Sunnyvale VISION ZERO

Approved by City Council
July 30, 2019

Sunnyvale

Photographs provided by the City of Sunnyvale and Fehr & Peers

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ACKNOWLEDGEMENTS

Developing Sunnyvale's Vision Zero Plan has been a collaborative effort. It would not be as robust or reflective of community needs without the participation of a wide range of stakeholders. Thank you to the more than 400 community members who participated in the online survey and in-person workshops. Your input was invaluable in creating a successful Sunnyvale Vision Zero Plan. Thank you to the elected officials, Sunnyvale staff, Sunnyvale Bicycle and Pedestrian Advisory Commission, Santa Clara Valley Transportation Authority, and other Santa Clara County agencies and school districts that provided input during this process. Your feedback helped align this plan with local priorities, policies and existing programs.

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Glenn Hendricks, Councilmember
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Gustav Larsson, Councilmember
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Mason Fong, Councilmember
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Key Stakeholders
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Santa Clara County of Public Health
Santa Clara Valley Transportation Authority
Santa Clara Unified School District
Sunnyvale School District

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Note: Throughout this plan, reference to the "City" refers to the Sunnyvale government.

LETTER FROM THE CITY

To the Sunnyvale community,

Sunnyvale's Vision Zero Plan is a critical step towards eliminating citywide traffic fatalities and serious injuries. With this plan, we articulate a goal to reduce fatalities and serious injuries by 50 percent by 2029 and to continue improving traffic safety towards zero fatal and serious injury collisions in the ten years that follow. We see traffic collisions as preventable incidents that can be addressed, rather than accidents that cannot be avoided. We are willing to make some challenging decisions when traffic safety is at stake, and we are committed to monitoring our progress and continually adapting new ideas and lessons learned in support of Vision Zero.

As the region's innovative local economy continues to thrive, addressing traffic safety in Sunnyvale becomes even more important to ensure that all road users – pedestrians, bicyclists, transit users, drivers, and those with mobility impairments – can travel with safety, comfort, and ease, no matter their destination. Whether you are a resident of Sunnyvale, an employee working in Sunnyvale, a visitor making Sunnyvale your destination, or simply passing through, we are dedicated to providing you a safe multi-modal transportation network.

The City's approach to reaching Vision Zero is quantitative, collaborative and inclusive. The commitments outlined in this plan – and the priority projects the City will implement to achieve them – help to better connect and strengthen our community. Vision Zero builds on Sunnyvale's years of investment in transportation safety. Since 2012, Sunnyvale's collision rate has declined by 30 percent, and Sunnyvale now has fewer collisions than 80 percent of cities of comparable size in California. The City's commitment to this plan will further distinguish Sunnyvale as one of the safest in its class.

Thanks to the City Council's leadership, our community's participation in the planning process and the hard work of City staff, we have a Vision Zero Plan that will make our community safer well into the future.

Sincerely,

Kent Steffens, City Manager

TABLE OF CONTENTS


32 SHOPPING CTR

A CALL TO ACTION TO MAKE SUNNYVALE'S STREETS SAFER

From 2012 through 2017, 25 people lost their lives when traveling on Sunnyvale's streets. They include individuals from all neighborhoods within Sunnyvale, and they cross geographic and demographic boundaries. These deaths resulted in tragic personal loss for family and friends and significantly impacted the Sunnyvale community.

Over half of the traffic related deaths involved people walking or bicycling. People walking and bicycling in Sunnyvale are disproportionately impacted in traffic collisions. Twelve percent of all trips in Sunnyvale are made on foot, but over 35 percent of collisions resulting in a fatality or serious injury involve a pedestrian. Two percent of all trips in Sunnyvale are made by bicycle[1], but almost 20 percent of collisions resulting in a fatality or serious injury involve a bicyclist.

The annual number of collisions in Sunnyvale decreased by over 30 percent between 2012 and 2017, but collisions that involved a fatality or serious injury decreased by only 10 percent over that time period. The City's transportation planning efforts have made progress, but more still needs to be done to address safety in Sunnyvale.

In January 2016, the Sunnyvale City Council and Bicycle and Pedestrian Advisory Commission (BPAC) recognized the need for continued safety investment and committed to support Vision Zero through a Study Issue. The stated goal of the Study Issue was to develop a Sunnyvale Vision Zero Plan that "strives for the total elimination of traffic fatalities for all transportation modes." The City Council approved funding for the Plan in 2017.

Bicyclists and pedestrians involved in traffic collisions in Sunnyvale are **13 times** more likely to be killed or seriously injured than drivers involved in collisions.

[1] 2012 California Household Travel Survey. Daily Mode Share, City of Sunnyvale (All Trip Purposes).

ABOUT VISION ZERO

What is Vision Zero?

Vision Zero sets an ambitious long-term goal to eliminate traffic fatalities and serious injuries, starting with an immediate commitment to reduce fatalities and serious injuries in the near term. Vision Zero programs are a departure from the status quo in several major ways:

1. Vision Zero takes a "safety first" approach, prioritizing traffic safety over other transportation considerations.
2. Vision Zero acknowledges that traffic deaths and serious injuries are preventable.
3. Vision Zero is a multidisciplinary approach that brings together a diverse set of stakeholders to address the complex problem of traffic safety.

Vision Zero began in Sweden in 1997, when the country adopted a national transportation policy that "the long-term goal of traffic safety is that nobody shall be killed or seriously injured as a consequence of traffic accidents."[2] Since 2014, Vision Zero has been building momentum in the United States. Starting with New York City, Vision Zero policies have spread across American cities, adopted in both large cities like Chicago, Seattle, San Francisco and Los Angeles, as well as smaller jurisdictions like Boulder, Colorado; Durham, North Carolina; and Somerville, Massachusetts. As of January 2018, 35 U.S. cities have committed to Vision Zero in a meaningful way, according to the national Vision Zero Network - a nonprofit organization working to define and advance Vision Zero in communities across the U.S. Sunnyvale is joining a global movement with a strong national network to help cities share best practices to improve roadway safety.

Early results are promising. In New York City, 2017 had the fewest traffic fatalities on record, marking the fourth consecutive year of declining traffic deaths under New York City's Vision Zero program. Closer to home, Fremont, California has seen a 25 percent reduction in major traffic collisions in the first two years since adopting its Vision Zero Plan.[3] While progress has been made, cities recognize the road to zero will be long. Sweden's initial goal was to eliminate fatalities by 2020; the country has since adjusted their reduction target to 50 percent by 2020 and to zero deaths by 2050.

[2] Rosencrantz, H., Edvardsson, K., & Hansson, S. O. (2007). Vision zero–Is it irrational? Transportation research part A: Policy and practice, 41(6), 559-567.

[3] Vision Zero Network. Vision Zero 101: Approach for Mid-Sized Cities webinar. Delivered by Hans Larsen, Public Works Director, Fremont, California. September 20, 2017.

Collisions, Not Accidents

The City of Sunnyvale commits to using the word "collision," not "accident." "Accident" implies that nothing could have been done to prevent an incident, while "collision" recognizes that these traffic incidents can be systemically addressed. In a 2014 letter to Federal Highway Administration staff, George L. Reagle, Associate Administrator for Motor Carriers at the U.S. Department of Transportation wrote:[4]

> Changing the way we think about events and the words we use to describe them affects the way we behave. Motor vehicle crashes occur "when a link or several links in the chain" are broken. Continued use of the word "accident" implies that these events are outside human influence or control. In reality, they are predictable results of specific actions…
>
> The Federal Highway Administration has joined the National Highway Traffic Safety Administration in declaring that the word "accident" will no longer be used in materials we publish, in speeches or other statements, or in communications with the media and others.

[4] Reagle, G.L. A Crash is Not an Accident. Federal Motor Carrier Safety Administration. March 4, 2014. https://www.fmcsa.dot.gov/newsroom/crash-not-accident

Incorporating the E's into Vision Zero

Effective multimodal planning has long been associated with the five E's: Engineering, Education, Enforcement, Encouragement, and Evaluation. In recent years, planners have begun to incorporate two additional E's: Engagement and Equity. Together, these seven concepts are the backbone of multimodal transportation planning, and they can be applied to the Vision Zero context.

Engineering: Implementing infrastructure changes that improve safety for drivers, bicyclists, and pedestrians.

Education: Giving people the skills, knowledge and confidence to travel safely.

Enforcement: Applying regulations that manage speed and roadway behavior.

Encouragement: Creating a safety culture where people feel comfortable using the travel mode of their choice.

Evaluation: Tracking progress in reducing fatalities and serious injuries.

Engagement: Working closely with the community when identifying safety concerns and developing solutions.

Equity: Ensuring that solutions serve everyone in the community, particularly low-income and minority populations.

VISION STATEMENT & GUIDING PRINCIPLES

The City of Sunnyvale Vision Zero Plan reflects the City's commitment to reducing traffic fatalities and serious injuries. It is a road map for action and a tool for measuring progress towards the City's safety goals.

Vision Statement

Sunnyvale Vision Zero is a community-driven and data-driven initiative to eliminate preventable traffic fatalities and serious injuries. In the coming years, Sunnyvale will aim to reduce collisions through improved transportation infrastructure and programming, achieving a **50 percent reduction in fatalities and serious injuries by 2029** and continued progress towards zero in the ten years that follow.

Guiding Principles

The following principles guide the actions of the Sunnyvale Vision Zero Plan:

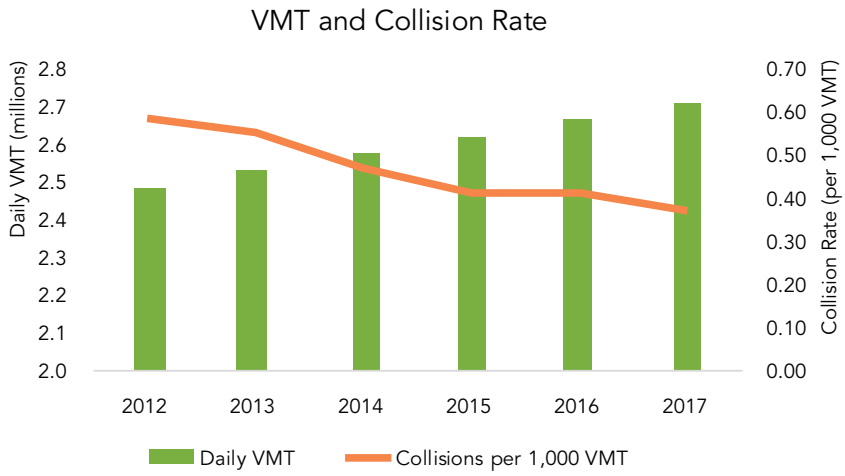
1. Traffic deaths are unacceptable and preventable.
2. Transportation options should be safe for all users, for all modes of transportation, in all communities, and for people of all ages and abilities.
3. Safety is a primary consideration in the development of transportation projects for all users.
4. Actions toward Vision Zero should embody a quantitative, collaborative, and equitable approach.
5. Human error is inevitable and unpredictable; the transportation system should be designed to anticipate error and minimize injury severity.
6. Speed is a fundamental predictor of collision severity survival. The transportation system should be designed for speeds that safely accommodate all modes of travel.
7. Ongoing evaluation should measure performance against the Sunnyvale Vision Zero Plan objectives.

BUILDING ON PRIOR INVESTMENTS IN SUNNYVALE

The City of Sunnyvale is already working to increase the availability of safe and comfortable multimodal transportation choices for all residents, helping meet citywide goals to reduce carbon emissions, improve public health through increased physical activity, and improve quality of life for everyone. The Sunnyvale Vision Zero Plan builds on the City's past and ongoing efforts to improve safety and multimodal access throughout the community.

The City of Sunnyvale 2035 General Plan Land Use and Transportation Element (LUTE) states that the City will "provide safe access to city streets for all modes of transportation. Safety considerations of all transport modes shall take priority over capacity considerations." With this pledge, the City recognizes its commitment to promote a healthy and safe environment through responsible stewardship of the transportation network. The adoption of Vision Zero makes the prioritization of safe travel for all modes a primary focus.

Between 2012 and 2017, Sunnyvale's daily vehicle miles traveled (VMT) increased by **9%**, while the total number of collisions decreased. As a result, the collision rate (collisions per 1,000 VMT) decreased by **37%** between 2012 and 2017.



Previous transportation investments have paid off; Sunnyvale has fewer collisions than 80 percent of cities of comparable size in California (120,000 to 160,000 population).[5] Sunnyvale's fatality crash rate of 2.8 annual traffic deaths per 100,000 population is substantially below the 9.2 rate for California and the 11.6 rate for the nation.[6] However, the City remains committed to eliminating fatal and serious injury collisions.

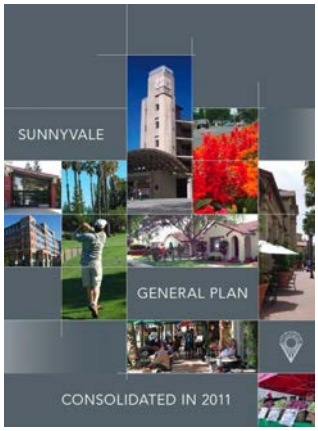
[5] California Office of Traffic Safety. 2015 OTS Rankings.

[6] Insurance Institute for Highway Safety, Highway Loss Data Institute. 2016 General statistics state by state.


PARK
W. Evelyn
YIELD
P

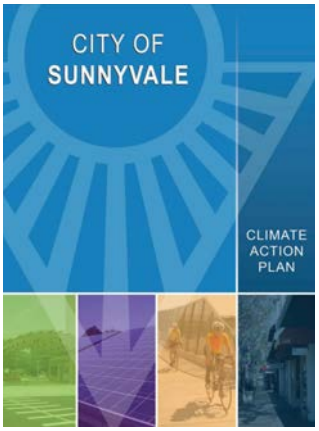
Plans and Policies

The Sunnyvale Vision Zero Plan builds on the City's progress towards improving street safety through a range of transportation plans, design guidelines, and area plans. These City resources complement safety efforts by the County and State, including the Santa Clara County Valley Transportation Plan 2040, grade separations plans, and Complete Streets program.

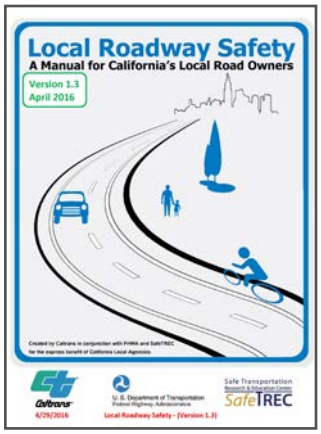


Sunnyvale General Plan - Land Use and Transportation Element: Updated in 2017, promotes safe streets and healthy living for all users. These policies support multimodal infrastructure improvements that address bicycle and pedestrian safety, convenience and connectivity. The General Plan's comprehensive, safety-oriented complete streets policy is further strengthened by a recently adopted City Council Resolution on complete streets.

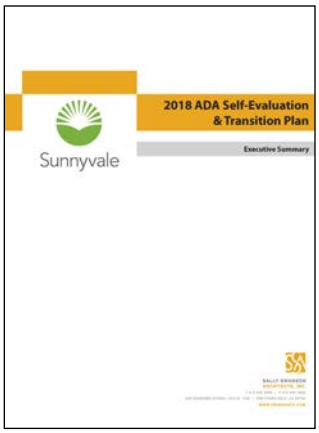
Sunnyvale Active Transportation Plan (ATP): Includes the Sunnyvale Bicycle Master Plan, Safe Routes to School Plan, and Pedestrian and Safety Circulation Plan. Is currently being developed and will be completed in 2020. The ATP will identify priority bicycle and pedestrian projects and improvements that contribute towards reducing collisions involving pedestrians and bicyclists throughout Sunnyvale.



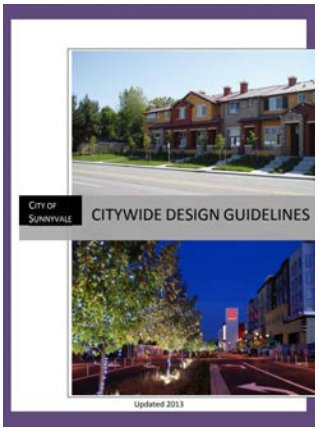
Sunnyvale Climate Action Plan 1.0 and Climate Action Playbook 2.0: Together include over 100 actions for reducing citywide greenhouse gas emissions, several of which relate to improving "sustainable circulation and transportation options." Specific actions cite improving the safety of bicyclists and pedestrians through roadway design and enforcement.



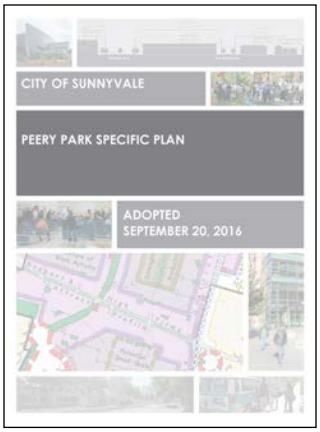
Systemic Safety Analysis Report Program (SSARP): Funded by California Department of Transportation (Caltrans), supports collision analysis, street safety issue initiation, and development of a list of systemic low-cost safety countermeasures that can be used in future statewide grant applications. Sunnyvale was awarded $250,000 in SSARP funds in 2017 to implement this program.



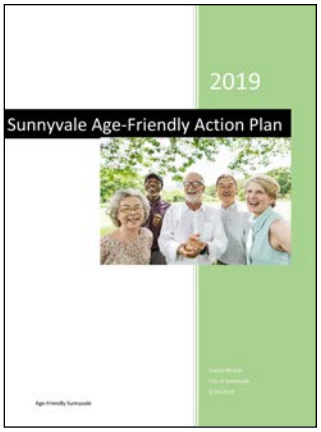
Sunnyvale Americans with Disabilities Act Self-Evaluation and Transition Plan (Draft): Focuses on ensuring access and usability for all persons with disabilities. It includes an ADA self-evaluation, a review of the City's ADA policies and practices, and a barrier assessment and remediation for public facilities.



Sunnyvale Design Guidelines: Including the citywide Design Guidelines, the Parking Structure Design Guidelines, and the Mixed-Use Development Toolkit, provide design guidelines for private developers to encourage safe site access, to create interesting and comfortable streetscapes, and to promote less dependence on cars.



Sunnyvale Specific, Precise, and Sense of Place Plans: Address multimodal transportation connectivity and safety through recommended streetscape improvements and intersection enhancements. Examples include the Fair Oaks Junction Sense of Place Plan, East Sunnyvale Sense of Place Plan, Downtown Specific Plan, Moffett Park Specific Plan, Peery Park Specific Plan, Lawrence Station Area Plan, and El Camino Real Corridor Specific Plan.



Sunnyvale Age-Friendly Action Plan (Draft): An "age-friendly city" optimizes opportunities for health, participation and security for all people, to ensure quality of life and dignity as people age. In September 2017, the City of Sunnyvale was formally designated an Age-Friendly City by the World Health Organization and American Association of Retired Persons. As part of the commitment to the Age-Friendly network, the City is developing an action plan that encompasses the City's values and vision and provides for sustainable growth. The plan is expected to be adopted in fall 2019.

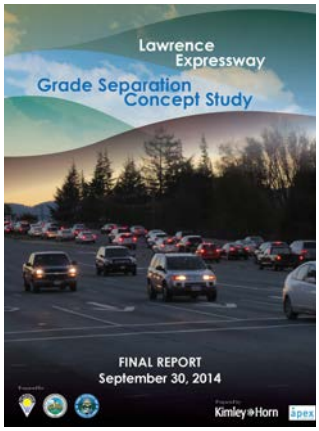
Infrastructure Changes

The Sunnyvale Vision Zero Plan builds on the City's progress towards improving street safety through past and ongoing infrastructure projects.

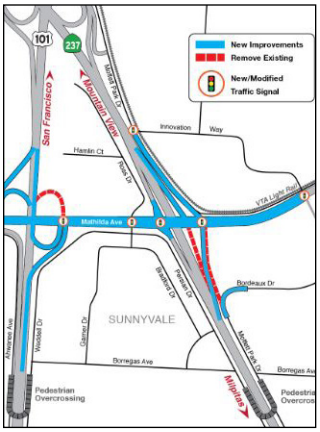
Fair Oaks Bridge: For more than four years, the City has been working with the community and Caltrans towards rehabilitating the Fair Oaks Avenue Bridge. Located between Kifer Road and Evelyn Avenue, the bridge crosses over the Caltrain tracks and Hendy Avenue. Once complete, this safety enhancement project will maintain the same number of automobile lanes, add a new separated sidewalk on the east side of the bridge, and widen the bridge's existing bicycle lanes.

Mary Avenue Overcrossing: The Mary Avenue Overcrossing project will relieve north-south traffic congestion, improve multimodal access between Moffett Park and other areas, and support smart growth in the Moffett Park area. The project would provide a multimodal connection from Mary and Almanor avenues, over US-101, SR-237 and Moffett Park Light Rail Station to 11th Avenue and Discovery Way (formerly E Street) in Moffett Park.

Bernardo Avenue Undercrossing: The Bernardo Avenue Undercrossing project is a joint effort between the City of Sunnyvale and the City of Mountain View to provide a key pedestrian and bicycle connection to employment centers and VTA Light Rail in the northern section of each jurisdiction. The undercrossing will provide pedestrian and bicycle access between North Bernardo Avenue and South Bernardo Avenue under the Caltrain Railroad and Central Expressway.



Lawrence Expressway Grade Separation Project: The purpose of the Lawrence Expressway Grade Separation Project is to identify potential improvements along the Lawrence Expressway at the intersections of Reed Avenue/ Monroe Street, Kifer Road, and Arques Avenue that will address existing and future traffic congestion in the study area. The proposed concepts (2014) have been evaluated based on safety benefits associated with eliminating conflict points at existing intersections and improved pedestrian and bicycle safety.



Mathilda Avenue Improvements: The project reconfigures the US 101 and SR 237 interchanges with Mathilda Avenue, including modification to on- and off-ramps; removal, addition, and signalization of intersections; and provision of new left-turn lanes. In addition, the project will modify bicycle and pedestrian facilities, street lighting, ramp metering, signage, and light rail crossing facilities.

Green Bike Lanes: Green bike lanes are being implemented at bicycle-vehicle conflict points across Sunnyvale. The treatment improves bicyclist visibility and reduces conflicts between bicyclists and vehicles.

Caltrain Grade Separations Feasibility Study: Caltrain Grade Separations at Mary and Sunnyvale Avenues will reduce existing congestion and queuing associated with crossing gate downtime, improve safety for all modes of travel, enhance pedestrian and bicycle access, and reduce noise. The project will identify a preferred alternative for each project location and complete a 15% design drawing.

GREEN INFRASTRUCTURE INITIATIVE

Sunnyvale is currently developing a citywide Green Infrastructure Plan. Green infrastructure includes trees, rain gardens, and infiltration planters that slow the course of runoff and filter it naturally before it reaches major waterways and sensitive plant and animal life. Vision Zero projects may provide an opportunity for green infrastructure improvements. For example, curb extensions or bulb outs may be constructed with planters for trees and other vegetation.

BUILDING BLOCKS OF VISION ZERO IN SUNNYVALE

The City of Sunnyvale sets a framework for Vision Zero efforts using two primary sources: **community feedback** and **collision records**. Public comments received through meetings, workshops, online surveys and walking tours, combined with a review of historic collisions within Sunnyvale, enabled the development of a robust set of recommendations that address safety concerns.

MAY 2017	JUN 2017 - AUG 2017	SEP 2017 - DEC 2017	JAN 2018 - MAY 2018	JUN 2018 - DEC 2018
Project Initiation	Existing Conditions Assessment	Priority Project Development	Implementation Strategy	Vision Zero Plan
		Public Workshop	Public Workshop	Walking Tour
		Stakeholder Focus Group	BPAC Presentation	
		BPAC Presentation		

Community Engagement

The City led a robust engagement effort to obtain input from community members on their perceptions of traffic safety in the City of Sunnyvale. All community members were invited to participate, and the community responded overwhelmingly with over 3,000 comments identifying safety concerns at specific locations and preferred safety countermeasures. The input from the community helped verify the results of the safety analysis and identify additional safety concerns not identified through the collision data. Community engagement efforts to develop the Sunnyvale Vision Zero Plan included:

Community Workshops: Community members participated in two workshops where they shared feedback on their current traffic safety concerns and their preferred approaches to improving the safety of Sunnyvale's roadways.

Online Surveys: Community members contributed to two online surveys. In the first online survey, they indicated how they travel within Sunnyvale and highlighted their safety concerns; in the second online survey, they identified their preferred safety improvements at the 10 priority project locations.

Webmap: Community members identified their location-specific safety concerns on the project webmap, sharing what feels unsafe about the locations and their ideas for improvements.

Walking Tours: Community members toured three priority project locations and provided feedback on the proposed street designs.

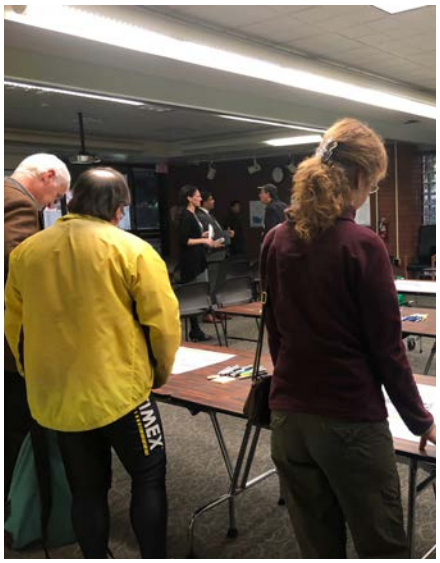
Bicycle and Pedestrian Advisory Commission (BPAC): Members of the Sunnyvale BPAC shared their feedback on the planning process during two public commission meetings.

Vision Zero Focus Group: An interdisciplinary focus group provided comments on the Sunnyvale Vision Zero planning process during one meeting. The group included the Sunnyvale Planning Department and Department of Public Safety, Santa Clara County of Public Health, Santa Clara Valley Transportation Authority, Sunnyvale School District, and the Cupertino Union and Santa Clara Unified School Districts.

"A neighborhood parallel bike path or a dedicated bike lane in the parking spaces should be a focus as Fair Oaks is currently too dangerous for cyclists."
– Online survey comment related to Fair Oaks Avenue between Balsam Avenue and East Taylor Avenue

Bicycle infrastructure and pedestrian crossing enhancements were the most requested improvements during the April 2018 workshop.

"There are a large number of pedestrians that gather at Pastoria Avenue and [El Camino Real] at school commute times. They overflow [the] intersection. A bulb out would be helpful. Also, many people whip around this intersection making right turns and risk pedestrian safety… Protecting bike commuters through here is important for the same reasons." – Online survey comment related to El Camino Real between S. Mary Avenue and S. Mathilda Avenue



"Narrower lanes is the best way to slow down traffic and encourage drivers to pay better attention. Green and buffered bike lanes will remind drivers to look out for bikes and pedestrians and not just automobiles. Green bike lanes in conflict zones or separated bike ways may make it easier to merge into turn lanes for bikers." – Online survey comment related to Fremont Avenue between Sunnyvale-Saratoga Road and Floyd Avenue

COMMUNITY ENGAGEMENT APPROACH

Phase 1 - Fall 2017

Workshop	Webmap	Online Survey	BPAC Meeting	Focus Group
160 Comments	**1,542** Comments	**385** Participants	City Stakeholders and Community	City and County Stakeholders

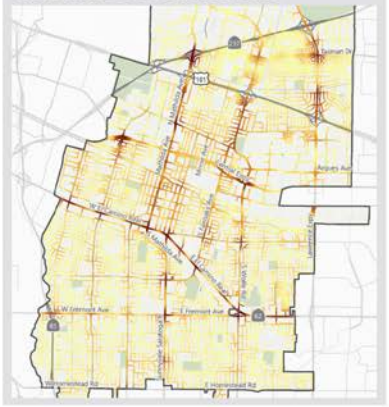
How and where you travel

Your travel safety concerns

Where the City can help make your trip safer

How the City can help make your trip safer

EXISTING CONDITIONS



COLLISION PROFILES

PRIORITY PROJECTS

SAFETY COUNTERMEASURES

58% of survey respondents **walk for transportation purposes** at least once a week

66% of survey respondents said **safety affects the mode of transportation** they choose for travel

82% of survey respondents report that **driving is their primary mode of transportation**

Phase 2 - Spring 2018

Workshop

153 Comments

Online Survey

75 Participants

BPAC Meeting

City Stakeholders and Community

Phase 3 - Fall 2018

Walking Tours

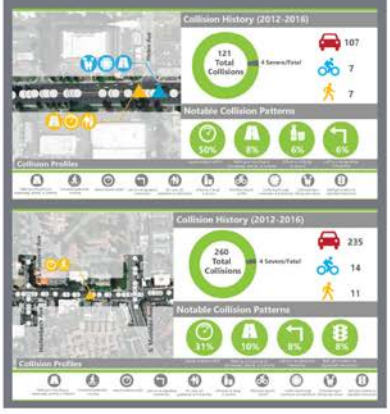
3 Priority Project Locations

How the City can improve identified Priority Project locations

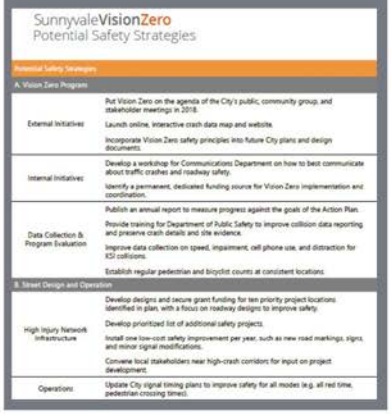
Policies and programs you recommend for safer streets

Street designs that meets your needs

PRIORITY PROJECTS



ACTION PLAN


SunnyvaleVisionZero
Potential Safety Strategies

A. Vision Zero Program	
External Initiatives	Put Vision Zero on the agenda of the City's public, community group, and stakeholder meetings in 2018. Launch online, interactive crash data map and website. Incorporate Vision Zero safety principles into future City plans and design documents.
Internal Initiatives	Develop a workshop for Communications Department on how to best communicate about traffic crashes and roadway safety. Identify a permanent, dedicated funding source for Vision Zero implementation and coordination.
Data Collection & Program Evaluation	Publish an annual report to measure progress against the goals of the Action Plan. Provide training for Department of Public Safety to improve collision data reporting and preserve crash details and site evidence. Improve data collection on speed, impairment, cell phone use, and distraction for KSI collisions. Establish regular pedestrian and bicyclist counts at consistent locations.
B. Street Design and Operation	
High Injury Network Infrastructure	Develop designs and secure grant funding for ten priority project locations identified in plan, with a focus on roadway designs to improve safety. Develop prioritized list of additional safety projects. Install one low-cost safety improvement per year, such as new road markings, signs, and minor signal modifications. Convene local stakeholders near high-crash corridors for input on project development.
Operations	Update City signal timing plans to improve safety for all modes (e.g. all red time, pedestrian crossing times).

11% of webmap comments and **24%** of survey responses included **speeding concerns**

7% of webmap comments related to **red light violations**

Workshop and BPAC participants highlighted **pedestrian safety concerns along** El Camino Real

Workshop participants voted for their top three safety enhancements:

- **Adding sidewalk connectivity or sidewalk widening**
- **Adding bicycle lanes**
- **Adding left-turn traffic signals and signal coordination**

Data-Driven Process

The City investigated collision records on local roadways and expressways from the five most recent years available (2012 to 2016)[7] to describe historic collision trends and identify high-risk locations. This information acts as a primary resource for the Sunnyvale Vision Zero Plan, providing the underlying data to support key analyses. The data-driven process included:

Collision Trends: Review collision statistics to evaluate when, where, and why collisions occur and who is involved.

High Injury Network: Identify corridors with the highest concentrations of fatal and serious injury collisions.

Collision Profiles: Combine different collision factors to identify 10 prevalent collision types.

Countermeasure Toolbox: Based on national research, identify effective countermeasures and pair them with applicable collision profiles.

Priority Project Locations: Select 10 priority project locations based on collision density and community verification.

COLLISION TRENDS

A review of collision records helped the City understand the "who, what, when, where, and why" of traffic incidents, particularly for collisions resulting in fatalities or serious injuries. Throughout the Plan, the acronym KSI is used to denote collisions where someone was killed (K) or seriously injured (SI).

Sunnyvale saw **6,244** collisions between 2012 and 2016, including **91** KSI collisions

72% of pedestrian KSI collisions occurred at intersections

7% of all collisions and **4%** of KSI collisions occurred on expressways

11% of KSI collisions involved drivers under the influence of alcohol or drugs

60% of KSI collisions occurred on roadways with speed limits greater than **35** miles per hour

KSI collisions were most likely to occur in the late afternoon or early evening. **51%** of collisions occur between 3 PM and 9 PM.

Only **10%** of all collisions involved bicyclists or pedestrians, yet bicyclist and pedestrian collisions comprised **56%** of KSI collisions

[7] Source: Crossroads Collision Database Software.

National research shows that children, seniors, low-income communities and people of color face a disproportionate burden when it comes to traffic fatalities and serious injuries. The City incorporated demographic information into the collision analysis to understand how some of these patterns play out locally.

Of these demographic considerations, people in Sunnyvale 60 years or older are overrepresented in fatal and serious injury pedestrian collisions. They make up **20%** of Sunnyvale residents but comprise over **40%** of KSI pedestrian collisions.

A FOCUS ON FATALITIES AND SERIOUS INJURIES

Focusing on fatal and serious injury collisions in Vision Zero acknowledges the outsized impact of these events. Improvements that target fatal and serious injury collisions help produce the greatest benefits to fulfill the City's commitments on health and safety.

The consequences of a fatality or serious injury can be measured in monetary costs, including medical bills, and in intangible costs, including physical pain and emotional suffering. According to the Highway Safety Manual (2016), the combined monetary and intangible cost of a fatal collision is estimated to be $5.8 million for victims and their families, and the cost of a collision resulting in serious injury is estimated to be $300,000.[8] This means that, between 2012 and 2016, KSI collisions in Sunnyvale cost the community **$142.8 million**, or **$28.5 million** per year.

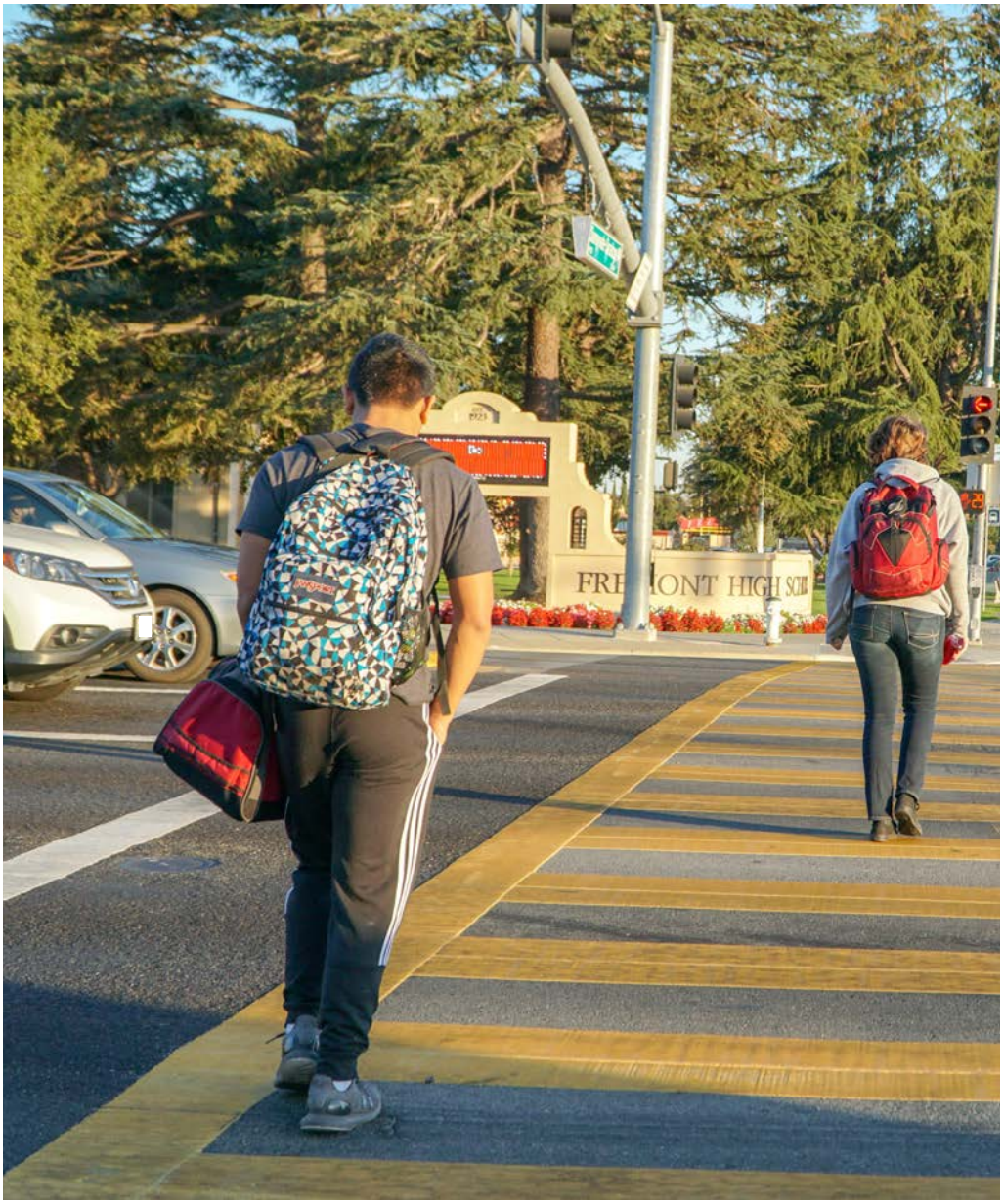
[8] Federal Highway Administration. 2018. Crash Costs for Highway Safety Analysis https://safety.fhwa.dot.gov/hsip/docs/fhwasa17071.pdf

High Injury Network (HIN)

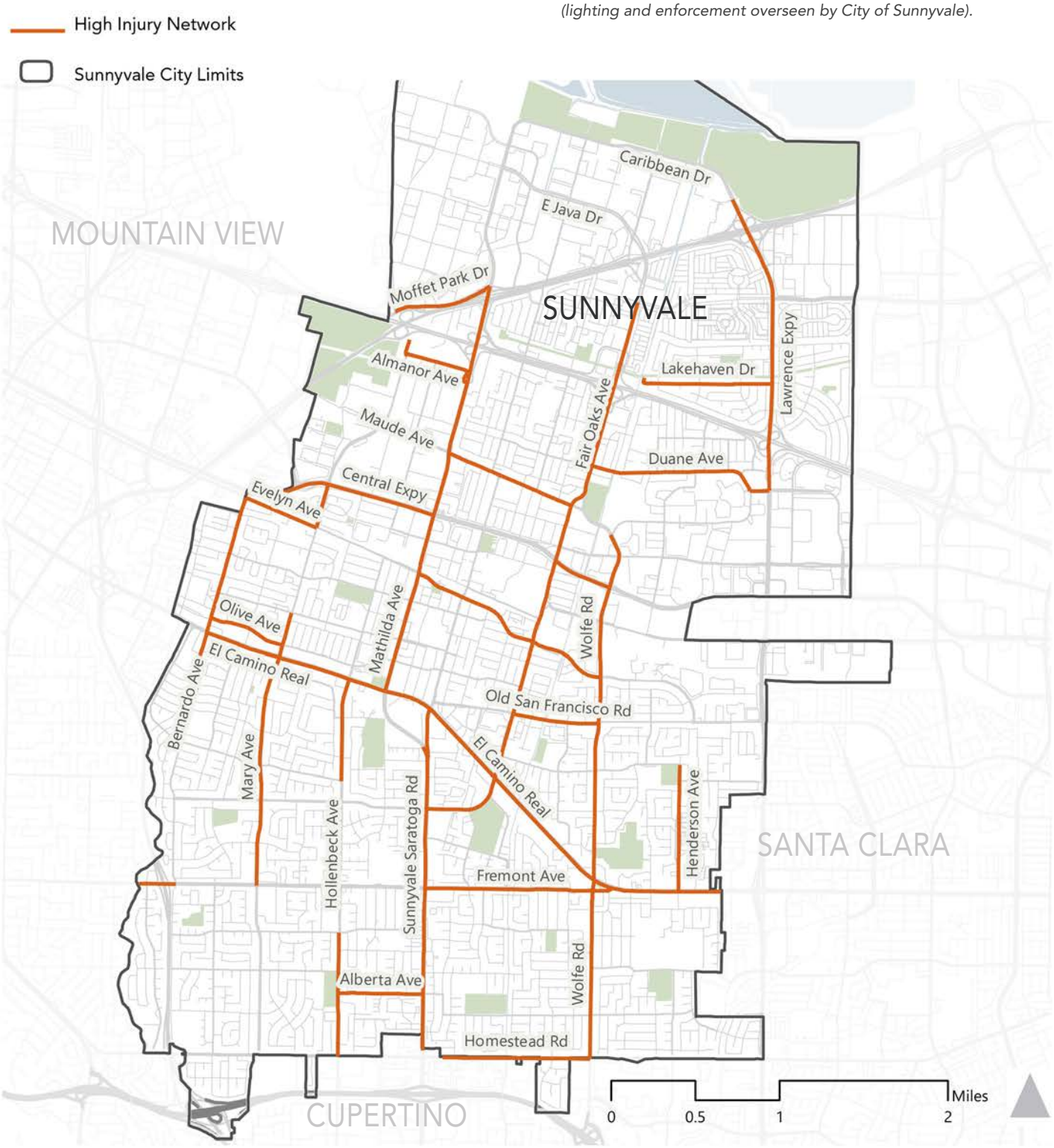
The High Injury Network (HIN) identifies the corridors with the highest levels of fatal and serious injury collisions for pedestrians, bicyclists and motorists. The majority of KSI collisions occurs on a small subset of Sunnyvale roadways. The HIN can help focus safety improvements on priority corridors where the most serious collisions happen with the highest frequency.

The High Injury Network accounts for **60%** of KSI collisions on just **7%** of Sunnyvale's roadway network.

20 of Sunnyvale's **27** public elementary, middle, and high schools fall within a quarter mile of the HIN.



Note: Central Expressway and Lawrence Expressway are managed by the County; El Camino Real is managed by Caltrans (lighting and enforcement overseen by City of Sunnyvale).



Source: City of Sunnyvale Crossroads Data, 2012-2016

HIGH INJURY NETWORK (HIN)


35

COUNTERMEASURE TOOLBOX AND COLLISION PROFILES

Countermeasure Toolbox

The City has developed a toolbox of key countermeasures that could be used to implement safety projects. These countermeasures encapsulate engineering, education and enforcement strategies. Each countermeasure is summarized based on its efficacy, cost, and complexity.

Efficacy indicates the countermeasure's ability to decrease serious and fatal collisions. High efficacy countermeasures have a measurable effect based on national research and provide overall safety benefits at the given location. Medium efficacy countermeasures may improve user experience and compliance, and they are often more effective at addressing specific crash types under specific conditions. Low efficacy countermeasures result in a possible improvement, though research on their impacts is not available yet.

Cost refers to the capital cost to implement the countermeasure. Complexity summarizes the time or level of effort to plan and design how the countermeasure would be implemented.

Where efficacy, cost or complexity varies significantly based on countermeasure installation type or roadway context, "Based on Context" has been indicated.

ROADWAY DESIGN

BULB OUTS AND CURB EXTENSIONS

Raised devices that reduce the corner radius or narrow the roadway to reduce speeds of turning vehicles, improve sight lines, and shorten crossing distances.

EFFICACY: ● ● ○

COST: ● ● ○

COMPLEXITY: ● ○ ○

LANE REDUCTION

Reduction in number of travel lanes, often paired with a center turn lane and/or bicycle lanes.

EFFICACY: ● ● ●

COST: ● ● ●

COMPLEXITY: ● ● ●

CONSOLIDATED DRIVEWAYS

Removal of redundant driveways where multiple driveways provide access to one property.

EFFICACY: ● ○ ○

COST: ● ● ○

COMPLEXITY: ● ● ●

SIDEWALK TO CLOSE GAPS

Construction of a new sidewalk that closes a gap between two existing sidewalks.

EFFICACY: ● ● ○

COST: ● ● ●

COMPLEXITY: ● ● ● **(BASED ON CONTEXT)**

ROADWAY AND INTERSECTION SAFETY LIGHTING

Roadway and intersection lighting to make other road users or hazards more visible to drivers at night, thereby improving driver perception and reaction time.

EFFICACY: ● ● ●

COST: ● ● ●

COMPLEXITY: ● ● ○

PEDESTRIAN CROSSINGS

HIGH VISIBILITY CROSSWALKS WITH ADVANCE STOP OR YIELD LINES

Distinct pavement markings, such as ladder or continental, stamped or colored concrete, or a reflective inlay or thermoplastic tape to increase visibility of pedestrians crossing.

EFFICACY: ● ● ●

COST: ● ○ ○

COMPLEXITY: ● ○ ○

MARKED CROSSING

New crosswalk at an unsignalized intersection where no marked crosswalk was previously striped, consistent with state guidance.

EFFICACY: ● ○ ○

COST: ● ○ ○

COMPLEXITY: ● ○ ○

PEDESTRIAN-ACTIVATED CROSSWALK WARNING BEACON

Pedestrian-activated flashing beacons that highlight crosswalks and pedestrian crossing signs.

EFFICACY: ● ● ○

COST: ● ● ○

COMPLEXITY: ● ○ ○

PEDESTRIAN HYBRID BEACON

Pedestrian-activated beacon that indicates to drivers that a pedestrian is in the crosswalk. An engineering study is used to determine whether installation of the beacon is warranted.

EFFICACY: ● ● ●

COST: ● ● ●

COMPLEXITY: ● ● ○

PEDESTRIAN REFUGE ISLAND AND MEDIAN

Curbed sections in the center of the roadway that are physically separated from vehicular traffic. Raised medians or refuge islands shorten crossing distances across large, multi-lane roadways.

EFFICACY: ● ● ●

COST: ● ● ○

COMPLEXITY: ● ○ ○

BIKEWAY DESIGN

BIKE INTERSECTION MARKINGS

Striping on intersection approaches that provide clear delineation between the paths of through bicyclists and through or right-turning vehicles in the adjacent lane.

EFFICACY: ● ● ○
COST: ● ○ ○
COMPLEXITY: ● ○ ○

BUFFERED BIKE LANE

Class II bike lane separated from vehicle lanes by a painted buffer, intended to reduce motor vehicle encroachment into the bike lane and increase bicyclist comfort and safety.

EFFICACY: ● ● ○
COST: ● ● ○
COMPLEXITY: ● ● ○

GREEN PAVEMENT

Green markings, created with paint, epoxy, thermoplastic, or colored asphalt, that designate bike lanes, cycle tracks, bike boxes, bicycle conflict zones or intersection crossings. Higher efficacy can be achieved when green pavement is used in combination with other treatments.

EFFICACY: ● ○ ○ **(BASED ON CONTEXT)**
COST: ● ● ○
COMPLEXITY: ● ○ ○

SHARED-USE TRAIL AND BICYCLE PATH

Off-street path, either for exclusive use by bicyclists or by bicyclists and pedestrians, usually with minimal street crossings, and designated by signs and/or pavement markings. These are considered Class I bikeways by Caltrans.

EFFICACY: ● ● ●
COST: ● ● ●
COMPLEXITY: ● ● ●

PROTECTED BIKEWAY

Exclusive bikeways that are located within or next to the roadway, but are separated from both the sidewalk and roadway by vertical barriers or elevation differences. These are considered Class IV bikeways by Caltrans.

EFFICACY: ● ● ● **(BASED ON CONTEXT)**
COST: ● ● ●
COMPLEXITY: ● ● ●

SIGNS, MARKINGS & OPERATION

MODIFIED INTERSECTION STOP-CONTROL

Modified stop-control at an intersection, such as new stop signs at an uncontrolled intersection or conversion of side-street stops to all-way stops, consistent with warrant guidance and design considerations.

EFFICACY: ● ● ●

COST: ● ● ○

(BASED ON CONTEXT)

COMPLEXITY: ● ● ○

(BASED ON CONTEXT)

PARKING RESTRICTION AT INTERSECTIONS

Parking spaces removed on near side of crossing locations to allow for improved sightlines for both pedestrians and motorists.

EFFICACY: ● ● ●

COST: ● ○ ○

COMPLEXITY: ● ○ ○

TURN RESTRICTION

Left or right turn restrictions to reduce conflicts between pedestrians and turning vehicles.

EFFICACY: ● ● ○

COST: ● ○ ○

COMPLEXITY: ● ○ ○

SIGNAL TIMING & PHASING

ADAPTIVE PEDESTRIAN SIGNAL SYSTEM

Sensors that automatically detect when pedestrians are present in a crossing and automatically increase crossing time when necessary.

EFFICACY: ● ● ○

COST: ● ● ○

COMPLEXITY: ● ● ○

LEADING PEDESTRIAN INTERVAL

Signals that allow pedestrians a short head start in crossing the intersection to minimize conflicts with turning vehicles.

EFFICACY: ● ● ○

COST: ● ○ ○

COMPLEXITY: ● ○ ○

PEDESTRIAN COUNTDOWN SIGNAL HEAD

Signal head that provides countdown to inform pedestrians about the length of time left to cross.

EFFICACY: ● ● ○

COST: ● ○ ○

COMPLEXITY: ● ○ ○

PROTECTED TURN

Signal phasing that includes an exclusive phase for left-turning vehicles to enter the intersection separate from any conflicting vehicle or pedestrian movements.

EFFICACY: ● ● ●

COST: ● ● ○

COMPLEXITY: ● ● ○

SIGNAL TIMING & PHASING (CONT.)

ADVANCED DILEMMA-ZONE DETECTION

Dynamic signal timing that adjusts the start time of the yellow phase either earlier or later, based on observed vehicle locations and speeds. The signal changes are typically used for high-speed approaches. They aim to minimize the number of drivers crossing the intersection during the yellow phase, successfully reducing the specific crash types of rear-end and angle crashes associated with traffic signal phase changes.

EFFICACY: ● ● ○

COST: ● ● ○

COMPLEXITY: ● ● ●

SIGNAL TIMING AND PHASING IMPROVEMENTS

Signal changes that address safety, such as longer walk intervals, signal coordination, signal timing optimized for bicyclist speeds, or longer all-red times to give pedestrians, bicyclists, and drivers more time to clear the intersection before drivers enter the intersection from a conflicting direction. The City of Sunnyvale currently updates its signal timing on a three-year cycle. Signal operation changes require adjustment to other intersections on signal coordinated roadways

EFFICACY: ● ● ●

COST: ● ● ●

COMPLEXITY: ● ● ●

SPEED CONTROL

VEHICLE SPEED FEEDBACK SIGN

Radar sign that displays the speed of an approaching vehicle in real-time on a changeable display. Speed feedback signs should be installed with a regulatory speed limit sign.

EFFICACY: ● ● ○

COST: ● ● ○

COMPLEXITY: ● ○ ○

REDUCED SPEED SCHOOL ZONE

Speed limit reductions to 15 or 20 mph, implemented as part of a speed reduction school zone. Reduced speed school zones are recommended based on state guidance.

EFFICACY: ● ● ○

COST: ● ○ ○

COMPLEXITY: ● ○ ○

SPEED HUMP, SPEED TABLE, AND RAISED CROSSWALK

Raised asphalt that spans the width of the roadway, varying in length depending on type. Speed tables are similar to speed humps but tend to be wider. Raised crosswalks are flat-topped speed tables, marked and signed as a pedestrian crossing.

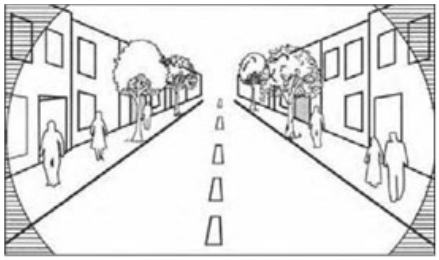
EFFICACY: ● ● ●

COST: ● ● ○

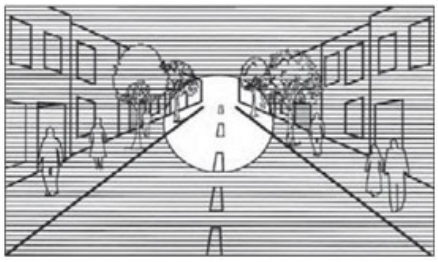
COMPLEXITY: ● ● ○

A major component of Vision Zero is the recognition of the relationship between speed and collision severity. In the City of Sunnyvale, unsafe speed (as recorded in the collision report) is a leading cause of collisions. By designing streets to better reflect the range of road users – bicyclists, pedestrians, buses, and personal vehicles – and through public education and targeted enforcement campaigns, the City can help reduce the speeds at which vehicles travel. The deployment of technologies like speed monitoring also can lower and manage speeds and reduce the likelihood and severity of collisions.

Unsafe speeds were a factor in **27.5%** of all collisions and **15.4%** of KSI collisions.



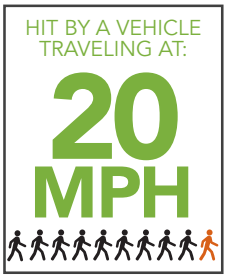
Field of vision at 15 MPH



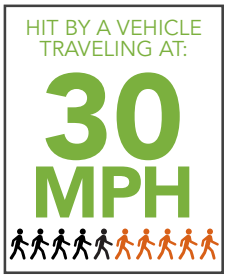
Field of vision at 30 to 40 MPH

Source: https://www.ite.org/technical-resources/topics/speed-management-for-safety/speed-as-a-safety-problem/

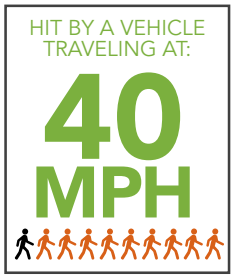
A driver's field of vision increases as speed decreases. At lower speeds, driver can see more of their surroundings and have more time to see and react to potential hazards.



9 out of 10 pedestrians survive



5 out of 10 pedestrians survive



Only 1 out of 10 pedestrians survives

Source: http://www.bikeleague.org/sites/default/files/speed.jpg

Speed is especially lethal for vulnerable users like pedestrians and people biking. The risk of injury and death increases as speed increases.

MISCELLANEOUS

EDUCATION

Public education campaigns, sometimes through public service announcements, that inform the public on roadway safety.

ENFORCEMENT

Number of officers in Department of Public Safety assigned to traffic enforcement determined based on guidance provided in the US Department of Transportation's National Highway Traffic Safety Administration Police Personnel Allocation Manual. Focus enforcement efforts on most risky behaviors and high-collision locations identified in the Sunnyvale Vision Zero Plan.

Collision Profiles

Ten collision profiles capture the top KSI collision patterns across Sunnyvale over the five most recent years of available data (2012 to 2016). The collision profiles cover collision characteristics, such as speeding vehicles or red light violations (as recorded in the collision report), as well as contextual factors including if the collision occurred on an expressway, at an intersection, or near a school. Individual collisions may fall under multiple profiles. For example, a collision may be both a speed-related conflict and involve a driver under the influence of drugs or alcohol.

The ten collision profiles are presented on the following pages with a description and relevant countermeasures. Each collision profile is paired with up to five safety countermeasures effective at addressing the collision type. Additional countermeasures may be effective at reducing collisions under a given profile, beyond the five highlighted here, and these are included in the technical appendix.

COLLISION PROFILE	% OF ALL KSI (# OF ALL KSI)	% OF AUTO KSI (# OF AUTO KSI)	% OF BICYCLE KSI (# OF BICYCLE KSI)	% OF PEDESTRIAN KSI (# OF PEDESTRIAN KSI)
1. Walking or bicycling on major roadway (expressway, arterial, or collector)	47% (43)		95% (18)	78% (25)
2. Unmarked pedestrian crossing	17% (15)			47% (15)
3. Speed-related conflict	15% (14)	15% (6)	21% (4)	13% (4)
4. Left turn at signalized intersection	12% (11)	10% (4)		23% (7)
5. 60+ year old pedestrians at intersection	12% (11)			34% (11)
6. Influence of drugs or alcohol	11% (10)	20% (8)	5% (1)	3% (1)
7. Midblock bicycle conflict	10% (9)		47% (9)	
8. Conflicting through movement at intersection	8% (7)	10% (4)	16% (3)	
9. Children walking or biking near school	8% (7)		21% (4)	9% (3)
10. Red light violation at signalized intersection	6% (5)	5% (2)	5% (1)	6% (2)

Note: Because an individual collision may be categorized under multiple profiles, the values in the table do not sum to 100%. Cells without a percentage KSI represent profiles where zero KSI collisions occurred for a given mode.

PROFILE 1

WALKING OR BICYCLING ON MAJOR ROADWAY (EXPRESSWAY, ARTERIAL, OR COLLECTOR)

FACTORS

» Pedestrian or bicycle collision

» Collision occurred on an expressway, arterial, or collector

STATS

43 KSI Collisions

» Accounts for **47%** of all KSI collisions

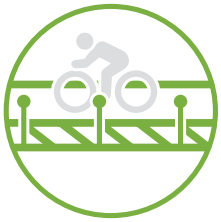
ADDITIONAL NOTES

» **14** of the **43** KSI profilecollisions **(33%)** occurred on **El Camino Real**

Key Countermeasures

Adaptive Pedestrian Signal System

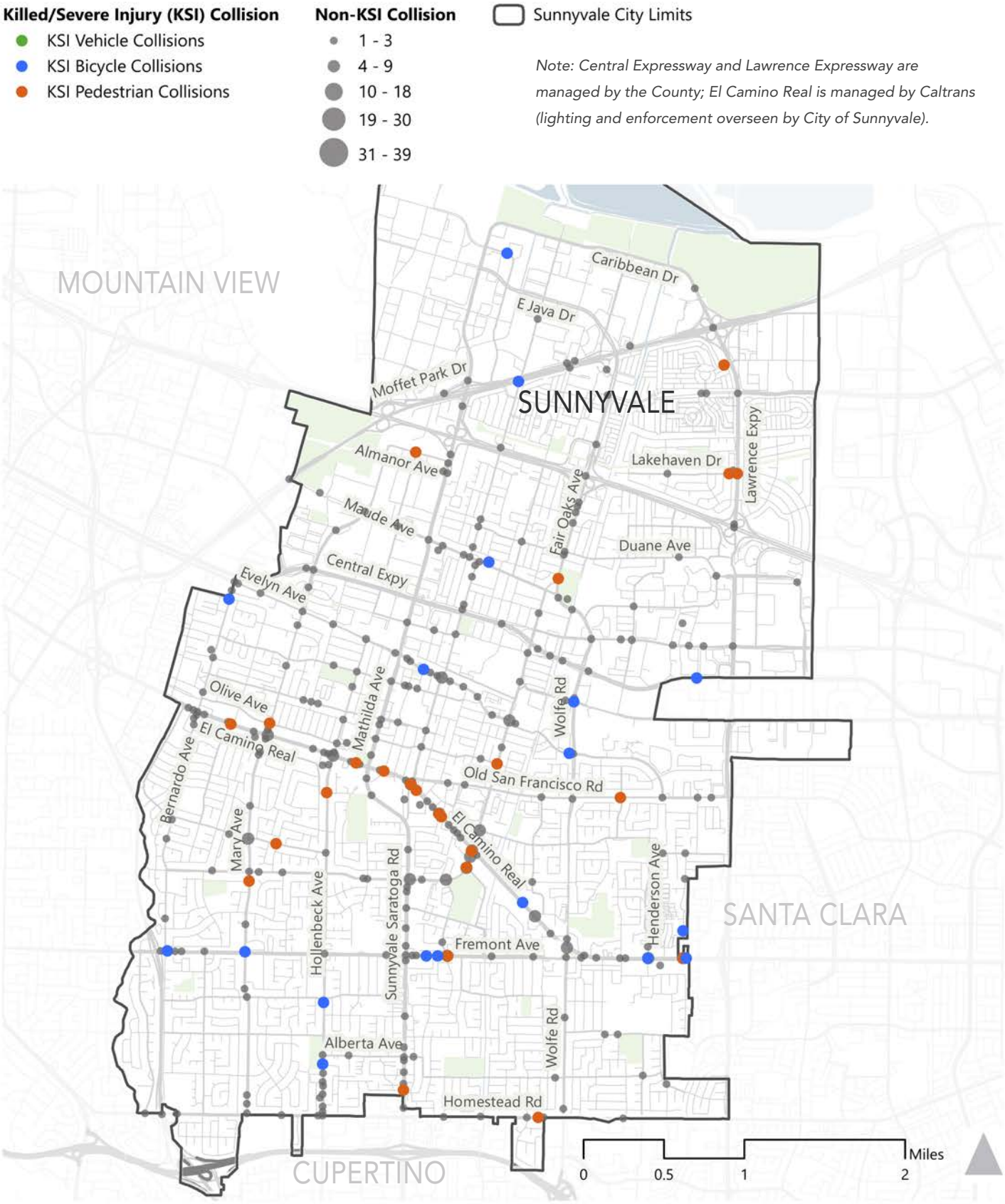
Pedestrian Refuge Island and Median



Protected Bikeway

Protected Turns

Roadway and Intersection Safety Lighting



Source: City of Sunnyvale Crossroads Data, 2012-2016

PROFILE 1: WALKING OR BICYCLING ON MAJOR ROADWAY (EXPRESSWAY, ARTERIAL, OR COLLECTOR)

PROFILE 2

UNMARKED PEDESTRIAN CROSSING

FACTORS

» Pedestrian collision

» No marked crosswalk

» Collision occurred at either mid-block or intersection location

STATS

15 KSI Collisions

» Accounts for **17%** of all KSI collisions

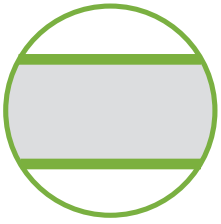
Key Countermeasures

Pedestrian Hybrid Beacon

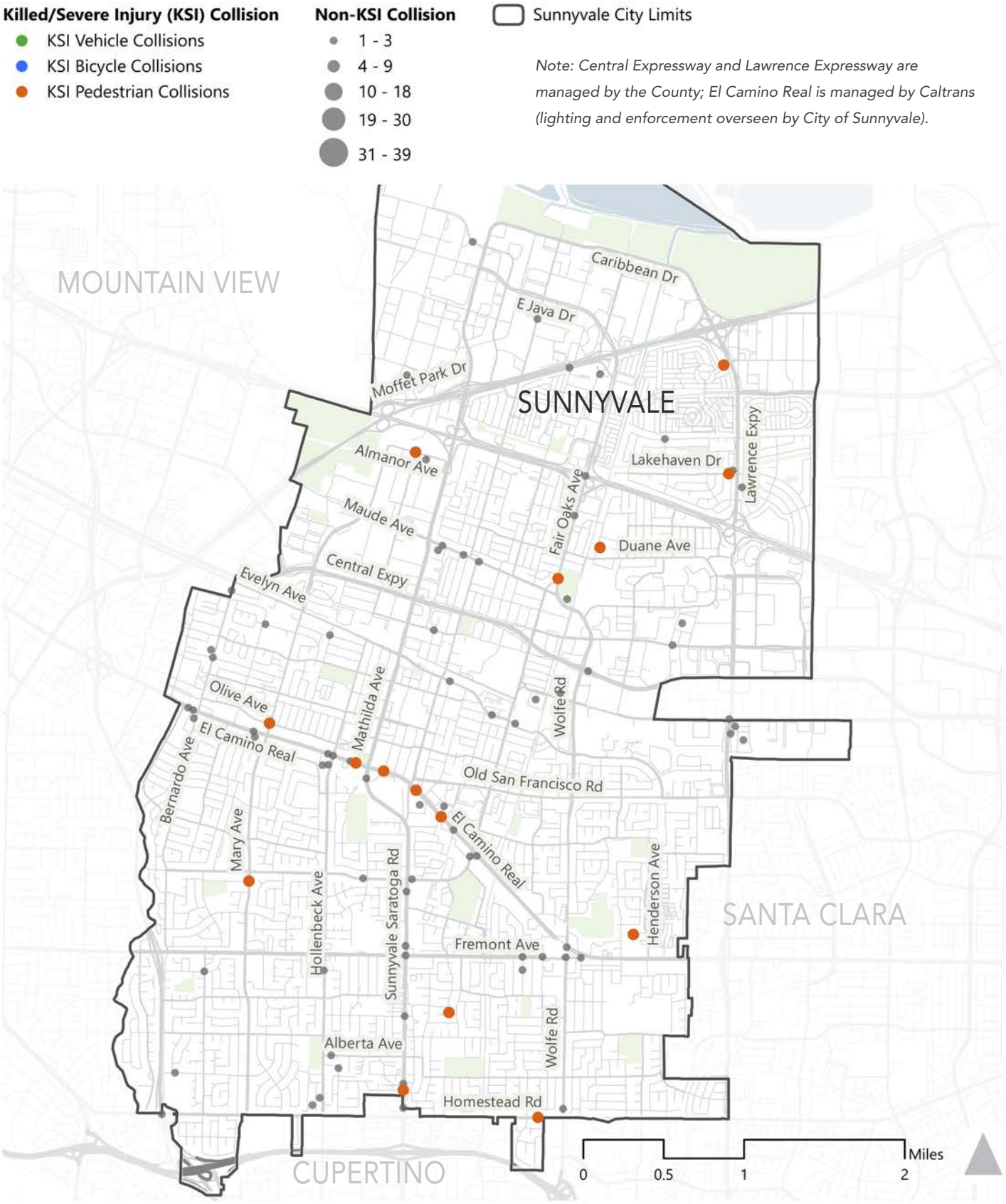
Pedestrian-Activated Crosswalk Warning Beacon

Bulb Outs and Curb Extensions

High Visibility Crosswalks with Advance Stop or Yield Line



Marked Crossings



Source: City of Sunnyvale Crossroads Data, 2012-2016

PROFILE 2: UNMARKED PEDESTRIAN CROSSING

PROFILE 3

SPEED-RELATED CONFLICT

FACTORS

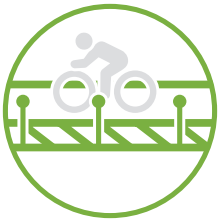
» Unsafe speed

STATS

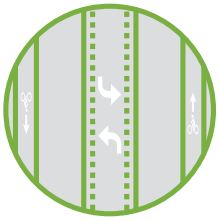
14 KSI Collisions

» Accounts for **15%** of all KSI collisions

Key Countermeasures



Protected Bikeway

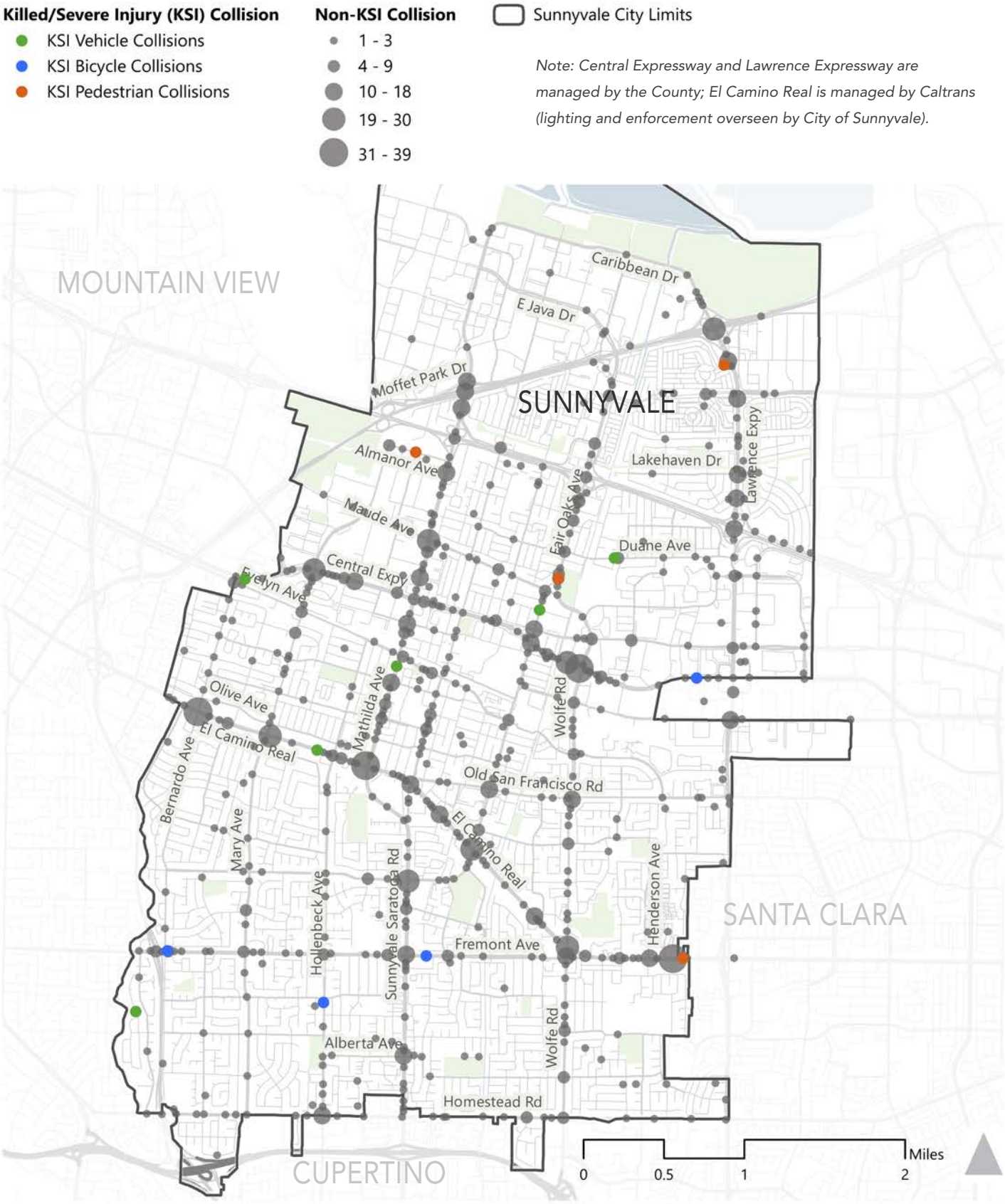


Lane Reduction

Vehicle Speed Feedback Sign

Speed Hump, Speed Table, and Raised Crosswalk

Reduced Speed School Zone



Source: City of Sunnyvale Crossroads Data, 2012-2016

PROFILE 3: SPEED-RELATED CONFLICT

PROFILE 4

LEFT TURN AT SIGNALIZED INTERSECTION

FACTORS

» Vehicle preceding movement is left turn or U-turn

» Collision occurred at a signalized intersection

STATS

11 KSI Collisions

» Accounts for **12%** of all KSI collisions

Key Countermeasures

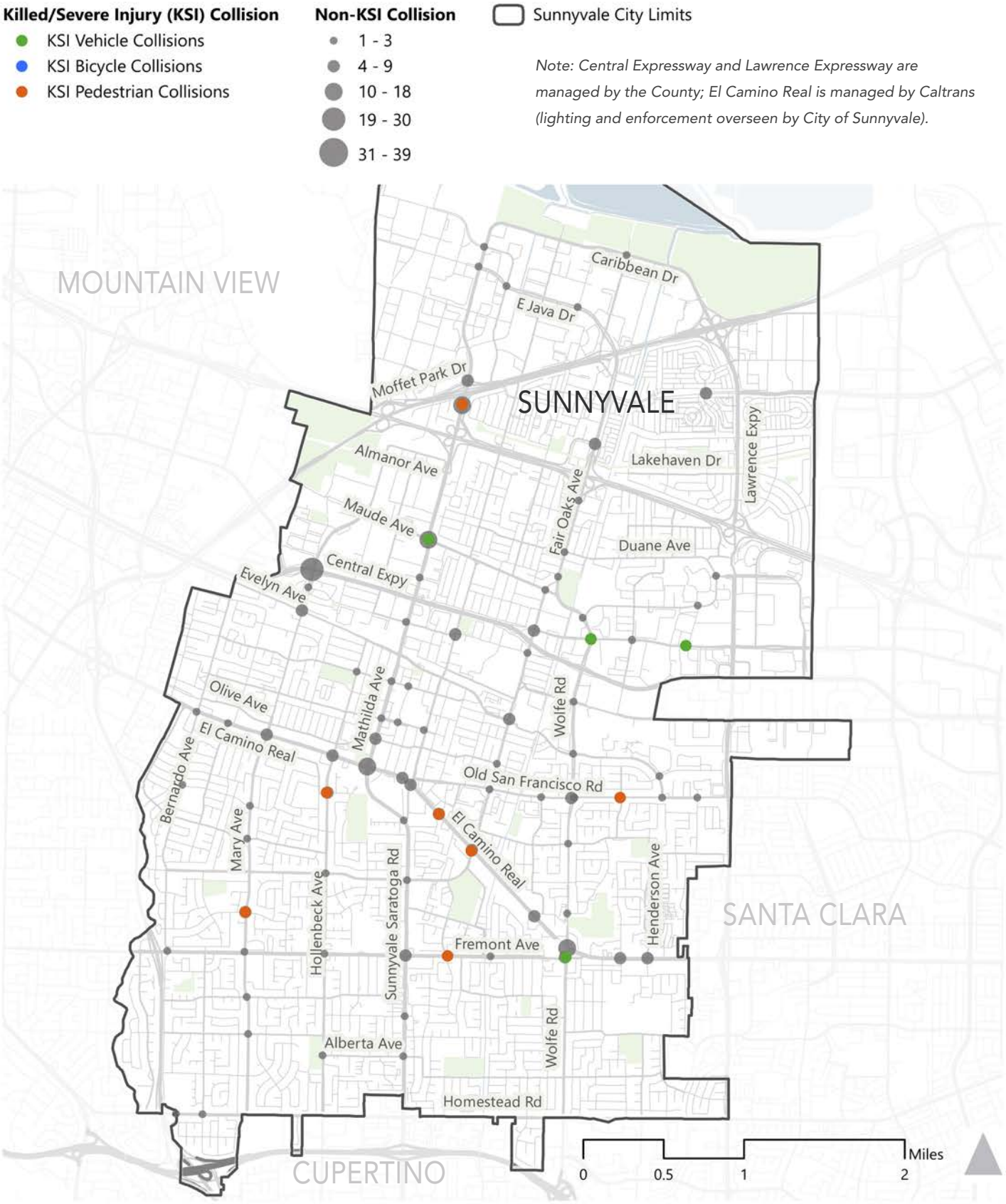
Leading Pedestrian Interval

Bulb Outs and Curb Extensions

Signal Timing and Phasing Improvements

Protected Turn

Turn Restriction



Source: City of Sunnyvale Crossroads Data, 2012-2016

PROFILE 4: LEFT TURN AT SIGNALIZED INTERSECTION

PROFILE 5

60+ YEAR OLD PEDESTRIANS AT INTERSECTION

FACTORS

» Pedestrian collision

» Pedestrian is 60 years old or older

» Collision occurred at an intersection

STATS

11 KSI Collisions

» Accounts for **12%** of all KSI collisions

Key Countermeasures

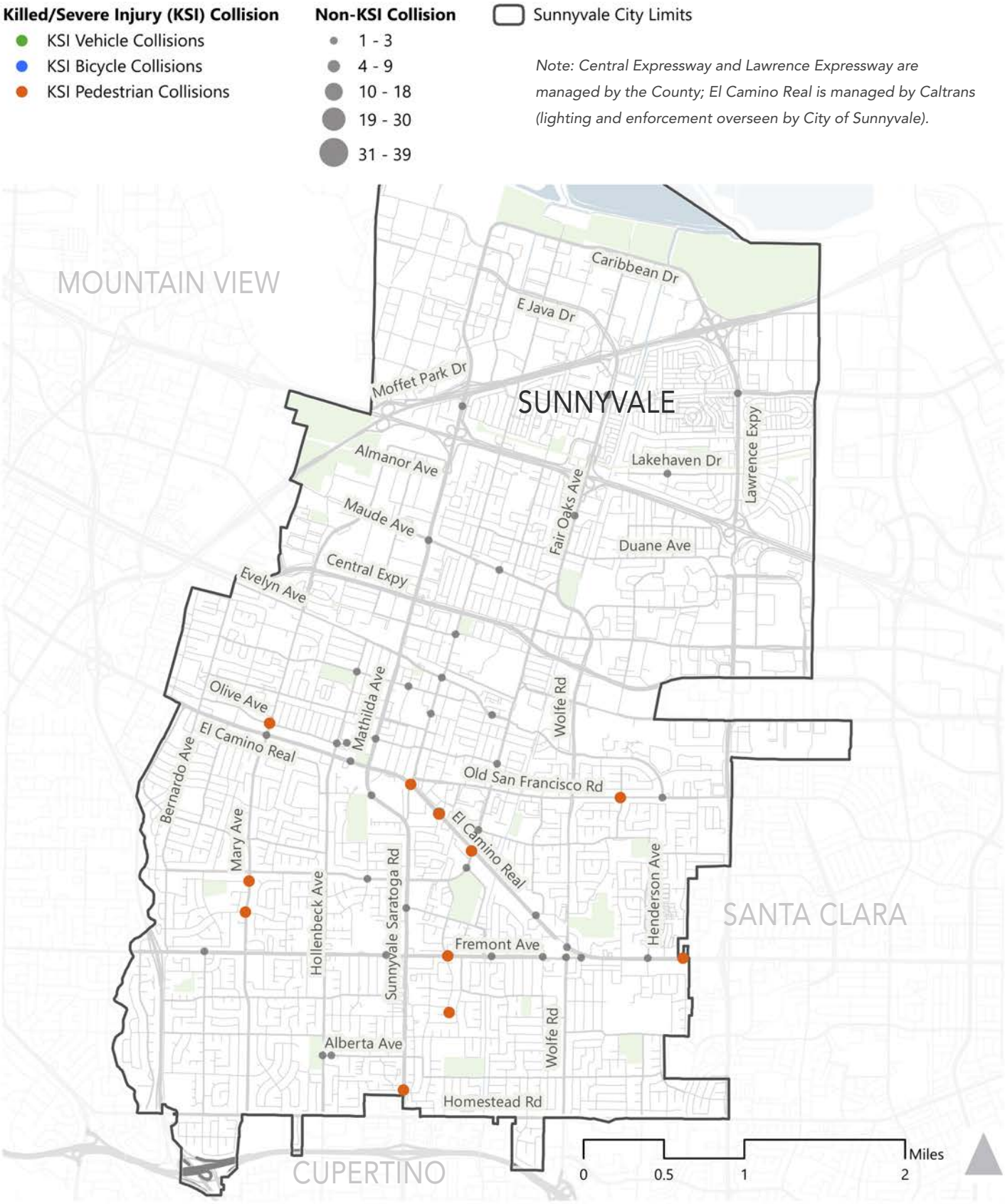
Protected Turn

Leading Pedestrian Interval

Bulb Outs and Curb Extensions

Pedestrian Refuge Island and Median

Adaptive Pedestrian Signal System



Source: City of Sunnyvale Crossroads Data, 2012-2016

PROFILE 5: 60+ YEAR OLD PEDESTRIAN AT INTERSECTION

PROFILE 6

INFLUENCE OF DRUGS OR ALCOHOL

FACTORS

» At least one party was under the influence of drugs or alcohol

STATS

10 KSI Collisions

» Accounts for **11%** of all KSI collisions

ADDITIONAL NOTES

» All **10** KSI collisions in this profile involved a driver (as opposed to a pedestrian or bicyclist) under the influence

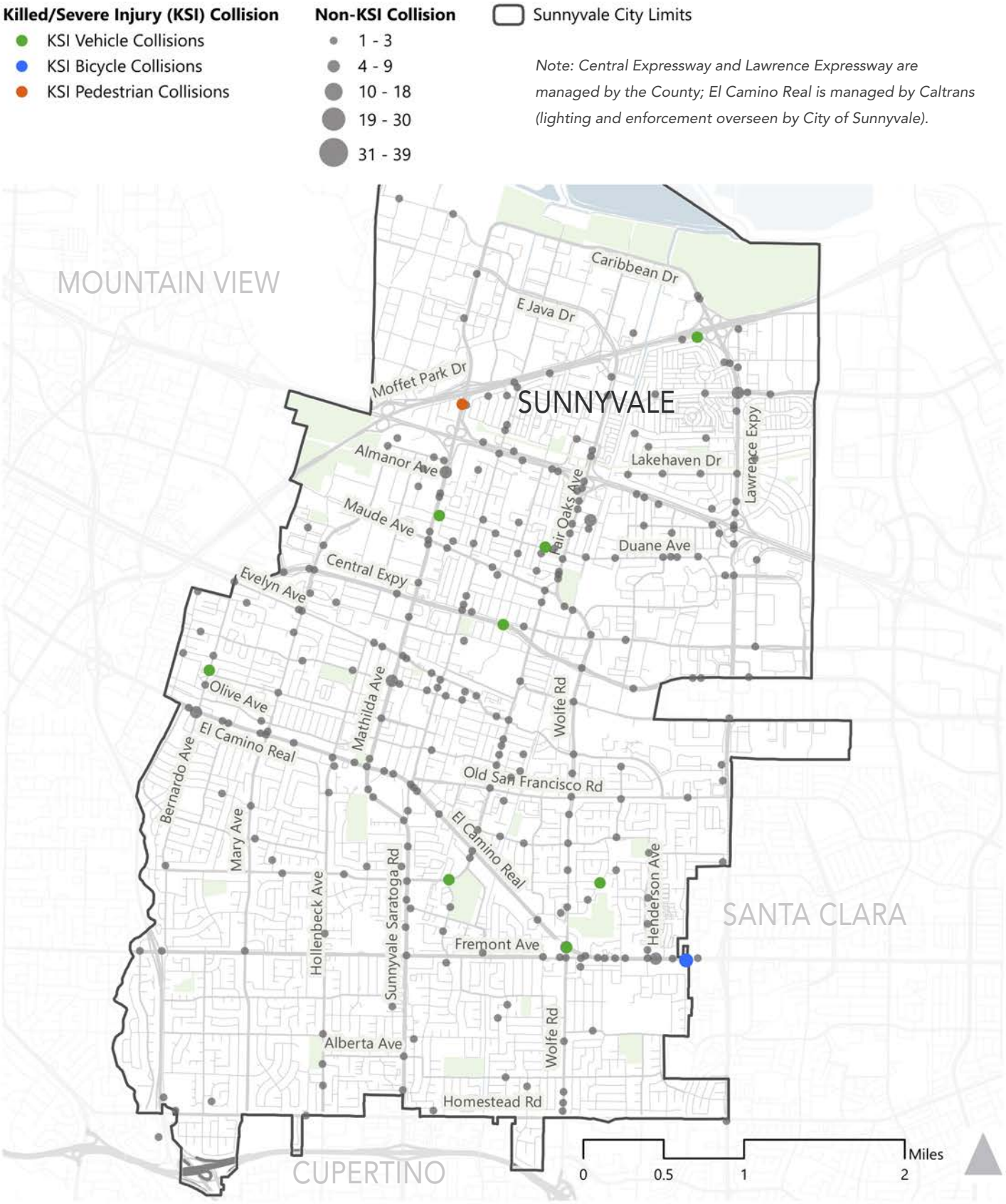
Key Countermeasures

Education

Enforcement

Vehicle Speed Feedback Sign

Speed Hump, Speed Table, and Raised Crosswalk



Source: City of Sunnyvale Crossroads Data, 2012-2016

PROFILE 6: INFLUENCE OF DRUGS OR ALCOHOL

PROFILE 7

MIDBLOCK BICYCLE CONFLICT

FACTORS

» Bicycle collision

» Collision occurred on a bicycle segment (not at an intersection)

STATS

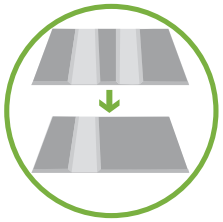
9 KSI Collisions

» Accounts for **10%** of all KSI collisions

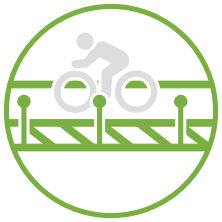
ADDITIONAL NOTES

» **2** KSI collisions involved a driver making a midblock turn (e.g. at a driveway)

Key Countermeasures



Consolidated Driveways

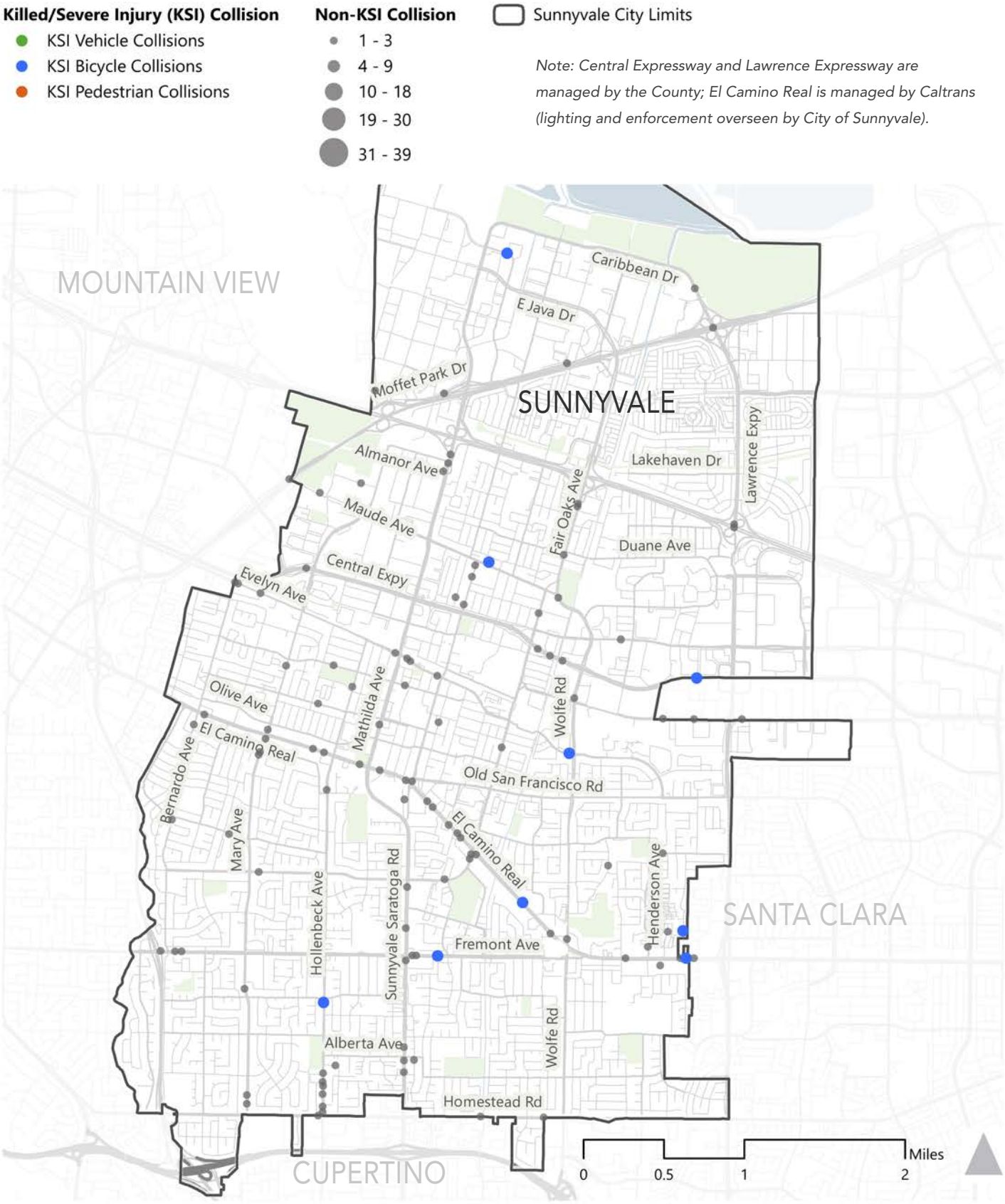


Protected Bikeway

Shared-Use Trail and Bicycle Path

Buffered Bike Lane

Green pavement



Source: City of Sunnyvale Crossroads Data, 2012-2016

PROFILE 7: MIDBLOCK BICYCLE CONFLICT

PROFILE 8

CONFLICTING THROUGH MOVEMENT AT INTERSECTION

FACTORS

» Vehicle or bicycle collision

» Collision occurred at an intersection

» At least one party was proceeding straight

» The collision type was broadside or sideswipe

STATS

7 KSI Collisions

» Accounts for **8%** of all KSI collisions

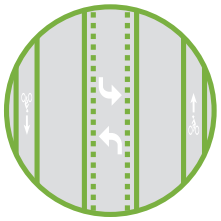
Key Countermeasures

Signal Timing and Phasing Improvements

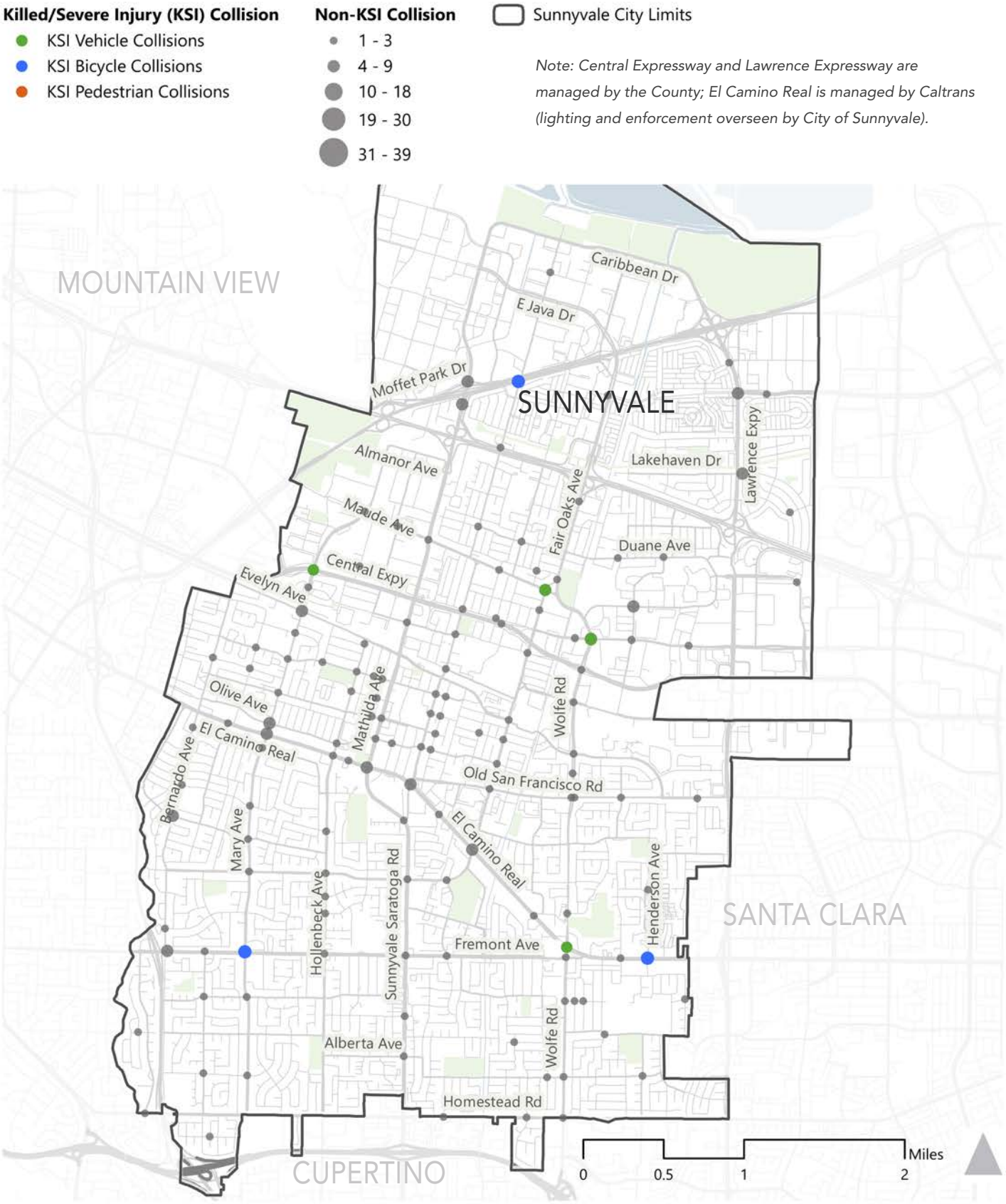
Bike Intersection Markings

Modified Intersection Stop-Control

Parking Restriction at Intersections



Lane Reduction



Source: City of Sunnyvale Crossroads Data, 2012-2016

PROFILE 8: CONFLICTING THROUGH MOVEMENT AT INTERSECTION

PROFILE 9

CHILDREN WALKING OR BIKING NEAR SCHOOL

FACTORS

» Pedestrian or bicycle collision

» The bicyclist or pedestrian was 18 years old or younger

» The collision occurred within a half mile of a school

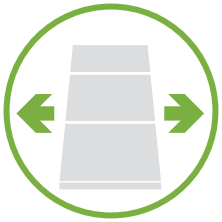
STATS

7 KSI Collisions

» Accounts for **8%** of all KSI collisions

Key Countermeasures

Pedestrian Countdown Signal Head

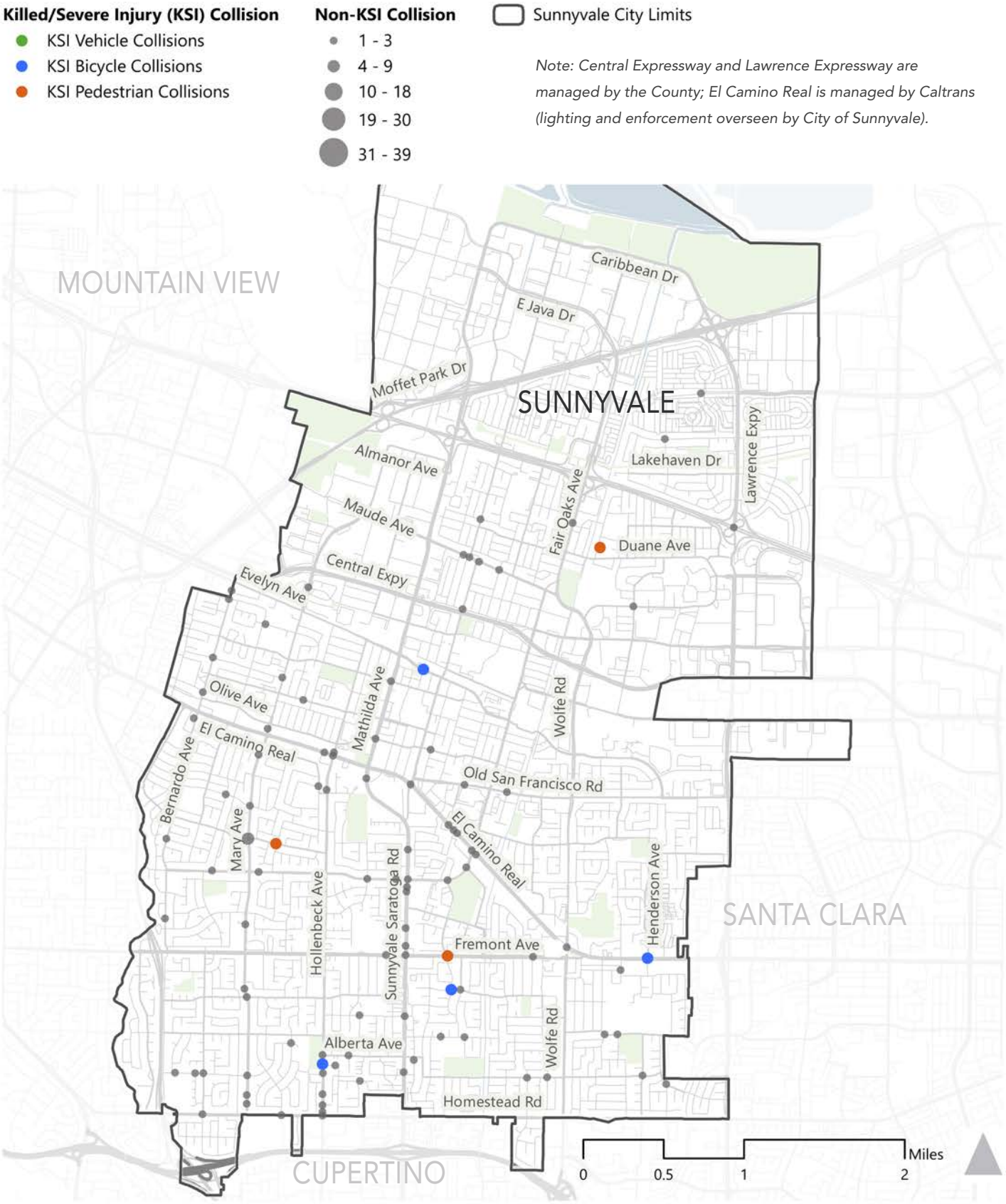


Sidewalk to Close Gaps

Shared-Use Trail and Bicycle Path

High Visibility Crosswalk with Advance Stop or Yield Sign

Reduced Speed School Zone



Source: City of Sunnyvale Crossroads Data, 2012-2016

PROFILE 9: CHILDREN WALKING OR BIKING NEAR SCHOOL

PROFILE 10

RED LIGHT VIOLATION AT SIGNALIZED INTERSECTION

FACTORS

» Contributing factor to the collision was a "traffic signals and signs violation"

» Collision occurred at a signalized intersection

STATS

5 KSI Collisions

» Accounts for **6%** of all KSI collisions

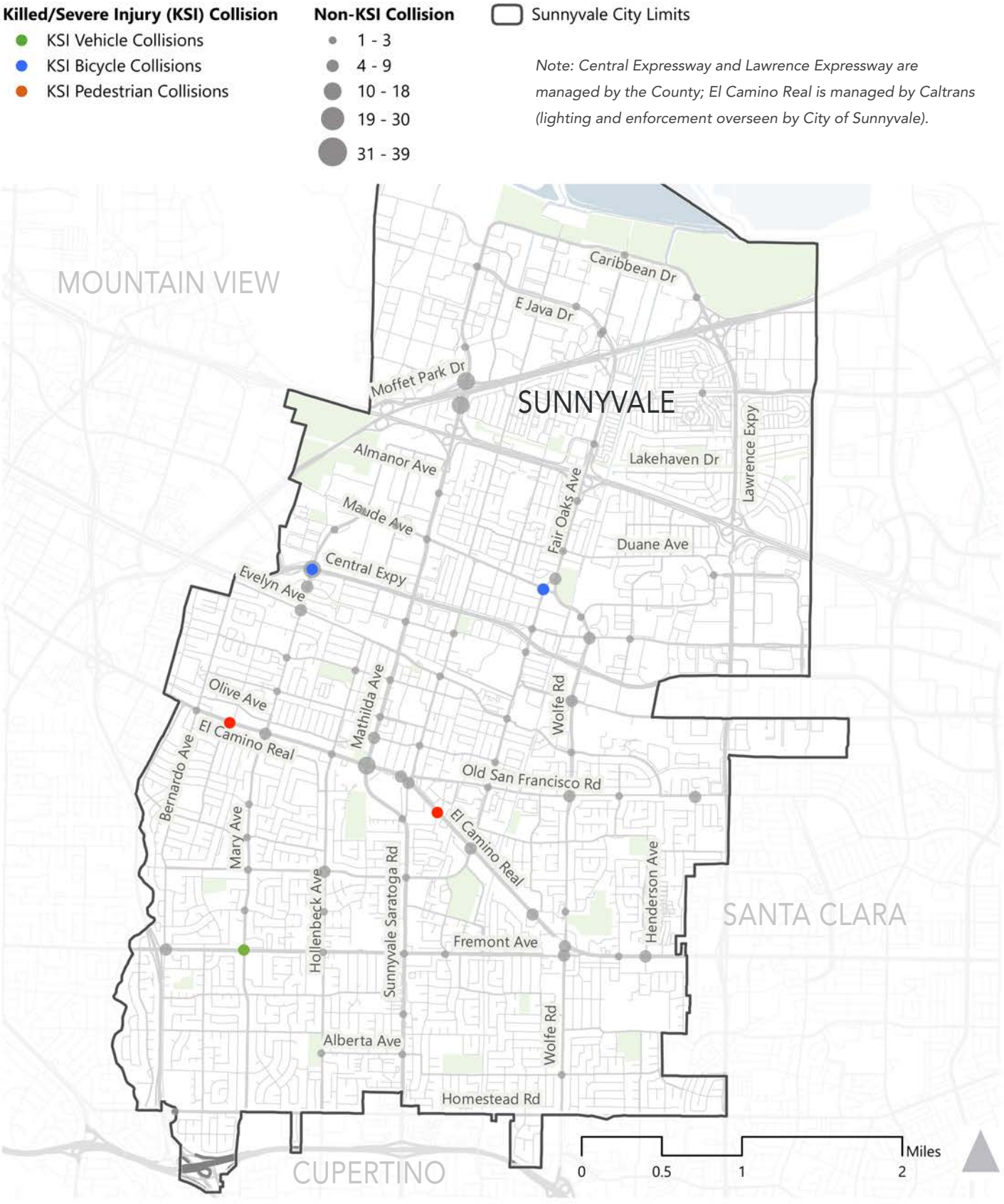
Key Countermeasures

Advanced Dilemma-Zone Detection

Signal Timing and Phasing Improvements

Education

Enforcement



Source: City of Sunnyvale Crossroads Data, 2012-2016

PROFILE 10: RED LIGHT VIOLATION AT SIGNALIZED INTERSECTION

ACTION PLAN

With the strong foundation of its Vision Zero building blocks and collision profiles, the City of Sunnyvale is ready to continue progress towards eliminating fatalities and serious injuries. The City will work to meet this goal through targeted investments at ten priority project locations and a set of actions to implement immediately and over the coming years.

Priority Project Locations

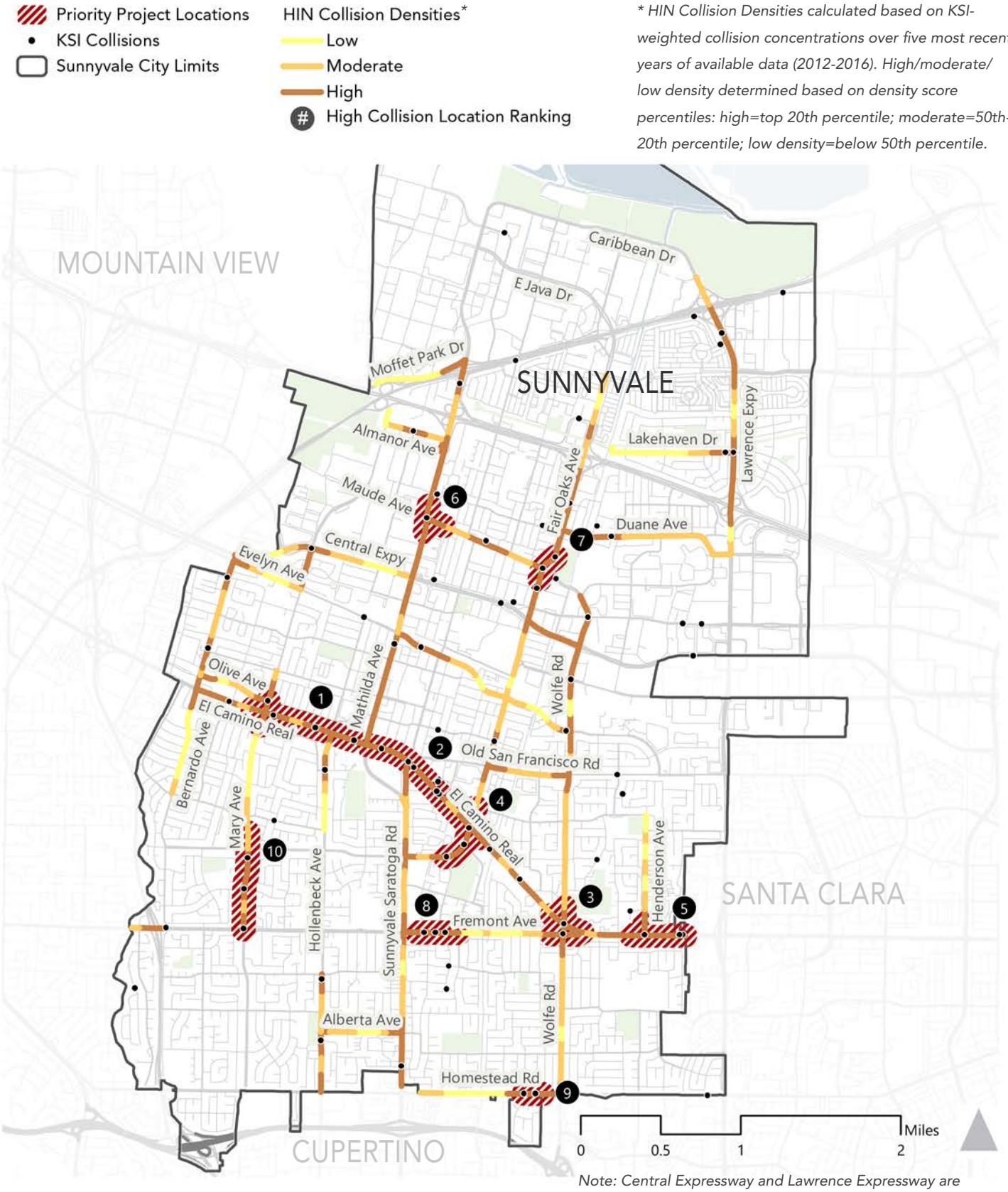
The City is focused on ten priority project locations. These are key locations on the HIN with a history of high collision densities and a high level of public feedback on perceived issues and safety concerns.

The technical appendix includes project location descriptions for the ten priority project locations and conceptual layouts for three selected projects. The three selected projects were chosen as representative examples for further development as conceptual layouts. They represent an array of discrete contexts, typologies, and challenges. The conceptual layouts do not represent proposed improvements at specific locations, but rather allow stakeholders and residents to visualize potential real-life applications of various countermeasures and treatments in familiar contexts. These were utilized to conduct walking tours along the three selected priority project corridors to collect feedback from participants about the potential improvements. Based on the comments received, the drawings were refined to produce the final conceptual layouts. The resulting conceptual layouts depict treatments that could be applied at a variety of locations throughout the City based on the outcome of further evaluation, engineering analysis, and design development.

Priority project locations cover **70%** of fatal collisions in the City of Sunnyvale and **20%** of severe injuries.

PRIORITY PROJECT LOCATIONS

El Camino Real between S. Mary Avenue and S. Mathilda Avenue
El Camino Real between S. Taaffe Street and S. Fair Oaks Avenue
El Camino Real, E. Fremont Avenue, and S. Wolfe Road (intersection)
Remington Drive/Fair Oaks Avenue between Iris Avenue and Manet Drive
El Camino Real between Henderson Avenue and Helen Avenue
N. Mathilda Avenue and W. Maude Avenue (intersection)
N. Fair Oaks Avenue between Balsam Avenue and E. Taylor Avenue
Fremont Avenue between Sunnyvale-Saratoga Road and Floyd Avenue
Homestead Road between Heron Avenue and Wolfe Road
Mary Avenue between Remington Drive and Fremont Avenue



** HIN Collision Densities calculated based on KSI-weighted collision concentrations over five most recent years of available data (2012-2016). High/moderate/low density determined based on density score percentiles: high=top 20th percentile; moderate=50th-20th percentile; low density=below 50th percentile.*

Note: Central Expressway and Lawrence Expressway are managed by the County; El Camino Real is managed by Caltrans.

PRIORITY PROJECT LOCATIONS

Implementable Actions

Vision Zero implementation will involve a committed team of City departments, the local community, and partner organizations. The project team has identified a set of key actions to serve as a roadmap towards Vision Zero. Each action is assigned a timeframe and a metric to measure progress. Short-term actions could be implemented within 2 years; medium-term actions could be completed within 2 to 5 years; and long-term actions could be implemented within 5 to 10 years.

Meeting the City's Vision Zero goal requires immediate action, yet it allows for feasible implementation with incremental improvements over the years. The actions in this plan should be evaluated and refined on an on-going basis, and their successful implementation depends upon funding availability.

The Implementable Actions are organized into four action areas:

Vision Zero Program Initiatives and Evaluation

Street Design and Operation

Behavioral Change

Vulnerable Road Users

FUNDING AND IMPLEMENTATION – There are many ways the City can fund and implement the actions included below. For example, safety improvements may be implemented through integration into pavement management programs, other transportation capital projects, and new development projects. To fund dedicated safety projects, the City may seek state or regional funding through Caltrans and MTC Active Transportation Programs, the Caltrans Highway Safety Improvement Program, the One Bay Area Grant Program, and Transportation Development Act Article 3 (TDA3) Local Transportation Fund.

VISION ZERO PROGRAM INITIATIVES AND EVALUATION

The Sunnyvale Vision Zero program will begin by establishing a framework for the City's approach to achieve its Vision Zero goal. Program initiatives include Vision Zero promotion, integration of Vision Zero into other planning efforts, and improved Vision Zero data collection and program evaluation.

SAFETY STRATEGY			TIMELINE	PROGRESS MEASURES	KEY PARTNERS	CITY RESOURCES
Vision Zero Program Initiation						
A.1	Vision Zero Task Force	Convene an interdisciplinary Vision Zero Task Force to oversee plan implementation and coordinate projects and programs across City departments.	Short-Term	Task Force established and regular meetings held	Department of Public Works, Community Development Department, School Districts, Department of Public Safety	Low
A.2	Dedicated Funding	Identify a permanent, dedicated funding source for Vision Zero implementation and coordination.	Short-Term	Amount of funding available for Vision Zero	City Council, City Manager's Office, Department of Public Works	Medium to High
A.3	Media Workshop	Develop a workshop for Communications Department on how best to communicate traffic collisions and roadway safety concepts.	Short-Term	Number of media professionals participating	City Manager's Office	Low
Promotion and Integration						
A.4	Public Meetings	Put Vision Zero on the agenda of the City's public, community group, and stakeholder meetings in 2019.	Short-Term	Number of meetings with Vision Zero on agenda	City Council, Neighborhood Associations, Department of Public Works, City Manager's Office - Communications	Low
A.5	Online Collision Map	Launch online, interactive collision data map and website.	Medium-Term	Number of website visitors	Information Technology Department, City Manager's Office - Communications, Department of Public Works, Department of Public Safety	Medium

SAFETY STRATEGY (CONT.)			TIMELINE (CONT.)	PROGRESS MEASURES (CONT.)	KEY PARTNERS (CONT.)	CITY RESOURCES (CONT.)
A.6	Future Plans	Incorporate Vision Zero safety principles into future City plans and design documents.	Ongoing	Number of plans and policies incorporating Vision Zero	Community Development Department, Department of Public Works	Low
Data Collection & Program Evaluation						
A.7	Progress Monitoring	Publish an annual report to measure progress against the goals of the Sunnyvale Vision Zero Plan and present progress biennially to City Council during the Strategic Planning Session meeting.	Medium-Term	Annual report and biennial presentation to City Council addressing plan metrics and performance measures	Department of Public Works, Department of Public Safety	Medium
A.8	Collision Report Training	Provide training for Department of Public Safety to improve collision data reporting, and preserve collision details and site evidence.	Long-Term	Number of Department of Public Safety officers trained	Department of Public Safety	Low
A.9	Data Completeness	Improve data collection on speed, impairment, cell phone use, and distraction for KSI collisions.	Medium-Term	Proportion of collision records including this information	Department of Public Safety	Low
A.10	Bicycle and Pedestrian Count Data	Establish regular pedestrian and bicyclist counts at consistent locations.	Medium-Term	Number of counts conducted	Department of Public Works	Medium

STREET DESIGN AND OPERATION

Sunnyvale Vision Zero prioritizes high-quality improvements on the HIN as the most targeted way to reach the goal of zero traffic fatalities and serious injuries. In addition to these improvements, the City will address street design through improved signal operations and design review procedures. Street improvements will comply with compatible Citywide Design Guidelines (2013).

	SAFETY STRATEGY		TIMELINE	PROGRESS MEASURES	KEY PARTNERS	CITY RESOURCES
High Injury Network Infrastructure						
B.1	Priority Locations	Develop designs and secure grant funding for ten priority project locations identified in plan, with a focus on roadway designs to improve safety.	Medium-Term	Number of projects funded	Department of Public Works	High
B.2	Prioritized Project List	Develop prioritized list of additional safety projects.	Medium-Term	Prioritized safety project list	Department of Public Works	Medium
B.3	Low-Cost Improvements	Install one low-cost safety improvement per year, including new road markings, signs, and minor signal modifications.	Medium-Term	Number of locations receiving improvements	Department of Public Works	Medium
B.4	Stakeholder Engagement	Convene local stakeholders near high-collision corridors for input on project design.	Medium-Term	Number of meetings	Department of Public Works, Department of Public Safety, School Districts	Low
Operations and Technology						
B.5	Signal Timing Updates	Update signal timing plans to improve safety for all modes (e.g. all red time, pedestrian crossing times).	Ongoing	Proportion of signals meeting updated policy	Department of Public Works	Medium

SAFETY STRATEGY (CONT.)			TIMELINE (CONT.)	PROGRESS MEASURES (CONT.)	KEY PARTNERS (CONT.)	CITY RESOURCES (CONT.)
B.6	Intelligent Transportation Systems (ITS)	Seek opportunities to deploy ITS technologies, such as speed monitoring, traffic management systems, adaptive pedestrian signal systems, and dilemma zone detection.	Long-Term	Adoption of ITS technologies to improve traffic safety	Department of Public Works	High
Policies & Design						
B.7	Design Standards	Apply established and approved design standards for design of transportation facilities, as per State guidelines and Municipal Code.	Short-Term	Proportion of projects meeting existing design standards	Department of Public Works	Low
B.8	Design Review	Establish internal process for Vision Zero countermeasures to be evaluated and implemented, where feasible, on projects on the HIN.	Medium-Term	Proportion of public and private projects incorporating Vision Zero elements	Community Development Department, Department of Public Works	Low
B.9	Complete Streets	When identifying safety improvements, consider all road users and how countermeasures follow the City's Complete Streets Policy.	Ongoing	Proportion of projects with improvements benefiting two or more modes	Department of Public Works	Low

BEHAVIORAL CHANGE

Sunnyvale Vision Zero encourages safe travel behaviors through actions related to outreach and education, enforcement, and providing alternatives to driving, particularly during holidays, special events, and late evenings. This acknowledges the shared responsibility to make safe decisions and create a culture of safety.

	SAFETY STRATEGY		TIMELINE	PROGRESS MEASURES	KEY PARTNERS	CITY RESOURCES
Education and Outreach						
C.1	Education Campaign	Launch high-visibility education campaigns against speeding, distracted driving, impaired driving, and other high-risk behaviors. Campaigns will focus on HIN corridors.	Medium-Term	Number of people reached	City Manager's Office, Department of Public Safety, School Districts	High
C.2	Speed Feedback Signs	Increase the use of speed feedback signs to discourage speeding.	Medium-Term	Number of signs installed	Department of Public Works, Department of Public Safety	Medium
C.3	Targeted Outreach	Deter impaired driving by targeting education and outreach at or near alcohol-serving establishments.	Medium-Term	Number of establishments reached	City Manager's Office, Department of Public Safety	Medium
Enforcement						
C.4	Police Academy	Integrate Vision Zero policies into Police Academy curriculum and in-service Public Safety Officer training.	Long-Term	Number of officers trained on Vision Zero	Department of Public Safety	Low

SAFETY STRATEGY (CONT.)			TIMELINE (CONT.)	PROGRESS MEASURES (CONT.)	KEY PARTNERS (CONT.)	CITY RESOURCES (CONT.)
Providing Alternatives to Driving						
C.5	Subsidized Transit	Explore opportunities to expand free or subsidized transit fares during holidays and for special events.	Medium-Term	Number of people using free or subsidized fares	VTA	Medium
C.6	Late-Night Options	Develop public promotional campaign to encourage late-night transit, taxi, rideshare, and other services to provide alternatives to impaired driving.	Long-Term	Number of promotional activities	City Manager's Office, VTA, Rideshare Providers	Medium
C.7	Curbside Management	Develop curbside management policies to encourage and enable passenger loading.	Medium-Term	Adoption of City policy	Community Development Department, Department of Public Works	Medium

VULNERABLE ROAD USERS

Sunnyvale Vision Zero strategies recognize that younger and older people, people biking and people walking are more vulnerable to serious traffic injuries and fatalities by accounting for different levels of reaction time and agility.

	SAFETY STRATEGY		TIMELINE	PROGRESS MEASURES	KEY PARTNERS	CITY RESOURCES
Bicyclists and Pedestrians						
D.1	Bicycle Network	Continue building and improving the bicycle network consistent with the Sunnyvale Bicycle Plan and Santa Clara Countywide Bike Plan.	Ongoing	Lane miles of low-stress bicycle facilities installed	Department of Public Works, VTA, Silicon Valley Bicycle Coalition	High
D.2	Countdown Timers	Install pedestrian countdown timers at every signalized crossing location.	Medium-Term	Proportion of crossings with countdown timers	Department of Public Works	Medium
D.3	Pedestrian Crossings	Install or upgrade pedestrian crossing treatments on the HIN.	Medium-Term	Number of upgraded crossings	Department of Public Works	High
D.4	Turning Vehicles	Complete projects that improve bicycle and pedestrian safety related to turning vehicles at intersections.	Long-Term	Number of projects implemented	Department of Public Works, Silicon Valley Bicycle Coalition	High

SAFETY STRATEGY (CONT.)			TIMELINE (CONT.)	PROGRESS MEASURES (CONT.)	KEY PARTNERS (CONT.)	CITY RESOURCES (CONT.)
Children and Seniors						
D.5	School Safety Zones	Implement reduced speed limits (15 miles per hour) on the streets adjacent to schools	Medium-Term	Number of schools with a school safety zone	Department of Public Works, Department of Public Safety	Low
D.6	High-Visibility Crosswalks	Install high-visibility crosswalks near schools.	Medium-Term	Number of crosswalks near schools that are "high visibility"	Department of Public Works	Medium
D.7	Seniors Awareness	Develop education campaign aimed at drivers to increase safety for pedestrians age 60+.	Medium-Term	Number of people reached	City Manager's Office, AARP, Library and Community Services, Senior Center	Medium
D.8	Traffic Education for Safe Routes to School	Host traffic safety classes for students and parents.	Medium-Term	Number of people reached	School Districts, Department of Public Safety	Medium
D.9	Traffic Education for Seniors	Host traffic safety classes for pedestrians over 60.	Medium-Term	Number of people reached	AARP, Department of Public Safety, Library and Community Services, Senior Center	Medium

TRANSPORTATION TECHNOLOGY – Technology is rapidly changing the transportation industry. Advances in vehicle-to-vehicle and vehicle-to-infrastructure communication, vehicle autonomy, and crash protection features like pedestrian detection and automatic braking present a potential opportunity to reduce traffic fatalities and serious injuries by helping people operate vehicles more safely. Data analytics provides cities with real-time intelligence on roadway operations and driving behavior to take action to minimize risk. The City of Sunnyvale has already investigated opportunities to integrate smart technology into its safety efforts and will continue to do so as the industry evolves.

How to Get Involved

City officials and staff need the help of the community to carry out the actions presented in this Plan and to reduce traffic fatalities and serious injuries in the City of Sunnyvale by 50 percent by 2029. Everyone has a personal responsibility to make the right choices and to spread the word about why traffic safety matters, making the City's efforts even more effective.

Take a driver education class – e.g., classes offered by your car insurance company or AARP.

Pledge to not text while walking, bicycling, or driving, and encourage your family and friends to do the same. Examples include AT&T's It Can Wait campaign and the DecidetoDrive.org program created by the American Association of Orthopedic Surgeons.

Install anti-texting-and-driving software on your cell phone.

When driving, be aware of surroundings. Obey the rules of the road, observe speed limits, and yield to pedestrians and bicyclists when turning at intersections.

When bicycling, obey the rules of the road and use lights and reflectors at night.

As a pedestrian, stay alert, stay visible to the extent possible, and do not assume that drivers see you or will yield when turning.

Visit https://sunnyvale.ca.gov/news/topics/visionzero/ to follow the City's progress!

TECHNICAL APPENDIX

A. Summary of Input from Public Outreach Activities

B. Summary of Collision Trends

C. Collision Profiles and Countermeasure Pairings

D. Priority Project Cut Sheets (10)

E. Priority Project Conceptual Layouts (3)