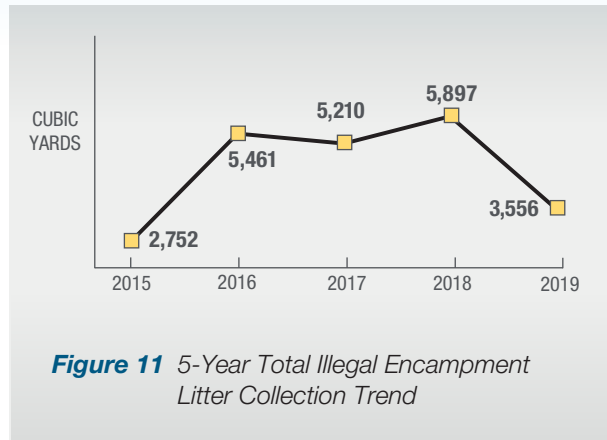
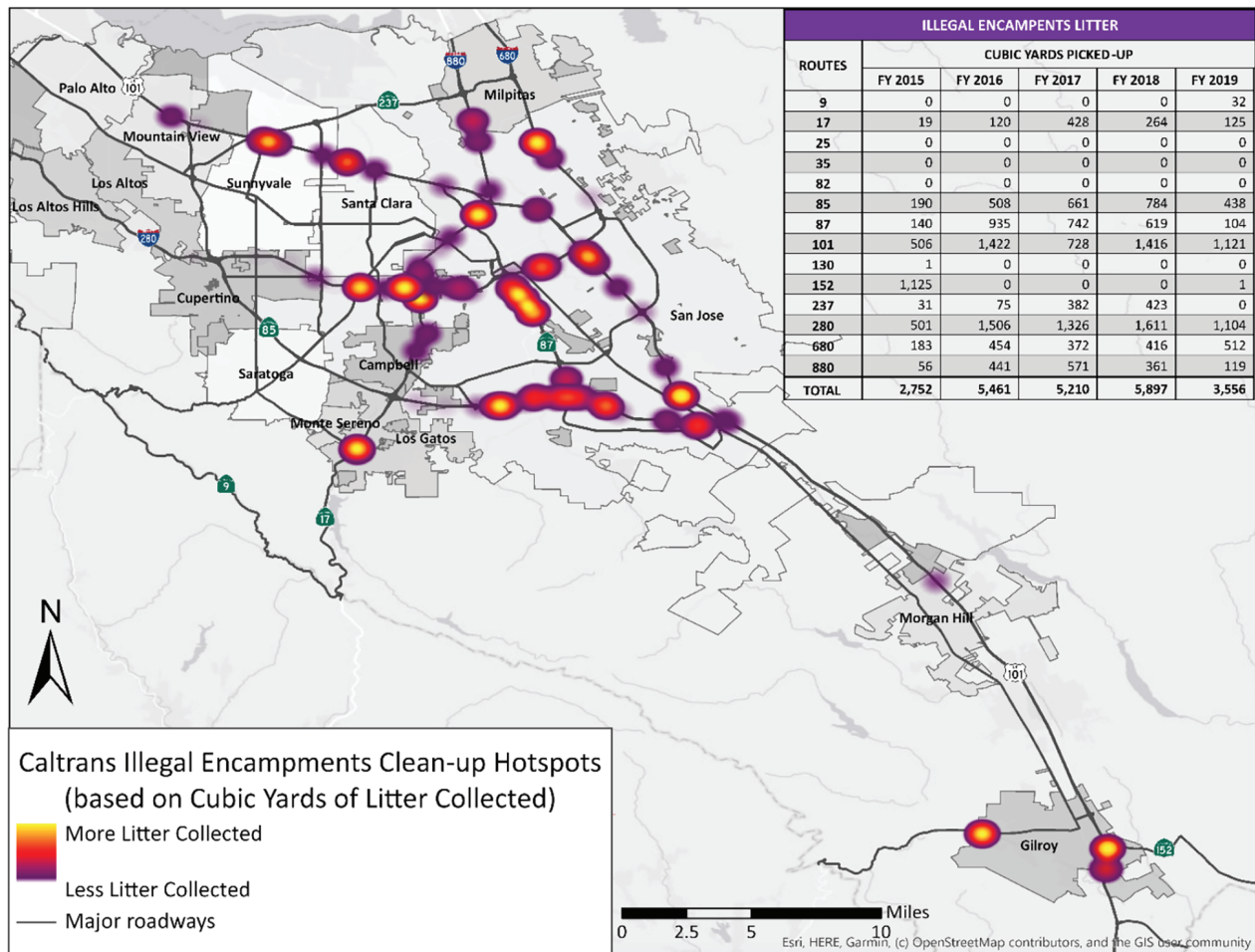


Figure 11 5-Year Total Illegal Encampment Litter Collection Trend

at the identified illegal encampments. The data in the table also shows the illegal encampments litter collection changes over a 5-year period by highway routes.

Figure 12

Hotspot Map of Illegal Encampments Litter in Cubic Yards Picked-up along Highways in Santa Clara County, FY 2019



Highway Litter, Illegal Encampments, and Graffiti Maintenance

The locations with the most amount of litter collected can also indicate the size of the illegal encampments. For locations that are routinely occupied, preventive measures such as restrictive signs, fencing, installation of trash containers, and social service outreach can be implemented through community outreach.

Graffiti

Highway overcrossings, sound walls and signages are frequently the target of graffiti. Caltrans clean-up crews routinely patrol the highway corridors and either remove or paint-over the graffiti. The data inventory shows that in FY 2019, an estimated 998,351 square feet of graffiti were removed along the highways in Santa Clara County.

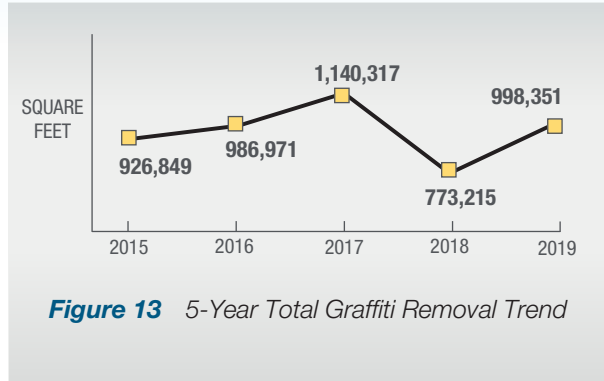
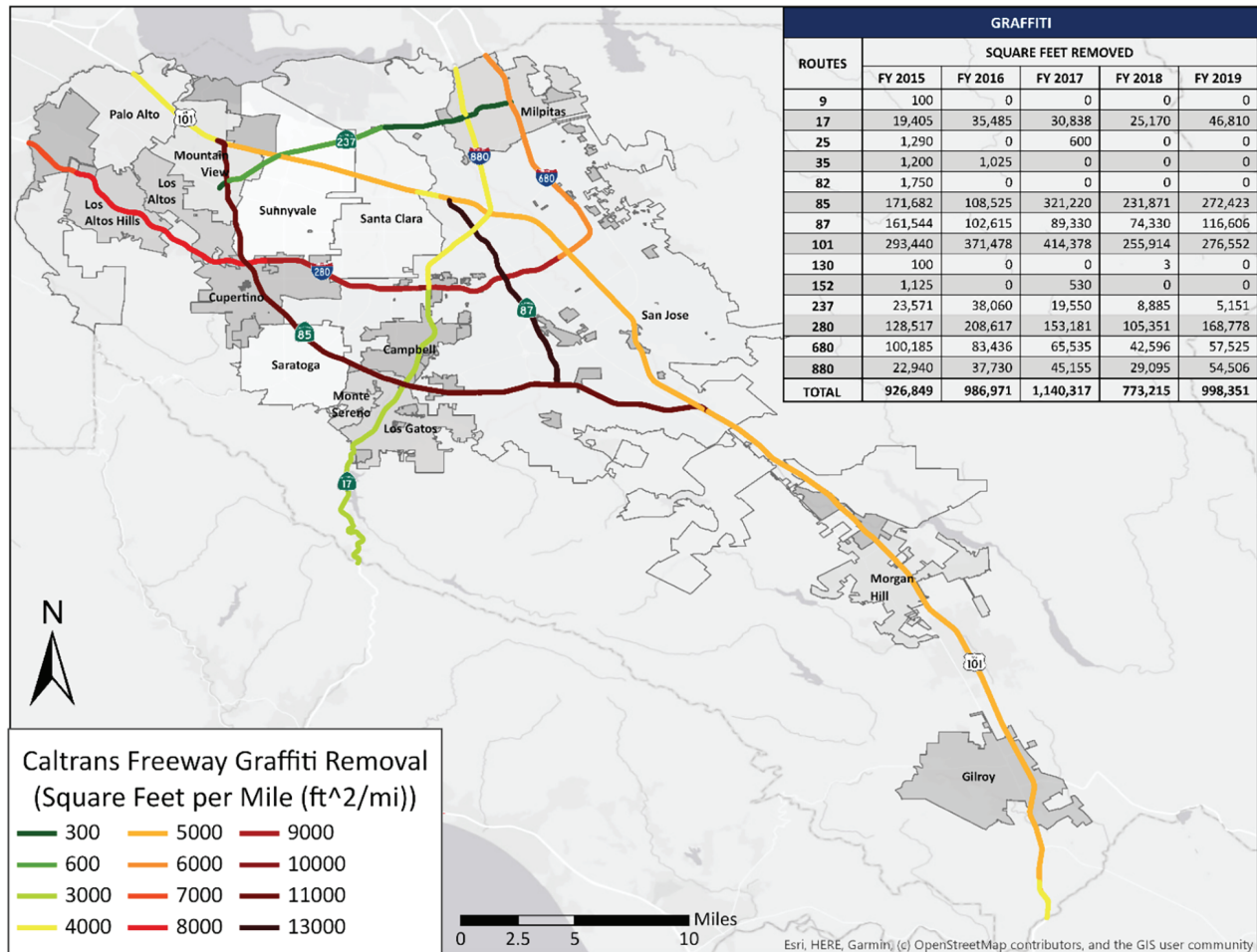


Figure 13 5-Year Total Graffiti Removal Trend

Compared to FY 2018, the amount of graffiti removed increased by approximately 29.1% or 225,136 square feet of graffiti.

Figure 14

Surface Area of Graffiti per Mile Removed along Highways in Santa Clara County, FY 2019



Highway Litter, Illegal Encampments, and Graffiti Maintenance

Caltrans graffiti removal efforts are conducted in partial segments of the highway, depending on the size and scale of the graffiti tags. To describe the amount of graffiti removed, a metric of square feet of graffiti removed per mile of highway is used in the table below. Dark green represents approximately 300 ft²/mi removed and dark red represents approximately 13,000 ft²/mi removed, with all other values shown in different colors.

The future data collection can be improved by more precisely indicating the locations and amounts of graffiti removed. This way, similar to the litter pick-up hotspot maps, a map could be generated for graffiti and the more severe locations could be monitored and issued preventive measures.

Maintenance

Santa Clara, San Mateo, and San Francisco counties are covered by Caltrans District 4 Southwest Region maintenance crews. Depending on available resources allocated from the State's annual budget, which varies from year to year, the Southwest Region may have up of 10-Road Maintenance Crews, 3-Bridge Maintenance Crews, 10-Landscape Maintenance Crews, 2-Maintenance Probationer Crews, 3-Region Vegetation Control Crews, 2-Storm Water Crews and 1-Tree Crew. These crews do not rotate, but the crew size may vary due to hiring and retention issues related to the high cost of living in the Bay Area. It is important to note here that State job classifications are paid the same rate regardless of work location. Crews can temporarily work outside of their areas of responsibility depending on operational needs

The Southwest Region and Headquarters Maintenance also contracts with several special program entities to focus on litter and vegetation maintenance. Currently, the Southwest Region has 8 crews of typically 6 to 8 people picking-up litter Monday through Friday. One crew is comprised of 10 people from special programs, and other seven crews are comprised of local conservation corps.

Work activity and schedules are based on operational needs that are based on numerous factors including, but not limited to Customer Service Requests, Oakland Dispatch, Region Dispatch, California Highway Patrol, construction, inspections, and input from local agencies and citizens.

Solutions



VTA, in partnership with Caltrans, Valley Water, and Keep America Beautiful, are developing a comprehensive countywide highway litter abatement program that includes procurement of illegal encampment and litter signs to be installed at high litter interchanges, and sponsoring of litter clean-up events over the next two years 2020 to 2021. This program will be called Keep Santa Clara Valley Beautiful.



With the recent passing of Senate Bill 1: Road Repair and Accountability Act (SB 1), Caltrans District 4 has received an additional funding of \$6 Million to address litter and graffiti on the highways. However, one the main issues facing Caltrans in Bay Area, is employee retention due to the high Bay Area cost-of-living index.



In addition to regular maintenance crews, Caltrans has an Adopt-a-Highway (AAH) program that allows communities and organizations to help maintain sections of the roadside. Groups have the option to participate a volunteer or to hire a maintenance service provide to perform the work

Highway Litter, Illegal Encampments, and Graffiti Maintenance



on their behalf. A current effort is underway by VTA to work with its member agencies to get all the adoptable highway segments adopted by their respective communities. Adoptions usually span a two-mile stretch of roadside, and permits are issued for five-year periods.

Participation can include one or more of the following activities:

- Removing litter (work frequency varies with location)
- Planting and establishing trees or wildflowers
- Removing Graffiti
- Controlling vegetation

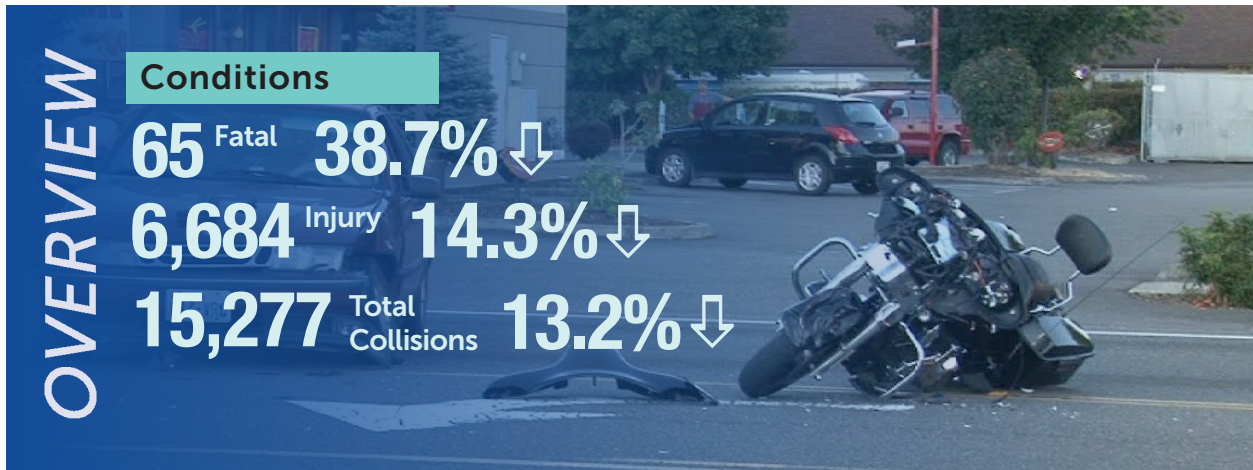
Caltrans, in partnership with volunteer organizations like Beautiful Day, San Jose Downtown Street Team, and San Jose Conservation Corps sponsors multiple clean-up day events each year. The California Highway Patrol (CHP) also participates in highway clean-up by sponsoring four litter clean-up days per year.



ZERO LITTER INITIATIVE

Another group that Caltrans has partnered with is Santa Clara Valley Zero Litter Initiative (ZLI). ZLI is a voluntary group comprised of cities, water agencies, and conservation organizations, including VTA, that are currently working on development and implementation of a comprehensive, multi-year anti-litter program that focusses on preventing pollution from entering waterways that lead to the San Francisco Bay.

Roadway Safety



Background

Transportation has a significant effect on public health and safety, creating a high-risk accident environment for all roadway users. To achieve Vision Zero goal of eliminating all transportation-related fatalities and severe injuries, while increasing safe, healthy and equitable mobility for all, the first step is to collect and analyze collision data to understand trends and causes.



It is important to mention that the data collection methodology this



year has been updated. Previously the data was retrieved from a collision database called Statewide Integrated Traffic Records System (SWITRS), maintained by California Highway Patrol (CHP). In effort to centralize and provide a more complete information, Santa Clara County utilized Crossroads Countywide Collision Database, which records accidents from the conventional CHP SWITRS database plus accidents recorded by the local police departments.

Conditions

Accident Collision Maps

Provisional 2017 data provided by Crossroads Countywide Collision Database is used as a source for the following statistics. There were **15,227 total collisions**, which included **65 fatal collisions**, **6,684 injury collisions**, and **8,478 property damage only collisions**. The total number of collisions **decreased** in 2017 by **13.2%** and the number of fatal collisions **decreased** by **38.7%**, which is a significant improvement.

The following pages show collision “hot spots” – locations of frequent collisions from data generated by Santa Clara County’s Crossroads Traffic Collision Database.

Figure 16
2017 Fatal Collisions “Hot Spots” Map, Santa Clara County

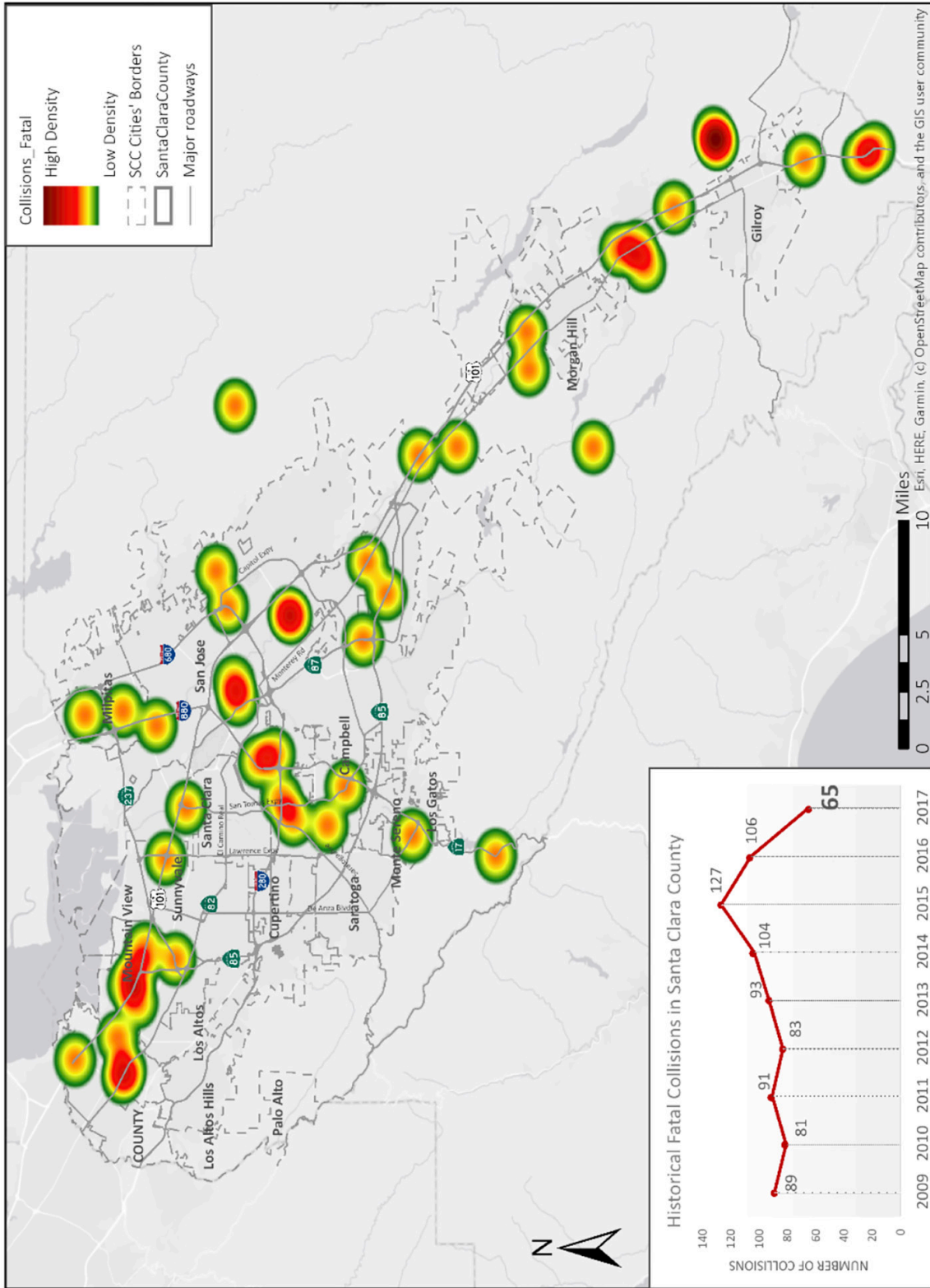
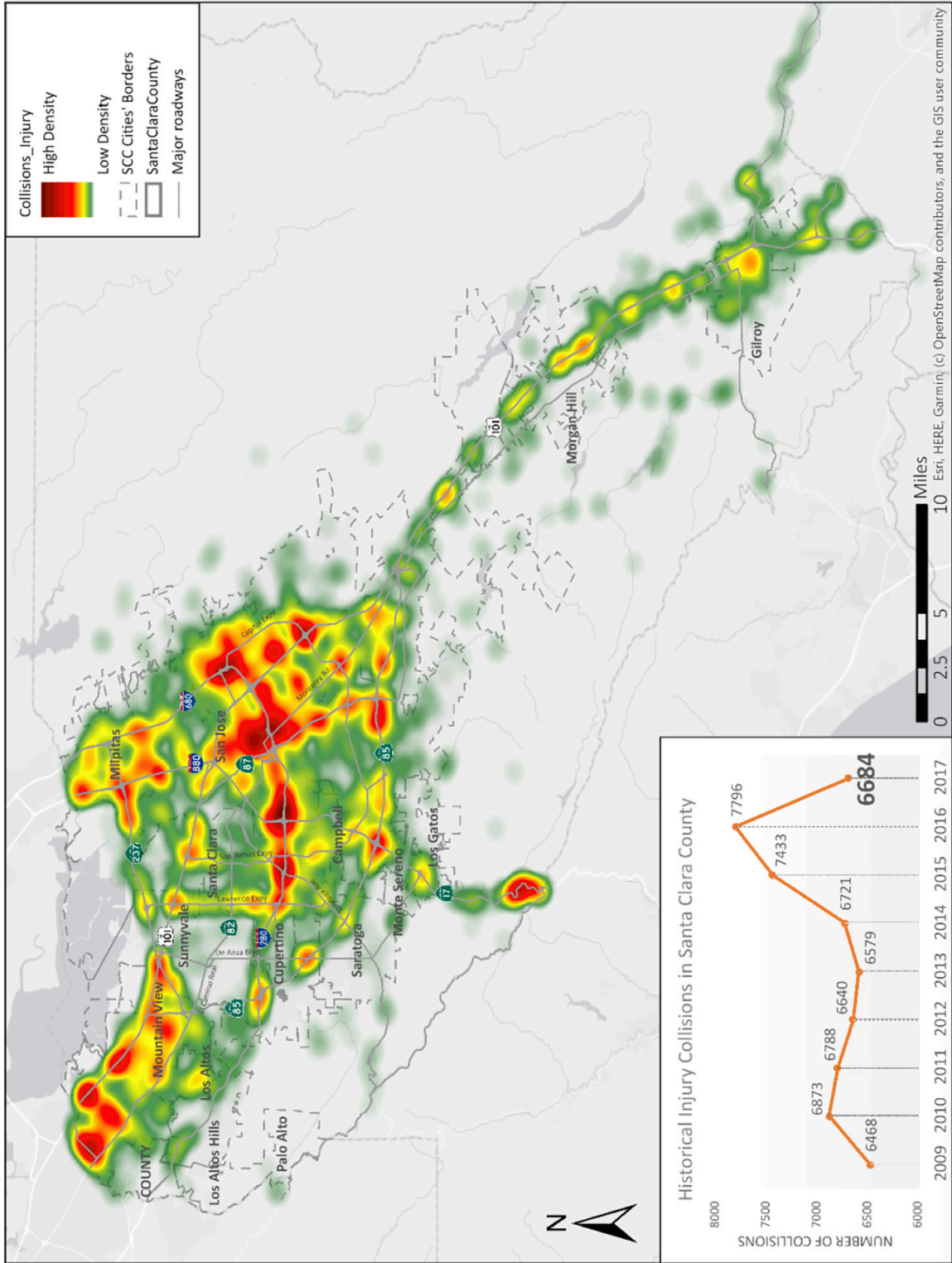


Figure 17
2017 Injury Collisions “Hot Spots” Map, Santa Clara County



Roadway Safety

Table 1 below shows a breakdown of major collision types, factors and involved parties per jurisdiction:

Table 1
2017 Major Collision Types, Factors, and Involved Parties per Agency

Agency	Total Collisions	Fatal Collisions	Injury Collisions	Hit & Run	DUI*	Speed	Auto RW**	Ped	Bike	Hit Object
Campbell	59	1	54	5	8	13	5	7	6	9
Cupertino	649	0	130	114	15	155	71	25	32	51
Gilroy	186	0	88	48	16	38	27	11	11	10
Los Altos	141	0	56	26	2	28	28	7	19	16
Los Altos Hills	45	1	13	4	3	13	5	1	6	13
Los Gatos	227	2	68	45	19	75	26	8	13	32
Milpitas	392	2	174	85	21	74	52	14	14	41
Monte Sereno	1	0	0	1	0	0	0	0	0	1
Morgan Hill	133	2	69	26	23	31	9	2	2	36
Mountain View	383	3	202	108	44	72	46	34	42	56
Palo Alto	553	3	261	82	23	155	78	22	54	42
San Jose	1824	12	1722	215	47	470	265	229	156	90
Santa Clara	909	3	281	218	72	180	169	38	18	109
Santa Clara County	2115	16	1131	331	118	754	253	68	74	329
Saratoga	196	0	55	25	15	51	25	4	7	48
State	8868	26	2805	1411	506	4925	76	45	31	1458
Sunnyvale	1266	3	431	384	73	335	176	39	50	150

*DUI - Driving Under the Influence

** Auto R/W - vehicle's Right-Of-Way violation

Collision Types and Primary Collision Factors (PCF)

Every collision record includes a prescription by type and primary collision factor. The data collected from the collision reports is used to identify the most common causes and to develop strategies to reduce the collision rates.

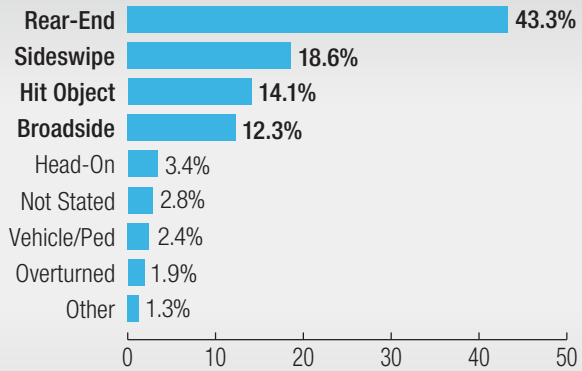


Figure 18 2017 All Collision – Collision Types

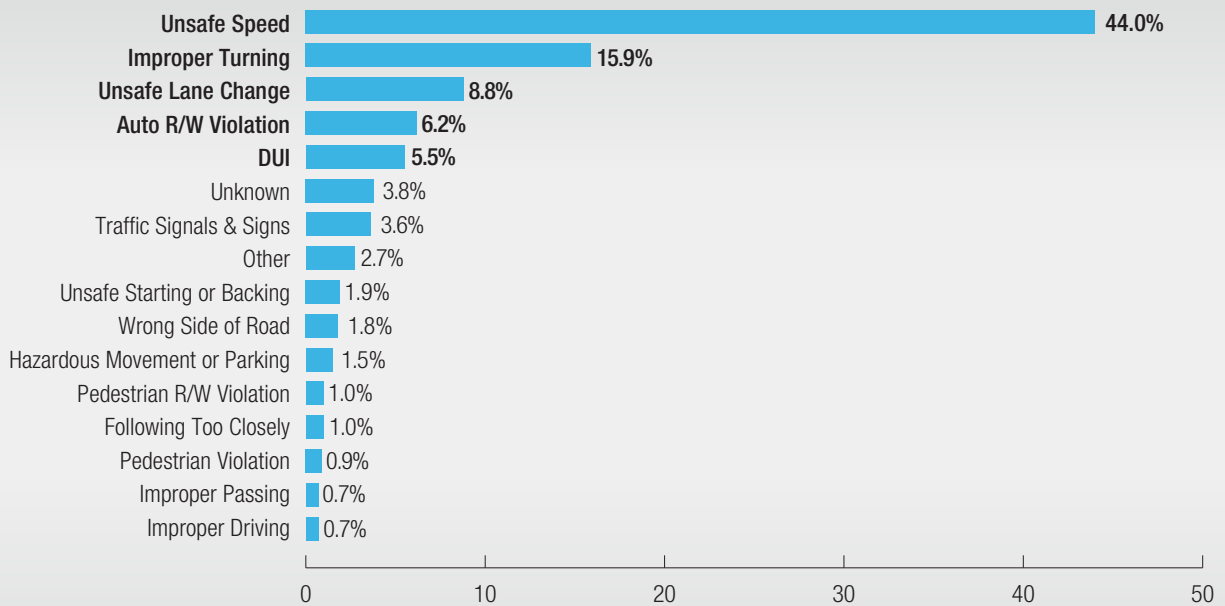


Figure 19 2017 All Collision – Primary Collision Factors (PCF)

Pedestrian and Bicycle Involved Collisions

In 2017, there were **889 reported collisions involving pedestrian and bicyclists**. The figures shown on this page provide details on collision types and primary causes.

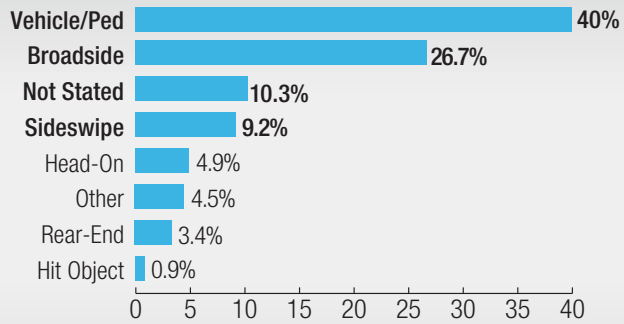


Figure 20 2017 All Collision – Collision Types

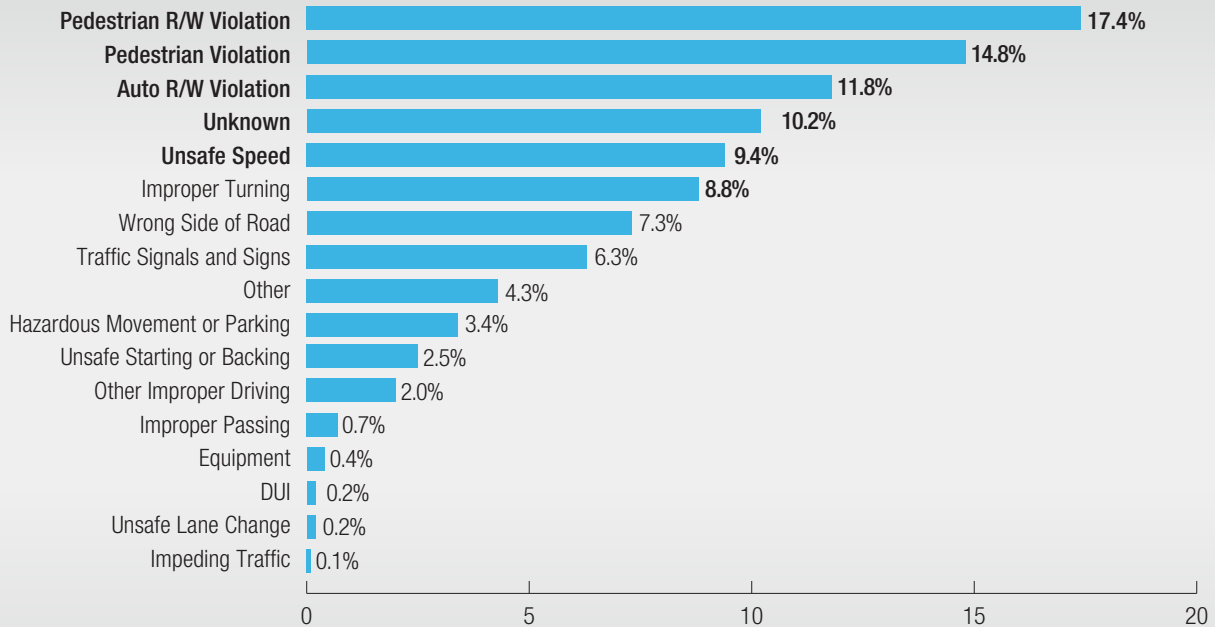
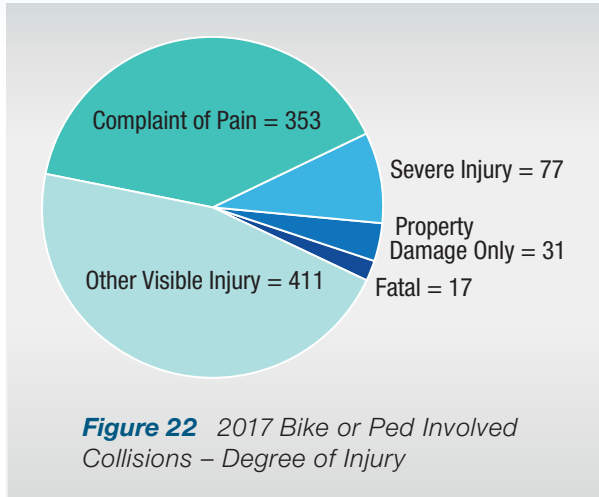


Figure 21 2017 All Collision – Primary Collision Factors (PCF)



The Most Dangerous Locations for Pedestrians, Bicyclists and Vehicles in Santa Clara County

Some intersections in Santa Clara County have more incidents of collisions than other locations. The following tables identify the locations with high rates of collisions. The most dangerous ped/bike intersections are typically located in city downtown areas or along high-density pedestrian and bike activity routes. This information can be used for safety studies and prioritize Complete Streets projects to reduce the number of collisions at these locations.

The overall number of **pedestrian and bicyclist involved collisions amounts to only 5.8% from the total number of collisions in Santa Clara County**. However due to pedestrians' and cyclists' vulnerability, **these collisions translate to 26.2% of all fatalities**.

Table 2
Highest **Bicyclist** Involved Incident Intersections in 2017

Rank	Intersection	City	Total Collisions
1	Bascom Ave at San Carlos St	Santa Clara County	2
2	Bollinger Rd at Wunderlich Dr	Cupertino	2
3	California St at Franklin St	Mountain View	2
4	Carlson Cir at Chreston Rd	Palo Alto	2
5	Church St at Welburn Av	Gilroy	2
6	Cuesta Dr at Miramonte Ave	Mountain View	2
7	Middlefield Rd at Colorado Ave	Palo Alto	2
8	Middlefield Rd at San Pierre Way	Mountain View	2
9	Middlefield Rd at Loma Verde Av (W)	Palo Alto	2
10	Monterey Rd at Tully Rd	San Jose	2
11	Muirfield Dr at Alum Rock Ave	San Jose	2
12	Park Blvd at Shridan Ave (W)	Palo Alto	2
13	Parrott St at Senter Rd	San Jose	2
14	Santa Clara St at Rt 87	State	2
15	Saratoga Los Gatos Rd at Austin Way (W)	State	2
16	Washington Dr at Arizona Ave	Milpitas	2
17	White Rd at Story Rd	San Jose	2

Table 3
Highest **Pedestrian** Involved Incident Intersections in 2017

Rank	Intersection	City	Total Collisions
1	2nd St at Santa Clara St	San Jose	3
2	Castro St at Evelyn Av (N)	Mountain View	3
3	Hermocilla Way at King Rd	San Jose	3
4	Story Rd at Roberts Av	San Jose	3
5	1st St at San Fernando St	San Jose	2
6	1st St at Santa Clara St	San Jose	2
7	Alum Rock Ave at Jose Figueres Ave	San Jose	2
8	Bascom Ave at Elliot St	Santa Clara County	2
9	Calaveras Blvd at Temple Dr	State	2
10	Charlston Rd at Landings Dr (W)	Mountain View	2
11	Douglas St at Meridian Ave	San Jose	2
12	Mckee Rd at Ridge Vista Ave (W)	Santa Clara County	2
13	Monterey Rd at Tully Rd	San Jose	2
14	San Carlos St at 4th St	San Jose	2
15	San Carlos St at Race St	San Jose	2
16	Shoreline Blvd at Stierlin Rd	Mountain View	2
17	Story Rd at Lancelot Ln	San Jose	2
18	Story Rd at McCreery Av	San Jose	
19	Winchester Blvd at Dorich St	Santa Clara	

Table 4
Highest **Vehicle** Involved Incident Intersections in 2017

Rank	Intersection	City	Total Collisions
1	San Tomas Expy at Monroe St	Santa Clara	14
2	Mclaughlin Ave at Story Rd	San Jose	13
3	Stevens Creek Blvd at San Tomas Expwy	Santa Clara	13
4	Great Mall Pkwy at Montague Expwy	Santa Clara County	12
5	Lawrence Expy at Homestead Rd	Sunnyvale	12
6	Middlefield Rd at Rt 237	Mountain View	12
7	San Tomas Expy at Payne Ave (W)	Santa Clara County	12
8	Silver Creek Rd at Capitol Expwy	Santa Clara County	12
9	Middlefield Rd at Forest Av	Palo Alto	11
10	Tully Rd at Senter Rd	San Jose	10

Table 5*Highest Pedestrian Involved Incident Roadway Segments in 2017*

Rank	Intersection	City	Total Collisions
1	San Tomas Expwy from El Camino Real to Benton St	Santa Clara County	2
2	Renova Dr from Bascom Ave to Turner Dr	San Jose	2
3	Main St from Curtis Ave to Corning Ave	Milpitas	2
4	Monterey Rd from Roeder Rd to Chynoweth Ave	San Jose	2

Table 6*Highest Vehicle Involved Incident Roadway Segments in 2017*

Rank	Intersection	City	Total Collisions
1	Rt 17 from Madrone Dr to Summit Rd	State	136
2	Rt 101 from Embarcadero Rd to Oregon Expwy	State	108
3	Rt 17 from Madrone Dr to Brush Rd	State	84
4	Rt 101 from Burnett Ave to Coyote Creek Golf Dr	State	83
5	Rt 101 from Oregon Expwy to Embarcadero Rd	State	78
6	Rt 680 from Capitol Expwy to Alum Rock Ave	State	70
7	Rt 280 North of Saratoga Ave	State	70
8	Rt 101 from Ellis St to Rt 237	State	66
9	Pacheco Pass Hwy from Dinosaur Point Rd to Fifield Rd (S)	State	65
10	Rt 280 from Saratoga Ave to San Tomas Expwy	State	64

Solutions

First implemented in Sweden in the 1990s, Vision Zero has proven to be a successful strategy across Europe and has recently been gaining acceptance in the United States, including cities in Santa Clara County like Cities of San Jose, Sunnyvale, Palo Alto, Mountain View, and Morgan Hill. The information presented here is from *VisionZeroNetwork.org*.

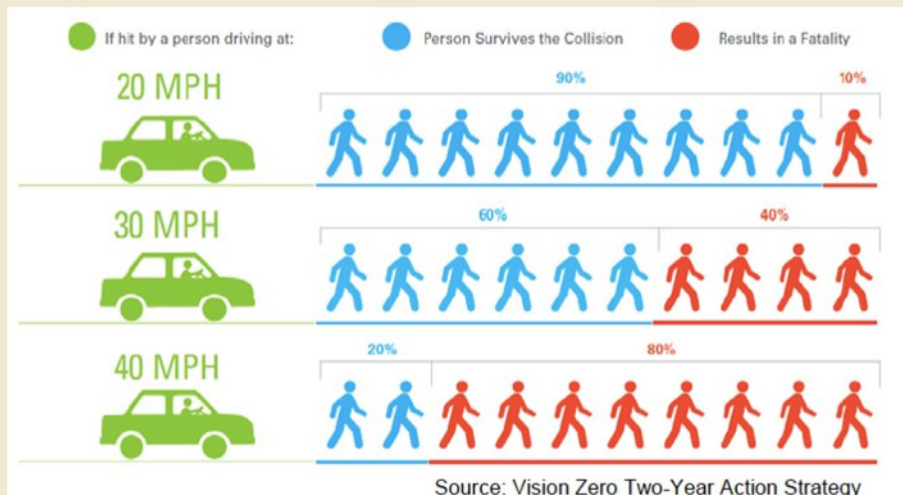
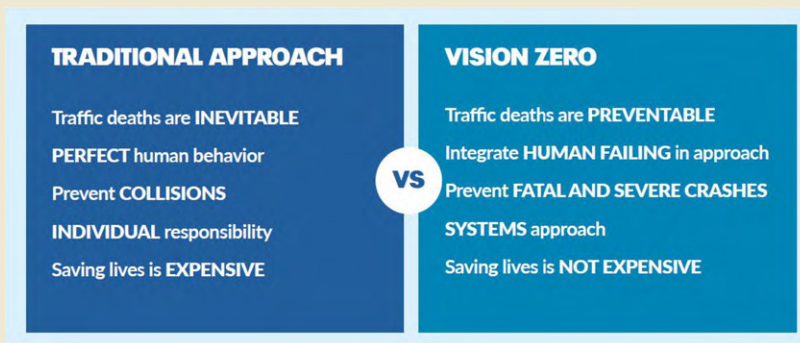
Basic strategies include the following elements:

- Collecting, analyzing, and using data to understand trends and potential

disproportionate impacts of traffic deaths on certain populations;

- Prioritizing equity and community engagement;
- Managing speed to safe levels; and
- Setting a timeline to achieve zero traffic deaths and serious injuries, which brings urgency and accountability, and ensuring transparency on progress and challenges

From a traffic engineering perspective, the key element for reducing fatal collisions and serious injuries is managing or reducing speed limit on local streets to under 40 miles per hour.



Highlights of Other Transportation Systems



Bridges/Overcrossings

Indicators	Previous Period	Current Period	Goal	Goal Met	Trend (Yearly)
Local Bridge Conditions (Avg. Sufficiency Rating (SR) scale 0 – 100)	78.9 (2017)	79 (2018)*	80	NO	

* Data retrieved from the spreadsheet provided by Caltrans called Local Agency Bridge Inventory: <http://www.dot.ca.gov/hq/structur/strmain/local/localbrist.pdf> last updated in July 2018.



Transit

Indicators	Previous Period	Current Period	Goal	Goal Met	Trend (Yearly)
Light Rail Annual Ridership (in Millions)	9.3 (2017)	8.54 (2018)	11.60	NO	
Bus Annual Ridership (in Millions)	29.06 (2017)	27.99 (2018)	33.32	NO	

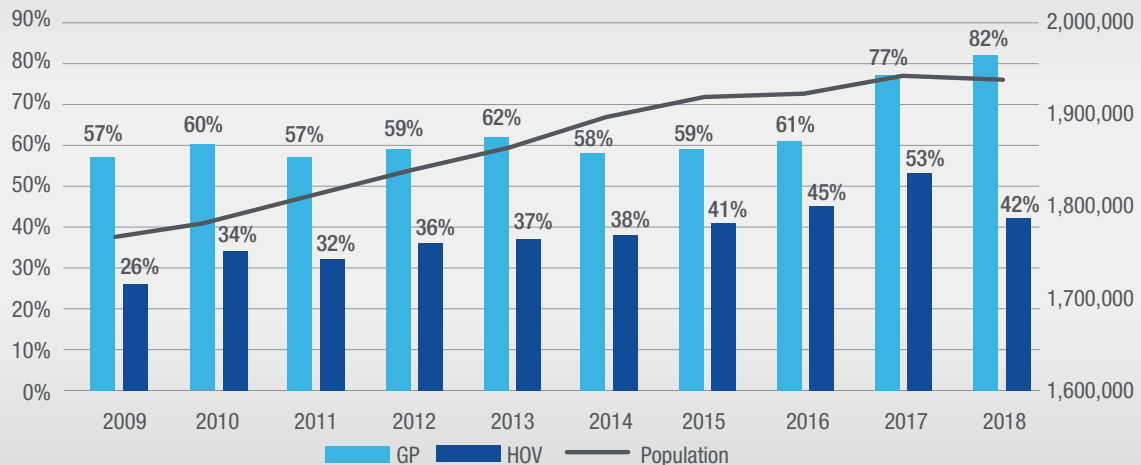
Highlights of Other Transportation Systems



Roadside Assets

Indicators	Previous Period	Current Period	Trend (Yearly)
Traffic Signals (percentage of Assets in useful condition)	83% (2018)	83% (2019)	
Pavement Markings (percentage of Assets in useful condition)	72% (2018)	72% (2019)	
Traffic Signs (percentage of Assets in useful condition)	69% (2018)	76% (2019)	
Litter Management (NEW) (percentage of Assets in useful condition)	– (2018)	88% (2019)	

% of Highway Segments operating at LOS D or lower (speed ≤ 62 mph) vs Population in Santa Clara County



Highlights of Other Transportation Systems

Table 7
Inventory of Assets

ASSETS	QUANTITY	YEAR COLLECTED
Roadway Lane Miles Repaired/Repaved (Total)	5,544 miles	2019
Miles Repaired/Repaved 2016	372 miles	2019
Miles Repaired/Repaved 2017	369 miles	2019
Miles Repaired/Repaved 2018	319 miles	2019
Bridges (Local)	492 NBI Bridges — **	2018
Bus		
Fleet Age (avg.)	9.39 Years ↓	2018
Fleet Size	453 ↓	2018
Route Mileage	1,265 mi —	2018
Routes	71 ↓	2018
Stops	3,800 ↓	2018
Light Rail		
Fleet Size	98 ↓	2018
Miles of Track	81.6 Miles —	2018
Route Mileage	42.2 Miles —	2018
Stations	61 —	2018
Highway – Ramp Meter Signals	255 Operational 74 Non-operational	2018
Traffic Signal Controllers	1,916 Local 160 State	2019
Traffic Signs	216,686	2019

** The arrows and dash represent the change of values with respect to 2017 data: ↑ increase, ↓ decrease, — same.

References

Street Pavement

Current (2018) Local Streets PCI shapefile, used to create the Figure was downloaded from an MTC's website called "Vital Signs": <http://www.vitalsigns.mtc.ca.gov/street-pavement-condition>. The rest of the data was obtained through a data request to an MTC staff, as, at the time of the 2019 TSMP report creation, the latest data was not yet made available online. MTC no longer provides a percentage breakdown of the PCI for each county, only for the whole Bay Area; therefore, this indicator was removed from 2019 TSMP report.

To more precisely present the change in pavement conditions, the report moves away from 3-year rolling average and displays annual PCIs. It is worth repeating that PCI starts with human observation and interpretation; therefore, it is possible to receive different results year to year for the same condition.

Highway Litter, Illegal Encampments, and Graffiti Maintenance

Due to the large inaccuracy and ambiguity of drive-by visual assessment of litter, landscape, and graffiti, the 2019 TSMP report focuses on quantitative data, representing the volume of litter and square footage of graffiti removed. The data was provided by the Caltrans highway maintenance crews, that work on collection and removal of litter, paint over graffiti, clean-up of homeless encampments, etc. The available data goes as far as 2015, which allows to generate a 5-year trend lines.

Each clean-up event, conducted by a Caltrans crew, is recorded with a type of work, amount removed, and post mile location or a highway segment. This information was used to generate a litter, illegal encampments, and graffiti heat maps, displayed above. Such methodology allows to show a full annual statistic on the removal, instead of an instant "snapshot" of litter, landscape, and graffiti conditions, making the analysis legitimate. The future use of this methodology will allow to monitor the highway "hotspots" and observe the amounts collected and removed in the most challenging areas each year.

In order to advance the TSMP report in the future, it would be beneficial to obtain litter collection data from all highway clean-up crews besides Caltrans, working in Santa Clara County. The data recording, however, needs to be done in a similar fashion, as the one from Caltrans, to be able to match and join the records into one database.

Roadway Safety

Provisional 2017 collision data was obtained from the Crossroads database that combines the information from the iSWITRS system and the local CHP databases. The Crossroads data request consisted of raw collision data and selected statistics for vehicle, pedestrian and cyclist on the collisions by severity, primary collision factor, road users' involvement. The request also included collision breakdown by city and a list of intersections with the highest number of vehicle, pedestrian, and cyclist accidents.

All maps were generated in ArcGIS Pro software using requested Crossroads data.

References

Highlights of Other Transportation Systems

Bridges/Overcrossings

The primary data source used for local bridges and overcrossings is a PDF spreadsheet provided by Caltrans called Local Agency Bridge Inventory on the website here: <http://www.dot.ca.gov/hq/structure/strmaint/local/localbrlist.pdf>. This source is used to obtain a Sufficiency Rating (SR) for a bridge, which is a combined structural/functional metric and is therefore not solely a measure of bridge structural integrity. This information is usually updated at least once a year. Unfortunately, the latest record available was created in July 2018 – three months after the record used for FY 2018 TSMP. Therefore, only a few bridges had SR updated and overall calculated average bridge SR for the County almost did not change. The next Local Agency Bridge Inventory should present a more significant update.

Transit

The VTA transit ridership data was obtained from American Public Transportation Association website:

<https://www.apta.com/wp-content/uploads/2018-Q4-Ridership-APTA.pdf>

Statistics on transit ridership were obtained from Santa Clara Valley Transportation Authority's FY 2018 Comprehensive Annual Financial Report and found in Table 21 Operating Information – Operating Indicators near the end of the report. This and previous reports can be accessed at:

<http://www.vta.org/about-us/financial-and-investor-information-accepted>

Bus

Current bus data was retrieved from internal VTA report called “VTA Facts, Current Bus System Data, April 2018”. Bus fleet includes all the following bus types: articulated (58), standard (195), hybrid 40-ft (119), hybrid 30-ft (38), and Hybrid Express (50). Bus route mileage is reported as the total round trip. Although this report is not published on the website, much of this information can be found in other reports such as the Annual Service Transit Plan (fleet size, number of routes & stops, and weekly ridership) which can be found on VTA's website here: <http://www.vta.org/reports-and-studies>. Additionally, a Bus System Overview fact sheet is provided periodically on VTA's website here: <http://www.vta.org/news-and-media/resources/vta-newsroom-fact-sheets-vta-information>.

Light Rail

Current light rail data was retrieved from internal VTA report called “VTA Facts, Current Light Rail System Data, April 2018”. In addition to the fleet of 99 standard vehicles, there are also 4 historic trollies that operate during the Christmas holiday season. Route miles define the extent of the operational network and represent the total extent of routes available for trains to operate. Track miles takes into account multiple track routes (e.g. for each route mile where there is double track, there are two track miles; where there are four tracks, there are four track miles). Although this report is not published on the website, much of this information can be retrieved from other reports such as the Annual Service Transit Plan (fleet size, number of routes & stops, and total ridership), which can be found on VTA's website here:

<http://www.vta.org/reports-and-studies>.

Roadside Assets

The data was obtained through the annual Roadside Assets survey, distributed to the local agency staff.

Highway – Ramp Meter Signals

Ramp meter information was taken from Caltrans 2017 Ramp Meters Development Plan <http://www.dot.ca.gov/trafficops/tech/docs/RampMeteringDevelopmentPlan.pdf>, published in February 2018.

Highway Level Of Service (LOS)

Current highway LOS data retrieved from VTA 2016 Congestion Monitoring Program (CMP) Monitoring and Conformance Report and the current intersection LOS data was also retrieved from the 2017 report both of which are available at <http://www.vta.org/cmp/monitoring-report>. For the sake of this report, AM and PM highway lane miles of LOS were combined. Highway LOS is normally analyzed every year, but intersection LOS is only analyzed every 2 years; therefore 2017 CMP Report does not include intersection analysis.

Population

Population data from United States Census Bureau provided on their website at State & County Quick Facts page <https://www.census.gov/quickfacts/fact/table/US/PST045216> and by searching Santa Clara County, CA.

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City of Mountain View

City of Palo Alto

City of San Jose

City of Santa Clara

City of Saratoga

City of Sunnyvale

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Town of Los Gatos

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Mott MacDonald Consultant

Natalia Kuvakina, EIT, Engineer II, Deputy Project Manager

VTA Project Staff

Eugene Maeda, Senior Transportation Planner, Project Manager

Murali Ramanujam, Transportation Engineering Manager

Deborah Dagang, Director of Planning and Programming

Janice Burton, Graphic Designer II



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