

ANNUAL 2022

Transportation Systems Monitoring Program (TSMP) Report

MAY 2023



TABLE OF CONTENTS

Executive Summary	2
Introduction	12
Street Pavement	13
Highway Litter, Illegal Encampments, & Graffiti Maintenance	17
Roadway Safety.....	24
COVID-19 Impacts.....	32
Intelligent Transportation Systems	36
Highlights of Other Transportation Systems	41
Acronym & Glossary	44
References	45
Acknowledgements	47



EXECUTIVE SUMMARY

Santa Clara County residents and businesses have made significant investments in its transportation infrastructure. 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.

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.



The TSMP follows the asset management principles of Fixing America's Surface Transportation Act, the federal reauthorization transportation funding program that emphasizes performance-based management of transportation infrastructure assets at the state and local levels.

The 2022 TSMP report builds on the data research presented in the 2021 Report with a focus on the following areas:

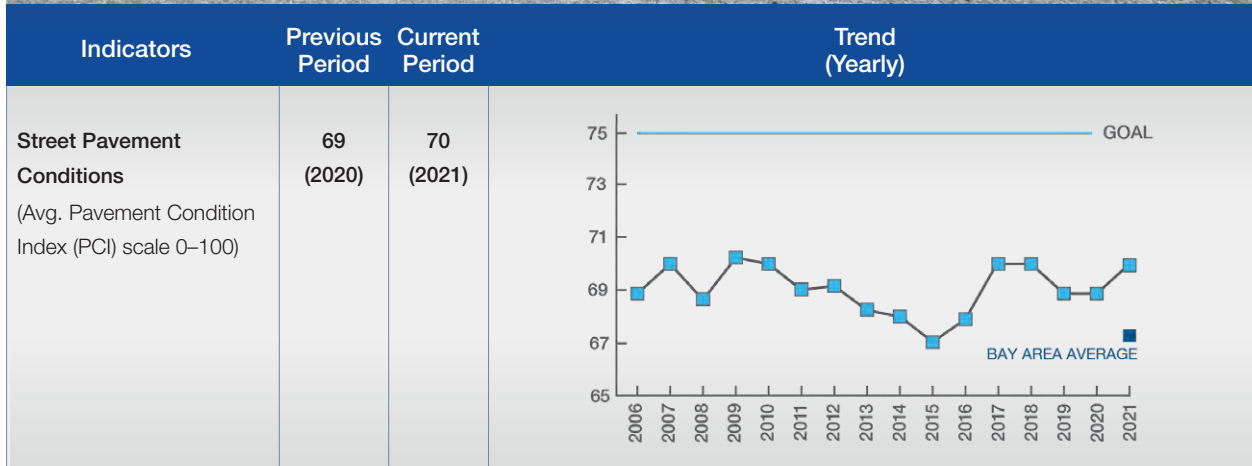
- 1) Pavement
- 2) Freeway Litter and Graffiti Maintenance
- 3) Roadway Safety (Collisions)
- 4) COVID-19 Impact Observations
- 5) Intelligent Transportation Systems (**New**)

In addition, Equity Priority Communities were also included in the mapping of these areas.

Transportation Asset Management Process



Street Pavement



Source: Metropolitan Transportation Commission Vital Sign

- Santa Clara County local jurisdictions maintain nearly **10,200 lane-miles of roadway pavement**. This is the most number of pavement miles of the nine counties in the Bay Area.
- **The average Pavement Condition Index (PCI) improved by one point to 70** since the previous reporting period. **This is an incremental positive trend since 2015**. 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.
- **The Bay Area average PCI was 67, compared with the regionwide 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 areas with the pavement in **Poor/Failed and At Risk condition reduced by 10% and 12.5%, respectively, in Equity Priority Communities**. The areas with the pavement in Fair/Good condition increased by 19.5%, indicating the improvement of the PCI score in those communities.

General comments from the local agencies suggest the recent upward trend can be attributed to the increased number of roadway miles repaired and rehabilitated with the modified COVID-19 work restrictions for public works projects.

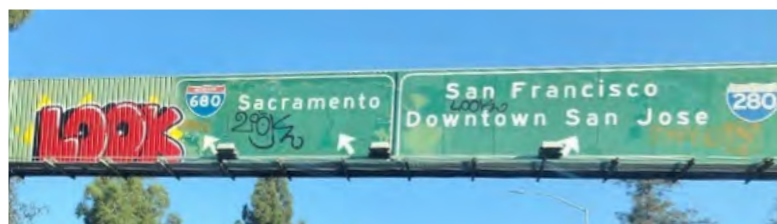
Solutions

- 💡 **\$10 Vehicle Registration Fee (VRF) and 2016 Measure B Local Streets & Roads Program Funding** - About \$183 million was collected from both these funding programs in FY 2021/22 and distributed to VTA's Member Agency jurisdictions from the for maintenance like repairing potholes, repaving, upgrading traffic signal controllers, and making safety improvements.

Highway Litter, Illegal Encampments, and Graffiti Maintenance

Indicators	Previous Period	Current Period	Trend (Yearly)
Highway Litter Removal (Cubic yards)	16,572 (2021)	21,550 (2022)	
Illegal Encampment Site Litter Removal (Cubic yards)	2,219 (2021)	436 (2022)	
Graffiti Removal (Square footage)	830,885 (2021)	361,309 (2022)	

Source: Caltrans District 4 Division of Maintenance



- **Highway Litter** - Caltrans maintenance crews picked-up an estimated **21,550 cubic yards of trash or 150,850 30-gallon sized trash bags last year** along the 307 highway shoulder miles in Santa Clara County. This represents an increase of nearly 30% or 4,978 cubic yards of trash collected compared to the previous year in FY 2021. The “hot spot,” frequently littered locations were along the southern end of I-280 and I-680, and most littered corridor was along US 101 (Palo Alto to Gilroy).
- **Illegal Encampments** - **The amount of litter collected at illegal encampment sites, typically near the interchanges and on/off ramp locations, decreased by 1,783 cubic yards or 12,481 trash bags from the previous year.** This reduction can be credited to a multi jurisdictional effort with Caltrans Clean CA and local agencies in providing additional resources to address the illegal encampments.
- **Graffiti** - Graffiti along the freeways continues to be a challenge as it is a moving target. In FY 2022, the square footage of graffiti **decreased from 830,885 square feet in FY 2021 to 361,309 square feet likely due to COVID-19.** The highway segments with the most graffiti removal were along I-280, SR 87, and US 101.

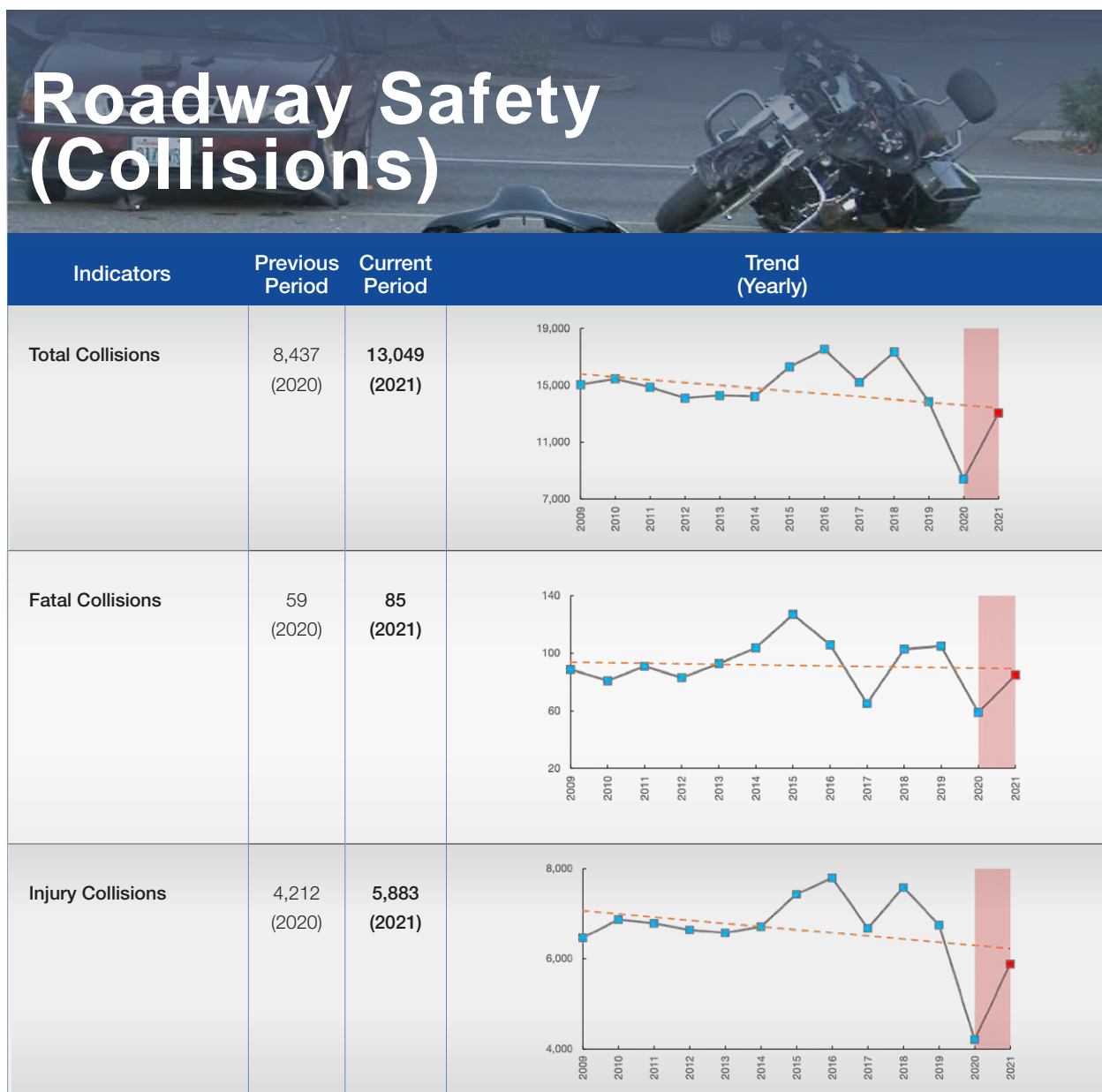
Solutions

Keep Santa Clara Valley Beautiful Highway Litter Abatement Program (KSCVB) - KSCVB is countywide, multi-agency initiative to clean and prevent littering on the highways in Santa Clara County. The project includes the following:

- Organizing popup cleanup events in cities and towns throughout Santa Clara County
- Installing No Dumping enforcement signs at frequently littered locations.
- Forming local volunteer groups to help clean the highways through Caltrans Adopt-A-Highway Program.

In 2022, VTA, in partnership with Caltrans, Valley Water, CHP, and local jurisdictions, organized **9 volunteer cleanup events in 9 cities throughout the county, collected 285 30-gallon bags of trash, and rallied over 90 volunteers.**





Sources: Santa Clara County's Crossroads Collision Database and City of San Jose's Vision Zero Crash Data

- Total Collisions** - There were **13,049 reported total collisions** in Santa Clara County including fatalities and serious injuries, an 55% increase or 4,612 number of collisions compared to the previous year. Significantly increased since the previous 2020 report period.
- Fatal Collisions** - Of total number of collisions, there were **85 fatalities and 5,883 injury involved collisions**. In the **first seven months of 2022**, there were **7,464 total collisions with 24 fatalities and 3,405 injuries**.
- Injury collisions** - There were 5,863 injury involved collision number of collisions decreased by 5,429 collisions, 46 fatalities, and 2,545 injuries. The increase in the number of county-wide collisions was likely attributed to more traffic on the roadways after the pandemic.

- **Common Collision Types** - Rear-End (32%) and Hit Object (20%)
- **Primary Collision Factors (PCF)** - Unsafe Speed (36%), Improper Turning (19%), and Unsafe Lane Change (7%)
- **Collision Involving Bicyclists and Pedestrians:** 865 collisions. Of these collisions, 47% were vehicle-pedestrian, and 53% involved bicyclists. The main causes were **Pedestrian Right of Way Violations (vehicle driver at fault) 15%, Pedestrian Violation 14%, and Improper Turning 12%.**

The overall number of collisions involving pedestrian and bicyclist represents 7% of the total number of collisions in the County, but accounts for 30% of all fatalities.


Table 1

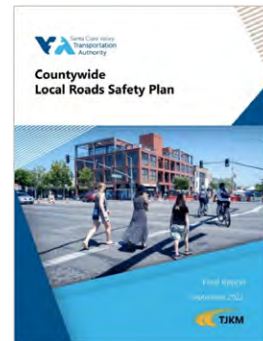
2021 Top Vehicle, Bicycle, and Pedestrian Collisions Interchange and Intersection Locations


Vehicle/Vehicle (Segment)	US 101 from Burnett Ave to Coyote Creek Golf Dr, Morgan Hill	75 collisions
Vehicle/Vehicle (Interchange)	US 101 and I-880, San Jose	12 collisions
Vehicle/Pedestrian (Segment)	US 101 from Story Rd to I-280, San Jose	2 collisions
Vehicle/Pedestrian (Intersection)	Bal Harbor and Story Rd, San Jose	2 collisions
Vehicle/Bicyclist (Intersection)	Los Gatos Saratoga Rd and Massol Ave, Los Gatos	3 collisions

All jurisdictions in Santa Clara County have been taking incremental steps, like adopting Vision Zero Initiative policies, incorporating Complete Streets designs, and developing Local Roads Safety Plans to make the roadway network safer for all users.

Solutions

 **Countywide Local Roads Safety Plan (CLRSP)** - VTA, in a collaborative effort through the Systems Operations and Management Working Group comprised of local agency transportation engineers and planners developed a plan for identifying, analyzing, and prioritizing roadway safety improvements on local roads with the goal of reducing fatal and serious traffic injuries.



 **Community Engagement** - Efforts included encouraging public participation to identify dangerous, high risk, collision locations on the project website using an interactive mapping tool through local agencies and VTA's social media platforms.

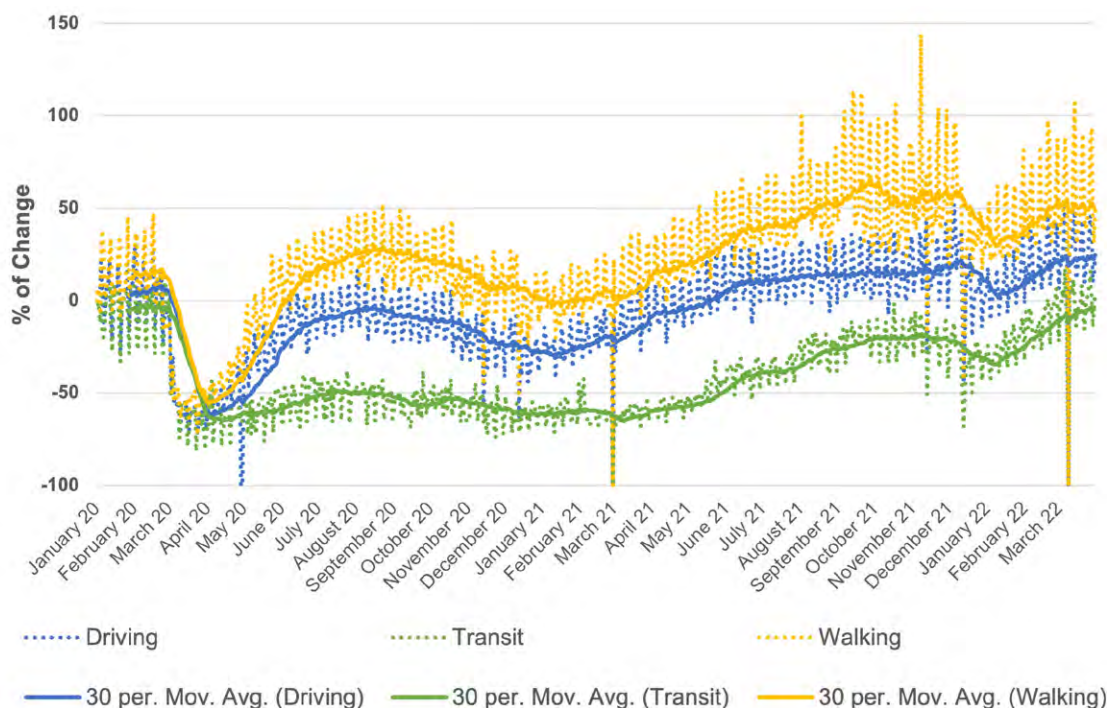


COVID-19 Impacts Observations

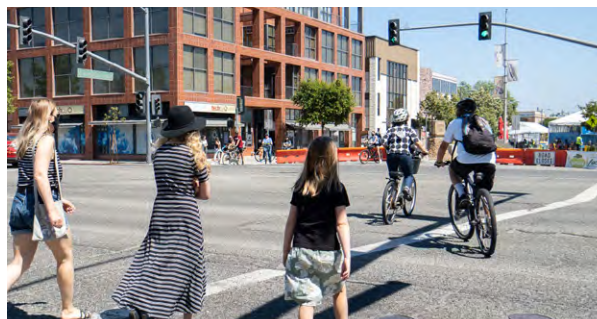
COVID-19 and the pandemic has brought about unforeseen changes to all aspects of daily life, including but not limited to travel behavior and traffic patterns, workflow and work schedules, and adoptions of new ordinances and adaptations to changing environments, presenting new trends in people mobility.

From January 2021 to March 2022, big data from sources like Apple Maps showed the following observed changes from pre-pandemic conditions: **vehicle traffic increased by 51%, walking increased by 52%, and transit use increased by 55%. This is consistent with national trends.**

Apple Maps© Mobility Trends Reports January 2020 – April 2022 for Santa Clara County



In addition, there were changes in travel speed and travel patterns. Local agencies took action to accommodate social distancing requirements and reduce speeding on the local streets by implementing slow/open streets programs, reprogramming signals to recall mode, and collaborating with the private sector to develop bicycle detection phone apps and touchless accessible pedestrian buttons.



Intelligent Transportation Systems

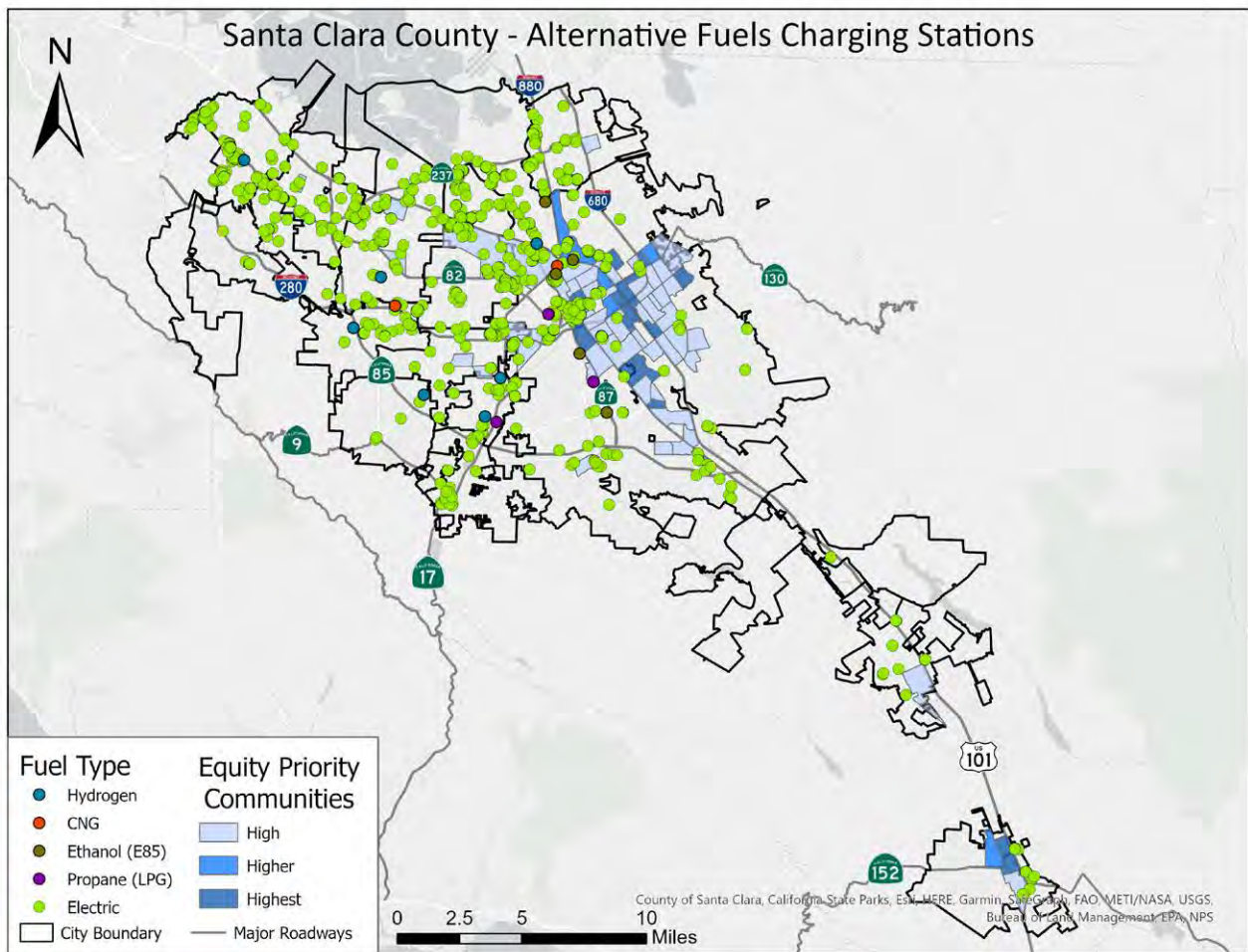
Using emerging mobility technologies, such as Connected and Autonomous Vehicles, Artificial Intelligence, advanced communications network, and electronic toll collection, Intelligent Transportation Systems (ITS) promise many traffic, safety, economical, and environmental improvements as they pave the way to the future of smarter transportation networks.

As a first step to managing the conditions of these infrastructure, the TSMP now includes inventory of traffic signals based on their Transit Signal Priority (TSP) capability and alternative fuels charging stations in Santa Clara County. The table below summarizes the number of operating traffic signals in Santa Clara County jurisdictions and their Transit Signal Priority (TSP) capability. **Approximately 85% of traffic signals located on VTA transit routes have modern TSP capabilities with dedicated communications ready to connect to newer TSP systems (e.g., central TSP).**

Traffic Signal Controllers in Santa Clara County by Jurisdiction, 2022

Count	City/Town	Total No. of Signals in Operations	No. of Signals on VTA Transit Route		No. of TSP Capable Traffic Signals		
			On Fast & Frequent	On All Transit	Full Capable	Partial Capable	Not Capable
1	Caltrans	145	68	113	145	0	0
2	Campbell	45	26	40	0	2	43
3	Cupertino	59	19	50	0	50	8
4	Gilroy	43	10	30	6	0	37
5	Los Altos	9	0	7	9	0	0
6	Los Altos Hills	3	0	0	0	0	0
7	Los Gatos	30	0	19	30	0	0
8	Milpitas	67	19	46	0	4	63
9	Monte Sereno	0	0	0	0	0	0
10	Morgan Hill	36	20	24	0	0	36
11	Mountain View	88	0	57	16	22	47
12	Palo Alto	101	1	48	0	101	0
13	San Jose	989	502	761	987	0	0
14	Santa Clara	145	48	103	0	145	0
15	Saratoga	15	7	15	1	5	9
16	Sunnyvale	136	31	110	135	0	1
17	County of Santa Clara	180	43	132	0	140	4
		2,091	794	1,555	1,329	469	248

Executive Summary



This map shows the locations and geographic distribution of clean fuel stations by fuel type, which can be used as a monitor and guide for future clean fuel station investments.

Count	City/Town	Total No. of Alternative Fuels Charging Stations	Fuel Type				
			CNG	E85	ELEC	HY	LPG
1	Campbell	31	-	-	28	2	1
2	Cupertino	76	1	-	74	1	-
3	Gilroy	24	-	-	24	-	-
4	Los Altos	14	-	-	14	-	-
5	Los Altos Hills	9	-	-	9	-	-
6	Los Gatos	21	-	-	21	-	-
7	Milpitas	75	-	-	75	-	-
8	Monte Sereno	4	-	-	4	-	-
9	Morgan Hill	11	-	-	11	-	-
10	Mountain View	60	-	-	60	-	-
11	Palo Alto	153	-	-	151	2	-
12	San Jose	519	1	5	510	1	2
13	Santa Clara	333	-	-	333	-	-
14	Saratoga	6	-	-	5	1	-
15	Sunnyvale	92	-	-	91	1	-
		1,428	2	5	1,410	8	3

Legend: **CNG** - Compressed Natural Gas **E85** - Ethanol **ELEC** - Electric **HY** - Hydrogen **LPG** - Popane

This table presents the number of alternative fuel charging stations by city and fuel type. There are currently 1,428 alternative fuel/charging public-use stations in operations. 1,410 or nearly 99% of these stations are electric charging stations and the remaining 18 or 1% of these stations support compressed natural gas (2 locations), ethanol (5 locations), hydrogen fuel (8 locations), and propane (3 locations) fueled vehicles.

*Electric Station
West Park Plaza, San Jose*



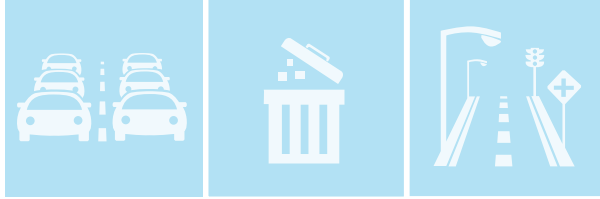
*Hydrogen Station
N. First Street, San Jose*



*Compressed Natural Gas Station
Junction Ave, San Jose*



INTRODUCTION



The 2022 Transportation Systems Monitoring Program Report is the 12th edition since the first report was released in 2010. Since then, the reports have expanded to include new data as it became available:

- 2010 (1st edition) – Introduced basic performance measures for consideration.
- 2011 (2nd edition) – Introduced monitoring of litter and landscape conditions on the highways.
- 2013 (3rd edition) – Featured an inventory of traffic signal systems and introduced monitoring of express lanes.
- 2014 (4th edition) – 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 edition) – Featured an expanded litter and landscape section.
- 2016 (6th edition) – Added ramp metering inventory and featured green bike lanes materials and applications.
- 2017 (7th edition) – Added a section to track the most frequently reported problems from local jurisdictions.
- 2018 (8th edition) – Added *Commute and Time Spent in Congestion* section to track performance of major corridors in the County, and new performance metrics for monitoring litter and graffiti along the freeways.
- 2019 (9th edition) – Reformatted to a more data driven report with graphic information representation over text. The report was also condensed to focus on areas of public importance: 1) *Pavement*, 2) *Freeway Litter*,

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.



Landscape, and Graffiti Maintenance, and 3) Roadway Safety (Collisions).

- 2020 (10th edition) – Added a new section on COVID-19 Impacts observations from the pandemic shelter-in-place order, and another section on bicycle infrastructure.
- 2020 (11th edition) – Includes additional data collected on COVID-19 Impact observations and bicycle and pedestrian infrastructure.
- *2022 (12th edition) - Added new sections on Intelligent Transportation Systems, Glossary, and Acronyms.*

About the Data

The information presented in the TSMP Reports leverages data extracted from a variety of transportation references including local, state, and federal agencies, as well as non-profit organizations like the Joint Venture Silicon Valley Institute for Regional Studies who produce the annual Silicon Valley Index Reports. In addition, a self-assessment survey was used to gain insight from local agencies on their ability to maintain roadside assets within their jurisdictions. The performance measures and sources used for this report are listed in the Notes Section.

STREET PAVEMENT

OVERVIEW

Inventory

10,193

Lane Miles

Conditions

70

PCI (Good)



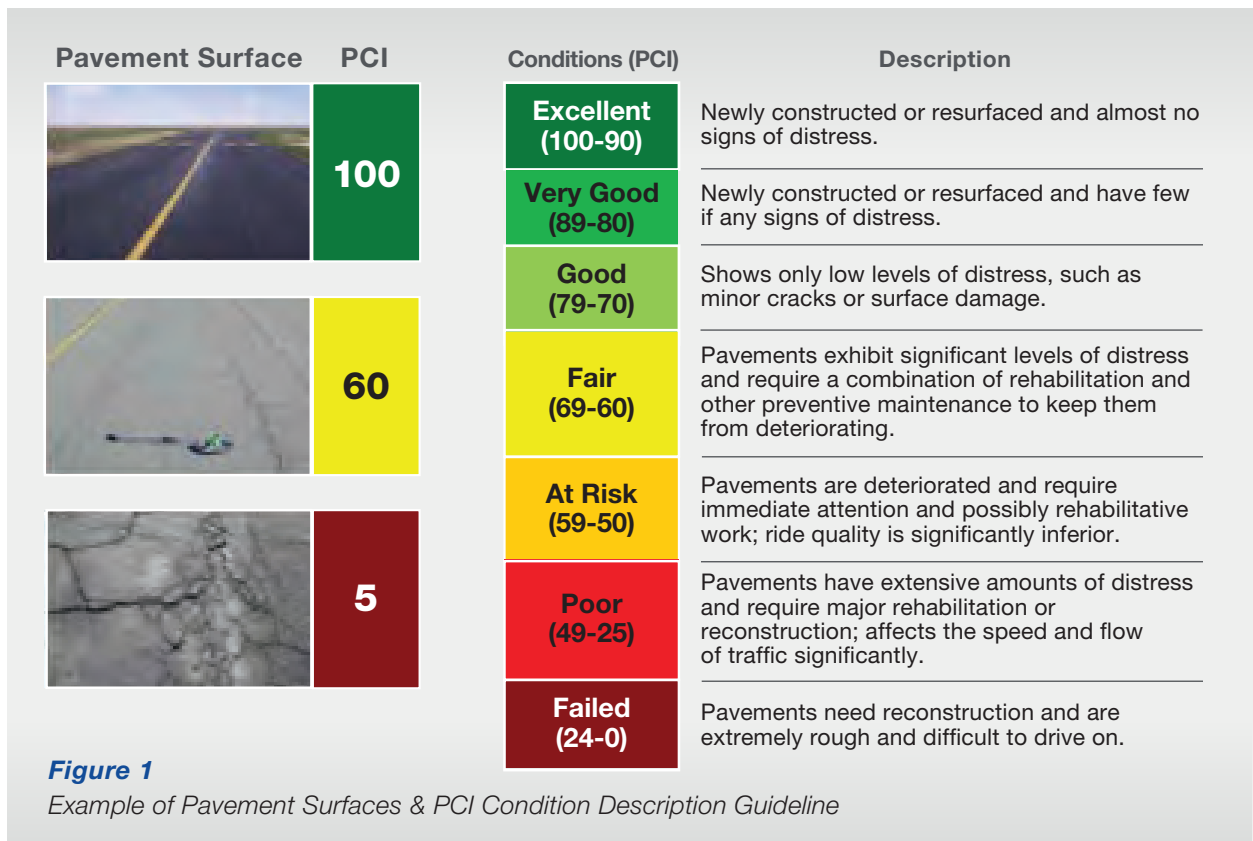
Inventory

There are nearly **10,200 lane miles** of pavement in Santa Clara County maintained by local agencies. The term “lane miles” is used describe roadway length based on the number of vehicle lanes. This measure is used to better reflect the total amount of pavement for maintenance purposes.

Conditions

PCI Definition

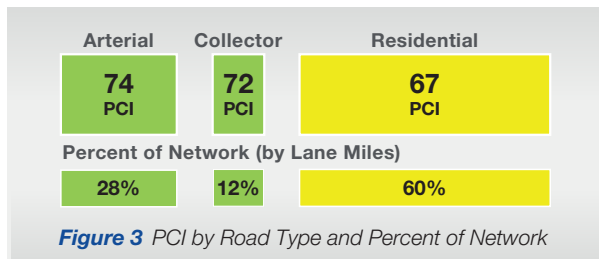
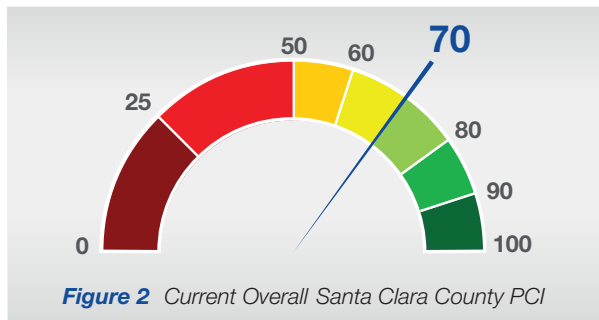
PCI is based on the number and severity of pavement distresses observed during a visual inspection of a roadway which is expressed in numerical index between 0 and 100. Zero is the worst or failed condition and 100 represents a roadway that is in excellent or new condition. Visual examples of the PCI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



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 67 (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.



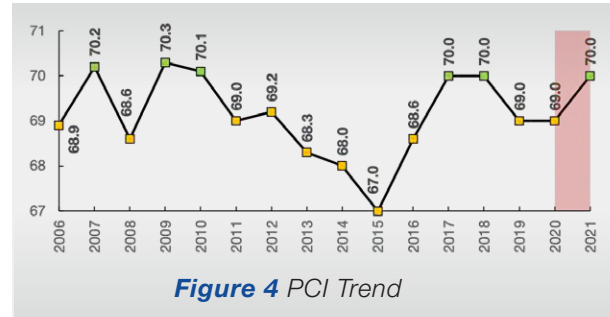
Condition and Pavement Evaluation

PCI is based on a visual assessment of the roadways' top surface layer. Pavement deterioration that originates below the surface are not typically noticed until they "make their way up" to the surface appearing in the form of cracks or depressions. These distressed conditions are typically caused from deteriorating underlying pavement, base, sub-base, and subgrade layers.

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

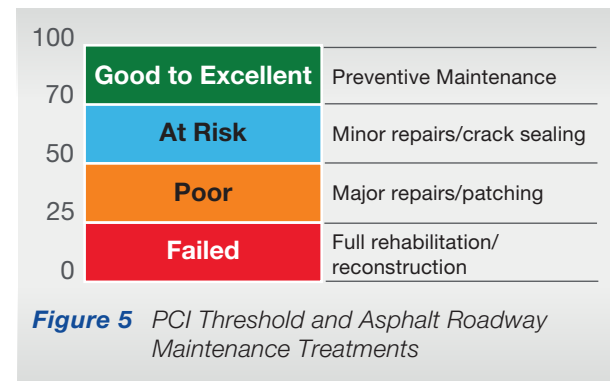
PCI Trend

An annual overall PCI trend for Santa Clara County is shown in the figure below.



Life Cycle

Pavement tends to deteriorate at an increasing rate over time. In 2021, the PCI for Santa Clara County maintained the overall "Good" condition. The current condition is within the area on the Pavement Life Cycle curve where only low levels of distress are shown. Preventative and restorative measures are necessary to minimize the further decline in PCI below 70.



Unit Costs (\$/sy)	Classification	
	Major Roads	Local Roads
Preventative Maintenance	\$5.46	\$4.94
Thin HMA Overlays	\$22.61	\$21.49
Thick HMA Overlays	\$35.35	\$32.80
Reconstruction	\$74.67	\$64.50

Table 2 Pavement Estimated Repair Costs (Square Yard)

PCI Scores by Jurisdiction in Santa Clara County

The Pavement Condition in Santa Clara County varies by local jurisdiction. Each jurisdiction's PCI is evaluated separately, and weighted average is used to determine the overall PCI.

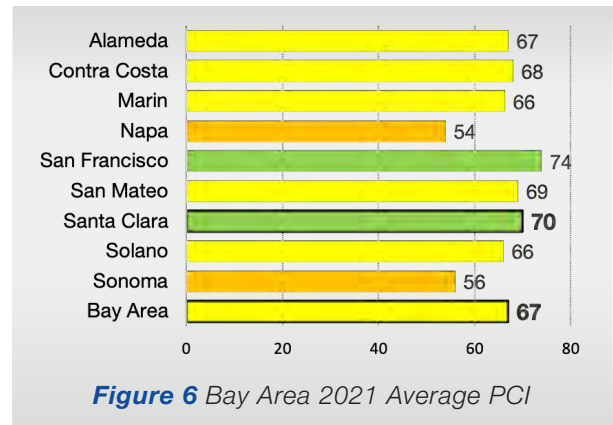
Table 3 below shows the PCI scores for each of Santa Clara County's 15 local jurisdictions, ranked from Very Good to At Risk condition and the change in PCI from 2020 to 2021. Ten of fifteen jurisdictions experienced decrease in PCI from 2020 to 2021, two had no change in PCI, and three jurisdictions showed improvements in their pavement conditions.

Jurisdiction per Category	Annual Network PCI Scores 2021	Annual Network PCI Scores 2020	Change 2020 to 2021
VERY GOOD (PCI = 80-89)			
Palo Alto	83	84	-1
Cupertino	81	84	-3
Los Altos Hills	80	78	2
GOOD (PCI = 70-79)			
Sunnyvale	77	76	1
Santa Clara	73	75	-2
Morgan Hill	72	73	-1
Milpitas	70	71	-1
Mountain View	70	71	-1
FAIR (PCI = 60-69)			
Campbell	69	69	0
Monte Sereno	69	69	0
San Jose	69	67	2
Los Gatos	68	69	-1
Los Altos	65	66	-1
Saratoga	65	66	-1
Santa Clara County	63	64	-1
AT RISK (PCI = 50-59)			
Gilroy	58	59	-1

Table 3 2021 Pavement Condition Index Scores by Jurisdiction in Santa Clara County

Peer County Comparison

The PCI goal established for the Bay Area's local roadways is 75. **Santa Clara County's roadways with a PCI score of 70 (Good) is slightly better than the Bay Area's PCI Average of 67 (Fair).**



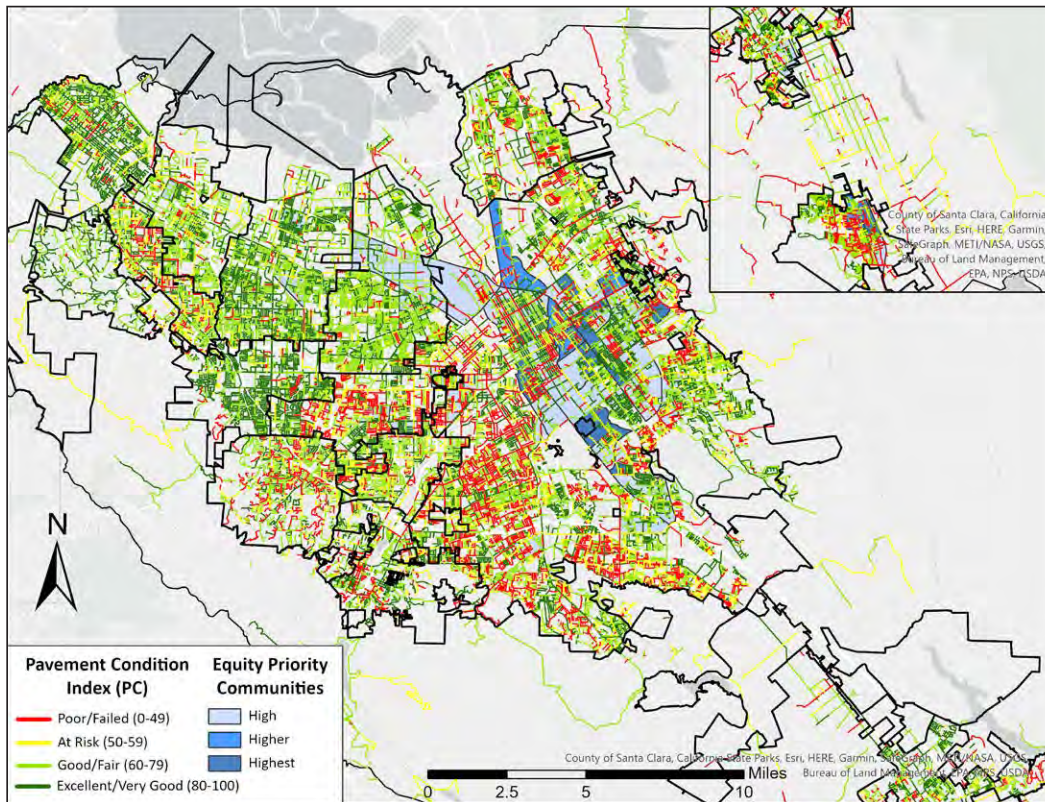
2021 Local Streets PCI Map

"Vital Signs," a website managed by the Bay Area's



metropolitan planning organization, Metropolitan Transportation Commission (MTC), that tracks transportation, economic and housing trends in the Bay Area region, and provides an interactive portal to historical pavement data by jurisdiction. This web-based tool was used to generate the 2021 Local Street Pavement Condition Index map for Santa Clara County.

Figure 7 Santa Clara County 2021 Local Streets PCI map



The average PCI score for Santa Clara County has been incrementally improving over for the last 5 years, 69 to 70 at the borderline between Fair to Good condition. General comments from the local agencies suggest the recent upward trend can be attributed to increase in the number of roadway lane miles repaired/repaved during FY 2021 and less COVID-19 restrictions affecting public works and general construction projects.

Based on the 2021 California Statewide Local Streets and Roads Needs Assessment annual report by the California State Association of Counties and League of California of Cities, Santa Clara County's needs is estimated at **\$3.2 Billion over the next 10 years** to eliminate the back log of maintenance repairs to achieve a best management practice PCI score of 80 or better, or Very Good condition. This cost is based on Santa Clara County's 10,200 lane miles.

Solutions

💡 2010 \$10 Vehicle Registration Fee and 2016 Measure B Program -

To help address the funding needs to maintain Santa Clara County's roadways to a state of good repair, Santa Clara County voters approved a \$10 Vehicle Registration Fee (VRF) in November 2010, and a 30-year, half cent sales tax measure in November in 2016. These funds are used to pay for local transportation improvements, including pothole repair, paving, traffic control signals, and safety improvements. The two programs generates approximately \$180 million annually and is distributed to cities to help fund their highest priority roadway improvements.

In FY 2021-2022, nearly \$183.2 million was distributed to VTA's Member Agency jurisdictions through the VRF's Local Road and Repair Program. Some agencies are combining funds over multiple years and/or combining them with other funding sources to finance large multi-year projects.

HIGHWAY LITTER, ILLEGAL ENCAMPMENTS, & 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 residents, regional travelers, and tourists.

Inventory

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

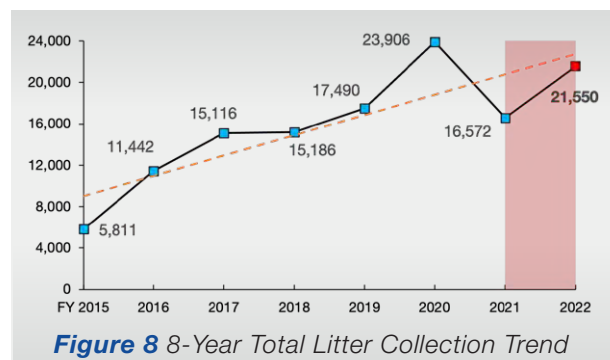
Conditions

Monitoring of litter and graffiti on roadways is a challenging task, as conditions are constantly changing throughout the year and any single day "snapshot" would not be an accurate data source. Prior to 2019, a subjective drive-by approach using a visual assessment scale was used as a performance metric to assess litter and graffiti conditions. This methodology was changed to a

new data source and performance metric provided by Caltrans to cubic yards of litter collected and square feet of graffiti removed. Caltrans maintenance crews now keep record of their maintenance work including an estimated amount of litter, graffiti, and illegal encampments removed by freeway segment locations. This data has been translated into visual graphs, tables, and heat maps.

Litter

In FY 2022, an estimated **21,550 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 150,850 trash bags (1 cubic yard = 7 of 30-gallon sized trash bags) or approximately 11 football fields (300 ft. length x 160 ft. width).



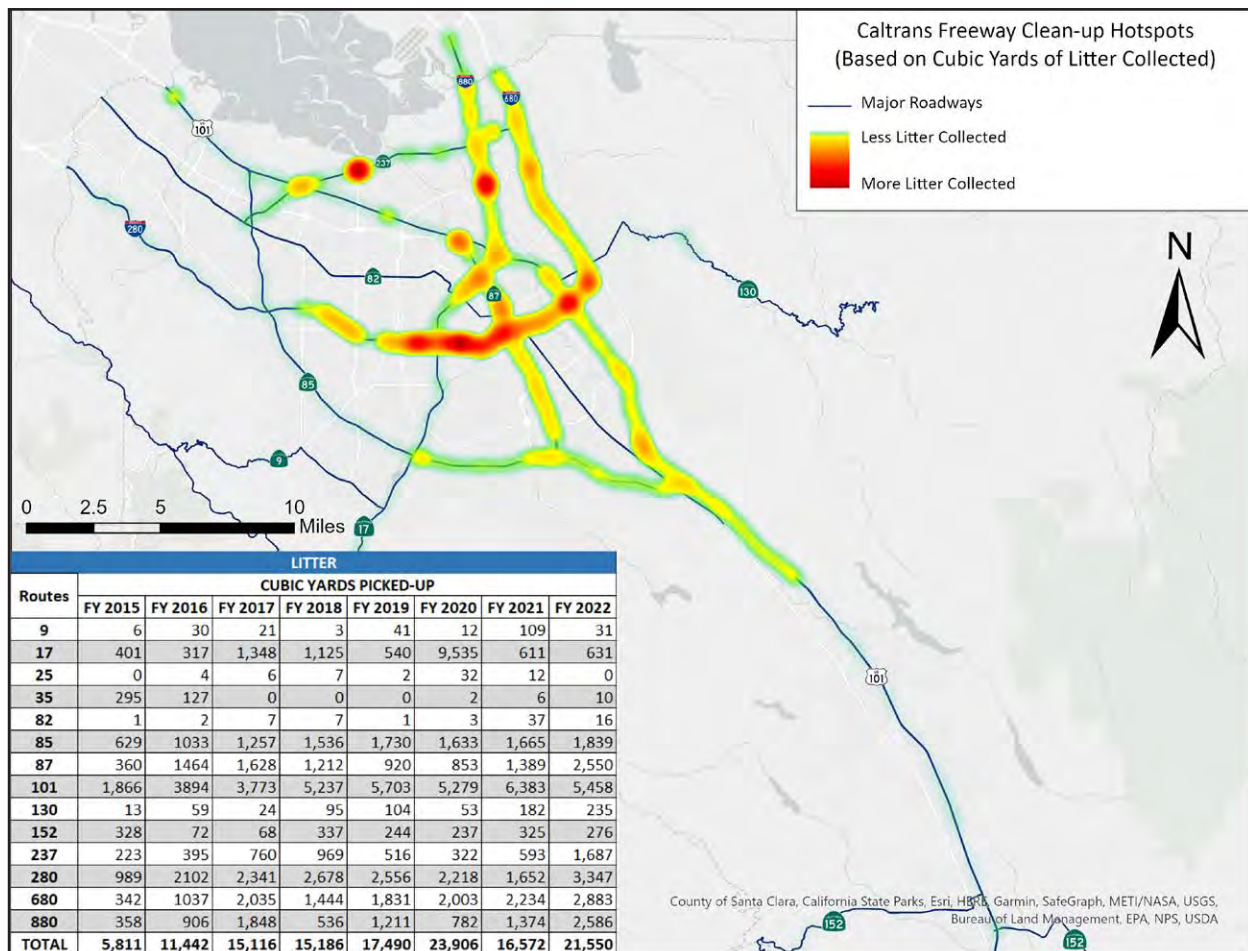
Compared to FY 2021, the amount of litter picked up increased by approximately 30% or 4,978 cubic yards (34,846 30-gallon trash bags).

Highway Litter, Illegal Encampments, & Graffiti Maintenance

The hotspot map below depicts the location and amount of litter collected in FY 2022. 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 an 8-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.

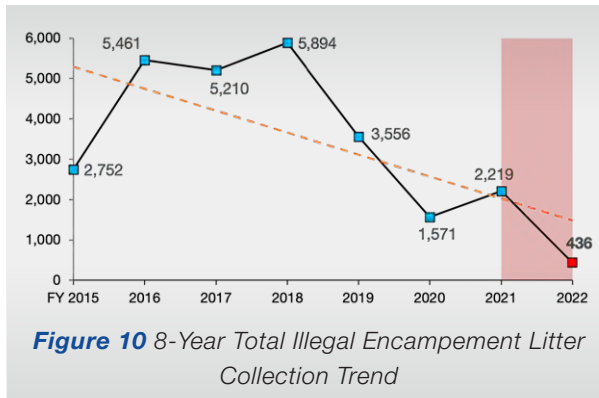
Figure 9 Hotspot Map of Litter in Cubic Yards Picked-up along Highways in Santa Clara County, FY 2022



Illegal Encampments

In addition to scheduled cleaning of the highway shoulders, Caltrans also recently started to record the location 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. In FY 2022, an estimated 436 cubic yards of litter were removed from illegal encampments along the highways in Santa Clara County.

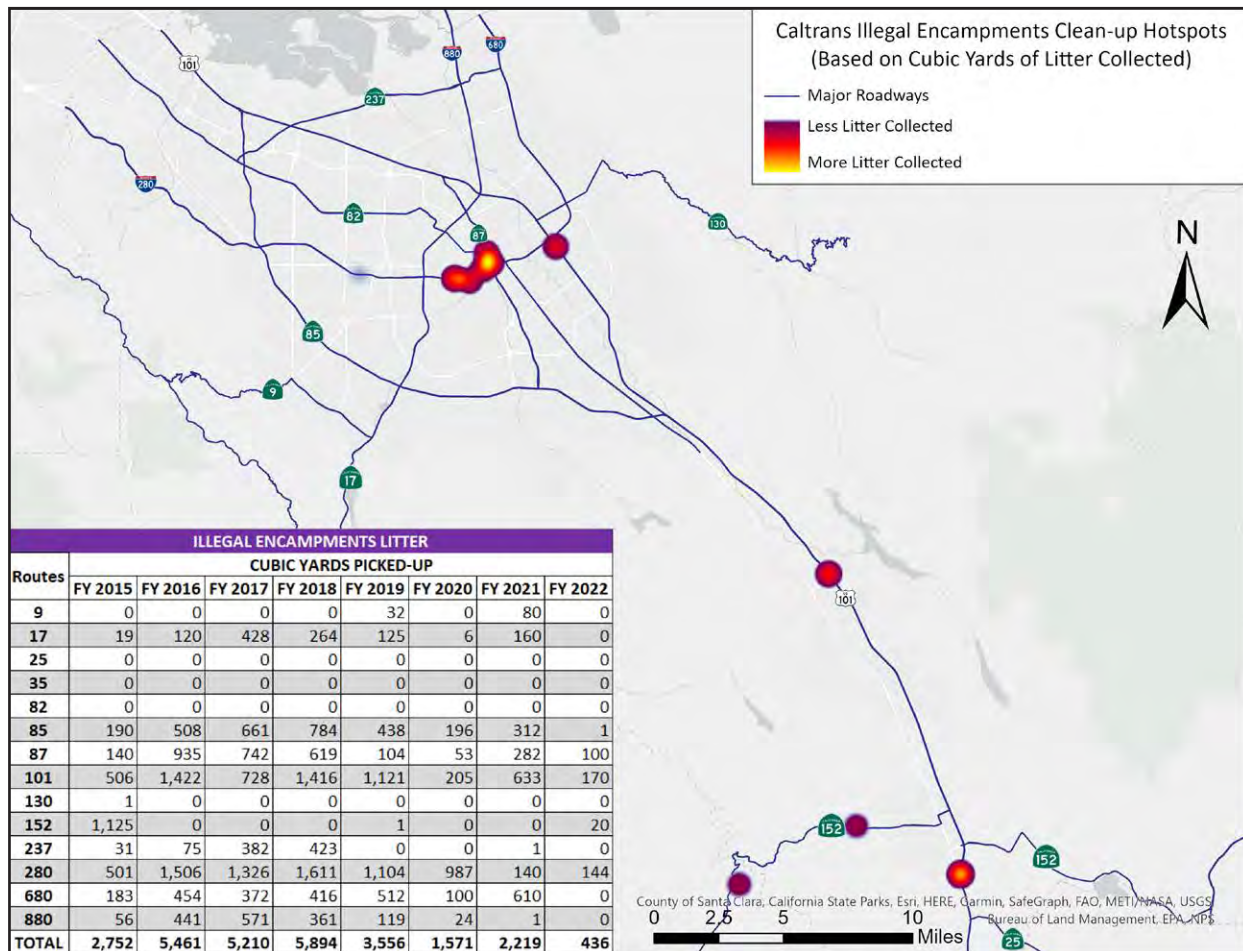
Highway Litter, Illegal Encampments, & Graffiti Maintenance



Compared to FY 2021, the amount of litter picked-up at illegal encampments during FY 2022 decreased by approximately 80% or 1783 cubic yards (12,481 trash bags). Assessing the amount of litter picked up along the highways and at illegal encampments, shows that Caltrans maintenance crew increased their efforts in highway curbside litter pick up.

The hotspot map below depicts the areas along highways with the largest amount of litter collected at the identified illegal encampments. The data in the table also shows the illegal encampments litter collection changes over an 8-year period by highway and highway routes.

Figure 11 Hotspot Map of Illegal Encampments Litter in Cubic Yards Picked-up along Highways in Santa Clara County, FY 2022



Highway Litter, Illegal Encampments, & Graffiti Maintenance

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

Graffiti

Graffiti and tagging on the highway system continues to be a problem in Santa Clara County. These incidents are typically seen on overcrossings, soundwalls, and signages. Caltrans maintenance crews and their contractors routinely patrol the highway corridors and either remove or paint-over the graffiti. In FY 2022, an estimated 361,309 square feet of graffiti were removed along the highways in Santa Clara County. Compared to FY 2021, the amount of graffiti removed in FY 2022 decreased by approximately 56.5% or 469,576 square feet of graffiti.

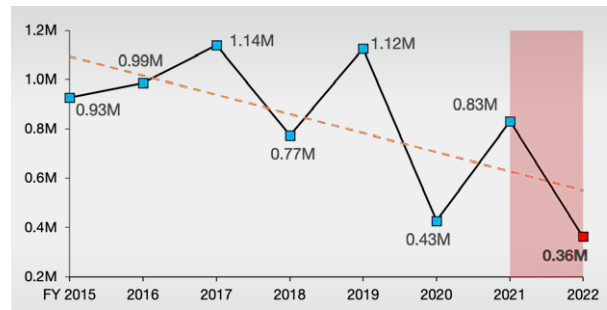
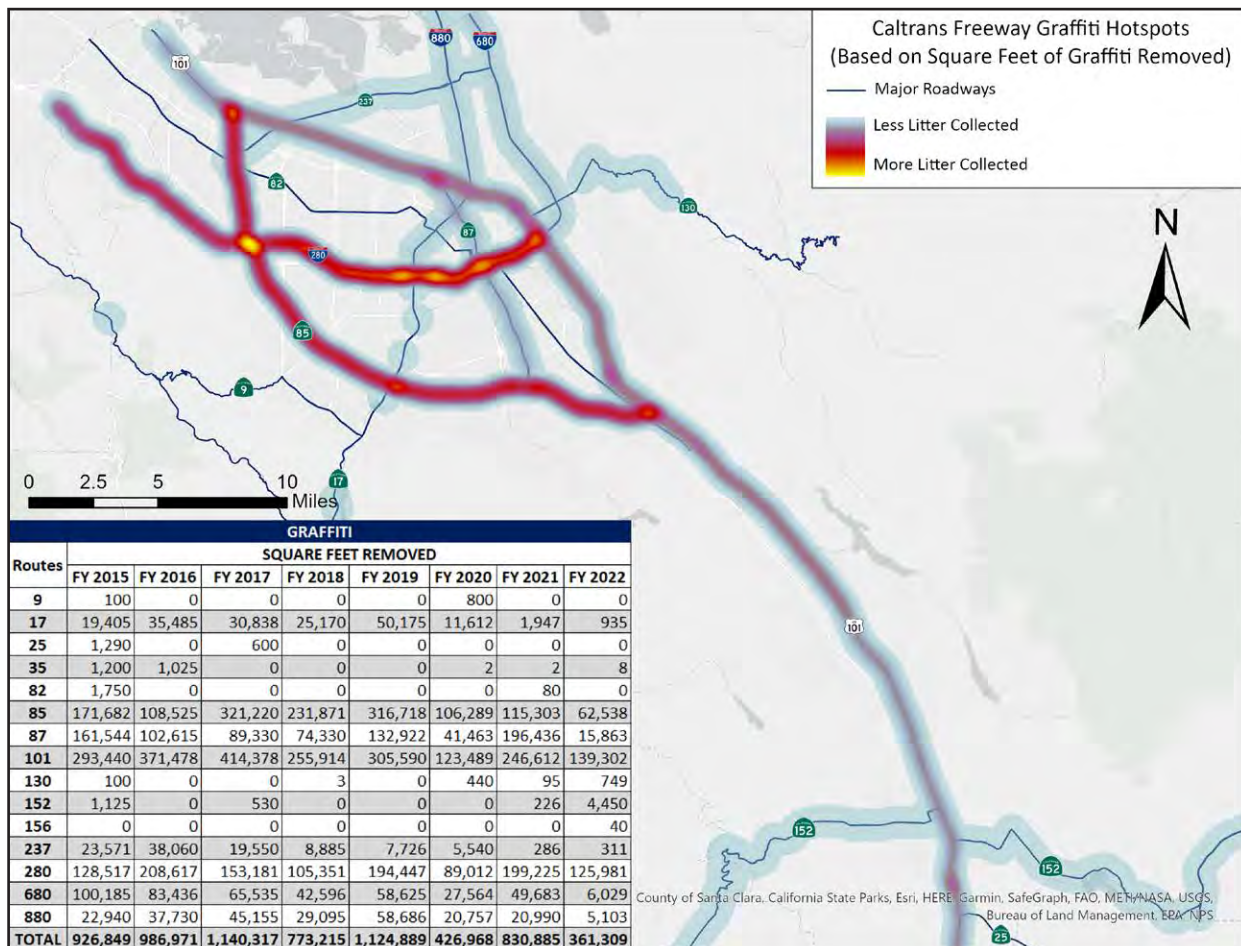


Figure 12 8-Year Total Graffiti Removal Trend

Caltrans graffiti removal efforts are conducted in partial segments of the highway, depending on the size and scale of the graffiti tags. The hotspot map identifies the areas with the largest number of square feet of graffiti removed. The data in the table also shows the changes in square footage of graffiti removed over a 8-year period by highway routes.

Figure 13 Surface Area of Graffiti per Mile Removed along Highways in Santa Clara County, FY 2022



The litter, illegal encampments, and graffiti removal data collection could be improved by more precisely reporting on the amounts cleaned-up per post mile. It is also important to leverage the data from the clean-up crews besides Caltrans to obtain the complete picture of the state of highway shoulders and surrounding areas year-round.

Maintenance

Depending on available resources allocated from the State's annual budget, which varies from year to year, Caltrans may have up to 13 maintenance crews at any given time that cover several counties. The crews consist of the following teams: 1 bridge crew, 1 vegetation spray crew, 1 special programs crew, 5 road maintenance crews, and 5 landscape maintenance crews.

In addition to Caltrans staff, litter and graffiti maintenance is supplemented by other resources like local agency anti-litter and graffiti initiatives, Adopt-A-Highway vendors, and other organizations.

Solutions



Keep Santa Clara Valley Beautiful is a countywide, multi-agency initiative to clean and prevent

littering on the highways in Santa Clara County. Trash on the highways is hazardous to drivers, the environment, and residents. VTA is working together with several partners to develop a program to change people's attitudes and behaviors towards throwing litter on the highways instead of in garbage cans or recycling containers.

The project includes organizing popup cleanup events in cities and towns throughout Santa Clara County, placing No Dumping enforcement signs at frequently littered locations, and forming local volunteer groups to help keep the community highways clean. In 2022, VTA, in partnership with Caltrans, Valley Water, CHP, and local jurisdictions, organized 9 volunteer cleanup events in 9 cities throughout the county, collected 285 30-gallon

bags of trash, and rallied over 90 volunteers. More information about the cleanup events can be found on the project website at <https://www.kscvb.com/>.

The map on the next page shows the Keep Santa Clara Valley Beautiful cleanup locations along the highways in Santa Clara County with the proportional amount of 30-gallon bags of trash removed at these locations.



Clean California - In July 2021, the State approved a \$1.5 Billion 3-Year statewide transformation initiative to remove litter on the roadways, create jobs, and

beautify California. VTA and local agencies in Santa Clara County are working with the Bay Area Local Caltrans District 4 Clean CA team to plan community volunteer clean-up event and free dump days in Santa Clara County.

Adopt-A-Highway (AAH) –

This is a Caltrans program that allows community volunteers and organizations to help maintain sections of the highways by either sponsoring clean-up events or hiring Caltrans approved maintenance vendors to perform the work on their behalf. Adoptions typically span over two-mile sections with permits issued up to five-year periods.



VTA is working with its member agency local jurisdictions to sponsor all adoptable highway segments by their respective communities. The sponsorship includes a AAH sign with the sponsor logo or name displayed along the adopted segment. The table on the next page shows an estimate of the available segments by jurisdiction using Caltrans District 4 Adopt-A-Highway Status Map. Nearly 84% of the adoptable highway segments are adopted in Santa Clara County.



Figure 14 Keep Santa Clara Valley Beautiful Cleanup Locations, 2022

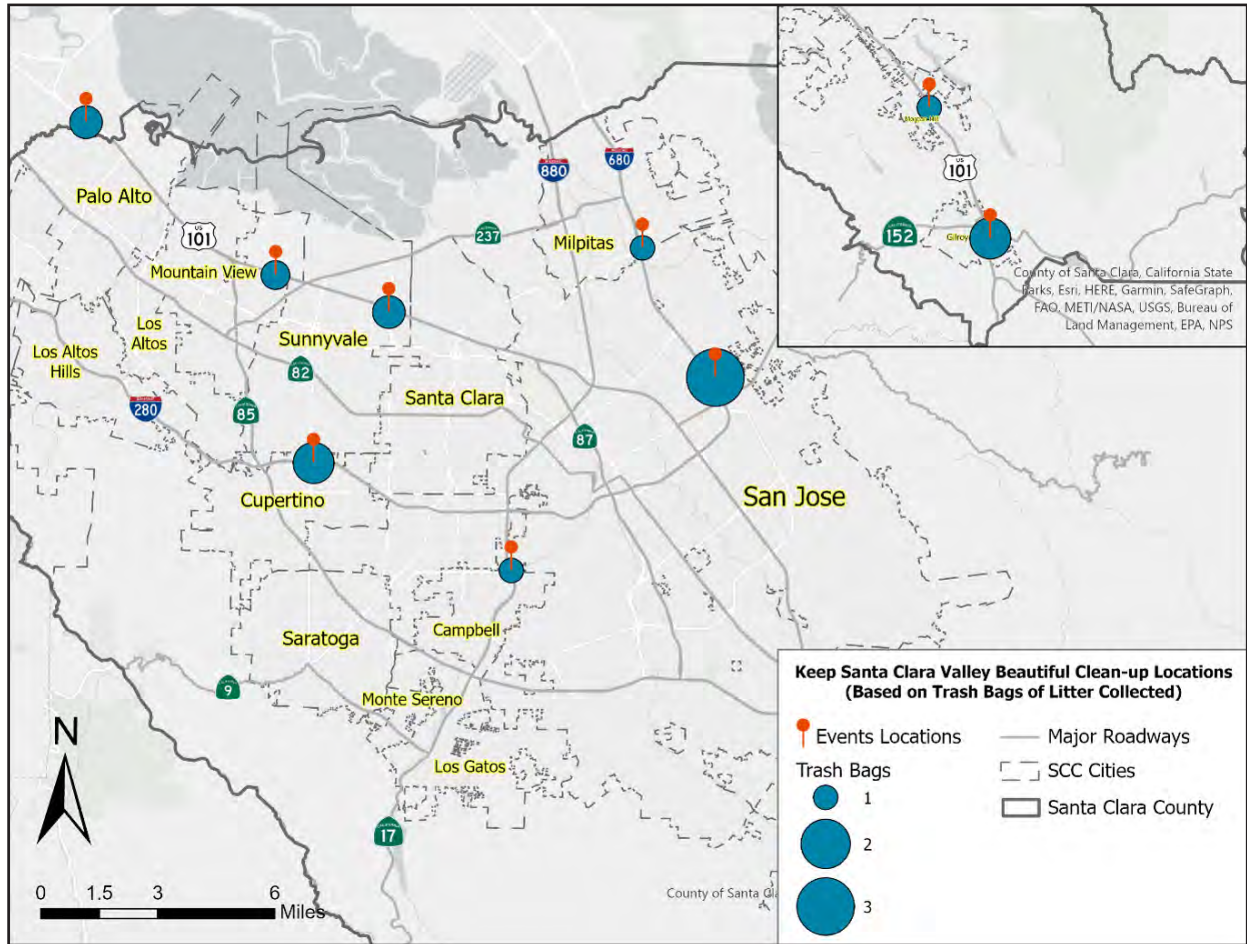


Table 4 Keep Santa Clara Valley Beautiful Cleanup Locations, 2022

NO.	Agency/City	Adopted Shoulder Miles ¹	Available Shoulder Miles	Estimated Cost (\$375/Month) ²	Highway/Freeway Locations	No of Available Interchange Sites ⁶	Estimated Cost (\$275/Month) ³
1	Campbell	4.8	0.0	-	17	3	\$825
2	Cupertino	8.6	0.0	-	85, 280	4	\$1,100
3	Gilroy	5.2	3.2	\$600	101	0	-
4	Los Altos	0.0	0.0	-	-	0	-
5	Los Altos Hills	8.0	0.0	-	280	0	\$825
6	Los Gatos	11.5	0.0	-	9, 17, 85	0	-
7	Milpitas	6.2	5.2	\$975	680, 880	3	-
8	Monte Sereno	1.4	0.0	-	9	0	-
9	Morgan Hill	5.2	1.0	\$188	101	0	-
10	Mountain View	10.0	2.0	\$375	85, 101, 237	0	-
11	Palo Alto	5.0	0.0	-	101	0	-
12	San Jose	88.6	18.8	\$3,525	85, 87, 101, 237, 280, 680, 880	13	\$3,575
13	Santa Clara	4.8	0.0	-	101	1	\$275
14	Saratoga	19.6	0.0	-	-	0	-
15	Sunnyvale	10.8	4.0	\$750	85, 101, 237	0	-
16	Unincorporated/ Unclassified	47.0	10.8	\$2,025	9, 17, 85, 87, 101, 237, 280, 680, 880	0	-

NOTES:

- There are sections of the freeways that are not adoptable so miles in the Adopt-A-Highway Program will not match the total Post Miles.
- Cost reflects two clean-ups per month per each approximate 2-mile segment.
- Cost reflects one clean-up per month per quadrant. Some sites may be required to be cleaned more than once per month.
- Caltrans dictates the frequency of clean-ups based on location so costs will vary. Costs provided in this table are intended to give rough estimates.
- Caltrans District 4 Adopt-A-Highway website: <http://www.dot.ca.gov/d4/adoptahighway/>
- The definition of interchanges includes on-off ramps and are typically divided into individual quadrants for adoption purposes.

ZERO LITTER INITIATIVE

Zero Litter Initiative (ZLI) – ZLI is a voluntary group comprised of cities, water agencies, and conservation organizations including VTA, dedicated to developing and implementing anti-litter programs that focusses on preventing pollution from entering waterways leading to the San Francisco Bay.

Other volunteer organizations include California Highway Patrol, Beautiful Day, San Jose Downtown Streets Team, and San Jose Conservation corps.



ROADWAY SAFETY

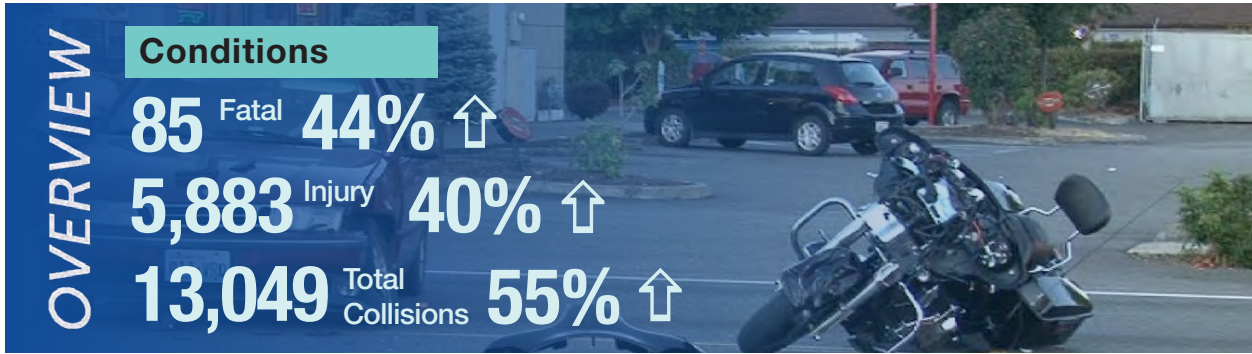
OVERVIEW

Conditions

85 Fatal **44%** ↑

5,883 Injury **40%** ↑

13,049 Total Collisions **55%** ↑



Background

Transportation has a significant effect on public health and safety, specifically collisions which are considered to be preventable. Santa Clara County has joined a nationwide effort to reduce and eventually eliminate all fatal and serious injury collisions on our roadways, while increasing safe, healthy, and equitable mobility for all users. The first step to achieving this goal is monitoring the collision rates, locations, and types.



levels as employees are shifting to hybrid work schedules. In general, there was a 55% increase in the number and types of collisions between 2020 and 2021:

- +4,612 (+55%) Total Collisions
- +26 (+44%) Fatal Collisions
- +1,671 (+40%) Injury Collisions

The following graphs show the historical Fatal and Injury Collision trends from 2009 to 2021. The maps on the following pages display “hot spots” of frequent locations by type.

Data Source

VTA and its Member Agencies have invested in the County’s Crossroads Collision software data base as a primary source for tracking and analyzing collisions.

Crossroads includes data from the Statewide Integrated Traffic Records System (SWITRS) in addition to the non-serious collisions collected by the local police departments that might not be reported to the State. This provides a more comprehensive database tool for use by local transportation engineers, planners, and public health department staff.



Conditions

After an initial decrease in traffic during the COVID-19 pandemic in 2020, which resulted in changes in work schedule, mode choices, and travel patterns, traffic is now rebounding to higher

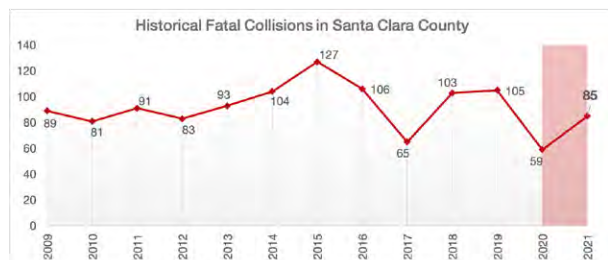
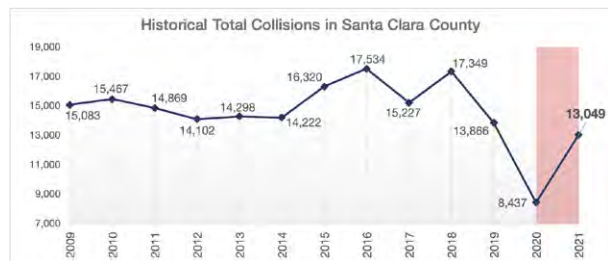


Figure 15 2021 All Collisions "Hot Spots" Map, Santa Clara County

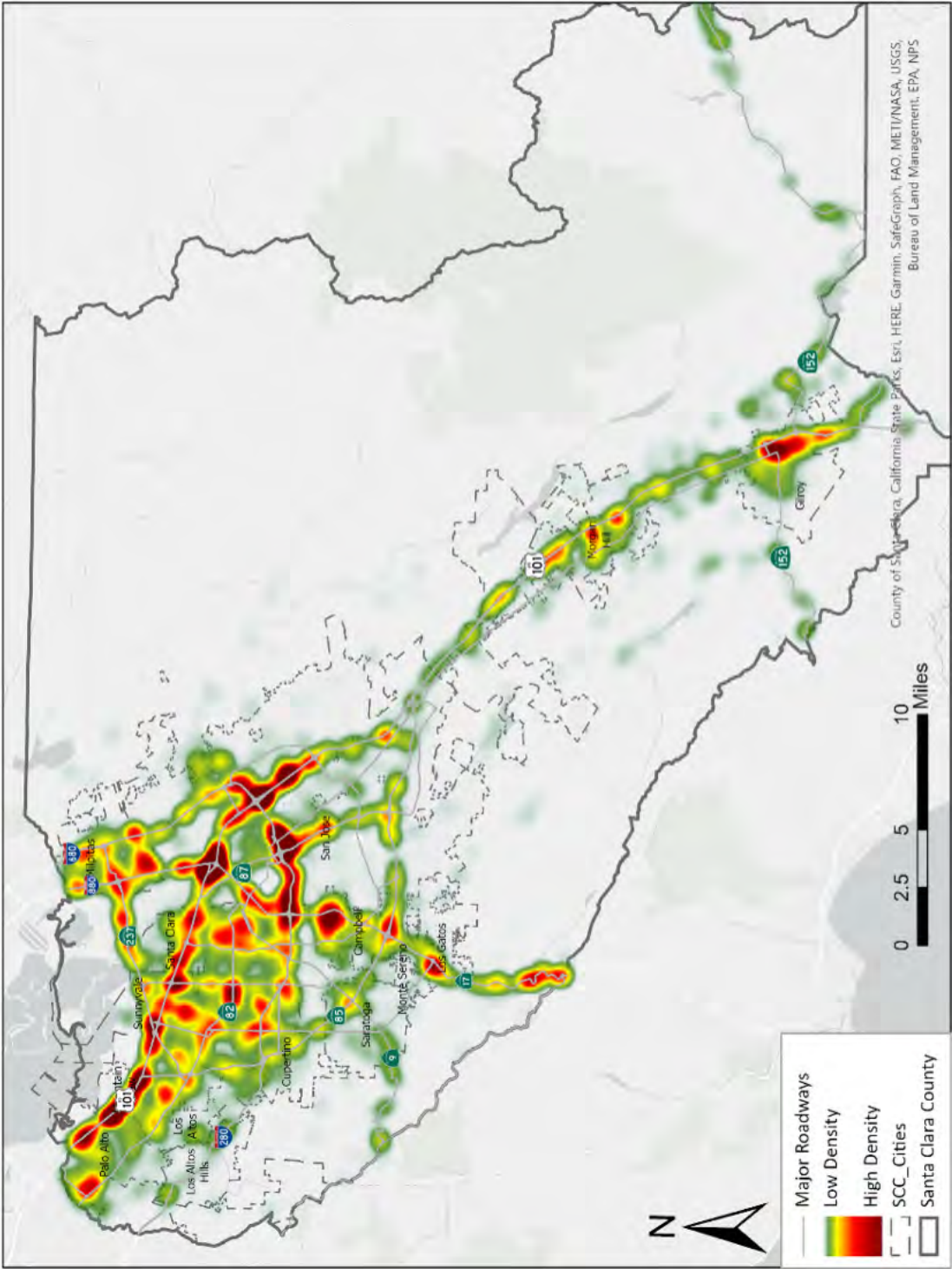
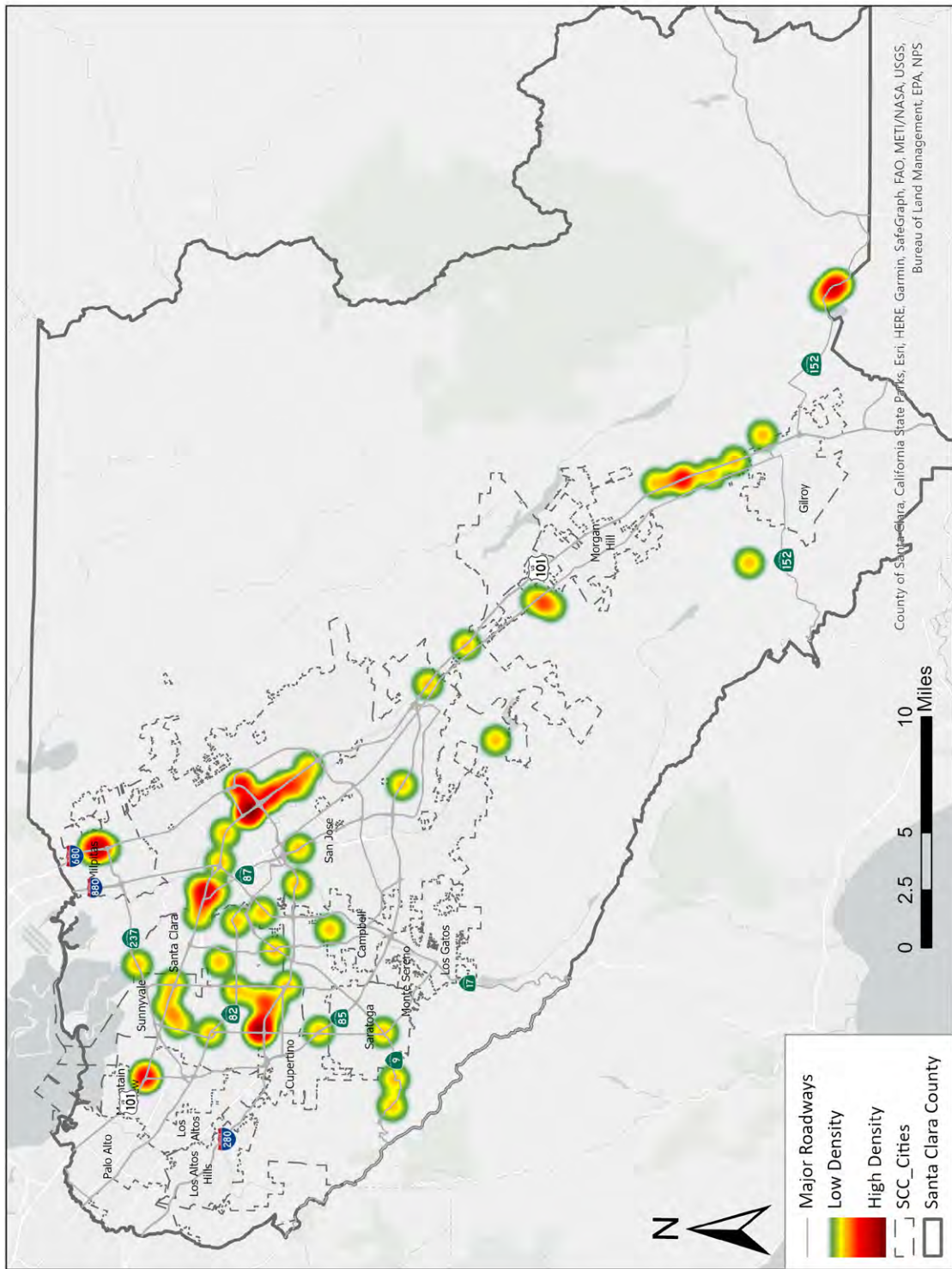


Figure 16 2021 Fatal Collisions "Hot Spot" Map, Santa Clara County



The overall number of 2021 major collision types, factors and involved parties by agency are presented in the following table:

Table 5 2021 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	327	1	91	141	74	53	15	16	12	68
Cupertino	300	2	78	55	8	47	21	4	17	47
Gilroy	705	5	274	243	43	151	91	30	28	89
Los Altos	93	0	51	15	5	22	14	3	9	18
Los Altos Hills	49	0	19	5	4	17	5	0	4	23
Los Gatos	179	0	64	53	9	46	15	8	12	39
Milpitas	353	1	147	77	34	104	32	9	18	51
Monte Sereno	7	0	7	0	1	2	2	0	2	4
Morgan Hill	185	0	80	36	21	29	21	8	2	55
Mountain View	269	0	148	63	50	43	22	16	21	70
Palo Alto	260	0	125	53	10	57	27	14	21	30
San Jose	1970	17	1906	269	44	481	282	230	162	101
Santa Clara	796	4	255	287	44	154	64	32	15	130
Santa Clara County	827	9	391	164	65	249	88	14	33	292
Saratoga	164	2	72	19	10	45	20	5	13	42
State	5780	41	1906	1257	512	2972	28	29	8	1407
Sunnyvale	784	3	268	300	50	178	64	34	36	141

*DUI - Driving Under the Influence

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

Collision Types and Primary Collision Factors (PCF)

Every collision record identifies the type of collision and a primary collision factor. This information is used to develop counter measures and strategies to mitigate these types of collisions. The following tables show the percentages of collision by type and primary factors or causes.

Figure 17 2021 All Collisions - Collision Type

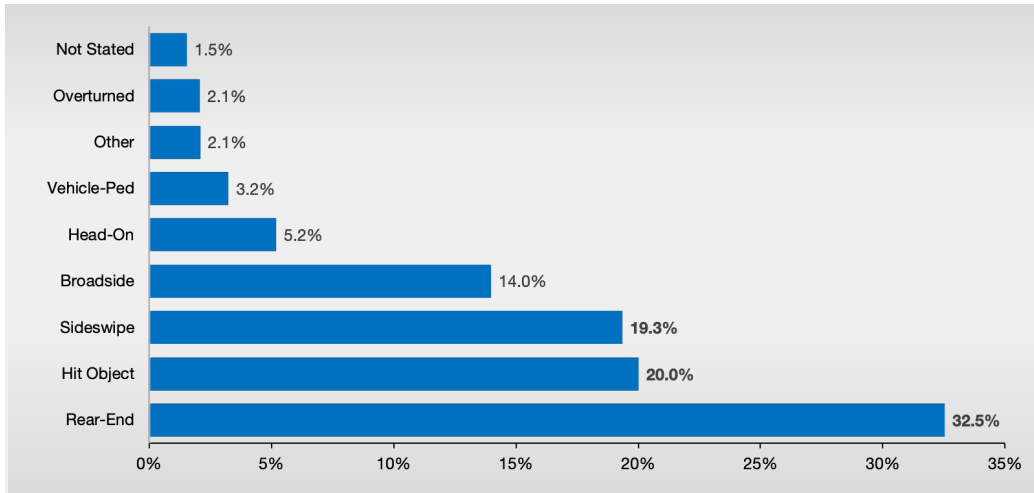
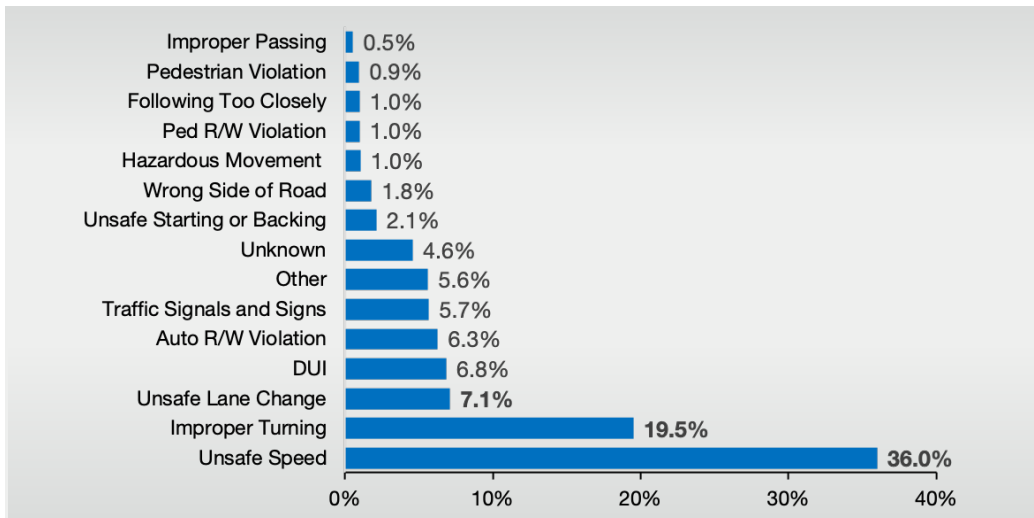


Figure 18 2021 All Collisions - Primary Collision Factor (PCF)



Pedestrian and Bicycle Involved Collisions

In 2021, there were **865 collisions involving bicyclists and pedestrians out of a total of 13,049 reported collisions in Santa Clara County**. This represents approximately 7% of the total collisions in the County. The number of bicycle and pedestrian collisions **increased by 253 or nearly 41% in 2021 compared to 2020 data**. This can be attributed to the increase in traffic volumes, reaching to near pre-pandemic conditions, thus increasing the number of collisions.

Figure 19 2021 Bike/Ped Collision - Collision Types

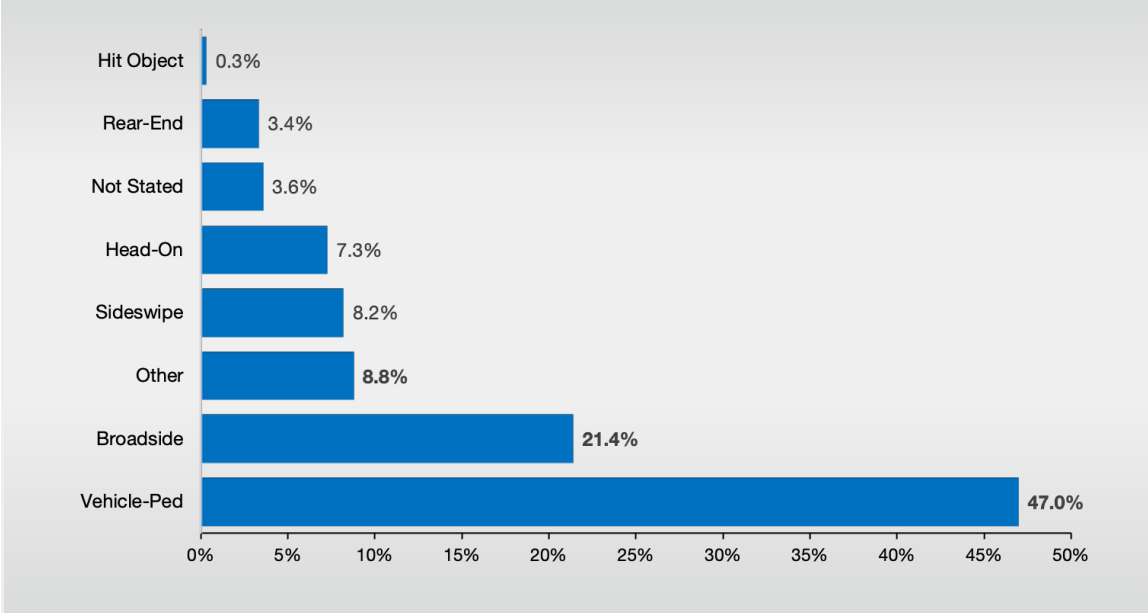


Figure 20 2021 Bike/Ped Collision - Primary Collision Factor (PCF)

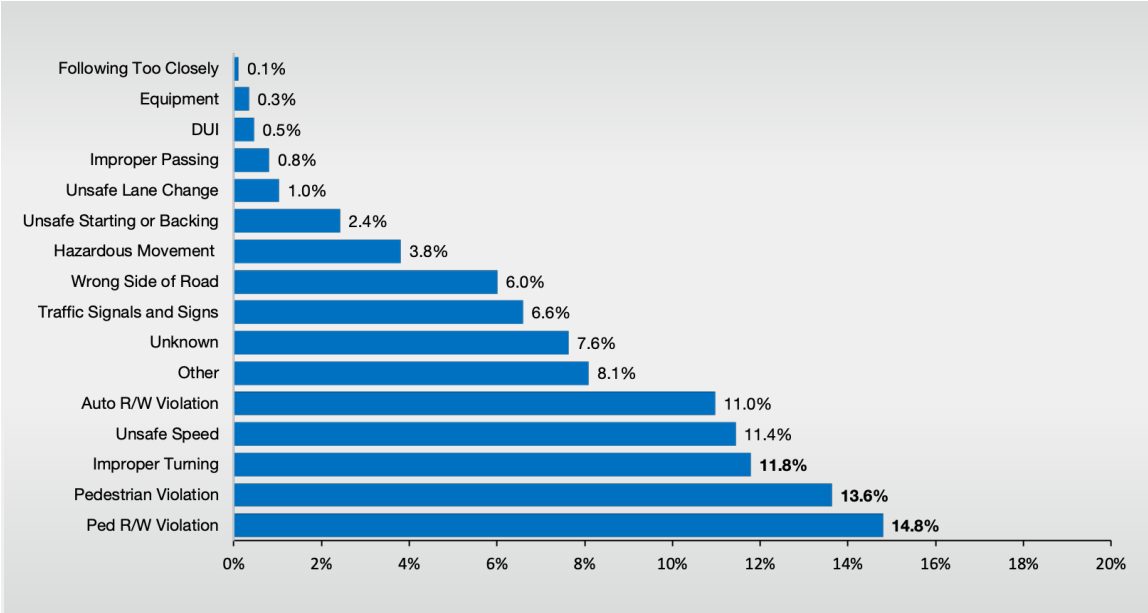
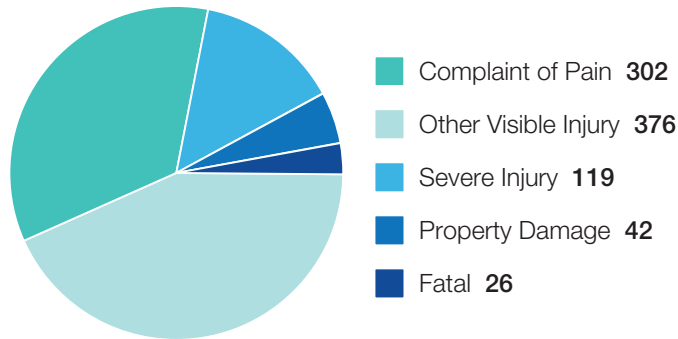


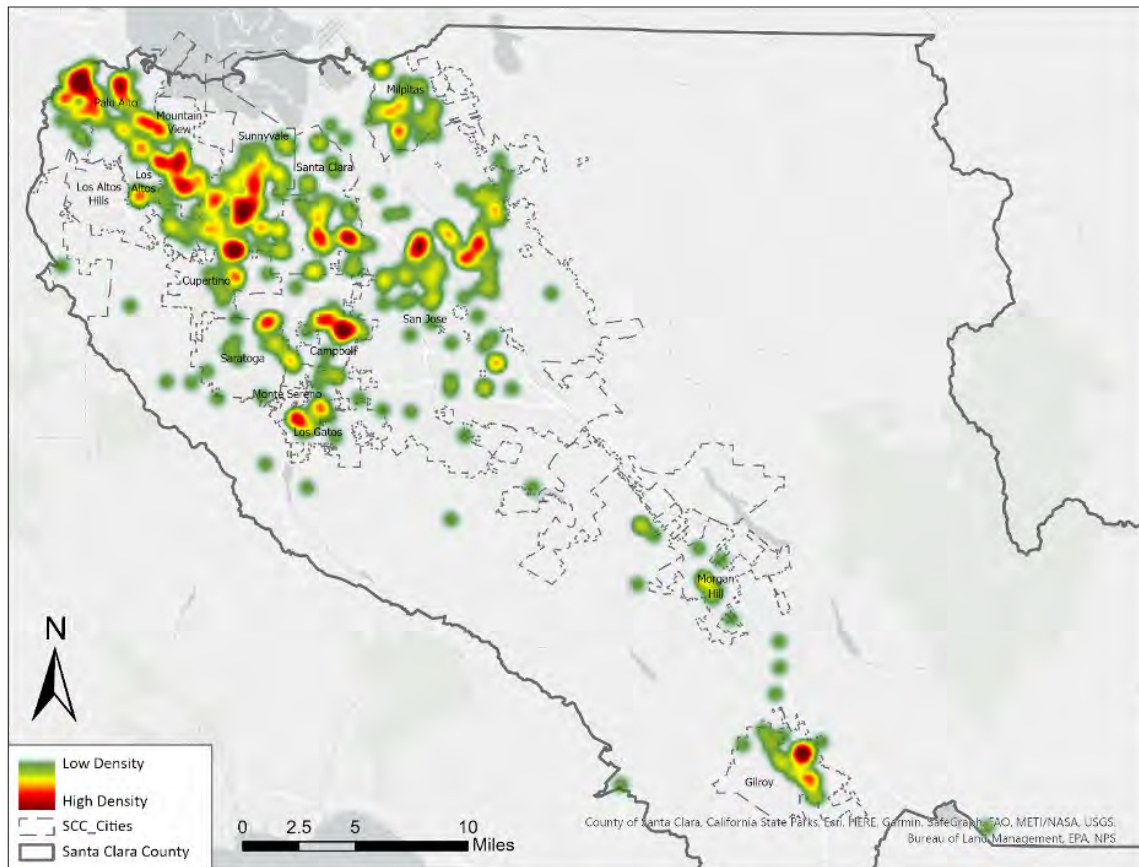
Figure 21 2021 Bike/Ped Collision – Degree of Injury



Frequent Collision Locations involving Bicyclists and Pedestrians

Monitoring and tracking locations of collisions year over year is a good performance metric for evaluating the effectiveness of collision reduction projects and strategies. The hotspot map below shows the location of bicycles and pedestrian collisions in 2021.

Figure 22 2021 Bike and Pedestrian Collisions “Hot Spot” Map, Santa Clara County

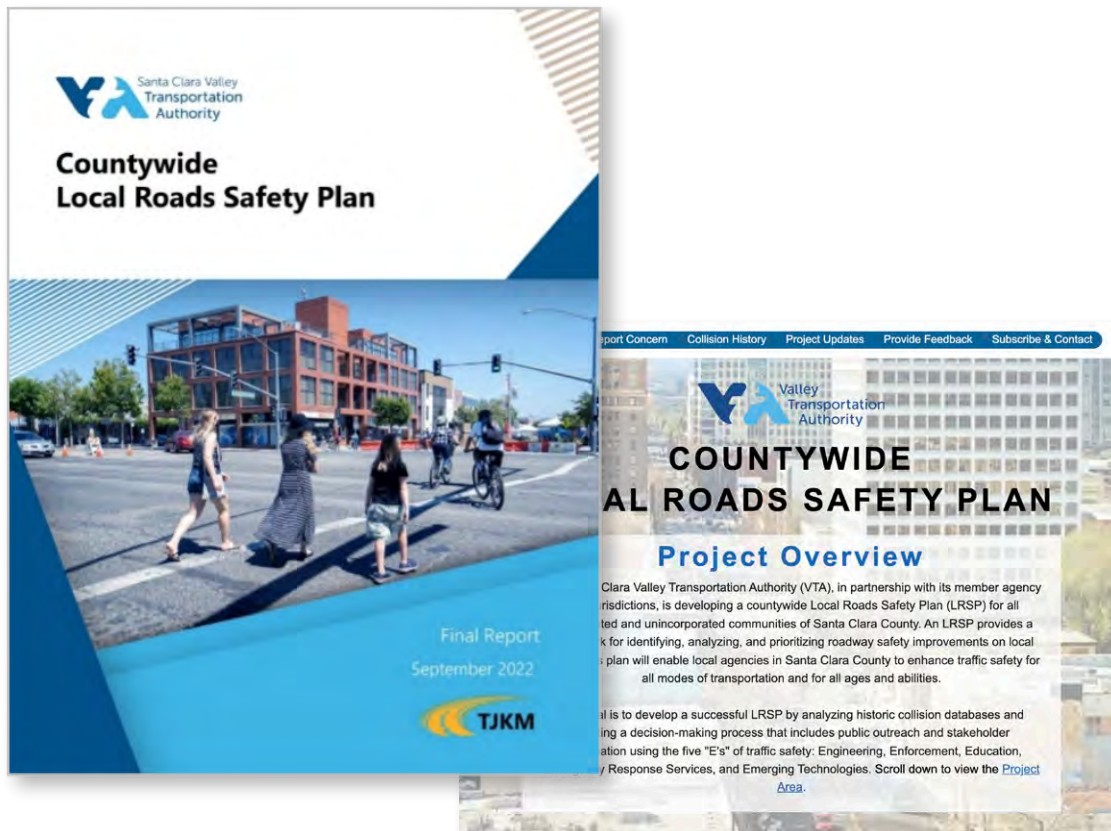


Solutions

VTA, in a collaborative effort through the Systems Operations and Management Working Group, comprised of local agency transportation engineers and planners, and input from local communities, developed a Countywide Local Roads Safety Plan (CLRSP) which provides jurisdictions with a systemic process aiming to reduce and eventually eliminate all traffic injuries and fatalities on the local roadway network. It should be noted that the CLRSP was an eligibility requirement for agencies identified in the report to apply for Caltrans Highway Safety Improvement Program (HSIP) Cycle 11 grant. The following cities/towns are included in this report: City of Campbell, City of Gilroy, Town of Los Altos Hills, City of Los Altos, City of Milpitas, City of Monte Sereno, City of Morgan Hill, City of Palo Alto, City of San Jose, City of Santa Clara, and City of Sunnyvale. Other jurisdictions in Santa Clara County developed their own Local Road Safety Plan (LRSP) or equivalent of LRSP which are mentioned in the CLRSP report.

Other efforts for improving Santa Clara County's Active Transportation Networks are as follows:

- 2016 Measure B Local Streets & Roads, and Bicycle & Pedestrian improvement plans and projects
- VTA Bicycle and Pedestrian Programs
- 2021 VTA Bicycle Superhighway Implementation Plan



COVID-19 IMPACTS



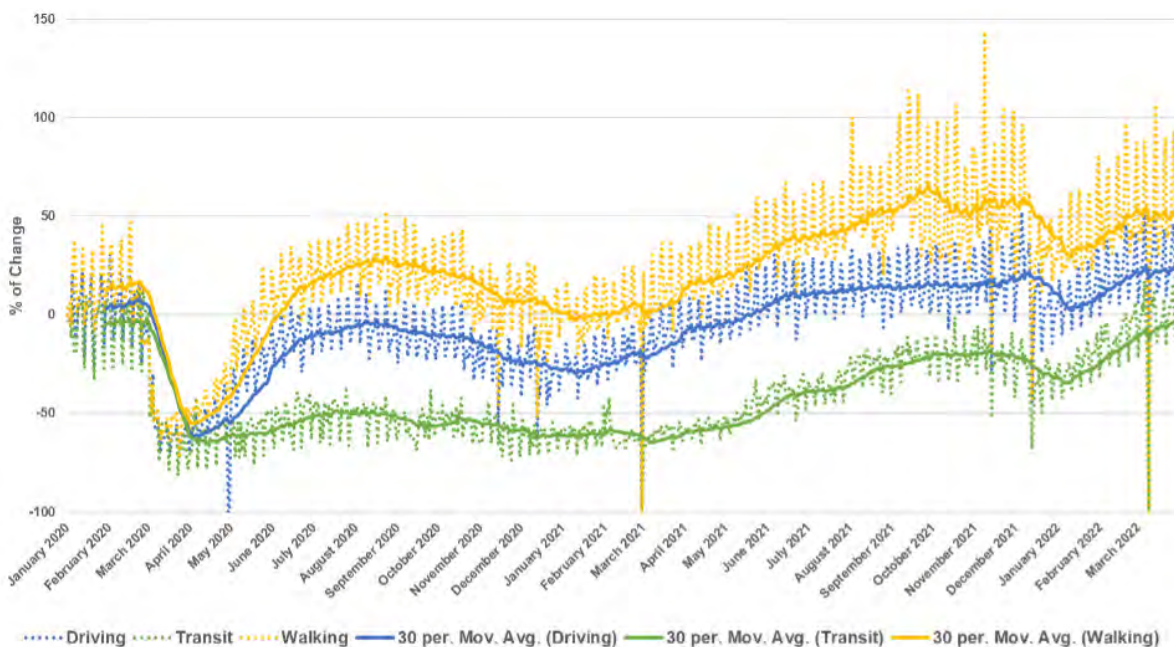
This section presents some general observations during the COVID-19 pandemic on transportation since the 2020 TSMP Report period, and social distancing guidelines issued by the State and County Public Health Departments in March 2020.

Following these orders and guidelines, many employers, schools, and other organizations transitioned their operations from on-site work to telecommuting. While adjusting their workflow processes and despite the COVID-19 vaccines distribution, businesses have been shifting to hybrid work schedules. These resulted in changes in personal transportation mode choices and commute patterns.

The graph below displays the change in patterns for vehicle, transit, and walking travel modes in Santa Clara County from January 2020 to April 2022. The data was generated based on Apple Maps© users' requests for directions by mode choice. It should be noted that, as of April 14, 2022, Apple is no longer providing COVID-19 mobility trends reports.

The overall vehicular traffic in Santa Clara County has increased by an average of 52% compared to the pre-COVID-19 volumes; walking increased by 50% after dropping to under 50% in April 2020 after shelter-in-place order, and transit experienced a 52% increase until April 2022.

Figure 23 Apple Maps© Mobility Trends Reports January 2020 – April 2022 for Santa Clara County



Source: <https://covid19.apple.com/mobility>

Traffic Impacts

The coronavirus pandemic and COVID-19 ordinances affected the schedules of businesses, government, schools, and other organizations, thus changing people’s travel behaviors and mode choices, impacting traffic congestion. Followed by relaxed social distancing guidelines, high vaccination rates, and shifting towards hybrid work schedules, the average speed has been decreasing, indicating more traffic congestion. Figures 2 and 3 illustrate the average speed trend during AM and PM peak hours along the freeways in Santa Clara County from January 2020 to December 2022.

Since March 2020 of the pandemic restrictions, the level of congestion on the highways in Santa Clara County have been gradually increasing resulting in lower average speeds. From 2021 to 2022, the average speed along the highways during the AM Peak Period decreased from 61 mph to 56.7 mph and from 56 mph to 51.5 mph during the PM Peak Period.

Figure 24 Average Freeway Speed Trend During AM Peak Hours



Figure 25 Average Freeway Speed Trend During PM Peak Hours

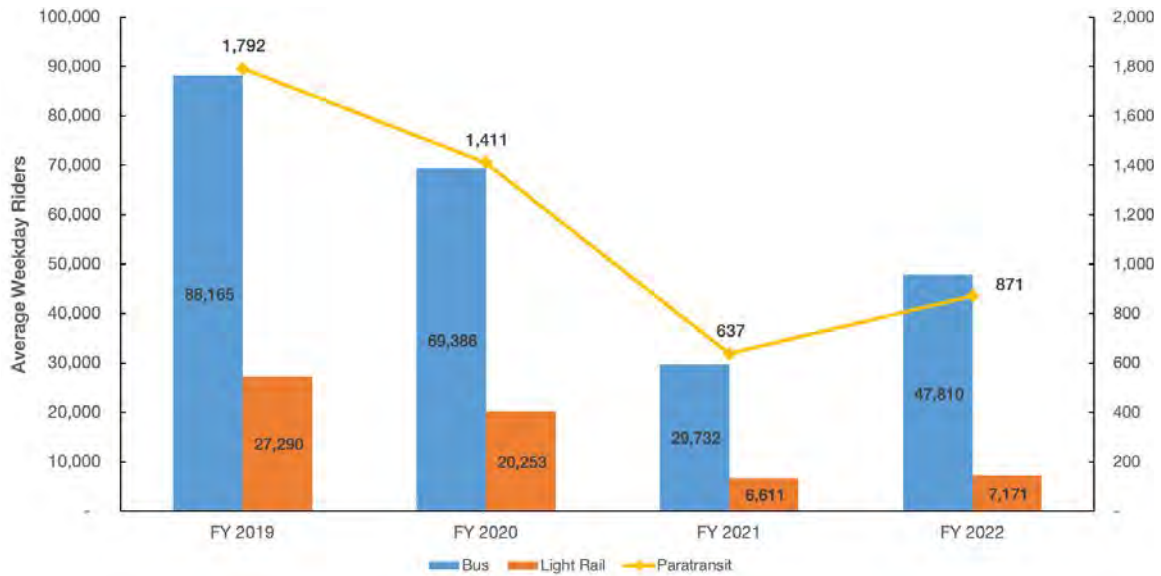


Transit Impacts

In addition to implementing the Fast Transit Program aiming to increase transit service, frequency, and reliability, VTA's transit ridership has been recovering gradually from the COVID-19 pandemic with increased capacities, high vaccination rates, and relaxed social distancing guidelines.

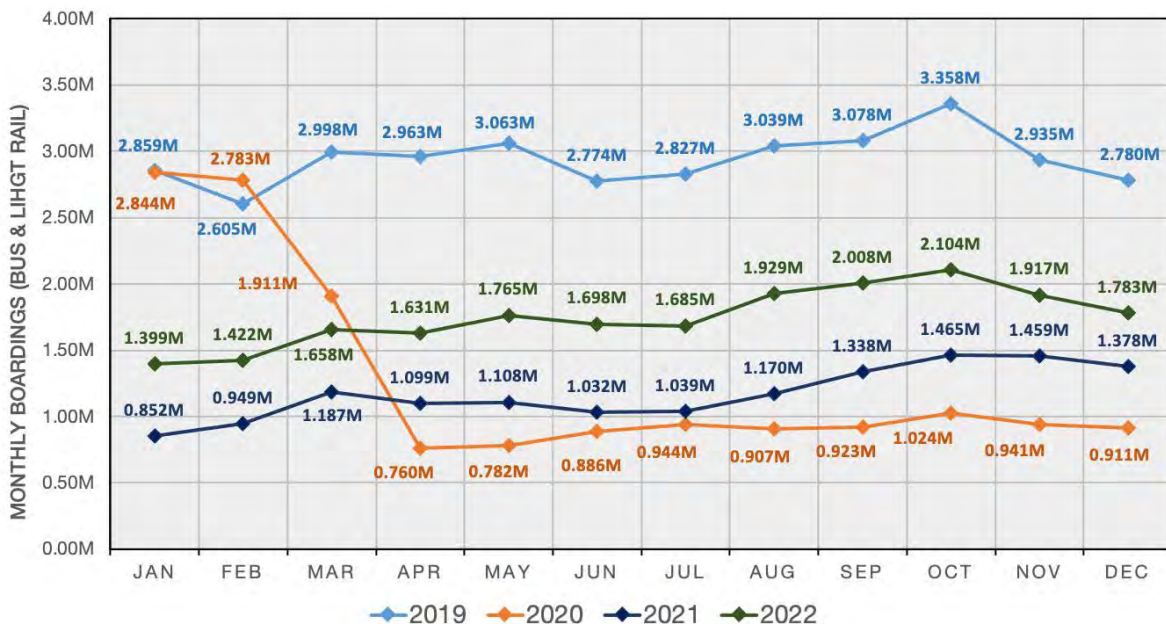
In FY 2022, VTA bus weekday riders increased by 60.8%, light rail increased by 8.5%, and paratransit increased by 36.7% compared to FY 2021. Overall, the system-wide (bus and light rail) weekday ridership has reached 47% of the pre-pandemic levels in FY 2019.

Figure 26 VTA Weekday Riders Between FY 2019 and FY 2022



The chart below shows monthly system wide VTA riders from January 2019 to August 2022, indicating the gradual increase and recovery.

Figure 27 VTA Monthly Riders from January 2019 to December 2022



Ridership Demographics

Transit service provides an alternative mode choice to single occupant vehicles and to those without any means of convenient transportation. Here are some information collected on communities using VTA's Frequent Service with 15 minute headways:

- 70% are people of color
- 32% live in households with one car
- 23% are within 200% of the Federal poverty threshold
- 12% are 65 or older
- 8% are living with a disability

Bicycle and Pedestrian Impacts

More people have continued to bicycle and walk more frequently since the start of the pandemic with stay-in-shelter order and social distancing ordinances back in March 2020. This mode shift can be attributed to employers allowing flexible work-from-home schedules.

In response to the demand and need for more public space to support social distancing regulations, many local jurisdictions implemented Slow Streets or Shared Streets type programs for pedestrians and bicyclists.



Source: <https://www.cityofpaloalto.org/Departments/Transportation/Transportation-Projects/Shared-Streets-Program>

In May 2020, the City of Palo Alto initiated a Shared Streets Program. The City limited vehicle access to local traffic only on segments of Bryant Street, Park Boulevard, and Ross Road. This program created more space for residents to walk, bike, and run while complying with physical distancing requirements. The program was piloted on three street segments, shown on the map above and ended on June 15, 2021.

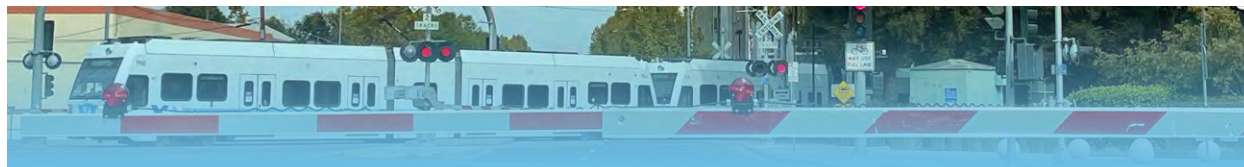


The City of Mountain View closed four blocks of Castro Street to vehicular traffic shortly after the start of the COVID-19 pandemic and converted it to an outdoor dining area to support local restaurants and retail businesses, while adhering to social distancing protocols and providing residents with more open space for walking. In October 2022, the City Council adopted an ordinance establishing pedestrian malls on three blocks of Castro Street between the east leg of West Evelyn Avenue and Villa Street, Villa Street and West Dana Street, and West Dana Street and California Street as the street closure moves from pandemic recovery response to an interim closure phase.

Similarly, in response to the COVID-19 pandemic, the City of Sunnyvale closed one block of South Murphy Avenue between Washington Avenue and West Evelyn Avenue to vehicular traffic, allowing restaurants on this block to expand outdoor dining onto the public street. The City is now conducting a study to evaluate the permanent street closure to cars.



INTELLIGENT TRANSPORTATION SYSTEMS



Using emerging mobility technologies, such as Connected and Autonomous Vehicles, Artificial Intelligence, advanced communications network, and electronic toll collection, Intelligent Transportation Systems (ITS) promise many traffic, safety, economical, and environmental improvements as they pave the way to the future of smarter transportation networks. Therefore, a new section was added to the TSMP report to monitor the current and future use and needs for maintaining these new infrastructure.

Arterial Management

The following table summarizes the estimated number of operating traffic signal controllers in Santa Clara County jurisdictions and their Transit Signal Priority (TSP) capability. Of the nearly **2100 operating traffic signals in the county, 1555 are located on VTA transit routes, 1329 (approximately 63%) have modern TSP capabilities** with dedicated communications ready to connect to newer TSP systems (e.g., central TSP), **469 have limited or no modern TSP capabilities, and roughly 250 do not have the required broadband communications.**

Table 7 Traffic Signal Controllers in Santa Clara County by Jurisdiction, 2022

Count	City/Town	Total No. of Signals in Operations	No. of Signals on VTA Transit Route		No. of TSP Capable Traffic Signals		
			On Fast & Frequent	On All Transit	Full Capable	Partial Capable	Full Capable
1	Caltrans	145	68	113	145	0	0
2	Campbell	45	26	40	0	2	43
3	Cupertino	59	19	50	0	50	8
4	Gilroy	43	10	30	6	0	37
5	Los Altos	9	0	7	9	0	0
6	Los Altos Hills	3	0	0	0	0	0
7	Los Gatos	30	0	19	30	0	0
8	Milpitas	67	19	46	0	4	63
9	Monte Sereno	0	0	0	0	0	0
10	Morgan Hill	36	20	24	0	0	36
11	Mountain View	88	0	57	16	22	47
12	Palo Alto	101	1	48	0	101	0
13	San Jose	989	502	761	987	0	0
14	Santa Clara	145	48	103	0	145	0
15	Saratoga	15	7	15	1	5	9
16	Sunnyvale	136	31	110	135	0	1
17	County of Santa Clara	180	43	132	0	140	4
		2,091	794	1,555	1,329	469	248

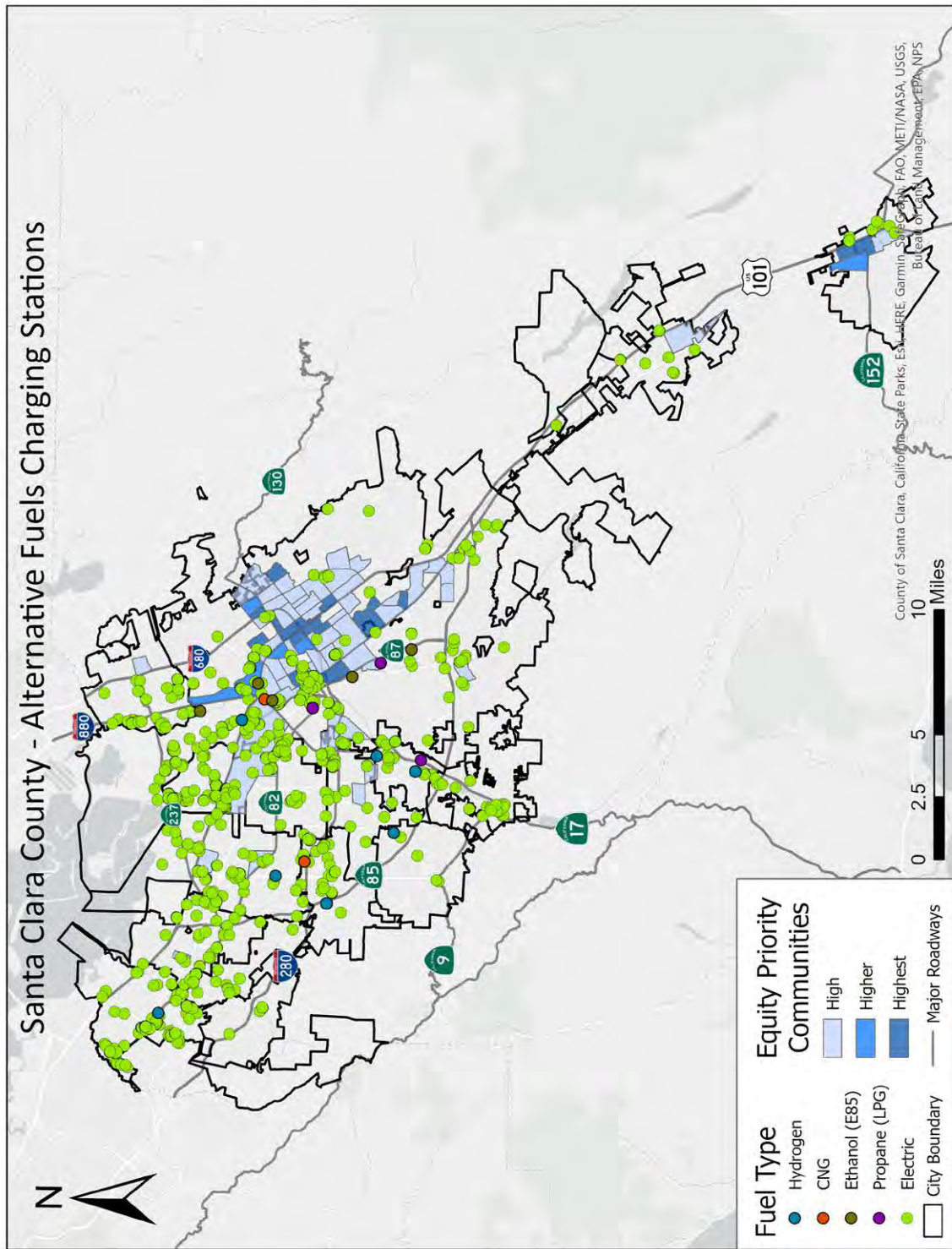
Smart Mobility

Identified as one of four functional areas of transportation systems in VTA’s Transportation Technology Strategic Plan (TTSP), smart mobility includes new technologies such as Connected and Autonomous Vehicles, shared-use mobility, and multimodal elements, which includes support for electric vehicles. The table below shows the number of available public alternative fuels charging stations in Santa Clara County by jurisdiction using the data from the Department of Energy’s alternative fuels data center. Available fuel types include CNG (Compressed Natural Gas), E85 (Ethanol), ELEC (Electric), HY (Hydrogen), and LPG (Propane). The following graph illustrates available alternative fuels charging stations (public stations) in the County, including approximately **1430 stations, roughly 10% of all the stations in California.**

Table 8 Status of Alternative Fuels Charging Stations in Santa Clara County by Jurisdiction, 2022

Count	City/Town	Total No. of Alternative Fuels Charging Stations	Fuel Type				
			CNG	E85	ELEC	HY	LPG
1	Campbell	31	-	-	28	2	1
2	Cupertino	76	1	-	74	1	-
3	Gilroy	24	-	-	24	-	-
4	Los Altos	14	-	-	14	-	-
5	Los Altos Hills	9	-	-	9	-	-
6	Los Gatos	21	-	-	21	-	-
7	Milpitas	75	-	-	75	-	-
8	Monte Sereno	4	-	-	4	-	-
9	Morgan Hill	11	-	-	11	-	-
10	Mountain View	60	-	-	60	-	-
11	Palo Alto	153	-	-	151	2	-
12	San Jose	519	1	5	510	1	2
13	Santa Clara	333	-	-	333	-	-
14	Saratoga	6	-	-	5	1	-
15	Sunnyvale	92	-	-	91	1	-
		1428	2	5	1410	8	3

Figure 30 Alternative Fuels Charging Stations in Santa Clara County, 2022



Solutions

In 2018, VTA developed the Santa Clara Transportation Technology Strategic Plan (TTSP) to provide a common vision of the future of transportation technology for local agencies and other stakeholders throughout the county, assisting them in collaborating in information sharing, project and operational initiatives, and securing future funding. The TTSP is divided into four functional areas, reflecting different elements of transportation systems, including transit management, arterial management, freeway management, and smart mobility.

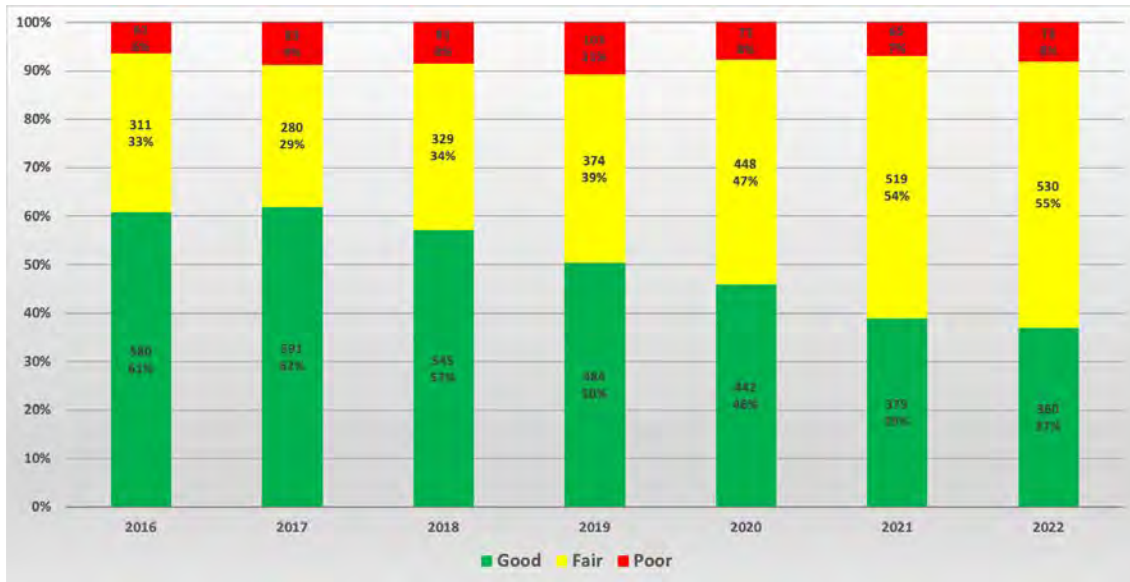
In November 2010, Santa Clara County voters approved a \$10 Vehicle Registration Fee (VRF) to be used only to pay for projects and programs bearing a relationship or benefit to the owners of motor vehicles paying fee, which must be consistent with the regional transportation plan. In FY 2021-2022, of the total VRF revenue of nearly \$16.4 million, approximately \$2.5 million was reserved for Countywide Program, that may be used for intelligent transportation systems or environmental mitigation projects. The scope of work for ITS projects includes upgrades to the traffic signal equipment along the project limits to improve multimodal operations, including updating traffic signal coordination plans.

In November 2022, aiming to improve travel time reliability and alleviate traffic congestion throughout the day, Caltrans District 4 (Bay Area) and its partners Metropolitan Transportation Commission (MTC), Santa Clara Valley Transportation Authority (VTA), Alameda County Transportation Commission (Alameda CTC) and cities along the Interstate 880 (I-880) corridor in Alameda and Santa Clara counties upgraded the existing ramp metering system to an adaptive ramp metering system, which adjusts green and red lights timings based on the congestion on the freeway.



HIGHLIGHTS OF OTHER TRANSPORTATION SYSTEMS

Bridges/Overcrossings



Roadside Assets

Indicators	Previous Period	Current Period	Trend (Yearly)
Traffic Signal Equipment (percentage of Assets in useful condition)	77% (2021)	75% (2022)	
Pavement Markings (percentage of Assets in useful condition)	68% (2021)	66% (2022)	
Traffic Signs (percentage of Assets in useful condition)	75% (2021)	71% (2022)	
Roadside Litter and Graffiti Management (percent of roadside with virtually no or some litter and graffiti)	85% (2021)	79% (2022)	

Highlights of Other Transportation Systems

Transit																																	
Indicators	Previous Period	Current Period	Trend (Yearly)																														
Light Rail Annual Ridership (in Millions)	3.16 (2020)	1.8 (2021)	<table border="1"> <caption>Light Rail Annual Ridership (in Millions)</caption> <thead> <tr> <th>Year</th> <th>Ridership (Millions)</th> </tr> </thead> <tbody> <tr><td>2008</td><td>11.0</td></tr> <tr><td>2009</td><td>10.5</td></tr> <tr><td>2010</td><td>10.0</td></tr> <tr><td>2011</td><td>10.5</td></tr> <tr><td>2012</td><td>10.8</td></tr> <tr><td>2013</td><td>11.0</td></tr> <tr><td>2014</td><td>11.5</td></tr> <tr><td>2015</td><td>11.0</td></tr> <tr><td>2016</td><td>10.0</td></tr> <tr><td>2017</td><td>9.0</td></tr> <tr><td>2018</td><td>8.8</td></tr> <tr><td>2019</td><td>8.5</td></tr> <tr><td>2020</td><td>3.5</td></tr> <tr><td>2021</td><td>1.8</td></tr> </tbody> </table>	Year	Ridership (Millions)	2008	11.0	2009	10.5	2010	10.0	2011	10.5	2012	10.8	2013	11.0	2014	11.5	2015	11.0	2016	10.0	2017	9.0	2018	8.8	2019	8.5	2020	3.5	2021	1.8
Year	Ridership (Millions)																																
2008	11.0																																
2009	10.5																																
2010	10.0																																
2011	10.5																																
2012	10.8																																
2013	11.0																																
2014	11.5																																
2015	11.0																																
2016	10.0																																
2017	9.0																																
2018	8.8																																
2019	8.5																																
2020	3.5																																
2021	1.8																																
Bus Annual Ridership (in Millions)	12.54 (2020)	12.3 (2021)	<table border="1"> <caption>Bus Annual Ridership (in Millions)</caption> <thead> <tr> <th>Year</th> <th>Ridership (Millions)</th> </tr> </thead> <tbody> <tr><td>2008</td><td>35.0</td></tr> <tr><td>2009</td><td>33.0</td></tr> <tr><td>2010</td><td>31.5</td></tr> <tr><td>2011</td><td>32.0</td></tr> <tr><td>2012</td><td>32.5</td></tr> <tr><td>2013</td><td>32.5</td></tr> <tr><td>2014</td><td>32.5</td></tr> <tr><td>2015</td><td>33.0</td></tr> <tr><td>2016</td><td>30.5</td></tr> <tr><td>2017</td><td>28.5</td></tr> <tr><td>2018</td><td>27.5</td></tr> <tr><td>2019</td><td>27.0</td></tr> <tr><td>2020</td><td>12.5</td></tr> <tr><td>2021</td><td>12.3</td></tr> </tbody> </table>	Year	Ridership (Millions)	2008	35.0	2009	33.0	2010	31.5	2011	32.0	2012	32.5	2013	32.5	2014	32.5	2015	33.0	2016	30.5	2017	28.5	2018	27.5	2019	27.0	2020	12.5	2021	12.3
Year	Ridership (Millions)																																
2008	35.0																																
2009	33.0																																
2010	31.5																																
2011	32.0																																
2012	32.5																																
2013	32.5																																
2014	32.5																																
2015	33.0																																
2016	30.5																																
2017	28.5																																
2018	27.5																																
2019	27.0																																
2020	12.5																																
2021	12.3																																

Table 10 Inventory of Assets

ASSETS	QUANTITY	YEAR COLLECTED
Local Roadway Lane Miles Maintained (Total)	5,648 miles	2022
Local Roadway Lane Miles Repaired/Repaved (Total)	1,475 miles	2022
Miles Repaired/Repaved 2019	510 miles	2022
Miles Repaired/Repaved 2020	421 miles	2022
Miles Repaired/Repaved 2021	532 miles	2022
Bus		
Fleet Age (avg.)	10.76 Years	2022
Fleet Size	445	2022
Route Mileage	1,265 mi	2022
Routes	56	2022
Stops	3,294	2022
Light Rail		
Fleet Size	98	2022
Miles of Track	81.6 Miles	2022
Route Mileage	42.2 Miles	2022
Stations	59	2022
Highway – Ramp Meter Signals	265 Operational 12 Non-operational 62 Planned 26 Part construction	2021
Traffic Signal Controllers	1,941 Local 145 State	2022
Traffic Signs	217,920	2022

ACRONYM & GLOSSARY

Acronym

AAH: Adopt-A-Highway
Caltrans: California Department of Transportation
CAV: Connected and Autonomous Vehicle
CHP: California Highway Patrol
CLRSP: Countywide Local Roads Safety Plan
DUI: Driving Under the Influence
RW: Right-Of-Way
HMA: Hot Mix Asphalt
HSIP: Highway Safety Improvement Program
ITS: Intelligent Transportation Systems
LRSP: Local Road Safety Plan
MTC: Metropolitan Transportation Commission
PCF: Primary Collision Factor
PCI: Pavement Condition Index
SY: Square Yard
TSMP: Transportation Systems Monitoring Program
TSP: Transit Signal Priority
TTSP: Transportation Technology Strategic Plan
VRF: Vehicle Registration Fee
VTA: Santa Clara Valley Transportation Authority
ZLI: Zero Litter Initiative

Glossary

- **Average Weekday Boarding:** The average number of persons who board the transit system on a day that normal weekday revenue service is provided.
- **Complete Street:** Streets that are designed to enable safe access and support mobility for all users, such as pedestrians, motorists, and bicyclists.
- **Deadhead:** Time during movement of a transit vehicle without passengers aboard, typically from the operating division to the start of the route.
- **Passengers per Revenue Hour:** This is a productivity measure comparing the number of boardings to the number of revenue hours operated. It measures service utilization per unit of revenue service operated. The revenue hour is the time when a vehicle is available to the general public to carry passengers. This will include layover but exclude deadheads.
- **Total Boarding:** The total number of boarding riders using VTA directly operated bus service and light rail service. Riders are counted each time they board a bus or light rail vehicle.
- **Unlinked Passenger Trips:** The number of times passengers board public transportation vehicles. Passengers are counted each time they board vehicles no matter how many vehicles they use to travel from their origin to their destination and regardless of whether they pay a fare, use a pass or transfer, ride for free, or pay in some other way. A person riding only one vehicle from origin to destination takes ONE unlinked passenger trip; a person who transfers to a second vehicle takes TWO unlinked passenger trips; a person who transfers to a third vehicle takes THREE unlinked passenger trips. Also called boardings.
- **Vision Zero:** A strategy aiming to eliminate all traffic fatalities and injuries.

Street Pavement

Local Streets Pavement Condition Index (PCI) maps were downloaded from the Metropolitan Transportation Commission's (MTC) Vital Signs website: [Street Pavement Condition | Vital Signs \(ca.gov\)](https://www.mtc.ca.gov/vital-signs). Additional PCI data were obtained from MTC staff.

2021 California Statewide Local Streets and Roads Needs Assessment Final Report, August 2021- [Statewide-2020-Local-Streets-and-Roads-Needs-Assessment-Final-Report-August-2021.pdf](https://www.savecaliforniastreet.org/2021-2022-local-streets-and-roads-needs-assessment-final-report-august-2021.pdf) ([savecaliforniastreet.org](https://www.savecaliforniastreet.org)).

VTA 2010 \$10 Vehicle Registration Fee webpage: [2010 \\$10 Vehicle Registration Fee | VTA](https://www.vta.org/2010-10-vehicle-registration-fee). This webpage includes an expenditure plan which provides details on project eligibility and how the funds are to be distributed by individual Member Agencies. To present the change more accurately in pavement conditions, the report has moved away from 3-year rolling PCI average to showing annual PCI scores. It should be noted here that PCI is based on human observations and interpretations; therefore, the minor differences in PCI scores between years could reflect similar conditions. The intent of reporting PCIs on an annual basis is to monitor the trending conditions over time.

Highway Litter, Illegal Encampments, and Graffiti Maintenance

The 2022 TSMP Litter, Illegal Encampments, and Graffiti Maintenance section focuses on quantitative data, representing the volume of litter and square footage of graffiti removed. The data was provided by Caltrans highway maintenance staff who record the amount of litter collected, square footage of graffiti removed, number of homeless encampments cleaned, etc. The trend line was generated based on the available data that dated back to 2015. This information was also used to generate heat maps to visually show the amount and locations of these occurrences, and changes over time.

Adopt-A-Highway – Information used to generate estimates for the table on the status of adoptable highway segments was downloaded from Caltrans District 4 Adopt-A-Highway website: [District 4 Adopt-a-Highway | Caltrans](https://www.caltrans.ca.gov/district-4-adopt-a-highway).

Keep Santa Clara Valley Beautiful – Information about the status of the cleanup events was obtained from the project website: <https://www.kscvb.com/>.

Roadway Safety

The Countywide Crossroads Collision Database, maintained by Santa Clara County's Roads and Airports Department was used to generate the collision data for this section. The data includes reports from the Statewide Integrated Traffic Records System and local agency police departments. The collision maps were generated using Esri ArcGIS Pro software.

COVID-19 Impact

The information in this section was compiled from both external and internal sources. Apple Maps@ Mobility Trends Report website [COVID 19 - Mobility Trends Reports - Apple](https://www.apple.com/mobility-trends/) was used to generate the January 2020 – April 2022 multimode use trend map and VTA's Congestion Tracker Tool was used to generate the congestion maps. It should be noted that, as of April 14, 2022, Apple is no longer providing the mobility trend data. Additional information on local agency responses to the pandemic was provided by VTA's member agencies. Information about the transit ridership data was obtained from VTA's Transit Operations Performance Report, FY2022 and the National Transit Database (NTD) website: [Monthly Module Raw Data Release | FTA \(dot.gov\)](https://www.fta.dot.gov/monthly-module/raw-data-release)

Intelligent Transportation Systems

Information about the status of the traffic signals in Santa Clara County was obtained from VTA's ITS group and member agencies local jurisdictions. Additional data for the status and location of alternative fuels charging stations were downloaded from US Department of Energy's website: https://afdc.energy.gov/fuels/electricity_locations.html#/find/nearest?fuel=ELEC.

Highlights of Other Transportation Systems

Bridges

The conditions of Santa Clara County bridges and overcrossings were retrieved from the Federal Highway Administration National Bridge Inventory (NBI) website at [National Bridge Inventory - Management and Preservation - Bridges & Structures - Federal Highway Administration \(dot.gov\)](https://www.fhwa.dot.gov/bridge/nbi/). The raw data was aggregated and summarized by “good”, “fair”, and “poor” condition indicators.

Roadside Assets

The data was obtained from responses to the 2022 Roadside Assets Condition Self-Assessment Surveys completed by VTA’s member agency local jurisdictions.

Transit

Statistics on transit ridership were obtained from American Public Transportation Association (APTA) Fourth Quarter 2021 Report for Santa Clara Valley Transportation Authority: <https://www.apta.com/wp-content/uploads/2021-Q4-Ridership-APTA.pdf>

Inventory of Assets

Roadway Lane Miles Maintained and Repaired/Repaved

The data was obtained from responses to the 2022 Roadside Assets Condition Self-Assessment Surveys completed by VTA’s member agency local jurisdictions.

Bus

The data for VTA’s bus fleet was obtained from an internal document, “VTA Facts, Current Bus System Data, 2022” produced by VTA’s Transit Operations Analysis and Reporting Department. Bus fleet includes all the following bus types: 30 foot (38), 40 ft hybrid (174), 40 ft standard (108), artic 60 foot (75), express (40), and electric (10). Bus route mileage is reported as the total round trip. Additional information on VTA’s transit fleets can be found on VTA’s Homepage: <https://www.vta.org>

Light Rail

The data for VTA’s light rail fleet was obtained from an internal document, “VTA Facts, Current Bus System Data, 2022” produced by VTA’s Transit Operations Analysis and Reporting Department. In addition to the fleet of 98 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). Additional information on VTA’s transit fleets can be found on VTA’s Homepage: <https://www.vta.org>

Highway – Ramp Meter Signals

Data provided by Caltrans District 4 Office of Traffic Systems staff.

Traffic Signal Controllers

Data provided by Caltrans District 4 Office of Traffic Systems staff, VTA’s ITS group, and member agencies local jurisdictions.

Traffic Signs

The data was obtained from responses to the 2022 Roadside Assets Condition Self-Assessment Surveys completed by VTA’s member agency local jurisdictions.

ACKNOWLEDGEMENTS

Participating Agencies

California Department of Transportation
(Caltrans District 4)*

City of Campbell

City of Cupertino

City of Gilroy

City of Los Altos

City of Milpitas

City of Monte Sereno

City of Morgan Hill

City of Mountain View

City of Palo Alto

City of San Jose

City of Santa Clara

City of Saratoga

City of Sunnyvale

County of Santa Clara Roads & Airports

Metropolitan Transportation Commission
(StreetSaver Program) *

Town of Los Altos Hills

Town of Los Gatos

* A special acknowledgement to Caltrans staff Earl Sherman III, Maintenance Manager, and Nick Saleh, District Division Chief, for their cooperation and support for the litter, landscape, and graffiti maintenance and monitoring efforts in Santa Clara County, and Sui Tan, MTC StreetSaver Program Manager, and Aksel K. Olsen, MTC Principal Regional Analyst, for sharing data on the Bay Area region and local pavement conditions.

Project Staff

Kia Sharifi (Mott MacDonald, Consultant)
Transportation Engineer, Deputy Project Manager

Eugene Maeda
Senior Transportation Planner, Project Manager

Murali Ramanujam
Toll Systems Manager

Deborah Dagang
Director of Planning and Programming

Joan Ho
Graphic Designer



Solutions that move you