

# Contra Costa County Vision Zero

# FINAL REPORT

February 2022

Prepared By  
**FEHR & PEERS**

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## List of Abbreviations

**ADA**

Americans with Disabilities Act

**AHSC**

Affordable Housing and Sustainable Communities program

**ATP**

Active Transportation Program

**CAV**

Connected and Autonomous Vehicle

**CBO**

Community-Based Organization

**CCTA**

Contra Costa Transportation Authority

**CHP**

California Highway Patrol

**CIP**

Capital Improvement Plan

**DUI**

Driving Under the Influence

**EMS**

Emergency Medical Services

**EPC**

Equity Priority Communities

**HIN**

High Injury Network

**ICP**

Integrated Connectivity Project

**ITS**

Intelligent Transportation Systems

**KSI**

Killed or Severely Injured

**LPI**

Leading Pedestrian Interval

**LRSP**

Local Roadway Safety Plan

**MTC**

Metropolitan Transportation Commission

**NHTSA**

National Highway Traffic Safety Administration

**OTS**

Office of Traffic Safety

**PHB**

Pedestrian Hybrid Beacon

**RIPA**

Rural Innovation Project Area

**RRFB**

Rectangular Rapid Flashing Beacon

**SRTS**

Safe Routes to School

**SSAR**

Systemic Safety Analysis Report

**TAC**

Technical Advisory Committee

**TCC**

Transformative Climate Communities program

**TOD**

Transit-Oriented Development





A pedestrian crossing equipped with an RRFB in downtown Rodeo



# EXECUTIVE SUMMARY

Contra Costa County is committed to Vision Zero: the elimination of severe injuries and fatalities resulting from traffic collisions on County roadways. The purpose of Contra Costa County's Vision Zero Action Plan is to identify opportunities to enhance safety for all modes through implementation of a Safe System approach. This report builds upon the engineering- focused Systemic Safety Analysis Report (SSAR) to provide a comprehensive, multidisciplinary, and holistic approach to safety.

Between the study years of 2014 and 2018, 2,256 collisions occurred in unincorporated Contra Costa County that resulted in injuries of any severity. The number of annual collisions increased by 18% during this period, with collisions resulting in someone being killed or severely injured

(KSI) reaching a peak in 2018, the end of the study period. The engineering-focused recommendations in the SSAR are a key step forward in curbing the rise in KSI collisions.

The Action Plan also presents a High Injury Network (HIN) for the County, laying the framework for the development of 11 collision profiles and 35 project locations. The ten priority projects were selected from the project locations list based on feedback from the community (via an interactive webmap) and from the Technical Advisory Committee (TAC) members. The TAC was created to support the Vision Zero team in assessing needs, feasibility, and priorities throughout the Plan's development.

While the priority projects focus on infrastructure

improvements, the Action Plan also discusses non-infrastructure recommendations to cover a range of Safe System elements: safe roads, safe road users, safe speeds, and post crash care, as well as equity considerations and emerging technologies. The Safe System approach was founded on the principles that humans make mistakes and are vulnerable, but the responsibility is shared, safety is proactive, and redundancy is crucial. This Action Plan aims to support a safety culture that includes education and engagement, cross-sector partnerships, emergency response and post-crash care, emerging technology implementation, and data collection and management. The goal of this Vision Zero Plan is to eliminate fatalities and severe injuries through existing efforts and programs, along with implementation of additional recommendations.



# Key Takeaways

- 1** From 2014 to 2018, there were 252 collisions that resulted in people being killed or severely injured (KSI) on Contra Costa County roads (County-owned and maintained non-freeways), and the total number of collisions resulting in injuries increased by 18%. Of all these collisions, 70% occurred on the High Injury Network (HIN), which makes up only 22% of roadway miles.
- 2** Pedestrian- and bicycle-involved collisions account for a disproportionate share of KSI collisions relative to their travel mode share. Persons of color are also disproportionately involved in collisions relative to their share of the County population.
- 3** Eleven systemic safety profiles highlight the most common, severe, and noteworthy collision patterns in the County. Examples of these systemic profiles include:
  - Driving Under the Influence
  - Bicycle-Involved Broadside Collisions at Urban Intersections
  - Roadway Departure Collisions on Rural Roads
  - Pedestrian Crossing Urban Roadways Midblock Outside Marked Crosswalks
  - Bicycle-Involved Collisions along Rural Roadways where Bicycle Facilities Do Not Exist
- 4** From these 11 systemic profiles, 35 projects have been recommended Countywide, with 10 identified as priorities. The projects address critical gaps in pedestrian and bicycle facilities, enhance gateway locations at the rural/suburban edge, and include opportunities for partnerships with neighboring jurisdictions on regionally-significant projects.
- 5** Following the Safe System approach, non-engineering countermeasures have also been identified to address the systemic profiles, including media campaigns, school and community partnerships, data-driven enforcement, post-crash care, and monitoring and evaluation.
- 6** Eight of the twelve actions were identified for cross-departmental collaboration that focus on implementation, monitoring, and accountability in support of the Vision Zero goal. This list of actions is envisioned to be refreshed and re-evaluated on a periodic basis, as necessary, to support sustained progress.



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# CHAPTER 1



# INTRODUCTION



A pedestrian with a dog using  
an enhanced crosswalk to  
cross Danville Blvd in Alamo





## TRADITIONAL APPROACH

Prevent crashes	→	Prevent deaths and serious injuries
Improve human behavior	→	Design for human mistakes/limitations
Control speeding	→	Reduce system kinetic energy
Individuals are responsible	→	Share responsibility
React based on crash history	→	Proactively identify and address risks

## SAFE SYSTEM APPROACH

### The Safe System Approach

The Safe System approach guides the projects and action plans included in this report. This section defines the Safe System approach and explains the philosophy underpinning this Vision Zero plan.

People are killed and seriously injured each day on roads in California and across the U.S. On average, a KSI collision occurs on County roadways once every week. Crashes can irreversibly change the course of human lives, touching

victims, their families and loved ones, and society as a whole. Contra Costa County believes all KSIs are unacceptable and is adopting a Safe System approach to improve safety on county roadways.

Through collective action on the part of all roadway system stakeholders—from system operators and vehicle manufacturers to law enforcement and everyday users—a Safe System approach anticipates human mistakes with the goal of eliminating fatal and serious injuries for all road users.<sup>1</sup>

A Safe System acknowledges the vulnerability of the human body when designing and operating a transportation network, in terms of the amount of kinetic energy transfer a body can withstand.

According to the World Health Organization, the goal of a Safe System is to ensure that if crashes occur, they “do not

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<sup>1</sup> Belin, M.-Å., Tillgren, P., & Vedung, E. (2012). Vision Zero- a road safety policy innovation. *International Journal of Injury Control and Safety Promotion*, 19, 171-179.



Two people on horse-back using a crosswalk in Bay Point

result in serious human injury.”<sup>2</sup> A Safe System approach addresses the five elements of a safe transportation system—safe road users, safe vehicles, safe speeds, safe roads, and post-crash care—in an integrated manner and through a wide range of interventions (see **Figure 1**).

The Safe System approach to road safety started internationally as part of the Vision Zero proclamation that no one should be killed or seriously injured on the road system.<sup>3</sup> Countries adopting the Safe System approach have

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<sup>2</sup> World Health Organization (2011). Decade of Action for Road Safety 2011-2020. Retrieved from [https://www.who.int/roadsafety/decade\\_of\\_action/plan/plan\\_en.pdf](https://www.who.int/roadsafety/decade_of_action/plan/plan_en.pdf), pg. 9.

<sup>3</sup> Johansson, R. (2009). Vision Zero - Implementing a policy for traffic safety. *Safety Science*, 47, 826-831; and Tingvall, C., & Haworth, N. (1999). An Ethical Approach to Safety and Mobility. Paper presented at the 6th ITE International Conference Road Safety and Traffic Enforcement. 6-7 September 1999, Melbourne, Australia.



achieved significant success in reducing highway fatalities, with reductions in fatalities between 50 and 70%.<sup>4</sup>

The Institute of Transportation Engineers (ITE) and the Road to Zero Coalition's Safe System Explanation and Framework articulate that in order to anticipate human mistakes, a Safe System seeks to accomplish the following:

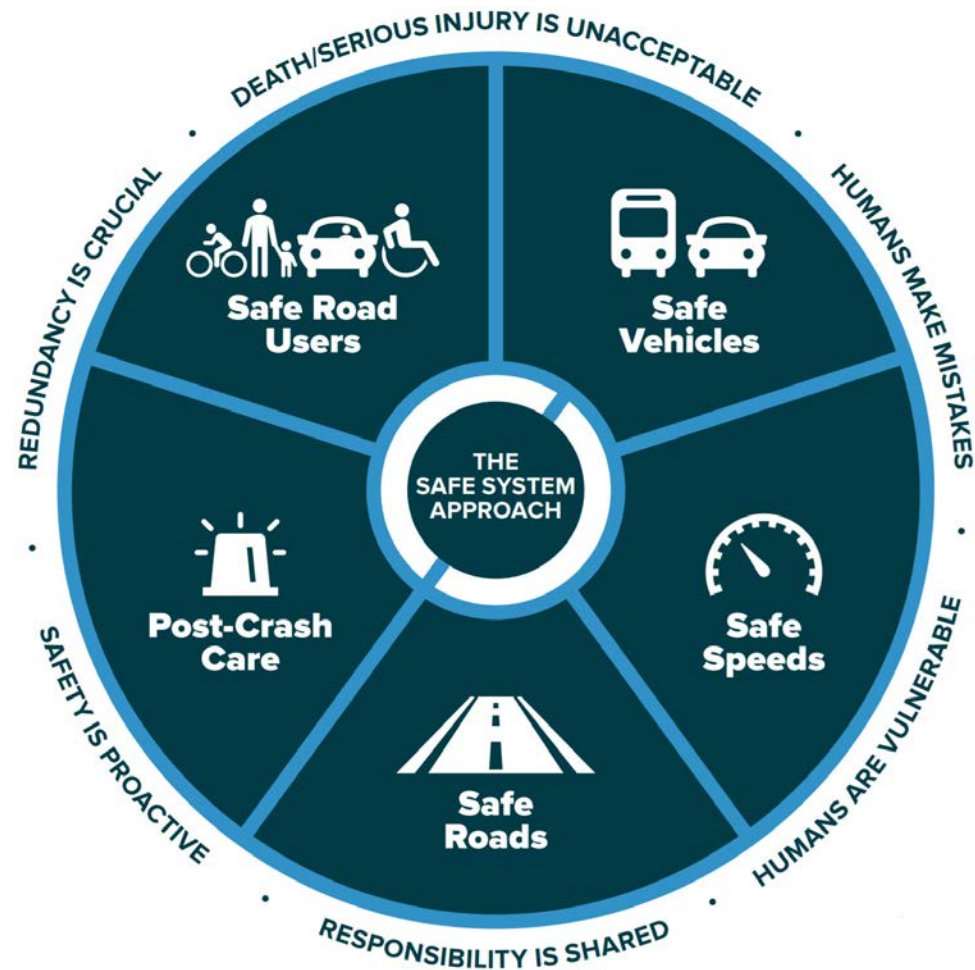
- Separate users in a physical space (e.g., sidewalks, dedicated bicycle facilities)
- Separate users in time (e.g., pedestrian scramble, dedicated turn phases)
- Alert users to potential hazards
- Accommodate human injury tolerance through interventions that reduce speed or impact force

The recommendations in this report have been organized to follow the Safe System approach elements and to reflect the shared responsibility of system planners, designers, and users in support of the County's safety goals.

<sup>4</sup> World Resources Institute (2018). Sustainable and Safe: A Vision and Guidance for Zero Road Deaths. Retrieved from <https://www.wri.org/publication/sustainable-and-safe-vision-and-guidance-zero-road-deaths>.

**Figure 1**  
**The Safe System Approach**

Source:  
Fehr & Peers for FHWA



## About Contra Costa County

Contra Costa County occupies the northern part of the East Bay region of the San Francisco Bay Area. The County is primarily suburban and is home to approximately 1,153,600 people.<sup>5</sup> Contra Costa County is broadly divided into three sub-regions, and the unincorporated areas include the following communities:

- **West County** — Kensington, El Sobrante, North Richmond, Rodeo, Crockett, Port Costa, Bayview-Montalvin, East Richmond Heights, Rollingwood, Tara Hills
- **Central County** — Canyon, Pacheco, Vine Hill, Clyde, Contra Costa Centre (Pleasant Hill BART station), Saranap, Alamo, Blackhawk, Tassajara, Briones, Diablo, Mountain View

- **East County** — Bay Point, Bethel Island, Knightsen, Discovery Bay, Byron

The County's most notable landmark is Mount Diablo, but the County is also well known for its many trails and recreational facilities, including Acalanes Ridge, the Bay Trail, Briones Regional Park, Las Trampas Regional Wilderness, and the Carquinez Strait Regional Shoreline.

A majority of the existing roadway network was built with a focus on motor vehicles. Multimodal traffic safety is a growing concern because of the suburban land use patterns in the County, major freeways running through the unincorporated areas, nearby recreational uses, and development occurring throughout the County.

Pedestrian- and bicycle-involved collisions have seen an upward trend in recent years.

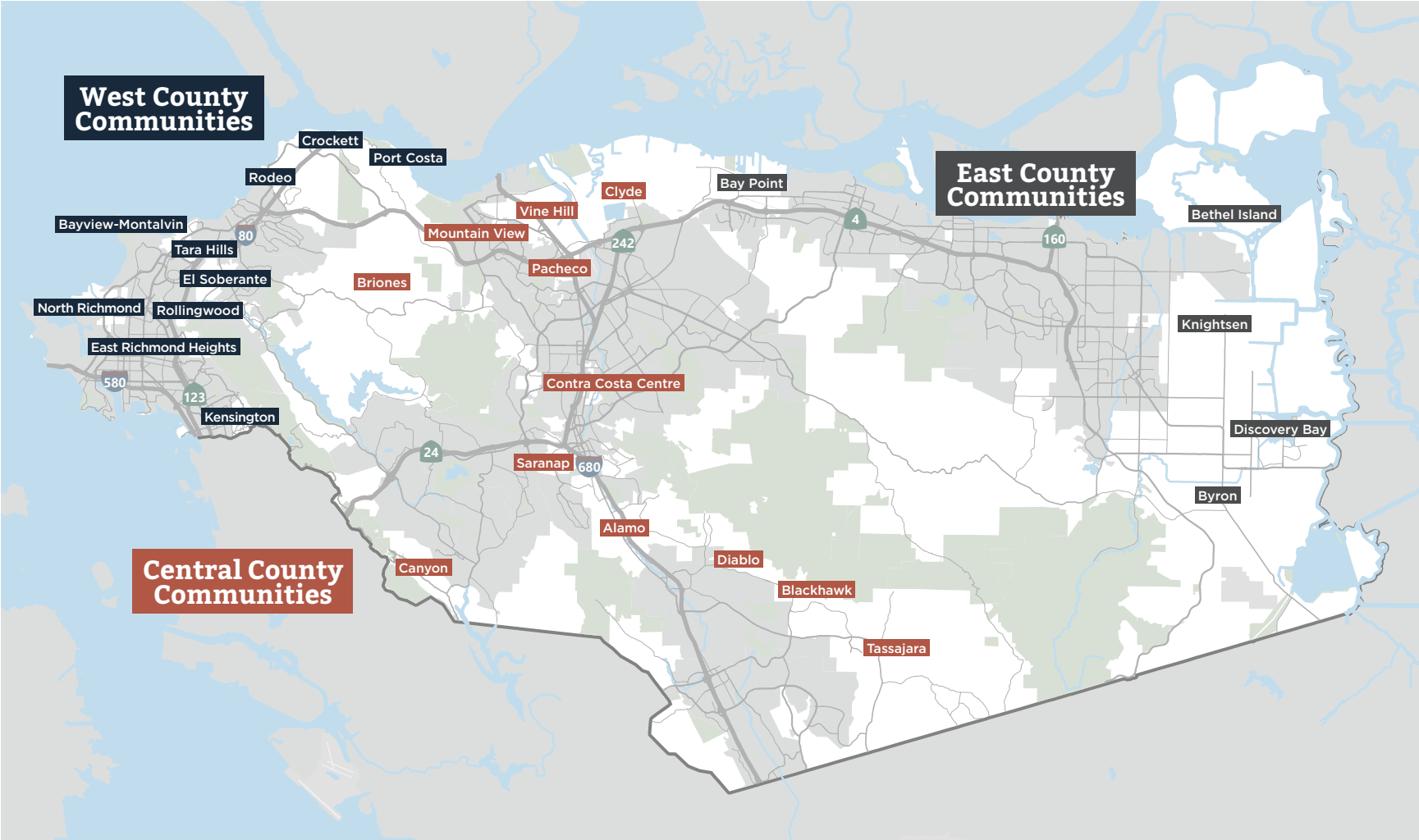
Historic auto-oriented land use patterns and a focus on reducing vehicle delay/congestion over multimodal accessibility and comfort have led to environments throughout the County where walking and bicycling are uncomfortable and safety concerns have arisen. To that end, this plan focuses on holistic interventions to decrease KSI collisions on County-maintained roadways.

For demographic context, the County's total population is 42% White, 18% Asian, 9% Black or African American, 26% Hispanic or Latinx, 0.2% Native Hawaiian and Other Pacific Islander, 0.3% American Indian and Alaskan Native, and 5% of another race or of two or more races.

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<sup>5</sup> Census Bureau American Community Survey (ACS) 2019 1-year estimates.

**Figure 2**  
**Regions and Communities in**  
**Unincorporated Contra Costa County**



# CHAPTER 2



# VISION AND GUIDING PRINCIPLES



# Vision Statement

*Contra Costa County will have an equitable, sustainable, multimodal transportation system where users of all ages and abilities can travel conveniently, reliably, and free from harm.*





# Guiding Principles

As an equity-focused and community data-driven initiative to proactively implement multimodal transportation safety improvements, this Vision Zero Plan aims to eliminate fatal and severe injuries throughout unincorporated Contra Costa County by 2035. Key elements of this approach include the following:

**1** Safety is the highest priority: Motor vehicle collisions should not result in a fatality or serious injury on County roadways. They are preventable and unacceptable incidents.

**2** People make mistakes: Errant driver behavior will be taken into consideration for design, construction, operation, and continuous evaluation of roads to determine the impact of such driver behavior on the most vulnerable road users.

**3** Safety is a shared responsibility: The goal is to create a roadway system where users, roadway designers, law enforcement, and post-crash care cohesively reinforce safety.

**4** A data-driven approach: Ongoing evaluation should continue to identify where and why traffic collisions are occurring and prioritize projects and programs that eliminate fatal and severe collisions. Proactive and reactive data-driven engineering decisions have been and will be made to design and manage roadways to reduce the severity of collisions.

**5** Transportation networks must be equitable: The transportation networks in unincorporated Contra Costa County must be equitable to all road users and serve all ages and abilities. Equity Priority Communities<sup>6</sup> will be considered as projects are developed. New safety interventions will not worsen equity concerns, especially as it relates to enforcement.

**6** Vision Zero will be accountable and transparent: Evaluation through an equity lens will be ongoing. The County strives to be transparent in its communications on roadway designs, prioritizing competing improvements, and use of resources needed to reduce fatal and severe collisions on County roadways.

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<sup>6</sup> These were formerly called “Communities of Concern” and defined by MTC as census tracts with a significant concentration of underserved populations, such as households with low incomes, people of color, or a combination of additional factors.

# CHAPTER 3



# COLLISION HISTORY, RISK FACTORS, AND TRENDS



Prior to the development of this Plan, the SSAR was prepared and included an in-depth review of collisions occurring on County roadways. Five years of the most current crash data available at the time (2014-2018) were extracted from the Statewide Integrated Traffic Records System (SWITRS) and Transportation Injury Mapping System (TIMS) databases. The datasets include extensive collision detail, such as collision location, type, severity, parties involved, contributing factors, and more. The SSAR provides an in-depth analysis of this crash history data, identifying collision trends, location types, and hot spots for crashes resulting in a death or serious injury. This Vision Zero Report includes key highlights from that effort.

Collisions on freeways and other roadways not maintained by the County, within city limits, or on private property were not included in this study.<sup>7</sup>

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<sup>7</sup> The exception is the surface section of State Route 4 from the intersection of Marsh Creek Road and Vasco Road eastward to the county line; collisions on this segment were included for analysis in this study.





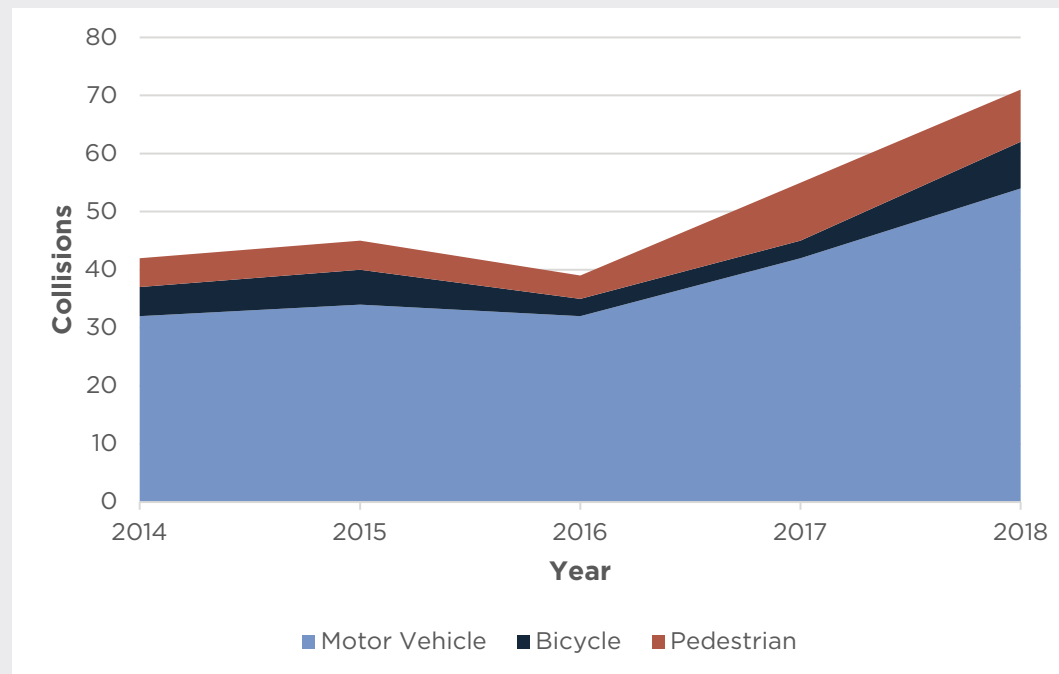


**Pedestrians at the  
Pleasant Hill/Contra Costa  
Centre BART Station**



**Figure 3**  
**KSI Collisions by Year and Mode**

Source:  
*Contra Costa County Systemic Safety Analysis Report (February 2021)*



## Annual Collision Trends

Annual collision trends show a rise in collisions since 2014. The total number of collisions across all modes rose from 413 in 2014 to 486 in 2018. Fatal and severe injury (KSI) collisions dipped in 2016, but show an upward trajectory. Fatal collisions peaked in 2015 and 2018, with 17 and 19 fatalities, respectively.

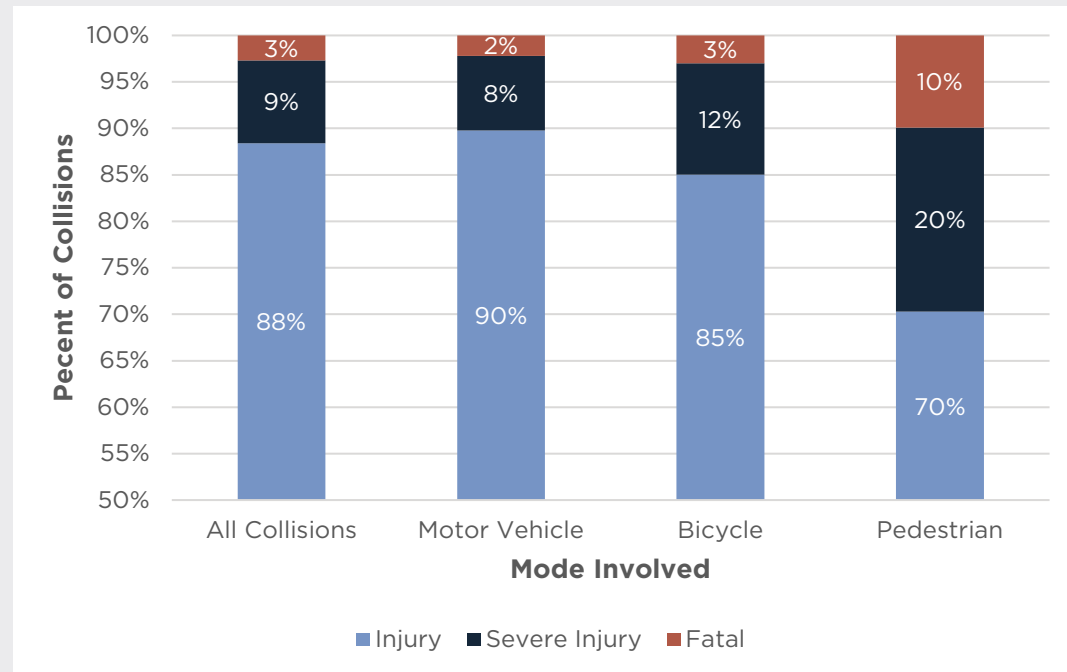
Motor vehicle KSI collisions experienced a dip in 2016 but have increased since then. Bicycle-involved KSI collisions decreased from 2015 to 2016, remained constant between 2016 and 2017, and peaked in 2018 with eight KSI collisions. Pedestrian-involved KSI collisions saw a spike between 2016 and 2017, with KSI collisions jumping from four in 2016 to ten in 2017. Pedestrian and bicycle-involved collisions account for 23% of all KSI collisions.

## Collision Severity

Vulnerable road users, including bicyclists and pedestrians, are more susceptible to fatal or severe injury collisions. In terms of collision mode, pedestrian-involved collisions led to the highest percentage of KSI collisions at 30%, with 10% of those collisions being fatal. KSI collisions comprised 10% of motor vehicle collisions and 15% of bicycle-involved collisions.

**Figure 4**  
**Collision Severity by Mode**

Source:  
*Contra Costa County Systemic Safety Analysis Report (February 2021)*



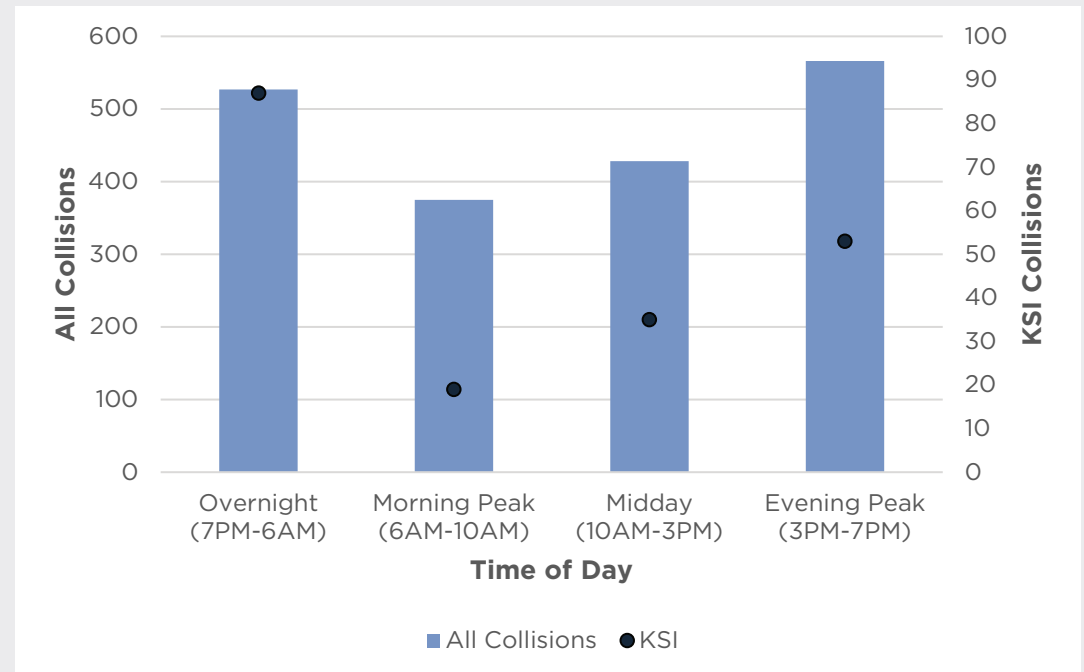
## Temporal Trends

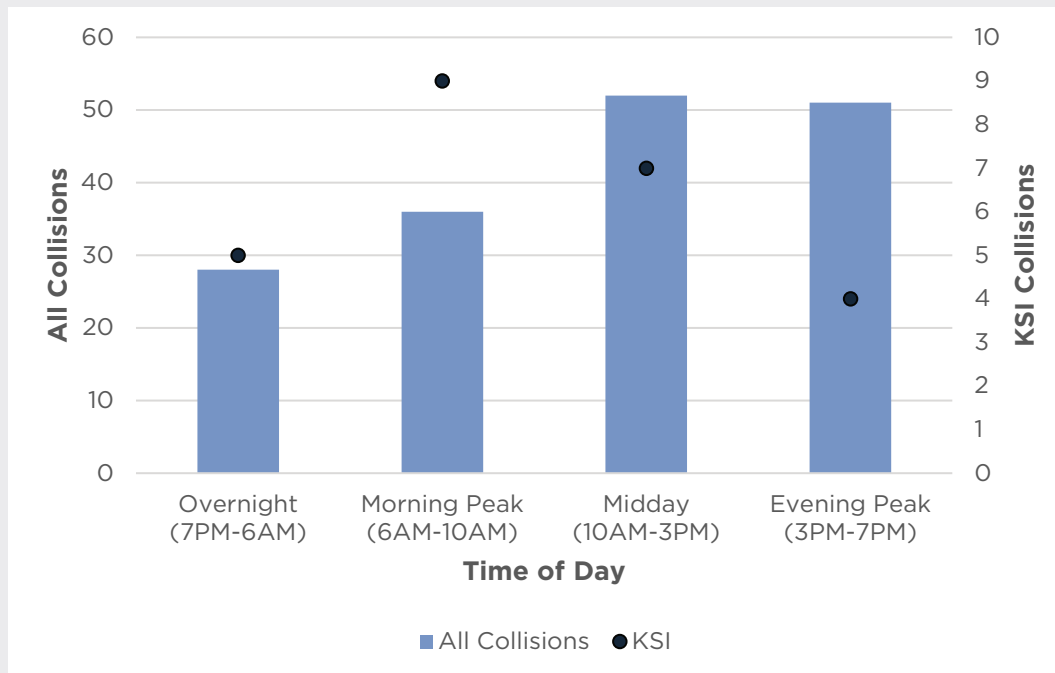
Temporal trends refer to collision trends based on time of day.

The highest share of motor vehicle and pedestrian-involved KSI collisions occurred overnight (7 PM to 6 AM). Bicycle-involved KSIs occurred most frequently during the morning peak hours, between 6 AM and 10 AM.

**Figure 5**  
**Motor Vehicle Collisions by Time of Day**

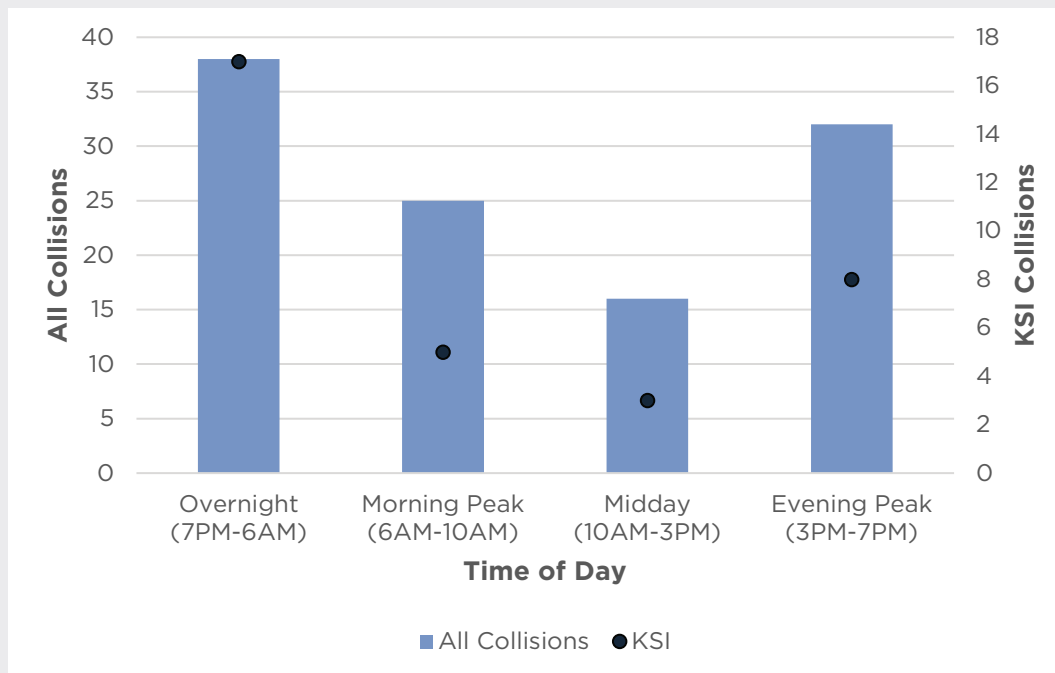
Source:  
*Contra Costa County Systemic Safety Analysis Report (February 2021)*





**Figure 6**  
**Bicycle-Involved Collisions by Time of Day**

Source:  
Contra Costa County Systemic  
Safety Analysis Report  
(February 2021)



**Figure 7**  
**Pedestrian-Involved Collisions by Time of Day**

Source:  
Contra Costa County Systemic  
Safety Analysis Report  
(February 2021)



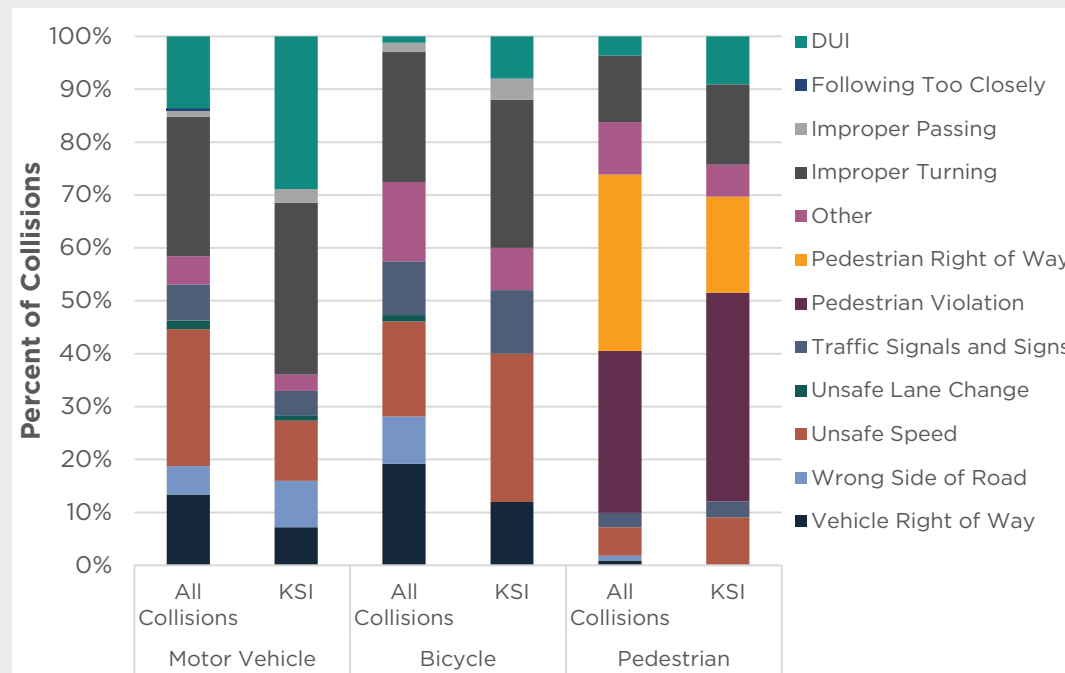


Schoolchildren walking near  
Walnut Heights Elementary School



**Figure 8**  
**Share of Collisions by Violation Category**

Source:  
*Contra Costa County Systemic Safety Analysis Report (February 2021)*



## Contextual Trends

The top violations for motor vehicle KSI collisions were improper turning (33%) and DUI (29%); for bicycle-involved KSI collisions the top violations were unsafe speeds on the part of motorists (28%) and improper turning (28%); and for pedestrian-involved KSI collisions the top violations were pedestrian violations (39%), pedestrian right-of-way violations (18%), and improper turning violations (15%).<sup>8</sup>

<sup>8</sup> A pedestrian violation indicates that a pedestrian is at fault in the collision (e.g., crossing outside of a marked crosswalk or crossing against a do not walk signal), while a pedestrian right-of-way violation indicates that the driver is at fault (e.g., driver enters the crosswalk while a pedestrian has a walk signal).

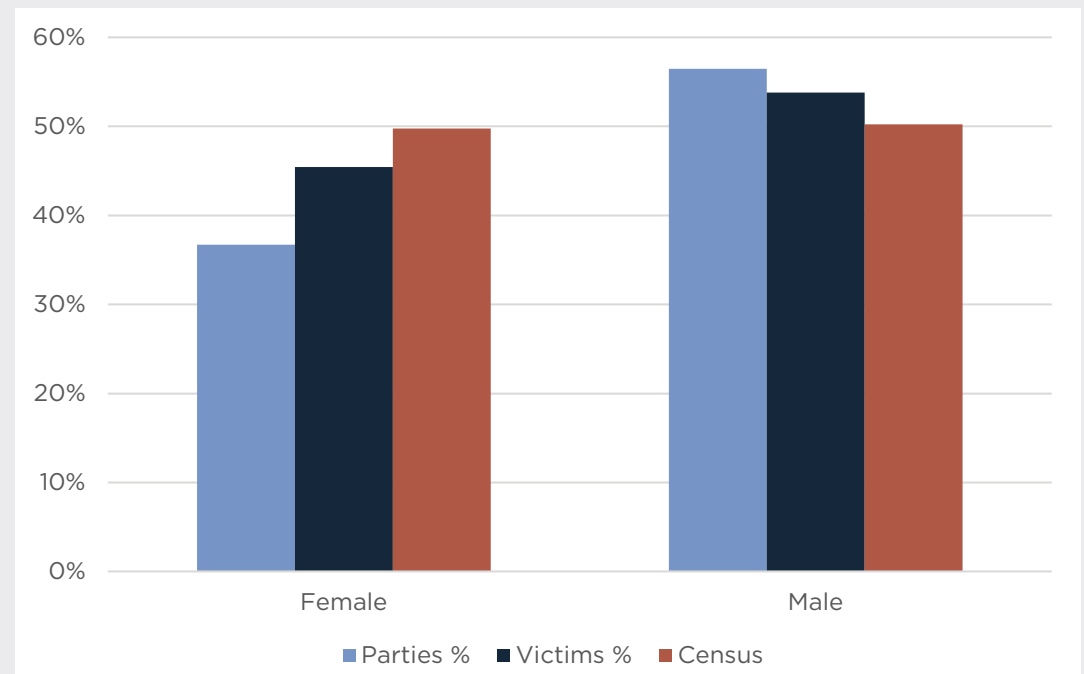
Men were a party to 56% of all collisions, as well as 82% of bicycle-involved collisions and 57% of pedestrian-involved collisions.

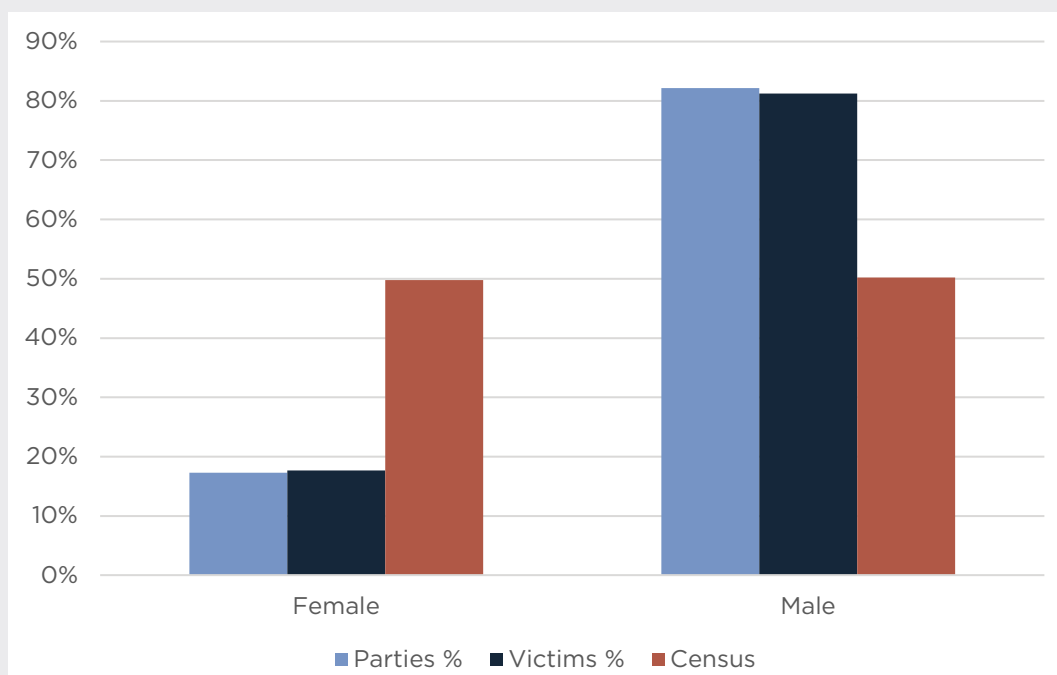
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\* This reflects the “sex” variable in the SWITRS dataset, which references “male”, “female”, or is left blank. This information is typically collected from a persons’ ID. This terminology is not assumed to be equivalent to or synonymous with gender or gender identity.

**Figure 9**  
**Male and Female\* Involvement in All Collisions**

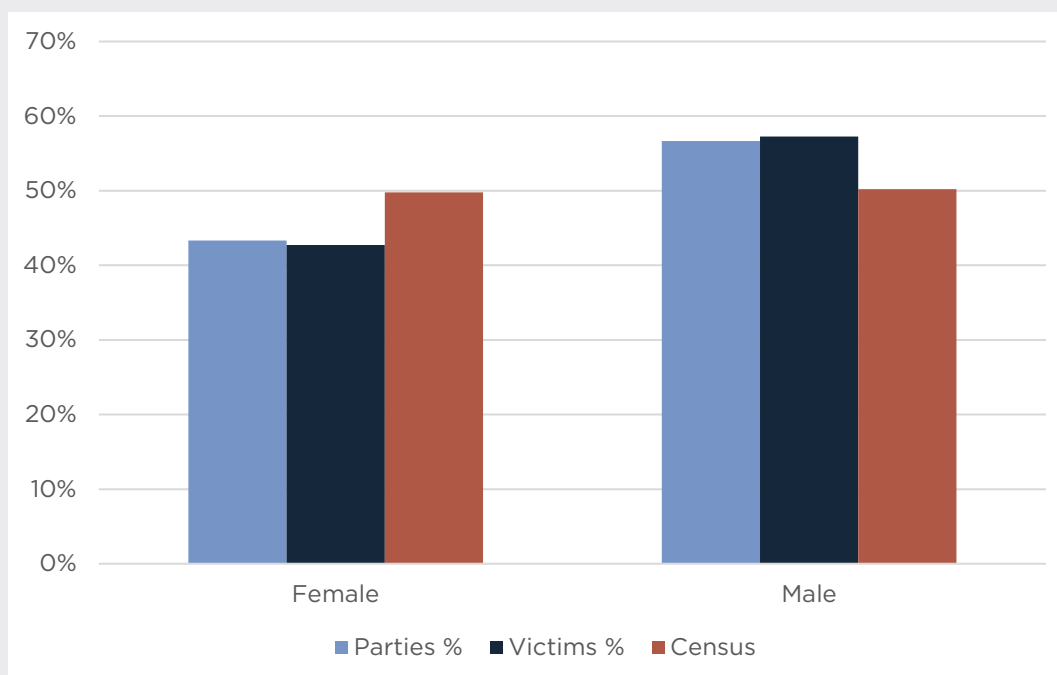
Source:  
*Contra Costa County Systemic Safety Analysis Report (February 2021)*





**Figure 10**  
**Male and Female\***  
**Involvement in Bicycle-**  
**Involved Collisions**

Source:  
 Contra Costa County Systemic  
 Safety Analysis Report  
 (February 2021)



**Figure 11**  
**Male and Female\***  
**Involvement in**  
**Pedestrian-Involved**  
**Collisions**

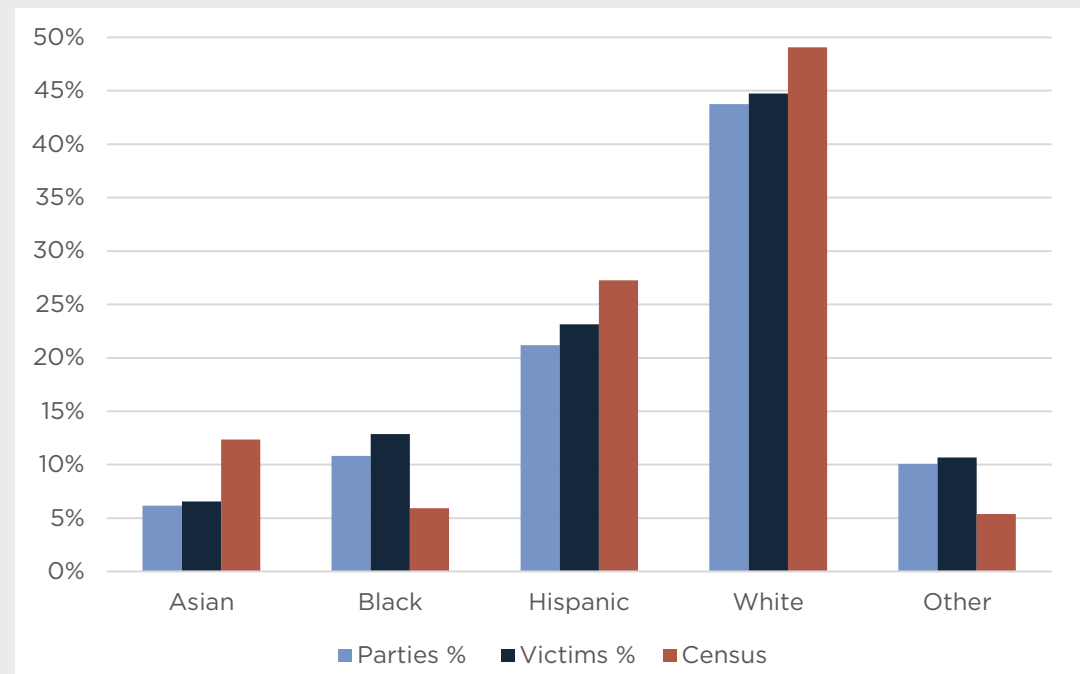
Source:  
 Contra Costa County Systemic  
 Safety Analysis Report  
 (February 2021)

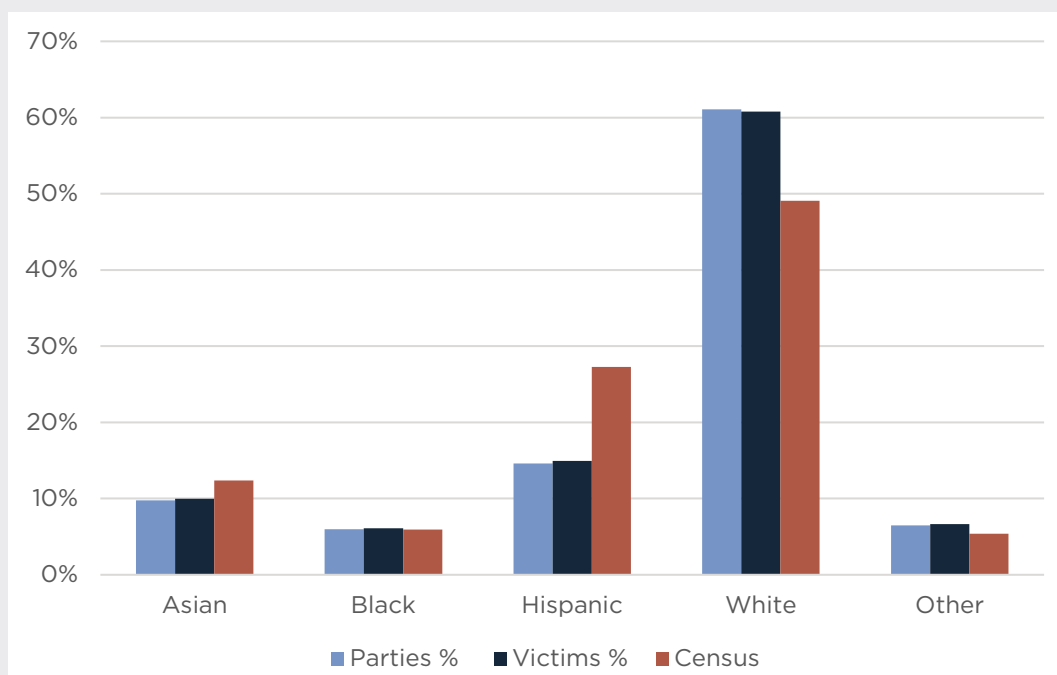


For all collision types, Black individuals were disproportionately the victim relative to share of the population, based on census data. Hispanic individuals showed higher rates of pedestrian-involved collisions relative to their share of the population, also based on census data.

**Figure 12**  
**Race/Ethnicity of Parties and Victims for All Collisions**

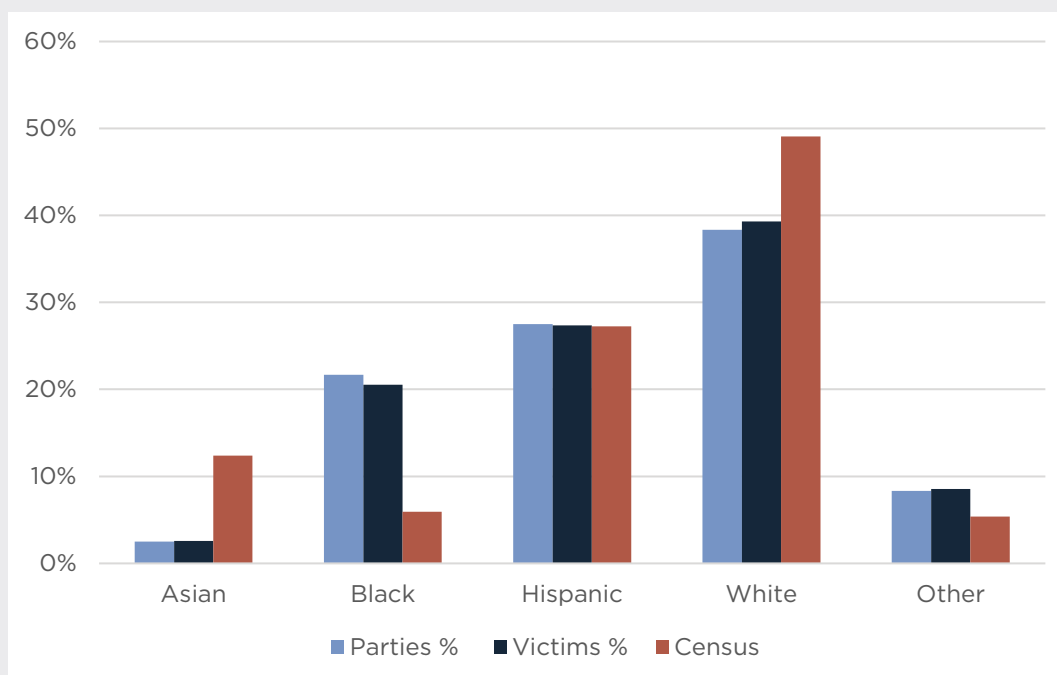
Source:  
*Contra Costa County Systemic Safety Analysis Report (February 2021)*





**Figure 13**  
**Race/Ethnicity of Parties**  
**and Victims for Bicycle-**  
**Involved Collisions**

Source:  
 Contra Costa County Systemic  
 Safety Analysis Report  
 (February 2021)



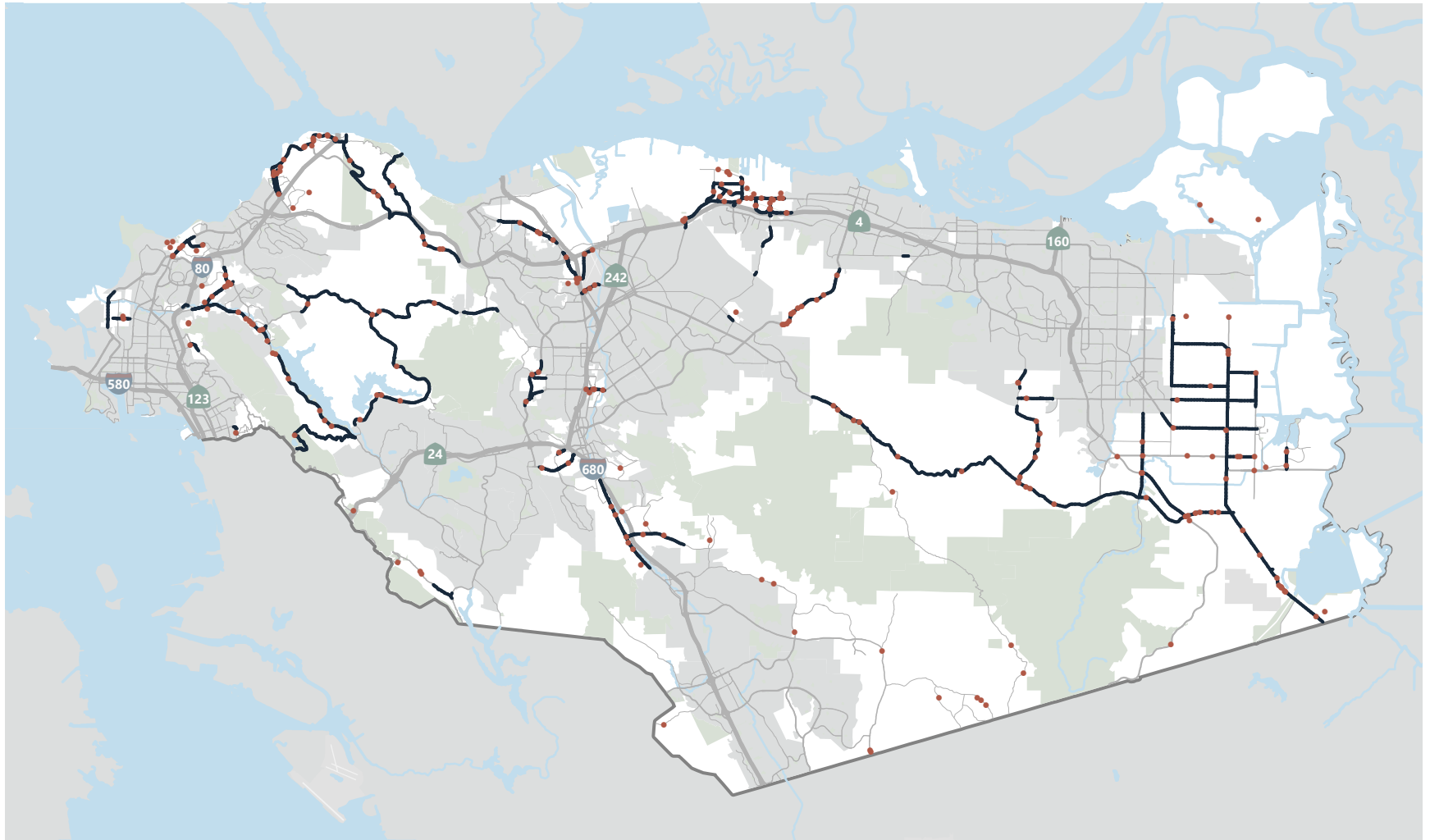
**Figure 14**  
**Race/Ethnicity of Parties**  
**and Victims for Pedestrian-**  
**Involved Collisions**

Source:  
 Contra Costa County Systemic  
 Safety Analysis Report (February  
 2021)

**Figure 15**

**High-Injury Network and KSI Collisions on County-Maintained Roads in Unincorporated Contra Costa County, 2014-2018**

• KSI COLLISIONS  
- HIGH-INJURY NETWORK





## High-Injury Network

The High-Injury Network (HIN) spotlights roadways with a high concentration of severe injuries and fatalities, providing a comprehensive set of focused locations for Countywide consideration in future project or funding decisions. The HIN accounts for 143 miles of roadways, representing 22% of the 662 miles of roadways maintained by the County.

A total of 2,174 non-freeway collisions occurred in the study area between 2014 and 2018; the HIN captures 70% (or 1,528) of these collisions.

A total of 252 of the 2,174 non-freeway collisions were KSIs; the HIN captures 73% (or 184) of these collisions.



Pedestrian using  
a push button



Franklin Canyon  
Road in Briones











## Contextual Data and Systemic Analysis

A systemic analysis looks at crash history on an aggregate basis to identify high-risk roadway characteristics in locations that have not necessarily seen a high number of collisions. This approach allows the County to proactively apply for grant funding at high-risk locations and carry out safety investments and widespread implementation of projects to reduce potential severe and fatal collisions at these locations.

The systemic analysis in the SSAR combined crash history and contextual data—including roadway characteristics and the characteristics of the surrounding areas—in addition to input and comments from County staff and Technical Advisory Committee (TAC) members to produce a set of 11 collision profiles that highlight the most common, severe, and noteworthy collision patterns in the County, which are listed in the table on the facing page along with the number of KSI collisions that align with each respective profile. They are grouped into the primary mode with which they are associated: bicycles, pedestrians, and automobiles only.

Countermeasures were identified for specific location contexts for each of the 11 collision profiles. These profiles were also linked with the engineering-based projects outlined in the SSAR.

**Figure 16**  
**List of Collision Profiles**

Profile Mode	Profile Number	Profile Name	# of KSIs
	1	Driving Under the Influence	56
	2	Vehicles Crossing into Opposing Lanes on Rural Roads	17
	3	Roadway Departure Collisions on Rural Roads	40
	4	Broadside Collisions at Urban Intersections with Side Street Stop Control	7
	5	Collisions at Signalized Intersections of Major (5+ Lanes) and Minor (3 Lanes or Less) Streets	19
	6	Bicycle-Involved Collisions Along Rural Roadways Where Bicycle Facilities Do Not Exist	10
	7	Bicycle-Involved Broadside Collisions at Urban Intersections	4
	8	Pedestrian-Involved Collisions on Rural Roads Where No Sidewalk or Marked Crosswalks are Present	4
	9	Pedestrians Crossing Urban Roadways Midblock Outside Marked Crosswalks	8
	10	Pedestrian-Involved Collisions at Signalized Urban Intersections	4
	11	Pedestrian-Involved Collisions at Unsignalized Urban Intersections	6



# CHAPTER 4



# COUNTER- MEASURES

**Figure 17**  
**Toolbox of Engineering Countermeasures**





## Engineering Countermeasures

The County's SSAR provides in-depth guidance on engineering countermeasures for each collision profile, including decision-making frameworks for safety improvements, detailed descriptions of countermeasures, and the feasibility and implementation considerations for each of the engineering countermeasures. The countermeasures recommended by the SSAR for the various profiles and locations around the County are presented on the facing page, and detailed information for each can be found in the appendix of the SSAR. These countermeasures focus on separating users in space and time to reduce conflicting movements, improving visibility for all users, and reducing kinetic energy transfer in the event of collisions.

## Non-Engineering Countermeasures

The following sections present additional safety countermeasures to include Road Users and Post-Crash Care, supplementing the SSAR's engineering-focused countermeasures on roadway design and speed reductions. Vehicle design does not fall within the County's purview, though opportunities to consider autonomous vehicle planning and intelligent transportation system technologies with future safety efforts are acknowledged. These non-engineering countermeasures are organized into five categories, as shown on the right.

**Safe Road Users**



**Safe Speeds**



**Post-Crash Care**



**Equity Considerations**



**Emerging Technologies**



## Safe Road Users



Transportation safety education plays an important role in shaping and shifting behavior. Many cities such as Seattle, Oakland, and Los Angeles are increasing community engagement and education to make streets safer for all. For example, the Los Angeles Vision Zero Dignity-Infused Community Engagement (DICE) approach includes partnerships with local nonprofits, paid outreach work for those experiencing barriers to employment, and both large- and small-scale community engagement events.



## Public Education Media Campaign

A public education media campaign focused on discouraging drinking and driving and/or speeding would complement engineering interventions targeting these risk factors in the County. Campaigns should also include the encouragement of increased awareness of pedestrians and bicyclists at night and appropriate crosswalk behaviors. Targeted education, such as on buses and bus shelters, on billboards, at movie theaters, or on local radio stations, may be directed at vulnerable populations with the help of local partners, and at certain behaviors of drivers, pedestrians, and bicyclists to deter specific collision types. Specific locations on the high-injury network, as well as partner campaigns with the County's Public Health Services Safe Routes to School team, may also be appropriate for concentrated educational messages. The County will consider joint efforts with Contra Costa Transportation Authority (CCTA) to develop outreach education campaigns focusing on common violations leading to fatalities and severe injuries, based on the collision profiles identified in the SSAR. Education and outreach campaigns could target the following:

- Reducing driving under the influence, as **29%** of KSI collisions involved drugs or alcohol.
- Providing education around driver behavior, as **33%** of motor vehicle KSI collisions were caused by improper turning; the top violations for bicycle-involved KSI collisions were unsafe speeds and improper turning (both **28%**).
- Encouraging pedestrians to cross in crosswalks and drivers to yield to pedestrians, to complement engineering countermeasures addressing the need for safer crossings, as **39%** of KSI collisions were pedestrian violations and **18%** of KSI collisions were pedestrian right-of-way violations.



## **Partner with Local Schools on Transportation Safety**

The County could partner with local schools to promote safe driver behavior. Education campaigns could involve students promoting safer driving to their parents by holding signs during pick-ups and drop-offs. Expanding existing youth programs led by the County's Health Services presents an opportunity to provide ongoing Safe Routes to School education to all students each year. Schools throughout the County have also used various educational programs such as the Street Smarts Program and the California Highway Patrol's (CHP) Start Smart Program that high schools use as an educational driving program that is required before a student is able to receive a parking permit. Office of Traffic Safety (OTS) grants also offer a variety of education programs intended to teach high school students about the dangers of alcohol and driving, including Every 15 Minutes, Sober Graduation, and DUI mock trials.



## **Educational Materials on New Roadway Design Changes**

Temporary demonstrations, like pop-up installations, can physically showcase proposed safety infrastructure and emergency response to the public in a tangible way. Using social media platforms such as NextDoor to prepare and promote materials and videos focused on new types of roadway designs and the County's major violation issues could direct community conversations for meaningful outcomes.



## **Partner with Local Experts**

Local partners should serve as community liaisons between the County and the public. Working with community partners and public institutions that have relationships with residents, such as local libraries, churches, cultural organizations, Boy and Girl Scouts, school safety patrol, and the Boys and Girls Clubs of Contra Costa, strengthens the engagement process by building trust and drawing on an established base of stakeholders. Local partners could help tailor the engagement process or incorporate engagement into existing programs and resources to educate people more effectively about roadway safety.



## Safe Speeds



Roadway networks within the County should address the safety of all road users, including those who walk, bike, roll, drive, and ride transit. Roadway design and management should encourage safe speeds, separate users in space and time, reduce kinetic energy transfer, and manipulate crash angles to ensure that collisions do not result in a fatality or serious injury. The SSAR provides engineering design recommendations for traffic calming such as lane narrowing, road diets, advanced yield and stop markings, and speed feedback signs, but these improvements should be complemented with enforcement tactics.



## High-Visibility Enforcement

High-visibility enforcement is a multifaceted approach to enforcement that garners public attention to traffic safety laws through highly visible patrols, such as checkpoints, saturation patrols, or message boards. OTS provides three grant funding sources to supplement CHP in their high-visibility enforcement goals. The goal for Get Education and Ride Safe III (GEARS III) is to reduce the number of motorcycle-involved KSI collisions. The goal of the Safer Highways Statewide grant is to reduce the number of alcohol-involved KSI collisions. Lastly, the Regulate Aggressive Driving and Reduce Speed V (RADARS V) grant is aimed at reducing the number of victims killed or injured due to speed, improper turning, driving on the wrong side of the road, or reckless driving-related collisions.

The goal of high-visibility enforcement is to promote voluntary compliance with traffic laws and, according to National Highway Traffic Safety Administration (NHTSA) research, it is one of the most effective enforcement strategies for safety outcomes.<sup>9</sup>

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<sup>9</sup> Richard, C. M., Magee, K., Bacon-Abdelmoteleb, P., & Brown, J. L. (2018). Countermeasures That Work: A Highway Safety Countermeasure Guide For State Highway Safety Offices, 2017 (No. DOT HS 812 478). United States. Department of Transportation. National Highway Traffic Safety Administration. [https://www.nhtsa.gov/sites/nhtsa.gov/files/documents/812478\\_countermeasures-that-work-a-highway-safety-countermeasures-guide-.pdf](https://www.nhtsa.gov/sites/nhtsa.gov/files/documents/812478_countermeasures-that-work-a-highway-safety-countermeasures-guide-.pdf). Accessed May 3, 2021.



## Cross-Sector Partnerships

Alternatives to law enforcement involve investing in cross-sector partnerships to promote transportation safety. Partnerships for the County's consideration include:

- Hiring community partners as Street Safety Ambassadors to canvas corridors with severe traffic fatalities or where communities are experiencing the most traffic stops or tickets for traffic violations. Hiring community members as Street Safety Ambassadors would also serve as an opportunity to build trust between government agencies and the public, since community partners typically have pre-existing relationships in the community.
- Hiring social workers, mental health counselors, addiction specialists, and other unarmed, specially trained professionals can supplement traffic enforcement. Partnering with local departments of mental health and public health may de-escalate traffic enforcement by treating traffic safety violations as a public safety issue.



## Automated Enforcement

Automated enforcement methods, such as red-light cameras or speed safety cameras, equitably target the specific drivers who are behaving dangerously. A strictly data-driven approach to automated enforcement might place red-light or speed cameras in locations with the highest number of collisions; however, speed safety cameras are not currently allowed in California. The County should monitor potential changes to state legislation for future use of this critical tool, should it become available.

## Post-Crash Care



Post-crash care is more than just medical care. It also includes the training of personnel and design of emergency vehicles and roadway infrastructure. Post-crash care also includes providing additional resources to the victims and their families such as resources for physical and mental rehabilitation, including support from organizations such as Families for Safe Streets.



## Emergency Medical Services Response

Victims involved in a collision have a higher chance of survival if they can quickly receive medical care. In many cases, law enforcement officers and fire department staff are the first responders to arrive at a collision location. In addition to equipping all first responders with the appropriate training, improving response times for EMS would help improve the chance of survival for collision victims. Collisions can also put the lives of first responders and other road users at risk due to increased congestion during the crash response, which may lead to secondary crashes.

The County could work with EMS to improve response times and ensure safety in both arriving at and attending to patients at the scene. Strategies include designing emergency vehicles to be highly visible (e.g., retroreflective striping and chevrons, high-visibility paint, and built-in passive light) and implementing emergency vehicle signal preemption, which allows emergency vehicles to break a normal signal cycle and proceed through an intersection.







Bike infrastructure along  
San Pablo Dam Road



## Post-Crash Care



### Trauma Care

Effective emergency trauma care can increase crash survival rates by as much as 25%, and an effective trauma care coordination system can reduce fatalities by 50%.<sup>10</sup> Contra Costa County could work with EMS and identify funding sources to improve on their existing infrastructure to be able to provide the highest care for victims. Recommended strategies to improve trauma care include providing funding for appropriate first responder equipment (e.g., hydraulic and pneumatic extrication tools), research for and adoption of technology aimed at reducing triage time (e.g., automatic vehicle reporting of severe crashes to EMS, EMS vehicle collision avoidance systems, and geolocation of nearest EMS vehicles), and promotion of federal- and state-certified training programs.



### Fatal Crash Response Team

In the event of a traffic fatality, analysis and evaluation are crucial in addressing the burden of traffic mortality and tracking progress toward eliminating fatalities on County roadways. One strategy would be for a designated person at the County to notify a cross-agency group after each fatal crash, including law enforcement, transportation officials, and public health officials. This would assist with accurate investigation and documentation of potentially relevant infrastructural and environmental crash factors, while identifying other additional factors that may have contributed to the fatal crash outcome. It can also expedite interventions to improve the crash location/circumstances and address similar risk factor locations and situations.

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<sup>10</sup> Office of Traffic Safety (OTS) (2020). California Highway Safety Plan 2020. Retrieved from <https://www.ots.ca.gov/wp-content/uploads/sites/67/2020/02/HSP-Final-back-2-4.pdf>. Pg. 106.



## Policy, Practices and Additional Resources

When individuals are injured in collisions, they rely on emergency first responders to quickly locate them, stabilize their injuries, and transport them to medical facilities. Post-crash care also includes forensic analysis at the crash site and traffic incident management, so that traffic flow may be restored as safely and quickly as possible. Policy action through the justice system and appropriate design of roadways to lessen the risk of future crashes can also help inform our safety programs.

Crash reporting practices, such as complete data collection and documentation of road user behavior and infrastructure, and sharing data across agencies or organizations (e.g., law enforcement, health officials, transportation officials, and hospitals) can help lead to a greater understanding of the holistic safety landscape, and thus lead to improved investments in safety.

To ensure a crash survivor receives the care needed to recover and restore body and mind to an active life within society, they require medical rehabilitation with specialists that can range

from orthopedics, neurosurgery, physical and occupational therapy, and prosthetics to psychology and neuropsychology.

Resources for crash survivors, their family, and friends, can be found on Contra Costa Health Services' website, <https://cchealth.org/mentalhealth>.

Severe and fatal collisions not only affect the victim involved, but their family and friends as well. Across the nation, in Canada, and locally in the San Francisco Bay Area, there are chapters of Families for Safe Streets. This group advocates at the state capitol in Sacramento and works with lawmakers and non-profits like Mothers Against Drunk Driving to share their stories and testify before legislative committees. Supporting victims' families can come in many forms. World Day of Remembrance for Road Traffic Victims is an annual event held on the third Sunday in November in remembrance of those who have died or have been affected by motor vehicle collisions, and to draw attention to the goal of Vision Zero.



## Equity Considerations



Creating an equitable framework for all modes of transportation in the County and removing transportation barriers for historically marginalized communities, especially communities of color, should ensure safe and fair transportation options so that all road users have a safe route and access to basic community services. The County will proactively work to address the inequities built into the current transportation system to keep vulnerable members of the community safe."

**11** FHWA (2018). Integrating the Safe System Approach with the Highway Safety Improvement Program. <https://safety.fhwa.dot.gov/hsip/docs/fhwasa2018.pdf>. Accessed May 3, 2021.



## Culturally-Relevant Engagement

Community engagement is not a one-size-fits-all model, as different communities have different needs. By developing culturally relevant engagement strategies that would be available on the County's website, participants would feel welcomed to participate in conversations about safety. Culturally relevant engagement strategies help education and programming around traffic safety reach a larger audience and be more impactful. For example, including cultural markers of a local community, such as contracting with popular local food vendors to cater engagement activities, may be a creative and welcoming way to engage residents. Meeting people "where they are" to gather input on safety issues at local parks can more effectively engage parents and children, rather than expecting families to attend a meeting at a government building.



## Funding and Project Prioritization

Ten priority engineering projects were identified and prioritized based on their perceived competitiveness for grant funding and alignment with County priorities, and were ranked by priority by the community. The County can apply for grant funding opportunities, such as California's Active Transportation Program, prioritize projects that increase safety and travel options for people walking and bicycling, and ensure that disadvantaged communities fully benefit from the ATP. California Office of Environmental Health Hazard Assessment's (OEHHA) CalEnviroScreen and the Metropolitan Transportation Commission's (MTC) Equity Priority Communities scores show part of Contra Costa County within the 25% most disadvantaged areas, making these priority areas for state and local funding opportunities.



## Traffic Enforcement

Through statistical analysis (traffic volumes, collision data, speed surveys, etc.) and observations and concerns received from citizens and key stakeholders regarding safety, the CHP is dedicated to reducing collisions through preventative enforcement based on data-driven concerns and locations.

Some agencies are shifting enforcement efforts to equity-based strategies that target specific reckless behaviors posing the highest safety risk while working to mitigate potential inequities in enforcement. Other agencies are looking for opportunities for non-sworn officers to be engaged in transportation enforcement activities, as appropriate.

Equity can also be considered in a range of enforcement strategies, including progressive fine structures, analysis

of demographic data in traffic citations, community-based alternatives to police enforcement, and investment in social programs that alleviate enforcement burdens.

Currently, fine structures, including any proposed changes and base fines for most offenses when a bill becomes law, is set by the State Legislature and not CHP. Additional fines, fees, and penalties are assessed by local counties and the State. CHP should update the County of any changes in implementing any of these suggested equitable enforcement strategies:

- Progressive traffic fine structures, such as a sliding scale based on a driver's income, development of payment plans, or the opportunity for first offenders to take a safety class focusing on driver

behavior changes may be considered.

- The analysis of available demographic data and the location of traffic citation would help the County understand if traffic enforcement is being implemented universally or if specific communities are experiencing disparities in enforcement.
- Assessment of traffic citation demographics and geographic data would help uncover inequities in policing and the enforcement of traffic safety.

## Emerging Technologies



Recent advancements in transportation technology have not only introduced new transportation modes and travel patterns but have also presented opportunities to better understand travel behavior and encourage safe behavior.



## Crash Risk Indicators

Surrogate safety measures, such as “near-miss” collisions, hard braking data, community-reported hazards, and high stress facilities, can provide a fuller understanding of the safety landscape and enable proactive interventions. “Near misses” have historically been difficult to study in practical safety applications due to an overall lack of reported information; however, new data

collection technologies are reducing that limitation. The County could consider using examples of surrogate safety measure technologies to help close the gap and provide key safety insights including the following:

- **Video data** — Video machine learning is an effective means of classifying collisions and collecting near-miss and hard braking data. Data vendors, such as StreetLight Data, have partnered with Ford Motors to combine multiple datasets, including connected vehicle data, to provide information such as hard braking data. This information can provide the County with a deeper understanding of hotspots where motorists need to brake hard to avoid a collision between a pedestrian, bicyclist, or other vehicle. CCTA has purchased StreetLight Data, and the County could consider investing in additional

features and technologies (e.g., along key roadways and intersections) to better understand and monitor risk scenarios in partnership with CCTA.

- **Public crowdsourcing** — Online web crowdsourcing platforms, such as UC Berkeley’s SafeTREC Street Story tool (available in English and Spanish), allow anyone to anecdotally report incidents of near misses: <https://safetrec.berkeley.edu/tools/street-story-platform-community-engagement>. These data points are publicly available for analysis and contain important contextual information based on geographic location (e.g., road conditions, street lighting, and travel mode). Using a platform like Street Story in future projects could also advance community education and engagement around road safety by providing an outlet and way for people to connect around each other’s stories.





## Emerging Vehicle Technologies

Safe vehicles are another element of the Safe System approach, and will increasingly add more redundancy or avoidance features in the system. Leveraging connected and autonomous vehicle (CAV) technology and identifying crash-avoidance systems with vehicle manufacturers is key in ensuring vehicles are safe for all road users in the future. The County does not currently design vehicles, but could take policy and design of County roadways into consideration as vehicle technology advances.



## Connected Systems and Vehicles

Smart signal technology enables agencies to collect data at multiple intersections, providing a high-resolution understanding of how people are using the roadway in real time. Connected vehicles are another part of this system. They wirelessly communicate with other vehicles and infrastructure (like signals) to provide data for instantaneous decision-making (e.g., reporting driver speed or collisions). Data from signals in combination with data from vehicles could allow the County to deploy real time speed-related signal operations, allowing for enhanced safety through adaptable systems. The County should consider upgrades to infrastructure as connected systems and vehicle technology advance.



## Data Collection, Inventory, and Management

Up-to-date data on transportation infrastructure, including roadway characteristics, intersection characteristics, and signs, are valuable for planning and implementing future improvements. With an updated inventory, the County could also allow for the identification of project synergies, such as including a safety countermeasure with a repaving project. Finally, enhanced contextual data supports systemic safety analysis for future safety plans and evaluations. Examples of service providers available to assist with this work include the following:

- Mapillary uses crowdsourced or privately provided street-level imagery to extract and map signs, streetlamps, sidewalks, signals, and other objects: <https://www.mapillary.com/>
- Ecopia uses satellite imagery to extract features such as road centerlines, roadway cross-sections, sidewalks, and more: <https://www.ecopiatech.com/>

## DUI Strategies and Considerations

The “Collision History, Risk Factors, and Trends” chapter of this report includes the 11 collision profiles from the SSAR that highlight the most common and severe collision patterns on unincorporated County roadways. Safe road users, safe speeds, and safe roads elements can complement the engineering countermeasures listed in the SSAR for all 11 emphasis areas.

One profile, driving under the influence (DUI), is a major factor in fatal and severe collisions in the County that will require a full Safe System approach to address. In addition to engineering-focused countermeasures, DUI collisions also require non-infrastructure prevention programs. The County is committed to implementing policy to reduce the rates of driving under the influence. These policies generally fall under three categories:

1. Deterrence policies focus on raising the actual and perceived risk of detection of driving under the influence. These policies should be highly visible to increase awareness of the risks of driving under the influence. Publicized sobriety checkpoints, saturation patrols, and other forms of high-visibility enforcement are effective for safety outcomes.
2. Prevention and education policies focus on mobilizing and educating the community and intervening before driving under the influence takes place. According to NHTSA research, alcohol problem assessment and treatment programs, as well as alcohol intervention in settings such as a doctor’s office, are highly effective strategies for improving safety outcomes.<sup>12</sup>
3. Limited access policies focus on making underage access to alcohol and drugs more difficult, and seek to limit excessive alcohol consumption.

Increasing funding for efforts that focus on prevention and education, such as alcohol problem assessment and treatment programs, would support less-punitive measures to reduce DUI collisions.

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<sup>12</sup> National Academies of Sciences, Engineering and Medicine (2005). A Guide for Reducing Alcohol-Related Collisions. Retrieved from <https://doi.org/10.17226/23419>. pg. 106.





Danville Boulevard  
through downtown Alamo



# CHAPTER 5



# PROJECT DEVELOPMENT

## Project Development

The 11 collision profiles provide a blueprint for Contra Costa County to prioritize countermeasures to reduce KSI collisions. Potential priority projects are identified in consideration of the 11 collision profiles, along with input from the County team and TAC members. Additional information of the collision profiles, including a description of the profile, a map of the collisions, key statistics, and applicable countermeasures for feasibility and implementation considerations can be found in Chapter 3 of the SSAR.

MTC's Equity Priority Communities should be reviewed when prioritizing projects. This takes into consideration when improvements can be made in underserved communities.

Thirty-five priority projects were identified and categorized as Tier Zero, Tier One, and Tier Two as follows:

- Tier Zero corresponds to a location the County has recently enhanced or has secured funding to improve, prior to the development of this plan; the County will monitor these locations to identify if the improvements were successful in meeting the County's safety goals for the projects.
- Tier One corresponds to the top ten projects recommended by the SSAR.
- Tier Two corresponds to the project locations not identified as Tier Zero or Tier One, but are identified as important locations. These projects will be revisited following the implementation of Tier One projects or with future prioritization efforts and opportunistic funding measures.

The full list of 35 projects is mapped on the facing page and also listed as follows:

### ***Tier Zero Project Locations***

1. Camino Diablo from Vasco Road to Byron Highway
2. Franklin Canyon Road from just west of McHarry Ranch Road to Wolcott Lane
3. Kirker Pass Road from Clayton Avenue to Buchanan Road
4. San Pablo Dam Road from Kennedy Grove Entrance to Bear Creek Road
5. Treat Boulevard from Buskirk Avenue to Sheppard Road

### ***Tier One Project Locations***

6. Appian Way/Valley View Road/Sobranite Avenue intersection
7. Byron Highway from Clifton Court Road to the California Aqueduct crossing
8. Camino Diablo/Vasco Road intersection





9. Canal Road/Bailey Road intersection and the De Anza Trail crossing
10. Concord Avenue from I-680 to the Walnut Creek channel
11. Danville Boulevard from Jackson Way to La Serena Avenue
12. Marsh Creek Road from west of Deer Valley Road to Clayton city limits
13. San Pablo Avenue from California Street to Merchant Street
14. San Pablo Dam Road from May Road to Kennedy Grove entrance
15. Willow Pass Road from Port Chicago Highway to North Broadway Avenue

### ***Tier Two Project Locations***

16. Alves Lane/Medanos Avenue/Hill Street intersection
17. Appian Way/Manor Road intersection
18. Bailey Road from Concord city limits to Willow Avenue
19. Bear Creek Road from Camino Pablo to Alhambra Valley Road

20. Camino Tassajara from Finley Road to just south of Windmere Parkway
21. Canal Road from Bailey Road to Loftus Road
22. Deer Valley Road from Marsh Creek Road to Balfour Road
23. Highland Road from Carneal Road to Manning Road
24. Market Avenue from Jade Street to UP tracks
25. Marsh Creek Road from Bixler Road to Byron Highway
26. Marsh Creek Road from Deer Valley Road to Camino Diablo
27. Olympic Boulevard from Windtree Court to I-680
28. Pacheco Boulevard/Center Avenue intersection
29. Pacheco Boulevard from Wygal Drive to Arthur Road
30. Port Chicago Highway from Driftwood Drive to Pacifica Avenue
31. San Pablo Avenue from Richmond Parkway to Golden Gate Park
32. San Pablo Dam Road from El Portal Drive to May Road

33. Sunset Road/Byron Highway intersection
34. Walnut Boulevard/Vasco Road intersection
35. Willow Pass Road/Evora Road/SR-4 interchange

## **Project Cutsheets**

The ten Tier One projects are highlighted in the following cutsheets with further detail on project descriptions, related profiles (a list of which is found on pg. 39), collision history at the project site, and modal information. Also included are benefit-cost information for each project, used to summarize a project's overall relationship between the relative costs and benefits associated with implementing the projects (e.g., crash reduction). This analysis provides a quantitative measure to help decision-makers prioritize projects and apply for grant funding. A sample cutsheet is provided on the facing page.

PROJECT



## Project Name and Extents

The project number and name appears here

This sections shows the collision profiles, as indicated by filled-in bubbles, that the proposed improvements could help address and alleviate. Reference page 39 of the SSAR for further details.

### Profiles Addressed



This section contains a brief description of the project scope and extents as detailed in the SSAR. Additional information about each of the projects can be found in the SSAR.

This section lists the modes—bicycles, pedestrians, and automobiles—toward which improvements from the projects are targeted

This is the number of KSI collisions that have occurred within the project extents during the study period

This is the estimated design and construction cost to implement the proposed project

This is an estimate of the statistical value of a human life lost or altered.

The B/C ratio calculates a project's overall relationship between the relative costs and benefits. The higher the ratio, the more likely a project is to get funded.

### Project Statistics



TARGET MODES

###

NUMBER OF KSI COLLISIONS ADDRESSED

\$###,###

TOTAL COST

\$#,###,###

TOTAL BENEFITS

##.##

B/C RATIO



PROJECT  
**6**

## Appian Way / Valley View Road / Sobrante Avenue intersections

### Profiles Addressed



This project targets all modes of travel: vehicles, bicyclists, and pedestrians. Flashing beacons, sidewalks extended at corners, and median islands enhance the visibility of pedestrians to drivers, limit pedestrian exposure in an intersection, and provide a space for pedestrians to wait in the median before entering the remaining part of the crossing. A transportation analysis study is also recommended to determine the feasibility of converting to a roundabout or traffic signal.

### Project Statistics



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#### TARGET MODES

**6**

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#### NUMBER OF KSI COLLISIONS ADDRESSED

**\$811,500**

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#### TOTAL COST

**\$21,277,289**

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#### TOTAL BENEFITS

**26.22**

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#### B/C RATIO



## Byron Highway from Clifton Court Road to the California Aqueduct crossing

### Profiles Addressed



Widening of the shoulder, as well as installation of vertical motor vehicle barriers, rumble strips (roadways features that cause a vibration and an audible rumbling noise when driven over), and “Do Not Pass” signs are ways to reduce passing conflicts between motor vehicles and bicyclists. The County is also coordinating discussions with Caltrans on the State Route 239 project.<sup>13</sup>

<sup>13</sup> The State Route 239 Project is a proposed new, four-lane highway from State Route 4 at Marsh Creek Road in Contra Costa County to Interstate 580 in Alameda County or Interstate 205 in San Joaquin County. More information can be found at <https://ccta.net/projects/state-route-239-project/>

### Project Statistics



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TARGET MODES

7

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NUMBER OF KSI COLLISIONS ADDRESSED

\$575,600

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TOTAL COST

\$32,225,550

---

TOTAL BENEFITS

59.44

---

B/C RATIO



# Camino Diablo/ Vasco Road Intersection

### Profiles Addressed



Updating traffic signal timing and using technology to help drivers navigate busy intersections are improvements to consider in addressing the top collision trends. Installing additional signage to alert drivers to not make a right turn on to Vasco Road from westbound Camino Diablo when their light is red is also recommended. The County should coordinate discussions with Caltrans on the SR 239 project.

### Project Statistics



TARGET MODES

4

NUMBER OF KSI COLLISIONS ADDRESSED

\$176,400

TOTAL COST

\$12,031,755

TOTAL BENEFITS

68.21

B/C RATIO



PROJECT  
**9**

**Canal Road/Bailey Road  
Intersection and the De Anza  
Trail crossing at Bailey Road**

*Profiles Addressed*



This project targets improvements for vehicles, bicyclists, and pedestrians. A two-way cycle track along Bailey Road from Willow Pass Road to Pittsburg-Bay Point BART Station Access that includes ADA-compliant sidewalks with a buffer zone to the De Anza Trail should be considered. At Canal Road, recommended improvements include updating signal timings to ensure enough time is given to vehicles moving through the intersection when the light is red before giving vehicles traveling on the intersecting street a green light.

*Project Statistics*



TARGET MODES

**4**

NUMBER OF KSI COLLISIONS ADDRESSED

**\$301,400**

TOTAL COST

**\$13,342,109**

TOTAL BENEFITS

**44.25**

B/C RATIO



## Concord Avenue from Walnut Creek Channel to I-680

### Profiles Addressed



Installing speed feedback signs and extending the left turn lane to hold more vehicles on the westbound approach at Diamond Boulevard are near term improvements. Looking ahead, a partnership with the City of Concord to explore the possibility of implementing a road diet which would reduce the number of vehicle lanes to allow for additional pedestrian and bicycle enhancements.

### Project Statistics



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TARGET MODES

3

---

NUMBER OF KSI COLLISIONS ADDRESSED

\$559,300

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TOTAL COST

\$14,049,051

---

TOTAL BENEFITS

25.11

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B/C RATIO

PROJECT  
**11**

**Danville Boulevard  
from Jackson Way  
to La Serena Avenue**

*Profiles Addressed*



From Jackson Way to Stone Valley Road, the planned single lane roundabout at Orchard Court should be accommodated along with a reduction in vehicle travel lanes through the corridor to Alamo Square Drive. This would also include pedestrian and bicycle improvements at the Stone Valley Road intersection and relocation of bus stops. From Las Trampas to La Serena Avenue, sidewalks should be installed on both sides of the street along with pedestrian enhancements that include flashing beacons, sidewalks extended at corners, median islands, ADA compliant curb ramps, and high-visibility crosswalks. Buffered bike lanes should be installed where missing throughout this corridor.

*Project Statistics*



TARGET MODES

**2**

NUMBER OF KSI COLLISIONS ADDRESSED

**\$904,200**

TOTAL COST

**\$19,983,535**

TOTAL BENEFITS

**22.10**

B/C RATIO



PROJECT  
**12**

## Marsh Creek Road from Deer Valley Road to Clayton city limits

### Profiles Addressed



Curve-warning signs, rumble strips, speed feedbacks signs, and other roadway improvements would benefit both motorists and bicyclists. Additional improvements include trimming vegetation and installing lighting to provide more visibility. The project also includes installation of paved pull-out areas for traffic enforcement.

### Project Statistics



TARGET MODES

**8**

NUMBER OF KSI COLLISIONS ADDRESSED

**\$919,300**

TOTAL COST

**\$59,847,337**

TOTAL BENEFITS

**65.10**

B/C RATIO

PROJECT  
**13**

**San Pablo Avenue  
from California Street  
to Merchant Street**

*Profiles Addressed*



Along San Pablo Avenue, improvements to consider include a reduction in the number of vehicle travel lanes to provide space for a two-way bicycle and pedestrian path on the north side of the roadway, as well as installing curve-warning signs, speed feedback signs, and additional lighting.

*Project Statistics*



TARGET MODES

**8**

NUMBER OF KSI COLLISIONS ADDRESSED

**\$9,777,800**

TOTAL COST

**\$36,502,091**

TOTAL BENEFITS

**3.73**

B/C RATIO

PROJECT  
**14**

## San Pablo Dam Road from May Road to the Kennedy Grove Entrance

### Profiles Addressed



This project includes multiple improvements along this stretch of San Pablo Dam Road. The intersection with Valley View Road is noted as a hot spot location by residents. Reconfiguring the intersection to have one eastbound receiving lane that would open up to two lanes after Olinda Road, along with roadway and sidewalk improvements, would benefit all road users. Other improvements to consider include installing a roundabout at Tri Lane, installing additional signs to notify drivers when they must share the road with bicyclists, installing enhanced pedestrian crossing near bus stops, and completing a speed study.

### Project Statistics



#### TARGET MODES

**1**

#### NUMBER OF KSI COLLISIONS ADDRESSED

**\$72,900**

#### TOTAL COST

**\$882,151**

#### TOTAL BENEFITS

**12.05**

#### B/C RATIO

PROJECT  
**15**

**Willow Pass Road from  
Port Chicago Highway  
to Crivello Avenue**

*Profiles Addressed*



Reducing the number of vehicle travel lanes along Willow Pass Road between Port Chicago Highway and North Broadway Avenue would allow protected bike lanes to be installed. Crosswalks that are uncontrolled—meaning a crosswalk where drivers do not have to stop for a stop sign or traffic signal—should be analyzed to ensure they are consistent with the latest best practice guidance for uncontrolled crossings. Lastly, traffic signal timing should be updated to smooth traffic flow and provide pedestrians with a head start when crossing. The head start provides additional times for pedestrians to cross and enhances the visibility of pedestrians to drivers.

*Project Statistics*



TARGET MODES

**7**

NUMBER OF KSI COLLISIONS ADDRESSED

**\$2,437,500**

TOTAL COST

**\$40,300,975**

TOTAL BENEFITS

**16.53**

B/C RATIO



# CHAPTER 6



# SAFETY EFFORTS AND PROGRAMS

In recent years, efforts to improve transportation safety in the County have included a thorough analysis of collisions and applicable engineering countermeasures through the Systemic Safety Analysis Report (SSAR), as well as grants from the Office of Traffic Safety for enforcement, education, and outreach programs.

## **Contra Costa County Systemic Safety Analysis Report**

Completed in early 2021, Contra Costa County's Systemic Safety Analysis Report (SSAR) lays the groundwork and provides the resources necessary for the preparation of successful Highway Safety Improvement Program (HSIP) and other local and federally funded grant applications sought by the County. The study was funded through the SSAR program grant provided by the California Department of Transportation (Caltrans).

The SSAR program helps local agencies take a strategic approach to identify systemic and hot spot safety improvement projects by completing a system-wide, multi-year, data-driven analysis of collisions. With a focus on engineering interventions, the SSAR provides a detailed look into collision and roadway database development, a review of local collision data, a safety data analysis, collision profile development, safety countermeasure selection, and project development.





Signage at the entrance of  
Kennedy Grove Recreation Area  
along San Pablo Dam Road



## Programs Under Way

The County has several existing programs and grants focused on educating the community on multimodal safety. Chapter 6 includes additional funding sources to consider as the County expands its outreach and educational campaigns.

### ***Safe Routes to School***

The National Center for Safe Routes to School offers a way for communities to provide education and programs to promote safety and educate students on walking and biking to school. Contra Costa Health Services works with schools and Community Based Organizations (CBO) throughout the County to promote in-class presentations, leadership development, Walk/Bike to School Days, assemblies, and bicycle rodeos. They also encourage on-campus kiosks promoting safe walking and bicycling.

### ***Street Smarts Diablo Region***

Streets Smarts Diablo is funded through 511 Contra Costa, with funding from the Contra Costa Transportation Authority and the Bay Area Air Quality Management District's Transportation Fund for Clean Air. This program provides safe walking and bicycling assemblies for students in elementary, middle, and high school. This program currently serves the southwest part of the County.

### ***Street Smarts San Ramon Valley***

Street Smarts San Ramon Valley is funded by the County, the City of San Ramon, the Town of Danville, San Ramon Valley Unified School District, and San Ramon Valley Fire. This program provides safety education to students at the elementary, middle, and high school level through various contests and assemblies that includes safety education and bike rodeos.

### ***Summer Bike Challenge***

511 Contra Costa hosts the annual Summer Bike Challenge, free for people of all ages and abilities. Between June and August, participants bike to as many locations identified in their community as possible, and prizes are awarded at the end of the summer.

### ***Caltrans Grant Funding***

The Fixing America's Surface Transportation (FAST) Act was signed into law on December 4, 2015. Under the FAST Act, the Highway Safety Improvement Program (HSIP) is a federal-aid program focusing on infrastructure projects to achieve significant reductions in fatalities and serious injuries on public roadways. The County applies for HSIP funding annually to improve county-maintained roadways and facilities.

### ***Mothers Against Drunk Driving (MADD)***

MADD is a non-profit organization seeking to stop drunk driving, support those affected by drunk driving, prevent underage drinking, and strive for stricter impaired-driving policies. Within the County, MADD hosts in-person Victim Impact Panels where participants share their stories of how drunk and drugged driving has affected their lives and the lives of their families and friends. The panel is aimed at helping offenders recognize and internalize the lasting and long-term effects of substance-impaired driving.

### ***California Highway Patrol (CHP) Programs***

California Highway Patrol has various DUI checkpoints set up throughout the County, although they have been less frequent recently due to the COVID 19 pandemic. CHP also uses social media and

hosts presentations at schools and at the district attorney's office warning students of the dangers of driving under the influence. CHP hosts a Start Smart program to inform newly licensed or soon-to-be licensed teenagers and their parents/guardians of the dangers of excessive speed, driving under the influence, and distracted driving.

### ***Complete Streets Corridor Studies***

The County's Transportation Analysis Guidelines outline Complete Streets implementation measures for existing and future roadways. The County strives to create a connected network of facilities accommodating all modes of travel, increasing connectivity across jurisdictional boundaries, and anticipating existing and future areas of origin and destination. A few recent Complete Streets projects the County has been working on

are the Appian Way Complete Streets Project, the Danville Boulevard/Orchard Complete Streets Improvement Project, and the San Pablo Avenue Complete Streets Project.

### ***Building Healthy Communities Program***

In partnership with local communities and organizations, Contra Costa Health Services' Building Healthy Communities Program helps to bring the Public Health perspective to local active transportation planning efforts. They participate in walk audits, review draft plans, and conduct surveys with residents to identify needed improvements. This program also seeks funding to address neighborhood conditions that lead to injuries or poor health such as unsafe parks or lack of access to high quality active transportation amenities.

# — CHAPTER 7 —



# FUNDING



Although many candidate projects in the SSAR are well suited for HSIP funding, there are many other potential funding sources that may be available for additional efforts. The following summarizes potential local, state, and federal funding sources related to transportation safety. The County will also continue to look for opportunities to layer safety-related projects onto other capital improvement projects, as well as maintenance projects and through review and approval of private development.

## **Developer Fees**

California law allows local governments to establish and charge a fee on residential and non-residential development to fund public facilities and to service population growth. Local agencies should update their transportation analysis guidelines to reflect safety improvements for all modes of travel. Public facility fees can be

charged to new development based on density and traffic impacts, and can go to a variety of public facilities, including local roadways.

The County has a total of 14 traffic Area of Benefit (AOB) programs within unincorporated Contra Costa County. A traffic AOB is a development traffic mitigation fee program designed to improve the capacity and safety of the County's road network within a defined boundary as development occurs.

## **RAISE Grant**

The U.S. Department of Transportation is committed to create high-quality jobs, improve safety, protect our environment, and generate equitable economic opportunity for all Americans with their Rebuilding American Infrastructure with Sustainability and Equity (RAISE) grant. Projects will be evaluated based on merit criteria that

includes safety, environmental sustainability, quality of life, economic competitiveness, state of good repair, innovation, and partnership. It is one of the few DOT discretionary programs for which regional and local governments can directly compete for multimodal transportation funding.

## **Affordable Housing and Sustainable Communities Program (AHSC)**

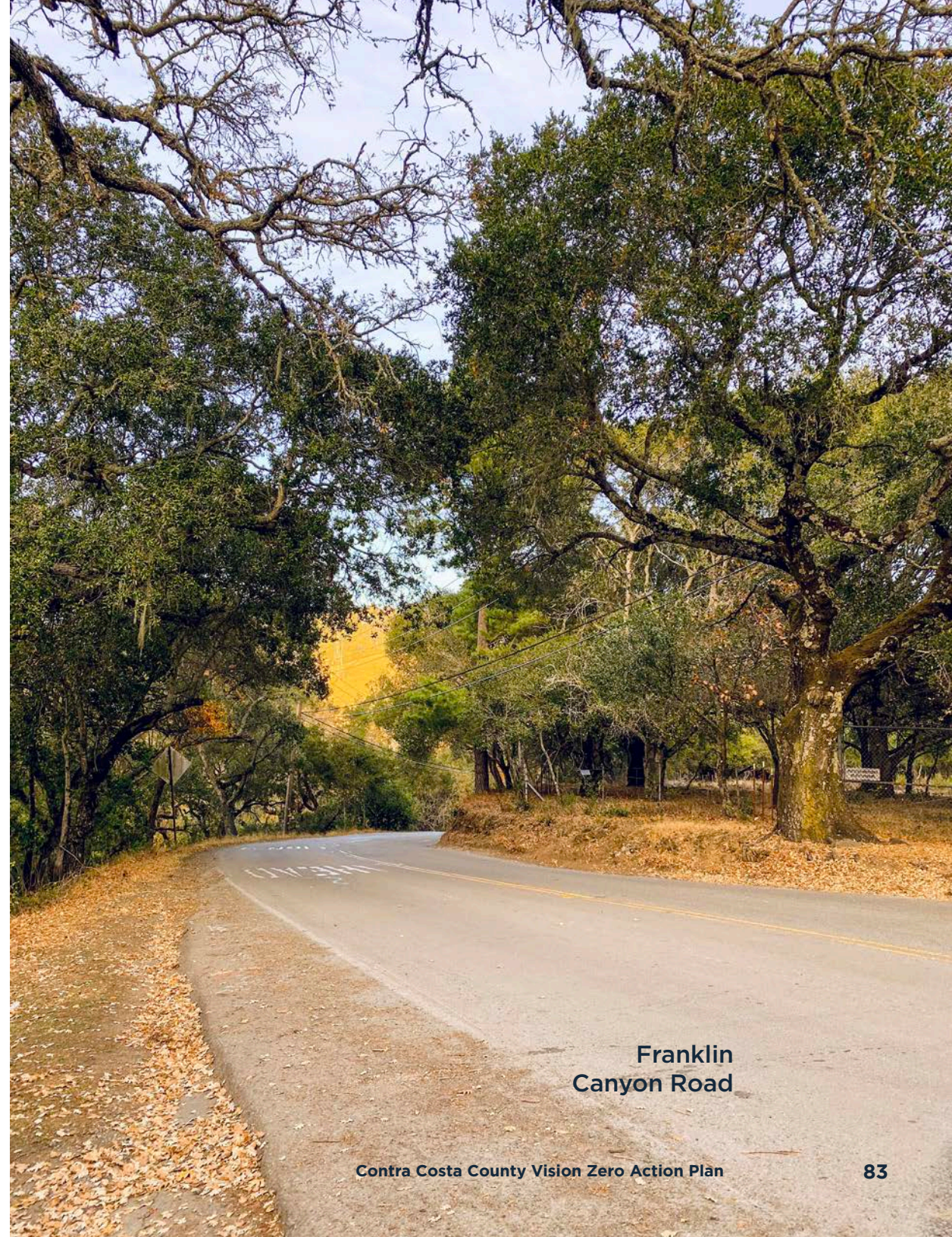
The AHSC Program, administered by the Strategic Growth Council and implemented by the Department of Housing and Community Development (HCD), funds land use, housing, transportation, and land preservation projects to support infill and compact development that reduces GHG emissions. This program will assist project areas by providing grants and/or loans, or any combination



thereof, that will achieve GHG emission reductions and benefit Disadvantaged Communities and Low-Income Households through increased accessibility of affordable housing, employment centers, and key destinations via low-carbon transportation. This results in fewer vehicle miles traveled through shortened or reduced trip lengths or mode shifts from Single Occupancy Vehicles to use of transit, bicycling, or walking. The project areas this funding is geared toward are transit oriented development (TOD) Project Areas, Integrated Connectivity Project (ICP) Project Areas, or Rural Innovation Project Areas (RIPA).

## **Lifeline Transportation Program**

The Metropolitan Transportation Commission (MTC) has created the Lifeline Transportation Program to evaluate state and federal funds to provide grants for mobility and accessibility needs in low-income communities across the Bay Area. New guidelines are established for each cycle and the projects must address transportation gaps or barriers identified in community-based transportation plans or other local planning efforts in low-income neighborhoods.



**Franklin  
Canyon Road**



## SB 1 Funding

California's Senate Bill 1 (SB 1), also known as the Road Repair and Accountability Act of 2017, is a landmark transportation investment to rebuild California by fixing neighborhood streets, freeways, and bridges in communities across California and targeting funding toward transit and congested trade and commute corridor improvements.

The largest portion of SB 1 funding goes to California's state-maintained transportation infrastructure. With this funding, Caltrans has a goal of repairing or replacing 17,000 miles of pavement in 10 years, spending \$250 million annually for congestion solutions, over \$700 million for better transit commutes, and supporting freight improvements. The other portion of SB 1 funding will go to local roads, transit agencies, and expanding the state's pedestrian and cycle routes. SB 1 funds various grant programs.

### ***Local Partnership Program (LPP)***

The Local Partnership Program's purpose is to provide local and regional transportation agencies that have passed sales tax measures, developer fees, or other imposed transportation fees, with a funding of \$200 million annually from the Road Maintenance and Rehabilitation Account to fund aging infrastructure, road conditions, active transportation, and health and safety benefits projects. LPP funds are distributed through a 50% statewide competitive component and a 50% formulaic component. Both programs are eligible to jurisdictions with voter approved taxes, tolls, and fees dedicated solely to transportation and the competitive program.

### ***Local Streets and Roads Program (LSRP)***

California has dedicated approximately \$1.5 billion per year appointed by the State Controller (Controller) to cities and counties for basic road maintenance, rehabilitation, and critical safety projects on the local streets and roads system. Cities and counties must submit a proposed projects list adopted at a regular meeting by their board or council that is then submitted to the California Transportation Commission (Commission). Once reviewed and adopted by the Commission, eligible cities and counties receive funding from the Controller and an Annual Project Expenditure Report is sent to the Commission to be transparent with program funding received and expended.

### ***Active Transportation Program (ATP) Funding***

The Active Transportation Program (ATP) was created by Senate Bill 99 to encourage increased use of active modes of transportation such as walking and biking. The goals of the ATP include, but are not limited to, increasing the proportion of trips accomplished by walking and biking, increasing the safety and mobility of non-motorized users, advancing efforts of regional agencies to achieve greenhouse gas reduction goals, enhancing public health, and providing a broad spectrum of projects to benefit many types of users, including disadvantaged communities. SB 1 directs \$100 million annually to the ATP, with more than 400 of the funded projects being Safe Routes to School projects and programs that encourage a healthy and active lifestyle throughout students' lives.

### ***Caltrans Sustainable Transportation Planning Grants***

The Sustainable Transportation Planning Grants include two parts: Sustainable Communities Grants and Strategic Partnerships Grants. The Sustainable Communities Grants have \$29.5 million set aside to encourage local and regional planning goals and best practices cited in the Regional Transportation Plan Guidelines. The Strategic Partnerships Grants set aside \$4.5 million to identify and address statewide, interregional, or regional transportation deficiencies on the state highway system in partnership with Caltrans. These grants were released for Fiscal Year 2020-21 and applications were due October 17, 2019. Grant award announcements were made in June 2020. There is the possibility of another grant on the horizon, but Caltrans has not released any new information yet.

### ***Safe Routes to School (SRTS) Funding***

Safe Routes to School (SRTS) is a program promoting walking and bicycling to school through infrastructure improvements, tools, safety education, and incentives to encourage these modes of travel. Nationally, 10% to 14% of car trips during the morning rush hour are for school travel. SRTS can be implemented at the state, community, or local school district level. Competitive federal funding is available through the Fixing America's Surface Transportation Act (FAST Act). Depending on the existing infrastructure, SRTS may require that education, transportation, public safety, and city planning agencies coordinate their effort.



## **Transformative Climate Communities (TCC) Program**

The TCC Program funds community-led development and infrastructure projects that strive to make major advances in environmental, health, and economic benefits in California's most disadvantages communities. Eligible improvements for this funding source include active transportation and public transit projects, transit ridership programs and passes for low-income riders, and encouraging education and planning activities to promote increased use of active modes of transportation.

## **California Office of Traffic Safety (OTS) Grant Programs**

OTS administers traffic safety grants in the following areas: alcohol impaired driving, distracted driving, drug-impaired driving, emergency medical services, motorcycle safety, occupant protection, pedestrian and bicycle safety, police traffic services, public relations, advertising, and roadway safety and traffic records.







A cyclist on the Iron Horse Regional Trail



# CHAPTER 8



# VISION ZERO CORE ELEMENTS AND ACTION PLAN



The Contra Costa County Vision Zero Plan requires partnerships and collaboration across various jurisdictions, with local organizations, and with the community to be successful. Several strategies have been identified, along with the party/parties responsible for leading the action, and supporting agencies. A timeline for implementation is provided, as well as performance metrics. These actions should be periodically revisited, and actions that are successful may be expanded; actions that are not successful will be eliminated and replaced with other strategies. As conditions and strategies evolve, the strategies and supporting elements will evolve as well.

The Vision Zero strategies are categorized into three Core Elements:



### **Leadership and Commitment**



### **Safe Roadways and Safe Speeds**



### **Data-Driven Approach, Transparency, and Accountability**







A pedestrian crossing the street in Contra Costa Centre



## Leadership and Commitment

### Technical Advisory Committee (TAC)

### Legislation

### Education

### Funding

## 1

The TAC will share updates on crash data, resources, current projects, policy evolution, funding opportunities, equity data, emerging issues, and other information. The County's Public Works Department and Health Services Department will coordinate invites to stakeholders to participate in the TAC, which includes, but is not limited to, Social Services, Economic Development, County Connection (also known as Contra Costa County Transit Authority ), Board of Supervisors (BOS), California Highway Patrol (CHP), and other non-profits and community-based organizations (CBOs). Routine collaboration between stakeholders and partners will ensure that County-led engineering countermeasures are supported by coordinated efforts led by local and regional partners. Strategies for mutual accountability include conducting briefings and presentations at board and agency meetings, collecting and sharing information on a regular basis, and updating a public-facing database (or scorecard) on the progress toward Vision Zero.

### Partners

- Contra Costa County Staff
- County Connection (Contra Costa County Transit Authority)
- County Board of Supervisors (BOS)
- California Highway Patrol (CHP)
- Non-profit organizations and community-based organizations (CBOs)

### Timeline

Ongoing

### Performance Measures

Biannual or quarterly meetings, numerical (#) progress on priority projects and safety goals



## 2

Create a Contra Costa County Vision Zero Plan media kit. The media kit should provide information and resources, and offer educational opportunities to media outlets and member governments about Vision Zero to promote consistent messaging and crash reporting language. As collision updates are developed, promote achievements as well as ongoing efforts.

### Partners

- Contra Costa County Public Works Department
- Contra Costa County Health Services Department
- Contra Costa Transportation Authority (CCTA)
- California Highway Patrol (CHP)
- Member agencies

### Timeline

Ongoing

### Performance Measures

Number of safety-focused news articles, a reduction in use of the word “accident” in the reporting of collisions, number of transportation safety-related social media posts

## 3

Use County accounts linked to Facebook, Twitter, NextDoor or other various media outlets to share key elements of the plan, promote achievements, and keep the community updated on policies and project completion. Some examples include the following:

- **Radio** — Radio ads are an effective way of advertising plans and updating the community. Vision Zero San Francisco used radio ad space to share information on the Vision Zero Plan and target speeding in the city.
- **Bus Banners and Bus Shelter Ads** — Various transit agencies have bus stops throughout the County. Banners promoting safety messages and Vision Zero related messages can spread the word to community members far and wide. Bus stops throughout the County have ad space available for use by County staff and approved community service organizations. Public service messages are allowed up to 30 displays for a minimum of 30 days to advertise various efforts.
- **Movies** — Movie-watching is enjoyed by all ages and serves as a great space for advertisements that can reach substantial sections of the community.

### Partners

- Radio stations
- Transit agencies
- Advertisement agencies

### Timeline

Ongoing

### Performance Measures

Number of ads related to Vision Zero messages





# Leadership and Commitment

Technical Advisory Committee (TAC)

Legislation

Education

Funding

## 4

Collaborate with public school districts and interested charter and private schools to provide additional transportation-related education. Tailor engagement toward middle and high school students, with a focus on empowering youth leaders to promote safe transportation in their own school communities, prioritizing Equity Priority Communities.

### Partners

- County School Districts
- Contra Costa County Public Works Department
- Contra Costa County Health Services Department
- California Highway Patrol (CHP)
- 511 Contra Costa
- Non-profit organizations and community-based organizations (CBOs)

### Timeline

Ongoing — coordinate with TAC

### Performance Measures

Number of Safe Routes to School projects implemented around the High-Injury Network (HIN)

## 5

Modify the County’s funding criteria to prioritize safety projects on the HIN and in Equity Priority Communities that address key crash profiles or otherwise reduce KSI crashes; Modify funding to ensure both proactive and reactive safety projects are deployed. Seek opportunities to institutionalize safety projects with other County efforts such as repaving programs and development impact review.

### Partners

- Contra Costa County Public Works Department

### Timeline

Annual (review progress)

### Performance Measures

Percent of available funding awarded to projects on HIN; number of safety projects funded

## 6

Support legislation to allow use of speed safety cameras and follow along with the implementation of AB 43 (passed on October 8, 2021) regarding changes to the 85th percentile speed limit setting process. These legislations allow for a more equitable enforcement and local speed limit setting capacities.

### Partners

- Contra Costa County Public Works Department
- Contra Costa County Health Services Department
- Member agencies

### Timeline

Within one year of plan adoption

### Performance Measures

Number of additional funding streams identified for safety projects in the County; participation in lobbying efforts in support of these measures

The intersection of San Pablo Dam Road and El Portal Drive in El Sobrante





# Safe Roadways and Safe Speeds

## Street and Roadway Design

7

Contra Costa County Public Works Department, local agencies, and TAC Members should develop guidelines, policies, and resolutions for the County, addressing safety-related aspects of street design, and incorporating Vision Zero and Safe System design principles. They should develop and implement Vision Zero and Safe System training aimed at County staff and elected officials to help encourage adoption and incorporation of these core elements within County programs, policies, and processes.

**Partners**

- Contra Costa County Public Works Department
- Partnering local agencies and jurisdictions
- Caltrans

**Timeline**

Start guideline development within one year of plan adoption

**Performance Measures**

Implementation of new design standards and monitoring of use; design standards updated to separate users in space and time and reduce kinetic energy transfer

8

Conduct safety demonstrations/ pilot projects to test innovative safety interventions and implement quick-build projects. The 10 priority projects could be considered to implement as pilot projects as part of this action item.

**Partners**

- Contra Costa County Public Works Department
- Partnering local agencies and jurisdictions
- Caltrans

**Timeline**

At least one demonstration project per year

**Performance Measures**

Number of demonstration projects implemented, including the share of demonstration projects in Disadvantaged Communities and Equity Priority Communities



Construction zone on  
Bethel Island Bridge  
(Bridge construction  
was completed in 2012)







## Data-Driven Approach, Transparency, and Accountability

### Data Collection, Monitoring, and Analysis

#### 9

Conduct and prepare an annual crash analysis, including preparation of crash profiles and comparison of various time periods to better identify trends and progress toward Vision Zero. Analysis should layer available demographic and environmental justice data. Periodically update the HIN and Action Plan to reflect progress being made or develop new strategies if current actions are not achieving the desired results.

##### Partners

- Contra Costa County Public Works Department
- Contra Costa County Health Services

##### Timeline

Annual (review progress); every five years (major plan update)

##### Performance Measures

Report safety improvements constructed to the Board of Supervisors on an annual basis, and progress toward Vision Zero; demonstrable and significant KSI reduction

#### 10

Partner with local law enforcement agencies and healthcare providers to provide collision reporting and crash-related injury coding best practices to improve the value of data analysis, emphasizing data collection on speed, impairment, distractions and use of emerging mobility options like e-scooters and ride sharing at KSI collision locations.

##### Partners

- Contra Costa County Public Works Department
- Contra Costa County Health Services Department
- Caltrans
- California Highway Patrol (CHP)
- Healthcare providers

##### Timeline

Within two years of plan adoption

##### Performance Measures

Number of training sessions held with Law Enforcement and Public Health, incorporation of additional data into the collision dataset

## 11

The Public Works Department should work with the Public Health Department to determine how hospital data could be obtained to develop more comprehensive collision records. As hospital data becomes available, incorporate it into the data dashboard to develop performance measures tied to health equity outcomes, and address underreporting.

### Partners

- Contra Costa County Public Works Department
- Contra Costa County Health Services Department
- Healthcare providers

### Timeline

Within two years of plan adoption

### Performance Measures

Incorporation of Public Health data in collision analytics

## 12

Leverage technology to better understand core collision factors and surrogate safety measures including collecting automated speed data and conducting near-miss analysis, hard braking hot spots, and hazard/community feedback clusters. Develop and maintain the database.

### Partners

- Contra Costa County
- Caltrans
- California Highway Patrol (CHP)
- Contra Costa Transportation Authority (CCTA)
- Member Agencies

### Timeline

Within one year of plan adoption

### Performance Measures

Assess surrogate safety measures and document KSI reductions; complete a full review of collision data to identify trends in 2035

On 2nd Avenue in  
Crockett overlooking  
the Carquinez Bridge



