



CALIFORNIA SAFE ROADS

2020–2024 Strategic Highway Safety Plan

2020 Implementation Plan



TABLE OF CONTENTS

ACRONYMS AND ABBREVIATIONS	3
INTRODUCTION.....	4
CHALLENGE AREAS	7
ACTION DEVELOPMENT	8
» 5 E Safety Strategies	13
CHALLENGE AREA ACTIONS	15
» Steering Committee Actions	16
» Lane Departures	18
» Speed Management / Aggressive Driving	19
» Impaired driving.....	21
» Active Transportation: Pedestrians	22
» Active Transportation: Pedestrians	23
» Active Transportation: Bicyclists	24
» Intersections	25
» Motorcyclists.....	26
» Young Drivers	27
» Aging Drivers	28
» Occupant Protection	29
» Commercial Vehicles	30
» Driver Licensing	31
» Distracted Driving	32
» Work Zones	33
» Emergency Response	34
» Emerging Technologies	35
IMPLEMENTATION PROCESS	36
» Ongoing Action Development	36
» Stakeholder Engagement	37
» Integration	38
» Evaluation.....	39
» Roles and Responsibilities	40



ACRONYMS AND ABBREVIATIONS

CA MUTCD – California Manual on Traffic Control Devices

CEQA – California Environmental Quality Act

CHP – California Highway Patrol

CMV – Commercial Motor Vehicle

CPS – Child Passenger Safety

CVSP – Commercial Vehicle Safety Plan

DECP – Drug Evaluation and Classification Program

DMV – Department of Motor Vehicles

FARS – Fatality Analysis Reporting System

HIN – High Injury Network

HSIP – Highway Safety Improvement Program

HSM – Highway Safety Manual

HSP – Highway Safety Plan

ITS – Intelligent Transportation Systems

LOS – Level of Service

LRSP – Local Road Safety Plan

NDCF – National Digital Car Seat Check Form

POST – Police Officer Standards and Training

RTP – Regional Transportation Plan

SB – Senate Bill

SCS – Sustainable Communities Strategies

SHS – State Highway System

SHSP – Strategic Highway Safety Plan

SWITRS – Statewide Integrated Traffic Records System

TZD – Toward Zero Deaths

VMT – Vehicle Miles Travelled

INTRODUCTION

The 2020–2024 SHSP Implementation Plan (Implementation Plan) for California's 2020–2024 Strategic Highway Safety Plan (SHSP) highlights the actions developed by safety proponents in support of the SHSP. The SHSP used extensive data analysis to identify factors that have contributed to the increase in California's motor vehicle related fatalities and serious injuries in recent years. The SHSP set forth a call to action to improve traffic safety.

In summer 2020, state transportation leaders recognized a bolder and more focused approach was necessary to combat the rise in fatalities and serious injuries that have occurred on all California public roadways. This important change, being referred to as “The Pivot”, includes new Guiding Principles, a focus on High Priority Challenge Areas, and expanding SHSP committee membership.

Each Challenge Area Team was tasked with institutionalizing Four Guiding Principles, aligning with the 5 Es (Education, Enforcement, Engineering, Emergency Response, and Emerging Technologies), and following the SMART (Specific, Measurable, Achievable, Relevant, and Time Constrained) guidelines throughout the lifespan of the SHSP and in development of actions for the SHSP Implementation Plan.

The 2020–2024 SHSP was updated to reflect this pivot as is this SHSP Implementation Plan. The SHSP Implementation Plan identifies and summarizes the trackable detailed actions that respond to that call to action for each of the Challenge Areas. The 2020–2024 SHSP Implementation Plan is a living document and will be updated bi-annually or annually as new actions are developed and approved.

Additional Resources

On-going efforts by other agencies have and continue to impact the development of the SHSP and the SHSP Implementation Plan in California.

The following resources enforced the decision for “The Pivot”:

[The FHWA Safe System Approach](#)

[Zero Traffic Fatalities Task Force](#)

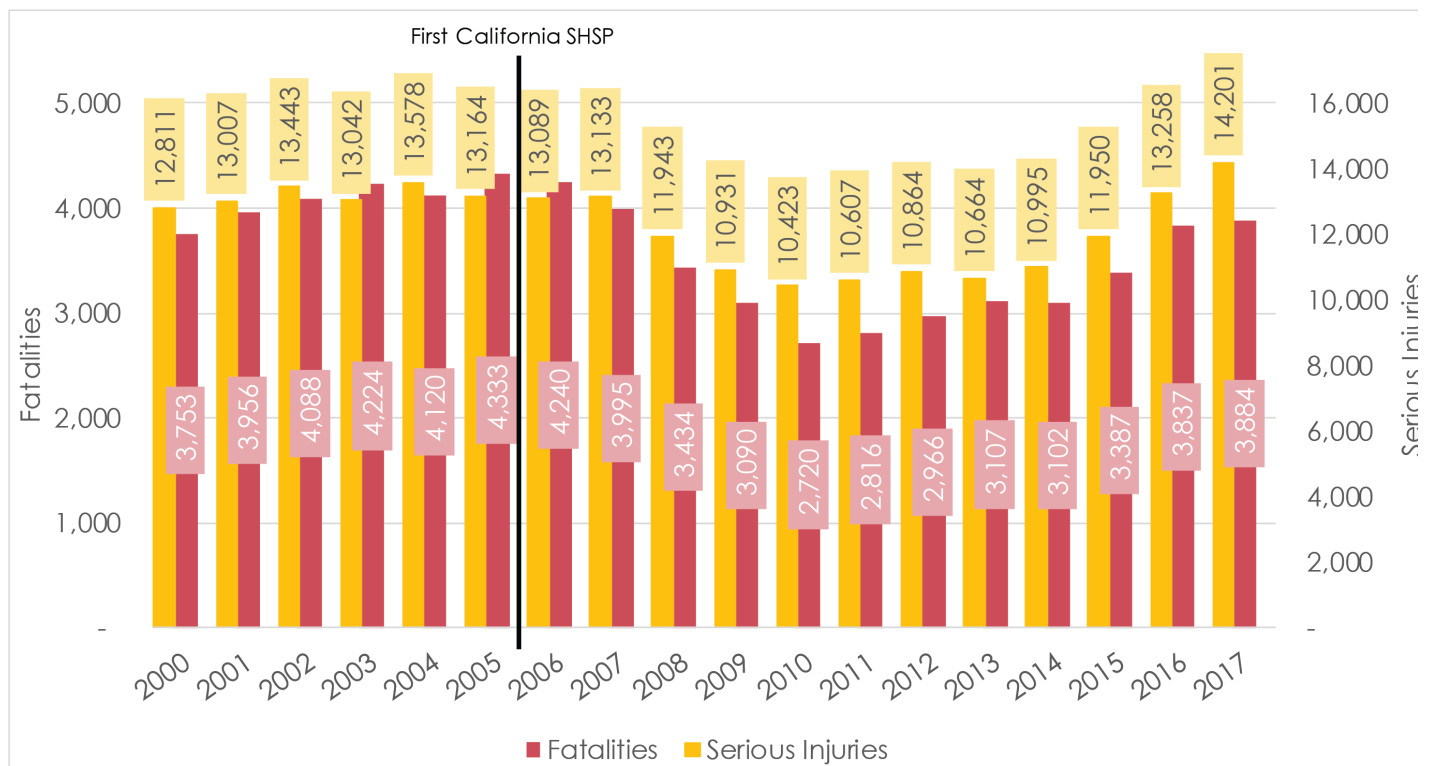
[The Road to Zero - RAND Report](#)

[NTSB Report: Reducing Speed-Related Crashes Involving Passenger Vehicles](#)



Figure 1 shows historical data on fatalities and serious injuries in California between 2000 and 2017. This review of historical crash-related fatality and serious injury data shows an unacceptable trend of increases in fatalities and serious injuries on California roadways since 2010. The 2020–2024 SHSP used extensive data analysis to identify factors that have contributed to the increase in California's motor vehicle related fatalities and serious injuries in recent years.

Figure 1 - Crash-Related Fatalities and Serious Injuries from 2000–2017



Source: Statewide Integrate Traffic Records System (SWITRS) as of July 2019 and Fatality Analysis Reporting System (FARS) as of October 2019

In order to allow for SHSP implementers to further evaluate crash trends to be used in developing actions, the California SHSP Crash Data Dashboard (<https://shsp.dot.ca.gov/>) was developed and will be updated at least annually with new data. In addition, the 2022 SHSP Traffic Safety Facts document is an annual report that includes statewide and Challenge Area crash data highlighting key issues with existing crash data, including equity-related data (<https://dot.ca.gov/-/media/dot-media/programs/safety-programs/documents/shsp/combined-shsp-fact-sheets-april-2022-a11y.pdf>). From review of the crash data and the most recent California Travel Household Survey (2013), it is clear that the fatalities of vulnerable road users of pedestrians, bicyclists and motorcyclists are high relative to their mode share. The data trend of the past 10 years suggests that extra emphasis is

needed to improve traffic safety outcomes: building on past successes while incorporating sound and innovative ideas for the future. The SHSP sets forth a call to action to improve traffic safety.

The SHSP Executive Leadership and Steering Committees led the development of the 2020–2024 SHSP and identified the following Vision, Mission, and Goal that guide the SHSP Implementation Plan.

VISION:

Safe public roads across California

The vision emphasizes that safety on all public roads across the state is critical to serve the needs of the diverse population and system of California.

MISSION

Ensure safety for all modes of travel on California's public roads

The mission expands on the vision by acknowledging that safety on all public roads includes all modes of travel. California has an active and diverse population that utilizes a variety of modes that share common space on public roads.

GOAL:

Zero Fatalities and Serious Injuries

Expanding on the nation's Toward Zero Deaths (TZD) goal, the SHSP's goal encourages setting realistic and achievable steps for California to reach zero fatalities and serious injuries.

In consideration of the SHSP Vision, Mission, and Goal, the Steering Committee decided upon the following for its primary objective:

MEASURABLE OBJECTIVE:

Establish a trend to reach zero fatalities and serious injuries by 2050.

The SHSP Implementation Plan is organized to highlight the Challenge Areas first by High Priority and then by Focus Areas. The Plan details the Four Guiding Principles and how they will be incorporated into the action and implementation process. Each of the Challenge Area actions as they are currently approved are included. This Plan is a living document that will continue to be updated as needed.



CHALLENGE AREAS

The 2020–2024 SHSP is composed of 16 Challenge Areas that are key factors associated with fatal and serious injury crashes. These Challenge Areas have been categorized as either High Priority or Focus Areas. Five High Priority Areas made up of six Challenge Areas were identified as having the greatest opportunity to reduce fatalities and serious injuries on public roads in California based on data trends and discussion with the Executive Leadership and Steering Committee. Active transportation is a high priority and includes both the bicyclists and pedestrians Challenge Areas. The additional focus areas encompass the remaining ten Challenge Areas identified in the 2020–2024 SHSP. Additionally, there is a Focus Area for the Steering Committee that apply to actions that include general traffic safety improvements. These actions will be overseen by the Steering Committee.

The percentages below is based on the number of fatalities and serious injuries that relate to each challenge area definition. It should be noted that several factors may be associated with a single crash, meaning that multiple Challenge Areas may be represented in one event. For example, an intersection crash may also be an aging driver and occupant protection crash if an aging driver did not use vehicle restraints.

HIGH PRIORITY AREAS

- » Lane Departures (45%)
- » Speed Management / Aggressive Driving (34%)
- » Impaired Driving (28%)
- » Active Transportation (24%):
 - Pedestrians (17%)
 - Bicyclists (7%)
- » Intersections (23%)

FOCUS AREAS

- » Motorcyclists (19%)
- » Young Drivers (14%)
- » Aging Drivers (13%)
- » Occupant Protection (13%)
- » Commercial Vehicles (7%)
- » Driver Licensing* (5%)
- » Distracted Driving (5%)
- » Work Zones (1%)
- » Emergency Response**
- » Emerging Technologies**

The percentages represent the number of fatalities and serious injuries each challenge area makes up per 2009-2018 SWITRS data

** represents only fatalities data from FARS*

*** limited data regarding fatalities and serious injuries data*

ACTION DEVELOPMENT

Each Challenge Area Team is responsible for developing associated actions that provide opportunities to address their critical safety problems. Challenge Area Teams utilize subject matter expertise as well as statewide crash data to guide action development.

In summer 2020, California's SHSP leadership directed the SHSP to become more bold, innovative, and focused on actions that address the most pressing traffic safety issues facing the state. "The Pivot" was intended to align the SHSP with the FHWA Safe System Approach. This new direction was supported with a commitment to eliminate fatalities and serious injuries and provide additional guidance for action development. However, since the Challenge Areas were already developed, the alignment is a hybrid of the existing plan and "The Pivot."

This SHSP Implementation Plan outlines several aspects of future action development that have been strengthened with this new direction. This includes:

- » Institutionalizing the Four Guiding Principles
- » Encouraging a collaborative approach with as many of the 5 E Safety Strategies as possible
- » Following the SMART Guidelines

Each action was updated to align with the new safety guidance, reviewed by the Steering Committee, and approved by Executive Leadership.





Photo Courtesy of Caltrans

Four Guiding Principles

The Guiding Principles support the need to incorporate new ideas and reach a larger audience in order to achieve California's traffic safety vision, mission, and goal. Institutionalizing the Guiding Principles provides consistency and direction for all aspects of the SHSP. Four Guiding Principles have been established as part of the SHSP to achieve California's traffic safety vision, mission and goal, which are:

- » Integrate Equity
- » Implement Safe System Approach
- » Double Down on What Works
- » Accelerate Advanced Technology

Integrate Equity

Integrating equity is essential to addressing institutional and systemic biases that have resulted in negative impacts to vulnerable and / or traditionally underserved populations. Data shows a disproportionate impact of safety outcomes in communities of concern. All of the actions within the SHSP must consider the following in development and implementation:

- » Which groups will benefit from the implementation of the proposed action (target audiences, groups, etc.)?
- » Who may be negatively impacted or affected by the implementation of the proposed action (low-income, persons of color, user ability, modality, etc.)?
- » What demographic and / or socioeconomic data was considered in the development of the action (race, age, income, gender, etc.)?
- » Who was involved in the process of developing the action?

The Working Definition of Equity for the SHSP is: Everyone has the right to travel safely on California's public roads – regardless of race, socioeconomic status, gender, age, and ability. When developing and implementing the SHSP, equity means taking into account any historical, present-day, and systemic biases so that safety is improved for all groups, particularly our most vulnerable and traditionally underserved populations. Equity will be integrated into all aspects of the SHSP, including the five key strategies of Education, Enforcement, Engineering, Emergency Response, and Emerging Technologies, so that a comprehensive, inclusive and equitable approach can



be taken to implement solutions to save lives on all of California's public roads.



Implement Safe System Approach

As defined by FHWA, the Safe System Approach seeks to eliminate fatal and serious injuries for all road users through a holistic view of the road system. The Safe System Approach is human-centric in that it anticipates that human beings make mistakes. It aims to implement solutions that minimize the impact of crashes on the human body. For example, altering roadway design, advancing operational changes rather than behavioral changes, and fully integrating the needs of all roadway users - pedestrians, bicyclists, aging, younger, disabled, etc. - are critical components in reducing roadway fatal and serious injury crashes. A Safe System Approach provides a safety net for the user by adhering to the following principles:

- » **Death/serious injury is unacceptable:** While no crashes are desirable, the Safe System Approach prioritizes crashes that result in death and serious injuries, since no one should experience either when using the transportation system.
- » **Humans make mistakes:** People will inevitably make mistakes that can lead to crashes, but the transportation system can be designed and operated to accommodate human mistakes and injury tolerances and avoid death and serious injuries.
- » **Humans are vulnerable:** People have limits for tolerating crash forces before death and serious injury occurs; therefore, it is critical to design and operate a transportation system that is human-centric and accommodates human vulnerabilities.
- » **Responsibility is shared:** All stakeholders (transportation system users and managers, vehicle manufacturers, etc.) must ensure that crashes do not lead to fatal or serious injuries.
- » **Safety is proactive:** Proactive tools should be used to identify and mitigate latent risks in the transportation system, rather than waiting for crashes to occur and reacting afterwards.
- » **Redundancy is crucial:** Reducing risks requires that all parts of the transportation system are strengthened, so that if one part fails, the other parts still protect people.

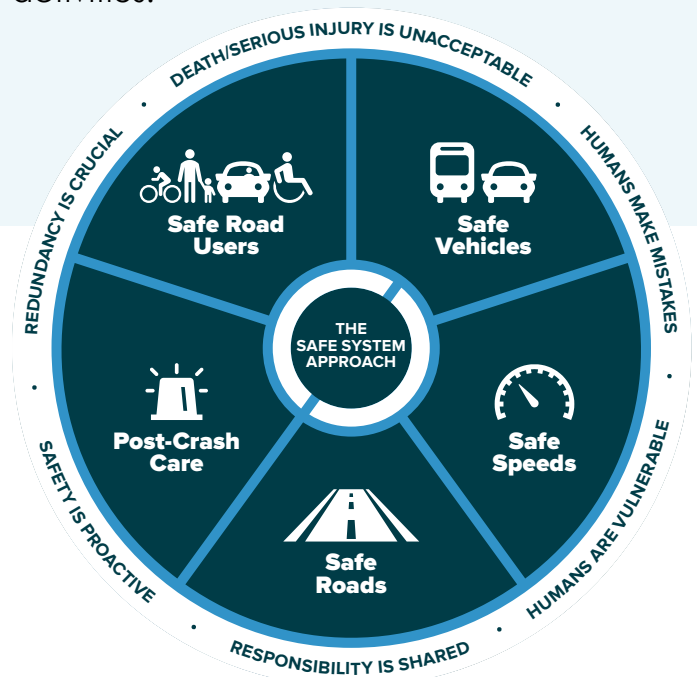


The Safe System Approach requires a commitment to address aspects of crash risk through five layers of protection and shared responsibility that promote a holistic approach to safety across the entire transportation system.



- » **Safe road users:** Addresses the safety of all road users, including those who walk, bike, drive, ride transit, and travel by other modes.
- » **Safe vehicles:** Vehicles are designed and regulated to minimize the occurrence and severity of crashes using safety measures that incorporate the latest technology.
- » **Safe speeds:** Humans are unlikely to survive high-speed crashes. Reducing speeds can accommodate human injury tolerances in three ways: reducing impact forces, providing additional time for drivers to stop, and improving visibility.
- » **Safe roads:** Designing to accommodate human mistakes and injury tolerances can greatly reduce the severity of crashes that do occur. Examples include physically separating people traveling at different speeds, providing dedicated times for different users to move through a space, and alerting users to hazards and other road users.
- » **Post-crash care:** When a person is injured in a crash, they rely on emergency responders to quickly locate them, stabilize their injury, and transport them to a medical facility. Post-crash care also includes forensic analysis at the crash site, traffic incident management, and other activities.

As part of “The Pivot,” the decision was made that Challenge Areas are to work to identify actions that cover the full range of Safe System topics.



Source: FHWA Zero Deaths and Safe Systems as of Feb 2021

Double Down on What Works

To institutionalize change and reduce fatalities and serious injuries, it is imperative to maximize the use of countermeasures that have demonstrated effectiveness. Challenge Area Teams are strongly encouraged to consider actions that are consistent with strategies documented in safety-related resources such as:

- » [FHWA Proven Safety Countermeasures](#)
- » [NHTSA Countermeasures that Work](#)
- » Crash Modification Factors ([CMF Clearinghouse](#))



Accelerate Advanced Technology

Technology plays a key role in improving safety on all roadways. Intelligent Transportation Systems (ITS) and Connected Vehicle technology can enhance traveler information and system performance to create an effective transportation network. An enhanced, robust data collection system can highlight and analyze high crash locations, conditions of infrastructure, or assets that commonly contribute to crashes. Being future-focused will provide the environment to lay the ground work for new technologies to come by designing roadways and intersections that are Automated Vehicle (AV) ready. The inclusion of advanced technology needs to be an integral component on every project to provide a cost-effective strategy that improves system performance.





5 E Safety Strategies

In support of institutionalizing the Four Guiding Principles, actions are to be developed using a collaborative approach with as many as possible of the following overarching five key safety strategies identified below to improve traffic safety in California. This includes the priority to incorporate equity into each of the strategies as discussed in the previous section.

1. **E**ducation: Educate all road users on safe behaviors
2. **E**nforcement: Enforce actions that reduce high-risk behavior
3. **E**ngineering: Apply effective and/or innovative countermeasures
4. **E**mergency Response: Improve emergency response times and actions
5. **E**merging Technologies: Apply emerging technologies to roadway, vehicle, and user



SMART Guidelines

To construct impactful actions related to each Challenge Area and prioritize effective countermeasures, actions should be data-driven, collaborative, and describe the importance and intended outcome of each effort. To increase the likelihood of effective implementation, all actions should be “SMART”, as defined below.

- » **Specific** – clear action statement
 - Actions must align with Integrate Equity and at least one of the other three Guiding Principles, and be specific about what will be accomplished.
- » **Measurable** – identified performance measures
 - Actions should have clear and present measures to indicate progress and completion.
- » **Achievable** – committed resources by responsible organization(s)
 - Actions should have resource needs clearly defined. Those responsible for action implementation will be identified to document and resolve potential obstacles.
- » **Relevant** – statewide significance and data-driven issue and countermeasure
 - Actions should document effectiveness in reducing fatalities and serious injuries or justify an innovative approach by identifying statewide or Challenge Area relevance.
- » **Time Constrained** – achievable within SHSP time frame
 - While most actions will be completed within the five-year lifespan of the SHSP, some bold innovative ideas may extend beyond the 2020–2024 SHSP timeframe. Where this is the case, the action will identify interim progress points to be achieved during the 2020–2024 period.



Photo Courtesy of Kimley-Horn



CHALLENGE AREA ACTIONS

As part of the first cycle of action development, actions were approved by the Steering Committee and Executive Leadership. In addition to actions under the 16 identified Challenge Areas, there are also actions that present overarching opportunities to improve traffic safety that do not fall under a specific Challenge Area and will be tracked and implemented by the Steering Committee.

The following pages provide a list of the approved SHSP actions by Challenge Area.



Photo Courtesy of Kimley-Horn

STEERING COMMITTEE ACTIONS

Actions that encompass several Challenge Areas are being overseen by the Steering Committee. These actions address a variety of traffic safety issues relevant to California.

Actions

→ SC.1

Develop a plan to expand statewide implementation of FHWA Proven Countermeasures (Infrastructure), Countermeasures that Work (Behavioral), other effective countermeasures, and the *Highway Safety Manual* (HSM)

→ SC.2

Develop a Safe System Proclamation and Implementation Guidebook

→ SC.3

Develop a tool that estimates the predicted crash reduction impacts of proposed safety projects and programs for agencies throughout the state

→ SC.4

Review and consider revising the allocation of Highway Safety Improvement Program (HSIP) funds between local roads and the State Highway System (SHS) from a data-driven perspective

→ SC.5

Regularly review the Caltrans encroachment permitting process to identify inefficiencies and determine new methods to expedite safety-related projects

→ SC.6

Require Caltrans to regularly convene a committee of external roadway design experts to advise on revisions to Caltrans design guidance

→ SC.7

Formalize existing traffic control device uses in the *California Manual on Traffic Control Devices* (CA MUTCD)



STEERING COMMITTEE ACTIONS

Actions Continued

- ➔ **SC.8**
Develop updates to the Interim LD-IGR Safety Guidance for State Highway System (SHS) projects and local land use projects through CEQA related to the implementation of SB 743
- ➔ **SC.9**
Adopt High Injury Network (HIN) guidance at Caltrans and conduct a pilot study implementing the HIN guidance
- ➔ **SC.10**
Prepare a white paper outlining a strategy for CBO-focused SHSP outreach and engagement for vulnerable and underserved communities to equitably inform and shape the SHSP
- ➔ **SC. 11**
Work with MPOs to compile GIS files of existing equity communities (e.g., Equity Priority Communities, Communities of Concern, Environmental Justice Areas, etc.) and High Injury Networks for use by SHSP Partners
- ➔ **SC. 12**
Complete a white paper summarizing the analysis identifying demographic and socioeconomic characteristics of crash-involved drivers
- ➔ **SC. 13**
Review of NHTSA's Countermeasures That Work and summary of state of implementation for each countermeasure (<1 page for each)

45% of California fatalities and serious injuries

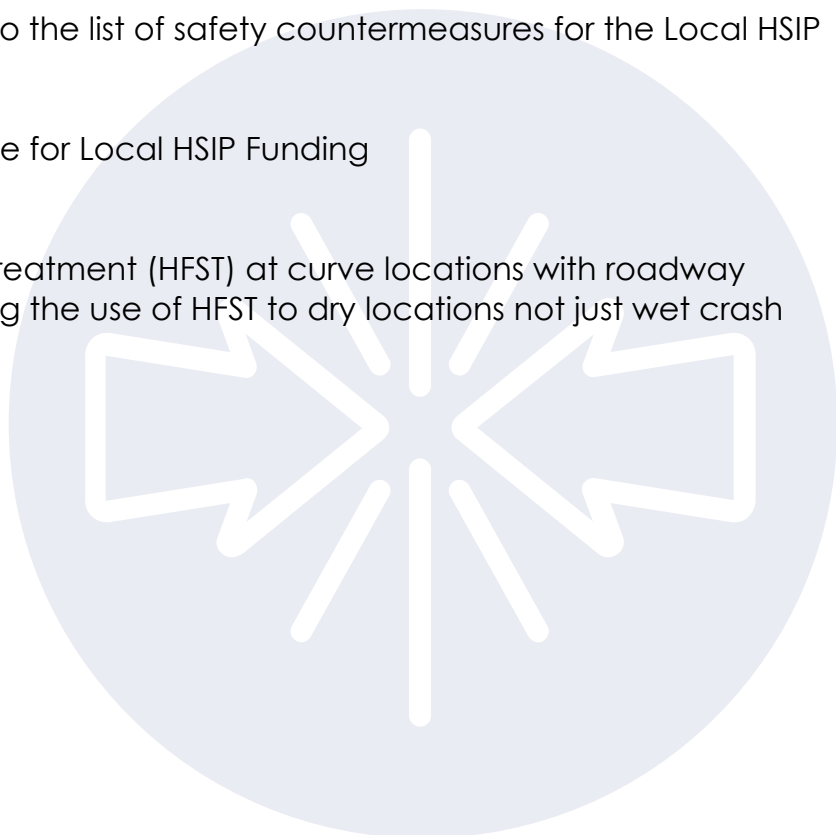
LANE DEPARTURES

High Priority Area

The Lane Departures Challenge Area crashes involve a vehicle leaving its dedicated lane of travel. This Challenge Area includes run-off-the-road, hit object, head-on, and overturned crashes. This Challenge Area was involved in the greatest number of fatal and serious injury crashes over the last five years of available data from 2014–2018.

Actions

- ➔ **LD.1**
Complete a local agency survey and targeted engineering training to local agencies so that agencies are aware of potential actions that can be taken to reduce fatal and serious injuries
- ➔ **LD.2**
Add “Curve Shoulder Widening” to the list of safety countermeasures for the Local HSIP
- ➔ **LD.3**
Add “Install Edgelines” as Set-aside for Local HSIP Funding
- ➔ **LD.4**
Implement High Friction Surface Treatment (HFST) at curve locations with roadway departure crash history, expanding the use of HFST to dry locations not just wet crash locations



**34% of California fatalities and serious injuries**

SPEED MANAGEMENT / AGGRESSIVE DRIVING

High Priority Area

The Speed Management / Aggressive Driving Challenge Area includes several behaviors such as travelling either above the posted speed limit or too fast for roadway conditions, tailgating, disobeying traffic signals and signs, and other driving maneuvers deemed reckless by the on-scene officer. Any crash with these behaviors documented are included in the dataset even if they are not the primary crash factor.

Actions

- ➔ **SM/AD.1**
Prepare recommendations for implementing a new roadway-based context sensitive approach to establish speed limits in California that prioritizes the safety of all road users based on research of national and international best practices
- ➔ **SM/AD.2**
Prepare recommendations for implementation specifically in California of the research results from NCHRP 17-76 (Guidance for Setting of Speed Limits) once published
- ➔ **SM/AD.3**
Revise the *California Manual for Setting Speed Limits* to comprehensively cover speed limit setting methodology and law in easy to understand terminology
- ➔ **SM/AD.4**
Develop state-sponsored training on the *California Manual for Setting Speed Limits*
- ➔ **SM/AD.5**
Establish technical assistance resources, including a webpage, to provide practitioners with an overview of speed setting methodology, best practices, and case studies, as well as any new methods developed in the future

34% of California fatalities and serious injuries

SPEED MANAGEMENT / AGGRESSIVE DRIVING

High Priority Area

Actions Continued

→ SM/AD.6

Develop policies related to the following topics and incorporate them into the *Highway Design Manual*:

- » Traffic calming
- » Lane narrowing
- » Reallocation of the roadway cross-section
- » Target speed

→ SM/AD.7

Develop a Statewide traffic safety monitoring program on the State Highway System that identifies and addresses locations with speeding-related crashes, with the long-term goal of substantially reducing speeding-related fatalities and serious injuries

→ SM/AD.8

Develop a report summarizing the findings and providing recommendations related to the impact of Level of Service (LOS) requirements on the implementation of engineering interventions designed to reduce operating speed to support agencies that want to prioritize pedestrian, bicyclist, and transit and vehicle safety over vehicle LOS

→ SM/AD.9

Provide Vehicle Racing / Modified Vehicle and Sideshow Enforcement Training Statewide to assist field personnel with combating side shows and activities associated with illegal street racing and how to identify and cite vehicle modifications normally associated with this activity

→ SM. 10

Develop and distribute public information tip cards for outreach related to illegal street racing and sideshows to potential participants, spectators, and other motorists on the safety hazards, traffic violations and penalties, and provide general awareness

→ SM. 11

Update the speed limit policies in the California MUTCD to allow greater flexibility by incorporating the seven Zero Traffic Fatalities Task Force (ZTTF) recommendations that are now permissible with the passing of Assembly Bill (AB) 43

**28% of California fatalities and serious injuries**

IMPAIRED DRIVING

High Priority Area

Impairment due to alcohol, prescribed, over-the-counter, or illicit drugs can severely alter a driver's ability to safely navigate the road. The Impaired Driving Challenge Area includes crashes where any evidence of drug or alcohol use by the driver is present even if they are not over the legal limit. The number of fatalities and serious injuries involving impaired driving has not decreased over the 10-year span from 2009 to 2018.

Actions

- ➔ **ID.1**
Provide Drug Evaluation and Classification Program (DECP) training statewide to detect and remove impaired drivers from the roadway
- ➔ **ID.2**
Create and deploy new messaging for DMV field offices related to the designated driver program to encourage Californians to designate a sober driver (or choose other safe alternatives)
- ➔ **ID.3**
Data Driven Driving Under the Influence Checkpoints
- ➔ **ID.4**
Complete the Impaired Driving County-Crash Analysis Tool (ID C-CAT): Web-Based Conversion
- ➔ **ID.5**
Raise Public Awareness of Children in Vehicles with Impaired Drivers
- ➔ **ID.6**
Develop messaging for the Designated Driver Program
- ➔ **ID.7**
Increase accurate reporting of BAC level and DUI treatment program duration to DMV
- ➔ **ID.8**
Increase of State-wide DREs to Boost Road Safety and Curb Impaired Driving

24% Active Transportation - 17% of California fatalities and serious injuries

Active Transportation: PEDESTRIANS

High Priority Area

The Pedestrians Challenge Area includes crashes where at least one fatal or serious injury victim is a pedestrian. Though pedestrian serious injuries have decreased since 2016, pedestrian fatalities are still rising making this vulnerable population a high priority for traffic safety.

Actions

- **P.1**
Establish a preferred methodology for developing a High Injury Network (HIN) for pedestrians
- **P.2**
Develop pedestrian count models to allow the estimation of the pedestrian counts for various roadway locations in order to better evaluate the performance of active transportation related infrastructure and more accurately predict pedestrian related crashes
- **P.3**
Expand education efforts to reduce the distracted street-crossing by pedestrians in order to reduce pedestrian-related street-crossing crashes
- **P.4**
Expand rail safety training to increase pedestrian safety awareness at highway rail grade crossings
- **P.5**
Develop state-level guidance and recommendations for the planning, design, permitting, implementation, maintenance, and evaluation of quick-build projects
- **P.6**
Develop a Speed Management Decision-Maker and Community Stakeholder Education Toolkit to advance public awareness of the role motor-vehicle speed plays on the likelihood and severity of pedestrian injury and fatalities



24% Active Transportation - 17% of California fatalities and serious injuries

Active Transportation: PEDESTRIANS

High Priority Area

Actions Continued

→ P.7

Develop Temporary Demonstration Projects Guidance to Pilot and Provide Education on Complete Streets for Safety



24% Active Transportation - 7% of California fatalities and serious injuries

Active Transportation: BICYCLISTS

High Priority Area

California's growing network of bike lanes and paths make bicycling a popular mode of transportation. Bicyclists are considered vulnerable road users and are more susceptible to serious and fatal injuries when involved in a motor vehicle crash.

Actions

- **B.1**
Establish a preferred methodology for developing a High Injury Network (HIN) for bicyclists
- **B.2**
Update the *California Complete Intersections Guide* in order to reduce intersection crashes for pedestrians and bicyclists by providing current design guidance to Caltrans and local staff
- **B.3**
Review current *Department of Motor Vehicles (DMV) Driver Handbook* to find and provide recommendations for updates regarding new vehicle codes, new bikeway types, and/or modified text or images to more thoroughly explain lawful, safer, and courteous behaviors by people bicycling or driving
- **B.4**
Create a California Bicycle Driver Handbook (similar to the *DMV Driver Handbook*) to increase the availability of authoritative information about best, lawful, and safer bicycling practices to encourage more effective bicycling thereby reducing crashes and fatalities, while increasing personal health and well being
- **B.5**
Develop recommendations to update the Police Officer Standards and Training (POST)/ Safety Training materials to accurately inform about current *California Vehicle Codes* regarding bicycling traffic law

**23% of California fatalities and serious injuries**

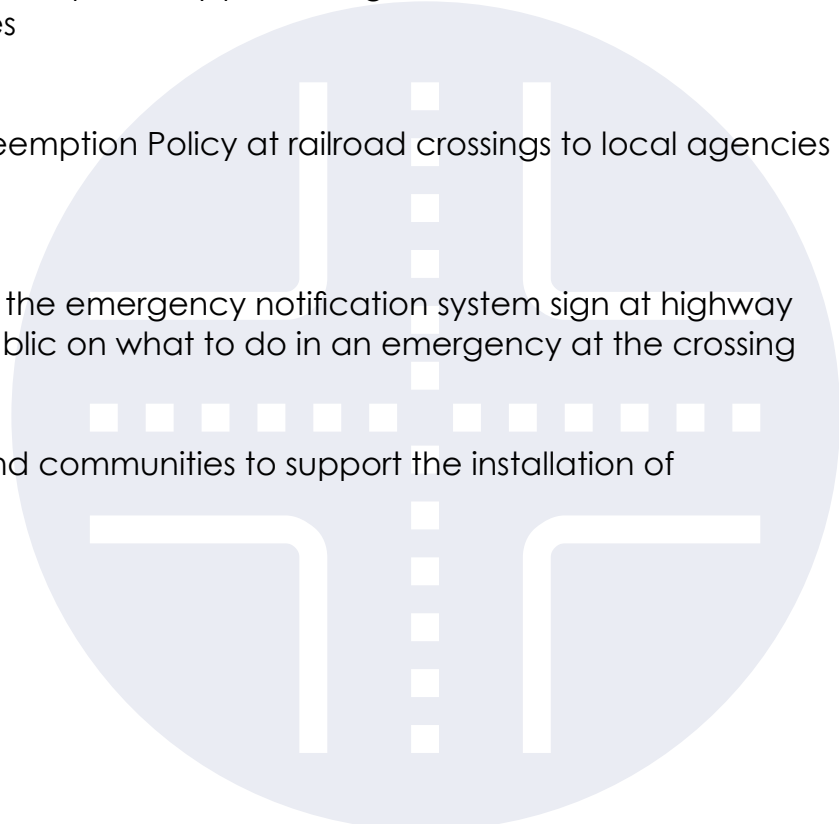
INTERSECTIONS

High Priority Area

Intersections are a natural point of conflict on roadways. The use of traffic control and systemic geometric improvements can minimize conflict points; however, crashes may occur when drivers do not comply with traffic control rules.

Actions

- ➔ **IN.1**
Conduct a crash vs. citation evaluation program as a joint local government agency effort to document the effectiveness of increased traffic enforcement in lowering traffic crash rates at intersections
- ➔ **IN.2**
Expand the use of retroreflective backplates by promoting Caltrans Retroreflective Backplate Policy to local agencies
- ➔ **IN.3**
Promote Caltrans Traffic Signal Preemption Policy at railroad crossings to local agencies to prevent rail crashes
- ➔ **IN.4**
Increase public awareness about the emergency notification system sign at highway rail grade crossings to alert the public on what to do in an emergency at the crossing
- ➔ **IN.5**
Provide assistance to agencies and communities to support the installation of more roundabouts



19% of California fatalities and serious injuries

MOTORCYCLISTS

Focus Area

Motorcyclists are considered vulnerable roadway users due to the minimal protection offered by this mode of transportation. Despite mandatory helmet use by all riders and passengers per California Vehicle Code sections 27802 and 27803, motorcycle fatalities and serious injuries have been on the rise since 2009.

Actions

MO.1

Complete a California Motorcyclist Safety Program (CMSP) Online Instruction Course Report



**14% of California fatalities and serious injuries**

YOUNG DRIVERS

Focus Area

The Young Drivers Challenge Area addresses crashes involving one or more young drivers between the ages of 15 and 20. The number of fatalities and serious injuries related to this challenge area include persons of any age that include a novice driver.

Actions

→ YD.1

Develop an interactive web page on the DMV website for young drivers and their parents to consolidate current and accurate educational information as a free resource to improve driving behavior

→ YD.2

Assess driver education material and content guidelines and provide recommendations in order to improve young driver knowledge on how to avoid future crashes

→ YD.3

Provide evidence-based programs and strategies to educate teens

→ YD.4

Increase Graduated Driver Licensing education using a parent-teen online module

→ YD.5

Expand the number of teen influencers empowered to deliver evidence-based strategies to allow effective messaging to reach more young drivers

→ YD.6

Develop positive community norming strategies for high schools to encourage good driving behaviors

13% of California fatalities and serious injuries

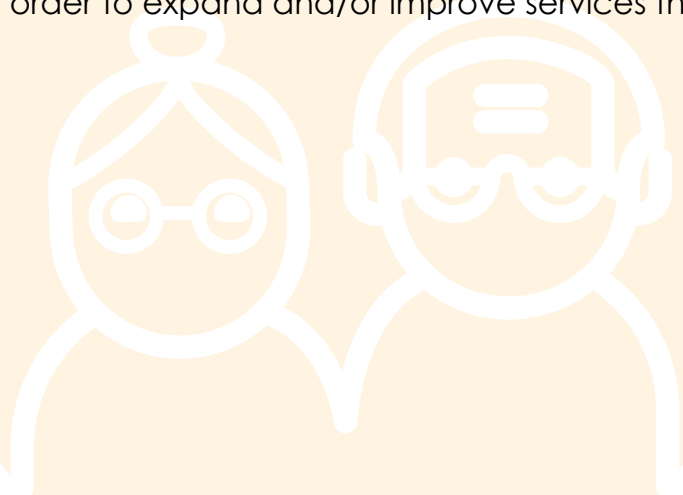
AGING DRIVERS

Focus Area

The Aging Drivers Challenge Area focuses on crashes involving a driver over the age of 65. Fatalities and serious injuries sustained in crashes involving an aging driver have been steadily increasing since 2011. The number of licensed drivers in California over the age of 65 has increased from 12.5% of total licensed in 2008 to 16% in 2017.

Actions

- **AD.1**
Assess the effects of law enforcement training on physical and mental condition referrals to the DMV that help minimize potential at-risk drivers on the roadway
- **AD.2**
Expand AARP driver safety program and AAA CARFIT education programs to effectively reach rural residents
- **AD.3**
Identify the driving habits, needs, and concerns of California's aging roadway users in order to expand and/or improve services that will promote safety



**13% of California fatalities and serious injuries**

OCCUPANT PROTECTION

Focus Area

The Occupant Protection Challenge Area addresses the lack or improper use of safety belts or child restraints by vehicle occupants involved in a crash. While California's seat belt use rate was 96% per findings conducted by OTS, 21% of fatal crashes involved at least one unrestrained vehicle occupant in 2018.

Actions

→ OP.1

Develop a training program to teach Certified Child Passenger Safety Technicians how to apply the behavioral skills, cognitive-based approach that has been shown to improve parental learning and retention of child restraint installation and use, in order to decrease misuse and resulting fatalities and injuries

→ OP.2

Develop an outcome evaluation protocol to be used by child passenger safety program coordinators to measure effectiveness of child passenger safety inspection stations and check-up events to decrease child restraint misuse and resulting fatalities and injuries

→ OP.3

Increase use of the recently piloted National Digital Car Seat Check Form (NDCF) to electronically capture Child Passenger Safety (CPS) data at inspection stations and check-up events in order to obtain real-time data and less time involved in submitting data

→ OP.4

Reintroduce the 5-step test to improve booster seat awareness and education among professionals and the public

7% of California fatalities and serious injuries

COMMERCIAL VEHICLES

Focus Area

California's geographic location makes the state a large transporter of goods and services resulting in significant commercial vehicle traffic on public roads. Commercial vehicle crashes involve a truck, truck tractor, school bus, or other bus. The number of fatalities and serious injuries resulting from commercial vehicle crashes has been increasing since 2010.

Actions

CV.1

Develop a strategy to expand the use of technology at California Highway Patrol (CHP) commercial vehicle enforcement facilities in order to increase commercial motor vehicle safety

CV.2

Develop multi-agency Commercial Motor Vehicle (CMV) enforcement task forces throughout the state to enhance CMV safety and reduce crashes involving CMVs on incorporated city streets throughout California

CV.3

Provide Caltrans' Transportation Permits trainings to public agencies (Cities and Counties)





5% of California fatalities and serious injuries

DRIVER LICENSING

Focus Area

Unlicensed, revoked, or drivers with invalid licenses continue to represent a substantial percentage of at-fault parties in crashes. The lack of a valid driver license does not prevent drivers from getting behind the wheel. Fatalities that result from crashes involving drivers without a valid license have been increasing from 2010.

Actions

DL.1

Create a deterministic methodology for linking statewide vehicular crash records with medical outcome data in order to improve the ability to track crash-related injuries, to provide accurate information to traffic safety stakeholders and the public, and to develop more effective and targeted mitigation strategies to reduce crash-related injuries and associated costs



5% of California fatalities and serious injuries

DISTRACTED DRIVING

Focus Area

The Distracted Driving Challenge Area addresses crashes where a motor vehicle driver was not paying attention to the road or using an electronic device. It is generally accepted that distracted driving crashes are underreported due to the difficulty in determining and/or proving distracted driving was involved prior to a crash. Due to these limitations, fluctuations and difficulty in identifying distracted driving trends are apparent between 2008 and 2017.

Actions

- **DD.1**
Increase outreach and education to college-aged students about reckless and distracted driving in order to reduce traffic crashes involving older novice drivers
- **DD.2**
Implement distracted driving education and evidence-based strategies for parents that will keep their teens safe behind the wheel



**1% of California fatalities and serious injuries**

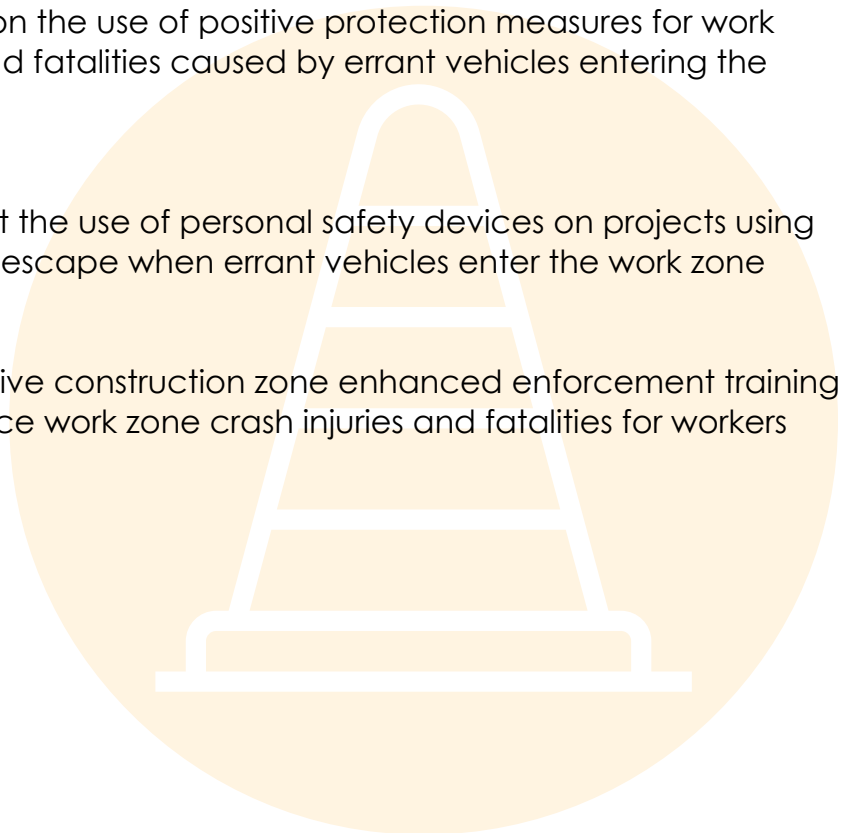
WORK ZONES

Focus Area

The Work Zones Challenge Area contains crashes that occur in a work zone for construction, maintenance, or other roadway repair. Work zones may or may not require lane closures or detours that disrupt a roadway. Though the number of work zone fatalities in 2017 returned to a 10-year low after an increase in 2010, the number of serious injuries continues to fluctuate.

Actions

- **WZ.1**
Create awareness and influence public behavior in construction zones in order to reduce crashes, deaths, injuries and economic losses that result from highway work zone crashes
- **WZ.2**
Develop a guidance document on the use of positive protection measures for work zones to reduce serious injuries and fatalities caused by errant vehicles entering the construction work zone
- **WZ.3**
Develop a research paper to pilot the use of personal safety devices on projects using technology to alert the worker to escape when errant vehicles enter the work zone
- **WZ.4**
Develop and promote collaborative construction zone enhanced enforcement training to CHP and Caltrans staff to reduce work zone crash injuries and fatalities for workers and the traveling public



EMERGENCY RESPONSE

Focus Area

The time after a crash is critical to saving lives. Rapid, coordinated response of emergency responders can reduce fatalities and prevent the occurrence of secondary crashes in the area.

Actions

ER.1

Prepare a white paper to propose a strategy to improve EMS response and transport times in and around tribal areas





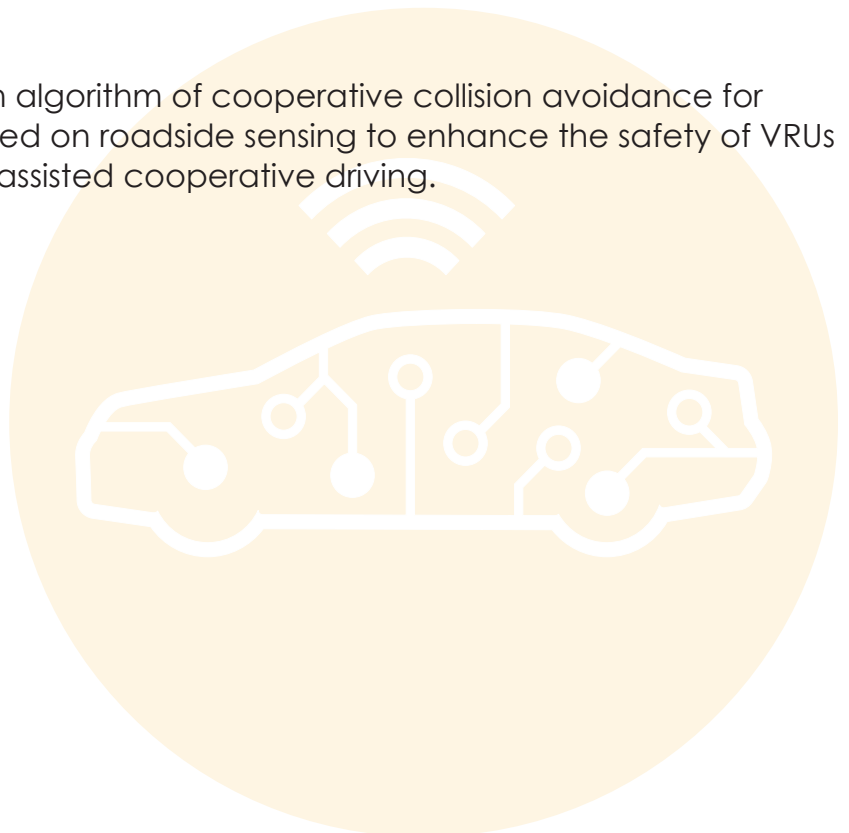
EMERGING TECHNOLOGIES

Focus Area

New to the SHSP, the Emerging Technologies Challenge Area includes the exploration of technologies that can potentially reduce the frequency or severity of crashes. Emerging technologies, such as autonomous and connected vehicles, support drivers by alerting drivers to risk, assisting drivers at risk, protecting vehicle occupants during crashes, and communicating with other drivers, vehicles and the environment.

Actions

- **ET.1**
Assess the use of LiDAR Data to Determine Sight Distance
- **ET.2**
Demonstrate the effectiveness and reliability of Bosch Mobile Device App for Wrong Way Driver Detection and Warning with Pilot Test by researchers in California
- **ET.3**
Research and development of an algorithm of cooperative collision avoidance for Vulnerable Road Users (VRUs) based on roadside sensing to enhance the safety of VRUs at intersections through roadside assisted cooperative driving.



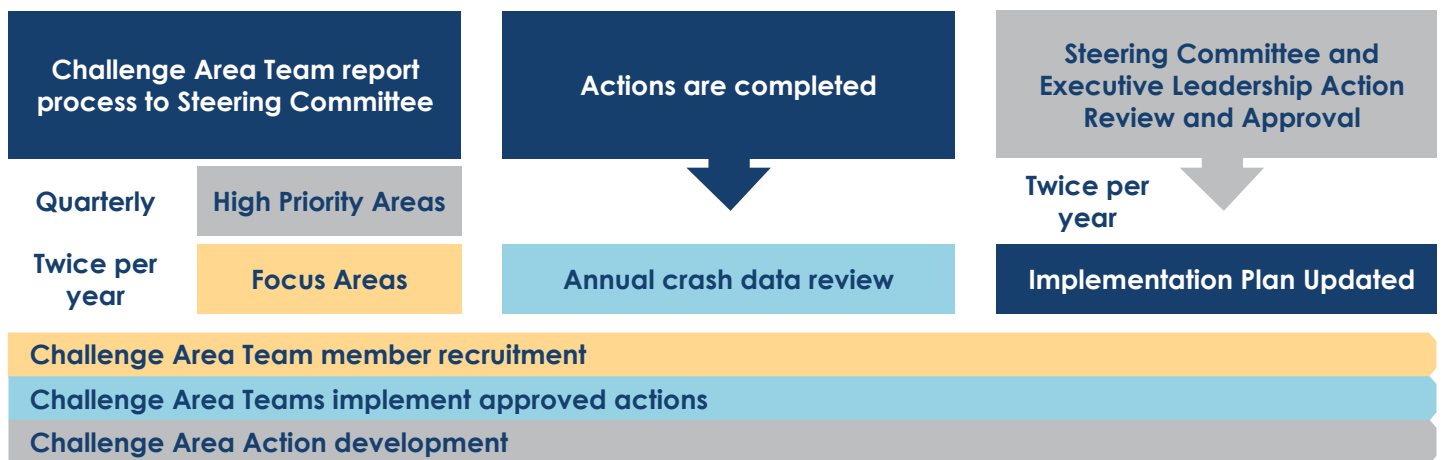
IMPLEMENTATION PROCESS

The development of the SHSP and Implementation Plan promotes a multidisciplinary and collaborative approach to improving roadway safety. Facilitating partnerships with stakeholders, the SHSP provides and promotes effective strategies and innovative efforts that align with the four Guiding Principles, 5 E Safety Strategies, and SMART Guidelines to achieve its goal.

Ongoing Action Development

It is anticipated that each action will require unique levels of involvement, assistance, and resources to reach completion. Implementation of some actions may be completed in a shorter timeframe, while others may require several years to make significant progress. Throughout the 2020–2024 SHSP period, Challenge Area Teams will work to implement actions and provide regular progress updates to the Steering Committee. The implementation process is open to new actions throughout the five-year lifespan of the 2020–2024 SHSP as Challenge Area Teams review new data and as emerging issues/countermeasures arise. Additional actions will be vetted through Steering Committee review at periodic intervals and approved by Executive Leadership at bi-annual meetings.

ONGOING SHSP ACTION IMPLEMENTATION AND DEVELOPMENT





Stakeholder Engagement

The key to effective implementation is having collaboration among various traffic safety stakeholders. Institutionalizing the four Guiding Principles into the process results in the consideration of equity, the Safe System Approach, Doubling Down on What Works and Accelerating Advanced Technology within all stakeholder engagement. Efforts to engage underrepresented groups and individuals, advocates, victims and/or victims' families are ongoing. Stakeholder engagement activities will continue throughout the SHSP implementation phase to encourage collaboration and stakeholder investment in SHSP strategies and actions. Additional innovative approaches to stakeholder engagement and outreach will be considered throughout the implementation of the SHSP. Future stakeholder outreach activities may include but are not limited to:

Statewide Safety Summit

will occur to convene state leadership and SHSP implementers to discuss emerging highway safety issues and provide opportunities to foster relationships and innovative responses to evolving traffic safety challenges.

Regional Workshops

will occur to provide a collaborative workshop environment for safety practitioners and partners to work through specific technical topics. These regional events will provide the forum to share best practices and innovative approaches.

Tribal Government Summits and Workshops

will mirror the regional workshops with a focus on engaging tribal governments with a focus on safety related to tribal issues, priorities, and countermeasures.

Partner Agency/ Organization Conferences and Meetings

will be leveraged to enhance awareness of and increase participation in the SHSP implementation process.

Additional Outreach

to public, private, and/or advocacy, non-profit, and community-based organizations to increase membership on Challenge Area Teams and participation in the SHSP process, in addition to outreach activities above.

Integration

The greatest potential for success in reducing fatalities and serious injuries requires integrating the SHSP with local, regional, and other statewide plans and activities. The SHSP Implementation Plan supports strategic efforts by key partners to develop safety plans that align with SHSP strategies and actions.

Collaborative opportunities to implement effective safety countermeasures have been strongly encouraged through the involvement of federal, state, regional, local, and tribal partners in the development of the SHSP Implementation Plan. Through involvement of these stakeholders, opportunities for partnership, collaboration, and synergies for implementation have been identified and will continue to develop. A diverse group of agencies and professionals involved in each Challenge Area and in stakeholder outreach efforts will encourage ownership and the adoption of actions throughout the broader traffic safety community.

When safety organizations concur with the priorities outlined in California's SHSP, these priorities should be reflected in these stakeholders' plans and activities. The SHSP priorities and strategies provides strategic direction for others developing safety plans in California, including the *Highway Safety Improvement Program (HSIP)*, *Highway Safety Plan (HSP)*, *Commercial Vehicle Safety Plan (CVSP)*, *Local Roadway Safety Plans (LRSPs)*, *Regional Transportation Plan (RTP)*, and *Sustainable Communities Strategies (SCS)*.

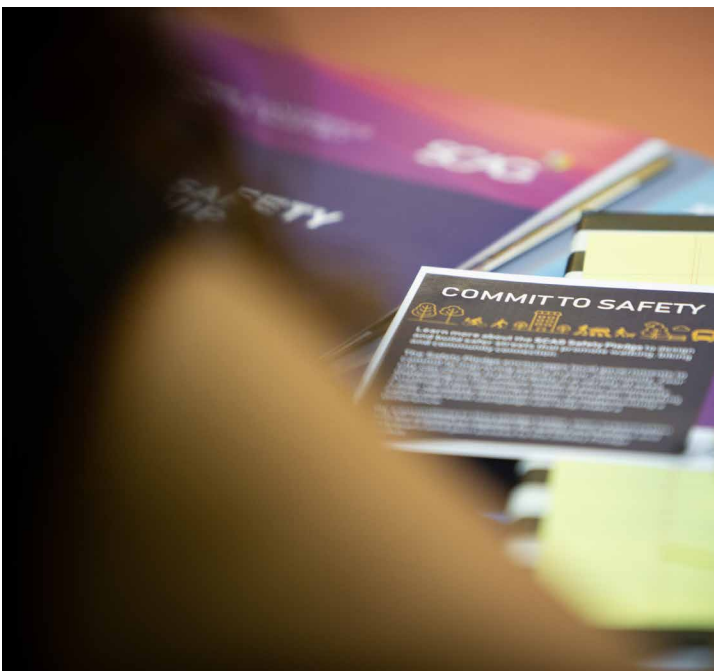


Photo Courtesy of SCAG



Photo Courtesy of Kimley-Horn



Evaluation

Evaluation is critical to understanding which countermeasures are working and worthy of continued investment, and which are less effective and need to be modified or discontinued. As part of the SHSP effort, a review of process and action performance will be undertaken over the course of its lifespan.

- » **An annual process evaluation to examine roles, responsibilities and process activities undertaken as a part of the California SHSP.** The Guiding Principles should be considered as actions are identified to ensure that the actions align. This includes evaluating the resources being allocated, as well as the timeline for monitoring, evaluating, and communicating SHSP performance data to key leadership and the public. In this way, California will ensure safety resources are focused on the strategies and actions that generate the best results.
- » **The performance measures identified for each action are to be reviewed regularly for progress against their performance guidelines and targets.** An online tracking tool accessible to Steering Committee members and Challenge Area co-leads was created to provide a centralized forum for updates and communication on the progress of all actions. Tracking implementation progress provides the Executive Leadership and/of Steering Committee with feedback about current action status and outcomes, allowing those involved to determine if modifications or new actions are needed.
- » **Statewide and regional performance data for each Challenge Area to be updated annually and compared with information from previous years to assess trends.** Reviewing state and regional data trends and annual safety performance targets on a regular basis helps leadership and Challenge Area Teams gauge progress toward California's goal of Zero Deaths and Serious Injuries. Challenge Areas with high priority status will be subject to more in-depth discussions on the annual trends to monitor these critical issues.
- » **A comprehensive mid-term evaluation, scheduled to be completed by June 2022, to include input from stakeholders and a review of potential action amendments to the SHSP Implementation Plan.**

Instilling a culture of ongoing evaluation will best help California safety leaders measure the state's progress toward eliminating traffic fatalities and serious injuries. Through the process of collecting, reviewing, and evaluating relevant safety data, leadership and stakeholders will gain significant insight into the impacts of chosen actions on the overall traffic safety picture in California. With ongoing evaluation and feedback, the SHSP Implementation Plan can be modified and updated to better respond to emerging traffic safety issues and trends.

Roles and Responsibilities

The Executive Leadership, Steering Committee, and Challenge Area Teams are integral to the development and implementation of a comprehensive and coordinated statewide plan to improve traffic safety. Each of these groups contribute to the state's ability to achieve its goal of Zero Fatalities and Serious Injuries by working both together and independently throughout the lifespan of the 2020–2024 SHSP.

EXECUTIVE LEADERSHIP

Organizational leaders in California's traffic safety community. Their guidance supports the SHSP process and reflects the importance of traffic safety to their organizations and the state.

STEERING COMMITTEE

Responsible for oversight and organization of the SHSP process.

CHALLENGE AREA TEAMS

The SHSP Challenge Area Teams are comprised of interested individuals and subject matter experts from a spectrum of organizations interested in the Challenge Area topics. They are responsible for the development and implementation of actions that align with the Guiding Principles described in the Implementation Plan.

CO-LEADS

Guide Challenge Area Teams to assist in the development and implementation of their specific actions

ACTION LEADS

Lead implementation of the individual actions with support from team members

MEMBERS

Help coordinate, develop, and implement actions with Challenge Area Team and Co-Leads

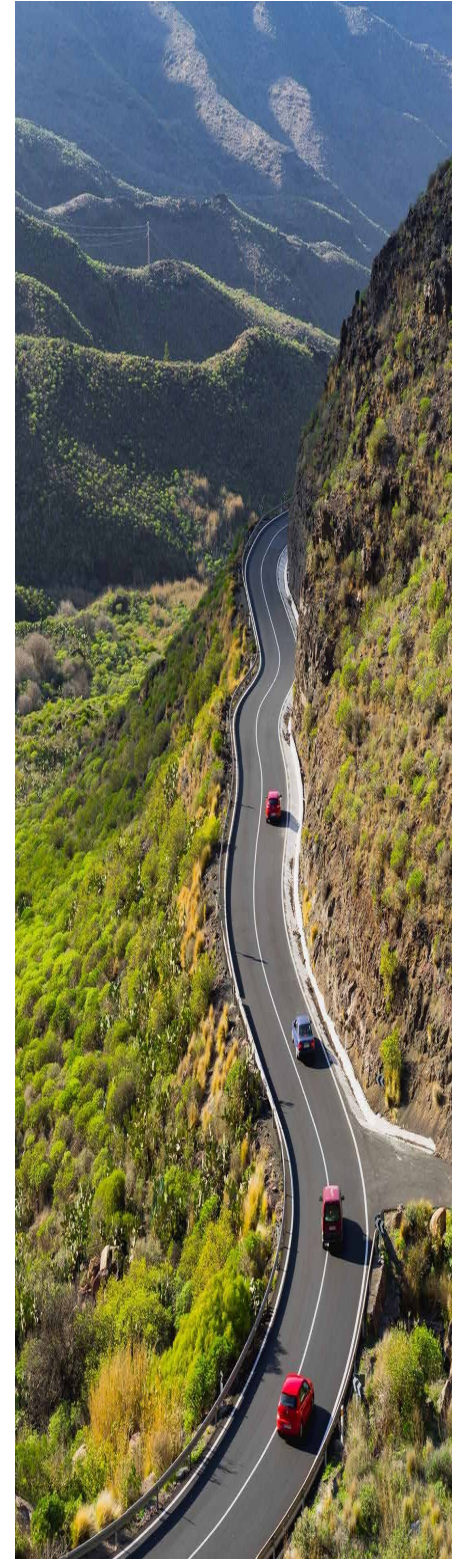


Executive Leadership members typically meet bi-annually. Executive Leadership members are expected to execute the following responsibilities:

- » Provide input on SHSP policies and procedures, review progress, offer advice, support, and guidance, help leverage resources, address challenges, and remove barriers.
- » Ensure opportunities to improve safety on all public roads.
- » Provide leadership and partnership in identification of future safety needs.
- » Incorporate, as appropriate, SHSP actions into their organization's strategic and / or transportation plans.

The **Steering Committee** meets on a regular basis throughout the implementation phase of the SHSP to guide and provide direct assistance to Challenge Area Teams, update Executive Leadership members, and coordinate activities with local, regional, and other statewide safety efforts. Steering Committee members are expected to execute the following responsibilities:

- » Identify key inputs, data gaps, and guide action development related to high priority Challenge Areas.
- » Discuss and direct action development, guide the implementation progress, and coordinate next steps.
- » Review progress of actions and determine if revisions or deletions are needed, as well as identify and suggest new actions where appropriate.
- » Seek input from specialists or subject matter experts on approaches to implementing existing actions or developing new actions.
- » Serve as spokespersons for the California SHSP within their organizations and in public forums.



The 16 **Challenge Area Teams** are tasked with the key responsibility to develop and implement actions that will reduce fatalities and serious injuries. The following highlights the tasks necessary to carry out this charge:

High Priority Challenge Area Teams:

- » Update the Steering Committee quarterly on action progress, potential actions, and other Challenge Area issues; identify and report trends, data gaps, problems, and barriers to action completion.
- » Develop new actions or modify existing actions as needed.
- » Discuss action implementation progress and coordinate next steps through team partnerships.
- » Host regular team meetings to track progress of actions and update the tracking tool at least quarterly.
- » Evaluate strategy gaps and the effectiveness of actions to ensure they are contributing to decreases in fatalities and serious injuries.

Focus Challenge Area Teams:

- » Update the Steering Committee twice a year on action progress and other Challenge Area issues; identify and report trends, data gaps, problems, and barriers to action implementation.
- » Develop new actions or modify existing actions as needed.
- » Host regular team meetings to track progress of actions and update the tracking tool at least quarterly.
- » Evaluate strategy gaps and the effectiveness actions to ensure they are contributing to decreases in fatalities and serious injuries.

These efforts are led by Challenge Area Co-Leads, typically two or three individuals who represent organizations and agencies involved with or interested in a Challenge Area. Challenge Area Action Leads are designated to lead their approved action. Challenge Area Members are interested in a Challenge Area, support the Co-Leads and Action Leads, and provide time, resources, and knowledge to help implement the actions.