KITTELSON & ASSOCIATES

SAN MATEO LOCAL ROADWAY SAFETY PLAN

SAN MATEO, CA

February 1, 2024

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San Mateo Local Roadway Safety Plan

San Mateo, CA

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Project Number 27516

February 1, 2024

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GLOSSARY

Aggressive Driving Challenge Area includes behaviors such as speeding, tailgating, running traffic signals or signs, and other reckless maneuvers (SHSP page 43).

Aging Drivers Challenge Area includes instances where the driver of a motor vehicle is 65 years or older (SHSP page 45).

Bicyclists Challenge Area includes instances where a motor vehicle is involved in a collision with a bicyclist (SHSP page 47).

Challenge Areas represent types of roadway users, locations, or collisions identified by the California Department of Transportation's *Strategic Highway Safety Plan* (SHSP). These areas, when addressed, have the most potential to improve roadway safety.

Commercial Vehicles Challenge Area includes instances where the collision involves a truck, truck tractor, school bus or other bus (SHSP page 49).

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

Distracted Driving Challenge Area includes instances where the driver of a motor vehicle was not paying attention or using an electronic device (SHSP page 51).

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

Impaired Driving Challenge Area describes operating a motor vehicle while under the influence of a substance, including alcohol, marijuana, illicit drugs, or some prescription medications.

Intersections Challenge Area includes collisions identified by the responding officer as occurring at an intersection or involving a train or rail vehicle (SHSP page 62).

Lane Departures Challenge Area includes head-on, hit object, and overturned collisions (SHSP page 63).

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 KABCO, as defined by the guidelines established by the Model Minimum Uniform Crash Criteria (MMUCC, Fifth Edition), is defined as 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.

Motorcyclists Challenge Area includes instances where a motorcycle or moped is involved in a collision (SHSP page 65).

Occupant Protection Challenge Area includes collisions involving misuse, non-use, or lack of vehicle safety equipment including lap belts, shoulder harnesses, passive restraints, or child restraints (SHSP page 67).

Pedestrians Challenge Area includes instances where a motor vehicle is involved in a collision with a pedestrian (SHSP page 69).

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.

The 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 City of San Mateo 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.

Work Zones Challenge Area includes instances where the collision occurs in a work zone for construction, maintenance and/or roadway repairs (SHSP page 71).

Young Drivers Challenge Area includes instances where one or more of the drivers of the motor vehicles are between 15 and 20 years old (SHSP page 73).

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Section 1
Introduction

1 INTRODUCTION

The City of San Mateo is located about 20 miles south of San Francisco and borders Burlingame to the north, Hillsborough to the west, San Francisco Bay and Foster City to the east, and Belmont to the south. The City's population, at the 2022 Census, was 100,984[1]. The City of San Mateo's roadways see an average of one fatality and 16 severe injuries annually in the past five years. Despite an overall reduction in total collisions during the pandemic, the frequency of fatal and severe injury collisions has increased. Additionally, severe injuries involving people walking, biking, and rolling have tripled in the last five years.[2] The City has a total of 418 lane miles of roadways, including freeways and state routes, according to Metropolitan Transportation Commission's standards[3].

The City of San Mateo (City) is committed to eliminating fatal and severe injury collisions on its roadways. To advance this mission, the City developed a Local Roadway Safety Plan (LRSP), which establishes a framework to help San Mateo residents and visitors travel safely through the city to their destinations.

The City of San Mateo's Local Roadway Safety Plan (LRSP) is a living document designed to be updated to respond to evolving community needs. The City of San Mateo is diverse in terms of land use context, comprising of urban and suburban neighborhoods, as well as a multilingual population. Additionally, the City's growing economy and the presence of several major state-owned highways require the City to balance both the local and regional travel needs. Given these factors, this LRSP will be revisited and updated approximately every five years, to account for changes in travel patterns and road user behavior. Additionally, the Action Items and Performance Measures identified in the LRSP should be tracked annually to assess progress towards achieving the LRSP's Vision, Mission, and Goals.

1.1 What is an LRSP?

The purpose of an LRSP is to assess the safety of a city's roadways, identify areas that need improvement, and recommend engineering countermeasures and strategies to address those identified issues. The LRSP provides a range of strategies to address safety concerns, from engineering countermeasures to educational campaigns and emerging technology related strategies. The safety plan also provides a timeline and goals for implementation and evaluation. The approach is multi-disciplinary, meaning that stakeholders from different agencies and organizations will need to work together to implement the recommended countermeasures, strategies, and overall vision for the plan. This includes law enforcement, fire department, neighboring jurisdictions, public health services, emergency response providers, community organizations, and the broader community.

LRSPs are recognized as a proven safety countermeasure by the Federal Highway Administration (FHWA). They prioritize investments and assist with the implementation of engineering strategies. Two Federal funding programs, the Highway Safety Improvement Program (HSIP) and Safe Streets and Roads for All (SS4A), provide funding for the implementation of countermeasures that address road safety challenges on public roads. In California, to pursue HSIP grant funds through Caltrans' grant program, a local agency must have an LRSP or an equivalent planning document. To pursue federal SS4A funding, a local agency must have a safety action plan that is equivalent to an LRSP, provided certain implementation frameworks are included that associate actions with timing, funding, and leads. In addition to these federal funding programs, the Active Transportation Program (ATP), managed by California Transportation Commission (CTC) consolidates federal and state transportation programs to encourage increased use of active transportation modes and ensure that disadvantaged communities fully share in the benefits of the program. Access to these funds can help

[1] https://www.census.gov/quickfacts/fact/table/sanmateocitycalifornia/PST045222

2 UC Berkeley. Transportation Injury Mapping System (TIMS). Retrieved from https://tims.berkeley.edu/tools/safetypm/

[3]https://www.cityofsanmateo.org/2133/Frequently-Asked-Questions#:~:text=Q%3A%20How%20many%20miles%20of,A%3A%20210.

the City to fund engineering- and non-engineering-related solutions that can make its roads safer for everyone.

1.1.1 Aligning with the California Strategic Highway Safety Plan

LRSPs across the state complement the 2020-2024 California Strategic Highway Safety Plan (SHSP), providing intentional and continual assessment and improvements to enhance roadway safety. The SHSP sets out California's vision, goals, and objectives for reducing fatal and severe injury collisions on public roadways (local roadways and state highways).[4] The California Department of Transportation (Caltrans) leads ongoing efforts to analyze collision data and collaborate with traffic safety partners across the entire state to identify these focus areas and continually monitor and identify actions to address these focus areas. The SHSP identifies key safety needs and guides investment decisions toward strategies and countermeasures with the most potential to save lives and prevent injuries.

The SHSP identified California's 16 Challenge Areas, or areas that should be the focus for roadway safety in California. As discussed in greater detail in the Statewide Comparison discussion in Section 4: Existing Safety Conditions, the three items bolded on this list were identified as high priority challenge areas for San Mateo, meaning improvements in these areas have the greatest opportunity to reduce death and severe injury.

1.1.1.1.1 SHSP Challenge Areas

- **Pedestrians**
- **Bicyclists**
- Aging Drivers
- Commercial Vehicles
- Distracted Driving
- Driver Licensing
- Emergency Response
- Emerging Technologies
- Impaired Driving
- **Intersections**
- Lane Departures
- Motorcyclists
- Occupant Protection
- Speed Management / Aggressive Driving
- Work Zones
- Young Drivers

Historically, the SHSP has used the five E's (Education, Enforcement, Engineering, Emergency Response, and Emerging Technologies) to organize strategies. In 2021, state transportation officials shifted focus and adopted guiding principles that integrate social equity, utilize the Safe System Approach, and encourage the use of proven countermeasures and emerging technologies.

1.1.2 Incorporating the Safe System Approach

In January 2022, the United States Department of Transportation (USDOT) released its National Roadway Safety Strategy that adopted the Safe System Approach as its core strategy[5].

There are five elements (or layers) to a Safe System (see Figure 1):

- **Safe Roadway Users** – All roadway users, including bicyclists, pedestrians, and transit riders, should be able to travel safely.
- **Safe Vehicles** – Vehicles should be designed and regulated to reduce the frequency and severity of collisions.
- **Safe Speeds** – The faster a vehicle is traveling, the greater its risk to human life. Safe speeds are speeds that reduce impact forces, improve stopping time, and improve visibility.
- **Safe Roadways** – Roadway design can accommodate human mistakes and improve injury tolerances through strategies, such as physically separating those traveling at different speeds or using signage to alert drivers to hazards.

4 Caltrans. Strategic Highway Safety Plan (SHSP). Retrieved from https://dot.ca.gov/programs/safety-programs/shsp
5 National Roadway Safety Strategy, United States Department of Transportation, January 2022
https://www.transportation.gov/sites/dot.gov/files/2022-02/USDOT-National-Roadway-Safety-Strategy.pdf

- **Post-Collision Care** – If a collision does occur, first responders must assess, stabilize, and transport those who were injured. Forensic investigation or incident management teams are also important parts of post-collision care.

Figure 1: FHWA's Safe System Elements

Source: FHWA, 2022
https://safety.fhwa.dot.gov/zerodeaths/zero_deaths_vision.cfm

1.1.2.1 San Mateo and the Safe Systems Approach

This LRSP uses the Safe System Approach to identify ways that San Mateo and its safety partners can create layers to help protect all roadway users – even when they make mistakes. The City is the driving force behind implementing engineering-related safety measures such as speed management or roadway design. Commitment from City staff and road safety partners to prioritize safety in their efforts and to implement both proven and innovative ideas are key to advancing road safety and for the LRSP to be impactful. The Safe System Approach considers all road users and identifies potential conflicts, as well as locations where proactive safety treatments can be implemented. Collaboration among all stakeholders, including road users, transportation system managers, law enforcement, emergency responders, and vehicle manufacturers, is crucial for achieving its goal of eliminating fatal and severe injuries.

To build redundancy in the local transportation system, San Mateo and its teaming partners can:

- Establish and continue to revisit vision, goals, and partnerships to help implement the LRSP.
- Identify systemic and location-specific engineering countermeasures and use them proactively and reactively.
- Provide education programs and overlap stakeholder efforts to communicate key roadway safety information to residents, business owners, and schools and create a culture of roadway safety.
- Review and revisit policies, guidelines, and standards to prioritize roadway safety in the City.

- Identify potential funding sources for project implementation, including quick-build projects.

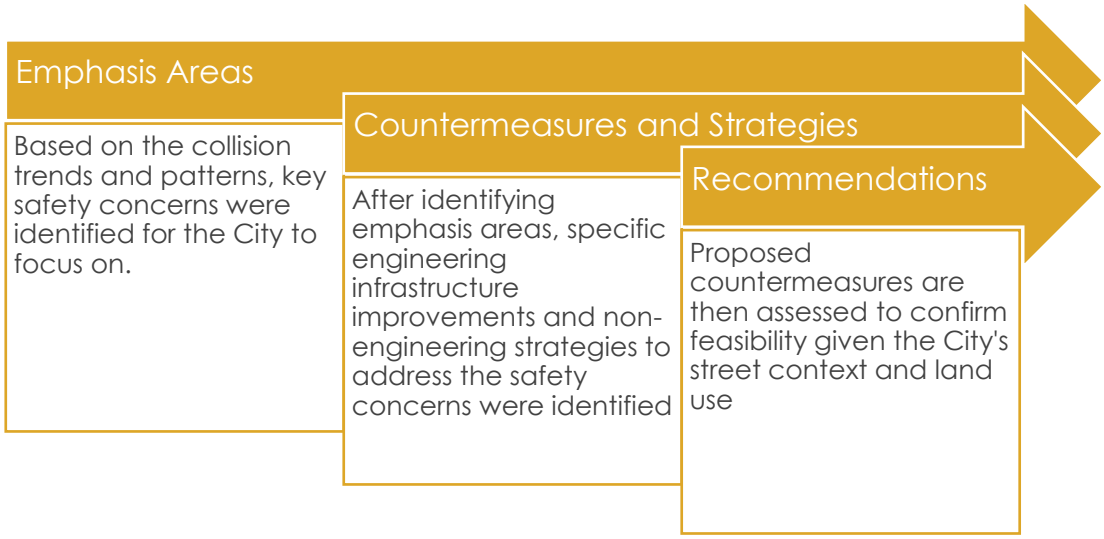
This LRSP and its recommendations can help create a Safe System and culture of roadway safety in the City of San Mateo. However, state and federal policies, such as legislation for automated speed enforcement and continued regulation of vehicle safety standards will be essential to complete the Safe System categories that the City and local agencies cannot directly affect.

1.2 Plan Overview

This LRSP uses historical collision data and an understanding of local context to assess existing roadway safety conditions in San Mateo, identify areas for improvement, and provide recommended actions and an implementation plan. Ultimately, this LRSP creates a data-driven and community-informed decision-making framework to reduce the number of fatal and severe injury collisions on local roadways.

The plan is organized into five main sections:

1. **Vision, Mission, and Goals** – Establishes a larger vision for transportation safety in San Mateo and sets goals for how to get there.
2. **Plan Development Process** – Details the collaborative data-driven and community-informed planning process.
3. **Existing Safety Conditions** – Provides an analysis of collisions in San Mateo.
4. **Emphasis Areas, Countermeasures, and Strategies** – Details the emphasis areas and lists proven countermeasures and strategies that can improve roadway safety.



5. **Recommendations, Actions, and Implementation** – Prioritizes short- and long-term projects and sets a strategy for assessing progress toward established goals.

Section 2
Vision, Mission, and Goals

2 Vision, Mission, and Goals

The Vision, Mission, and Goals of the LRSP were created collaboratively by representatives from the City and the Project Development Team (PDT) and covers both short- and long-term outcomes. The City of San Mateo is committed to implementing the FHWA's Safe System Approach in its future efforts related to road safety, to achieve its goals. Although the City's road network is extensive and intricate, ongoing, and anticipated safety initiatives are designed to gradually reduce the risk of accidents on the City's roads.

2.1 Vision

The City of San Mateo envisions a roadway network that prioritizes safety for all users, ensuring secure travel throughout the city.

2.2 Mission Statement

The City of San Mateo will use a collaborative, data-driven, and community-informed approach to proactively identify and address collision risk factors to implement safety countermeasures, strategies, and programs that can ultimately eliminate preventable fatalities and severe injuries within the City.

The City of San Mateo is committed to using data and Safe System principles recommended by FHWA and the California SHSP to assess road safety to prevent collisions proactively and systemically across the entire roadway network. The City is committed to reaching its goal of eliminating all preventable traffic fatalities and severe injuries by 2050.

2.3 Overarching Goals

The following goals will guide collaborative planning efforts with the PDT and other safety related partners:

- Use a data-driven and community-informed approach to identify priority locations for safety improvements.
- Implement proactive approaches to improve roadway safety and identify cost-effective systemic countermeasures.
- Prioritize investments in countermeasures and strategies that reduce collisions in identified emphasis areas.
- Collaborate with agencies and safety partners towards implementation.
- Educate and promote safe travel practices in the City of San Mateo.
- Periodically monitor and evaluate collision reduction goals with respect to emphasis areas and overall safety performance of the City's transportation network.

Section 3
Plan Development Process

3 Plan Development Process

This LRSP was developed according to the guidelines and requirements set forth by Caltrans and followed the FHWA's Developing Safety Plans manual and the Safe System Approach. The FHWA's LRSP development process is captured in Figure 2, and consists of four main steps:

1. Establishing stakeholders
2. Using safety data (analyzing safety data and identifying collision types and high-collision risk locations)
3. Choosing proven solutions
4. Implementing solutions

The first step of the plan involved bringing together a diverse group of stakeholders, the Project Development Team (PDT), to provide input on roadway safety issues and identify needs. Subsequently, the City analyzed available roadway and collision data to understand collision patterns, risk factors, and areas for improving safety. However, since data can be incomplete or inaccurate, the LRSP used a community-informed approach that combined data analysis with input from the community and the PDT to provide a more comprehensive understanding of transportation safety issues. Based on this analysis, a selection of proven countermeasures was identified to form a countermeasure toolbox and guide the implementation plan for the LRSP.

Figure 2: FHWA LRSP Planning Process

Source: FHWA, 2022, https://safety.fhwa.dot.gov/LRSPDIY/downloads/LRSP_FinalBuild_Infographic_508.pdf

The following two stakeholder groups have been valued partners that represent a unique set of experiences, needs, and views on roadway safety in the City of San Mateo.

3.1 Project Development Team (PDT)

The PDT was developed to include representatives from a broad cross section of community, business, educational, and government interests. Each person represents a unique set of experiences and perspectives on the transportation system in San Mateo that helped shape the LRSP. The following departments and organizations were represented in the PDT:

- San Mateo Consolidated Fire Department
- San Mateo County Office of Education
- San Mateo County Health
- City of San Mateo Senior Citizens Commission
- San Mateo Police Department
- San Mateo Baywood Plaza Homeowners Association/ City of San Mateo Age-Friendly Task Force member

3.1.1 Meeting Dates and Topics

The PDT met twice over the course of the LRSP's development, discussing topics as summarized below:

3.1.1.1 Meeting 1 | June 26, 2023

- Define LRSP purpose and scope.
- Present and gather feedback on preliminary data analysis.
- Present network screening results.
- Discuss potential emphasis areas based on data findings.

During the meeting, the PDT members requested the project team to refer to the High Injury Network (HIN) created by the Safe Routes to School (SRTS) team for identifying priority locations near San Mateo Schools, as applicable. Furthermore, the project team was advised to consider specific collision data related to vehicle types, collision trends, and develop maps detailing pedestrian and bicycle-specific collisions in the LRSP. Lastly, the PDT encouraged the project team to look at the City's older populations' origins and destinations to better understand and evaluate the sidewalk network within these regions.

For development of the countermeasure toolbox in the LRSP, the PDT members suggested including the following measures currently being installed near schools:

- Curb extensions
- Mini traffic circle
- High visibility crosswalks
- Rectangular rapid flashing beacons (RRFBs)

3.1.1.2 Meeting 2 | January 17, 2024

- Discuss community engagement activity and reach.
- Discuss actions and performance measures.
- Review Draft LRSP recommendations.
- Discuss implementation and responsibilities.

One of the PDT members noted that the crosswalk at the intersection of 3rd Avenue/El Camino Real is slippery. The PDT members suggested tracking drivers running a red light and recommending installing stop

signs or plaques indicating intersections are not all-way stop controlled, specifically at two-way stop-controlled intersections.

3.2 Sustainability and Infrastructure Commission (SIC)

The SIC is an advisory body to the City Council, established to advise on policies and programs related to environmental sustainability, transportation and infrastructure. Each committee member represents a unique set of experiences, needs, and views of the transportation system and roadway safety in the City of San Mateo that helped shape the LRSP. Continuing to leverage City relationships with the SIC will help in identifying proactive safety strategies, countermeasures at high-risk locations, and administering or promoting programs that encourage safe transportation behaviors.

Similar to the PDT, the SIC met twice over the course of the LRSP's development, discussing the same topics as summarized above. The SIC meetings took place on July 12, 2023 and February 2024. Copies of the SIC presentations are included in Appendix A. The SIC meetings were also open to the community.

During the first meeting, the SIC commented that the outreach should be transparent about the costs of implementing the safety improvements. The SIC members were also concerned about the intersection of Hillsdale Boulevard and Saratoga Drive which currently lacks a marked crosswalk on the eastbound leg of the intersection. Furthermore, the SIC suggested that the project team consider quick-build improvements[6].

Meeting Summary (Placeholder)

[6] Quick-Build projects require minor construction activities but are built with durable, low to moderate cost materials, and last from one year to five years. These projects have moderate design flexibility to anticipate some adjustments that may occur. The purpose of a Quick-Build project is to immediately implement safety needs, allowing a community to benefit quickly from improvements made, and allowing the people of a community affected by the project to provide input and test the project improvements before they are permanently constructed.

Section 4
Existing Safety Conditions

4 Existing Safety Conditions

The existing safety conditions are determined by reviewing relevant regional and local planning documents, community engagement, and collision analysis. Prior to engaging with the community, the project team developed a community outreach and engagement strategy that incorporated an equity analysis to identify underserved and disadvantaged communities. The engagement strategy was revised periodically as the LRSP progressed to ensure effective and meaningful engagement. The outcome from the existing conditions informed the emphasis areas and priority locations.

4.1 Existing Safety Practice and Culture

This section summarizes the regional and local planning documents pertaining to local roadway safety in San Mateo. Additionally, a summary is included to show the relevance of the document in the development of LRSP. The complete synthesis of roadway safety-related documents for the City of San Mateo and adjacent jurisdictions is included in Appendix B.

4.1.1 MTC Regional Safety/Vision Zero Policy (2020)

The MTC Regional Safety/Vision Zero Policy establishes a strategy for working with partner agencies to support equitable and data-driven action towards eliminating traffic deaths and serious vehicular injuries in the Bay Area by 2030.

Relevance to the LRSP development

- Establishes regional vision for collaborative and data-driven approach to eliminate traffic deaths and serious injuries.
- Emphasizes equity in roadway safety management planning and implementation.

4.1.2 C/CAG of San Mateo County Safe Routes to School Reports (2017)

In 2010, the C/CAG partnered with the San Mateo County Office of Education (SMCOE) to develop and implement the San Mateo County Safe Routes to School program to the 25 school districts in San Mateo County, in which elementary schools and middle schools in the City of San Mateo are affiliated with San Mateo-Foster City Elementary School District, and high schools in the City are affiliated with San Mateo Union High School District. The goal of the program was to improve the health, well-being, and safety of children by encouraging and enabling them to walk and bike to school.

Relevance to the LRSP development

- Opportunity for collaboration across agencies to create safe routes for students and integrate strategies across the LRSP and Safe Routes to School program.
- Identifies a toolbox of potential improvements for school-specific concerns and risks.
- Surveys include community-perceived barriers to walking and biking to school, which could inform development of targeted countermeasures for the LRSP.

4.1.3 San Mateo County Safe Routes to School High Injury Network Report (2022)

The High Injury Network (HIN) report details the process and outcomes of a youth-based HIN analysis. The HIN identifies segments in a roadway network where many pedestrian and bicycle collisions have occurred, prioritizing those with greater severity and those involving youth or active-mode victims. HIN synthesizes

information about collision characteristics, collision patterns, and user types to identify roadway segments that account for the highest number of specific types of collisions.

Relevance to the LRSP development

- Opportunity to use HIN to identify segments near schools where students traveling to or from school may face increased safety challenges.

4.1.4 Transit-Oriented Development (TOD) Pedestrian Access Plan (2022)

The San Mateo Transit-Oriented Development Pedestrian Access Plan serves as a roadmap to enhance pedestrian safety and create comfortable walking routes to transit for all ages and abilities. The scope of the Plan includes the pedestrian path of travel within a half-mile radius of the City's three Caltrain stations and along El Camino Real to account for frequent SamTrans service along this corridor. Caltrain and SamTrans have created new visions for their service in San Mateo County and this plan aims to complement these visions by making it easy to access transit for existing and future residents, employees, and visitors.

Relevance to the LRSP development

- Identifies issues informed by the community related to pedestrian access to transit for consideration in the LRSP.
- Provides examples and takeaways from community engagement which can inform the LRSP's community engagement activities and safety recommendations.

4.1.5 San Mateo Bicycle Master Plan (2020)

The 2020 San Mateo Bicycle Master Plan is the culmination of over a year of robust community engagement, data analysis, planning, and design work. This Plan is an update of the City's 2011 Bicycle Master Plan and serves as a blueprint for expanding and improving the San Mateo bicycle and mobility network in the coming years.

Relevance to the LRSP development

- Establishes goal to reduce bicycle-related crashes, injuries, and fatalities to align with the LRSP.
- Identifies bicyclist safety-related concerns and hotspots for consideration in the LRSP.
- Proposes bicycle facilities and intersection improvements that would enhance safety and comfort of bicyclists for consideration and coordination with the LRSP.

4.1.6 San Mateo Citywide Pedestrian Master Plan (2012)

The Citywide Pedestrian Master Plan is a blueprint for the City of San Mateo to improve the pedestrian environment, secure funds dedicated to pedestrian safety and livable communities, and increase the number of walking trips. The Plan provides a broad vision, strategies, and actions for improving the pedestrian environment in the city. Safety is identified as one of the six goals of the Plan. Specifically, the City sought to reduce the number of pedestrian related crashes, injuries and fatalities by 50 percent from 2010 levels by 2020.

Relevance to the LRSP development

- Establishes goal to reduce pedestrian-related crashes, injuries, and fatalities to align with the LRSP.
- Identifies pedestrian safety-related concerns and hotspots for consideration in the LRSP.
- Integrates existing regulations and best practices into a set of pedestrian enhancements that can enhance the safety, convenience, and mobility for pedestrians in the City which will be coordinated with the LRSP recommendations.

4.1.7 San Mateo 2030 General Plan (2010)

The San Mateo's General Plan is the community's planning guide that defines the long-term vision and provides the framework for all zoning and land use decisions within the community. The General Plan seeks to establish a balance between the need for new growth and development and the preservation of the City's high quality of life. At the time of writing this LRSP, the City is working on updating the General Plan 2040, which will likely be adopted in March 2024. More information on this General Plan 2040 can be found at www.cityofsanmateo.org/1537/General-Plan.

The Strive San Mateo General Plan 2040 includes ten big ideas that will guide the next 20 years of San Mateo. These Big Ideas are a mix of enduring principles that have guided decision-making in San Mateo for many years and support the City's history and fabric while introducing new concepts and topics that reflect present-day concerns and challenges. The ideas are as follows:

1. Balance growth and change,
2. Enhance San Mateo's neighborhood fabric and quality of life,
3. Preserve nature as the foundation of the city,
4. Encourage all ways to travel around the city,
5. Support the local economy,
6. Address historic preservation holistically,
7. Initiate a comprehensive sea level rise strategy,
8. Strengthen community outreach,
9. Focus on equity and health for all residents, and,
10. Improve community safety planning and awareness.

This General Plan 2040 recognizes the importance of improving the safety of the multimodal transportation network and includes a Vision Zero policy. Vision Zero is based on the five elements of a Safe Systems Approach advanced by the FHWA to eliminate traffic fatalities and serious injuries on roadways – the components and elements of the Safe System Approach is explained in detail in Section 1.1.2 Incorporating the Safe System Approach.

The General Plan also notes an action related to the Vision Zero Plan, as follows:

Action C 1.12 Vision Zero Plan: Complete and regularly update a plan that uses a safe systems approach to work towards Vision Zero and identifies specific citywide changes to policies, practices, funding, and other action items that will reduce speeding, collisions, and collision severity.

Relevance to the LRSP development

- Citywide safety-related goals and policies to be integrated for consistency in the LRSP.
- Coordination of long-term citywide improvements with LRSP recommendations and strategies.

4.2 Engagement and Outreach

As part of this LRSP, a series of public engagement activities were organized to gain insights on safety issues and needs from the community. These activities were tailored towards the unique character of the City of San Mateo and informed by discussions with City staff. Focused neighborhoods for community engagement were determined based on the results from collision analysis and equity analysis.

A comprehensive collision database was developed using the reported collision data from January 1, 2017, through December 31, 2021. Collision analysis revealed collision types, primary collision factors, and intersections and segments that have the highest collision frequency and severity. More information on collision analysis is described in Section 4.3 Citywide Safety Performance Analysis.

4.2.1 Equity Analysis

Equity is a fundamental consideration of the Safe System Approach, particularly given that pedestrian and bicyclist fatality rates on a per-capita basis vary largely by race,[7] as well as by income, age, and gender to varying degrees in varying places.[8] These outcomes underscore the need to explicitly examine correlations between sociodemographic and risk factors related to roadway infrastructure and operations.

To inform the communities in the City that are or have been historically underserved, Kittelson conducted the following evaluation:

- Demographic analysis
- Metropolitan Transportation Commission's (MTC) Equity Priority Communities (EPC)
- State of California's Disadvantaged Communities
- Transportation Disadvantaged Population Index
- SS4A Underserved Communities Census Tracts (Historically Disadvantaged Communities and Areas of Persistent Poverty)

4.2.1.1 Demographic Analysis

The City of San Mateo has a population of 104,333 according to the American Community Survey (ACS) 2019 5-year estimates. The working age population cohort (ages 20 to 64) represents the largest population segment in the City at more than 60 percent of the total population. San Mateo residents are highly educated, with nearly half (48 percent) of people aged 25 years or older holding at least a bachelor's degree. Table 1 shows the racial composition of the City.

Table 1: Race and Origin (Information directly from ACS)

Race and Origin	Population	Percentage
White alone, percent	55,216	52.9%
Black or African American alone, percent	2,044	2.0%
American Indian and Alaska Native alone, percent	408	0.4%
Asian alone, percent	25,141	24.1%
Chinese	11,593	11.1%

7 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.
8 Vision Zero Network. N.d. *Equity Strategies for Practitioners.* Accessed April 17, 2023: https://visionzeronetwork.org/wp-content/uploads/2017/05/VisionZero_Equity.pdf

Filipino	4,393	4.2%
Asian Indian	3,355	3.2%
Native Hawaiian and Other Pacific Islander alone, percent	2,617	2.5%
Two or More Races, percent	7,175	6.9%
Hispanic or Latino, percent	26,154	25.1%
White alone, not Hispanic or Latino, percent	42,623	40.9%

Source: U.S. Census Bureau, 2014-19 ACS 5-Year Estimates, Table DP05

Table 2 shows the language spoken at home data for San Mateo's over the age of 5 years.

Table 2: Language Spoken at Home

Language	Population (5 years and over)	Percentage	Percentage speak English less than "very well"
English only	55,177	56.8%	N/A
Spanish	18,403	18.9%	54.4%
Indo-European Languages	7,019	7.2%	26.0%
Asian and Pacific Languages	15,546	16.0%	38.7%

Source: U.S. Census Bureau, 2014-19 ACS 5-Year Estimates, Table S1601

Findings

- 53 percent of the population is White, 25% of the population identify as Hispanic or Latino, and 24 percent Asian. Chinese, Filipino and Asian Indian constitute the major Asian groups in the City.
- Approximately, 57 percent people speak only English at home. Spanish is the second most common language spoken in the city with 19 percent residents fluent in Spanish, of which 54 percent do not speak English very well. Asian and Pacific Island languages constitute about 16 percent of the population, of which 39 percent do not speak English very well.

4.2.1.2 Equity Priority Communities

Formerly called "Communities of Concern," EPCs are Census tracts that have a significant concentration of underserved populations, such as households with low income and people of color. A combination of additional factors helps define these areas, including Limited English proficiency households, seniors 75 years and older, zero-vehicle households, single parent households, people with a disability, and rent-burdened households. The EPCs were updated in 2021 and use ACS 2018 5-year estimates.[9] Figure 3 shows the EPCs in the City of San Mateo.

Findings

- Areas of North Central, Shoreview and parts of Downtown San Mateo as EPCs. These areas are generally located between Delaware Street, Peninsula Avenue, 5th Avenue and Bay Trail.

[9] MTC Equity Priority Communities: https://mtc.ca.gov/planning/transportation/access-equity-mobility/equity-priority-communities accessed on September 12 , 2022

4.2.1.3 State of California's Disadvantaged Communities

The Disadvantaged Communities (DAC) represent Census tracts that experience high levels of pollution and/or Census tracts that are federally recognized as tribal areas. The DAC designations were updated in 2022 to designate census tracts receiving the highest 25 percent of overall scores in CalEnvironScreen4.0 as disadvantaged.[10] Figure 3 shows the CalEnviroScreen 4.0 top 25th percentile DAC extent in the City of San Mateo.

Findings

- Similar to the EPCs, DACs are also located in the North Central and Downtown San Mateo.

4.2.1.4 SS4A Underserved Communities Census Tracts

The SS4A program allocates grants to support local initiatives aimed at preventing roadway fatalities and severe injuries. In alignment with the Justice40 initiative, USDOT is actively working to tackle and rectify decades of inadequate investment in underserved communities. Currently, 25 percent of the total population is in Disadvantaged Census Tracts in San Mateo.

Figure 4 shows SS4A underserved communities. [11]

Findings

- Similar to the EPCs and DACs, North Central and Downtown neighborhood remain underserved communities with an addition of the Hillsdale neighborhood west of El Camino Real.

Table 3 provides the total number and the percentage of fatal or severe injury collisions in EPCs and SS4A communities.

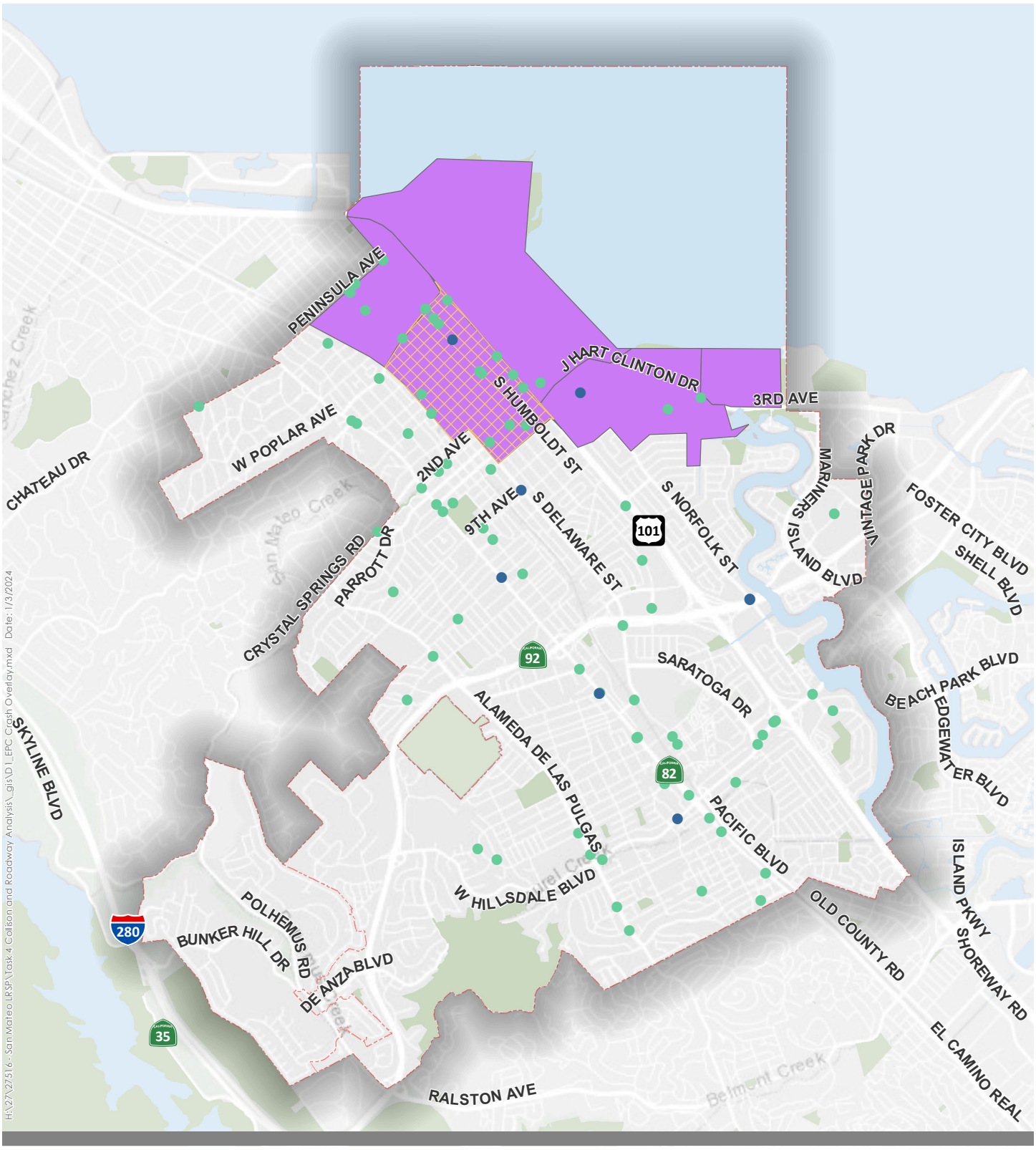
Table 3: Proportion of Fatal or Severe Injury Collisions in Disadvantaged Areas

Disadvantaged Area	Number of Fatal or Severe Injury Collisions in San Mateo	Number of Fatal or Severe Injury Collisions in Disadvantaged Area	% of Fatal or Severe Injury Collisions in Disadvantaged Area
Equity Priority Communities	89	26	29.2%
CalEnviroScreen 4.0 (Top 25%)		14	15.7%
SS4A Underserved Communities		31	34.8%

Source: Kittelson and Associates, Inc (2023)

[10] CalEnviroScreen is a screening methodology that can be used to help identify California communities that are disproportionately burdened by multiple sources of pollution.

[11] USDOT. *SS4A Underserved Communities.* Accessed from https://www.arcgis.com/apps/dashboards/99f9268777ff4218867ceedfabe58a3a



LEGEND

- City Boundary
- Equity Priority Communities
- CalEnviroScreen 4.0 Top 25%

Collision Severity

- Fatal
- Severe Injury

0 0.5 1 Miles

Equity Priority Communities with Fatal/Severe Injury Collision Overlay

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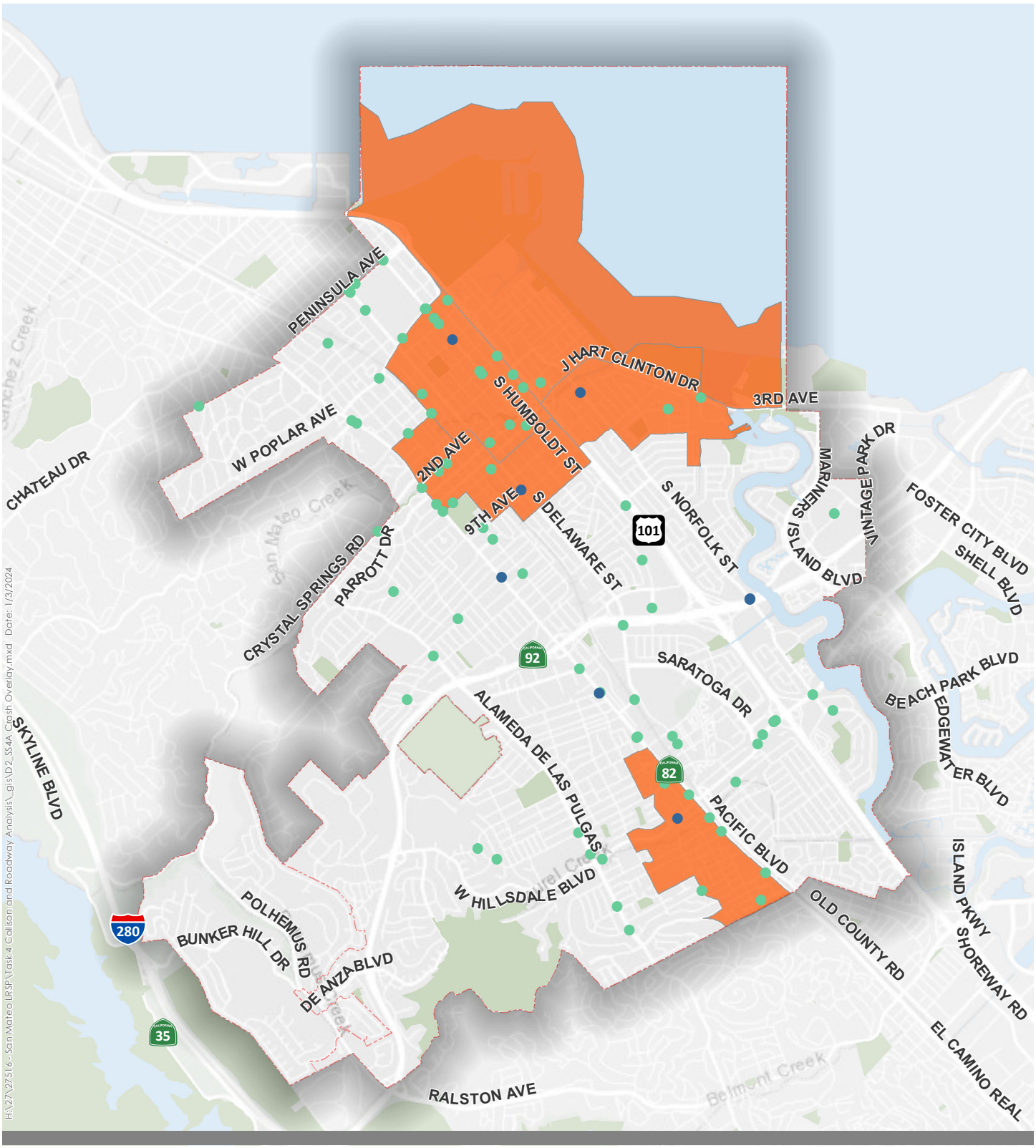
Source: MTC 2050 Plan Bay Area, Equity Priority Commnunities; CalEPA, SB 535 Disadvantaged Communities



LEGEND

City Boundary

SS4A Underserved Communities

Collision Severity

Fatal

Severe Injury

0 0.5 1 Miles

SS4A Communities with Fatal/ Severe Injury Collision Overlay

Source: USDOT SS4A Underserved Community Mapping Tools, June 21, 2023

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Collision analysis identified collision patterns, trends, and high-priority intersections and roadways, and equity analysis informed the historically underserved areas within the City, with potential issues related to specific collision types and severities. These two pieces of information were used to determine focused neighborhoods in the City that warranted extra attention during community engagement activities.

The overview of engagement strategies is provided below, detailed information related to each of these strategies and their reach can be found in Appendix C.

4.2.2 Project Webpage

Kittelson collaborated closely with the City staff to create a project webpage[12], which was hosted on the City's website. This dedicated webpage served as a one-stop shop for updates and information related to the LRSP. The webpage featured an array of valuable resources, including an overview of the LRSP, details on upcoming events, project updates, an interactive web map, a story map, and access to relevant documents.

4.2.2.1 Interactive Map

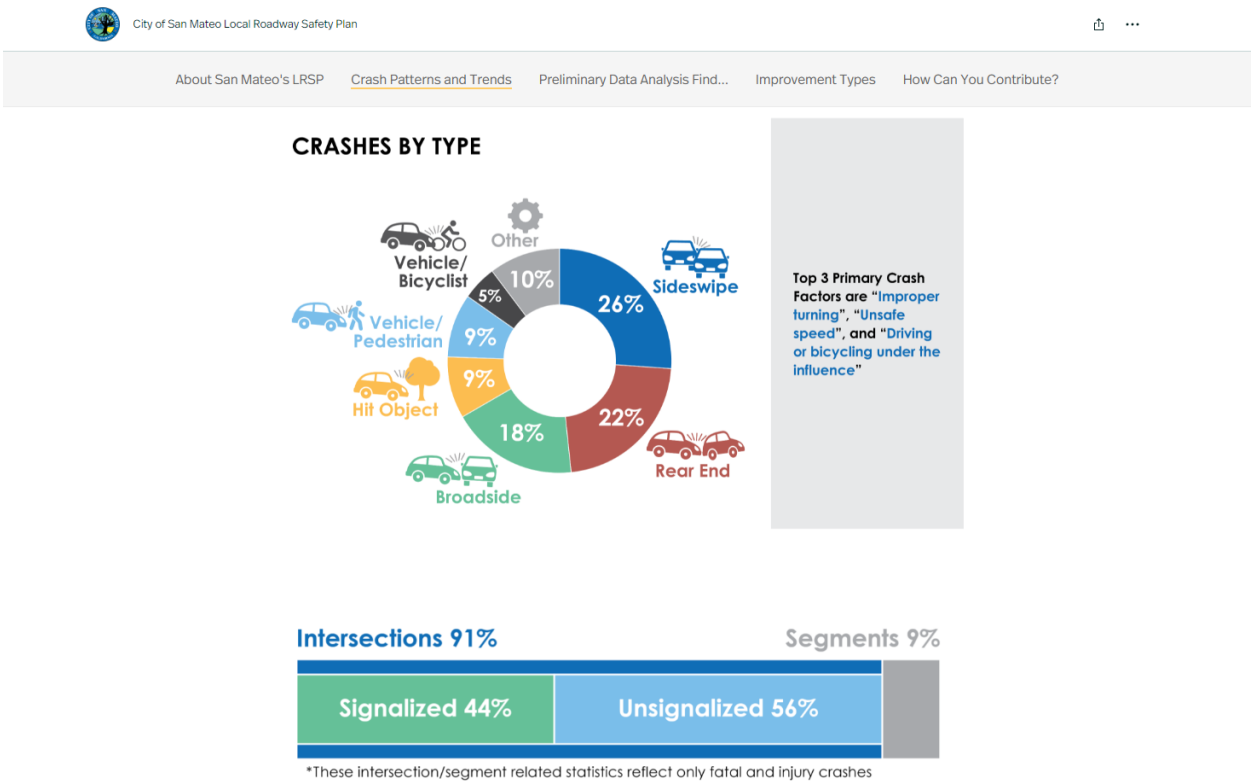
The interactive map was utilized to get location-specific feedback from communities throughout the city. A total of 507 comments were received between early June 2023 through September 2023 after Labor Day, September 8, 2023. Of the total comments, 57 percent (289) of the comments were in focused neighborhoods. Duplicate comments were removed during the review. Figure 4 shows the location of comments by user-defined type.

4.2.2.2 Story Map

Kittelson completed data analysis of collision trends in the city and compiled examples of safety countermeasures (or improvements) that can address these collision related trends in the Story Map[13]. A Story Map is an interactive web-based tool that provides information on the overview of LRSP, citywide collision patterns and trends, preliminary data analysis findings, countermeasures list, and a link directing users to interactive map, shown in Figure 5.

[12] www.cityofsanmateo.org/SafetyPlan
[13] https://storymaps.arcgis.com/stories/11cb2a44f9aa4280948c0d2ec924d1b5

Figure 5: Screenshot of San Mateo LRSP Story Map



4.2.3 Project Flyers and Posters

Kittelson identified the greatest safety performance needs and historically underserved communities in the city, also known as focused neighborhoods, that required focused community outreach – Downtown, Hillsdale, and North Central. Kittelson placed 545 community-specific flyers in English, Spanish, and simplified Chinese, selecting spots in these neighborhoods strategically focusing on activity-centers, i.e., near the schools, transit stops, commercial and retail centers/hubs, community centers, and areas with high pedestrian movement.

4.2.4 Pop-Up Events

This LRSP was developed concurrently with the ongoing 2024 Complete Streets Plan, which organized a series of public engagement events. Because safety is central to both plans' recommendations, those public activities and feedback inform locations, priorities, and input for this LRSP. The 2024 Complete Streets Plan project team conducted a series of pop-up events, of which the LRSP project team participated in two pop-up events (Figure 6). These were conducted at the San Mateo Central Park and San Mateo Farmers' Market. At these public engagement activities, City Staff and project team members received input on what infrastructure would best meet the needs of San Mateo's residents, business owners, workers, and other visitors.

4.2.4.1 Business Cards

Kittelson developed easy-to-carry business cards for the participants that attended the pop-up events. The business cards provided a link and QR code to the project webpage. The business cards were developed in two languages, English and Spanish.

4.2.5 Findings

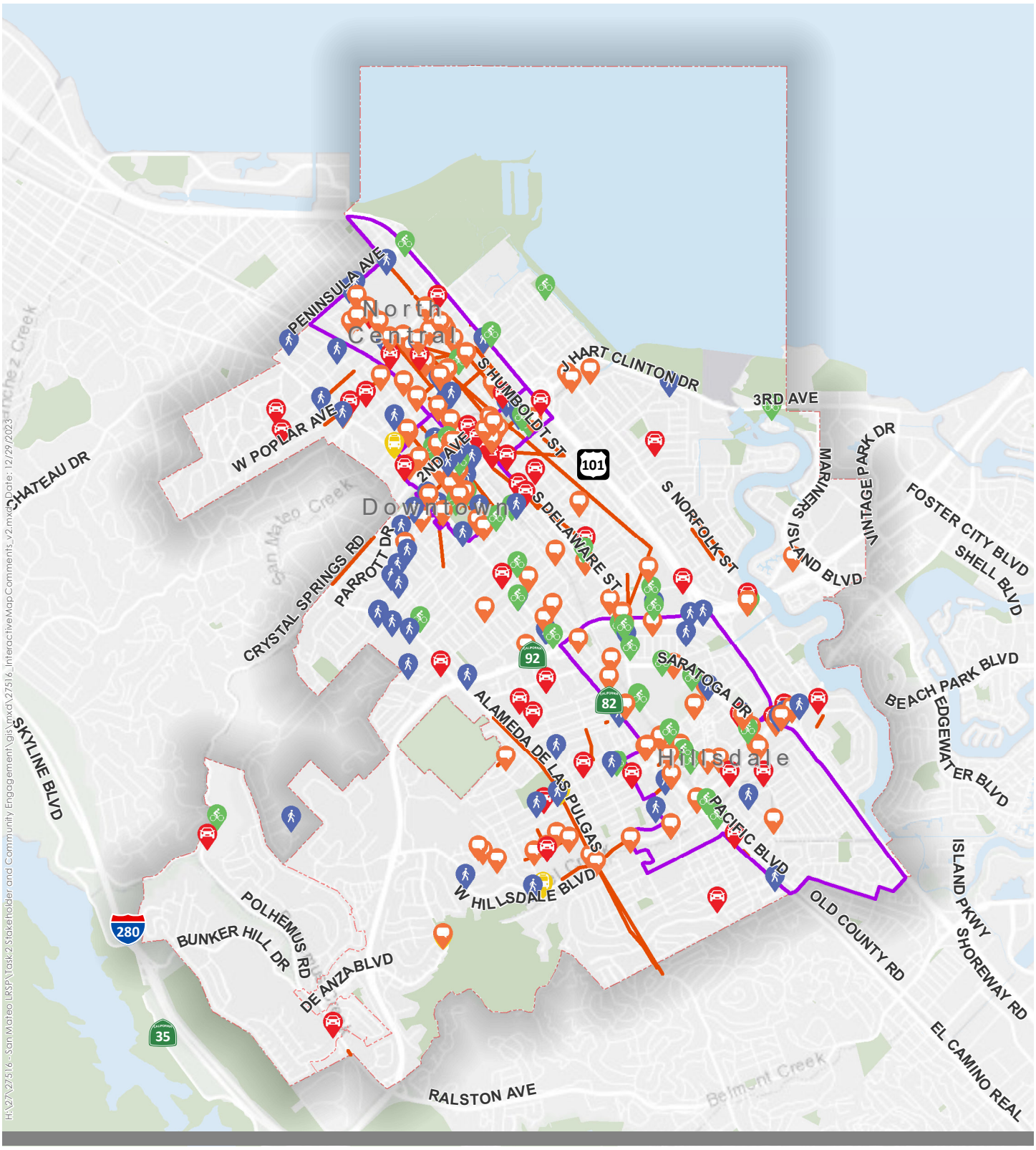
Figure 7 shows the location of comments received on Interactive Map tool based on user-defined type. Most of these comments include speeding cars near schools and residential areas, intersections with limited access for vulnerable users, inadequate pedestrian crossings, poor visibility, and maintenance issues. Additionally, some comments are related to traffic congestion, illegal parking, and inadequate infrastructure for bikes. The residents suggested improvements at certain locations such as implementing speed bumps, adding stop signs or traffic lights, improving crosswalks, enhancing bike lanes, increasing enforcement, and narrowing or removal of traffic lanes.

Below is list of key themes of safety issues and concerns from the pop-up events:

- Red Light Running and Speeding:
    - Red light running at intersections: 12th Avenue/Hobart Ave/El Camino Real, 20th Avenue & El Camino Real, and El Camino Real corridor.
    - Speeding on several streets in the City, including El Camino Real, Tilton Avenue, Palm Avenue, and 20th Avenue.
- Pedestrian Safety:
    - Need for pedestrian crossing signals, signal heads, additional crosswalks, pedestrian related infrastructure improvements near schools and in higher pedestrian activity areas.
- Bike Safety:
    - Lack of bike lane presence, bike infrastructure, and bicycle lane connectivity.
- School Zones:
    - Speeding in school zones, safety concerns at school pick-up/drop-off areas.
    - Suggestions included reducing pedestrian crossing lengths by adding curb extensions at intersections.
- Intersection Design:
    - Need for stop signs and better visibility.
- Traffic Calming Measures:
    - Need for more speed humps and speed cushions on various streets, including Alameda de las Pulgas and Delaware Street.
- Pavement Conditions:
    - Presence of potholes on various streets, including Poplar Avenue, El Camino Real, and Pacific Blvd.

The findings from the data were informed and expanded using community engagement and feedback. For key themes identified above, if the data findings were supported by community feedback (for example, need for speed management on some city roadways), we addressed those key themes by identifying systemic treatments as discussed in Section 7.2. For site-specific comments from the community, if the data findings supported community feedback and experience, site-specific treatments were recommended at priority locations that address those factors identified, described in detail in Section 7.3. For key themes and comments from the community that were not informed by the data (for example, maintenance needs on city roadways), we were not able to assess if pavement conditions are associated with an increase in collisions. The City may consider monitoring this as part of their implementation of the LRSP. By incorporating findings from the data and listening directly to community needs, this LRSP reflects data-driven and community-informed desires to improve roadway safety performance in the City of San Mateo.

Figure 6: Pop-up Community Engagement



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LEGEND

- City Boundary
- Focused Neighborhood
- Bicycling
- Walking
- Driving
- Transit
- Other
- Roadway Segment Comment

0 0.5 1 Miles

Interactive Map Comments

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4.3 Citywide Safety Performance Analysis

Kittelson developed a collision database using the reported collision data from January 1, 2017, through December 31, 2021. The data was cross-checked and supplemented with information from the California Statewide Integrated Traffic Records System (SWITRS), University of California Berkeley's Transportation Injury Mapping System (TIMS), and City's internal collision database. Collisions on Caltrans-owned and operated roads such as US 101 and State Route 92 were excluded from the data, while those on at-grade facilities with direct interaction with the City's roadway network, such as State Route 82, were included. Collisions reported at the ramp terminal intersections that are associated with grade-separated freeways and highways in the City are also included in the analysis database. Duplicate records were also identified and removed. The final dataset is comprised of 1,909 collisions from SWITRS/TIMS and 690 collisions from the City's internal collision database.

The citywide roadway safety performance is summarized using findings from the following analyses:

- **Citywide Collision Patterns and Trends,** which identifies relevant collision factors such as collision types, primary collision factors, and users involved.
- **Network Screening,** which spatially locates collisions and identifies intersections and segments with the highest collision frequency and severity to determine locations where improvements may have the highest impact.
- **Statewide Comparison,** which compares local collision statistics with statewide data to identify areas for safety improvement.

4.3.1 Citywide Collision Patterns and Trends Summary

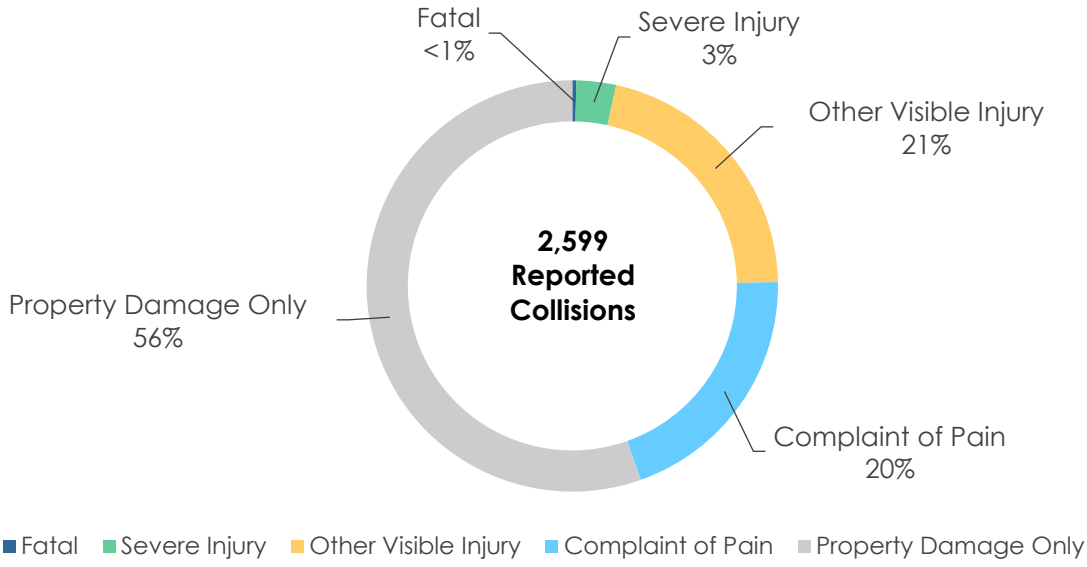
This section describes collision patterns and trends for all reported collisions between January 1, 2017, and December 31, 2021. These statistics helped develop systemic and location-specific countermeasures for safety projects across the city. The following is a summary of key findings from all reported collisions:

- 2,599 collisions were reported (an average of 519.8 per year), including 89 fatal or severe injury collisions (an average of 17.8 per year).
- Intersection collisions are more frequent than roadway collisions, representing 93% of reported collisions and 92% of fatal/severe injury collisions.
- 230 collisions (9% of reported) involved pedestrians, including 31 fatal and severe injury collisions (34% of fatal and severe injury).
- 144 collisions (6% of reported) involved bicyclists, including 15 fatal and severe injury collisions (17% of fatal and severe injury).
- Sideswipe (26%), rear-end (22%), and broadside (18%) collisions are the most frequently cited collision type.
- Improper turning (26%), unsafe speed (15%), and driving or bicycling under the influence (14%) are the most frequently cited primary collision factors.

In this analysis, the project team focused on understanding the overall collision risk factors and primary contributing factors, with an emphasis on their relationship with fatal and severe injury collisions. This is because Caltrans Director's Policy commits to Safe System Approach to eliminate deaths and serious injuries on California roadways.

Figure 8 and Table 4 summarize the reported collisions by severity in the City of San Mateo. Table 4 also shows a breakdown of City collisions by road users involved. 230 collisions involved pedestrians, 31 of which were fatal or severe injury collisions (1.2% of total collisions, but 35% of fatal and severe injury collisions citywide). Similarly, 144 collisions involved bicyclists, 15 of which were fatal and severe injury collisions (0.5% of total collisions, but 17% of fatal and severe injury collisions citywide).

Figure 8: Reported Collisions by Severity (2017-2021)



Source: SWITRS, TIMS, City of San Mateo, compiled by Kittelson (2023)

Table 4: Collision Severity of Reported Collisions by Road User Involved (2017-2021)

Road Users Involved	Fatal (% of column)	Severe Injury (% of column)	Other Visible Injury (% of column)	Complaint of Pain (% of column)	Property Damage Only (% of column)	Total (% of column)
Pedestrian-Involved	4 (50%)	27 (33%)	106 (19%)	79 (15%)	14 (1%)	230 (9%)
Bicycle-Involved	2 (25%)	13 (16%)	81 (15%)	43 (8%)	5 (<1%)	144 (6%)
Vehicle Only or Vehicle-Fixed Object	2 (25%)	42 (52%)	366 (66%)	396 (77%)	1,421 (99%)	2,227 (86%)
Reported Collisions	**8 (100%)**	**81 (100%)**	**553 (100%)**	**517 (100%)**	**1,440 (100%)**	**2,599 (100%)**
Severity Share of Reported Collisions	**<1%**	**3%**	**21%**	**20%**	**55%**	**100%**

Source: SWITRS, TIMS, City of San Mateo, compiled by Kittelson (2023)

Due to uncertainty in the reported locations of collisions, 1,159 out of 2,599 reported collisions were geolocated and analyzed when assessing collision location (essentially all non-PDO crashes).

Figure 9 shows the collision tree with fatal and injury collisions broken down by collision location (intersection/roadway segment) and road user involved (pedestrian, bicycle, motor vehicle). 91% of reported collisions and 92% of fatal and severe injury collisions occurred at an intersection. Of the 1,055 general collisions and 82 fatal/severe injury collisions related to intersections, over half took place at unsignalized intersections.

Figure 9: Collision Tree – San Mateo Collisions by Location, Severity, Mode (2017-2021)

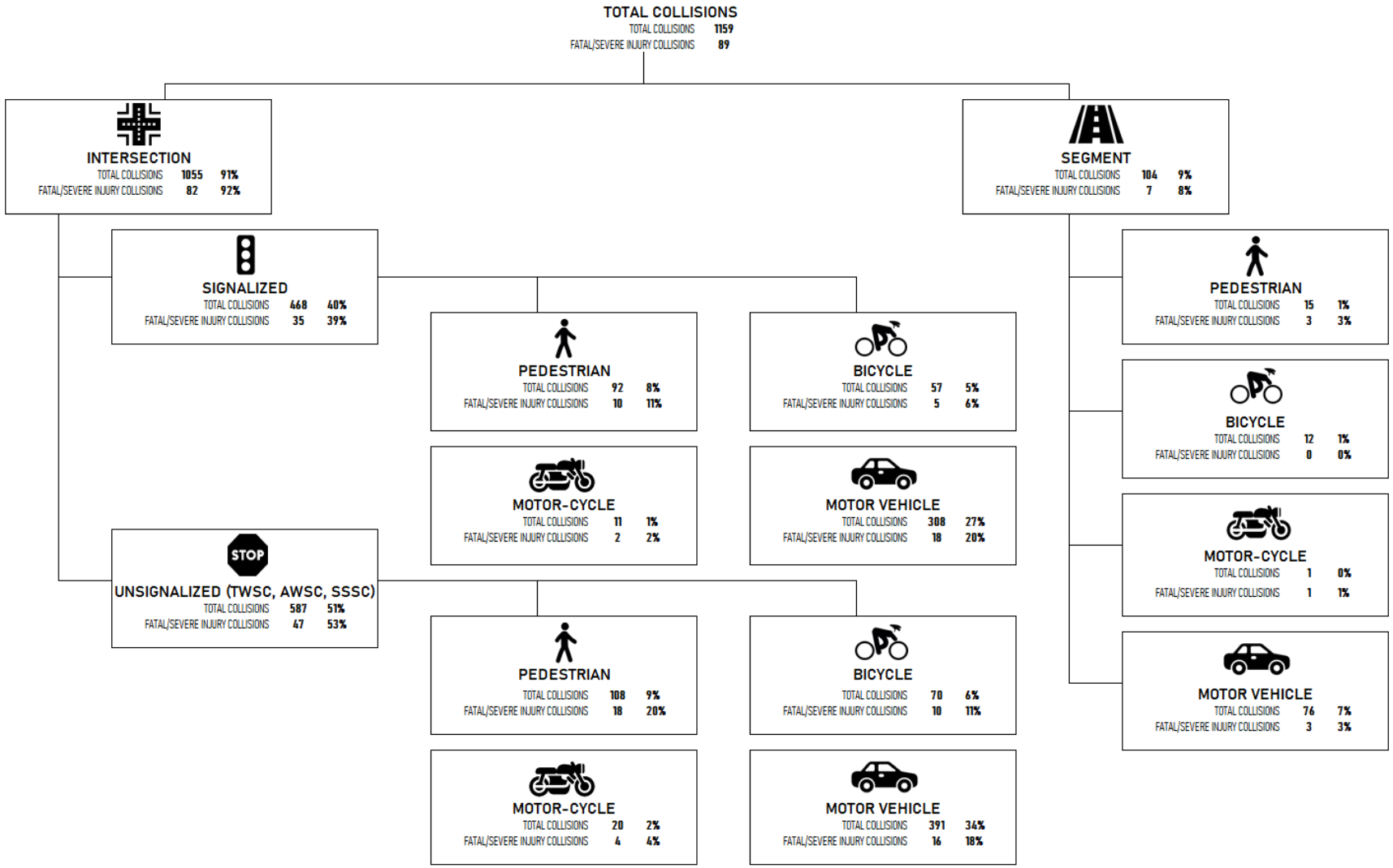
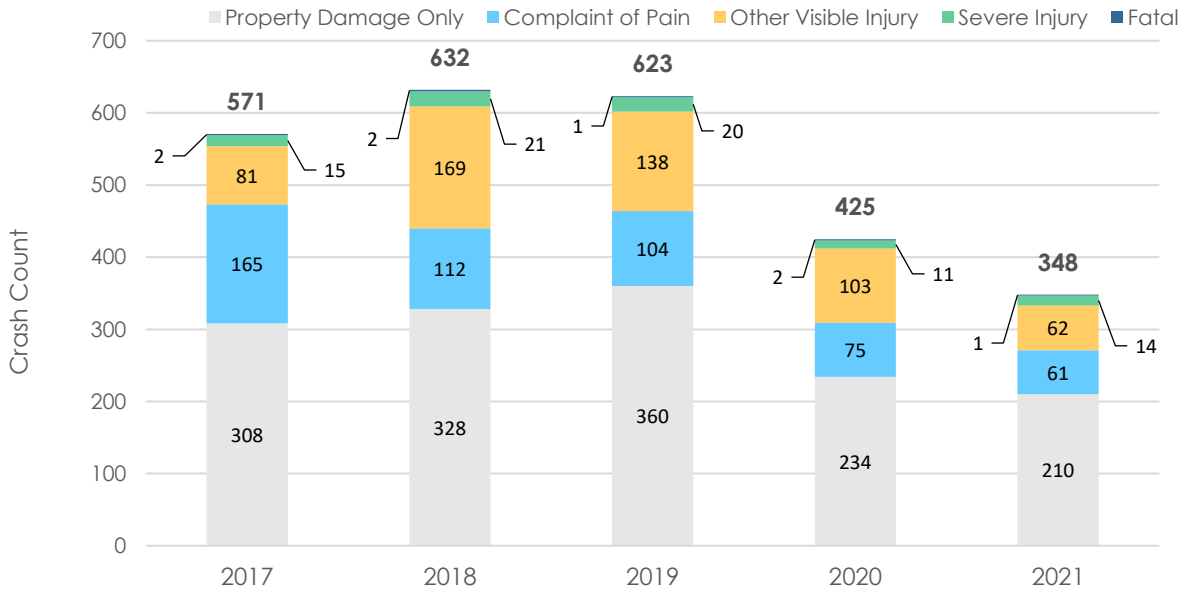


Figure 10 shows the temporal trend of traffic collisions from 2017 to 2021. The year 2018 had the highest number of total reported collisions followed by 2019. Overall, we see a decrease in the total collisions in 2020 and 2021. The share of fatal and severe injury collisions is highest in 2021 (4.3%), followed by 2018 (3.6%). In general, single-year trends are sensitive to probabilistic fluctuations and may not necessarily indicate improved or worsened safety performance. With the COVID-19 pandemic, 2020 and 2021 were not typical and almost all the cities in the United States experienced a decrease in traffic volumes and change in travel patterns in 2020 due to the pandemic. Associated with this trend, jurisdictions saw a decrease in total collisions but an increase in roadway fatalities and severe injury collisions.

Figure 10 supports this national trend within the City of San Mateo – there were fewer total collisions on City's roadways in 2020 and 2021, but the proportion of fatal and severe injury collisions was higher compared to prior years. While research is still ongoing, this increase in severe collisions is hypothesized to be associated with higher driving speeds and riskier driving behavior – although there was less driving overall, those driving did so with less traffic on the road and more opportunity to speed. While 2020 and 2021 totals appear lower than previous years, its data should not be directly compared to other years' collision data or used in isolation as indication of improved roadway safety performance. This is an expected outcome that is correlated with lower levels of travel overall, related to stay-at-home orders and evolving patterns of working from home and reduced travel.

Figure 10: Annual Reported Collisions for Fatal and Severe Injury Collisions (2017-2021)

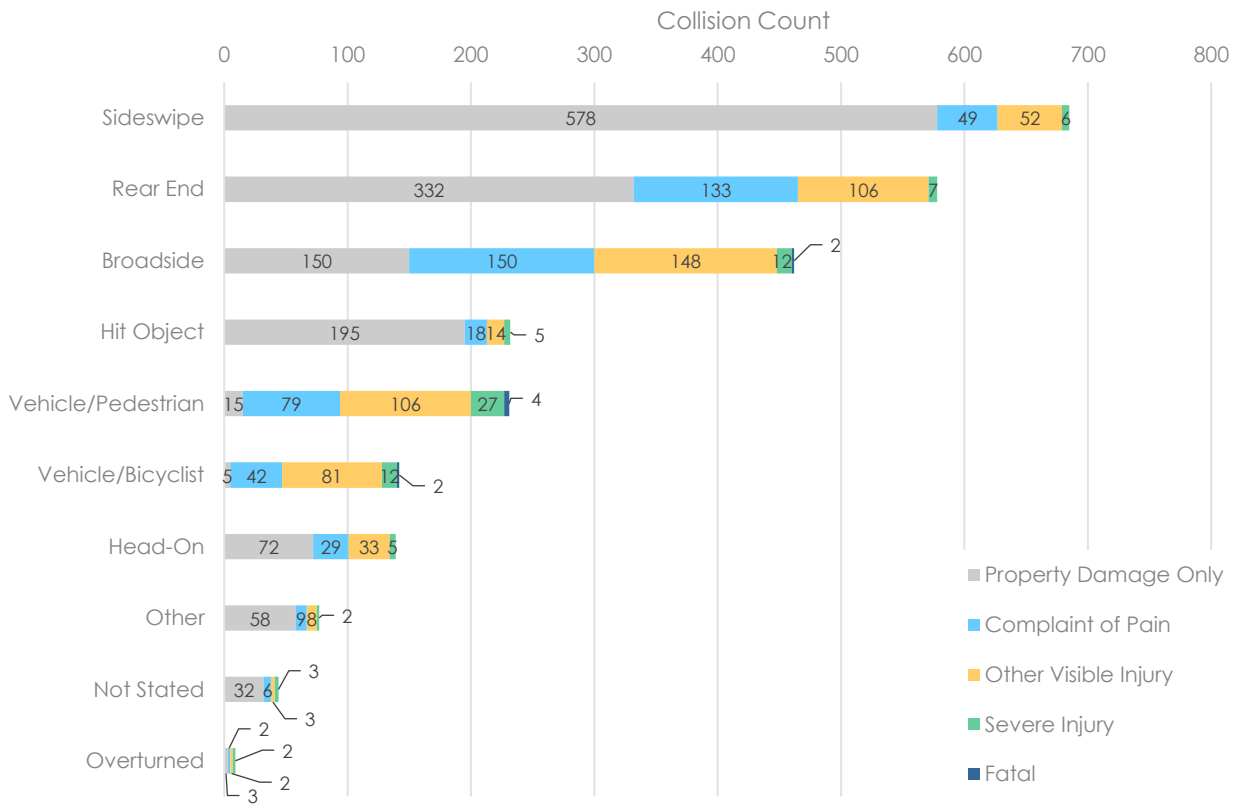


Source: SWITRS, TIMS, City of San Mateo, compiled by Kittelson (2023)

4.3.1.1 Collision Types

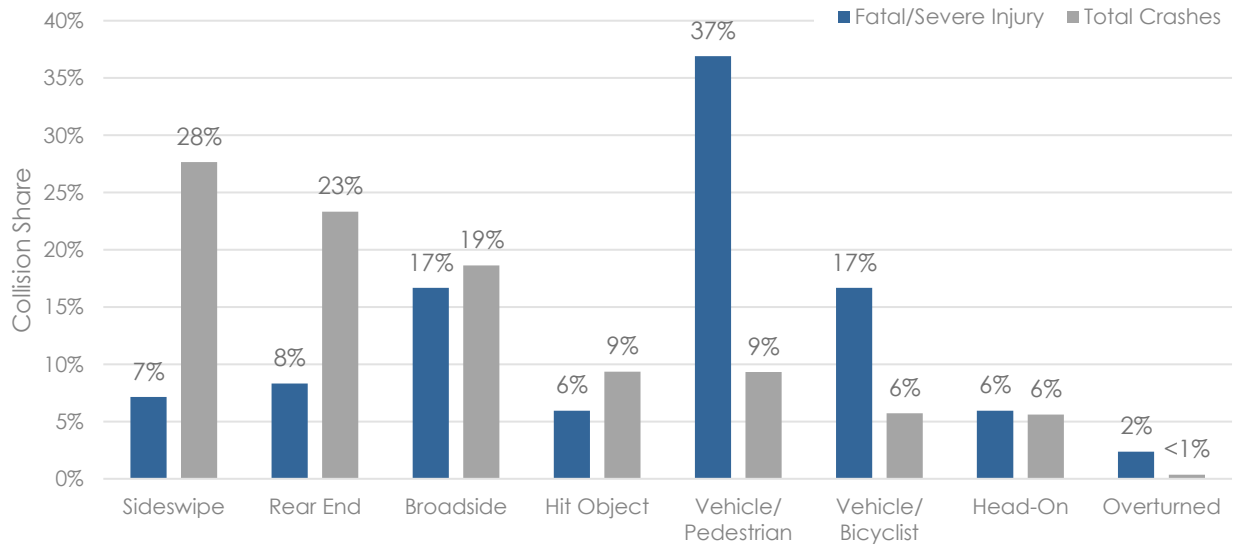
Figure 11 and Figure 12 show the most frequently occurring collision types that were reported in the City. Of all the reported collisions, the three most common collision types include sideswipe, rear end, and broadside collisions (68% of all reported collisions). The most common collision types that resulted in fatal and severe injury collisions include vehicle/pedestrian (37% of fatal and severe injury crashes), vehicle/bicyclist (17% of fatal and severe injury crashes), and broadside collisions (17% of fatal and severe injury crashes).

Figure 11: Collision Type of Reported Collisions by Collision Severity (2017-2021)



Source: SWITRS, TIMS, City of San Mateo, compiled by Kittelson (2023)

Figure 12: Share of Fatal or Severe Injury Collisions by Collision Type and Collision Severity (2017-2021)



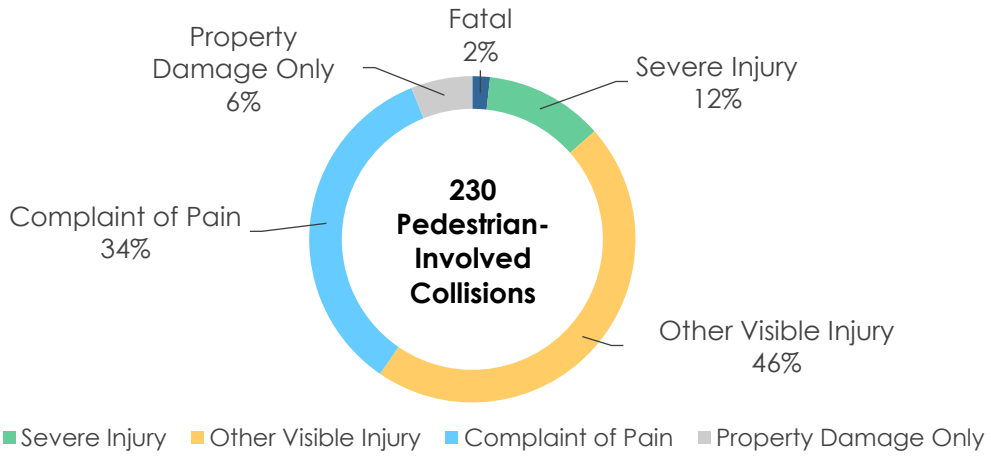
Source: SWITRS, TIMS, City of San Mateo, compiled by Kittelson (2023)

4.3.1.1.1 Pedestrian-Involved Collisions

Across the five study years (2017-2021) there were a total of 230 pedestrian-involved collisions as shown in Figure 13. Of these collisions, 31 were fatal and severe injury collisions. Pedestrian-involved collisions comprised 9% of all reported collisions but accounted for 35% of fatal and severe injury collisions. Therefore, pedestrian-involved collisions are over-represented in fatal and severe injury collisions.

61% of all reported pedestrian-involved collisions and 58% of fatal and severe injury collisions occurred when the pedestrian was crossing in a crosswalk at an intersection.

Figure 13: Pedestrian-Involved Collisions by Severity (2017-2021)



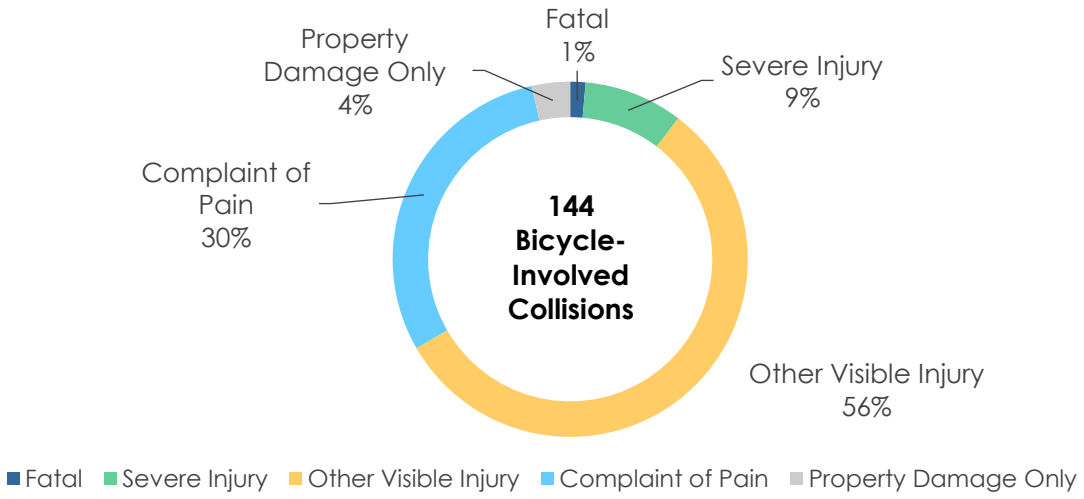
Source: SWITRS, TIMS, City of San Mateo, compiled by Kittelson (2023)

4.3.1.1.2 Bicycle-Involved Collisions

Across the five study years (2017-2021) there were a total of 144 bicycle-involved collisions as shown in Figure 14. Of these collisions, 15 were fatal and severe injury collisions. Bicycle-involved collisions comprised 6% of all reported collisions but accounted for 17% of fatal and severe injury collisions. Therefore, bicycle-involved collisions are over-represented in fatal and severe injury collisions.

46% of all reported bicycle-involved collisions and 27% of fatal and severe injury collisions were classified as broadside collisions. The top three primary collision factors for bicycle-involved collisions were wrong side of road, automobile right of way, and unsafe speed.

Figure 14: Bicyclist-Involved Collisions by Severity (2017-2021)



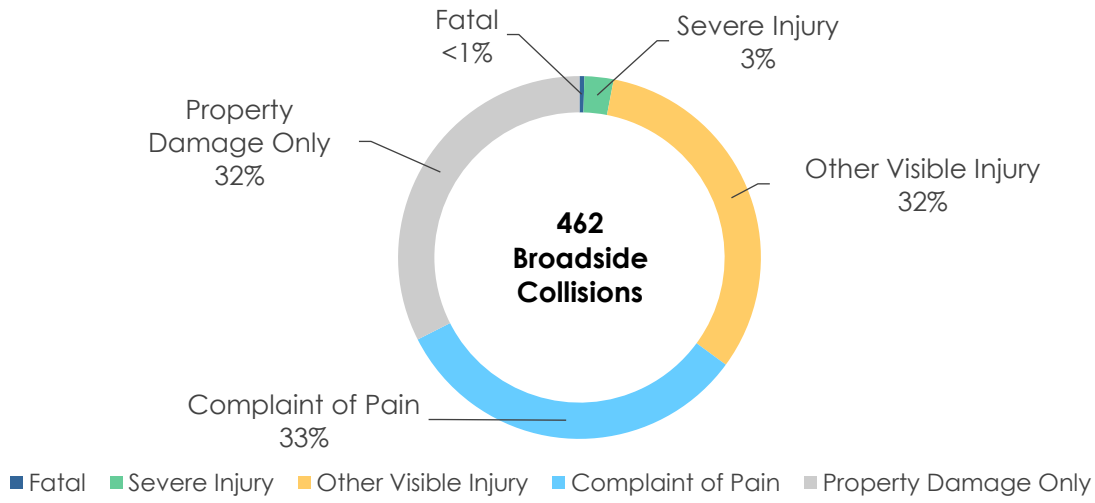
Source: SWITRS, TIMS, City of San Mateo, compiled by Kittelson (2023)

4.3.1.1.3 Broadside Collisions

Since broadside collisions are most commonly reported for all collisions as well as for fatal and severe injury collisions, broadside collisions were investigated further. Across the five study years (2017-2021) there were a total of 462 broadside collisions as shown in Figure 15. Of these collisions, 14 were fatal and severe injury collisions. Broadside collisions comprised of 18% of all reported collisions but accounted for 16% of fatal and severe injury collisions.

The top three primary collision factors for broadside collisions were automobile right of way, traffic signals and signs, and improper turning.

Figure 15: Broadside Collisions by Severity (2017-2021)



Source: SWITRS, TIMS, City of San Mateo, compiled by Kittelson (2023)

4.3.1.2 Primary Collision Factors

Reported primary collision factors (PCFs) convey the violation or the underlying causal factor for a collision. Reporting officers identify a primary collision factor (PCF) for every collision. There are several different PCFs from which they can select. It is up to the officer's judgement and information available at the scene for them to select the factor that is most relevant to the collision. Officers select one from among a list of PCFs based on violations[14] and road user behavior. There may be multiple PCFs that are appropriate for a given collision, but the PCF is the factor identified by the officer as the primary contributing violation/action for the collision.

Figure 16 and Figure 17 show the most frequently occurring PCFs that were reported in the City. Of all the reported collisions, the three most common PCFs include improper turning, unsafe speed, and driving or bicycling under the influence (DUI) (55% of all reported collisions). The three most common PCFs that resulted in fatal and severe injury collisions include pedestrian right of way, DUI, and improper turning (53% of all fatal and severe injury collisions).

Detailed descriptions for each of these PCFs are provided below.

4.3.1.2.1 Improper Turning

Improper turning violations are generally associated with a violation of CVC 22100. CVC 22100 directs how and when right-hand and left-hand turns get made on California roadways. For the City of San Mateo, improper turning violations are mostly correlated with sideswipe, hit object, and head-on collision types.

4.3.1.2.2 Unsafe Speed

Speed violations are generally associated with CVC 22350. CVC 22350 generally prohibits motorists from driving faster than what is considered safe for given driving conditions and circumstances. For the City of San Mateo, unsafe speed violations are mostly correlated with rear end, overturned, and hit object collisions. It is 0.5 times more likely for a collision with a PCF of unsafe speed to result in other visible injury and complaint of pain than for total collisions. Weekday AM and PM peak periods appear to have more collisions due to unsafe speed, likely associated with increased travel activity.

4.3.1.2.3 Driving or Bicycling Under the Influence of Alcohol and Drug

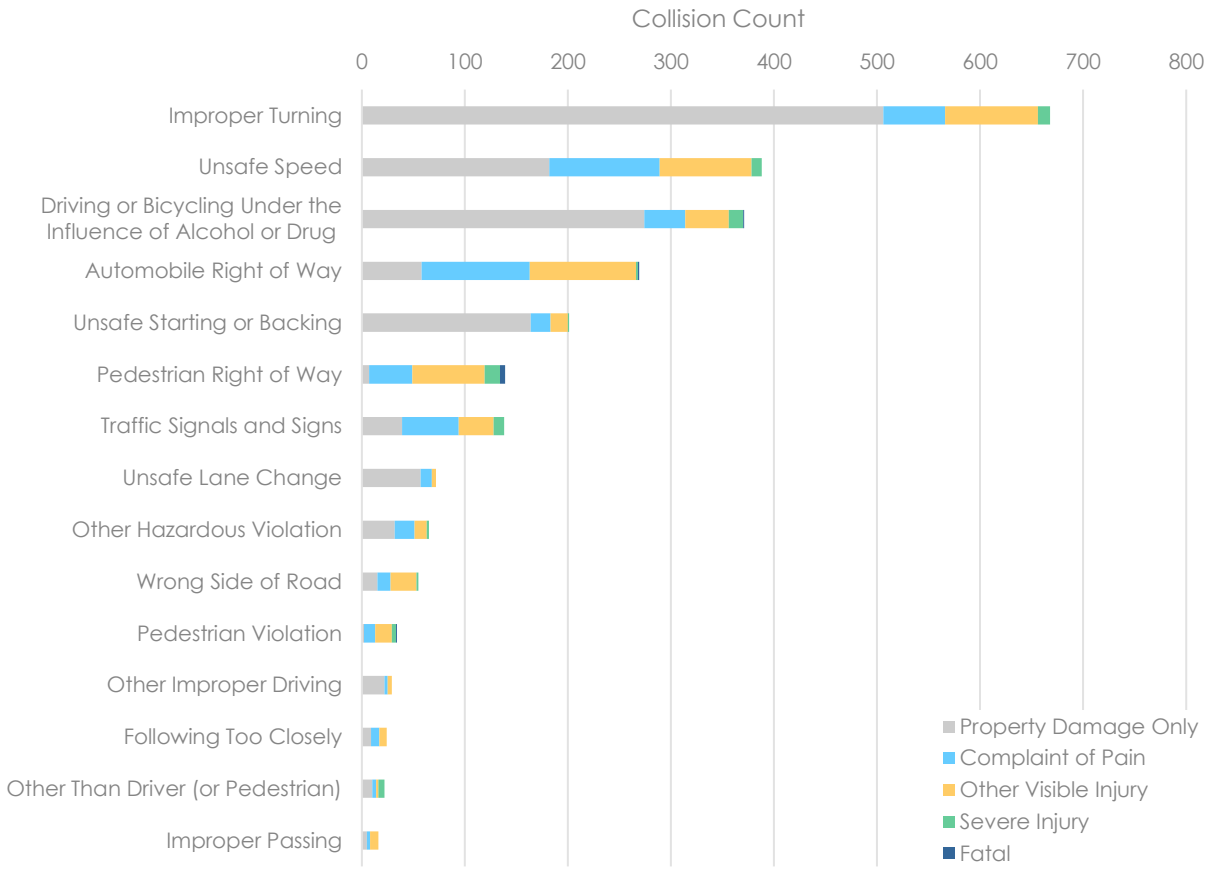
A violation of CVC 23152 is generally associated with driving under the influence violations. For the City of San Mateo, driving under the influence violations are mostly correlated with overturned, hit object, and head-on collisions. It is more likely for a collision with a PCF of driving or bicycling under the influence of alcohol and drugs are to result in a severe injury than for total collisions. Weekend evenings appear to have more collisions due to drivers driving under the influence of alcohol or drugs.

4.3.1.2.4 Pedestrian Right of Way

Violations of CVC 21949 through 21971 are associated with pedestrian right-of-way violations. For the City of San Mateo, pedestrian right-of-way violations are mostly correlated with vehicle/pedestrian and head-on collisions. There is a higher proportion of collisions with a PCF of pedestrian right of way resulting in a fatal or severe injury.

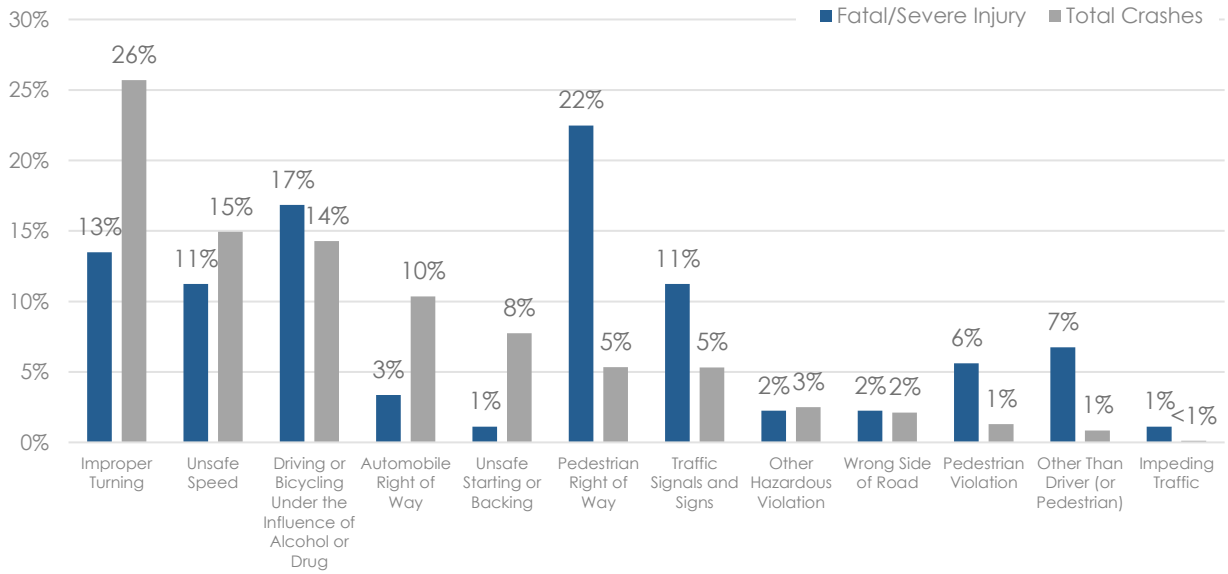
14 California Vehicle Code (CVC)

Figure 16: PCF by Collision Severity (2017-2021)



Source: SWITRS, TIMS, City of San Mateo, compiled by Kittelson (2023)

Figure 17: Share of Fatal or Severe Injury Collisions by PCF and Collision Severity (2017-2021)



Source: SWITRS, TIMS, City of San Mateo, compiled by Kittelson (2023)

4.3.2 Safety Performance Network Screening

Kittelson analyzed citywide collision patterns spatially and calculated collision severity scores for each intersection and roadway segment. These collision severity scores will ultimately help the City identify priority locations for safety improvement projects, which are discussed further in Section 8 - Recommendations.

4.3.2.1 Methodology

4.3.2.1.1 Collision Severity Score

Kittelson used the equivalent property damage-only score (EPDO score; hereafter referred to as *collision severity score*) performance measure from the American Association of State Highway and Transportation Officials, or AASHTO, *Highway Safety Manual (HSM)*, which assigns weighting factors to collisions by severity relative to PDO collisions. The collision severity score calculation was performed for all public intersections and roadway segments, not including state highway facilities. This performance measure is described below.

The collision severity score is calculated by multiplying each collision severity total by its associated weight and summing the results, using the following formula:

$$Annualized\ Collision\ Severity\ Score = \frac{\sum_{\forall\ collision\ severities} W_i * N_i}{T}$$

Where, W_i = Weight of specified collision severity
N_i = Total number of collisions throughout the time-period of analysis
T = Time-period of analysis (years)

The collision severity score is annualized by dividing the score by the number of years of collision data used in the analysis. The associated collision severity weights are based on the cost of PDO collisions, provided by the 2022 *Caltrans' Local Roadway Safety Manual*. These weights are shown in Table 5.

Table 5: Collision Weights by Severity and Location Type

Location Type	Collisions Weighting by Severity				
	Fatal	Severe Injury	Moderate Injury	Minor Injury	Property Damage Only
Signalized Intersection	119.93	119.93	10.73	6.10	1
Unsignalized Intersection	190.81	190.81	10.73	6.10	1
Roadway	165.17	165.17	10.73	6.10	1

Source: 2022 Caltrans' Local Roadway Safety Manual

As shown in Table 5, the collision weights prioritize fatal and severe injury collisions equally to recognize that a death versus a severe injury is often a function of the individual involved (i.e., age or physical fitness) or of emergency response time. Therefore, both outcomes represent locations where the region may equally value improvements. Moreover, collision weights vary by location due to the relative costs associated with the collision severity at the location types. Specifically, unsignalized intersections have a higher cost for fatal and severe collisions because fatal and severe collisions at these locations tend to result in more severely injured persons on average.

4.3.2.1.2 Intersection Analysis

Kittelson first identified signalized and unsignalized intersections in the City's roadway network and then defined collisions as intersection or segment collisions. An intersection collision is defined as a collision that occurs within 250 feet of the intersection. These collisions were spatially joined and summarized in ArcGIS to show the total number of collisions by severity and the respective annualized collision severity scores at each intersection. Where intersections were less than 500 feet from each other, collisions were assigned to the nearest of the two intersections. Collisions occurring more than 250 feet from any intersection were separated to be used in the roadway segment analysis discussed below.

4.3.2.1.3 Roadway Segment Analysis

After completing the intersection analysis, Kittelson used the collisions reported more than 250 feet from the nearest intersection to conduct a separate segment analysis. A Python script in ArcGIS allowed for splitting the San Mateo roadway network into overlapping half-mile (0.5) segments, incrementing the segments by one quarter (0.25) of a mile. This methodology helps to identify portions of the roadway with the greatest potential for safety improvements.

Once the roadway segments were created, the Python script spatially joined collisions to the corridor segment (excluding those identified with intersections as described above). Like the intersection methodology above, collisions were summarized by severity, and the totals were multiplied by the collision severity weights for roadway segments. The weighted collision severity scores of the collisions were totaled and annualized by the number of years of collision data (five) to generate an annualized collision severity score.

4.3.2.2 Results

To meet the goals of the City of San Mateo, Kittelson performed an intersection and roadway segment analysis based on collision severity score metrics. The results of the intersection and segment analysis helped create an initial list of intersections and corridors with high collision rates. This method highlights the sites that have high frequencies of fatal and/or severe injury collisions which typically warrant further investigation and countermeasure application. These locations are often the most competitive for HSIP, SS4A, and similar safety-related grant applications, discussed in Section 8 - Recommendations.

4.3.2.2.1 Priority Intersections

Kittelson used all reported collisions to conduct a network screening at all intersections in the City (127 signalized, 1,978 side-street stop-controlled and 2,024 uncontrolled intersections). Collision severity scores ranged from zero to 124.46. The priority intersections are organized into a Tier 1 and Tier 2 classification based on their collision severity score:

- **Tier 1** – Priority intersections that have a collision severity score 46 or higher. A threshold of 46 was determined since there appeared to be a natural break in the results at this point.
- **Tier 2** – Priority intersections that have a collision severity score lower than 46 and higher than or equal to 42. A threshold of 42 was determined since there appeared to be a natural break in the results at this point.

Table 6 displays the priority intersections with their corresponding collision severity score. Figure 18 displays the priority intersections identified in Table 6.

Table 6: Priority Intersections – City of San Mateo

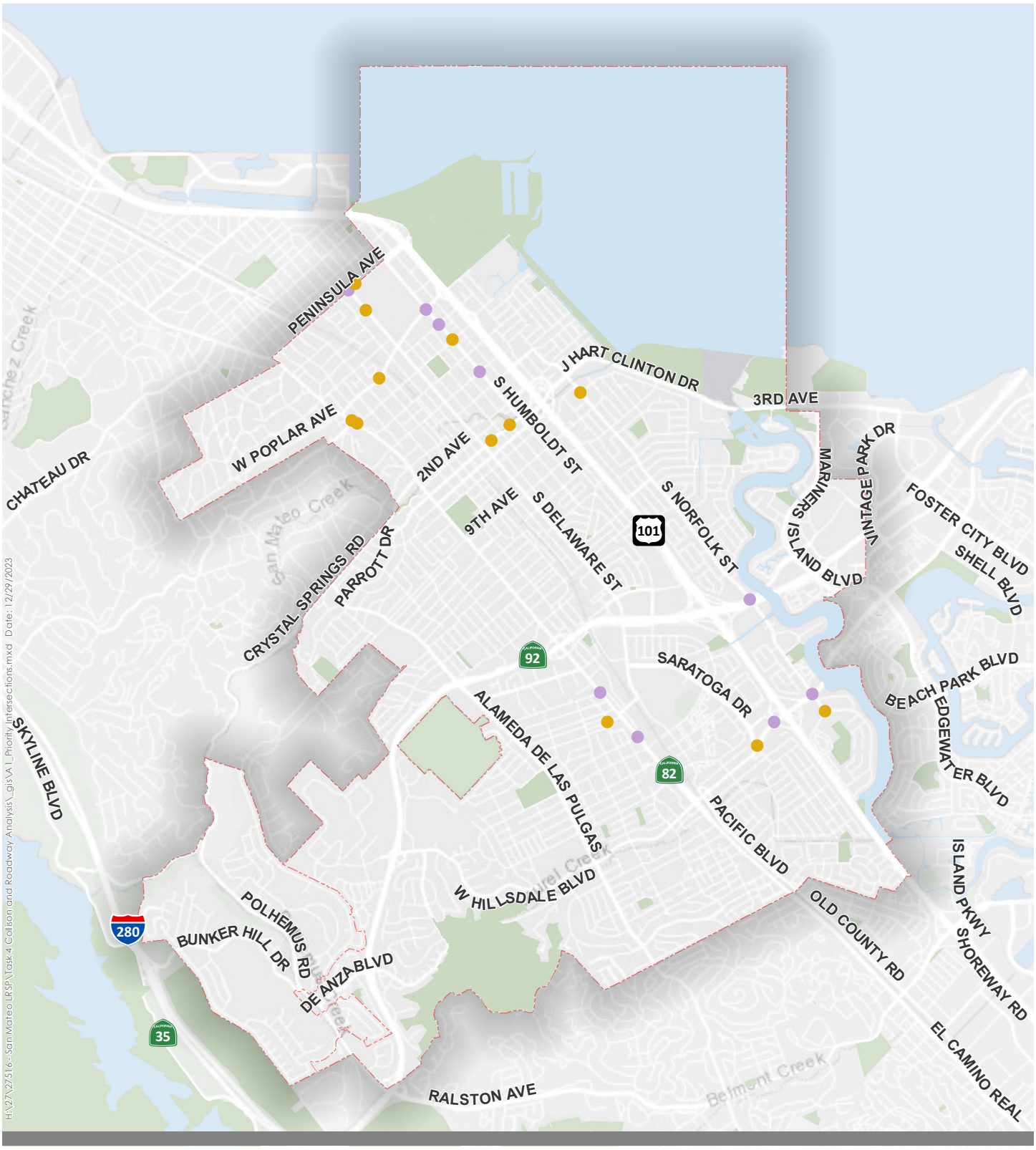
#	Location	Control Type	KA[15] Collisions	BCO[16] Collisions	Collision Severity Score
		Tier I Priority Intersections			
1	El Camino Real & 22nd Ave	SSSC	3	10	124.46
2	Humboldt St & Poplar Ave	Signalized	4	16	118.80
3	Humboldt St & Indian Ave	TWSC	2	12	94.48
4	Humboldt St & Tilton Ave	AWSC	2	3	80.82
5	Norfolk St & Fashion Island Blvd	Signalized	2	22	73.63
6	Hillsdale Blvd & Franklin Pkwy	Signalized	2	6	56.42
7	Dwight Rd/Delaware St & Peninsula Ave	Signalized	2	5	56.13
8	Norfolk St & Hillsdale Blvd	Signalized	1	20	49.77
9	El Camino Real & 27th Ave	Signalized	2	2	48.37
10	Eldorado St & 3rd Ave	TWSC	1	5	46.95
		Tier II Priority Intersections			
11	Humboldt St & Santa Inez Ave	TWSC	1	8	45.69
12	Poplar Ave & Ellsworth Ave	TWSC	1	6	45.60
13	3rd Ave & Grant St	SSSC	1	6	45.29
14	Delaware St & State St	SSSC	1	6	45.29
15	El Camino Real & Santa Inez Ave (East)	SSSC	1	5	44.97
16	25th Ave and Flores St	AWSC	1	3	44.60
17	El Camino Real & Santa Inez Ave (West)	SSSC	1	4	43.97
18	La Selva St & Los Prados St	SSSC	1	4	42.85
19	Saratoga Dr & Hillsdale Blvd	Signalized	1	14	42.54
20	Peninsula Ave & Stanley Rd	TWSC	1	2	42.45
21	Norfolk St & Shoreview Ave	AWSC	1	5	42.13

Source: City of San Mateo, Kittelson (2023)

Note:
TWSC = Two-Way Stop Control; AWSC = All-Way Stop Control; SSSC = Side-Street Stop Control

[15] Fatal (K) and Severe Injury (A) Collisions

[16] Other Visible Injury (B), Compliant of Pain (C), and Property Damage Only (O) Collisions



LEGEND

- Tier 1
- Tier 2
- City Boundary

0 0.5 1 Miles

Priority Intersections
San Mateo, CA

KITTELSON & ASSOCIATES

4.3.2.2.2 Priority Roadway Segments

Kittelson used reported collisions that were not classified as intersection-related collisions to run a roadway segment analysis. There were a total of 104 roadway segment-related collisions out of the 1,159 collisions that were geolocated. Collision severity scores ranged from zero to 51.72. Beginning with the sliding window segment used for the analysis, logical project limits were determined based on roadway characteristics and collision data to support project development. The collision severity scores were recalculated for the resulting roadway segment limits. It was determined that a collision severity score of 33.03 was an appropriate threshold for classifying priority segments. The threshold was determined since a collision severity score of 33.03 suggests that, over a five-year period, at least one fatal or severe injury collision occurred.

Table 7 displays the priority roadway segments with their corresponding collision severity score along the segment. Figure 19 visualizes these priority roadway segments.

Table 7: Priority Roadway Segments – City of San Mateo

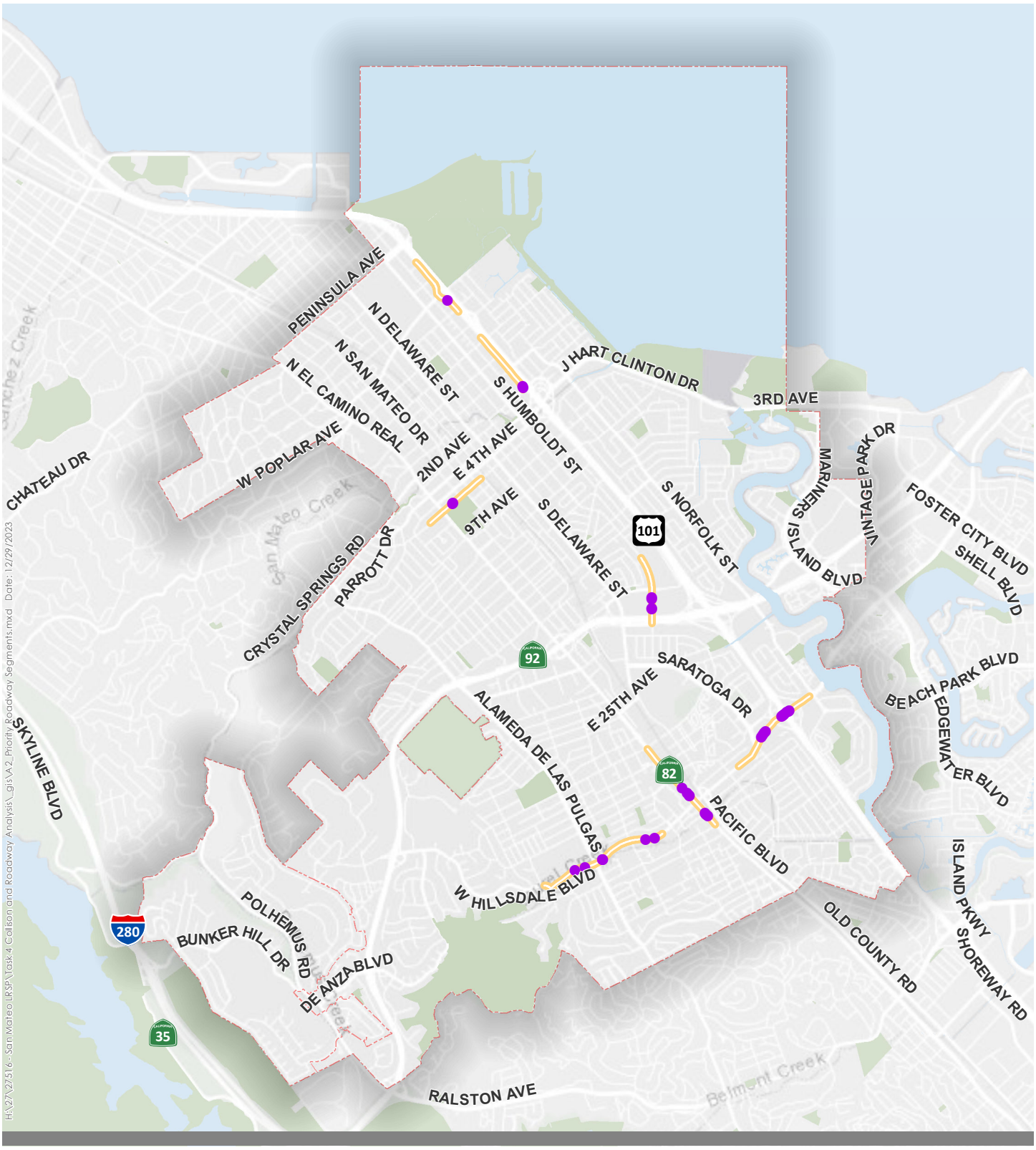
#	Segment Location	Roadway Classification[a]	Type of Median	Segment Length (mi)	KA[17] Collisions	BCO[18] Collisions	Collision Severity Score
1	Hillsdale Blvd from Curtis St to Norfolk St	Minor Arterial	Partially divided	0.59	1	10	51.72
2	El Camino Real from 28th Ave to 36th Ave	Principal Arterial	Divided	0.59	1	10	47.92
3	Hillsdale Blvd from Del Monte St to Edison St	Minor Arterial	Undivided	0.79	1	5	37.93
4	Grant St from Betty Ln to 19th Ave	Major Collector	Partial TWLTL	0.40	1	3	36.60
5	5th Ave from El Camino to Railroad Ave	Minor Arterial	Undivided	0.39	1	1	34.25
6	Amphlett Blvd from Monte Diablo Ave to 2nd Ave	Major Collector	Undivided	0.40	1	1	33.23
7	Amphlett Blvd from State St to Indian Ave	Major Collector	Undivided	0.40	1	0	33.03

Notes:
TWLTL = Two-Way Left-Turn Lane
[a] Roadway classifications were based off of functional classifications from the (yet to be adopted) City's General Plan 2040 Circulation Element[19].

Source: City of San Mateo, Kittelson (2023)

[17] Fatal (K) and Severe Injury (A) Collisions

[18] Other Visible Injury (B), Compliant of Pain (C), and Property Damage Only (O) Collisions
[19] https://strivesanmateo.org/wp-content/uploads/2024/01/Chapter-3-Circulation-Element.pdf



H:\27\27516 - San Mateo LRSP\Task 4 Collison and Roadway Analysis_gis\A2_Priority Roadway Segments.mxd Date: 12/29/2023

LEGEND

- Relevant Segment Crashes
- Priority Roadway Segments
- City Boundary

0 0.5 1 Miles

Priority Roadway Segments
San Mateo, CA

KITTELSON & ASSOCIATES

4.3.3 Statewide Comparison

The California 2020-2024 Strategic Highway Safety Plan (SHSP) is a statewide traffic safety plan that provides guidance to influence development of statewide goals, strategies, and performance measures for local agencies and stakeholders statewide.

The SHSP focuses on 16 challenge areas. Thirteen of the challenge areas are compared below to City of San Mateo collision history. The remaining three are not compared because the data available for this project are not readily and reliably provided for these challenge areas. Figure 20 shows a collision share comparison between the City's collision statistics between 2017-2021 and the statewide data between 2008-2017 for each of the challenge areas posed in the SHSP.[20] The City of San Mateo generally has at least two times higher fatal/severe injury shares than Statewide for the following SHSP challenge areas:

- Intersections (51% vs 23%)
- Pedestrians (36% vs 17%)
- Bicyclists (20% vs 7%)

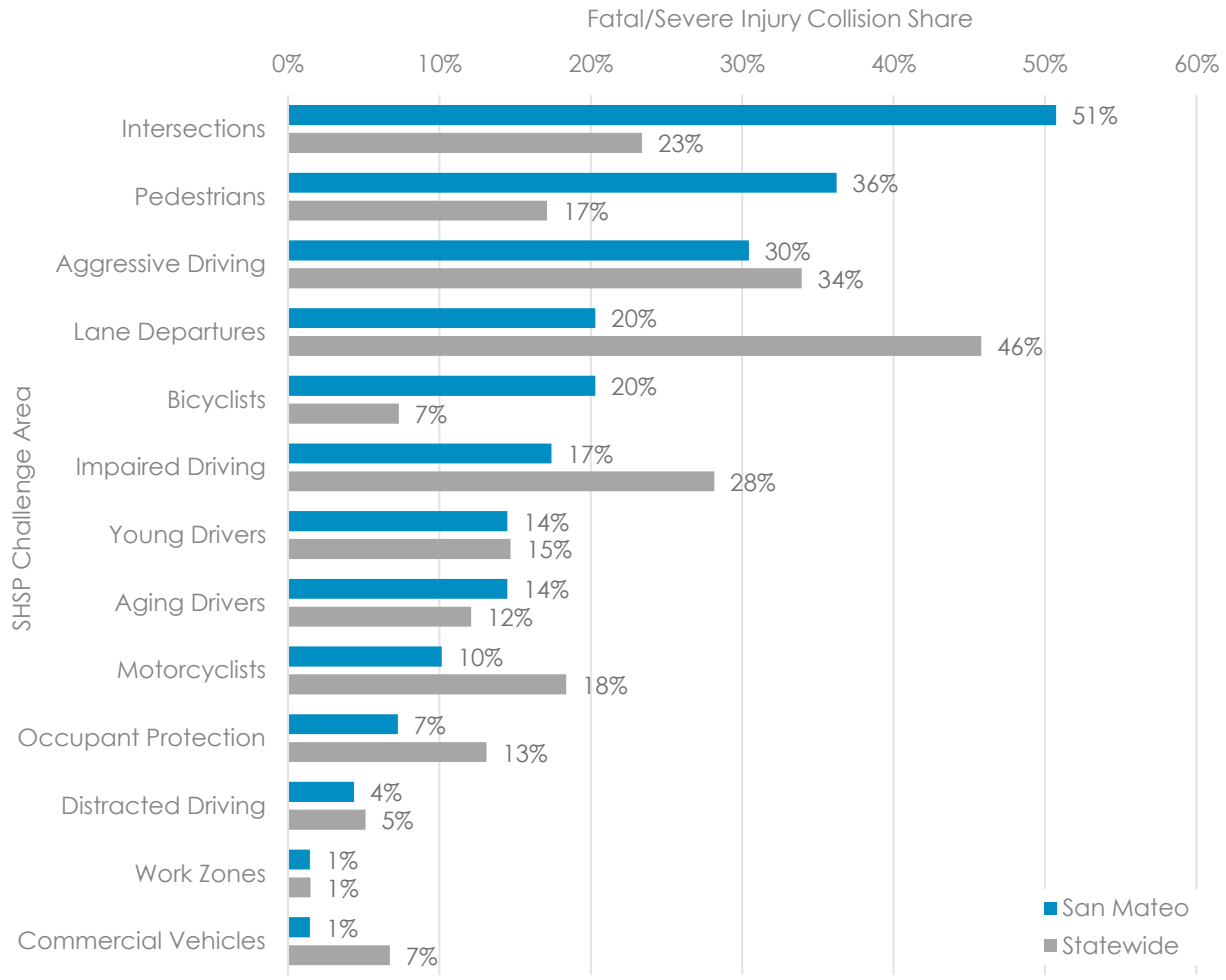
Other categories that show a similar or slightly higher share in San Mateo compared to the statewide averages include:

- Aggressive driving (which is similar to the speed-related findings already presented)
- Young drivers
- Aging drivers
- Distracted driving

Aligning with the findings already presented in the sections above, these challenge areas were considered while developing the emphasis areas and used in the goal development for the City of San Mateo.

[20] Driver Licensing, Emergency Response, and Emerging Technologies cannot be compared using the collision data since they are not readily and reliability available at this time.

Figure 20: Citywide Fatal/Severe Injury Collision Shares by Challenge Area Compared to Statewide Statistics



Source: SWITRS, TIMS, City of San Mateo, compiled by Kittelson (2023)

Section 5
Emphasis Areas, Countermeasures, and Strategies

5 Emphasis Areas

According to San Mateo's collision patterns, locations, movements, behavioral factors, and statewide priority areas, the greatest opportunity to improve roadway safety is to target the following emphasis areas:

- **Pedestrians and Bicyclists**. Non-motorized users are involved in higher shares of fatal and severe injury collisions compared to their representation in all reported severity levels. 35% and 17% of fatal and severe injury collisions involved a pedestrian or a bicycle, respectively.
- **Intersections**. Intersections account for 91% (signalized intersections – 40% and unsignalized intersections – 51%) of the total collisions. 92% of fatal and severe injury collisions occurred at intersections (signalized intersections – 39% and unsignalized intersections – 53%).
- **Improper Turning** is a contributing factor in fatal and severe injury collisions citywide and represents a potential emphasis area. 13% of fatal and severe injury collisions had improper turning as their primary collision factor.
- **Unsafe Speed** is a contributing factor in fatal and severe injury collisions citywide and represents a potential emphasis area. 11% of fatal and severe injury collisions had improper turning as their primary collision factor.
- **Alcohol and Drug Involvement** is a contributing factor in fatal and severe injury collisions citywide and represents a potential emphasis area. 17% of fatal and severe injury collisions had improper turning as their primary collision factor.
- **Aging and Young Drivers,** collisions are overrepresented by drivers in the age group of 18-64 years (54%). Drivers 65 years and over account for 10% of the total collisions. 58% of fatal and severe injury collisions involved a driver in the age group of 18-64 years old. 11% of fatal and severe injury collisions involved a driver 65 years old or older.

These six emphasis areas guide the recommended countermeasures, strategies, actions, and implementation plan in this LRSP.

6 Countermeasures and Strategies

Addressing emphasis areas in order to improve safety will take a coordinated effort and a combination of the available countermeasures and strategies presented in this section. This section presents multidisciplinary recommendations for the City to consider as they make investments and advancements in improving roadway safety across the City.

6.1 Countermeasures vs. Strategies

Countermeasures: A term used for engineering infrastructure improvements that can be implemented to reduce the risk of collisions.

Strategies: A term used for non-engineering practices that address traffic safety – often related to behavior or components of a Safe System that build a culture of safety.

6.2 Available Countermeasures

These engineering countermeasures are proven effective treatments to reduce collision risk as described in this section. This set of countermeasure treatments have been grouped into five treatment groups that most directly address the City's collision patterns and trends for fatal and severe injury collisions, and overall collisions:

- Pedestrian Related Countermeasures
- Bicycle Related Countermeasures
- Signalized Intersection Countermeasures
- Unsignalized Intersection Countermeasures
- Roadway Segment Countermeasures

For each of these groupings, priority countermeasures were identified and summarized based on the collision types addressed, quantitative effectiveness of the treatment document as collision reduction factors (CRFs) and implementation considerations, shown in Table 8. Combining these countermeasures with non-engineering strategies can also target road user characteristics and behavior. The pedestrian and bicycle related countermeasures only apply the crash reduction to pedestrian and bicycle related crashes, while the other countermeasures apply the crash reduction to all crashes (with some exceptions, for example, lighting countermeasure applies crash reduction only to night-time crashes). The safety countermeasure toolbox memorandum submitted to the City in February 2023 is attached in Appendix D.

Table 8: Summary of Available Countermeasures Toolbox for the City

CM ID[21]	Countermeasure Name	Description	CRF[22]	Cost[23]
Pedestrian Related Treatments				
R34PB	Install sidewalk	Sidewalks and walkways provide people walking or rolling with a separated space to travel within the public right-of-way.	80%	Varies
NS19PB	Pedestrian refuge island	A pedestrian refuge island is a median with a dedicated separated space for pedestrians to protect pedestrians who are crossing the street.	45%	$13,500
NS21PB	Crosswalk visibility enhancements	This group of countermeasures includes high-visibility crosswalk markings, improved nighttime lighting, advance or in-street warning signage, curb extensions, and parking restrictions. These may be considered to improve sight distance and visibility of pedestrians. Crosswalks also reduce bicycle crashes by reducing wrong-way biking.	35%	$5,000 - $20,000 (depending on treatment selected)
NS22PB	Rectangular rapid flashing beacons (RRFB)	RRFB include pedestrian-activated flashing lights and additional signage that enhance the visibility of marked crosswalks and alert motorists to pedestrian crossings.	35%	$22,250
S17PB	Pedestrian countdown signal heads	Pedestrian countdown signal heads provide information to pedestrians about the amount of time remaining to safely cross the street at signalized intersections.	25%	$190-$1,930
S19PB	Pedestrian scramble	A pedestrian scramble reduces conflicts between vehicles and pedestrians and improves pedestrian access and safety.	40%	$5,000 - $15,000
S21PB	Leading pedestrian interval (LPI)	LPIs increase visibility of crossing pedestrians and reduce conflicts between pedestrians and vehicles. This treatment increases the likelihood of motorists yielding to pedestrians because pedestrians are in the	60%	$550-$6,000

[21] CM ID refers to the Countermeasure ID from the Caltrans *Local Roadway Safety Manual* (April 2020, LRSM). If a CM ID is not listed, the countermeasure is not listed in the LRSM. Local Roadway Safety – A Manual for California's Local Road Owners

[22] Documented collision reduction factors are derived either from the *LRSM* or the FHWA's *Proven Safety Countermeasures* resource, unless otherwise noted. An "N/A" indicates that a documented, research-backed collision reduction factor does not exist.

[23] Planning-level cost estimate, they vary depending on various factors, such as the length of countermeasure (where applicable), system installation, labor, materials, and maintenance costs.

CM ID[21]	Countermeasure Name	Description	CRF[22]	Cost[23]
		crosswalk by the time traffic signal turns green for parallel vehicle movements[24].		
N/A	Pedestrian hybrid beacons (PHB)	PHBs are used to control traffic and revert to all dark until a pedestrian activates it via a push button or other form of detection. When activated, the beacon displays a sequence of flashing and solid lights that indicate when vehicles must stop and when pedestrians should cross.	15-69%	$57,680
N/A	No right-turn on red (No RTOR)	No RTOR eliminates conflicts between right-turning vehicles and pedestrians and bicyclists traveling through.	25%	$200-$6,000
Bicycle Related Treatments				
R14	Road diets (Reduction of vehicle travel lanes)	Road diets reduce the number of travel lanes on the roadway and provide space to implement pedestrian and bicyclist related treatments, including adding bike lanes and median crossing islands.	30%	$25,000 - $40,000 per mile
R32PB	Install bike lanes	This treatment designates a portion of roadway for the preferential or exclusive use of bicyclists through striping, signage, and pavement markings.	35%	$55,000 per 100 feet
S20PB	Install advance stop bar before crosswalk (Bike boxes)	A bike box is a designated area at the head of a traffic lane at a signalized intersection that provides bicyclists with a safe and visible way to get ahead of queuing traffic during the red signal phase.	15%	$5,000 per box
N/A	Extend bike lanes through intersection	Bicycle pavement markings through intersections indicate the intended path of bicyclists through an intersection or across a driveway or ramp. They guide bicyclists on a safe and direct path through the intersection and provide clear boundary between paths of bicyclists and motorists.	39% (ODOT)	$200 - $5,000 per intersection
N/A	Install bicycle signal heads	Bicycle signal heads are an additional traffic-control device installed at signalized intersections to provide guidance and right-of-way control to bicyclists in specific circumstances.	45% (ODOT)	$1,000 per signal face

[24] *http://www.pedbikesafe.org/pedsafe/countermeasures_detail.cfm?CM_NUM=12#:~:text=LPIs%20increase%20the%20percentage%20of,green%20for%20parallel%20vehicle%20movements.*

CM ID[21]	Countermeasure Name	Description	CRF[22]	Cost[23]
Signalized Intersection Treatments				
S01	Install intersection lighting	This treatment involves adding intersection lighting to improve safety during nighttime conditions.	40%	$7,000 - $10,000 per light
S02	Improve signal hardware	This treatment involves installing new LED lighting, signal back plates, retro-reflective tape outlining the back plates, or additional signal heads to increase signal visibility.	15%	$1,500 to $3,000 per signal head
S06	Install left-turn lane and add turn phase (signal has no left-turn lane or phase before)	Provides exclusive left-turn lanes and appropriate signal phasing for left-turning vehicles. Left-turn lane allows separation of left-turn and through-traffic streams, thus reducing the potential for rear-end collisions.	55%	$25,000 – $200,000 per approach
S07	Provide protected left-turn phase (left turn lane already exists)	The protected left turn phase provides a green arrow for left turning vehicles while stopping both on-coming traffic and parallel pedestrian crossings to eliminate conflicts.	30%	$8,000 to $150,000
N/A	Provide advanced dilemma zone detection	This system enhances safety at signalized intersections by modifying traffic control signal timing to reduce the number of drivers that may have difficulty deciding whether to stop or proceed during a yellow phase.	39%	$25,000 to $30,000 per system
Unsignalized Intersection Treatments				
NS01	Install intersection lighting	This treatment involves adding intersection lighting to improve safety during nighttime conditions.	40%	$7,000 to $10,000 per light
NS02	Convert to all-way STOP control (from 2-way or Yield control)	STOP sign at intersection approaches warns drivers to slow down and prepare to stop.	50%	$500 per sign
NS04	Install roundabouts	A roundabout is a type of circular intersection without traffic signals or stop signs, where drivers travel counterclockwise around a center island. Roundabouts are installed to manage vehicular speeds through the intersection, improve safety at intersections by eliminating broadside and head-on collisions, reducing the severity of collisions, and helping the traffic to flow more efficiently.	12-78%	$45,000 - $500,000

CM ID[21]	Countermeasure Name	Description	CRF[22]	Cost[23]
NS06	Install or upgrade intersection signage and/or pavement markings	This treatment consists of adding or upgrading signage and pavement markings at and on the approach to an unsignalized intersection.	15%	$500 - $5,000 per approach
NS11	Improve sight distance to intersection (clear sight triangles)	This treatment consists of clearing vegetation, roadside objects, on-street parking, fences, buildings, or other objects in the right-of-way.	20%	$200 - $50,000 per approach
NS15	Create directional median openings to allow (and restrict) left-turns and U-turns	Directional median openings are usually designed to restrict left-turn and U-turn movements at intersections, to help avoid potential traffic conflicts.	50%	$20,000 per opening
NS17	Install right-turn lane	Add an exclusive right turn lane(s).	20%	Varies
NS18	Install left-turn lane	Add an exclusive left turn lane(s).	35%	Varies
Roadway Segment Treatments				
R01	Install Street lighting	This treatment involves adding roadway lighting to improve safety during nighttime conditions.	35%	$7,000 to $10,000 per light
R26	Install Dynamic Speed Feedback Signs	Speed feedback signs provide drivers with feedback about their speed in relationship to the posted speed limit. This treatment primarily addresses collisions caused by motorists traveling too fast around sharp curves.	30%	$2,000 - $11,000 per display
N/A	Traffic Calming	Traffic calming is the use of mainly physical roadway design measures to slow motor vehicles as they move through urban, commercial, and residential neighborhoods. These treatments also help to reduce cut-through traffic and improve the safety of non-motorized users by reducing the potential for higher speed and higher severity conflicts. This group of treatments include Speed Hump, Chicane, Bulb-out, Raised intersections, Mid-block Pedestrian Crossing, and Choker/Pinch Point.	Varies	$5,000 - $25,000 per location

6.3 Available Strategies

This section discusses the non-engineering countermeasures to improve safety and reduce collisions on roadways in the City, reviewed and referenced from *Countermeasures That Work* guide[25]. Non-engineering countermeasures/strategies for the City are grouped into the following, detailed explanation for each of these can be found in Appendix D:

1. Education Strategies
2. Enforcement Strategies
3. Equity Strategies
4. Emerging Technologies

6.3.1 Education Strategies

Education strategies are focused on teaching road users, road safety principles. These strategies can be developed to include interactive activities, comprehensive teaching notes, and information on road safety messages and concepts that can be taught at school or in off-school activities. Public education and collaboration help bridge gaps in knowledge that influence roadway behavior.

6.3.2 Enforcement Strategies

Even when engineering countermeasures are implemented, road users failing to adhere to traffic laws can result in collisions of varying severity. Police enforcement can increase driver awareness and consequently reduce traffic collisions. However, enforcement strategies should be undertaken with due caution to avoid inequitable enforcement activities and evaluated to determine the strategy's impact. The following considerations can help lead to more successful outcomes for roadway safety enforcement strategies:

- Police officers should be provided with resources related to primary contributing factors of collisions that will be used for crash reporting.
- Campaigns should be tailored to suit the needs of different neighborhoods and demographics and should be designed and carried out to avoid targeting disadvantaged communities and populations.
- Enforcement should be conducted with the help of staff support and awareness of the courts.
- Enforcement operations should begin with warnings and flyers before moving on to issuing citations.

6.3.3 Equity Strategies

Equity is defined as the fairness with which benefits, and burdens are distributed and how disparities, including those based on age, race/ethnicity, income and gender, are identified and addressed within specific populations (National Safety Council[26]).

The following equity strategies have been identified for the City of San Mateo:

- **Engineering:** An equitable approach to engineering countermeasures must consider and should include, but is not limited to:
    - Investing in infrastructure in an equitable manner to reduce traffic accidents, prioritizing historically disinvested neighborhoods, or neighborhoods overrepresented for collisions;
    - Creating contextually sensitive plans and solutions and avoiding one-size-fits-all-solutions. For instance, infrastructure plans can be designed keeping in mind different kinds of roadway users including children, senior citizens, people with disabilities;
    - Involving a diversity of people in testing and design to increase safety.

[25] https://www.nhtsa.gov/book/countermeasures/countermeasures-that-work
[26] https://www.nsc.org/getattachment/757d2d64-8b77-4997-8fb4 7d004188acf/t%20equity%20in%20transportation%20165

- **Education:** An equitable approach to education strategies must consider and should include, but is not limited to:
    - Developing, executing, and implementing programming with community voices included in the process, particularly those representing disadvantaged and/or highly impacted communities;
    - Using images, language, and media that is reflective of the community and audience;
    - Working with trusted ambassadors, spokespeople, and community leaders to help in the execution of any campaigns or programs.
- **Enforcement:** An equitable approach to enforcement strategies must consider and should include, but is not limited to,
    - Adopting income-based repayment for traffic tickets;
    - Understanding whether and how enforcement of traffic safety laws or regulations can exacerbate existing racial, socioeconomic, or accessibility issues, and subsequently working with stakeholders to identify solutions;
    - Educating and training those working on enforcement on equitable enforcement practices and techniques;
    - Assessing whether new or alternative forms of enforcement can be deployed to effectively address the issue at hand, including automated enforcement and community policing.

6.3.4 Emerging Technologies

New traffic safety technology can enhance the benefits of other engineering, education, enforcement efforts by accelerating road safety understanding using technology, thereby helping transition to safer transportation systems.

Section 6
Recommendations, Actions, and Implementation

7 RECOMMENDATIONS

Following identification of the broader emphasis areas, engineering countermeasures and non-engineering strategies to address those areas, these treatments represent improvements that may have the greatest potential to help reduce fatal and severe injury collisions and build a culture of safety in San Mateo. This section summarizes the systemic and location-specific countermeasures that could be implemented across the city to potential location-specific projects, to reduce fatal and severe injury collisions. The countermeasures, identified in Section 6-Countermeasures and Strategies are based on the corroboration between site visits and observations, community feedback, and collision data analysis.

7.1 Systemic vs. Site-Specific Treatments

Systemic Treatments - The systemic safety approach to roadway safety involves selecting locations for countermeasures based on roadway characteristics that may be correlated with severe collision types rather than identify locations based on collision history. Identified sites may or may not have a history of frequent or severe collisions but will have roadway characteristics associated with collision risk factors. By selecting locations based on roadway characteristics instead of collision history, systemic treatments may help to proactively reduce the risk of fatal and severe injury collisions. Kittelson identified the following systemic treatments to address the risk factors that were identified through the data-driven and community-informed analysis documented in the Summary of Citywide Safety Performance, Emphasis Areas, and Equity Analysis sections of the LRSP.

Site-Specific Treatments - These projects are identified based on collision history and road data at individual sites to identify and prioritize countermeasures for sites that have a high frequency of fatal and/or severe injury collisions. The priority location list identified in Section 4.3 - Safety Performance Network Screening provides the LRSP's initial location-specific project locations.

7.2 Systemic Treatments

The list is not exhaustive and other opportunities may arise to implement low-cost countermeasures that may address other emphasis areas not described below (i.e., low-cost improvements from Road Safety Audits (RSAs)).

7.2.1 Leading Pedestrian Intervals (S21PB) & No Right-Turn-on-Red Treatment

When paired, these two treatments are a low-cost countermeasure that can be applied systemically to reduce the risk of pedestrian collisions, especially in areas with a high level of pedestrian activity. According to Assembly Bill AB-2264, Caltrans requires state-owned or operated traffic-actuated signals upon first placement or replacement to include LPI with accessible pedestrian signals (APS) and detectors[27].

Research has shown that LPIs may lose their intended benefits when right turns on red that conflict with the crossing are not restricted[28]. When using an LPI, right turns on red should be restricted in parallel and perpendicular to the treated crossings, since right-turning drivers from both streets would otherwise proceed and conflict with crossing pedestrians. At some locations with highly peaking traffic and with very high volumes of right turns (exceeding 200 vehicles per hour), traffic operations and queuing may be a

[27] https://dot.ca.gov/-/media/dot-media/programs/safety-programs/documents/ctcdc/ctcdc-agenda-item-22-10-110322-a11y.pdf

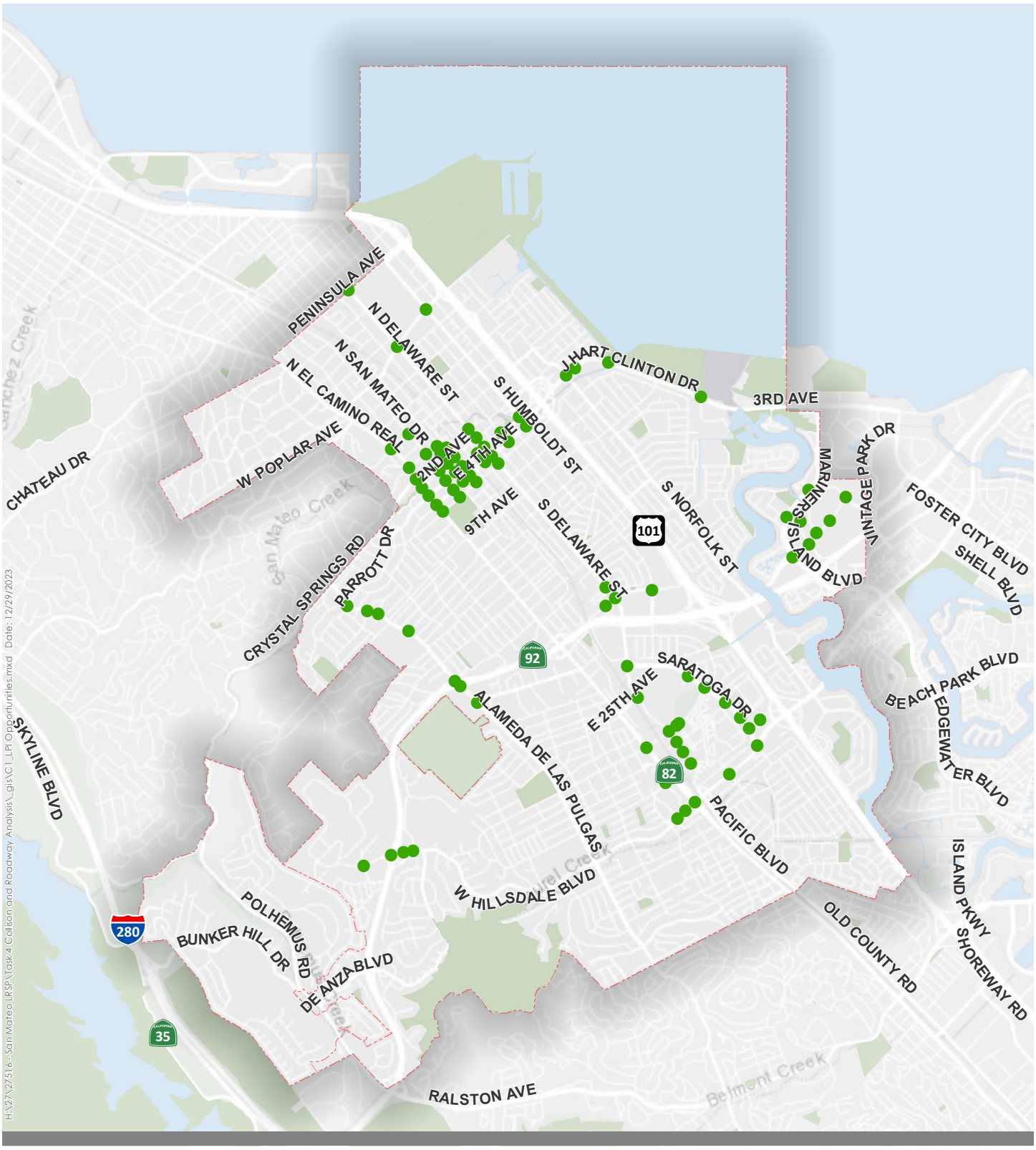
[28] Hubbard, Sarah ML, Darcy M. Bullock, and John H. Thai. "Trial implementation of a leading pedestrian interval: lessons learned." ITE Journal 78.10(2008):32.

concern. *NCHRP Report 969: Traffic Control Strategies for Pedestrians and Bicyclists* explains some options for these locations:

- For LPIs providing a head-start along a minor street, adding an LPI typically has no effect on traffic operations.
- LPIs and RTOR restrictions can be implemented for certain times of day, i.e., peak hours of pedestrian traffic.
- At locations with very high volumes of right turns, full protection between vehicle and pedestrian movements may be preferred. NCHRP Report 969 offers information on such options.
- If the pedestrian phase is push-button actuated, then the additional LPI phase will only be triggered when a pedestrian is present.

Figure 21[29] shows locations which are initial candidates for implementing LPIs and RTOR restrictions. The City may choose to evaluate these locations to compare queuing impacts of implementing LPIs at these locations against the safety benefits of providing these treatments. There may be other locations identified with a high level of existing or anticipated pedestrian activity as part of the future plans or developments in review, these treatments can also be applied to those locations.

[29] Note that citywide data on LPI presence at intersections was not available in a format to conduct this citywide analysis. As such, when implementing this countermeasure, the city will need to determine if an LPI has already been implemented.



H:\27\27516 - San Mateo LRSP\Task 4 Collison and Roadway Analysis_gis\C1_LPI Opportunities.mxd Date: 12/29/2023

Near-Term Leading Pedestrian Interval Opportunities
San Mateo, CA

KITTELSON & ASSOCIATES

7.2.2 Signal Visibility Improvements (S02)

At signalized intersections, simple hardware improvements can improve the signal visibility and address patterns of broadside, rear-end, night-time, and red-light running collisions. These hardware upgrades enables drivers to see traffic signals sufficiently in advance to safety negotiate the intersection being approached and have been shown to reduce related collisions by as much as 15 percent. Improvements include but not limited to:

- Backplates with retroreflective borders improves signal head visibility during daytime and nighttime conditions.
- Lenses with LED lighting or larger lenses may increase traffic signal visibility.
- Mounting assemblies include mast arms, span wires, and side-mounted vehicular signals, upgrading these may improve signal hardware longevity.

Figure 22[30] shows locations which are initial candidates for implementing signal visibility improvement treatments. There may be other locations identified as part of the future plans or developments in review, this treatment can also be applied to those locations.

7.2.3 Speed Management (R26)

Speed management seeks to lower the vehicular speeds on the roadway, thereby reducing speeding related collisions. Speed management should be addressed comprehensively to encompass all the factors that may influence travel speeds, including road user/driver behavior, roadway design, surrounding land use context, traffic, roadway conditions, posted speed limits, and enforcement. Assembly Bill 645 authorized San Francisco, Oakland, and San Jose to pilot speed camera safety technology in October 2023. Depending on the findings from the pilot program, the City of San Mateo may consider deploying speed cameras at locations in the City that would benefit from reduction in speeds and the likelihood of a collision involving a fatality or a severe injury.

The following two countermeasures were identified for the City:

1. Install Dynamic Speed Feedback Signs/Dynamic Speed Warning Signs
2. Traffic Calming

7.2.3.1 Install Dynamic Speed Feedback Signs

This treatment consists of installing dynamic or variable speed feedback signs on the roadway. Speed feedback signs provide drivers with feedback about their speed in relationship to the posted speed limit. These treatments provide a message to drivers exceeding a certain speed threshold (or posted speed limit). The intent of these treatments is to get drivers' attention and provide them with a visual warning that they may be traveling over the recommended speed on the roadway.

7.2.3.2 Traffic Calming

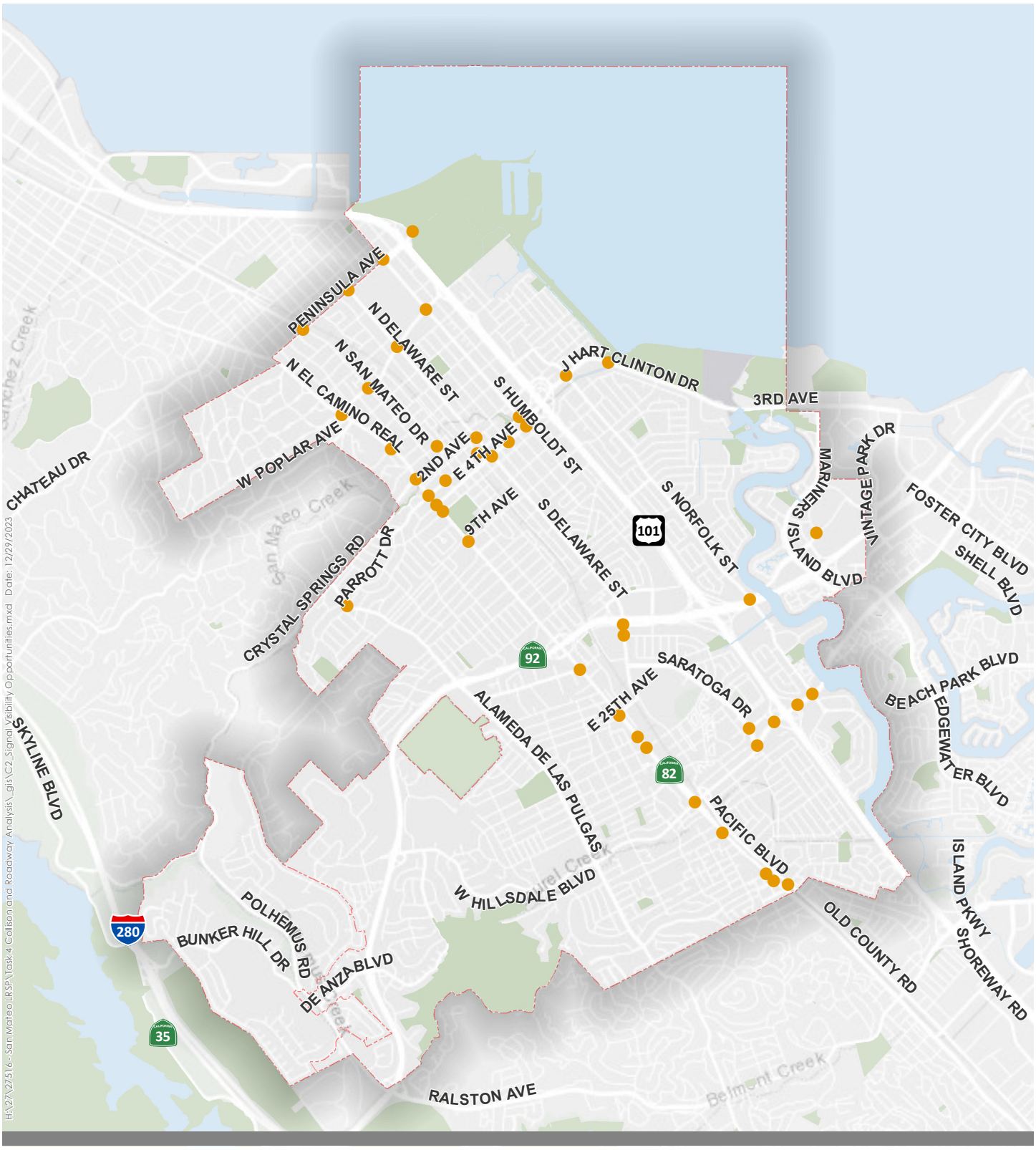
Traffic calming is the use of mainly physical roadway design measures to slow motor vehicles as they move through urban, commercial, and residential neighborhoods. These treatments also help to reduce cut-through traffic and improve the safety of non-motorized users by reducing the potential for higher speed and higher severity conflicts. This section describes additional engineering measures that can be used for traffic calming. Many pedestrian and bicycle related treatments also provide traffic calming benefits. Enforcement

[30]Note that citywide data on signal visibility improvements at intersections was not available in a format to conduct this citywide analysis. As such, when implementing this countermeasure, the city will need to determine if a signal visibility improvement has already been implemented.

strategies such as speed feedback signs and high visibility saturation patrols can also be effective for traffic calming.

This group of treatments include Speed Hump, Chicane, Bulb-out, Raised intersections, and Choker/Pinch Point. Figure 23[31] shows locations which are initial candidates for implementing speed management treatments. There may be other locations identified as part of the future plans or developments in review, these treatments can also be applied to those locations.

[31]Note that citywide data on speed management treatments was not available in a format to conduct this citywide analysis. As such, when implementing this countermeasure, the city will need to determine if speed feedback sign or a traffic calming measure has already been implemented.



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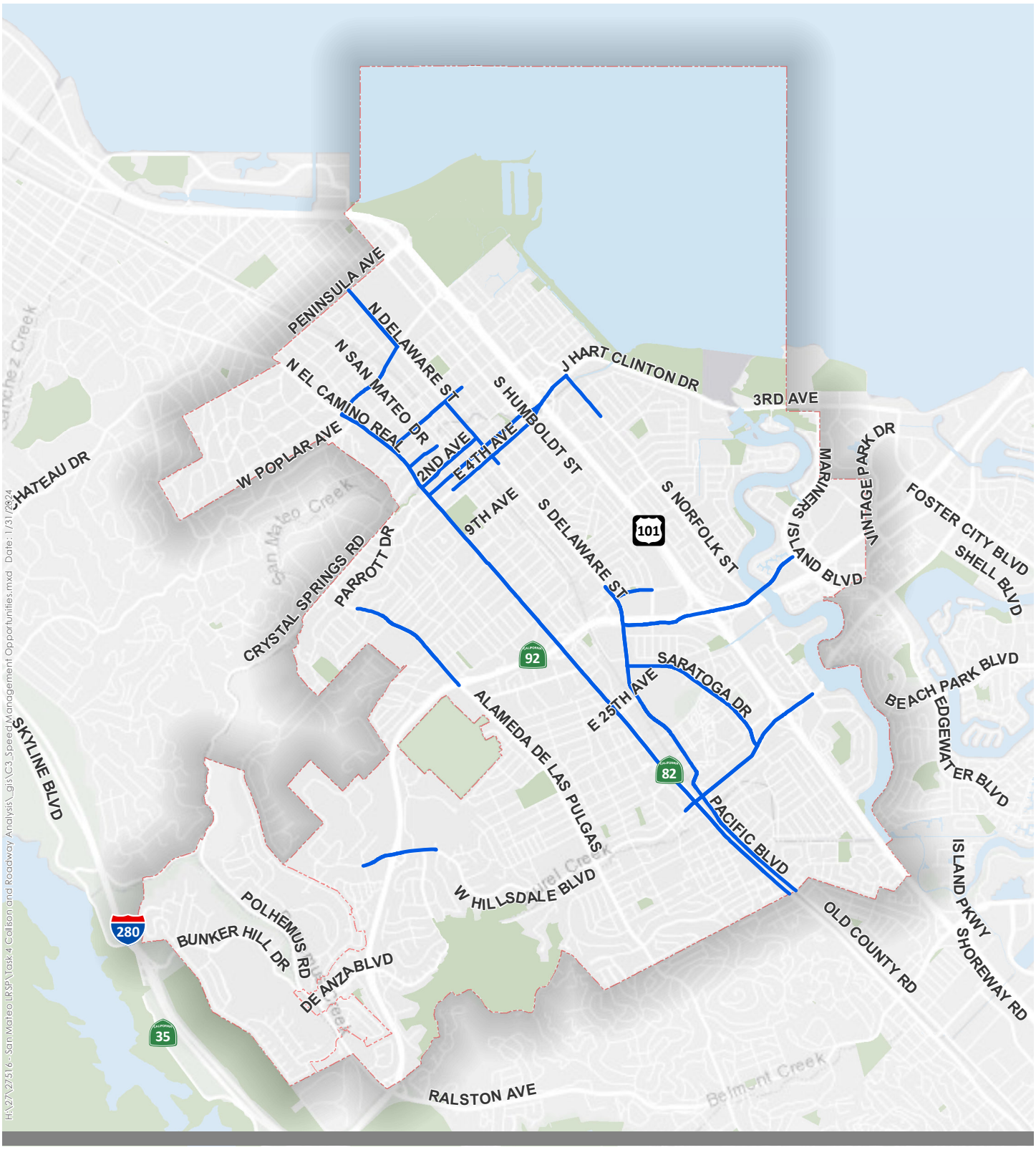
Signal Visibility Improvement Opportunities
San Mateo, CA

KITTELSON & ASSOCIATES



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0 0.5 1 Miles

Unsafe Speed Opportunities
San Mateo, CA

KITTELSON & ASSOCIATES

7.2.4 Centerline Hardening

Centerline hardening is an intersection treatment that reduces the speed of turning vehicles and improves pedestrian visibility, an example is shown in Figure 24. The basic hardened centerline treatment consists of five pieces of rubber curb and bollards and/or rubber speed bumps installed on the centerline and extending at a maximum of six feet into the intersection. The treatment can be implemented in a low-cost fashion with quick build materials.

Because centerline hardening can calm left turns, this treatment can be proactively implemented at intersections with left-turn geometry that otherwise allow for high-speed left turns. This treatment can be installed at intersections or midblock crossing locations on major and/or minor arterials in urban areas[32].

Figure 24: Centerline Hardening Example in Oakland, California

Source: Kittelson & Associates, Inc.

7.3 Site Specific Treatments

This list will be updated at an interval determined appropriate by the City based on implementation (e.g., annually, every three to five years) using the collision severity score (equivalent property damage only), critical collision rates, or similar safety performance measure consistent with the AASHTO *Highway Safety Manual*. Table 9 lists the site-specific projects in San Mateo.

The matrix is organized by short-term and longer-term opportunities. This list is not exhaustive, as many of these treatments can be applied elsewhere in the City of San Mateo. Appendix E shows the priority project location concepts, along with recommended treatments.

32 https://www.arlingtonva.us/Government/Programs/Transportation/Vision-Zero/Tools-and-Guidelines/Multimodal-Safety-Engineering-Toolbox-Web-Format/Hardened-Centerlines-and-Turn-Wedges

Table 9: Site-Specific Projects (and Countermeasures)

Priority Ranking #	Location	Control Type	Low-Cost, Short-Term Countermeasures	Higher-Cost, Longer-Term Countermeasures
1	El Camino Real & 22nd Ave	Unsignalized	◆ Install painted safety zone (painted road areas that wrap around sidewalk corners to make pedestrian crossing intersections more visible to people driving) ◆ Centerline hardening ◆ Improve enforcement. ◆ Consider studying lighting levels. ◆ Shorten the pedestrian crossing into the parking lane	◆ NS15: Create directional median openings to allow (and restrict) left-turns and u-turns. ◆ NS19PB: Install raised medians (refuge islands). ◆ Consider changing traffic control to signals (warrant analysis) and install another pedestrian crossing, LPI, and a left turn lane with traffic signal installation
2	El Camino Real & 27th Ave	Signalized	◆ SI02: Improve signal hardware, mast arm, retro reflective backplates on side street. ◆ SI09: Install raised pavement markers and striping through intersection. ◆ Improve enforcement.	
3	Humboldt Street & Poplar Avenue	Signalized	◆ SI02: Improve signal hardware. ◆ SI07: Provide protected left-turn phase. ◆ SI21PB: Implement LPI ◆ Consider studying lighting levels. ◆ Restrict street parking along westbound approach along Poplar Ave (remove parked vehicles within 150 feet of intersection) ◆ Improve enforcement	
4	Humboldt Street & Indian Avenue Humboldt Street & Tilton Avenue Humboldt Street & Santa Inez Avenue	Unsignalized	◆ NS06: Install/upgrade larger or additional stop signs or other intersection warning/regulatory signs. ◆ NS11: Improve sight distance to intersection (restricting parked vehicles 100 feet from the center of the intersection on all approaches to increase visibility) ◆ Implement raised crossings on one approach leg along Humboldt. ◆ Consider studying lighting levels. ◆ Improve enforcement	◆ NS21PB: Install/upgrade pedestrian crossing at uncontrolled locations (with enhanced safety features) at Humboldt Street & Indian Avenue and Humboldt Street & Santa Inez Avenue ◆ Consider curb extensions. ◆ Consider changing traffic control to all way stop (warrant analysis) at Humboldt Street & Indian Avenue and Humboldt Street & Santa Inez Avenue
5	Fashion Island Blvd & Norfolk Street[33]	Signalized	◆ SI01: Add intersection lighting (underneath bridge – pedestrian scale lighting) ◆ SI02: Improve signal hardware (back-plates with retroreflective borders) ◆ SI21PB: Implement LPI ◆ SI10: Install flashing beacons as advance warning (according to crash data, most people are heading West) ◆ Improve enforcement.	◆ Consider mid-block pedestrian crossing. ◆ Install pedestrian refuge islands. ◆ Install curb extensions.
6	Hillsdale Blvd & Franklin Parkway Hillsdale Blvd & Norfolk Street[34]	Signalized	◆ SI02: Improve signal hardware (make signs bigger, change signs) ◆ SI10: Install flashing beacons as advance warning along Franklin Pkwy to indicate no left turns allowed. ◆ Add pavement markings along Franklin Pkwy approach to clearly indicate no left turn allowed. ◆ Consider studying lighting levels (place lighting in a way where signs are visible at night) ◆ Improve enforcement at Hillsdale Blvd & Norfolk Street ◆ Restripe to high-visibility crosswalks at Hillsdale Blvd & Norfolk Street ◆ Refresh pavement markings at Hillsdale Blvd & Norfolk Street	◆ Median in the empty space to restrict left turns at Hillsdale Blvd & Franklin Parkway ◆ Modify driveway access SE of Hillsdale Blvd & Norfolk Street intersection. ◆ Post reasonable, safe, and consistent speed limits on intersection approaches

[33] Project Underway: Fashion Island Boulevard Bikeway Improvements Feasibility Study between S. Delaware Street and Mariners Island Boulevard.
[34] Project Underway: 14-foot-wide pedestrian and bicycle overcrossing from Hillsdale Blvd/Franklin Parkway to Hillsdale Blvd/Norfolk Street, Hillsdale Pedestrian/Bicyclist Bridge | San Mateo, CA - Official Website (cityofsanmateo.org)

#	Location	Control Type	Low-Cost, Short-Term Countermeasures	Higher-Cost, Longer-Term Countermeasures
7	Peninsula Avenue & Delaware Street[35]	Signalized	◆ SI02: Improve signal hardware. ◆ SI07: Provide protected left turn phase. ◆ SI10: Install flashing beacons as advance warning (signal ahead) ◆ SI21PB: Implement LPI ◆ Consider studying lighting levels. ◆ Improve enforcement. ◆ High-visibility crosswalks	◆ Install curb extensions
8	Eldorado Street & 3rd Avenue Peninsula Avenue & Stanley Road	Unsignalized	◆ NS11: Improve sight distance to intersection, clear sight triangles at Eldorado Street & 3rd Avenue. ◆ Install painted safety zone. ◆ Centerline hardening ◆ Consider studying lighting levels	◆ NS19PB: Install raised medians (refuge islands) at Peninsula Avenue & Stanley Road ◆ Consider changing traffic control to signals (warrant analysis) and install another pedestrian crossing, LPI, and a left turn lane with traffic signal installation
9	Hillsdale Blvd (Saratoga Dr. to Norfolk St. – 0.59 mi)[36]	N/A	◆ R02: Relocate fixed objects outside of Clear Recovery Zone (sign is hidden) ◆ R27: Install delineators, reflectors, and/or object markers. ◆ Evaluate segment lighting. ◆ Install dynamic speed feedback signs. ◆ Improve enforcement	◆ Consider speed management – traffic calming measures.
10	El Camino Real (28th Avenue to 36th Avenue – 0.59 mi)	N/A	◆ R01: Add segment lighting. ◆ R27: Install delineators, reflectors, and/or object markers, raised pavement markers.	◆ R35PB: Install mid-block pedestrian crossing (transit stop nearby and next crossing is quite a while), and other locations where signals are considered far apart

[35] Project Underway: US 101/Peninsula Avenue Interchange Project to relocate the existing U.S. Hwy 101 southbound on- and off-ramps from East Poplar Avenue to Peninsula Avenue in order to create a single, full-access interchange at Peninsula Avenue and Airport Boulevard, https://www.cityofsanmateo.org/2792/US-101Peninsula-Avenue-Interchange-Proje

[36] Project Underway: 14-foot-wide pedestrian and bicycle overcrossing from Hillsdale Blvd/Franklin Parkway to Hillsdale Blvd/Norfolk Street, Hillsdale Pedestrian/Bicyclist Bridge | San Mateo, CA - Official Website (cityofsanmateo.org)

8 Action Items and Performance Measures

Aligning action items with goals and identifying metrics for measuring success helps track progress towards a safer San Mateo for everyone. The listed performance measures can be used in subsequent plan updates to assess progress.

Goal	Action Items	Performance Measures
Use a data-driven and community-informed approach to identify priority locations for safety improvements.	***Near-Term*** ◆ Review collision data in subsequent plan updates to evaluate progress on emphasis areas and for fatal and severe injury collision frequency. ◆ Compare the city's internal collision database with publicly available collision data in subsequent plan updates to identify potential missing collisions in either database. ***Medium-Term*** ◆ Continuously engage with the community to identify and document locations of concern, in recognition that the collision data does not tell the whole story. ***Long-Term*** ◆ Update the LRSP goals and emphasis areas with subsequent updates.	◆ Number of fatal and severe injury collisions by emphasis areas. ◆ Summary of safety-related feedback received (quantity, type, location). ◆ Number of safety improvements implemented at priority locations. ◆ Number of safety evaluations conducted at priority or potential systemic safety locations.
Implement proactive approaches to improve roadway safety and identify cost-effective systemic countermeasures. Prioritize investments in countermeasures and strategies that reduce collisions in identified emphasis areas. Periodically monitor and evaluate collision reduction goals with respect to emphasis areas and overall safety performance of the City's transportation network.	***Near-Term*** ◆ Identify opportunities to implement short-term countermeasures at prioritized locations (see Site Specific Treatments). ◆ Pursue HSIP and Safe Streets and Roads for All (SS4A) grant funding. ◆ Develop an internal process to regularly collect data and information around the performance measures that can be used to assess changes citywide and at priority locations. ***Medium-Term*** ◆ Implement systemic and site-specific countermeasures and strategies using available funding. ◆ Begin implementation of equitable enforcement strategies and monitoring. ***Long-Term*** ◆ Explore funding opportunities to implement low-cost, high priority systemic strategies identified as part of this plan. ◆ Evaluate effectiveness of equitable strategies. ◆ Monitor and evaluate effectiveness of priority safety projects to determine local safety benefits. ◆ Revisit medium- and long-term countermeasures (see Site Specific Treatments) for inclusion in City's Capital Improvement Program or for future grant funding opportunities (see Funding section).	◆ Number of fatal and severe injury collisions by emphasis areas. ◆ Number of fatal and severe injury collisions citywide. ◆ Grant money received for safety projects. ◆ Annual expenditure on safety improvements. ◆ Number of sites with implemented safety improvement projects by type (capital, systemic, quick-build, other).
Collaborate with agencies and safety partners towards implementation.	***Near-Term*** ◆ Continue to engage with partners through existing venues to plan and promote school educational training and encouragement using school resource officers, bicycle rodeos, or other avenues at San Mateo schools. ◆ Work with the City Office of Communications to regularly communicate with the public on roadway, pedestrian, and bicycle safety. Use findings in this plan to align messaging priorities with emphasis areas. ***Medium-Term***	◆ Number of safety educational activities hosted, sponsored, or supported by the City. ◆ Annual expenditures on safety improvement projects. ◆ Number of new or innovative safety countermeasures or strategies piloted with safety partners. ◆ Frequency of communication with identified partners on safety initiatives. ◆ Number of action items implemented.

Goal	Action Items	Performance Measures
	◆ Establish educational programs to reduce driving under the influence and aggressive driving. ◆ Continue to coordinate with San Mateo Police Department on locations and emphasis areas and deploy speed trailers in mutually agreed upon locations. ***Long-Term*** ◆ Continue to identify opportunities to acquire grant funds for implementing countermeasures and strategies.	
Educate and promote safe travel practices in the City of San Mateo.	***Near-Term*** ◆ Make the LRSP publicly available to share collision trends and recommended best practices. ◆ Partner with San Mateo schools to promote and expand educational campaigns for roadway safety including walking and biking specific campaigns. ◆ Identify partners to develop safety messaging campaigns to reduce impaired driving. ◆ Partner with local law enforcement and partners to implement education campaigns to address safe speeds and impaired driving. ***Medium-Term*** ◆ Conduct educational training at schools on driving under the influence and distracted driving. ◆ Partner with enforcement or other organizations to work with alcohol and marijuana retailers/servers to deter selling to underage customers. ***Long-Term*** ◆ Develop multilingual comprehensive roadway safety education programs to develop a safety culture in the City. ◆ Revisit and revise educational campaign opportunities based on collision trends and patterns.	◆ Number of events hosted, and summary of educational activities led by the city. ◆ Frequency of communication with identified partners on safety initiatives. ◆ Summary of safety-related feedback received (quantity, type, location).

8.1 Plan Updates and Evaluation

This LRSP is in line with the Safe System Approach, federal and state safety guidance, and is Safe Streets and Roads For All (SS4A) compliant. Updates to the LRSP should be every three to five years. City staff will create and implement a process to report on the performance measures listed above annually. As collision and other data are available, the City can evaluate the plan's progress (i.e., about five to seven years) and effectiveness. The City and its partners should take a holistic look at current data trends and technologies, and implementation progress to determine whether the plan should be updated and to what extent (e.g., to incorporate innovative technologies or practices, to modify action items based on what is and is not working, to address emerging collision trends).

Evaluation should be included as part of each activity so that actions, projects, and partnerships can be modified as needed. The ability to adjust the plan will better help build a road to success and, ultimately, help the City achieve its long-term goal of eliminating preventable fatal and severe injury collisions by 2050.

8.1.1 Project Evaluation

The City will evaluate the effectiveness of projects to inform ongoing efforts to reduce fatal and severe injury collisions. For the projects in the LRSP, this will likely mean follow-up studies to evaluate the effects the treatments have had on fatal and severe injury collisions after they are implemented.

8.1.1.1 Systemic Project Evaluations

Systemic projects are meant to be deployed broadly across locations with the potential for collisions, not necessarily where collisions have recently occurred. Therefore, a simple before-after evaluation of a single site will not accurately capture the effects of the systemic program. Instead, relatively comparable sites that have been treated with similar countermeasures (e.g., LPIs at signalized intersections) during the same time period should be grouped together in the before-after evaluation.

8.1.1.2 Site-Specific Project Evaluations

Site-Specific projects can be evaluated through a before-after comparison study of each site. The Highway Safety Manual describes different methods for these studies. The most common is the simple before-after study, which involves directly comparing collision data from the period before the treatment was applied to collision data from the period after the treatment. However, this leaves out the effect of time trends and other variations that tend to occur in collisions. More robust methods include the "Empirical Bayes" and the comparison group methods. Both methods require more data and, in some cases, may not be practical for the city. Some of the weaknesses of the simple method can be overcome by using a larger sample. To accomplish this, relatively comparable sites that have been treated with similar countermeasures (e.g., installing flashing beacons as advance warning at signalized intersections) during the same time period can be grouped together.

8.1.2 Project Tracking

The City can track the status of projects in two ways. One means would be through a spreadsheet or database that is regularly updated. Another would be through a GIS-based tool with each project mapped with supporting information (e.g., estimated cost, benefit, year programmed, priority, description). This would be updated regularly to capture when projects are completed. Information important to capture after a project is completed includes:

- Project cost (actual),
- Construction start and end dates,
- Description of project as constructed, including countermeasures applied and locations,
- Links to as-built plans or construction drawings and any studies or analyses conducted, and,

- Information on collisions (by type and severity) before and after the treatment, along with the results of the before-after study.

The success of this plan will be judged on its results. Performance measures are included in this section to evaluate the success of the plan in eliminating fatal and severe injury collisions, as well as to evaluate the success of the City and its partners in implementing this plan.

Measures the City can use to evaluate the ongoing success of the LRSP towards achieving its ultimate goal include:

- Fatal collisions reported quarterly in total and by emphasis area.
- Fatal and severe injury collisions reported annually in total, per capita, and by emphasis area using data from the most recent year.
- Frequency of communication with identified partners on safety initiatives.
- Annual expenditure on safety improvements.

Further, the City and its partners could develop performance measures to evaluate the effectiveness of individual measures (e.g., has improved software for 911 allowed dispatchers to take more emergency calls? Did adding LPIs result in fewer broadside or pedestrian-related crashes at the intersection?). Developing these measures will be the responsibility of the implementing organization and will depend on the availability of data to use for the evaluation.

9 FUNDING

Funding for regional and local transportation projects, policies, and programs is available from various federal and state sources. The City may also choose to identify or develop regional programs that could be used by local agencies to enhance roadway safety. As funding changes over time, the information provided in this LRSP should be updated.

9.1 Federal Programs

9.1.1 USDOT: Infrastructure Investments and Jobs Act (2022-2026)

Managing Agency: USDOT

This program provides funding for several types of projects, including significant funding for active transportation projects and programs. This program increases opportunities for funding Safe Routes to School (SR2S) funds through the transportation alternatives program. The latest federal funding program will provide funds from 2022-2026. New programs under the law focus on rehabilitating bridges in critical need of repair, reducing carbon emissions, increasing system resilience, removing barriers to connecting communities, and improving mobility and access to economic opportunity. Many of the new programs include eligibility for local governments, Metropolitan Planning Organizations (MPOs), Tribes, and other public authorities.

One program, the Safe Streets for All (SS4A) Grant Program, has appropriated $5 billion over the next five years, with up to $1 billion available in fiscal year 2022. Funding is available for the following activities:

- Comprehensive safety action plans
- Planning, design, and development activities in support of an Action Plan (like this LRSP)
- Projects and strategies identified in an Action Plan (like this LRSP)

Website: https://transportation.house.gov/committee-activity/issue/infrastructure-investment-and-jobs-act

SS4A Website: https://www.transportation.gov/grants/SS4A

9.1.2 Congestion Management and Air Quality (CMAQ)

Managing Agency: Federal Highway Administration

The Congestion Mitigation and Air Quality Improvement (CMAQ) program is a flexible funding source for state and local governments to fund transportation projects and programs to help meet the requirements of the Clean Air Act (CAA) and its amendments. CMAQ money supports transportation projects that reduce mobile source emissions in areas designated by the U.S. Environmental Protection Agency (EPA) to be in nonattainment or maintenance of the national ambient air quality standards. See MTC's One Bay Area Grant (OBAG) program for how CMAQ funding is distributed within the nine-county Bay Area. OBAG disburses federal funds in accordance with MTC's regional transportation priorities and associated land-use and housing goals.

Website: https://www.fhwa.dot.gov/environment/air_quality/cmaq/

9.1.3 Surface Transportation Block Grant Program (STBG)

Managing Agency: Federal Highway Administration

The Fixing America's Surface Transportation (FAST) Act converts the long-standing Surface Transportation Program (STP) into the Surface Transportation Block Grant Program (STBG) acknowledging that this program has the most flexible eligibilities among all federal-aid highway programs and aligning the program's name with how the Federal Highway Administration (FHWA) has historically administered it. The STBG promotes

flexibility in State and local transportation decisions and provides flexible funding to best address State and local transportation needs. STBG funding may be used for projects to preserve and improve the conditions and performance on any Federal-aid highway, bridge and tunnel projects on qualifying public roads, pedestrian and bicycle infrastructure, and transit capital projects, including intercity bus terminals. OBAG disburses federal funds in accordance with MTC's regional transportation priorities and associated land-use and housing goals.

Website: https://www.fhwa.dot.gov/specialfunding/stp/

9.1.4 Better Utilizing Investments to Leverage Development (BUILD) Grant

Managing Agency: United States Department of Transportation (USDOT)

The Better Utilizing Investments to Leverage Development (BUILD) Transportation Discretionary Grant program provides a unique opportunity for USDOT to invest in road, rail, transit, and port projects that promise to achieve national objectives. Previously known as Transportation Investment Generating Economic Recovery (TIGER) Discretionary Grants, Congress has dedicated nearly $5.6 billion for nine rounds of national infrastructure investments to fund projects that have a significant local or regional impact. The eligibility requirements of BUILD allow project sponsors at the state and local levels to obtain funding for multimodal, multijurisdictional projects that are more difficult to support through traditional department of transportation programs. BUILD can fund port and freight rail projects, for example, which play a critical role in the ability to move freight but have limited sources of federal funds.

Website: https://www.transportation.gov/BUILDgrants

9.1.5 Infrastructure for Rebuilding America (INFRA) Grant

Managing Agency: USDOT

The INFRA Grants program funds transportation projects with a focus on rebuilding existing infrastructure. To be eligible, projects must be on the National Highway System, a railway/highway grade separation project, or a freight project that is rail or intermodal, or improves freight movement within an intermodal facility. Most governmental bodies are eligible applicants (e.g., unit of local government, port authority, groups of jurisdictions). Minimum awards for large projects are $25 million and $5 million for small projects.

Website: https://www.transportation.gov/buildamerica/infragrants

9.1.6 Community Change Grants

Managing Agency: America Walks

This program supports the growing network of advocates, organizations, and agencies working to advance walkability. Grants are awarded to innovative, engaging, and inclusive programs and projects that create change and opportunity for walking and movement at the community level. Applications for grants open in the fall and are awarded for the full calendar year.

Website: https://americawalks.org/programs/community-change-grants-2021/

9.1.7 Community Development Block Grant Program

Managing Agency: United States Department of Housing and Urban Development

This program provides annual grants to cities and counties to develop viable urban communities by providing decent housing and a suitable living environment, and by expanding economic opportunities, principally for low- and moderate-income persons. Grant applications open about every two years. Eligible transportation

improvements include installing sidewalks, curb and gutter, as well as maintenance activities (e.g., repairing streets and sidewalks) serving low- and moderate-income persons.

Website: https://www.hud.gov/program_offices/comm_planning/cdbg

9.2 State Programs

9.2.1 Senate Bill 1

Managing Agency: Caltrans

Senate Bill 1 (SB 1) was passed in 2017 as a long-term transportation reform and funding package. The bill includes new revenues that address a wide variety of transportation projects, such as road safety improvements, street repair, transit, and roadway and bridge construction. SB 1 provides $5.2 billion per year to fund transportation projects throughout California. The programs listed below are funded through SB 1.

Website: http://rebuildingca.ca.gov/

9.2.2 Highway Safety Improvement Program (HSIP) Grant

Managing Agency: Caltrans

The Highway Safety Improvement Program (HSIP) is one of the core federal-aid programs in the federal surface transportation act, Fixing America's Surface Transportation Act (FAST). The purpose of the HSIP program is to achieve a significant reduction in traffic fatalities and serious injuries on all public roads, including non-State-owned public roads and roads on tribal land. Example safety projects include but are not limited to crosswalk markings, rapid flashing beacons, curb extensions, speed feedback signs, guard rails, pedestrian refuge islands, slurry seal, and other pavement markings.

Website: http://dot.ca.gov/hq/LocalPrograms/hsip.html

9.2.3 Office of Traffic Safety (OTS) Grants

Managing Agency: Office of Traffic Safety

The California Office of Traffic Safety (OTS) strives to eliminate traffic deaths and injuries. It does this by making grants available to local and state public agencies for programs that help them enforce traffic laws, educate the public in traffic safety, and provide varied and effective means of reducing fatalities, injuries, and economic losses from collisions.

Website: https://www.ots.ca.gov/

9.2.4 Safe Streets and Roads for All (SS4A) Grant Program

Managing Agency: U.S. Department of Transportation

The SS4A program funds regional, local, and Tribal initiatives through grants to prevent roadway deaths and serious injuries. The Bipartisan Infrastructure Law (BIL) established the SS4A discretionary program with $5 billion in appropriated funds over 5 years, 2022-2026. The program supports the development of a comprehensive safety action plan (Action Plan) that identifies the most significant roadway safety concerns in a community and the implementation of projects and strategies to address roadway safety issues. SS4A requires an eligible Action Plan to be in place before applying to implement projects and strategies. The SS4A program provides funding for planning and demonstration and implementation.

Website: https://www.transportation.gov/grants/SS4A

9.2.5 Active Transportation Program (ATP) Grants

Managing Agency: California Transportation Commission (CTC)

The Active Transportation Program (ATP) consolidates existing federal and State transportation programs, including the Transportation Alternatives Program (TAP), Bicycle Transportation Account (BTA), and State Safe Routes to School (SR2S), into a single discretionary grant program with a focus to make California a national leader in active transportation. The purpose of the ATP is to encourage increased use of active transportation modes by increasing the proportion of trips made by bicycle or on foot and increasing non-motorized user safety; reduce greenhouse gases; enhance public health; and ensure that disadvantaged communities fully share in the benefits of the program.

Website: http://www.dot.ca.gov/hq/LocalPrograms/atp/

9.2.6 State-Local Partnership Program (LPP)

Managing Agency: CTC

The Road Repair and Accountability Act of 2017 (Senate Bill 1) created the Local Partnership Program (LPP), which is modeled closely on the Proposition 1B State Local Partnership Program. The purpose of the Senate Bill 1 LPP program is to provide local and regional transportation agencies that have passed sales tax measures, developer fees, or other imposed transportation fees with a continuous appropriation of $200 million annually from the Road Maintenance and Rehabilitation Account to fund road maintenance and rehabilitation, sound walls, and other transportation improvement projects. Consistent with the intent behind Senate Bill 1, the CTC intends this program to balance the need to direct increased revenue to the State's highest transportation needs while fairly distributing the economic impact of increased funding. LPP provides funding to local and regional agencies to improve aging Infrastructure, road conditions, active transportation, and health and safety benefits.

Website: http://www.catc.ca.gov/programs/sb1/lpp/

9.2.7 Sustainable Communities Grants

Managing Agency: Caltrans

The Sustainable Transportation Planning Grant Program was created to support the Caltrans mission: provide a safe, sustainable, integrated, and efficient transportation system to enhance California's economy and livability. Eligible planning projects must have a transportation nexus ideally demonstrating that planning projects directly benefit the multimodal transportation system. Sustainable Communities Grants will also improve public health, social equity, environmental justice, the environment, and provide other important community benefits.

Website: http://www.dot.ca.gov/hq/tpp/offices/orip/Grants/grants.html

9.2.8 Adaptation Planning Grants

Managing Agency: Caltrans

Climate change adaptation aims to anticipate and prepare for impacts to reduce the damage from extreme weather events. Adaptation is distinct from, but complements, climate change mitigation, which aims to reduce greenhouse gas (GHG) emissions. This funding is intended to advance adaptation planning on California's transportation infrastructure, including but not limited to roads, railways, bikeways, trails, bridges, ports, and airports. Adaptation efforts will enhance the transportation system's resiliency to help protect against climate impacts. The overarching goal of this grant program is to support planning actions at local and regional levels that advance climate change adaptation efforts on the transportation system, especially efforts that serve the communities most vulnerable to climate change impacts. Adaptation

Planning Grants are funded through California Senate Bill (SB) 1 under the Public Transportation Account (PTA).

Website: http://www.dot.ca.gov/hq/tpp/grants.html

9.2.9 State Highway Operation and Protection Program (SHOPP)

Managing Agency: Caltrans

The State Highway Operation and Protection Program (SHOPP) is the State Highway System's (SHS) "fix-it-first" program. It funds repair and preservation, emergency repairs, safety improvements, and some highway operational improvements on the SHS. Although SHOPP is intended for projects on statutorily designated State-owned roads, highways (including the interstate system) and bridges, it can be used for associated bicycle and pedestrian facilities. Revenues for the SHOPP are generated by federal and State gas taxes and are fiscally constrained by the State Transportation Improvement Program Fund Estimate that is produced by Caltrans and adopted by the California Transportation Commission.

Website: http://www.dot.ca.gov/hq/transprog/shopp.htm

9.2.10 State Transportation Improvement Program (STIP)

Managing Agency: CTC

The State Transportation Improvement Program (STIP) is a biennial five-year plan adopted by the CTC for future allocations of certain state transportation funds for state highway improvements, intercity rail, and regional highway and transit improvements. State law requires the CTC to update the STIP biennially, in even-numbered years, with each new STIP adding two new years to prior programming commitments. CTC staff recommendations are based on the combined programming capacity for the Public Transportation Account (PTA) and State Highway Account (SHA) as identified in the fund estimate adopted by the CTC. Projects must first be nominated by the Metropolitan Transportation Commission in its Regional Transportation Improvement Program (RTIP), or by Caltrans in its Interregional Transportation Improvement Program (ITIP) to be included in the STIP that is adopted by the CTC.

Website: http://www.catc.ca.gov/programs/stip/

9.2.11 Affordable Housing and Sustainable Communities (AHSC) Program

Managing Agency: California Strategic Growth Council

The purpose of the AHSC Program is to reduce GHG emissions through projects that implement land-use, housing, transportation, and agricultural land preservation practices to support infill and compact development, and that support related and coordinated public policy objectives. The AHSC program includes transportation focuses related to reducing air pollution, improving conditions in disadvantaged communities, supporting or improving public health, improving connectivity and access to jobs, increasing options for mobility, and increasing transit ridership. Funding for the AHSC Program is provided from the Greenhouse Gas Reduction Fund (GGRF), an account established to receive cap-and-trade auction proceeds.

Website: http://www.sgc.ca.gov/programs/ahsc/

9.2.12 Transformative Climate Communities (TCC) Program

Managing Agency: California Strategic Growth Council

The Transformative Climate Communities Program was established by Assembly Bill (AB) 2722 to fund development and implementation of neighborhood-level transformative climate community plans that include GHG emissions reduction projects that provide local economic, environmental, and health benefits to disadvantaged communities. The TCC Program is also an opportunity to realize the State's vision of Vibrant Communities and Landscapes, demonstrating how meaningful community engagement coupled with strategic investments in transportation, housing, food, energy, natural resources, and waste can reduce GHG emissions and other pollution, while also advancing social and health equity and enhancing economic opportunity and community resilience. The TCC Program funds both implementation and planning grants. Transportation-related projects funded by the TCC Program can include, but are not limited to: developing active transportation and public transit projects; support transit ridership programs and transit passes for low-income riders; expanding first/last mile connections; building safe and accessible biking and walking routes; and encouraging education and planning activities to promote increased use of active transportation modes.

Website: http://www.sgc.ca.gov/programs/tcc/

9.2.13 Urban Greening Grant Program

Managing Agency: California Natural Resources Agency

As part of the California State Senate Bill (SB) 859, the California Natural Resources Agency's Urban Greening Program was created and is funded by the Greenhouse Gas Reduction Fund (GGRF) to support the development of green infrastructure projects that reduce GHG emissions and provide multiple benefits. Projects should be focused in disadvantaged communities to maximize economic, environmental, and public benefits. The Urban Greening Program will fund projects that reduce greenhouse gases by sequestering carbon, decreasing energy consumption, and reducing vehicle miles traveled, while also transforming the built environment into places that are more sustainable, enjoyable, and effective in creating healthy and vibrant communities. These projects will establish and enhance parks and open space, using natural solutions to improve air and water quality and reducing energy consumption, and creating more walkable and bikeable trails.

Website: http://resources.ca.gov/grants/urban-greening/

9.2.14 Environmental Justice (EJ) Small Grants Program

Managing Agency: California Environmental Protection Agency

The Environmental Justice (EJ) Small Grants Program offers funding opportunities to assist eligible non-profit community organizations and federally recognized tribal governments to address environmental justice issues in areas disproportionately affected by environmental pollution and hazards. The EJ Small Grants are awarded on a competitive basis with a maximum amount $50,000 per grant. EJ Small Grants can be used for a variety of environmental purposes but can also be used to augment community engagement, health, trainings, and programmatic opportunities in underserved communities.

Website: https://calepa.ca.gov/EnvJustice/Funding/?mc_cid=b68bc95390&mc_eid=b4c201d657

Appendix A:
SIC Meeting Presentation

City of San Mateo Local Roadway Safety Plan Project Update

Sustainability and Infrastructure Meeting

July 12, 2023

KITTELSON & ASSOCIATES

Agenda

01 Introduction

02 Project Purpose, Scope, and Schedule

03 Preliminary Data Analysis Findings

04 Countermeasures Toolbox

05 Community Outreach Efforts

06 Next Steps

What Is An LRSP?

A comprehensive safety plan with strategies, actions, and projects focused on reducing crashes, specifically fatal and serious injury crashes in the City of San Mateo

Using the Safe System Approach:

1. Prevent Death & Serious Injury
2. Design for Human Mistakes
3. Reduce System Kinetic Energy
4. Shared Responsibility
5. Proactively Identify and Address Risk

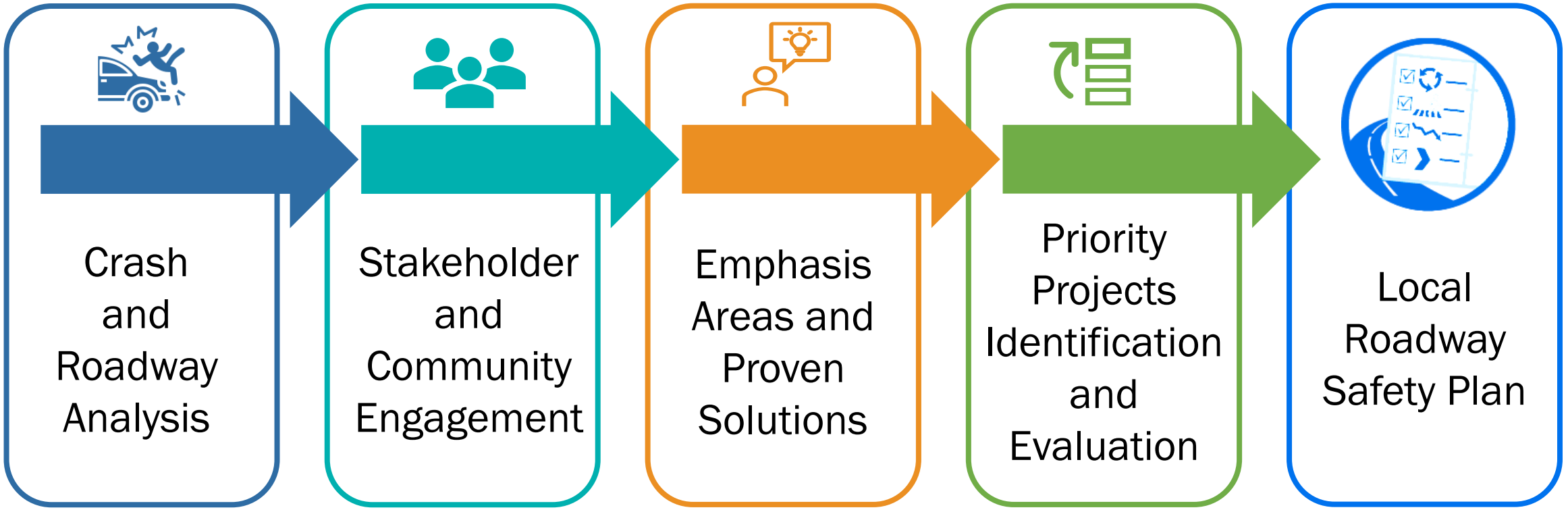
Project Purpose

Improve roadway safety for everyone in the City

Develop an implementable plan of safety improvement projects meeting eligibility for grant funds

Establish vision and goals for roadway safety improvement

Plan Development Process



Project Schedule

Preliminary Data Analysis Findings

Data Analysis

Data Sources

- Statewide Integrated Traffic Records System (SWITRS)
- UC Berkeley's Transportation Injury Mapping System (TIMS)
- City of San Mateo's crash database
- Roadway and intersection characteristic data

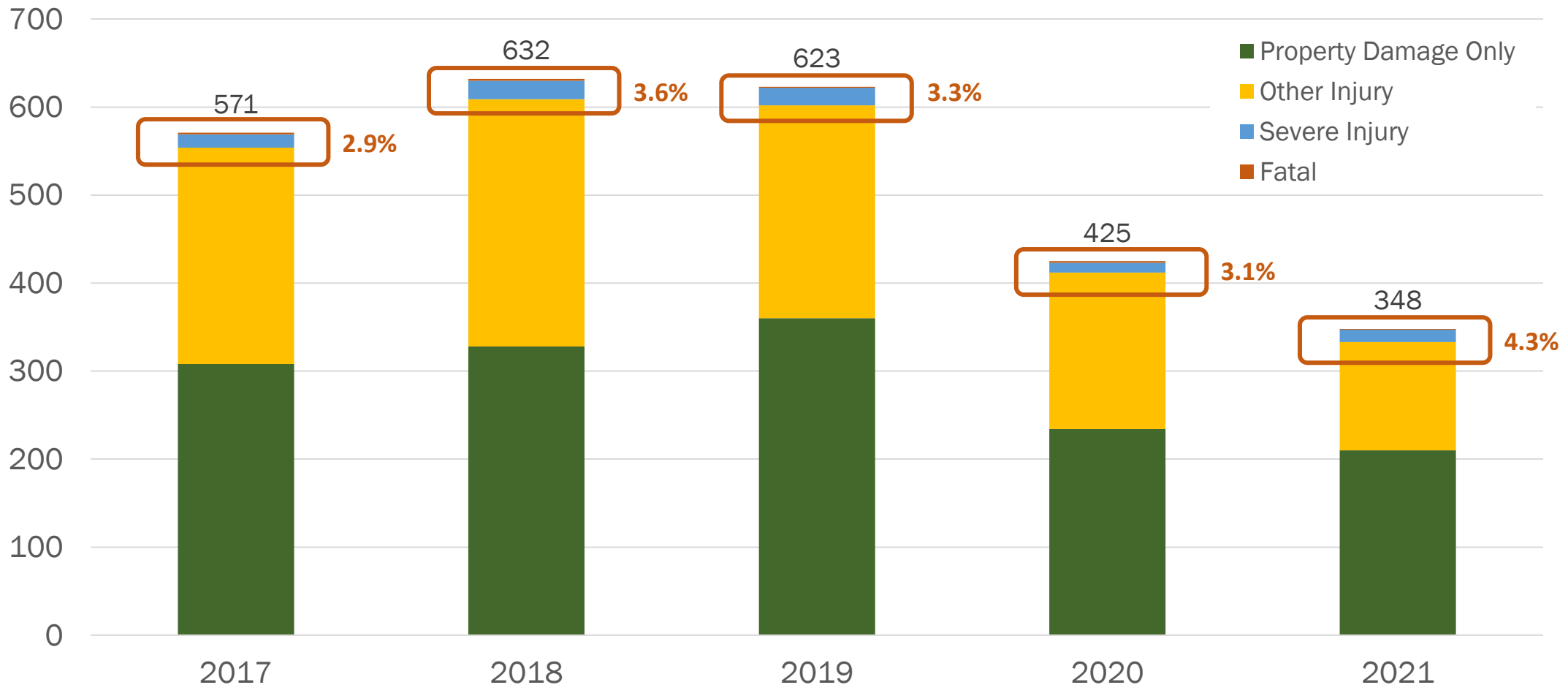
What was studied

- Crash Severity
- Crash Location
- Crash Type
- Primary Crash Factor
- Temporal Trends
- Network Screening (Crash Frequency and Severity)

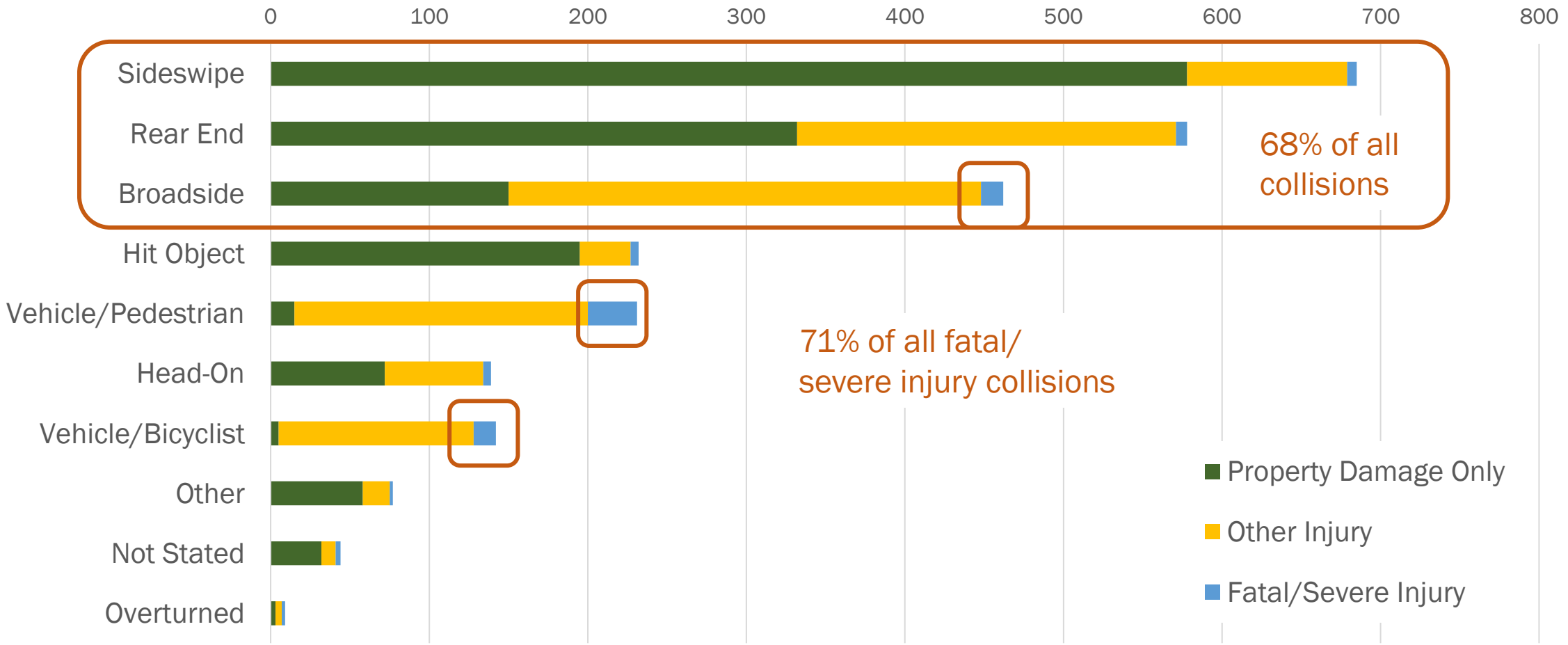
Data Overview

- 2,599 reported crashes over 5 years (519 annually) between January 2017 and December 2021
- 3.4% of reported crashes resulted in at least one death or severe injury (18 annually)

Crash Frequency by Year



Crash Type and Frequency



Vehicle/Pedestrian Crashes

- **230** vehicle/pedestrian crashes (~**46** annually)
- **37%** of total fatal and serious injury crashes
- **61%** of fatal/severe injury pedestrian crashes involved a pedestrian crossing in a crosswalk

Vehicle/Bicyclist Crashes

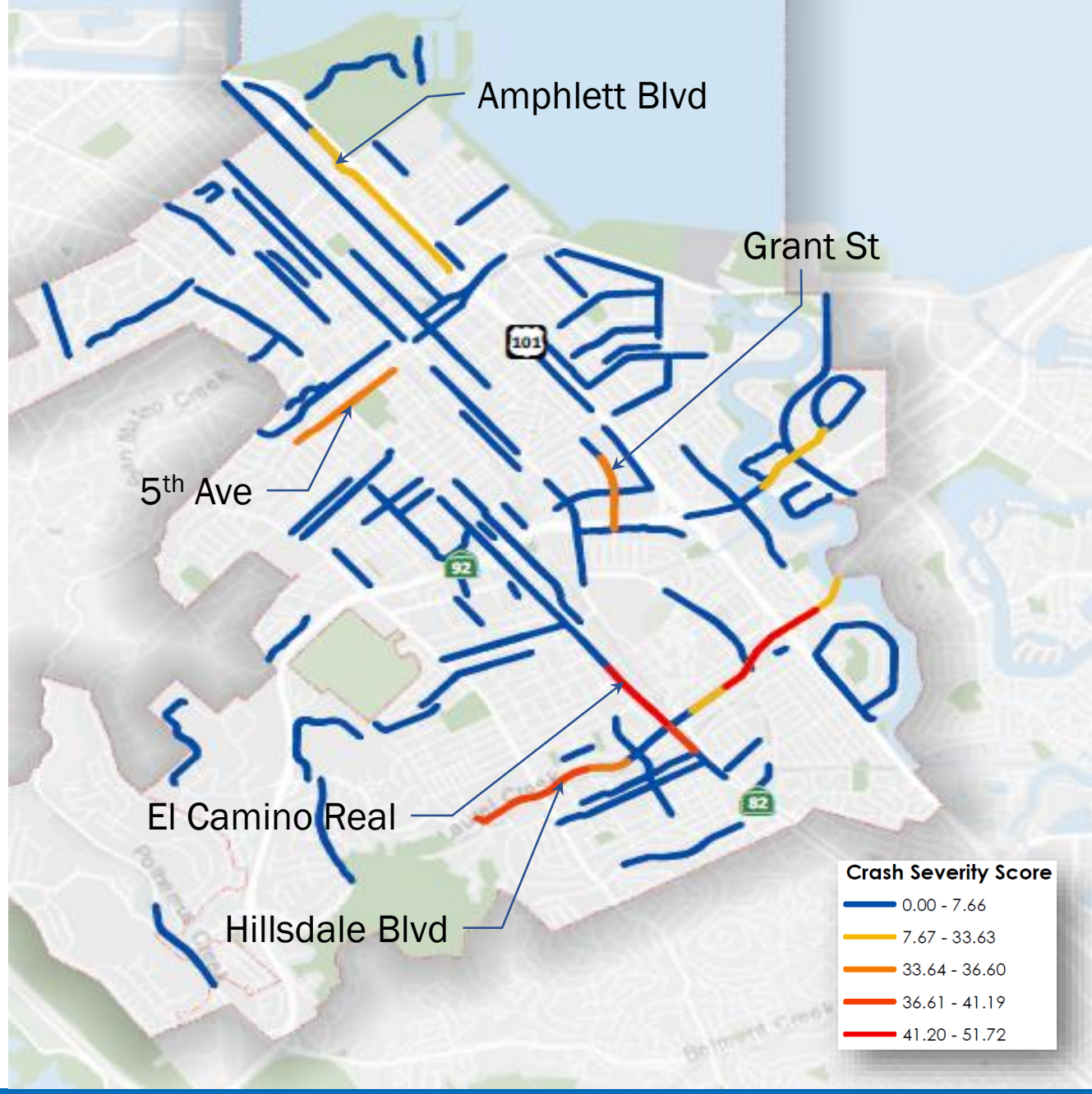
- **142** vehicle/bicyclist crashes (~**28** annually)
- **17%** of total fatal and serious injury crashes

Broadside Crashes

- **462** broadside crashes (~**92** annually)
- **17%** of total fatal and serious injury crashes

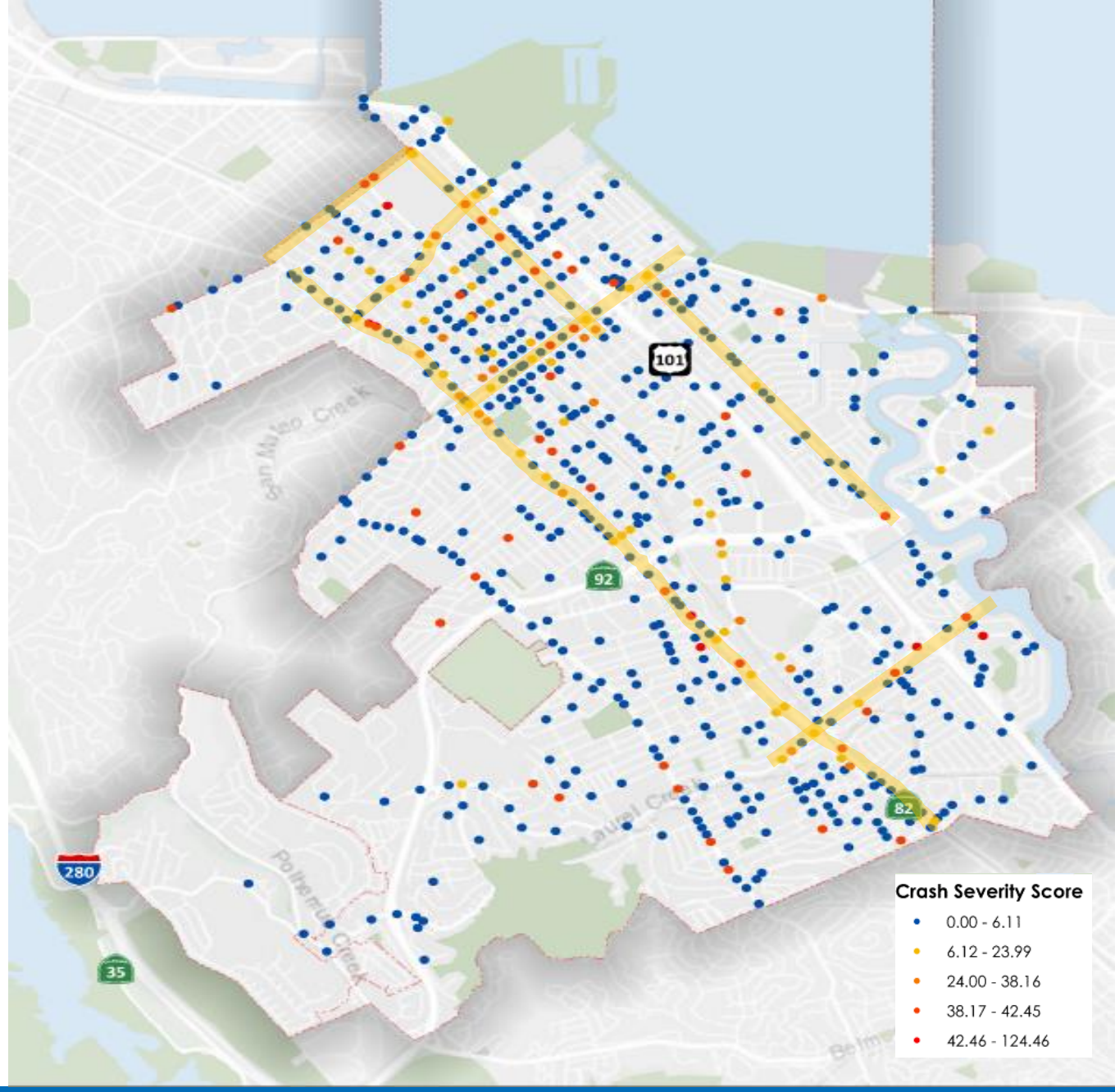
Potential Segment Priorities

- Hillsdale Boulevard
- El Camino Real
- Grant Street
- 5th Avenue
- Amphlett Boulevard



Potential Priority Intersection Corridors

- El Camino Real
- Humboldt Street
- Norfolk Street
- Peninsula Avenue
- Hillsdale Boulevard
- 3rd Avenue
- Poplar Avenue



Countermeasures Toolbox

What is a Safety Countermeasure?

A roadway safety countermeasure is an action designed to counteract an identified safety issue.

Pedestrian-Related Treatments

- Crosswalk Visibility Enhancements
- Rectangular Rapid Flashing Beacons (RRFBs)
- Pedestrian Hybrid Beacon (PHB)
- Pedestrian Refuge Island

Bicycle-Related Improvements

- Bike Lane Extension Through Intersections
- Bike Lanes
- Bike Signals
- Bike Boxes

Roadway Segment Treatments

- Streetlighting
- Speed Management
  - Dynamic Speed Feedback Signs
  - Traffic Calming

Signalized Intersection Treatments

- Improve signal hardware or timing
- Install left-turn green arrow
- Improved detection
- Install intersection lighting

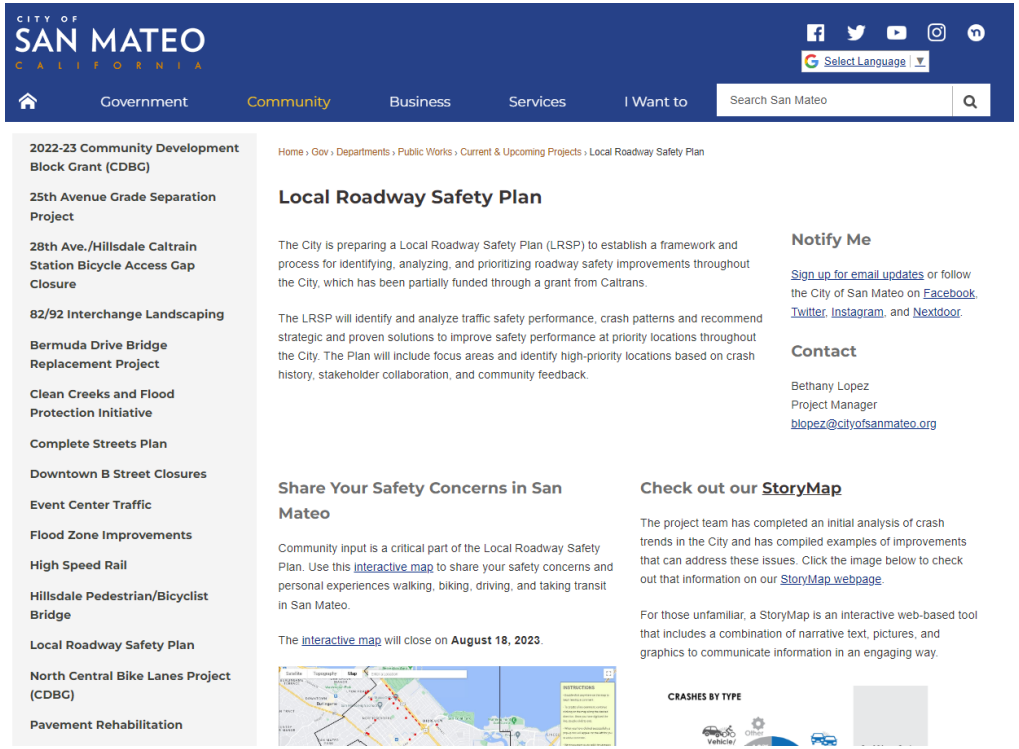
Unsignalized Intersection Treatments

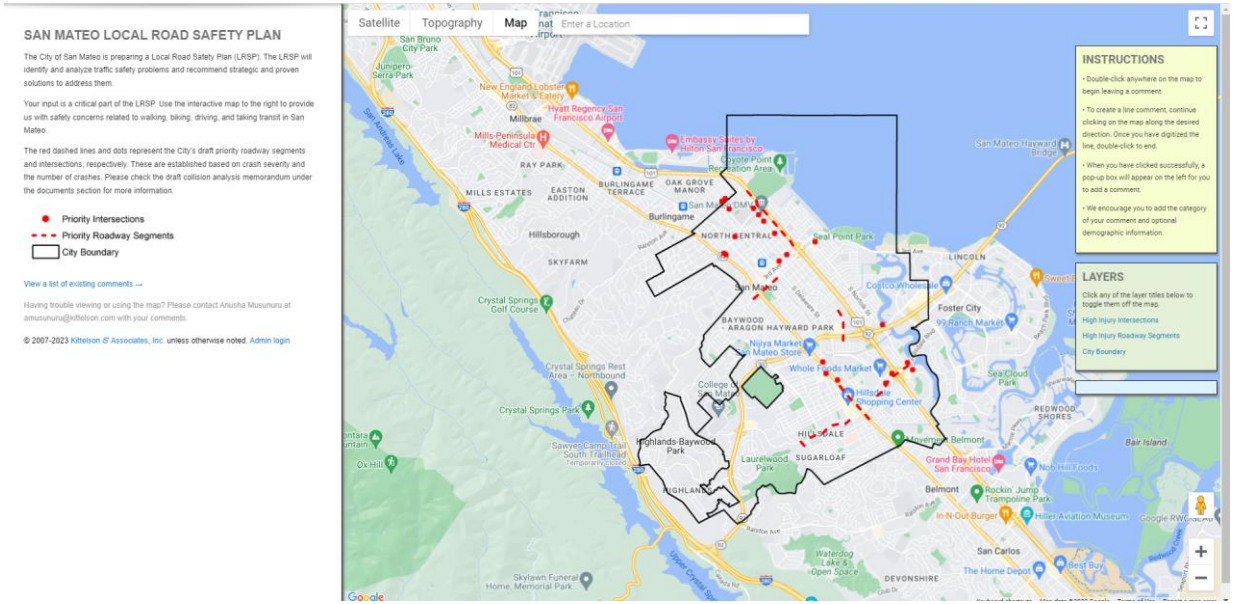
- Install Intersection Lighting
- Install Roundabouts
- Install or Upgrade Intersection Signage and/or Pavement Markings
- Improve Sight Distance to Intersection

Community Outreach Efforts

Project Website

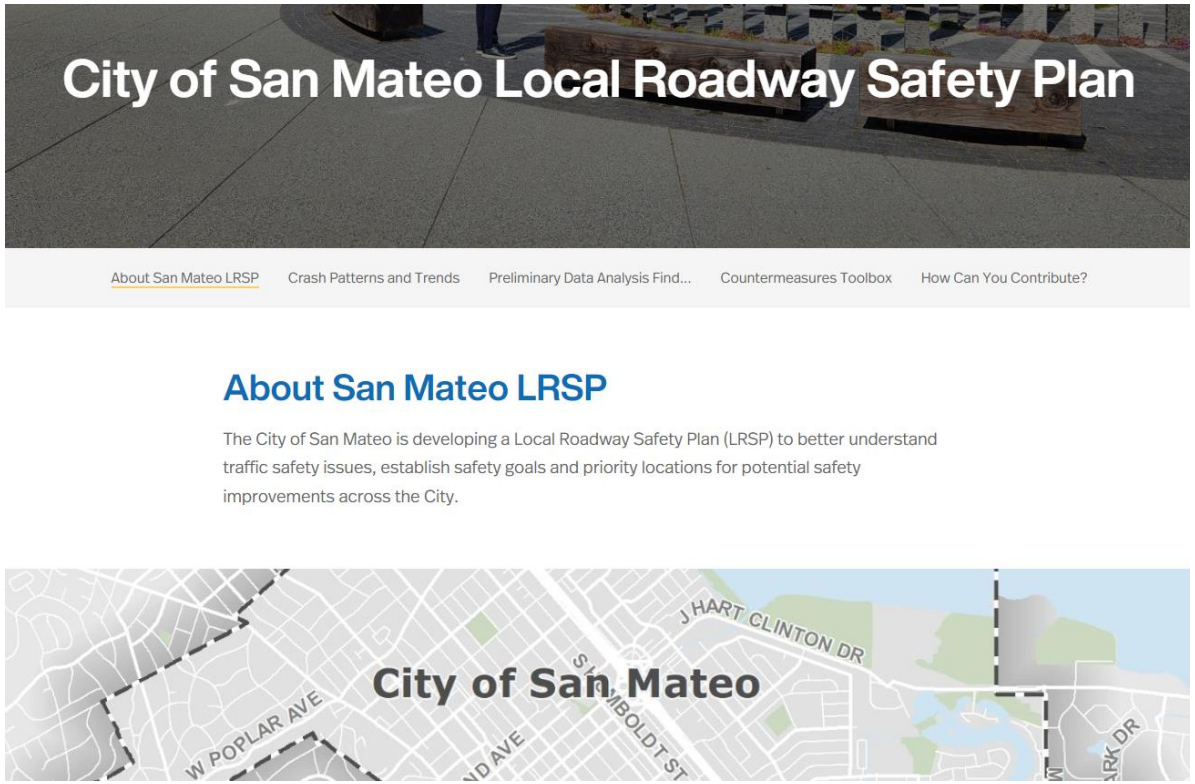
- City LRSP Webpage: https://www.cityofsanmateo.org/SafetyPlan





Story Map Webpage

- Link on the project website
- LRSP Story Map includes:
  - Crash patterns and trends
  - Preliminary findings
  - Network screening results
  - How can you contribute?



Recent In-Person Events:

- **Pop Up Event #1:** San Mateo Central Park – July 4th
- **Pop Up Event #2:** College of San Mateo Farmers Market– July 8th

Upcoming Outreach Efforts:

- **Flyer Postings:**
  - Downtown
  - North Central neighborhood
  - Hillsdale area
- **Social Media Outreach** – July and August

Next Steps

Next Steps

- Summary from community outreach
  - Incorporate into developing priority projects & LRSP
  - Draft LRSP - October
- Upcoming meetings:
  - PDT Meeting #2: September/October
  - SIC Meeting #2: September/October
  - City Council: November/December

Feedback

- Share your experiences on our interactive map
- Comment on draft LRSP when presented at SIC in the fall

Appendix B:
Document Review Memorandum

KITTELSON & ASSOCIATES
155 Grand Avenue, Suite 505
Oakland, CA 94612
P 510.839.1742

Technical Memorandum

December 8, 2022 Project# 27516

To: Josh Pilachowski
City of San Mateo
330 W. 20th Avenue
San Mateo, CA 94403

From: Doreen Gui; Anusha Musunuru, PhD; Matt Braughton, RSP; Kittelson & Associates, Inc.

CC: Bethany Lopez, Nikki Chan; City of San Mateo

RE: San Mateo Local Roadway Safety Plan: Document Review Memorandum - FINAL

INTRODUCTION

Kittelson & Associates, Inc. (Kittelson) prepared this memorandum as a synthesis of roadway safety-related documents for the City of San Mateo and adjacent jurisdictions. This memorandum highlights the state/regional/jurisdiction-specific crash trends and current noteworthy safety practices, policies, and/or initiatives that have been implemented at a state, regional and local level. This document provides guidance for the safety analysis methodology, emphasis areas, policies, and strategies for the Local Roadway Safety Plan (LRSP) project and a summary of recent roadway safety improvement related efforts undertaken by the City.

The memorandum starts with a discussion of the project's background and focuses on the findings from Federal Highway Administration (FHWA) and California statewide safety plans and best practices. This is followed by regional policy and programs and city-specific planning documents. The memorandum also summarizes guidance for proven countermeasures and strategies and concludes with a discussion of the most relevant safety-related grant programs.

Project Background

The LRSP will create a framework for developing a comprehensive transportation safety management program to identify potential safety issues in the City and apply strategic and proven solutions to address them. The LRSP process will combine stakeholder input with data analysis to produce a community-driven and data-driven approach to addressing transportation safety performance. Increasing understanding of trends in driver behavior, crash characteristics, and locations helps the City identify safety improvements. These safety improvements are intended to reduce crash frequency and severity for roadway users in the City of San Mateo. The LRSP will include mission, vision statement, goals, a list of emphasis areas, high-priority locations, and safety countermeasures and strategies based on crash history, local agency collaboration, and stakeholder and community feedback.

The LRSP would apply the Safe System approach in addition to traditional systemic approach, hotspot analysis, and site-specific approaches. The Safe System approach takes a broad view to systemically evaluate risk across an entire roadway network rather than at certain locations (as is done in site-specific approach). It also adopts a proactive approach to address safety concerns to help prevent crashes rather than a reactive approach based on historic crash data (i.e., waiting for crashes to happen). A systemic approach recognizes that the location of reported crashes alone is not sufficient to determine potential

countermeasures. This is particularly true for low volume roads where crash densities are comparatively low, and for specific crash types (such as pedestrian-vehicle crashes) that occur less frequently while typically having more severe outcomes. The Safe System and systemic safety approach considers the presence of conflicts between different roadway users and develops crash risk factors to identify locations likely to benefit from proactive safety treatments and have the greatest potential to improve roadway safety. Potential conflicts, site visits, and assessments of driver behavior also help inform decisions for prioritizing and implementing countermeasures to consistently reduce crash risk.

Existing Safety-Related Guidance, Policies, and Programs

This memorandum summarizes the following documents from Federal Highway Administration (FHWA), U.S. Department of Transportation, State of California, Metropolitan Transportation Commission (MTC), City/County Association of Governments of San Mateo County (C/CAG), and City of San Mateo:

- **Federal**
  - FHWA Safe System Approach
  - FHWA LRSP Guidance
- **State**
  - California Strategic Highway Safety Plan (SHSP)
- **Regional**
  - MTC Regional Safety/Vision Zero Policy
  - C/CAG of San Mateo County Safe Routes to School Reports
- **Local**
  - San Mateo 2030 General Plan
  - City of San Mateo Citywide Pedestrian Master Plan (2012)
  - City of San Mateo Bicycle Master Plan (2020)
  - Transit-Oriented Development (TOD) Pedestrian Access Plan
- **Strategies and Countermeasures**
  - FHWA Proven Safety Countermeasures
  - FHWA Crash Modification Factors (CMF) Clearinghouse
  - FHWA Pedestrian and Bicycle Safety Guide and Countermeasure Selection System
  - NHTSA Countermeasures that Work
  - Caltrans Local Road Safety Manual
- **Most Relevant Grant Programs**
  - Safe Streets for All (SS4A) Grant Program
  - Highway Safety Improvement Program (HSIP)
  - California Office of Traffic Safety (OTS) Grants
  - Railroad Crossing Elimination Grant Program

Federal

FHWA Safe System Approach

In January 2022, the United States Department of Transportation released its National Roadway Safety Strategy[1] that adopted the Safe System Approach as its core strategy. In February 2022, Caltrans released Director's Policy 36[2] which commits to adopting the Safe System Approach to achieve its vision to eliminate fatalities and serious injuries on California's roadways by 2050 and provide safer outcomes for all communities.

As opposed to traditional road safety practices that attempt to modify human behavior and prevent crashes, the Safe System Approach focuses on modifying overall transportation system design to anticipate human errors and lessen impact forces to reduce crash severity and save lives. The Safe System Approach also acknowledges that the human body is vulnerable in terms of the amount of kinetic energy transfer it can withstand. This vulnerability is considered when designing and operating a transportation network to minimize serious injuries and fatalities. Therefore, it is crucial that the responsibility is shared by those who design and operate the transportation system. In a Safe System, all stakeholders work together which include, but are not limited to, road users, transportation system managers, law enforcement, emergency responders, and vehicle manufacturers. Additionally, it is also crucial to provide redundancy in the system so that multiple levels of protection are available to help prevent crashes that lead to severe injuries and deaths.

These important recognitions of changing how we approach traffic safety are being prioritized as traffic deaths continue to be unacceptably high numbers across the country. In 2020, there were 38,824 traffic-related fatalities in the United States[3]. In California, there were 3,798 fatalities in 2018[4]. These numbers do not include serious injury crashes that also significantly change the lives of people involved and the communities they live in. The Safe System Approach aims to eliminate fatal and serious injuries on roadways and will requires change in traffic safety culture, standards, practices, and partnerships.

There are three key components of the Safe System Approach to understand: the Safe System "approach," "principles," and "elements." In addition, the term "Safe System" is singular to depict an overall safe road system rather than individual elements that would be addressed in isolation or separately.

[1] National Roadway Safety Strategy, United States Department of Transportation, January 2022
https://www.transportation.gov/sites/dot.gov/files/2022-02/USDOT-National-Roadway-Safety-Strategy.pdf
[2] California Department of Transportation Director's Policy 36, February 15, 2022
https://dot.ca.gov/-/media/dot-media/programs/safety-programs/documents/policy/dp_36-a11y.pdf
[3] National Highway Traffic Safety Administration Overview of Motor Vehicle Crashes in 2020
https://crashstats.nhtsa.dot.gov/Api/Public/ViewPublication/813266
[4] Caltrans Strategic Highway Safety Plan Traffic Safety Facts April 2022
https://dot.ca.gov/-/media/dot-media/programs/safety-programs/documents/shsp/combined-shsp-fact-sheets-april-2022-a11y.pdf

Figure 1: FHWA's Safe System Approach

Source: FHWA, 2022
https://safety.fhwa.dot.gov/zerodeaths/zero_deaths_vision.cfm

The Safe System "**approach**" is the broadest term and describes all aspects of the Safe System which are shown in Figure 1[5].

Six Safe System "**principles**" encompass the fundamental beliefs that the approach is built on. A successful Safe System approach weaves together all six principles. The six principles are shown around the outside ring of the graphic.

Five Safe System "**elements**" that are conduits through which the Safe System approach must be implemented. These promote a holistic approach to safety across the entire roadway system and acknowledge the shared responsibility principle. Making a commitment to zero deaths means addressing every aspect of crash risks through these five elements that accommodate human mistakes and injury tolerances. The elements are presented in the middle ring of the graphic.

Roadway system managers in the Safe System Approach use a proactive approach to safety to try to address safety concerns before crashes occur, contrasting with traditional road safety practices which are reactive and address safety concerns after crashes occur. This involves using crash data, roadway design characteristics and employing a data-driven approach to identify crash patterns and trends associated with crash risk. Transportation system managers then systemically implement proven safety countermeasures at all locations matching those crash risk factors to mitigate against future crashes.

Finally, redundancy is key in reducing crash occurrence in a transportation system. All parts of the system should be strengthened so that if one part fails, other parts of the system still protect roadway users. A simple implementation of this would be rumble strips that protect people when their own ability to be safe road users is compromised by distractions or drowsiness.

Relevance to the San Mateo LRSP:

- Firmly establishes death and serious injuries are not acceptable as the fundamental basis for roadway safety planning and design.
- Encourages proactive approaches for safety and shared responsibilities by all parties involved in roadway planning, design, and operations (including road users).
- Emphasizes a data-driven and community-informed approach to developing safety improvements and strategies.

[5] https://safety.fhwa.dot.gov/zerodeaths/docs/FHWA_SafeSystem_Brochure_V9_508_200717.pdf

FHWA LRSP Guidance

In addition to the Safe System Approach discussed above, FHWA also provides a framework of the key steps in developing an LRSP in *Developing Safety Plans – A Manual for Local Road Rural Owners* (2012). The FHWA LRSP development process is captured in Figure 2, with four primary steps:

1. Establishing Stakeholders
2. Using Safety Data
3. Choosing Proven Solutions
4. Implementing Solutions

The first step of the plan involves convening a diverse group of stakeholders as the Project Development Team (PDT) to help support and inform the planning process by sharing diverse views on roadway safety and help identify needs. This should be followed by a detailed analysis using available roadway and crash history data to understand crash patterns and trends, potential crash risk factors, and emphasis areas for addressing roadway safety in the local jurisdiction. While data is an important and useful tool to help define safety issues, it is often incomplete for a variety of reasons. These might include inaccurate reporting, an inability to capture safety issues like near-misses, and difficulty pinpointing streets or areas people currently avoid because they feel unsafe. Therefore, FHWA recommends LRSP projects to take a data-informed approach to planning, using data analysis in conjunction with engagement with the PDT and community to highlight lived experience in addition to data to develop a more comprehensive view of the transportation safety issues. Following the analysis and with input from the PDT, a selection of proven countermeasures most applicable should be developed and refined to form a countermeasure toolbox and inform the implementation plan for the LRSP.

Figure 2: FHWA LRSP Planning Process

Source: FHWA, 2022, https://safety.fhwa.dot.gov/LRSPDIY/downloads/LRSP_FinalBuild_Infographic_508.pdf

Relevance to the San Mateo LRSP:

- Highlights the importance of incorporating diverse group of stakeholders and the community.
- Emphasizes a data-driven approach to develop priorities and strategies.
- Focuses on selecting and deploying proven safety countermeasures.

State

California Strategic Highway Safety Plan (SHSP)

The 2020-2024 Strategic Highway Safety Plan (SHSP) is a statewide, coordinated safety plan providing a comprehensive framework for reducing highway fatalities and severe injuries on public roads in California. It identifies key safety needs and guides investment decisions towards strategies and countermeasures with the most potential to save lives and prevent injuries.

The aspirational goal for the plan is to have zero fatalities and serious injuries on California public roads consistent with other Toward Zero Deaths (TZD) initiatives. Working to make zero fatalities and serious injuries on California roadways a reality will require a traffic safety culture that promotes collaboration and innovation from all safety sectors and a collective commitment.

The SHSP identified California's 16 challenge areas, or areas that should be the main topics for roadway safety in California. Of the challenge areas, six were identified as high priority areas, having the greatest opportunity to reduce death and serious injury, and are presented below. Those challenge areas can be compared with the result of the LRSP's crash data analysis and can inform the process of identifying high-priority locations for crash risk and cost-effective countermeasures.

- Active Transportation: Pedestrians and Bicyclists
- Impaired Driving
- Intersections
- Lane Departures
- Speed Management / Aggressive Driving

Initially, the SHSP approached traffic safety using the five E's: engineering, enforcement, education, emergency services, and emerging technologies. In 2021, state transportation officials shifted focus to adopt guiding principles that integrate social equity, integrate the Safe System Approach (described in the section above), and encourage the use of proven countermeasures and emerging technologies.

SHSP partner agencies have begun to implement strategies to eliminate traffic deaths and serious injuries using their guiding principles and challenge areas. This LRSP will build from the framework created by the SHSP by incorporating ideas that align with the challenge areas and guiding principles established to address safety at the state level.

Relevance to the San Mateo LRSP:

- Identifies state priorities, challenge areas and goals to align with the LRSP.
- State challenge areas will be used to compare against San Mateo crash history to determine consistency or differences with state crash priorities.
- Opportunities to align and leverage statewide strategies, partnerships, and approaches with the LRSP.
- State priorities help identify potential state funding opportunities for LRSP projects and strategies.

Regional

MTC Regional Safety/Vision Zero Policy

The MTC Regional Safety/Vision Zero Policy establishes a strategy for working with partner agencies to support equitable and data-driven action towards eliminating traffic deaths and serious vehicular injuries in the Bay Area by 2030.

The document promotes a three-pronged approach to enhance safety in the region. First, MTC staff will work on enhancing the region's and jurisdictions' access to reliable and consistent data by integrating several available sources into a single regional safety data repository. Second, MTC will use data to inform and develop regional policy and support legislation that has been proven effective, such as lowered speed limits and automated speed enforcement. Finally, and dependent on resources available, MTC will support jurisdictions by providing technical assistance with safety planning.

The following principles are adopted in the policy:

- Regional safety leadership
- Data driven
- Equity focused
- Evidence-based policy and legislation
- Education and engagement

Funding

One potential role of MTC is to provide technical assistance to jurisdictions, which includes funding advocacy for the region. In fact, MTC has applied and received funding for the development of a Regional Safety Data System and the development of a State of Safety in the Region Report.

An important piece of MTC's Vision Zero policy is the use of incentive programs to encourage the adoption of Vision Zero plans and safety best practices. As an action item under the regional safety leadership principle, the Policy notes that MTC will engage and incentivize leadership across local jurisdictions in prioritizing safety and work towards aligning funding investments with safety goals. For example, local agencies with a Vision Zero Plan may designate Connected Community Priority Development Areas, which gives them access to additional funding opportunities.

In January 2022, MTC adopted the third round of One Bay Area Grant funding (OBAG 3), which includes more than $750 million in federal funding for projects from 2023 to 2026. For local programs, County Transportation Agencies (CTAs) will assist countywide outreach and submit a project nomination list to MTC for consideration. Funds will be available for a wide range of project types, including safety programs such as Safe Routes to School.

Relevance to the San Mateo LRSP:

- Establishes regional vision for collaborative and data-driven approach to eliminate traffic death and serious injury.
- Incentivizes Vision Zero safety plan development through the Connected Communities Safety Policy with additional funding for safety improvements.
- Emphasizes equity in roadway safety management planning and implementation.
- Opportunity to coordinate the LRSP with regional safety data bank and priorities.

C/CAG of San Mateo County Safe Routes to School Reports

This section summarizes findings from San Mateo County Safe Routes to School Five-Year Evaluation (2010-2011, 2014-2015 School Years)[6] and San Mateo County Safe Routes to School High Injury Network Report[7].

San Mateo County Safe Routes to School Five-Year Evaluation

In 2010, the C/CAG partnered with the San Mateo County Office of Education (SMCOE) to develop and implement the San Mateo County Safe Routes to School program to the 25 school districts in San Mateo County, in which elementary schools and middle schools in the City of San Mateo are affiliated with San Mateo-Foster City Elementary School District, and high schools in the City are affiliated with San Mateo Union High School District. The goal of the program was to improve the health, well-being, and safety of children by encouraging and enabling them to walk and bike to school.

In 2014-2015, the program conducted four walking and biking audits, held over a thousand assemblies, bike rodeos, and educational events. 133 schools and/or organizations participated in the program. In the City of San Mateo, 14 schools participated in the program and conducted Safe Routes to School Activities, such as:

- Bike after school program
- Tour de SMFC schools
- Route maps
- Bike education programs
- Walk to school days
- Walking school bus

In the Laurel Elementary School project, the County, SMCOE, San Mateo-Foster City School District, and the City of San Mateo partnered to construct the Laurel Elementary School Sustainable Stormwater and Safe Routes Demonstration Project in May 2015. Road safety improvements included the following:

- Shorter crossing distance and better visibility with marked crosswalks and curb extensions
- Safe walking/waiting area with one-way drop-off and pick-up area delineated by bollards
- Expanded and secure bike rack area

Though the San Mateo County walk to and from school rates (26% walking from school and 24% walking to school) were higher than the national average (16% walking from school and % walking to school), the parent survey identified the following in the 2014-2015 school year:

- Speeding traffic along route
- Unsafe intersections
- Too much traffic along route
- Stranger danger
- Distance to school
- Lack of adults to walk with

Walking and Biking Audits

In the five-year period, 61 walking and biking audits have been conducted in San Mateo County. Audits are conducted by engineering professionals, school staff, City staff, and law enforcement. Four walk audits were conducted at schools in the San Mateo-Foster City School District in the 2016-2017 evaluation year. The audit team conducts site visits to evaluate the quality and availability of pedestrian and/or bicycle

[6] https://ccag.ca.gov/wp-content/uploads/2017/12/San-Mateo-SRTS-Evaluation-Final_appendices.pdf
[7] https://ccag.ca.gov/wp-content/uploads/2022/07/San-Mateo-County-SRTS_HIN-Report.pdf

facilities that provide access to school, as well as on-site facilities. The document also includes a toolbox of potential engineering improvements that could be applied to roadways within the County.

Relevance to the San Mateo LRSP:

- Opportunity for collaboration across agencies to create safe routes for students and integrate strategies across the LRSP and Safe Routes to School program.
- Identifies a toolbox of potential improvements for school-specific concerns and risks.
- Surveys include community-perceived barriers to walking and biking to school, which could inform development of targeted countermeasures for the LRSP.

San Mateo County Safe Routes to School High Injury Network Report

This report details the process and outcomes of a youth-based high injury network (HIN) analysis. The HIN identifies segments in a road network where many pedestrian and bicycle collisions have occurred, as a means for prioritizing future infrastructure improvements. In the context of a Safe Routes to School (SRTS) program, the HIN can be used to identify segments near schools where students traveling to or from school may face increased safety challenges.

According to this report, in the City of San Mateo, out of the 925 collisions reported from 2014 to 2020, 175 are within one-quarter mile of a school. There are 203 youth-involved collisions Citywide, in which 51 are within one-quarter mile of a school. The top five safety priority corridors are listed below, all of which are within the City of San Mateo or pass through the City:

- State Highway 82 (El Camino Real)
- North Delaware Street
- North San Mateo Drive
- East Hillsdale Boulevard
- North Humboldt Street

The top four collision factors that create potential barriers to walking and biking to school identified in the annual SRTS Parent/Caregiver survey are speeding traffic along routes, unsafe intersections, too far from school, and too much traffic along routes. All of these factors were identified in 15 percent or more of the responses from San Mateo-Foster City School District or San Mateo Union High School District.

The top five collision factors identified in the San Mateo School Safety Analysis (2014 – 2020) based on crash analysis are shown in Table 1.

Table 1: Top Five Collision Factors in the City of San Mateo, 2014-2020

Collision Factors	Number of Collisions
Unsafe speed	190
Automobile right of way	179
Improper turning	129
Pedestrian right of way	116
Traffic signals and signs	68

Source: San Mateo County Safe Routes to School High Injury Network Report, 2022

Based on a high-level understanding of countywide and jurisdiction-level collision trends, the report selects countermeasures that focus on speed management, pedestrian safety improvements, intersection

improvements, and programmatic strategies that have proven safety benefits. Some of the key engineering and education related countermeasures described in the report are as follows:

- Actuated beacons (RRFBs/PHBs)
- Crosswalk markings and enhanced crossings
- Curb extensions
- Speed humps and tables
- Chicanes
- Road diets
- Leading pedestrian intervals (LPIs)
- Slow speed school zones
- Placemaking and landscaping
- Youth outreach and education programs
- Safety campaigns
- School walk audits
- Road safety audits

Relevance to the San Mateo LRSP:

- Identifies regional high-injury corridors within San Mateo that can be integrated into the LRSP.
- Opportunity to coordinate strategies and recommendations within the LRSP.
- Community surveys inform perceived/experienced safety-related barriers.

Local

San Mateo 2030 General Plan

The San Mateo's General Plan is the community's planning guideline that defines the long-term vision and provides the framework for all zoning and land use decisions within the community. The General Plan seeks to establish a balance between the need for new growth and development and the preservation of the City's high quality of life. In 2010, the City of San Mateo updated its General Plan - "Vision 2030, which provides an extension of the prior General Plan and incorporates new goals and policies pertaining to climate change and sustainability.

The Land Use and Circulation Elements of the plan include goals and policies that address roadway safety. The related policies are described below.

- Land Use Policy 3.3 - El Camino Real. ***Pedestrian activity and safety should be encouraged*** as part of the improvement project of the commercial boulevard.
- Circulation Policy 2.5 - Traffic Studies. ***Traffic impacts caused by a development project are considered to be unacceptable and warrant mitigation if there may be safety hazards created***.
- Circulation Policy 3.4 - Hillsdale Station. Relocating the Hillsdale Station northward. The planned modifications consist of ***installing a raised platform on an aerial viaduct, which will provide safer access and easier transfers to buses and shuttles***.
- Circulation Policy 3.5 - Grade Separation of Rail Line. ***Promoting the elimination of existing at grade crossings to improve local circulation and safety***.
- Circulation Policy 3.7 - San Mateo Rail Corridor Transit-Oriented Development Plan (Corridor Plan). To improve east-west access via ***new grade-separated rail crossings at 28th and 31st Avenues, which would improve local traffic circulation and pedestrian safety***.
- Circulation Policy 4.1 - Bicycle Master Plan. Implement Bicycle Master Plan's recommended programs and projects to ***create and maintain a fully-connected safe and logical bikeways system***.

- Circulation Policy 4.7 - Pedestrian Safety. ***Pedestrian safety shall be made a priority in the design of intersection and other roadway improvements***.
- Circulation Policy 4.8 - Pedestrian and Bicycle Mobility Needs. Balance ***pedestrian mobility and bicycle accessibility and safety with vehicular congestion*** when considering intersection improvements to address level of service degradation.
- Circulation Policy 4.10 - Bikeway Systems. Review the City's planned bikeways system for adequacy, consistency and connectivity throughout the City to ***facilitate ease of use and safety for the users*** including adequate parking for bicycles.
- Circulation Policy 4.11 - Hillsdale Bicycle and Pedestrian Over Crossing. The General Plan notes to ***make bicycling safer, more convenient, and more accessible*** in all reaches of the City through strategic capital improvements, programming, and better internal coordination of bicycling projects.

The City is updating its General Plan currently (2040 General Plan), which is the plan that expresses the community's vision for how the City will look, feel, and change over the next 20 years.

Relevance to the San Mateo LRSP:

- Citywide safety-related goals and policies to be integrated for consistency in the LRSP.
- Coordination of long-term citywide improvements with LRSP recommendations and strategies.
- Potential opportunity for LRSP recommendations to inform ongoing General Plan update.

City of San Mateo Citywide Pedestrian Master Plan (2012)

The Citywide Pedestrian Master Plan is a blueprint for the City of San Mateo to improve the pedestrian environment, secure funds dedicated to pedestrian safety and livable communities, and increase the number of walking trips. The Plan provides a broad vision, strategies, and actions for improving the pedestrian environment in the City.

Safety is identified as one of the six goals of the Plan. Specifically, the City seeks to reduce the number of pedestrian related crashes, injuries and fatalities by 50 percent from 2010 levels by 2020. This is assumed to be accomplished through the design and maintenance of sidewalks, streets, intersections, and other roadway improvements such as signage and lighting, and landscaping; as well as best practice programs to enhance and improve the overall pedestrian safety.

This document examines where pedestrian improvements are needed in San Mateo based on pedestrian commute patterns and historic crash data. The analysis reveals the need for continuous walkways and enhanced crossings at locations with high pedestrian-related crash rates. High concentration of crashes occur near Downtown area, El Camino Real, Delaware Street, East Poplar Avenue, West Hillside Boulevard, 1st Street, 5th Street, and Alameda de les Pulgas. These findings are based on 2000-2009 Caltrans' Statewide Integrated Traffic Report System (SWITRS) crash data.

The document explores both programmatic and engineering improvements that may help improve pedestrian safety. Programmatic improvements include encouragement, education, and enforcement programs. These programs can ensure that more residents know about new and improved facilities, learn the skills they need to integrate walking into their activities, and receive positive reinforcement about integrating walking into their daily lives. In addition to the programmatic improvements, the document recommends the following engineering enhancements:

- Standardize sidewalk design by land use
- Install pedestrian scale lighting along major corridors
- Install curb ramps and curb extensions

- Install high visibility crosswalks and prioritize at locations near senior living facilities and senior centers, retail corridors, uncontrolled crossings, school buildings and grounds, and high pedestrian-related collision areas
- Consider pedestrian refuge islands
  - Along streets with high pedestrian activity
  - Where crossing distances are long (60 feet or greater)
  - Near and within retail areas, civic and institutional uses, schools, senior housing, and senior centers
  - At unsignalized intersections serving a large number of pedestrian trips
- Install advance stop bars to increase pedestrian visibility at controlled intersections
- Install advance yield lines at all midblock uncontrolled marked crossings
- Install pedestrian hybrid beacon or rectangular rapid flash beacon at marked crosswalks at all uncontrolled arterial crossing locations

Relevance to the San Mateo LRSP:

- Establishes goal to reduce pedestrian-related crashes, injuries, and fatalities to align with the LRSP.
- Identifies pedestrian safety-related concerns and hotspots for consideration in the LRSP.
- Integrates existing regulations and best practices into a set of pedestrian enhancements that can enhance the safety, convenience, and mobility for pedestrians in the City which will be coordinated with the LRSP recommendations.

San Mateo Bicycle Master Plan (2020)

The 2020 San Mateo Bicycle Master Plan is the culmination of over a year of robust community engagement, data analysis, planning and design work. This Plan is an update of the City's 2011 Bicycle Master Plan and serves as a blueprint for expanding and improving the San Mateo bicycle and mobility network in the coming years. The goals of the Plan are as follows:

- Seamless bicycle connectivity to major destinations throughout the City
- Equitable infrastructure investments that prioritize underserved communities
- Safe and comfortable riding for people of all ages and abilities
- A significant mode shift from driving to bicycling and other forms of micromobility for trips around the City
- Creation of a robust active transportation community in San Mateo

To achieve the safety goal, the Bicycle Plan adopts the following objectives and metrics related to bike safety, also shown in Table 2:

- Install low-stress facilities and treatments that reduce conflicts between bicyclists and other roadways users including drivers, pedestrians, and users of micromobility systems (e.g., people on e-scooters and so on.).
- Provide safe, direct bicycle and micromobility connections across barriers, including intersections, freeways, and the Caltrain tracks.
- Ensure facilities are comfortable to use through increased lighting and regularly scheduled maintenance.

Table 2: Safety Related Metrics Used by the City of San Mateo

Metric	Target
Number of fatal and injury bicycle crashes	Using 2018 data as baseline, reduce the number of fatal and injury bicycle crashes by 20% two years after
Number of intersection improvements or barrier-crossing-enhancement projects completed	Three (3) projects per year
Roadway maintenance funding allocated for bicycle infrastructure (e.g., street sweeping, lighting etc.)	Five percent (5%) of annual roadway maintenance budget allocated specifically for bicycle infrastructure maintenance

Source: San Mateo Bicycle Master Plan (2020).

Citywide bicycle-involved crash data was analyzed to understand the crash patterns and trends. From 2013 to 2017, 205 bicycle-involved crashes were reported in the City, of which none resulted in fatalities and 184 resulted in injuries. The top six collision factors, which cumulatively accounted for over 70 percent of the bicycle crashes, are automobile right of way violation, other hazardous movement, improper turning, wrong side of road, traffic signals and signs, and unsafe speed.

Geographically, bicycle crashes are not evenly distributed throughout San Mateo. Four crash hotspots are identified in the Plan: San Mateo High School, Downtown San Mateo, Between Hillsdale and Hayward Park Caltrain Stations, and Junction between US 101 and Hillsdale Boulevard.

The Plan also proposes a future bicycle network for San Mateo with 101 miles of new facilities and 56 miles of existing facilities based on community and City staff input, site visits, evaluations of existing conditions, results from the crash analysis, and best practices in bicycle network planning and design. Because "Interested but Concerned" bicyclists - riders who have interest in bicycling but also have safety concerns when interacting with vehicular traffic - represent the largest potential for mode shift away from private vehicles in San Mateo, the proposed network aims to create a dense low-stress network suitable for this classification of riders. In addition, the Bicycle Master Plan also recommends the City to complete a series of spot improvements, including signal improvements, geometric changes, and supplementary pavement marking, to enhance safety and comfort at intersections when implementing the proposed bicycle network.

Relevance to the San Mateo LRSP:

- Establishes goal to reduce bicycle-related crashes, injuries, and fatalities to align with the LRSP.
- Identifies bicyclist safety-related concerns and hotspots for consideration in the LRSP.
- Proposes bicycle facilities and intersection improvements that would enhance safety and comfort of bicyclists for consideration and coordination with the LRSP.

Transit-Oriented Development (TOD) Pedestrian Access Plan

As part of the San Mateo Walks to Transit project[8], the City is currently developing a Transit-Oriented Development Pedestrian Access Plan that focuses on improving conditions for pedestrians around the City's three Caltrain stations (Downtown, Hillsdale, Hayward Park) and El Camino Real. The Plan will evaluate existing conditions, identify barriers and impediments to pedestrian access, and prioritize improvements necessary to enhance the pedestrian realm to provide a safe, comfortable, and connected path of travel.

The Community Engagement Summary reveals the following safety concerns highlighted by participants:

- Buckled and/or narrow sidewalk
- Limited safe crossing routes
- Short crossing times for pedestrians
- High vehicle speed

Top areas or locations of concern flagged by the community are (in descending order):

1. Intersection of 28th Avenue and El Camino Real
2. Hillsdale Caltrain Station at 28th Avenue, Derby, & Curiosity Way (access & crossing tracks)
3. Franklin Parkway and Baze Rd-Mena Drive
4. Hayward Park Caltrain Station (access & crossing tracks)
5. 17th Avenue and El Camino Real
6. Intersections along 2nd Avenue between San Mateo Drive and N Railroad Ave
7. El Camino Real between Tilton Avenue and E 5th Avenue
8. El Camino Real and 20th Avenue
9. Monte Diablo Ave between N Eldorado Street and Fremont Street
10. Tilton Ave between N B Street and S Fremont Street
11. Intersections along S Delaware Street between 1st Avenue and E 4th Avenue
12. S Eldorado Street at E 3rd Avenue and E 5th Avenue

Relevance to the San Mateo LRSP:

- Identifies community-perceived issues related to pedestrian access to transit for consideration in the LRSP.
- Provides examples and takeaways from community engagement which can inform the LRSP's community engagement activities and safety recommendations.

[8] As San Mateo Walks to Transit is an ongoing project, the information presented in this section is based on available online contents from:
San Mateo Walks to Transit https://www.cityofsanmateo.org/4566/San-Mateo-Walks-to-Transit
San Mateo Walks to Transit: Engagement Summary
https://www.cityofsanmateo.org/DocumentCenter/View/88853/Community-Engagement-Summary-Report?bidId=
Request for Proposals, Transit-Oriented Development Pedestrian Access Plan
https://www.cityofsanmateo.org/DocumentCenter/View/82893/Transit-Oriented-Development-Pedestrian-Access-Plan---Request-for-Proposal?bidId=

Strategies and Countermeasures

FHWA Proven Safety Countermeasures

FHWA's Proven Safety Countermeasures initiative (PSCi) is a collection of 28 countermeasures and strategies effective in reducing roadway fatalities and serious injuries. These treatments have been identified based on their quantitative safety benefits and consistency with national, state, and local safety goals. These strategies are designed for all road users and all road types. Each countermeasure addresses at least one of four safety focus areas:

- Speed management
- Intersections
- Roadway departures
- Pedestrians

Relevance to the San Mateo LRSP:

- Countermeasures are based on latest research and can make significant and measurable impacts on roadway safety for consideration in the City's toolbox.

FHWA Crash Modification Factors (CMF) Clearinghouse

A crash modification factor is used to compute the expected number of crashes after implementing a countermeasure on a road or intersection. The CMF Clearinghouse provides a searchable database of research-developed CMFs along with guidance and resources on using CMFs in road safety practice. Each CMF study is assigned a star quality rating to reflect the cumulative performance of the study conducted. The CMF Clearinghouse is updated on a regular basis to add recently developed and documented CMFs.

Relevance to the San Mateo LRSP:

- Provides a resource to identify applicable countermeasures and obtain expected effectiveness for consideration in the LRSP's priority project development and countermeasure toolbox.

FHWA Pedestrian and Bicycle Safety Guide and Countermeasure Selection System

Pedestrian Safety Guide and Countermeasure Selection System (PEDSAFE) and Bicycle Safety Guide and Countermeasure Selection System (BIKESAFE) are interactive tools maintained by FHWA. PEDSAFE and BIKESAFE provide practitioners with information and tools to review and select engineering and roadway infrastructure improvements to reduce pedestrian and bicyclist injuries and fatalities. The countermeasures section includes a comprehensive list of engineering, education, and enforcement countermeasures, as well as details of each, including its description, purpose, considerations, safety effect, and cost.

Relevance to the San Mateo LRSP:

- Establishes best practices to proactively identify locations for walking and bicycling safety improvements and involve citizens in the planning process.

NHTSA Countermeasures that Work

Countermeasures That Work: A Highway Safety Countermeasure Guide for State Highway Safety Offices is a basic reference published by the National Highway Traffic Safety Administration (NHTSA) to assist State Highway Safety Offices (SHSOs) in selecting effective, evidence-based countermeasures for ten traffic safety problem areas: Alcohol- and Drug-Impaired Driving; Seat Belts and Child Restraints; Speeding and Speed Management; Distracted Driving; Motorcycle Safety; Young Drivers; Older Drivers; Pedestrians; Bicycles; and Drowsy Driving. The guide describes major strategies and countermeasures that are relevant to SHSOs; summarizes strategy/countermeasure use, effectiveness, costs, and implementation time; and provides references to the most important research summaries and individual studies.

Relevance to the San Mateo LRSP:

- Identifies safety strategies that have the most evidence of effectiveness based on published research with a focus on targeting human factors for consideration in the LRSP.

Caltrans Local Road Safety Manual

The goal of *Local Road Safety: A Manual for California's Local Road Owners* is to maximize the safety benefits for local roadways by encouraging all local agencies to proactively identify and analyze their safety issues and to position themselves to compete effectively in Caltrans' statewide, data-driven call-for-projects. Due to the wide variety of local agencies, roadway types, and project types, currently, there is a vast range of safety documents and analysis tools. Without clear and simple safety guidance for locals, many agencies take a "reactive" approach to safety. This manual integrates the set of manuals designed specifically for rural road owners published by FHWA, along with Caltrans' ongoing research, to offer local agencies focused roadway safety information in one manual.

The manual provides an easy-to-use and comprehensive framework of the steps and analysis tools needed to identify locations with roadway safety issues and the appropriate countermeasures. It also includes key safety activities that every local agency should conduct regularly with the objective of reducing the number and severity of crashes within their jurisdiction.

Relevance to the San Mateo LRSP:

- Documents the state recommended approach to roadway safety management.
- Establishes state crash reduction factors for state-adopted countermeasures.
- Provides guidance that aligns with statewide HSIP grant funding opportunities.

Most Relevant Grant Programs

Safe Streets for All (SS4A) Grant Program

The Bipartisan Infrastructure Law (BIL) established the new Safe Streets and Roads for All (SS4A) discretionary program with $5 billion in appropriated funds over the next 5 years. The SS4A program funds regional, local, and Tribal initiatives through grants to prevent roadway deaths and serious injuries. It supports Secretary of Transportation Pete Buttigieg's National Roadway Safety Strategy and the Department's goal of zero deaths and serious injuries on our nation's roadways. For the fiscal year (FY) 2022, up to $1 billion of funds are available and are to be awarded to support planning, infrastructure, behavioral, and operational initiatives to prevent death and serious injury on roads and streets involving all roadway users, including

pedestrians; bicyclists; public transportation, personal conveyance, and micromobility users; motorists; and commercial vehicle operators.

The following activities are eligible for the SS4A program:

- Comprehensive safety action plans
- Planning, design, and development activities in support of an Action Plan (like an LRSP)
- Projects and strategies identified in an Action Plan (like an LRSP)

There are two types of SS4A grants: Action Plan Grants and Implementation Grants. To be eligible for an Action Plan Grant, a local agency must be requesting funds to develop or complete an Action Plan, which an LRSP is equivalent to if addressing federal requirements or requesting funds for activities that support or enhance an existing Action Plan. To pursue an Implementation Grant, a local agency must have a safety Action Plan in place and must be requesting funds to carry out projects and strategies identified in the Action Plan. When eligible for both, applicants may only apply for an Action Plan Grant or an Implementation Grant, not both.

The required and recommended elements of the Action Plan, summarized from the Self-Certification Eligibility Worksheet are shown in the section below. An applicant is eligible to apply for an Action Plan Grant that funds supplemental action plan activities, or an implementation Grant, only if the following two conditions are met:

- Should answer "yes" to Questions – 3,7,9
- Should answer "yes" to at least four of the six remaining questions – 1,2,4,5,6,8

Questions from SS4A Self-Certification Eligibility Worksheet

Question 1: Are both of the following true?

- Did a high-ranking official and/or governing body in the jurisdiction publicly commit to an eventual goal of zero roadway fatalities and serious injuries?
- Did the commitment include either setting a target date to reach zero, or setting one or more targets to achieve significant declines in roadway fatalities and serious injuries by a specific date?

Connection to the LRSP:

- If the LRSP is adopted by the City Council and contained a commitment consistent with the requirements, it will meet all requirements in Question 1.

Question 2: To develop the Action Plan, was a committee, task force, implementation group, or similar body established and charged with the Plan's development, implementation, and monitoring?

Connection to the LRSP:

- The LRSP will meet all requirements in Question 2.

Question 3: Does the Action Plan include the following?

- Analysis of existing conditions and historical crash trends
- Analysis of crash locations, severity, contributing factors, and crash types
- Analysis of systemic and specific safety needs (high risk road features, specific road user safety needs)
- A geospatial identification of higher risk locations

Connection to the LRSP:

- The LRSP will meet all requirements in Question 3.

Question 4: Did the Action Plan development include all of the following activities?

- Engagement with public and stakeholders
- Incorporating of information received from engagement
- Coordination that included inter- and intra-governmental cooperation and collaboration, as appropriate

Connection to the LRSP:

- The LRSP will meet all requirements in Question 4.

Question 5: Did the Action Plan development include all of the following?

- Considerations of equity
- Identification of underserved communities using data
- Equity analysis, and equity impact assessment of proposed projects and strategies

Connection to the LRSP:

- The LRSP will consider equity and identify underserved communities but will not perform a full equity impact assessment for proposed projects and strategies as currently scoped.

Question 6: Are both of the following true?

- Plan development included an assessment of current policies, plans, guidelines, and/or standards to identify opportunities to improve how processes prioritize safety
- Plan discusses implementation through the adoption of revised or new policies, guidelines, and/or standards

Connection to the LRSP:

- The LRSP will meet all requirements in Question 6.

Question 7: Does the Plan identify a comprehensive set of projects and strategies to address the safety problems in the Action Plan, time ranges when projects and strategies will be deployed, and explain project prioritization criteria?

Connection to the LRSP:

- The LRSP will meet all requirements in Question 7.

Question 8: Does the Plan include all of the following?

- A description of how progress will be measured over time that includes, at a minimum, outcome data
- The Plan is posted publicly online

Connection to the LRSP:

- The LRSP will meet all requirements in Question 8 if posted online when complete.

Question 9: Was the Plan finalized and/or last updated between 2017 and 2022?

Connection to the LRSP:

- The LRSP will meet the updated date requirement of the next cycle of SS4A.

Relevance to the San Mateo LRSP:

- One of the larger competitive grant funding opportunities of implementing safety strategies and improvements.
- Grants are not limited in the type of safety opportunity and can fund strategies ranging from capital improvements to hiring additional staff to support education or enforcement activities.
- Emphasizes the importance of equity and community engagements, which are the goals of the LRSP shared by the City.

Highway Safety Improvement Program (HSIP)

The Highway Safety Improvement Program (HSIP) is one of the core federal-aid programs, aiming to achieve a significant reduction in traffic fatalities and serious injuries on all public roads. California's share of HSIP funds is split between the State HSIP for state highways and the Local HSIP for local roads, in which the Local HSIP will be applicable to the LRSP.

In order to apply for the HSIP funds, Caltrans requires an agency to have completed their LRSP or an equivalent plan. The LRSP must be updated and validated at least every five years. A specific safety problem must be identified, and the proposed countermeasure(s) must substantially address the condition. Normally HSIP calls for projects are made at an interval of two years. The proposed projects are generally evaluated based on the Benefit/Cost (B/C) Ratios (BCRs).

Relevance to the San Mateo LRSP:

- Frequent (biennial) and larger grant funding opportunity for capital improvements.
- LRSP is required to be eligible for future cycles of HSIP funding.
- Requires data-driven identification of locations to identify locations with the greatest potential for safety improvement.

California Office of Traffic Safety (OTS) Grants

The California Office of Traffic Safety's mission is to effectively administer traffic safety grants that deliver innovative programs and eliminate traffic fatalities and injuries on California roadways. To be eligible, the project must use the funds for one of the ten traffic safety priority areas identified by NHTSA (as discussed in the NHTSA Countermeasures that Work section above). The project must provide traffic safety data that demonstrates how it will save lives on CA roadways, which would be consistent with the data-driven approach of the LRSP. In addition, the project must demonstrate the effect using performance measures with one-year of funding.

Relevance to the San Mateo LRSP:

Provides funding for education and enforcement strategies aimed at addressing human factors in roadway safety.

Summary

This memorandum summarizes planning documents, safety approaches and best practices, and funding opportunities (where applicable) from FHWA, NHTSA, USDOT, State of California, MTC, C/CAG, and City of San Mateo. As opposed to traditional road safety practices that attempt to modify human behavior and prevent crashes, the Safe System Approach focuses on modifying transportation system design to anticipate human errors and lessen impact forces to reduce crash severity and save lives. The systemic safety process from FHWA informs the benefits of evaluating crash risk across an entire roadway network rather than at certain locations. These safety policies and initiatives will help the City of San Mateo address documented crash trends and inform decision making related to the systemic safety process. Kittelson will consider national and state safety evaluation practices to implement an effective approach specific to the City of San Mateo.

Appendix C:

Community Engagement Summary Memorandum

KITTELSON & ASSOCIATES
155 Grand Avenue, Suite 505
Oakland, CA 94612
P 510.839.1742

Technical Memorandum

December 29, 2023 Project# 27516

To: Josh Pilachowski,
City of San Mateo
330 W. 20th Avenue
San Mateo, CA 94403

From: Kittelson & Associates, Inc.

CC: Bethany Lopez, Nikki Chan; City of San Mateo

RE: 27516 - San Mateo LRSP: Community Engagement Summary Memo DRAFT

INTRODUCTION

Kittelson & Associates, Inc. (Kittelson) prepared this memorandum to summarize the community outreach and engagement efforts conducted for the Local Roadway Safety Plan (LRSP). In February 2023, Kittelson developed a Community Outreach and Engagement Plan (Engagement Plan) which was informed by discussions with City's staff. The Engagement Plan outlined the following goals for community engagement.

- Communicate timely information to the public, stakeholders, and partners throughout the project
- Actively seek public and stakeholder input prior to key milestones during the project
- Provide meaningful public involvement opportunities
- Demonstrate how public and stakeholder input has influenced the LRSP's development
- Seek participation of potentially underserved, disadvantaged communities
- Ensure consistency with applicable state and federal laws and regulations, as well as local policies, goals, and objectives.

The planned engagement activities were tailored towards the unique character of the City of San Mateo and informed by discussions with City staff. Through these strategies, and in partnership with City staff, Kittelson engaged appropriate stakeholders and community groups to better understand safety issues, needs, and safety performance improvement opportunities within the City of San Mateo. Table 1 provides an overview of engagement strategies used and their reach.

Table 1: Engagement Activity and Reach Summary

Activity	Date	Reach
Project Webpage	May 2023 to present	1,115 views by 643 users
Project Flyers	August 2023	545 scans with 485 unique scans.
Business Cards	At Pop-up events	100 distributed
Interactive Map	June 2023 to August 2023	507 comments
Story Map	June 2023 to present	696 views
Pop-up events	• San Mateo Central Park 4th of July Event - 07/04/2023 • Farmers Market Event - 07/08/2023	211 Comments

PROJECT WEBPAGE

Kittelson collaborated closely with the City staff to create a project webpage (accessible at www.cityofsanmateo.org/SafetyPlan), which was hosted on the City's website. This dedicated webpage served as a one-stop shop for updates and information related to the LRSP. The primary goal was to actively engage the community, offering a platform for residents to learn about initial findings from the collision data and share their safety concerns and comments regarding walking, biking, driving, and using public transit in San Mateo using the interactive web map.

The webpage featured an array of valuable resources, including an overview of the LRSP, details on upcoming events, project updates, an interactive web map, a story map, and access to relevant documents. The information about the website was publicized using social media channels, business cards, and flyers.

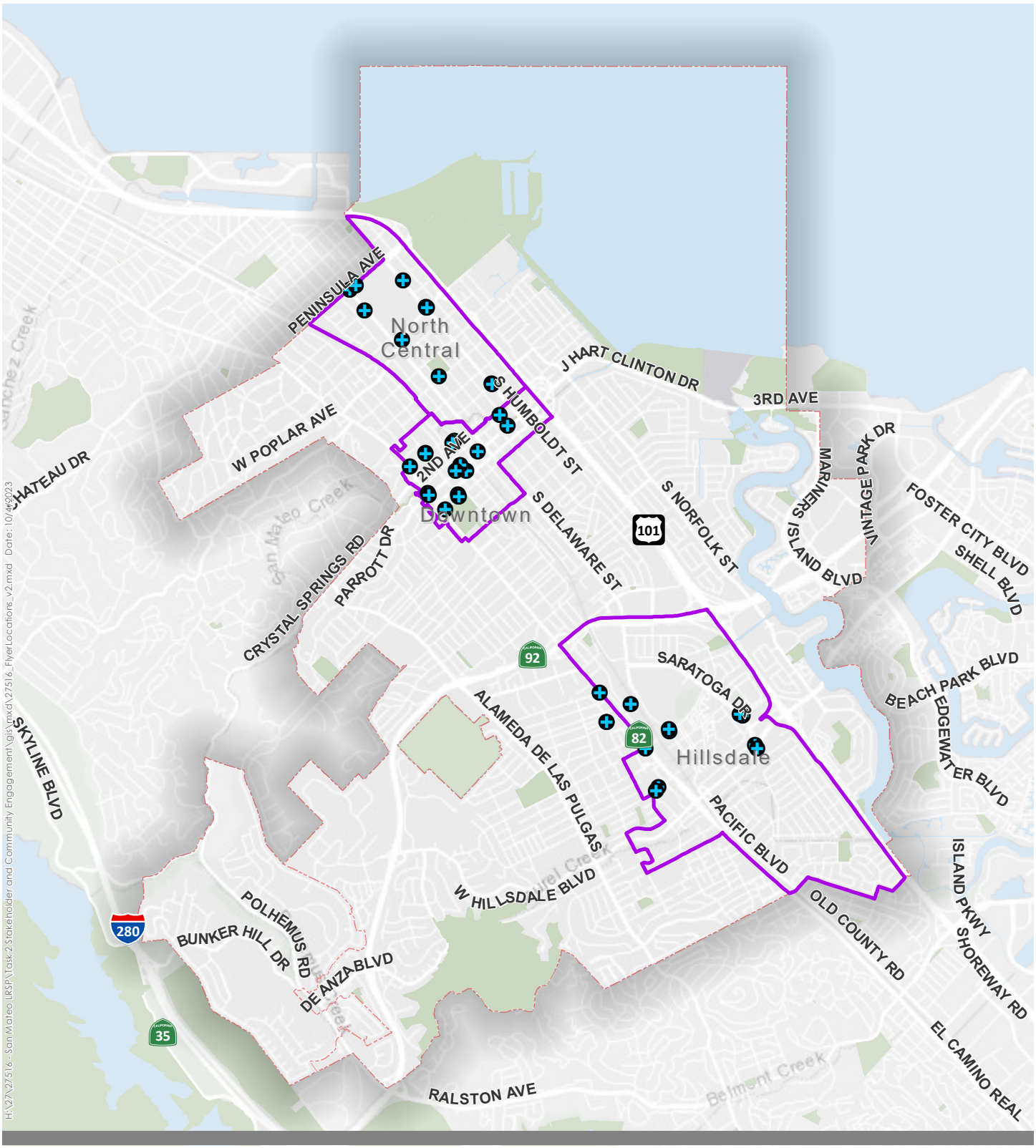
Story Map

Kittelson developed the story map and the link was provided in the project webpage. Kittelson completed data analysis of crash trends in the City and compiled examples of safety countermeasures (or improvements) that can address these crash related trends in the Story Map. A Story Map is an interactive web-based tool that provides information on the overview of LRSP, citywide crash patterns and trends, preliminary data analysis findings, countermeasures list, and a link directing users to interactive map. A total of X,XXX people viewed the story map as of October 31, 2023. An exported PDF of the story is included in Appendix A.

PROJECT FLYERS

As part of the Engagement Plan, Kittelson identified the greatest safety performance needs and historically underserved communities in the City that required focused community outreach - Downtown, Hillsdale and North Central. Kittelson placed 50 flyers, selecting spots in these neighborhoods strategically focusing on activity-centers, i.e., near the schools, transit stops, commercial and retail centers/hubs, community centers, and areas with high pedestrian movement (See Figure 1).

The flyers included crash information related to the neighborhood and information directing residents to project website. The flyers were translated in Spanish and Simplified Chinese language in addition to English. A sample flyer is shown in Figure 2 and all flyers are included in Appendix B.



LEGEND

- Flyer Location
- Focused Neighborhood
- City Boundary

0 0.5 1 Miles

Interactive Map Comments

KITTELSON & ASSOCIATES

TRAFFIC SAFETY IN DOWNTOWN SAN MATEO

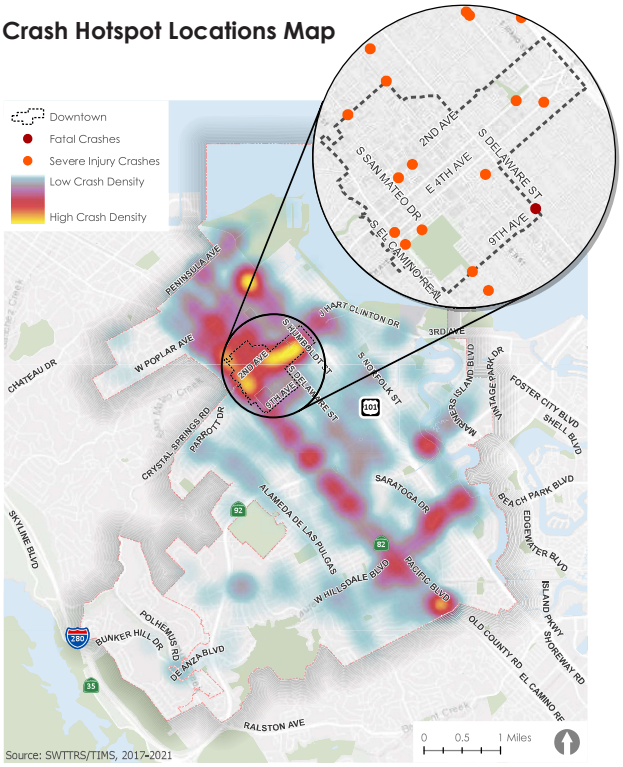
We want to hear from you to help make the City's streets safer!

Using your feedback and crash data, the City is working to recommend proven solutions to improve roadway safety.

Share your safety concerns and learn more online at www.cityofsanmateo.org/SafetyPlan
OR
Scan the QR Code with a smartphone camera

CRASH DATA IN DOWNTOWN SAN MATEO

Crash Hotspot Locations Map



MOST COMMON CAUSES OF CRASHES

18% (11%) Failure to yield to Pedestrian

16% (18%) Unsafe Speed

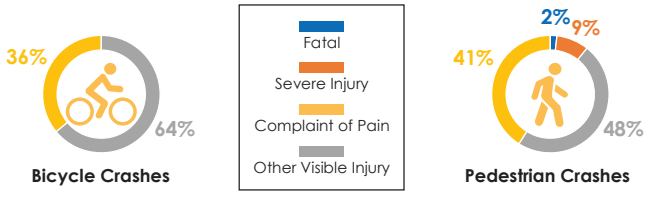
14% (18%) Failure to yield to Other Cars

14% (14%) Improper Turning

5% (8%) Driving Under Influence

Downtown San Mateo (Citywide)

BICYCLE AND PEDESTRIAN CRASHES



FOR QUESTIONS, CONTACT PUBLIC WORKS AT (650) 522-7300 OR PUBLICWORKS@CITYOFSANMATEO.ORG.

BUSINESS CARDS

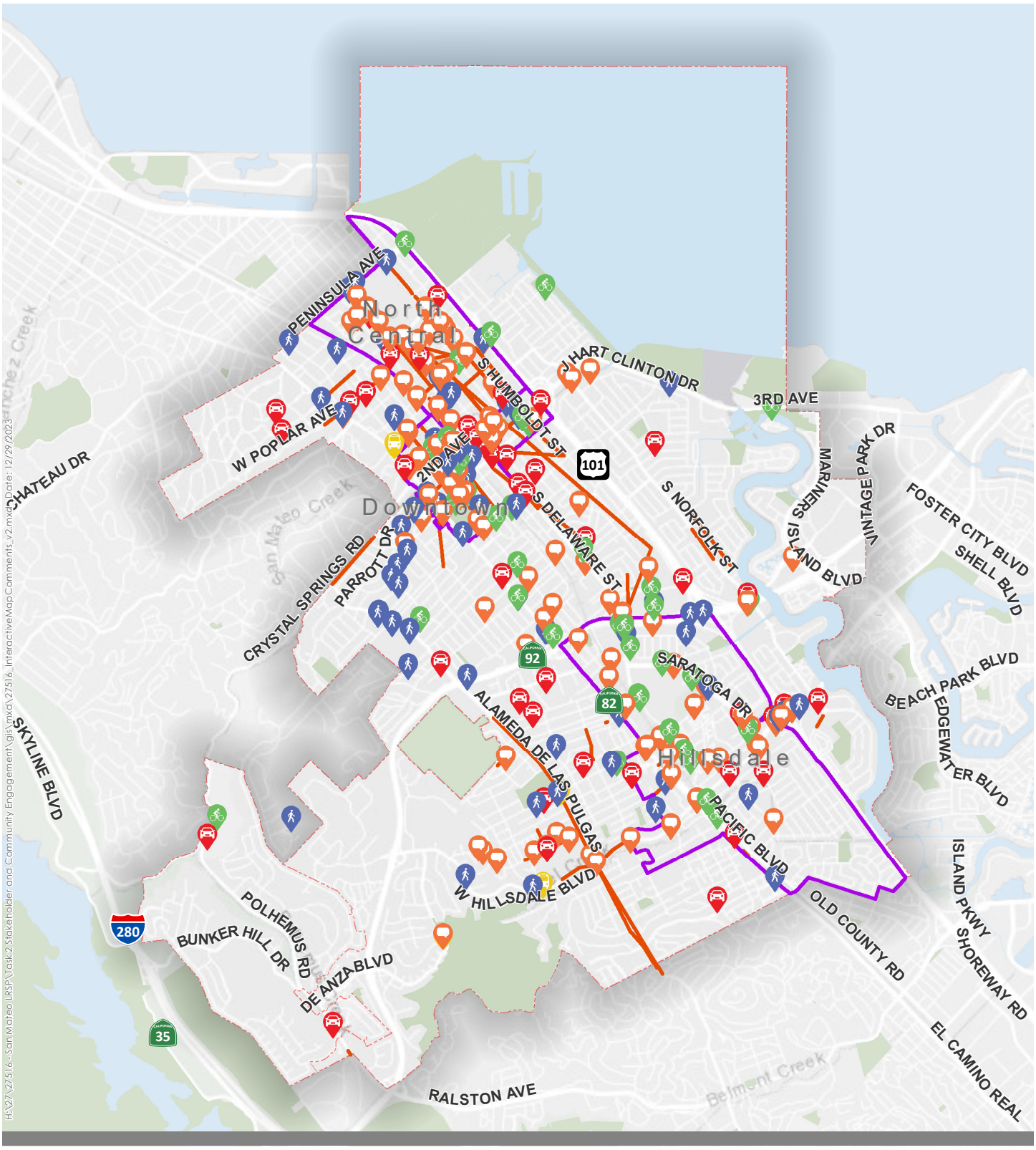
Kittelson developed easy-to-carry business cards for the participants that attended the pop-up events. The business cards provided a link and QR code to the project webpage. The business cards were developed in two languages, English and Spanish (See Figure 3). A total of 100 business cards were distributed at the pop-up events.

Figure 3: Business Card (in English and Spanish)

INTERACTIVE MAP

The interactive map was utilized to get location-specific feedback from communities throughout the City. A total of 507 comments were received between early June 2023 through September 2023 after Labor Day, September 8, 2023. Of the total comments, 57 percent (289) of the comments were in focused neighborhoods. Duplicate comments were removed during the review. Figure 4 shows the location of comments by user defined type. All the comments are shown in Appendix C.

Most of these comments include speeding cars near schools and residential areas, intersections with limited access for vulnerable users, inadequate pedestrian crossings, poor visibility, and maintenance issues. Additionally, some comments are related to traffic congestion, illegal parking, and inadequate infrastructure for bikes. The residents suggested improvements at certain locations such as implementing speed bumps, adding stop signs or traffic lights, improving crosswalks, enhancing bike lanes, increasing enforcement, and narrowing or removal of traffic lanes.



H:\27\27516 - San Mateo LRSP\Task 2 Stakeholder and Community Engagement\gis\mxd\27516_InteractiveMapComments_v2.mxd Date: 12/29/2023

LEGEND

- City Boundary
- Focused Neighborhood
- Bicycling
- Walking
- Driving
- Transit
- Other
- Roadway Segment Comment

0 0.5 1 Miles

Interactive Map Comments

KITTELSON & ASSOCIATES

Kittelson reviewed and categorized the interactive map comments using the Safe System Approach by Federal Highway Administration (FHWA) (See Figure 5). Unlike traditional road safety practices that focus on modifying human behavior, the Safe System Approach focuses on modifying transportation system design to anticipate human errors and build redundancy in the system to reduce fatalities and severe injury crashes. It acknowledges the vulnerability of the human body and promotes creating a forgiving roadside environment that requires shared responsibility among stakeholders to design and operate a safe transportation system.

The comments were categorized using three out of five elements of the Safe System Approach.

Figure 5 FHWA's Safe System Approach

- **Safer People:** The major concern highlighted by the community is people speeding on roadways and failing to yield to pedestrians and bicyclists. Additionally, there were comments regarding people running red lights, parking in the bike lane, illegal parking near the intersections and red curbs. Some of these comments were coupled with poor connectivity for active transportation users and roadway design.
- **Safer Roads and Safer Speeds:** The community raised concerns about the intersection and roadway design. Concerns include obstruction of driver's view of pedestrian and bicyclist at intersections and driveways. A few intersections lack proper traffic controls to allow vulnerable users to safely cross the streets. Some comments highlighted the presence of longer crosswalks and missing sidewalks, which made walking experience stressful at certain locations. There were comments regarding bike lane connectivity, especially on major roadways. Residents identified roadways that have speeding related concerns which does not promote a safe environment for pedestrians and bicyclists.

Based on the interactive map comments, roadway segments and intersections with highest number of comments are listed in Table 2 and Table 3, respectively.

Table 2 Roadways with Highest Number of Comments

#	Roadway Name	Survey Limit
1	El Camino Real	Baywood Avenue to 12th Avenue
2	El Camino Real	22nd Avenue to Hillsdale Blvd
3	Delaware Street	Peninsula Avenue to Sunnybrae Blvd
4	Hillsdale Boulevard	Glendora Drive to Norfolk Street
5	Claremont Street	Peninsula Avenue to 10th Avenue
6	31st Avenue/Franklin Parkway	28th Avenue to Saratoga Drive
7	Humboldt Street	Peninsula Avenue to 10th Avenue
8	Alameda de Las Pulgas	Crystal Spring Road to 42nd Avenue
9	San Mateo Drive	Peninsula Avenue to 5th Avenue
10	Saratoga Drive	Delaware Street to Franklin Parkway
11	3rd Avenue	Dartmouth Road to Idaho Street

Table 3 Intersections with Highest Number of Comments

#	Intersection Name
1	Claremont Street and Tilton Avenue
2	Claremont Street and 1st Avenue
3	Alameda De Las Pulgas and Hillsdale Boulevard
4	Delaware Street and State Street
5	Hillsdale Boulevard and US 101 Interchange
6	El Dorado Street and 3rd Avenue
7	Ellsworth Avenue and 2nd Avenue
8	San Mateo Drive and 2nd Avenue
9	El Camino Real and 31st Avenue
10	31st Avenue and Baze Road
11	1st Avenue and Main Street
12	San Mateo Drive and Tilton Avenue
13	Hillsdale Boulevard and Saratoga Drive
14	Fashion Island Blvd and Norfolk Street

POP-UP EVENTS

Kittelson participated in two pop-up events along with the Complete Streets Plan project team that were organized by the City (shown in Figure 6). The pop-up events were held in early July 2023, with the first one at San Mateo Central Park on 4th of July and the second at Farmers Market on July 8, 2023. Kittelson met with over 200 people at both the pop-up events.

Figure 6: Pop-up Events in July 2023

The key themes from the residents' comments were:

- Red Light Running and Speeding:
  - Red light running at intersections: 12th Avenue & El Camino Real, 20th Avenue & US 92, and El Camino Real corridor.
  - Speeding on several streets in the City, including El Camino Real, Tilton Avenue, Palm Avenue, and 20th Avenue.
- Pedestrian Safety:

    - Need for pedestrian crossing signals, signal heads, additional crosswalks, pedestrian related infrastructure improvements near schools and in higher pedestrian activity areas.
- Bike Safety:
    - Lack of bike lane presence, bike infrastructure, and bicycle lane connectivity.
- School Zones:
    - Speeding in school zones, safety concerns at school pick-up/drop-off areas.
    - Suggestions included reducing pedestrian crossing lengths by adding curb extensions at intersections.
- Intersection Design:
    - Need for stop signs and better visibility.
- Traffic Calming Measures:
    - Need for more speed humps and speed cushions on various streets, including Alameda De Las Pulgas and Delaware Street.
- Pavement Conditions:
    - Presence of potholes on various streets, including Poplar Avenue, El Camino Real, and Pacific Street.

NEXT STEPS

The City of San Mateo LRSP will be a data-driven and community-informed safety plan. The community engagement activities were an important part of the decision-making process, and the priority projects, and the LRSP will reflect the views of the wider community in the City. The following highlight some of the key areas where community participation and feedback will be used in developing or informing the LRSP:

- Identifying areas of concern with respect to traffic safety performance that do not have historic crash data – getting community feedback on near misses, high travel speeds in residential/commercial neighborhoods, and any other safety performance concerns in the City.
- Gathering community feedback on the emphasis areas identified from the crash data, trends, and crash patterns throughout the city.

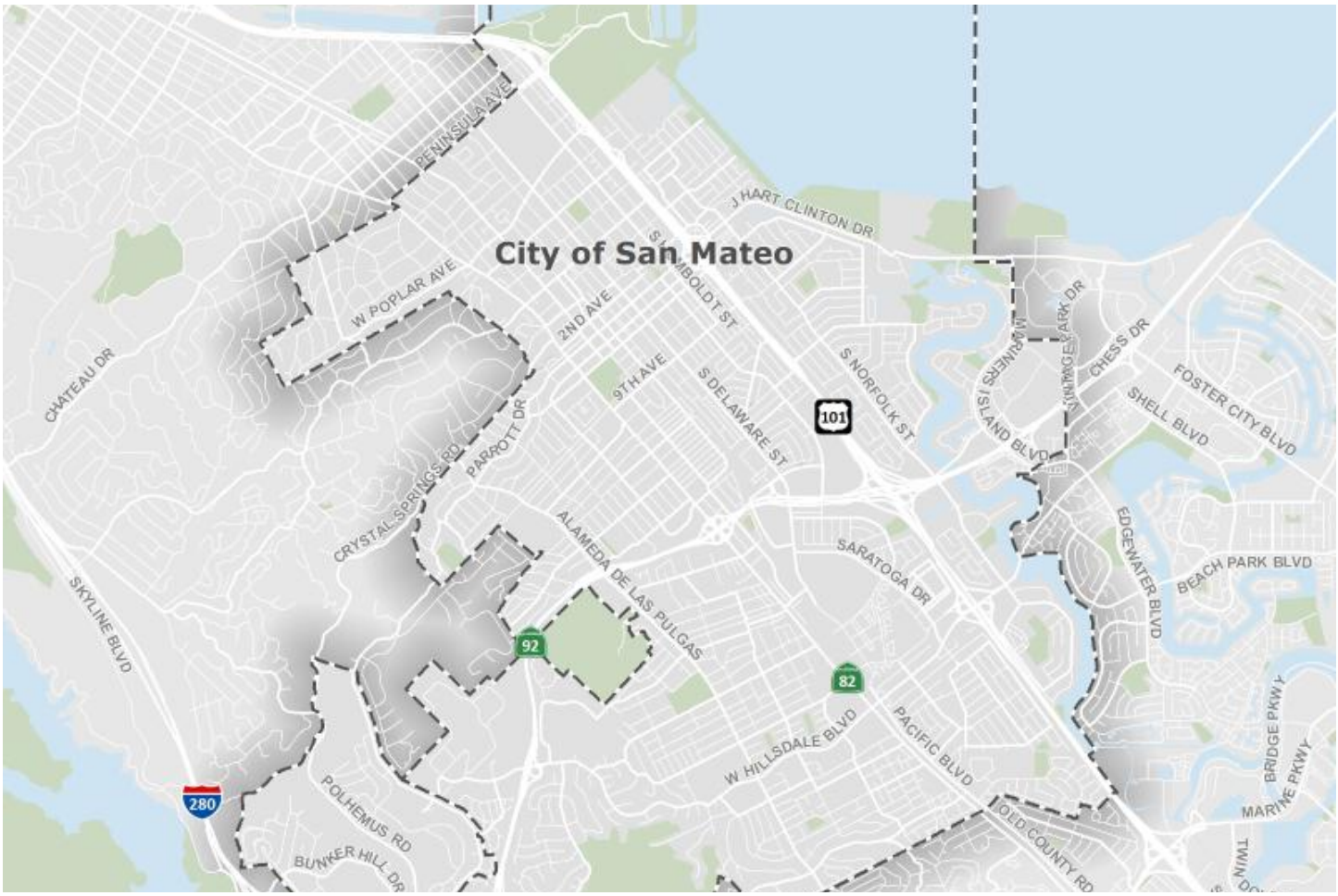
This community feedback will be accounted for in the identification of priority locations and countermeasures, and in shaping the goals, mission statement, actions, and policies that the City will adopt as part of this LRSP.

Appendix A – Storymap Webpage

City of San Mateo Local Roadway Safety Plan

About San Mateo's LRSP

The City of San Mateo is developing a Local Roadway Safety Plan (LRSP) to better understand traffic safety issues, establish safety goals and identify priority locations for potential safety improvements across the City.



Why are we developing a LRSP

Funded by a Caltrans grant, the LRSP provides an opportunity for the local jurisdictions to evaluate roadway safety performance through data analysis and identify areas that need improvement. The plan will provide a range of strategies including engineering, enforcement, education, equity, and emergency services to address safety concerns.

The City's LRSP will outline key crash patterns, trends, priority locations for potential projects, and recommendations for developing an on-going local road safety management process for the City.

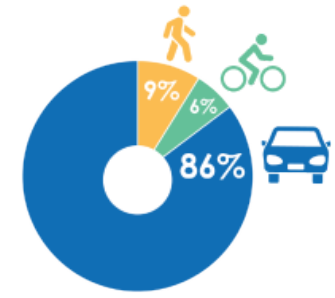
Call to Action

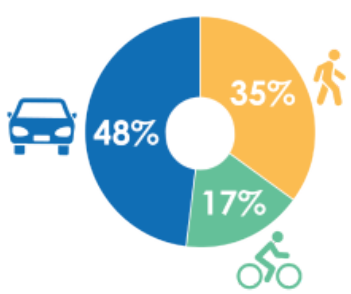
Every year between 2017 and 2021, one individual lost their life, and several others were seriously injured in traffic crashes in the City of San Mateo.

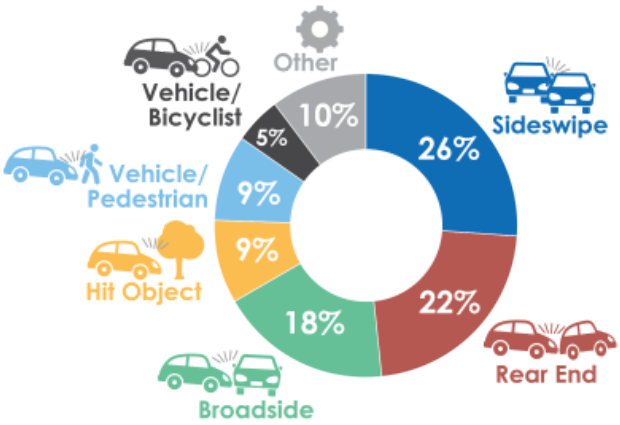
We can do better. Your input on our interactive map is part of the LRSP. Scroll down to learn more about trends in crash data in the City.

Crash Patterns and Trends

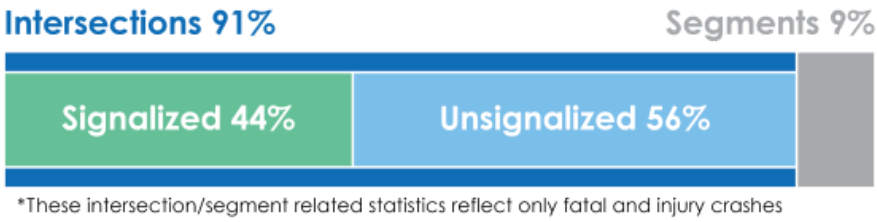
The following is a summary of key findings from all reported crashes between January 1, 2017 and December 31, 2021:





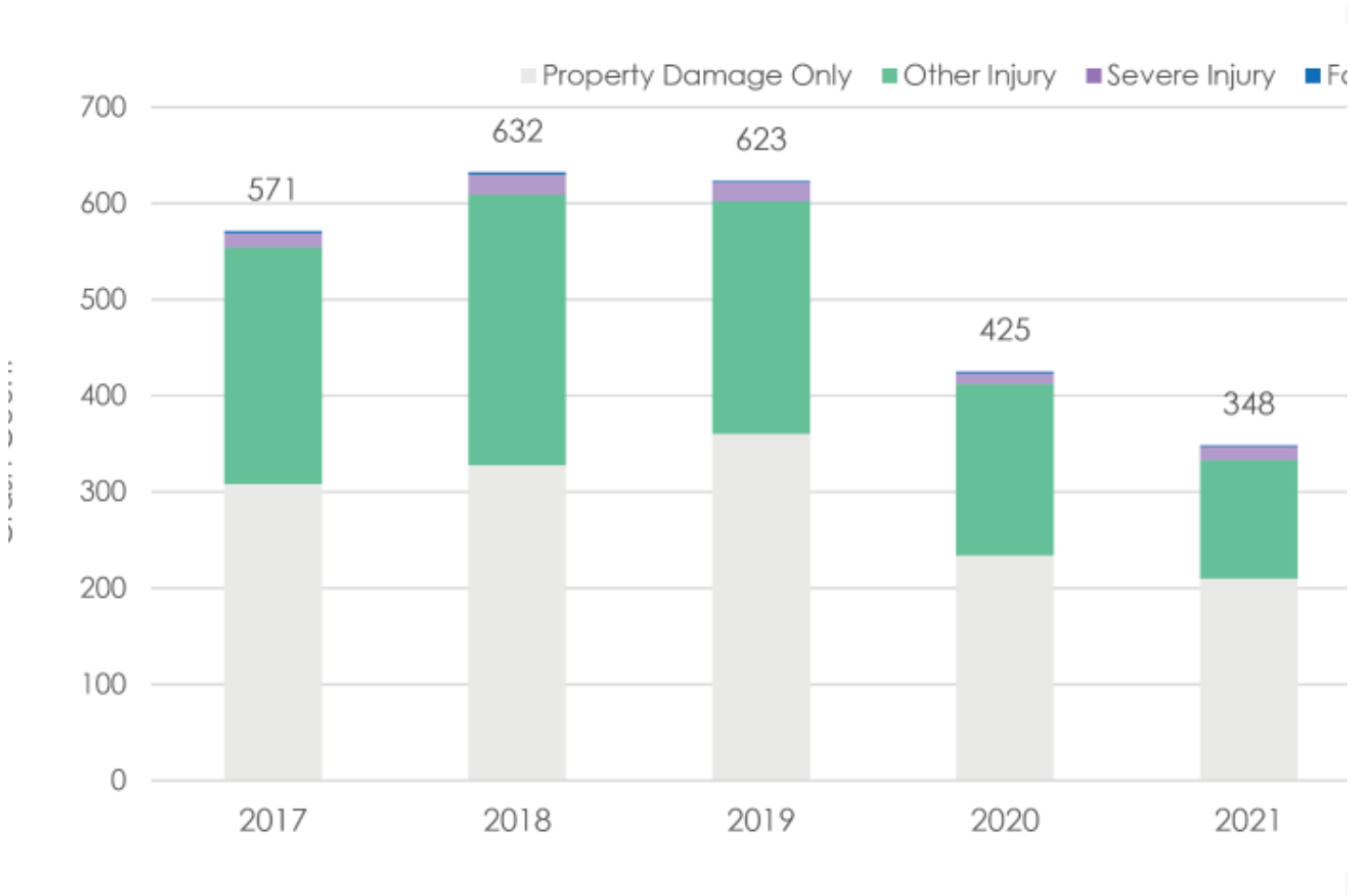


Top 3 Primary Crash Factors are "Improper turning", "Unsafe speed", and "Driving or bicycling under the influence"



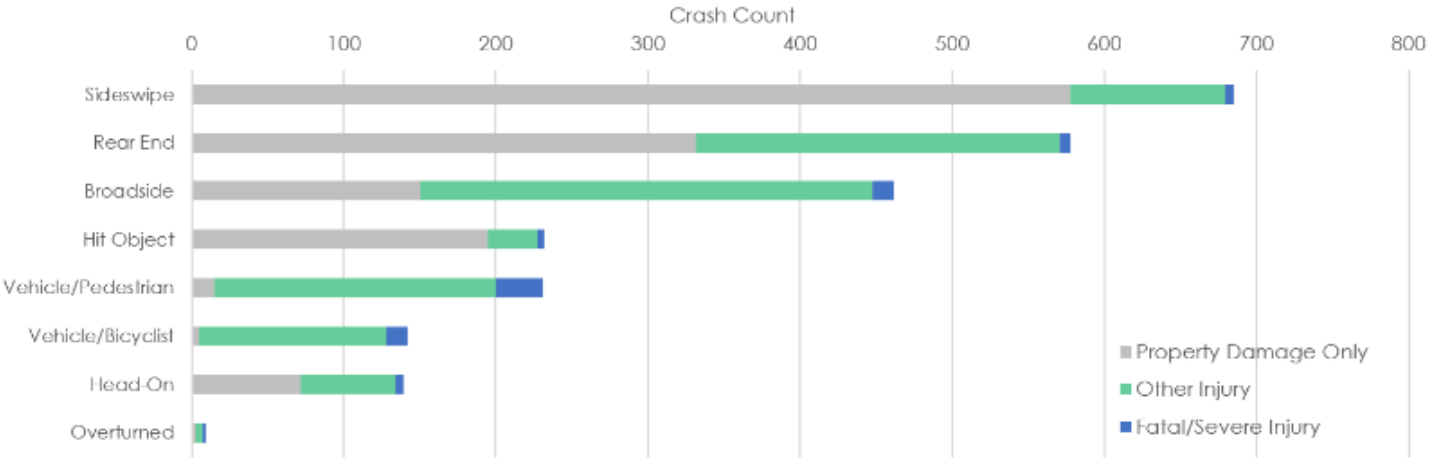
*These intersection/segment related statistics reflect only fatal and injury crashes

Preliminary Data Analysis Findings



Annual Reported Crashes

The total number of crashes per year increased every year through 2019, with a steep decline in 2020 due to the COVID-19 pandemic. The City's trend was consistent with national trends with fewer total crashes on City's roadways in 2020 and 2021, but the proportion of fatal and severe injury crashes was higher compared to prior years.



Crash Type and Severity

The crash types that happen most frequently are sideswipe (28%), rear-end (23%), and broadside or right-angle (19%). However, crashes involving vehicle-pedestrian (37%), vehicle-bicyclist (17%) and broadside or right-angle crashes (17%) are associated with the most fatalities and severe injuries.

Pedestrian and Bicyclist Crashes

Vulnerable road users (VRUs), including pedestrians and bicyclists, are at a high risk of getting injured in any vehicular crash. They account for 75% of all fatal crashes and 49% of all severe injury crashes in the city.

Improvement Types

This section presents examples of safety treatments that can help address crash trends identified in the City. The full list of treatments will be included in the LRSP document.

Pedestrian Related Treatments

Pedestrian-related treatments were identified as one of the priority countermeasures for the City because pedestrian-involved crashes were overrepresented among fatal and serious injury crashes in the City. Pedestrian-involved crashes make up nearly 36% of all fatal and severe injury crashes but only 9% of total crashes.

The following countermeasures were identified for potential application in San Mateo:

Install Sidewalk/Pathway

Crosswalk Visibility Enhancements

Leading Pedestrian Interval

No Turn On Red

Pedestrian Countdown Signal Heads

Rectangular Rapid Flashing Beacons (RRFBs)

Pedestrian Hybrid Beacons (PHBs)

Bicycle Related Treatments

Bicyclist-involved crashes are 6% of total crashes but account for 19% of the total fatal and severe injury crashes in the City.

The following countermeasures were identified in bicycle related treatments:

Install Bike Lanes

Install Advanced Stop Bar Before Crosswalk (Bike Boxes)

Extend Bike Lanes Through Intersection

Signalized intersection Treatments

Crashes within the influence area of a signalized intersection represent 30% of total crashes and 44% of fatal and severe injury crashes in the City of San Mateo. Reducing conflicts with non-motorists, right angle, and rear-end crashes, crashes during dusk/dawn and dark without street lighting have been identified as priority areas for signalized intersection treatments in San Mateo.

The following treatments were identified for signalized intersections in the City of San Mateo:

Install Intersection Lighting

Improve Signal Hardware

Unsignalized Intersection Treatments

Crashes within the influence area of an unsignalized intersection represent 65% of total crashes and 54% of fatal and severe injury crashes in the City of San Mateo. From the crash patterns analysis for the City of San Mateo, reducing conflicts with non-motorists, improper turning, rear-end crashes, unsafe speed, crashes during dusk/dawn and dark without street lighting are identified as priority areas for unsignalized intersections' treatment.

The following treatments were identified for unsignalized intersections in the City of San Mateo:

Install Roundabouts

Install or Upgrade Intersection Signage and/or Pavement Markings

Improve Sight Distance to Intersection (Clear Sight Triangles)

Roadway Segment Treatments

Roadway segment related crashes account for 7% of the total and fatal and severe injury crashes in the City of San Mateo. With the crash patterns analysis, increasing

driver awareness and speed management have been identified as potential emphasis areas to reduce roadway segment related crashes.

The following two countermeasure categories were identified for the City of San Mateo:

Traffic Calming (Speed Hump)

How Can You Contribute?

Does this information align with your experience on San Mateo's streets? We would like to hear about your priority issues, locations, and near miss experiences. Let us know if you have any comments or suggestions about

roadway safety in the City of San Mateo by clicking the link below.

https://maps.kittelson.com/SanMateoLRSP

Appendix B: Flyers

TRAFFIC SAFETY IN DOWNTOWN SAN MATEO

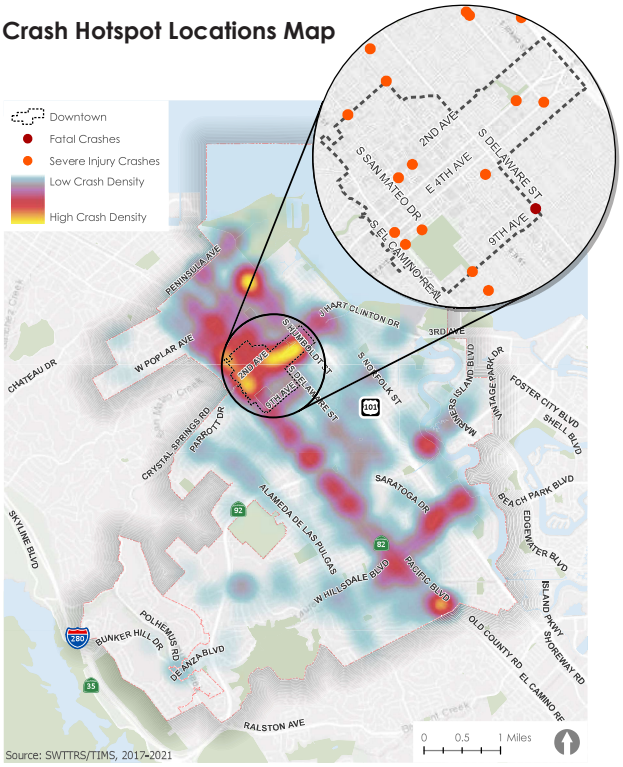
We want to hear from you to help make the City's streets safer!

Using your feedback and crash data, the City is working to recommend proven solutions to improve roadway safety.

Share your safety concerns and learn more online at www.cityofsanmateo.org/SafetyPlan
OR
Scan the QR Code with a smartphone camera

CRASH DATA IN DOWNTOWN SAN MATEO

Crash Hotspot Locations Map



MOST COMMON CAUSES OF CRASHES

18% (11%) Failure to yield to Pedestrian

16% (18%) Unsafe Speed

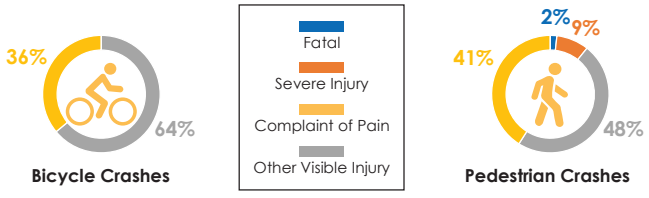
14% (18%) Failure to yield to Other Cars

14% (14%) Improper Turning

5% (8%) Driving Under Influence

Downtown San Mateo (Citywide)

BICYCLE AND PEDESTRIAN CRASHES



FOR QUESTIONS, CONTACT PUBLIC WORKS AT (650) 522-7300 OR PUBLICWORKS@CITYOFSANMATEO.ORG.

SEGURIDAD VIAL EN DOWNTOWN SAN MATEO

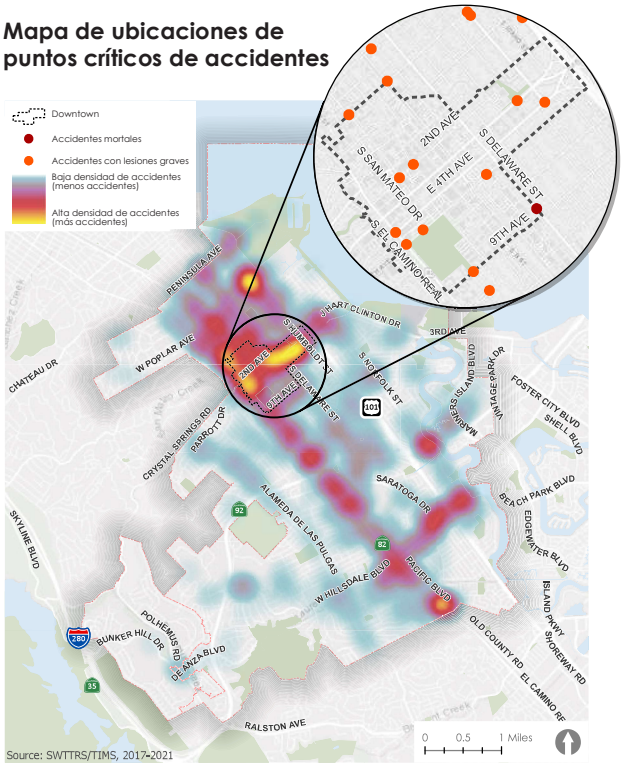
¡Queremos escuchar tu opinión para ayudar a hacer las calles de la ciudad más seguras!

Usando tus comentarios junto con los datos de accidentes, la ciudad está trabajando para recomendar soluciones comprobadas para mejorar la seguridad en las carreteras.

Comparte tus preocupaciones de seguridad y obtén más información en línea en www.cityofsanmateo.org/SafetyPlan O escanea el código QR con la cámara de tu teléfono inteligente

DATOS DE ACCIDENTES EN DOWNTOWN SAN MATEO

Mapa de ubicaciones de puntos críticos de accidentes



CAUSAS MÁS COMUNES DE CHOQUES

18% (11%) Falta de ceder el paso a peatones

16% (18%) Velocidad insegura

14% (14%) Giro inadecuado

14% (18%) Falta de ceder el paso a otros vehículos

5% (8%) Conducir bajo la influencia

Downtown San Mateo (En toda la ciudad)

ACCIDENTES DE BICICLETAS Y PEATONES

SI TIENES PREGUNTAS, COMUNÍCATE CON OBRAS PÚBLICAS AL (650) 522-7300 O PUBLICWORKS@CITYOFSANMATEO.ORG

交通安全
市中心

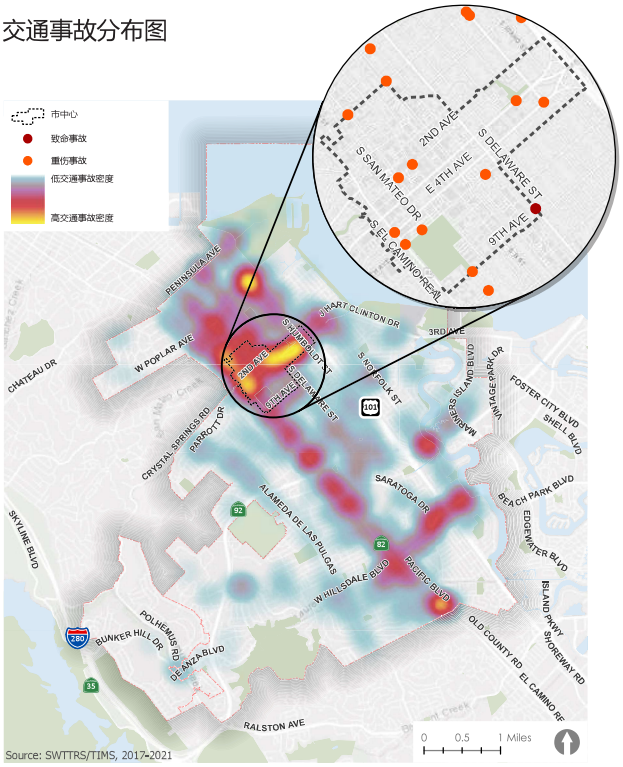
我们希望收到您的建议，以确保城市街道的安全！

使用您的建议和交通事故数据，我们将努力研发经过验证的解决方案，以提高交通道路的安全。

更多咨询请至
www.cityofsanmateo.org/SafetyPlan
或使用手机扫
QR Code
来分享您的宝贵意见。

交通事故数据 市中心

交通事故分布图



常见事故原因

18% (11%)
未礼让行人

16% (18%)
不安全车速

14% (18%)
未让道而行

14% (14%)
违规转弯

5% (8%)
酒驾

San Mateo 市中心 (全市)

脚踏车和行人交通事故

相关资讯和问题请来电至 (650) 522-7300 或发送电子邮件至 PUBLICWORKS@CITYOFSANMATEO.ORG. 工务局关心您。

TRAFFIC SAFETY IN NORTH CENTRAL

We want to hear from you to help make the City's streets safer!

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Share your safety concerns
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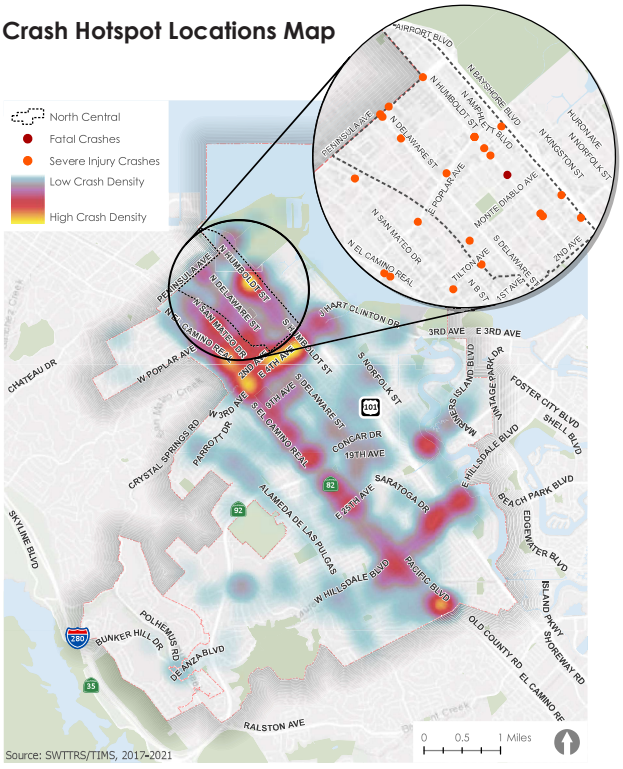
Scan the QR Code
with a smartphone camera

CRASH DATA IN NORTH CENTRAL

Crash Hotspot Locations Map



MOST COMMON CAUSES OF CRASHES

24% (18%) Failure to yield to Other Cars

14% (11%) Failure to yield to Pedestrian

13% (14%) Improper Turning

12% (8%) Driving Under Influence

11% (18%) Unsafe Speed

North Central (Citywide)

BICYCLE AND PEDESTRIAN CRASHES

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SEGURIDAD VIAL EN NORTH CENTRAL

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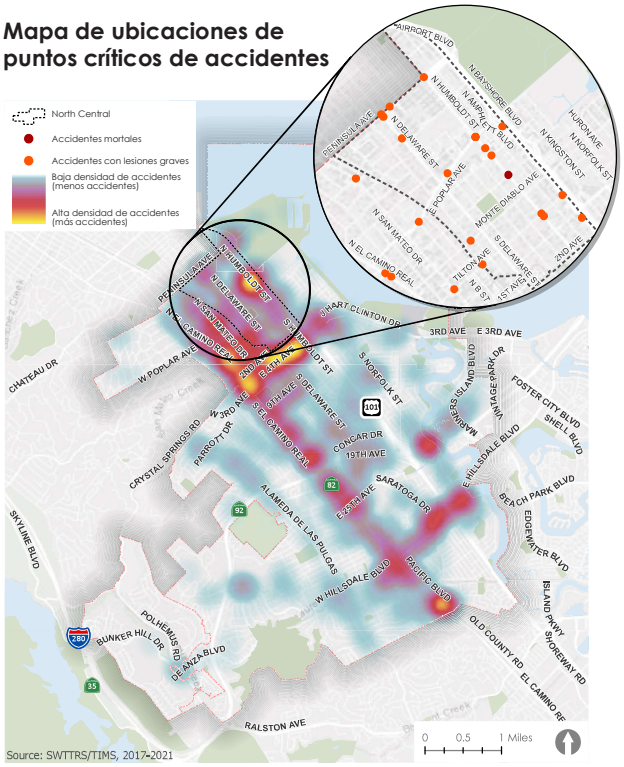
DATOS DE ACCIDENTES EN NORTH CENTRAL

Mapa de ubicaciones de puntos críticos de accidentes



CAUSAS MÁS COMUNES DE CHOQUES

24% (18%)
Falta de ceder el paso a otros vehículos

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Falta de ceder el paso a peatones

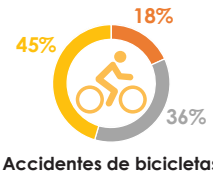
13% (14%)
Giro inadecuado

12% (8%)
Conducir bajo la influencia

11% (18%)
Velocidad insegura

North Central (En toda la ciudad)

ACCIDENTES DE BICICLETAS Y PEATONES



Accidentes de bicicletas

Lesiones graves
Quejas de dolor
Otras lesiones visibles

Accidentes de peatones

SI TIENES PREGUNTAS, COMUNÍCATE CON OBRAS PÚBLICAS AL (650) 522-7300 O PUBLICWORKS@CITYOFSANMATEO.ORG

交通安全
中北部

我们希望收到您的建议，以确保城市街道的安全！

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或使用手机扫
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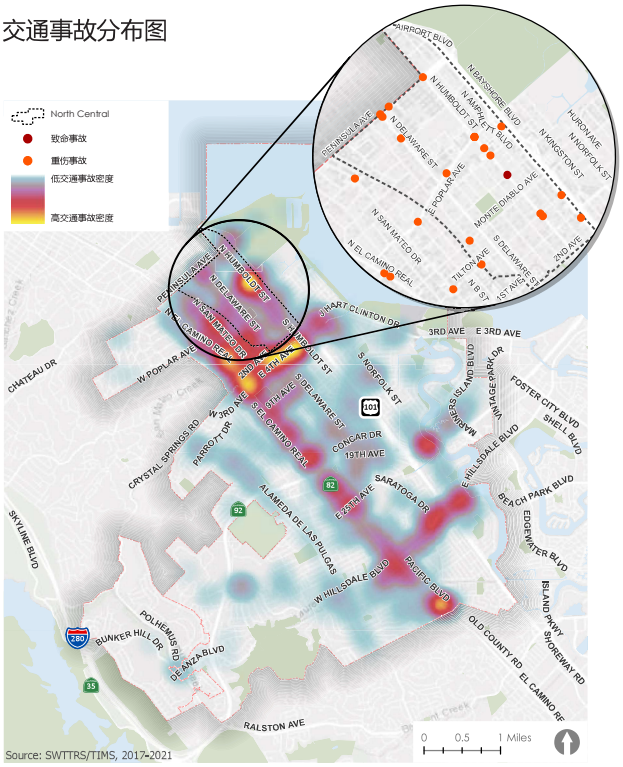
交通事故数据 中北部

交通事故分布图



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违规转弯

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酒驾

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不安全车速

North Central (全市)

脚踏车和行人交通事故

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TRAFFIC SAFETY IN HILLSDALE

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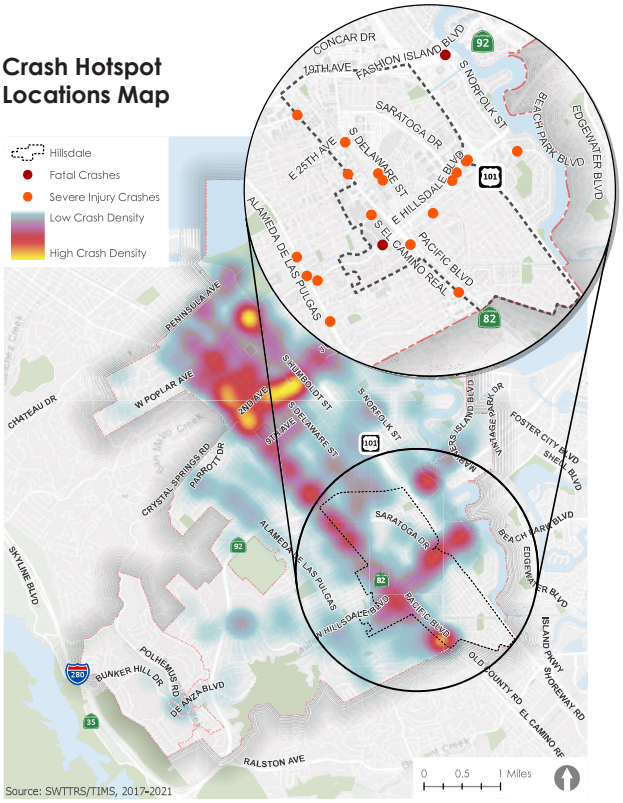
CRASH DATA IN HILLSDALE

Crash Hotspot Locations Map



MOST COMMON CAUSES OF CRASHES

25% (18%) Unsafe Speed

14% (18%) Failure to yield to Other Cars

11% (14%) Improper Turning

10% (11%) Failure to yield to Pedestrian

6% (8%) Driving Under Influence

Hillsdale (Citywide)

BICYCLE AND PEDESTRIAN CRASHES

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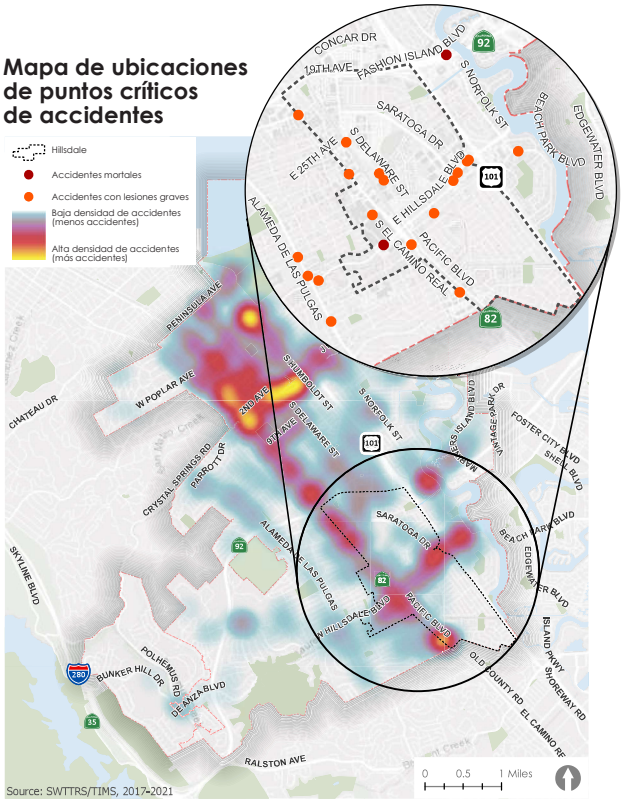
DATOS DE ACCIDENTES EN HILLSDALE

Mapa de ubicaciones de puntos críticos de accidentes



CAUSAS MÁS COMUNES DE CHOQUES

- **25% (18%)** Velocidad insegura
- **14% (18%)** Falta de ceder el paso a otros vehículos
- **11% (14%)** Giro inadecuado
- **10% (11%)** Falta de ceder el paso a peatones
- **6% (8%)** Conducir bajo la influencia

Hillsdale (En toda la ciudad)

ACCIDENTES DE BICICLETAS Y PEATONES

SI TIENES PREGUNTAS, COMUNÍCATE CON OBRAS PÚBLICAS AL (650) 522-7300 O PUBLICWORKS@CITYOFSANMATEO.ORG

交通安全
希尔斯代尔

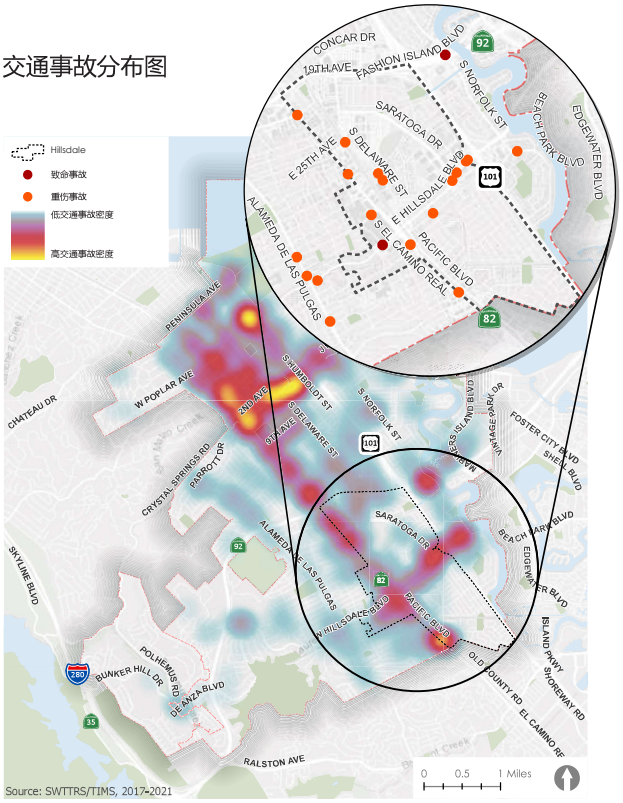
我们希望收到您的建议，以确保城市街道的安全！

使用您的建议和交通事故数据，我们将努力研发经过验证的解决方案，以提高交通道路的安全。

更多咨询请至
www.cityofsanmateo.org/SafetyPlan
或使用手机扫
QR Code
来分享您的宝贵意见。

交通事故数据 希尔斯代尔

交通事故分布图



常见事故原因

25% (18%)
不安全车速

14% (18%)
未让道而行

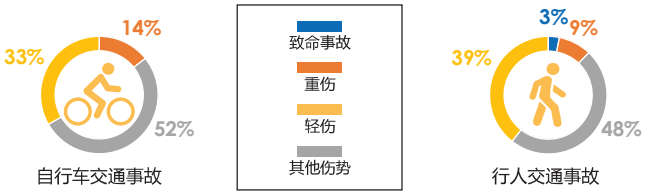
11% (14%)
违规转弯

10% (11%)
未礼让行人

6% (8%)
酒驾

Hillsdale (全市)

脚踏车和行人交通事故



相关资讯和问题请来电至 (650) 522-7300 或发送电子邮件至 PUBLICWORKS@CITYOFSANMATEO.ORG. 工务局关心您。

Appendix C: Interactive Map Comments

ID	Parent ID	Body	Type	Likes
146765		20th ave from Alameda to El Camino cars are going up to 35-40mph especially late afternoon to early evening this is a daily occurrence. There is a high school, and a preschool as well as other businesses. The cars pay no attention to pedestrians trying to cross the stree or pull out of their driveways	Driving	5
146878		Now that the lighter traffic due to the pandemic is returning to pre-pandemic congestion, the roads leading to and at the intersection of South Grant and 19th Avenue by the YMCA is a bottleneck problem. With the current developments in the area, more traffic is a problem all day, and especially at commute times at the start and after 3pm/end of the work day, with many cars on these particular roads and intersection. Motorists block the intersection at high traffic times and cars back up on the connecting roads. Nearby Fiesta Gardens school children/families drop-off and pick-up should also be considered. Seniors, those with mobility problems, and pedestrians need consideration for enough time to walk at those crosswalks. Impatient and aggressive drivers are a concern. Safety is a concern. That intersection is not setup to handle that amount of traffic at high peak times of the day. Thank you to the rep at San Mateo's July 4th event for informing me of this feedback opportunity; I was not aware of it.		5
146888		I have almost been struck by cars going from Sunnybrae to Folkstone at speed now that there is no stop sign on Sunnybrae at Folkstone.	Walking	0
146889		It is now impossible to legally enter my driveway from Folkstone when heading towards Sunnybrae due to changes to the intersection.	Driving	0
146890		When I called in 15 years ago I was told that our street is in the worst condition. I have not seen any work done other then fixing pothole. Is there any plan that Hemlock Avenue will get fized?	Driving	0
146912		Cars are speeding down the hill on Alameda here, creating a dangerous condition for the many kids walking and running among the high schools. Please consider a speed hump at the bottom of the hill on Alameda just before Alta. There is also not a crosswalk between 23rd ave and 26th ave so kids are crossing where they can. you can see the worn out path in the median. finally, all of Alameda needs tighter curbs to reduce speeds turning right at all locations. cars racing down the street not only is unsafe but discourages more walking and biking.	Walking	2
146930		A light or stop sign at any part between poplar and peninsula on North Delaware St. the speed of cars and lack of useable sidewalks for young children in strollers or kids coming and going from school is a huge issue 24 hours a day.	Driving	1
146960		I have lived on Dwight Road since 1984 and the intersection at Peninsula and Dwight and Delaware has really become dangerous. I walk over to the Starbucks in the Woodlake Shopping Center every day and very often I see cars running the Red Light both coming up and going down Peninsula. I have almost been hit a few times. Since this is the border between San Mateo and Burlingame neither police department seems to be concerned with it. A person was killed a few years ago just one block east at Peninsula and Stanley. That prompted someone to install a flashing light crosswalk. Either the city of San Mateo or the City of Burlingame really needs to take a look at this intersection often and actually witness the people who gun their motors and flagrantly run the light way after it has turned red. I know that going east on Peninsula is The City of San Mateo and going west is The City of Burlingame but someone needs to step up and protect people at this intersection. I would say if a police vehicle was parked near there and was able to view the intersection that within an hour they would see at least 2 high speed red light violations.Since our block has already brought this up at the Lyon Hoag Traffic Calming meetings a couple of years ago and nothing has been done I am not getting my hopes up. There have been many vehicle accidents here and on your map you have it listed as a " Priority Intersection. If at all possibel please see what can be done to help protect us all at this dangerous intersection. Thank you very much for your time.	Walking	1

ID	Parent ID	Body	Type	Likes
146961		We need a 4-way stop at this intersection. East/West moving traffic is fast-moving with no stop signs, and there is a lot of foot traffic due to community growth, the Church located at the intersection, and Tilton's role as a thoroughfare for pedestrian traffic to-and-from B St.	Driving	12
146962		We live along this 2 block stretch. Cars speed past on their way to the left turn/freeway approach at exorbitant rates! Just today we saw a vehicle nearly get rear-ended by someone doing 50+ along N Delaware Street. At night it sounds like a drag race along this stretch. Dangerous for those of us backing out of driveways, crossing street on foot, and anyone who is unlucky enough to be in front of these speeders.	Driving	3
146963		This intersection is very problematic. As you are aware the turn signal on the south east corner has been knocked down numerous times. In addition school drop off and pick up at Saint Matthews creates congestion and safety risks on El Camino baywood and Baldwin. I have contacted the school numerous times, and they have made no change. Moreover, left hand turns at this light or like a game of chicken or similar to the old video game Frogger. I have personally witnessed two accidents at this intersection in three years of living here and have almost been hit several times by people running the red light when I was turning left. Iâ€™m not sure what to suggest, but I hope this intersection will receive some attention.	Driving	1
146964		Very unsafe intersection on El Camino Real, Baldwin, Baywood and De Sabla. Lots of car accidents there. My main concern is for pedestrian safety, particularly at night, on the crosswalk parallel to El Camino (western side) connecting De Sabla and Baywood. A number of times I had to run quickly on this crosswalk. Cars, turning left or right to either Baywood or De Sabla have no separate light just for turns. This causes them to turn quickly with no regards to pedestrians on the crosswalk. This is particularly dangerous at night since the awkward intersection for 5 roads is poorly lit. Is there any way to make this intersection safer, particularly for pedestrians?	Walking	5
146965		I am a resident of State Street and frequently cross the intersection of State Street and Delaware to go to the grocery store or to the high school track with my toddler. This intersection is absolutely the most dangerous intersection in the area. It is heavily used by pedestrians including families with young children and high school students walking to and from school. Delaware is two lanes on each side and there is no stop sign in either direction. Visibility is limited due to parked cars. Cars often speed through this intersection and I have personally seen accidents happen at this intersection as well as many near misses. I believe that a stop sign in all directions is necessary in addition to flashing lights for pedestrians to cross such as the flashing lights used further down Delaware near the high school.	Walking	1
146966		As a pedestrian, I was nearly struck by an SUV turning left from Hacienda onto W Hillsdale Blvd. While crossing, cars often begin moving towards me from the opposite side of the intersection while I am in their direct path in the crosswalk. This intersection feels incredibly unsafe as a pedestrian, and would benefit from protections and traffic calming.	Walking	1
146967		It feels dangerous to be a pedestrian at this multi-lane, four-way stop. Cars have started rolling towards me in many cases. As a major intersection on the path to multiple bus stops and the Hillsdale Caltrain station, this intersection should be safe for pedestrians.	Walking	2
146968		I am a resident of state street and there is a huge problem at the intersection of Claremont and state street. Cars use this massive intersection to do donuts at all times of the day. In addition, state street has no stop signs here so it is a huge hazard coming from Claremont and many people run the stop sign coming from Claremont making it dangerous for cars coming down State. I believe either a 4 way stop or a traffic circle would make a huge difference in the safety of this intersection.	Driving	2
146969		Crossing El Camino Real on the way to the Hillsdale Caltrain is terrifying as a pedestrian; there are so many lanes of traffic and often a very long wait at the crosswalk.	Walking	8

ID	Parent ID	Body	Type	Likes
146970		I am a resident of state street and cars are constantly speeding down our street at 50mph+. They use it as a drag strip because it is so wide, flat, long and straight: I have children and pets and I am extremely concerned for their safety. I would love to see some roadway improvements including a stop sign at state and Claremont, and narrowing the roadway by adding paint lines for parking.		5
146971		Merging north onto 101 from E Hillsdale Blvd during the morning rush hours feels very dangerous. People trying to exit onto 92 will move into the merge lane. When the 92 exit gets backed up, the merge lanes turn into a dead standstill while the left lanes are moving at highway speeds. The merge here is also very short, giving little margin.	Driving	1
146972		There are some massive bumps in the road from tree roots in the median on this stretch of Alameda de las Pulgas. When going the speed limit, I fear for my car's suspension.	Driving	1
146973		There is no sidewalk along this stretch, meaning I need to cross into parking lots / the street to access businesses along this corridor.	Walking	2
146974		A kid almost died here. Drivers need to be slowed down. Speed limits are rarely followed.	Walking	13
146975		El Camino. Basically a freeway located in-town. Extreme vigilance is required as a pedestrian/cyclist when crossing this intersection.	Walking	3
146976		Even with manually activated flashing lights, vehicles speed through here with alarming frequency. This is supposed to be a pedestrian first neighborhood.	Walking	7
146977		As a pedestrian or cyclist, cross your fingers and hope you won't get run over in this intersection.	Walking	9
146978		In Fall/Winter, drivers are blinded on this stretch by the sun setting in the west in the evening. Recommend placing bike cones to separate lane.	Bicycling	5
146979		The cycling transition from Palm to Delaware needs improvement. As a cyclist taking a left here I need to be extremely cautious of drivers flooring it between Delaware and El Camino.	Bicycling	12
146980		Taking a left on to 5th is tough based on time of day. Drivers can move very fast through here.	Bicycling	4
146981		There's a 2-3 block stretch here that has no bike lane. Why?	Bicycling	6
146982		This back road is often the safest option for cyclists. Would be ideal to have better markings so drivers can be aware.	Bicycling	2
146983		The road here is awful (potholes, etc.). Of course it smooths out when it transitions to Belmont. San Mateo needs to match Belmont.	Bicycling	0
146984		I call this 'psycho alley' because all the drivers are psycho (driving 50MPH) and you'd have to be a psycho as a cyclist to even attempt this stretch. There is a "bike lane" only in the loosest sense of the word.	Bicycling	10
146985		Running the gauntlet on this overpass is not fun as a cyclistâ€”or pedestrian.	Bicycling	10
146986		Foot-sized holes in the crosswalk at Poplar and El Camino just begging for somebody to twist their ankle in the middle of the road if they're checking for cars.	Walking	1
146987	146986	The west sidewalk of this intersection is also a mess. It's narrow with a large overhanging plant, as well as a bus stop and a traffic pole in the middle of the sidewalk. People also bike on this sidewalk because El Camino is so unsafe to bike on. With all of that as well as there being no buffer between the sidewalk and El Camino, an accident feels like an inevitability.		0
146988		At intersections along ECR downtown, prevent conflict between pedestrians and vehicles that are turning (both left and right) since they both get the "go" at the same time, by giving each their own time to go.	Walking	8
146989		We have experienced countless cases where cars turning left or right on this 4 way intersection who donâ€™t see the pedestrians walking through the cross walk. We live close by and use these 2-3 times a day, and have had too many close incidents. We heard this from all our neighbors as well. The city should please consider creating safer conditions before someone else dies.	Walking	2
146990		I feel like this should permanently be closed for pedestrians as cars would pose a huge safety hazard to pedestrians in this pedestrian-congested area.	Transit	7

ID	Parent ID	Body	Type	Likes
146991		Turning from Monte Diablo on to N Amphlett (especially left) is often dangerous due to limited visibility. Cars are often parked illegally further obstructing the view, but even when not, visibility is limited. Maybe some of the convex mirrors mounted along the sound barrier wall could help? Note that all similar turns from nearby streets on to N Amphlett are similarly obstructed.	Driving	2
146992		Turning in any direction at this intersection is challenging due to how far the sidewalk/curbs are into the road. If there is another vehicle at the stop sign in the direction you're turning, it's a very narrow space.	Driving	0
146993		Driving anywhere along Tilton is stressful due to it being a narrow road with cars always parked on it. If there's a vehicle coming in the opposite direction, there's often mere inches of clearance - and drivers often are going too fast for the space and visibility.	Driving	3
146994		Street parking here and in the surrounding areas is often utter chaos. At the very least, some lines to denote parking spaces would help and discourage blocking driveways. There is also still debris left behind from months-old sewer work.	Driving	2
146995		Crosswalk timing and access at this intersection doesn't flow well with offramp traffic. At best slow and often dangerous as a pedestrian.	Walking	1
146996		Cars exiting this shopping center parking lot have very poor visibility to pedestrians walking north (toward San Francisco) on the sidewalk due to the tall hedges and the Borel Square sign. Removing those hedges and perhaps adjusting the rounded curb should allow more opportunity for motorist to see the pedestrians.	Walking	0
146997		Cars on El Camino run the red light frequently (at 17th) which makes it dangerous to drive or walk through	Driving	0
146998		construction workers and employees in new buildings use S Delaware as parking now since it has no time limits. Also on 7th	Driving	0
146999		Pedestrians crossing always have to be extremely vigilant to cars turning left who often ignore the crosswalk. This crosswalk should be upgraded with the flashing in crosswalk lights that make it very obvious to motorists this is an active crosswalk. Also, due to the volume of traffic passing through this intersection there are frequent occurrences of cars running red lights here.	Walking	3
147000	146999	Suggest implementing no right on red for vehicles turning onto ECR. They tend to focus so much on finding a break in oncoming traffic that they donâ€™t notice pedestrians attempting to cross.		3
147001		Could the city build a pedestrian bridge over ECR, possibly using the vacant site at this corner?	Walking	4
147002		Currently if you are using the cross walk from the Franklin Templton campus on the south side of this intersection you often seen cars coming through several seconds after the crosswalk light turns on. There should be a longer dwell time after the left turn from Park Place light turns red before the the crosswalk across Saratoga turns on.	Walking	2
147003		Cars traveling north on Saratoga often drift from the left lane to the right lane in this intersection. I've seen many close calls. Perhaps painting a lane line would help guide drivers to keep in their lane.	Driving	2
147004	146969	I agree. Drivers don't have great visibility when turning right from 31st onto N El Camino. Maybe one of those larger curbs that make it harder for drivers to turn quickly would help? That might be hard to add due to the unique merge that happens here on northbound traffic.		1
147005	146984	Any driver turning right from the 101 north exit onto Hillsdale Blvd has to pull into the crosswalk to get enough visibility to turn right. I have never walked to any of the shops north of 101 from the south because I don't want to play Frogger with cars and die. Maybe if cars were not able to turn right on red from this off ramp it would be improved, but I'm not sure how to enforce that.		3

ID	Parent ID	Body	Type	Likes
147006		This is pretty minor, but drivers turning left from Park Pl onto Saratoga south get confused by the large insertion. Sometimes they stop when they see the red light for Saratoga south, even though it is expected to see a red light from the street you are turning left onto. Maybe add some of those baffles to the stop lights so that drivers turning left are less likely to see the red light? The geometry of this intersection makes that hard to add I'd imagine...	Driving	0
147007		Got hit by a car exiting this parking lot a couple months back, thankfully it was a sedan so I managed to go over the hood and not sustain any injury. There's poor visibility for exiting cars and cars generally go way too fast on the ECR which adds to stress.	Walking	1
147009		This double stop line is AWFUL. People coming out of the 76 gas station should be forced to turn right and go around the round about instead of trying to turn left. Iâ€™ve seen so many accidents here. Also people coming out of the village and just rolling entirely through the 4 way light to try and get up to Hillsdale and out. Or people cutting through the chevron gas station on the east side to get to the light. Itâ€™s such a mess and it seems so risky and tenuous to just leave my neighborhood.	Driving	7
147010		People blowing through stop signs during school hours.	Walking	0
147011	147003	Agreed, the lane lines don't align well between the south and north sides of the intersection. Driving in the right lane, I've been cut off / forced into the bike lane many times by cars that were in the left lane at the light.		1
147012		There needs to be a safe bike/ped crossing here. It's the obvious place to cross between the paths marked on this map and access to the Village via Curtiss St., especially now that Village residents have to walk farther to the relocated Caltrain stop. Reducing Franklin eastbound to one lane has helped but how about adding a real crosswalk and flashing lights like at Baze Rd.	Walking	6
147013		For a pedestrian crossing 4th & El Camino, the experience can be frightening. Cars turning south onto El Camino frequently ignore or discover at a very late time pedestrians crossing El Camino with the light. I propose that 3rd and 4th Avenues be made one way between El Camino and the the 101, westbound and eastbound respectively. Not only would this reduce the pedestrian issue at both 3rd and 4th Ave, it would make for tremendously better traffic flow on 3rd & 4th, reduce illegal u-turns into parking places, eliminate waiting to turn left against on-coming traffic, and improve pedestrian safety at every crosswalk	Driving	0
147014		For a pedestrian crossing 4th & El Camino, the experience can be frightening. Cars turning south onto El Camino frequently ignore or discover at a very late time pedestrians crossing El Camino with the light. I propose that 3rd and 4th Avenues be made one way between El Camino and the the 101, westbound and eastbound respectively. Not only would this reduce the pedestrian issue at both 3rd and 4th Ave, it would make for tremendously better traffic flow on 3rd & 4th, reduce illegal u-turns into parking places, eliminate waiting to turn left against on-coming traffic, and improve pedestrian safety at every crosswalk	Driving	0
147015	146991	Totally agree. Make this turn (left into amphora) from Indian (right by DMV) regularly and it is scary. You have to pull out into traffic before you can see anything. Mirrors would be great.		1
147018		Please consider a 4 way stop at this intersection. Currently there are only stop signs on Flores. Cars are flying through the intersection driving on 29th ave. The stopped cars on Flores also has a hard time seeing the cars driving fast on 29th because of all the parked cars around this intersection. The stopped cars need to inch forward on Flores to see past parked cars and there are many close collisions because of the fast driving 29th cars.	Driving	0

ID	Parent ID	Body	Type	Likes
147026		I live next to 1st and S Ellsworth and regularly see drivers confused by KEEP CLEAR zone at this intersection. Drivers often mistake the Keep Clear boundary line as a stop line and will pull all the way into the intersection to get to the line. This is both counterproductive and unsafe for pedestrians crossing Ellsworth an other drivers turning onto Ellsworth from 1st. In other cities (SF) the keep clear zones are painted red to make these visually obvious and as a driver and pedestrian that is very much appreciated.	Driving	4
147027		As a pedestrian crossing 2nd Ave at San Mateo Drive can be scary, especially at night. Becauseof the weird shape of the intersection, drivers turning right/east from San Mateo Dr onto 2nd Ave cannot see pedestrians in the cross walk until they have completed the turn. The building and parked cars create visual barriers. There is not any signage or lights or mirrors to help drivers watch out for pedestrians. I have nearly been struck and have seen other close encounters at this crosswalk.	Walking	9
147028	146961	This intersection is very dangerous. I have witnessed many cars parked too close or on the red areas obstructing view of oncoming cars. Cars speed here all the time. They do not stop for pedestrians and several accidents have occurred just over the past 2-3 years. These accidents have caused injury and damage to property.		7
147029		Cars speed through this neighborhood and children are present at all times of the day. Speed bumps would be helpful to deter speeding and or a sign indicating to drivers how fast they are driving through a pedestrian neighborhood.	Driving	2
147030		Nobody stops at this stop sign.		2
147031		The speed bumps on 28th and 31st are horrible and unlike other bumps in other cities. These look temporary. Need a smooth bump/hump like the two on 28th closer to Flores St.	Driving	1
147033		Please include signs on all 4 way interactions when itâ€™s a 4 way stop. A lot of the 4 way stops donâ€™t indicate that the other directions have stop signs. It can be hard to differentiate between 4 way stops and 2 way stops.		2
147034		The addition of the bike lane has caused parking problems. People are often parked in spots not big enough for their car and end up blocking driveways. Could parking on both sides be allowed at certain hours to avoid this?		0
147035		Have seen multiple close-calls between pedestrians and vehicles here due to there being no obvious crosswalk or signal to enter the pedestrian bridge. There's also no stop sign on Amphlett, so I've noticed cars speeding through right turns onto Monte Diablo making it dangerous for pedestrians crossing the street into the bridge.	Walking	0
147036		This is a blind spot for cars where they can't see pedestrians or cyclists crossing the intersection. Same on the other side of the street.	Bicycling	1
147037	146992	This seems safer for pedestrians though, forces cars to take slower turns and pay attention while turning.		3
147038		My wife and I live on North Delaware Street between Peninsula Avenue and Poplar Avenue. This stretch of road has seen its increase in unsafe drivers speeding down this corridor after San Mateo HS school hours are over. A suggestion for solution would be to create roadway speed bumps spread across the Peninsula Avenue/Poplar Avenue corridor especially high enough to reduce vehicle speeds within 15mph. Recommend 2 roadway speed bumps between Peninsula Avenue and State Street. 4 roadway speed bumps between San Mateo Union HS District Building to Poplar Avenue.	Driving	1
147039		Please either add stop signs on N Delaware Street at the intersection section with State Street or add Pedestrian Walking Flashing Lights to warn drivers who constantly speed in this area. Adding roadway speed bumps throughout N Delaware Street between Peninsula Ave. and Poplar Ave. would be great as well to slow down speeders.	Driving	0
147040		Please either add stop signs on N Delaware Street at the intersection section with E Bellevue Avenue or add Pedestrian Walking Flashing Lights to warn drivers who constantly speed in this area. Adding roadway speed bumps throughout N Delaware Street between Peninsula Ave. and Poplar Ave. would be great as well to slow down speeders.	Walking	1

ID	Parent ID	Body	Type	Likes
147041		When driving Eastbound on 4th in the left lane, if stopped at a red light at Delaware, it looks like you're supposed to go straight, into the right lane after the intersection. However, due to the street becoming a 1-way street, you're supposed to go into the left lane after the intersection. I walk by this intersection a lot, and I see many drivers confused by this. A white dotted line may help.	Driving	1
147042		Massive intersection that makes walking feel unsafe. Making this intersection smaller or turning it into a roundabout would be great!	Walking	2
147043		The right turn from Northbound Palm to Eastbound 9th has a wide sweeping slip-lane-like design which encourages drivers to run the stop sign and makes the pedestrian crossing much longer.	Walking	2
147044		The lead pedestrian interval here is helpful but is very short. I think this one is ~3 seconds while the rest of downtown is ~5 seconds. This LPI should be longer since the crossing here is much longer.	Walking	3
147045		A lead pedestrian interval here would be welcome. The crossing is scary as a pedestrian. There should also be no right on red from Barneson as drivers are so focused on looking for how to accelerate into the flow of traffic that they miss pedestrians.	Walking	1
147046		This stretch of 5th Ave needs traffic calming of some type. Crossing here is scary at times as a pedestrian. Drivers drive too fast and there is nothing to stop them from doing so.	Walking	10
147047		Palm Ave has a speed limit of 25 mph but has 12ft wide lanes that invite cars to drive too fast. Traffic calming and a better design are needed.	Driving	3
147048		This section of road/sidewalk is very unsafe for bikes/pedestrians. The exit of the ARCO and off ramp from 92 make it hectic and unsafe yet it is one of the best ways to get to Fiesta Gardens International School.	Bicycling	8
147049		The shadow through here is horrible. There is so much right-of-way here, we need better bike infrastructure on this stretch to connect the cavities to the north and south.	Bicycling	0
147050		The stopsign while traveling north on Grant here is hard to see with the tree. I just watched a car run the stop at full speed.	Other	1
147051		need lights here -- it's wide and unclear who should go at the 4 way.	Driving	0
147052		it's unclear how to cross in order to get to the bike path to the station.Diagonally?	Bicycling	8
147053	146984	psycho alley is its name on strava I think!		0
147054		the corridor from the Event center across to Fashion island is just sketchy. I can do it because I am comfortable sprinting and holding a lane. A kid or inexperienced rider would just forget it - there's no safe way to get to foster city. install protected bike lanes maybe? The bay trai lis great if you can get to it	Bicycling	5
147055		This is a very scary intersection to cross as a pedestrian. Iâ€™ve had multiple cars almost hit me while turning right. There needs to be a safer way for pedestrians to cross El Camino.	Walking	1
147056		Left turn lights and signal needed here! Many left turners do not wait foe traffic heading straignt before turning on to El Camino Real.		1
147057		Left turn signals needed here! Many left turners. Do not wait for oncoming traffic before turning. Left onto El Camino Real.	Driving	1
147058	146961	Was coming here to say the same thing. This intersection is very dangerous for pedestrians and also for cars attempting to turn onto Tilton from Claremont. We are lucky to live in a beautiful neighborhood with lots of walkers, but this intersection is scary. Better lighting would also be great.		5
147059		Cars speed through this section as the street is very wide. There are many children who play in the street and there are regular children educational programs held at the Buddhist Temple. We would like some kind of traffic slowing measure such as a speed hump.	Driving	4
147060		I would like a traffic light here. Cars routinely do not stop for the stop sign and there have been serious accidents as a result.	Driving	4
147061	146961	This intersection is very dangerous. I would agree about the need for a 4-way stop		4

ID	Parent ID	Body	Type	Likes
147062	146993	I agree. There should be more restrictions on parking on this road given how narrow it is. There are times when it is impossible for two large cars to drive at the same time.		0
147063		People often dump large objects here which is a hazard for pedestrians and for people with mobility issues or using strollers	Walking	6
147064		The parking structure here does not have adequate visibility as cars are exiting. I have almost been hit by cars several times. There should be mirrors and warnings about pedestrians and people walking with dogs or strollers	Walking	10
147065	147060	Fully agree. I witnesses a serious accident involving rolled over vehicle hitting several parked cars here. One person was seriously injured and possibly dead as a result - they were unresponsive		3
147066	147043	Also, there should be 2 crosswalks across 9th at either side of Palm - many people cross on the side without the crosswalk anyway since there is a path into the park		3
147067	147064	Yes, this is dangerous for anyone walking but especially for people with children in strollers and/or dogs. There is no way to see if a car is coming without stopping your stroller and looking around. Cars also cannot see you until they pull further out of the garage.		4
147068		West hillsdale needs speed bumps. Lots of pedestrians and families in the area and cars going way too fast	Walking	0
147069	146963	I agree. The unprotected lefts from El Camino Real in either direction are accident-prone. I frequently detour down a side road just to avoid the hassle. Additionally, the ambiguous intersection of Baywood and De Sabla further complicates matters. How is one supposed to turn from one street to the other?		0
147070	146964	Cars on El Camino Real frequently blow the red light during rush hour, speeding through crosswalks with lit walk signals.		0
147071	146975	Crossing the westbound E Hillsdale to El Camino northbound turn lane is particularly difficult to cross due to low visibility for both cars and pedestrians.		1
147072	146989	That's horrible! When did somebody die here?	Driving	0
147073		The new stop sign location is obscured by a tree. This has resulted in the stop sign being obeyed a lower percentage of the time than its previous location at Folkstone and Sunnybrae,	Driving	0
147074		The parking garages here do not have any gates or speed bumps at the exits. Drivers regularly ignore the stop sign and roll right onto the side walk at unsafe speeds. I regularly see pedestrians have to dodge out of the way of exiting vehicles.		5
147075		The parking garage here does not have any gates or speed bumps at the exits. Drivers regularly do not stop at the sidewalk to look for pedestrians before moving on, and instead roll right onto the sidewalk, often at unsafe speeds.	Walking	0
147076		The parking garage here does not have any gates or speed bumps at the exits. Although this building is currently uninhabited, I foresee this garage exit becoming an issue in the future as tenants move in.	Walking	2
147077		Cars speed through this residential area as they leave the downtown area. Speed bumps would be a good opportunity to add here.	Driving	2
147078		Wish this intersection were a 4-way stop - frequent near-misses happen for cars turning off Cypress onto Humboldt in either direction, and there are lots of pedestrians - kids live on this block and are often coming/going from the church down the block.	Driving	2
147082		At the crosswalks of these on-ramps, vehicles rampantly violate pedestrian right-of-way. Sometimes I have to wait standing in the crosswalk while 10-15 vehicles speed past before one vehicle decides to stop.	Walking	0
147083		Vehicles making right turns onto or off of Fashion Island Blvd to exit or enter Southbound 101 tend to whip around the corner at 30 mph without noticing pedestrians in the crosswalks or the lit Walk signal that invited them there. I've had to jump out of the way several times, and I've been saved at least once by someone slamming on their brakes at the last second.	Walking	0

ID	Parent ID	Body	Type	Likes
147084		To facilitate foot traffic between YMCA/Crossroads and the shopping center, the middle of this long block of Grant St could really use a bulbed-out crosswalk with warning lights, like the one nearby on Concar Dr.	Walking	7
147085		Vehicles making right turns onto or off of Fashion Island Blvd to exit or enter Southbound 101 tend to whip around the corner at 30 mph without noticing pedestrians in the crosswalks or the lit Walk signal that invited them there. I've had to jump out of the way several times, and I've been saved at least once by someone slamming on their brakes at the last second.	Walking	6
147089		Adding a bollard-protected easement from the Saratoga sidewalk to the Bermuda cul-de-sac at this location would dramatically improve pedestrian and cyclist connectivity in this whole area, opening up the YMCA/Crossroads area to Bay Meadows and Park Place workers and residents, and allowing Fiesta Gardens residents to access the new shops, restaurants, parks, and services at Bay Meadows and Park Place.	Walking	4
147091		The 28th Ave/Caltrain street engineering is the worst ever. Sidewalk on south too narrow to avoid walking in street (its one stroller wide). People run across street all the time. Vehicle turn left to south parking lot despite barrier (BIG ones, not just cars). Bikes have no path to ride on safely. No one takes the ramp to the station on south side, just as well as you could get beaned by a bike exiting the tunnel. Always dangerous commuter bus exiting north lot, they don't expect bikes from the west. Somebody is going to die here		6
147092		Crossing Hillsdale when going down Saratoga on foot or on bike is taking your life into your hands since the city closed the east side crosswalk. Bikes ride on the narrow sidelwalk on the west side, I have been forced into traffic by kids on bikes on many occasions. Even with a green light, cars turning right from southbound Saratoga onto Hillsdale try to hit me almost every single time! We have effectively eliminated this crossing. It goes to schools, parks, and shopping. People now drive in both directions. How stupid is that when Bay Meadows is supposed to be walk/bike oriented?		2
147093		Cars parking on sidewalk, cars blocking road to stop at food truck evenings.	Walking	4
147094		Cars parking on sidewalk. Can barely walk this area of town. And itâ€™s across from a school. Iâ€™m an adult, would hate for my kids to have to deal with.	Walking	5
147095	146974	1) 35 mph is too fast for a residential neighborhood, should be 25 mph through out bay meadows. 2) flashing crosswalk signs are not adequate traffic controls, should be a stop sign with an elevated cross walk/ speed bump		8
147096		This intersection seems oddly timed and sequenced, such that it's usually an unnecessarily long wait for a pedestrian to cross a short distance, even when there is no traffic in sight. Often pedestrians and vehicles are both waiting on red for many seconds, with no moving vehicles present to use the opposing green.	Walking	0
147097		Please consider making 3rd and 4th Avenues into, two lane, one-way couplets between ECR and 101. A 'green wave' could be installed to time signals for slow progression through downtown. Something like 15MPH would be ideal. This has been done in San Francisco on Valencia, Folsom and other streets and has made traffic way less intimidating. The extra space could be allocated for protected bike lanes. Everybody wins - traffic flows slowly but smoothly, speeding gets reduced so safety increases, people biking finally get some high quality facilities.	Driving	3
147098		We need to allow bikes on S. B. Traffic calm it or figure out other ways to address concerns but we need to encourage people to access downtown businesses and Caltrain by bike. The barricades make biking in downtown even worse than before and it was really bad before.	Bicycling	6
147099		The bend in S. Grant limits sight distance and leads to very scary situations with cars passing bikes. I've nearly been hit here several times. Traffic calm S. Grant with frequent speed humps or remove parking from one side to allow for bike lanes.	Bicycling	1
147100		Run San Mateo Drive bike lanes through downtown and create great bike facilities on Baldwin to connect the entire route to Caltrain.	Bicycling	3
147101	146981	Yes, extend the bike lanes all the way to Central Park!		3

ID	Parent ID	Body	Type	Likes
147102	147052	A complete vision is needed for this route. Everything is piecemealed and it is confusing, slow, and dangerous.		4
147103	146978	2 traffic lanes in each direction aren't needed. Protect the bike lanes since it is scary to ride next to the fast moving cars.		5
147104		The 'share' markings are terrible. I've been honked at and buzzed by drivers. Change the parking to parallel and put in bike lanes.		3
147105		Add a multi-use path connecting the bike lanes on Palm with bike lanes on San Mateo Drive. And extend the San Mateo Drive bike lanes all the way to Central Park!	Bicycling	2
147106		There is a 4 way stop here but often cars roll through and don't come to a full stop which is especially dangerous as this is across the street from an elementary school. Another issue is that there are many trucks parked at this corner so its hard to see children trying to cross and cars don't obey the stop sign, come to a full stop, and look both ways before proceeding.	Walking	2
147107		Drivers use this street to speed through when there is traffic on Delaware St. They don't obey the stop signs at both ends of the street and drive way too fast in this residential area that is sandwiched between an elementary school and a park. Please add speed bumps on this street.	Driving	0
147108	147094	I agree with this, if you are in a wheelchair or pushing a stroller, you can only get by by walking in the middle of the street. This street was not made for cars to park on it.		2
147109		Drivers don't always stop when there is a pedestrian waiting at this crosswalk or even when the lights flash. Please add a light at this corner to force cars to stop, this is between a high school and elementary school! I was waiting at this crosswalk with a stroller, I hit the button to start the flashing lights, there was a car that drove through and when I waved at the car to let them know they should have stopped for a pedestrian with the flashing lights, they waved back at me because they thought I was saying hello. This driver was completely oblivious and didn't even think they should have stopped for a stroller with the crosswalk light flashing.	Walking	3
147110	147109	Because there isn't a stop sign or red light here, often cars try to drive through even when they see kids waiting. I've seen so many high school students step out into the street to force cars to stop for them, this is incredibly dangerous.		1
147111		You should remove the hate symbol that some vandal carved into the sidewalk at this location.	Walking	0
147112		Highly dangerous crossing. I was walking with my stroller and no cars stop fully to allow crossing. The flashing lights are all ignored. Why is this busy crossroad not a FULL STOP? Are we waiting for someone to have an incident to allow this?	Walking	10
147113	147012	We need a stop light or at the minimum a four way stop sign here. This intersection is one of the most dangerous intersections in the area.		2
147121	146974	Needs to have a stoplight and speed slowing measures. Even with reducing to one lane, cars are speeding without regard to pedestrians.		5
147122		The concrete base of the railing along this bridge is spalling badly, exposing rebar and shedding concrete chunks onto the sidewalk.	Walking	1
147125		I have experienced drivers not notice me in the crosswalk on several occasions at this intersection. This was during daylight hours. Can there be more visibility added for pedestrians?	Walking	3
147126	146961	+1 I would be ok having a pedestrian crosswalk here too. There is a lot of foot traffic here		2
147127	147094	Cars parked on the sidewalk make it difficult to navigate along this street		2
147128		The sidewalk is blocked by utility poles which makes it difficult to navigate in a wheelchair or with a stroller	Walking	1
147129	147064	+1 The stop sign at the garage exit is difficult to view as a driver. As a pedestrian I've had several close calls where the driver didn't look both ways and was exiting the garage fast.		3

ID	Parent ID	Body	Type	Likes
147130	147040	Flashing lights have been added to this crossing but are not very effective. I cross here almost daily and drivers often ignore the flashing lights. What would be most helpful are two changes: 1) curb extensions into the street so that drivers can see pedestrians waiting to cross and 2) a restriction on parking on the north west side of Delaware. The cars that park on that side near the crossing obstruct the view of pedestrians who are crossing from the northwest corner of the crossing.		4
147131		This crosswalk is extremely dangerous, despite the flashing crosswalk lights. I once was driving and stopped for a pedestrian to cross. The driver behind me sped around to my left into the turning lane (that feeds into the CVS parking lot) to pass me, not aware that there was a pedestrian crossing. The pedestrian was nearly struck by the impatient driver making an illegal pass. This crossing should have those lane dividing cones to prevent cars passing each other thru the crosswalk similar to the ones by the fire station on E 3rd avenue near the approach to 101.	Walking	3
147132	146968	I agree, this intersection is unsafe. Two of the corners were recently painted red to improve visibility at the stop sign, but cars park in the red zone anyway and the visibility issues persist. There are round skid marks on the ground from the frequent donuts the prior commenter referenced.		1
147135		Parents at drop off/pick up at Park School do not adhere to the traffic signs (white curb/drop off only/red curb/no parking) despite repeated attempts by the Principal to message this to parents. It would be great to see regular police enforcement at this location during the school year.	Driving	0
147136		Parents at drop off/pick up at Park School do not adhere to the traffic signs (white curb/drop off only/red curb/no parking) despite repeated attempts by the Principal to message this to parents. It would be great to see regular police enforcement at this location during the school year.	Driving	0
147138		Frequent Illegal dumping on this block. Cars will drive up in the middle of the night and unload trashes.	Other	3
147139	146981	Completely agree. The bike lane has calmed traffic, improved visibility and is pleasant to use. Let's extend it all the way through downtown to Central Park.		2
147141		This should be a 4 way stop. It's next to a park, and a lot of kids cross by here.	Walking	2
147142	147027	I agree. This intersection is far too huge.		3
147143		This may not be popular, but we should consider banning right turn on red, especially in our downtown areas. It would drastically improve pedestrian safety of our most walkable areas.	Driving	3
147144		Something needs to be added to the blind curves on Palm Ave between 25th and 20th to prevent passing - aggressive drivers regularly pass bicyclists in on-coming traffic. Also, Palm in general needs treatment to make it clear bicyclists are welcome and encouraged.	Bicycling	3
147145		I suggest adding a modal filter on Palm somewhere between 20th and 17th. Make Palm into a true bike blvd, reduce cut-through traffic, and then probably don't need bikes lanes and parking removal. Cars constantly aggressively pass bikes on Palm Ave.	Bicycling	1
147146	147047	Palm between 16th & 9th is completely residential. This section needs to be converted into a neighborhood street - reduce car speeds, add greenery, or diverters. Stop cut through traffic (people speeding to beat the time they think it would've taken them to get down ECR).		2
147147		We will need a 4 way stop sign here. Cars are racing down Santa Inez Ave and humble Ave. it was too hard to cross, too difficult to see car fast enough when they racing by. Specifically bikers, hard to see them.	Driving	0
147148		Drivers consistently creep into the intersection to make a left turn while pedestrians are crossing. Left turn onto ECR needs its own signal, so people can get to 92 onramps more safely.	Driving	0
147149		This light does not trigger for bikes.	Bicycling	0
147150		This traffic signal does not trigger for bikes	Bicycling	0
147151		I don't feel welcome biking on 28th. Drivers are impatient and ride too closely even with the stop signs and speed humps.	Bicycling	0

ID	Parent ID	Body	Type	Likes
147152		This corner of Baldwin and Ellsworth is far too wide to encourage safe driving. Drivers treat the extra wide lane as a right turn lane, and turn right without checking to see if there are pedestrians on their right, regardless of if the pedestrian walk sign is on. Drivers are often unaware that the downtown area has leading pedestrian indicators, as they are more focused on looking at oncoming traffic to their left on Ellsworth. We should narrow the lanes on Baldwin down to force drivers to consider pedestrians as they make their right hand turn on red.		1
147153		Crossing the train tracks at 9th both directions - bikes have to merge into speeding traffic - unsafe. Heading toward 101, sidewalk not a great option as there's a telephone pole and an and steep curb blocking a safe crossing at S. Railroad. Kids cannot safely ride through here.	Bicycling	2
147154		Why are there so many traffic lanes here! Crossing Delaware on bikes or walking is very unsafe - impatient drivers. Can't believe this intersection is still like this so close to an elementary school.		0
147155		Crossing 2 right turn lanes going south on Delaware is unnecessaryily unsafe. We don't need 2 turn lanes here anymore with the grade separation	Bicycling	2
147156		The center cycle lane over 101 is awesome here - thought could be smoothed out a bit. Getting off is very challenging. Getting onto it from 3rd is almost impossible. I try to use the crosswalks here (creating a bike box), but the sidewalk on the NW corner doesn't fit a bike (especially to orient to the crosswalk into the cycle track). Also, righthand turning cars do not see you waiting there to cross.	Bicycling	6
147157		Getting onto the cycle track is awful here. Sidewalk is really the only solution, but it's too narrow and bumpy with curb cuts. Needs dedicated bike entrance.	Bicycling	4
147158		Bike lane is too narrow - especially headed to a high school. Cars always parked in it too. Seems like this sole-residential street should be modal filtered and bikes given free range of the street.	Bicycling	1
147159		This crosswalk needs more visibility (middle yield to ped sign?). Also, the parking is too close to the sidewalk (SW corner especially). I've almost hit a pedestrian twice on my bike because they come out into the bike lane to see around the parked car to cross the street.	Walking	1
147160		Every time I've been riding through here in the past month, there has been some sort of delivery vehicle parked in the redzone on the CURVE. Cars pass into oncoming traffic - including into me on my bike.	Bicycling	2
147161		Crossing 2 lanes of traffic going north on a bike to make a lefthand turn onto 25th is very uncomfortable. Lefthand turn from bike lane needs to be better at 25th	Bicycling	5
147162	147105	If multi-use path through the park isn't an option, make the wiggle around on Laurel more comfortable for bikes (i.e. fix all the left hand turns required).		2
147163		Condition of this path is very rough - too many roots pushing the path up. Tripping hazard.		4
147164		The traffic light crossing Concar going south on Grant is too short for bikes to cross (and doesn't trigger for bikes anyway). As a person on a bike, I have to get onto the sidewalk and push the pedestrian signal.	Bicycling	1
147165	147094	Can this be made one way or closed to non-local traffic (for at least a portion)? Is is unsafe to walk or bike on this street to get to school.		1
147166		Cars speed up to approx 35 mph along the street from Alameda to the stop sign at Isabelle. There are 2 schools along this street, an elementary and a high school. There are also people with physical disabilities who use the sidewalks and cross intersections and at least one person in a motorized wheel chair who uses the street. A stop sign at Stratford or other traffic calming systems would be helpful.	Driving	0
147167		Stratford is a narrow street and difficult to drive when there is a lot of activity on the street. Cars going in opposite directions often have to try to pull over and stop for each other, dodge each other, or slowly and carefully creep by each other. The problem is at its worst during school drop-off and pick-up.The sidewalks on the Serra HS side of the street are wide. It would be helpful to either narrrow the sidewalks to widen the street or restrict parking to one side of the street.	Driving	0
147168		This is a major pedestrian and bicyclist corridor for students attending San Mateo high school	Bicycling	2

ID	Parent ID	Body	Type	Likes
147169		Walking is very dangerous on Bellevue after high school lets out due to parents double parked waiting for their kids.	Walking	0
147170		The bike lane is a great addition to kids getting to SMHS at the new back entrance to campus. As a result, more kids are biking to school instead of driving and parking in the adjacent neighborhood.	Bicycling	1
147171		The bike lane is a great addition to kids getting to SMHS at the new back entrance to campus. As a result, more kids are biking to school instead of driving and parking in the adjacent neighborhood. There are also kids who bike home after being dropped off by one of the many elementary school buses that drop off on Humboldt.	Bicycling	4
147172		Parking is difficult at night (not during the day). Many neighbors have 5+ cars, don't use their driveways and garages, reserve spots with parking cones, and illegally park commercial vehicles overnight. The problem isn't that there isn't enough spots. It's that selfish residents don't know how to share.	Other	0
147173	146961	This is a very dangerous intersection. I would like to see a 4-way stop at a minimum. Also, individuals who attend the church park in such a way as to block visibility of the intersection.		1
147174	147063	The dumping of trash poses a hazard for pedestrians. Particularly those with disabilities		1
147175	147060	I agree with prior comments about the dangerousness of this intersection.		3
147176	147059	I agree. this is a dangerous section of this street or children and the elderly.		2
147177	147064	I fully agree. this is a danger for pedestrians, dogs, and persons with strollers		1
147178	147063	In addition, the trees growing in the creek need trimming to avoid blocking part of the sidewalk		1
147179	147059	Cars do race down this stretch because it is wider, and they need to be slowed down.		1
147180	146990	I agree		1
147181	146961	I agree that this intersection is very dangerous		0
147182	147060	Particularly dangerous at night		0
147183		Southbound on N Claremont St entering E Poplar Ave has poor visibility for approaching cars in both directions on Poplar. The hedges at Stanbridge block visibility from the left, and parked cars block visibility on the right. Coupled with the pedestrian crosswalk on E Poplar it makes crossing or turning left onto more dangerous than necessary.	Driving	0
147184		The Woodlake shopping center has no pedestrian access from N Delaware St. To access the center on foot you are required to use the same car entry, or walk around the block to Peninsula Ave for an official pedestrian entry.	Walking	2
147185		Customers of La Raza regularly park illegally along E Poplar, causing cars to cross the road centerline in order to pass. This added distraction reduces safety of drivers and pedestrians along the intersection.		4
147186		Every day there are people who don't know that there are three lanes at the traffic signal. They hold up traffic or make dangerous maneuvers to go straight from the left-turn lane. It would be great if the center island leading up to the intersection were shorter with earlier, more and clear signage of the left, straight and right turn lanes.	Driving	0
147187		Add physical dividers in the center after the intersection. People make an immediate left turn after turning onto S Norfolk to turn into the gas-station. This is dangerous for the people following because they get stuck in the intersection.	Driving	0
147188		Add a protected left-turn signal here from 3rd onto S Claremeont. People turning left are "allowed" to take the right-of-way here and it is very confusing.	Driving	0
147189	147148	Agree to the previous commenter and also: People turning left are "allowed" and expected to take the right-of-way here even honking if you don't rush across the intersection even if there is oncoming traffic.		0

ID	Parent ID	Body	Type	Likes
147190		Make the exit lane to Fashion Island Blvd extend from the 92 west onramp rather than the 92 east onramp. People take the 92 west lane and then illegally cut over into the exit lane at the last second because traffic in the 92 east lane is backed up.	Driving	0
147191		Move a 250 bus stop closer to Hillsdale High. The new stop makes it way longer to get to the school than the old stop did on Alameda.	Transit	0
147192	146878	This would be safer and a lot more convenient for pedestrians and bikes if we could cut through the fenced off school parking lot. Its a long way out of the way from Bay Meadows and Fiesta Gardens to go all the way to the (dangerous) Delaware crossing.		0
147193	147186	And I wanted to add, shorten the center divider to allow the left turning lane to start earlier.		0
147194		This new bike lane is a terrible design. It forces cars to make a right-hand turn in front of cyclist. In a perfect world, everyone should come to a complete stop, look both ways, etc. In reality, most people, cyclists and cars, run this stop sign all day long. As a cyclist, it is much safer to navigate traffic and merge lanes while I'm moving. When I'm stopped at this stop sign, 6 ft passed the sign, I'm a sitting duck if I proceed through the intersection, and the car to my left turns right, not paying attention.	Bicycling	1
147195		On southbound Pacific, cars use the bike lane to drive around stopped traffic turning left on to Otay. This should be a protected bike lane with bollards to prevent cars from driving in the bike lane.	Bicycling	1
147196		What is the point of the bike lanes on ECR under 92? Northbound, the bike lane dead ends in to parked cars. Cyclists should be directed to use the dedicated bike routes on Palm and Alameda de las Pulgas.	Bicycling	0
147197		Speeding regularly occurs here, as well as families and children walking across the street without crosswalks at this nor the nearby intersection at 2nd/Lawrence Rd and Fremont. Wrecks have occurred here as drivers are speeding and I have seen countless people get inches away from being hit while trying to cross the road. At this intersection, we desperately need a speedbump (on S. Fremont) and crosswalk on S. Fremont at the stop sign.	Walking	2
147198		This intersection desperately needs crosswalks, as I've seen folks fail to stop entirely at the stop signs and come very close to hitting pedestrians.	Walking	2
147199	146969	Agreed. It would be helpful if the pedestrian signal lasted a little longer too. I've seen older folks get stuck in the middle because they ran out of time. In the future it might be useful to have a pedestrian undercrossing near the Michael's parking lot to link up with the entrance to the train station and the mall.		2
147200		The right-turn only light here from westbound 31st Ave. to northbound Sailer Dr. is dangerous for pedestrians. Cars turn without watching for pedestrians. I almost got run over here last week.	Walking	0
147201	146967	This intersection is so busy, they really need to put a traffic light here to make it safer.		1
147202		The road here is not wide enough for the amount of traffic that passes through. Cars often have to wait for each other to pass through. If parking was removed on one side of the street, I think that would leave enough room for cars to pass without needing to pull over.	Driving	1

ID	Parent ID	Body	Type	Likes
147203		East-bound 31st Ave lane narrows thru Hillsdale Mall then widens to 3 lanes at El Camino making it ver dangerous for cyclist crossing El Camino. 1)There should be a bike lane on the narrow section thru the mall in both directions of 31st Ave 2) To continue E bound on 31st, a cyclist would either have be in the right turn lane, the straight thru lane or try to get to curb and on to sidewalk to await the traffic light. None of the options is safe, especially the right turn lane & sidewalk where driver donâ€™t look for pedestrians or cyclists. West bound 31st is also a nightmare for cyclist, where there is suddenly 4 lanes after crossing El Camino, one if which is a right turn lane, again endangering cyclist. Then right after Sailer Dr it squeezes to 1 lane and of course no bike lanes. It dangerous for cyclists at the mall underpass as it is poorly lighted and there are no bike lanes. Donâ€™t understand why bike lanes were put in a slightly wider road.	Bicycling	2
147204	147012	A raised cross walk here would help slow traffic. There is a 30mph sign for corner if driving towards the mall. This is too fast for the blind corner.		1
147205		This stop light is not timed well. It turns green for cars to drive through to merge on 101 south. But often a car coming across hillsdale will drive through. Surprised there has not been more accidents here.	Driving	0
147206	147112	Raised cross walks both crossings across Franklin could help to slow the traffic at this dangerous blind corner going towards the mall.		2
147207		An opening to and from the Caltrain would be useful here	Walking	7
147208		People are driving way too fast here. It feels unsafe to walk or bike here with people screaming down the road at up to 40 mph. Speed bumps should be installed to keep speeds down.	Bicycling	0
147209		It would be nice if there were a pedestrian crossing here (preferably grade-separated) to access the entrance to Hillsdale train station. It would also improve access from the station to bus stops on El Camino and save people from needing to walk along El Camino, where cars are speeding by at 40 mph or more. It would also provide access to the train station for cyclists, so they can cut through the less-busy mall streets instead of riding on El Camino (VERY dangerous) or 31st Ave.	Walking	1
147210		This intersection could use a roundabout or other traffic calming device. Too many times have I seen drivers fly down the Alameda hill and zip through this intersection without stopping.	Driving	0
147211		This section of Alameda de las Pulgas doesn't see very much traffic for a 4-lane road, so the two outer lanes should be converted into bike lanes. This would make existing traffic drive a little bit slower (people drive too fast) and make it safer for cyclists.	Bicycling	5
147212		Put a stop sign here on 28th Ave. Right now it's really confusing because there are already stop signs on 31st Ave. It's quite strange to have a T intersection with a nonstop intersecting route. A lot of drivers stop here anyways because they are already expecting a normal T intersection with a 3-way stop. Just make it easier for drivers and pedestrians to understand the traffic pattern here by making it normal.	Driving	2
147213		This intersection is always a major hazard to drivers and pedestrians. There are so many cars trying to enter and exit the shopping center that it often causes gridlock with the Hillsdale intersection. There's also no crosswalk here and I often see people trying to dodge cars while carrying groceries.	Driving	1
147214		we need a four way stop at this corner..speeding on Humboldt makes this an unsafe place to go west on E Santa Inez	Driving	0
147215		Separated bike lane is needed, highly dangerous corridor in which cars travel at high speeds.	Bicycling	5
147216		Road diet desperately needed. This is a 6-lane highway running through the center of city, cutting off access to the park and downtown. Cars travel routinely well in excess of the posted speed limit.	Walking	4

ID	Parent ID	Body	Type	Likes
147217		Baldwin needs traffic calming to improve the safety of Episcopal Day kids and a bike lane. There is currently no safe way to bike to this school.	Bicycling	0
147218	147044	This intersection is highly dangerous for cars, bikes, and pedestrians. The offset in turning lanes makes visibility from a car difficult while turning left. While drivers are trying to see around other cars, they become unaware of pedestrians or bikes. I've had near-misses at this intersection.		1
147219		Dangerous stretch for bikers, as existing bike lane terminates at Catalpa dropping bikers into high-speed traffic lane.	Bicycling	1
147220		At what point will San Mateo get serious about creating an integrated cycling network in the city. The current system is wildly insufficient and even the improvements currently proposed in accordance with the 2020 Bike Plan will leave a fragmented, dangerous system. Cycling to San Mateo Station should be a real option for commuters without risking their lives.	Bicycling	1
147221	146974	Drivers continue to speed from the freeway to access El Camino often missing the crossing walk lights after the blind turn. This intersection should be a stop light for saver pedestrian crossing.		2
147222	146961	I too, agree about the danger of this intersection for pedestrians. Cars parked on the street block the view for drivers to see a pedestrian, and the walker to see a car. Need a stop sign or something. And, better lighting on the corners of every street in North Central.		0
147223		To exit the school parking lot, there is a supposedly right turn only when exiting on N Deleware, and there is so much traffic on the other side of the school trying to exit on Poplar, especially when drivers are trying to get to the S bound 101 entrance on Poplar. All this traffic is causing safety hazards for pedestrians and drivers. There needs to be some sort of traffic control at drop off and pick up hours. Lots of traffic equals upset drivers and commuters. More stop signs on N Delaware would be great to slow down drivers and let the pedestrians in the area (students mostly) get around safely. It would also help the locals who walk to shopping. There's no safe place to cross N Delaware from Poplar to Peninsula.	Other	1
147224	147170	I don't think the back entrance is open yet as the construction is still going on, so not sure how this comment makes the bike lane a good thing credible. I haven't noticed "more kids biking to school" either. Most of the kids who live in the neighborhood are walking. The bike lane has caused more problems for the local neighborhood than it has benefited a select few bikers.		0
147225		This area, under the railroad tracks, is an illegal dumping site. There is constantly large items like mattresses, furniture and other garbage left on the sidewalks.	Other	3
147226		This area, under the railroad tracks, is an illegal dumping site. There is constantly large items like mattresses, furniture and other garbage left on the sidewalks.	Other	2
147227		This stretch of the street has constant, every evening through the late night, food trucks and street vendors. It causes a lot of car traffic and makes it hard to navigate through this section. There's a lot of pedestrians as well, making it more dangerous to drive down this stretch. Please limit where the food trucks can park and sell their goods, or have them move to a parking area, let them use the king center parking lot at night.	Driving	2
147228		The volume and speed of the traffic on Bermuda Drive is a safety risk for pedestrians. Drivers routinely treat these three blocks as extended freeway entrance and exit ramps. Horns honk if anyone has to slow down or tap their breaks. In addition, drivers seldom stop at the stop sign at Grant when turning on to Bermuda Dr. There appears to be no enforcement of speed limits and drivers respond accordingly. Thank you for the new signage regarding School Speed limits attempting to address this problem further down Bermuda by Fiesta Gardens School. However, the sign on east bound Bermuda just past Texas Way is a bit confusing. It states â€œSchool Speed Limit 25 when children are present.â€ This clearly implies the speed limit is higher when children are not present, but I assume this is not the case!	Walking	1

ID	Parent ID	Body	Type	Likes
147230	147092	I cross this crosswalk 6 times a week. Moving the crosswalk from the east side of the street increased my commute (I now have to cross Saratoga to the east side, then cross back) but did nothing to improve safety. I regularly get challenged by cars that are turning across the crosswalk turning from Saratoga onto Hillsdale. The pedestrian walk signal now turns green a few seconds before the traffic light, but this is mostly ignored by drivers who usually are only looking at the cross traffic on Hillsdale and not paying any attention to people in the crosswalk.		3
147231		It's not clear if the lights can sense a bike in order to change. At times, I've dismounted or asked a pedestrian to press the button so I can take a left.	Bicycling	1
147232	147143	I agree on banning right on red in the downtown area. I have been hit by a car once - and almost hit too many times to count as a pedestrian in downtown - and itâ€™s a right on red 99% of the time. Study after study shows allowing right on red led to a huge increase in pedestrian and cyclists injuries/deaths.		1
147233		We live on the 400 block of State Street in San Mateo, CA. Cars often drive by fast in front of our home, on the (short) stretch of State Street between N. Delaware Street and Woodside Way. Often this poses a danger to pedestrians - especially the elderly and kids - as well as to cyclists. Please find some way to limit the speeding of cars on the stretch of State Street in San Mateo, between N. Delaware Street and Woodside Way. One suggestion is to install a pair of STOP SIGNS at the intersection of State Street and N. Claremont Street, making that intersection a 4-WAY STOP. Currently, the intersection of State Street and N. Claremont Street is a 2-WAY STOP causing cars going along N. Claremont Street only to stop. Adding two STOP SIGNS at that intersection, causing cars going along State Street to stop would go a long way in ensuring the safety of pedestrians and cyclists on this stretch of State Street. It would also reduce accidents caused by drivers who do not realize the intersection is NOT a 4-way STOP. Thank you for your attention to this important matter and for caring about the safety of residents in San Mateo, CA.	Walking	0

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		We live on the 400 block of State Street in San Mateo, CA. Cars often drive by fast in front of our home, on the (short) stretch of State Street between N. Delaware Street and Woodside Way. Often this poses a danger to pedestrians - especially the elderly and kids - as well as to cyclists. Please find some way to limit the speeding of cars on the stretch of State Street in San Mateo, between N. Delaware Street and Woodside Way. One suggestion is to install a pair of STOP SIGNS at the intersection of State Street and N. Claremont Street, making that intersection a 4-WAY STOP. Currently, the intersection of State Street and N. Claremont Street is a 2-WAY STOP causing cars going along N. Claremont Street only to stop. Adding two STOP SIGNS at that intersection, causing cars going along State Street to stop would go a long way in ensuring the safety of pedestrians and cyclists on this stretch of State Street. It would also reduce accidents caused by drivers who do not realize the intersection is NOT a 4-way STOP. Thank you for your attention to this important matter and for caring about the safety of residents in San Mateo, CA.		
147234			Walking	1
147235	146974	A little girl was already hit at this intersection. We need two stop signs here - flashing crosswalks are not enough. We all walk-through this intersection petrified for our lives. Drivers continue to speed down Franklin, completely ignoring or disregarding the flashing lights. There is also a blind turn right before this intersection that causes a lot of drivers to miss the flashing lights and they can't stop in time. A car missed me and my toddler by 2 inches yesterday - it continued zooming down franklin pkwy despite seeing us walking across the crosswalk. This happens on the regular. This is a residential neighborhood - I witness families racing for their lives all the time. So many people have almost died at this intersection. A little girl actually got hit. Please do something before a tragedy happens. Please help keep us safe.		2
147252	147039	I agree. Maybe even speed bumps would be helpful because there are cars who donâ€™t slow down even when they see pedestrians in the crosswalks		0
147253	147040	The cars do not slow for the flashing lights or pedestrians they may see in the crosswalk, even children. What this section of North Delaware needs is speed bumps here and over by Woodlake Condos.		0
147254	147109	I agree either a red light or speed bumps because cars donâ€™t stop. I have been at this crosswalk with strollers and school aged children and watched cars race by even when there are flashing lights.		2
147255	147234	I live on this stretch of State Street, and I totally agree with the above comments. We need to have a 4-way stop at the intersection of State and N. Claremont Street. Thank you.		0
147256	147198	The indefinitely failed construction project and its fencing has been a traffic visibility and pedestrian hazard for years now.		1
147257		This area is now a food truck hangout with double parked cars lined up at night. This requires drivers to head into oncoming traffic to get around those double parked cars. There's also an increase in jaywalking to the food truck which is extra dangerous for cars turning off of 3rd ave at night.	Driving	2
147258		Frequent double parking and driveway blockages due to customers of Little Caesars.	Driving	0

ID	Parent ID	Body	Type	Likes
147259		The new ADA ramp at the corner of Meet Fresh is different from other corners. Here there are raised walls to the ramp which present a tripping hazard. The other ramps don't have this wall.	Walking	2
147260		There needs to be a commercial loading zone next to Hassett. Frequently, there is a semi truck double parked along Delaware at the corner than requires busy morning traffic headed south on Delaware to have to pass a long semi going head on to oncoming traffic.	Driving	2
147261		There should be a crosswalk to cross 3rd Ave here.	Walking	1
147262	147197	Fremont is also a very cramped street in general making two way traffic very challenging.		1
147263		This is a high incident area. Not sure why but there are frequently high speed collisions in this area. Maybe protected turn signals and turn lanes may help.	Driving	0
147264		Cars frequently block this intersection and cars are unable to use S Eldorado St. to cross 3rd Ave. We need a KEEP CLEAR added on 3rd Ave.	Driving	0
147265		Drivers frequently use this street to bypass traffic and SPEED through here, turning quickly at both corners and accelerating quickly along this stretch.	Driving	1
147266		it is hard to see around the parked cars along 2nd Ave. to make a right/left turn off of S Eldorado St. Frequent near misses or cars pulled way out into the 2nd Ave. before driver can see if it is all clear to turn.	Driving	1
147267		Frequent jaywalking here by pedestrians - especially during beginning/end of workday by employees from Verkada. Add crosswalk?	Walking	0
147268	147258	Pick-up @ nearby day care also adds to driveway blockages.		0
147269		Visibility to turn from 2nd Ave. onto Fremont St. is terrible with all the parked cars blocking the view. Cars frequently just enter the intersection without much care about oncoming traffic along Fremont St.	Driving	0
147270	147198	Pedestrians can't safely walk along 2nd Ave. or cross here. Construction stuff blocking way and also causing visibility issues here.		0
147271		High traffic area during drop-off/pick-up times. Turn this intersection into a 4-way STOP.	Driving	4
147272	147257	The food truck here creates visibility problems at night, especially when cars are double parked along Fremont and cars are trying to turn right onto Fremont from 2nd Ave. The food truck also encourages littering.		1
147273		Food vendors frequently sell here and cause issues with double parking as customers stop to buy food.	Driving	1
147274		Crossing is a little inconvenient for bikes especially crossing from the east side as only one side has a cross walk. It requires bikes go the opposite direction and either keep going on the side walk or wait to cross again at the light to go to the other lane. Seems always someone running the red on El Camino as well when the light turns green on Barneson.	Bicycling	1
147275		Getting to and from this side of San Mateo from the other side of the tracks, highway, ECR is extremely painful. Any route to cross the tracks and highway to here doesn't seem to be straightforward and you would need to compete with cars.	Bicycling	0
147276	147098	More attractive barriers, like removable cement bollards, would allow bikes to go in and out of B while restricting cars, and be more attractive. Also these areas should be reconfigured so that there is a pull out area for cars, since people and trucks WILL stop there to unload along 2nd and 3rd, which currently causes congestion when crossing B along 2nd and 3rd. So we should make a pull out area veering into B for cars. .		1
147277	146982	Would be good to also advertise this route to cyclists - too many people seem to bike along Delaware when this is a much better route!		0
147278	147043	Agreed! When biking north on Palm into the park, you have to make an awkward left-right swivel onto the left-side curb cut. We need a curb cut on the right, N-E entrance to the park.		2
147279	147105	Laurel is good for biking, would be good to encourage that as the thoroughfare for bikes rather than going through the park, where interactions with peds, kids, strollers, dogs... are much more likely.		2
147280	146992	It is. Curb cuts are supposed to make the cars slow down and turn more carefully!		0

ID	Parent ID	Body	Type	Likes
147281	147156	I agree its tricky but having the center lane over 101 is amazing! Maybe a bike-specific light/button or something for crossing?		3
147282	147052	This stretch of 25th between el camino and delaware is embarrassing for bike infrastructure. It is brand new and yet nothing is right! First off one of the traffic lanes should be a bike lane. Secondly, there needs to be a crosswalk under the train line for peds (and I suppose bikes) to cross the street - expecting peds to walk to either end of the block to cross is unreasonable. I'd also love to see signs to discourage cars from simply stopping in the road to drop passengers - is it so hard to pull into the train station??? And lastly the bike racks should have been placed in a more convenient location at the train station... we need to make biking more convenient than driving, which entails locating bike racks in the best places!		4
147283	147207	I assume that someday the chainlink fence between the station and Michales will be removed? It is set up to be temporary or allow opening. Or at least it should be!		2
147284		Cars turn left and right here very quickly. The corners are cut to help them do so at fast speeds.		0
147285		Pedestrians should be able to cross on both sides of the street here. Also, this intersection is very wide and the road can sometimes be like a speedway. This intersection is right by the library and the creek.	Walking	1
147286		This intersection is very wide. Itâ€™s a common walking and biking route in the community and in route to the back way to the creek.	Walking	0
147287		This is a wide intersection and a walking route to schools. Could be made to accommodate pedestrians more rather than vehicles.		0
147288		Cars turn left and right here very fast and the intersection is so wide it is difficult for pedestrians and vehicles to see each other. This is on a walking route to schools.	Walking	0
147289		This is designed to accommodate cars turning fast, but this is a walking route to schools and should be designed for pedestrian safety.	Walking	0
147290		This is a route to school. The intersection is wide and designed for cars to turn fast, not designed for ped safety.	Walking	0
147291		This is a route to school. The curbs are designed for cars to turn fast, not designed for ped safety.	Walking	0
147292		This crosses right to a school. Pedestrians can only cross on one side of the street. Peds should be able to cross on both sides. And other improvements can be made to enhance ped safety.	Walking	0
147293		This exit ramp should be closed. Vehicles are going highway speeds in a neighborhood that leads right to a school.	Walking	1
147294		Although it appears there is a transit route here, it is a completely unreliable route. The schedule is so confusing thereâ€™s no way to plan to take the route to be able to get to Beresford Park using this route, and the ECR bus is reliable and predictable but drops off too far away to be useful for this location.	Transit	0

ID	Parent ID	Body	Type	Likes
147295	147078	Hi, I would like to add my comment regarding the kids live on this block (Cypress Ave / Humboldt st.) The school bus pick-ups are between 7-8am and drop-offs 12:30-5pm at 15 S. Humboldt st. which causes significant traffic stops on Humboldt street during the rush hours on the main street to get on/off hwy 101. I live right next to the church and I frequently see drivers running the stop sign while kids are getting on/off the bus. The school bus driver yells at the kids to get on/off the bus and the road. It's not uncommon to hear the bus driver having a heated debate with the drivers ignoring the stop sign attached to the bus. The kids are excited to get off the bus, not paying much attention to the upcoming traffic assuming everyone just stops and wait for them to get off the road. The street vendors selling popsicles and sugary drinks right at the bus drop-off only makes the situation more chaotic. I honestly think the bus pick-up/drop off shouldn't be happening on the main street connecting the neighborhood with hwy 101 for the sake of safety and for preventing accidents from happening. My questions: Is there a plan to move this pick-ups/drop-offs to a more appropriate place? Thank you, Viktor		3
147296		There is not a good way to get to Laurelwood park by bus. The 250 bus is the closest. Apple Maps says itâ€™s a 12 minute walk, but it is uphill both ways, with hardly any shade. Not a good way to get to the park.	Transit	1
147297		A lot of of drivers speed, disregard red lights, stop signs and common sense altogether in this section of Delaware Street. We have had approximately 10-20 close calls over a period of 3 years, where distracted drivers have almost ran us over while weâ€™re out walking our dog in the morning (7-8am) and evening (4-5pm) hours. Some traffic cameras, policing, installation of speed bumps could help.	Driving	1
147298		Iâ€™ve witnessed several close call accidents and near predestians due to illegal U turns on people trying to get parking spots. It is just a matter of time before an accident occurs due to these dangerous driving tactics. I would recommend doubling the fine and excessive enforcement to stop this maneuver which seems to occur everytime I am Downtown, which is almost daily. This occurs on 3rd and 4th Avenue between B Street and the El Camino.		1
147299	147009	I see this happen daily. People stop at E. Hillsdale at a red light. When it looks like no one is coming thru the intersection, they go up to the second intersection to make the right turn onto Hillsdale against the red. The only solution is enforcement (randomly.)		1
147300		Bike lane here is VERY faded and hard to see.	Bicycling	0
147301	147273	People also park in the red zones.		0
147302		There are traffic accidents constantly at this intersection. Some weeks there are 3 or 4 accidents. There is no protected turn so most of the accidents are the result of left turns. Sometimes they also occur when one car stops to make a turn and another car runs into the back of the stopped car. It is a very dangerous intersection!	Driving	0

ID	Parent ID	Body	Type	Likes
147303	146974	The option I prefer and think is most pragmatic is to reduce the number of lanes on Franklin leading to Baze from both east and west. This is already done on the westbound approach, but it is "temporary". It should be permanent and the complementary eastbound lanes should be reduced to one starting some distance after Delaware.		0
147304		Performing a turn from Madison to Maple can be very difficult due to low visibility from cars parked on the corners.	Driving	1
147305	147092	When City engineers changed this intersection to a two-lane right turn from Saratoga onto Hillsdale, they told the City Council they would include a flashing yellow arrow to alert drivers making the right turn to watch for and yield to pedestrians. This was never installed. Actually installing this warning arrow would help safety. Unfortunately the two-lane right design just favors motor vehicles over people walking. Not good.		0
147306		Bicyclists traveling east on Franklin basically lose the bike path when they reach the Police HQ. They then have to move into the traffic lane to get across Saratoga and back onto a shared path at Kaiser. This is a pretty scary proposition. I see only the most intrepid cyclists doing it. There needs to be a continuation of the shared path all the way across Saratoga. This would also work for westbound cyclists too, because the path is supposed to two-way.	Bicycling	1
147307	146976	Agree. This is a bike boulevard in name only. It's not especially bike friendly. There is a share path on the north side of 28th for cyclists. Not very obvious tho.		2
147308	147156	Really need a better solution at Norfolk for the separated bike path. Getting dumped into the middle of an intersection? WTF? It's super awkward for bicyclists.		4
147309		Despite the sign that says no left turns during school hours, drivers still frequently attempt or even do make left turns despite crossing guard protests. Earlier signs, rerouting traffic and traffic calming would be great.	Walking	0
147310	146977	Yeah. Drivers usually jump ahead of pedestrians trying to cross the highway onramp. People walking have the right-of-way, but you'd not know that based on the aggressive driving here.		1
147311		The bike lane here is dicey. Most people ride on the sidewalk because drivers routinely speed on Saratoga. This street is designed as highway with four lanes. Why?	Bicycling	2
147312	147207	It's just a joke that you can literally see a way to easily get to the train platform here and..... it's fenced off. WTF?		0
147313		As a bicyclist, you get here on Fashion Island and the path just ends. One of the main reasons to be here is to get to Bridgepointe for shopping, etc. There needs to be the last section of bike infrastructure that gets all the way to Bridgepointe. Nobody is riding that last block now. Too much car traffic to be safe.	Bicycling	4
147314	147160	Agree. This bend is super unsafe due to illegal parking.		1
147315		Drivers crossing sidewallk dont always look	Walking	0
147316	146969	Agreed that the pedestrian crossing time is too short and very dangerous for pedestrians at the 31St & El Camino intersection because of the right turns. Drivers are focused on looking left at S-bound El Camino. Maybe a No Right Turn on Red is needed..		0
147317	146966	Living nearby, I've heard and seen numerous car crashes, near misses (screeching tires) at this intersection, generally because cars are speeding on Hillsdale. Traffic needs to be slower, NOBODY is driving the posted 25mph!		0
147318	147210	Agreed on the speeding cars down the Alameda Hill. However, NO ROUNDABOUTS... Americans don't know how to use one nor build on. Just look at the Roundabout at 31st & Edison, too small to be effective and with 5-6 exits (depending on how you count them)		0

ID	Parent ID	Body	Type	Likes
		I rarely, in my 30+ yrs of cycling in SM, cross over via the Hillsdale/101 overpass. It is suicidal. The E-bound Hillsdale cars in right lane are turning right to get on to the S-101 ramp, then that lanes disappears and one had to content with cars turning right at the N-101 cloverleaf ramp I remember one early morning when an Caltrans truck E-bound on Hillsdale, trying to get on to N 101 cloverleaf hit & killed a cyclist right at the entrance to the on-ramp.		
147319	146984	I prefer the slightly safer 19th Avenue route.		2
		Suicidal!!		
147320	146985	See my comment across overpass.		1
147321		Blind intersection coming up the hill on S-bound Edison, can't see W 41st Ave in either direction	Driving	0
		Yes, make it a single car lane and a wide bike lane. By making it a single car lane, speeds will automatically slow down. There used to be marked bike lanes. Now here are stupid "Share the Road" signs painted on the road, as if cyclists are going to be willing to use the full lane with speeding cars...whoever thought that up never rode bikes on roads		
147322	147211			1
147323	147156	Agreed, the center bike lane is great, but the Norfolk side needs to be handled better		3
147343		Cars speeding along this road	Driving	0
		How about a sign in the island or on traffic lights indicating that only the inner left lane goes to both N & S Bound 101 entrances. I often see all sort of lane change-issues at the intersection or just beyond on Hillsdale		
147344		overpass as drivers try to move to the right lane for the freeway entrances.	Driving	1
147345	147145	Actually Palm is one of the "better" bike routes. Certainly wider at 17-20th St. versus further South.		0
147346		How about regularly trimming the bushes & trees on E-bound Crystal Springs, so that they don't a) take my head off, b) force me into the car lane.	Bicycling	2
147353	146961	This is an extremely dangerous intersection due to visibility challenges as parked cars make it impossible to see cross-traffic. A 4-way stop would make this much safer.		0
		A 4-way stop would be a great improvement, especially due to the lack of parking enforcement of the red curbs. Cars tend to drive fast here due to the wide road but it's difficult to see cross traffic as there are constantly cars parked along the red curbs with seemingly no enforcement.		
147355	147271	Either enforce the red curbs or make this a 4-way stop.		0
		Need more parking enforcement of red curbs. While the amount of red curbs is sufficient to allow for safe turns there are constantly cars parked in red that make it impossible to see the coming cross-traffic. Without enforcement of the red curbs they are useless and would require		
147358		many more 4-way stops to improve safety.	Driving	0
147360	147093	Cars are constantly parking in the red curbs or just stopping in the middle of the street or intersections here.		1
		Yes this crosswalk gets crazy when school gets out. This crossing particularly could benefit from a crossing guard because local drivers have gotten into altercations with parents waiting		
147373	147106	to pick up their kids.		0
147374	147184	Yes pedestrian and wheelchair access to Woodlake would be helpful to avoid forcing walkers into the driveway		0
147375	147094	This crosswalk would really benefit from a crossing guard for when the bus from Bayside to this neighborhood drops off.		0

ID	Parent ID	Body	Type	Likes
147377	147223	There absolutely needs to be more traffic control in this area during pickup and drop off areas. Students will cross willy nilly and block trafffic for several minutes which causes cars to speed down the street when they can.		1
147404	146993	I agree. The road is too narrow to have cars parked on both sides, and people drive too fast along the road. This is unsafe for drivers, bicyclists, and pedestrians. I live on Tilton and see parked cars side swiped about three times per year in front of my house alone. Cars also regularly drive up onto the parkways to try to avoid getting side swiped, which detracts from the neighborhood aesthetics and also negatively impacts safety for pedestrians. I would love to see reduced speed limits, speed bumps, parking only permitted on one side, a dedicated bicycle lane along this road, and new/increased regulations and enforcement to reduce parking on parkways.		0
147405		The bushes at the residential property at the Northwest corner of 2nd and S Humboldt make it difficult to see pedestrians coming from that direction that may be trying to cross S Humboldt.	Walking	0
147406		Consider adding a 4-way stop here. There are many pedestrians regularly crossing here to get to/from Mercado El Nayarita, the hair salon, and the food truck often parked on Tilton next door.	Walking	2
147408		Vehicles turning either direction to or from 5th Ave often do not look for pedestrians before turning. Especially dangerous is the right turn from W 5th Ave onto ECR. Many vehicles do not even come to a full stop at a red light before turning in front of pedestrians with right of way.	Walking	3
147429		Seems like an accident is bound to happen since oncoming traffic from 17th turning left on el camino is not yielding to right turn green lights from bovet traffic.	Driving	0
147434		Please consider making all of Ellsworth and b street between 2nd and fourth street closed to vehicle traffic. This would reduce traffic incidents and allow for safer pedestrian walkways throughout the downtown. Iâ€™ve observed many near-crashes between cars and pedestrians as people try to turn, make U turns, and reverse to get a parking spot. If at all possible, turning part of 3rd or 4th street into pedestrian only as well could be extremely beneficial, (eg by diverting third street car traffic to second street)		0
147476		This road is not in great shape and needs to be repaved.	Driving	0
147477		Visibility turning left out of Hillside Garden is not good. It's hard to see oncoming traffic coming from the left side. Maybe increase the red zone to not allow cars to park so close to the driveway here.	Driving	1
147478	147261	A cross walk might encourage drivers not to block this intersection when traffic backs up from the light @ Delaware. Otherwise, adding a KEEP CLEAR section here would help.		0
147479		The ped/bike bridge over 101 was a priority project about a decade ago, but apparently ran into funding problems. Still should be supported.	Bicycling	4
147480		Analyze roundabout potential? For Alameda intersections, like at Barneson, 31st, Hilldale.	Driving	1
147481		Like the raised crosswalk at Garfield & 28th. Prefer this to the "temporary" rubber speed humps on 28th and 31st Avenues. Conventional speed humps also better. More roadway narrowing measures: curb bulbouts, planter islands in parking lane?	Walking	0
147482		Provide Caltrain grade separation here.	Walking	0
147483		Enforcement of new 15 mph school speed zones needed.	Driving	1
147484	146969	Consider reducing number of lanes on ECR, at least southbound shared right/through, instead of separate, and put in curb bulbout for		0
147488	147043	Cars do not always stop at the stop signs on 9th Ave and Palm. Iâ€™ve witnessed many near pedestrian accidents. Need flashing lights, bright yellow crosswalks, please.		2
147491	147408	Possibly add a phase separation for the pedestrians before the green phase for vehicles. Also only have a pedestrian crossing on the opposite side of the intersection to allow for better visibility or look into diagonal crosswalks since it is a really busy intersection for multiple users.		0

ID	Parent ID	Body	Type	Likes
147492		High speed through posted 10MPH zone. Speed hump has minimal affect. Especially bad during school drop off/pick up times.	Driving	0
147493	147009	Lane signage is inadequate. Too many drivers turn right onto Hilldale from Saratoga left hand lane causing frequent swerving and near misses.		1
147494		Good spot for pedestrian crossing flashing lights. Vehicles turn right on red without stopping.	Walking	0
147495		People run red lights well after the light turns red. If you had 1-2 days with Motorcycle patrol, there would be plenty of tickets	Driving	0
147496		cars parked in the evening blocking access to the bay trail for cyclists, usually one with shark stickers on the side. Occupants inside smoking drugs. Also a hazard for kids playing in the playground next to it.	Bicycling	1
147497		needs a bikelane on the left side guiding cyclists over 101.	Bicycling	1
147498	147157	+1, also some driveways there. It just is too difficult to get into the protected bike lane over 101.		1
147499		impossible to enter the road safely when using the bike/pedestrian bridge. The bridge itself is often filled with litter and poop.	Bicycling	2
147500		add a bike lane	Bicycling	1
147501	147210	The Hillsdale/Alameda intersection should have a traffic light. I saw enough pedestrians, mainly kids almost being hit before and after school hours. The four way stops failed our pedestrians during busy hours.		0
147502		The 101 over-crossing is great, but headed westbound on a bike you're all of a sudden stuck at 3rd and Humboldt. There is no safe obvious way to continue along 3rd without crossing all lanes of traffic (to the outside "slow" lane of 3rd). As others have mentioned, the crosswalk timing is also difficult, making this quite an unsafe intersection for pedestrians and cyclists using the over-crossing.	Bicycling	1
147503		This crosswalk allows less than 10 seconds for pedestrians to cross 6 lanes of traffic across el camino. Literally (used correctly), every time I see someone crossing here they are either in the way of oncoming traffic or they're in imminent physical danger from cars turning from 25th onto NB el camino. I see a pedestrian have a cross call more than once a month. I was told 2+ years ago that this is a state route so the city can't change the crosswalk timing; that is irrelevant from a pedestrians point of view. I urgently needs adjustment.	Walking	2
147504		This curb is missing an accessible curb cut, yet the curb across the street has one. This path is highly trafficked by parents with strollers and other folks who really need curb cuts.	Walking	0
147505	147042	The huge expanse of intersection also creates safety problems for cyclists. Drivers often don't turn their head far enough to see a cyclist traveling NB before they start their turn.		1
147506		This is *the most* dangerous part of my daily cross town bike commute (while carrying my daughter on my bike). Drivers through here are out of their minds with frustration because of slow traffic on el camino that they're avoiding, trying to beat lights, etc. And there is no bike at all! I would encourage local traffic only to parking garages, speed bumps, or other large changes to the traffic patterns here. A mounted SMPD officer told me this area is one of the worst, but is also the highest traffic route for cross-town bike commuters. He's even had people threaten him while on duty, riding an SMPD bike on the road.	Bicycling	2
147507	147185	I have biked past here hundreds of times over the past few years and have only *not* seen cars illegally parked here a handful of times. It is super unsafe considering it's a recommended bike route.		3
147508		There should be prominent crosswalks here as it is a primary entrance to College Park Elementary. The school added a crossing guard here last year, but no infrastructure/paint exists to indicate it is a crosswalk.	Walking	3
147509		This street should be one-way between Humboldt and Delaware (or some substantial portion) to control traffic and improve pedestrian safety. It is extremely crowded in the mornings during school drop-off and not wide enough for two way traffic. Crosswalks are dangerous with so many drivers (many of whom are late / distracted).	Driving	0

ID	Parent ID	Body	Type	Likes
147510	147009	Traffic coming off 100 to Saratoga West is ridiculous. It blocks up traffic trying to go straight on Saratoga (either turning onto Hillsdale or going straight into the village).		0
147511		This crossing needs a dedicated button for cyclists to trigger the lights on both sides of the road. It's very difficult to access the sidewalk on a bike, and the lights don't change without pushing the button.	Bicycling	0
147512	147207	What morons agreed that Delaware should be one lane through the Bay Meadows project? With no turn lanes? No idea how it can be changed now. Try keeping this in mind as you continue to build on every spare inch of land.		0
147513		I bike along this route to and from the Hillsdale caltrain daily. There is no bike lane, and cars do not yield to cyclists at all coming on and off the highway. This issue is Bidirectional. I have had multiple instances where distracted drivers and speeding drivers have switched right in front of me. The especially bad part is going north on delaware riding past the gas stations. The two right turn lanes make it very difficult for me to continue straight, as drivers will actively cut cyclists off or be sitting in between two lanes. Personally, I am a very confident cyclist, even in high traffic conditions. However, this junction has been a huge danger for my daily commute and has made it very unsafe to get to and from the train station.	Bicycling	2
147514		How the hell are you going to deal with traffic with all of the new units that are being built on Norfolk and Delaware?		0
147515	147346	The north side of the road is Hillsborough DPW unfortunately. I have complained 3 times since 2021 and they have done absolutely nothing. To be honest I think some citizens should consider doing it themselves.		0
147516	147346	The road is literally 1-2 FEET narrower on the westbound side of the road because of overgrown shrubs and compacted dirt / weeds growing on the pavement.		0
147517	147313	I ride it fairly often and it is indeed totally unsafe.		1
147518	147163	This strava segment is called "roots of all evil" for a reason. To say that it's "rough" is putting it too mildly, it is straight up hazardous. Really needs to be repaved.		2
147519		This intersection needs a stop sign on pacific. Due to cars speeding and bad visibility, itâ€™s unsafe to turn onto pacific from Antioch (in either direction)	Driving	0
147526		An illegal restaurant here results in many cars parking in the bike lanes and in the traffic lanes in both directions. This forces cars to serve intro oncoming traffic, and bikes to have to swerve into car lanes. The illegally parked vehicles also obstruct visibility for drivers and people entering the busy road. Police never enforce this no stopping rule.	Driving	1
147528	147171	Agree the bike lanes are a huge improvement but people keep blocking the bike lanes with stopped cars.		2
147529	147269	The utility box at the northeast corner of second and Fremont here also adds to the visibility problem. This route is heavily used by pedestrians bikes and vehicles and is utter chaos at times with people surging from the stun sign south of here.		0
147533	147513	I agree, this is a difficult intersection, and northbound cars turning onto the freeway ramp display little courtesy for either pedestrians or cyclists		0
147534	147434	It would be a huge improvement to DTSM to pedestrianize more than just two blocks of B st.		0
147535	147298	Plus the constant outrageous right turns to race pedestrians crossing Ellsworth at Fourth		0

ID	Parent ID	Body	Type	Likes
147536	147096	As a pedestrian while waiting to cross Saratoga Dr at Park Pl, I see many cars run the red light for a right turn on red. Most drivers don't look for pedestrians and it feels like a tragedy waiting to happen. This intersection needs no right turn on red or enforcement of stopping before turning to be enforced. When crossing Park Pl as a pedestrian, the crosswalks do not give enough time to cross the entire intersection. You often have to wait through 2 light cycles- one for each direction of Park Pl.		0
147537	147269	This intersection has been a complete mess ever since the (seemingly never to be finished) construction of Fremont Terrace began. The fence and food truck donâ€™t help safety for cyclists		0
147538	147266	I bike along 2nd often and experience the same with cars pulling far out into the street before they can seem. Theyâ€™re usually committed by thenâ€¦.		0
147539		Crossing the two slip lanes here always feels very dangerous - there's limited visibility of the cars coming over the overpass and no flashing pedestrian signal.	Walking	0
147540		It would be nice to have speed bumps on W Hillsdale Blvd and a marked crosswalk here to make accessing Monterey St and the Creek Overlook Trail safer. Cars flying down the hill on W Hillsdale Blvd make this feel unsafe trying to look both ways to cross the street.	Walking	0
147541	147476	This is a failed road with no attempts to fixing the potholes north of Monte Diablo to Poplar. Danger to vehicle and cyclists.		0
147542		This is an extremely poorly controlled intersection that causes long backups on Poplar. This is a very busy intersection with challenges for turning or getting by stopped traffic.	Driving	0
147543		This is a very dangerous intersection for cars on Poplar trying to get onto 101 S. 101 traffic exiting alters the sequence of cars trying to get on from Poplar and Amphlet. Drivers on Amphlett do not always stop and follow right of way trying to get onto 101.	Driving	0
147544		This intersection is extremely busy and causes blockages for cars exiting 101. Traffic on Poplar trying to get on Humbolt are stuck in a long line of cars trying to get onto 101. Each green light may yield two cars that pass through the intersection at peak time.	Driving	0
147545		Extremely congested street not suitable for parking on both sides and two way traffic.	Driving	0
147547		Traffic coming off 101 to San Mateo West Side and traffic that is trying to get onto the 101 is often chaotic.	Driving	0
147549		Additional crosswalks would be helpful for school crossing	Walking	1
147555		Weds street sweeping occurs in this neighborhood twice a month from 11-1 pm which coincides with the 12:25 and 12:35 pick up time for College Park Elementary. This creates a lot of additional congestion as neighborhood families and those doing pick up struggle to find parking. If street sweeping can be adjusted to be done by 12, or after 12:35, it would alleviate congestion.		1
147556	147509	This street is pretty narrow in the morning and drivers going both directions have to wait and/or take turns passing by to go either direction. This is noticeable in the morning as there are a few schools in the area.		0
147562		Change N. Eldorado, San Antonio, N. Fremont, and N. Grant to one way. Changing streets to one-way will help traffic flow through these narrow streets. Drivers get very aggressive on these streets trying to rush to next pinch point (where cars are parked on both sides) and try to get through pinch point instead of waiting for car coming in opposite direction. These streets are nearly impassable if garbage truck, school bus, or other large vechicle is driving towards you.	Driving	0
147564		To avoid the red light, Drivers heading east on Tilton Ave regularly cut through parking lot and then turn south onto San Mateo Drive. And often not stopping while driving out of parking lot. I think this should be expensive traffic ticket (~$2000), the drivers are knowingly not following traffic laws	Driving	0

ID	Parent ID	Body	Type	Likes
147565		To avoid the red light, Drivers heading west on 12th Ave drive through the small bank parking lot and then turn North on El Camino Real. This is so annoying.	Driving	0
147567		Once a week I see someone driving 65+ mph along S. Fremont from 4th to 10th, normally headed south. I think they are trying to "beat" the evening commute traffic	Driving	0
147568		Consider closing 1st Ave between Caltrain tracks and S. B street. Turn this area into a park / green space. This area, the box of Ellsworth, Transit Center Way, Caltrain track, and 2nd ave could be improved by decreasing number of roads	Other	0
147569		Work with Hillsborough, there should be a sidewalk along Woodland Drive, especially on the uphill bend, when high school lets out, there are kids everywhere. sidewalk is needed in San Mateo and Hillsborough parts of Woodland Drive. Woodland Drive gets a fair amount of traffic from people coming down Tournament and heading to Alameda de las Pulgas.	Walking	0
147570	147217	There needs to be better traffic control for parent drop offs in all areas surrounding this school. Itâ€™s total traffic chaos for cars, and dangerous for cyclists and pedestrians		0
147571	147198	Agree that this is a dangerous area with visibility challenges from construction water tank and fencing. Narrowed lane is also challenging for cyclist safety		0
147572	147163	Would love to see a ton of work in this area to make it ok for pedestrians (of all abilities) and cyclists. It gets a lot of use, and could be an pretty little Creekside area as well		1
147573	147145	I like most of Palm for bike riding, but feel more vulnerable on the approach (either direction) to crossing under 92. Cats speed up signifivpcantly here for reasons unknown		1
147574	147143	My vote too - cars are constantly trying to usurp pedestrians at most right turn crossings downtown. Thereâ€™s a huge argument to make the central blocks to downtown car free		1
147575	147099	Agree - traffic is usually traveling fast on Grant as it crosses Concar. The many commercial vehicles parked on Grant donâ€™t help.		0
147576	147009	God forbid you try to ride a bike through here in any direction. Itâ€™s much safer to enter the sidewalk as far distant from the intersection as possible		0
147577	146999	This is such a common problem throughout downtown that no right on red would dramatically improve safety in the core downtown		0
147578	147304	Agree, would be nice to add a distance of red curb (no parking) to improve visibility. Add red curb to Maple Street on south corner of intersection with Madison Ave. The red curb is not needed on north corner.	Driving	1
147579	147544	Additionally any northbound cyclist takes their life into their hands as southbound cars turning right will inevitably ignor (or not notice) them in their haste to get to the freeway		0
147580		This is a bad five intersection. End De Sabla Road so that it does not have access to El Camino Real. Turn this into a standard four intersection.	Driving	0
147581		For Poplar, driving NE (from ECR to 101), approaching the San Mateo Drive intersection, traffic backs up at the morning in the straight lane, but not in the left turn lane. Drivers who want to turn left will often travel into the oncoming traffic lane to get in front of the backup and make the left turn lane/light. This is extremely dangerous given the bike lane and volume of traffic here. There should be bollards on the center line to prevent drivers from doing this.	Driving	0
147582		The Town of Hillsborough will be adding several dozen new units in Tobin Clark, next to CSM, as part of its housing element. I believe that new residents will drive via CSM. The City and CSM need to take measures to make sure that these drivers do not endanger existing residents who walk and bike in this quiet neighborhood and on campus.	Walking	0
147583	147313	There is a ChickFilA coming to Bridgepointe. Per the experience of Redwood City, there will be a huge amount of traffic generated. Much of this will be teenagers, who often aren't the best drivers. We should make it as easy as possible for kids to bike and walk to Bridgepointe from the west side of 101 to reduce dangerous and voluminous teen auto traffic.		1

ID	Parent ID	Body	Type	Likes
147584		There needs to be a crosswalk here for all of the Aragon HS students walking to school. It is unreasonable to ask them to walk that far to the next crosswalks in order to cross the street. There should be crosswalks where people want to walk. Also some signage to slow traffic. A pedestrian was hit here last year.	Walking	1
147585		This street is too fast - 50 MPH!. It is wide and straight and becomes a race track. This is wrong given it is right next to a major park with little kids. It is also used by people on bikes who want to get to the adjacent Bay Trail.	Walking	0
147588		This road needs a diet. Despite there being a crosswalk with lights, cars still speed dangerously around this curve		0
147589		Pedestrian residents here walk down hill in the bike lane, to Safeway. Probably deserves a real sidewalk, as they are feet from oncoming vehicle traffic	Walking	0
147590	147296	Drivers regularly exceed 25mph because this road is abnormally wide and straight and there are zero painted crosswalks. This is regrettable because this is a major walking path to San Mateo High School, and residents heading north/south to/from Burlingame.		0
147591		Continue the bike lanes farther west on 9th Avenue so people can ride bikes to Central Park!	Bicycling	1
147592		I have been yelled at by motorists while crossing the crosswalk here, across ECR. The crossing distance is too long to be comfortable or feel safe, especially for parents going to San Mateo Park Elementary on foot.	Walking	0
147593		A bike boulevard needs to have speed control measures. Painting 'bike boulevard' is a joke. Traffic calming (speed humps, diversion, etc.) is needed on streets labeled bike boulevards.	Bicycling	0
147594	146965	Additionally the sidewalk on the east side of the street is incredibly narrow. It is almost too narrow for two pedestrians to walk past each other.		0
147595		Install a great bike facility all the way to Hayward Park Station.		0
147596	147234	The intersection here is beyond enormous. It is incredibly wide with huge accommodating turning radii to encourage speeding cars, and no painted crosswalks.		2
147597		The crosswalk here is a long distance and an accommodatingly wide turning radius for cars encourages speeders who cannot respond quickly to the realization of pedestrians in the crosswalk	Walking	0
147598		Writing 'share' is not an acceptable bike facility. Remove parking or at least change it to parallel to allow for separate bike facilities. I've been buzzed by drivers and honked at in this area, even with a kid on the back.	Bicycling	1
147599	147170	I cannot speak to students using this lane, but I use it regularly outside of school start/end and am very grateful for the new safety that the bike lanes provide me. I would not be able to safely bike this stretch if they did not exist.		0
147600	147144	Serious traffic calming is needed on Palm to discourage passing people on bikes dangerously. Through traffic should be on El Camino.		0
147601		Provide a way through here for people to ride bikes to and from Caltrain.	Bicycling	0
147602	147156	A center running bike path farther east along 3rd Ave to connect to the Bay Trail would be amazing! Much better connections to Norfolk are needed, too.		0
147603		A road diet with separated bike facilities is needed here. This is incredibly uncomfortable to ride through.	Bicycling	0
147604	147211	Share the road markings should be banned on any street with volume more than a quiet residential street. Alameda de las Pulgas needs a road diet from end to end so that people can ride to the schools, parks and other destinations along the street.		0
147605	147171	Please finish the job by removing the bulb-outs that force bikes to share the lane with cars in many places. I've spoken with several people who won't ride Humboldt because of these scary merges.		0
147606		This doesn't need to be 5 lanes. Please consider a road diet and use the space for protected bike lanes and designated loading zones so people don't block the bike lanes like they do today.	Bicycling	0
147607	146979	Remove traffic lanes on 25th Avenue for bike facilities to connect Palm and Delaware. With 28th and 31st open, 25th doesn't need to carry as much traffic.		1

ID	Parent ID	Body	Type	Likes
147608	147479	Online the Hillsdale bike Project Phase says in Preliminary Design. Other cities like Palo Alto, Menlo Park already opened up new bike bridges during the 10 year period.		0
147609		Add easier bike access to creek path	Bicycling	0
147610		Parking encroaching on the corners at this intersection goes totally unenforced, causing blind turns. Only a matter of time before there is a disastrous accident at this intersection--the recently added blinker helps for pedestrian crossing.	Driving	0
147611	147564	My wife & I cut through this parking lot on our bikes, as it is the safest option. This parking lot will go away though soon, and be replaced with a preschool, according to city signage.		0
147612	146981	There are no bike lanes on San Mateo Drive between Tilton & Baldwin. Why?????????? They just stop at Tilton and become a shared road where vehicles angrily pass in the middle suicide lane on San Mateo Drive. Totally unsafe to be a bicyclist on this stretch.		0
147613	147506	San Mateo Drive is too wide, lots of angry drivers trying to pull in/out of Sutter medical center's massive parking garage. A bike lane and bulb outs for pedestrians would make the road narrower & feel a lot safer for those outside of cars.		0
147614	147046	I have seen near fatal car-on-pedestrian accidents, even with the flashing beacon. Pedestrian crossing on 5th here is not honored 5% of the time, which is enough for it to be fatally dangerous.		0
147615	147027	Perhaps this intersection could be made a roundabout, to ensure reduced car speeds.		0
147619		I have been almost hit in this intersection easily more than 20 times by ppl turning left on to EC ior right from EC onto popular who either donâ€™t see me, but more frequently do not care a pedestrian is in the cross walk. This includes with a stroller. Some sort of additional enforcement needs to happen here.	Walking	0
147620		This weird fake round about is such a pain. People are so confused about it and never signal properly and constantly almost collide. The city should either remove the center landscaping and make it a normal intersection or a true round about	Driving	0
147621		Crystal Springs & Polhemus should be a 4-way stop sign intersection.	Driving	0
147622		This comment is for the downtown as a whole. I regularly walk around downtown from my apartment and now that includes w my infant son in his stroller. The number 1 thing we could do to improve pedestrian and biking safety downtown is get rid of right in red. I cannot tell you how many times I have almost been hit by a driver turning right in red in Dan Mateo (and actually was hit once). It doesnâ€™t matter if you have the crosswalk, itâ€™s itâ€™s broad daylight, if youâ€™re walking w your 6â€5â€ spouse who is in dayglow yellow, and a stroller that youâ€™ve attached reflective tape a lights to, they will still act like they never saw you. When I was 6 mo pregnant I was almost hit 5 times between Mounds Rd and Central Park - broad daylight, I always had the crosswalk light / 2x drivers never saw me (too busy looking for cars instead of pedestrians), 1 didnâ€™t see me but their passenger did and screamed for them to stop and 2 Saw me in the crosswalk, made eye contact and still almost hit me bc it was more important for them to get were they were going faster than my safety. Right on red is a failed experiment that study after study has shown leads to vastly increased pedestrian and cyclist injury and death.		0
147627		It is unclear how bicyclists exiting this trail should turn right or left here across 2 lanes of traffic--not a safe intersection for those on bicycle & no options to cross on foot.	Other	0
147628	147145	I do not see a reason that car traffic needs to drive this underpass. The only traffic I notice are cut-through traffic avoiding El Camino Real. Please install a modal filter, it would make this a true bike boulevard instead of a shared road w/ high speed cars		0

ID	Parent ID	Body	Type	Likes
147629		This overpass would be improved greatly for bicyclists if they were grade-separated from 35mph+ car traffic. Instead they are at the same grade, while pedestrians on the sidewalk are above grade. If both were, I expect there would be much higher bike access to Coyote Point & the bay trail	Bicycling	0
147630		Crossing Peninsula on foot continues to be extremely dangerous. The crosswalks are unpainted, poorly lit and drivers do not yield to pedestrians >50% of the time, in spite of high foot traffic of San Mateans walking to downtown Burlingame.	Walking	0
147631		The 31st Ave speed bumps should continue West past Hillsdale High School since many students park in the neighborhood and have to cross 31st to get to campus. Currently the speed bumps end before the school which makes no sense at all.	Driving	2
147632	147168	Lots of cars doing donuts late at night.		0
147633	147168	Not enough parking spaces on this street. Hardly anyone uses the bike lanes here.		0
147634	147168	Why is there a no turn on red now with the new bike lanes that only 5 people use? It delays the morning traffic and was a waste of money to put in.		0
147635		Sidewalks on these streets should be fixed. We canâ€™t teach our kids how to ride a bike because the sidewalks are broken.		0
147636	147168	Sidewalks need to be fixed.		0
147637	147631	The speed cushions work, but only for the areas they are in. As soon as drivers get past them, they increase speed rapidly. They should be extended, probably up to Mason, and there should be regular patrol or speed traps in the afternoons on side streets.		1
147638		Fernwood, like all of the narrow streets north of 31st, is filled with students at school start and end times, frequent speeding, and there is low visibility at corners because students often park close to corners and driveways. Sideswipes are very common on Fernwood. Enforcement is an answer, so is possible signage or red curbs.		2
147639		Sylvan receives speeders at high school start and end times. Students sometimes achieve 50mph on this narrow street - it is intermittent. Speed bump studies have been done, but apparently it's never frequent enough to trigger deployment. Suggest regular enforcement, and possible changes to the intersection at Fernwood, which can become impassible.	Driving	3
147640		This intersection often gets drivers who do not yield to pedestrians at all. I once was walking to school with 4 children and a driver completely ignored the stop sign, came to a stop only when I yelled, and missed a child by only about 10 feet. I think the crosswalk should be raised. Again, once the speed bumps end, drivers immediately speed up until they get to Mason.	Walking	1
147641		The entire street should be highlighted for problems of visibility for drivers and pedestrians due to speeding and excessive parking - which is always better at the start of the school year, but gets worse as more students start driving throughout the year.	Walking	0
147642	147211	I have seen a lot of speeding between 28th and 31st avenue. Switching to 2 lanes might work, but maybe if some left turn lanes were preserved so drivers from Sylvan, 30th, 29th, and others could enter Alameda from the opposite direction. The 2nd lane serves as a landing lane in this situation. But too much speeding overall - crossing as a pedestrian is frightening even at the official crosswalks.		0
147643		I am dismayed that Hillsdale High School does not encourage, advertise, or allow students to park in this parking lot. Instead, they over-park in the neighborhood immediately to the north of the school. Students should be using this lot, and families should also drop off kids on Alameda (yes, and then walk for 3 minutes), rather than idling and inching along in the neighborhoods north of the campus for even longer periods of time just to get to a close drop off point.	Other	0
147644	147641	I should also emphasize that the crowding that happens due to parking makes walking to school hazardous.		0

ID	Parent ID	Body	Type	Likes
147645		The entire street of Eisenhower is unsafeâ€¦.High traffic due to school and very few stop signs on cross streetsâ€¦Speeding and ignoring stop sign in front of the school is common place. Also, please remove parking from corner or Eisenhower and Roberta so people can see cars around the turn.		0
147646	147186	Fashion Island and Norfolk needs flashing lights on street when people cross. Super hard to see anyone with freeway structure. Lots of cyclists and people on motorized scooters.		0
147648		The sidewalk or crosswalk is pretty much constantly blocked around this corner by vehicles parked on the sidewalk or inside the crosswalk.	Walking	0
147654	147639	Many high school students and parents use Sylvan Ave to bypass the speed bumps on 31st Ave. They are consistently exceeding the speed limit on Sylvan Ave during the school year, especially between 8:20-8:30AM and after school. There has been no enforcement efforts.		2
147659		Over the past several months, I've been concerned about pedestrian safety at the exits of the multiple parking towers, not just this one. The limited visibility for both drivers and pedestrians poses a significant risk to the safety of pedestrians as they navigate these areas. I believe that installing mirrors at strategic points at the exits of the parking tower can greatly enhance pedestrian safety and minimize potential accidents.	Walking	0
147660	147064	I also left a comment for the other side of this parking structure. Both exits are so dangerous for pedestrians.		0
147661		Illegally parked cars leaving their wheels on the sidewalk on the north side of Tilton. Obstructs pedestrian access to El Camino Real (lots of foot traffic here trying to catch ECR Samtrans bus).	Transit	0
147662		This crosswalk is very long distance-wise, cars yield ~50% of the time to pedestrians.	Walking	0
147663		Lots of dangerous drivers right-turning-on-red at this intersection. Not hospitable to pedestrians	Walking	0
147666	147296	Car Drivers regularly drive 35 mph on DeAnza Blvd between 92 and Laurel wood park. This is a 25 mile zone for cars and there are lots of cyclists and walkers on DeAnza Blvd. Need a stop sign at corner of DeAnza and Parkwood heading west.		0
147667		Crowded street with parked cars on both sides, extremely difficult to drive by and not safe for kids walking to school and crossing frequently. Congestions due to not enough room for cars from both directions.		0
147670		Please consider adding speed reducing elements to other parts of 31st Ave. Extremely hard to pull out of driveways due to the speed of cars on this road and the amount of cars that roll through the stop signs.		0
147687	147670	Yes, I live down the hill, and with the curves I do not know how anyone up here gets out of their driveway in the 230 to 530pm period. We need regular speed enforcement at a minimum. Note that the high school has 2 or 3 afternoon rush hours.		0
147688		If you are walking up or down 31st avenue across Beverly, Landsdale, or any of the other streets, it is frightening because the young drivers that make up most of the drivers do not know to respect pedestrians (in addition to speeding). Possibly should have a crosswalk at every intersection in this area - that might remind the drivers to stay out of the intersection when pedestrians are present. Then you can also enforce this. Enforcement should be daily, by the way, not occasionally.		0
147689		Cars often rush pedestrians at this intersection, leaving little room. The four lanes make it even harder than usual to cross. 28th avenue is a "hurry" street, where non locals try to get through the area as fast as possible.	Walking	0
147690		The high school is not asking its students to park on this section of 31st (same as the parking lot off Alameda), there are usually 20-30 open spots - instead, the students park in the neighborhood north of the school, affecting residents ability to drive and walk safely in the AM and afternoon. Yes it's a longer walk for students, but their convenience comes at the expense of our safety, and these spots sit empty.		0

ID	Parent ID	Body	Type	Likes
147691	147212	Not only is it confusing for a driver, but the steep hills make it hard to see in the distance. A cyclist was killed here a few years ago. I think 3 way stop signs are probably the only solutions.		0
147692	147210	Re: roundabouts, don't expect them - they require a lot of space. Probably not enough space here for one, unless the city were going to acquire houses (not gonna happen). So come up with other ideas? A traffic light that functions during rush hours, but reverts to flashing red (i.e. a4 way stop) for most of the day?		0
147708	147631	Drivers speed up rapidly after the 2nd bump near Hillsdale Highâ€™s parking lot exit. This occurs during the day and night. Lived here nearly 20 years and drivers are going faster up this block after the install of the speed bumps.		0
147709		At the crosswalk, add a flashing light button for pedestrians or a stop sign at this intersection to reduce the speeding going up to the stop sign at Del Monte on 31st.	Driving	0
147710	147631	Speed bump pieces on the ground do not stay in place and gets loose every few months.		0
147759		Though the intersection is a 4-way stop, cars on Edison don't slow down much and visibility is bad coming in and out of the Hillsdale garage. Cars don't really expect people to be here and we've had a couple of near misses. It's the best place to get out of East Hillsdale park and into the mall, but the crossing and lack of pedestrian infrastructure inside the parking garage (coupled with fast speeds and distracted drivers) makes for a harrowing experience.	Walking	0
147766		Cars making right onto Aragon donâ€™t always see the pediatricians crossing Aragon (up or down Alameda de las Pulgas)	Walking	0
147801		Can you please help us. People speed tremendously in Pico Av.		0
147802		This block of Pico is the narrowest by approximately four feet. Vehicles continually speed down the street and through the intersection of Dolores and downhill onto this narrow section. We need a stop sign at the Dolores intersection.	Driving	0
147823	147304	I was involved in a car accident last year for this very reason. Quite often cars park northbound on Maple street up very close to the intersection of Madison Ave. and it is very unsafe and difficult to see oncoming traffic going Northbound on Maple St.. In addition, Maple St. is a very busy street especially during school morning and afternoon hours as well as rush hour (morning and evening).		0
147848	147057	I want to echo this comment. I have nearly bit hit here multiple times when traveling on 28th westbound crossing El Camino. Happened again today. Cars turning left onto El Camino North from 28th do not seem to realize traffic is flowing westbound through the intersection.		0
147849		There is a crosswalk in this area that is used by children and families going to George Hall. Cars are able to park close to the crosswalk and it is extremely difficult to see pedestrians waiting to cross. I have been surprised many times to see someone step out. They are not visible until in the roadway due to the parked cars. Very dangerous.		0

Appendix D:

Countermeasures Toolbox Memorandum

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Technical Memorandum

February 10, 2023 Project# 27516

To: Josh Pilachowski
City of San Mateo
330 W. 20th Avenue
San Mateo, CA 94403

From: Kittelson & Associates, Inc.

CC: Bethany Lopez, Nikki Chan; City of San Mateo

RE: San Mateo Local Roadway Safety Plan - Safety Countermeasures Toolbox Memorandum

INTRODUCTION

Kittelson & Associates, Inc. ("Kittelson") is working with the City of San Mateo ("City") to identify countermeasures to improve roadway safety performance as part of their Local Road Safety Plan (LRSP). This memorandum summarizes the engineering and non-engineering treatments that could be implemented by the City to reduce crash frequency, severity, and risk throughout the City.

This memorandum begins with a discussion of engineering treatments/countermeasures identified for the City based on the crash patterns and trends analysis, as well as a review of characteristics at high priority intersections and roadway segments identified through the citywide network screening evaluation. This is followed by a discussion of potential education, enforcement, equity, and emerging technology strategies to partner with engineering countermeasures in working towards improving roadway safety performance across the City.

ENGINEERING TREATMENTS

This section presents engineering safety treatments identified to address citywide crash patterns and trends and potential emphasis areas as documented in the *Crash Patterns and Trends Technical Memorandum*. The emphasis areas are identified based on the analysis of crash types, locations, movements, and behavioral factors and are considered in identifying the treatment groups in this stage of the LRSP development. These emphasis areas are as follows:

- Pedestrians and Bicyclists
- Intersections
- Improper Turning
- Driver Speed
- Alcohol and drug involvement
- Aging and young drivers

The treatments have been grouped into five treatment groups that most directly address the City's crash patterns and trends for fatal and severe injury crashes, and overall crashes.

The five treatment groups identified include:

- Pedestrian Related Treatments
- Bicycle Related Treatments
- Signalized Intersection Treatments
- Unsignalized Intersection Treatments
- Roadway Segment Treatments

For each of these treatment groupings, priority countermeasures have been identified and summarized based on the crash types addressed, quantitative effectiveness of the treatment, and implementation considerations.

Pedestrian Related Treatments

Pedestrian related treatments were identified as one of the priority countermeasures for the City because pedestrian-involved crashes were overrepresented among fatal and serious injury crashes in the City. Pedestrian-involved crashes make up nearly 36% of all fatal and severe injury crashes but only 9% of total crashes.

The following countermeasures were identified for potential application in San Mateo:

- Install Sidewalk/Pathway
- Crosswalk visibility enhancements
- Additional Pedestrian Crossing Improvements
    a. Pedestrian Refuge Island
    b. Rectangular Rapid Flashing Beacons (RRFBs)
    c. Pedestrian Hybrid Beacons (PHBs)
- Signalized Intersection Pedestrian Treatments
    a. Leading Pedestrian Interval
    b. No Right Turn on Red
    c. Pedestrian Countdown Signal Heads
    d. Pedestrian Scramble

The information provided in the sections below is adapted from the Federal Highway Administration (FHWA) *Field Guide for Selecting Countermeasures at Uncontrolled Pedestrian Crossing Locations* (FHWA Field Guide, 2018)[1], National Cooperative Highway Research Program (NCHRP) *Guidance to Improve Pedestrian and Bicyclist Safety at Intersections* (NCHRP, 2020), and California *Local Roadway Safety Manual* (California LRSM)[2].

Install Sidewalk/Pathway

Description: Sidewalks and walkways provide people walking or rolling with a separated space to travel within the public right-of-way.

Purpose: Crash analysis patterns and trends for the City of San Mateo show that the third most frequently reported pedestrian action for total reported crashes and second most frequently reported pedestrian action for fatal/severe injury reported crashes was "In Road, including shoulder" (14% and 16%, respectively). According to the California LRSM, the presence of sidewalks on both sides of the street results in significant reductions in "walking along roadway" pedestrian crash risk compared to locations where no sidewalks or walkways exist.

[1] https://safety.fhwa.dot.gov/ped_bike/step/docs/pocket_version.pdf
[2] https://dot.ca.gov/-/media/dot-media/programs/local-assistance/documents/hsip/2020/lrsm2020.pdf

Application: Per LRSM guidance document, this treatment may be considered for application under the following roadway context to be eligible for Highway Safety Improvement Program (HSIP) funding:

- Pedestrian and bicycle crashes have occurred within the limits of the new walkway; and,
- An existing narrow sidewalk is not being replaced with a wider one.

Considerations: This treatment can be considered in locations with high pedestrian volumes, areas noted as not having adequate or no sidewalks, and a history of walking along roadway pedestrian crashes.
Systemic Application: Sidewalks are most likely to be integrated as part of larger capital improvement projects or installed as their own capital improvements. This treatment may be better suited as a spot treatment or a treatment package.

Crash Reduction Factor: 80% (California LRSM, 2020).

Planning Level Cost: Varies. The costs will vary depending upon factors such as sidewalk width, materials, and existence of curb, gutter, and drainage. Asphalt curbs and walkways are less expensive when compared to sidewalks but require more regular maintenance.

Crosswalk Visibility Enhancements

Description: This group of countermeasures includes high-visibility crosswalk markings, improved nighttime lighting, advance or in-street warning signage, curb extensions, and parking restrictions. For locations with unmarked crosswalks, lighting, curb extensions, and parking restrictions may be considered to improve sight distance and visibility of pedestrians. Figure 1 shows an example of a high-visibility pedestrian crosswalk treatment and Figure 2 shows an example of curb extensions combined with a raised crosswalk.

Figure 1: High-Visibility Crosswalk

Source: City of Sacramento, CA

Figure 2: Curb Extensions and Raised Crosswalk

Source: FHWA

Purpose: Analysis showed that the most frequently reported pedestrian action for total and fatal/severe injury crashes is "Crossing in crosswalk at intersection" (64% and 68%, respectively). Crosswalk visibility enhancements may be used to indicate preferred locations for people to cross, to increase visibility of the crossing location, and to help reinforce the driver requirement to yield the right-of-way to pedestrians at crossing locations.

Application: FHWA Field Guide recommends the following countermeasures at all established midblock or uncontrolled crosswalk locations:

- High-visibility crosswalk markings

- Overhead lighting
- On-street parking restrictions or curb extensions

Additionally, adding advance Yield Here to Pedestrian sign and yield line should be considered for the following roadway combinations of average daily traffic (ADT), number of travel lanes, and posted speed limit conditions:

- Any ADT + 4 or more lanes (with or without a raised median) + any posted speed limit
- Any ADT + any number of lanes + ≥ 35 mph posted speed limit

Per FHWA Field Guide, on roadways with 4 or more lanes and more than 9,000 vehicles per day, the risk for pedestrian crashes could increase if uncontrolled marked crosswalks are not combined with other treatments, such as refuge islands or Pedestrian Hybrid Beacons.

Considerations: These treatments may help address most traffic behaviors or safety issues but are most needed when the following conditions are observed at the site:

- Drivers not yielding to pedestrians in crosswalks
- Inadequate conspicuity/visibility of the crosswalk and pedestrian
- Noted conflicts at crossing locations.

Systemic Application: Low-cost crosswalk visibility enhancements may easily be integrated into other ongoing maintenance or capital improvement projects. This could include integration into routine restriping or resurfacing activities. Markings would likely have to be redone on a regular basis, which may increase maintenance costs.

Crash Reduction Factor: 25 - 40% depending on the treatments selected.

Planning Level Cost: Varies - $5,000 – 20,000 depending on the treatments selected.

Additional Pedestrian Crossing Improvements

Pedestrian Refuge Island

Description: A pedestrian refuge island is a median with a dedicated separated space for pedestrians to protect pedestrians who are crossing the street. This countermeasure is also referred to as a crossing island or pedestrian island. Figure 3 shows an example of a pedestrian refuge island treatment.

Purpose: Analysis showed that the 11% of the total pedestrian crashes are "Crossing not in crosswalk" and the most frequently reported pedestrian action for total and fatal/severe injury crashes is "Crossing in crosswalk at intersection" (64% and 68%, respectively). These treatments are add-ons to address these pedestrian-related crashes and to address issues discussed earlier in this section. Refuge islands allow pedestrians a place for refuge during multiple-stage crossings and to focus on identifying adequate gaps in traffic for one direction of vehicular travel to cross at a time. This treatment also reduces the crossing distance for pedestrians. Refuge island also positions crossing pedestrians in the sightline of drivers approaching the intersection, potentially reducing conflicts.

Application: Per FHWA Field Guide, refuge islands may be considered under the following roadway conditions:

- Any ADT + 2 or 3 lanes (without a raised median) + any posted speed limit

- ADT ≥ 9,000 + 4 or more lanes (without a raised median) + any posted speed limit
- Any ADT + 4 or more lanes (without a raised median) + ≥ 35 mph posted speed limit

Figure 3: Pedestrian Refuge Island

Source: NACTO

Considerations: This countermeasure is most effective where the following are observed at the site:

- Inadequate conspicuity/visibility of the crosswalk and/or crossing pedestrian
- Excessive vehicle speeds or traffic volumes
- Insufficient pedestrian separation from traffic during long crossings

Systemic Application: Raised concrete medians are most likely installed as their own capital improvement projects and are usually installed in conjunction with a marked crosswalk and warning sign. Interim crossing islands can be implemented systemically using flexible delineators and temporary curbing.

Crash Reduction Factor: 45% (California LRSM, 2020).

Planning-Level Cost: $2,000 - $41,000 per island, depending on the length of the island (the average cost of the island is $13,500 with an average cost per square foot of $10). The costs for concrete islands will be higher than for asphalt islands, though the lifespan of concrete is longer when compared to the lifespan of asphalt.

Rectangular Rapid Flashing Beacons (RRFBs)

Description: Rectangular Rapid Flashing Beacons (RRFB) include pedestrian-activated flashing lights and additional signage that enhance the visibility of marked crosswalks and alert motorists to pedestrian crossings. They use an irregular flash pattern that is similar to emergency flashers on police vehicles. RRFBs may be installed at unsignalized intersections and at mid-block pedestrian crossings. Figure 4 shows an example of a RRFB treatment.

Figure 4: Rectangular Rapid Flashing Beacons

Source: Texas A & M Transportation Institute

Purpose: RRFBs have been shown to significantly increase driver yielding behavior at uncontrolled crosswalks, with motorist yielding rates ranging from 34% to over 90% (NCHRP, 2020). This treatment helps reduce pedestrian-vehicle conflicts and increases the visibility of pedestrian crossing locations.

Application: Per FHWA guidance, RRFBs may be considered for the below conditions:

- ADT ≤ 15,000 + 2 lanes or one lane in each direction with a raised median + ≥ 40 mph posted speed limit
- ADT 9,000 – 15,000 + one lane in each direction with or without median + ≥ 35 mph posted speed limit
- Multilane (more than one lane in each direction) with <40 mph posted speed limit

Considerations: This treatment may be considered for potential RRFB installation locations:

- RRFBs shall not be used without the presence of a pedestrian crossing sign.
- An RRFB should be installed in the median rather than the far-side of the roadway if there is a pedestrian refuge or other type of median.
- Advance yield pavement markings and signs may be used to supplement RRFBs.
- Solar-power panels can be used to eliminate the need for a power source.
- Other treatments may be more appropriate in locations with sight distance constraints.

Systemic Application: RRFBs are mostly likely to be integrated as part of larger capital improvement projects or installed as their own capital improvements. This treatment may be better suited as a spot treatment or a treatment package.

Crash Reduction Factor: 35% (California LRSM, 2020).

Planning Level Cost: $4,500 to $52,000 each, with the average cost estimated at $22,250. These costs include the complete system installation with labor and materials.

Pedestrian Hybrid Beacons (PHBs)

Description: A Pedestrian Hybrid Beacon (PHB) is a traffic control device that uses beacons to control traffic when activated. PHBs are used to control traffic and revert to all dark until a pedestrian activates it via a push button or other form of detection. When activated, the beacon displays a sequence of flashing and solid lights that indicate when vehicles must stop and when pedestrians should cross. Figure 5 shows an example of a Pedestrian Hybrid Beacon.

Figure 5: Pedestrian Hybrid Beacon

Source: City of San Luis Obispo, CA

Purpose: PHBs provide active warning to drivers and control their movements when a pedestrian is in the crosswalk. PHBs have been shown to significantly increase driver yielding behavior at uncontrolled crosswalks, with motorist yielding rates exceeding 90% (FHWA 2014). These devices have been successfully used at school crossings, parks, senior centers, mid-block crossings, and other pedestrian crossings on multilane or higher-speed streets.

Application: Per FHWA guidance, PHBs may be considered in the following conditions:

- AADT of at least 15,000 + 4 or more lanes + any speed limit
- AADT of at least 9,000 + 3 or more lanes (with or without median) + ≥ 35 mph speed limit
- Any AADT + any number of lanes + ≥ 40 mph speed limit

Considerations: This treatment may be considered when the following factors are observed on site:

- Long pedestrian delay due to few available gaps in traffic
- Drivers not yielding to pedestrians in crosswalks
- Noted vehicle-pedestrian conflicts at crossing locations.

Systemic Application: PHBs are most likely installed as their own capital improvement projects.

Crash Reduction Factor: 15 - 69% (California LRSM, 2020).

Planning Level Cost: $21,000 - $128,000 with an average per unit cost of $57,680.

Signalized Intersection Pedestrian Treatments

Description: This group of treatments include strategies for enhancing pedestrian crossings at signalized intersections, including: implementing leading pedestrian intervals, prohibiting right-turns on red, pedestrian countdown signal heads, and pedestrian scramble. Each of these strategies is summarized below:

- **Leading Pedestrian Interval (LPI):** A leading pedestrian interval (LPI) gives pedestrians the opportunity to begin crossing 3-7 seconds before vehicles are given a green indication. With this head start, pedestrians can better establish their presence in the crosswalk before vehicles have priority to turn left to increase their visibility and reduce potential conflicts.

- **No Right-Turn on Red (no RTOR):** This treatment restricts motorists from turning right during a red phase. The posting of "No Turn on Red" signs (static or dynamic) may be posted to restrict these turns, according to the specifications set forth in the California Manual on Uniform Traffic Control Devices (CA MUTCD). Dynamic signs may be used to restrict right turns during certain times of day or during certain signal phases.

- **Pedestrian Countdown Signal Heads:** A pedestrian countdown signal contains a timer display and counts down the number of seconds left in the crossing phase. Countdown signals can reassure pedestrians who are in the crosswalk when the flashing "DON'T WALK" interval appears that they still have time to finish crossing. Countdown signals may begin counting down either when the "WALK" or when the flashing "DON'T WALK" interval appears and stop at the beginning of the steady "DON'T WALK" interval. Figure 6 shows an example of a pedestrian countdown signal head.

- **Pedestrian Scramble**: Pedestrian scramble (also known as Barnes Dance) is a form of the pedestrian "WALK" phase at a signalized intersection in which all vehicular traffic is stopped, allowing pedestrians to safely cross through the intersection in all directions simultaneously, including diagonally. Figure 7 shows an example of a pedestrian scramble treatment.

Figure 6: Pedestrian Countdown Signal Heads

Source: FHWA

Figure 7: Pedestrian Scramble

Source: Virginia Department of Transportation (VDOT)

Purpose:

- LPIs increase visibility of crossing pedestrians and reduce conflicts between pedestrians and vehicles. This treatment increases the likelihood of motorists yielding to pedestrians because pedestrians are in the crosswalk by the time traffic signal turns green for parallel vehicle movements[3].
- No RTOR eliminates conflicts between right-turning vehicles and pedestrians and bicyclists traveling through.
- Pedestrian countdown signal heads have been shown to encourage more pedestrians to use the pushbutton rather than cross against the signal. These countdown signals provide information to pedestrians about the amount of time remaining to safely cross the street at signalized intersections.
- A pedestrian scramble reduces conflicts between vehicles and pedestrians and improves pedestrian access and safety.

Application: Per NCHRP guidance document[4], the following treatments may be considered for application under the following roadway contexts:

- LPIs and No RTOR treatments may be considered at signalized intersections with medium to high motor vehicle turning volumes and pedestrian volumes.
- Pedestrian countdown signal heads may be considered at any signalized intersections where they do not exist. These can be prioritized to locations used by mobility-challenged, elderly pedestrians, or adults accompanying small children.
- Pedestrian scramble may be considered at intersections where pedestrian volumes outnumber vehicular volumes.

Systemic Application: LPIs and pedestrian countdown signal heads are better suited as systemic treatments in areas where there are existing pedestrian signals and high volumes of pedestrians and turning vehicles. No RTOR may be implemented as a systemic treatment, paired with a solution to address higher right-turn on green needs, if needed. Pedestrian scrambles are typically implemented as spot treatments or a treatment package in areas with very high pedestrian activity.

[3] http://www.pedbikesafe.org/pedsafe/countermeasures_detail.cfm?CM_NUM=12#:~:text=LPIs%20increase%20the%20percentage%20of,green%20for%20parallel%20vehicle%20movements.
[4] https://www.trb.org/Main/Blurbs/180624.aspx

Crash Reduction Factor: LPI – 59%; No RTOR – 25%; Pedestrian Countdown Signal Heads – 25%; Pedestrian scramble – 40%

Planning-Level Cost: LPIs: $550 - $6,000, including countdown timer, controller, signal head and software upgrade; No RTOR: $200 - $6,000 depending on the type of sign (electronic vs. others); Pedestrian countdown signal heads: $190 - $1,930; Pedestrian scramble: $5,000 - $15,000 depending on signal timing modifications and pavement markings.

Bicycle Related Treatments

Bicycle-related treatments were identified as one of the priority countermeasures for the City because bicyclist-involved crashes were overrepresented as compared to other crash types among fatal and serious injury crashes in the City. Bicyclist-involved crashes are 6% of total crashes but account for 19% of the total fatal and severe injury crashes in the City.

The following countermeasures were identified in bicycle related treatments:

- Install bike lanes
- Extend bike lanes through intersection
- Road diets (Reduction of vehicle travel lanes)
- Install advance stop bar before crosswalk (Bike boxes)
- Install bicycle signal heads

The information provided in the sections below is adapted from the Federal Highway Administration (FHWA) *Safety Guide and Countermeasure Selected System (FHWA BIKESAFE)*[5] and National Cooperative Highway Research Program (NCHRP) *Guidance to Improve Pedestrian and Bicyclist Safety at Intersections* (NCHRP, 2020), National Association of City Transportation Officials (NACTO) Urban Bikeway Design Guide (NACTO, 2011)[6] and California Local Roadway Safety Manual (California LRSM).

Install Bike Lanes

Description: This treatment designates a portion of roadway for the preferential or exclusive use of bicyclists through striping, signage, and pavement markings. Bike lanes typically run in the same direction of traffic, though they may be configured in the contra-flow direction on low-traffic corridors for the connectivity of a particular bicycle route. Different types of bike lanes are as follows:

- ***Conventional Bike Lanes:*** These bike lanes designate an exclusive space for bicyclists using pavement markings and signage. These are located adjacent to motor vehicle travel lanes and flow in the same direction as motor vehicle traffic.

- ***Buffered Bike Lanes*:** These bike lanes are conventional bike lanes paired with a designated buffer space separating the bike lane from motor vehicle travel lanes and/or parking lane. Figure 8 shows an example of a buffered bike lane.

- ***Contra-Flow Bike Lanes**:* These bike lanes allow bicyclists to ride in the opposite direction of motor vehicle traffic. They convert a one-way street into a two-way street: one direction for motor

[5] http://pedbikesafe.org/BIKESAFE/
[6] https://nacto.org/publication/urban-bikeway-design-guide/

vehicles and bikes, and the other for bikes only. Figure 9 shows an example of a contra-flow bike lane.

- ***Left-Side Bike Lanes***: These bike lanes are conventional bike lanes placed on the left-side of one-way streets or two-way median divided streets. Figure 10 shows an example of a left-side bike lane.

Purpose: Bike lanes provide separation from vehicular traffic, and help bicyclists to ride at their preferred speed without interference from prevailing traffic conditions. They also facilitate predictable behavior and movements between bicyclists and motorists and reduces potential conflicts between motorists and bicyclists.

Application: Per the NACTO Urban Bikeway Design Guide, the following treatments may be considered for application under the following roadway contexts:

- ***Conventional Bike Lanes:*** ADT ≥ 3,000 + ≥ 25 mph posted speed limit + high transit vehicle volumes
- ***Buffered Bike Lanes:*** ADT ≥ 3,000 + ≥ 35 mph posted speed limit
- ***Contra-Flow Bike Lanes:*** On streets where bicyclists are already riding the wrong way, and on low-speed and low volume streets
- ***Left-Side Bike Lanes:*** ADT ≥ 3,000 + ≥ 35 mph posted speed limit + one-way or median divided streets + frequent transit stops or loading zones on right side of street.

Considerations: These treatments may be considered when any of the following factors are observed on site:

- Presence of sidewalk or wrong-way riding behavior by bicyclists;
- Limited connectivity and access to bicyclists; or,
- Presence of right or left-turning conflicts between bicyclists and motor vehicles at intersections and/or driveways.

Systemic Application: Low-cost bike lane installations may easily be integrated into other ongoing maintenance or capital improvement projects, provided it involves striping the roadway and minor signing. This could include integration into routine restriping or resurfacing activities. Bikeway projects that require roadway widening, right-of-way acquisition and environmental impacts are most likely addressed as capital improvement projects given the increased cost and complexity of these improvements.

Crash Reduction Factor: 35 - 45% depending on the treatments selected.

Planning-Level Cost: Varies – approximately $55,000 per 100 feet, depending on treatments selected and existing roadway configuration.

Figure 8: Buffered Bike Lane

Source: NACTO

Figure 9: Contra-Flow Bike Lane

Source: NACTO

Figure 10: Left-Side Bike Lane

Source: NACTO

Extend Bike Lanes through Intersection

Description: Bicycle pavement markings through intersections indicate the intended path of bicyclists through an intersection or across a driveway or ramp. They guide bicyclists on a safe and direct path through the intersection and provide clear boundary between paths of bicyclists and motorists. Figure 11 shows an example of bicycle pavement markings through intersections.

Purpose: Crash patterns analysis for the City of San Mateo shows that the most frequently reported crash type for total and fatal and severe injury bicyclist-involved crashes is broadside crashes (48% and 32% respectively). The use of bicycle pavement markings through intersections helps raise awareness for both bicyclists and motorists to potential conflict areas. This treatment also reinforces that the through bicyclists have priority over turning motor vehicles.

Application: Per the NACTO Urban Bikeway Design Guide, bicycle pavement markings may be considered for application at particularly wide or complex signalized intersections, where the bicycle path may be unclear.

Figure 11: Bike Lane markings through intersections

Source: Maricopa Association of Governments

Considerations: This treatment may be considered when any of the following factors are observed:

- Presence of right or left-turning vehicle conflicts with through bicyclists; or,
- Locations with bicycle lanes or separated bike lanes where it is desired to delineate the bicycle crossing;

Since the effectiveness of markings depends entirely on their visibility, maintaining markings should be a high priority where this treatment is considered.

Systemic Application: Bicycle pavement markings are mostly likely to be integrated as part of larger capital improvement projects along major bike routes. This treatment may be better suited as a treatment package in urban neighborhoods.

Crash Reduction Factor: 39% (ODOT, 2021)

Planning-Level Cost: Varies. $200 - $5,000 per intersection depending on surface area of markings, materials used, and the color of markings.

Road Diets (Reduction of Vehicle Travel Lanes)

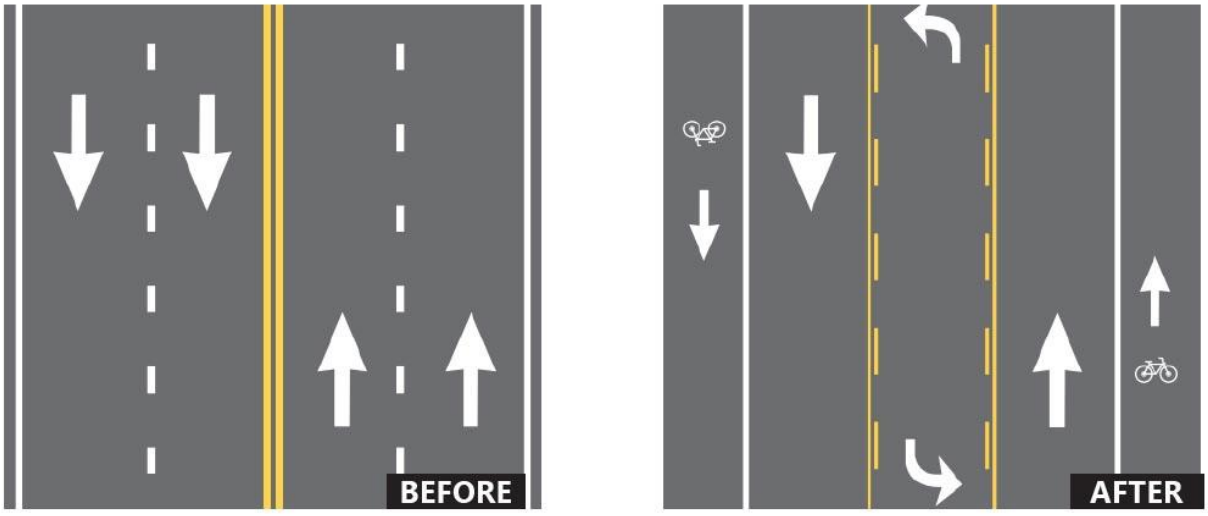
Description: Road diets reduce the number of travel lanes on the roadway and provide space to implement pedestrian and bicyclist related treatments, including adding bike lanes and median crossing islands. The most common road diet configuration involves converting a four-lane roadway into three travel lanes (with one lane in each direction and a two-way center-turn lane to facilitate turning movements), often supplemented with bike lanes, pedestrian refuge islands, and crosswalk visibility enhancements. Figure 12 shows an example of a road diet i.e., reconfiguration of a roadway.

Purpose: From the crash patterns analysis for the City of San Mateo:

- Head-on crashes comprise 16% of the fatal and severe injury bicyclist-involved crashes;
- Unsafe motor vehicle speed is the most frequently reported primary crash factor for fatal and severe injury bicyclist-involved crashes (26%) and is the third most frequently reported primary crash factor for total bicyclist-involved crashes (10%);
- Walking in Road – including shoulder, crossing not in a crosswalk and crossing in a crosswalk not at an intersection are among the most frequently reported pedestrian actions for pedestrian-involved crashes.

Road Diets are intended to improve access management, increase pedestrian and bicyclist access, and enhance roadway safety. Studies indicate a 19 to 47 percent reduction in overall crashes when a Road Diet is installed on a previously four-lane undivided facility as well as a decrease in crashes involving drivers under 35 years of age and over 65 years of age[7]. Road Diets can reduce the vehicle speed differential, which can reduce the number and severity of crashes[8].

Figure 12: Road Diet



Source: FHWA

Application: Per the NCHRP Guide, road diets may be considered for application for the following contexts:

- At priority pedestrian and bicycle routes; or,

[7] FHWA "Evaluation of Lane Reduction Road Diet Measures on Crashes", FHWA Report No. FHWA-HRT-10-053., Washington D.C., 2010.
[8] https://safety.fhwa.dot.gov/road_diets/guidance/info_guide/rdig.pdf

- In urban and suburban areas with multilane roadways that are designed for vehicle throughput rather than multiple modes of travel.

Considerations: This treatment may be considered when any of the following factors are observed on site:

- Presence of left-turning conflicts between bicyclists and motor vehicles; or
- Desire to better accommodate pedestrians and bicycle traffic.

Systemic Application: Road diets are most likely addressed as their own capital improvement projects and are usually installed in conjunction with bicycle lanes and/or a pedestrian refuge island. However, they may be implemented as part of resurfacing or other minor capital improvement projects where restriping and minor signs are the only elements needed for the road diet implementation.

Crash Reduction Factor: 26 - 43%

Planning-Level Cost: Varies. $25,000 - $40,000 per mile, depending on context and configuration.

Bike Box

Description: A bike box is a designated area at the head of a traffic lane at a signalized intersection that provides bicyclists with a safe and visible way to get ahead of queuing traffic during the red signal phase. Figure 13 shows an example of a bike box.

Figure 13: Bike Box

Source: NACTO

Purpose: Crash patterns analysis for the City of San Mateo shows that:

- Broadside crashes are the most frequently reported crash type for total and fatal and severe injury bicyclist-involved crashes (48% and 32% respectively).
- Automobile right of way is the second most frequently reported primary crash factor for bicyclist-involved crashes.

The use of bike boxes increases visibility of bicyclists and helps prevent "right-hook" or "left-hook" conflicts with turning vehicles at the start of the green indication. In addition to increasing the visibility of bicyclists, bike boxes provide priority for bicyclists by allowing them to come to the front of a queue.

Application: Per the NACTO Urban Bikeway Design Guide, bike boxes may be considered for application at signalized intersections with high volumes of bicyclists and/or motor vehicles, especially those with frequent bicyclist left-turns and/or motorist right-turns.

Considerations: This treatment may be considered when any of the following factors are observed on site:

- Presence of right- or left-turning conflicts between bicyclists and motor vehicles;
- Desire to accommodate left-turning bicycle traffic;
- A situation where the dominant motor vehicle traffic flows right and bicycle traffic continues through (such as a Y intersection or access ramp).

Systemic Application: Bike Boxes are most likely to be integrated as part of capital improvement projects along major bike-routes. This treatment may be better suited as a treatment package in urban neighborhoods.

Crash Reduction Factor: 35% (ODOT, 2021)

Planning-Level Cost: $5,000 per box, including green thermoplastic, pavement markings and signage.

Install Bicycle Signal Heads

Description: Bicycle signal heads are an additional traffic-control device installed at signalized intersections to provide guidance and right-of-way control to bicyclists in specific circumstances. Figure 14 shows an example of a bicycle signal head.

Figure 14: Bicycle Signal Head

Source: NACTO

Purpose: Bicycle signal heads may be used to improve safety and operations at signalized intersections where bicycles require specific guidance.

Applications: Bicycle signal heads may be considered for application under the following contexts:

- At intersections with bicycle-specific movements such as contraflow bike lane or separated bike lanes where bicycle-specific control is required
- At intersections where bicycle movements need to be separated in time from a conflicting vehicular movement, such as locations with a high volume of left- or right-turns
- At intersections with high bicycle volumes where bicyclists would otherwise follow the pedestrian indication (such as shared-use path crossings) or vehicular indication

Considerations: This treatment may be considered when any of the following factors are observed on site:

- Presence of intersections where a bicycle facility transitions from a cycle track to a bicycle lane; or,
- Locations with highly used bicycle route that must cross a major signalized intersection to connect users to the rest of the route.

Systemic Application: Bike signals are better suited as a spot or corridor treatment at intersections that are complicated for bicyclists to navigate, intersect a primary bicycle route, and have high bicycle volumes. This treatment may be used as a treatment package in cases where agencies want to create a "green wave" effect by timing bicycle signals along the corridor to allow bicyclists to move through intersections at a consistent speed.

Crash Reduction Factor: 45% (ODOT, 2021)

Planning-Level Cost: Varies. $1,000 per signal face and increases with the number of signal heads and bicycle detection required.

Signalized Intersection Treatments

Crashes within the influence area of a signalized intersection represent 28% of total crashes and 39% of fatal and severe injury crashes in the City of San Mateo. Reducing conflicts with non-motorists, right angle, and rear-end crashes, crashes during dusk/dawn and dark without street lighting have been identified as priority areas for signalized intersection treatments in San Mateo. The countermeasures in this section seek to improve the visibility of the intersection and reduce the potential for conflicting movements within the intersection.

The following treatments were identified for signalized intersections in the City of San Mateo:

- Install intersection lighting
- Improve signal hardware
- Provide advanced dilemma zone detection
- Install left-turn lane and add turn phase (signal has no left-turn lane or phase before)
- Provide protected left-turn phase (left turn lane already exists)

The information provided in the sections below is adapted from FHWA Signalized Intersections: Informational Guide[9], California Local Roadway Safety Manual (California LRSM) and current research.

Install Intersection Lighting

Description: This treatment involves adding intersection lighting to improve safety during nighttime conditions.

Purpose: In the City of San Mateo, 32% of fatal and severe injury pedestrian-involved crashes occurred in the evening when it is dark, and 14% of fatal and severe injury bicyclist-involved crashes occurred when it is dark. Providing intersection lighting improves safety during nighttime conditions by:

- Making drivers more aware of their surroundings, which improves perception-reaction times;
- Enhancing drivers' available sight distances to perceive roadway and intersection characteristics in advance of the change; or
- Improving non-motorists' visibility and navigation.

Application: This treatment may be considered at locations with crashes that may indicate that night-time drivers are unaware of the roadway characteristics.

[9] *https://safety.fhwa.dot.gov/intersection/signal/fhwasa13027.pdf*

Considerations: This treatment may be considered at intersections with disproportionate number of night-time crashes and do not currently have lighting at the intersection or on its approaches.

Systemic Application: This treatment may be implemented to upgrade intersections that have experienced nighttime crashes and have no or limited lighting. New signal or signal modifications should consider installing adequate street lighting as a proactive measure to prevent crashes.

Crash Reduction Factor: 20 - 74%

Planning- Level Cost: $7,000 to $10,000 per light

Improve Signal Hardware

Description: This treatment involves installing new LED lighting, signal back plates, retro-reflective tape outlining the back plates, or additional signal heads to increase signal visibility.

Purpose: Providing better visibility of intersection signals aids drivers' advance perception of the upcoming intersection. Visibility and clarity of the signal should be improved without creating additional confusion for drivers.

Application: This treatment may be considered at signalized intersections with a high frequency of broadside and rear-end crashes.

Considerations: This treatment is a human factors enhancement of a traffic signal's visibility, conspicuity, and orientation for all drivers. This treatment may also improve intersection awareness during periods of power outages or during evening and night conditions, when the signals would otherwise be dark, providing a visible cue for drivers to stop at the intersection ahead.

Systemic Applications: Due to the low cost of this treatment, it may be implemented systemically throughout the city.

Crash Reduction Factor: 0 – 46%

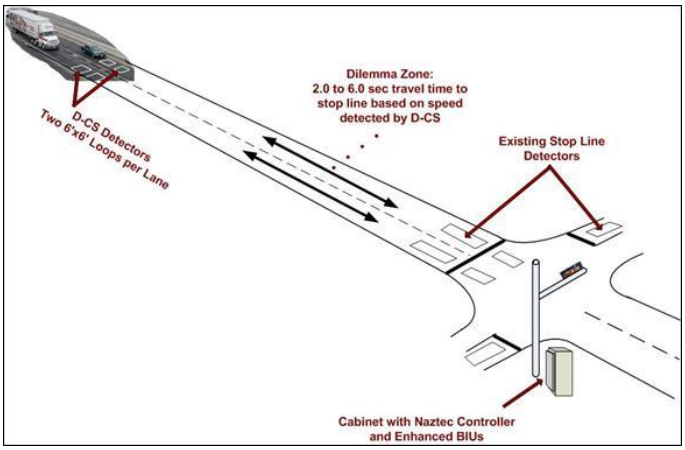
Planning-Level Cost: $1,500 to $3,000 per signal head

Provide Advanced Dilemma Zone Detection

Description: The Advanced Dilemma-Zone Detection system enhances safety at signalized intersections by modifying traffic control signal timing to reduce the number of drivers that may have difficulty deciding whether to stop or proceed during a yellow phase. This system uses pulse (or advanced) detectors placed at one or more locations on the intersection approach to extend the green phase and prevent the onset of yellow while approaching vehicles are in the dilemma zone. Figure 15 shows an example of an Advanced Dilemma Zone Detection System.

Purpose: This treatment may reduce rear-end crashes associated with unsafe stopping and angle crashes due to illegally continuing into the intersection during the red phase. Advanced dilemma-zone detection uses the speed, location, and length of vehicles to calculate the location of the dilemma zone relative to both vehicle speeds and their intersection approach.

Figure 15: Advanced Dilemma Zone Detection System



Source: FHWA

Application: This treatment may be applied at intersections that have a high frequency of broadside and rear-end crashes.

Considerations: Installation costs should be low and the time to implement short. Additional modifications to the traffic signal controller may also be necessary.

Systemic Applications: This treatment can be very effective as a systemic approach. Video detection equipment is now available for this purpose, making installation and maintenance more efficient and cost effective.

Crash Reduction Factor: 39%

Planning-Level Cost: $25,000 to $30,000 per system. If a system is already in place, signal timing updates would be $5,000 - $8,000.

Install left-turn lane and add turn phase (signal has no left-turn lane or phase before)

Description: Provides exclusive left-turn lanes and appropriate signal phasing for left-turning vehicles.

Purpose: Left-turn lane allows separation of left-turn and through-traffic streams, thus reducing the potential for rear-end crashes. Left-turn phasing also provides a safer opportunity for drivers to make a left-turn. The combination of left-turn storage and a left turn signal has the potential to reduce many crashes between left-turning vehicles and through vehicles and/or non-motorized road users.

Application: Left-turn lanes may be considered at intersections which have difficulties in accommodating left-turning vehicles and have high angle, rear-end, and sideswipe crashes.
According to the FHWA Signalized Intersections: Informational Guide, left turn phasing may be applied at intersections under the following contexts:

- The left-turning movement crosses 3 or more lanes of opposing through traffic
- The posted speed of opposing traffic exceeds 45mph
- A minimum of 2 left-turning vehicles per cycle and the product of opposing and left-turn hourly volumes exceeds

- Random arrivals (no other traffic signals within 0.5 miles): One opposing lane – 50,000 vehicles per hour and two opposing lanes – 90,000 vehicles per hour
- Platoon arrivals (other traffic signals within 0.5 miles): One opposing lane – 50,000 vehicles per hour and two opposing lanes – 90,000 vehicles per hour

Considerations: Left-turn lanes increase the capacity of the approach by adding an additional approach lane; they allow for a wider variety of phasing options. On the other hand, left-turn lanes may increase the overall intersection cycle length, adding delay to all users.

Crash Reduction Factor: 17 – 58%

Planning-Level Cost: Varies. $25,000 – $200,000 per approach for restriping the left-turn lane and adding left-turn phase.

Provide Protected left-turn phase (left-turn lane already exists)

Description: The protected left turn phase provides a green arrow for left turning vehicles while stopping both on-coming traffic and parallel pedestrian crossings to eliminate conflicts.

Purpose: A properly timed protected left-turn phase can help reduce rear-end and sideswipe crashes between left-turning vehicles and the through vehicles as well as vehicles behind them and reduce conflicts with pedestrians crossing parallel to vehicular traffic.

Application: This treatment may be considered in the following contexts:

- The pedestrian and bicyclist crossing phase often conflicts with left-turn maneuvers
- Providing protected left-turn phases can significantly improve the safety for left-turn maneuvers by removing the need for the drivers to navigate through gaps in oncoming/opposing through vehicles.

Considerations: Protected left-turn phases are warranted based on factors such as turning volumes, delay, visibility, opposing vehicle speed, distance to travel through the intersection, presence of non-motorized road users, and safety experience of the intersections. Protected left-turn phasing may reduce intersection capacity or require longer lengths and may impact signal system coordination.

Systemic Application: Adding a protected left-turn phase where a left-turn currently exist may be implemented systemically at signalized intersections or integrated with capital improvements at the signal due to the limited needs for the additional phase (adjusting signal timing and dedicated left-turn signal heads).

Crash Reduction Factor: 16 – 99%

Planning-Level Cost: Adjusting signal phasing/timing is very low cost. New signal equipment can range from $8,000 to $150,000 depending on what materials are needed.

Unsignalized Intersection Treatments

Crashes within the influence area of an unsignalized intersection represent 65% of total crashes and 54% of fatal and severe injury crashes in the City of San Mateo. From the crash patterns analysis for the City of San Mateo, reducing conflicts with non-motorists, improper turning, rear-end crashes, unsafe speed, crashes during dusk/dawn and dark without street lighting are identified as priority areas for unsignalized intersections' treatment. The countermeasures suggested in this section seek to improve the visibility of the intersection, reduce the potential for conflicting movements within the intersection, thereby reducing the number of conflict points within the influence area of the intersection.

The following treatments were identified for unsignalized intersections in the City of San Mateo:

- Install intersection lighting
- Convert to all-way STOP control (from 2-way or Yield control)
- Install roundabouts
- Install or upgrade intersection signage and/or pavement markings
- Improve sight distance to intersection (clear sight triangles)
- Install right turn/left-turn lane
- Create directional median openings to allow (and restrict) left-turns and U-turns

Install Intersection Lighting

Description: This treatment involves adding intersection lighting to improve safety during nighttime conditions.

Purpose: In the City of San Mateo, 32% of fatal and severe injury pedestrian-involved crashes occurred in the evening when it is dark, and 14% of fatal and severe injury bicyclist-involved crashes occurred when it is dark. Providing intersection lighting improves safety during nighttime conditions by:

- Making drivers more aware of their surroundings, which improves perception-reaction times;
- Enhancing drivers' available sight distances to perceive roadway and intersection characteristics in advance of the change; or
- Improving non-motorists' visibility and navigation.

Application: This treatment may be considered at locations with crashes that may indicate that night-time drivers are unaware of the roadway characteristics.

Considerations: This treatment may be considered along unsignalized intersection approaches with disproportionate number of night-time crashes and do not currently have lighting at the intersection or at its approaches.

Systemic Application: This treatment may be implemented to upgrade the City's existing unsignalized intersections that have experienced nighttime crashes.

Crash Reduction Factor: 20 - 50%

Planning- Level Cost: $7,000 to $10,000 per light

Convert to all-way STOP control (from 2-way or Yield control)

Description: STOP sign at intersection approaches warns drivers to slow down and prepare to stop.

Purpose: All-way stop control can reduce broadside and improper turning crashes at unsignalized intersections by providing more orderly movement at an intersection, reducing through, and turning speeds, and minimizing the safety effect of any sight distance restrictions that may be present.

Application: This treatment may be considered at unsignalized intersections that have broadside and improper turning crashes and have no controls on major roadway approaches.

Considerations: All-way stop control is suitable only at intersections with moderate and relatively balanced volume levels on the intersection approaches. Under other conditions, the use of all-way stop control may create unnecessary delays and aggressive driver behavior. This countermeasure only applies to crashes occurring in the intersection and/or influence area of the new control. California MUTCD warrants must always be followed.

Systemic Application: This treatment may be implemented as a systemic approach but is most often implemented as a spot treatment.

Crash Reduction Factor: 50%

Planning-Level Cost: Varies. $500 per sign which does not include the installation cost.

Install Roundabouts

Description: This treatment consists of installing a roundabout as traffic control at an intersection. A roundabout is a type of circular intersection without traffic signals or stop signs, where drivers travel counterclockwise around a center island. When entering the roundabout, drivers yield to existing traffic, then enter the intersection and exit in their desired direction. Figure 16 shows an example of a roundabout.

Figure 16: Roundabout

Source: FHWA

Purpose: Roundabouts are designed to eliminate left turns by requiring traffic to exit to the right of the circle. Roundabouts are installed to manage vehicular speeds through the intersection, improve safety at

intersections by eliminating broadside and head-on crashes, reducing the severity of crashes, and helping the traffic to flow more efficiently.

Application: This treatment may be considered at any intersection with a high frequency of reported crashes, traffic delays, complex geometry (more than four approach roads), frequent left-turns, and/or relatively balanced traffic flows.

Considerations: Roundabouts work well for intersections with low-to-moderate traffic speeds, and lower traffic volumes. Per NCHRP 672 Roundabouts: Informational Guide, typical daily service volume on 4-leg single lane roundabouts is 25,000 vehicles/day and on 4-leg two-lane roundabouts is 45,000 vehicles/day.

Systemic Application: Due to the need to design roundabouts for the context of each location, this treatment is best implemented as part of a site-specific capital improvement.

Crash Reduction Factor: 12 - 78%

Planning-Level Cost: $45,000 - $500,000 depending on the size, site conditions, and right-of-way acquisition and needs.

Install or upgrade intersection signage and/or pavement markings

Description: This treatment consists of adding or upgrading signage and pavement markings at and on the approach to an unsignalized intersection. This can include advance intersection warning signs, STOP AHEAD pavement markings, transverse rumble strips on the approach, stop bars, and upgraded warning or control signs.

Purpose: This treatment is particularly suited for unsignalized intersections with patterns of rear-end, broadside, and turning-related crashes that occurred due to lack of driver awareness of the presence of the intersection. Unsignalized intersections that are not clearly visible to approaching motorists, particularly approaching motorists on the major road are good candidates for this treatment.

Application: This treatment may be considered at any unsignalized intersection, especially intersections with higher speed, curved, or skewed approaches, or locations with other sight distance or visibility limitations.

Considerations: These treatments may be considered when high frequencies of crashes are related to visibility of the intersection, or the intersection footprint is not clearly delineated by striping or pavement markings.

Systemic Application: New or upgraded signs and pavements markings are low-cost treatments that can be implemented systemically and integrated into ongoing maintenance and capital improvement projects.

Crash Reduction Factor: 13 - 60%

Planning-Level Cost: $500 - $5,000 per approach depending on the combination of signing and striping implemented.

Improve Sight Distance to Intersection (clear sight triangles)

Description: This treatment consists of clearing vegetation, roadside objects, on-street parking, fences, buildings, or other objects in the right-of-way.

Purpose: Clearing obstructions within the vicinity of the intersection improves sight distance at the intersection by providing clear sight triangles on the approach or adjacent to the intersection.

Application: These treatments may be considered at any unsignalized intersection where intersection sight distance is limited by on-street parking or other obstacles.

Considerations: These treatments may be considered when high frequencies of crashes are related to conflicting movements that may be impacted by limited visibility at the intersection. However, sight-distance improvements should be balanced with other concerns (such as the loss of on-street parking) to balance competing needs of the City.

Systemic Application: Some obstructions and on-street parking may be removed from the right-of-way at low cost and implemented systemically. Some obstructions such as earthen berms or buildings may require separate capital improvements to implement.

Crash Reduction Factor: 11 – 56%

Planning-Level Cost: $200 - $50,000 per approach, depending on the extent and type of obstruction.

Install Right Turn/Left Turn Lane

Description: Add an exclusive right turn/left turn lane(s).

Purpose: Sideswipe crashes have been identified as the most frequent crash type reported in the City of San Mateo and improper turning is the primary crash factor for 50% of the sideswipe crashes. 14% of the rear-end crashes and 13% of the broadside crashes have improper turning as a primary crash factor.

Adding a right turn lane is targeted to reduce the frequency of rear-end crashes or conflicts between vehicles turning right and following vehicles; or through vehicles coming from the left on the cross street. Right-turn lanes also remove slow vehicles that are decelerating to turn right from the through-traffic stream, thus reducing the potential for rear-end collisions.

Adding left-turn lanes removes vehicles waiting to turn left from the through-traffic stream, thus reducing the potential for rear-end collisions. Because they provide a sheltered location for drivers to wait for a gap in opposing traffic, left-turn lanes may encourage drivers to be more selective in choosing a gap to complete the left-turn maneuver.

Application: These treatments may be considered on high-volume and high-speed major-road approaches.

Considerations: When considering new right-turn/left-turn lanes, potential impacts to non-motorized users should be considered and mitigated as appropriate. New lanes can increase the length of the intersection crossing and create an additional potential conflict point for non-motorized users.

Systemic Application: If the right-of-way is available, restriping can be a low-cost improvement systemically. If the treatment involves widening the roadway or acquisition of additional right-of-way, this treatment can be integrated into capital improvement projects.

Crash Reduction Factor: Right turn lane:14-26%; Left turn lane: 9 – 55%

Planning-Level Cost: Varies. Implementing this strategy may take from months to years. At some locations, right-turn/left-turn lanes can be quickly and simply installed by restriping the roadway. At other locations, widening of the roadway, acquisition of additional right-of-way, and extensive environmental processes may be needed.

Create directional median openings to allow (and restrict) left-turns and U-turns

Description: Directional median openings are usually designed to restrict left-turn and U-turn movements at intersections, to help avoid potential traffic conflicts. Figure 17 shows an example of directional median openings at an unsignalized intersection.

Figure 17: Directional Median Openings at Unsignalized Intersection

Source: FDOT

Purpose: Broadside, rear-end, sideswipe, pedestrian-involved and bicyclist-involved crashes are priority areas to reduce crashes in the City of San Mateo. The number of access points, coupled with the speed differential between through and turning vehicles traveling along a roadway, contributes to crashes at higher volumes intersections. Directional median openings that restrict turning movement into and out of an intersection can help reduce conflicts between through and turning traffic.

Application: This treatment may be considered at unsignalized intersections noted as having turning-related crashes on the approaches to the intersection. Directional median openings may be most effective in retrofit situations where high volumes of turning vehicles have impacted safety, and where more extensive countermeasures would be cost prohibitive because of limited right-of-way and constrains of the built environment.

Considerations: This treatment may be considered when there is a clustering of similar turning movement-related crashes on an approach to or at the intersection. Impacts to businesses and other land uses closer to the intersection must be considered.

Systemic Application: This treatment may be more suitable as a spot treatment at intersections with high traffic volumes and high turning movement crashes.

Crash Reduction Factor: 51%

Planning Level Cost: $20,000 per opening

Roadway Segment Treatments

Roadway segment related crashes account for 7% of the total and fatal and severe injury crashes in the City of San Mateo. With the crash patterns analysis, increasing driver awareness and speed management have been identified as potential emphasis areas to reduce roadway segment related crashes.

The following two countermeasure categories were identified for the City of San Mateo:

- Install Street lighting
- Speed Management
    a. Install Dynamic Speed Feedback Signs
    b. Traffic Calming

Street Lighting

Description: This treatment involves adding roadway lighting to improve safety during nighttime conditions.

Purpose: Evenings, dark and no lighting conditions are associated with high pedestrian – involved and bicycle-involved crashes. Crash frequency analysis by time of day has shown that the highest frequencies of crashes occur during 10 PM – 12AM on a typical weekday, 5 – 7 PM and 9 PM – 12 AM on a typical weekend when the conditions are dark.

Providing roadway lighting improves safety during nighttime conditions by:

- Making drivers more aware of their surroundings, which improves perception-reaction times;
- Enhancing drivers' available sight distances to perceive roadway characteristics in advance of the change; or
- Improving non-motorists' visibility and navigation.

Application: This treatment may be considered at locations with night-time crashes to make drivers aware of the roadway characteristics in the night.

Considerations: This treatment may be considered along segments with notable substantial patterns of nighttime crashes.

Systemic Application: Due to the low cost of installing lighting, this treatment may be implemented systematically or integrated with ongoing maintenance or capital improvement projects.

Crash Reduction Factor: 35%

Planning-Level Cost: $7,000 to $10,000 per light

Speed Management

Unsafe speed was identified as a primary crash factor for 15% of the total crashes and 11% of the fatal and severe injury crashes in the City of San Mateo. Speed management treatments seek to lower vehicular speeds on the roadway, thereby reducing speeding related crashes. Speed management should be addressed comprehensively to encompass all the factors that may influence travel speeds, including road user/driver behavior, roadway design, surrounding land use context, traffic, roadway conditions, posted speed limits, and enforcement.

The following two countermeasures were identified for the City of San Mateo:

1. Install Dynamic Speed Feedback Signs
2. Traffic Calming

Install Dynamic Speed Feedback Signs

Description: This treatment consists of installing dynamic or variable speed feedback signs on the roadway. Figure 18 shows an example of a dynamic speed feedback sign.

Purpose: Speed feedback signs provide drivers with feedback about their speed in relationship to the posted speed limit. This treatment primarily addresses crashes caused by motorists traveling too fast around sharp curves. It is intended to get the drivers attention and give them a visual warning that they may be traveling over the recommended speed for the approaching curve.

Application: Curvilinear roadways that have an unacceptable level of crashes due to excessive speeds on relatively sharp curves.

Considerations: These treatments may be considered on roadways that have higher incidence of crashes due to excessive speeds, and on relatively sharp curves.

Figure 18: Dynamic Speed Feedback Signs

Source: FHWA

Systemic Application: This treatment is a relatively low-cost implementation that can easily be implemented systemically or integrated with capital improvement projects.

Crash Reduction Factor: 0 - 41%

Planning-Level Cost: $2,000 - $11,000 per display, depending on whether it is solar powered or AC.

Traffic Calming

Traffic calming is the use of mainly physical roadway design measures to slow motor vehicles as they move through urban, commercial, and residential neighborhoods. These treatments also help to reduce cut-through traffic and improve the safety of non-motorized users by reducing the potential for higher speed and higher severity conflicts. This section describes additional engineering measures that can be used for traffic calming. Many pedestrian and bicycle related treatments also provide traffic calming benefits. Other speed management treatments such as dynamic speed feedback signs can also be effective for traffic calming.

Description: This group of treatments include Speed Hump, Chicane, Bulb-out, Raised intersections, Mid-block Pedestrian Crossing, and Choker/Pinch Point. The detailed explanation for each of the treatments is below:

- ***Speed Hump*:** Rounded (vertically along travel path) raised areas of pavement typically 12 to 14 feet in length and often placed in a series (typically spaced 260 to 500 feet apart)
- ***Chicane*:** Roadway treatment that creates shifting deviations in the street by the implementation of curb extensions or islands
- ***Bulb-out*:** A bulb-out or curb extension visually or physically narrows the roadway to reduce vehicle speeds and create shorter crossings for pedestrians.
- ***Raised Intersection*:** Raised area for an entire intersection used to reduced vehicle speeds and create additional awareness of pedestrians at the intersection
- ***Mid-block Pedestrian Crossing*:** Designated space for pedestrians to cross the street at locations where the nearest signalized intersection is too far to walk to and includes striping and physical features that reduce vehicle speeds.
- ***Choker/Pinch Point*:** Mid-block narrowing of roadway that requires drivers to slow down or yield to each other to maneuver through the area.

Purpose: Traffic calming is the combination of measures that lower vehicle speeds, alter driver behavior, and improve conditions for non-motorized street users.

Considerations: Traffic calming has many potential applications, especially in residential neighborhoods and small commercial centers. Some treatments may impact existing roadway drainage and on-street parking.

Systemic Application: These treatments are relatively low-cost implementations that can easily be implemented systemically or integrated with capital improvement projects.

Crash Reduction Factor: Varies by treatments

Planning-Level Cost: $5,000 - $25,000 per location

City of San Mateo Neighborhood Traffic Calming Policy: In October 2006, San Mateo City Council adopted a Neighborhood Traffic Calming Policy as part of its overall neighborhood traffic mitigation efforts. The goal of this policy is to enhance traffic and pedestrian safety and preserve neighborhood character and livability. Traffic calming measures adopted by the City are primarily engineering measures divided into two categories:

- ***Step 1*:** This category includes easy to implement, low-cost tools such as radar speed display signs, most sign installations (excluding stop signs and turn-prohibition signs), high visibility crosswalks, narrow lane striping, neighborhood traffic safety campaigns, neighborhood speed watch programs and targeted police enforcement.
- ***Step 2*:** This category includes measures that alter street configuration, impede traffic flow, and change travel patterns such as stop signs, curb extensions, speed cushions, traffic circles and roundabouts, median barriers, etc. In general, these measures are more expensive than Step 1 measures.

In 2015, the City of San Mateo developed an outreach program to gather inputs from various neighborhoods within the City regarding their traffic safety concerns. The City utilized each neighborhood's concerns and feedback on traffic calming measures and drafted 13 Traffic Action Plans specific to each neighborhood.

EDUCATION STRATEGIES

Education strategies are focused on teaching road users, road safety principles. These strategies can be developed to include interactive activities, comprehensive teaching notes, and information on road safety messages and concepts that can be taught at school or in off-school activities. The following six education-related strategies were identified for the City of San Mateo.

- Road Safety Education to Children
- Speed Monitoring Awareness Radar Trailer
- Conspicuity Enhancements and Education
- Vulnerable Road User Education
- High-Visibility Cell Phone and Text Messaging Media Campaign
- DUI Educational Programs

Road Safety Education to Children

Road safety education to children includes strategies such as safe routes to school, walking school bus, and bicycle trains that promote road safety to all users, particularly for pedestrians and bicyclists. A 'safe routes to school' program would encourage and enable children to walk and bike to school. This can improve their health, well-being, and safety. This also results in less traffic congestion and emissions caused by school-related travel. Walking school buses and bicycle trains encourage groups of children walking or biking to school, with one or more adults.

As part of the Safe Routes to School program[10], the City of San Mateo has conducted pedestrian and bicycling safety workshops to create safety awareness and encourage students to get to school by means other than a car. The San Mateo County Safe Routes to School Five-Year Education program[11] has implemented walk and bike to school day, bike and helmet giveaways, walking school buses, bike rodeos,

[10] Safe Routes to School | San Mateo, CA - Official Website (cityofsanmateo.org)
[11] San-Mateo-SRTS-Evaluation-Final_appendices.pdf (ca.gov)

pedestrian safety month and walking and biking audits[12]. . A parent survey in 2014-2015 school year identified the following issues for walking/biking to and from school in San Mateo County:

- Speeding traffic along route
- Unsafe intersections
- Too much traffic along route
- Stranger danger
- Distance to school
- Lack of adults to walk with

Speed Monitoring Awareness Radar Trailer

The speed trailer is an educational device that helps drivers become more aware of their speed in relation to the posted speed. This awareness tool can also help residents survey the traffic speeds in their own neighborhood. This trailer is usually deployed in a street or neighborhood for a few days so the residents can monitor the speeds on their own streets and become aware of their own driving behaviors.

Conspicuity Enhancements and Education

The purpose of enhancing conspicuity for pedestrians is to increase the opportunity for drivers to see and avoid pedestrians, particularly when it is dark. In the City of San Mateo, 32% of fatal and severe injury pedestrian -involved crashes occurred in the evening when it is dark and it is 4.0 times more likely for a pedestrian-involved crash that occurs when it is dark with no lighting to result in a fatal or sever injury.. Educating pedestrians to wear reflective clothing and walk in well-lit areas can be implemented as targeted campaigns. The use of high visibility clothing and protective gear enhances safety. There is some limited evidence to suggest that a program aimed at increasing conspicuous and protective clothing could be successful.

Vulnerable Road User Education

The road safety education regarding vulnerable road users like pedestrians and bicyclists includes strategies involving education from police officers. If the driver encroaches into the bike lane or fails to yield to the pedestrian at the crossing, the police officer pulls the driver over and hands them a flyer that has the information for drivers to adapt their behavior towards all road users; this can be in addition to a citation.

High-Visibility Cell Phone and Text Messaging Media Campaign

The High Visibility Enforcement model combines dedicated law enforcement with paid and earned media supporting the enforcement activity. Paid media includes advertisements on TV, radio, online, and via billboards, while earned media includes things like press events and news releases covering the efforts. Both types of media support enforcement activities are needed to ensure the public is aware of the enforcement activity, and to create the impression that violators will be caught.

DUI Educational Programs

An educational program to reduce driving under the influence of drugs or alcohol may help improve safety throughout the County. A DUI program may involve working with stakeholder partners to identify

[12] https://www.cityofsanmateo.org/2933/Safe-Routes-to-School

opportunities to influence driving under the influence behaviors, as well as coordinating with enforcement to identify focus locations for enforcement activities and education opportunities. It may also be beneficial to implement educational programs with local school districts to target underage impaired driving.

ENFORCEMENT STRATEGIES

Even when engineering countermeasures are implemented, road users failing to adhere to traffic laws can result in crashes of varying severity. Police enforcement can increase driver awareness and consequently reduce traffic crashes. Potential enforcement strategies to address crash patterns and trends in City of San Mateo are presented below. However, enforcement strategies should be undertaken with due caution to avoid inequitable enforcement activities and evaluated to determine the strategy's impact.

The following considerations can help lead to more successful outcomes for roadway safety enforcement strategies:

- Police officers should be trained properly beforehand.
- Campaigns should be tailored to suit the needs of different neighborhoods and demographics and should be designed and carried out to avoid targeting disadvantaged communities.
- Enforcement should be conducted with the help of staff support and awareness of the courts.
- Enforcement operations should begin with warnings and flyers before moving on to issuing citations.

City staff can also help monitor the impact of the enforcement strategy by coordinating with the City of San Mateo Police Department to obtain and analyze enforcement records to help evaluate effectiveness and equity considerations.

The following enforcement strategies have been identified for the City of San Mateo:

- Progressive Ticketing
- Speed Enforcement in School Zones
- High Visibility Saturation Patrols

Progressive Ticketing

Progressive ticketing is a method for introducing ticketing through a three-staged process. Issuing tickets is the strongest strategy of an enforcement program and it is usually reserved for changing unsafe behaviors that other strategies failed to change or that pose a real threat to the safety of road users. There are three main steps of an effective progressive ticketing program:

- Educating - Establish community awareness of the problem. The public needs to understand that drivers are speeding and the consequences of this speeding for road safety. Raising awareness about the problem will change some behaviors and create public support for the enforcement efforts to follow.
- Warning - Announce what action will be taken and why. Give the public time to change behaviors before ticketing starts. Fliers, signs, newspaper stories and official warnings from officers can all serve as reminders.
- Ticketing – After the "warning" period, hold a press conference announcing when and where the police operations will occur. If offenders continue their unsafe behaviors, officers issue tickets.

Speed Enforcement in School Zones

Strict enforcement of speed laws in school zones is one law enforcement tool that can improve the safety for children walking and bicycling to school as well as drivers. A 'zero tolerance' policy for speeders in school zones and even an increase in fines for drivers who violate the posted school zone speed limit are potential approaches.

High Visibility Saturation Patrols

A saturation patrol (also called a blanket patrol or dedicated DWI patrol) consists of many law enforcement officers patrolling a specific area to look for drivers who may be impaired. These patrols usually take place at times and locations where impaired driving crashes commonly occur. Like publicized sobriety checkpoint programs, the primary purpose of publicized saturation patrol programs is to deter driving after drinking by increasing the perceived risk of arrest.

The City of San Mateo's Neighborhood Traffic Management Program[13] identifies "Enforcement" as one of the key strategies to address speeding problems. The Traffic Action Plan for Sunnybrae Neighborhood in the City of San Mateo[14] has identified speeding as one of the key areas of concern for traffic safety and recommended targeted police enforcement based on time of day and vehicle speeds on select roadways in the neighborhood. City Staff worked with other City's neighborhoods to develop similar enforcement strategies that would address speeding issues specific to each community and incorporated these strategies into respective neighborhood's Traffic Action Plans.

San Mateo Police Department held a traffic enforcement day throughout the city in April 2021[15], during which the police cited 45 drivers and warned pedestrians at-fault. Traffic enforcement operation was taken up after the Police Department held several traffic education programs, with the police giving out more than 100 warnings over three days. Traffic enforcement was also based on data-driven times, peak hours and peak crash times. With the observations from traffic enforcement day, the City plans to enhance pedestrian safety enforcement operations and increase safety awareness for drivers.

EQUITY STRATEGIES

Equity is defined as the fairness with which benefits, and burdens are distributed and how disparities, including those based on age, race/ethnicity, income and gender, are identified and addressed within specific populations (National Safety Council[16]).

Notable statistics from crash patterns analysis for the City of San Mateo regarding population demographics of involved party members include:

- Only 16% of the City's population are 65 years old and over. But they are over-represented in number of pedestrian-involved crashes (25%) and bicycle-involved crashes (29%) fatal and severe injury crashes,
- Considering that 7% of the City's population were considered between the ages of 18 and 24 years, there were a significantly high number of drivers (17%) and bicyclists (21%) between 18 and 24 years of age involved in a fatal or severe injury crash,

[13] https://www.cityofsanmateo.org/DocumentCenter/View/1211/Neighborhood-Traffic-Management-Program?bidId=
[14] https://www.cityofsanmateo.org/DocumentCenter/View/51273/Neighborhood-Traffic-Forums---Sunnybrae-Traffic-Action-Plan
[15] https://www.smdailyjournal.com/news/local/traffic-safety-in-focus-in-city-of-san-mateo/article_6b009046-a95e-11eb-84a1-8f679085668b.html
[16] https://www.nsc.org/getattachment/757d2d64-8b77-4997-8fb4 7d004188acf/t%20equity%20in%20transportation%20165

- Pedestrians under 18 were also involved in a relatively high number of fatal and severe injury crashes (25%),
- Hispanic and Black populations were overrepresented by at least 20% and 50%, respectively, in crashes across all party types.

Incorporating equity as part of engineering, education and enforcement strategies discussed above can help address these and other existing disparities in the City.

The following equity strategies have been identified for the City of San Mateo:

- **Engineering:** An equitable approach to engineering countermeasures must consider and should include, but is not limited to:
    - Investing in infrastructure in an equitable manner to reduce traffic accidents, prioritizing historically disinvested neighborhoods, or neighborhoods overrepresented for crashes;
    - Creating contextually sensitive plans and solutions and avoiding one-size-fits-all-solutions. For instance, infrastructure plans can be designed keeping in mind different kinds of roadway users including children, senior citizens, people with disabilities;
    - Involving a diversity of people in testing and design to increase safety.
- **Education:** An equitable approach to education strategies must consider and should include, but is not limited to:
    - Developing, executing, and implementing programming with community voices included in the process, particularly those representing disadvantaged and/or highly impacted communities;
    - Using images, language, and media that is reflective of the community and audience;
    - Working with trusted ambassadors, spokespeople, and community leaders to help in the execution of any campaigns or programs.
- **Enforcement:** An equitable approach to enforcement strategies must consider and should include, but is not limited to,
    - Adopting income-based repayment for traffic tickets;
    - Understanding whether and how enforcement of traffic safety laws or regulations can exacerbate existing racial, socioeconomic, or accessibility issues, and subsequently working with stakeholders to identify solutions;
    - Educating and training those working on enforcement on equitable enforcement practices and techniques;
    - Assessing whether new or alternative forms of enforcement can be deployed to effectively address the issue at hand, including automated enforcement and community policing.

As part of its data transparency efforts, the City of San Mateo collects and reports policing data and data on traffic collisions[17]. To further the data collection and transparency efforts and to improve its equity in transportation, the City may consider reporting all traffic stops and searches. Stop records should include the location of the stop, demographic information about the stopped person, the reason of the stop, the outcome of the stop, whether any searches were conducted and the outcome of any searches,

The information provided in the sections above is adapted from Center for Policing Equity: Traffic Safety Recommendations18 and National Safety Council: Equity in Transportation Best Practices Framework[19].

[17] https://www.cityofsanmateo.org/4451/Data-Transparency
[18] https://policingequity.org/traffic-safety/61-cpe-brief-trafficsafety/file
[19] https://www.nsc.org/getattachment/757d2d64-8b77-4997-8fb4-97d004188acf/t%20equity%20in%20transportation%20165

EMERGING TECHNOLOGIES STRATEGIES

This section notes innovative approaches to improve roadway safety by accelerating road safety understanding using technology, thereby helping transition to safer transportation systems. Focus areas include but are not limited to:

- Artificial Intelligence and Deep Learning
- Big Data
- Fleet Related Technology
- Touchless Tire Pressure Monitoring

The Road Safety Innovation List (2021) identified the following new technologies and approaches for safety management.

Artificial Intelligence and Deep Learning

This technology applies artificial intelligence and deep learning on traffic video feed (such as existing CCTV traffic cameras) to perform automated video analysis of traffic flow for effective and immediate road safety diagnosis and evaluation of conflicts. The combination of artificial intelligence and vehicle-to-everything (V2X) technology is designed to predict vehicles and pedestrians' intent and prevent conflicts that may result in crashes. This technology is now being tested in autonomous vehicles and applications are being developed for use by jurisdictions to apply at intersections or networks. (https://trid.trb.org/view/772920).

Big Data

New "Big Data" information measures all kinds of activity in streets including volumes, paths, speeds, and behaviors of pedestrians, bicycles, different types of vehicles, wheelchairs, and scooters on the roadway. These data platforms provide data on curb-level activity and help engineers and planners design safer and more efficient streets by helping to detect conflicts and address potential road user behaviors and patterns before crashes occur.

Mobile phone data and machine learning algorithms are being designed to identify high-risk driver behavior before a crash occurs. Using the smart phone sensors, the behavioral data provides actionable insights that improve safety for all road users.

Fleet Related Technology

Vehicle fleet technology integrates the driver-assisting platooning system to all commercial fleets, and links the active safety systems between freight trucks, detects oncoming vehicles, pedestrians, and bicyclists and alerts drivers in advance to avoid them with real-time warnings.

Touchless Tire Pressure Monitoring

Touchless tire pressure monitoring is a new technology which measures tire pressure in real time. This has been implemented in two locations near the turnpike in Central Florida. Drivers must simply drive over the "Wheel Right" station to learn what their current tire pressure is and if the tires are ready for the road or low

on pressure. This is a safety feature that can help prevent blowouts and accidents on the road by warning drivers ahead of time when they need to maintain their vehicle.

NEXT STEPS

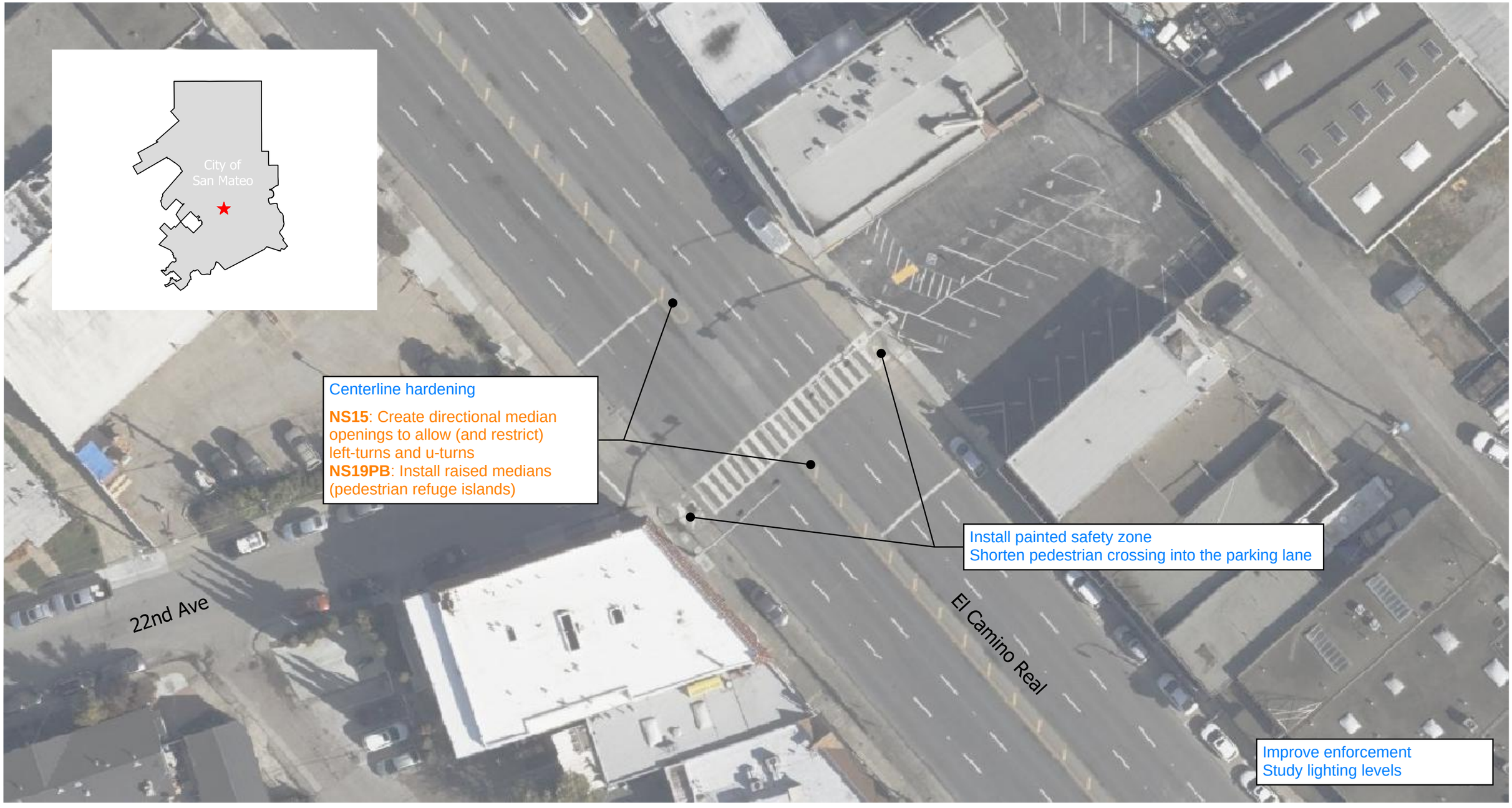
This memorandum summarizes the prioritized engineering and non-engineering countermeasures that could be implemented across the City of San Mateo as well as considerations for their application. Combined with the results of the Crash Data Analysis Memorandum, these countermeasures will form the basis for identifying treatments at priority intersections and roadways across the City. Following review by City staff, Kittelson will finalize the countermeasure memo and develop safety projects for the priority locations as identified in collaboration with City staff.

Appendix E:

Priority Projects with Proposed Countermeasures

San Mateo Local Roadway Safety Plan - DRAFT Concept Sketches

November 2023



KITTELSON & ASSOCIATES

PHONE: (503) 228-5230 CONTACT:

Scale: 1" = 30'

30 15 0 30

N

Short-term countermeasures

Medium-term countermeasures

Project Location 1

El Camino Real and 22nd Ave

C:\Users\tbood_bdemonbreun\Temp\AcPublish_16520\Project Concepts v2.dwg Nov 10, 2023 - 4:18pm - bdemonbreun Layout Tab: El Camino x 22nd Ave

San Mateo Local Roadway Safety Plan - DRAFT Concept Sketches

November 2023

27th Ave

El Camino Real

Improve enforcement
SI02: Improve signal hardware, mast arm, retro reflective backplates on side street
SI09: Install raised pavement markers and striping through intersection

KITTELSON & ASSOCIATES
PHONE: (503) 228-5230 CONTACT:

Scale: 1" = 30'

30 15 0 30

N

Short-term countermeasures

Medium-term countermeasures

Project Location 2
El Camino Real and 27th Ave

San Mateo Local Roadway Safety Plan - DRAFT Concept Sketches

November 2023

KITTELSON & ASSOCIATES
PHONE: (503) 228-5230 CONTACT:

Scale: 1" = 30'
30 15 0 30

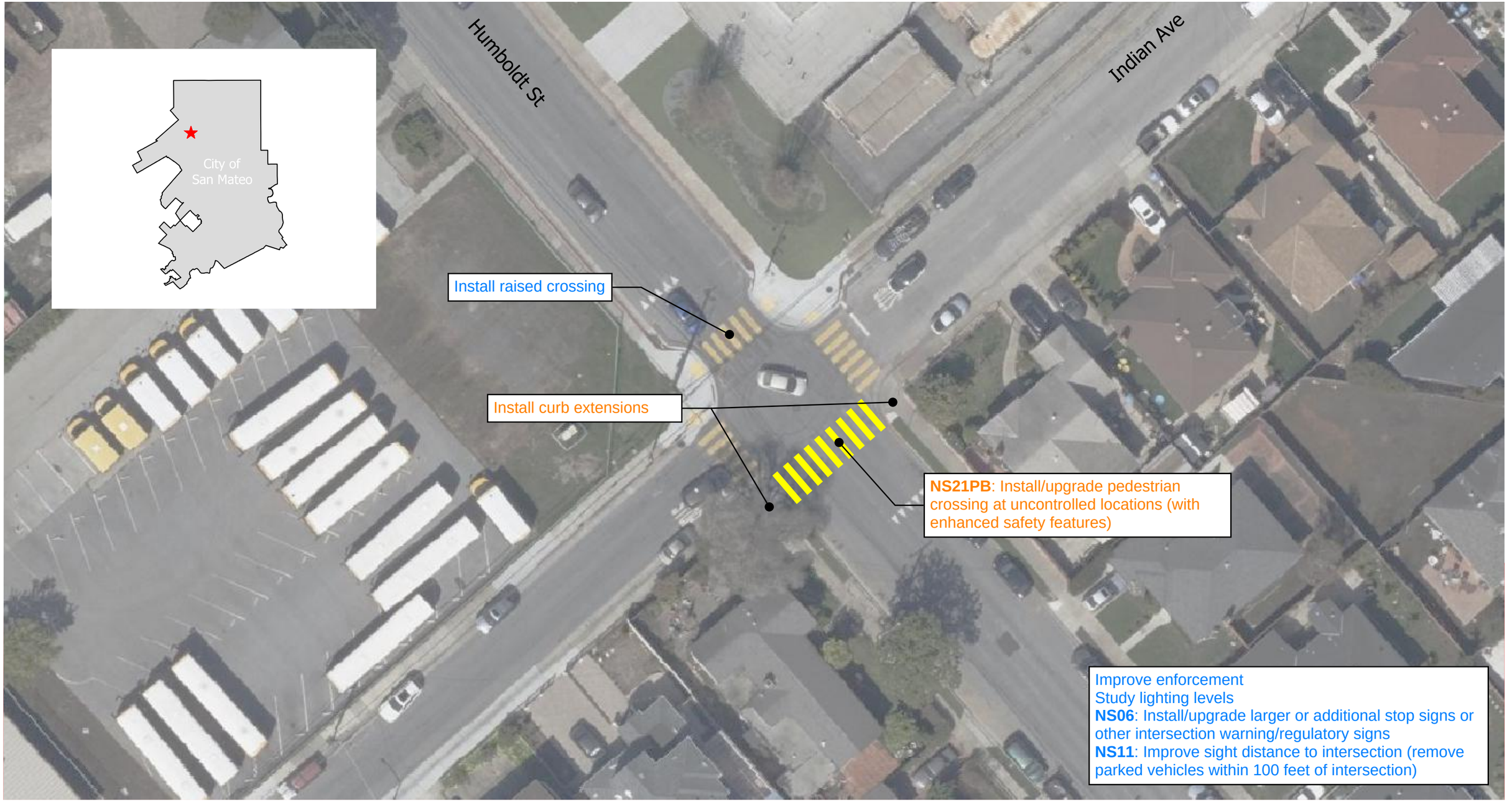
N

Short-term countermeasures
Medium-term countermeasures

Project Location 3
Humboldt Street and Poplar Avenue

San Mateo Local Roadway Safety Plan - DRAFT Concept Sketches

November 2023



KITTELSON & ASSOCIATES

PHONE: (503) 228-5230 CONTACT:

Scale: 1" = 30'

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Short-term countermeasures

Medium-term countermeasures

Project Location 4a
Humboldt Street and Indian Avenue

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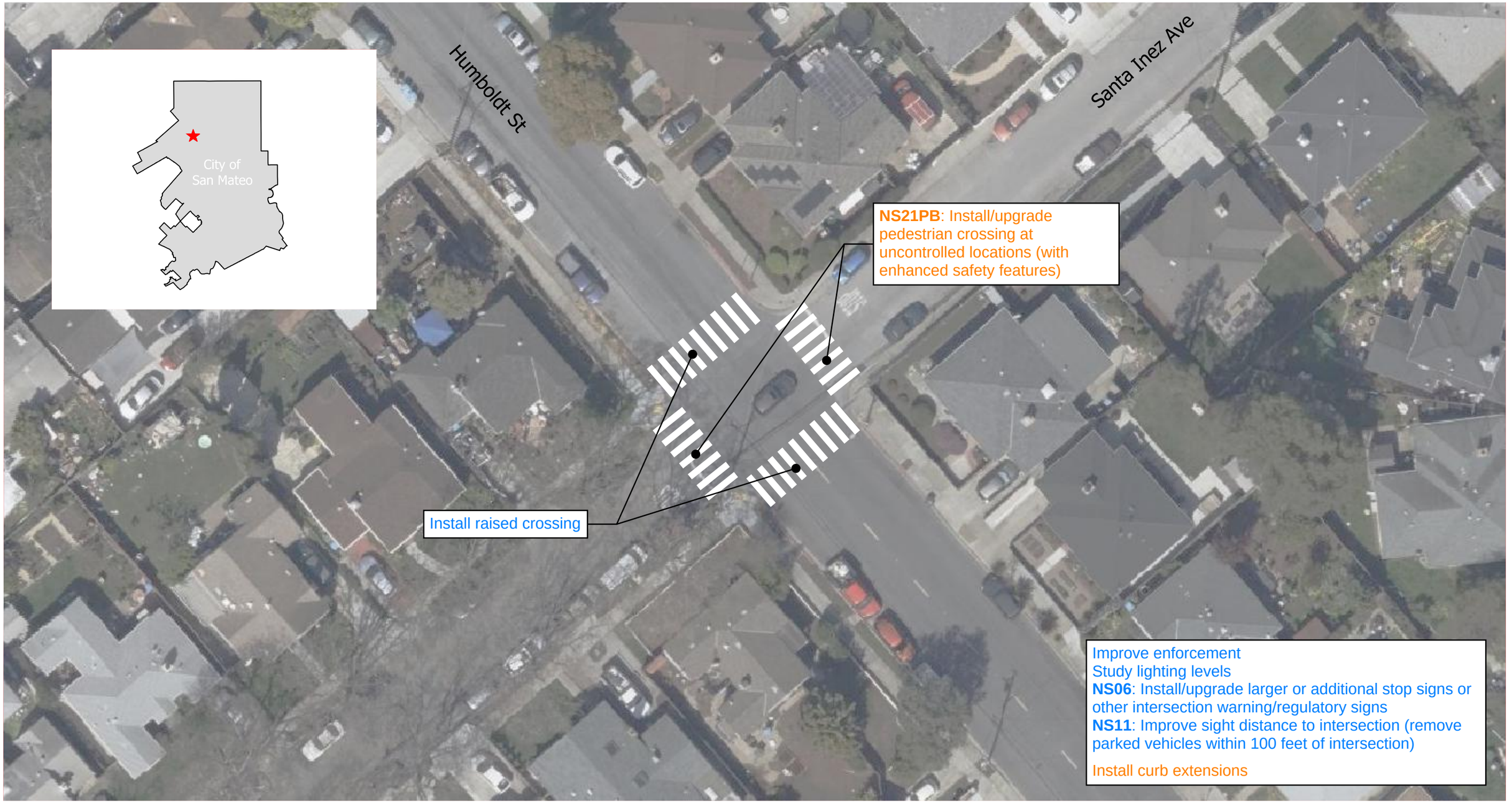
San Mateo Local Roadway Safety Plan - DRAFT Concept Sketches

November 2023



KITTELSON & ASSOCIATES
PHONE: (503) 228-5230 CONTACT:

Scale: 1" = 30'
30 15 0 30

N

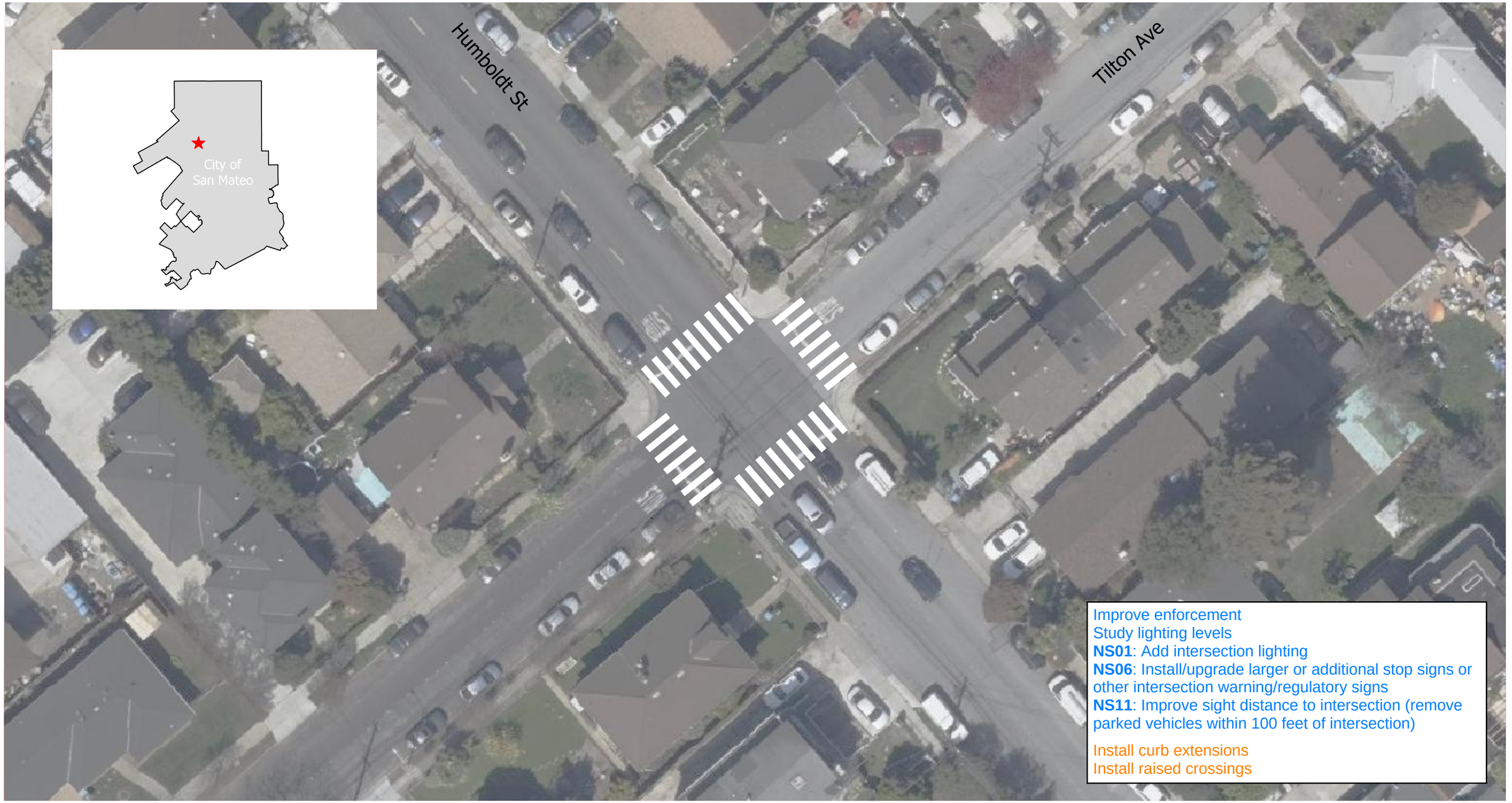
Short-term countermeasures
Medium-term countermeasures

Project Location 4b
Humboldt Street and Santa Inez Avenue

C:\Users\local_bdemonbreun\Temp\AcPublish_16520\Project Concepts v2.dwg Nov 10, 2023 - 4:18pm - bdemonbreun Layout Tab: Humboldt Street x Santa Inez Ave

San Mateo Local Roadway Safety Plan - DRAFT Concept Sketches

November 2023



KITTELSON & ASSOCIATES
PHONE: (503) 228-5230 CONTACT:

Scale: 1" = 30'
30 15 0 30

N

Short-term countermeasures
Medium-term countermeasures

Project Location 4c
Humboldt Street and Tilton Avenue

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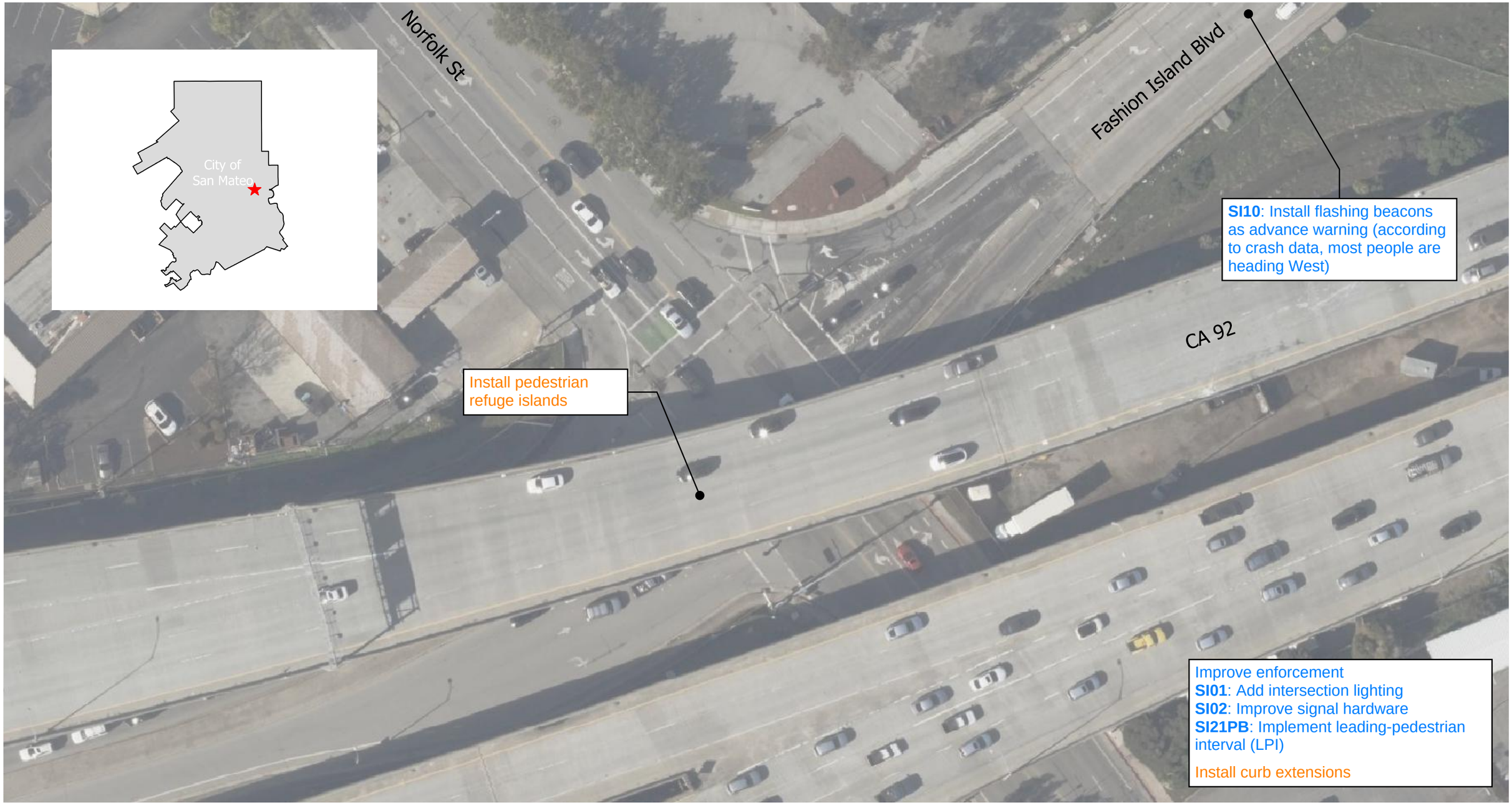
San Mateo Local Roadway Safety Plan - DRAFT Concept Sketches

November 2023



KITTELSON & ASSOCIATES
PHONE: (503) 228-5230 CONTACT:

Scale: 1" = 40'
40 20 0 40

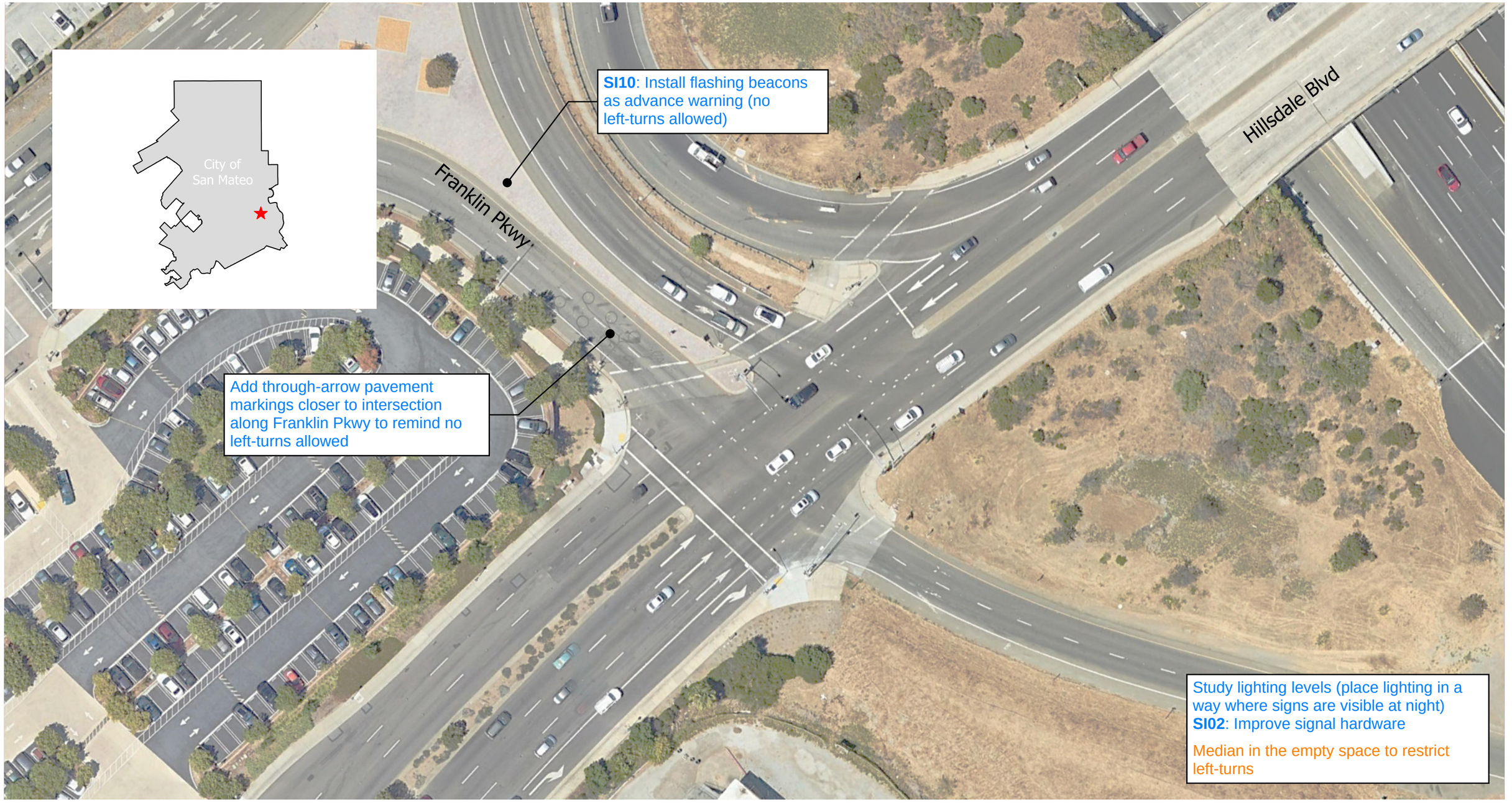
N

Short-term countermeasures
Medium-term countermeasures

Project Location 5
Fashion Island Boulevard and Norfolk Street

San Mateo Local Roadway Safety Plan - DRAFT Concept Sketches

November 2023



KITTELSON & ASSOCIATES
PHONE: (503) 228-5230 CONTACT:

Scale: 1" = 50'

50 25 0 50

N

Short-term countermeasures

Medium-term countermeasures

Project Location 6a
Hillsdale Boulevard and Franklin Parkway

San Mateo Local Roadway Safety Plan - DRAFT Concept Sketches

November 2023

KITTELSON & ASSOCIATES
PHONE: (503) 228-5230 CONTACT:

Scale: 1" = 50'

50 25 0 50

N

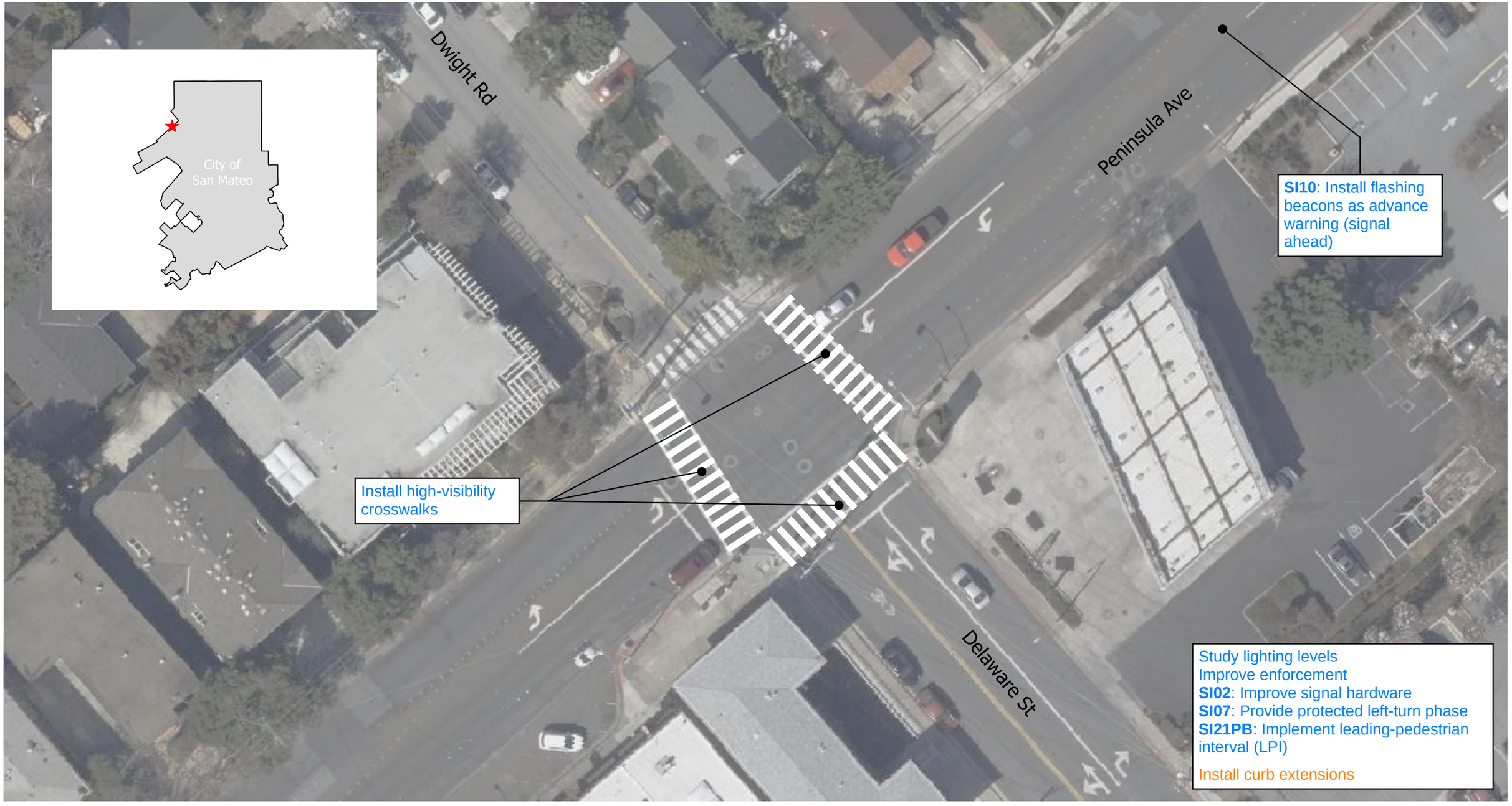
Short-term countermeasures

Medium-term countermeasures

Project Location 6b
Hillsdale Boulevard and Norfolk Street

San Mateo Local Roadway Safety Plan - DRAFT Concept Sketches

November 2023



KITTELSON & ASSOCIATES
PHONE: (503) 228-5230 CONTACT:

Scale: 1" = 30'
30 15 0 30

N

Short-term countermeasures
Medium-term countermeasures

Project Location 7
Peninsula Avenue and Delaware Street

San Mateo Local Roadway Safety Plan - DRAFT Concept Sketches

November 2023

KITTELSON & ASSOCIATES
PHONE: (503) 228-5230 CONTACT:

Scale: 1" = 30'

30 15 0 30

N

Short-term countermeasures

Medium-term countermeasures

Project Location 8a
Eldorado St and 3rd Ave

San Mateo Local Roadway Safety Plan - DRAFT Concept Sketches

November 2023

KITTELSON & ASSOCIATES
PHONE: (503) 228-5230 CONTACT:

Scale: 1" = 30'
30 15 0 30

N

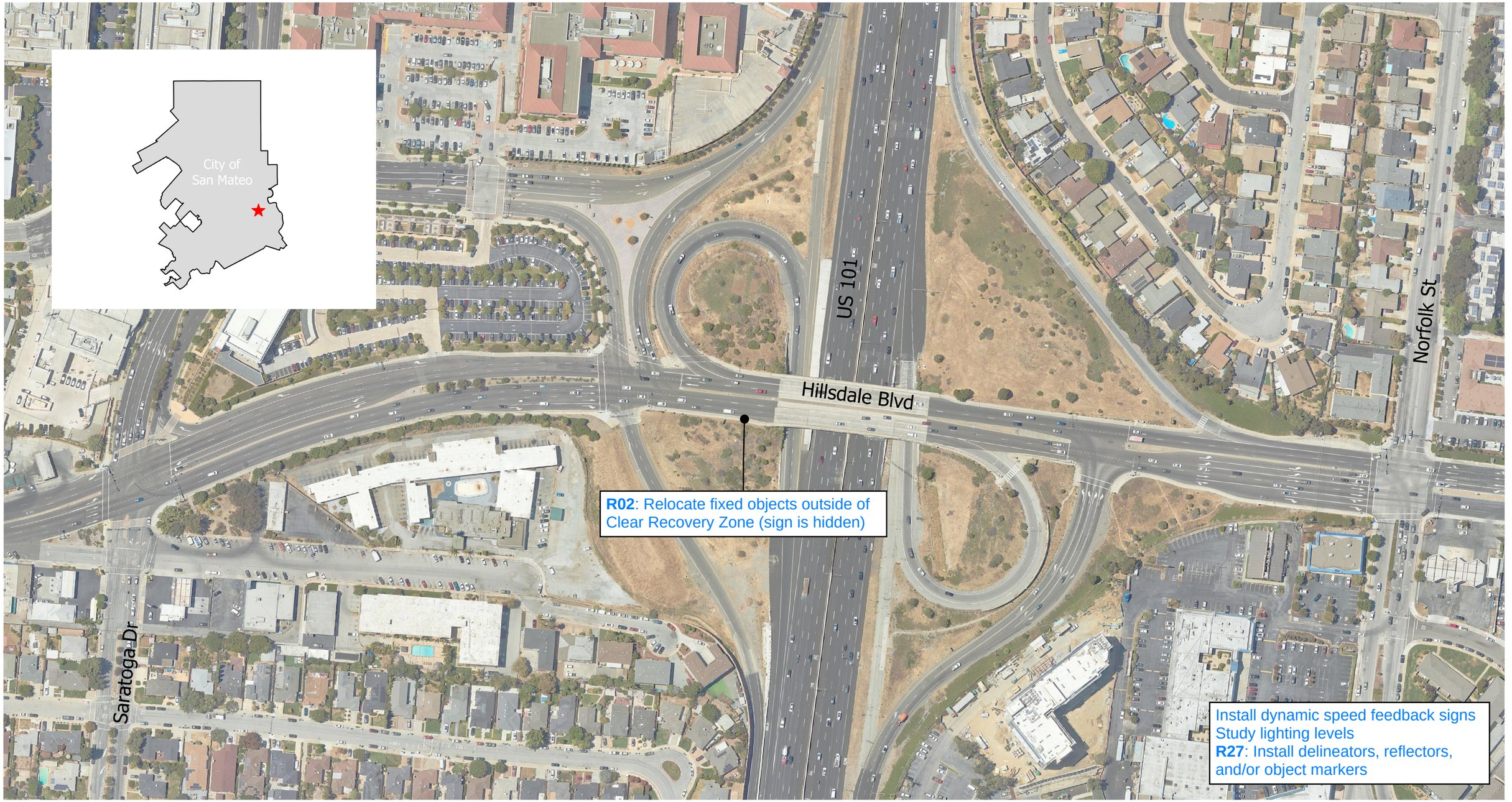
Short-term countermeasures
Medium-term countermeasures

Project Location 8b
Peninsula Avenue and Stanley Road

C:\Users\local_bdemonbreun\Temp\AcPublish_16520\Project Concepts v2.dwg Nov 10, 2023 - 4:18pm - bdemonbreun Layout Tab: Peninsula Ave x Stanley Rd

San Mateo Local Roadway Safety Plan - DRAFT Concept Sketches

November 2023



KITTELSON & ASSOCIATES

PHONE: (503) 228-5230 CONTACT:

Scale: 1" = 175'

175 87.5 0 175

Short-term countermeasures

Medium-term countermeasures

Project Location 9

Hillsdale Blvd - Saratoga Dr to Norfolk St

San Mateo Local Roadway Safety Plan - DRAFT Concept Sketches

November 2023

KITTELSON & ASSOCIATES

PHONE: (503) 228-5230 CONTACT:

Scale: 1" = 250'

250 125 0 250

Short-term countermeasures

Medium-term countermeasures

Project Location 10

El Camino Real - 28th Ave to 36th Ave