



San Mateo C/CAG Countywide LRSP

PUBLIC DRAFT PLAN

MARCH 2024

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GLOSSARY OF TERMS

Countermeasures are engineering infrastructure improvements that can be implemented to reduce the risk of collisions.

Emphasis Areas represent types of roadway users, locations, or collisions with safety issues identified based on local trends that merit special focus in the City's approach to reducing fatal and severe injury collisions.

Local Roadway Safety Plans, or LRSPs, are documents that provide local-level assessments of roadway safety and identify locations and strategies to improve safety on local roadways.

Crash Severity is defined by the guidelines established by the Model Minimum Uniform Crash Criteria (MMUCC, Fifth Edition) and is a functional measure of the injury severity for any person involved in the crash.

- **Fatal Collision [K]** is death because of an injury sustained in a collision or an injury resulting in death within 30 days of the collision.
- **Severe Injury [A]** is an injury other than a fatal injury which results in broken bones, dislocated or distorted limbs, severe lacerations, or unconsciousness at or when taken from the collision scene. It does not include minor laceration.
- **Other Visible Injury [B]** includes bruises (discolored or swollen); places where the body has received a blow (black eyes and bloody noses); and abrasions (areas of the skin where the surface is roughened or blotchy by scratching or rubbing which includes skinned shins, knuckles, knees, and elbows).
- **Complaint of Pain [C]** classification could contain authentic internal or other non-visible injuries and fraudulent claims of injury. This includes: 1. Persons who seem dazed, confused, or incoherent (unless such behavior can be attributed to intoxication, extreme age, illness, or mental infirmities). 2. Persons who are limping but do not have visible injuries; 3. Any person who is known to have been unconscious because of the collision, although it appears he/she has recovered; 4. People who say they want to be listed as injured do not appear to be so.
- **Property Damage Only [O]** Collision is a noninjury motor vehicle traffic collision which results in property damage.

Highway Safety Improvement Program (HSIP) is one of the nation's core federal-aid programs. Caltrans administers HSIP funds in the state of California and splits the state share of HSIP funds between State HSIP (for state highways) and local HSIP (for local roads). The latter is administered through a call for projects biennially.

Primary Collision Factors (PCFs) convey the violation or underlying causal factor for a collision. Although there are often multiple causal factors, a reporting officer at the scene of a collision indicates a single relevant PCF related to a California Vehicle Code violation.

Safe Streets for All (SS4A) is a federal discretionary grant program created by the 2021 Bipartisan Infrastructure Law with \$5 billion in appropriated funds for 2022 through 2026.

Safe System Approach is a layered method for roadway safety promoted by the FHWA. This approach uses redundancies to anticipate mistakes and minimize injury. For more, visit https://safety.fhwa.dot.gov/zerodeaths/docs/FHWA_SafeSystem_Brochure_V9_508_200717.pdf.

Safety Partners are agencies, government bodies, businesses, and community groups that the City can work with to plan, promote, and implement safety projects.

Strategies are non-engineering tools that can help address road user behavior, improve emergency services, and build a culture of safety.

Systemic safety defines an analysis and improvement approach based on roadway and environmental factors correlated with crash risk (rather than targeting locations solely on documented crash history). The approach take a broad view to evaluate risk across an entire roadway system.

TABLE OF CONTENTS

Acknowledgments	3
Glossary of Terms	4
Executive Summary	10
Safe System Approach	11
Vision & Goals	11
Public Engagement	12
High Injury Network	12
Emphasis Areas	13
Recommendations	13
Project Prioritization	14
Implementation & Monitoring	14
List of Figures	7
List of Tables	8
Appendices	8
Introduction	15
What is an LRSP?	15
Safe System Approach	16
Alignment with the SHSP	17
Incorporating Vision Zero	17
What’s in the Plan	18
Vision and Goals	19
Vision.....	19
Plan Goals	20
Plan Development	21
Existing Safety Efforts.....	21
Project Advisory Group.....	21
Community Engagement and Input.....	23
Countywide Data Analysis Findings	30
Pre-Pandemic versus Pandemic Comparison	31
Hot Spot analysis/ High Injury Network Identification	34
Systemic Descriptive Findings.....	39

Emphasis Areas.....	39
Systemic Findings by Mode.....	40
State Highways in San Mateo County.....	48
Safety on At-Grade State Highways.....	49
Existing Plans and Directives to Improve Safety	51
Caltrans Director’s Policy 36: Road Safety – establishes the VZ commitment....	51
Caltrans Road Safety Action Plan 2023–24.....	51
District 4 Bike Plan.....	52
District 4 Pedestrian Plan	52
Improvements to Date in the County.....	52
Caltrans Recommendations and Actions	53
Safe System–Aligned Recommendations	54
Engineering.....	54
Policy and Program.....	59
Organize.....	60
Educate.....	60
Coordinate.....	61
Fund	62
Research.....	62
Plan.....	63
Project Prioritization.....	66
SamTrans Bus Stop Prioritization.....	75
Implementation and Monitoring	78

LIST OF FIGURES

Figure 1. “Swiss Cheese” Model Demonstrating Layers of Redundancy.....	18
Figure 2. Online Map Survey Tool.....	25
Figure 3. Percentage of Total Respondents by City of Residence.....	26
Figure 4. Percentage of Total Responses by Emphasis Areas Selected	27
Figure 5. Countywide Pedestrian High Injury Network	35
Figure 6. Countywide Bicyclist High Injury Network.....	36
Figure 7. Countywide Motor Vehicle High Injury Network.....	37
Figure 8. Countywide Combined High Injury Network.....	38

LIST OF TABLES

Table 1. C/CAG Constituent Jurisdictions and Partner Agencies21

Table 2. Calendar of C/CAG Public Engagement Events 24

Table 3. Crash Data Overview, All Modes Aggregated (2018-2022) 30

Table 4. Crashes by Year, All Modes Aggregated (2017-2022)31

Table 5. Crashes by Year and Jurisdiction, All Modes Aggregated (2017-2022) 32

Table 6: Crashes by Mode, Countywide (2018-2022) 39

Table 7. San Mateo County State Highways and Local Jurisdictions 48

Table 8. Crashes by Jurisdiction, All Modes Aggregated (2018-2022) 50

Table 9. Caltrans SAP Actions Related to LRSP 52

Table 10: Engineering Countermeasures 55

Table 11. Recommendations and Categories 59

Table 12: Policy/Program Recommendations and Partner Roles 65

Table 13: Local HIN Segments by Mode, Jurisdiction, and Social Equity Neighborhoods 67

Table 14: State Highway HIN Segments by Mode, Jurisdiction, and Social Equity Neighborhoods 74

APPENDICES

- Appendix A Web Comments received by Agency
- Appendix B Phase 2 Engagement Comments
- Appendix C Crash Analysis Memo
- Appendix D Project Priority Location Memo
- Appendix E SamTrans Bus Stop Priority Analysis



Executive Summary

EXECUTIVE SUMMARY

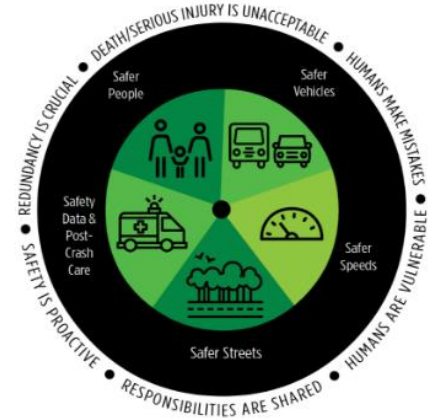
The City/County Association of Governments (C/CAG) created this Local Road Safety Plan (LRSP) with the following safety partners:



SAFE SYSTEM APPROACH


The recommendations and policies contained within this plan align with the principles of the Safe System Approach, which aims to eliminate fatal and severe injuries for all road users.


The Safe System Approach works by taking a holistic approach to roadway safety: by layering safe policy, design, and behavior initiatives atop one another, it maximally reduces the chance that a crash will occur and, if it does, that its outcome will be severe.




VISION & GOALS

C/CAG, its 21 local jurisdictions, and its partner agencies will work together to:

- 

Identify safety improvements, strategies, and programs using the Safe System Approach to eliminate fatalities and severe injuries on local roads.
- 

Enhance the existing roadway network in a cost-effective manner that promotes traffic safety and social equity, meets the needs of the community, and enriches the lives of residents.
- 

Promote a culture across agencies and communities that puts roadway safety first in all actions.

The goals of this plan include the following:

- 1 Regularly review crash history and community needs to identify and prioritize opportunities to reduce crash risk for roadway users of all ages and abilities.
- 2 Reduce the number of annual fatal and severe injury crashes across all local roadways.
- 3 Partner with other local agencies to incorporate roadway safety into all actions.
- 4 Support agencies in providing opportunities for citizen engagement in identifying issues and inform solutions for roadway safety across the community.
- 5 Embrace the Safe System Approach to promote engineering and non-engineering strategies in the community.
- 6 Work with agencies to monitor safety projects and policy implementation to track progress towards goals.

See the individualized jurisdiction LRSP chapters for each jurisdiction’s specific goals.

PUBLIC ENGAGEMENT

C/CAG hosted multiple events throughout the development of this plan to hear from residents throughout the County. The timeline below offers an overview of the breadth of event types and locations.

AUG 10

Virtual meeting (recorded and posted to plan website)

Countywide Virtual Kickoff Meeting

Sharing the purpose and timing of the plan

AUG 16

East Palo Alto

AUG 19

Half Moon Bay Farmers Market

AUG 20

Foster City Summer Days

AUG 27

San Carlos Block Party

Phase 1 Pop-up/Tabling Event

Shared crash data analysis; received input on locations and safety concerns

AUG - SEP

Online webmap (countywide input)

Phase 1 Concurrent Online Input

DEC 17

Belmont Farmers Market

DEC 20

Woodside Public Library

JAN 9

Colma BART Station

JAN 16

Atherton Library

JAN 18

Brisbane Farmers' Market

Phase 2 Pop-up/Tabling Event

Shared draft prioritized locations and types of engineering recommendations; received comments on locations and votes/input on types of treatments and desired locations

FEB 7

Portola Valley Bicycle, Pedestrian, & Traffic Safety Committee

MAR - APR

Various

Phase 3 Draft Plan

Share the draft plan publicly on the project website, through electronic distribution channels, and with presentations to C/CAG Committees and the Board.

HIGH INJURY NETWORK

To create a comprehensive network of high injury segments for San Mateo County and its local jurisdictions, the plan identifies separate high injury networks (HINs) for pedestrians, bicyclists, and motor vehicles. This comprehensive HIN is visualized in [an interactive map online](#). Users can toggle the data by travel mode.

EMPHASIS AREAS

The project team analyzed crash data countywide to establish emphasis areas. Emphasis areas are crash dynamic, behavioral, or road user characteristics that agencies can focus on to maximize their reduction of fatalities and severe injuries on local roads. The Countywide emphasis areas are:



Pedestrian and bicyclist safety



Motor vehicle speed related roadway segment crashes



Nighttime/low light safety



High-speed roadways (35+ mph)



Unsignalized intersections on arterials/collectors



Alcohol involvement



Vulnerable age groups (youth and aging)

RECOMMENDATIONS

Because C/CAG doesn't own local roadways and instead provides support and coordination to County agencies, the plan identifies 18 plan and program recommendations organized into the following categories:



PROJECT PRIORITIZATION

The spatial HIN analysis identified the highest crash locations by frequency and severity. Based on that work and the accompanying systemic analysis, the plan development team collaborated with partner jurisdictions to identify priority project locations. Prioritization used the following three factors:



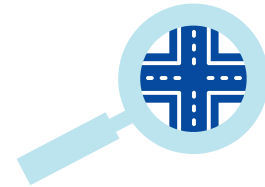
Crash History

Used to identify the locations with the highest reported five-year crash frequency and severity.



Social Equity

Used to identify locations where projects would benefit disadvantaged populations and align with future grant funding opportunities that emphasize social equity.



Systemic Factors

Used to identify locations that have roadway and land use characteristics associated with crash frequency and severity. Using systemic factors emphasizes a proactive rather than purely reactive approach.

IMPLEMENTATION & MONITORING

A key part of achieving C/CAG's vision is consistently evaluating roadway safety performance and tracking progress towards the goals. The Plan includes monitoring strategies that will track the progress of this plan's implementation.

INTRODUCTION

This countywide Local Roadway Safety Plan (LRSP) was initiated by the City/County Association of Governments of San Mateo County (C/CAG) with funding provided by the Metropolitan Transportation Commission (MTC). The plan development team was C/CAG with a consultant team of Kittelson & Associates, Inc. (Kittelson), Safe Streets Research & Consulting (SSRC), and Circlepoint to provide a countywide vision for and assessment of transportation safety.

The plan is divided into two parts. The first part contains the Countywide LRSP, and the second part contains individual agency LRSPs for 10 participating agencies. C/CAG engaged its 21 constituent jurisdictions with the goal of providing an updated safety plan for those without one. The remaining 11 jurisdictions without a separate chapter in this plan already have or, at the time of this writing, are developing their own safety plans. Therefore, those agencies are not included individually in this plan. Links to their current safety plans are provided in a subsequent section. The jurisdictions with plans developed through this process include the following:

- Atherton
- Belmont
- Brisbane
- Colma
- East Palo Alto
- Foster City
- Half Moon Bay
- Hillsborough
- San Carlos
- Woodside

The completion of the LRSP will render jurisdictions in the County eligible for grant funding from the MTC OBAG 3 County & Local Program, future funding for Caltrans Highway Safety Improvement Program, and USDOT Safe Streets for All (SS4A) funding cycles.

What is an LRSP?

An LRSP is a systematic plan that assesses and identifies locations and strategies to improve local road safety. LRSPs take an interdisciplinary approach to traffic safety and rely on interagency and community collaboration to implement recommendations.

A Federal Highway Administration (FHWA) [proven safety countermeasure](#), LRSPs provide crosscutting efforts to prioritize investments.¹ FHWA provides more than \$2 billion each year in Highway Safety Improvement Program (HSIP) funds for States to address road safety challenges on all public roads.

In California, to pursue HSIP grant funds (estimated at \$210 million for Cycle 11 in 2022), a local agency must have an LRSP or equivalent planning document. This LRSP helps C/CAG and participating agencies qualify for HSIP funds and gets the city one step closer to eliminating traffic deaths and severe injuries on its roads.

At the national level, USDOT requires a current LRSP that meets certain criteria in order for an agency to be eligible for implementation funding grant opportunities.² This plan has been structured to meet those criteria for C/CAG at the countywide level and for each of the 11 participating jurisdictions.

¹ FHWA maintains a list of Proven safety countermeasures with documented effectiveness in reducing roadway fatalities and severe injuries (totaling 28 at present). More information is available online at <https://highways.dot.gov/safety/proven-safety-countermeasures>.

² The most recently published eligibility information is available online at <https://www.transportation.gov/sites/dot.gov/files/2023-03/SS4A-Self-Certification-Eligibility-Worksheet-FY23.pdf>.

Safe System Approach

In January 2022, the U.S. Department of Transportation (USDOT) released its National Roadway Safety Strategy (NRSS). In addition to setting the vision for the USDOT, the NRSS adopts the Safe System Approach (SSA) to safety planning, analyses, and project prioritization and implementation.^{3, 4, 5, 6, 7, 8}

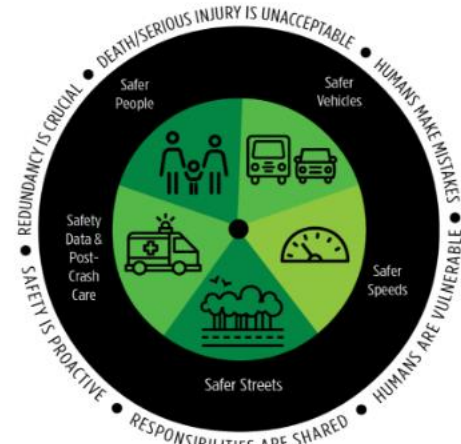
The SSA aims to eliminate fatal and severe injuries for all road users.³ The SSA views crashes as systematic events that can be mitigated (or avoided completely) through a holistic approach to infrastructure, enforcement, programs, and policies. A core assumption of this approach is that roadway users make mistakes while traveling and that the price of these mistakes should not be death or severe injury.

The SSA has five core elements³:

- **Safe road users:** This element reflects that the SSA prioritizes the safety of all road users traveling in the system. It also encompasses the human behavior and human factors issues that lead to crashes, injuries, and death.
- **Safe vehicles:** Vehicle regulations and vehicle design should be designed to mitigate the safety impacts of vehicle-involved crashes.
- **Safe speeds:** Because speed is the method of energy transfer to the human body, the SSA identifies it as a core element that should be considered in infrastructure design and policy-making.
- **Safe roads:** Roadways are the context in which crashes occur. They should be designed to accommodate user error and mitigate the consequences when crashes occur. The SSA emphasizes that engineers and planners must rely on better design of roadways and speed management – rather than the traditional approach of relying on enforcement – to improve safety outcomes^{5,7}.
- **Post-crash care:** The final element acknowledges the importance of people receiving medical care after crashes occur, as well as post-crash analysis to understand contributing factors.

The large role speed plays in determining crash severity suggests the need to design a roadway safety strategy that slows speeds, thereby lessening the kinetic energy transferred to the human body in a crash.³ Recent Federal Highway Administration (FHWA) guidance, which highlights key alignments between the SSA, the Highway Safety Improvement Program (HSIP), and a State's Strategic Highway Safety Plan (SHSP), focuses on

Figure 1: Safe System Approach Principles and Elements



³ Elissa Goughnour, Kara Peach, Michael Dunn, Meghan Mitman, and Dan Gelinne. *Primer on Safe Systems Approach for Pedestrians and Bicyclists*. Federal Highway Administration. Washington, DC, 2021.

⁴ The Safe System Approach. Washington, DC, 2022.

⁵ Federal Highway Administration. "Integrating Equity into the Safe System Approach" Presentation. Accessed Apr. 17, 2023: <https://highways.dot.gov/safety/zero-deaths/integrating-equity-safe-system-approach-presentation>.

⁶ Institute of Transportation Engineers. Recommendations of the Safe System Consortium. 2022.

⁷ National Roadway Safety Strategy. Washington, DC, 2022.

⁸ Core Elements for Vision Zero Communities. Washington, DC, 2022.

roadway speed—not just speeding behavior—as a general risk factor.⁹ Similarly, international authorities focus on a **systemic approach**—using risk factors to inform a rating system that helps to identify problematic roadways and prioritize projects for addressing safety concerns.^{10,11}

C/CAG and its 21 jurisdictions do not have full control over all Safe System elements. For example, the agencies cannot directly affect safe vehicle design and regulation. A Safe System would require State and Federal policy—like legislation to allow automated speed enforcement and continued regulation of vehicle safety standards—will be essential to build a system that is truly safe.

Alignment with the SHSP

The [2020–2024 California Strategic Highway Safety Plan](#) (SHSP) sets out California’s vision, goals, and objectives for reducing fatal and severe injury crashes on public roads (local roads and State Highways). To draw this roadmap, the California Department of Transportation (Caltrans) analyzed crash data and collaborated with traffic safety partners across the state. As a result, the SHSP identified 16 challenge areas, or areas with the most potential to improve roadway safety. Of the challenge areas, six were identified as high-priority areas, or areas with the greatest opportunity to reduce fatality and severe injury.

Whereas the SHSP has historically used the five “Es” (education, enforcement, engineering, emergency response, and emerging technologies) to organize its strategies, as of 2021 State transportation officials shifted focus toward principles that integrate social equity, take a Safe System Approach, and encourage proven countermeasures and emerging technologies. This plan is aligned with the SHSP’s updated guidance.

SHSP challenge areas include (with high-priority challenge areas presented in **bold font**):

- Aging Drivers (65 and older)
- **Bicyclists**
- Commercial Vehicles
- Distracted Driving
- **Impaired Driving**
- **Intersections**
- **Lane Departures**
- Motorcyclists
- Occupant Protection
- **Pedestrians**
- **Speed Management/Aggressive Driving**
- Work Zones
- Young Drivers (15–20 years old)

Incorporating Vision Zero

Vision Zero is a local, national, and international movement to eliminate all traffic-related deaths and severe injuries. The traditional approach to traffic safety views deaths and severe injuries as the cost of getting around; Vision Zero rejects this inevitability and instead understands that traffic fatalities and severe injuries are preventable.

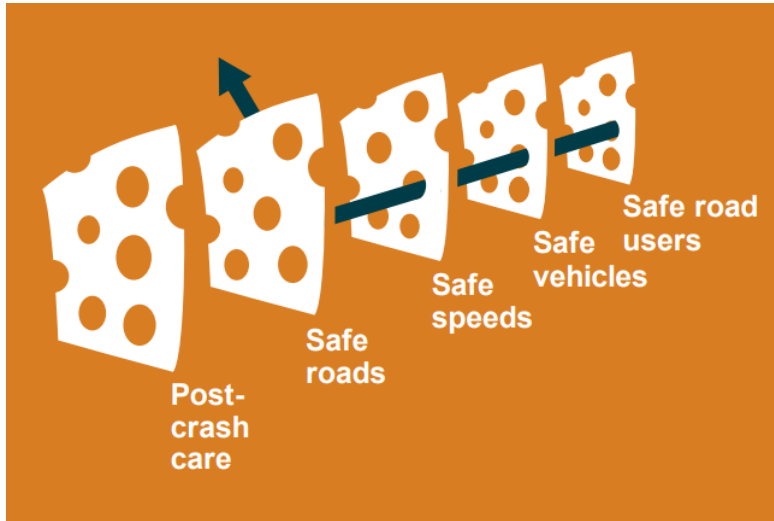
⁹ Emily Finkel, Cullen McCormick, Meghan Mitman, Sarah Abel, Jackie Clark. 2020. *Integrating the Safe System Approach with the Highway Safety Improvement Program*. Federal Highway Administration. Washington, DC.

¹⁰ PIARC Road Safety Manual. 2019. Accessed April 17, 2023: <https://roadsafety.piarc.org/en>

¹¹ New Zealand Ministry of Transport. 2010. *Safer Journeys - A National Strategy to Improve Road Safety*.

By using the principles of the Safe System Approach, Vision Zero initiatives build layers of protection and redundancy into the transportation system to protect all roadway users—even when they make mistakes. The layers of overlapping redundancy are sometimes referred to as the “Swiss Cheese” Model (see Figure 1)— death and severe injury would only occur when all layers fail.

Figure 1. “Swiss Cheese” Model Demonstrating Layers of Redundancy



Source: FHWA (<https://cdn-wordpress.webspec.cloud/intrans.iastate.edu/uploads/sites/10/2021/11/SSA-lowa-FHWA.pdf>)

This plan is aligned with a Vision Zero approach. Although C/CAG does not own local or State roads within San Mateo County, its vision for this plan represents an aggregate of all 21 communities’ visions and would result in significant near-term declines in fatal and severe injuries, with an eventual goal of zero.

MTC passed a Vision Zero policy in 2020 that identified actions to support cities like those in San Mateo County to pursue a Vision Zero commitment. Such a commitment means building a safer transportation system and creating and sustaining a culture where residents, workers, and visitors prioritize traffic safety and minimize the lethality of traffic mistakes. This plan will be implemented through coordination with identified safety partners, including both city agencies and external parties.

What’s in the Plan

This LSRP includes the following:

- Vision and Goals: Countywide vision, accompanying local agency goals, and associated C/CAG goals
- Plan Development: A summary of the collaborative process for developing the LRSP.
- Countywide Data Analysis Findings: A description of major systemic and spatial findings from a countywide existing conditions analysis.
- State Highways in San Mateo County: A snapshot of the influence of Caltrans facilities on safety in the county and a commitment to work with Caltrans to improve safety on its network.
- Safe System Aligned Recommendations: Engineering, policy, and program recommendations for C/CAG and member agencies to realize the plan’s vision and goals.
- Projects: A summary of identified countywide locations to consider for implementing safety projects.
- Implementation and Monitoring: Actions and performance measures to evaluate progress on plan goals.

VISION AND GOALS

Vision

This Countywide Plan vision establishes a desired future condition for San Mateo County, one which is achievable only with collaborative efforts from all relevant agencies.

As the lead agency in developing this plan, C/CAG envisions a County of diverse partners sharing resources and responsibility for maintaining a safe and equitable transportation system, with all actors consistently working together to eliminate death and severe injury on roads countywide.

Together, C/CAG, its 21 local jurisdictions, and partner agencies work to:

- Identify safety improvements, strategies, and programs using the Safe System Approach to eliminate fatalities and severe injuries on local roads.
- Enhance the existing roadway network in a cost-effective manner that promotes traffic safety and social equity, meets the needs of the community, and enriches the lives of residents.
- Promote a culture across agencies and communities that puts roadway safety first in all actions.

C/CAG will lead, coordinate, and support its 21 local jurisdictions in achieving their vision to reduce or eliminate fatalities and severe injury crashes across all public roadways. The desired quantitative reductions from each jurisdiction's plan is summarized below (with links to the current published plans):

- **Atherton:** Reduce fatal and severe injury crashes to zero by 2050.
- **Belmont:** Eliminate all traffic fatalities and reduce the number of non-fatal crashes by 50 percent by 2040.
- **Brisbane:** Reduce fatal and severe injury crashes to zero by 2050; establish and promote a Safe System culture to build overlapping layers of safety.
- **Burlingame:** Reduce fatal and severe injury crashes to zero by 2050.
- **Colma:** Eliminate all traffic fatalities and reduce the number of non-fatal crashes by 50 percent by 2040.
- **Daly City (published 2020)**¹²: Eliminate fatalities and serious injuries by 2035.
- **East Palo Alto:** Eliminate all traffic fatalities and reduce the number of non-fatal injury crashes by 50 percent by 2050.
- **Foster City:** Eliminate all traffic fatalities and reduce the number of non-fatal crashes by 50 percent by 2050 as part of a broader effort to promote roadway safety in Foster City's departments, businesses, and residents.
- **Half Moon Bay:** Eliminate all traffic fatalities and reduce non-fatal crashes by 50 percent by 2050.
- **Hillsborough:** Eliminate all traffic fatalities and reduce the number of non-fatal crashes by 50 percent by 2050.
- **Menlo Park (updated 2023)**¹³: Eliminate traffic fatalities and reduce the number of non-fatal collisions by 50% by 2040.

¹² <https://www.dalycity.org/DocumentCenter/View/3369/Vision-Zero-Action-Plan-2020-PDF>

¹³ <https://menlopark.gov/files/sharedassets/public/v/1/agendas-and-minutes/city-council/2023-meetings/agendas/20231024/m3-20231024-cc-vision-zero-update.pdf>

- **Millbrae (adopted 2022)**¹⁴: Systemically identify and analyze roadway safety problems and recommend improvements.
- **Pacifica (adopted 2023)**¹⁵: Residents and visitors to Pacifica are able to safely travel by car, foot, bicycle, transit, and other modes of transportation to access daily needs and recreational opportunities.
- **Redwood City (adopted 2022)**¹⁶: Eliminate traffic fatalities and severe injuries for all modes by 2030.
- **San Bruno (adopted 2023)**¹⁷: Identify and analyze road safety issues from a systemic perspective and recommend improvements.
- **San Carlos**: Eliminate all traffic fatalities and reduce the number of non-fatal crashes by 50 percent by 2050.
- **San Mateo (ongoing)**: The City is committed to reaching its goal of eliminating all preventable traffic fatalities and severe injuries by 2050.
- **South San Francisco (published 2022)**¹⁸: Support the California vision of moving towards significantly reducing fatalities and serious injuries for all road users.
- **Unincorporated County (published 2021)**¹⁹: Reduce the number of fatal crashes to zero by 2035.
- **Woodside**: Achieve 50 percent reduction in fatal and severe injury crashes by 2050.

Plan Goals

This plan acts in the service of achieving several Countywide safety goals. These goals have guided the creation of this plan and serve as markers C/CAG can use to measure the plan's success moving forward.

The goals include the following:

- Regularly review crash history and community needs to identify and prioritize opportunities to reduce crash risk for roadway users of all ages and abilities.
- Reduce the number of annual fatal and severe injury crashes across all local roadways.
- Partner with other local agencies to incorporate roadway safety into all actions.
- Support agencies in providing opportunities for citizen engagement in identifying issues and inform solutions for roadway safety across the community.
- Embrace the Safe System Approach to promote engineering and non-engineering strategies in the community.
- Work with agencies to monitor safety projects and policy implementation to track progress towards goals.

¹⁴ <https://portal.laserfiche.com/Portal/DocView.aspx?id=15854&repo=r-c2783ec8&searchid=81b66911-b352-477f-ab4f-4a776cf7f808>

¹⁵ <https://www.cityofpacific.org/home/showpublisheddocument/15778/638278612505239698>

¹⁶ <https://www.redwoodcity.org/home/showpublisheddocument/25615/638016840641870000>

¹⁷ <https://www.sanbruno.ca.gov/436/Projects>

¹⁸ <https://www.ssf.net/home/showpublisheddocument/30166/638245818532000000>

¹⁹ <https://www.smcsustainability.org/wp-content/uploads/San-Mateo-County-LRSP3-1.pdf>

PLAN DEVELOPMENT

Existing Safety Efforts

This plan, in addition to outlining a countywide vision for roadway safety, concludes with 11 tailored safety plans for various towns and cities within San Mateo County. The remaining 10 jurisdictions within San Mateo County already have or are developing their own safety plans and therefore are not included individually in this plan (links provided where available):

- [Burlingame \(2023\)](#)
- [Daly City \(2020\)](#)
- [Menlo Park \(2023\)](#)
- [Millbrae \(2022\)](#)
- [Pacifica \(2023\)](#)
- [Portola Valley \(2019\)](#)
- [Redwood City \(2022\)](#)
- [San Bruno \(2023\)](#)
- San Mateo (ongoing)
- [South San Francisco \(2022\)](#)
- [Unincorporated County \(2021\)](#)

Project Advisory Group

The project team convened an advisory group to review and guide the plan's progress. Throughout the plan's development, the project team engaged the advisory group regularly and in different ways, including whole-group meetings, specific break-out meetings, and one-on-one conversations.

The advisory group consisted of the following individuals and organizations:

Table 1. C/CAG Constituent Jurisdictions and Partner Agencies

Agency	Representative(s)	Agency	Representative(s)
Town of Atherton	Robert Ovadia	City of San Bruno	Hae Won Harry Yip
City of Belmont	Matt Hoang Tracy Scramaglia	City of San Carlos	Hanieh Houshmandi Steven Machida
City of Brisbane	Tomas Santoyo Karen Kinser	City of San Mateo	Bethany Lopez Azalea Mitch
City of Burlingame	Andrew Wong	City of South San Francisco	Jeff Chou Matthew Ruble
Town of Colma	Abdulkader Hashem	Town of Woodside	Yazdan Emrani Sindhi Mekala Sean Rose

Agency	Representative(s)	Agency	Representative(s)
City of Daly City	Richard Chiu, Jr.	County of San Mateo	San Mateo County Fire Marshal; Diana Shu
City of East Palo Alto	Irene Chiu Humza Javed Anwar Mirza	California Highway Patrol	Mackenzie Crouch
City of Foster City	Justin Lai Francine Magno Amy Zhou	Caltrans	Greg Currey Jake Freedman Sergio Ruiz;
City of Half Moon Bay	Maz Bozorginia Jonathan Woo	County of San Mateo Office of Sustainability	Joel Slavitt
Town of Hillsborough	Paul Willis	Metropolitan Transportation Commission	Bryan Redmond
City of Menlo Park	Matthew Hui	SamTrans	Martin Reyes
City of Millbrae	Sam Bautista	San Mateo County Office of Education	Theresa Vallez-Kelly
City of Pacifica	Lisa Peterson	San Mateo County Health	Liz Sanchez
Town of Portola Valley	Howard Young	Silicon Valley Bicycle Commission	Anthony Montes
City of Redwood City	Malahat Owrang		

A variety of agency staff and community partners were involved throughout the development of this LRSP and played an integral role in identifying priorities, providing local context, and reviewing the existing conditions analysis. Many of the strategies identified in this plan will require coordination with these partners and their support to create a culture of roadway safety. Additional partners may be identified in the future, but the advisory group shown above represents a group of invested parties that can be leveraged for plan implementation.

COMMUNITY ENGAGEMENT AND INPUT

This LRSP includes community members’ experiences and concerns gathered from project team hosted pop-up events and an interactive webmap.



Pop-up Events Conducted as Part of Public Engagement at Woodside Public Library (top) and at Brisbane Farmers’ Market (bottom).

Events

The project team hosted a series of public engagement events countywide to support the concurrent development of the Countywide LRSP and each participating jurisdiction’s plan. These events focus on jurisdiction-specific issues and on countywide concerns. The table below lists the events, organized by themed engagement phases, and is followed by the community input themes we heard.

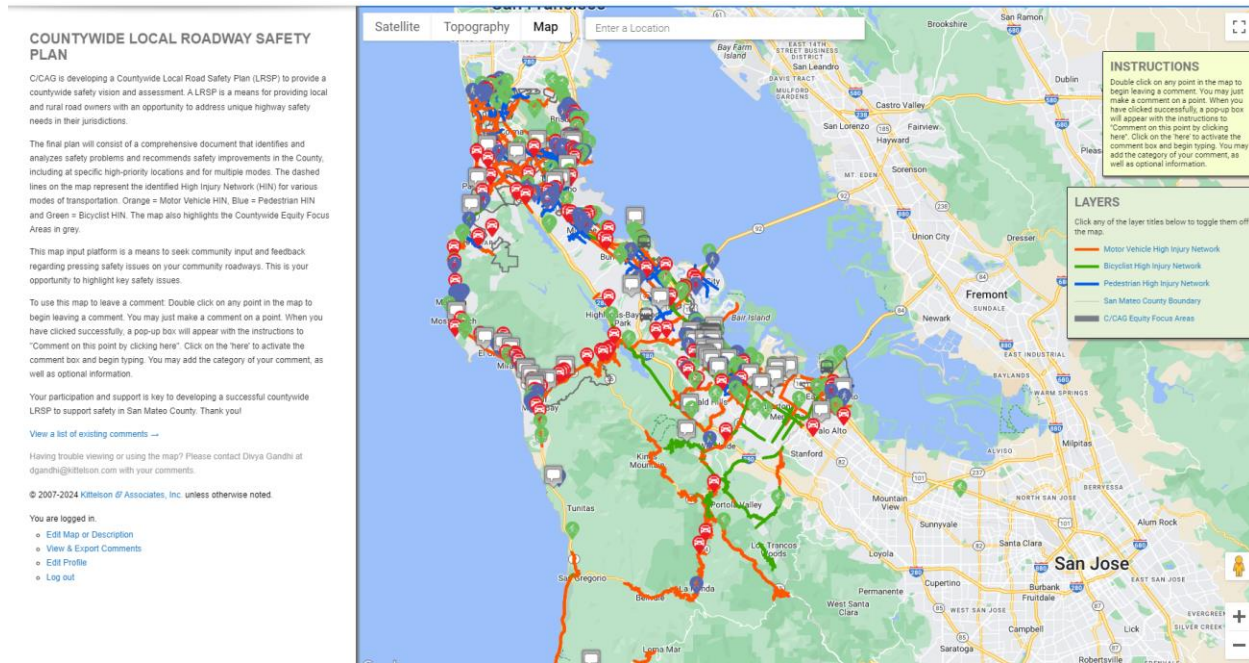
Table 2. Calendar of C/CAG Public Engagement Events

Date	Event	Location
August 10, 2023	Countywide Virtual Kickoff meeting – Sharing the purpose and timing of the plan	Virtual meeting (recorded and posted to plan website)
August 16, 2023	Phase 1 Pop-up/Tabling Event	East Palo Alto
August 19, 2023	Shared crash data analysis; received input on locations and safety concerns	Half Moon Bay Farmers Market
August 20, 2023		Foster City Summer Days
August 27, 2023		San Carlos Block Party
August – September, 2023	Phase 1 Concurrent Online Input	Online webmap (countywide input)
December 17, 2023	Phase 2 Pop-up/Tabling Event	Belmont Farmers' Market
December 20, 2023	Shared draft prioritized locations and types of engineering recommendations; received comments on locations and votes/input on types of treatments and desired locations	Woodside Public Library
January 9, 2024		Colma BART Station
January 16, 2024		Atherton Library
January 18, 2024		Brisbane Farmers' Market
February 7, 2024		Portola Valley Bicycle, Pedestrian, & Traffic Safety Committee
March – April 2024	Phase 3 Draft Plan Share the draft plan publicly on the project website, through electronic distribution channels, and with presentations to C/CAG Committees and the Board.	Various

Online Map Survey

The project team made an online countywide webmap tool and survey available during August and September 2023 for the public to provide comments and respond to questions to guide the plan's development (see Figure 2). Respondents were able to record location-specific feedback, associate a travel mode, and leave a detailed comment pertaining to a safety concern.

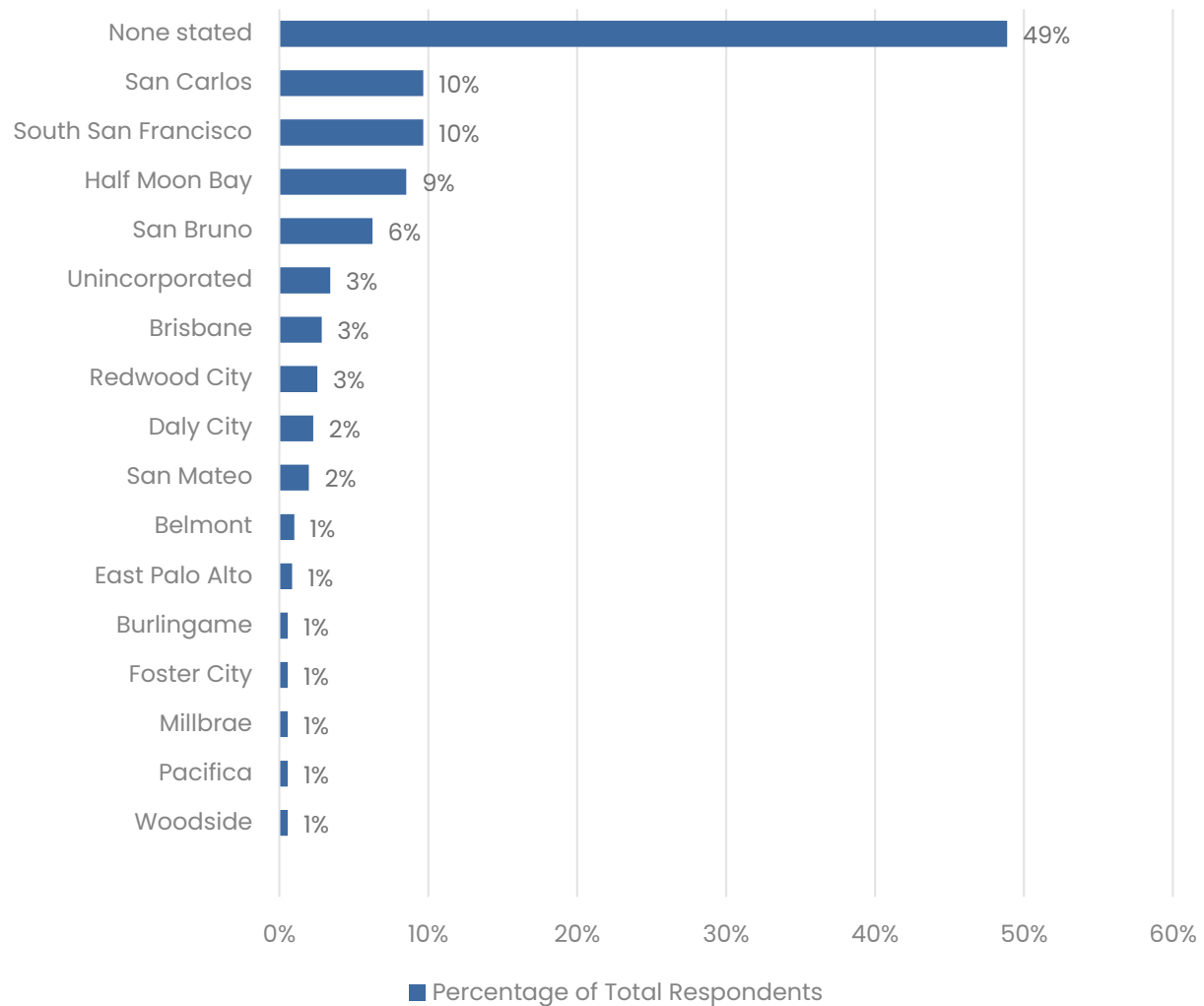
Figure 2. Online Map Survey Tool



Countywide, there were a total of 528 comments recorded by 352 respondents. Those comments are included in Appendix A, organized by local jurisdiction. Of the 352 respondents:

- 180 respondents mentioned their city of residence. Among the respondents who shared their city of residence, the top three were South San Francisco (19 percent), San Carlos (19 percent) and Half Moon Bay (17 percent). Figure 3 shows the percentage of total respondents by city of residence. (In many cases, respondents would leave a comment within a jurisdiction but not identify their city or town of residence. We have recorded those responses as “none stated.”)
- 140 respondents identified their age group. Among the respondents who identified their age group, the top three categories were 35–39 years (26 percent), 30–34 years (24 percent), and 45–49 years (11 percent).
- 116 respondents identified their race/ethnicity. Among the respondents who identified their race/ethnicity, 83 percent were White, 7 percent were Asian, 6 percent were Hispanic, and 4 percent belonged to Other race/ethnicity groups.
- 106 respondents responded to whether they lived in a C/CAG Equity Focus Area. Of these respondents, 55 percent responded as “Yes”, and 45 percent responded as “No”.

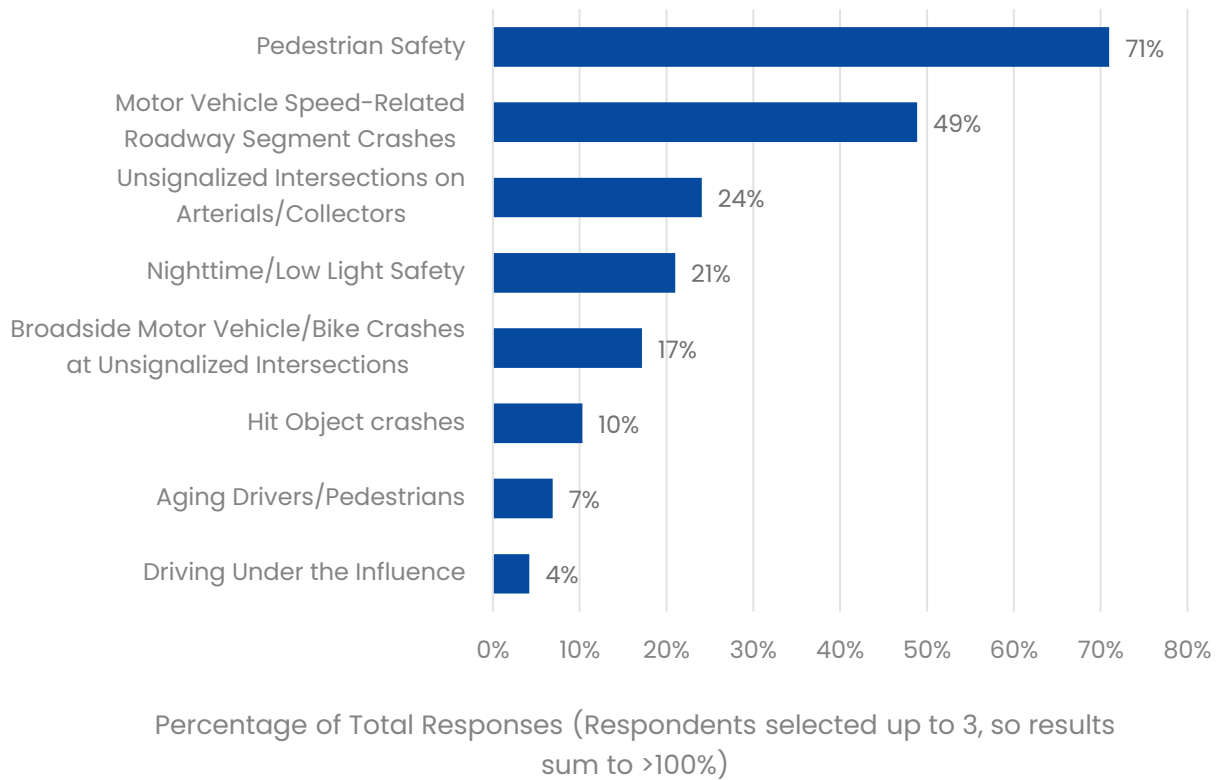
Figure 3. Percentage of Total Respondents by City of Residence



Of the 528 responses, the following trends emerged:

- Respondents were asked to identify the travel mode for their comment and safety concern. The most frequent travel modes identified were biking (26 percent), driving (22 percent) and walking (20 percent).
- Respondents were asked to pick their top three emphasis areas for the plan to focus on. The most frequently selected emphasis areas were pedestrian safety (71 percent of respondents), motor vehicle speed related roadway safety (49 percent), and unsignalized intersections on arterials/collectors (24 percent). Figure 4 shows the percentage of total responses by emphasis areas selected. (Because respondents could select multiple, the responses sum to more than 100 percent).

Figure 4. Percentage of Total Responses by Emphasis Areas Selected



Respondents were also asked which Safe System elements were most important for the plan to focus on (Safer People, Safer Roads, Safer Vehicles, Safer Speeds, or Post-Crash Care). Of those who responded to the question, the top three safe system elements selected were safer roads (70 percent), safer people (46 percent), and safer speeds (34 percent). Some respondents selected more than one, so results sum to more than 100 percent.

Phase 1 Feedback

This section describes the general themes/concerns gathered from community feedback. Additionally, maps of comment locations are included in the local jurisdiction chapters.

Biking Concerns/Requests

- Add new bike infrastructure such as protected bike lanes, separated bike lanes, road diets, bike tunnels, and bike bridges.
- Provide a more connected bike network: continuous bike lanes (especially through intersections) and install bike lanes to transit connections (Caltrain) and biotechnology business parks in South San Francisco.
- Upgrade or general maintenance concerns of existing bike infrastructure including widening and restriping bike lanes, installing raised barriers on overpasses, installing bike wayfinding signs, installing street lighting to increase visibility of bicyclists, removing speed humps, repairing potholes, and removing debris along bike lanes.
- Concerns regarding conflicts with motor vehicles including high traffic volumes and congestion, vehicle speeds, right of way issues, and turning conflicts at intersections.
- Upgrade signal timing to provide a leading bicycle interval.
- Remove on-street parking to make more way for bikes along the roadway.
- Request to provide modal filters: to allow only bicycles and pedestrians on certain streets.

Pedestrian Concerns/Requests

- Add new pedestrian infrastructure or upgrade existing infrastructure such as building new sidewalks, widening existing sidewalks, providing midblock crossings, and high visibility crosswalks.
- Requests for sidewalk maintenance and trimming low hanging trees.
- Support for additional pedestrian infrastructure including Rectangular Rapid Flashing Beacons, push buttons for WALK signs and pedestrian hybrid beacons (HAWK), increasing pedestrian walk times and modifying signals to include a leading pedestrian interval (especially at intersections near transit connections and schools).
- Concerns regarding conflicts with motor vehicles including high traffic volumes and congestion, speeding, and running STOP signs.
- Concerns related to sharing sidewalks with micromobility devices such as bicycles, electric scooters, skateboards, etc.
- Pedestrian visibility concerns: street lighting is absent or insufficient.
- Concerns regarding curb ramps being insufficient for wheelchairs or other mobility challenged roadway users.

Traffic Enforcement Concerns

- Multiple concerns regarding running STOP signs and red lights.
- Concerns regarding speeding observed at multiple locations – requests for traffic calming.
- Concerns regarding illegal on-street parking, double parking, parking on sidewalks and bike lanes and large vehicles parking on roadways or curves.

Roadway Infrastructure/ Traffic Operations Concerns

- Primary concerns include traffic congestion, the number of lanes not being sufficient for the traffic volumes during peak hours and poor signal timing design (signals show red when there are no vehicles at an approach)
- Concerns regarding maintenance of roadway infrastructure including friction of the roadway surfaces, potholes, lack of proper roadway markings, wayfinding signage and improving visibility at intersections.
- Requests to reduce vehicle conflict points at intersections through design.
- Requests to install barriers to separate two-way traffic, lengthening passing lanes and adding high occupancy vehicle lanes.

Public Transit Concerns

- Improve biking and walking connections to transit stations.
- Provide more public transportation options.
- Ensure reliable bus services and routes serving locations such as schools, parks and seniors.

Phase 2 Feedback

Phase 2 outreach included more detailed discussion of the Countywide High Injury Network and draft priority locations within communities. Participants were also asked to weigh in on potential engineering solutions. The project team received over 200 comments on priority locations and proposed countermeasures. The locations and themes of Phase 2 comments are presented in the individual plan chapters included in this plan document. Comments received, organized by event, are included in Appendix B. Themes from this feedback varied between communities but are summarized as follows:

General Comments

- Desire for better enforcement of motor vehicles speeding and stopping at stop signs.

Pedestrian Comments

- Concerns of pedestrian safety on major roadways and desire for pedestrian enhancements, such as sidewalks and pedestrian signals, to enhance safety,

Bicycle Comments

- Desire to improve bicycle facilities, specifically clearly marked and separated bike lanes.
- Concerns of poor visibility for bicyclists, especially where bicyclists and drivers share the road.

Motor Vehicle Comments

- Desire for traffic calming measures, such as speed bumps, stop signs, and traffic lights.
- Concerns of vehicles speeding, especially in areas with lots of pedestrians

COUNTYWIDE DATA ANALYSIS FINDINGS

A **systemic descriptive analysis** was conducted to identify patterns, trends, and potential risk factors based on five-year County crash data. The descriptive analysis identifies environmental, design, and user characteristics most associated with fatal and severe injury (F/SI) outcomes. The data were downloaded from the Transportation Injury Mapping System.²⁰ (TIMS) Crash database representing injury and fatal crashes for the full years 2018 through 2022.

The analysis was limited to roadways and crashes that occur on locally owned roadways and along at-grade State Highway facilities. The analysis excluded all Caltrans-owned grade-separated freeways and ramps, with the exception of crashes occurring within the influence area of ramp terminal intersections (which typically include Caltrans and locally owned roadways).

The subsequent State Highways in San Mateo County Section beginning on page 46 describes at-grade State Highway trends in the county and provides recommendations for working with Caltrans to improve safety on State Highway roads in the County.

Table 3 shows an overview of crashes and share of local/State Highway locations for the data analyzed.

Table 3. Injury/Fatal Crash Data Overview, All Modes Aggregated (2018-2022), Non-Freeway Crashes

Year	Total Count	Crashes on Non-Freeway Roadways	Crash Breakdown			
			State Highway Crashes	State Highway Share (percent)	Local Roadway Crashes	Local Roadway Share (percent)
2018-2022	12,526	8,468	2,712	43%	5,756	57%

Source: TIMS 2023

²⁰ Transportation Injury Mapping System, <http://tims.berkeley.edu>

Pre-Pandemic versus Pandemic Comparison

The COVID-19 pandemic has had a significant effect on travel patterns, behaviors, and traffic volumes. The analysis considered crashes that occurred before the pandemic (2017-2019) and during the pandemic years (2020-2022) to observe changes in safety due to the COVID-19 pandemic.

Based on the findings as listed in Table 4, the total number of crashes has decreased, but the number of F/SI crashes before versus after is quite similar (52 compared to 48 percent of the six-year total). This is also evident in the EPDO score per crash, which indicates that in the pandemic era the average severity has been about 20 percent higher compared to 2017-2019.

Table 4. Injury/Fatal Crashes by Year, All Modes Aggregated (2017-2022), Non-Freeway Crashes

Year	Count	percent of 6-year Total Crashes	F/SI Count	percent of Total F/SI Crashes	EPDO Score	percent of Total EPDO Score	Average EPDO Score
2017-2019	6,109	58%	555	52%	139,258	54%	22.8
2020-2022	4,436	42%	518	48%	120,774	46%	27.2
Total	10,545	100%	1,073	100%	260,032	100%	24.7

Source: TIMS 2023

The project team consulted Caltrans Traffic Census data and found that traffic volumes have decreased along State Highway routes in the San Mateo County area with the exception of the Route 35 San Mateo County and Santa Clara County line traffic census location which has stayed the same from 2017 to 2021. Largest reductions in traffic volume were recorded along Route 82 in Colma and Daly City, where traffic volumes have decreased by 37.9 percent from 2017 to 2021.

Table 5 shows the total number of crashes has decreased from pre-pandemic to pandemic era in most jurisdictions with the exception of East Palo Alto, Half Moon Bay, and Woodside. The Cities of Atherton, Burlingame, Daly City, East Palo Alto, Foster City, Millbrae, Pacifica, Portola Valley, Redwood City, San Carlos, Woodside, and Unincorporated San Mateo County (64 percent of total jurisdictions) all recorded higher F/SI crashes in the pandemic era.

Table 5. Injury/Fatal Crashes by Year/Jurisdiction, All Modes Aggregated (2017-2022), Non-Freeway Crashes

Jurisdiction	Year	F/SI	Other Crashes	Total
Atherton	2017-2019	2	116	118
	2020-2022	3	41	44
Belmont	2017-2019	5	164	169
	2020-2022	5	130	135
Brisbane	2017-2019	8	53	61
	2020-2022	8	23	31
Burlingame	2017-2019	3	212	215
	2020-2022	11	116	127
Colma	2017-2019	22	9	31
	2020-2022	0	1	1
Daly City	2017-2019	4	544	548
	2020-2022	39	434	473
East Palo Alto	2017-2019	10	250	260
	2020-2022	33	229	262
Foster City	2017-2019	4	106	110
	2020-2022	10	74	84
Half Moon Bay	2017-2019	10	77	87
	2020-2022	9	82	91
Hillsborough	2017-2019	4	30	34
	2020-2022	2	13	15
Menlo Park	2017-2019	23	430	453
	2020-2022	15	252	267
Millbrae	2017-2019	11	142	153

Jurisdiction	Year	F/SI	Other Crashes	Total
	2020-2022	24	107	131
Pacifica	2017-2019	21	249	270
	2020-2022	24	167	191
Portola Valley	2017-2019	2	25	27
	2020-2022	10	11	21
Redwood City	2017-2019	41	783	824
	2020-2022	50	546	596
San Bruno	2017-2019	56	266	322
	2020-2022	23	187	210
San Carlos	2017-2019	15	155	170
	2020-2022	19	139	158
San Mateo	2017-2019	58	715	773
	2020-2022	23	326	349
South San Francisco	2017-2019	66	530	596
	2020-2022	43	424	467
Unincorporated	2017-2019	113	625	738
	2020-2022	137	529	666
Woodside	2017-2019	14	73	87
	2020-2022	30	87	117

Source: TIMS 2023

Hot Spot analysis/ High Injury Network Identification

A hot spot analysis involves analyzing historic crash data for the County and within each local jurisdiction. Hot spot analysis is a valuable method to identify locations with disproportionate histories of crashes, but it is not intended to reveal roadway factors that contribute to high crash risk. To identify the modal High Injury Networks (HINs) for pedestrians, bicyclists, and motor vehicles, a sliding window analysis was conducted as described in Appendix C

Dynamic maps of all local jurisdiction HINs, as well as of the combined Countywide HIN, can be viewed at [this link](#). Static maps are contained in the body and as part of Appendix C of this plan.

- The pedestrian HIN is represented by 98 miles of the street network that had the highest concentration of weighted crashes on a per-mile basis. The minimum weighted crash threshold was substantially higher along State routes (i.e., Caltrans roadways) compared to local roads. This differential scoring was used to keep State routes from dominating the HIN and precluding insights about locally controlled roadways. The Pedestrian HIN covers just 3.4 percent of the street network for the County but accounts for half of all pedestrian crashes and 69 percent of fatal and severe injury pedestrian crashes from 2018 to 2022. Roughly 12 percent of the pedestrian HIN is along a State route, and 10 percent of the pedestrian HIN is along El Camino Real (SR 82).
- The bicyclist HIN was produced using the same approach as the pedestrian HIN (i.e., evaluating State routes separately from local streets and using the same relative scoring). The bicyclist HIN represents 96 miles of the street network and accounts for 3.3 percent of the street network. Twenty-seven percent of the network is along a State route, with El Camino Real comprising nearly 10 percent of the bicyclist HIN mileage. Most crashes along the bicyclist HIN involved both a bicyclist and a motorist (82 percent of total crashes; 67 percent of F/SI crashes), while the remaining crashes were solo bicyclist crashes.
- The Motor Vehicle HIN was developed using the same per-mile weighted analysis as the pedestrian and bicyclist HIN but the crash thresholds for State highways and local roadways. The motor vehicle HIN represents 283 miles of the street network and accounts for about 10 percent of the street network, 63 percent of all injury motor vehicle crashes, and 44 percent of F/SI motor vehicle crashes. Forty-two (42) percent of the network is along a State route.

To consolidate a network of high injury segments for San Mateo County and its specific jurisdictions, motor vehicle HIN, pedestrian HIN and bicycle HIN were combined to identify, for every roadway segment in the County, whether it is part of zero, one, two, or all three of the modal HINs.

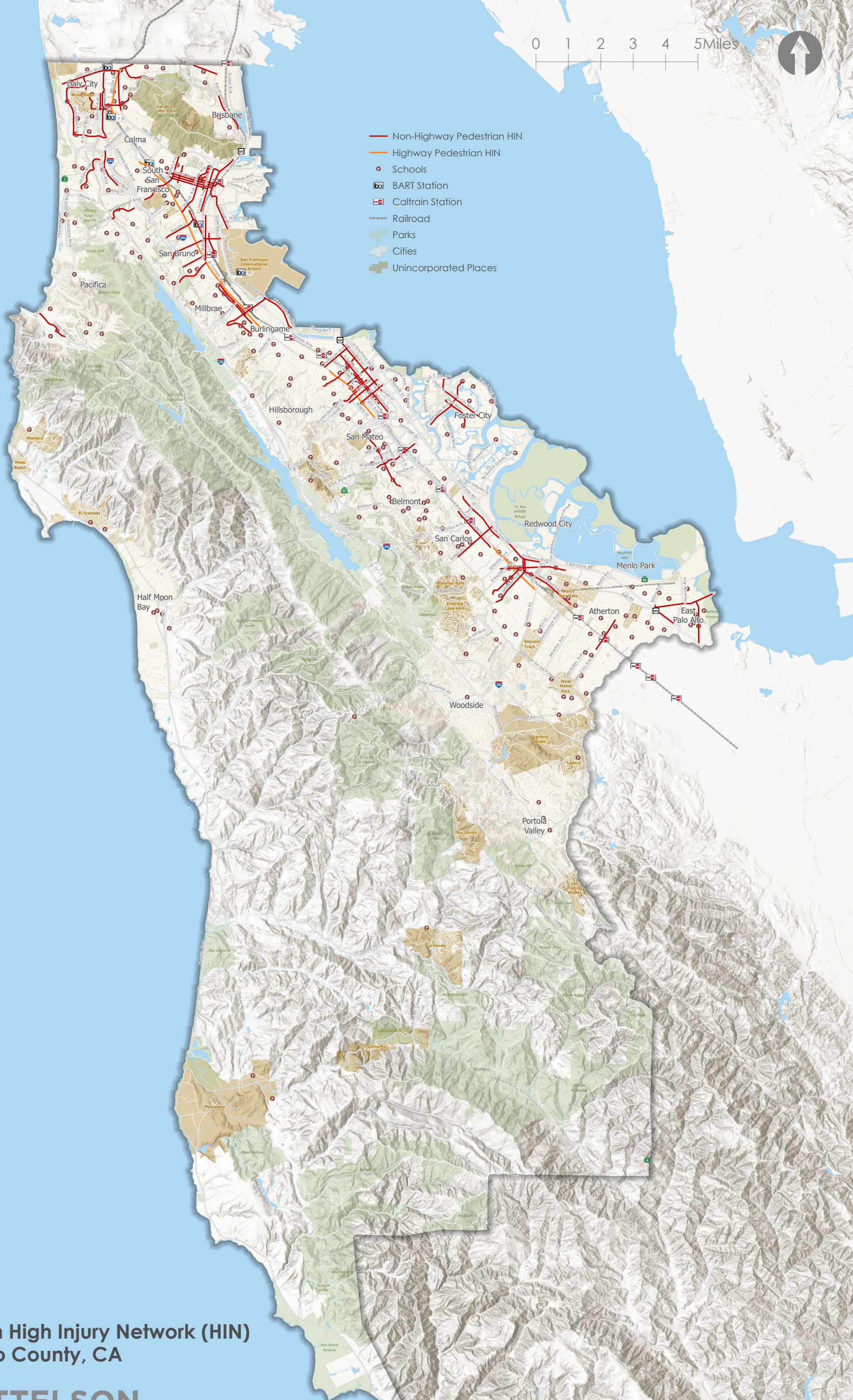


Figure 5

**Pedestrian High Injury Network (HIN)
San Mateo County, CA**

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Figure 6

**Bicyclist High Injury Network (HIN)
San Mateo County, CA**

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- Non-Highway High Injury Network
- Highway High Injury Network
- Schools
- BART Station
- Caltrain Station
- Railroad
- Parks
- Cities
- Unincorporated Places

0 1 2 3 4 5 Miles



Figure 7

**Motor Vehicle High Injury Network (HIN)
San Mateo County, CA**

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Figure 8

Pedestrian + Bicyclist + Motor Vehicle Union High Injury Network (HIN) San Mateo County, CA

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SYSTEMIC DESCRIPTIVE FINDINGS

In addition to the spatial and location-based findings, the analysis analyzed the crash data for systemic findings. Those are organized by mode (pedestrian, bicyclist, and motor vehicles). An overview of crashes by mode for the 5-year period is provided in Table 6. The following pages describe high-level Countywide systemic crash findings. Pages 40-41 show countywide findings in relation to the County emphasis areas.

Table 6: Injury/Fatal Crashes by Mode, Countywide (2018-2022), Non-Freeway Crashes

Mode	Count	% of 5-year Total Crashes	F/SI Count	% of Total F/SI Crashes
Pedestrians	1,064	13%	208	23%
Bicyclists	1,058	13%	175	20%
Motor Vehicle Alone	6,328	75%	515	57%
Total	8,450	100%	898	100%

Source: TIMS 2023

EMPHASIS AREAS

The project team analyzed crash data countywide to establish emphasis areas. Emphasis areas are crash dynamic, behavioral, or road user characteristics that agencies can focus on to maximize fatal and severe injury reduction on local roads. Countywide emphasis areas are listed below.

1. **Pedestrian and bicyclist safety.** Countywide, pedestrians were involved in 13 percent of all injury crashes but 23 percent of fatal/severe injury crashes, showing a disproportionate involvement in the most severe outcomes. Similarly, bicyclists were involved in 13 percent of all injury crashes but 20 percent of fatal/severe injury crashes.
2. **Nighttime/low light safety.** Countywide, crashes occurring in dark conditions—especially in dark, unlit conditions—are more severe than those that occur in daylight. Motor vehicle crashes in dark, unlit conditions have about double the average severity when they occur compared to crashes in daylight.
3. **Unsignalized intersections on arterials/collectors.** Countywide, crashes for all modes most frequently occurred at the intersection of higher order and lower order roadways – most commonly along arterial and collector roadways. Pedestrian and bicyclist crashes most frequently occur at unsignalized intersections.
4. **Vulnerable age groups (youth and aging).** Countywide across all modes, crash victims between the 15 to 34 years old are more likely to be injured including F/SI as a result of traffic safety than other groups. Victims between the ages 50 and 69 and between 75 and 84 are more likely to be severely injured than other groups.
5. **Motor vehicle speed related roadway segment crashes.** Countywide, motor vehicle crashes were more severe along roadway segments than at any other location type; unsafe speed was the most commonly cited the primary crash factor (27 percent of all injury crashes and 23 percent of fatal/severe injury crashes)

6. **High speed roadways (35+mph).** Countywide, crashes on roadways with posted speeds 40mph or higher had an average crash severity per mile 13 times higher than along roadways with posted speeds of 25 mph or less.
7. **Alcohol involvement.** Countywide, one in ten (10 percent) of all motor vehicle injury crashes and one in five F/SI motor vehicle crashes (19 percent) involved alcohol.

SYSTEMIC FINDINGS BY MODE

The systemic findings highlight the following topics for modes as appropriate. More detail is provided in a detailed analysis memo provided as Appendix C.

- | | | |
|-----------------------------|----------------------------------|-----------------------|
| • Crashes by Year | • Functional Classification | • Pre-Crash Movements |
| • Lighting Conditions | • Intersection Control | • Violation Types |
| • Weather Conditions | • Number of Legs at Intersection | • Alcohol Usage |
| • Roadway Conditions | • Posted Speed Limit | • Violation Types |
| • Proximity to Transit Stop | • Functional Classification | • Victim Age |
| • Crash Locations | | |

Pedestrian Findings

Crashes by Year

- There was a sharp reduction in crashes at the start of the pandemic; however, crashes appear to have slightly increased in severity during the core pandemic years, from 18–20 percent of total EPDO scores in 2018–2019 to 22–23 percent of total EPDO scores in 2020–2021.
- Pedestrian crash frequencies increased in 2022 as pandemic–related restrictions eased and travel and activities begin to increase, although the overall share of severe and fatal crashes dropped back to about 16 percent.

Lighting Conditions

- Lighting condition has a strong correlation with F/SI outcomes. Crashes that occurred in darkness or low-light (i.e., dusk or dawn) conditions were much more likely to result in a F/SI outcome (27 percent) compared to those that occurred during daylight (15 percent), and this disproportionality was even stronger in dark, unlit conditions (32 percent F/SI).

Proximity to Transit Stop

- Intersections within 250 feet of a transit stop had a crash rate of 20 crashes per 100 intersections, compared to just four crashes per 100 intersections for those intersections further away.

Crash Locations

- Most crashes occurred at an intersection (76 percent of injury/fatal crashes; 68 percent of F/SI crashes), with the remainder coded to segment locations (24 percent of injury/fatal crashes; 32 percent of F/SI crashes).
- Segment and unsignalized intersection pedestrian crashes tended to be more severe, with average EPDO scores of 51 and 40.5, respectively, compared to crashes at signalized intersections, which have an average EPDO score of 30.5. Motorist speeds may be higher midblock than at intersections, resulting in higher kinetic energy and limited reaction time, both of which may contribute to greater injury severity from segment crashes.

Functional Classification

- Primary streets had the highest rate of crashes per 100 miles (340 crashes per 100 miles) and F/SI crashes (81 F/SI crashes per 100 miles), followed by secondary streets (137 crashes per 100 miles; 29 F/SI crashes per 100 miles). This finding supports research showing consistent pedestrian crash risk along major arterials, which generally have higher vehicle speeds, higher vehicle volumes, and greater crossing widths.
- At intersections, crashes occurred most frequently at:
 - Secondary and residential streets (23 percent of injury/fatal crashes; 28 percent of F/SI crashes),
 - Primary and residential streets (20 percent of injury/fatal crashes; 23 percent of F/SI crashes), and
 - Residential and residential streets (19 percent of injury/fatal crashes; 13 percent of F/SI crashes).

Intersection Control

- A majority of intersection crashes occurred at unsignalized intersections (63 percent of injury/fatal and 61 percent of F/SI crashes).
- Crashes were concentrated at signalized intersections (51 crashes per 100 intersections; 9 F/SI crashes per 100 intersections).
- Crashes that involved a pedestrian crossing in a crosswalk at a signalized intersection with a motorist going straight accounted for the second largest share of F/SI crashes (23 percent); these crashes were also disproportionately severe when they occurred, with 42 percent resulting in a F/SI outcome.

Posted Speed Limit

- Roadways with 25 mph speed limits are underrepresented in F/SI crashes even though they accounted for the largest share of pedestrian crashes. They accounted for 38 percent of pedestrian crashes and 34 percent of F/SI crashes, but 80 percent of the street network has a speed limit of 25mph or less.
- Streets with a posted speed limit of 45 mph had the second largest share of crashes (27 percent) and F/SI crashes (29 percent), followed by 35 mph streets (23 percent of injury/fatal crashes; 27 percent of F/SI crashes). These higher speed streets had some of the highest percentages of crashes resulting in an F/SI outcome, average EPDO scores, and EPDO scores per 100 miles. These findings support the current understanding that higher speed roads have serious safety implications for vulnerable road users.

Pre-Crash Movements

- Most pedestrian crashes involved the following:
 - A pedestrian crossing at an intersection with a motorist turning left (24 percent). These crashes most frequently occurred at a signalized intersection (45 percent), but most of the F/SI crashes with this crash type occurred at unsignalized intersections.
 - A pedestrian crossing at an intersection with a motorist proceeding straight (15 percent). These crashes most frequently occurred at unsignalized intersections for overall crashes (77 percent) and F/SI crashes (59 percent).
 - A pedestrian crossing not in a crosswalk with a motorist proceeding straight (13 percent). These crashes most often occurred at segment locations (46 percent of injury/fatal crashes; 53 percent of F/SI crashes), followed by unsignalized intersections (39 percent of injury/fatal crashes; 31 percent of F/SI crashes).
- Of those three crash types, those that involved a motorist proceeding straight had a higher share of crashes that resulted in a F/SI outcome and a higher average EPDO score.

Alcohol Usage

- The vast majority of crashes did not have any road user found to be under the influence of alcohol (96 percent of injury/fatal crashes; 94 percent of F/SI crashes).

Victim Age

- Pedestrian victims aged between 15 and 29 years of age and between 55 and 59 years of age accounted for the largest share of victims for all injury severities. However, pedestrian victims aged from 40 to 44 and from 55 to 74 years of age had the largest share of F/SI victims.

Bicyclist Findings

Crashes by Year

- Bicyclist crash frequencies were highest during the first two years of the five-year study period and lowest during the core period of the COVID-19 pandemic (2020–2021).
- Crash severity appears to be getting worse. Bicyclist injury trends showed that 20–23 percent of crashes resulted in a F/SI outcome in 2021–2022, compared to 11–15 percent of crashes in 2018–2020.

Lighting Conditions

- The vast majority of bicyclist crashes occurred during daylight conditions (84 percent), which fits with when most bicyclist trips occur.
- Bicyclist crashes were more likely to result in an F/SI outcome during dark lighting conditions (21 percent) compared to daylight conditions (16 percent).

Weather Conditions

- More than 90 percent of total crashes and F/SI bicyclist crashes occurred during clear weather conditions.

Roadway Conditions

- Most crashes occurred at locations with no unusual conditions (95 percent of crashes).
- Though a comparatively small sample, the majority of F/SI bicyclist crashes that occurred with any type of non-typical roadway condition (n=17) were solo bicyclist crashes (n=13), underscoring the vulnerability of bicyclists and the need for well-maintained roads.

Crash Locations

- Most bicyclist crashes (43 percent) occurred at unsignalized intersections, but most F/SI crashes occurred at segment locations (43 percent). Roughly one-third of the F/SI crashes at unsignalized intersections were solo bicyclist crashes.
- Among the crashes at unsignalized intersections, and excluding solo bicyclist crashes, it was most common for both parties to be traveling in the same direction (e.g., an overtaking or dooring crash) in both overall crashes (45 percent) and F/SI crashes (58 percent).
- Among the unsignalized same-direction crashes, most involved both the bicyclist and motorist going straight (17 percent).
- Most F/SI crashes at unsignalized intersections involved both parties traveling in perpendicular directions, either both going straight (n=7) or the bicyclist going straight and the motorist making a left turn (n=4).

Functional Classification

- Most bicyclist crashes occurred along:
 - Secondary streets (39 percent),
 - Residential streets (20 percent), and

- Primary streets (20 percent).
- At intersections, crashes occurred most frequently at:
 - Secondary-residential intersections (28 percent of injury/fatal crashes; 24 percent of F/SI crashes),
 - Residential-residential intersections (18 percent of injury/fatal crashes; 13 percent of F/SI crashes),
 - Primary-residential intersections (17 percent of injury/fatal crashes; 16 percent of F/SI crashes), and
 - Tertiary-residential intersections (16 percent of injury/fatal crashes; 18 percent of F/SI crashes).

Intersection Control

- Most crashes occurred at unsignalized intersections, accounting for 67 percent of injury/fatal crashes and 70 percent of F/SI crashes. When looking at crashes per 100 intersections, crashes were concentrated at signalized intersections (38 crashes per 100 intersections; 5 F/SI crashes per 100 intersections). The percentage of crashes that resulted in a F/SI outcome was comparable between location types, with 15 percent of crashes resulting in a F/SI outcome at unsignalized intersections compared to 13 percent at signalized intersections.

Posted Speed Limit

- Higher-speed streets tend to have very high EPDO scores per 100 miles. Most crashes and F/SI crashes occurred along 45 mph roadways (32 percent of injury/fatal crashes; 31 percent of F/SI crashes), while only 8 percent of the network is made up of 45 mph streets.
- Streets with a posted speed limit of 40 mph had the largest rate of crashes per 100 miles (n=166) and F/SI crashes per 100 miles (n=138). Given that these streets comprise less than 1 percent of the network, these statistics indicate that a disproportionate share of overall crashes and F/SI crashes occur on these roads.

Pre-Crash Movements

- Most bicyclist crashes involved:
 - Both roadway users proceeding straight at the time of the crash (21 percent of injury/fatal crashes; 18 percent of F/SI crashes). These crashes occurred most frequently at unsignalized intersections (53 percent), whereas F/SI crashes occurred most frequently at signalized intersections (43 percent).
 - A bicyclist proceeding straight and a motorist turning left (12 percent of injury/fatal crashes; 9 percent of F/SI crashes). Most of these crashes occurred at unsignalized intersections (25 percent of injury/fatal crashes; 46 percent of F/SI crashes).
 - A bicyclist proceeding straight and a motorist turning right (11 percent of injury/fatal crashes; 6 percent of F/SI crashes). Most of these crashes occurred at unsignalized intersections (43 percent of injury/fatal crashes; 29 percent of F/SI crashes) and signalized intersections (32 percent of crashes; 53 percent of F/SI crashes).

Violation Types

The most frequent violation types included:

- Automobile right-of-way (19 percent of crashes; 15 percent of F/SI crashes),
- Unsafe speed (18 percent of crashes; 28 percent of F/SI crashes), and
- Improper turning (17 percent of crashes; 12 percent of F/SI crashes).

Alcohol Usage

- Few reported crashes identified either the motorist or bicyclist as being under the influence of alcohol (less than 2 percent of injury/fatal crashes; less than 5 percent of F/SI crashes).

Motor Vehicle Findings

Crashes by Year

- Motor Vehicle crash frequencies were highest during the first two years of the five-year period and lowest during the core period of the COVID-19 pandemic (2020–2021).
- Crash severity has decreased, with the highest crash severity observed in 2018 which then decreased during the pandemic years (2020–2021).

Lighting Conditions

- About 26 percent of motor vehicle crashes were observed to have occurred in the dark. Crashes with no streetlights had nearly double the per-crash EPDO score of daylight crashes.

Crash Locations

- About 39 percent of motor vehicle crashes and 52 of F/SI motor vehicle crashes occurred at a segment or midblock location. Unsignalized intersection and roadway segment crashes are both more severe on average than signalized intersection crashes.

Functional Classifications

- Secondary roadways are overrepresented in in F/SI share (36 percent) compared to total share (29 percent).
- Intersection crashes along primary and secondary roads account for the majority of intersection crashes (36 and 29 percent each) and similarly large shares of F/SI crashes (35 and 29 percent). The highest average EPDO scores were at intersections along the trunk and primary roadway system where they intersect with lower-order intersections. When looking at the signalized versus unsignalized breakdown of these combinations, the unsignalized intersections all have higher average EPDO scores—indicating that unsignalized minor-street intersections along arterial roadways have a disproportionate severity burden in the county.

Intersection Control

- The majority of motor vehicle crashes occurred at unsignalized intersections, but signalized intersections have a much higher crash rate per 100 intersections.

Posted Speed Limit

- Higher-speed streets tend to have very high EPDO scores. Most crashes and F/SI crashes occurred along roadways with speed greater than 40 mph roadways (56 percent of all crashes; 70 percent of F/SI crashes).
- Notably, almost 47 percent of the 40 mph+ unsignalized intersection crashes occurred along secondary roadways A majority of crashes at 45 mph or higher intersections were at unsignalized intersections (56 percent)
- Roadways with posted speed limits of 40 mph or higher consist of 12 percent of County roadways but make up 44 percent total crashes and the majority (55 percent) of total F/SI crashes. Crashes that occurred on roadways with a posted speed limit of 40 mph or higher had an average EPDO per mile that was more than thirteen times that of crashes occurring on roadways with a posted speed limit of 25 mph or less.

Crash Types

- At intersections, the most frequent and severe motor vehicle crashes were the following types and locations:

- Broadside: 61 percent occurred unsignalized intersections (66 percent of EPDO score),
 - Rear-end: 55 percent at occurred at signalized intersections (51 percent of EPDO score), and
 - Head-on: 51 percent occurred at signalized intersections (59 percent of EPDO score).
- On roadway segments, the predominant crash types are rear-end (29 percent), hit-object (21 percent), and broadside (18 percent). Hit-object crashes account for disproportionately large (35 percent of F/SI crashes and 30 percent of EPDO score, compared to 21 percent overall).

Violation Types

The most frequent violation types included:

- Unsafe speed (27 percent of injury/fatal crashes, 23 percent of F/SI crashes),
- Automobile right-of-way (19 percent of crashes; 12 percent of F/SI crashes), and
- Improper turning (18 percent of crashes; 19 percent of F/SI crashes).

Alcohol Usage

About 10 percent of the motor vehicle crashes included a driver under the influence, but those accounted for 19 percent of F/SI crashes and had an average EPDO about 1.5 times as high as other motor vehicle crashes.

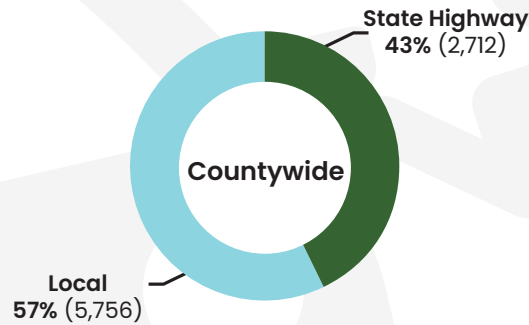
- Victims between the ages of 10 and 29 are more likely to be injured, including F/SI as result of traffic safety issues on average than other groups. Victims between the ages 15 to 24 are especially overrepresented with victims and F/SI ratios over 2.
- Victims ranging from ages 0 to 14 (children) account for 18 percent of the countywide population and 14 percent of total crashes and 8 percent of F/SI motor vehicle crash victims.
- Victims ranging from ages 15 to 24 (young adult) account for 11 percent of the countywide population but account for 22 percent of total crashes and 26 percent of F/SI motor vehicle crash victims.

Victims ranging from ages 65 and up account for 16 percent of the countywide population but account for 10 percent of total crashes and 14 percent of F/SI motor vehicle crash victims.

San Mateo County—Crash History

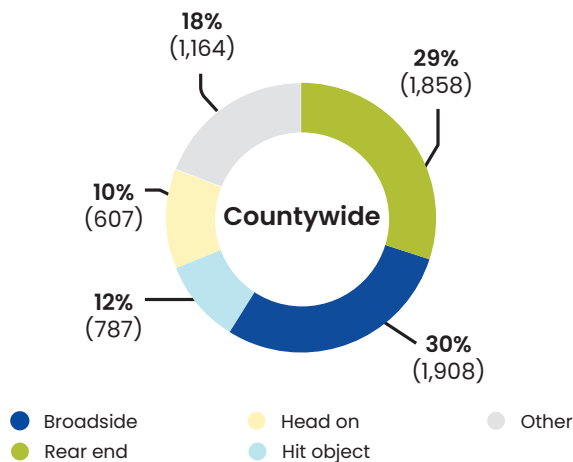
Total Crashes

In San Mateo County, 8,464 fatal and injury crashes were reported on at-grade facilities between 2018 – 2022, where:



Most Frequent Collision Types

Broadside, rear-end, head-on, and hit-object crashes were the most common crash types in San Mateo County.



Mode Involvement

Pedestrian Crashes (1,073)



Countywide
13% (1,073)

All Injury Crashes



Fatal/Severe Injury Crashes
23% (208)

Fatal/Severe Injury Crashes

Bicycle Crashes (1,067)



Countywide
13% (1,067)

All Injury Crashes



Fatal/Severe Injury Crashes
20% (176)

Fatal/Severe Injury Crashes

Motor Vehicle¹ Crashes (6,324)



Countywide
75% (6,324)

All Injury Crashes



Fatal/Severe Injury Crashes
57% (515)

Fatal/Severe Injury Crashes



8% (625)

of reported collisions in the Countywide total involved drugs or alcohol



5% (472)

of reported collisions in the Countywide total involved young drivers²

1. Motor crashes include motor vehicles and motorcyclists.

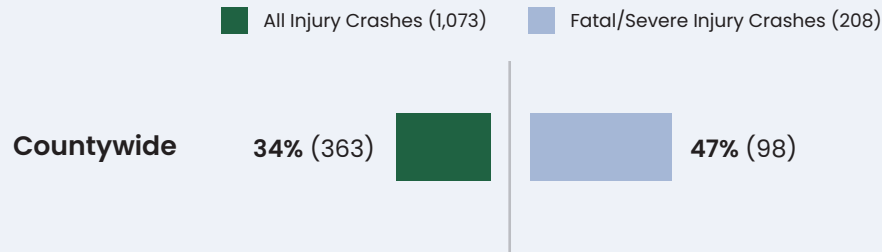
2. Young driver crashes are crashes that involve at fault drivers who are under 30 years old.

San Mateo County—Crash History

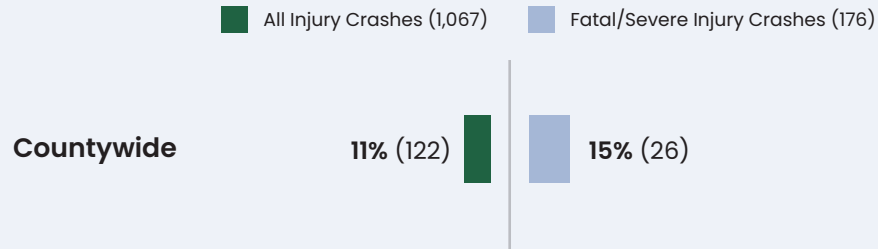
Dark Conditions

Crashes reported in nighttime conditions were found to be more severe—especially in dark, unlit conditions. Here are the Countywide crashes in dark conditions:

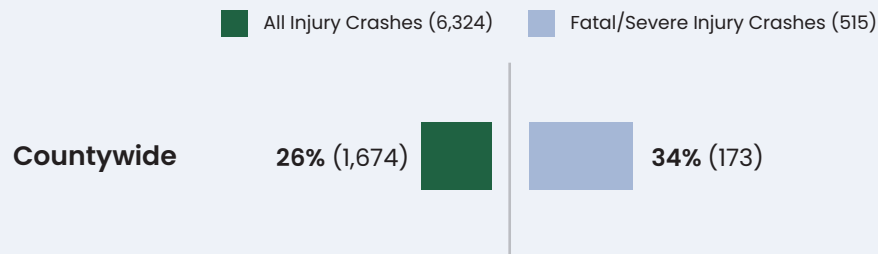
Share of Pedestrian Crashes in Dark Conditions (363)



Share of Bicyclist Crashes in Dark Conditions (122)

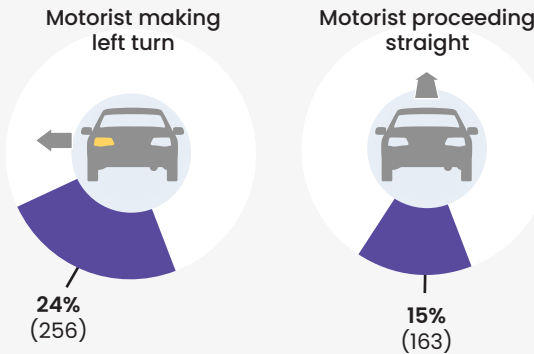


Share of Motor Vehicle Crashes in Dark Conditions (1,674)

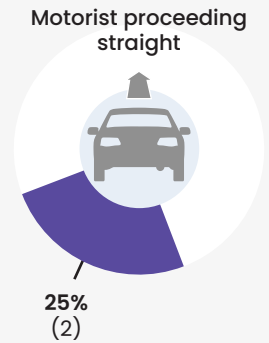


Reported Pedestrian Crashes (1,073)

Pedestrian Crossing at Intersection



Pedestrian Crossing Not at a Crosswalk

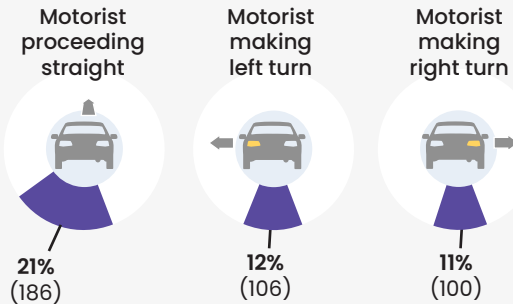


● Countywide

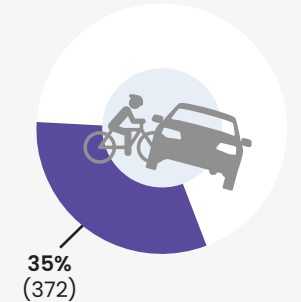


Reported Bicycle Crashes (1,067)

Bicyclist Proceeding Straight



Perpendicular Bicyclist Crashes



● Countywide

STATE HIGHWAYS IN SAN MATEO COUNTY

State Highways are some of the most critical interjurisdictional facilities across the C/CAG region. They connect multiple jurisdictions; move high volumes of people across many travel modes; serve critical freight needs; and in some communities serve as high-activity walking, biking, and commercial corridors.

Any planning and project development requires cross-jurisdictional coordination.

The County includes the at-grade State Highways which run through the jurisdictions shown in Table 7.

Table 7. San Mateo County State Highways and Local Jurisdictions

Local Jurisdictions	At-Grade State Routes						Freeways			
	1	35 (Skyline Blvd)	82 (El Camino Real)	84	92 (Half Moon Bay Rd)	109 (University Ave)	114 (Willow Rd)	US 101	I-280	I-380
Atherton			X							
Belmont			X					X		
Brisbane								X		
Burlingame			X					X	X	
Colma			X						X	
Daly City	X	X	X						X	
East Palo Alto						X	X	X		
Foster City					X					
Half Moon Bay	X		X		X					
Hillsborough		X								
Menlo Park			X	X		X	X	X	X	
Millbrae			X					X	X	
Pacifica	X	X								
Portola Valley										
Redwood City			X	X				X	X	
San Bruno		X	X	X				X	X	X
San Carlos			X					X	X	
San Mateo			X		X			X		

Local Jurisdictions	At-Grade State Routes						Freeways			
	1	35 (Skyline Blvd)	82 (El Camino Real)	84	92 (Half Moon Bay Rd)	109 (University Ave)	114 (Willow Rd)	US 101	I-280	I-380
South San Francisco			X	X				X	X	
Woodside		X			X				X	
Total	3	4	13	5	3	2	2	12	11	1

Safety on At-Grade State Highways

At-grade State Highways serve a high volume of traffic to, through, and within San Mateo County. As a result, they account for a considerable share of countywide crashes.

Table 8 provides a breakdown of reported non-freeway crashes from 2018 to 2022 in the County and a share occurring within each jurisdiction on the State Highway network. Overall, the State Highway network accounted for 43 percent of at-grade crashes within the County and was as high as 77 percent within any jurisdiction.

The following jurisdictions showed the highest variation from that share:

- Brisbane (contains no at-grade State Highways): 100 percent local
- Portola Valley (SR 35 defines the southwestern boundary, but otherwise contains no at-grade State Highways): 100 percent local
- Hillsborough: 100 percent local
- Half Moon Bay: 23 percent local
- Unincorporated: 37 percent local
- Woodside: 39 percent local

Table 8. Injury/Fatal Crashes by Jurisdiction, All Modes Aggregated (2018-2022), Non-Freeway Crashes

Jurisdiction	Count	State Highway Crashes	Percent (%) State Highway Crashes	Local Roadway Crashes	Percent (%) Local Roadway Crashes
Atherton	121	36	30%	85	70%
Belmont	244	66	29%	178	71%
Brisbane	69	-	0%	69	100%
Burlingame	267	90	30%	177	70%
Colma	11	3	59%	8	41%
Daly City	863	143	29%	720	71%
East Palo Alto	458	150	33%	308	67%
Foster City	150	7	29%	143	71%
Half Moon Bay	145	116	77%	29	23%
Hillsborough	38	-	0%	38	100%
Menlo Park	542	188	33%	354	67%
Millbrae	230	94	38%	136	62%
Pacifica	394	141	56%	253	44%
Portola Valley	39	-	0%	39	100%
Redwood City	1,137	295	26%	842	74%
San Bruno	412	171	36%	241	64%
San Carlos	281	48	18%	233	82%
San Mateo	869	176	29%	693	71%
South San Francisco	866	168	17%	698	83%
Unincorporated	1,147	704	61%	443	39%
Woodside	185	111	61%	74	39%
Total	8,468	2,712	43%	5,756	57%

Source: TIMS 2023

Existing Plans and Directives to Improve Safety

Caltrans has already taken steps to address safety on at-grade State Highways in San Mateo County, as included in the following documents, discussed in more detail below:

- Director's Policy 36: Road Safety
- Road Safety Action Plan 2023-24
- District 4 Bike Plan
- District 4 Pedestrian Plan

CALTRANS DIRECTOR'S POLICY 36: ROAD SAFETY – ESTABLISHES THE VZ COMMITMENT

Director's Policy 36, issued in February 2022, establishes a vision for Caltrans to eliminate fatalities and severe injuries (F+SIs) on California's roadways by 2050.²¹ The statement includes the following intended results:

- "...to establish a corporate expectation to prioritize safety in order to achieve its goal of zero fatalities and severe injuries by 2050."
- "All Divisions shall align their programs, plans, policies, procedures, and practices with the Safe System Approach as appropriate to their division."
- This statement includes a commitment to:
 - A safety first mindset
 - Prioritize eliminating F+SIs through existing programs and the development of new programs.
 - Eliminate race-, age-, ability- and mode-based disparities in road safety outcomes.

The policy statement also formally adopts the Safe System Approach, which aligns with this Countywide Local Roadway Safety Plan.

CALTRANS ROAD SAFETY ACTION PLAN 2023-24

The Caltrans Road Safety Action Plan 2023-24 lays out a coordinated plan to support Caltrans' goal of eliminating fatal and severe injury crashes by 2050.²² Importantly, the Plan includes the following actions relevant to this Countywide LRSP.

²¹ Available online at https://dot.ca.gov/-/media/dot-media/programs/safety-programs/documents/policy/dp_36-a11y.pdf

²² Available online at <https://dot.ca.gov/-/media/dot-media/programs/traffic-operations/documents/safety/road-safety-action-plan-2023-24-a11y.pdf>

Table 9. Caltrans SAP Actions Related to LRSP

Action	Relevance to this Plan
1.5 Propose to extend Caltrans’ delegation to approve proactive safety projects in addition to reactive projects.	This plan includes countywide and jurisdiction-specific priority locations identified through a combination of reactive and proactive measures. C/CAG and local jurisdictions will look for opportunities to coordinate with Caltrans to identify proactive safety projects (i.e., the locations may not have risen to the top of Caltrans’ own prioritization process).
2.1 Develop best-practice guidance to improve the safety of pedestrians and bicyclists on the State Highway System.	This plan includes a list of context-appropriate recommended countermeasures, including for pedestrians and bicyclists, for each jurisdiction to improve safety. This list of countermeasures aligns with the Caltrans <i>Local Roadway Safety Manual</i> , and jurisdictions may cross check available countermeasures against forthcoming Caltrans best-practice guidance to identify alignment and, therefore, opportunities to coordinate on projects.
3.1 Develop a statewide inventory of safety devices to support proactive safety initiatives and create a framework to extend the database to include additional roadside safety features.	

DISTRICT 4 BIKE PLAN

The 2018 District 4 Bike Plan includes a list of top tier bicyclist/pedestrian projects on Caltrans facilities.²³ The plan includes over 100 bicycle/pedestrian projects on Caltrans facilities based on how they address safety, mobility, and/or equity. Many of these projects are located on at-grade State Highways. Those are included as an attachment. For those that have not yet been implemented, Caltrans and the relevant jurisdictions will use the advisory group to be formed as a recommendation from this plan to coordinate and bring forward pathways to implementation.

DISTRICT 4 PEDESTRIAN PLAN

The 2021 District 4 Pedestrian Plan includes an assessment of walking conditions and a tiered ranking of priority highway segments and crossings for pedestrian improvements.²⁴ The plan also includes recommendations for local coordination to advance pedestrian projects.

Improvements to Date in the County

Caltrans has successfully partnered with local jurisdictions who have coordinated to bring forward safety projects in the County. The following projects can serve as a model for cross-jurisdictional coordination in the name of safety improvements:

- Town of Colma – El Camino Real

²³ Available online at https://dot.ca.gov/-/media/dot-media/district-4/documents/d4-bike-plan/caltransd4bikeplan_report_lowres-r6.pdf

²⁴ Available online at <https://dot.ca.gov/-/media/dot-media/programs/transportation-planning/documents/active-transportation-complete-streets/district4-finalreport-ally.pdf>

The Town of Colma worked closely with Caltrans to develop the 2021 *El Camino Real Bicycle and Pedestrian Improvement Plan* which proposes a series of projects along the corridor along with potential funding sources.²⁵ The Town has successfully received SMCTA and OBAG funding to improve the El Camino Real/Mission Road intersection as a result of this plan. The Town is continuing to look for funding and implementation opportunities.

■ South San Francisco El Camino Real

The City of South San Francisco has teamed with the San Mateo County Transportation Authority, the San Mateo County Office of Education, and the Silicon Valley Bike Coalition to install a demonstration project along a 0.3-mile stretch of El Camino Real. The project includes a class IV separated bike lane, a newly striped crosswalk, and a boarding platform for SamTrans buses. The project proceeded with Caltrans coordination.

Caltrans Recommendations and Actions

Given the nature and scale of crash history along at-grade State Highways along with C/CAG's and Caltrans' Vision Zero commitment, Caltrans will participate in the recommended County Safety Advisory Group and will work with the group to achieve the following outcomes:

- Consult the Caltrans District 4 Bike Plan and Pedestrian Plan Project list to further advance projects not yet funded.
- Develop a list of safety treatments or project types meeting each of the following three criteria:
 - "Caltrans maintained" – Local jurisdictions would be able to install these treatments provided they reach agreement with Caltrans for Caltrans to maintain the treatments.
 - "Locally maintained" – Local jurisdictions would be able to install these treatments and would be required to maintain on at-grade State Highways without the need for a maintenance agreement.
 - "Coordination required" – Caltrans would be generally supportive of such a project, but some maintenance details would need to be negotiated.
- Develop a template or exemplar for a maintenance agreement that agencies can use in an "off-the-shelf" fashion to more easily advance safety projects in partnership with Caltrans.
- Caltrans will proactively identify when projects are moving into certain project development phases or project streams, to provide the opportunity for local jurisdiction input and coordination to improve safety.
- Caltrans will listen to input and help shape areas of need and project opportunity countywide, including proactive safety projects.

²⁵ Available online at <https://www.colma.ca.gov/documents/ecr-improvement-plan/>

SAFE SYSTEM-ALIGNED RECOMMENDATIONS

This section offers engineering recommendations, which include physical countermeasures to be implemented onto roadways, as well as policy and program recommendations, which work to increase safe travel behavior in roadway users through action-based outreach, strategic funding, and equitable prioritization of resources.

Each individual recommendation is designed to bring the Countywide roadway network and its users into better alignment with the values and practices of the Safe System Approach. When implemented in tandem, however, these twin tracks of recommendations will create the holistic, layered protection in the Countywide roadway network that the Safe System Approach requires.

Engineering

C/CAG does not own any local roadways and therefore will not design, implement, or maintain engineering countermeasures. However, through this project it has coordinated with the participating jurisdictions to develop lists of city- or town-approved countermeasures. The following table presents the cumulative list of countermeasures developed among agencies

Table 10: Engineering Countermeasures

Location Type [1]	Countermeasure	Crash Types	Cost	Location Type [1]	Countermeasure	Crash Types	Cost
all	Lighting [2]	Nighttime	\$\$	UI	Upgrade intersection pavement markings [2]	Rear-end, right-angle, or turning crashes related to lack of driver awareness	\$
SI	Improve signal hardware: lenses, back-plates with retroreflective borders, mounting, size, and number [2]	Signalized Local/Arterial Intersections	\$	UI	Install flashing beacons at stop-controlled intersection [2]	Broadside, Rear-end	\$\$\$
SI	Install left-turn lane and add turn phase [2]	Signalized Local/Arterial Intersections	\$-\$ \$\$	UI	Install Pedestrian Signal, Pedestrian Hybrid Beacon, or Rectangular Rapid Flashing Beacon [2]	Pedestrian and Bicycle	\$\$\$
SI	Convert signal to mast arm (from pedestal-mounted) [2]	Signalized Local/Arterial Intersections	\$\$\$	UI	Install transverse rumble strips on approaches [2]	All	\$
SI	Install raised median on approaches [2]	Signalized Local/Arterial Intersections	\$	UI	Install splitter islands on the minor road approaches [2]	All	\$
SI	Create directional median openings to allow (and restrict) left-turns and U-turns (signalized intersection) [2]	Pedestrian Crashes, Signalized Local/Arterial Intersections	\$	R	Road diet (Reduce travel lanes from 4 to 3 and add a two way left-turn and bike lanes) [2]	All	Varies

Location Type [1]	Countermeasure	Crash Types	Cost	Location Type [1]	Countermeasure	Crash Types	Cost
SI	Install raised pavement markers and striping [2]	Wet, Night, all	\$	R	Corridor access management [2]		Varies
SI	Install flashing beacons as advance warning (S.I.) [2]	read-end, broadside	\$\$\$	R	Install edgeline rumble strips/stripes [2]	All	Varies
SI	No Right Turn on Red (RTOR)	Pedestrian Crashes, Signalized Local/Arterial Intersections	\$	R	Install separated bike lanes [2]	Pedestrian and Bicyclists	\$\$\$
SI	Centerline Hardening or Continuous Raised Median [3]	All crashes	\$	R	Install/upgrade pedestrian crossing (with enhanced safety features) [2]	Pedestrian and Bicyclists	\$\$\$
SI	Convert intersection to roundabout (from signal) [2]	Signalized Local/Arterial Intersections	\$\$\$	R	Install raised pedestrian crossing [2]	Pedestrian and Bicyclists	\$
SI	Install pedestrian countdown signal heads [2]	Pedestrian Crashes, Signalized Local/Arterial Intersections	\$	R	Remove or relocate fixed objects outside of Clear Recovery Zone [2]	Hit Object	Varies
SI	Install pedestrian crossing [2]	Pedestrian Crashes, Signalized Local/Arterial Intersections	\$	R	Install delineators, reflectors and/or object marker [2]	All	\$
SI	Install pedestrian scramble [2]	Pedestrian Crashes, Signalized Local/Arterial Intersections	\$	R	Install/upgrade signs with new fluorescent sheeting (regulatory or warning) [2]	All	\$

Location Type [1]	Countermeasure	Crash Types	Cost	Location Type [1]	Countermeasure	Crash Types	Cost
SI	Install advance stop bar before crosswalk (Bicycle Box) [2]	Pedestrian and Bicyclist Crashes, Signalized Local/Arterial Intersections	\$	R	Install dynamic/variable speed warning signs [2]	Driver Behavior	Varies
SI	Modify signal phasing to implement a Leading Pedestrian Interval (LPI) [2]	Pedestrian Crashes, Signalized Local/Arterial Intersections	\$	SI	Extend pedestrian crossing time	Pedestrian	\$
SI	Install painted safety zone	Pedestrian Crashes, Signalized Local/Arterial Intersections	\$	SI	Pedestrian Phase Recall	Pedestrian	\$
SI	Install Protected Intersection Elements	Pedestrian Crashes, Signalized Local/Arterial Intersections	\$	SI	Extend green time for bikes	Bikes	\$
UI	Convert to all-way STOP control (from 2-way or Yield control) [2]	All	\$	SI	Extend Yellow and All Red Time	All	\$
UI	Install signals [2]	All	\$\$\$	R	Lane Narrowing	All	\$
UI	Convert intersection to roundabout (from all way stop) [2]	All	\$\$\$	SI	Bicycle Crossing (Solid Green Paint)	Bikes	\$

Location Type [1]	Countermeasure	Crash Types	Cost	Location Type [1]	Countermeasure	Crash Types	Cost
UI	Convert intersection to roundabout (from stop or yield control on minor road) [2]	All	\$\$\$	SI	Bicycle Signal/Exclusive Bike Phase	Bikes	\$
UI	Convert intersection to mini-roundabout [2]	All	\$\$\$	UI	Curb Extensions	All	\$
UI	Create directional median openings to allow (and restrict) left-turns and u-turns (unsignalized intersections) [2]	All	\$	SI	ADA-compliant directional curb ramps and audible push buttons	Pedestrian	\$
UI	Install raised medians (refuge islands) [2]	Pedestrian and Bicyclists	\$	SI,UI	Curb Radius Reduction [3]	All	\$-\$
UI	Install pedestrian crossings (signs and markings only) [2]	Pedestrian and Bicyclists	\$	UI,SI	Splitter Islands [4]	All	\$
UI	Install pedestrian crossings (with enhanced safety features) [2]	Pedestrian and Bicyclists	\$\$\$	UI,SI	Approach Curvature [4]	All	Varies
UI	Install/upgrade larger or additional stop signs or other intersection warning or regulatory signs [2]	Rear-end, right-angle, or turning crashes related to lack of driver awareness	\$	all	Roadside Design Features [4]	All	Varies

1: UI = Unsignalized Intersection; SI = Signalized Intersection; R = Roadway segments; All = All of the above

Sources: [2] [Caltrans Local Roadway Safety Manual \(2022\)](#); [3] [NCHRP Report 926](#); [4] [NCHRP Report 613](#)

\$ = ≤\$50,000; \$\$ = \$50,000 - \$200,000; \$\$\$ = > \$200,000

Policy and Program

Based on the goals, existing conditions, and opportunities identified in the development of this plan, this section identifies categories of actions C/CAG and identified partners can take to support LRSP implementation. The recommendations fall into a few categories, as shown in Table 11.

The recommendations are described in more detail following the table, and Table 12 on page 65 is provides a list of recommendations and partner roles.

Table 11. Recommendations and Categories

Category	Near-Term Recommendations	Ongoing Recommendations	Long-Term or Ongoing Recommendations
Organize (O)	O1: Transportation Safety Advisory Committee		
		O2: High-Visibility Media Campaign	
Educate (E)		E1: Best Practices Training E2: Law Enforcement Training E3: Technical Assistance for Safety Education in Schools	
			E4: Communication Protocol
Coordinate (C)	C1: AB413 Implementation		C2: Safe System Enabling Legislation C3: Graduated Traffic Fine Structure
Fund (F)	F1: Dedicated Funding	F2: Equitable Investment F3: Prioritize Investments F4: Identify Targeted Enforcement Funding	
Research (R)			R1: Safety and Equity Impacts Evaluation R2: Data Quality Improvements R3: Crash Data Enhancements R4: Big Data
Plan (P)		P1: Safe Routes to School P2: Annual Review	
			P3: Plan Update

ORGANIZE

O1: Transportation Safety Advisory Committee

Convene the Plan's Advisory Group Form as the newly-established San Mateo County Transportation Safety Advisory Committee (TSAC) to coordinate on safety plan implementation. The TSAC will include seats for the agencies listed in this table and will identify additional seats dedicated to representatives of equity priority communities, vulnerable road users, youth, older adults, parents of school-age children, local businesses, traffic violence victim families, etc.

Importantly, the TSAC will include representation from Caltrans to allow coordination on State Highway locations in the County. As a member of the TSAC, Caltrans will proactively identify when projects are moving into certain project development phases or project streams, to provide the opportunity for local jurisdiction input and coordination to improve safety. Caltrans will also listen to input and help shape areas of need and project opportunity countywide, including proactive safety projects.

Convene meetings quarterly.

Lead agency: C/CAG

Coordinating partners: Constituent jurisdictions, County Public Health, Office of Sustainability, County Office of Education, SMCTA, California Highway Patrol, MTC, SVBC, Caltrans, County Sheriff's Office

O2: High-Visibility Media Campaign

Conduct a safety media campaign. This may be exclusively a median campaign to raise awareness about the emphasis areas identified in this plan, or this may be a high-visibility enforcement campaign. If the latter, the campaign includes dedicated law enforcement with media supporting the enforcement activity to ensure public awareness. Potential communication tools:

- Bus ads
- Social media
- Text messages

Lead agency: County Public Health

Coordinating partners: County Sheriff's Office, California Highway Patrol, Office of Sustainability, San Mateo County Office of Education

EDUCATE

E1: Best Practices Training

Through the TSAC, convene best practices training to keep local jurisdictions informed of state-of-the-art practices related to safety planning and implementation. Example education session topics may include: (1) support for developing competitive grant applications, (2) share safety best practices including updated safety countermeasure recommendations, (3) training on available data sources.

C/CAG will organize and schedule the workshops and will seek assistance from MTC and Caltrans in identifying relevant topics and training resources (especially related to grant-related topics).

Lead agency: C/CAG

Coordinating partners: MTC, Caltrans, constituent jurisdictions

E2: Law Enforcement Training

Integrate safety into training for new officers (e.g., NHTSA's pedestrian training for law enforcement).

Lead agency: County Sheriff's Office

Coordinating partners: California Highway Patrol

E3: Technical Assistance for Safety Education in Schools

Continue to fund School Travel Fellowship Program to provide the following:

- technical assistance to schools and planners to implement roadway safety demonstration projects
- ATP Project Specialist to work with educators to provide technical assistance (bike rodeos, parent engagement workshops and resources, walk and bike audits, and additional support for walk/bike to school encouragement events) to schools in EPCs

Lead agency: San Mateo County Office of Education

Coordinating partners: C/CAG, County Public Health, Office of Sustainability, SVBC

E4: Communication Protocol

Adopt and develop safety-related communication protocols in coordination with the TSAC. The protocols will promote consistent public communication regarding language usage and statements related to transportation safety. Encourage language in line with Vision Zero and Safe System principles that acknowledges mistakes are inevitable but death and severe injury are preventable. For example, promote use of the word crash rather than accident to emphasize shared responsibility.

Lead agency: C/CAG

Coordinating partners: Constituent jurisdictions

COORDINATE

C1: AB413 Implementation

Coordinate among jurisdictions through the TSAC to provide an implementation pathway for [Assembly Bill 413](#), which prohibits the stopping, standing, or parking of a vehicle within 20 feet of the approach of any marked or unmarked crosswalk, or 15 feet where a curb extension is present. Prior to January 1, 2025, jurisdictions may only issue warnings unless the violation occurred where red paint or signage prohibits the stopping, standing, or parking.

Communicating and enforcing AB413 presents logistical challenges for local jurisdictions, but through the TSAC they may prepare common and individualized implementation pathways.

Lead agency: C/CAG

Coordinating partners: Constituent jurisdictions

C2: Safe System Enabling Legislation

Consider advocating for legislation that could support the Safe System Approach—for example, authorization to implement automated enforcement. Include public engagement and input from constituent jurisdictions while the implementation of Assembly Bill 645 brings speed cameras to Glendale, Long Beach, Los Angeles, Oakland, San Jose, and San Francisco.

Lead agency: C/CAG

Coordinating partners: MTC, Caltrans

C3: Graduated Traffic Fine Structure

Through legislative agenda, consider advocating for an income-based graduated traffic fine structure at the state level, so fines do not disproportionately impact people with lower incomes. Such a change would allow traffic enforcement to occur where necessary while tempering disproportionate burdens.

Lead agency: C/CAG

Coordinating partners: TSAC members

FUND

F1: Dedicated Funding

Propose ongoing, dedicated funding and staffing for implementation and monitoring of the safety plan, including presiding over the TSAC. This role may be fulfilled by a partial FTE or through staff augmentation.

Lead agency: C/CAG

Coordinating partners: SMCTA, MTC, Caltrans

F2: Equitable Investment

Prioritize investments in disadvantaged communities. Include social equity criteria in scoring when making funding available. Consider using a combination of indices in allowing local agencies to identify disadvantaged communities. For example, consider including C/CAG Equity Focus Areas, MTC Equity Priority Communities, USDOT Historically Disadvantaged Communities, USDOT Areas of Persistent Poverty, and other relevant indices subsequently developed locally, regionally, or federally.

Lead agency: C/CAG

F3: Prioritize Investments

Incorporate the regional High Injury Network and local jurisdictions' prioritized locations when allocating and scoring funding opportunities for local jurisdictions. (This includes identified locations for the 11 jurisdictions with safety plan updates as part of the regional LRSP and for the ten jurisdictions not included in this plan document.) Award points or a similar priority mechanism for projects that improve conditions in these identified locations. Stipulate community engagement requirements for projects receiving funding.

Lead agencies: C/CAG, SMCTA

F4: Identify Targeted Enforcement Funding

Identify grant opportunities to expand targeted traffic enforcement of emphasis areas or other targeted behaviors associated with fatal/severe injury outcomes. Local jurisdictions lack discretion over law enforcement priorities and some cities who contract with the County Sheriff's Office would benefit from additional resource allocation dedicated specifically to target behaviors. One such funding opportunity would be through the California Office of Traffic Safety, which has a [grant program](#) related to priority program areas provided documented crash data are available: alcohol impaired driving, distracted driving, drug-impaired driving, emergency medical services, motorcycle safety, occupant protection, pedestrian and bicycle safety, and police traffic services.

Lead agency: C/CAG, SMCTA

RESEARCH

R1: Safety and Equity Impacts Evaluation

Conduct a study to address traffic injury and enforcement inequities to inform policies, projects, programs, and needed data quality improvements. Solicit feedback on the report's equity analysis from groups representing equity priority communities. Topics for the study may include injury burdens related to homelessness, race/ethnicity, language, income, and immigration status, citations by demographics, citation type, and location.

Lead agency: C/CAG

Coordinating partners: MTC, County Sheriff's Office

R2: Data Quality Improvements

Conduct one or more studies and/or convene working groups to address the following challenges:

- Integrating hospital and police data
- Providing a means to collect and incorporate near-miss data into safety analysis
- Developing a consistent countywide crash database that would prevent the time lag present in SWITRS, provide accurate and timely monitoring of crashes and allow monitoring of injury trends over time.

Some agencies have successfully used video-based conflict monitoring algorithms to capture near-miss information at select locations. The techniques show promise for identifying conflicts that correlate to crashes, but the ability to scale the technology is still unclear.²⁶ Funding may be available through the [California Office of Traffic Safety grant program](#), which lists *Roadway Safety and Traffic Records* as a category among its priority program areas.

Lead agency: C/CAG

Coordinating partners: County Public Health, County Sheriff's Office, constituent jurisdictions, local police departments

R3: Crash Data Enhancements

Study integrating crash data with Police Department's tracking system for timely, efficient reporting and sharing of injury crashes, including geolocated data. Review current crash data form and study existing best practices. Consider adding select visible disability statuses to the crash data form. If feasible and prudent, add this field to the crash data form.

Lead agency: County Sheriff's Office

Coordinating partners: California Highway Patrol, C/CAG, MTC

R4: Big Data

Identify a pathway for obtaining and incorporating integrated curb-level activity data including volumes, paths, speeds, and behaviors of pedestrians, bicycles, vehicles, etc. These data are available from a number of big data sources on the market. The goal would be to enable improved data availability for safety planning.

Lead agency: C/CAG

Coordinating partners: MTC, SMCTA, Town of Hillsborough

PLAN

P1: Safe Routes to School

Continue to conduct school safety assessments at all public and private schools, develop implementation plans for improvements up to one quarter mile from the schools.

Lead agency: San Mateo County Office of Education

P2: Annual review

Provide an annual review of plan implementation progress. This review includes an update and presentation to the C/CAG board and information posted on the C/CAG website.

Lead agency: C/CAG

²⁶ For example, the Pennsylvania Department of Transportation evaluated the technology as part of its SMART intersections project. More information is available online at <https://www.penndot.pa.gov/ProjectAndPrograms/Planning/Research-And-Implementation/Documents/Smart%20Intersections.pdf>

P3: Plan Update

Update the plan within five years of publication and approximately every subsequent five years. The plan update will revise actions to reflect current crash trends and will integrate technological advancements and changes in best practices as needed.

Alternately, coordinate with all 21 jurisdictions to see that local plans are pursued and updated consistent with best practices within the five-year timeframe.

Lead agency: C/CAG

Coordinating partners: Constituent jurisdictions

Table 12: Policy/Program Recommendations and Partner Roles

Recommendation	Agency Involvement (L = Lead; P = Participate)										
	C/CAG	California Highway Patrol	Caltrans	Constituent Jurisdictions	County Office of Education	County Public Health	County Sheriff's Office	Office of Sustainability	MTC	SMCTA	SVBC
O1: Transportation Safety Advisory Committee	L	P	P	P	P	P	P	P	P	P	P
O2: High-Visibility Media Campaign		P			P	L	P	P			
E1: Best Practices Training	L		P	P					P		
E2: Law Enforcement Training		P					L				
E3: Technical Assistance for Safety Education in Schools					L	P		P			P
E4: Communication Protocol	L			P							
C1: AB413 Implementation											
C2: Safe System Enabling Legislation	L		P						P		
C3: Graduated Traffic Fine Structure	L	P	P	P	P	P	P	P	P	P	P
F1: Dedicated Funding	L		P						P	P	
F2: Prioritize Investments	L									P	
F3: Equitable Investment	L										
F4: Identify Targeted Enforcement Funding	L									L	
R1: Safety and Equity Impacts Evaluation	L								P		
R2: Data Quality Improvements	L			P		P	P				
R3: Crash Data Enhancements	P	P					L		P		
R4: Big Data	L								P	P	
PI: Safe Routes to School				P	L						
P2: Annual Review	L			P							
P3: Plan Update	L			P							

PROJECT PRIORITIZATION

The spatial HIN analysis identified the regionally highest-crash locations by frequency and severity. Based on that work and the accompanying systemic analysis, the plan development team worked with participating jurisdictions to identify priority project locations. The methodology and jurisdiction-specific results are included as Appendix D.

For those jurisdictions, the prioritization used the following three factors:

- **Crash history** – used to identify the locations with the highest reported five-year crash frequency and severity.
- **Social equity** – used to identify locations where projects would benefit disadvantaged populations and align with future grant funding opportunities that emphasize social equity.
- **Systemic factors** – used to identify locations that have roadway and land use characteristics associated with crash frequency and severity. Using systemic factors emphasizes a proactive rather than purely reactive approach. Each factor was weighted relative to the other factors based on the average severity of relevant crashes (for example, if pedestrian crashes on arterials/collectors were overall twice as severe as pedestrian crashes at unsignalized intersections overall, then the former would be weighted twice the latter).

In line with this plan's goals, C/CAG supports the development of safety projects and solutions along countywide HIN corridors or along subsequently identified project priority locations. For the 11 participating jurisdictions, those remaining priority locations are included in subsequent chapters. For the 10 jurisdictions with existing or developing plans, refer to those plans documents for identified priority project locations.

This plan places particular emphasis on locations where projects could provide safety benefits to disadvantaged neighborhoods. Accordingly, Table 13 and Table 14 provide summary statistics on the mileage of the Countywide HIN by modal emphasis and by the jurisdictions they are located within. The tables also provide the percentage of each HIN corridor that passes through identified social equity areas:

- **C/CAG Equity Focus Areas**, as defined in the C/CAG Comprehensive Bicycle and Pedestrian Plan.
- **MTC Equity Priority Communities** (formerly called "Communities of Concern") as guided by MTC's Equity Platform.
- **USDOT Areas of Persistent Poverty**, as defined by the Climate and Economic Justice Screening Tool (CEJST) developed by the Council on Environmental Quality.
- **USDOT Historically Disadvantaged Communities**, as defined by the CEJST.

This plan identifies the following emphasis areas which local agencies may use to define systemic treatments for safety problems town- or city-wide, or to further screen locations among those on the Countywide HIN or on their priority project lists.

1. **Pedestrian and bicyclist safety**
2. **Nighttime/low light safety**
3. **Unsignalized intersections on arterials/collectors**
4. **Vulnerable age groups (youth and aging)**
5. **Motor vehicle speed related roadway segment crashes**
6. **High speed roadways (35+mph)**
7. **Alcohol involvement**

Table 13: Local HIN Segments by Mode, Jurisdiction, and Social Equity Neighborhoods

Road name	Length (mi) of applicable criterion / location																				Percent of Corridor in Social Equity Area									
	Pedestrian HIN	Bicyclist HIN	Motor Vehicle HIN	Total HIN Length, Any Modes	Max 1/2 Mile Crash Severity Score	ATHERTON	BELMONT	BRISBANE	BURLINGAME	COLMA	DALY CITY	EAST PALO ALTO	FOSTER CITY	HALF MOON BAY	HILLSBOROUGH	MENLO PARK	MILLBRAE	PACIFICA	PORTOLA VALLEY	REDWOOD CITY	SAN BRUNO	SAN CARLOS	SAN MATEO	SOUTH SAN FRANCISCO	UNINCORPORATED	WOODSIDE	USDOT APP	USDOT HDC	MTC EPC	C/CAG Equity Focus Areas
Total	87.5	70.8	167.7	231.5		3.4	5.4	4.2	9.1	2.2	24.4	8.5	5.5	2.2	0.0	11.5	5.4	6.7	5.7	27.2	10.0	11.6	25.4	30.9	36.2	5.6				
2nd	0.6	0.0	0.6	0.6	554																		0.6					89%	29%	
3rd	1.8	0.0	0.7	1.8	569																0.7		1.1					28%	18%	
42nd	0.0	0.0	0.7	0.7	339																		0.7					100%		
4th	0.0	0.0	0.4	0.4	384																		0.4					100%		
5th	1.1	0.0	0.0	1.1	571																		1.1					45%	29%	
87th	0.0	0.0	1.2	1.2	352					0.3															1.0			87%		78%
9th	0.8	0.0	0.0	0.8	389																		0.8					64%		
Adams	0.0	0.0	0.1	0.1	499															0.1									100%	100%
Airport	2.6	0.0	2.9	3.0	991																			3.0				93%	97%	57%
Alameda De Las Pulgas	2.0	3.5	1.7	6.7	732	1.0	0.3													0.5	1.6	3.0		0.7						
Alpine	0.0	4.5	3.0	7.5	628										0.5			3.3							4.1			15%		
Amphlett	0.0	0.0	1.5	1.5	572				0.1														1.5					100%	20%	
Avalon	0.0	0.0	1.0	1.0	264																0.1		1.0						74%	
Baden	1.3	0.0	1.3	1.3	1,075																		1.3				8%	100%	100%	
Bay	1.8	0.0	3.3	3.3	1,051						1.8									0.7				1.2	27%	55%	100%	70%		
Bayshore	2.0	0.8	4.7	4.7	1,177		2.7		0.3	1.7													0.1				9%	37%	31%	
Beech	0.0	0.0	0.2	0.2	601															0.2								100%	100%	
Belmont	0.0	0.0	0.6	0.6	268																	0.6								
Brewster	0.0	0.0	1.5	1.5	527															1.5										

Road name	Length (mi) of applicable criterion / location																			Percent of Corridor in Social Equity Area										
	Pedestrian HIN	Bicyclist HIN	Motor Vehicle HIN	Total HIN Length, Any Modes	Max 1/2 Mile Crash Severity Score	ATHERTON	BELMONT	BRISBANE	BURLINGAME	COLMA	DALY CITY	EAST PALO ALTO	FOSTER CITY	HALF MOON BAY	HILLSBOROUGH	MENLO PARK	MILLBRAE	PACIFICA	PORTOLA VALLEY	REDWOOD CITY	SAN BRUNO	SAN CARLOS	SAN MATEO	SOUTH SAN FRANCISCO	UNINCORPORATED	WOODSIDE	USDOT APP	USDOT HDC	MTC EPC	C/CAG Equity Focus Areas
Brittan	1.4	0.0	1.4	1.4	1,383																	1.4								
Broadway	3.3	2.4	3.2	3.8	1,647											1.3			2.5								37%	8%	42%	34%
California	0.0	2.5	1.3	2.5	789				2.5														0.1					48%		
Canada	0.0	6.3	3.2	7.1	554																			5.5	1.7					
Capitol	0.0	0.0	0.2	0.2	506						0.2																	100%	100%	
Carlos	0.0	0.0	0.0	0.0	352																			0.0						
Chester	0.0	0.0	0.4	0.4	407					0.4															0.1					68%
Chestnut	0.9	0.8	1.4	1.8	714														0.8				0.9	0.0		35%		63%	65%	
Claremont	1.2	0.0	0.0	1.2	275																		1.2				58%	33%	17%	
Clarke	0.0	0.0	0.3	0.3	286						0.3																	100%	100%	
Coast	0.0	0.0	1.4	1.4	1,067																			1.4						
Commercial	1.3	0.0	0.0	1.3	686																			1.3				94%	94%	
Crocker	1.1	0.0	0.0	1.1	418					1.1																				61%
Crystal Springs	1.1	0.0	0.0	1.1	400																	1.1						9%	9%	
Cypress	0.0	0.0	0.5	0.5	231																			0.5			43%	100%	100%	
Delaware	2.3	1.4	1.1	3.6	569																						11%	39%	9%	
Donohoe	0.0	0.5	0.5	0.5	888						0.5																	100%	100%	
Dwight	0.0	0.0	0.6	0.6	448				0.6														0.1							
Eastmoor	0.0	0.0	0.7	0.7	737					0.7																	85%		85%	
Edgewood	0.0	0.0	2.5	2.5	635																			2.5						
Eucalyptus	0.5	0.0	0.0	0.5	488																			0.5				55%	82%	

Road name	Length (mi) of applicable criterion / location																			Percent of Corridor in Social Equity Area										
	Pedestrian HIN	Bicyclist HIN	Motor Vehicle HIN	Total HIN Length, Any Modes	Max 1/2 Mile Crash Severity Score	ATHERTON	BELMONT	BRISBANE	BURLINGAME	COLMA	DALY CITY	EAST PALO ALTO	FOSTER CITY	HALF MOON BAY	HILLSBOROUGH	MENLO PARK	MILLBRAE	PACIFICA	PORTOLA VALLEY	REDWOOD CITY	SAN BRUNO	SAN CARLOS	SAN MATEO	SOUTH SAN FRANCISCO	UNINCORPORATED	WOODSIDE	USDOT APP	USDOT HDC	MTC EPC	C/CAG Equity Focus Areas
Farm Hill	0.0	0.0	1.8	1.8	565														1.4						0.5					
Foster City	1.7	0.0	1.2	1.7	678							1.7																		
Gellert	1.2	0.0	2.7	2.7	527					1.7														1.1						33%
Geneva	0.8	0.0	0.8	0.8	1,241					0.8																	100%	13%	100%	
Grand	1.9	1.8	3.4	3.4	1,347																		3.4			50%	89%	48%		
Grant	0.0	0.0	0.6	0.6	356																		0.6			71%	35%			
Guadalupe Canyon	0.0	0.0	2.5	2.5	719		0.1		0.4															2.2					8%	
Harvey	0.0	0.0	0.1	0.1	829												0.1													
Haven	0.0	0.0	0.3	0.3	275						0.3															100%	100%			
Hickey	1.3	0.0	2.8	2.8	759					1.9							0.9						0.2			18%	18%	25%		
Hillcrest	0.0	0.0	0.4	0.4	329					0.4																			100%	
Hillsdale	3.1	2.6	2.4	3.9	953							1.9											2.1			13%		18%		
Hillside	1.2	0.0	1.9	3.1	531				0.7	1.2													0.9	0.5					32%	
Holly	0.0	1.0	0.8	1.0	713														0.2	0.9									20%	
Hopkins	0.0	0.0	1.3	1.3	461														1.3											
Howard	0.0	0.0	1.1	1.1	536				1.1														0.1				9%			
Hudson	0.0	1.4	0.0	1.4	385															1.4							71%	43%		
Humboldt	2.0	1.8	2.0	2.0	2,172				0.4														1.7			20%	85%	15%		
Huntington	1.1	1.0	0.0	1.2	758															1.0			0.3			28%	60%	60%		
Industrial	1.7	0.0	2.4	2.4	881														0.5	2.0										
James	1.2	0.0	0.0	1.2	361														1.2											

Road name	Length (mi) of applicable criterion / location																			Percent of Corridor in Social Equity Area										
	Pedestrian HIN	Bicyclist HIN	Motor Vehicle HIN	Total HIN Length, Any Modes	Max 1/2 Mile Crash Severity Score	ATHERTON	BELMONT	BRISBANE	BURLINGAME	COLMA	DALY CITY	EAST PALO ALTO	FOSTER CITY	HALF MOON BAY	HILLSBOROUGH	MENLO PARK	MILLBRAE	PACIFICA	PORTOLA VALLEY	REDWOOD CITY	SAN BRUNO	SAN CARLOS	SAN MATEO	SOUTH SAN FRANCISCO	UNINCORPORATED	WOODSIDE	USDOT APP	USDOT HDC	MTC EPC	C/CAG Equity Focus Areas
Jefferson	1.7	1.3	1.6	1.7	942														1.7										35%	24%
Jenevein	0.8	0.0	0.0	0.8	494															0.8									13%	49%
John Daly	1.8	0.0	1.9	1.9	1,152					1.9																32%	32%	11%	32%	
Junipero Serra	2.0	1.6	5.4	5.8	935				1.3	1.7													3.1				9%		27%	
King	0.0	0.0	1.3	1.3	785					1.3							0.0						0.1						82%	
Kings Mountain	0.0	3.5	0.0	3.5	528																			2.1	1.7					
Laurel	1.5	1.0	0.0	2.5	406	0.2									1.0							1.5								
Lincoln	0.0	0.0	0.5	0.5	668														0.5									100%	76%	
Linda Mar	1.1	1.6	1.9	1.9	880												1.9												21%	
Linden	1.6	0.0	1.8	1.8	1,195															0.1			1.8				83%	100%	100%	
Lyall	0.0	0.0	0.3	0.3	246	0.3																								
Magnolia	1.5	0.0	0.0	1.5	454				0.3							1.3												13%		47%
Main	0.0	0.0	2.0	2.0	451								1.1						0.9									31%	75%	
Maple	0.7	1.1	1.2	1.9	889														1.2			0.7			26%	16%	79%	74%		
Market	0.8	0.0	0.0	0.8	356					0.8																			91%	
Marsh	0.0	0.0	1.3	1.3	543	0.4									0.7								0.5			47%	47%	38%		
Menlo	0.0	0.0	0.3	0.3	449										0.3															
Metro Center	0.0	0.0	0.7	0.7	361							0.7																		
Middle	0.0	1.1	0.0	1.1	416										1.1															
Middlefield	2.2	2.2	3.8	3.8	2,166	1.2									0.6				1.5				1.0		26%	8%	39%	24%		
Millbrae	1.5	0.0	1.5	1.5	878											1.5											39%	20%		

Road name	Length (mi) of applicable criterion / location																			Percent of Corridor in Social Equity Area									
	Pedestrian HIN	Bicyclist HIN	Motor Vehicle HIN	Total HIN Length, Any Modes	Max 1/2 Mile Crash Severity Score	ATHERTON	BELMONT	BRISBANE	BURLINGAME	COLMA	DALY CITY	EAST PALO ALTO	FOSTER CITY	HALF MOON BAY	HILLSBOROUGH	MENLO PARK	MILLBRAE	PACIFICA	PORTOLA VALLEY	REDWOOD CITY	SAN BRUNO	SAN CARLOS	SAN MATEO	SOUTH SAN FRANCISCO	UNINCORPORATED	WOODSIDE	USDOT APP	USDOT HDC	MTC EPC
Miller	1.3	0.0	1.1	1.3	682																		1.3					23%	45%
Mission	1.9	0.0	1.9	1.9	1,062					1.8														0.2				5%	68%
Newbridge	0.0	1.0	1.0	1.0	1,089						0.4				0.7												70%	100%	100%
Norfolk	0.0	1.9	0.0	1.9	384																		1.9						9%
Oak Grove	1.1	1.2	0.0	1.2	527	0.4									0.9														
O'Connor	0.0	0.0	0.6	0.6	319						0.6																	100%	72%
Old Bayshore	1.3	0.0	1.4	1.4	815				1.2							0.3												85%	
Old Canada	0.0	0.0	1.1	1.1	606																			1.1					
Old County	0.0	1.9	3.4	3.4	884		1.2												0.1		2.2			0.3					
Old Page Mill	0.0	0.0	0.5	0.5	393																			0.5			100%		
Orange	0.0	0.0	1.0	1.0	330																		1.0				60%	80%	70%
Oyster Point	0.0	0.0	1.1	1.1	482																		1.1				100%	100%	9%
Palmetto	0.0	0.0	2.1	2.1	635												2.1												
Park Plaza	0.4	0.0	0.0	0.4	362					0.4																100%	100%	100%	100%
Peninsula	1.0	0.0	0.0	1.0	1,101				0.1														1.0					10%	
Pescadero Creek	0.0	0.0	1.4	1.4	341																			1.4			100%		
Poplar	1.4	0.0	0.9	1.4	1,361																		1.4					37%	
Portola	0.0	4.2	2.4	4.2	1,277													2.4						0.4	1.7				
Price	0.0	0.0	0.8	0.8	264					0.8														0.1					93%
Pulgas	1.3	0.0	1.5	1.5	862						1.5																13%	100%	20%
Railroad	0.0	0.0	0.7	0.7	253																		0.7				41%	100%	100%

Road name	Length (mi) of applicable criterion / location																			Percent of Corridor in Social Equity Area											
	Pedestrian HIN	Bicyclist HIN	Motor Vehicle HIN	Total HIN Length, Any Modes	Max 1/2 Mile Crash Severity Score	ATHERTON	BELMONT	BRISBANE	BURLINGAME	COLMA	DALY CITY	EAST PALO ALTO	FOSTER CITY	HALF MOON BAY	HILLSBOROUGH	MENLO PARK	MILLBRAE	PACIFICA	PORTOLA VALLEY	REDWOOD CITY	SAN BRUNO	SAN CARLOS	SAN MATEO	SOUTH SAN FRANCISCO	UNINCORPORATED	WOODSIDE	USDOT APP	USDOT HDC	MTC EPC	C/CAG Equity Focus Areas	
Shell	1.1	0.0	0.0	1.1	641							1.1																			
Sierra Point	0.0	0.0	1.4	1.4	352		1.4																								
Sister Cities	0.0	0.0	0.9	0.9	570																		0.9						11%		
Sneath	1.0	0.0	1.3	1.8	418																1.8										5%
Southgate	3.1	0.0	2.7	3.1	792				0.1	3.1																10%	52%	26%	61%		
Spruce	1.7	0.0	1.7	1.7	817																		1.7				60%	72%	84%		
Stafford	0.0	0.0	0.4	0.4	11														0.4		0.1										
Sullivan	0.5	0.0	1.3	1.3	781					1.2														0.2			100%	1%	100%		
Tilton	0.8	0.8	0.0	0.8	758																		0.8				43%	69%			
Valota	0.0	0.0	1.2	1.2	395															1.2											
Veterans	1.2	1.1	1.7	1.7	877															1.7						17%		17%			
Walnut	0.3	0.0	0.0	0.3	235																		0.3				25%	63%	63%		
Washington	0.9	0.0	0.9	0.9	758					0.4														0.6			89%		43%		
Westborough	1.8	0.0	2.7	2.7	1,501																0.1		2.3	1.2						64%	
Westmoor	0.0	0.0	0.4	0.4	396					0.4																	75%		100%		
Whipple	0.0	0.0	1.8	1.8	1,057															1.8											
Willow	0.0	2.3	1.8	2.3	504						0.5					2.1											25%	43%	43%		
Winslow	0.0	0.0	0.8	0.8	330															0.8											

Table 14: State Highway HIN Segments by Mode, Jurisdiction, and Social Equity Neighborhoods

Road name	Length (mi) of applicable criterion / location																							Percent of Corridor in Social Equity Area						
	Pedestrian HIN	Bicyclist HIN	Motor Vehicle HIN	Total HIN Length, Any Modes	Max 1/2 Mile Crash Severity Score	ATHERTON	BELMONT	BRISBANE	BURLINGAME	COLMA	DALY CITY	EAST PALO ALTO	FOSTER CITY	HALF MOON BAY	HILLSBOROUGH	MENLO PARK	MILLBRAE	PACIFICA	PORTOLA VALLEY	REDWOOD CITY	SAN BRUNO	SAN CARLOS	SAN MATEO	SOUTH SAN FRANCISCO	UNINCORPORATED	WOODSIDE	USDOT APP	USDOT HDC	MTC EPC	C/CAG Equity Focus Areas
Total	15.2	27.1	120.1	122.6		3.4	5.4	4.2	9.1	2.2	24.4	8.5	5.5	2.2	0.0	11.5	5.4	6.7	5.7	27.2	10.0	11.6	25.4	30.9	36.2	5.6				
El Camino Real	10.2	9.3	23.2	23.5	2,670	1.5	1.6		3.0	1.2						1.5	1.8			2.5	2.1	2.0	4.3	2.9	0.8			17%	13%	18%
Golf Course	0.0	0.0	0.2	0.2	246																			0.2						
John Daly	1.8	0.0	1.9	1.9	1,152					1.9																	32%	32%	11%	32%
La Honda	0.0	1.1	13.7	14.0	1,874																			10.5	3.5		59%			
Marsh	0.0	0.0	1.3	1.3	543	0.4										0.7									0.5		47%	47%	38%	
Mission	1.9	0.0	1.9	1.9	1,062					1.8															0.2			5%	68%	
San Jose	0.0	0.0	0.2	0.2	279					0.2																			100%	
San Mateo	1.4	0.0	9.8	9.8	1,101									1.1							1.4		1.2	0.6	5.6		10%	13%	34%	
Skyline	0.0	3.0	24.2	25.3	1,160					7.0								2.5			2.3			0.6	14.8	0.5	24%	6%	15%	
State Highway 1	0.0	4.2	26.7	26.7	1,511									5.3											16.8		34%		16%	
State Highway 84	0.0	0.0	2.6	2.6	658										2.2											0.4	83%	83%	4%	
State Highway 92	0.0	0.0	1.8	1.8	844																		0.1	1.7						
Tom Lanos Tunnel	0.0	0.0	2.2	2.2	407																				2.2					
University	0.0	2.1	1.8	2.1	2,597						1.7				0.5												56%	100%	100%	
Willow	0.0	2.3	1.8	2.3	504						0.5				2.1												25%	43%	43%	
Woodside	0.0	5.2	6.9	7.0	1,666															3.1				0.5	3.6	11%		23%	8%	

SamTrans Bus Stop Prioritization

The plan development team analyzed bus stop data provided by SamTrans to identify correlation of roadway and intersection risk factors with crash history around high-ridership bus stops. Systemic roadway and intersection characteristics were identified and used to develop a priority list of bus stops for SamTrans. The detailed methodology and results are included in Appendix E. Table 15 and Table 16 present the priority bus stop locations as they relate to pedestrian and bicycle crash history, respectively. Separate priority lists were developed for pedestrians and bicyclists to better target the improvements for those users.

Table 15. Priority Bus Stop Locations for Pedestrian Improvements

PED RANK	STOP ID	STOP LOCATION	JURISDICTION	CRASH HISTORY			EQUITY	SYSTEMIC CHARACTERISTICS				TOTAL SCORE (0-1)	BIKE RANK
				Ped Crash Severity Score (0-432)	Ped HIN	Ped Crash History Score (Normalized 0-1)	Equity Score (0-1)	Uncontrolled Location (0-1)	Absence of Sidewalk (0-1)	> 35 MPH (0-1)	Char. Score (Normalized 0-1)		
1	351002	3745 Bayshore Blvd-Andrys Trailer Park	Brisbane	165	1	0.69	1	1	1	1	1.00	0.89	>30
2	336039	El Camino Real & Silva Ave	Millbrae	371	1	0.93	1	1	0	1	0.67	0.86	>30
3	332221	Mission St & Evergreen Ave-Daly City	Daly City	241	1	0.78	1	1	0	1	0.67	0.81	>30
4	344658	Jefferson Ave at Adams St	Redwood City	224	1	0.76	1	1	0	1	0.67	0.80	8
5	344657	Jefferson Ave at Adams St	Redwood City	213	1	0.75	1	1	0	1	0.67	0.80	7
6	344086	El Camino Real & Lincoln Ave	Redwood City	202	1	0.73	1	1	0	1	0.67	0.79	4
7	336027	El Camino Real & Center St-Millbrae	Millbrae	393	1	0.95	1	0	0	1	0.33	0.76	>30
8	336028	El Camino Real & Center St-Millbrae	Millbrae	393	1	0.95	1	0	0	1	0.33	0.76	>30
9	336038	El Camino Real & Silva Ave	Millbrae	371	1	0.93	1	0	0	1	0.33	0.75	>30
10	334246	S Spruce Ave & Railroad Ave	South San Francisco	356	1	0.91	1	0	0	1	0.33	0.74	>30
11	332154	Hillside Blvd & Brunswick St	Daly City	334	1	0.89	1	1	0	0	0.33	0.73	>30
12	332233	Mission St & Price St	Daly City	44	1	0.55	1	1	0	1	0.67	0.73	>30
13	332129	Geneva Ave & Schwerin St	Daly City	34	1	0.54	1	0	1	1	0.67	0.73	>30
14	335612	Jenevein Ave & El Camino Real	San Bruno	322	1	0.87	1	0	0	1	0.33	0.73	>30
15	351001	3800 Bayshore Blvd-Andrys Trailer Park	Brisbane	165	0	0.19	1	1	1	1	1.00	0.72	>30
16	332232	Mission St & Parkview Ave	Daly City	17	1	0.52	1	1	0	1	0.67	0.72	>30
17	341109	N Delaware St & E Bellevue Ave	San Mateo	11	1	0.51	1	1	0	1	0.67	0.72	>30
18	341111	N Delaware St & Tilton Ave	San Mateo	11	1	0.51	1	1	0	1	0.67	0.72	5
19	344087	El Camino Real & Main St	Redwood City	11	1	0.51	1	1	0	1	0.67	0.72	6
20	344095	El Camino Real & Winklebleck St	Redwood City	11	1	0.51	1	1	0	1	0.67	0.72	2
21	363041	Bay Rd & Oakwood Dr	East Palo Alto	11	1	0.51	1	1	0	1	0.67	0.72	>30
22	363602	Bay Rd & Pulgas Ave	East Palo Alto	11	1	0.51	1	1	0	1	0.67	0.72	>30
23	335635	Sneath & Huntington Inbound BART	San Bruno	11	1	0.51	1	1	0	1	0.67	0.72	>30
24	344085	El Camino Real & Jefferson Ave	Redwood City	11	1	0.51	1	1	0	1	0.67	0.72	21
25	332184	Junipero Serra Blvd & School St	Daly City	11	1	0.51	1	1	0	1	0.67	0.72	>30
26	363605	Bay Rd & Pulgas Ave	East Palo Alto	11	1	0.51	1	1	0	1	0.67	0.72	>30
27	334078	El Camino Real & Brentwood Dr	South San Francisco	6	1	0.51	1	1	0	1	0.67	0.72	>30
28	344416	Jefferson Ave & Myrtle St	Redwood City	6	1	0.51	1	1	0	1	0.67	0.72	>30
29	363002	Bay Rd & Gloria Way	East Palo Alto	6	1	0.51	1	1	0	1	0.67	0.72	>30
30	341058	Alameda de las Pulgas & Parkside Way	San Mateo	0	1	0.50	1	1	0	1	0.67	0.72	>30

Table 16. Priority Bus Stop Locations for Bicycle Improvements

BIKE RANK	STOP ID	STOP LOCATION	JURISDICTION	CRASH HISTORY			EQUITY	SYSTEMIC CHARACTERISTICS				TOTAL SCORE (0-1)	PED RANK
				BIKE CRASH SEVERITY SCORE (0-367)	BIKE HIN	BIKE CRASH SCORE (NORMALIZED 0-1)	EQUITY SCORE (0-1)	UNCONTROLLED LOCATIONS (0-1)	ABSENCE OF SIDEWALKS (0-1)	>35 MPH (0-1)	CHAR. SCORE (NORMALIZED 0-1)		
1	344900	El Camino Real & Dumbarton Ave	North Fair Oaks	0	1	0.50	1	1	1	1	1.00	0.83	>30
2	344095	El Camino Real & Winklebleck St	Redwood City	191	1	0.76	1	1	0	1	0.67	0.80	20
3	344207	Middlefield Rd & Flynn Ave	Redwood City	28	1	0.54	1	1	0	1	0.67	0.73	>30
4	344086	El Camino Real & Lincoln Ave	Redwood City	17	1	0.52	1	1	0	1	0.67	0.72	6
5	341111	N Delaware St & Tilton Ave	San Mateo	11	1	0.51	1	1	0	1	0.67	0.72	18
6	344087	El Camino Real & Main St	Redwood City	11	1	0.51	1	1	0	1	0.67	0.72	19
7	344657	Jefferson Ave at Adams St	Redwood City	11	1	0.51	1	1	0	1	0.67	0.72	5
8	344658	Jefferson Ave at Adams St	Redwood City	11	1	0.51	1	1	0	1	0.67	0.72	4
9	363067	University Ave & Sacramento St	East Palo Alto	11	1	0.51	1	1	0	1	0.67	0.72	>30
10	342054	El Camino Real & Ruth Ave	Belmont	0	1	0.50	1	1	0	1	0.67	0.72	>30
11	342085	Old County Rd & Dale View Ave	Belmont	0	1	0.50	1	1	0	1	0.67	0.72	>30
12	344195	Middlefield Rd & Cassia St	Redwood City	0	1	0.50	1	1	0	1	0.67	0.72	>30
13	344196	Middlefield Rd & Elm St	Redwood City	0	1	0.50	1	1	0	1	0.67	0.72	>30
14	344420	Veterans Blvd & Hansen Way	Redwood City	0	1	0.50	1	1	0	1	0.67	0.72	>30
15	344448	Woodside Rd & Bonita Ave	Redwood City	0	1	0.50	1	1	0	1	0.67	0.72	>30
16	344659	Jefferson Ave at Grand St	Redwood City	0	1	0.50	1	1	0	1	0.67	0.72	>30
17	344901	El Camino Real & Northumberland Ave	North Fair Oaks	0	1	0.50	1	1	0	1	0.67	0.72	>30
18	341142	El Camino Real & 43rd Ave	San Mateo	0	1	0.50	1	1	0	1	0.67	0.72	>30
19	335099	Huntington Ave & Sneath Ln	San Bruno	0	1	0.50	1	1	0	1	0.67	0.72	>30
20	363064	2111 University Ave-Bell St Park	East Palo Alto	0	1	0.50	1	1	0	1	0.67	0.72	>30
21	344085	El Camino Real & Jefferson Ave	Redwood City	0	1	0.50	1	1	0	1	0.67	0.72	24
22	315013	Hwy 1 & Kelly Ave	Half Moon Bay	0	1	0.50	1	0	1	1	0.67	0.72	>30
23	344203	Middlefield Rd & Dumbarton Ave	North Fair Oaks	191	1	0.76	1	1	0	0	0.33	0.69	>30
24	344204	Middlefield Rd & Dumbarton Ave	North Fair Oaks	191	1	0.76	1	1	0	0	0.33	0.69	>30
25	363065	University Ave & Runnymede St	East Palo Alto	148	1	0.70	1	0	0	1	0.33	0.67	>30
26	363066	University Ave & Runnymede St	East Palo Alto	148	1	0.70	1	0	0	1	0.33	0.67	>30
27	341943	Hillsdale Blvd & Saratoga Dr	San Mateo	131	1	0.68	1	0	0	1	0.33	0.66	>30
28	344450	Woodside Rd & Hess Rd	Redwood City	131	1	0.68	1	0	0	1	0.33	0.66	>30
29	344624	Woodside Rd & Hess Rd	Redwood City	131	1	0.68	1	0	0	1	0.33	0.66	>30
30	315901	Hwy 92 & Hwy 35-Skyline Blvd	Unincorporated San Mateo County	0	0	0.00	1	1	1	1	1.00	0.66	>30

IMPLEMENTATION AND MONITORING

A key part of achieving C/CAG's vision is consistently evaluating roadway safety performance and tracking progress towards the goals. C/CAG will develop a process to regularly collect data and information around the performance measures that can be used to assess changes city-wide and at the top priority locations.

Implementation actions are organized by plan goals and grouped by time: near-term actions, which C/CAG can initiate immediately, and longer-term actions, which may require coordination and additional staff time.

This section identifies recommendations for C/CAG and other county-level safety partners to implement the plan. These are aligned with the Safe System Approach and include a framework to measure plan progress over time.

Table 17. Implementation Goals and Measures of Success

Goal	Measure of Success
<p>Regularly review crash history and community needs to identify and prioritize opportunities to reduce crash risk for roadway users of all ages and abilities.</p>	<ul style="list-style-type: none"> ■ Convene TSAC meetings 2-4 times per year. ■ Number of project locations identified in this plan advanced through project development, reported at the agency level, and aggregated regionally. ■ Annual and three-year total reported crashes, fatal/severe injury crashes, crashes by mode, and crashes by emphasis areas identified. ■ Improved data availability or maintenance to enhance safety analysis and practice.
<p>Implement safety countermeasures systemically and as part of all projects to target emphasis areas and underserved communities.</p>	<ul style="list-style-type: none"> ■ Share of project locations identified in this plan advanced through project development by presence within equity focus areas, reported at the agency level, and aggregated regionally.
<p>Work with identified safety partners to incorporate roadway safety through educational campaigns across the County.</p>	<ul style="list-style-type: none"> ■ Implementation of a high-visibility media campaign ■ Expansion of SRTS and Roadway Safety Education in School programs to more schools within the County. ■ Quantification of education campaigns, through number of participants reached, events held, and similar measures.
<p>Provide opportunities for community engagement to identify issues and inform safety solutions across the community.</p>	<ul style="list-style-type: none"> ■ Number of percent C/CAG-funded safety project development activities that include community engagement. ■ Number of engagement touchpoints and number of community member interactions countywide for safety plans or projects. ■ Report-backs from local jurisdictions to the TSAC regarding community engagement, including information about outreach to disadvantaged communities where applicable. ■ Percent of school district participation in SRTS and roadway safety education opportunities. ■ Report-backs from local jurisdictions to the TSAC regarding community engagement, including information about outreach to disadvantaged communities where applicable.
<p>Embrace the Safe System Approach to promote engineering and non-engineering strategies in the community.</p>	<ul style="list-style-type: none"> ■ Number of trainings conducted regarding Safe System elements, available tools, or practices.

San Mateo C/CAG Countywide LRSP
