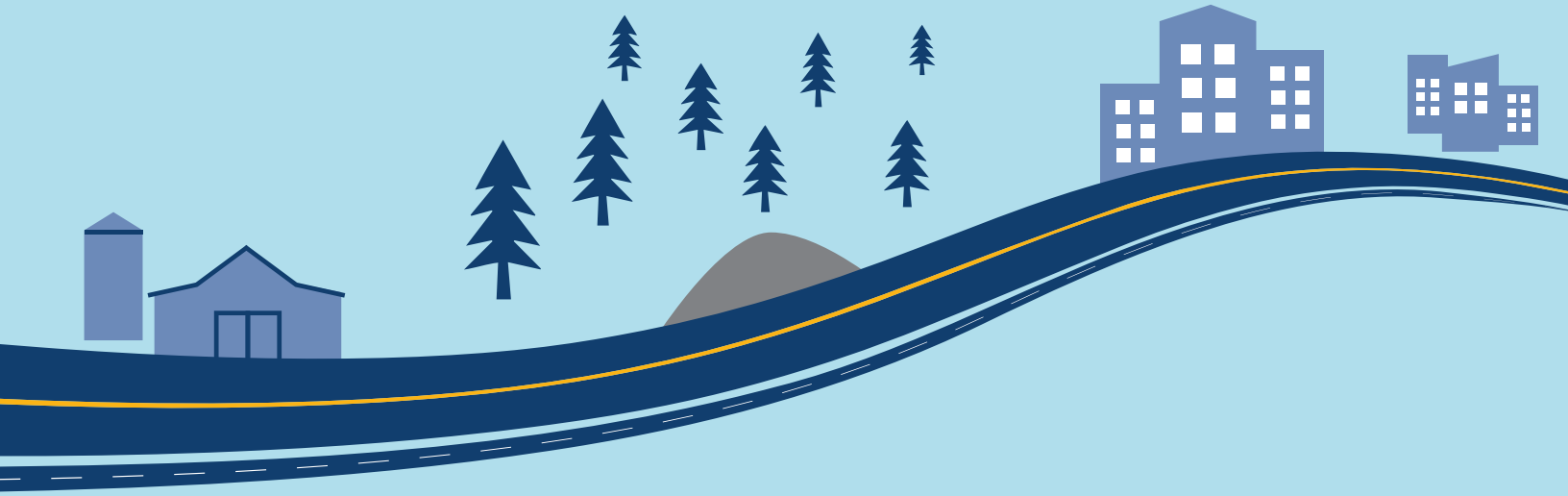
# CALIFORNIA® SAFE ROADS

## 2025–2029

## California Strategic Highway Safety Plan



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# Acronyms and Abbreviations

| Acronym | Definition |
|---|---|
| 3HSP | Triennial Highway Safety Plan |
| AARP | American Association of Retired Persons |
| ATP | Active Transportation Plan |
| AB | Assembly Bill |
| ABC | California Department of Alcoholic Beverage Control |
| ACS | American Community Survey |
| ADAS | Advanced Driver Assistance Systems |
| AV | Autonomous Vehicles |
| CAL-ATSSA | California American Traffic Safety Services Association |
| CaCTI | California City Transportation Initiative |
| CalSTA | California State Transportation Agency |
| Caltrans | California Department of Transportation |
| Cal Walks | California Walks |
| CBO | Community-Based Organization |
| CCPDA | California County Planning Director's Association |
| CDPH | California Department of Public Health |
| CEAC | County Engineers Association of California |
| CHP | California Highway Patrol |
| CPCA | California Police Chiefs Association |
| CMF | Crash Modification Factors |
| CTC | California Transportation Commission |
| CV | Connected Vehicle |
| CVSP | Commercial Vehicle Safety Plan |
| DECP | Drug Evaluation and Classification Program |
| DMV | California Department of Motor Vehicles |
| DRE | Drug Recognition Expert |
| DUI | Driving Under the Influence |
| DOT | Department of Transportation |
| DVMT | Daily Vehicle Miles Traveled |
| EL | Executive Leadership Committee |
| EMSA | Emergency Medical Services Authority |
| FARS | Fatality Analysis Reporting System |
| FAST ACT | Fixing America's Surface Transportation Act |
| FRA | Federal Railroad Administration |
| FHWA | Federal Highway Administration |
| FMCSA | Federal Motor Carrier Safety Administration |

| Acronym | Definition |
|---|---|
| FSI | Fatal and Serious Injury |
| GIS | Geographic Information System |
| HPMS | Highway Performance Monitoring System |
| HR3 | High-Risk Rural Roads Program |
| HSIP | Highway Safety Improvement Program |
| HSP | Highway Safety Plan |
| League | League of California Cities |
| LRSP | Local Roadway Safety Plan |
| MADD | Mothers Against Drunk Driving |
| MPO | Metropolitan Planning Organization |
| NGO | Non-Governmental Organization |
| NHTSA | National Highway Traffic Safety Administration |
| OTS | Office of Traffic Safety |
| PC | Post-Crash Care |
| RCTF | Rural Counties Task Force |
| RTPA | Regional Transportation Planning Agency |
| SRTS | Safe Routes to School |
| SB | Senate Bill |
| SC | Steering Committee |
| SL | Safer Land Use |
| SHSP | Strategic Highway Safety Plan |
| SMART | Specific, Measurable, Achievable, Relevant, and Time-Constrained |
| SR | Safe Roads |
| SS | Safe Speeds |
| SS4A | Safe Streets and Roads for All |
| SSA | Safe System Approach |
| SU | Safe Road Users |
| SV | Safe Vehicles |
| SWITRS | Statewide Integrated Traffic Records System |
| SWOT | Strengths, Weaknesses, Opportunities, and Threats |
| TIMS | Transportation Injury Mapping System |
| UCB ITS | University of California Berkeley Institute of Transportation Studies |
| UCSD TREDS | University of California San Diego Transportation Research and Education for Driving Safety |
| US | United States |
| USDOT | United States Department of Transportation |
| VMT | Vehicle Miles Traveled |
| VRU | Vulnerable Road Users |

# Letter From the Secretary

As the Secretary of the California State Transportation Agency, I am deeply troubled by traffic fatalities and serious injuries on our roadways. The harsh reality is that far too many people continue to die or suffer serious injuries on California's public roads each day. It is essential for all of us to tackle this issue with a sense of urgency.

A paradigm shift in road safety is occurring, and the 2025–2029 California Strategic Highway Safety Plan stands at the forefront of this transformation. This Strategic Highway Safety Plan signifies our commitment to institutionalizing the Safe System Approach, which provides an enhanced strategy for addressing road safety by examining and improving every part that makes up the road system. While we work with traditional road safety partners, we are seeking new stakeholders, partnerships, collaborations, and commitments to achieve the goal of zero traffic fatalities and serious injuries on all of California's public roadways.

As biking, walking, e-scooters, and other transportation mobility solutions continue to grow in access and popularity, we must do everything we can to protect our most vulnerable road users. We also must take aggressive action to address other critical traffic safety issues, such as impaired driving, aggressive driving, and speeding. Our policies must reflect that we are supporting historically overrepresented communities impacted by fatal and serious injury crashes due to factors like inadequate infrastructure, increased exposure to risky driving behaviors, and limited access to resources for vehicle maintenance and safe transportation.

We must continue to take decisive action on these and other important road safety issues. The Strategic Highway Safety Plan Executive Leadership and Steering Committees, comprised of safety stakeholders from across the state, have united to develop strategies aimed at eliminating traffic fatalities and serious injuries on our roadways. Moreover, the California State Transportation Agency, in partnership with the California Department of Health and Human Services, has recently developed a Joint Secretary's Policy on Road Safety which includes a commitment to reduce the number of fatalities and serious injuries by 30% on California's public roads by 2035. It is through these cross-sector collaborative efforts that we can address this critical public health issue.

Achieving zero traffic fatalities and serious injuries will require the collective commitment and creativity of us all. By integrating efforts in education, enforcement, engineering, emergency response, and emerging technologies, we can develop meaningful solutions to advance our traffic safety goals. As we implement this plan, we must consider both proven, evidence-based countermeasures and new, innovative ways to improve safety for all California road users.

Everyone has the right to travel safely on our roads, regardless of race, socioeconomic status, gender, age, ability, or geographic location. It is crucial that we develop programs focused on improving safety for all groups, especially our most vulnerable and traditionally underserved populations. Enhancing the road system in every community will improve the quality of life for all Californians.

By working together, each one of us can make a positive difference in the lives of all California road users and contribute to the health and economic vitality of our state. The California Strategic Highway Safety Plan provides a clear roadmap to make progress toward this goal. Let's work together to make zero fatalities and serious injuries on California's public roadways a reality for us all.

Sincerely,

**Toks Omishakin**
*Secretary*

# Executive Summary

The California Strategic Highway Safety Plan (SHSP) is a comprehensive, statewide road safety plan that provides a collaborative framework for achieving zero fatalities and serious injuries on all of California's public roadways. This document represents the fourth update of California's initial 2005 SHSP and uses the latest crash data and insights from safety partners across the state to inform the SHSP's development. Working in conjunction with other statewide safety plans and programs, such as the Highway Safety Improvement Program (HSIP), the Highway Safety Plan (HSP), and the Commercial Vehicle Safety Plan (CVSP), this SHSP provides guidance that will influence the development of goals, strategies, actions, and performance measures for stakeholders working to improve road safety on roads in California.

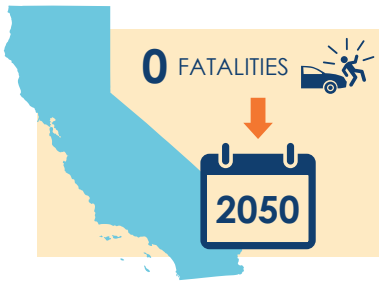
## 2025–2029 Strategic Highway Safety Plan Vision, Mission, and Goal

To optimize progress toward improving road safety in California, the SHSP continues to focus on 16 traffic safety Challenge Areas that have been categorized into High Priority and Focus Areas. The Challenge Areas were identified by the SHSP Executive Leadership (EL) and Steering Committee (SC) after an in-depth analysis of California crash data as well as an extensive statewide outreach process that involved hundreds of diverse road safety partners. The High Priority Areas are represented by the six Challenge Areas that were identified as having the greatest opportunity to reduce fatalities and serious injuries on public roads in California. It is recognized that the goal is aspirational in nature; therefore, interim targets will be developed as part of the SHSP implementation process. For more information about interim targets, refer to Section 6.7 Measurable Objectives and Performance Measures.

**VISION**
Safe and accessible roads for all road users in California

**MISSION**
Collaborate to enhance safety for all modes of travel on California's public roadways

**GOAL**
Zero traffic fatalities and serious injuries on all of California's public roadways




There are no number of deaths or serious injuries that should ever be considered acceptable on California's public roadways. Understanding that it will take time, it is the firm belief of the SHSP stakeholders that **zero fatalities and serious injuries can be achieved by 2050.**

## Traffic Safety Culture

Traffic Safety Culture is a framework designed to change behaviors among road users and stakeholders, thereby improving traffic safety. This framework depends on the natural influence that culture has on humans as social beings.

A common definition of traffic safety culture is: "The shared belief system of a group of people, which influences road user behaviors and stakeholder actions that affect traffic safety" (Transportation Safety Research Center, 2014). In other words, traffic safety culture is a perspective on traffic safety that recognizes and focuses on the role of people's habits, beliefs, norms, and the influence of the groups to which they belong in shaping their choices and actions on the road.

## Pro-Social Traffic Safety Culture

Pro-social traffic safety culture promotes shared traffic safety goals by creating a social environment that expects, encourages, and rewards the actions of people that improve the safety of other road users. It can be defined as voluntary behavior that reduces future harm to others in support of shared safety goals. Importantly, the discretionary element highlights that such actions are not part of any formal traffic safety role. Therefore, pro-social traffic safety culture is most applicable to non-traditional stakeholders who are vested in the safety of others but have no formal role or assigned duties within the safety system (e.g., families, friends, coworkers, schools, neighbors).

## Safe System Approach

The 2020–2024 SHSP included a strategic shift in priorities for safety that was known as "The Pivot." One of the guiding principles that emerged from "The Pivot" was to implement the Safe System Approach (SSA), which was adopted by the United States Department of Transportation (USDOT) as the future of road safety for the nation in 2022. The 2025–2029 SHSP builds on that principle and enhances it for use in California.

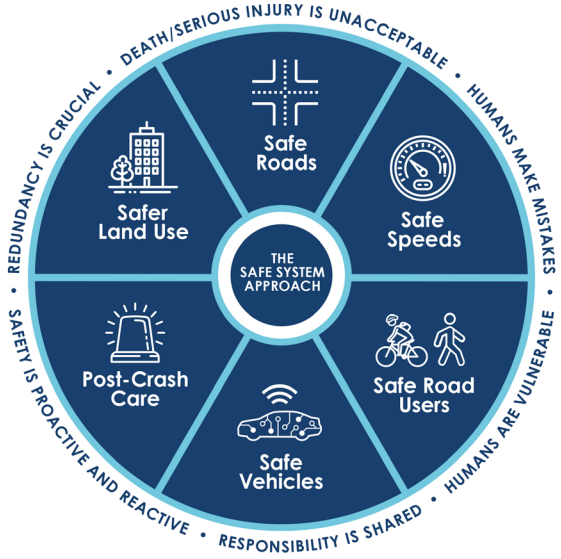
### *Safe System Approach Elements*

#### *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.

#### *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 Road Users*
The SSA 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.

### *Post-Crash Care*
When a person is injured in a crash, they rely on emergency first responders to quickly locate them, stabilize their injury, and transport them to medical facilities. Post-crash care also includes forensic analysis at the crash site, traffic incident management, and other activities.

### *Safer Land Use*
Safer Land Use encompasses an approach to safety that acknowledges that land use decisions and development patterns have an impact on our ability to create a safe and more accessible road system for all people, especially vulnerable road users (VRU). For the SHSP, Safer Land Use supports mode shift away from individual motorized modes where appropriate and possible. Safer Land Use also promotes community-based planning, with an awareness of the impact of past roadway and land use decisions.

## *Safe System Approach Principles*

### *Death and Serious Injuries are Unacceptable*
The SSA prioritizes crashes that result in death and serious injuries, since no one should experience either when using the road system.

### *Humans Make Mistakes*
People will inevitably make mistakes that can lead to crashes, but the road 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 road system that is human-centric and accommodates human vulnerabilities.

### *Responsibility is Shared*
All stakeholders (road system users and managers, vehicle manufacturers, etc.) must ensure that crashes do not lead to fatal or serious injuries.

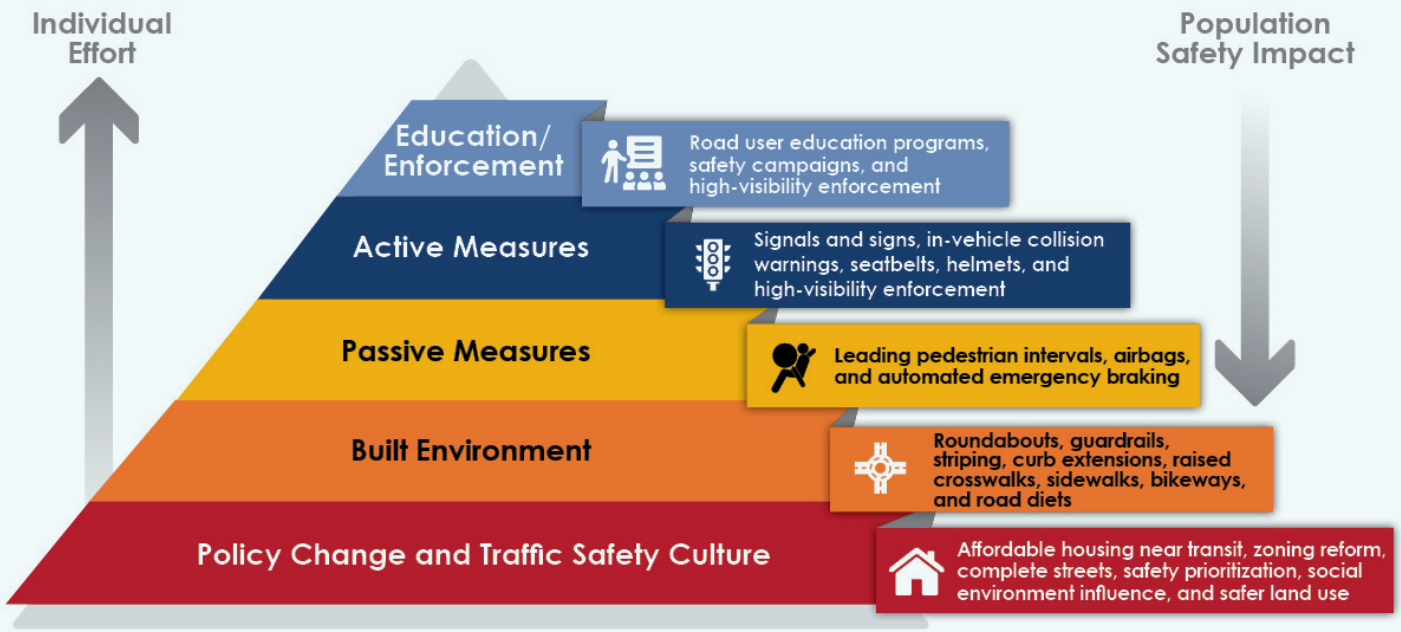
### *Redundancy is Crucial*
Reducing risks requires that all parts of the road system are strengthened, so that if one part fails, the other parts still protect people.

### *Safety is Proactive and Reactive*
Proactive tools should be used to identify potential safety hazards before crashes happen while also recognizing the importance of historical data that helps inform where and why crashes are happening.

To apply the SSA effectively, a shift in our perspective on traffic safety must occur. Instead of isolating and blaming individual causes for crashes, it is important to understand how all the parts of the road system combine and interact to influence crash events, necessitating changes across the entire system. By adopting a "systems thinking" approach to problem solving we take a broader view of events and actions.

## Safe System Pyramid

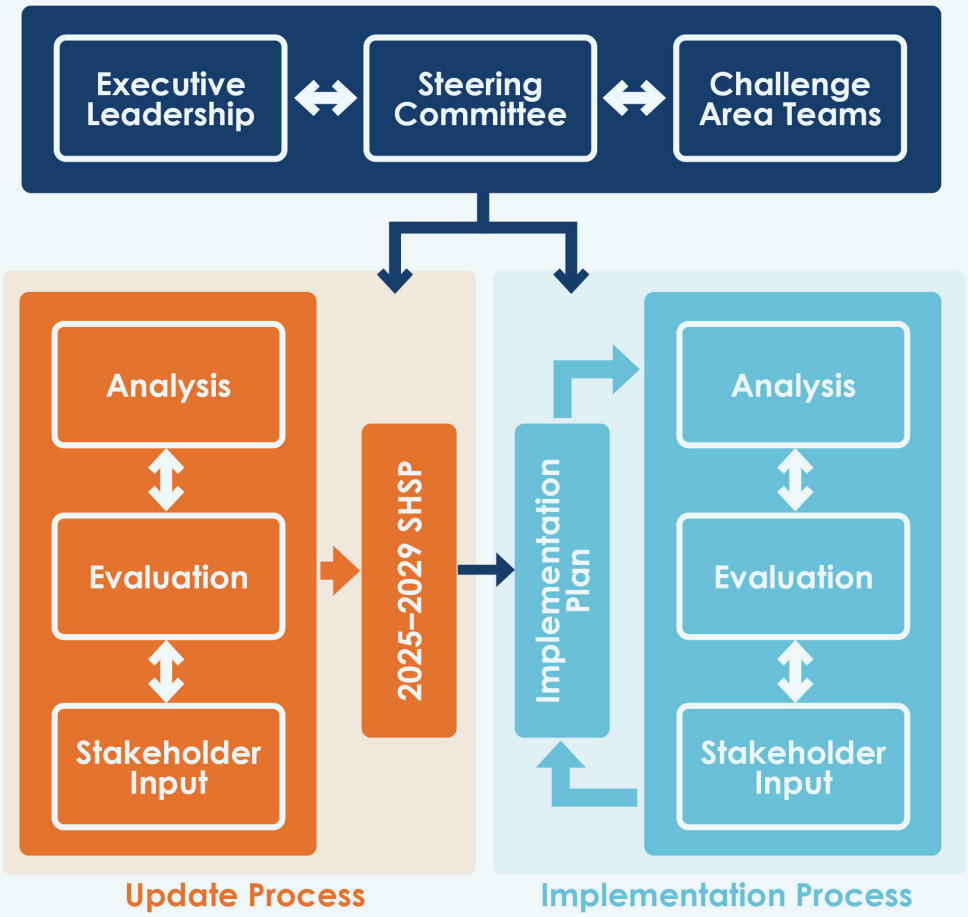
The Safe System Pyramid is a framework for prioritizing road safety interventions based on their potential for broad impact (group behavior and culture) and the level of effort required by individuals. It has a hierarchical structure, with interventions lower in the pyramid (like those addressing traffic safety culture) having the broadest reach and requiring the least individual effort, while those higher up (like education) have a narrower reach and require more individual action. This framework is designed to shift road safety thinking from a focus on individual behavior to a system-level.



## Strategic Highway Safety Plan Leadership and the Development Process

Informed by extensive outreach to a network of safety partners across the state as well as stakeholders representing education, enforcement, engineering, emergency response, and emerging technologies, the 2025–2029 California SHSP is based on the belief that everyone, no matter how they travel, should be able to arrive at their destination safely, and feel safe doing so.

This 2025–2029 California SHSP effort focuses on developing and implementing strategies with the greatest potential to reduce fatalities, serious injuries, and overall crashes. To ensure that decision-making is collaborative and consistent, the SHSP is anchored by a clear vision, mission, and goal. The vision represents what the SHSP aims to accomplish, while the mission is the means of getting there. Fulfilling these statements affords the state, under guidance of the SHSP, the best opportunity to reach its goal: zero traffic fatalities and serious injuries on all of California's public roadways.



## Challenge Areas, Strategies, and Actions

Crash data was utilized to identify the Challenge Areas that will assist in realizing the vision, mission, and goal of the 2025–2029 SHSP. The Challenge Areas are sorted into High Priority and Focus Areas. The High Priority Areas will coordinate more frequently with the SC on key issues and data trends. The 2025–2029 SHSP Challenge Areas are:

### *High Priority Areas*

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

### *Focus Areas*

- Aging Drivers
- Commercial Vehicles
- Distracted Driving
- Driver Licensing
- Emergency Response
- Emerging Technologies
- Motorcyclists
- Occupant Protection
- Work Zones
- Young Drivers

Twenty-four strategies have been developed in this SHSP to provide high-level guidance for future action development, which will take place during the implementation of the Plan. Each strategy serves as an overarching, guiding framework. They define the broad approach and direction needed to achieve the vision, mission, and goal, and outline how this will be accomplished.

There is widespread recognition among SHSP partner organizations that adopting the SSA means ensuring it is an embedded cornerstone of all the road safety work that occurs within the state. The most effective way to achieve this is through the institutionalization (formal integration) and adoption of the SSA and to align the SHSP strategies with the SSA principles and elements. The SC continues to be engaged in the strategy development that aligns with SSA principles and elements so that these strategies can be used to guide future action development.

Actions for each Challenge Area will be included in the 2025–2029 SHSP Implementation Plan and will be updated as needed through the 5-year lifecycle of the SHSP. All actions will be **SMART**:

**S** **pecific –** clear action descriptions

**M** **easurable –** identified performance measures

**A** **chievable –** committed resources by responsible organizations

**R** **elevant –** statewide significance with data-driven countermeasures

**T** **ime Constrained –** achievable within the SHSP time frame

Not only will the actions in the SHSP Implementation Plan be SMART, but they will also be aligned with the SSA elements and principles to ensure they meet a specific need and also move California towards specific safety objectives. These objectives include developing a road system with built-in redundancies for preventing crashes, reducing kinetic energy in crashes that do occur, and combining all parts of a safe and vibrant road system working in unison to share in the responsibility of eliminating fatal and serious injury crashes.

Making zero fatalities and serious injuries on all of California's public roadways a reality will require a pro-social traffic safety culture that promotes collaboration and innovation from all safety sectors and a collective commitment to prevent and mitigate traffic crashes.

Consistent with the prior SHSP, California safety leaders adopted a two-plan approach to implement the road safety strategies detailed by the data-driven, multi-year SHSP. This 2025–2029 SHSP was developed through a process of analysis, evaluation, and stakeholder input, led by the EL and SC. The corresponding Implementation Plan will identify detailed actions for each of the Challenge Areas, and a process for analysis, evaluation, and stakeholder input led by the SC during the life of the Plan. The Implementation Plan is a living document that will be updated over the course of this 5-year period to ensure that the actions identified are being implemented as intended and are moving California toward its ultimate goal of zero fatalities and serious injuries.

# 1 What is the Strategic Highway Safety Plan?

The SHSP is a comprehensive, statewide road safety plan which provides a collaborative framework for eliminating fatalities and serious injuries across all travel modes and on all public roads. The SHSP utilizes a data-driven process to identify key safety needs and guides resource and investment decisions that provide the greatest potential to achieve the plan's goal of zero traffic fatalities and serious injuries on all of California's public roadways.

Started in 2005, the SHSP is updated regularly to ensure continued progress and to meet changing safety needs. Currently, 1,390 safety stakeholders from more than 530 public and private agencies and organizations work together on this effort under the guidance of the SHSP EL and SC.

## 1.1 Federal Requirements

The SHSP is a federally required plan. Per federal law, "A SHSP is a major component and requirement of the HSIP (23 U.S.C. § 148). It is a statewide-coordinated safety plan that provides a comprehensive framework for reducing highway fatalities and serious injuries on all public roads. A SHSP identifies a state's key safety needs and guides investment decisions towards strategies and countermeasures with the most potential to save lives and prevent injuries." The SHSP also sets a consistent message—including the use of the word "crash" instead of "accident"—and tone for all partners to ensure that there is a collective responsibility in promoting a pro-social traffic safety culture.

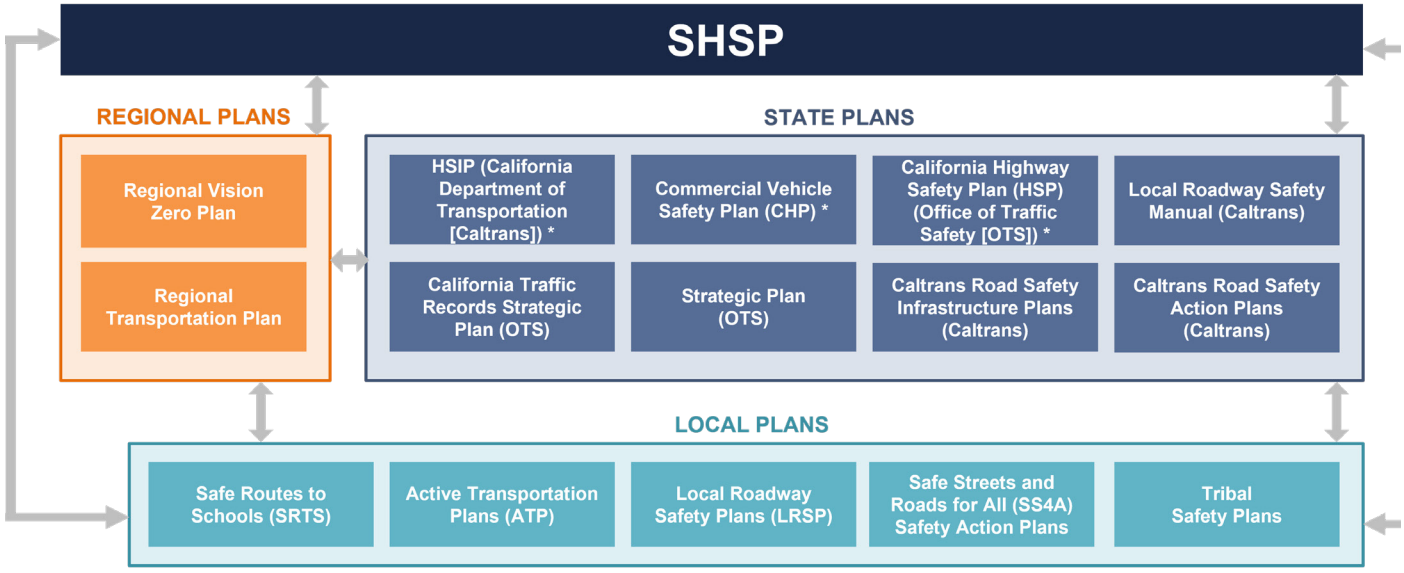
The HSIP provides funds to state departments of transportation (DOTs) for safety improvement projects and, in turn, requires each state to develop a SHSP. This federally required plan involves preparing a comprehensive, collaborative, and data-driven approach to safety that incorporates engineering, education, enforcement, emergency medical services, and emerging technologies. The process defined by the Federal Highway Administration (FHWA) requires the SHSP to establish an overall framework to analyze priority needs and opportunities for road safety improvements. The SHSP assesses previous safety planning efforts and current conditions to inform future statewide planning efforts as well as planning at the regional, tribal, and local levels. The SHSP is an overarching road safety plan to guide California's safety planning and programming processes and to facilitate implementation of developed strategies. The SHSP also identifies complementary and jointly funded activities that can be implemented at the state, regional, local, and tribal levels. All partners are encouraged to utilize the SHSP as a guide for developing road safety initiatives within their own organizations to help shape California's road system.

Subsequent sections of this SHSP include a review of general safety trends; the SHSP development process, vision, mission and goal; stakeholder engagement; recommended strategies; and implementation.

### *1.1.1 Relationship to Other Plans within California*

The SHSP consists of leadership from federal, state, regional, local agencies, and tribal governments, as well as private sector and non-governmental organizations (NGOs) and community-based organizations (CBOs). **Figure 1** on the following page shows the relationship between the SHSP, as the highest-level multi-agency road safety plan in the state, and other road safety plans within California.

### Figure 1: SHSP Relationship to Other Safety Plans




*Mandated coordination with SHSP
*Plans outlined above are primary plans related to SHSP, and are not inclusive of all SHSP-related plans*

The SHSP provides guiding priorities and supports coordination for all other plans and programs in California that touch upon road safety. This includes the Vulnerable Road User (VRU) Safety Assessment, the Triennial Highway Safety Plan (3HSP), HSIP, and the CVSP. The SHSP also influences existing and new safety plans, programs, and policies.

## 1.2 Why This is Being Done

The SHSP provides the state with guidance to systematically identify and address the key factors contributing to roadway crashes. Through the SHSP, the implementation of targeted safety measures can be identified leading to increased safety across the public roadways within the state. The SHSP creates a comprehensive framework to align resources and strategies across various agencies to work collaboratively. It can help prioritize investments, address regional and local safety concerns, promote data-driven decision-making, and enhance public awareness and engagement.

Most importantly, the SHSP establishes partnerships and identifies a pathway to make progress towards the goal of zero traffic fatalities and serious injuries on all of California's public roadways.

# 2 Background of the Strategic Highway Safety Plan

California developed its first SHSP in 2005 and, following that initial plan, has updated the SHSP on a 5-year cycle (2010, 2015, 2020, and 2025).

During the development of the 2020–2024 SHSP, road safety leaders recognized that a bolder and more focused approach was needed to combat the rise in fatalities and serious injuries occurring on California's roadways. These changes, referred to as "The Pivot," included a focus on High Priority Challenge Areas, an expansion of SHSP committee membership, and the incorporation of four Guiding Principles for the SHSP. These guiding principles focused on utilizing effective proven safety countermeasures, incorporating new safety technology, implementing the SSA, ensuring inclusivity, and promoting reponsiveness to end-user needs.

The corresponding 2020–2024 SHSP Implementation Plan outlined specific strategies and actions aimed at incorporating the aforementioned Guiding Principles with the intent of mitigating fatalities and serious injuries associated with each of the 16 Challenge Areas.

The 2025–2029 SHSP will build on the efforts of the prior Plans to further enhance safety for all modes of travel on California's public roadways, with a continued focus on ensuring inclusivity and promoting responsiveness to end-user needs, doubling down on what works, accelerating advanced technology, and promoting a pro-social traffic safety culture through the institutionalization of the SSA.

## 2.1 Accomplishments from the last Strategic Highway Safety Plan

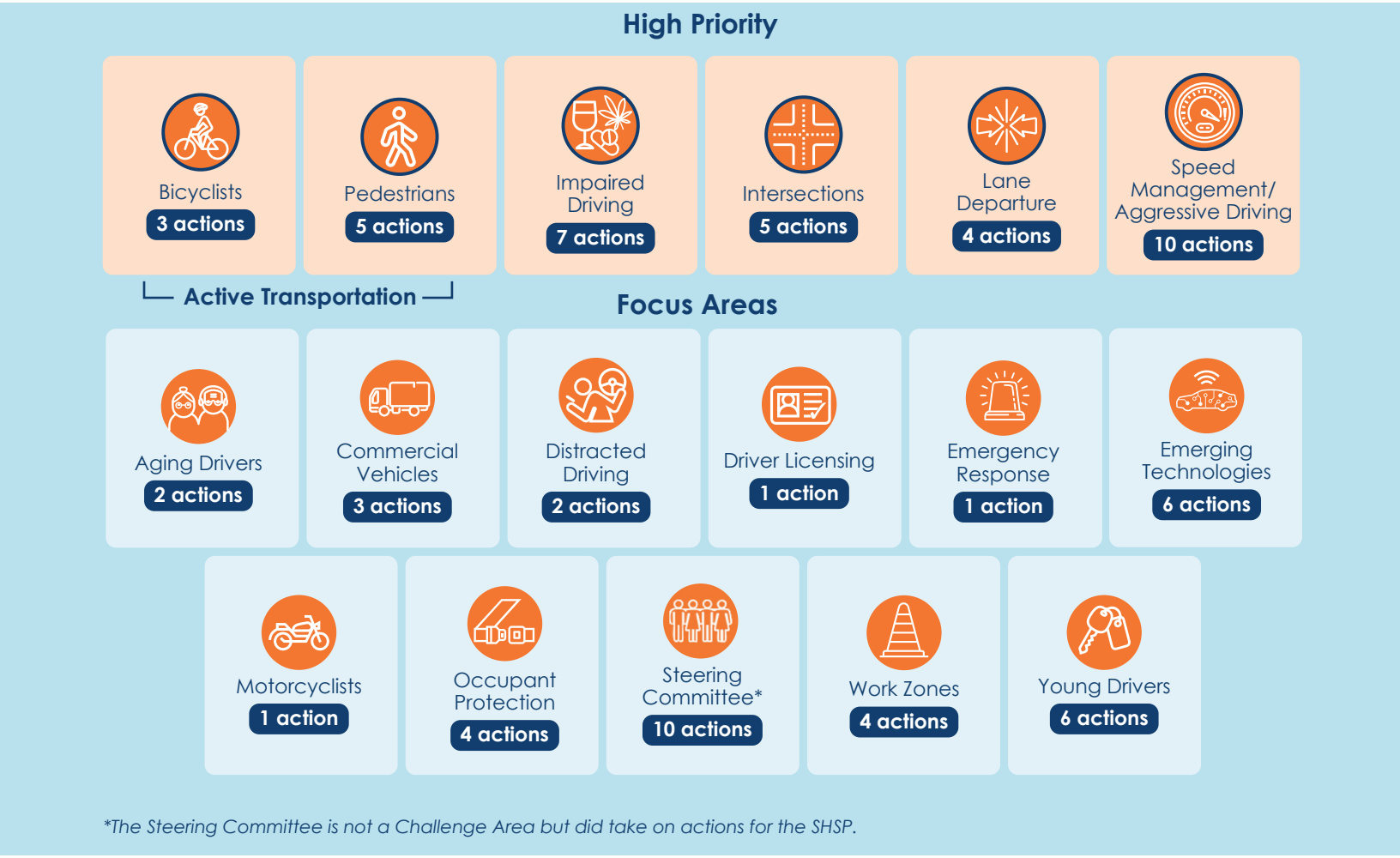
From 2020 to 2024, the SHSP demonstrated progress towards improving road safety and achieving the goal of zero traffic fatalities and serious injuries. The SHSP stakeholders completed 70 actions that were included in the Implementation Plan. The California Department of Transportation (Caltrans) played a leading role, with involvement in 31 of these actions, reflecting a strong commitment to improving road safety across the state.

Stakeholder engagement was significantly enhanced during this period, with the SHSP Committees being broadened to include new agencies, and a series of regional workshops and targeted tribal outreach was completed, which helped to encourage greater participation in the SHSP.

Throughout the 2020–2024 SHSP period, the SHSP team welcomed many new members across various Challenge Area Teams, representing a variety of different types of organizations and interests. The infusion of new members from diverse organizations across California enhanced collaboration and brought fresh perspectives to the SHSP.

One of the standout achievements of the 2020–2024 SHSP was the inaugural SHSP Executive-Level Transportation Safety Summit held in May 2023 in Sacramento, California. This event saw high-level participation from leaders at various federal, state, regional, and local agencies, fostering significant dialogue and collaboration on road safety. The summit was a crucial moment in uniting different stakeholders.

**Figure 2: 2020–2024 SHSP Completed Actions**




**The Steering Committee is not a Challenge Area but did take on actions for the SHSP.*

The 2020–2024 SHSP completed 70 actions, which are specific goals aimed at addressing a Challenge Area. These completed actions reflect the meaningful collaboration between multiple agencies throughout the state to improve road safety. A summary of the completed actions, as well as a few specific highlights of completed actions, are outlined below.

To verify the efficacy of its initiatives, the SHSP conducted a Mid-Term Evaluation in October of 2023. This comprehensive assessment focused on data analysis, the evaluation of completed actions, and process improvements. This evaluation not only measured progress but also guided future efforts, establishing continuous improvement and adaptation of strategies.

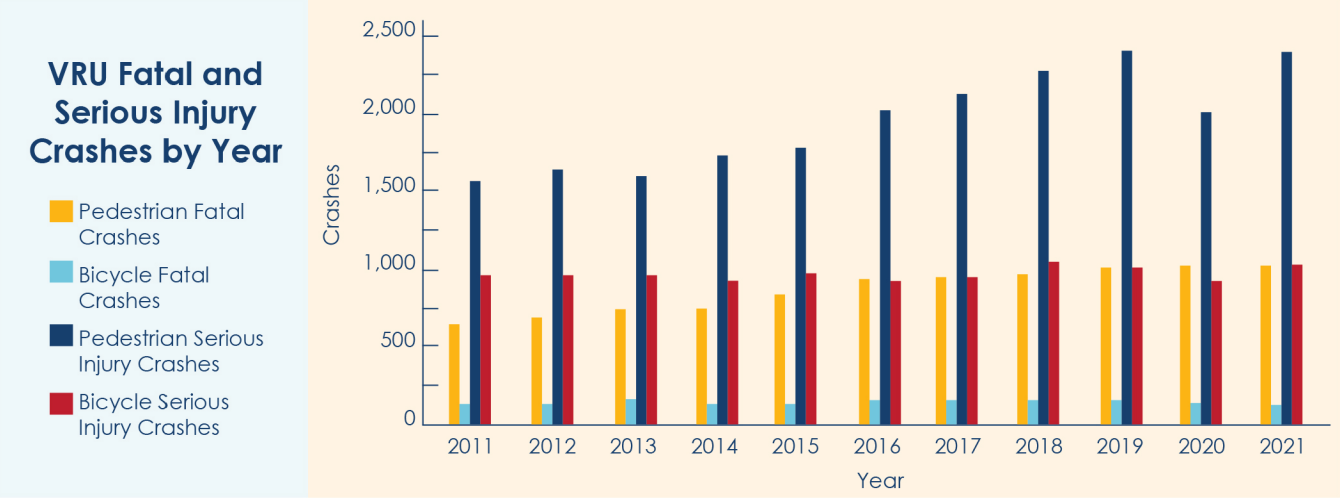
Data analysis was a cornerstone of the 2020–2024 SHSP's success, leading to the development of several new data tools and reports. An important advancement was the development of the SHSP Crash Data Dashboard with the addition of provisional safety data. This collaborative effort between the SHSP EL and SC provided stakeholders with more up-to-date information, enabling them to better analyze crash patterns and target specific Challenge Areas more effectively. By creating the Crash Data Dashboard, and including tribal data, provisional data, and the Senate Bill (SB) 535 Disadvantaged Communities

Geographic Information System (GIS) layer, the SHSP ensured widespread access to this pertinent material. Additionally, region-specific, demographic, and tribal data fact sheets were produced alongside detailed analyses of various data trends within specific Challenge Areas.

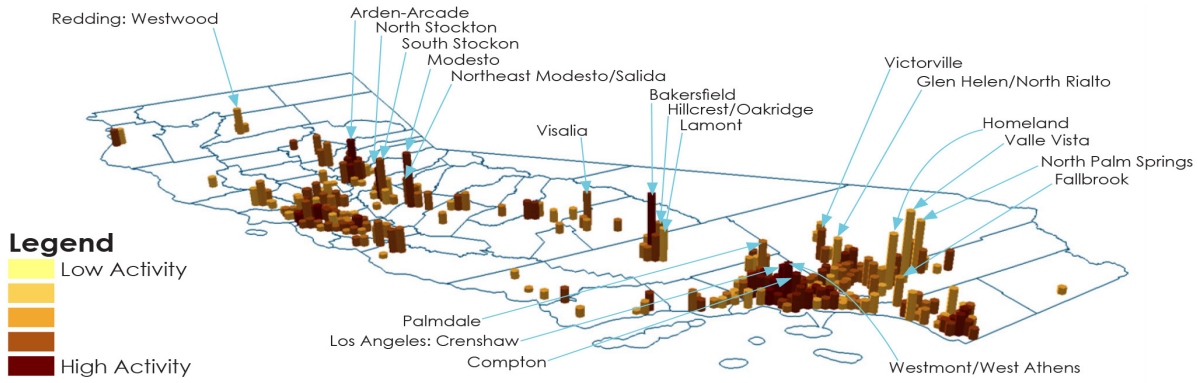
Significant strides were made in protecting VRU through California's first VRU Safety Assessment*, published in fall of 2023 in response to new FHWA guidance requiring all states to develop a VRU Safety Assessment as part of the HSIP. The 2020–2024 SHSP included this VRU Safety Assessment for California and used a data-driven approach to identify priority locations and strategies to improve safety for VRU on state and local roads. This initiative marked a critical step in making roads safer for FHWA-defined VRU: pedestrian, bicyclist or e-cyclist, other conveyance such as scooter or skateboard, an injured person, or a highway worker on foot in a work zone. Following are highlights of the findings from the 2020–2024 SHSP VRU Safety Assessment.

**Figure 3** highlights historical safety trend data of VRU crash information.

### Figure 3: Historical Safety Trend



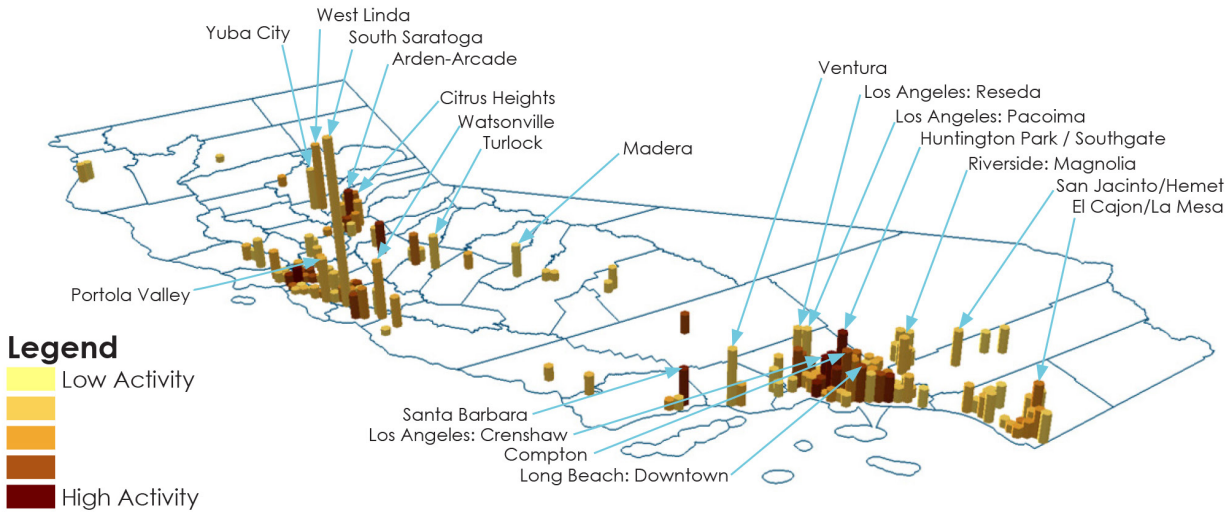

### Figure 4: Areas with Highest Statewide Pedestrian Fatal and Serious Injury Crash Rates




*Source: Statewide Integrated Traffic Records System (SWITRS) 2011–2020*

**https://dot.ca.gov/-/media/dot-media/programs/safety-programs/documents/shsp/shsp-vru-report2-a11y.pdf*

### Figure 5: Areas with Highest Statewide Bicycle Fatal and Serious Injury Crash Rates




*Source: SWITRS 2011–2020*

One of the key accomplishments of the 2020–2024 California SHSP was the completion of the first cycle of Caltrans' "Vision Zero" pilot program.

## 2.1.1 Action Highlights

### Completed Action Outcomes

- 15 Guides/Manuals/Policies Updated
- 12 Research Documents Published
- 8 Training Programs Held
- 2 Targeted Enforcement Programs Developed
- 20 Educational Campaigns Developed

### Figure 6: Completed Actions by Organization

| # of Completed Actions | Lead Organization |
|---|---|
| 26 | Caltrans |
| 17 | Advocacy/Community-Based Organization (CBO) |
| 11 | California Highway Patrol (CHP) |
| 8 | University |
| 4 | California Department of Motor Vehicles (DMV) |
| 5 | City/County/Metropolitan Planning Organization (MPO) |
| 3 | California Department of Public Health (CDPH) |
| **70*** | **Total** |

** Some actions have leads from multiple agencies*

The following pages include a few highlights of the 70 completed actions.

### *Completed Action Highlights: Impaired Driving #1*

**Description:** Provide Drug Evaluation and Classification Program (DECP) Training Statewide to Detect and Remove Impaired Drivers from the Roadway

**Action Lead(s):** CHP

**Accomplishments:**
- Conducted 32 Drug Recognition Expert (DRE) courses and 105 DRE recertification courses (CHP; ID.1)
- As of August 7, 2024, California has 1,172 certified DREs, the most of any state in the nation


### *Completed Action Highlights: Impaired Driving #3*

**Description:** Data Driven Driving Under the Influence Checkpoints

**Action Lead(s):** CHP

**Accomplishments:**
- Conducted 112 sobriety/driver license checkpoints
- Screened 43,814 vehicles
- Administered 1,529 field sobriety tests
- Made 185 driving under the influence (DUI) arrests
- Issued 623 citations

### *Completed Action Highlights: Lane Departures #3*

**Description:** Add "Installing Edgelines" as Set-aside for Local HSIP Funding

**Action Lead(s):** Caltrans

**Accomplishments:**
- 10 applications were received for the local HSIP Cycle 10 Call-for-Projects
- For Cycle 10 of the HSIP, a total of 24 projects with a total cost of $3.9M were funded, encompassing nearly 450 miles of roadway

### *Completed Action Highlights: Intersections #5*

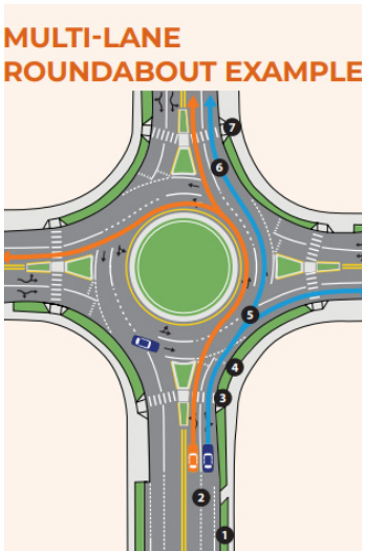
**Description:** Provide assistance to agencies and communities to support the installation of more roundabouts

**Action Lead(s):** Caltrans

**Accomplishments:**

- Commercial Vehicle Drivers Handbook Roundabout Update
- Roundabout Video Series
- Roundabout Brochures in English and Spanish
- Affordable Roundabouts Webinar

*Source: Caltrans, https://dot.ca.gov/-/media/dot-media/programs/safety-programs/documents/psc/202405-rab-brochure-roundabout-gen-en-a11y.pdf*

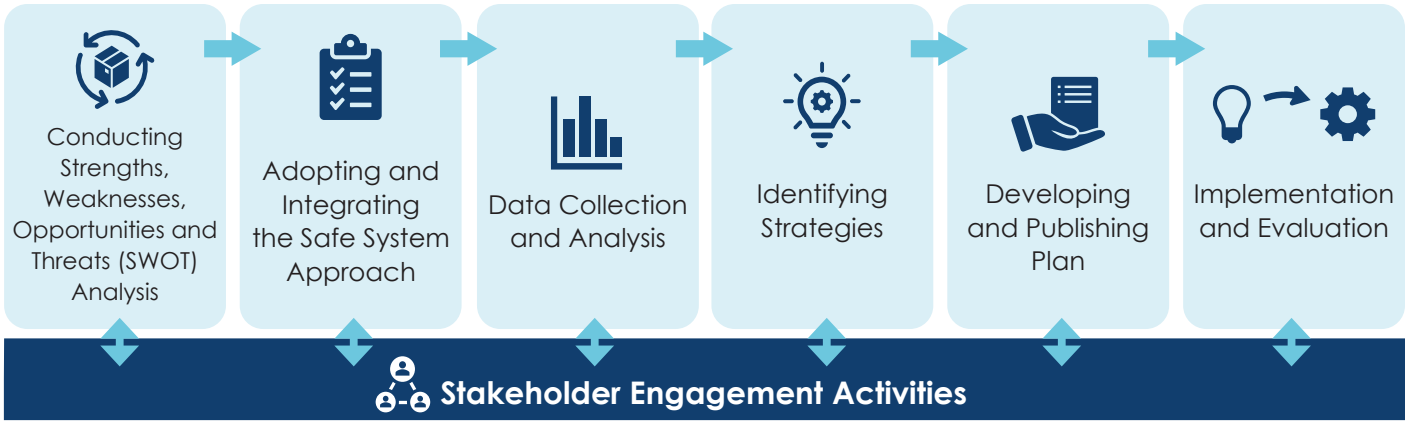




The accomplishments of the 2020–2024 California SHSP reflect a comprehensive and collaborative approach to road safety. Through data-driven strategies, stakeholder engagement, and targeted safety initiatives, the SHSP has made significant strides towards its goal of zero fatalities and serious injuries on all of California's public roadways, setting a strong foundation for future improvements in road safety.

# 3 The Development Process of the 2025–2029 California Strategic Highway Safety Plan

## 3.1 Overview of Creating the 2025–2029 California Strategic Highway Safety Plan

The creation of the 2025–2029 SHSP began with a review of the previous Plan to identify successes and challenges with achieving road safety in California. The overall process of creating this SHSP involved:




Initial findings from these efforts were presented at multiple stakeholder engagement forums, including:

- SHSP SC Meetings
- SHSP EL Meetings
- SHSP Challenge Area Co-Lead Meetings
- Six SHSP-Led Virtual Workshops
- SHSP Development Presentations at Existing Partner-Led Forums with Local Agencies and Underserved Groups like the Tribes and CBOs

During each of these stakeholder engagement forums, the SHSP process and preliminary findings were presented to key stakeholders, who then provided their feedback and input to help shape the development of this Plan. Development of this 2025–2029 SHSP therefore reflects the collective stakeholder feedback received from a diverse group of stakeholders all across California.

### *3.1.1 Short Summary of Strengths, Weaknesses, Opportunities, and Threats*

The SWOT Analysis is an important assessment that was conducted to help develop the 2025–2029 SHSP for California.

The SWOT Analysis looked at the 2020–2024 SHSP and highlighted data gaps and stakeholder outreach inefficiencies and provided recommended improvements that could be included in the 2025–2029 SHSP.

The analysis involved a comprehensive examination focused on multiple critical areas. This included evaluating training programs, assessing the direction and action alignment steered by the SC and EL, and measuring action implementation success.

Additionally, the SWOT Analysis examined data availability, public information dissemination methods, and outreach strategies intended to reach a diverse set of stakeholders.

Furthermore, it provided insights into the activities and obstacles encountered in the previous Challenge Area initiatives, helping to illuminate past successes and learning opportunities. This evaluation also extended into how the 2020–2024 California SHSP aligned with and was incorporated into other state and local plans. By doing so, the SWOT Analysis sought to provide a cohesive and integrated approach to improve road safety across various governance levels and sectors, fostering a more holistic and effective safety strategy for California's road network going forward.

An analysis was conducted examining current best practices in traffic safety from international and domestic sources, which focused on the SSA. The SSA has been used internationally for over 30 years, showing great success. Domestically, states that are implementing the SSA in their road safety were identified and studied. The last piece of this analysis was a review of traffic safety related laws domestically, with an additional focus on California.

As a final component, the SWOT Analysis yielded recommendations and next steps for implementing the recommendations from the Mid-Term Evaluation and Executive Safety Summit for the following elements: pro-social traffic safety culture, SSA Integration, Data Analysis/Technology, Performance Measurement/ Evaluation, Collaboration/Stakeholders, Communication, Outreach and Engagement, and Policy and Legislation.

**Appendix B** contains the SWOT Analysis.

## 3.2 2025–2029 Strategic Highway Safety Plan Development Process

The 2025–2029 California SHSP was developed using a data-driven approach and then was vetted through all of the stakeholder engagement activities mentioned above. The SHSP process is therefore a combination of quantitative and qualitative data analyses of existing roadway safety conditions in California supported by holistic stakeholder engagement activities.

## 3.3 Stakeholder Engagement

The SHSP includes extensive stakeholder engagement and outreach activities to help ensure that the plan represents the diverse needs and interests across the entire state. There is a collaborative organizational structure in place that supports development and implementation of the SHSP over the five-year life of the Plan. The SHSP development and implementation includes more than 1,390 safety stakeholders from more than 530 federal, state, regional, local, and tribal organizations, as well as advocates and CBOs.

### 3.3.1 Executive Leadership, Steering Committee, and Challenge Area Teams

The SHSP governance structure includes the EL, SC, and Challenge Area Teams. There are currently 30 organizations that reside on the EL and SC, comprised of local, state, regional, and federal agencies along with non-governmental organizations (NGOs) and CBOs.


Below is a listing of the current organizations that reside on the SHSP Committees:

- American Association of Retired Persons CA [AARP CA] (National)
- American Traffic Safety Services Association [CAL-ATSSA] (State)
- Autonomous Vehicle Industry Association [AVIA] (National)
- California City Transportation Initiative [CaCTI] (Local)
- California County Planning Director's Association [CCPDA] (Local)
- California Department of Alcoholic Beverage Control [ABC] (State)
- California Department of Motor Vehicles [DMV] (State)
- California Department of Public Health [CDPH] (State)
- California Department of Transportation [Caltrans] (State)
- California Emergency Medical Services Authority [EMSA] (State)
- California Highway Patrol [CHP] (State)
- California Office of Traffic Safety [OTS] (State)
- California Police Chiefs Association [CPCA] (Local)
- California State Transportation Agency [CalSTA] (State)
- California Transportation Commission [CTC] (State)
- California Tribal Representative (Local)
- California Walks [Cal Walks] (State Advocacy)
- Children's Initiative (Local Advocacy)
- County Engineers Association of California [CEAC] (Local)
- Federal Highway Administration [FHWA] (Federal)
- Federal Motor Carrier Safety Administration [FMCSA] (Federal)
- League of California Cities [League] (Local)
- Metropolitan Planning Organizations [MPOs] (Local)
- Mothers Against Drunk Driving [MADD] (State Advocacy)
- National Highway Traffic Safety Administration [NHTSA], Region 9 (Federal)
- Regional Transportation Planning Agencies [RTPA] (Local)
- Rural Counties Task Force [RCTF] (Local)
- University of California Berkeley Institute of Transportation Studies [UCB ITS] (Academic/Research)
- University of California San Diego Transportation Research and Education for Driving Safety [UCSD TREDS] (Academic/Research)
- Vision Zero Network (National Advocacy)

The EL provides direction and final approval on all SHSP policies, procedures, and proposed actions and engages support from multiple agency executives. The EL works collaboratively with the SC to identify strategies to implement the SHSP and identify Challenge Area best practices. EL members communicate directly with and provide direction to the SC representatives. With the support of the SC, the EL makes informed policy decisions that improve safety for California.

The SC establishes the strategies and processes to implement the SHSP and provides oversight for all of the Challenge Area Teams. The SC collaborates with the Challenge Area Teams to discuss best practices, data trends, and data needs. The SC is required to regularly communicate, share updates with, and seek direction from the EL.

The Challenge Area Teams evaluate relevant data, track best practices related to their respective Challenge Area, and are responsible for the development and completion of actions in the SHSP Implementation Plan. California's 16 SHSP Challenge Area Teams are comprised of representatives from federal, state, regional, and local agencies, tribes, advocacy groups, and subject matter experts that are responsible for leading the efforts to identify and implement safety actions at the state and local levels.

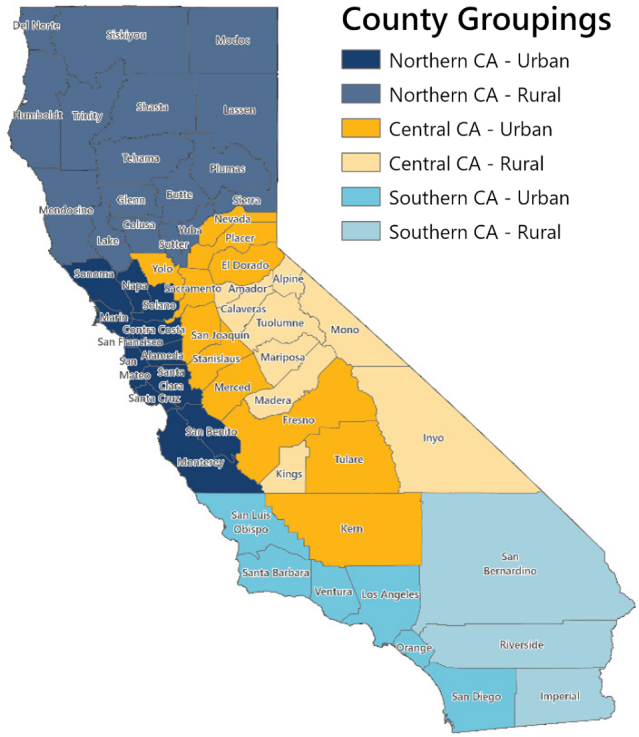
### Figure 7: Challenge Areas


### 3.3.2 Spring Virtual Regional Workshops

In addition to the EL, SC, and Challenge Area Teams, it is important that the 2025–2029 SHSP represents the diverse needs and interests from all road safety partners across California. The SHSP Team therefore held a series of virtual workshops covering different regions across the state. The main objectives of the workshops were to:

- Engage with local/regional/state/federal partners to get input on the development of the 2025–2029 SHSP
- Solicit input/feedback on how the statewide SHSP relates to local and regional road safety efforts
- Raise awareness and encourage participation in the SHSP
- Share best practices and lessons learned for road safety

**Figure 8: County Groupings**




Each region, shown in the figure to the right, was identified based on a review of the data and the recognition that urban and rural areas in the state face very different road safety challenges and thus have different needs that must be incorporated into the SHSP. The county groupings shown to the right also provided opportunities for workshop participants to engage in conversations with partners from similar counties that are close in geographic proximity. Approximately 600 people registered (and almost 400 people attended) these workshops. Feedback received from workshop participants was incorporated into the development of this SHSP.

## 3.4 Data-Driven Approach

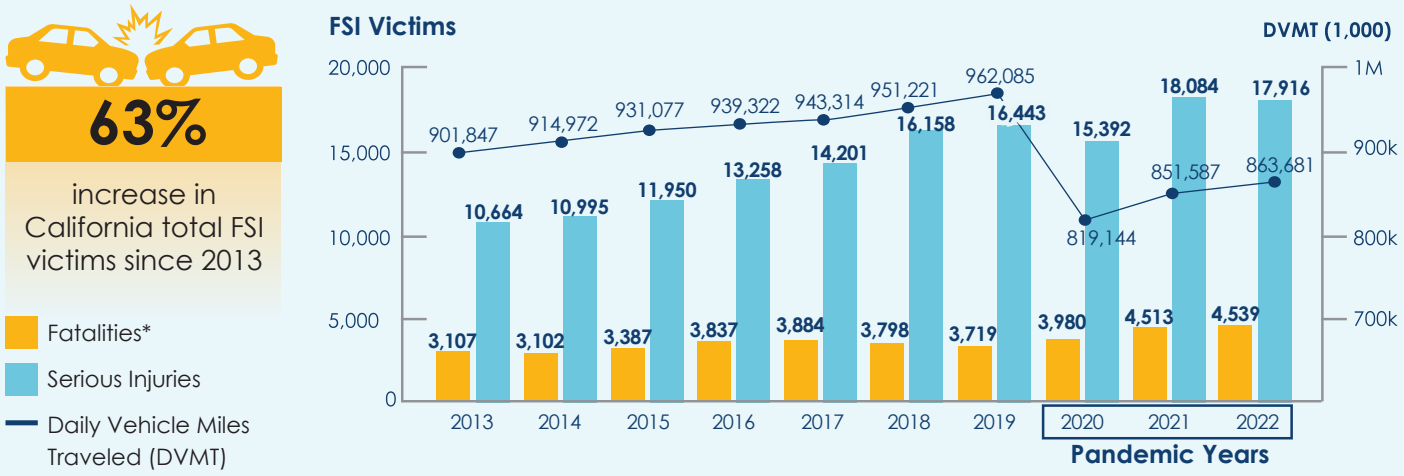
### 3.4.1 Current Trends

The 2025–2029 SHSP incorporates an updated assessment of crash data and traffic volume data, along with a revised approach to demographic and socioeconomic data analyses. This data-driven approach provides a baseline for road safety trends in California.

### 3.4.2 Fatal and Serious Injuries

Statewide fatal and serious injuries (FSI) from the most recent 10-year period (2013–2022) of finalized crash data are represented in **Figure 9**. From 2013 to 2017, FSI steadily increased in California, with fatalities decreasing in 2018 and 2019. During the pandemic years (identified as 2020, 2021, and 2022 in the SHSP), FSI increased substantially. In 2022, California reported its largest-ever number of annual fatal crashes resulting in 4,428 fatalities, per the federal Fatality Analysis Reporting System (FARS). In total, there was a 63% increase in statewide FSI from 2013 to 2022.

### Figure 9: FSI Victims Since 2013



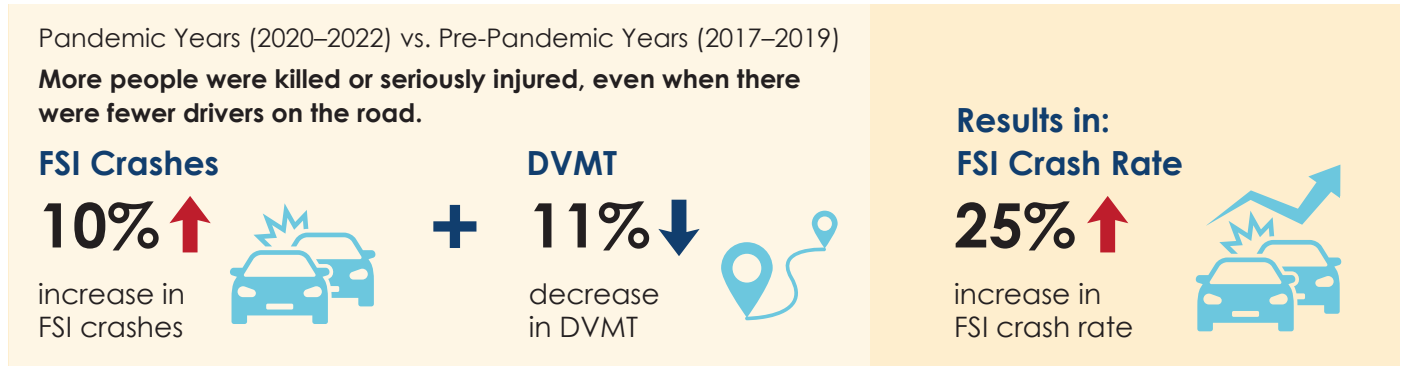

*Fatalities sourced from FARS

*Additional sources for Figure 9: Statewide Integrated Traffic Records System (SWITRS) and Highway Performance Monitoring System (HPMS)

## *3.4.3 Fatal and Serious Injury Crash Rates*

This increase in FSI occurred despite a significant decrease in Daily Vehicle Miles Traveled (DVMT) during the pandemic years, as shown in **Figure 9**. Between the pandemic years (2020–2022) and the three pre-pandemic years (2017–2019), FSI crashes increased by 10%, even though DVMT decreased by 11%. This resulted in a 25% increase in the FSI crash rate, as illustrated in **Figure 10**.

### Figure 10: Pandemic Impact on Roadway Safety

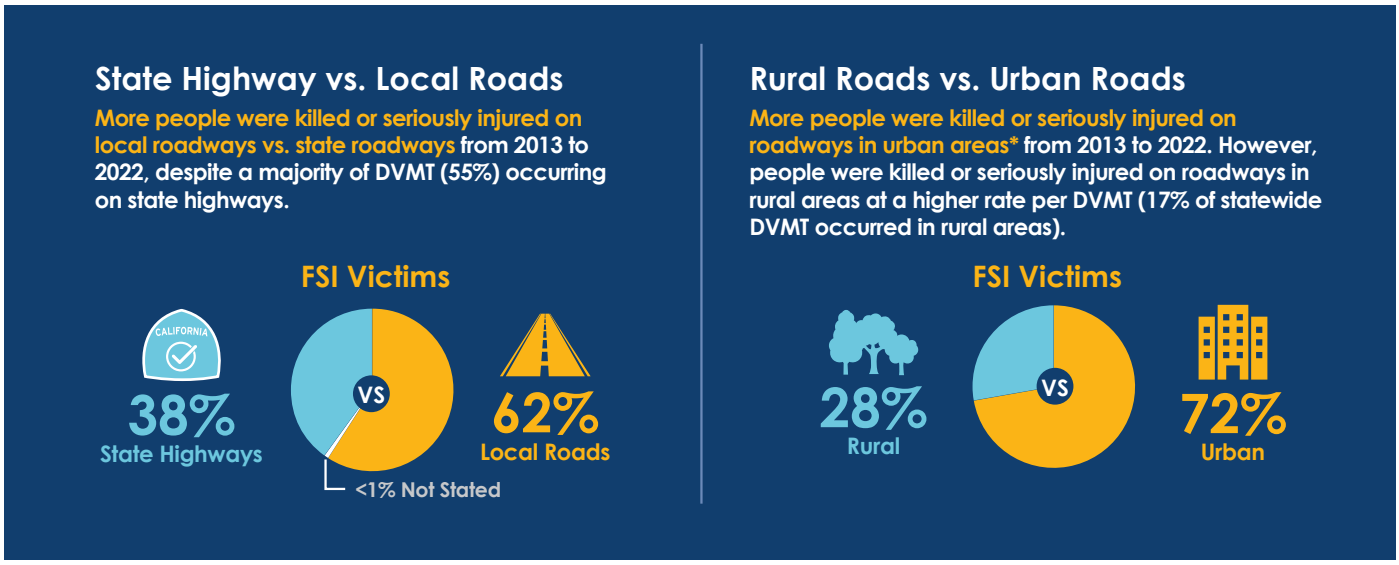



*Sources: SWITRS, HPMS

## 3.4.4 Crash Location

The SHSP crash data analysis also considered the location of crashes and a comparison of those crash locations with traffic volumes. **Figure 11** highlights the share of FSI victims between state highways and local roads, along with the share of FSI victims between rural roads and urban roads[1].

**Figure 11: FSI Victims Comparison: State Highway vs. Local Roads, Rural Roads vs. Urban Roads**




**Sources: SWITRS, HPMS, United States (US) Census Bureau "Urban Areas" dataset (2020)*

The majority of FSI occurred on local roads between 2013 and 2022, despite a larger share of DVMT occurring on state highways (55%) during the same period. This share of FSI incidents on local roads (62%) is a 2% decrease from previous SHSP analysis periods (2008–2017).

In addition, the majority of FSI incidents occurred on roadways in urban areas (72%) compared to rural areas (28%) between 2013 and 2022. Even though more people were killed or seriously injured on roadways in urban areas from 2013 to 2022, people were killed or seriously injured at a higher rate per DVMT, as only 17% of statewide DVMT occurred in rural areas during the 2013–2022 period.

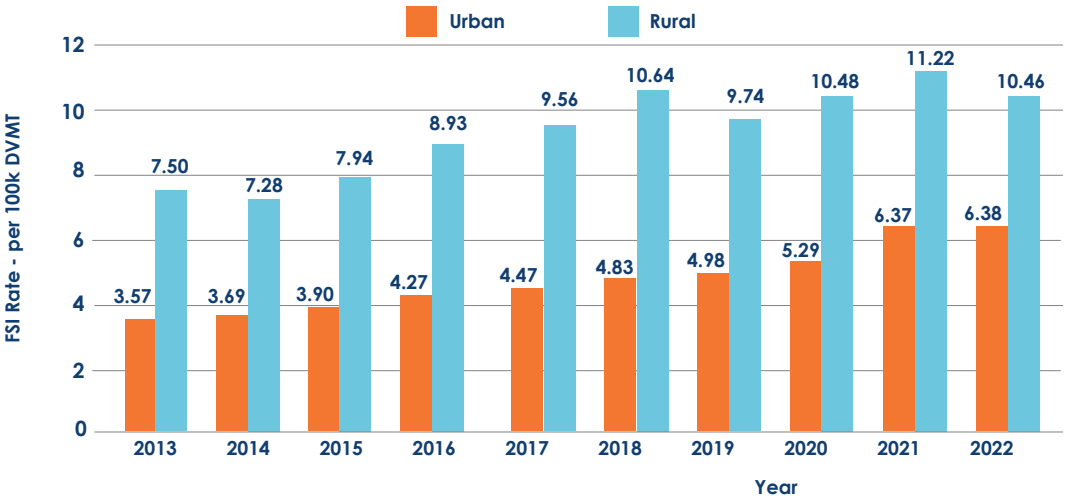
### 3.4.4.1 High Risk Rural Roads

Acknowledging the higher fatality rate in rural areas, California initiated a High Risk Rural Roads Program (HR3) as part of the HSIP in 2012. This structure allows HR3 eligible projects to benefit from the HSIP funding. To meet the FHWA requirement of defining high risk rural roads for California in the SHSP, a definition is provided below. The Fixing America's Surface Transportation Act (FAST Act) requires a state to obligate a certain amount of funds on HR3 if the fatality rate on its rural roads increases. California was served notice by FHWA that the HR3 Special Rule has been triggered for 2023. Strategies to assist in addressing improvements related to rural roads are included and will be monitored and evaluated to help reduce the number of crashes that have led to the designation of California being a HR3 state.

*1. FSI crash location at rural vs. urban roadway determined using US Census Bureau "Urban Areas" dataset (2020). Rural vs. urban areas are defined using measures based primarily on population, residential population density, and non-residential land use. See https://www.federalregister.gov/documents/2022/03/24/2022-06180/urban-area-criteria-for-the-2020-census-final-criteria*

The term 'high-risk rural road' includes any roadway functionally classified as a rural major, or minor collector, or rural local road on which the crash rate for fatalities and serious injuries exceeds the statewide average for those functional classes of roadway; or that will likely have increases in traffic volume that are likely to create a crash rate for fatalities and serious injuries that exceeds the statewide average for those functional classes of roadway.

**Figure 12: FSI Rate in Urban and Rural Areas**




**Sources: SWITRS, HPMS, US Census Bureau "Urban Areas" dataset (2020)*

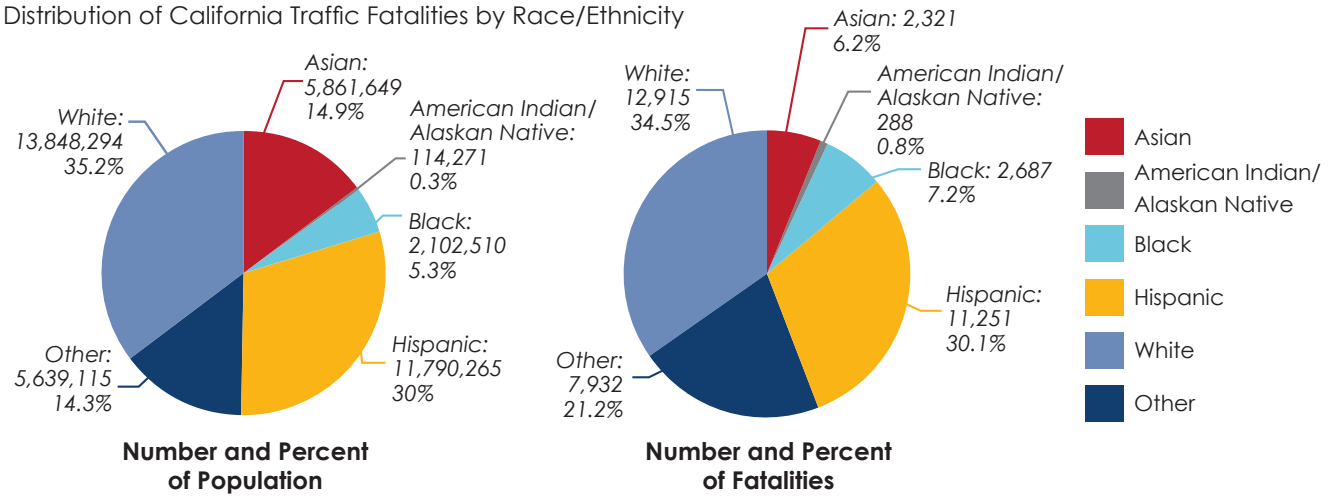
## *3.4.5 California Traffic Fatalities in Overrepresented Populations*

The SHSP incorporates data analyses related to demographic and socioeconomic factors layered on top of the traditional crash data to better understand who is being impacted by the rise in traffic-related fatalities and serious injury crashes in California.

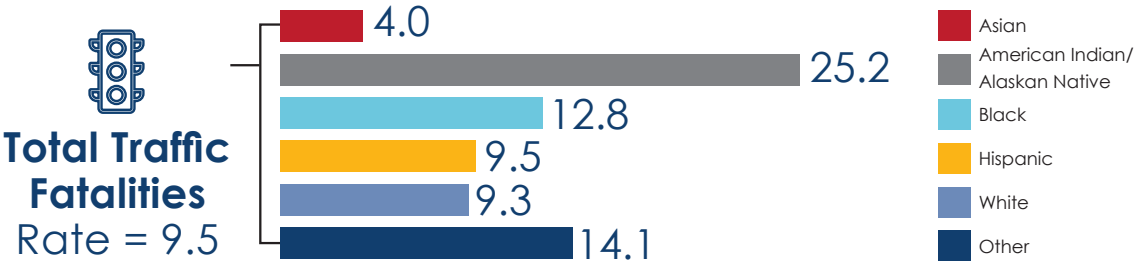
**Figure 13** provides an overall breakdown of race/ethnicity at the state level as well as a breakdown of race/ethnicity for traffic fatalities between 2013 and 2022. This information was combined in **Figure 14** to identify fatality rate (deaths per 100,000 population) by race/ethnicity. As shown in **Figure 14**, American Indian/Alaskan Natives face the highest fatality rate, or deaths per 100,000 population, at 25.2, followed by Other[2] (14.1) and Black (12.8). Each of these race[3] classifications are overrepresented in the fatality data, meaning that race/ethnicity's share of traffic fatalities from 2013–2022 is larger than their share of the total 2022 statewide population.

2. *Includes individuals identified as Native Hawaiian and Pacific Islander and multiple or mixed race.*
3. *See Appendix C for complete race/ethnicity classification methodology.*

### Figure 13: Race/Ethnicity in Traffic Fatalities




### Figure 14: Fatality Rate by Race/Ethnicity (Fatality Rate per 100,000 Population)




*Sources: US Census Bureau 2022 American Community Survey (ACS) 5-Year Estimate data and FARS 2013–2022*

Note that the race/ethnicity data within SWITRS is determined at the party level rather than victim level, meaning that multiple victims in the same party are coded as a single race, whether or not that is accurate. The race/ethnicity data within SWITRS is also not a personal identification of the crash party and is therefore subject to bias. FARS data was used for all race/ethnicity analysis as the dataset underwent additional data cleaning, such as a review of each fatal victim's death certificate for race/ethnicity information.

## 3.4.6 Income Impact on Traffic Fatalities

The SHSP also evaluated the impact of median household income on traffic fatalities using FARS data (2013–2022) and US Census Bureau 2022 5-Year Estimate data[4]. The fatality rate in disadvantaged communities is 40% higher than the fatality rate of non-disadvantaged communities (see **Figure 15**). Disadvantaged communities were determined using the ACS data for median household income at the census tract level, where median household incomes were below the Assembly Bill (AB) 1550 threshold[5] for disadvantaged communities.

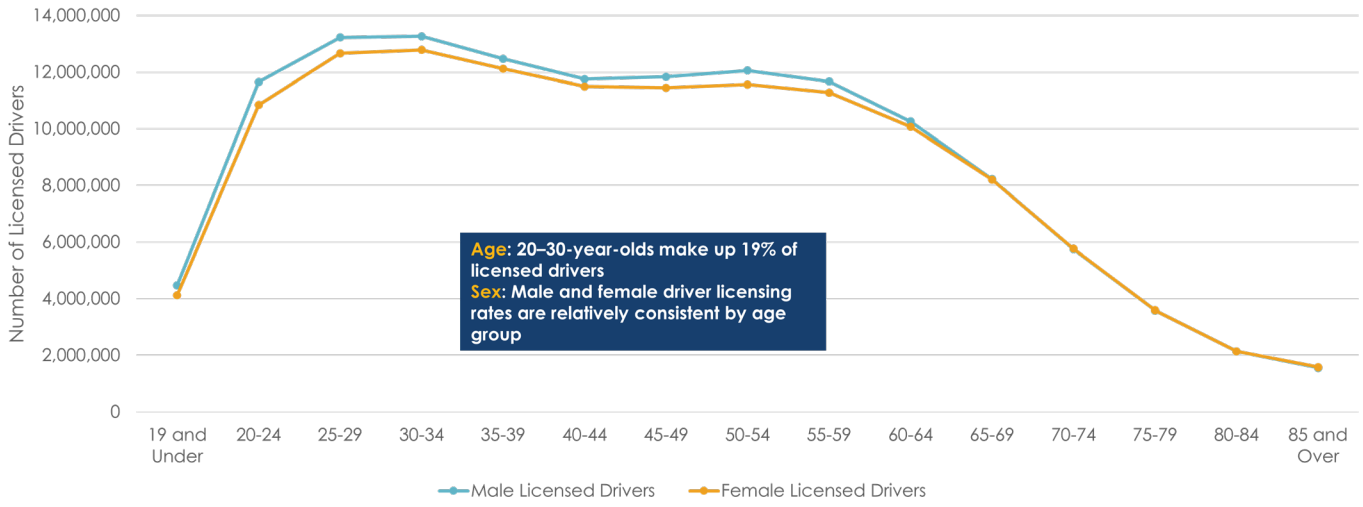
**Figure 15: Disadvantaged Community Representation in Statewide Fatalities**


**Sources: US Census Bureau 2022 ACS 5-Year Estimate data and FARS 2013–2022*

## 3.4.7 Traffic Fatalities: Age and Gender

Discussions with the SHSP stakeholders pointed to additional demographic data analyses needed to prepare the 2025–2029 SHSP. Particularly, stakeholders identified that age and sex information for people involved in crashes would be beneficial. **Figure 16** shows the number of California licensed drivers by age and sex for the 10-year period. Regarding age, 25–34-year-old individuals make up about 20% of licensed drivers, which is the largest share of any age group in a 10-year increment. Licensed driver rates among females and males are relatively consistent across age groups.

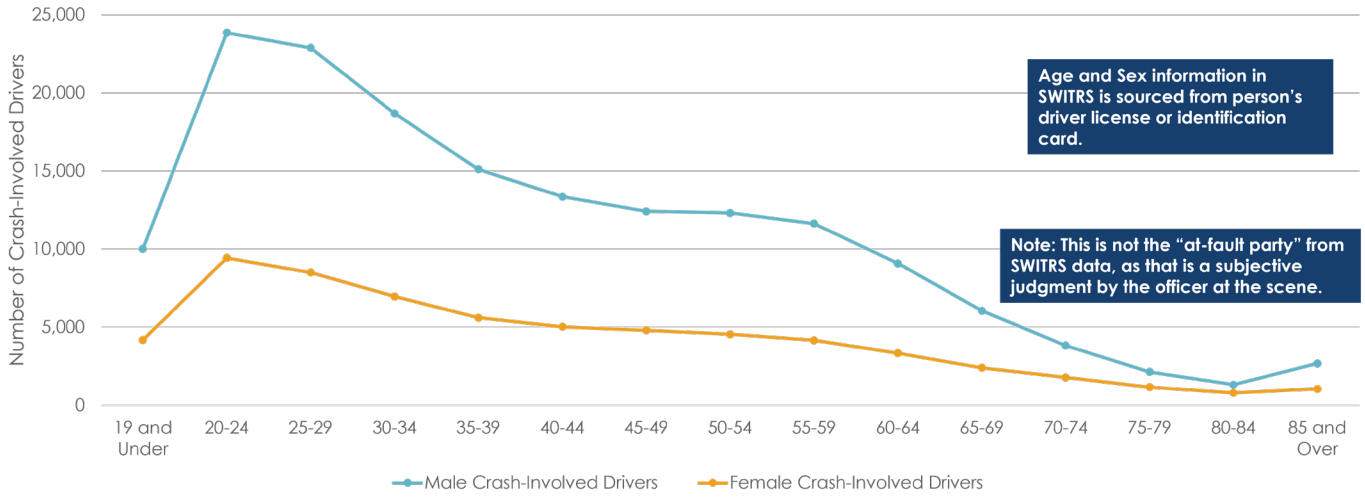
**Figure 16: California Licensed Drivers by Age and Sex (2013–2022)**




*4. Income data is available for the Census Tracts where a traffic fatality occurs and not the individual (i.e. this data represents the income information of the Census Tracts where the crash occurred and not the income of the crash victim).*
*5. AB 1550 stipulates that 80% of the statewide median household income is to be used as the threshold for disadvantaged communities. 2022 threshold is $73,524.*

When reviewing age and sex within the crash data, however, the trends are noticeably different from the licensing of drivers. Using SWITRS data (2013–2022), male drivers are more than 2.5 times as likely to be involved in an FSI crash in California when compared to female drivers. Also, 20–30-year-old drivers are involved in 29% of FSI crashes in California, which is the most of any 10-year age group.

### Figure 17: California Crash-Involved Drivers by Age and Sex (2013–2022)




*Source: SWITRS, 2013–2022*

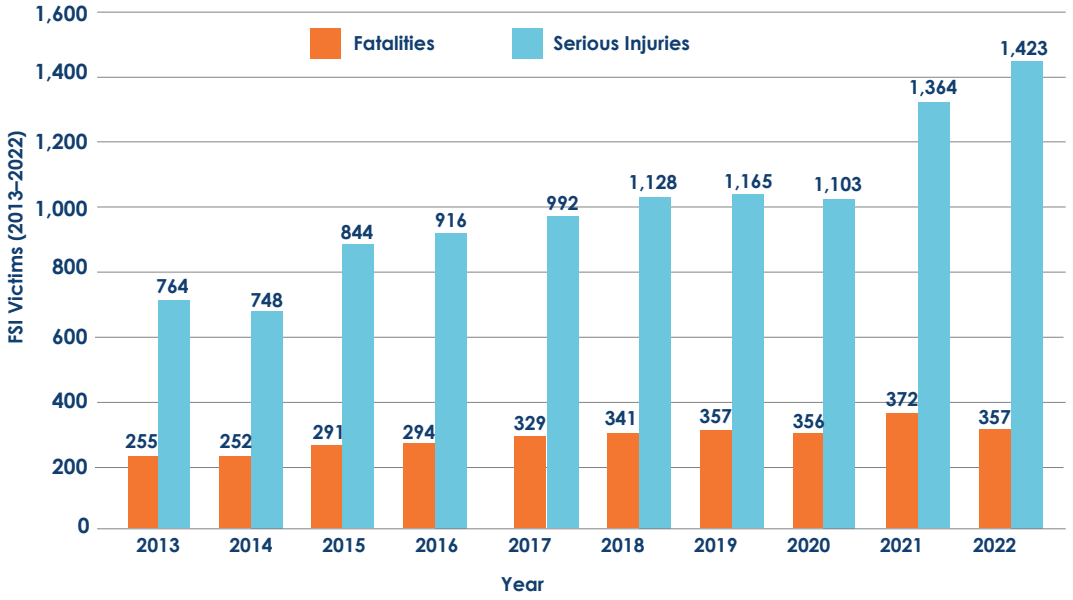
Note that age and sex information in SWITRS is self-reported by a crash-involved driver via a driver license or identification card. In situations where an individual is not in possession of identification, age and sex is then determined by the officer at the scene; however, this situation is rare.

## *3.4.8 Tribal Area Data*

The SHSP conducted an updated analysis for fatalities and serious injuries occurring in tribal areas, which are defined as roadways within a five-mile range of tribal boundaries (federally determined).

Tribal area fatalities and serious injuries increased from 2013 to 2022, including a sharp increase in the number of serious injuries in 2021 and 2022. Also, the increase in FSI within tribal areas (75%) between 2013 and 2022 has outpaced the overall statewide FSI increase (62%).

**Figure 18: Yearly Trend for FSI Victims in Tribal Areas (2013–2022)**




**Since 2013, FSI victims in tribal areas increased by 75%, versus the overall statewide increase of 62%.**

*Source: UCB ITS, FARS (2013–2022), SWITRS (2013–2022)*

See **Appendix D** for additional information on the approach to demographic-related data analyses.

It should be noted that tribal roads are often very rural, require updated engineering in some cases, and have fewer safety countermeasures in place—such as guardrail, refreshed striping, lighting, designated bicycle/pedestrian paths, etc. These factors all directly contribute to a higher number of FSI crashes in these areas.

# 4 2025–2029 California Strategic Highway Safety Plan

The SHSP utilizes the following in its efforts to significantly improve road safety statewide:

- **Vision**
- **Mission**
- **Goal**
- **Systems Thinking**
- **Traffic Safety Culture**
- **Safe System Approach**
- **Strategies**
- **Challenge Areas**

To verify that decision-making is consistent, the SHSP is anchored by a vision, mission, and goal. The vision represents what the SHSP intends to accomplish while the mission is the means of getting there. Fulfilling these statements affords the state, under guidance of the SHSP, the opportunity to reach its goal of zero fatalities and serious injuries on all of California's public roadways. The vision, mission, and goal were developed through a collaborative process involving the EL, SC, Challenge Area Teams, and the hundreds of other stakeholders engaged in the outreach activities mentioned earlier. It is recognized that the goal is aspirational in nature, therefore, interim targets will be developed as part of the SHSP implementation process. For more information about interim targets, refer to section **6.7 Measurable Objectives and Performance Measures**.

**VISION**
Safe and accessible roads for all road users in California

**MISSION**
Collaborate to enhance safety for all modes of travel on California's public roadways

**GOAL**
Zero traffic fatalities and serious injuries on all of California's public roadways


There are no number of deaths or serious injuries that should ever be considered acceptable on California's public roadways. Understanding that it will take time, it is the firm belief of the SHSP stakeholders that **zero fatalities and serious injuries can be achieved by 2050.**

## 4.2 Paradigm Shift: Systems Thinking

Fatalities and serious injuries have been rising in California since 2010. In 2020, state transportation leaders acknowledged that a bolder, more focused approach was needed to address traffic fatalities and serious injuries, particularly among VRU and underserved communities. Implementing the SSA was added as a guiding principle for developing and implementing the state's SHSP. The effort that started as part of the 2020–2024 SHSP is taken to the next level with this Plan.

Historically, traffic crashes have been viewed as isolated events that are reacted to. To prevent FSI crashes, we need to change our perspective and approach to road safety. Instead of blaming individual causes for crashes, it is crucial to understand how all parts of the road system work together to influence crashes, thereby requiring changes throughout the entire system.

***"Complex systems cannot be understood by studying parts in isolation. The very essence of the system lies in the interaction between parts and the overall behavior that emerges from the interactions. The system must be analyzed as a whole" (Ottino, 2003, p. 293).***

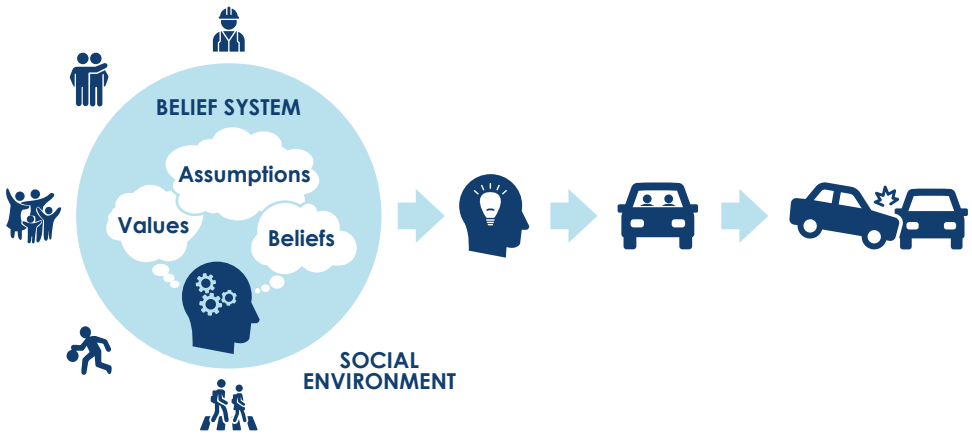
"Systems thinking" encourages proactive action by understanding how all parts of the roadway system, such as the interactions between roads, vehicles, people, laws, and others, shape future crash trends.From this perspective, both system users and those who design and manage the system need to change their behaviors to create a safe system. These behavioral changes may require a shift in the "culture." Each stakeholder (e.g., transportation agencies, law enforcement, schools, community groups, etc.) needs to take ownership of their portion of the system and be willing to change their mode of operation if needed. Sometimes this may require only a change in policy or operating practice; but it may also require a cultural change among both stakeholders and road users, so that safety is the expected norm in all situations. For instance, shifting the mindset of system stakeholders from prioritizing mobility to ensuring safe travel for all road users may need to take place.

## 4.3 Traffic Safety Culture

Traffic Safety Culture is a framework designed to change behaviors among road users and stakeholders, thereby improving road safety. This framework depends on the natural influence that culture has on humans as social beings. Our deliberate choices of behavior are shaped by what we believe is normal, expected, and rewarded within the social groups to which we belong (e.g., family, school, workplace). The goal of applying the traffic safety culture framework in road safety planning is to foster a culture that promotes and maintains safe behaviors through the social dynamics of the group. One standard definition of traffic safety culture is "the shared belief system of a group of people, which influences road user behaviors and stakeholder actions that affect traffic safety" (Transportation Safety Research Center, 2014, p.8).

**Figure 19** depicts how the system of beliefs (culture) shared within different groups in the social environment influences behavior choice (willingness and intention). Some of these behaviors may increase the risk of harmful crashes (dangerous behaviors) and some may reduce the risk of harmful crash (protective behaviors).

**Figure 19: Traffic Safety Culture**



Traffic safety culture strategies are not meant to replace education, enforcement, or other safety planning or implementation strategies, but rather to complement them. Education and awareness-building efforts provide information and training to develop awareness, knowledge, and skills needed for safe actions. Enforcement provides external motivation or incentives for safe behaviors. Traffic safety culture efforts leverage social group influence and expectations (culture) to encourage and maintain safe actions, so that safe behaviors become an internalized and normative part of one's culture.

### Figure 20: How Safety Strategies Work Together: Seatbelt Use

| Input | Output | Outcome |
|---|---|---|
| **Education**<br>Learning the "Why" and "How" | Campaigns taught people that seatbelts save lives and showed how to buckle up correctly. | Build awareness, knowledge, and skills. |
| **Enforcement**<br>External Motivation | Police began giving tickets to people who did not wear seatbelts. (Enforcement gives rules for desired behavior.) | Use laws to show what is expected and penalties encourage safe behavior (compliance). |
| **Traffic Safety Culture**<br>Making It "Who We Are" | Over time, wearing a seatbelt became normal, something most people do without thinking, and something expected by family and friends. | Ensure safety is a part of our culture and identity so it lasts. |

In short, education tells us why and how to be safe, enforcement pushes us to follow through, and traffic safety culture makes the behavior and traffic safety part of our shared social identity (who we are).

### Figure 21: Montana Department of Transportation Seatbelt Campaign


Traffic safety culture can be used by "traditional" traffic safety stakeholders as a framework for developing culture-based strategies to change the behavior of at-risk road users. Traditional stakeholders are those whose mission or job responsibilities specifically include traffic safety. For example, the Montana Department of Transportation developed the seatbelt campaign for tribal communities, shown in **Figure 21**. This campaign leveraged the social status associated with riding champions, a highly valued image in these communities, to promote seatbelt compliance. **Figure 22** provides an example of a California program specific to increasing traffic safety culture within the state, the OTS Go Safely Campaign.

*Source: https://mdt.mt.gov/visionzero/plans/docs/chsp/2013/meeting/2013-soar.pdf*

### 4.3.1 Pro-Social Traffic Safety Culture

Recently, there has been growing interest in using traffic safety culture as a framework to encourage road users to prioritize not only their own safety but also the safety of others. Members of social groups (e.g., families, friends, neighborhoods, workplaces) are encouraged to take actions that support the safety of other group members. "Pro-social" traffic safety culture involves creating a social environment that motivates safe road users to become traffic safety allies by acting in ways that help other (at-risk) road users become safer too. For example, according to the 2023 OTS Annual Report, 96.2% of California drivers wear their seatbelts. These drivers are part of social groups that can influence the behavior of drivers who do not comply with the rules. Because these groups don't have direct responsibility for traffic safety, they can be considered "non-traditional" stakeholders. **Figure 23** illustrates an example of a campaign that showcases the social environment associated with the family, leveraging the bond and roles shared by family members to encourage seatbelt use. An SHSP partner organization, Impact Teen Drivers, is a proponent of pro-social traffic safety culture. **Figure 24** is an example of one of the organization's collateral assets from their Be The Change program.

**Figure 22: OTS Go Safely Campaign**


**Figure 23: Embrace Life Campaign**

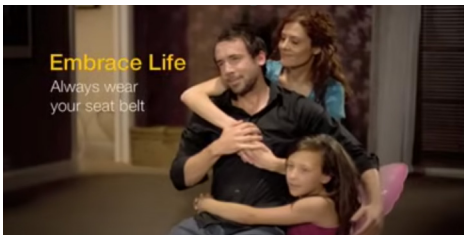
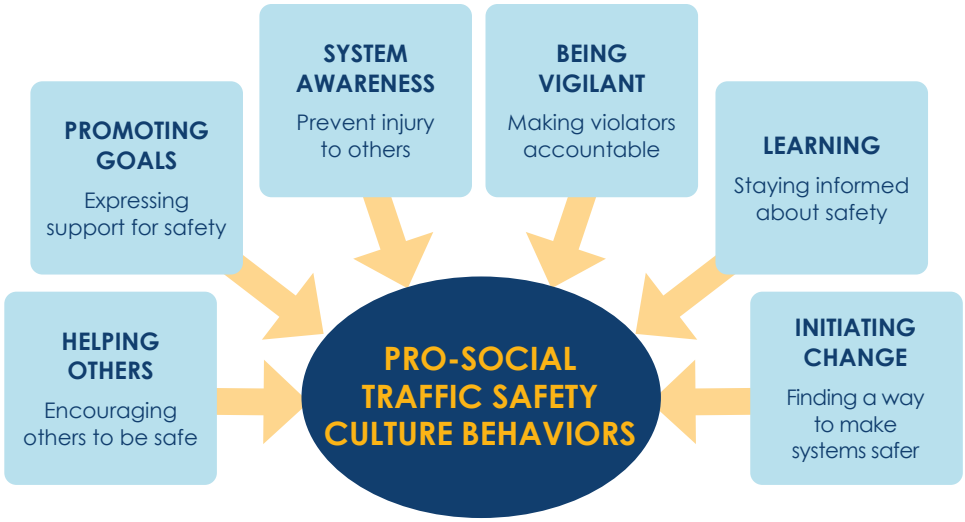



**Figure 24: Be The Change Program**

*Source: https://en.wikipedia.org/wiki/Embrace_Life*

A pro-social traffic safety culture fosters a social environment that expects, encourages, and rewards voluntary behavior that reduces future harm to others in support of shared safety goals. **Figure 25** provides examples of types of pro-social behaviors that non-traditional stakeholders may engage in, especially those already sharing a strong culture of traffic safety.

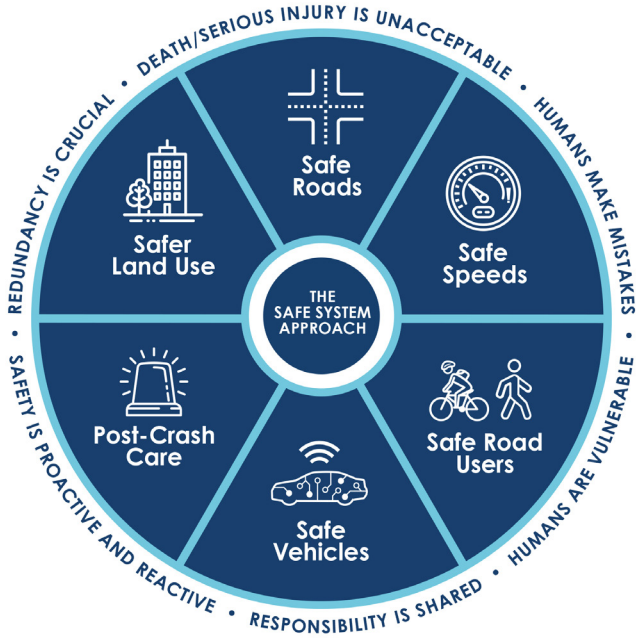
**Figure 25: Pro-Social Traffic Safety Culture Behaviors**



## 4.4 Safe System Approach

The SSA is a systematic road safety framework designed to eliminate fatal and serious injury in crashes. It acknowledges that humans are both fragile and fallible, which requires a roadway system that minimizes mistakes and their adverse effects. Notably, the SSA recognizes that FSI crashes are the result of complex interactions among multiple system elements. Consequently, the SSA encourages implementation of strategies that strengthen these key system elements.

**Figure 26: California Safe System Approach**




### 4.4.1 California Safe System Elements

#### Safe Roads

Design roadway environments to mitigate human mistakes and account for injury tolerances, to encourage safer behaviors, and to facilitate safe travel by the most vulnerable users.

#### Safe Speeds

Promote safer speeds in all roadway environments through a combination of thoughtful, equitable, context-appropriate roadway design, appropriate speed-limit setting, targeted education, outreach campaigns, and enforcement.

#### Safe Road Users

Encourage safe, responsible driving and behavior by people who use our roads and create conditions that prioritize their ability to reach their destination unharmed.

#### Safe Vehicles

Expand the availability of vehicle systems and features that help to prevent crashes and minimize the impact of crashes on both occupants and non-occupants.

#### Post-Crash Care

Enhance the survivability of crashes through expedient access to effective emergency medical care, while creating a safe working environment for vital first responders and preventing secondary crashes through robust traffic incident management practices.

#### Safer Land Use

Safer Land Use encompasses an approach to safety that acknowledges that land use decisions and development patterns have an impact on our ability to create a safe and more accessible road system for all people, especially VRU. For the SHSP, Safer Land Use supports mode shift away from individual motorized modes where appropriate and possible. Safer Land Use also promotes community-based planning, with an awareness of the impact of past road and land use decisions.

Safer Land Use is an SSA Element that is not part of the USDOT version of the SSA. California is including this element to recognize the importance of planning a safe, efficient, and effective road system and how the land is used as part of the system. Through a collaborative process involving the EL, SC, and stakeholders, Safer Land Use was determined to include the following items:

- Supports mode shift away from individual motorized modes where appropriate and possible
- Supports land use planning that is community-based and encourages active mode travel
- Understands and considers the impact of residential and commercial development on road safety, particularly for underserved populations
- Understands and considers the impact of past road and land use decisions when considering safety

Notably, strategies developed through the lens of the SSA strategies are not developed or implemented in isolation. Instead, they are combined to create an integrated system of defenses. Referred to as defense in depth, these defenses prevent mistakes from producing harmful outcomes. Road systems should be designed to reduce errors, encourage safe behavior, and minimize harm to accommodate safe movement for all users. Speeds are appropriate and safe under all conditions. People are protected from large kinetic forces and operate within the rules. The defenses ensure that if one of those elements fail, the next or series of next elements will prevent death or serious injury. For example, a person driving a car fails to yield when entering a roundabout and is struck by another vehicle traveling at a lower speed and a glancing angle, protecting occupants from serious injury.

The SSA also incorporates a set of principles to guide the design, selection, and integration of strategies.

## 4.4.2 California Safe System Principles

### Death and Serious Injuries are Unacceptable

The SSA prioritizes crashes that result in death and serious injuries, since no one should experience either when using the road system.

### Humans Make Mistakes

People will inevitably make mistakes that can lead to crashes, but the road 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 road system that is human-centric and accommodates human vulnerabilities.

### Responsibility is Shared

All stakeholders (road system users and managers, vehicle manufacturers, etc.) must ensure that crashes do not lead to fatal or serious injuries.

### Redundancy is Crucial

Reducing risks requires that all parts of the road system be strengthened, so that if one part fails, the other parts still protect people.

### Safety is Proactive and Reactive

Proactive tools should be used to identify potential safety hazards before crashes happen while also recognizing the importance of historical data that helps inform where and why crashes are happening.

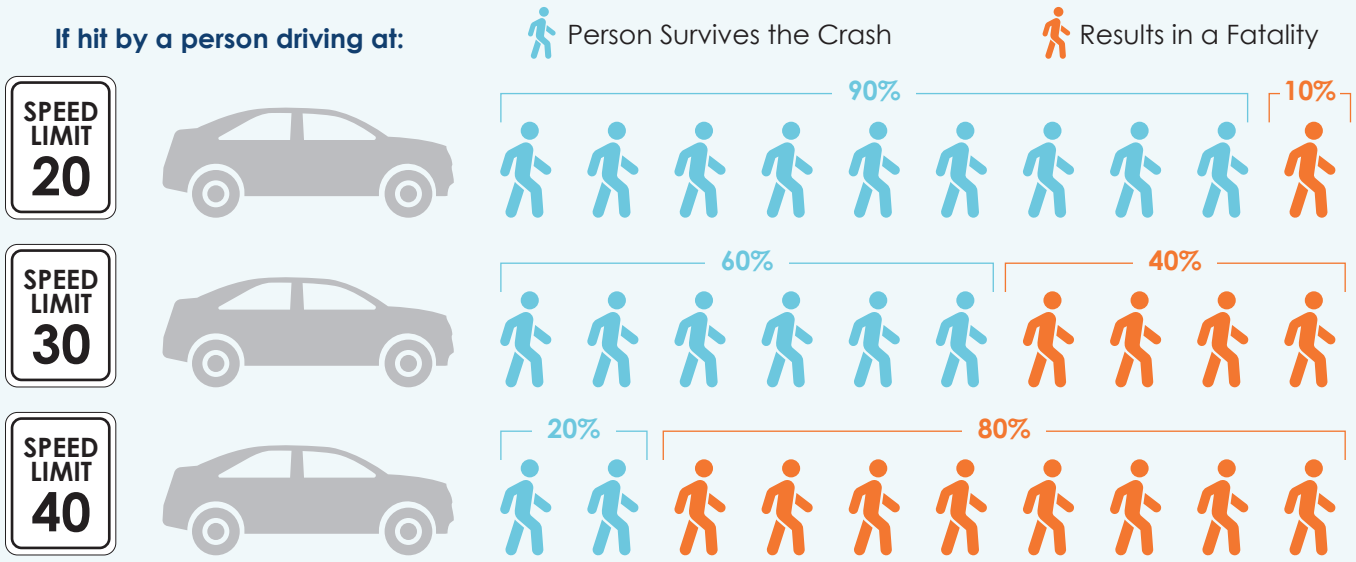
The SSA Elements and Principles complement one another to holistically address all aspects of how we use and design the road system. The elements define the key parts of the system that we seek to improve, and the Principles provide justification and guidance for how we make those improvements.

The SSA realigns how crash prevention is pursued. The focus shifts from trying to prevent all crashes, to eliminating FSI crashes specifically. The subtle shift opens new possibilities in addressing crash factors and how to minimize specific factors such as the kinetic energy created in a crash and the transfer of that energy to the human body.

Speed plays a significant role in that kinetic energy, so it is natural to look at limiting speed-related crashes to reduce that energy. Furthermore, applying treatments to the built environment such as roundabouts, separated bicycle lanes, or providing pedestrians advanced timing at intersections can all lead to eliminating FSI crashes.

Data shows that a significant proportion of FSI crashes (34%) can be attributed to actions that fall within the Speed Management and Aggressive Driving Challenge Area, highlighting the importance that the SSA can have in reductions of these types of crashes (illustrated in **Figure 27** below).

**Figure 27: FSI and Speed Management**



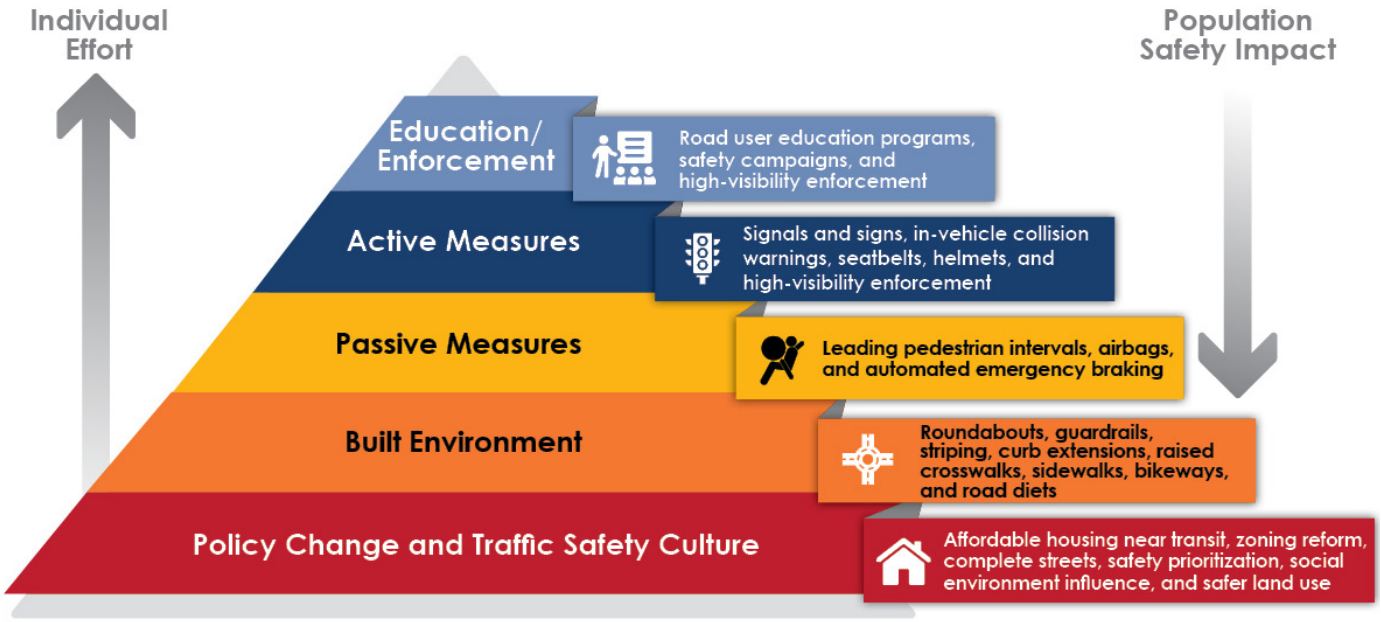
### 4.4.3 Safe System Pyramid

The Safe System Pyramid is a framework for prioritizing road safety interventions based on their potential for broad impact (group behavior and culture) and the level of effort required by individuals. It has a hierarchical structure, with interventions lower in the pyramid (like those addressing pro-social traffic safety culture) having the broadest reach and requiring the least individual effort, while those higher up (like education) have a narrower reach and require more individual action. This framework is designed to shift road safety thinking from a focus on individual behavior to a system-level approach that prioritizes population health.

The Safe System Pyramid serves as a hierarchical model which stacks safety measures, starting with base layers like infrastructure and policies and moving towards active safety features and behaviors at the highest level. This framework demonstrates how strong safety results come from the combination of various prevention, detection, and response levels within an all-encompassing safety system.

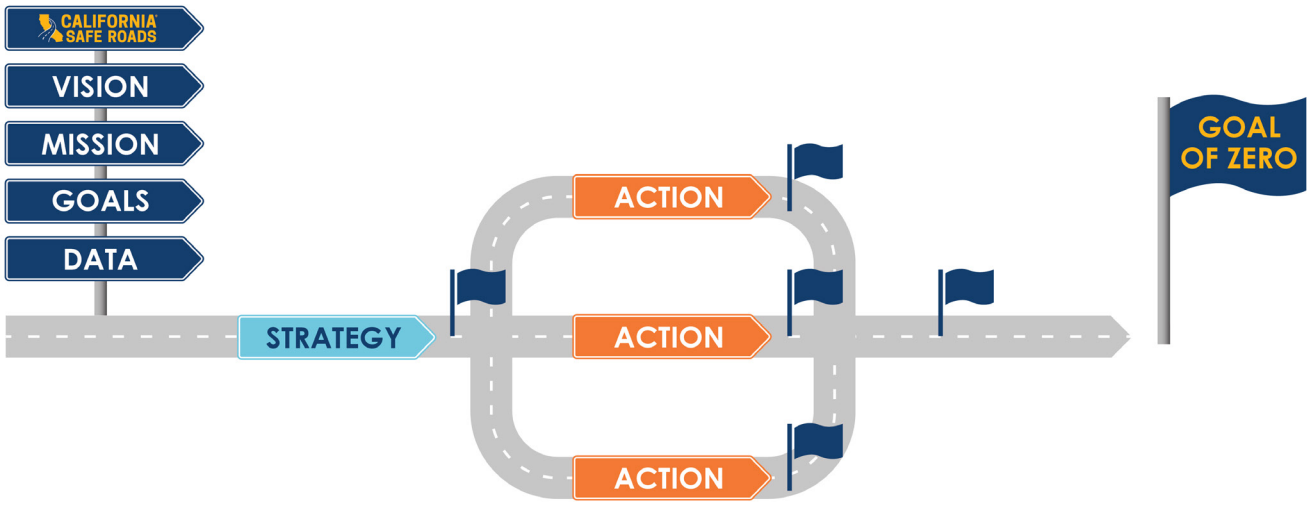
The Safe System Pyramid enacts its philosophy by using a tiered strategy which begins with education and enforcement, setting speed limits that match scientific data about human vulnerability, instituting vehicle technologies that stop crashes or shield occupants when crashes happen and culminates on road design that is self-enforcing, separates users, and controls kinetic energy. It flows in a direction from the peak to the base in order of the greatest potential controls on society, culminating in policy changes and pro-social traffic safety culture.

**Figure 28. Safe System Pyramid**



## 4.5 Strategies

### Figure 29: Strategy Roadmap




Strategy development is guided by the SHSP vision, mission, and goal, in tandem with the data analysis. The strategies are higher-level objectives for meeting the larger goal of reducing fatalities and serious injuries on all of California's public roadways.

The starting point for the development process of the strategies was to ensure they tied to the SSA Elements and to ensure that each strategy would address the SSA Principles as well. It was determined that the principles "death and serious injury are unacceptable" and "redundancy is crucial" are universal to all strategies and would also fulfil one of the four remaining principles. Further, ensuring inclusivity and promoting responsiveness to end-user needs is a cornerstone of the 2025–2029 SHSP and strategies accordingly are guided by that foundational belief.

**Safe Roads (SR)**

**SR.1: Promote the design, operation and use of self-enforcing roadways that anticipate human error.**

⊕ Humans Make Mistakes

**SR.2: Design, operate, and maintain roadways to minimize the release of kinetic energy in a crash for any mode, including designs that reduce conflict points and separate modes in time or space.**

⊕ Humans Are Vulnerable

**SR.3: Involve representation of stakeholders from applicable infrastructure sectors in design projects. (e.g., finance, engineering, land use, etc.).**

⊕ Responsibility is Shared

**SR.4: Consider both the existing and future needs of all modes including safety planning, design, operations, and maintenance programs for roadways.**

⊕ Safety is Proactive and Reactive

## Safe Speeds (SS)

**SS.1: Set safe and credible speed limits, prioritizing contexts associated with excessive speeding.**

⊕ Humans Make Mistakes

**SS.2: Set speeds based on human survivability.**

⊕ Humans Are Vulnerable

**SS.3: Partners collaborate to ensure that speed limits are established according to the road's functional class and context, particularly considering vulnerable road user activity. Additionally, appropriate speed legislation, design, driver education, vehicle technology, and enforcement must support these limits.**

⊕ Responsibility is Shared

**SS.4: Develop safe speed policies that anticipate the implications of changes in VRU exposure and vehicle types.**

⊕ Safety is Proactive and Reactive

## Safe Road Users (SU)

**SU.1: Provide facilities that address systemic safety issues and accommodate road user needs and capabilities.**

⊕ Safety is Proactive and Reactive

**SU.2: Create and promote pro-social traffic safety culture whereby all road users recognize and accept responsibility to ensure the safety of others.**

⊕ Responsibility is Shared

**SU.3: Create a road user culture that normalizes the use of personal safety and vehicle equipment designed to reduce harm (e.g., helmets, child seats).**

⊕ Humans Are Vulnerable

**SU.4: Educate stakeholders and road users about the conditions that increase high-risk behavior to provide awareness and skills to avoid those conditions and minimize the outcomes of mistakes.**

⊕ Humans Make Mistakes

## Safe Vehicles (SV)

**SV.1: Review regulatory standings periodically to ensure modes of travel are evaluated on an ongoing basis to address changing technology and times.**

⊕ Safety is Proactive and Reactive

**SV.2: Promote and facilitate the rapid deployment of the best available technologies to improve vehicle safety, especially for the benefit of VRU, with a priority focus on state, regional, county, and city fleet vehicles.**

⊕ Responsibility is Shared

**SV.3: Encourage the development and inclusion of both active and passive safety systems within vehicles to protect road users, both inside and outside of the vehicle, and eliminate barriers to adoption.**

⊕ Humans Are Vulnerable

**SV.4: Support and expand use of Advanced Driver Assistance Systems (ADAS) in vehicles to minimize human error and limit risk taking.**

⊕ Humans Make Mistakes

## Post-Crash Care (PC)

**PC.1: Increase the ability of first responders to mitigate harm caused by traffic incidents.**

⊕ Humans Make Mistakes

**PC.2: Reduce response times tied to the "golden hour."***

⊕ Humans Are Vulnerable

**PC.3: Promote interoperable communications and interdisciplinary training to ensure multiagency collaboration for the most effective and responsive services supported by legislation and appropriate equipment.**

⊕ Responsibility is Shared

**PC.4: Locate emergency response/trauma centers in areas that have access to road systems that are predicted to have increased fatality and serious injury rates (per capita).**

⊕ Safety is Proactive and Reactive

**The golden hour is defined as the first hour after an out-of-hospital traumatic injury has occurred.*
*Lerner EB, Moscati RM. The golden hour: scientific fact or medical "urban legend"? Acad Emerg Med. 2001 Jul;8(7):758-60. doi: 10.1111/j.1553-2712.2001.tb00201.x. PMID: 11435197.*

**Safer Land Use (SL)**

**SL.1: Use models in the planning process that predict the impact of land use options on transportation accessibility and safety with allowance for local agencies to preemptively address those impacts.**

⊕ Safety is Proactive and Reactive

**SL.2: Involve stakeholders in the planning process that represent all community needs to align their goals in support of safe transportation.**

⊕ Responsibility is Shared

**SL.3: Prioritize the needs of the VRU community in the planning process.**

⊕ Humans Are Vulnerable

**SL.4: Ensure accessibility to emergency services and medical facilities in the planning process.**

⊕ Humans Make Mistakes

## 4.6 Challenge Areas

Informed by the data collected and analyzed, stakeholders identified safety "Challenge Areas" on which to focus resources and efforts. The 16 Challenge Areas in this SHSP include all 16 of the Challenge Areas from the 2010–2024 SHSP.

These 16 Challenge Areas were categorized into High Priority and Focus Areas to assist in establishing guidance for implementation. High Priority Areas will have more detailed and frequent updates and analyses to support action development. The High Priority Areas represent six Challenge Areas most often involved in FSI crashes and have the greatest potential to significantly decrease statewide fatalities and serious injuries. The remaining 10 Challenge Areas are Focus Areas, which are also recognized as being important to traffic safety in California but are associated with fewer fatalities and serious injuries.

### *4.6.1 High Priority Challenge Areas*

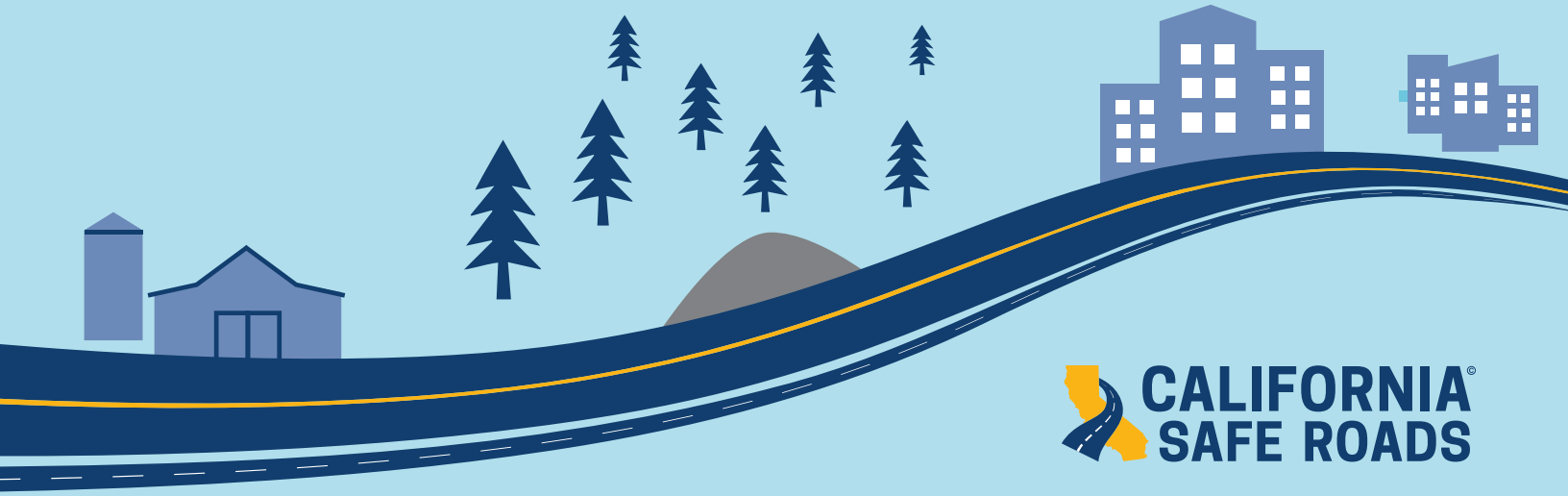
The High Priority Challenge Areas have been identified as having the greatest opportunity to achieve the SHSP goal.

### *4.6.2 Focus Challenge Areas*

All Challenge Area Teams focus on developing actions that assist in eliminating fatal and serious crashes for their respective areas of focus. General safety improvements through education, awareness, and research are also included as part of the work of Challenge Areas.

# High Priority

## Fact Sheets



CALIFORNIA SAFE ROADS

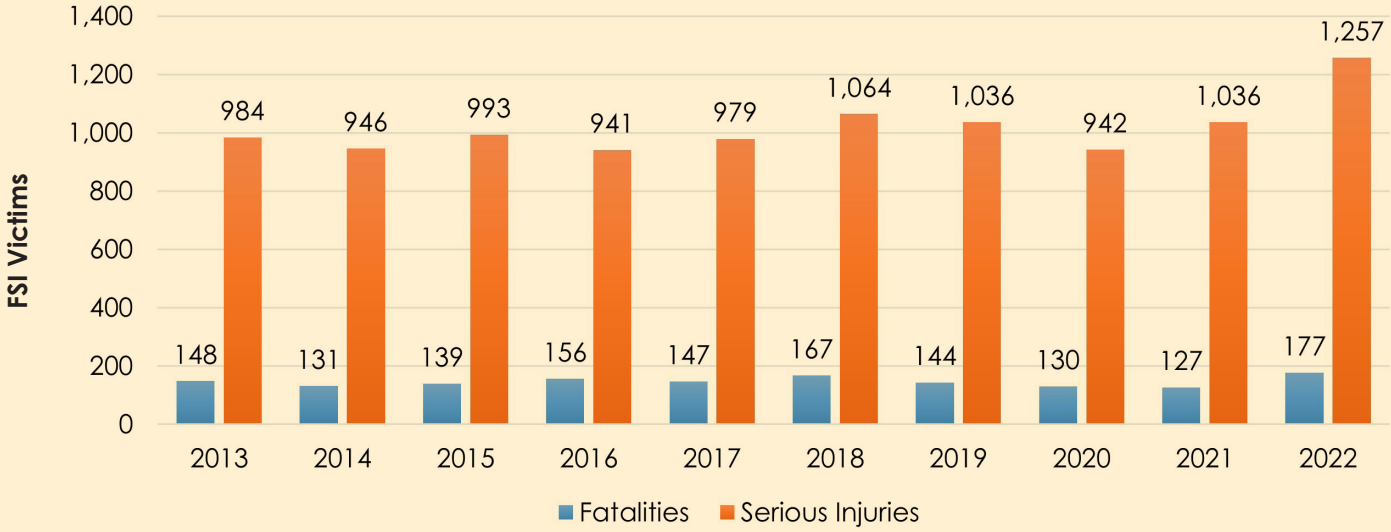
# BICYCLISTS

**The Bicyclists Challenge Area focuses on improving safety for people biking on public roads. This includes instances where a motor vehicle is involved in a crash with a bicyclist, including e-bikes and their riders.**

## Bicyclists FSI Crashes

**7%** of FSI crashes **(11,699)**

## FSI Victims by Year




*Fatalities sourced from FARS*

## Top Three Challenge Area Overlaps

Bicyclists FSI crashes also involve:

- **34%** Intersections
- **31%** Speed Management/ Aggressive Driving
- **20%** Lane Departures

Crashes often involve more than one factor and overlap with multiple Challenge Areas. See related fact sheets for overlapping Challenge Areas, as addressing one Challenge Area can improve the safety outcomes of the others.

## Share of FSI Victims: State Highways vs. Local Roads

**12%** State Highways **VS** **88%** Local Roads

## Share of FSI Victims: Rural vs. Urban Roads[1]

**12%** Rural Roads **VS** **88%** Local Roads

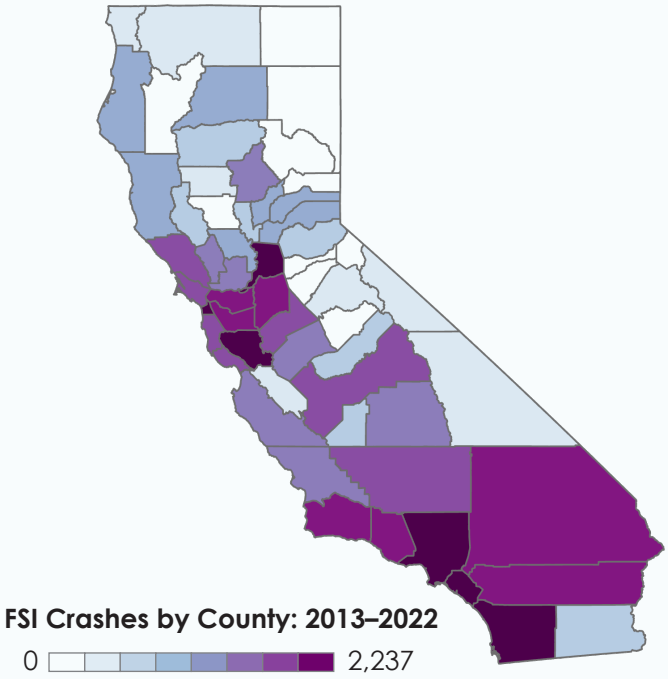
*Source: All crash data is from SWITRS unless otherwise noted.*
*1. Rural and urban data determined by 2020 US Census "Urban Areas" dataset. Crashes recorded by Transportation Injury Mapping System (TIMS) without geolocation were not included in Rural vs. Urban analysis.*

**For more information, visit the SHSP Crash Data Dashboard:**

# BICYCLISTS

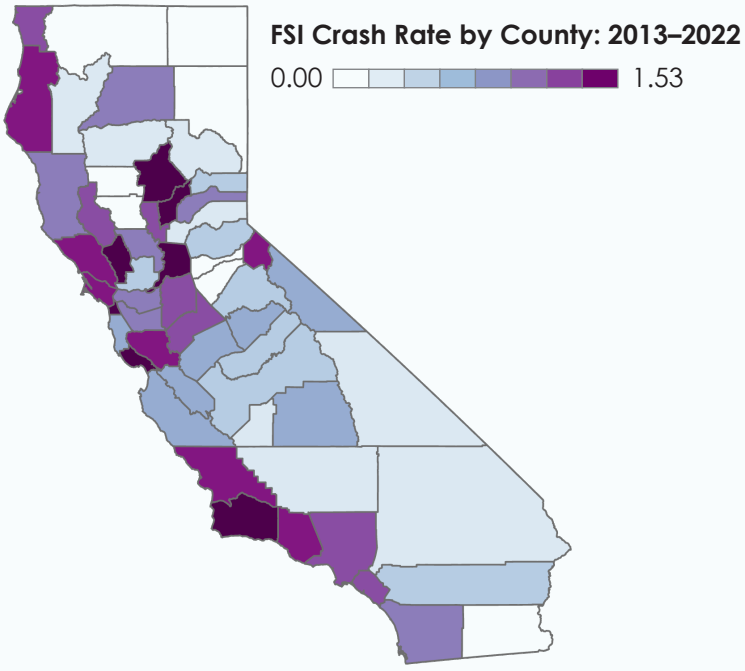
## FSI Crash Frequency and FSI Crash Rate by County

### FSI Crash Frequency



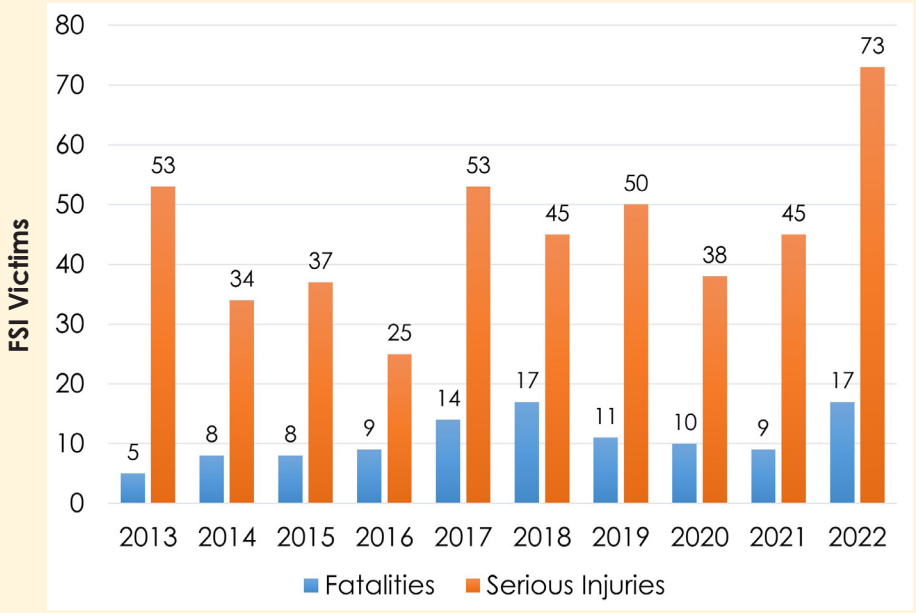

### FSI Crash Rate

*FSI Crashes per 100,000 DVMT*




*DVMT Source: Highway Performance Monitoring System*

## Yearly Trend for FSI Victims in Tribal Areas[1,2]




**Bicyclists** makes up **4%** of tribal area FSI crashes.

Since 2013, FSI victims in tribal areas increased by **55%**, versus the overall statewide increase of **27%**.

*Source: All crash data is from SWITRS unless otherwise noted.*

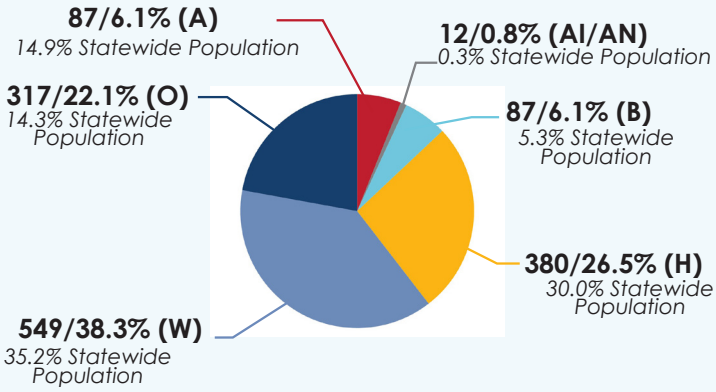
*1. University of California, Berkeley's Safe Transportation Research and Education Center (SWITRS 2013–2022), FARS 2013–2022*

*2. Tribal areas defined as areas within 5 miles of tribal boundaries.*

# BICYCLISTS

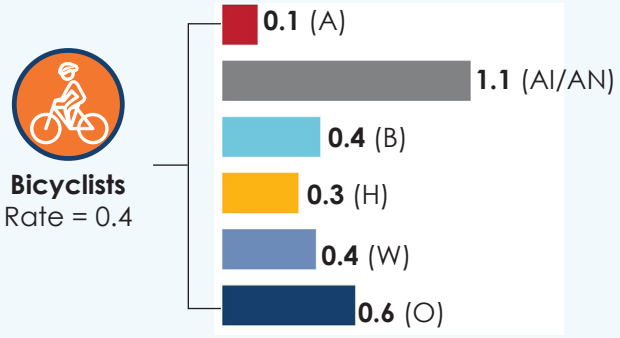
## Race/Ethnicity in Traffic Fatalities

### *Distribution of California Traffic Fatalities by Race/Ethnicity*




### *Fatality Rate by Race/Ethnicity*

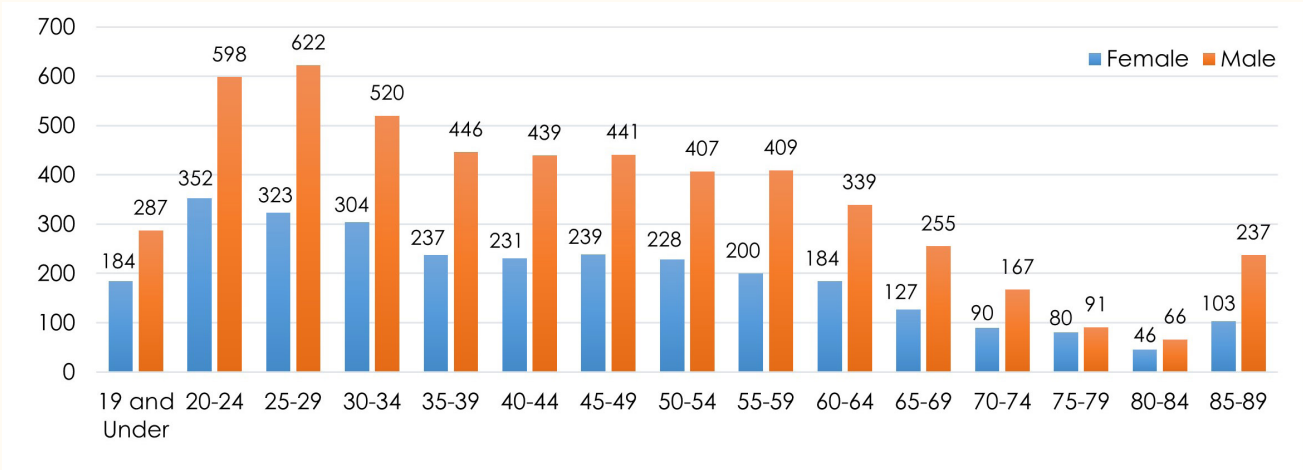
***(Fatality Rate per 100,000 Population)***




Asian (A) | American Indian/Alaskan Native (AI/AN) | Black (B) | Hispanic (H) | White (W) | Other (O)

## Comparison of Crash-Involved Drivers by Age and Sex

Male drivers are **1.8x** as likely to be involved in a Bicyclist FSI crash then female drivers




## Income Impact in Traffic Fatalities[1,2,3]

Increased Rate of Fatalities in Disadvantaged Communities Versus Non-Disadvantaged Communities

***Statewide Fatalities*** **40%** Higher

***Bicyclists Fatalities*** **41%** Higher

*1. Income data is available for the Census Tracts where a traffic fatality occurs and not the individual (i.e. this data represents the income information of the Census Tracts where the crash occurred and not the income of the crash victim).*

*2. Disadvantaged communities were determined using 2022 ACS 5-Year estimate data for median household income at Census Tract level. The 2022 ACS 5-Year Estimate data was used to determine fatality rates per 100,000 population.*

*3. Assembly Bill 1550 stipulates that 80% of statewide median household income to be used as threshold for disadvantaged communities. 2022 threshold is $73,524.*

*Source: US Census Bureau 2022 ACS 5-Year Estimate data and FARS 2013–2022*

# BICYCLISTS

## Top Three Crash Types*

**31%** Broadside

**28%** Other

**10%** Rear End

## Top Three Primary Crash Factors*

**17%** Automobile Right of Way

**16%** Improper Turning

**15%** Unsafe Speed

## Potential Countermeasures to Mitigate Bicyclists FSI Crashes

These countermeasures have been selected as data-backed strategies to improve traffic safety within the Bicyclists Challenge Area. See related fact sheets for overlapping Challenge Areas, as addressing one Challenge Area can improve the safety outcomes of other Challenge Areas.

Bicycle Lanes[1,3]

Separated Bicycle Lanes[1,3]

Improved Lighting[1,3]

Training and Education for Local Agency Decision-Makers on Selecting Appropriate Speed Limits[1,2]

SRTS Program Promotion[2]

Roadway Reconfiguration (Road Diet)[1,3]

### *Countermeasure References and Resources*


1. 28 Proven Safety Countermeasures, supported by Caltrans and FHWA

2. NHTSA Countermeasures that Work, 2023

3. Caltrans Local Roadway Safety Manual (Version 1.7, April 2024)


** Top three crash data is from SWITRS unless otherwise noted.*
*Percentages are calculated based on a total of 11,699 Bicyclists FSI crashes.*

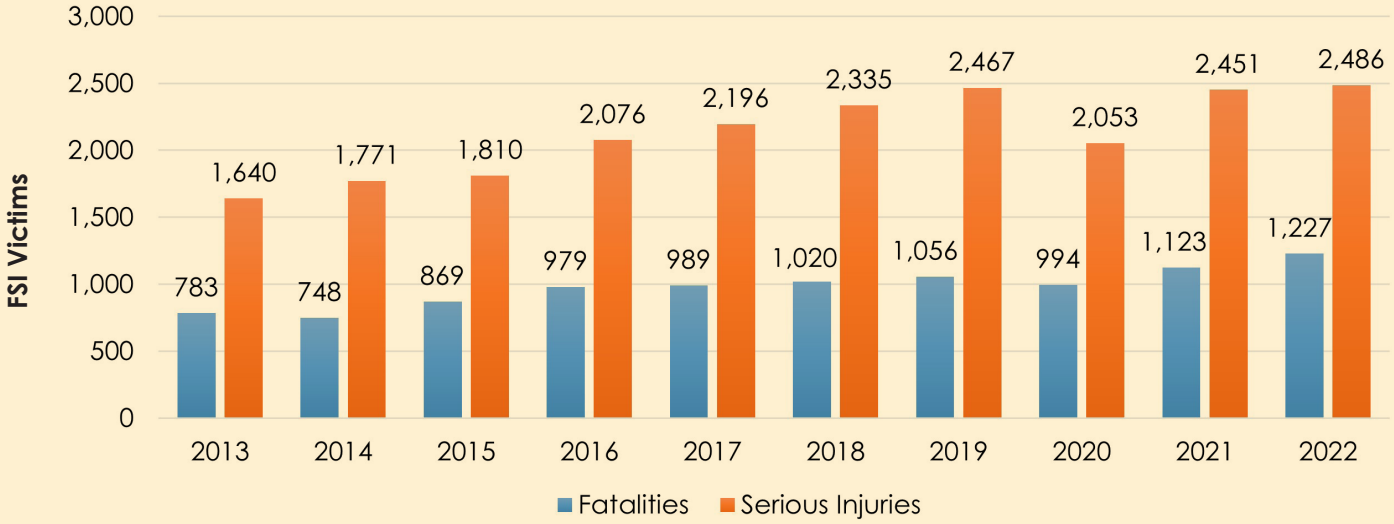
# PEDESTRIANS

**The Pedestrians Challenge Area focuses on improving pedestrian safety and reducing fatal and serious injury crashes that involve motor vehicles and a pedestrian. This includes people using wheelchairs, human-powered scooters, and non-motorized mobility devices other than bicycles and e-bikes.**

## Pedestrians FSI Crashes

**19%** of FSI crashes **(30,178)**

## FSI Victims by Year




*Fatalities sourced from FARS*

## Top Three Challenge Area Overlaps

Pedestrians FSI crashes also involve:

- **26%** Intersections
- **14%** Speed Management/ Aggressive Driving
- **12%** Driver Licensing*

**Driver Licensing includes only fatal crashes (from FARS)*

Crashes often involve more than one factor and overlap with multiple Challenge Areas. See related fact sheets for overlapping Challenge Areas, as addressing one Challenge Area can improve the safety outcomes of the others.

## Share of FSI Victims: State Highways vs. Local Roads

**20%** State Highways **VS** **80%** Local Roads

## Share of FSI Victims: Rural vs. Urban Roads[1]

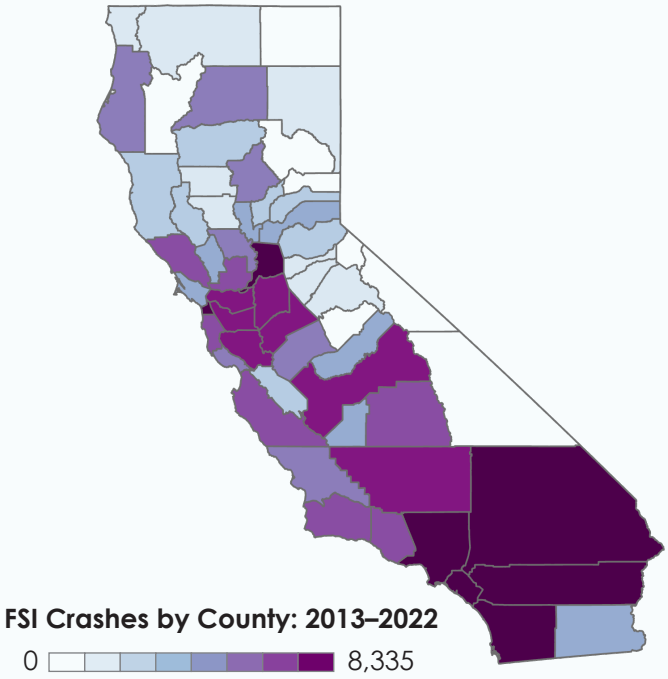
**6%** Rural Roads **VS** **94%** Urban Roads

*Source: All crash data is from SWITRS unless otherwise noted.*
*1. Rural and urban data determined by 2020 US Census "Urban Areas" dataset. Crashes recorded by TIMS without geolocation were not included in Rural vs. Urban analysis.*

**For more information, visit the SHSP Crash Data Dashboard:**

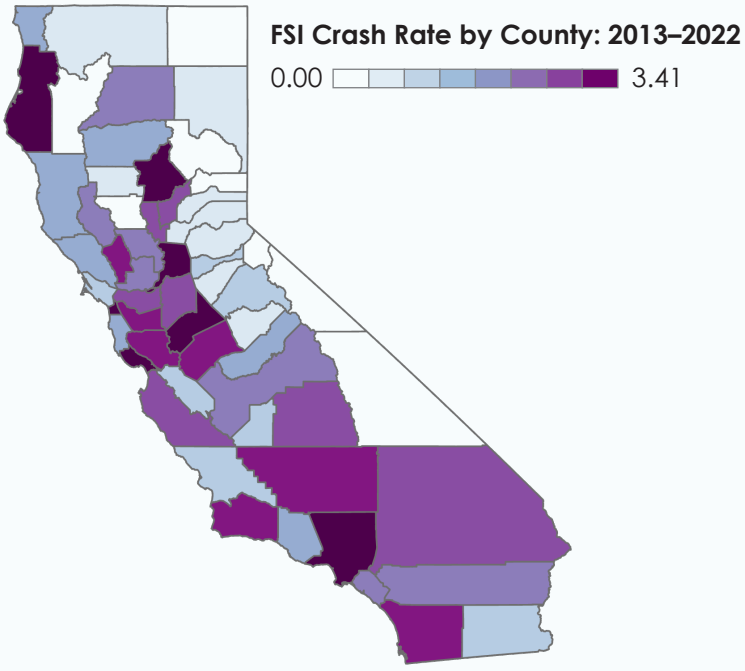
## FSI Crash Frequency and FSI Crash Rate by County

### FSI Crash Frequency



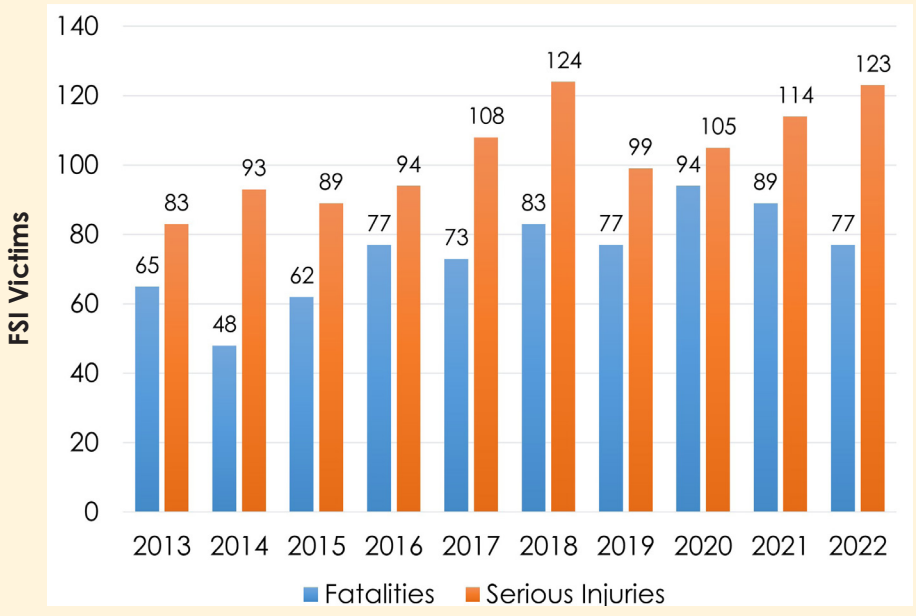

### FSI Crash Rate

*FSI Crashes per 100,000 DVMT*




*DVMT Source: Highway Performance Monitoring System*

## Yearly Trend for FSI Victims in Tribal Areas[1,2]




**Pedestrians** make up **13%** of tribal area FSI crashes.

Since 2013, FSI victims in tribal areas increased by **35%**, versus the overall statewide increase of **48%.**

*Source: All crash data is from SWITRS unless otherwise noted.*

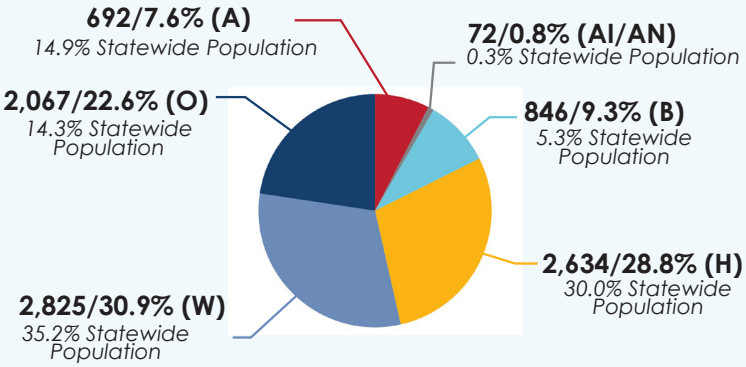
*1. University of California, Berkeley's Safe Transportation Research and Education Center (SWITRS 2013–2022), FARS 2013–2022*

*2. Tribal areas defined as areas within 5 miles of tribal boundaries.*

# PEDESTRIANS

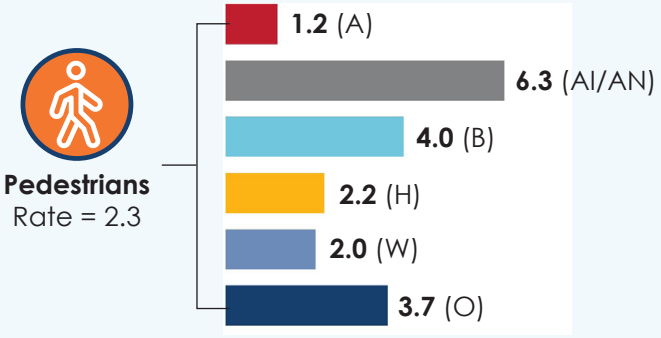
## Race/Ethnicity in Traffic Fatalities

### *Distribution of California Traffic Fatalities by Race/Ethnicity*




### *Fatality Rate by Race/Ethnicity*

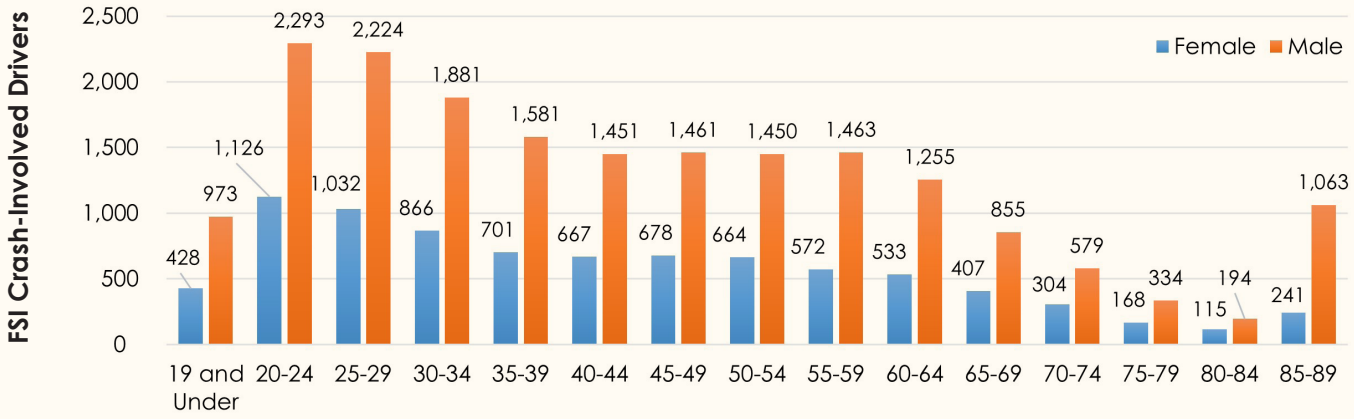
***(Fatality Rate per 100,000 Population)***




Asian (A) | American Indian/Alaskan Native (AI/AN) | Black (B) | Hispanic (H) | White (W) | Other (O)

## Comparison of Crash-Involved Drivers by Age and Sex

Male drivers are **2.2x** as likely to be involved in a Pedestrians FSI crash




## Income Impact in Traffic Fatalities[1,2,3]

Increased Rate of Fatalities in Disadvantaged Communities Versus Non-Disadvantaged Communities

***Statewide Fatalities*** **40%** Higher

***Pedestrians Fatalities*** **52%** Higher

*1. Income data is available for the Census Tracts where a traffic fatality occurs and not the individual (i.e. this data represents the income information of the Census Tracts where the crash occurred and not the income of the crash victim).*

*2. Disadvantaged communities were determined using 2022 ACS 5-Year estimate data for median household income at Census Tract level. The 2022 ACS 5-Year Estimate data was used to determine fatality rates per 100,000 population.*

*3. Assembly Bill 1550 stipulates that 80% of statewide median household income to be used as threshold for disadvantaged communities. 2022 threshold is $73,524.*

*Source: US Census Bureau 2022 ACS 5-Year Estimate data and FARS 2013–2022*

# PEDESTRIANS

## Top Three Crash Types*

**87%**
**Vehicle/ Pedestrian**

**3%**
**Head-On**

**3%**
**Broadside**

## Top Three Primary Crash Factors*

**52%**
**Pedestrian Violation**

**18%**
**Pedestrian Right of Way**

**7%**
**Unsafe Speed**

## Potential Countermeasures to Mitigate Pedestrians FSI Crashes

These countermeasures have been selected as data-backed strategies to improve traffic safety within the Pedestrians Challenge Area. See related fact sheets for overlapping Challenge Areas, as addressing one Challenge Area can improve the safety outcomes of other Challenge Areas.

**Install Sidewalks**[1,3]

**Medians and Pedestrian Refuge Islands**[1,3]

**Rectangular Rapid Flashing Beacons (RRFB)**[1,3]

**Pedestrian Hybrid Beacons**[1,3]

**Training and Education for Local Agency Decision-Makers on Selecting Appropriate Speed Limits**[1,2]

**SRTS Program Promotion**[2]

**Improved Lighting**[1,3]

**Roadway Reconfiguration (Road Diet)**[1,3]

### *Countermeasure References and Resources*


**1.** 28 Proven Safety Countermeasures, supported by Caltrans and FHWA

**2.** NHTSA Countermeasures that Work, 2023

**3.** Caltrans Local Roadway Safety Manual (Version 1.7, April 2024)


** Crash data is from SWITRS unless otherwise noted.*
*Percentages are calculated based on a total of 30,178 Pedestrian FSI crashes.*

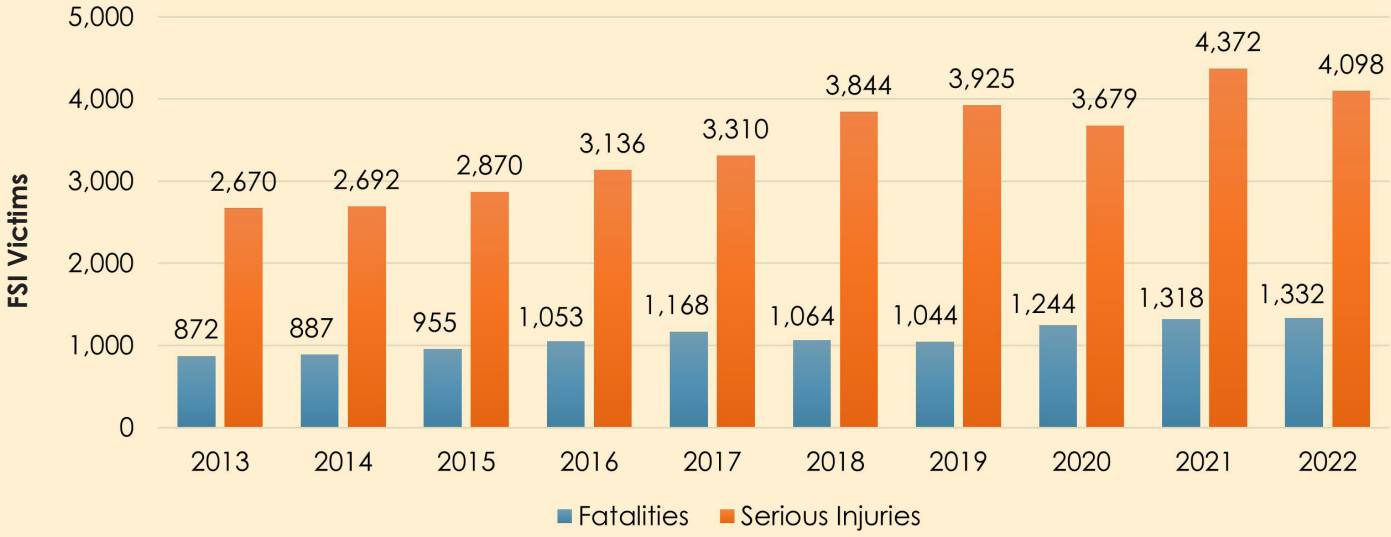
# IMPAIRED DRIVING

**The Impaired Driving Challenge Area focuses on the prevention, identification, and intervention of drivers that are impaired by alcohol and/or drugs, both illegal and prescription. It includes crashes where any evidence of alcohol or drug use by the driver is present, even if the driver was not over the legal limit.**

## Impaired Driving FSI Crashes

**24%** of FSI crashes **(38,175)**

## FSI Victims by Year




*Fatalities sourced from FARS*

## Top Three Challenge Area Overlaps

Impaired Driving FSI crashes also involve:

**60%** Lane Departures

**37%** Driver Licensing*

**34%** Speed Management/ Aggressive Driving

**Driver Licensing includes only fatal crashes (from FARS)*

Crashes often involve more than one factor and overlap with multiple Challenge Areas. See related fact sheets for overlapping Challenge Areas, as addressing one Challenge Area can improve the safety outcomes of the others.

## Share of FSI Victims: State Highways vs. Local Roads

**41%** State Highways **VS** **59%** Local Roads

## Share of FSI Victims: Rural vs. Urban Roads[1]

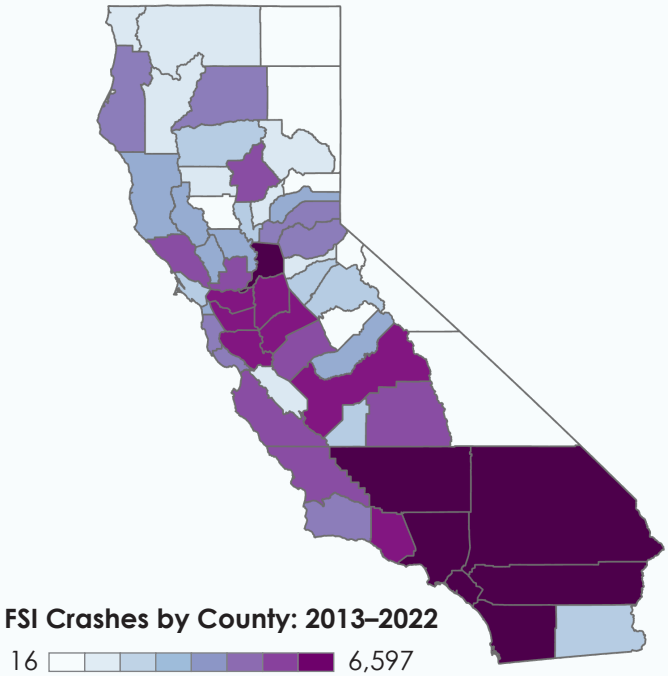
**31%** Rural Roads **VS** **69%** Urban Roads

*Source: All crash data is from SWITRS unless otherwise noted.*
*1. Rural and urban data determined by 2020 US Census "Urban Areas" dataset. Crashes recorded by TIMS without geolocation were not included in Rural vs. Urban analysis.*

**For more information, visit the SHSP Crash Data Dashboard:**

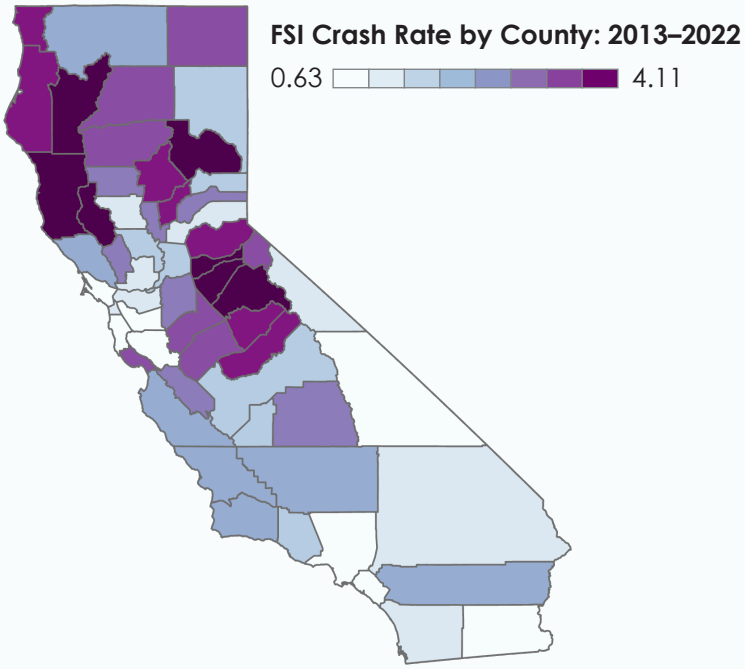
## FSI Crash Frequency and FSI Crash Rate by County

### FSI Crash Frequency



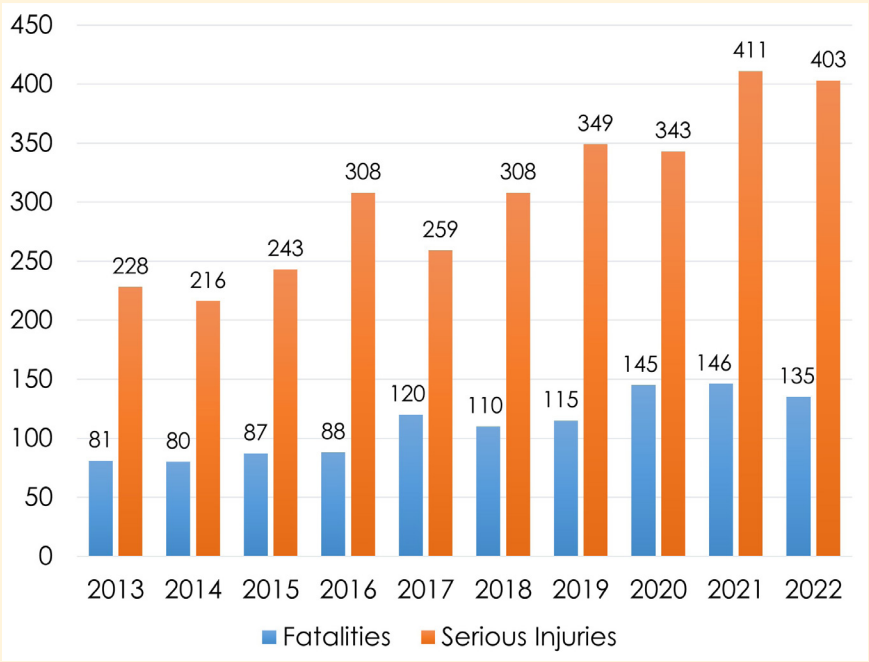

### FSI Crash Rate

*FSI Crashes per 100,000 DVMT*




*DVMT Source: Highway Performance Monitoring System*

## Yearly Trend for FSI Victims in Tribal Areas[1,2]




**Impaired Driving** makes up **32%** of tribal area FSI crashes.

Since 2013, FSI victims in tribal areas increased by **74%**, versus the overall statewide increase of **34%.**

*Source: All crash data is from SWITRS unless otherwise noted.*

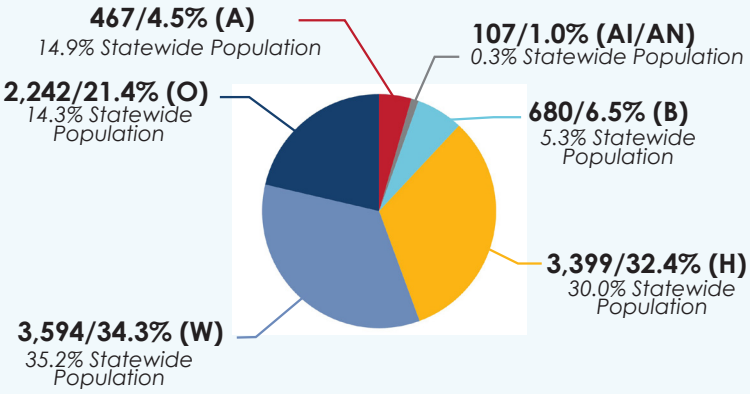
*1. University of California, Berkeley's Safe Transportation Research and Education Center (SWITRS 2013–2022), FARS 2013–2022*

*2. Tribal areas defined as areas within 5 miles of tribal boundaries.*

# IMPAIRED DRIVING

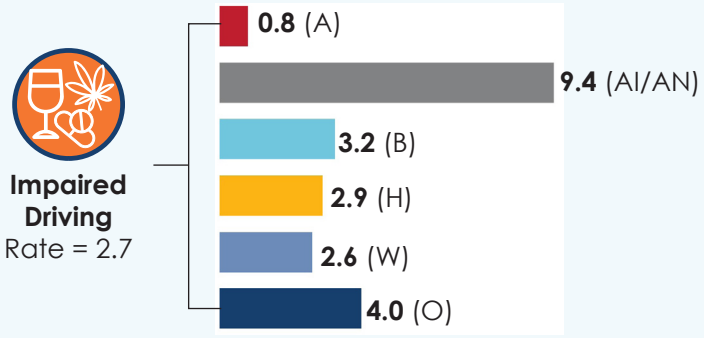
## Race/Ethnicity in Traffic Fatalities

### *Distribution of California Traffic Fatalities by Race/Ethnicity*




### *Fatality Rate by Race/Ethnicity*

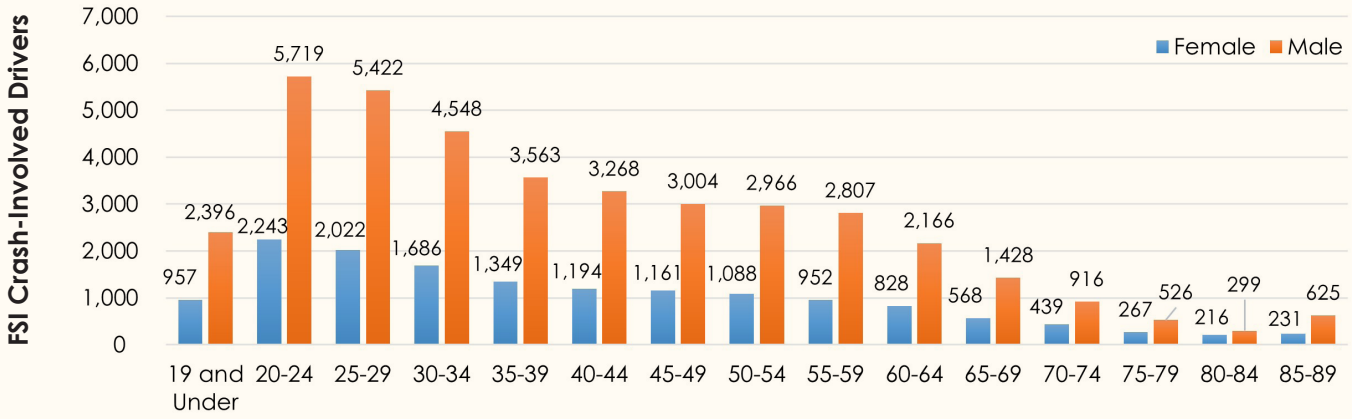
***(Fatality Rate per 100,000 Population)***




Asian (A) | American Indian/Alaskan Native (AI/AN) | Black (B) | Hispanic (H) | White (W) | Other (O)

## Comparison of Crash-Involved Drivers by Age and Sex

Male drivers are **2.5x** as likely to be involved in an Impaired Driving FSI crash




## Income Impact in Traffic Fatalities[1,2,3]

Increased Rate of Fatalities in Disadvantaged Communities Versus Non-Disadvantaged Communities

***Statewide Fatalities*** **40%** Higher

***Impaired Driving Fatalities*** **32%** Higher

*1. Income data is available for the Census Tracts where a traffic fatality occurs and not the individual (i.e. this data represents the income information of the Census Tracts where the crash occurred and not the income of the crash victim).*

*2. Disadvantaged communities were determined using 2022 ACS 5-Year estimate data for median household income at Census Tract level. The 2022 ACS 5-Year Estimate data was used to determine fatality rates per 100,000 population.*

*3. Assembly Bill 1550 stipulates that 80% of statewide median household income to be used as threshold for disadvantaged communities. 2022 threshold is $73,524.*

*Source: US Census Bureau 2022 ACS 5-Year Estimate data and FARS 2013–2022*

# IMPAIRED DRIVING

## Top Three Crash Types*

**36%** Hit Object

**14%** Broadside

**14%** Rear End

## Top Three Primary Crash Factors*

**72%** Under the Influence

**7%** Unsafe Speed

**7%** Improper Turning

## Potential Countermeasures to Mitigate Impaired Driving FSI Crashes

These countermeasures have been selected as data-backed strategies to improve traffic safety within the Impaired Driving Challenge Area. See related fact sheets for overlapping Challenge Areas, as addressing one Challenge Area can improve the safety outcomes of other Challenge Areas.

High-Visibility Enforcement of DUI Laws[2]

Publicized Sobriety Checkpoints[2]

Administrative License Revocation or Suspension[2]

Open Container Laws[2]

Alcohol Problem Assessment and Treatment[2]

All Offender Screening and Intervention[2]


All Offenders Ignition Interlock Device Legislation[2]


Vehicle and License Plate Sanctions[2]

### *Countermeasure References and Resources*


1. 28 Proven Safety Countermeasures, supported by Caltrans and FHWA

2. NHTSA Countermeasures that Work, 2023

3. Caltrans Local Roadway Safety Manual (Version 1.7, April 2024)


** Top crash data is from SWITRS unless otherwise noted.*
*** Percentages are calculated based on a total of 38,175 Impaired Driving FSI crashes.*

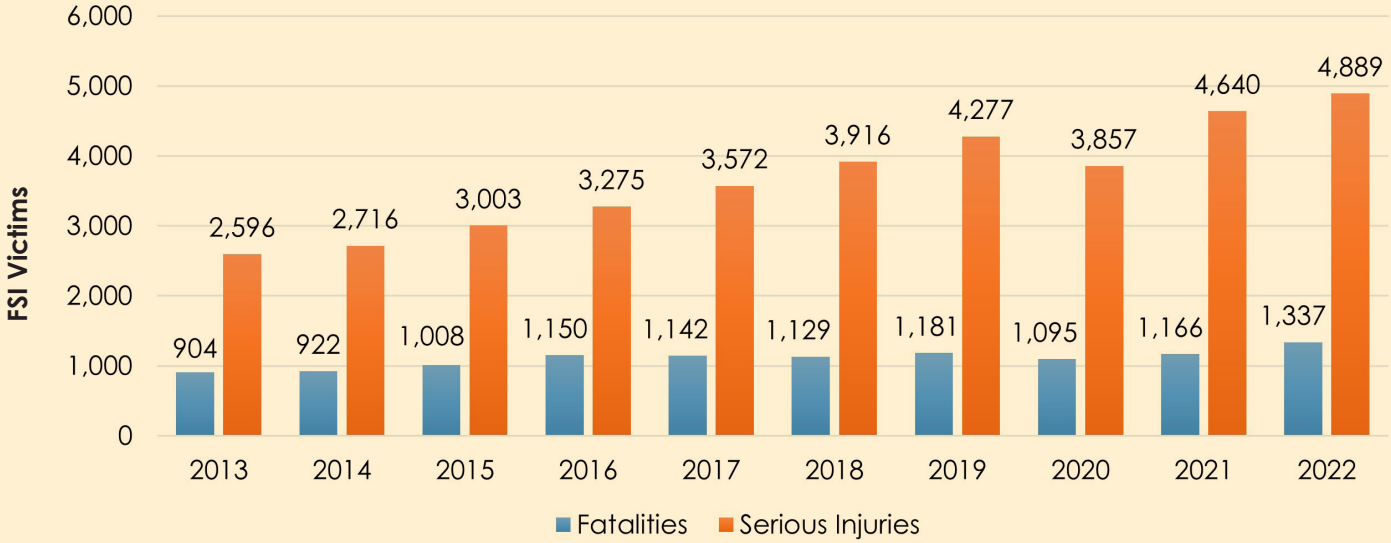
# INTERSECTIONS

**The Intersections Challenge Area focuses on identifying issues that lead to fatal and serious injury crashes at or in the influence of intersections and the appropriate countermeasures. All types of roadway intersections are included, such as interchanges and/or crashes involving a train or rail vehicle at an at-grade crossing.**

## Intersections FSI Crashes

**24%** of FSI crashes **(38,811)**

## FSI Victims by Year




*Fatalities sourced from FARS*

## Top Three Challenge Area Overlaps

Intersections FSI crashes also involve:

**40%** | **Speed Management/ Aggressive Driving**

**27%** | **Driver Licensing***

**20%** | **Motorcyclists**

**Driver Licensing includes only fatal crashes (from FARS)*

Crashes often involve more than one factor and overlap with multiple Challenge Areas. See related fact sheets for overlapping Challenge Areas, as addressing one Challenge Area can improve the safety outcomes of the others.

## Share of FSI Victims: State Highways vs. Local Roads

**16%** State Highways **VS** **84%** Local Roads

## Share of FSI Victims: Rural vs. Urban Roads[1]

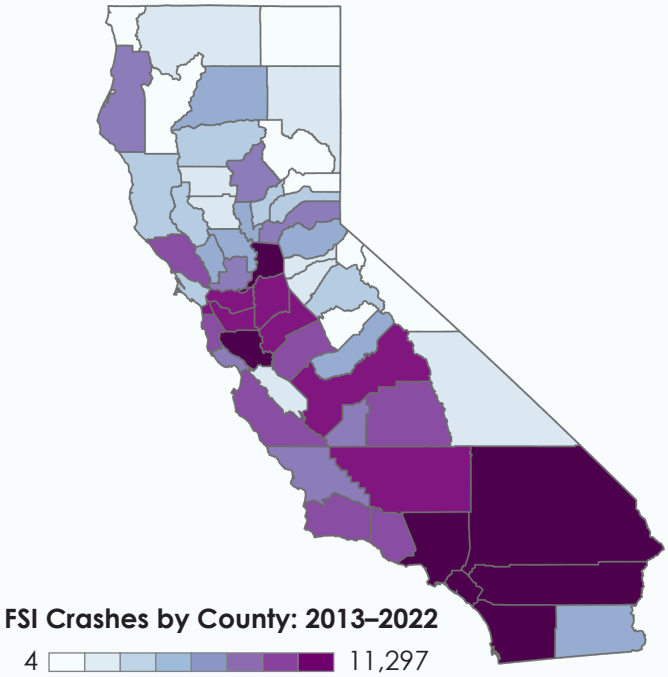
**14%** Rural Roads **VS** **86%** Urban Roads

*Source: All crash data is from SWITRS unless otherwise noted.*
*1. Rural and urban data determined by 2020 US Census "Urban Areas" dataset. Crashes recorded by TIMS without geolocation were not included in Rural vs. Urban analysis.*

**For more information, visit the SHSP Crash Data Dashboard:**

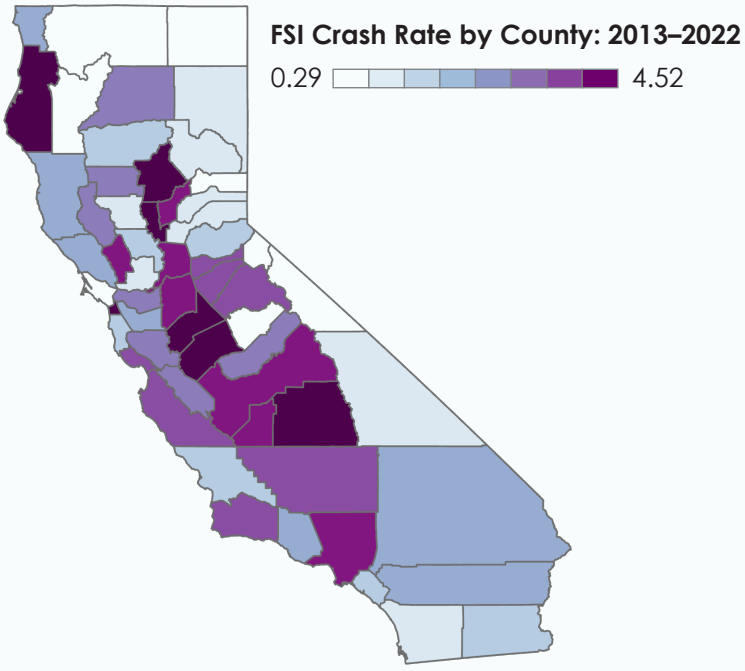
## FSI Crash Frequency and FSI Crash Rate by County

### FSI Crash Frequency



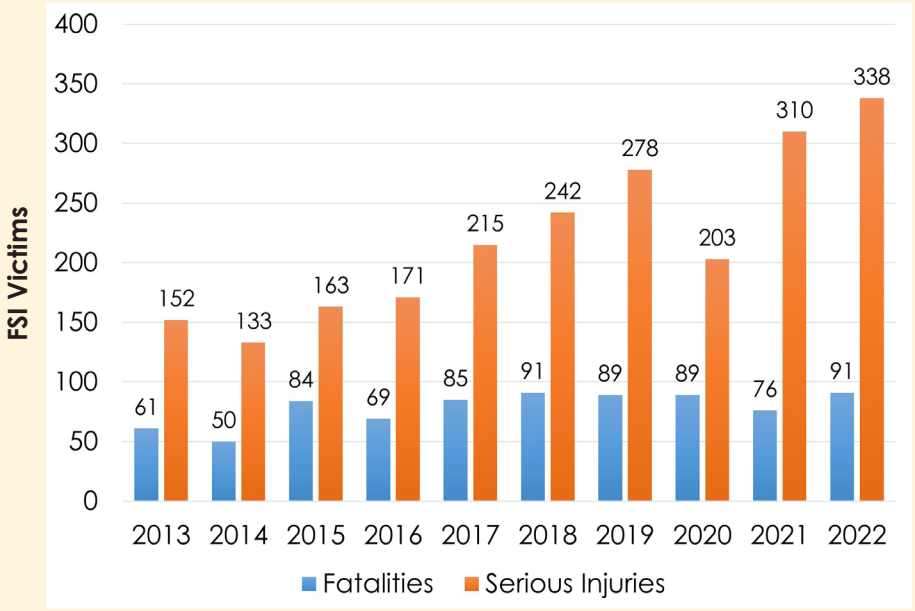

### FSI Crash Rate

*FSI Crashes per 100,000 DVMT*




*DVMT Source: Highway Performance Monitoring System*

## Yearly Trend for FSI Victims in Tribal Areas[1,2]




**Intersections** make up **20%** of tribal area FSI crashes.

Since 2013, FSI victims in tribal areas increased by **101%**, versus the overall statewide increase of **82%.**

*Source: All crash data is from SWITRS unless otherwise noted.*

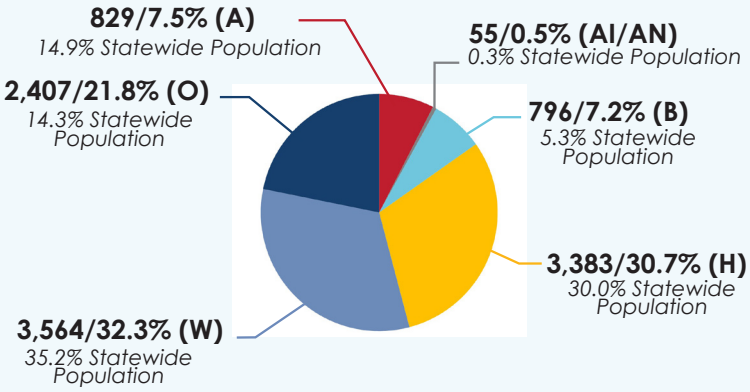
*1. University of California, Berkeley's Safe Transportation Research and Education Center (SWITRS 2013–2022), FARS 2013–2022*

*2. Tribal areas defined as areas within 5 miles of tribal boundaries.*

# INTERSECTIONS

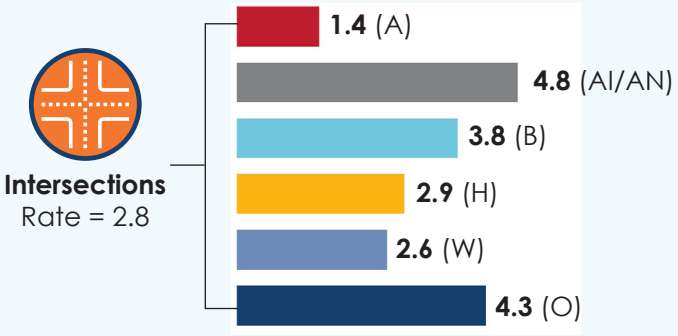
## Race/Ethnicity in Traffic Fatalities

### *Distribution of California Traffic Fatalities by Race/Ethnicity*




### *Fatality Rate by Race/Ethnicity*

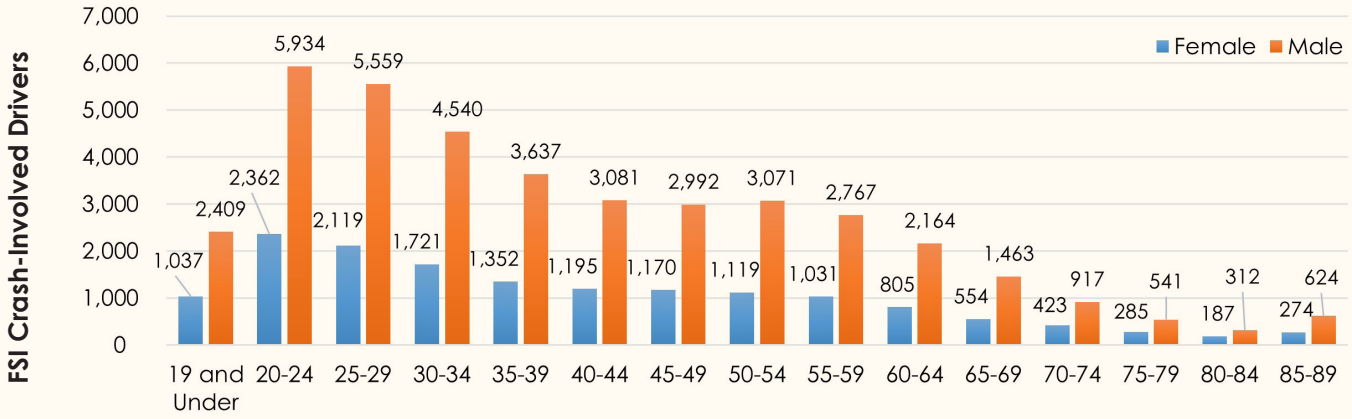
***(Fatality Rate per 100,000 Population)***




Asian (A) | American Indian/Alaskan Native (AI/AN) | Black (B) | Hispanic (H) | White (W) | Other (O)

## Comparison of Crash-Involved Drivers by Age and Sex

Male drivers are **2.5x** as likely to be involved in an Intersection FSI crash




## Income Impact in Traffic Fatalities[1,2,3]

Increased Rate of Fatalities in Disadvantaged Communities Versus Non-Disadvantaged Communities

***Statewide Fatalities*** **40%** Higher

***Intersections Fatalities*** **41%** Higher

*1. Income data is available for the Census Tracts where a traffic fatality occurs and not the individual (i.e. this data represents the income information of the Census Tracts where the crash occurred and not the income of the crash victim).*

*2. Disadvantaged communities were determined using 2022 ACS 5-Year estimate data for median household income at Census Tract level. The 2022 ACS 5-Year Estimate data was used to determine fatality rates per 100,000 population.*

*3. Assembly Bill 1550 stipulates that 80% of statewide median household income to be used as threshold for disadvantaged communities. 2022 threshold is $73,524.*

*Source: US Census Bureau 2022 ACS 5-Year Estimate data and FARS 2013–2022*

# INTERSECTIONS

## Top Three Crash Types*

**51%**
**Broadside**

**18%**
**Vehicle/ Pedestrian**

**10%**
**Head-On**

## Top Three Primary Crash Factors*


**26%**
**Automobile Right of Way**

**21%**
**Traffic Signals and Signs**

**11%**
**Under the Influence**

## Potential Countermeasures to Mitigate Intersections FSI Crashes

These countermeasures have been selected as data-backed strategies to improve traffic safety within the Intersections Challenge Area. See related fact sheets for overlapping Challenge Areas, as addressing one Challenge Area can improve the safety outcomes of other Challenge Areas.


**Improved Signage and Striping at Stop-Controlled Intersections[1,3]**

**Signal Hardware Improvements[1,3]**

**Roundabouts[1,3]**

**Protected Left-Turn Phasing at Signalized Intersections[1,3]**

**Traffic Law Enforcement Near and at Intersections and Rail Crossings[2]**

**Dedicated Left-Turn Lanes at Intersections[1,3]**

**Install or Rehabilitate Marked Crosswalks[1,3]**

**Leading Pedestrian Interval (LPI)[1,3]**

### *Countermeasure References and Resources*


**1.** 28 Proven Safety Countermeasures, supported by Caltrans and FHWA

**2.** NHTSA Countermeasures that Work, 2023

**3.** Caltrans Local Roadway Safety Manual (Version 1.7, April 2024)


** Top crash data is from SWITRS unless otherwise noted.*
** Percentages are calculated based on a total of 38,811 Intersections FSI crashes.*

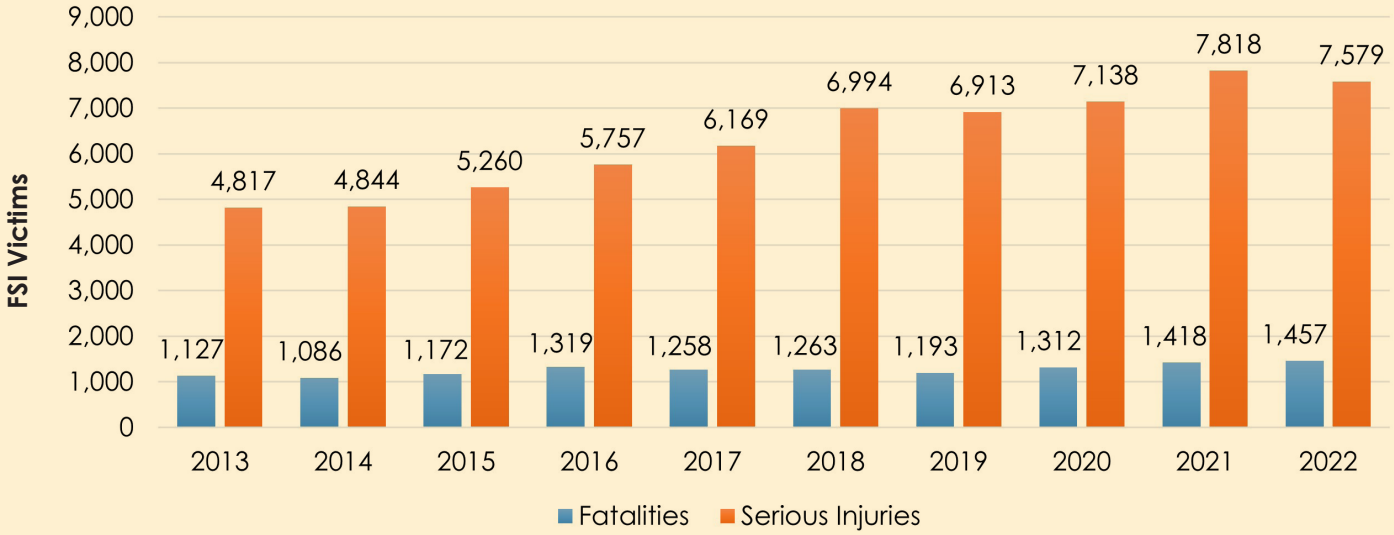
# LANE DEPARTURES

**The Lane Departures Challenge Area focuses on identifying strategies to reduce instances of vehicles leaving the roadway or deviating from their lane of travel into oncoming traffic. This includes head-on, hit object, and overturned crashes as well as instances where a vehicle runs off the road or crosses into the opposing lane prior to the crash.**

## Lane Departures FSI Crashes

**42%** of FSI crashes **(67,197)**

## FSI Victims by Year




*Fatalities sourced from FARS*

## Top Three Challenge Area Overlaps

Lane Departures FSI crashes also involve:

**34%** | **Impaired Driving**

**31%** | **Driver Licensing***

**28%** | **Speed Management/ Aggressive Driving**

**Driver Licensing includes only fatal crashes (from FARS)*

Crashes often involve more than one factor and overlap with multiple Challenge Areas. See related fact sheets for overlapping Challenge Areas, as addressing one Challenge Area can improve the safety outcomes of the others.

## Share of FSI Victims: State Highways vs. Local Roads

**45%** State Highways **VS** **55%** Local Roads

## Share of FSI Victims: Rural vs. Urban Roads[1]

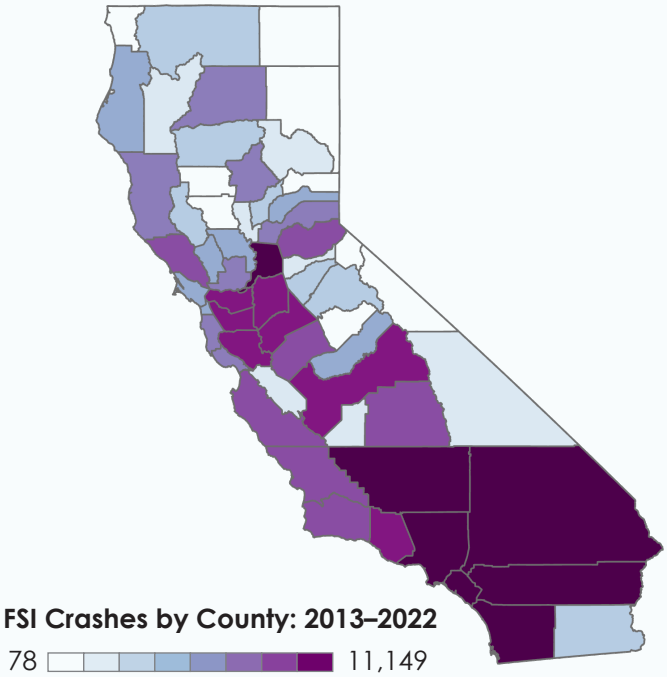
**45%** Rural Roads **VS** **55%** Urban Roads

*Source: All crash data is from SWITRS unless otherwise noted.*
*1. Rural and urban data determined by 2020 US Census "Urban Areas" dataset. Crashes recorded by TIMS without geolocation were not included in Rural vs. Urban analysis.*

**For more information, visit the SHSP Crash Data Dashboard:**

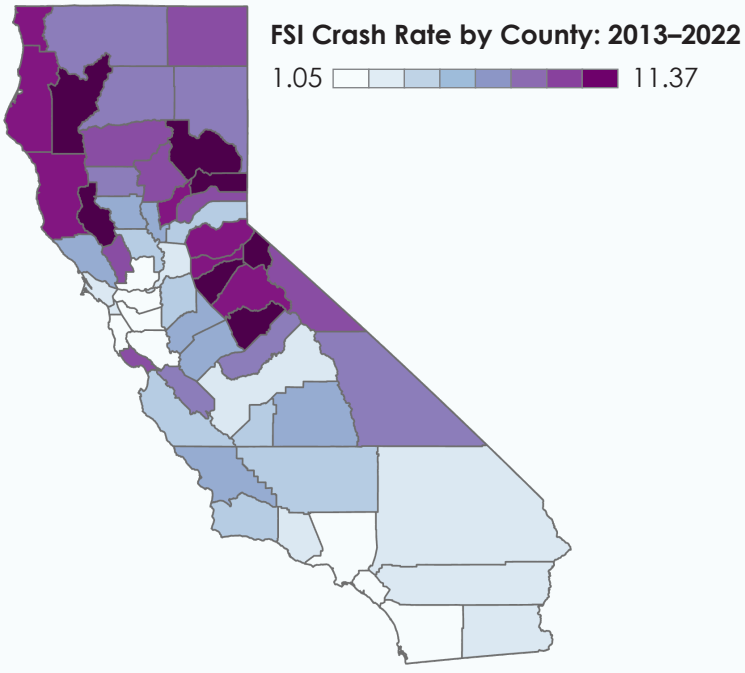
## FSI Crash Frequency and FSI Crash Rate by County

### FSI Crash Frequency



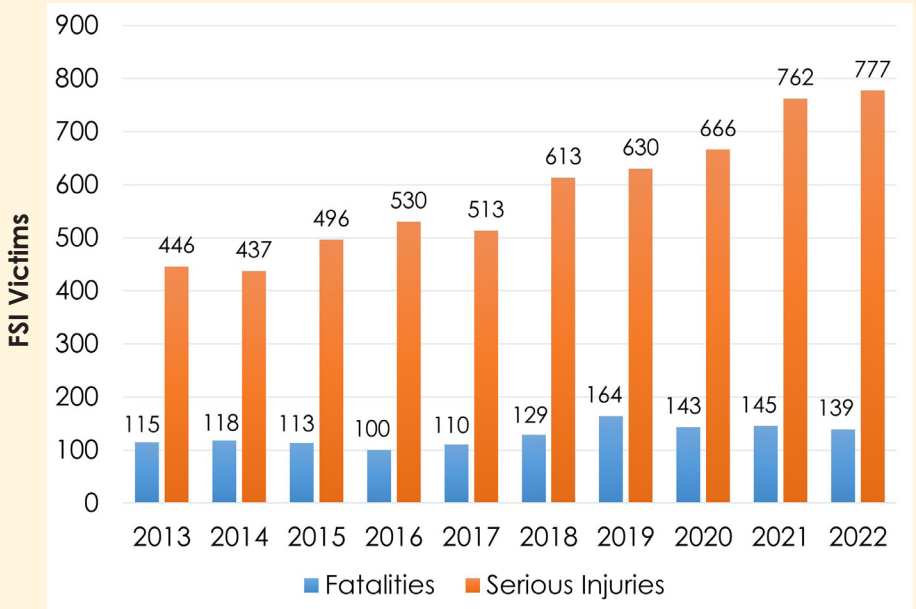

### FSI Crash Rate

*FSI Crashes per 100,000 DVMT*




*DVMT Source: Highway Performance Monitoring System*

## Yearly Trend for FSI Victims in Tribal Areas[1,2]




**Lane Departures** make up **56%** of tribal area FSI crashes.

Since 2013, FSI victims in tribal areas increased by **63%**, versus the overall statewide increase of **53%.**

*Source: All crash data is from SWITRS unless otherwise noted.*

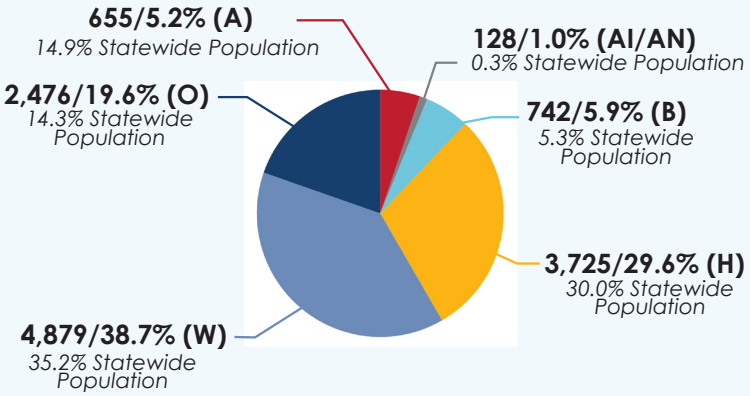
*1. University of California, Berkeley's Safe Transportation Research and Education Center (SWITRS 2013–2022), FARS 2013–2022*

*2. Tribal areas defined as areas within 5 miles of tribal boundaries.*

# LANE DEPARTURES

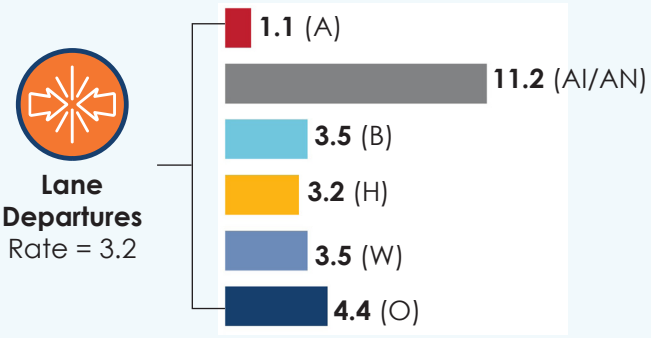
## Race/Ethnicity in Traffic Fatalities

### *Distribution of California Traffic Fatalities by Race/Ethnicity*




### *Fatality Rate by Race/Ethnicity*

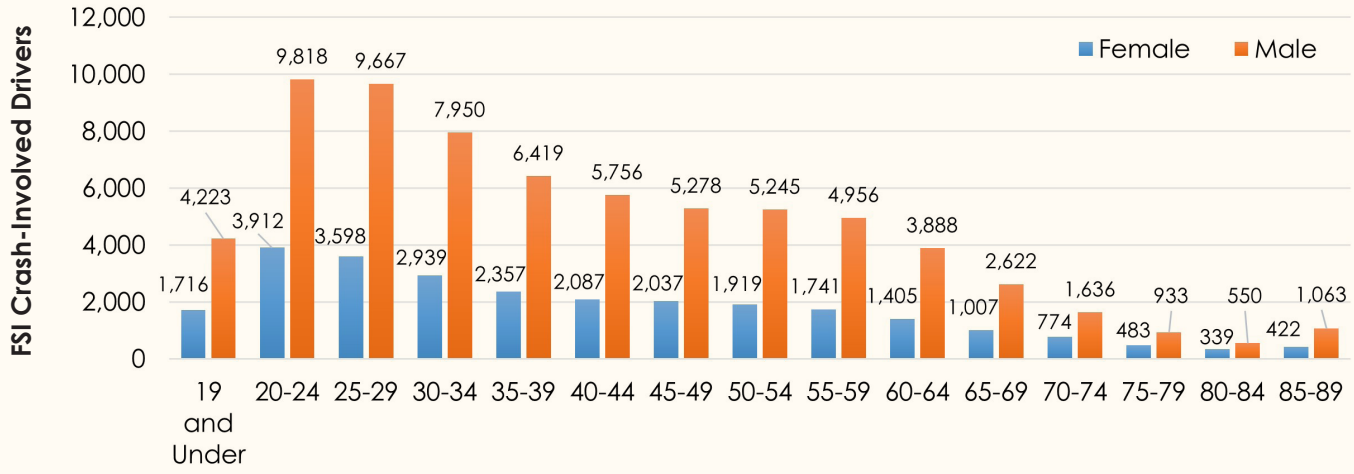
***(Fatality Rate per 100,000 Population)***




Asian (A) | American Indian/Alaskan Native (AI/AN) | Black (B) | Hispanic (H) | White (W) | Other (O)

## Comparison of Crash-Involved Drivers by Age and Sex

Male drivers are **2.5x** as likely to be involved in a Lane Departures FSI crash




## Income Impact in Traffic Fatalities[1,2,3]

Increased Rate of Fatalities in Disadvantaged Communities Versus Non-Disadvantaged Communities

***Statewide Fatalities*** **40%** Higher

***Lane Departures Fatalities*** **40%** Higher

*1. Income data is available for the Census Tracts where a traffic fatality occurs and not the individual (i.e. this data represents the income information of the Census Tracts where the crash occurred and not the income of the crash victim).*

*2. Disadvantaged communities were determined using 2022 ACS 5-Year estimate data for median household income at Census Tract level. The 2022 ACS 5-Year Estimate data was used to determine fatality rates per 100,000 population.*

*3. Assembly Bill 1550 stipulates that 80% of statewide median household income to be used as threshold for disadvantaged communities. 2022 threshold is $73,524.*

*Source: US Census Bureau 2022 ACS 5-Year Estimate data and FARS 2013–2022*

# LANE DEPARTURES

## Top Three Crash Types*

**52%** Hit Object

**23%** Head-On

**22%** Overturned

## Top Three Primary Crash Factors*

**33%** Improper Turning

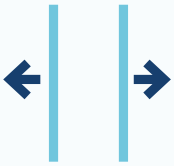
**28%** Under the Influence

**19%** Unsafe Speed

## Potential Countermeasures to Mitigate Lane Departures FSI Crashes

These countermeasures have been selected as data-backed strategies to improve traffic safety within the Lane Departures Challenge Area. See related fact sheets for overlapping Challenge Areas, as addressing one Challenge Area can improve the safety outcomes of other Challenge Areas.

Rumble Strips[1,3]



Wider Edge Lines[1]

Median Barriers[1,3]

Curve Advance Warning Signage[1,3]

GDL Intermediate License Nighttime Restrictions[2]

Communications and Outreach on Drowsy Driving[2]

Retroreflective Chevron Signs at Curves[1,3]

Guardrails and Impact Attenuators at Curves[1,3]

### *Countermeasure References and Resources*


1. 28 Proven Safety Countermeasures, supported by Caltrans and FHWA

2. NHTSA Countermeasures that Work, 2023

3. Caltrans Local Roadway Safety Manual (Version 1.7, April 2024)


** Top crash data is from SWITRS unless otherwise noted.*
*Percentages are calculated based on a total of 67,197 Lane Departures FSI crashes.*

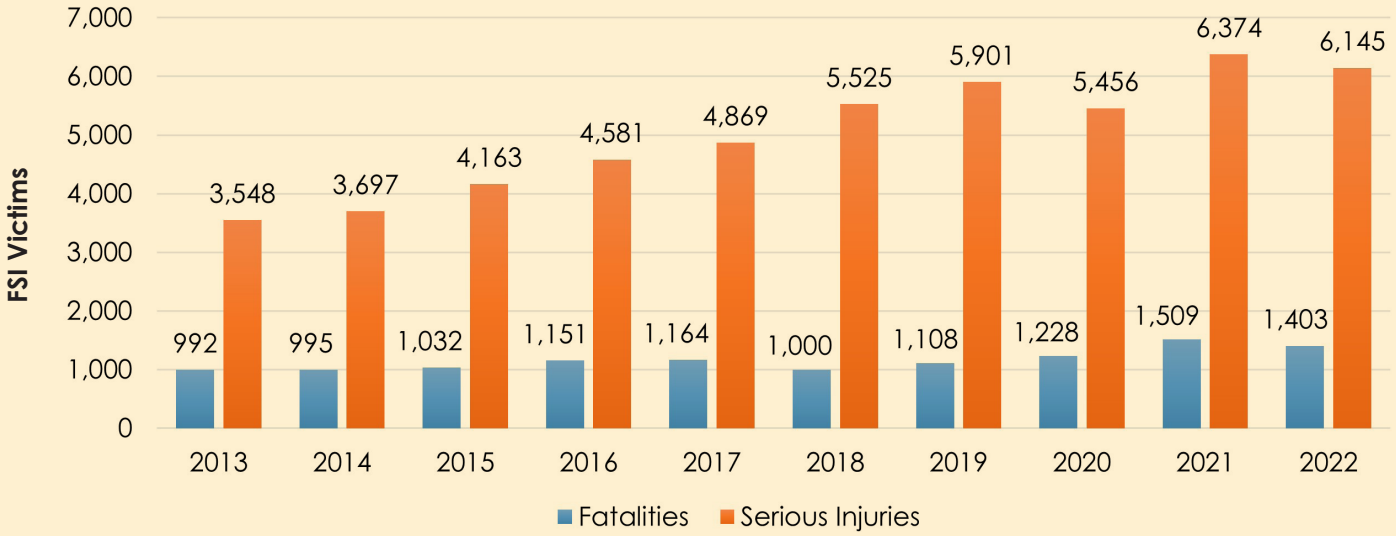
# SPEED MANAGEMENT/ AGGRESSIVE DRIVING

**The Speed Management/Aggressive Driving Challenge Area focuses on identifying strategies and countermeasures that reduce instances of driving too fast, tailgating, and other reckless driving maneuvers as determined by a law enforcement officer on scene. Sideshows are also included in this Challenge Area, along with reducing the overall factors of speed and aggressive driving that lead to fatal and serious injury crashes.**

## Speed Management/ Aggressive Driving FSI Crashes

**33%** of FSI crashes **(53,354)**

## FSI Victims by Year




*Fatalities sourced from FARS*

## Top Three Challenge Area Overlaps

Speed Management/Aggressive Driving FSI crashes also involve:

- **36%** Lane Departures
- **34%** Driver Licensing*
- **29%** Intersections

**Driver Licensing includes only fatal crashes (from FARS)*

Crashes often involve more than one factor and overlap with multiple Challenge Areas. See related fact sheets for overlapping Challenge Areas, as addressing one Challenge Area can improve the safety outcomes of the others.

## Share of FSI Victims: State Highways vs. Local Roads

**38%** State Highways **VS** **61%** Local Roads

## Share of FSI Victims: Rural vs. Urban Roads[1]

**24%** Rural Roads **VS** **76%** Urban Roads

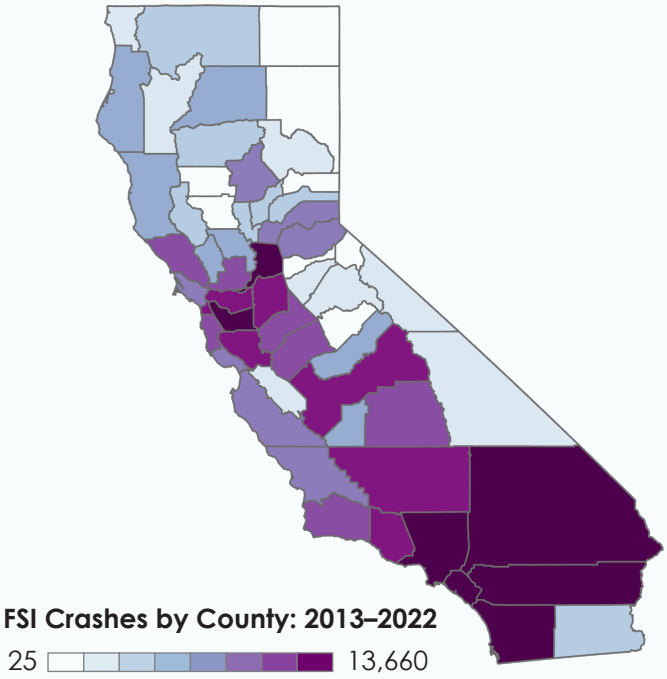
*Source: All crash data is from SWITRS unless otherwise noted.*
*1. Rural and urban data determined by 2020 US Census "Urban Areas" dataset. Crashes recorded by TIMS without geolocation were not included in Rural vs. Urban analysis.*

**For more information, visit the SHSP Crash Data Dashboard:**

# SPEED MANAGEMENT/AGGRESSIVE DRIVING

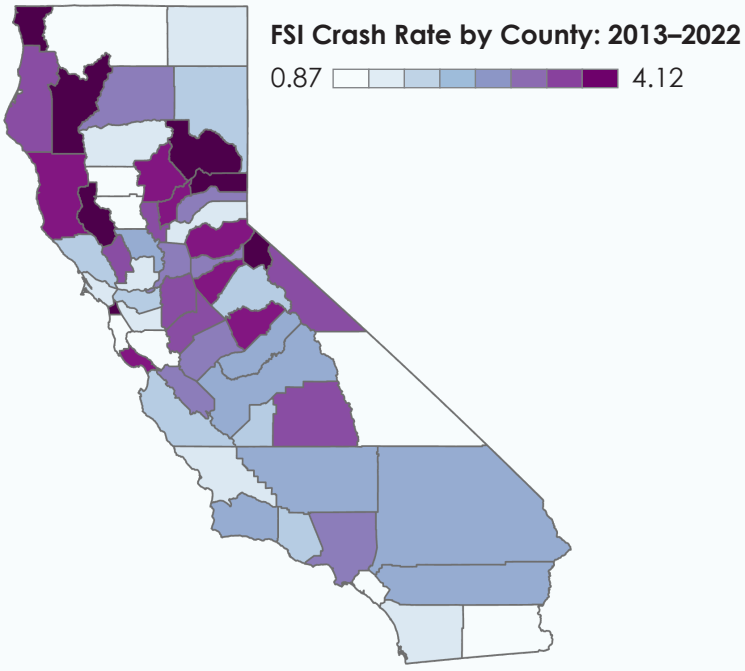
## *FSI Crash Frequency and FSI Crash Rate by County*

### *FSI Crash Frequency*



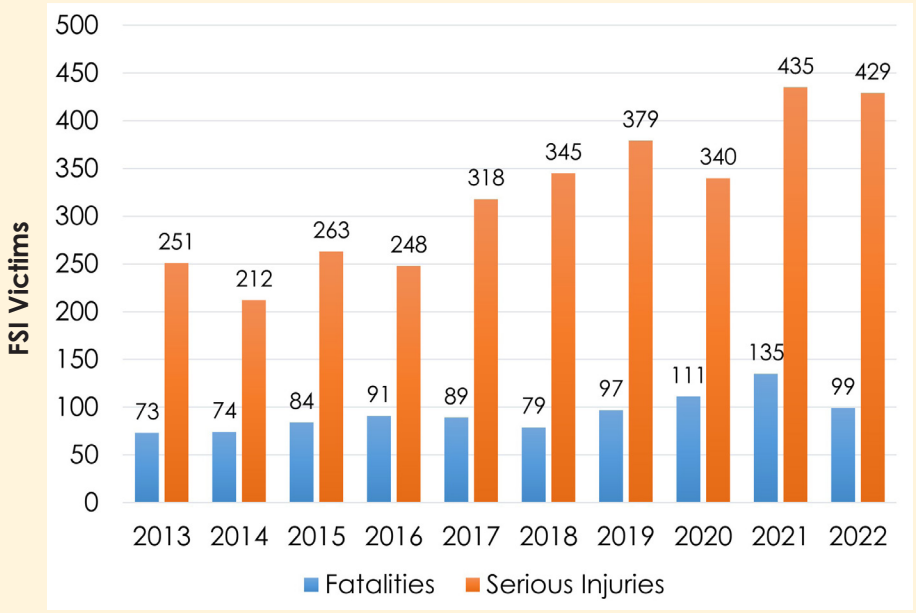

### *FSI Crash Rate*

*FSI Crashes per 100,000 DVMT*




*DVMT Source: Highway Performance Monitoring System*

## Yearly Trend for FSI Victims in Tribal Areas[1,2]




**Speed Management/ Aggressive Driving** makes up **30%** of tribal area FSI crashes.

Since 2013, FSI victims in tribal areas increased by **63%**, versus the overall statewide increase of **66%**.

*Source: All crash data is from SWITRS unless otherwise noted.*

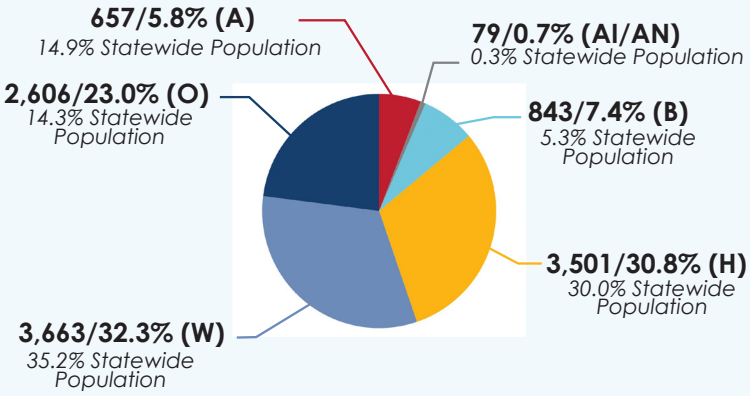
*1. University of California, Berkeley's Safe Transportation Research and Education Center (SWITRS 2013–2022), FARS 2013–2022*

*2. Tribal areas defined as areas within 5 miles of tribal boundaries.*

# SPEED MANAGEMENT/AGGRESSIVE DRIVING

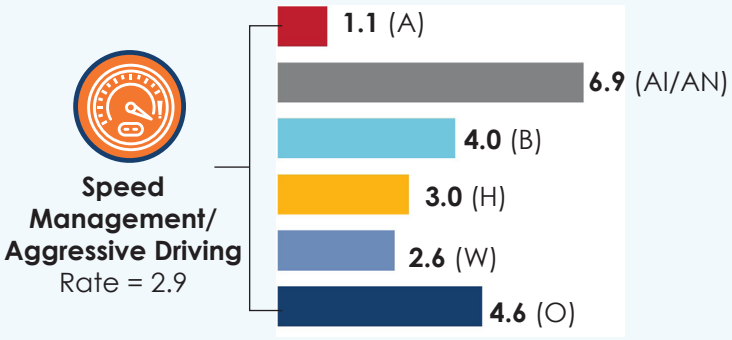
## Race/Ethnicity in Traffic Fatalities

### *Distribution of California Traffic Fatalities by Race/Ethnicity*




### *Fatality Rate by Race/Ethnicity*

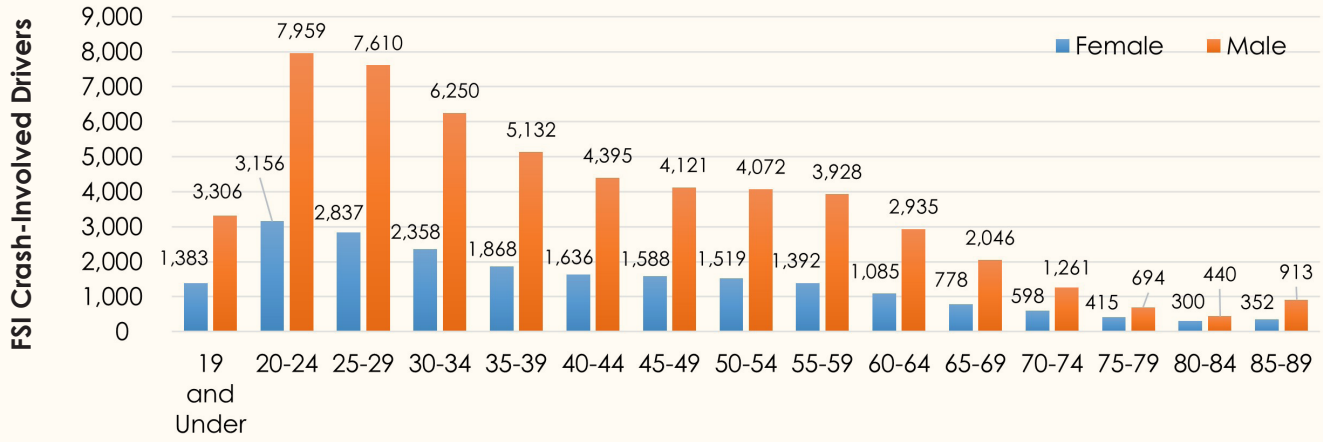
***(Fatality Rate per 100,000 Population)***




Asian (A) | American Indian/Alaskan Native (AI/AN) | Black (B) | Hispanic (H) | White (W) | Other (O)

## Comparison of Crash-Involved Drivers by Age and Sex

Male drivers are **2.5x** as likely to be involved in a Speed Management/Aggressive Driving FSI crash




## Income Impact in Traffic Fatalities[1,2,3]

Increased Rate of Fatalities in Disadvantaged Communities Versus Non-Disadvantaged Communities

***Statewide Fatalities*** **40%** Higher

***Speed Management/ Aggressive Driving Fatalities*** **30%** Higher

*1. Income data is available for the Census Tracts where a traffic fatality occurs and not the individual (i.e. this data represents the income information of the Census Tracts where the crash occurred and not the income of the crash victim).*

*2. Disadvantaged communities were determined using 2022 ACS 5-Year estimate data for median household income at Census Tract level. The 2022 ACS 5-Year Estimate data was used to determine fatality rates per 100,000 population.*

*3. Assembly Bill 1550 stipulates that 80% of statewide median household income to be used as threshold for disadvantaged communities. 2022 threshold is $73,524.*

*Source: US Census Bureau 2022 ACS 5-Year Estimate data and FARS 2013–2022*

# SPEED MANAGEMENT/AGGRESSIVE DRIVING

## Top Three Crash Types*

**28%** Rear End

**23%** Broadside

**19%** Hit Object

## Top Three Primary Crash Factors*

**56%** Unsafe Speed

**17%** Traffic Signals and Signs

**16%** Under the Influence

## Potential Countermeasures to Mitigate Speed Management/Aggressive Driving FSI Crashes

These countermeasures have been selected as data-backed strategies to improve traffic safety within the Speed Management/Aggressive Driving Challenge Area. See related fact sheets for overlapping Challenge Areas, as addressing one Challenge Area can improve the safety outcomes of other Challenge Areas.


Dynamic Speed Feedback Signs[2,3]

Speed Safety Cameras (Dependent on Legislation)[1,2,3]

Roadway Reconfiguration (Road Diet)[1,3]


Variable Speed Limits[1,2]

Driver's License Suspensions (and Increasing Penalties) for Repeat Offenders[2]

Training and Education for Local Agency Decision-Makers on Selecting Appropriate Speed Limits[1,2]


High-Visibility Speeding Enforcement[2]

Signal Hardware Improvements[1,3]

### *Countermeasure References and Resources*


1. 28 Proven Safety Countermeasures, supported by Caltrans and FHWA

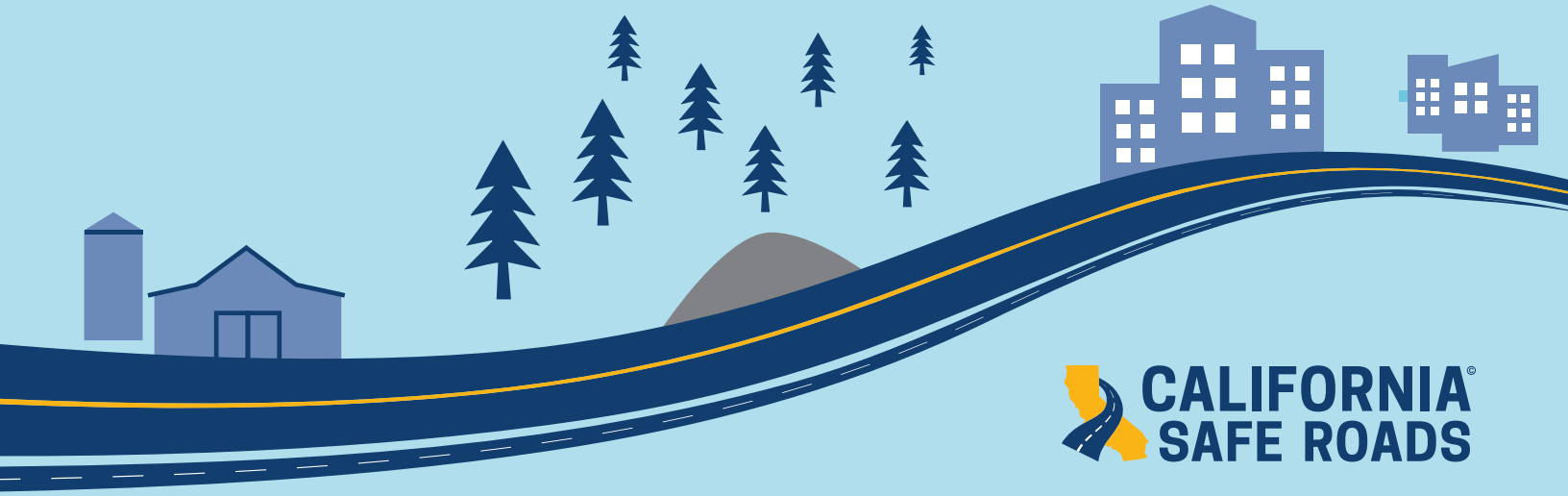
2. NHTSA Countermeasures that Work, 2023

3. Caltrans Local Roadway Safety Manual (Version 1.7, April 2024)


** Crash data is from SWITRS unless otherwise noted.*
*Percentages are calculated based on a total of 53,354 Speed Management/Aggressive Driving FSI crashes.*

# Focus Area

## Fact Sheets



CALIFORNIA SAFE ROADS

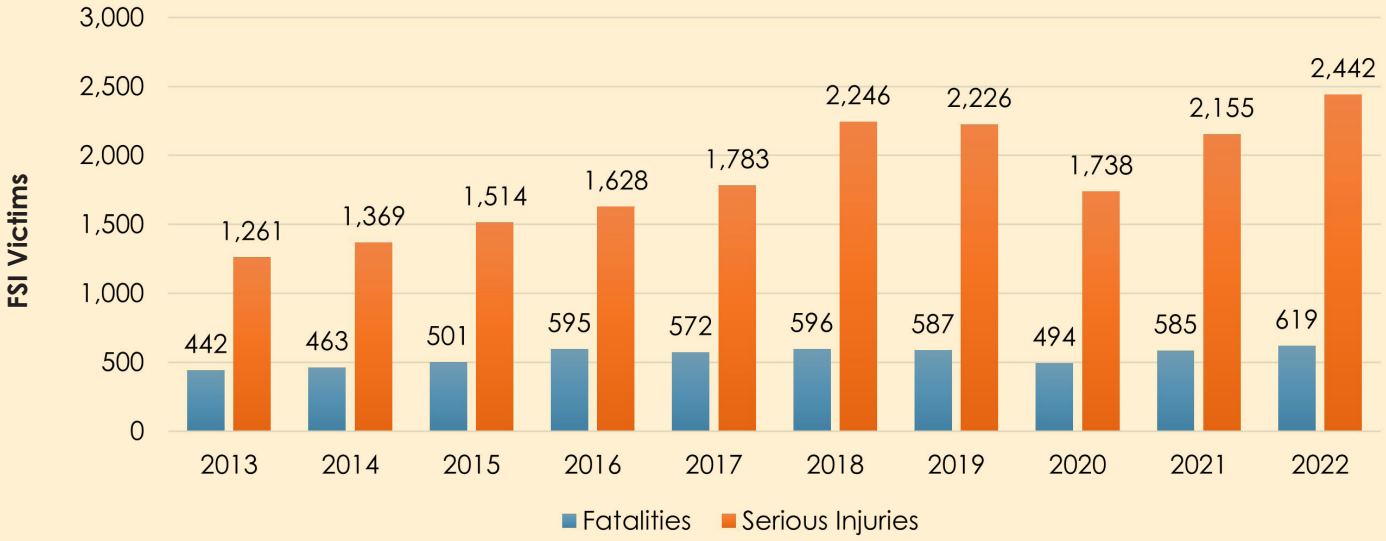
# AGING DRIVERS

**The Aging Drivers Challenge Area focuses on improving safety for drivers 65 years and older by assisting in understanding how aging can affect driving safety and developing tools to help meet aging drivers' specific needs.**

## Aging Drivers FSI Crashes

**13%** of FSI crashes **(20,426)**

## FSI Victims by Year




*Fatalities sourced from FARS*

## Top Three Challenge Area Overlaps

Aging Drivers FSI crashes also involve:

- **34%** Lane Departures
- **32%** Speed Management/ Aggressive Driving
- **32%** Intersections

Crashes often involve more than one factor and overlap with multiple Challenge Areas. See related fact sheets for overlapping Challenge Areas, as addressing one Challenge Area can improve the safety outcomes of the others.

## Share of FSI Victims: State Highways vs. Local Roads

**40%** State Highways **VS** **60%** Local Roads

## Share of FSI Victims: Rural vs. Urban Roads[1]

**31%** Rural Roads **VS** **68%** Urban Roads

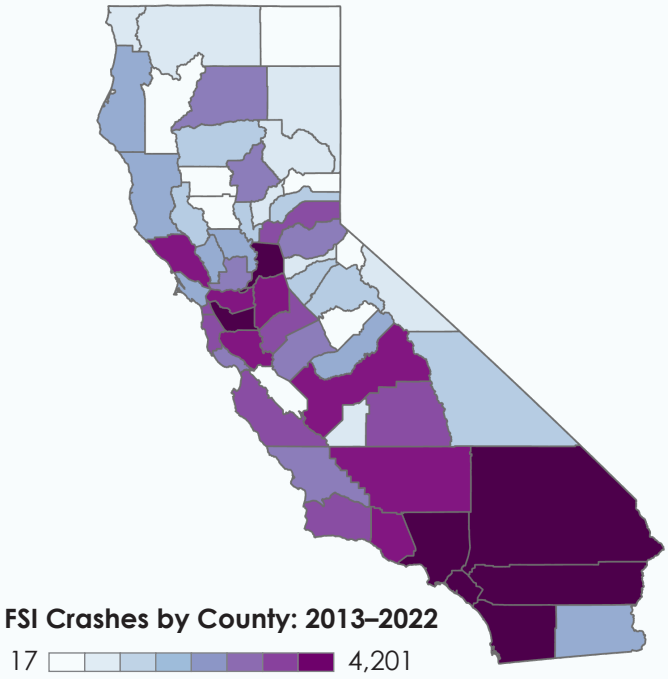
*Source: All crash data is from SWITRS unless otherwise noted.*
*1. Rural and urban data determined by 2020 US Census "Urban Areas" dataset. Crashes recorded by TIMS without geolocation were not included in Rural vs. Urban analysis.*

**For more information, visit the SHSP Crash Data Dashboard:**

# AGING DRIVERS

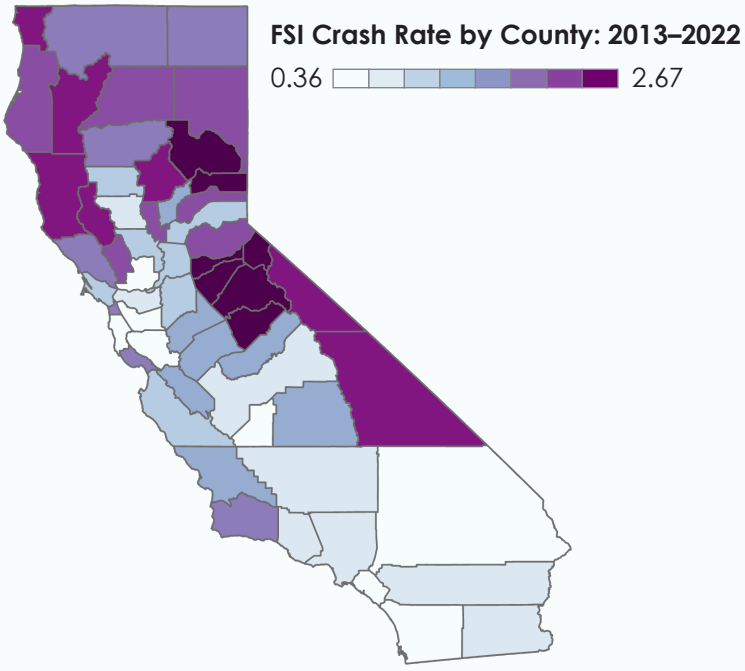
## FSI Crash Frequency and FSI Crash Rate by County

### FSI Crash Frequency



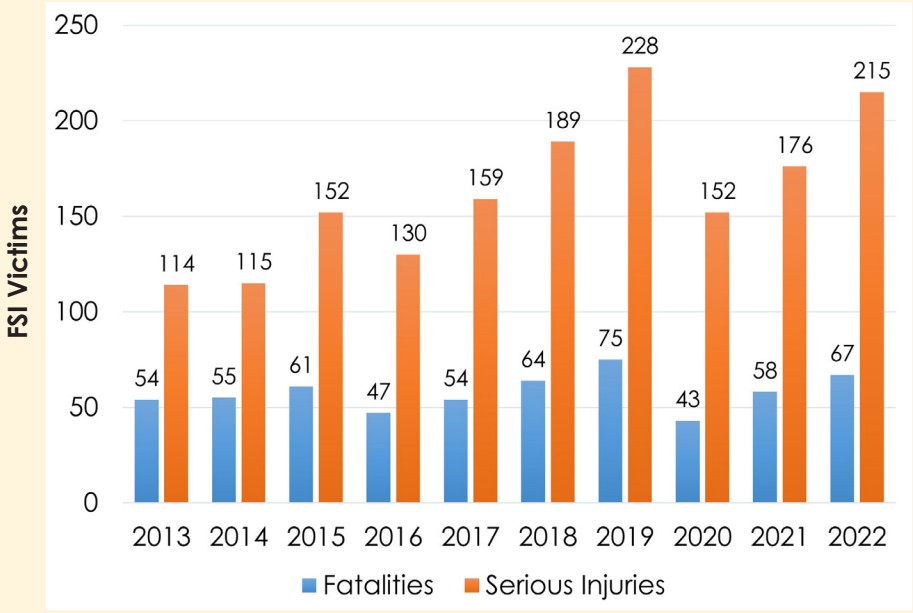

### FSI Crash Rate

*FSI Crashes per 100,000 DVMT*




*DVMT Source: Highway Performance Monitoring System*

## Yearly Trend for FSI Victims in Tribal Areas[1,2]




**Aging Drivers** make up **16%** of tribal area FSI crashes.

Since 2013, FSI victims in tribal areas increased by **68%**, versus the overall statewide increase of **82%.**

*Source: All crash data is from SWITRS unless otherwise noted.*

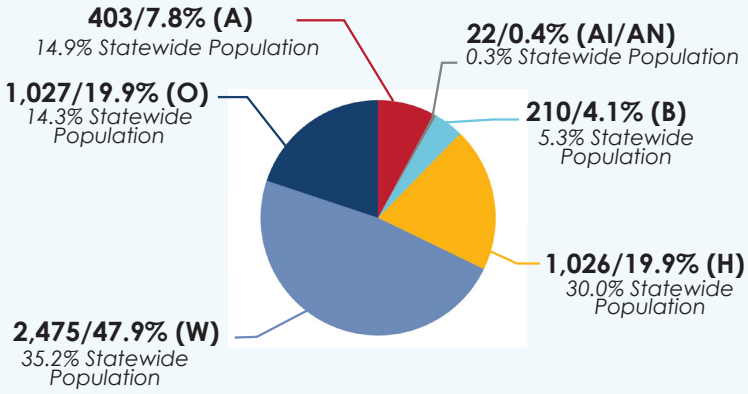
*1. University of California, Berkeley's Safe Transportation Research and Education Center (SWITRS 2013–2022), FARS 2013–2022*

*2. Tribal areas defined as areas within 5 miles of tribal boundaries.*

# AGING DRIVERS

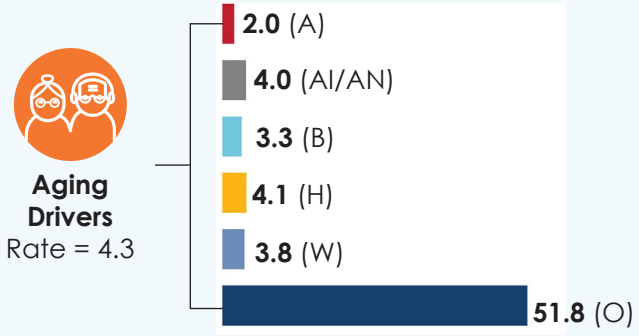
## Race/Ethnicity in Traffic Fatalities

### *Distribution of California Traffic Fatalities by Race/Ethnicity*




### *Fatality Rate by Race/Ethnicity*

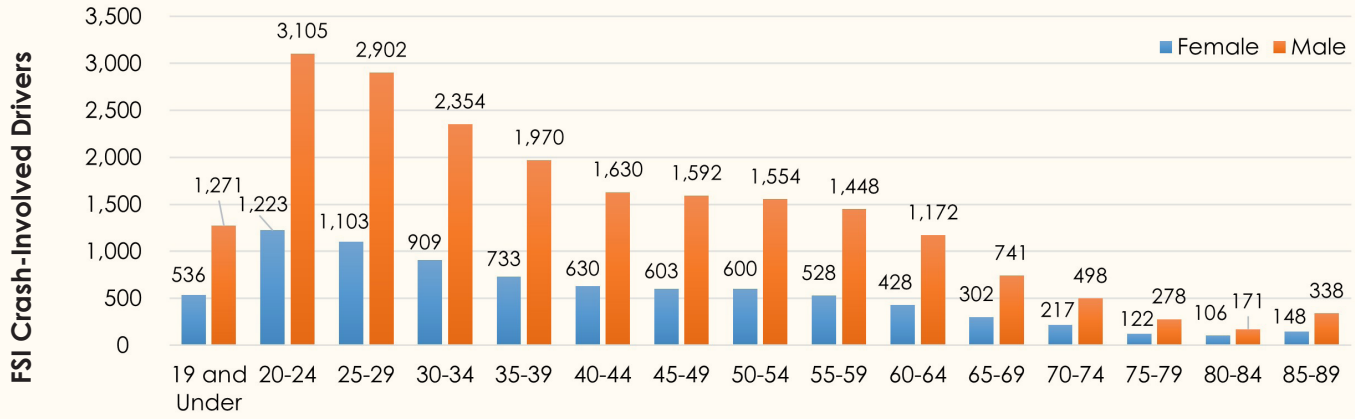
***(Fatality Rate per 100,000 Population)***




Asian (A) | American Indian/Alaskan Native (AI/AN) | Black (B) | Hispanic (H) | White (W) | Other (O)

## Comparison of Crash-Involved Drivers by Age and Sex

Male drivers are **2.5x** as likely to be involved in an Aging Drivers FSI crash




## Income Impact in Traffic Fatalities[1,2,3]

Increased Rate of Fatalities in Disadvantaged Communities Versus Non-Disadvantaged Communities

***Statewide Fatalities*** **40%** Higher

***Aging Drivers Fatalities*** **33%** Higher

*1. Income data is available for the Census Tracts where a traffic fatality occurs and not the individual (i.e. this data represents the income information of the Census Tracts where the crash occurred and not the income of the crash victim).*

*2. Disadvantaged communities were determined using 2022 ACS 5-Year estimate data for median household income at Census Tract level. The 2022 ACS 5-Year Estimate data was used to determine fatality rates per 100,000 population.*

*3. Assembly Bill 1550 stipulates that 80% of statewide median household income to be used as threshold for disadvantaged communities. 2022 threshold is $73,524.*

*Source: US Census Bureau 2022 ACS 5-Year Estimate data and FARS 2013–2022*

# AGING DRIVERS

## Top Three Crash Types*

**28%**
**Broadside**

**15%**
**Rear End**

**14%**
**Vehicle/ Pedestrian**

## Top Three Primary Crash Factors*

**18%**
**Unsafe Speed**

**18%**
**Improper Turning**


**17%**
**Automobile Right of Way**

## Potential Countermeasures to Mitigate Aging Drivers FSI Crashes

These countermeasures have been selected as data-backed strategies to improve traffic safety within the Aging Drivers Challenge Area. See related fact sheets for overlapping Challenge Areas, as addressing one Challenge Area can improve the safety outcomes of other Challenge Areas.

**Formal Courses for Older Drivers (Classroom and On-Road Feedback)[2]**

**Driver License Screening and Testing[2]**

**License Restrictions for Aging Drivers[2]**

**Install/Upgrade Signs with Fluorescent Sheeting[3]**

### *Countermeasure References and Resources*


**1.** 28 Proven Safety Countermeasures, supported by Caltrans and FHWA

**2.** NHTSA Countermeasures that Work, 2023

**3.** Caltrans Local Roadway Safety Manual (Version 1.7, April 2024)


** Top crash data is from SWITRS unless otherwise noted.*
*** Percentages are calculated based on a total of 20,426 Aging Drivers FSI crashes.*

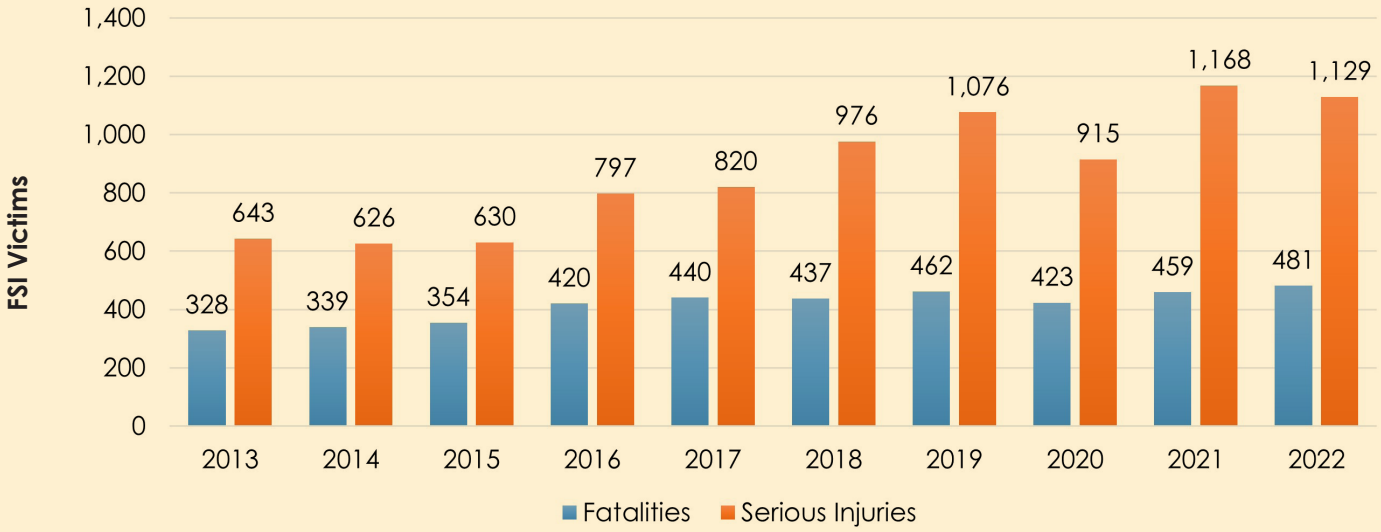
# COMMERCIAL VEHICLES

**The Commercial Vehicles Challenge Area focuses on improving the safety of trucks, truck tractors, school buses, and public/private coaches as well as the drivers of those vehicles on roadways.**

## Commercial Vehicles FSI Crashes

**7%** of FSI crashes **(10,620)**

## FSI Victims by Year




*Fatalities sourced from FARS*

## Top Three Challenge Area Overlaps

Commercial Vehicles FSI crashes also involve:

- **43%** | **Speed Management/ Aggressive Driving**
- **26%** | **Lane Departures**
- **24%** | **Driver Licensing***

**Driver Licensing includes only fatal crashes (from FARS)*

Crashes often involve more than one factor and overlap with multiple Challenge Areas. See related fact sheets for overlapping Challenge Areas, as addressing one Challenge Area can improve the safety outcomes of the others.

## Share of FSI Victims: State Highways vs. Local Roads

**62%** State Highways **VS** **38%** Local Roads

## Share of FSI Victims: Rural vs. Urban Roads[1]

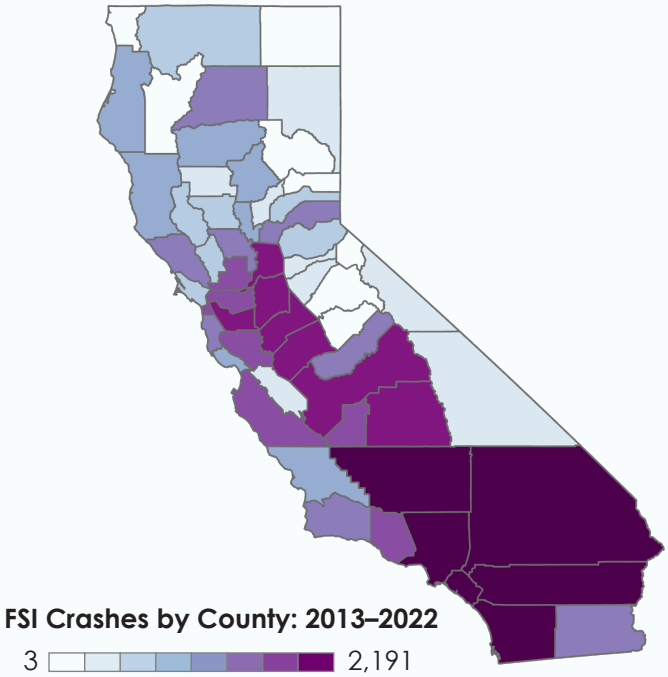
**41%** Rural Roads **VS** **59%** Urban Roads

*Source: All crash data is from SWITRS unless otherwise noted.*
*1. Rural and urban data determined by 2020 US Census "Urban Areas" dataset. Crashes recorded by TIMS without geolocation were not included in Rural vs. Urban analysis.*

**For more information, visit the SHSP Crash Data Dashboard:**

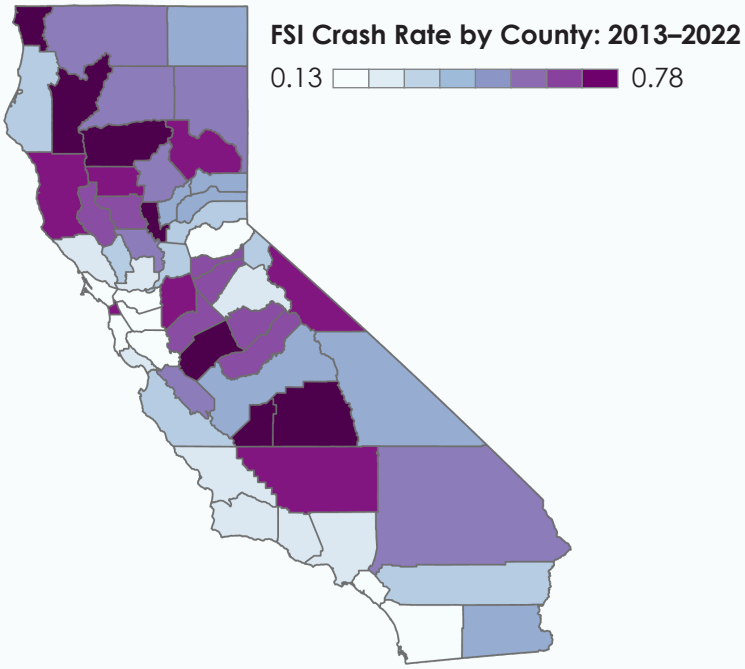
## FSI Crash Frequency and FSI Crash Rate by County

### FSI Crash Frequency



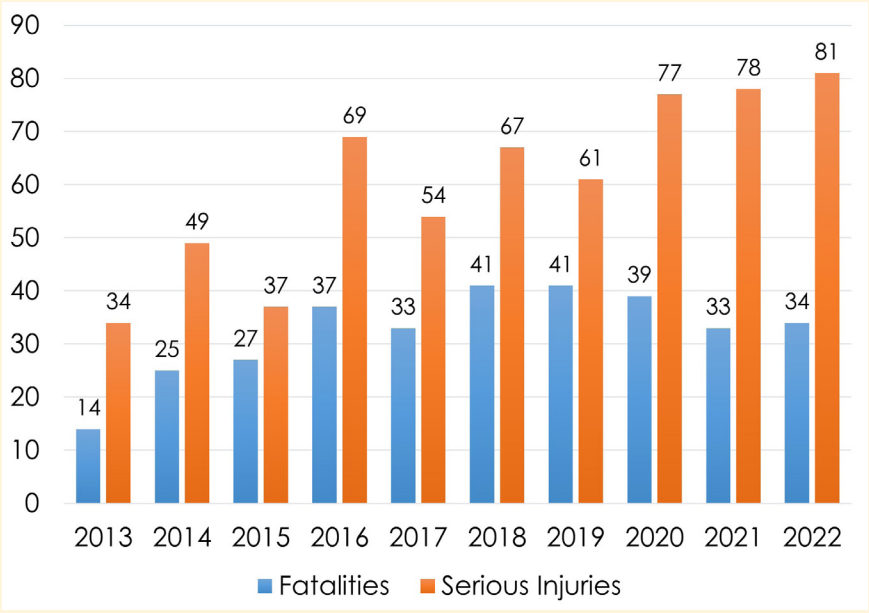

### FSI Crash Rate

*FSI Crashes per 100,000 DVMT*




*DVMT Source: Highway Performance Monitoring System*

## Yearly Trend for FSI Victims in Tribal Areas[1,2]




**Commercial Vehicles** make up **7%** of tribal area FSI crashes.

Since 2013, FSI victims in tribal areas increased by **140%**, versus the overall statewide increase of **66%.**

*Source: All crash data is from SWITRS unless otherwise noted.*

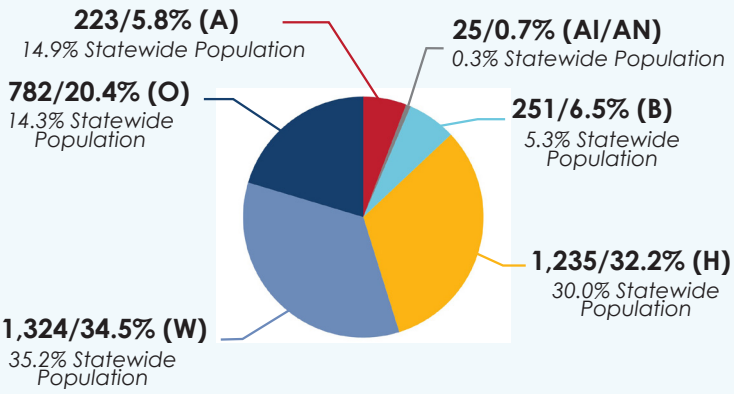
*1. University of California, Berkeley's Safe Transportation Research and Education Center (SWITRS 2013–2022), FARS 2013–2022*

*2. Tribal areas defined as areas within 5 miles of tribal boundaries.*

# COMMERCIAL VEHICLES

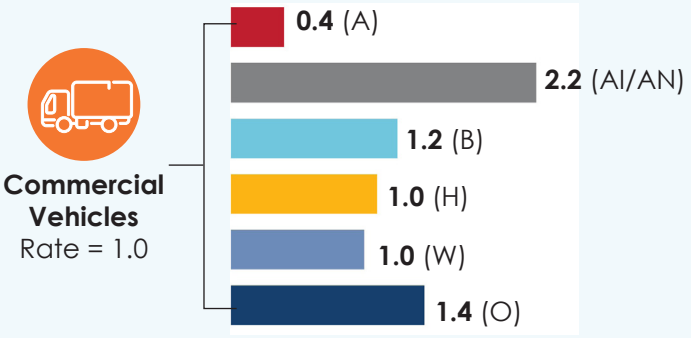
## Race/Ethnicity in Traffic Fatalities

### *Distribution of California Traffic Fatalities by Race/Ethnicity*




### *Fatality Rate by Race/Ethnicity*

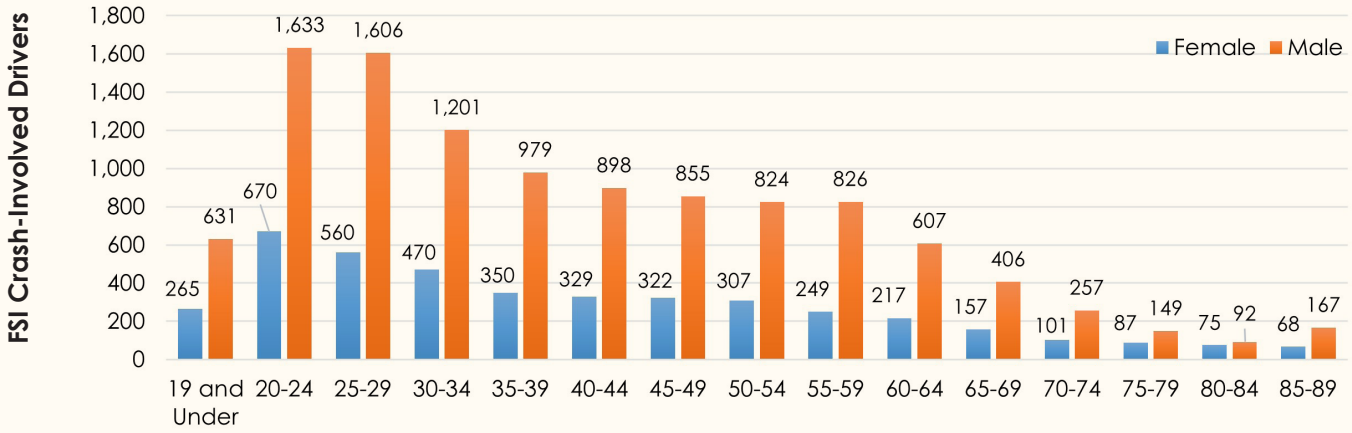
***(Fatality Rate per 100,000 Population)***




Asian (A) | American Indian/Alaskan Native (AI/AN) | Black (B) | Hispanic (H) | White (W) | Other (O)

## Comparison of Crash-Involved Drivers by Age and Sex

Male drivers are **2.5x** as likely to be involved in a Commercial Vehicles FSI crash




## Income Impact in Traffic Fatalities[1,2,3]

Increased Rate of Fatalities in Disadvantaged Communities Versus Non-Disadvantaged Communities

***Statewide Fatalities*** **40%** Higher

***Commercial Vehicles Fatalities*** **49%** Higher

*1. Income data is available for the Census Tracts where a traffic fatality occurs and not the individual (i.e. this data represents the income information of the Census Tracts where the crash occurred and not the income of the crash victim).*

*2. Disadvantaged communities were determined using 2022 ACS 5-Year estimate data for median household income at Census Tract level. The 2022 ACS 5-Year Estimate data was used to determine fatality rates per 100,000 population.*

*3. Assembly Bill 1550 stipulates that 80% of statewide median household income to be used as threshold for disadvantaged communities. 2022 threshold is $73,524.*

*Source: US Census Bureau 2022 ACS 5-Year Estimate data and FARS 2013–2022*

# COMMERCIAL VEHICLES

## Top Three Crash Types*

**31%**
**Rear End**

**21%**
**Broadside**

**13%**
**Sideswipe**

## Top Three Primary Crash Factors*

**27%**
**Unsafe Speed**

**18%**
**Improper Turning**

**15%**
**Under the Influence**

## Potential Countermeasures to Mitigate Commercial Vehicles FSI Crashes

The California Commercial Vehicle Safety Plan (CVSP) provides a multi-year performance-based plan to reduce crashes, fatalities, and injuries involving commercial vehicles through consistent, uniform, and effective commercial vehicle safety programs. The following countermeasures were identified by the CVSP as potential countermeasures to mitigate Commercial Vehicles FSI crashes.

Please see related fact sheets for overlapping Challenge Areas, as addressing one Challenge Area can improve the safety outcomes of other Challenge Areas.

**Roadside Inspections[4]**

**"Strike Force" Enforcement at High-Risk Corridors and Work Zones[4]**

**High-Visibility Enforcement of DUI Laws[2,4]**

### *Countermeasure References and Resources*


**1.** 28 Proven Safety Countermeasures, supported by Caltrans and FHWA

**2.** NHTSA Countermeasures that Work, 2023

**3.** Caltrans Local Roadway Safety Manual (Version 1.7, April 2024)

**4**. CVSP (CHP, 2024-2026)


** Crash data is from SWITRS unless otherwise noted.*
*** Percentages are calculated based on a total of 10,620 Commercial Vehicles FSI crashes.*

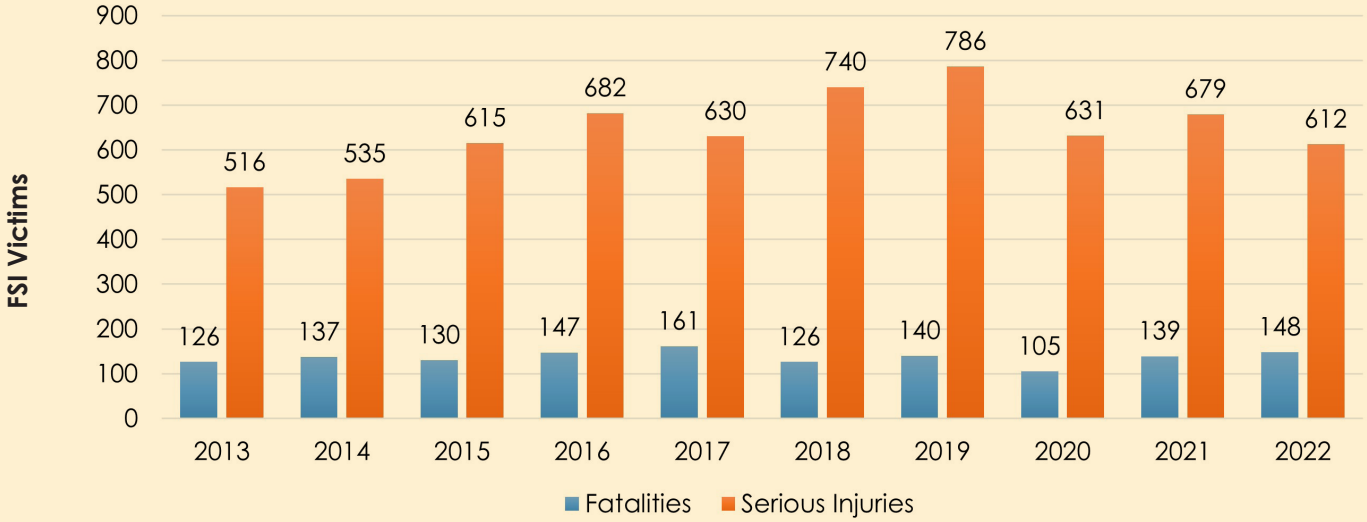
# DISTRACTED DRIVING

**The Distracted Driving Challenge Area focuses on strategies to reduce instances of distracted driving through education and awareness countermeasures. Distracted Driving describes any driver action that takes eyes or mind off of the task of driving, or hands off of the wheel.**

## Distracted Driving FSI Crashes

**4%** of FSI crashes **(6,952)**

## FSI Victims by Year




*Fatalities sourced from FARS*

## Top Three Challenge Area Overlaps

Distracted Driving FSI crashes also involve:

**36%** | **Speed Management/ Aggressive Driving**

**31%** | **Lane Departures**

**29%** | **Pedestrians**

Crashes often involve more than one factor and overlap with multiple Challenge Areas. See related fact sheets for overlapping Challenge Areas, as addressing one Challenge Area can improve the safety outcomes of the others.

## Share of FSI Victims: State Highways vs. Local Roads

**32%** State Highways **VS** **68%** Local Roads

## Share of FSI Victims: Rural vs. Urban Roads[1]

**23%** Rural Roads **VS** **77%** Urban Roads

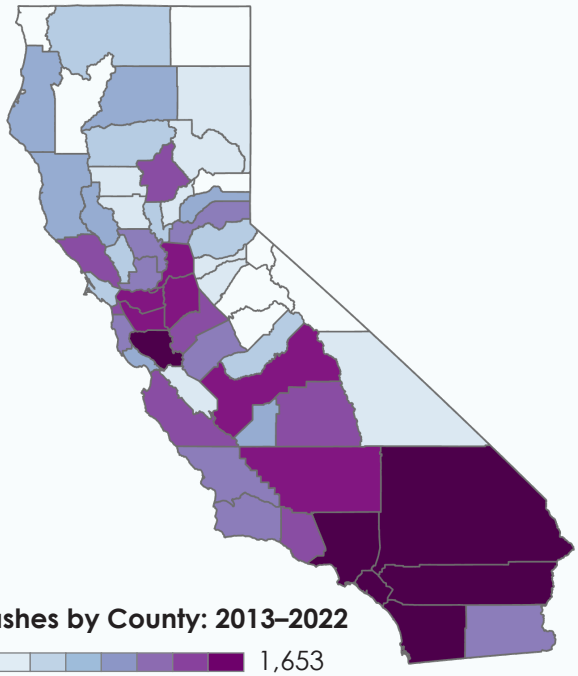
*Source: All crash data is from SWITRS unless otherwise noted.*
*1. Rural and urban data determined by 2020 US Census "Urban Areas" dataset. Crashes recorded by TIMS without geolocation were not included in Rural vs. Urban analysis.*

**For more information, visit the SHSP Crash Data Dashboard:**

# DISTRACTED DRIVING

## *FSI Crash Frequency and FSI Crash Rate by County*

### *FSI Crash Frequency*

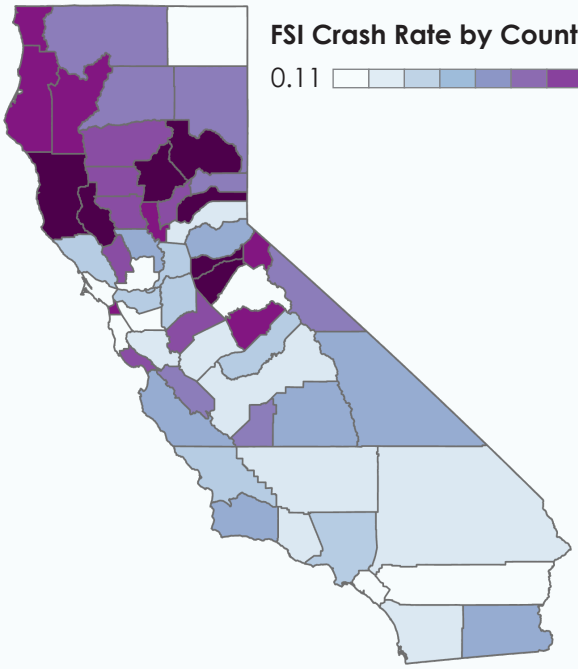


**FSI Crashes by County: 2013–2022**

2 — 1,653

### *FSI Crash Rate*

*FSI Crashes per 100,000 DVMT*

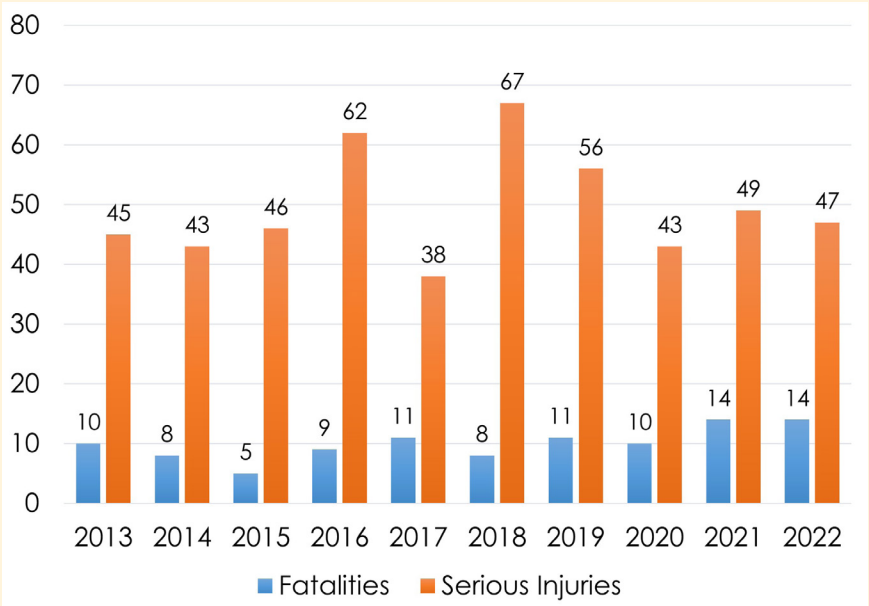


**FSI Crash Rate by County: 2013–2022**

0.11 — 0.68

*DVMT Source: Highway Performance Monitoring System*

## Yearly Trend for FSI Victims in Tribal Areas[1,2]




**Distracted Driving** makes up **5%** of tribal area FSI crashes.

Since 2013, FSI victims in tribal areas increased by **11%**, versus the overall statewide increase of **15%.**

*Source: All crash data is from SWITRS unless otherwise noted.*

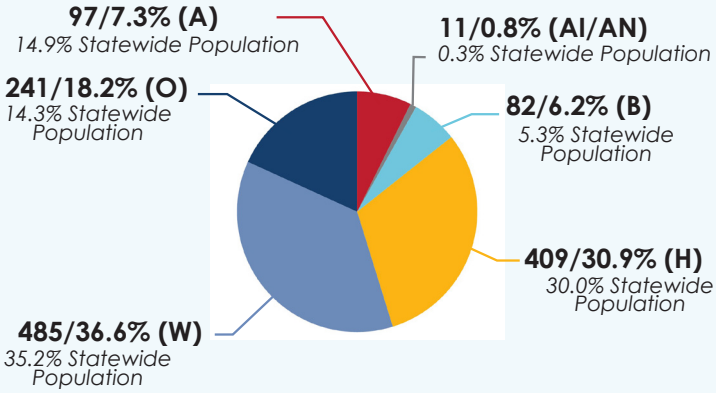
*1. University of California, Berkeley's Safe Transportation Research and Education Center (SWITRS 2013–2022), FARS 2013–2022*

*2. Tribal areas defined as areas within 5 miles of tribal boundaries.*

# DISTRACTED DRIVING

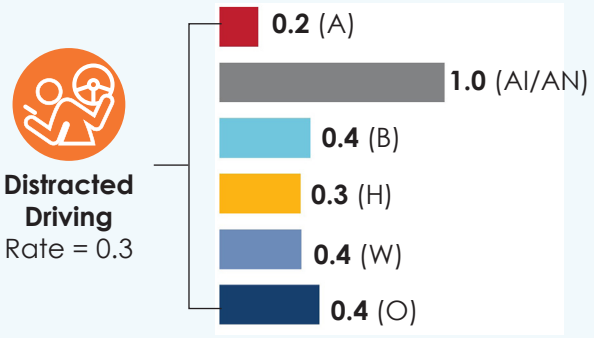
## Race/Ethnicity in Traffic Fatalities

### *Distribution of California Traffic Fatalities by Race/Ethnicity*




### *Fatality Rate by Race/Ethnicity*

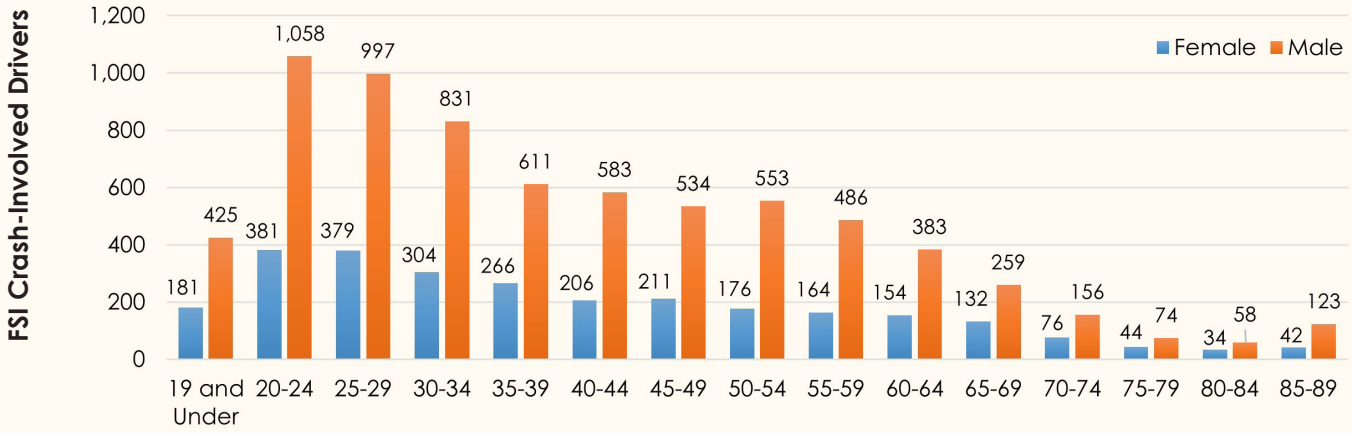
***(Fatality Rate per 100,000 Population)***




Asian (A) | American Indian/Alaskan Native (AI/AN) | Black (B) | Hispanic (H) | White (W) | Other (O)

## Comparison of Crash-Involved Drivers by Age and Sex

Male drivers are **2.5x** as likely to be involved in a Distracted Driving FSI crash




## Income Impact in Traffic Fatalities[1,2,3]

Increased Rate of Fatalities in Disadvantaged Communities Versus Non-Disadvantaged Communities

***Statewide Fatalities*** **40%** Higher

***Distracted Driving Fatalities*** **34%** Higher

*1. Income data is available for the Census Tracts where a traffic fatality occurs and not the individual (i.e. this data represents the income information of the Census Tracts where the crash occurred and not the income of the crash victim).*

*2. Disadvantaged communities were determined using 2022 ACS 5-Year estimate data for median household income at Census Tract level. The 2022 ACS 5-Year Estimate data was used to determine fatality rates per 100,000 population.*

*3. Assembly Bill 1550 stipulates that 80% of statewide median household income to be used as threshold for disadvantaged communities. 2022 threshold is $73,524.*

*Source: US Census Bureau 2022 ACS 5-Year Estimate data and FARS 2013–2022*

# DISTRACTED DRIVING

## Top Three Crash Types*

**25%** Vehicle/ Pedestrian

**20%** Rear End

**16%** Broadside

## Top Three Primary Crash Factors*

**23%** Unsafe Speed

**18%** Improper Turning

**13%** Pedestrian Violation

## Potential Countermeasures to Mitigate Distracted Driving FSI Crashes

These countermeasures have been selected as data-backed strategies to improve traffic safety within the Distracted Driving Challenge Area. See related fact sheets for overlapping Challenge Areas, as addressing one Challenge Area can improve the safety outcomes of other Challenge Areas.

**Graduated Driver Licensing (GDL) Passenger Limits for Young Drivers[2]**

**High-Visibility Cell Phone Use Enforcement[2]**

**Employee Programs on Distracted Driving (Training, Outreach, Policies)[2]**

### *Countermeasure References and Resources*


**1.** 28 Proven Safety Countermeasures, supported by Caltrans and FHWA

**2.** NHTSA Countermeasures that Work, 2023

**3.** Caltrans Local Roadway Safety Manual (Version 1.7, April 2024)


** Crash data is from SWITRS unless otherwise noted.*
*Percentages are calculated based on a total of 6,952 Distracted Driving FSI crashes.*

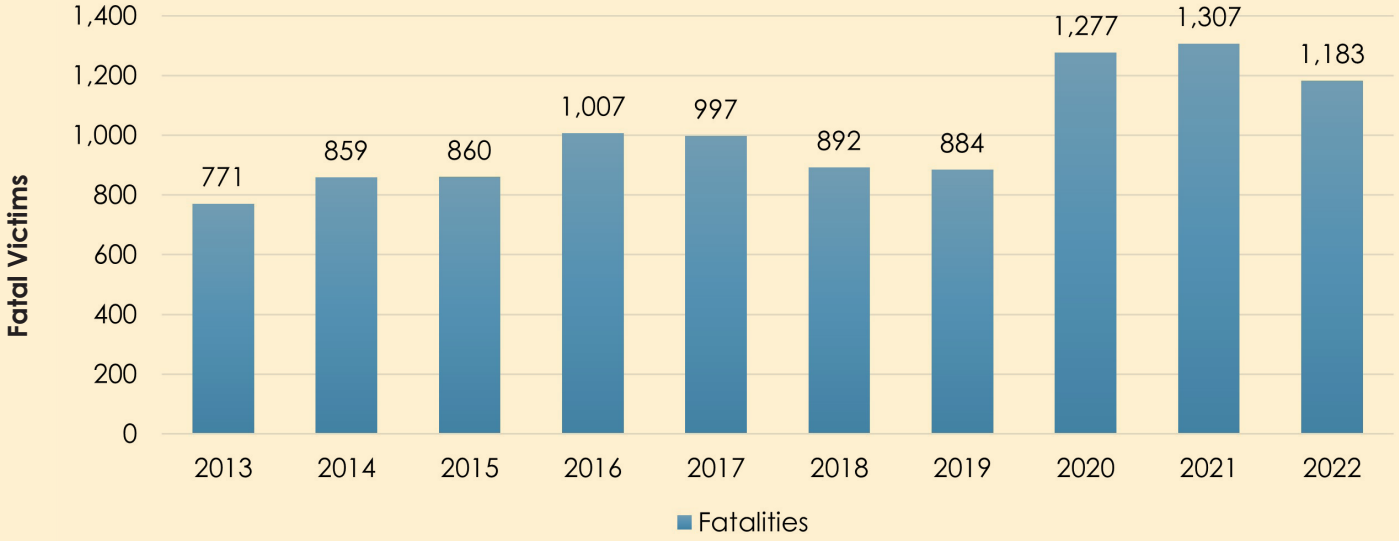
# DRIVER LICENSING

**The Driver Licensing Challenge Area focuses on reducing instances where an involved driver is unlicensed or does not carry a valid license for the vehicle that they are operating. Information on driver licensing is only currently available through the federal FARS; therefore, the data being reported for this Challenge Area only pertains to fatalities.**

## Driver Licensing Fatal Crashes

**27%** of fatal crashes **(8,966)**

## Fatal Victims by Year




*Fatalities sourced from FARS*

## Top Three Challenge Area Overlaps

Driver Licensing fatal crashes also involve:

- **40%** Impaired Driving
- **40%** Occupant Protection
- **39%** Lane Departures

Crashes often involve more than one factor and overlap with multiple Challenge Areas. See related fact sheets for overlapping Challenge Areas, as addressing one Challenge Area can improve the safety outcomes of the others.

## Share of Fatal Victims: State Highways vs. Local Roads

**40%** State Highways **VS** **60%** Local Roads

## Share of Fatal Victims: Rural vs. Urban Roads[1]

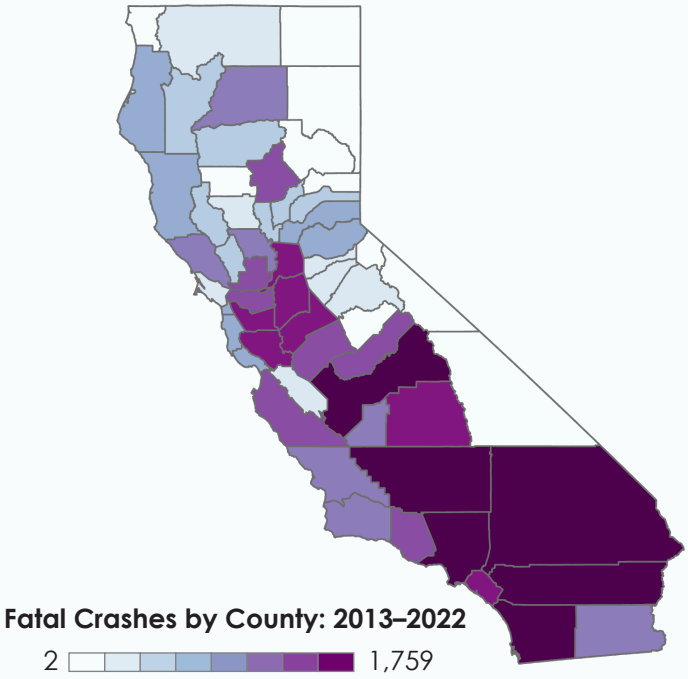
**40%** Rural Roads **VS** **60%** Urban Roads

*1. Rural and urban data determined by 2020 US Census "Urban Areas" dataset. Crashes recorded by TIMS without geolocation were not included in Rural vs. Urban analysis.*

**For more information, visit the SHSP Crash Data Dashboard:**

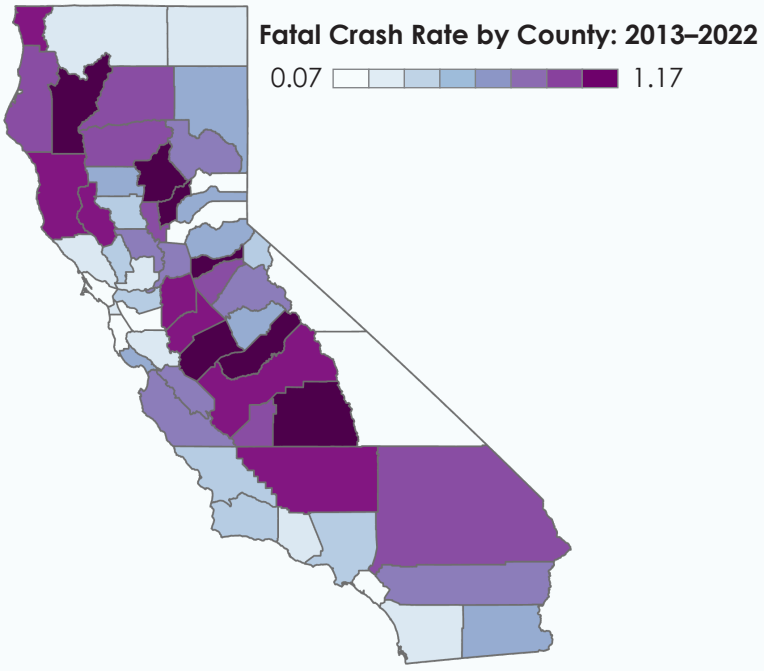
## Fatal Crash Frequency and Fatal Crash Rate by County

### Fatal Crash Frequency



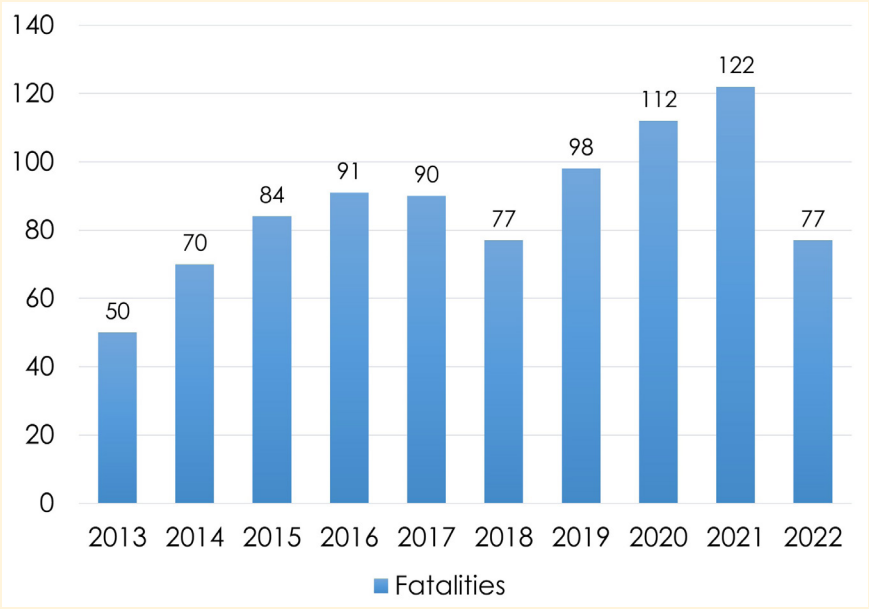

### FSI Crash Rate

*FSI Crashes per 100,000 DVMT*




*DVMT Source: Highway Performance Monitoring System*

## Yearly Trend for Fatal Victims in Tribal Areas[1,2]




**Driver Licensing** makes up **27%** of tribal area fatal crashes.

Since 2013, fatal victims in tribal areas increased by **54%**, versus the overall statewide increase of **53%.**

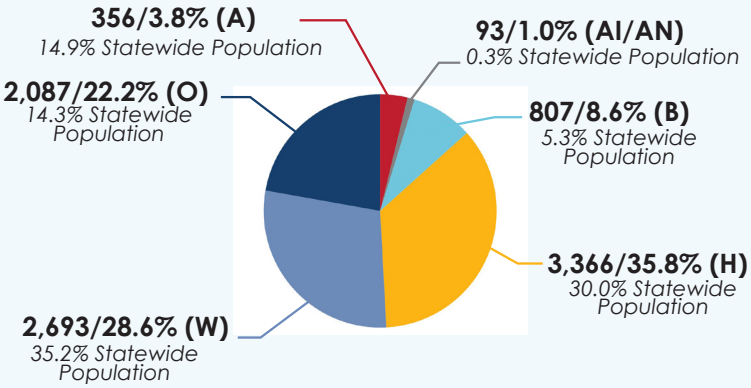
*1. University of California, Berkeley's Safe Transportation Research and Education Center (SWITRS 2013–2022), FARS 2013–2022*

*2. Tribal areas defined as areas within 5 miles of tribal boundaries.*

# DRIVER LICENSING

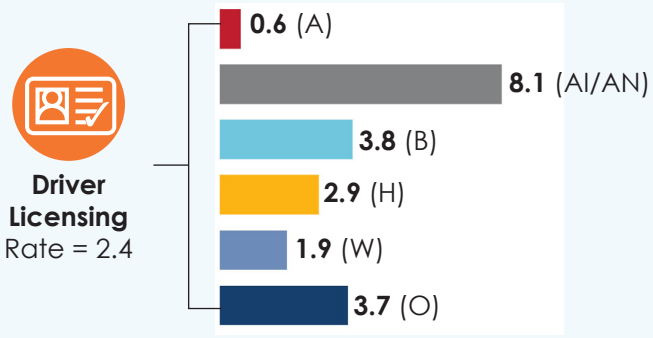
## Race/Ethnicity in Traffic Fatalities

### *Distribution of California Traffic Fatalities by Race/Ethnicity*




### *Fatality Rate by Race/Ethnicity*

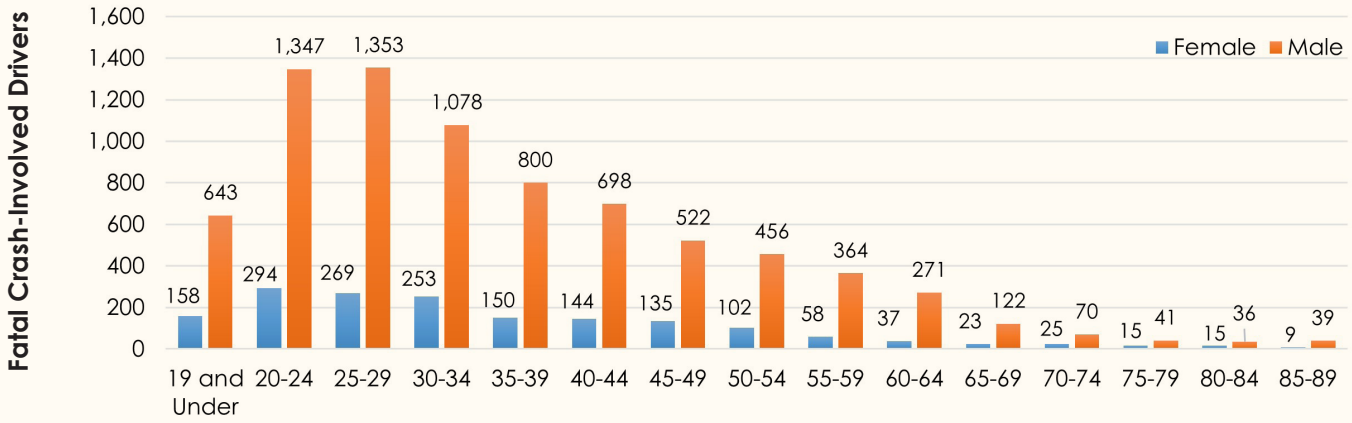
***(Fatality Rate per 100,000 Population)***




Asian (A) | American Indian/Alaskan Native (AI/AN) | Black (B) | Hispanic (H) | White (W) | Other (O)

## Comparison of Crash-Involved Drivers by Age and Sex

Male drivers are **4.5x** as likely to be involved in a Driver Licensing fatal crash




## Income Impact in Traffic Fatalities[1,2,3]

Increased Rate of Fatalities in Disadvantaged Communities Versus Non-Disadvantaged Communities

***Statewide Fatalities*** **40%** Higher

***Driver Licensing Fatalities*** **48%** Higher

*1. Income data is available for the Census Tracts where a traffic fatality occurs and not the individual (i.e. this data represents the income information of the Census Tracts where the crash occurred and not the income of the crash victim).*

*2. Disadvantaged communities were determined using 2022 ACS 5-Year estimate data for median household income at Census Tract level. The 2022 ACS 5-Year Estimate data was used to determine fatality rates per 100,000 population.*

*3. Assembly Bill 1550 stipulates that 80% of statewide median household income to be used as threshold for disadvantaged communities. 2022 threshold is $73,524.*

*Source: US Census Bureau 2022 ACS 5-Year Estimate data and FARS 2013–2022*

# DRIVER LICENSING

## Top Three Crash Types*

**32%**
**Hit Object**

**22%**
**Broadside**

**12%**
**Head-On**

## Top Three Primary Crash Factors*

**9%**
**Under the Influence**

**3%**
**Manslaughter**

**2%**
**Hit-and-Run**

*Note: Primary crash factors determined using "Violations" table in FARS. Note that over 81% of crashes in FARS lacked information for violation.*

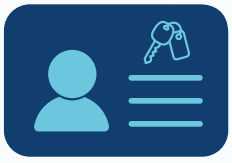
## Potential Countermeasures to Mitigate Driver Licensing Fatal Crashes

These countermeasures have been selected as data-backed strategies to improve traffic safety within the Distracted Driving Challenge Area. See related fact sheets for overlapping Challenge Areas, as addressing one Challenge Area can improve the safety outcomes of other Challenge Areas.

**Driver License Screening and Testing[2]**

**Enhanced Driver Education**

**GDL Intermediate License Nighttime Restrictions[2]**



**Enhanced GDL Programs and Restrictions[2]**

### *Countermeasure References and Resources*


**1.** 28 Proven Safety Countermeasures, supported by Caltrans and FHWA

**2.** NHTSA Countermeasures that Work, 2023

**3.** Caltrans Local Roadway Safety Manual (Version 1.7, April 2024)


** Percentages are calculated based on a total of 8,966 Driver Licensing fatal crashes.*

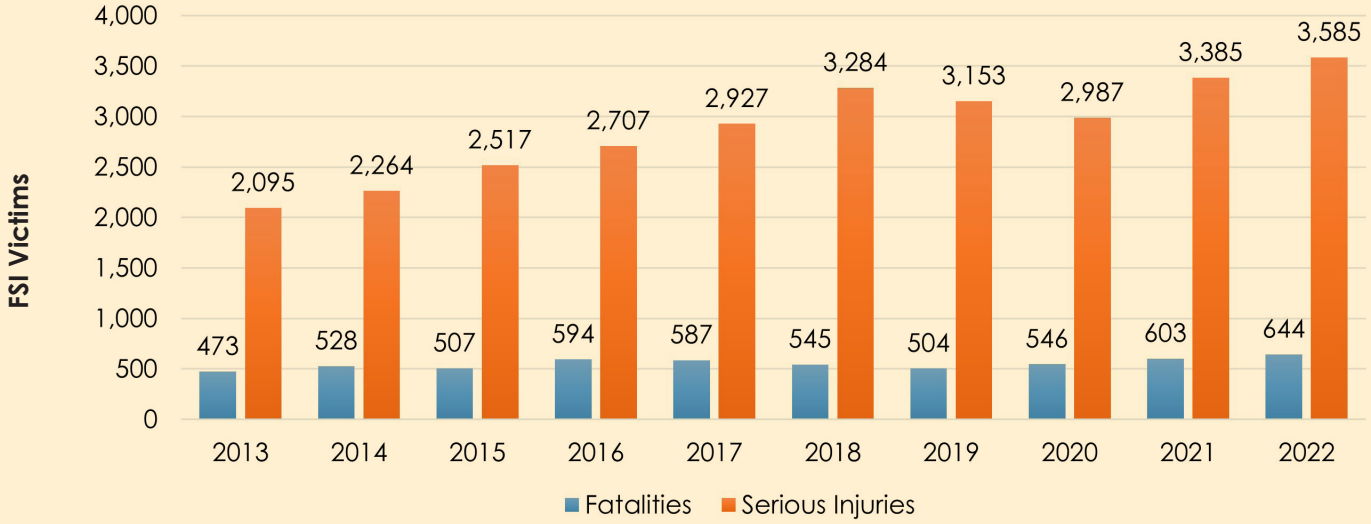
# MOTORCYCLISTS

**The Motorcyclists Challenge Area focuses on reducing fatal and serious injury crashes where a motorcyclist, motorized scooter, or moped rider is involved in a crash and identifying strategies to improve their overall safety on the roadway.**

## Motorcyclists FSI Crashes

**21%** of FSI crashes **(33,220)**

## FSI Victims by Year




*Fatalities sourced from FARS*

## Top Three Challenge Area Overlaps

Motorcyclists FSI crashes also involve:

- **44%** Lane Departures
- **42%** Speed Management/ Aggressive Driving
- **24%** Intersections

Crashes often involve more than one factor and overlap with multiple Challenge Areas. See related fact sheets for overlapping Challenge Areas, as addressing one Challenge Area can improve the safety outcomes of the others.

## Share of FSI Victims: State Highways vs. Local Roads

**41%** State Highways **VS** **58%** Local Roads

## Share of FSI Victims: Rural vs. Urban Roads[1]

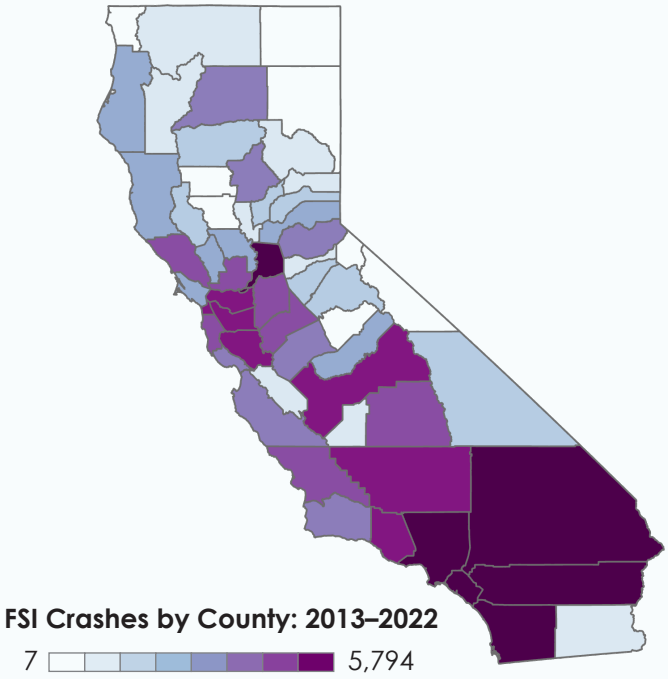
**30%** Rural Roads **VS** **70%** Urban Roads

*Source: All crash data is from SWITRS unless otherwise noted.*
*1. Rural and urban data determined by 2020 US Census "Urban Areas" dataset. Crashes recorded by TIMS without geolocation were not included in Rural vs. Urban analysis.*

**For more information, visit the SHSP Crash Data Dashboard:**

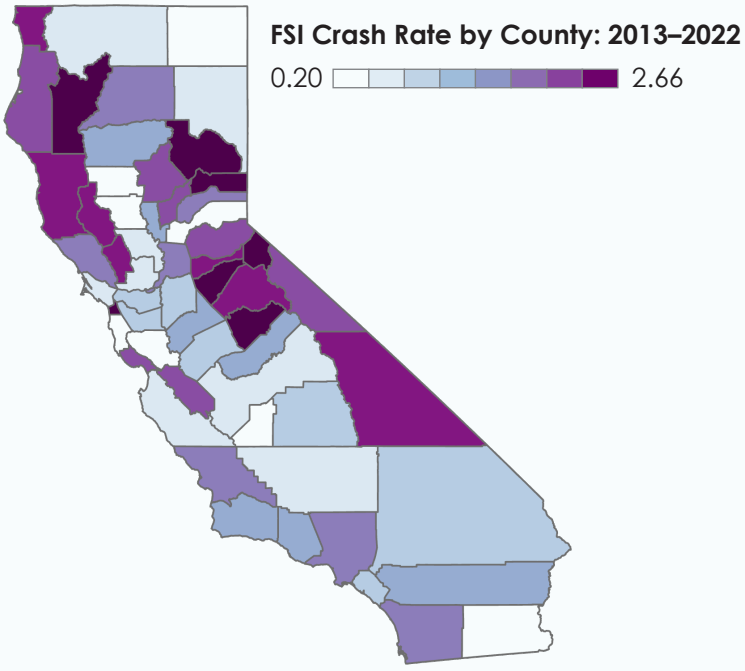
## FSI Crash Frequency and FSI Crash Rate by County

### FSI Crash Frequency



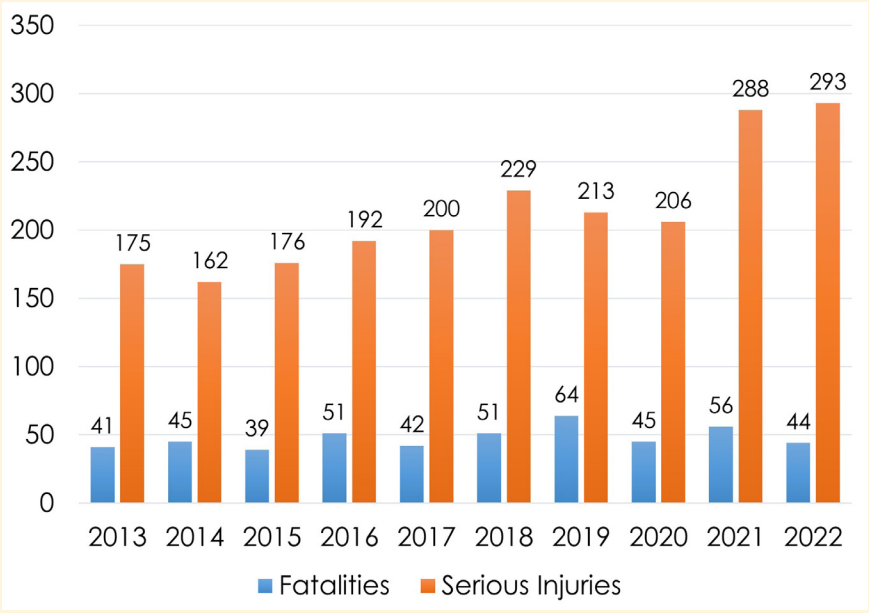

### FSI Crash Rate

*FSI Crashes per 100,000 DVMT*




*DVMT Source: Highway Performance Monitoring System*

## Yearly Trend for FSI Victims in Tribal Areas[1,2]




**Motorcyclists** make up **19%** of tribal area FSI crashes.

Since 2013, FSI victims in tribal areas increased by **56%**, versus the overall statewide increase of **66%.**

*Source: All crash data is from SWITRS unless otherwise noted.*

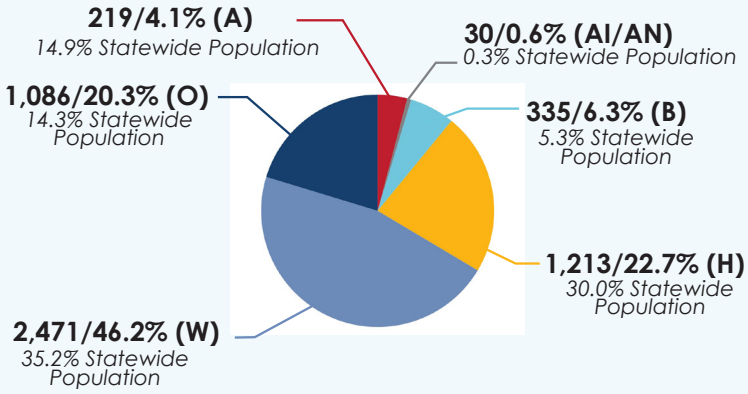
*1. University of California, Berkeley's Safe Transportation Research and Education Center (SWITRS 2013–2022), FARS 2013–2022*

*2. Tribal areas defined as areas within 5 miles of tribal boundaries.*

# MOTORCYCLISTS

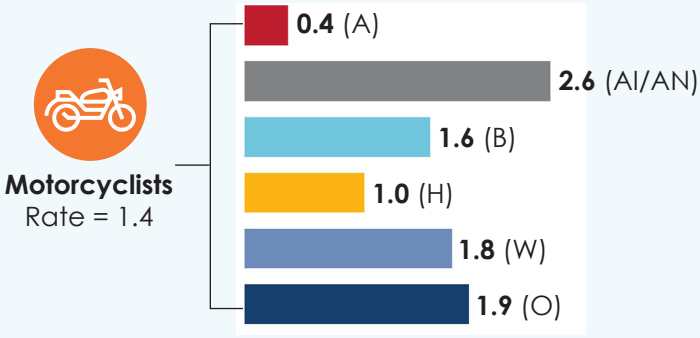
## Race/Ethnicity in Traffic Fatalities

### *Distribution of California Traffic Fatalities by Race/Ethnicity*




### *Fatality Rate by Race/Ethnicity*

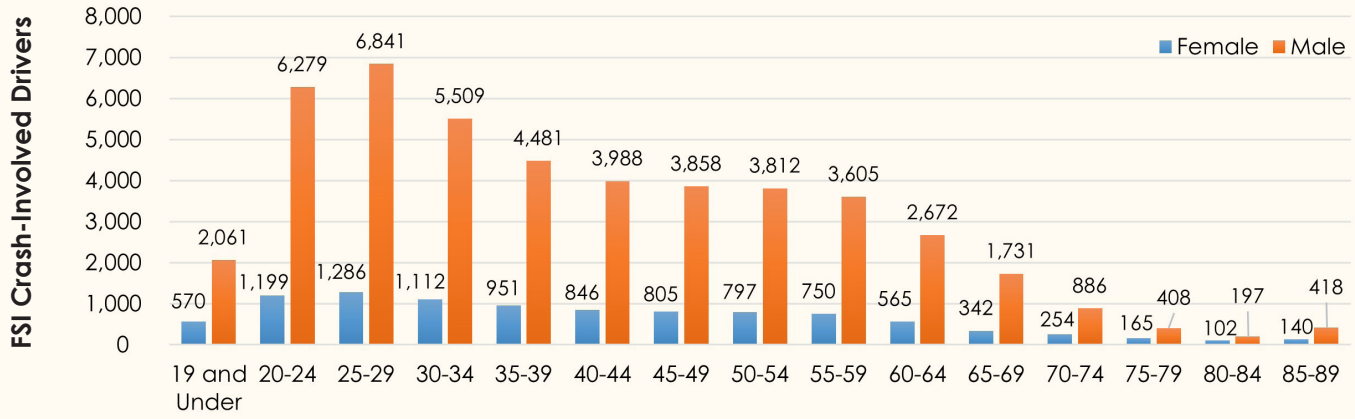
***(Fatality Rate per 100,000 Population)***




Asian (A) | American Indian/Alaskan Native (AI/AN) | Black (B) | Hispanic (H) | White (W) | Other (O)

## Comparison of Crash-Involved Drivers by Age and Sex

Male drivers are **4.5x** as likely to be involved in a Motorcyclists FSI crash




## Income Impact in Traffic Fatalities[1,2,3]

Increased Rate of Fatalities in Disadvantaged Communities Versus Non-Disadvantaged Communities

***Statewide Fatalities*** **40%** Higher

***Motorcyclists Fatalities*** **20%** Higher

*1. Income data is available for the Census Tracts where a traffic fatality occurs and not the individual (i.e. this data represents the income information of the Census Tracts where the crash occurred and not the income of the crash victim).*

*2. Disadvantaged communities were determined using 2022 ACS 5-Year estimate data for median household income at Census Tract level. The 2022 ACS 5-Year Estimate data was used to determine fatality rates per 100,000 population.*

*3. Assembly Bill 1550 stipulates that 80% of statewide median household income to be used as threshold for disadvantaged communities. 2022 threshold is $73,524.*

*Source: US Census Bureau 2022 ACS 5-Year Estimate data and FARS 2013–2022*

# MOTORCYCLISTS

## Top Three Crash Types*

**26%** Broadside

**20%** Overturned

**17%** Hit Object

## Top Three Primary Crash Factors*

**30%** Unsafe Speed

**20%** Improper Turning

**17%** Automobile Right of Way

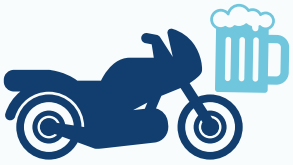
## Potential Countermeasures to Mitigate Motorcyclists FSI Crashes

These countermeasures have been selected as data-backed strategies to improve traffic safety within the Motorcyclists Challenge Area. See related fact sheets for overlapping Challenge Areas, as addressing one Challenge Area can improve the safety outcomes of other Challenge Areas.

**Enhanced Motorcyclists Education and Training[2]**

**Universal Motorcyclist Helmet Use Laws[2]**

**Promote the Use of All Protective Riding Equipment[2]**



**Alcohol-Impaired Motorcyclists: Detection, Enforcement, and Sanctions[2]**

### *Countermeasure References and Resources*


1. 28 Proven Safety Countermeasures, supported by Caltrans and FHWA

2. NHTSA Countermeasures that Work, 2023

3. Caltrans Local Roadway Safety Manual (Version 1.7, April 2024)


** Crash data is from SWITRS unless otherwise noted.*
*Percentages are calculated based on a total of 33,220 Motorcyclists FSI crashes.*

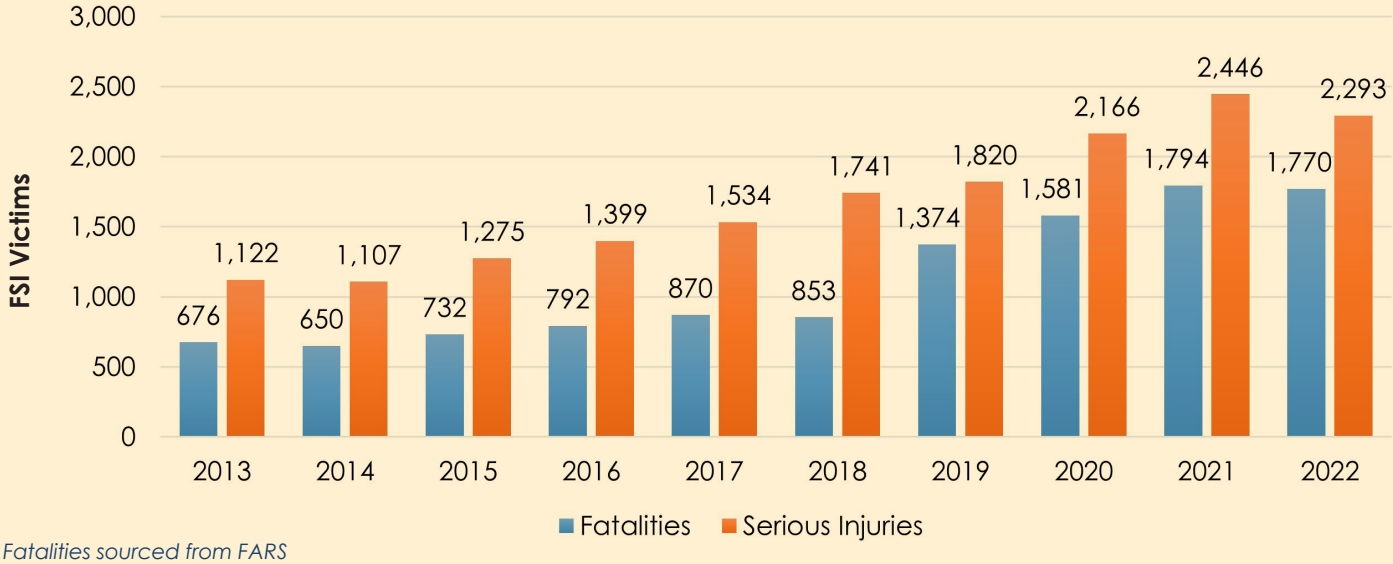
# OCCUPANT PROTECTION

**The Occupant Protection Challenge Area focuses on increasing the proper use of occupant restraining devices (including seat belts and child seats) to reduce fatalities and serious injuries that can be attributed to the lack of or improper use of restraining devices.**

## Occupant Protection FSI Crashes

**13%** of FSI crashes **(21,420)**

## FSI Victims by Year




*Fatalities sourced from FARS*

## Top Three Challenge Area Overlaps

Occupant Protection FSI crashes also involve:

- **64%** Lane Departures
- **43%** Impaired Driving
- **34%** Speed Management/ Aggressive Driving

Crashes often involve more than one factor and overlap with multiple Challenge Areas. See related fact sheets for overlapping Challenge Areas, as addressing one Challenge Area can improve the safety outcomes of the others.

## Share of FSI Victims: State Highways vs. Local Roads

**43%** State Highways **VS** **57%** Local Roads

## Share of FSI Victims: Rural vs. Urban Roads[1]

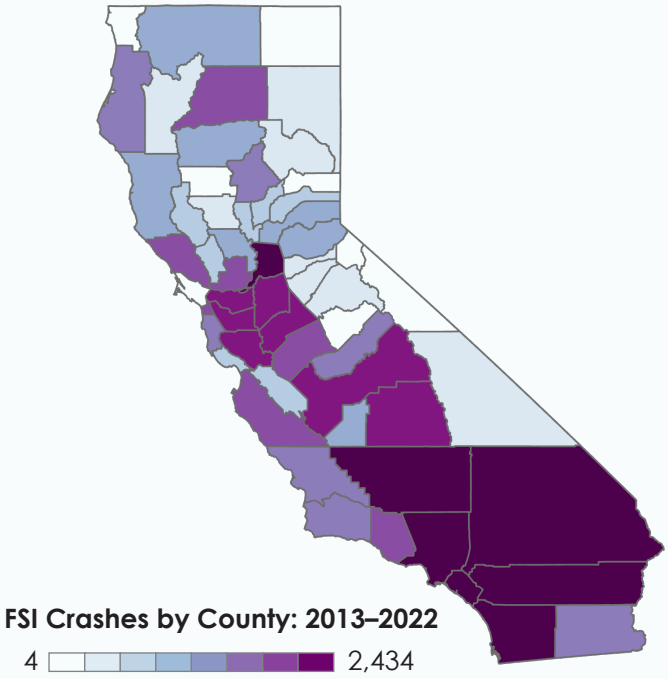
**39%** Rural Roads **VS** **61%** Urban Roads

*Source: All crash data is from SWITRS unless otherwise noted.*
*1. Rural and urban data determined by 2020 US Census "Urban Areas" dataset. Crashes recorded by TIMS without geolocation were not included in Rural vs. Urban analysis.*

**For more information, visit the SHSP Crash Data Dashboard:**

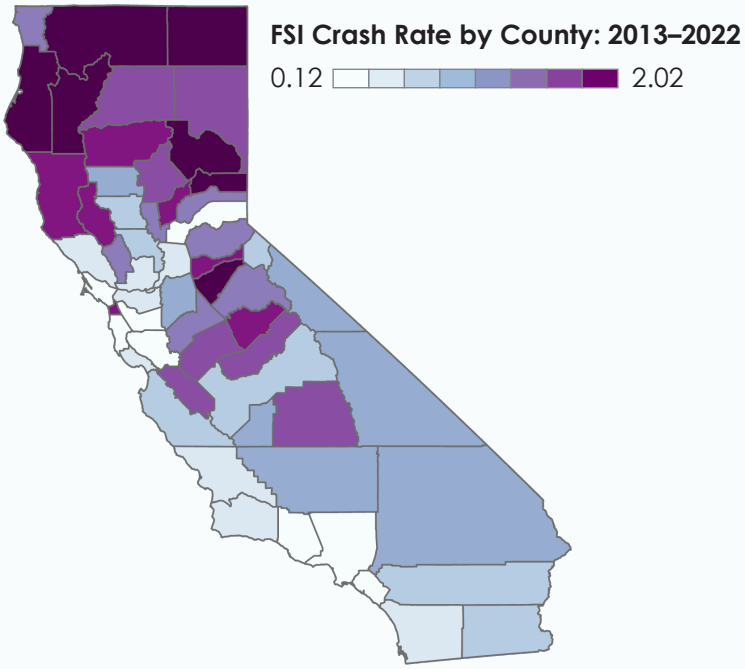
## FSI Crash Frequency and FSI Crash Rate by County

### FSI Crash Frequency



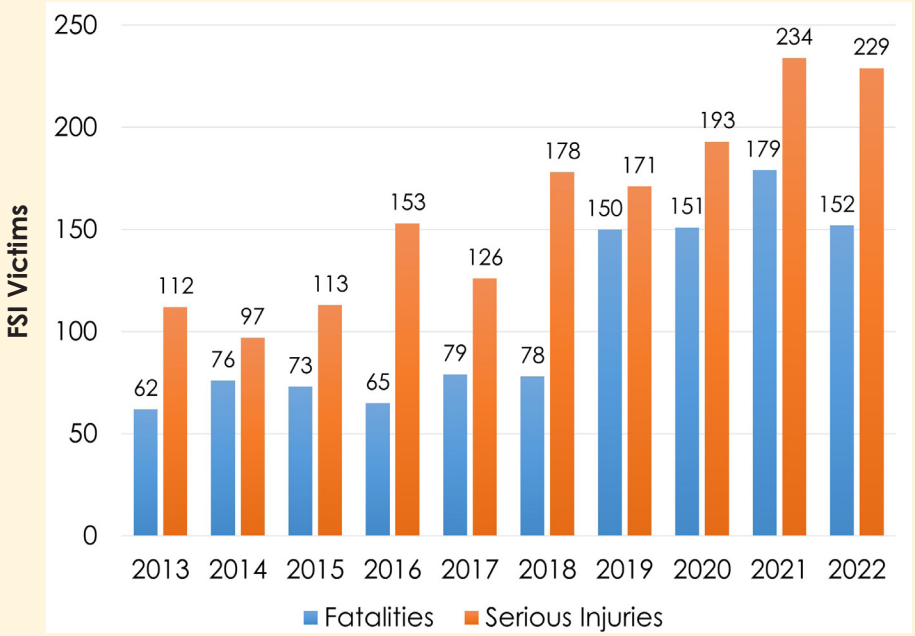

### FSI Crash Rate

*FSI Crashes per 100,000 DVMT*




*DVMT Source: Highway Performance Monitoring System*

## Yearly Trend for FSI Victims in Tribal Areas[1,2]




**Occupant Protection** makes up **17%** of tribal area FSI crashes.

Since 2013, FSI victims in tribal areas increased by **119%**, versus the overall statewide increase of **90%.**

*Source: All crash data is from SWITRS unless otherwise noted.*

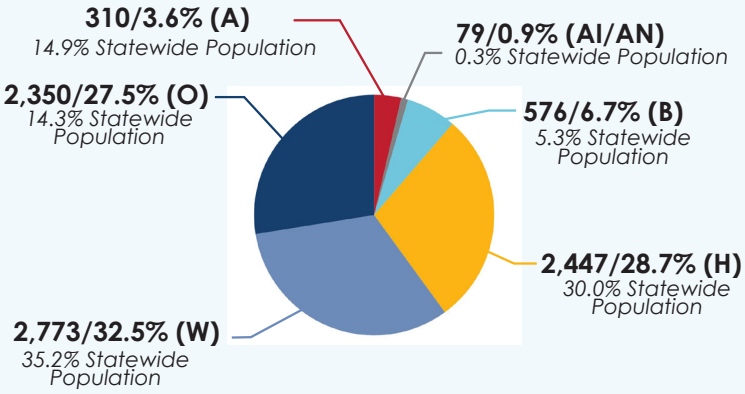
*1. University of California, Berkeley's Safe Transportation Research and Education Center (SWITRS 2013–2022), FARS 2013–2022*

*2. Tribal areas defined as areas within 5 miles of tribal boundaries.*

# OCCUPANT PROTECTION

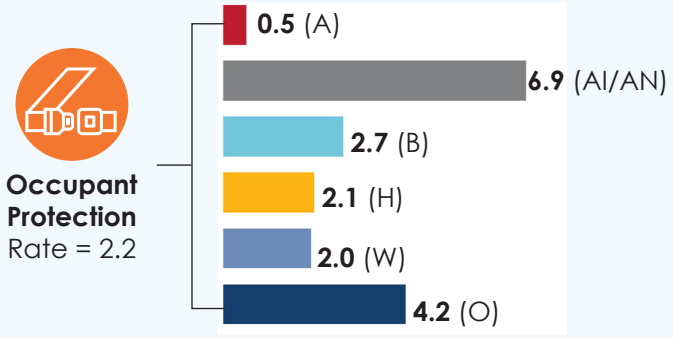
## Race/Ethnicity in Traffic Fatalities

### *Distribution of California Traffic Fatalities by Race/Ethnicity*




### *Fatality Rate by Race/Ethnicity*

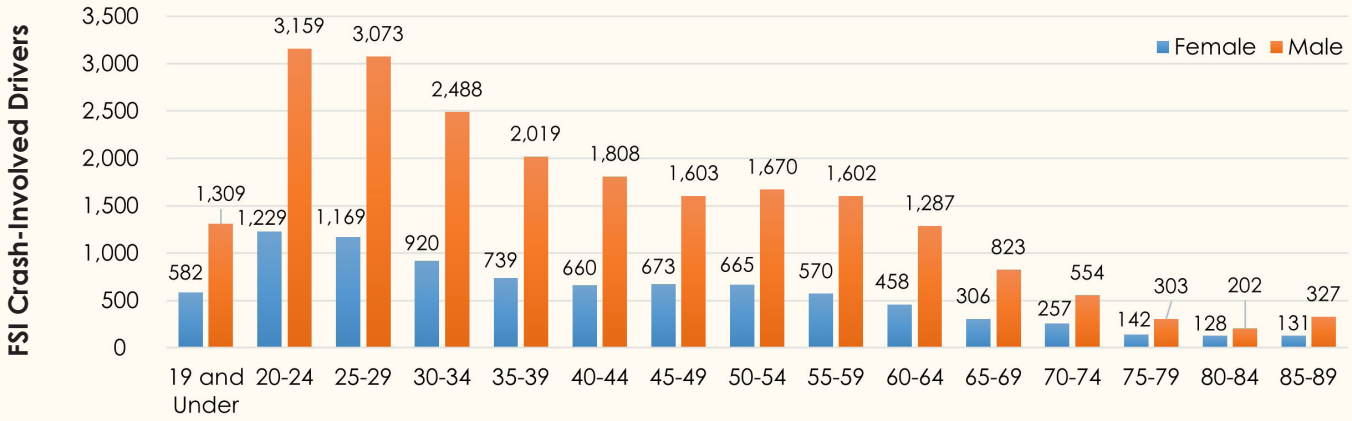
***(Fatality Rate per 100,000 Population)***




Asian (A) | American Indian/Alaskan Native (AI/AN) | Black (B) | Hispanic (H) | White (W) | Other (O)

## Comparison of Crash-Involved Drivers by Age and Sex

Male drivers are **2.5x** as likely to be involved in an Occupant Protection FSI crash




## Income Impact in Traffic Fatalities[1,2,3]

Increased Rate of Fatalities in Disadvantaged Communities Versus Non-Disadvantaged Communities

***Statewide Fatalities*** **40%** Higher

***Occupant Protection Fatalities*** **39%** Higher

*1. Income data is available for the Census Tracts where a traffic fatality occurs and not the individual (i.e. this data represents the income information of the Census Tracts where the crash occurred and not the income of the crash victim).*

*2. Disadvantaged communities were determined using 2022 ACS 5-Year estimate data for median household income at Census Tract level. The 2022 ACS 5-Year Estimate data was used to determine fatality rates per 100,000 population.*

*3. Assembly Bill 1550 stipulates that 80% of statewide median household income to be used as threshold for disadvantaged communities. 2022 threshold is $73,524.*

*Source: US Census Bureau 2022 ACS 5-Year Estimate data and FARS 2013–2022*

# OCCUPANT PROTECTION

## Top Three Crash Types*

**40%** Hit Object

**15%** Broadside

**12%** Overturned

## Top Three Primary Crash Factors*

**34%** Under the Influence

**26%** Improper Turning

**16%** Unsafe Speed

## Potential Countermeasures to Mitigate Occupant Protection FSI Crashes

These countermeasures have been selected as data-backed strategies to improve traffic safety within the Occupant Protection Challenge Area. See related fact sheets for overlapping Challenge Areas, as addressing one Challenge Area can improve the safety outcomes of other Challenge Areas.

**High-Visibility Seat Belt Law and Child Passenger Safety Enforcement Programs[2]**

**Education and Outreach Programs with Low Seat Belt Use Demographic Groups[2]**

**Strong Child Passenger Safety Laws[2]**

**Primary Enforcement of Seat Belt Use Laws[2]**

**Increased Fines for Seat Belt Law Violations[2]**

### *Countermeasure References and Resources*


**1.** 28 Proven Safety Countermeasures, supported by Caltrans and FHWA

**2.** NHTSA Countermeasures that Work, 2023

**3.** Caltrans Local Roadway Safety Manual (Version 1.7, April 2024)


** Crash data is from SWITRS unless otherwise noted.*
*** Percentages are calculated based on a total of 21,420 Occupant Protection FSI crashes.*

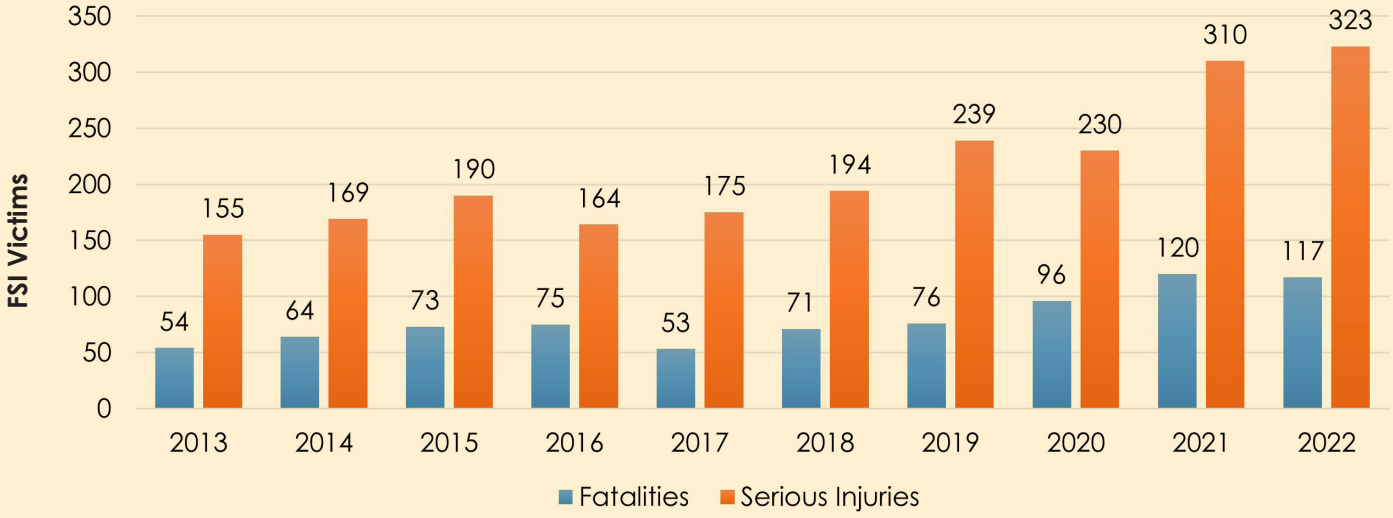
# WORK ZONES

**The Work Zones Challenge Area focuses on improving the safety in and near work zones for construction, maintenance, and/or roadway repairs to reduce fatal and serious injury crashes in those roadway conditions. This includes work zones that are temporary or long-term, regardless of the presence of workers.**

## Work Zones FSI Crashes

**2%** of FSI crashes **(2,493)**

## FSI Victims by Year




*Fatalities sourced from FARS*

## Top Three Challenge Area Overlaps

Work Zone FSI crashes also involve:

**47%** | **Speed Management/ Aggressive Driving**

**38%** | **Lane Departures**

**28%** | **Impaired Driving**

Crashes often involve more than one factor and overlap with multiple Challenge Areas. See related fact sheets for overlapping Challenge Areas, as addressing one Challenge Area can improve the safety outcomes of the others.

## Share of FSI Victims: State Highways vs. Local Roads

**79%** State Highways **VS** **21%** Local Roads

## Share of FSI Victims: Rural vs. Urban Roads[1]

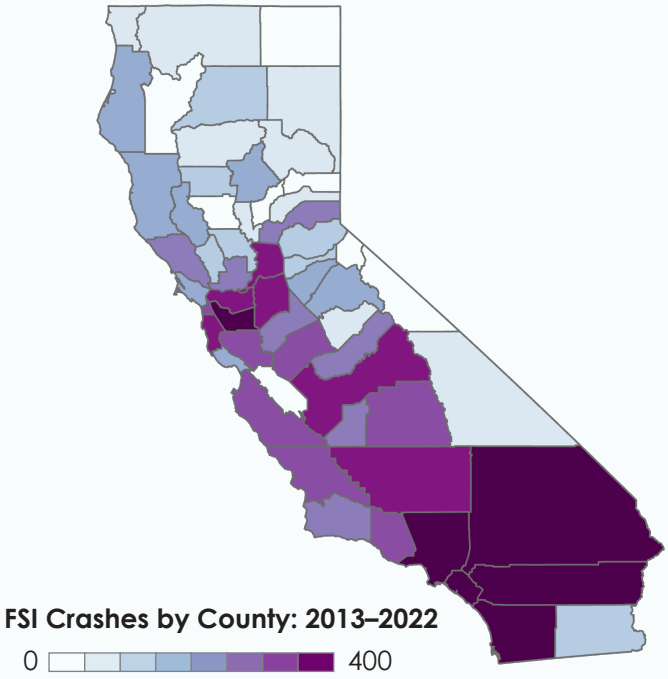
**26%** Rural Roads **VS** **74%** Urban Roads

*Source: All crash data is from SWITRS unless otherwise noted.*
*1. Rural and urban data determined by 2020 US Census "Urban Areas" dataset. Crashes recorded by TIMS without geolocation were not included in Rural vs. Urban analysis.*

**For more information, visit the SHSP Crash Data Dashboard:**

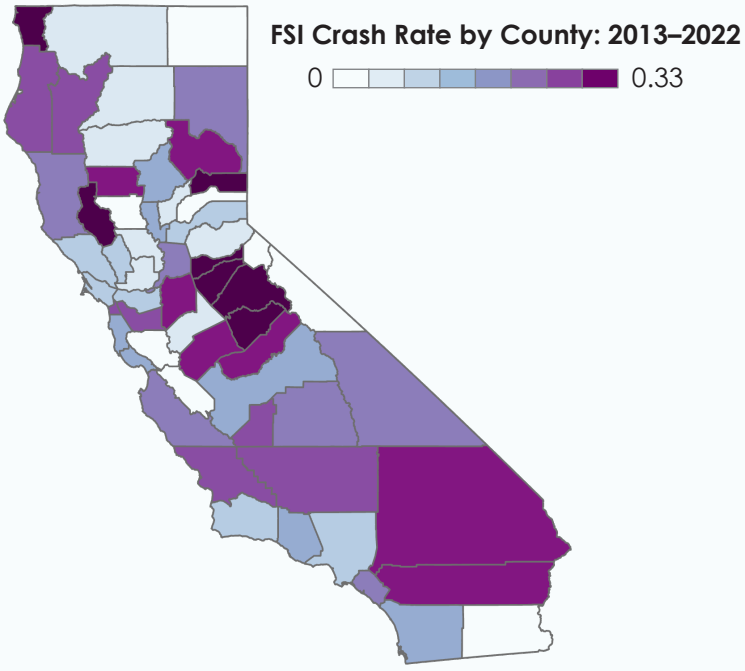
## FSI Crash Frequency and FSI Crash Rate by County

### FSI Crash Frequency



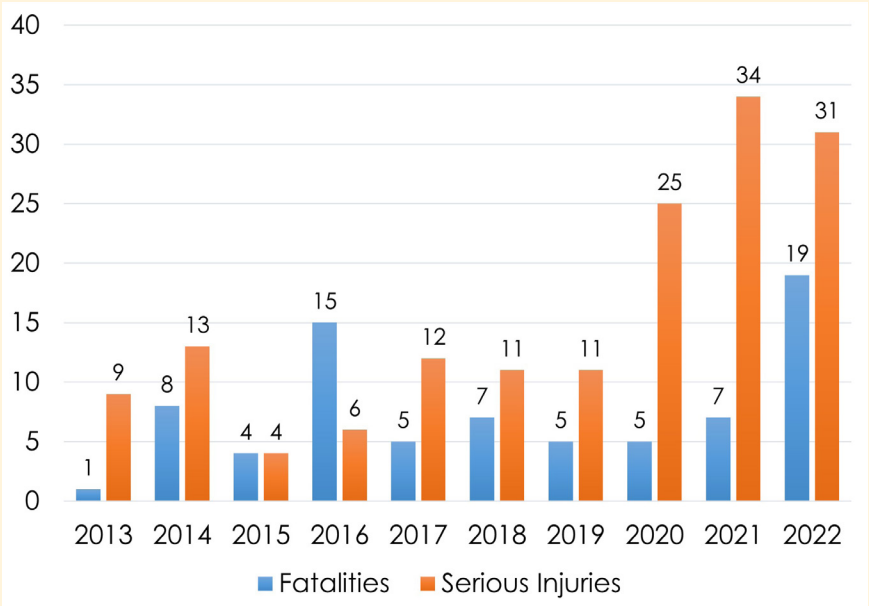

### FSI Crash Rate

*FSI Crashes per 100,000 DVMT*




*DVMT Source: Highway Performance Monitoring System*

## Yearly Trend for FSI Victims in Tribal Areas[1,2]




**Work Zones** makes up **2%** of tribal area FSI crashes.

Since 2013, FSI victims in tribal areas increased by **400%**, versus the overall statewide increase of **93%**.

*Source: All crash data is from SWITRS unless otherwise noted.*

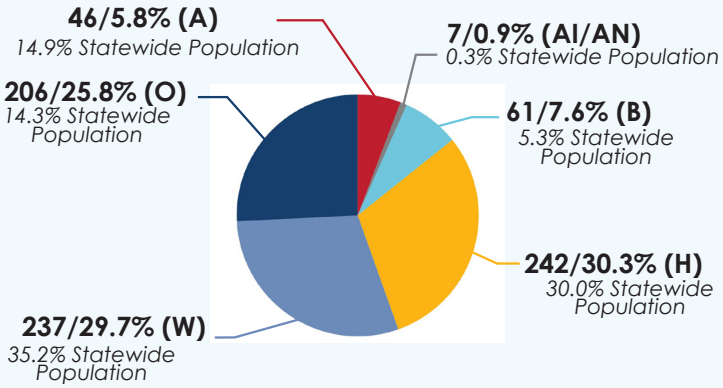
*1. University of California, Berkeley's Safe Transportation Research and Education Center (SWITRS 2013–2022), FARS 2013–2022*

*2. Tribal areas defined as areas within 5 miles of tribal boundaries.*

# WORK ZONES

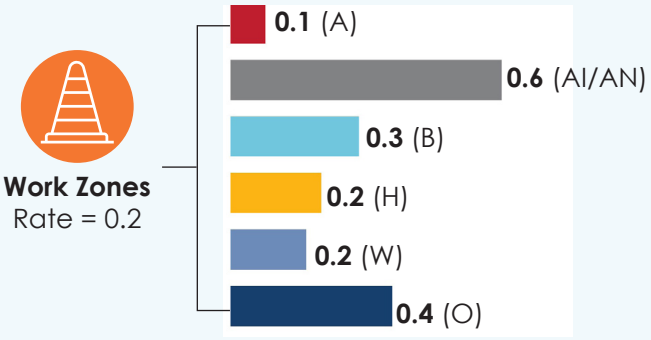
## Race/Ethnicity in Traffic Fatalities

### *Distribution of California Traffic Fatalities by Race/Ethnicity*




### *Fatality Rate by Race/Ethnicity*

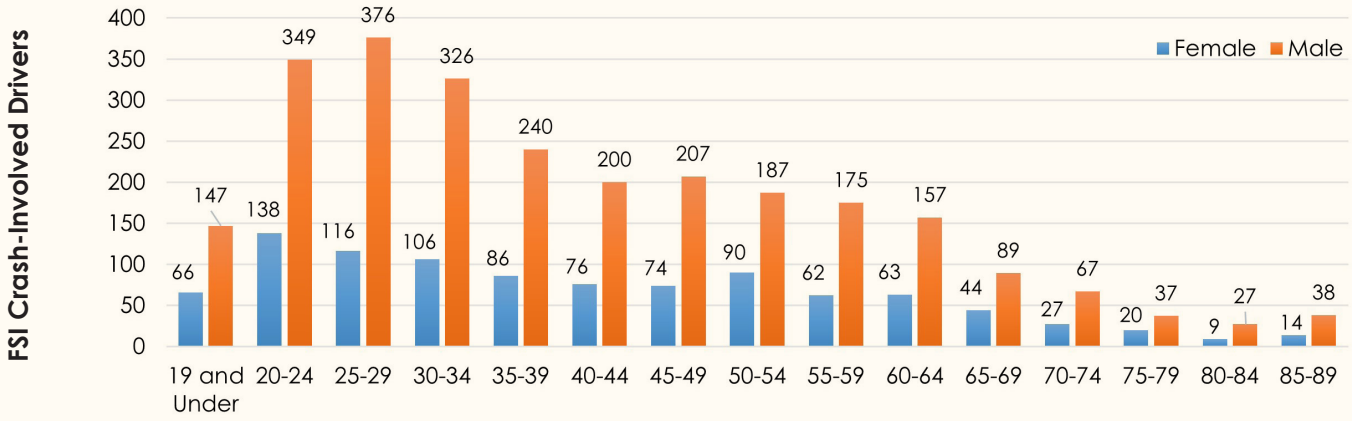
***(Fatality Rate per 100,000 Population)***




Asian (A) | American Indian/Alaskan Native (AI/AN) | Black (B) | Hispanic (H) | White (W) | Other (O)

## Comparison of Crash-Involved Drivers by Age and Sex

Male drivers are **2.5x** as likely to be involved in a Work Zones FSI crash




## Income Impact in Traffic Fatalities[1,2,3]

Increased Rate of Fatalities in Disadvantaged Communities Versus Non-Disadvantaged Communities

***Statewide Fatalities*** **40%** Higher

***Work Zones Fatalities*** **20%** Higher

*1. Income data is available for the Census Tracts where a traffic fatality occurs and not the individual (i.e. this data represents the income information of the Census Tracts where the crash occurred and not the income of the crash victim).*

*2. Disadvantaged communities were determined using 2022 ACS 5-Year estimate data for median household income at Census Tract level. The 2022 ACS 5-Year Estimate data was used to determine fatality rates per 100,000 population.*

*3. Assembly Bill 1550 stipulates that 80% of statewide median household income to be used as threshold for disadvantaged communities. 2022 threshold is $73,524.*

*Source: US Census Bureau 2022 ACS 5-Year Estimate data and FARS 2013–2022*

# WORK ZONES

## Top Three Crash Types*

**33%**
**Rear End**

**24%**
**Hit Object**

**10%**
**Vehicle/ Pedestrian**

## Top Three Primary Crash Factors*

**32%**
**Unsafe Speed**

**23%**
**Under the Influence**

**18%**
**Improper Turning**

## Potential Countermeasures to Mitigate Work Zones FSI Crashes

While there are no countermeasures that specifically address Work Zone roadway safety per the countermeasure resources #1-3 below, the following countermeasures have been identified from a review of other state plans and road best practices as potential countermeasures to mitigate Work Zones FSI crashes.

See related fact sheets for overlapping Challenge Areas, as addressing one Challenge Area can improve the safety outcomes of other Challenge Areas.

**High-Visibility Speeding Enforcement (in Work Zones)[4]**

**Speed Safety Cameras in Work Zones (Dependent on Legislation)[4]**

### *Countermeasure References and Resources*


**1.** 28 Proven Safety Countermeasures, supported by Caltrans and FHWA

**2.** NHTSA Countermeasures that Work, 2023

**3.** Caltrans Local Roadway Safety Manual (Version 1.7, April 2024)

**4.** Implementing the Proven Safety Countermeasures in Work Zones, 2024


** Top crash data is from SWITRS unless otherwise noted.*
*** Percentages are calculated based on a total of 2,493 Work Zones FSI crashes.*

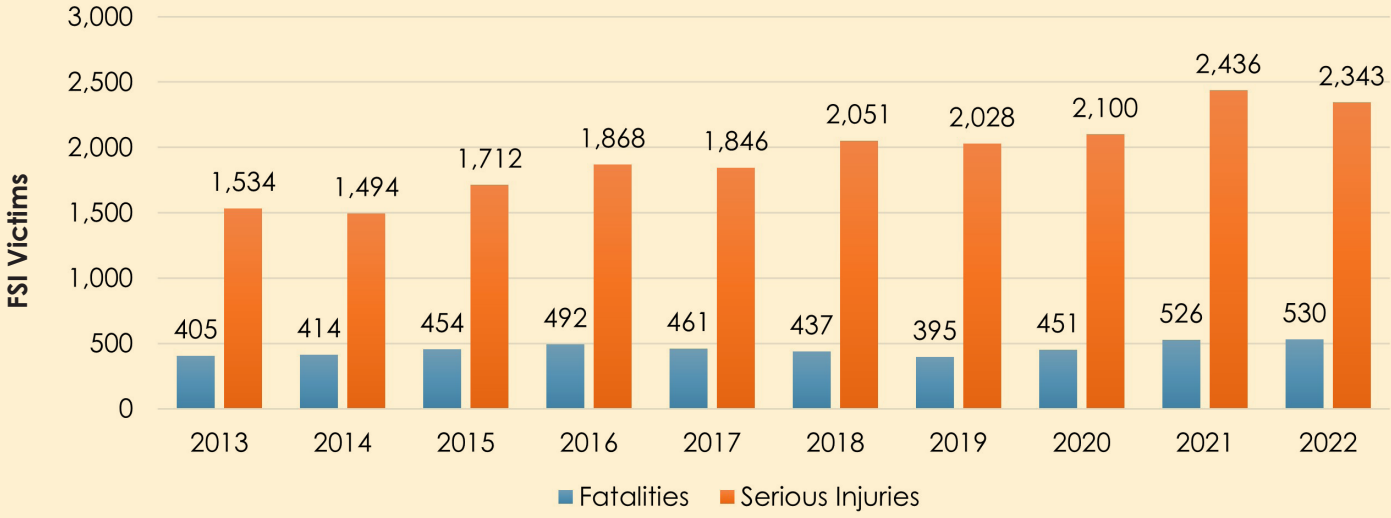
# YOUNG DRIVERS

**The Young Drivers Challenge Area focuses on improving the safety of drivers identified as being 15 to 20 years of age, mirroring the ages represented by the state's GDL provisions.**

## Young Drivers FSI Crashes

**12%** of FSI crashes **(19,387)**

## FSI Victims by Year




*Fatalities sourced from FARS*

## Top Three Challenge Area Overlaps

Young Drivers FSI crashes also involve:

- **44%** Lane Departures
- **40%** Speed Management/ Aggressive Driving
- **29%** Intersections

Crashes often involve more than one factor and overlap with multiple Challenge Areas. See related fact sheets for overlapping Challenge Areas, as addressing one Challenge Area can improve the safety outcomes of the others.

## Share of FSI Victims: State Highways vs. Local Roads

**34%** State Highways **VS** **66%** Local Roads

## Share of FSI Victims: Rural vs. Urban Roads[1]

**28%** Rural Roads **VS** **71%** Urban Roads

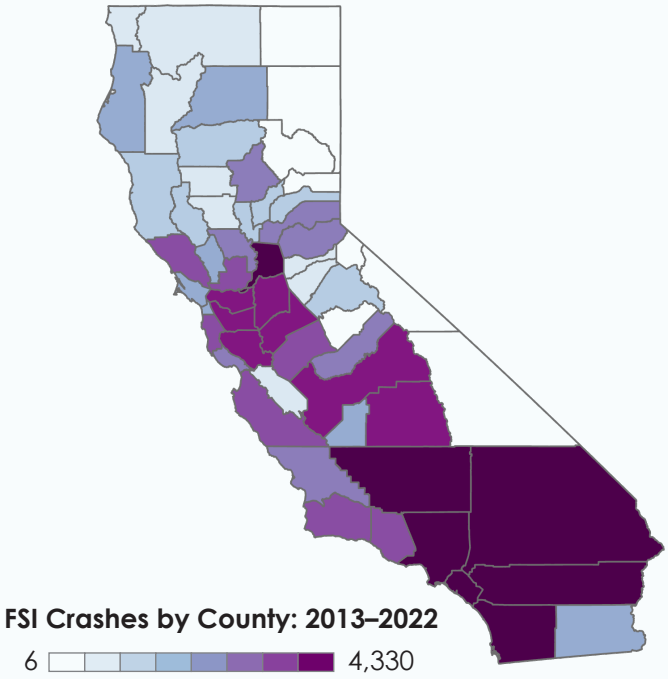
*Source: All crash data is from SWITRS unless otherwise noted.*
*1. Rural and urban data determined by 2020 US Census "Urban Areas" dataset. Crashes recorded by TIMS without geolocation were not included in Rural vs. Urban analysis.*

**For more information, visit the SHSP Crash Data Dashboard:**

# YOUNG DRIVERS

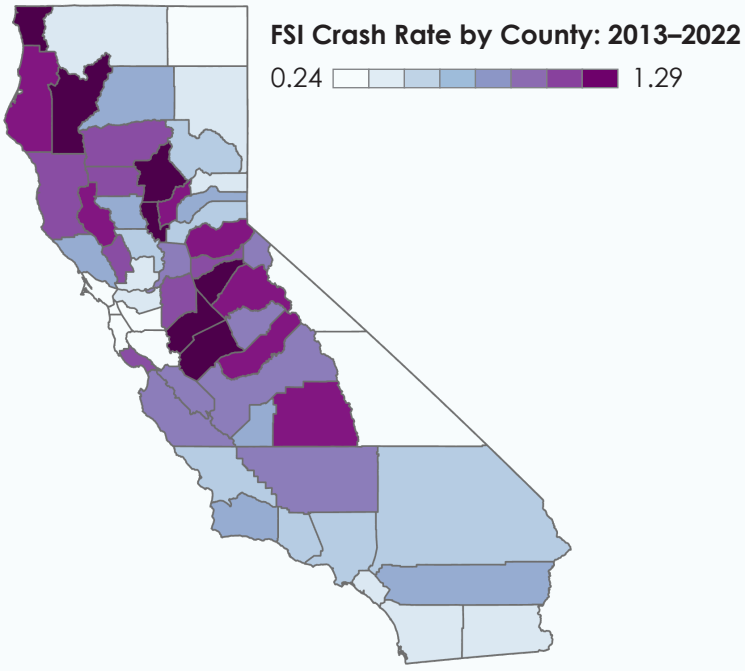
## FSI Crash Frequency and FSI Crash Rate by County

### FSI Crash Frequency



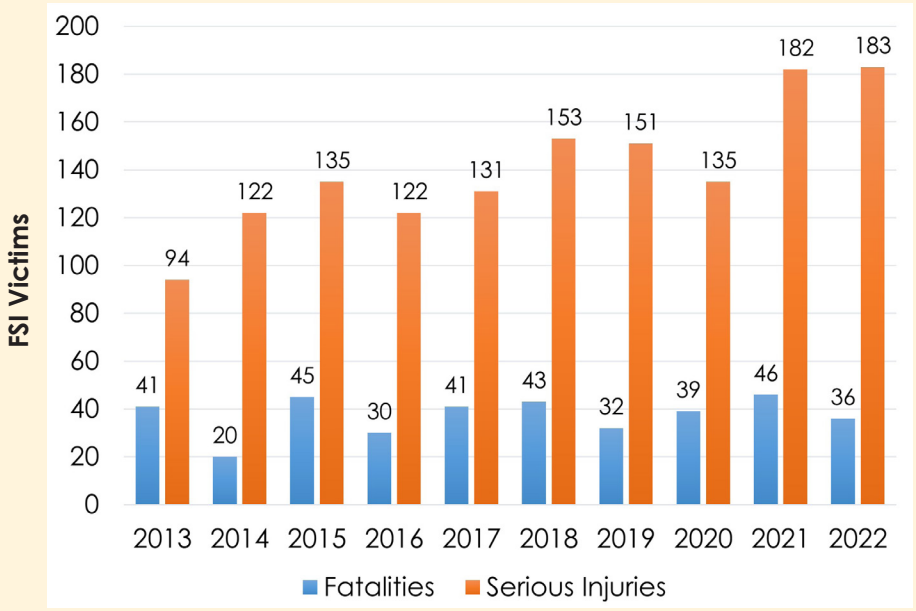

### FSI Crash Rate

*FSI Crashes per 100,000 DVMT*




*DVMT Source: Highway Performance Monitoring System*

## Yearly Trend for FSI Victims in Tribal Areas[1,2]




**Young Drivers** make up **13%** of tribal area FSI crashes.

Since 2013, FSI victims in tribal areas increased by **62%**, versus the overall statewide increase of **49%.**

*Source: All crash data is from SWITRS unless otherwise noted.*

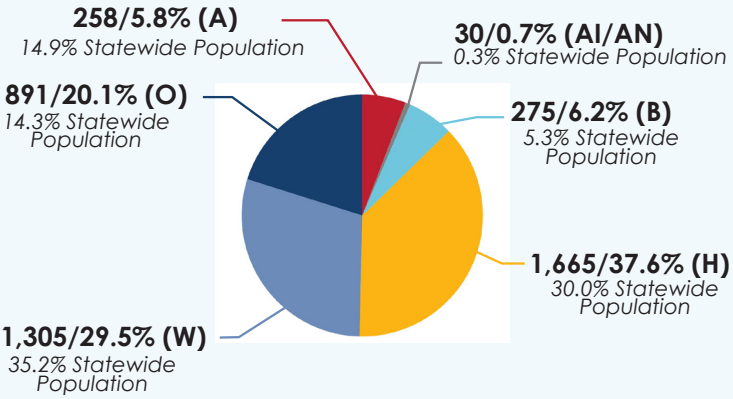
*1. University of California, Berkeley's Safe Transportation Research and Education Center (SWITRS 2013–2022), FARS 2013–2022*

*2. Tribal areas defined as areas within 5 miles of tribal boundaries.*

# YOUNG DRIVERS

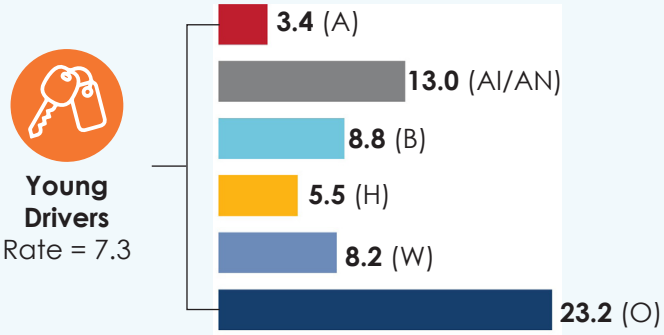
## Race/Ethnicity in Traffic Fatalities

### *Distribution of California Traffic Fatalities by Race/Ethnicity*




### *Fatality Rate by Race/Ethnicity*

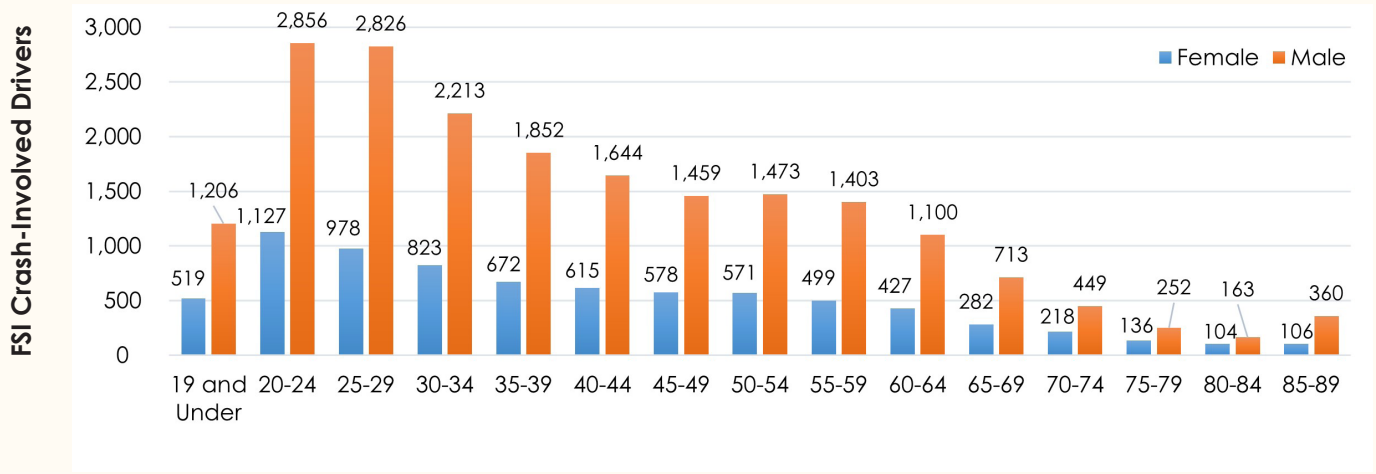
***(Fatality Rate per 100,000 Population)***




Asian (A) | American Indian/Alaskan Native (AI/AN) | Black (B) | Hispanic (H) | White (W) | Other (O)

## Comparison of Crash-Involved Drivers by Age and Sex

Male drivers are **2.5x** as likely to be involved in a Young Drivers FSI crash




## Income Impact in Traffic Fatalities[1,2,3]

Increased Rate of Fatalities in Disadvantaged Communities Versus Non-Disadvantaged Communities

***Statewide Fatalities*** **40%** Higher

***Young Drivers Fatalities*** **33%** Higher

*1. Income data is available for the Census Tracts where a traffic fatality occurs and not the individual (i.e. this data represents the income information of the Census Tracts where the crash occurred and not the income of the crash victim).*

*2. Disadvantaged communities were determined using 2022 ACS 5-Year estimate data for median household income at Census Tract level. The 2022 ACS 5-Year Estimate data was used to determine fatality rates per 100,000 population.*

*3. Assembly Bill 1550 stipulates that 80% of statewide median household income to be used as threshold for disadvantaged communities. 2022 threshold is $73,524.*

*Source: US Census Bureau 2022 ACS 5-Year Estimate data and FARS 2013–2022*

# YOUNG DRIVERS

## Top Three Crash Types*

**26%**
**Broadside**

**23%**
**Hit Object**

**13%**
**Rear End**

## Top Three Primary Crash Factors*

**21%**
**Unsafe Speed**

**20%**
**Improper Turning**

**16%**
**Under the Influence**

## Potential Countermeasures to Mitigate Young Drivers FSI Crashes

These countermeasures have been selected as data-backed strategies to improve traffic safety within the Young Drivers Challenge Area. See related fact sheets for overlapping Challenge Areas, as addressing one Challenge Area can improve the safety outcomes of other Challenge Areas.

**Education and Outreach Programs for Parents and Guardians of Young Drivers[2]**

**Electronic Monitoring Tool Use for Parents and Guardians of Young Drivers[2]**

**Enhanced Graduated Driver Licensing (GDL) Programs and Restrictions[2]**

**Graduated Driver Licensing (GDL) Passenger Limits for Young Drivers[2]**

### *Countermeasure References and Resources*


**1.** 28 Proven Safety Countermeasures, supported by Caltrans and FHWA

**2.** NHTSA Countermeasures that Work, 2023

**3.** Caltrans Local Roadway Safety Manual (Version 1.7, April 2024)


*Unless otherwise noted, crash data is from SWITRS unless otherwise noted.*
*Percentages are calculated based on a total of 19,387 Young Drivers FSI crashes.*

**The Challenge Areas below are not represented by fact sheets** like the other fourteen areas. Emerging Technologies and Emergency Response are not represented with data in the same way other areas are. As a result, they are presented here as no less important than the other Challenge Areas with the explanation of what these Challenge Areas specialize in and the areas of expertise that set them apart from the other areas.

### *Emerging Technologies*

The Emerging Technologies Challenge Area focuses on the use of technology to prevent, identify, and respond to crashes. This includes exploring both emerging and underutilized technologies that have the potential to reduce the frequency and severity of roadway crashes. These technologies can incorporate infrastructure, vehicles, and/or people and can then align with the SSA elements. Recognizing technology currently in use such as advancements in automated enforcement tools that can support identification of violations or prevention of crash factors are also part of this Challenge Area. As innovation continues to accelerate, it is critical that California's safety strategies remain adaptable, and data informed.

New technologies like artificial intelligence, telematics, advanced mobility analytics, and digital modeling tools provide powerful insights into traffic behavior and corridor risk. These platforms support planning and policy development by enabling agencies to estimate traffic volumes, speeds, exposure risk, and unsafe driving patterns with greater precision than traditional traffic studies.

Autonomous vehicles (AVs) are being increasingly deployed on California's public streets, especially in major metropolitan areas. AV companies are actively expanding their service areas and capabilities. While AVs have the potential to reduce crashes by minimizing human error, their long-term safety outcomes remain uncertain and should be continuously evaluated.

Looking toward the future, connected vehicle (CV) technologies will enable safer and smarter communication between vehicles, infrastructure, and vulnerable users. These systems—collectively known as V2X (Vehicle-to-Everything)—represent a critical step toward potentially reducing crash risks caused by human error or limited visibility.

### *Emergency Response*

Access to timely emergency medical care is a critical factor in reducing the severity of injuries and saving lives following roadway crashes. The Emergency Response Challenge Area therefore looks at improving incident detection, verification, response, and clearance times – especially for serious injury crashes. One of the most significant predictors of survivability in post-crash care is the proximity to high-level trauma centers, particularly those designated as Level I and Level II, which are equipped to handle the most severe injuries with comprehensive, around-the-clock resources.

To evaluate trauma access across California, a 60-mile buffer was generated around all designated trauma centers using GIS analysis. This analysis was overlaid with crash data from the Statewide Integrated Traffic Records System (SWITRS) to assess spatial access to emergency trauma care.

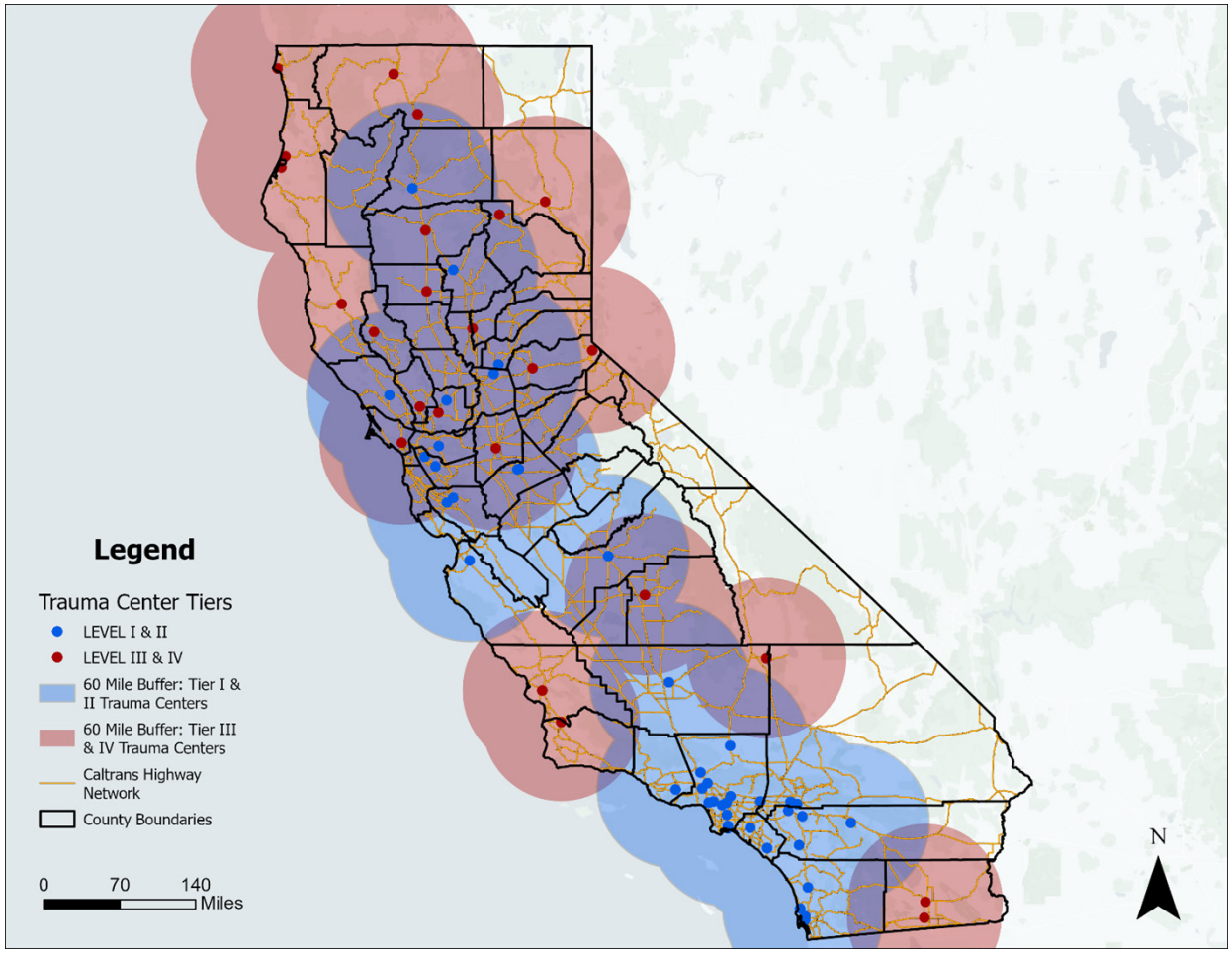
- **Level I and II trauma centers** — the highest-level facilities — provide coverage for 145,658 crashes, accounting for 91% of all SWITRS-reported FSI crashes statewide. This broad coverage highlights the concentration of high-tier trauma resources in densely populated or urban areas.
- **Level III and IV trauma centers,** which offer more limited emergency and surgical services, were found to cover an additional 67,033 of FSI crashes, or 41% of all crashes. These centers tend to serve smaller cities and rural communities but are not always equipped for the most severe trauma cases.

Notably, 6,985 FSI crashes — or 4.3% of the total — occurred outside the 60-mile coverage area of any trauma center. These represent areas of significant concern, where response time and access to adequate trauma care may be delayed, posing serious risks to crash survivors.

This spatial disparity in trauma center coverage reveals a critical disparity in emergency response resources, particularly for residents in rural or isolated regions of California. While Level III and IV centers help bridge some of the geographic distance, they may not fully compensate for the capabilities and outcomes associated with Level I and II care. Victims of crashes occurring outside of these Level I and II zones may experience longer transport times, delayed advanced medical care, and reduced survival outcomes as a result.

As part of California's broader safety strategy, these findings underscore the importance of strengthening emergency response systems, improving infrastructure that supports faster EMS transport, and exploring strategic placement or partnerships to improve access in high-need areas. Future strategies may also involve technology deployment, improved inter-agency coordination, and investment in underserved regions to ensure that all Californians — regardless of geography — have equitable access to life-saving trauma care.

### Figure 30: Trauma Center Locations in California




*Source: SWITRS 2013–2022, California Department of Public Health (CDPH) Geospatial Resources, Caltrans California Road System (CRS)*

**Figure 31: Comparison of FSI Crash Location and Trauma Center Locations**

| Trauma Center Level | Total # of FSI Crashes (within 60 miles) | % of all FSI Crashes (within 60 miles) |
|---|---|---|
| I & II | 145,658 | 91% |
| III & IV | 67,033 | 41% |
| No Coverage | 6,985 | 4.3% |

*Source: SWITRS 2013-2022, CDPH Geospatial Resources*

### *Emergency Medical Services Arrival Times and Data Limitations*

FARS is currently the most accessible federal dataset for examining crash-related fatalities and associated emergency response times. However, its utility is limited. FARS includes EMS arrival times for only about 5% of all fatal crashes in California (2013–2022), offering an incomplete picture of system performance.

A further complication to evaluating EMS response is the lack of access to California Emergency Medical Services Information System (CEMSIS) data. CEMSIS provides a far more comprehensive dataset on EMS activations, arrival intervals, and outcomes, but gaining access requires navigating a complex bureaucratic process. This lack of transparency presents a structural challenge for planners, policymakers, and researchers seeking to improve emergency response strategies.

### *Opportunities to Improve Crash Reporting*

Improved crash and EMS data collection — particularly standardized, real-time reporting on EMS dispatch and arrival times — would significantly enhance California's ability to analyze emergency response gaps and target interventions. Streamlining access to CEMSIS or developing parallel reporting systems at the local or regional level could offer new insights into where EMS delays occur and how they affect outcomes, particularly in high-severity crash corridors.

# 5 Implementation

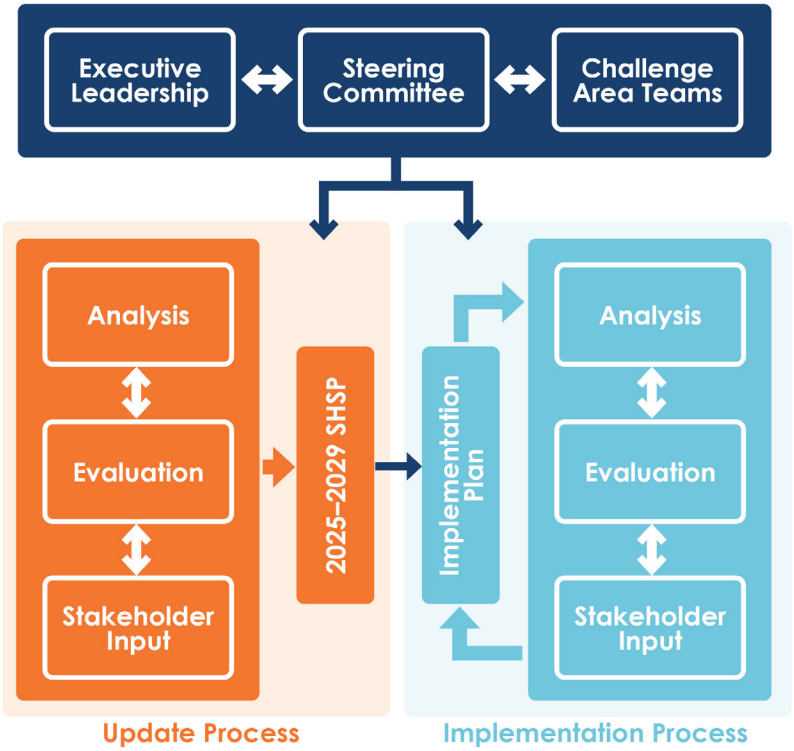
Following development of the SHSP, additional elements in the form of strategy implementation, action development, data analyses, and stakeholder engagement activities will continue for the remaining portion of the five-year cycle (2025–2029). These include, but are not limited to:

- Developing an Implementation Plan that defines specific multi-agency-led actions, and that will be updated as needed throughout the five years
- Safety summit conferences and regional workshops to engage with leaders and practitioners from federal, state, regional, and local agencies to strengthen partnerships, share best practices, and solicit input on the continued implementation of the SHSP
- A mid-term evaluation assessment and report to ensure optimal progress and alignment are completed on SHSP action items

The Implementation Plan will also include measurable objectives and performance measures to track action progress developed by the Challenge Areas. Those measurable objectives and performance measures will help focus on interim progress toward the goal of zero fatalities and serious injuries. Creating milestones as part of the progress measures will help monitor, analyze, and adjust outputs to ensure an environment for greater success.

These actions and interim performance measures can be modified through the life of the 2025–2029 SHSP. The SC and Challenge Area Teams will continue to evaluate the safety data and manage the development of strategies, actions, and performance measures. The SC has been active in providing feedback on the process to improve action development. The SHSP Team will introduce an improved action development process that includes implementation of the SSA, the Principles, Elements, and the 2025–2029 SHSP Strategies.

Additional analysis to benchmark and evaluate how the SHSP Team is progressing towards completing actions will become part of the Implementation Plan, such as tracking adoption and/or implementation of actions through audits of the performance measurement updates.



# 6 Evaluation

Federal law requires evaluation of the California SHSP to help confirm the validity of the Challenge Areas and the effectiveness of its strategies, to identify issues hindering progress, and to double-down on things that are showing success. An evaluation of the SHSP will help ensure the efforts put forward in the pursuit of saving lives on California's public roadways are being maximized, and that focus is being placed on the things that are most efficient and effective. As part of the SHSP evaluation effort, California will annually review the process and the performance.

## 6.1 Process Evaluation

The process evaluation will examine roles, responsibilities, and actions of the SHSP stakeholders as well as opportunities to optimize the data collection and management process to ensure decisions are being made with adequate data and resources.

## 6.2 Performance Evaluation

The performance evaluation will examine annually reviewed data to see if it aligns with the annual HSIP and HSP performance targets. Data for each Challenge Area will be compiled annually and compared with previous years' data to assess trends and inform SHSP action development and decision-making.

## 6.3 Mid-Term Evaluation

In addition to the annual reviews of the SHSP process and performance, a detailed mid-term SHSP project performance evaluation will be prepared to ensure that progress is being made. This evaluation will include input from safety stakeholders and will review potential amendments to the Implementation Plan.

## 6.4 Progress Tracking

Ensuring each of the strategies and actions in the SHSP are data-driven and evidence-based will be a critical factor in the success of this Plan. Regular evaluations of both the SHSP process and performance will be an important measure of the progress toward the SHSP's goal, mission, and vision. Actions developed during implementation will be continuously monitored through the California SHSP Action Tracking Tool, which is an online portal that digitally tracks the progress of actions, Challenge Area work, and logistics for SHSP implementation.

## 6.5 Strategic Highway Safety Plan Leadership Engagement

The EL and SC will be consulted throughout the life of the SHSP. All progress will be shared with them through regular meetings that track the progress and performance of the SHSP. The Challenge Area Teams will meet on a regular basis to discuss strategies, actions, progress, and completion.

## 6.6 Safe System Approach Institutionalization

This is the first SHSP for California that is adopting the SSA Principles to guide the advancement of the SHSP vision, mission, and goal. Monitoring progress specific to the SSA will occur through the use of the Action Tracking Tool and continued discussions with stakeholders, partners, and the organizations that are represented within the SHSP. Analysis of data related to road safety and advancements in policies, procedures, and practices will take place as well.

## 6.7 Measurable Objectives and Performance Measures

While zero fatalities and serious injuries on all of California's public roadways is the goal and long-term vision, shorter term goals are needed to recognize milestones on that journey. In 2016, the FHWA published the HSIP and Safety Performance Management Final Rules. As part of these rules, states must develop statewide targets annually for five safety performance measures, including:

- Number of fatalities
- Rate of fatalities per 100 million Vehicle Miles Traveled (VMT)
- Number of serious injuries
- Rate of serious injuries per 100 million VMT
- Number of non-motorized fatalities and non-motorized serious injuries

These targets will serve as short-term goals for the state. In developing the strategies and content within this plan, the SC considered how they would support the targets and goals defined annually by the state. As these targets are established, adjustments will be considered to either the targets or strategies to align with California's long-term goal of zero traffic fatalities or serious injury collisions.

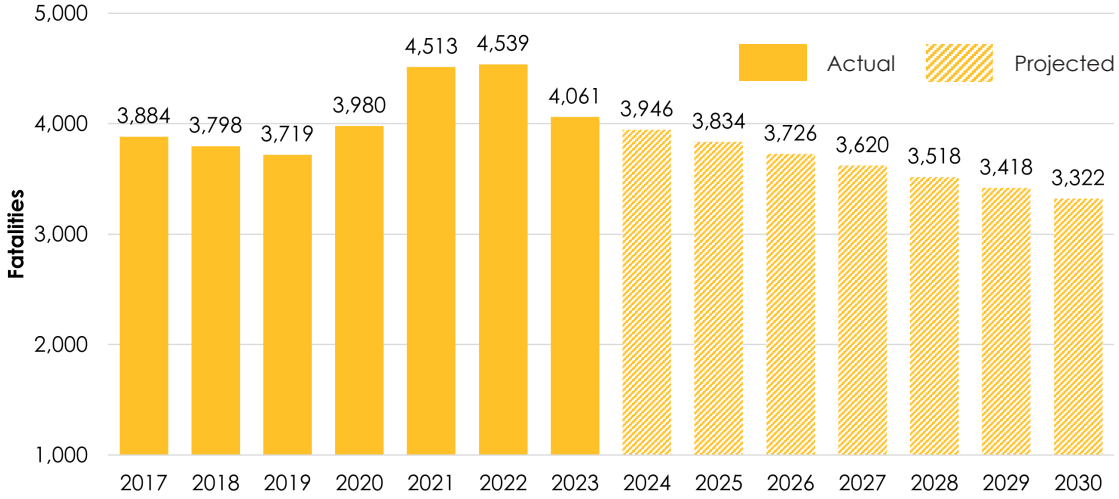
Traffic fatality targets are determined through comprehensive data analysis and forecasting, considering key metrics such as the number and rate of fatalities and serious injuries. Actual targets use current data and averages over time, while projected targets involve forecasting based on potential scenarios, including the implementation of safety measures. The process focuses on reliable data sources, statistical modeling, and considers various influencing factors like road conditions and driver behavior. The goal is continuous improvement by regularly evaluating and adjusting strategies to enhance traffic safety. An annual review of the safety performance measures will be conducted as part of the Implementation Plan, along with performance measures related to strategies and actions.

The following pages show actual and projected data for fatalities and serious injuries through the year 2030.

## Annual Fatalities

- Annual reduction of **2.83%** per OTS 2024–2026 3HSP
- Reduces from 4,061 in 2023 to 3,322 in 2030 (22.3% reduction)
- Average decrease of **106** fatalities/year

### Figure 32: Actual and Projected Fatalities Through 2030



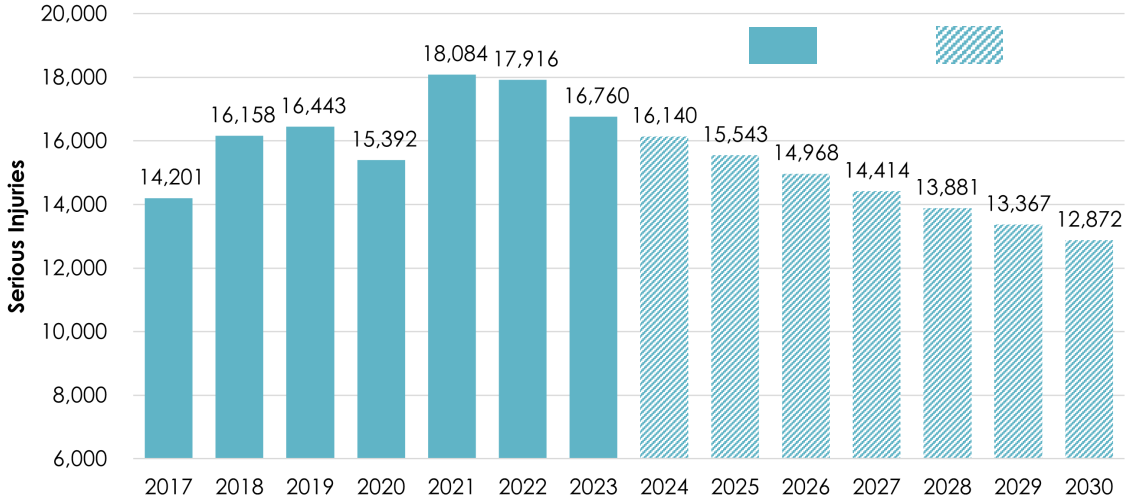

*Source: FARS 2017–2023, OTS 2024–2026 3HSP*

Based on future trends, review of past trends and future actions, it is determined the total annual fatalities will, on average, decrease by **106** annually through 2030.

## Annual Serious Injuries

- Annual reduction of **3.70%** per OTS 2024–2026 3HSP
- Reduces from 16,760 in 2023 to 12,872 in 2030 (30.2% reduction)
- Average decrease of **555** serious injuries/year

### Figure 33: Annual and Projected Serious Injuries/Year Through 2030



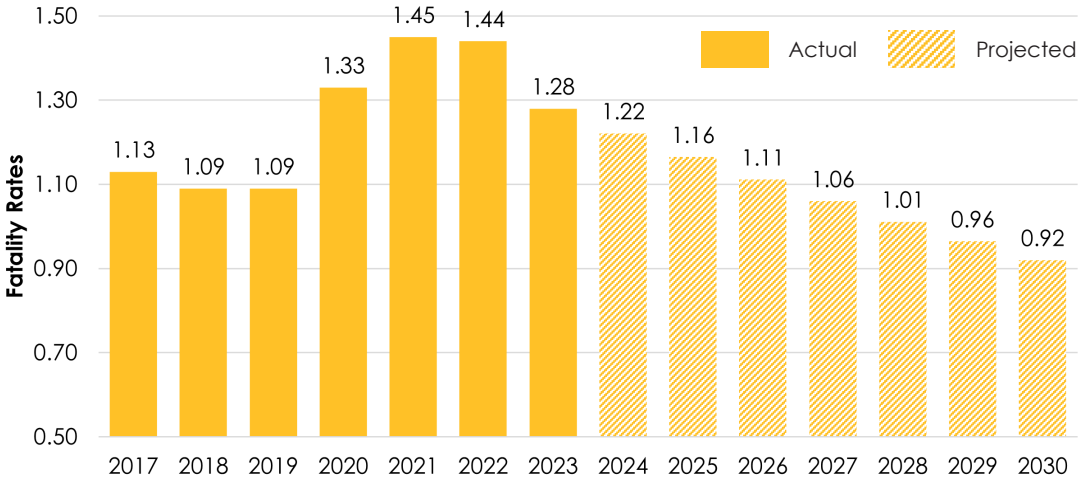

*Source: SWITRS 2017–2023, OTS 2024–2026 3HSP*

Based on future trends, review of past trends, and future actions, it is determined the total annual serious injuries will, on average, decrease by **555** annually through 2030.

## Actual Fatality Rate

- Annual reduction of **4.61%** per HSIP
- Reduces from 1.28 in 2023 to 0.92 in 2030 (39.1% reduction)
- Average decrease of **0.051** fatality rate/year

### Figure 34: Actual and Projected Fatality Rates Through 2030



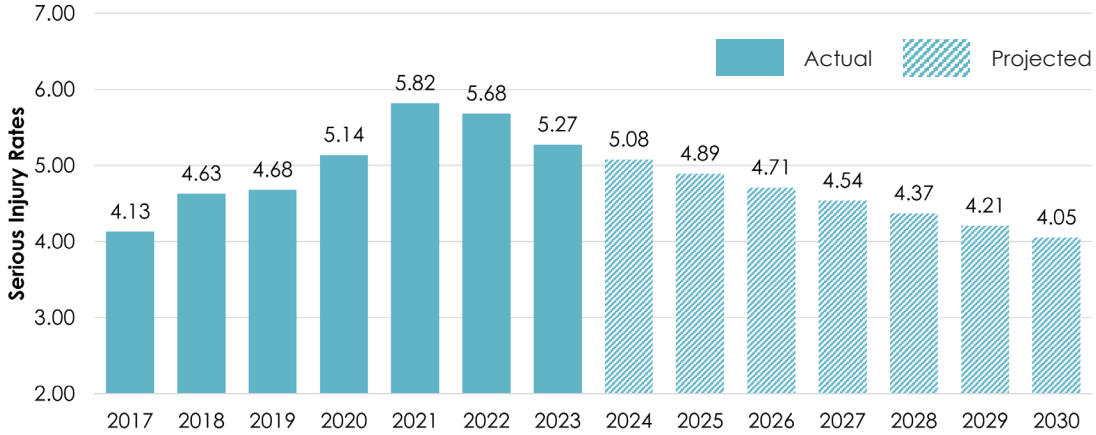

*Source: FARS 2017–2023, HPMS, HSIP*

Based on future trends, review of past trends and future actions, it is determined the total annual fatality rate will decrease on average by **0.051** annually through 2030.

## Actual Serious Injury Rate

- Annual reduction of **3.69%** per HSIP
- Reduces from 5.27 in 2023 to 4.05 in 2030 (30.1% reduction)
- Average decrease of **0.174** serious injury rate/year

### Figure 35: Actual and Projected Serious Injury Rates Through 2030



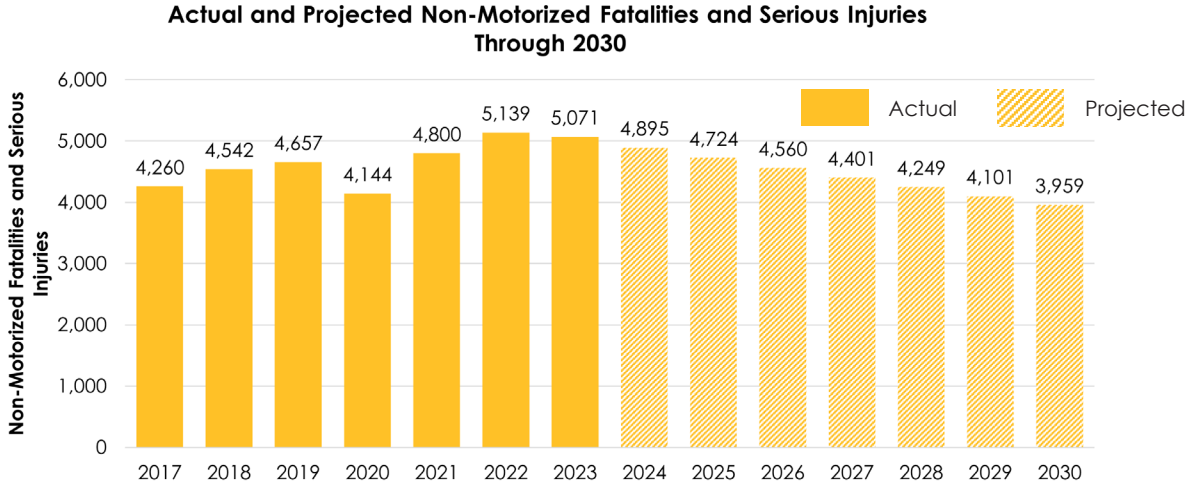

*Source: SWITRS 2017–2023, HPMS, HSIP*

Based on future trends, review of past trends and future actions, it is determined the total annual serious injury rate will decrease on average by **0.174** annually through 2030.

## *Actual Non-Motorized Fatalities and Serious Injuries*

- Annual reduction of **2.84%** for fatalities and **3.69%** for serious injuries per HSIP
- Reduces from 5,071 in 2023 to 3,959 in 2030 (28.1% reduction)
- Average decrease of **159** non-motorized fatalities and serious injuries/year

### Figure 36: Actual and Projected Non-Motorized Fatalities and Serious Injuries Through 2030




*Source: FARS 2017–2023, SWITRS 2017–2023, HSIP*

Based on future trends, review of past trends and future actions, it is determined the total annual non-motorized fatalities and serious injuries will decrease on average by **159** annually through 2030.

# 7 Conclusion

The 2025–2029 SHSP provides a new and improved roadmap to eliminating death and serious injury crashes on California's roadways. The development of this SHSP document is the culmination of a yearlong effort by the SHSP EL, SC, road safety stakeholders, and a committed group of traffic safety partners. This path is intended to guide road safety improvement efforts on behalf of all Californians. The Implementation Plan document that will partner with this plan details the actions being taken to move California towards the vision, mission, and goal outlined in this strategic plan.

The SHSP development and implementation includes more than 1,390 participants from more than 530 federal, state, regional, local, and tribal organizations, as well as advocates and CBOs. With zero fatalities and serious injuries on all of California's public roadways as its stated goal, this SHSP will guide the implementation of strategies targeting identified Challenge Areas and will build upon prior investments using evidence-based countermeasures deployed at high-priority locations. The specific actions undertaken by each of the Challenge Area Teams will be documented in the Implementation Plan and will be reviewed and updated over the course of the next four years to ensure that appropriate actions are being taken to move California towards its vision, mission, and goal.

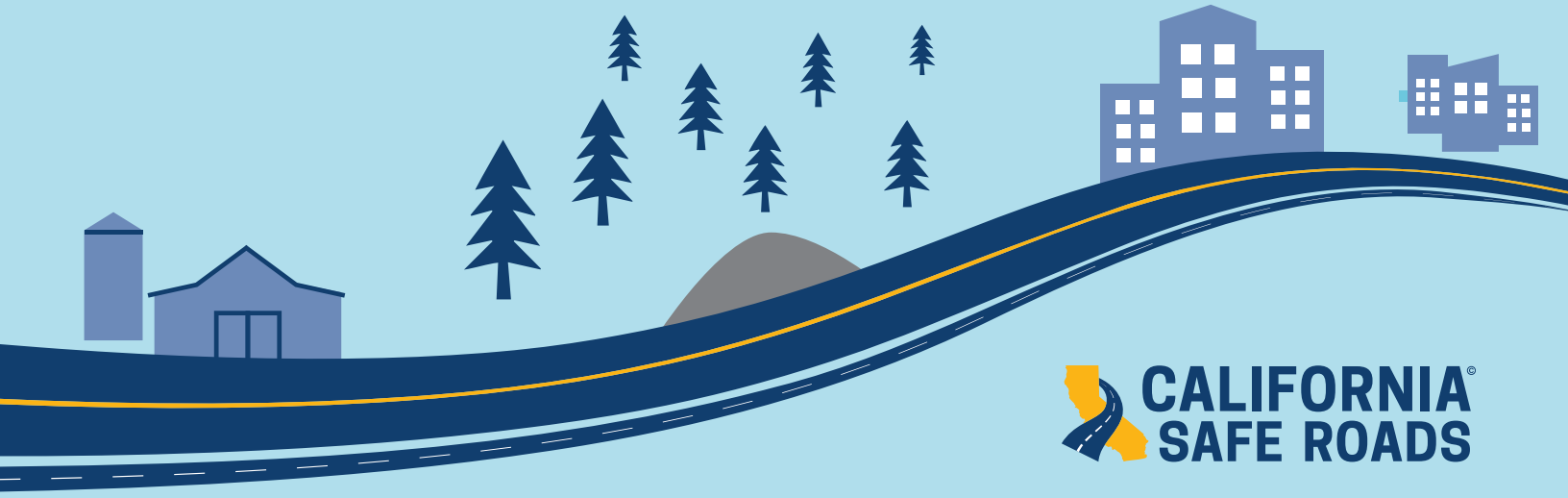
To help ensure the best possible outcomes, this SHSP institutionalizes the SSA. This bold and strategic paradigm shift comes with the potential to revolutionize safety in California by treating the entire roadway system as a whole. The adoption of the Safe System Pyramid to help prioritize treatment levels to impact the greatest number of people and commit to a pro-social traffic safety culture mentality can exponentially advance the strategies within this plan.

The next steps include working closely with all traffic safety partners to redouble their efforts, enhance existing policies, and expand safety practices that will lead California forward toward zero fatalities and serious injuries. Sixteen Challenge Area Teams are charged with implementing and tracking progress on SHSP actions, representing a variety of interests and expertise at federal, state, regional, local, tribal, and advocacy organizations. Focusing on proven approaches and activities, Challenge Area Teams can make all the difference and lead in the efforts to strategically drive down fatalities and serious injuries.

As we continue to work together, engage new partners, and follow through with implementing this SHSP, we can lessen the tragic impact of crashes and drive roadway fatalities and serious injuries toward the SHSP vision of safe and accessible roads for all road users in California.

# Appendix





CALIFORNIA SAFE ROADS

# Appendix A – Vulnerable Road Users (VRU) Safety Assessment Update for 2025–2029 Strategic Highway Safety Plan

A VRU Safety Assessment is a federal requirement. As part of the 2020–2024 SHSP, an initial VRU Safety Assessment was completed. It was also completed to comprehensively evaluate VRU safety trends in California, as the number of pedestrians and bicyclists that have died or have been seriously injured on California public roadways has steadily increased over the past decade. The initial assessment developed a set of key takeaways on VRU safety and provided a safety countermeasures selection matrix in alignment with the SSA to help achieve the vision of eliminating fatalities and serious injuries.

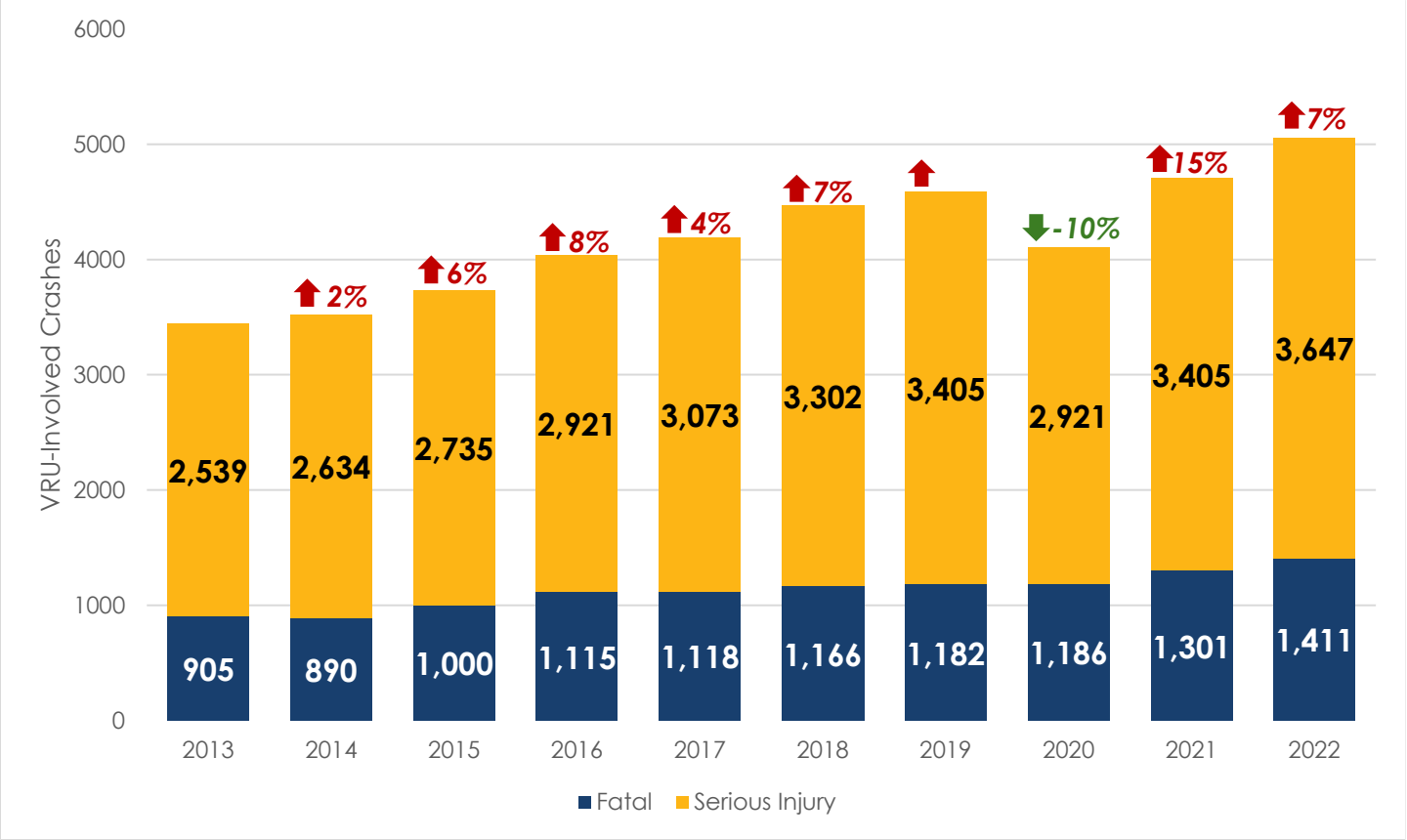
The 2025–2029 VRU Safety Assessment Update builds on the information gathered from the initial VRU Safety Assessment and provides updates on the key takeaways.

## *Fatal and Serious Injury Crashes*

VRU-involved FSI crashes increased 47% between 2013 and 2022. VRU-involved fatal crashes increased at an even higher rate (56%) over the same 10-year period. The most recent two years of analysis (2021 and 2022) also featured significant year-over-year increases in VRU-involved FSI crashes. Between 2020 and 2021, VRU-involved FSI crashes increased 15%, and between 2021 and 2022, VRU-involved FSI crashes increased 7%.

FSI crashes have continued to increase between 2013 and 2022 — at a rate of 47% from 2013 to 2022. VRU-involved fatal crashes increased at an even higher rate (56%) over the same 10-year period. The most recent two years of analysis (2021 and 2022) also featured significant year-over-year increases in VRU-involved FSI crashes — between 2021 and 2020, VRU-involved FSI crashes increased 15%, and between 2021 and 2022, VRU-involved FSI crashes increased 7%.

*Figure A-1: VRU-Involved FSI Crashes, 2013–2022*




*Source: SWITRS, 2013–2022*

This increasing trend is consistent with the 2011–2021 analysis period from the initial VRU Safety Assessment, which recorded a 42% increase in VRU-involved FSI crashes between 2011–2021. Fatal VRU-involved crashes increased between both the 2011–2021 (64% increase) and 2013–2022 (56% increase) analysis periods, but at a lower rate during the SHSP 2013–2022 period.

## Functional Classification

The initial VRU Safety Assessment provided an overview of roadway functional classification and VRU-involved FSI crashes, finding that Other Principal Arterials and Minor Arterials had much higher shares of VRU-involved FSI crashes relative to overall roadway mileage.

Figure A-2 contains updated findings of the functional classification and VRU-involved crash analysis for 2013–2022, and a comparison between the initial VRU assessment period (2011–2020) and the current SHSP period. Functional classifications are designated by Caltrans CRS.

*Figure A-2: VRU-Involved FSI Crashes and Functional Classification, 2013–2022 and 2011–2020*

| Functional Classification | 2011-2020 # of FSI Crashes | 2011-2020 % of Total | 2011-2020 # of FSI Crashes | 2011-2020 % of Total | Pct Change (2011-2020 vs (2013-2022) | % of State Roadway Mileage |
|---|---|---|---|---|---|---|
| Interstate | 1398 | 4.6% | 1937 | 4.9% | 38.6% | 2% |
| Other Freeway or Expressway | 1248 | 4.1% | 1694 | 4.3% | 35.7% | 1.5% |
| Other Principal Arterial | 11888 | 39.2% | 15528 | 39.3% | 30.6% | 5% |
| Minor Arterial | 8366 | 27.6% | 10856 | 27.5% | 29.8% | 7.5% |
| Major Collector | 3470 | 11.4% | 4467 | 11.3% | 28.7% | 8% |
| Minor Collector | 145 | 0.5% | 185 | 0.5% | 27.6% | 2% |
| Local | 3824 | 12.6% | 4854 | 12.3% | 26.9% | 73% |

*Source: SWITRS (2011–2022), Caltrans CRS*

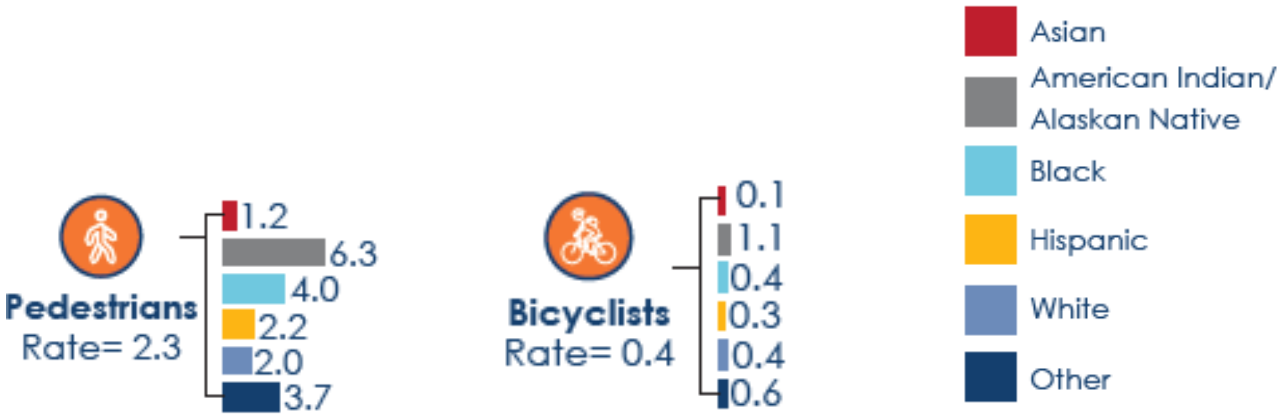
Between 2013 and 2022, VRU-involved FSI crashes predominantly occurred on Other Principal Arterials (39.3%) and Minor Arterials (27.5%), which is nearly identical to the FSI crash share reported in the initial VRU Safety Assessment (2011–2020). Arterial roadways are overrepresented in VRU-involved FSI crashes — more pedestrians and bicyclists are dying or getting seriously injured on arterial roadways compared to their smaller share of overall mileage in California (especially compared to local roadways).

## Race/Ethnicity

Pedestrian and bicyclist fatalities[1] were compared against the 2022 ACS 5-year statewide population figures. These findings identified that minority populations have a higher fatality rate than White populations, both for pedestrians and bicyclists. As shown in Figure A-3, American Indian/Alaskan Native individuals have the highest fatality rate (6.3 deaths per 100,000 in population for pedestrians, 1.1 for bicyclists), followed by Black individuals (4.0 for pedestrians, 0.4 for bicyclists) and Other[2] (3.7 for pedestrians, 0.6 for bicyclists). Note that these fatality rates are per 100,000 population.

[1] *FARS data is used to analyze race/ethnicity data due to accuracy issues in SWITRS race data.*
[2] *See Appendix C for race/ethnicity data definitions*

*Figure A-3: VRU Fatality Rates by Race/Ethnicity*




*Source: FARS (2013–2022), 2022 ACS 5-Year Estimates*

The initial VRU Safety Assessment also found that racial minorities are more likely to be killed as pedestrians. However, this 2011–2021 assessment concluded that White roadway users are more likely to be killed as bicyclists than other races/ethnicities. The current analysis is showing that American Indian/Alaskan Native bicyclists are dying at higher rate than White bicyclists. White bicyclists also have a nearly identical fatality rate to Black bicyclists.

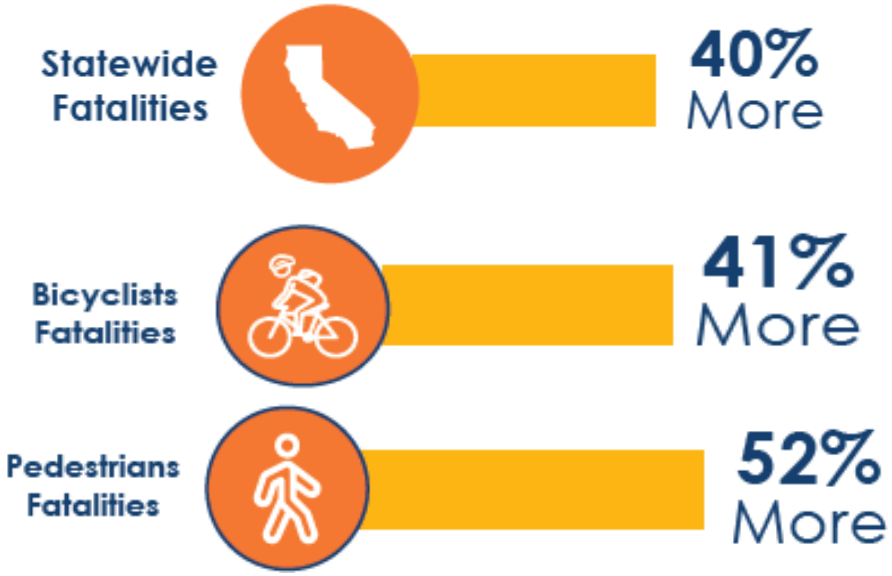
## Low-Income Communities

The 2025–2029 SHSP compared fatalities in disadvantaged communities versus non-disadvantaged communities, using AB-1550 median household income criteria[3]. Fatality rates for each Challenge Area (including Pedestrians and Bicyclists) were computed using 2022 ACS data[4] and FARS fatalities (2013–2022).

These findings indicated that, overall, fatalities occurred 40% more often in disadvantaged communities compared to non-disadvantaged communities, per 2022 population estimates and median household income. In particular, pedestrian fatalities were overrepresented in disadvantaged communities — pedestrians in disadvantaged communities died 52% more often. This is consistent with findings from the initial VRU Safety Assessment.

[3] *AB 1550 stipulates that 80% of the statewide median household income should be used as a threshold for disadvantaged communities. The 2022 threshold is $73,524.*
[4] *Income data is available for the Census Tracts where a traffic fatality occurs and not the individual (i.e. this data represents the income information of the Census Tracts where the crash occurred and not the income of the crash victim.)*

*Figure A-4: Fatality Rates for Disadvantaged Communities vs. Non-Disadvantaged Communities (Statewide, Bicyclists, and Pedestrians)*

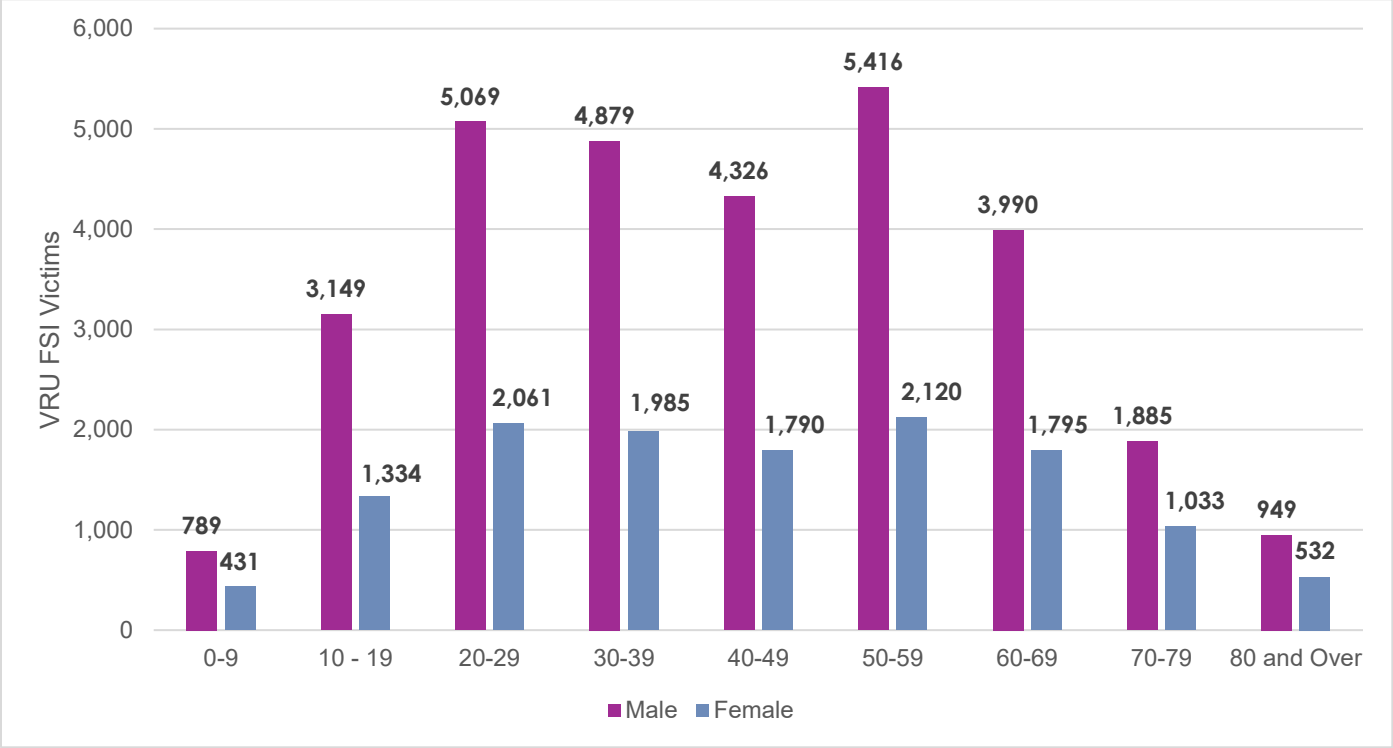



*Source: FARS (2013–2022), 2022 ACS 5-Year Estimates*

## Age and Sex

The age and sex of pedestrian and bicyclist victims were also evaluated, as shown in Figure A-5. Males make up a larger share of pedestrian and bicyclist victims than females — nearly 70% of all pedestrian and bicyclist victims between 2013 and 2022 were males. Concerning age, 7,536 pedestrians and bicyclists between 50 and 59 years-old were killed or seriously injured, representing the largest share of VRU FSI victims for any 10-year age range.

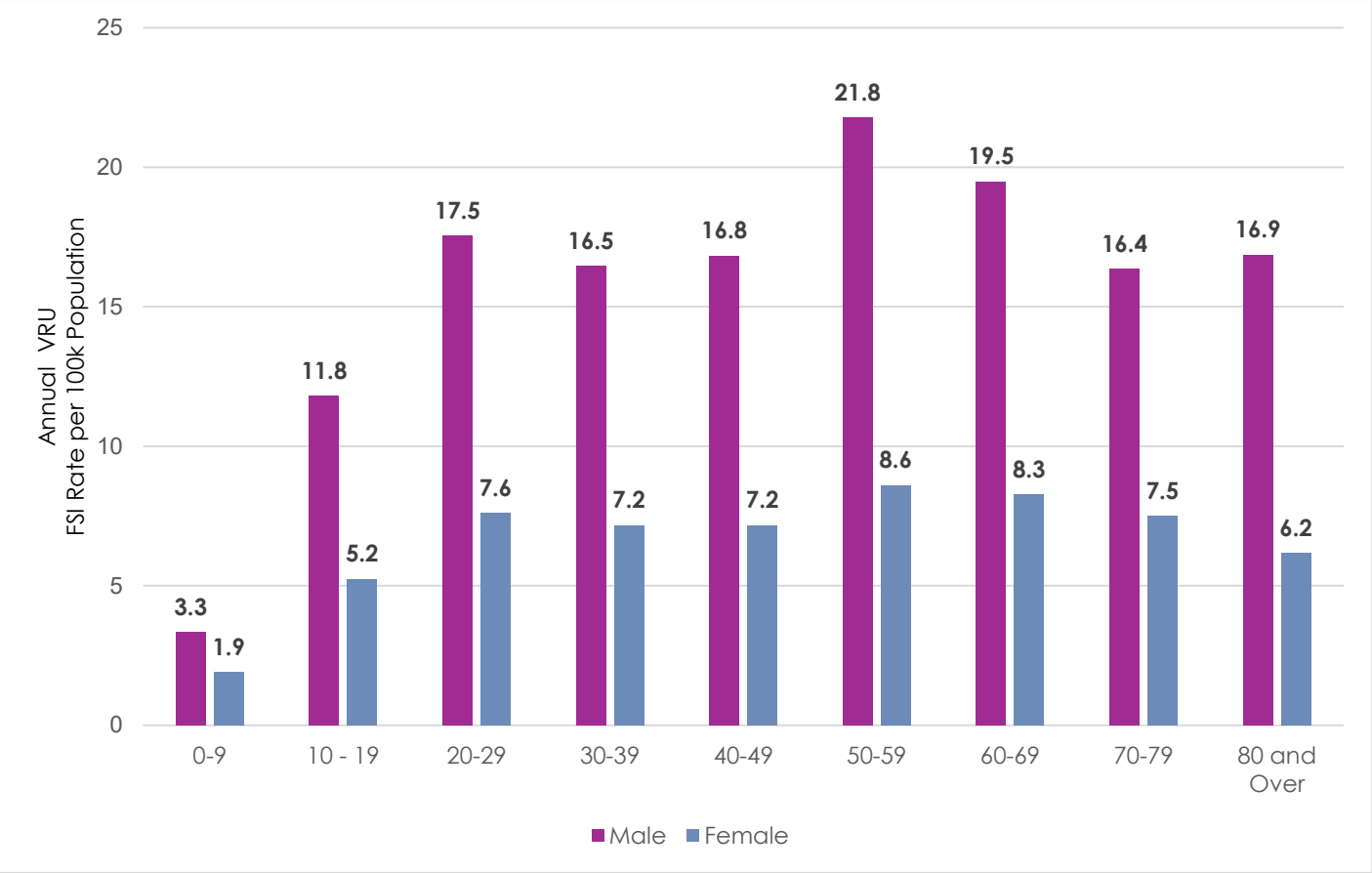
*Figure A-5: Age and Sex of Pedestrian and Bicyclist FSI Victims, 2013–2022*




*Source: SWITRS 2013–2022*

To compare the age and sex of pedestrian and bicyclist FSI victims against statewide population figures, the 2022 ACS 5-Year Estimate data was used to compute an annual fatality and serious injury rate for these different age ranges for both males and females.

*Figure A-6: Annual FSI Rates Pedestrian and Bicyclist FSI Victims, 2013–2022*




*Source: SWITRS 2013–2022, 2022 ACS 5-Year Estimate — Table S0101*

The annual FSI rates demonstrate that pedestrians and bicyclists in the 50–59 age group are killed or seriously injured at the highest rate of any 10-year age group, and this is especially true for males in the 50–59 age group. Older pedestrians and bicyclists (60–69, 70–79, and 80 and over) are impacted at similar rates to younger age groups, despite the older population representing a much smaller share of the number of FSI victims.

## Location

The initial VRU Safety Assessment identified 13 VRU focus communities based on a higher concentration of FSI crashes involving VRU, a presence of disadvantaged communities (per SB 535 or Justice 40), and some holistic criterion such as community size and character. For the 2013–2022 period, pedestrian and bicyclist FSI victims were compared against municipality population figures to compute an FSI rate. This analysis can help identify specific locations with

a potential VRU safety issue. While population does not predict VRU exposure, it can help to identify communities with a potential for increased VRU risk.

## Bicyclist Focus Communities

The following municipalities scored in the 90th percentile or higher in bicyclist FSI rates, using 2013–2022 SWITRS data and 2022 ACS 5-Year Estimate data for municipality population. Focus communities were also chosen based on an increasing/worsening chronological trend for bicyclist FSIs[5].

- Berkeley
- Davis
- El Cajon
- Encinitas
- Eureka
- Fairfax
- Goleta
- Lakeport
- Los Altos Hills
- Malibu
- Newport Beach
- Portola Valley
- San Anselmo
- San Luis Obispo
- Saratoga
- Ukiah
- Woodside

*Figure A-7: Bicyclist Focus Communities Map*


[5] *Note that some potentially high-ranking municipalities are predominantly industrial or commercial, and so their resident populations do not accurately portray overall VRU activity. These municipalities were omitted from the Bicyclist Focus Communities list after review.*

## Pedestrian Focus Communities

The following municipalities scored in the 90th percentile or higher in pedestrian FSI rates, using 2013–2022 SWITRS data and 2022 ACS 5-Year Estimate data for municipality population. Focus communities were also chosen based on an increasing/worsening chronological trend for pedestrian FSIs[6].

- Barstow
- Commerce
- Compton
- Eureka
- Lakeport
- Long Beach
- Los Angeles
- Malibu
- Merced
- Oroville
- Palm Springs
- Red Bluff
- Sacramento
- San Bernardino
- San Francisco
- Taft
- West Hollywood

*Figure A-8: Pedestrian Focus Communities*


[6] *Note that some high-ranking municipalities are predominantly industrial or commercial, and so their resident populations do not accurately portray overall VRU activity. These municipalities were omitted from the Pedestrian Focus Communities list after review.*

## Countermeasures

The VRU Safety Countermeasures below summarize preferred safety countermeasures based on facility and implementation context. These are sourced from FHWA Proven Safety Countermeasures, the Crash Modification Factors (CMF) Clearinghouse, and the California Local Roadway Safety Manual (LRSM). A Selection Matrix was developed by reviewing existing Local Road Safety Plans (LRSP) and SS4A guidance. Early identification of suitable VRU safety countermeasures will assist in decision making, planning, and implementation. These resources are not intended to replace engineering judgement or design standards, and additional safety countermeasures should be considered based on local context.

The following figures provide a summary of context-sensitive selection criteria for each countermeasure based on location, roadway functional class, speed limit, volume, and impact. Figure A-9 describes preferred application for countermeasures based on specific roadway functional class and location. Figure A-9 also describes how each countermeasure enhances VRU safety, and their ancillary impacts.

These tools were developed for the 2024 Vulnerable Road User Safety Assessment, which was an update for the 2020–2024 SHSP. They are included here as a visual guide and inspiration for what will be included in the 2025–2029 SHSP Implementation Plan when countermeasures are discussed.

## Figure A-9: VRU Countermeasures Selection Score Cards

✓ Applicable ✓- Somewhat Applicable ✗ Not Applicable N No Impacts Y Impacts $ Cost

### Add or Enhance Lighting

**Roadway Functional Class:**
- ✓ Arterial
- ✓ Collector
- ✓ Local

**Location:**
- ✓ Segment
- ✓ Intersection

**Additional Criteria:**
- ✓ ✓ ✓ ✓ ✓ Any Slope

**Speed Limit:** Any

**Volume:** Any

**Effectiveness:**
- Separated Space: ✗
- Separated Time: ✗
- Attentiveness/Awareness: ✓
- Reduce Speeds: ✗
- Reduce Impact Forces: ✗

**Impact:**
- Emergency Vehicles: N
- Cost: $$

### Bike Boxes

**Roadway Functional Class:**
- ✓ Arterial
- ✓ Collector
- ✗ Local

**Location:**
- ✗ Segment
- ✓ Intersection

**Additional Criteria:**
- ✓ ✓ ✓ ✓ ✓ <5%

**Speed Limit:** <=45 mph

**Volume:** Any

**Effectiveness:**
- Separated Space: ✓
- Separated Time: ✓-
- Attentiveness/Awareness: ✓
- Reduce Speeds: ✓-
- Reduce Impact Forces: ✗

**Impact:**
- Emergency Vehicles: Y
- Cost: $

### Convert to Mini Roundabout

**Roadway Functional Class:**
- ✗ Arterial
- ✓ Collector
- ✓ Local

**Location:**
- ✗ Segment
- ✓ Intersection

**Additional Criteria:**
- ✓ w/conditions ✗ ✓ w/conditions <0%

**Speed Limit:** <=35

**Volume:** Any

**Effectiveness:**
- Separated Space: ✓-
- Separated Time: ✗
- Attentiveness/Awareness: ✓-
- Reduce Speeds: ✗
- Reduce Impact Forces: ✗

**Impact:**
- Emergency Vehicles: Y
- Cost: $$$

### Curb Extensions

**Roadway Functional Class:**
- ✓ Arterial
- ✓ Collector
- ✓ Local

**Location:**
- ✓ Segment
- ✓ Intersection

**Additional Criteria:**
- ✓ ✓ with conditions ✓ with conditions ✓ with conditions <5%

**Speed Limit:** Any

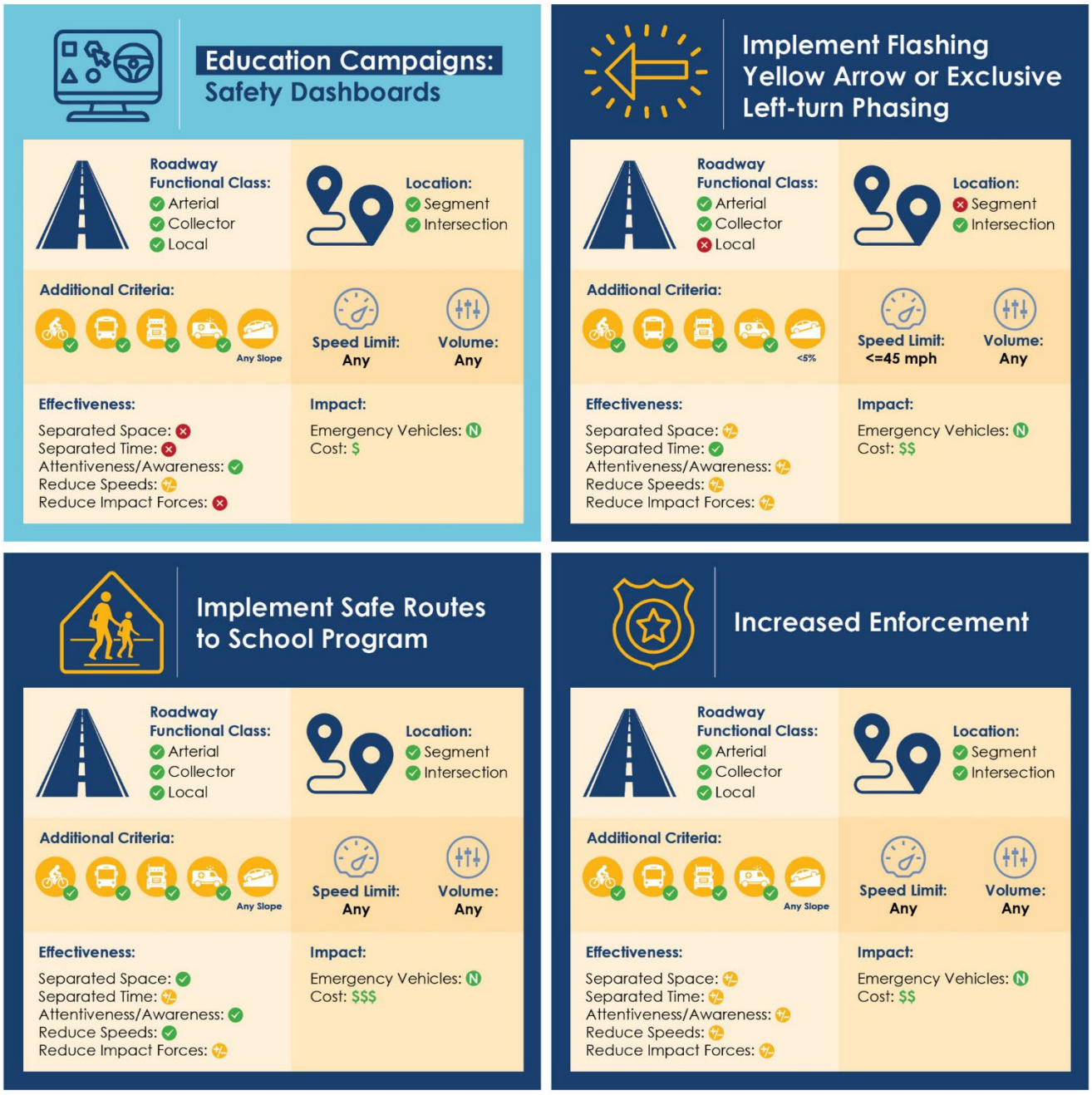
**Volume:** Any

**Effectiveness:**
- Separated Space: ✗
- Separated Time: ✗
- Attentiveness/Awareness: ✓
- Reduce Speeds: ✓
- Reduce Impact Forces: ✓-

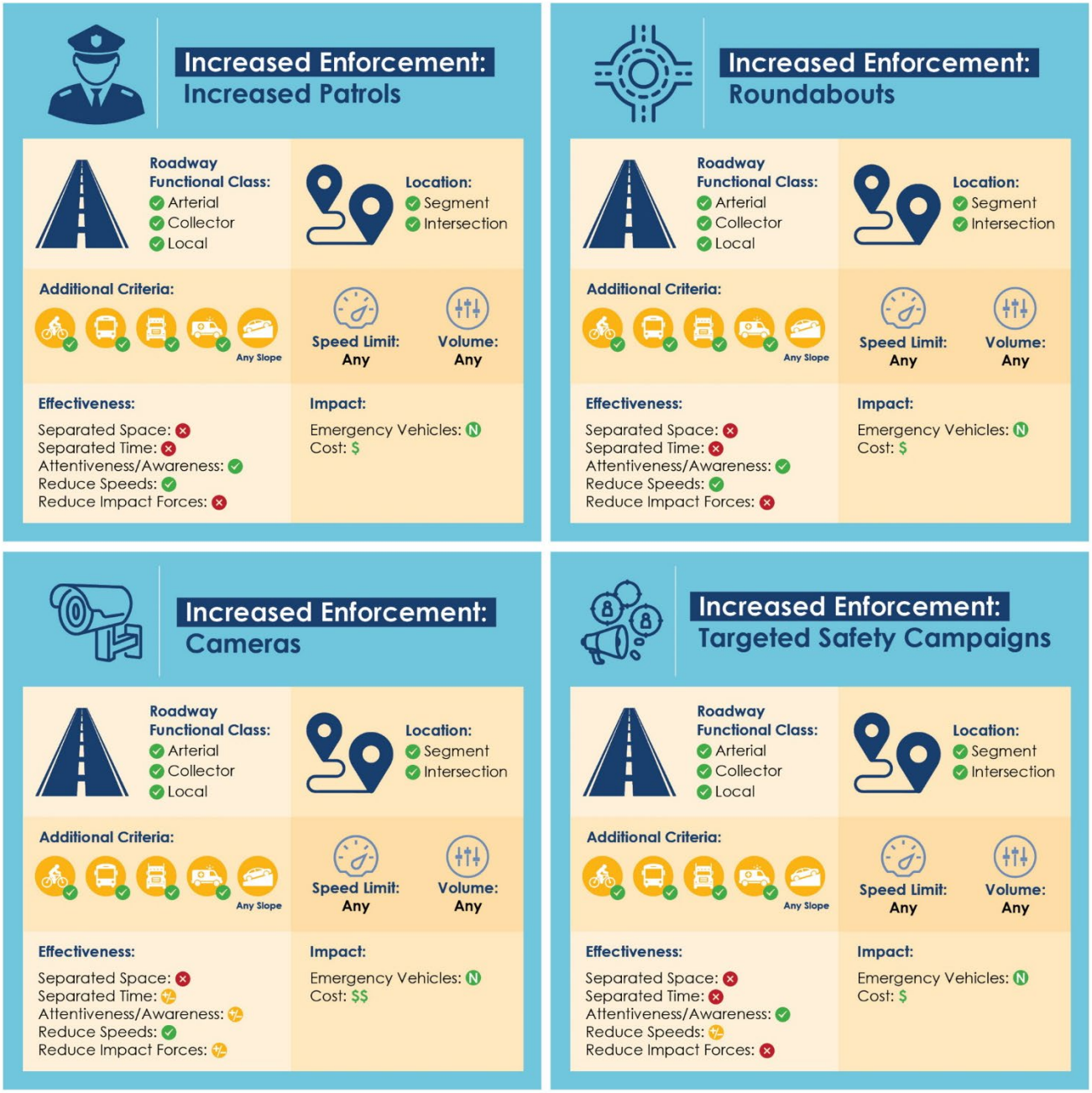
**Impact:**
- Emergency Vehicles: Y
- Cost: $$$

## Figure A-9: VRU Countermeasures Selection Score Cards (continued)

## Figure A-9: VRU Countermeasures Selection Score Cards (continued)



## Figure A-9: VRU Countermeasures Selection Score Cards (continued)



## Figure A-9: VRU Countermeasures Selection Score Cards (continued)

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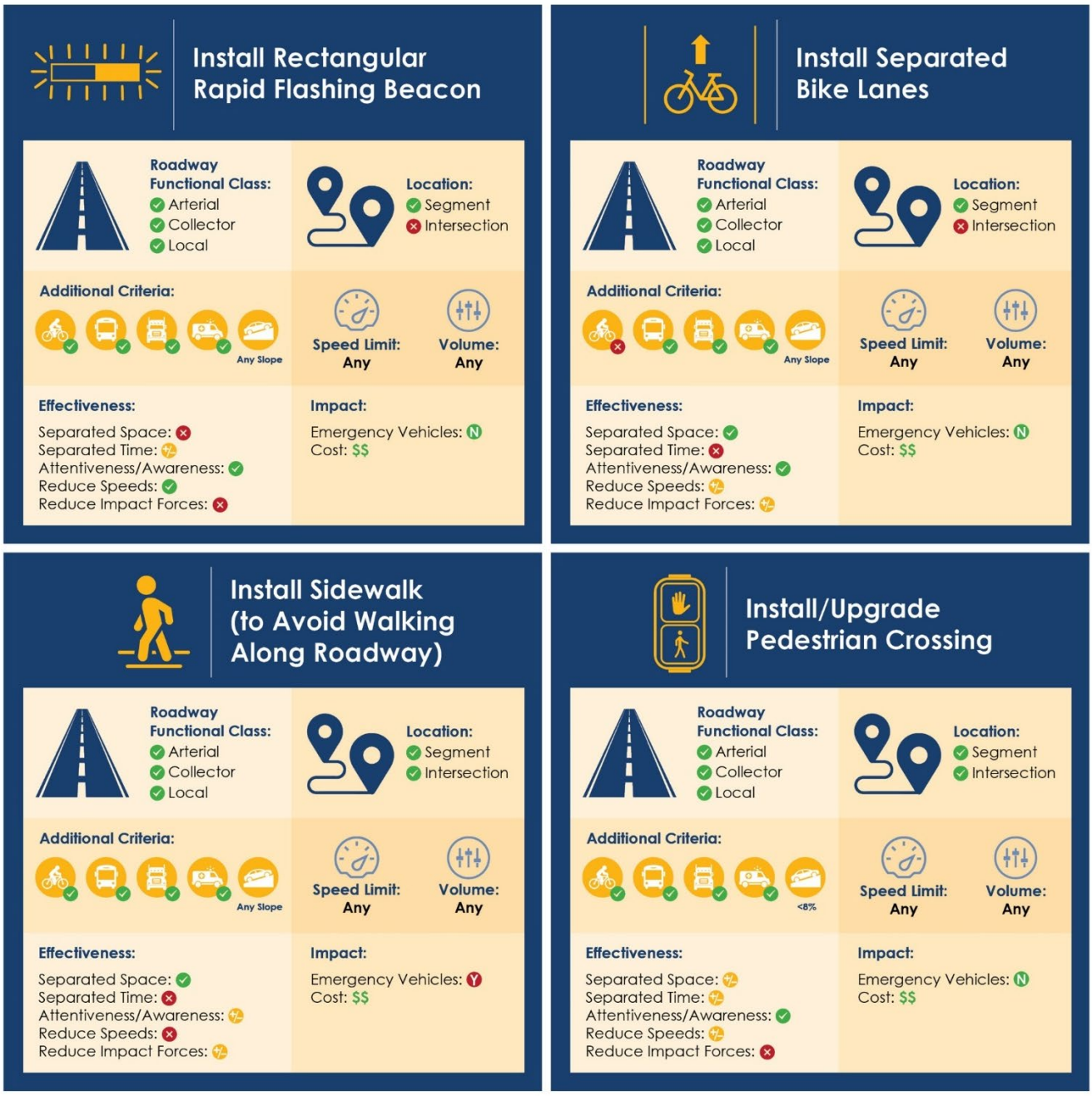


## Figure A-9: VRU Countermeasures Selection Score Cards (continued)

# *Strengths, Weaknesses, Opportunities, and Threats (SWOT) Analysis for California's 2025–2029 Strategic Highway Safety Plan (SHSP) Development*

CALIFORNIA SAFE ROADS©

# Contents

## SWOT Purpose, Overview, and Scope

### Purpose and Overview

The Strengths, Weaknesses, Opportunities, and Threats (SWOT) Analysis is a pivotal component in developing the 2025–2029 Strategic Highway Safety Plan (SHSP) for California, as it provides a structured framework to identify the plan's strengths, weaknesses, opportunities, and threats. The SWOT Analysis thoroughly examines the 2020–2024 SHSP and considers critical areas such as training, leadership alignment, action success, and integration with other transportation plans. This SWOT Analysis helps in recognizing data gaps and stakeholder outreach inefficiencies, allowing for targeted improvements. Additionally, by comparing California's SHSP efforts with those of other states and countries, the SWOT Analysis facilitates the adoption of innovative and effective strategies, allowing California to continue to be on the forefront of safety. The findings from the SWOT Analysis will directly inform the 2025–2029 SHSP development timeline, ensuring that the development of the 2025–2029 SHSP results in a more robust and adaptive safety plan.

### Scope

The SWOT Analysis for California's SHSP involves a comprehensive analysis focusing on multiple critical areas. This includes evaluating training programs, assessing the direction and action alignment steered by the Executive Leadership, and measuring action success. This SWOT Analysis aims to determine how well the California SHSP integrates with other state, regional, local, and tribal transportation plans. Additionally, the SWOT Analysis examines data availability, public information dissemination methods, and outreach strategies intended to reach a diverse set of stakeholders. A crucial element of the SWOT Analysis involves reviewing and comparing California's current SHSP efforts against those of other states and countries to identify best practices that could be adopted to enhance safety outcomes in California.

The SWOT Analysis also includes a thorough review of the SHSP Action Tracking Tool to assess its efficacy in monitoring the plan's progress. Additionally, it provides insights into the activities and obstacles encountered in the previous Challenge Area initiatives, helping to illuminate past successes and learning opportunities. This evaluation extends to how the California SHSP aligns with and is incorporated into other state and local plans. By doing so, the SWOT Analysis will ensure a cohesive and integrated approach to improving highway safety across various governance levels and sectors, fostering a more holistic and effective safety strategy for California's transportation network.

# SWOT Analysis

## Process

The SWOT Analysis was conducted throughout 2024 and culminated in a series of presentations to the California SHSP Steering Committee (SC) between April and July and with a presentation to the California SHSP Executive Leadership (EL) Committee in September. Discussions with the SC and EL regarding how to implement the findings and recommendations from this SWOT Analysis are ongoing and are expected to help shape the 2025–2029 SHSP. The SWOT analysis builds upon and integrates the findings from the 2020-2024 SHSP Midterm Evaluation, which was completed in 2023. The Midterm Evaluation is included as an appendix to this document.

The SWOT Analysis was broken into multiple components, as listed below. Each component has a dedicated section, which can be found in the Table of Contents:

- International and Domestic Scans of Safe System Integrations in other Jurisdictions
- Legislative Synergies Review
- Identification of Strengths, Weaknesses, Opportunities and Threats related to the 2020–2024 SHSP
- Recommendations and Next Steps

On January 27, 2022, the then United States Transportation Secretary, Pete Buttigieg, announced the National Roadway Safety Strategy (NRSS), a roadmap for addressing the national crisis in roadway fatalities and serious injuries. Among the multi-tiered strategies developed is the adoption of the "Safe System Approach (SSA)." The federal adoption of the SSA shifted the traditional focus of balancing safety, efficiency, traffic flow and design to a process that places an emphasis on prioritizing safety at all levels of government. Key to that emphasis is determining the best strategies for eliminating crashes that lead to death and serious injury.

## Safe System Approach

Work in other jurisdictions to implement and operationalize the SSA was reviewed to inform best practices for the 2025–2029 SHSP. The review was broken into three parts:

- International Scan
- Domestic Scan
- Legislative Synergies

The following is an outline of the analysis that was conducted of how other jurisdictions have interpreted successful implementation of the SSA. By reviewing these, the best use of the SSA principles and elements from around the globe and within the United States will help the

California SHSP integrate, institutionalize and implement the best possible strategies for the reduction of fatal and serious injury crashes within the state.

## International Scan

The international scan encompassed a review of countries that had made active efforts to improve traffic safety using the SSA. Several countries have made significant strides toward improving traffic safety through a combination of SSA countermeasures, supportive strategies, and the institutionalization of the SSA. Three countries that stand out include Sweden, Australia, and Norway. A summary of the international scan of the SSA is included in Appendix A.

### SSA Countermeasures by Country

In **Sweden**, the focus has been on controlling harmful energy at impact to maintain it within tolerable levels, primarily through speed limitations. The country also placed a strong emphasis on separating road users from potential hazards and embraced innovative road designs, such as 2+1 passing lanes.

**Australia** adopted similar SSA countermeasures, focusing on the human body's tolerance to impact forces. Their approach includes designing forgiving roads and roadsides equipped with crash barriers, comprehensive speed management, and using tools to align road designs with SSA principles regarding kinetic energy in crashes.

**Norway** has employed quick and effective SSA countermeasures to improve traffic safety, beginning with straightforward solutions like removing street parking to create bike lanes. The country has also revised speed limits and implemented traffic calming measures in urban areas to enhance safety. Norway's road designs aim to separate pedestrians and bicyclists from vehicles, reducing conflict points.

### SSA Institutionalization by Country

In **Sweden**, the implementation of Vision Zero as a policy has marked a major shift, translating this ambitious vision into tangible actions and fundamentally altering the governance of both urban and rural transportation projects.

The institutionalization of an SSA in **Australia** is characterized by a management-by-objectives approach, setting transparent performance and outcome measures. Gabby O'Neill, the head of the Office of Road Safety with the Australian Department of Infrastructure, Transport, Cities and Regional Development, emphasized that clear targets drive the allocation of resources and the urgency of implementation. However, Australia faces challenges, such as inconsistent stakeholder commitment, thus necessitating a robust and comprehensive approach that embeds SSA principles at all levels of road safety efforts, including public acceptance of a "no harm" road system.

Institutionalizing an SSA in **Norway** involves a strong focus on vulnerable road users, ensuring that people not only are safe but also feel safe using the roadways. The involvement of vulnerable road user groups in safety initiatives has been pivotal. However, the implementation has been complicated by the General Data Protection Regulation (GDPR), which poses challenges for crash data analyses, making it difficult to track the origins and locations of crashes accurately.

These countries illustrate that the successful implementation of an SSA and the continuous evolution of traffic safety strategies are crucial for sustaining momentum towards safety targets. Sweden's transformation of policy with Vision Zero, Australia's focus on measurable targets despite challenges in stakeholder commitment, and Norway's emphasis on quick, effective solutions and the inclusion of vulnerable road users, demonstrate the varied approaches to embedding SSA principles in national traffic safety culture. Each country has had to evolve its methods over time to address specific challenges and maintain progress toward reducing road traffic fatalities and serious injuries.

## Domestic Scan

The domestic scan encompassed a review of all current SHSPs that were submitted to the Federal Highway Administration in accordance with federal regulation. Of the published SHSPs, it was determined that although more than 30 states had mentioned the SSA within their SHSP publications, only 14 states have integrated SSA principles at some level. The review revealed that several of those 14 states have utilized SSA elements to structure their emphasis areas and associated strategies. However, there is limited evidence indicating that states are actively applying SSA principles to the development and evaluation of these strategies. This observation highlights a gap between adopting SSA features and fully integrating SSA methodologies into traffic safety initiatives. A summary of the domestic scan of SSA is included in Appendix B.

It is worth noting that of the 14 states showing some degree of implementation, all but one were published after the adoption of the SSA and the NRSS by the USDOT. The use of the SSA nationally is still in its infancy and therefore it will take time until all states have implemented the SSA and for the benefits to be truly realized.

The domestic scan of SHSPs identified several ways in which states best interpreted SSA implementation for their individual states. The SSA elements, data, and stakeholder engagement activities were among some of the highlights:

- Indiana examined "contributing factors" in crash fatalities and serious injuries by exploring the interactions between their emphasis areas*.
- Both Arkansas and Massachusetts used analysis methods that identified trends over time in fatalities and serious injuries within emphasis areas*.

- Arkansas, Indiana, and Iowa all categorized their emphasis areas* under the SSA elements.
- Distracted Driving strategies from Michigan covered all SSA elements.
- All states included stakeholders as the foundation of their SHSP. Most often, the analysis and selection of stakeholders typically defaulted to choosing those traditionally responsible for the transportation system and traffic safety.
- The effectiveness of the SHSP depended on the collaboration process. Most states appeared to use a process of periodic rather than continuous stakeholder participation. The most common methods for engaging the stakeholders were periodic meetings, conferences, or workshops.
- Kansas recently completed a "stakeholder mapping" exercise to identify and assign stakeholders to each SSA element.
- Washington State added "Safer Land Use" as an element of the SSA within their plan to help improve active transportation options to lead to fewer motor vehicle trips.
- Arizona has structured their emphasis areas* within the SSA and organized strategies by SSA elements.
- Alaska and Arkansas modeled their emphasis areas* around the five elements of the SSA but have combined safe roads and safe speeds.

**Within the California SHSP these are referred to as Challenge Areas.*

## Legislative Synergies

A review of legislation was undertaken with a focus on two distinct streams of information. The first was a review of current California state legislation and the second was a review of legislation from other states that have undertaken legislative change to improve roadway safety.

Several states with noteworthy legislative efforts were identified during this scan. **Utah** has implemented a lower Blood Alcohol Concentration (BAC) threshold of 0.05%, setting a precedent for stricter DUI enforcement. Extreme speeder laws, termed "Super Speeder" legislation, have been enacted in **Georgia, New Jersey,** and **Virginia** to target high-risk speeding behaviors. Additionally, 31 states have mandated Ignition Interlock Devices for all offenders to curb repeat drunk driving offenses. **Washington** has focused on enhancing child passenger safety, and **North Carolina** has prioritized traffic safety stops, a strategy with potential for adoption in California. These initiatives reflect a diverse range of approaches aimed at improving roadway safety across the states.

Advocates for Highway and Auto Safety, an alliance of consumer, medical, public health, law enforcement, and safety groups and insurance companies and agents working together to improve road safety in the U.S., has identified several best practices that can be implemented to increase traffic safety. The organization publishes annual reports highlighting the best practices within each state and also how states can improve to receive the highest

possible grades for safety within the state based on 16 optimal laws. Its 2024 Roadmap to Safety was reviewed along with individual state legislative reviews nationwide. Further, the Roadmap to Safety reports from 2020–2024 specific to California were reviewed. California has a strong legislative base to improve traffic safety across the state. While the SHSP does not advocate for specific laws or hold any lobbying presence for legislative change, the SHSP is a document that can be used for educational purposes. Recognizing legislation that is at the forefront of traffic safety acknowledges its importance.

During the course of the 2020–2024 SHSP the California Legislature passed and enacted several laws that could benefit from promotion through SHSP Challenge Areas. These include:

- AB43 – Speed Limit Setting (2021)
- AB1938 – Speed Limit Setting Modifications (2022)
- SB1398 – Semiautonomous Vehicles (2023)
- SB1472 – Speeding and Reckless Driving (Speeding over 100, sideshows, Vehicle Manslaughter and Gross Negligence) (2023)
- AB1946 – E-Bicycle Safety and Training Program (2023)
- AB645 – Speed Camera Pilot Program (2024)
- AB413 – Improved Visibility at Crosswalks and Intersections (2024)
- AB1909 – Omnibike Bill (overtaking bicycles 'move over') (2024)
- AB361 – Bike Lane Parking Enforcement (2024)
- SB88 – Improved Driver Qualifications and Student Safety (2024)

Some additional laws that have been recognized in other states as best practices for road safety legislation that could be improved or instituted in California are:

**Rear Seat Through Age 12 Law** – Evidence has shown that children are least at risk of injury occurring in crashes when they are in the rear seat of vehicles, even beyond the use of child seats and booster seats.

**Graduated Drivers Licensing**

- **Minimum Ages for Learner's Permit and Licensing** – Delaying licensure, either through higher entry ages or Graduated Drivers License (GDL) requirements such as extended learner stages, can reduce young driver crashes.
- **70 Hours of Supervised Driving Provision** – 70 hours of supervised driving is a recommendation for graduated driver licensing (GDL) programs, which are designed to gradually introduce new drivers to driving.
- **Nighttime Driving Restriction (NDR) Provision** – Having this restriction in place is a requirement for young drivers in the Graduated Driver Licensing (GDL) system in the United States. The purpose of an NDR is to reduce the risk of fatal crashes for new drivers. California currently restricts nighttime driving for young drivers between 11 p.m. and 5 a.m., which does not take many nighttime hours into account.

- **Passenger Restriction Provision** – The majority of states limit passengers to zero or one to reduce potential distractions while learning how to drive. California allows for passengers as long as a licensed driver over 25 is present.

**All-Offender Ignition Interlocks** – The majority of states have this restriction in place for all offenders charged with Impaired Driving offenses. First time offenders in California have the option for Ignition Interlock Devices.

**Automated Enforcement in Use** – California has recently allowed for the use of automated enforcement as a speed management tool on a limited basis. Expansion of the program state-wide would be beneficial.

**Lowered BAC of .05%** – The current permissible law for alcohol is .08%. Several states are looking at following the lead of Utah. This is measure largely designed for both a specific and general deterrence.

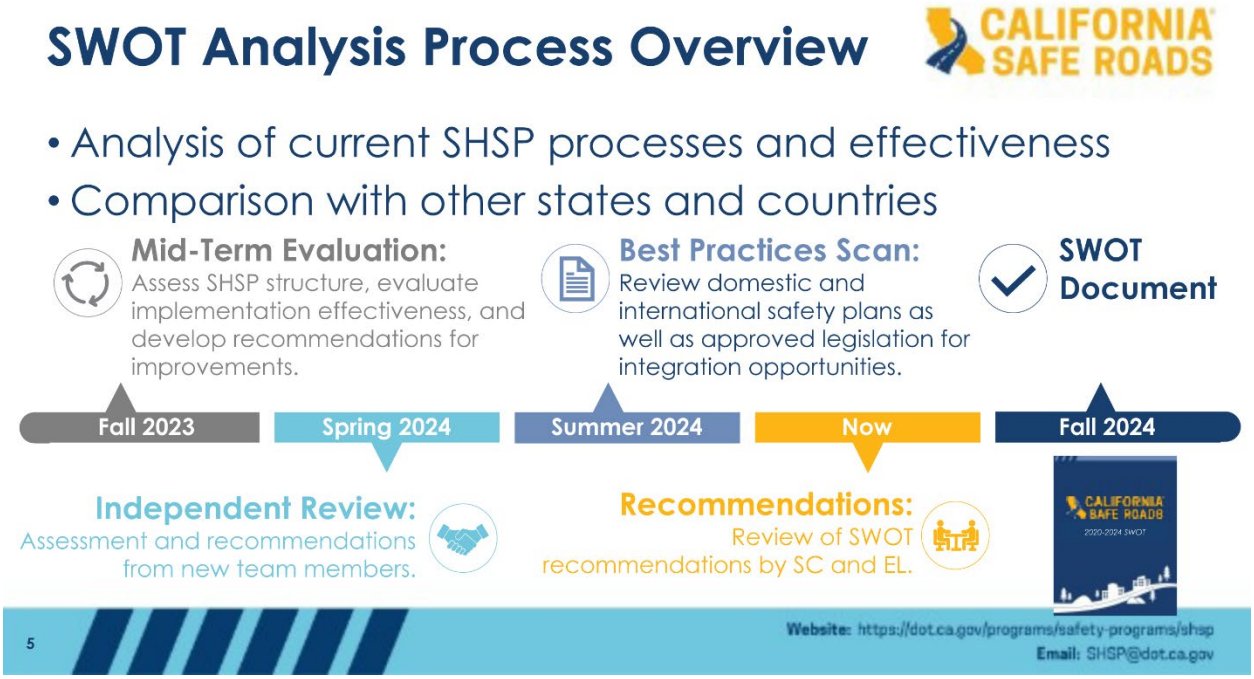
A comprehensive list of the above laws and their full descriptions can be found in Appendix C.

Finally, there is evidence to support prioritizing high impact traffic offense prioritization that targets those offenses that cause the most harm: impaired driving, speeding and aggressive driving, moving violations at or near intersections, distracted driving and occupant restraint. Collectively, these are widely accepted as the offenses that cause the most societal harm through traffic crashes. Programs enacted by law enforcement making the identification and intervention of these offenses a priority have shown to have the added benefits of greater fatal and serious injury reductions, but also general improvement in less serious traffic crashes. The most widely cited program of this comes from Fayetteville, NC.

## SWOT Analysis Findings

The SWOT Analysis was developed in collaboration with the Steering Committee to identify the aspects of the 2020–2024 SHSP that could be improved upon or changed ahead of the next California SHSP cycle for 2025–2029. Both the Mid-Term Evaluation and SWOT Analysis findings are presented under the respective elements of the SWOT: Strengths, Weaknesses, Opportunities, and Threats.

Figure 1: SWOT Analysis Process




The SWOT Analysis recognized that there are multiple strengths, weaknesses, and threats associated with the 2020–2024 SHSP, which help identify opportunities for future California SHSP cycles. The identified strengths, weaknesses, opportunities, and threats were reviewed and recommended through collaborative efforts between the California SHSP Consultant Team and the Steering Committee and Executive Leadership during the 2020-2024 SHSP cycle. Additionally, the California SHSP previously conducted a Mid-Term Evaluation that identified strengths, weaknesses, opportunities, and threats, which are denoted by an "**(M)**" in the lists below. The Mid-Term Evaluation can be found in Appendix D.

Strengths

The strengths identified during the SWOT Analysis and the Mid-Term Evaluation are:

The strengths identified during the SWOT Analysis and the Mid-Term Evaluation are:

- Preparation of a separate strategic plan and implementation plan
- Enhanced stakeholder engagement activities **(M)**
- Conducted a Mid-Term Evaluation
- Conducted new data analysis **(M)**
- More thoughtful explanation of the SSA principles for the intended audiences
- The 2020–2024 SHSP won several awards recognizing the Pivot

For a complete and comprehensive review of the strengths discussed, see Appendix E.

## Weaknesses

The weaknesses identified during the SWOT Analysis and the Mid-Term Evaluation follow:

- SHSP identifies safety issues but does not examine why the issues exist within the transportation system
- Actions under each Challenge Area are not comprehensive and do not cover all SSA elements
- SHSP is not tied directly to a funding source, which limits involvement and ability to implement and promote actions **(M)**
- Lack of timely and detailed data **(M)**
- Non-infrastructure SHSP actions are difficult to equate to crash reduction effectiveness **(M)**
- Limited staff at agencies dedicated to implementing the SHSP
- Limited coordination between the 16 Challenge Areas **(M)**
- Difficulty engaging tribes, CBOs, and other underserved groups **(M)**
- Lack of engagement at the local and regional levels for implementation **(M)**
- Lack of participation from Connected and Autonomous Vehicle (CAV) Groups **(M)**
- Limited reporting on opportunities, best practices, and success stories **(M)**
- Lack of public education to encourage mode shift and promote a safety culture **(M)**

For a complete and comprehensive review of the weaknesses discussed, see Appendix F.

## Opportunities

The opportunities identified during the SWOT Analysis and Mid-term Evaluation follow:

- Strengthen and streamline the action development process for the areas that will have the greatest impact on crash reductions
- Consider interagency training and education on best practices related to implementing the SSA
- Strengthen integration with other state, regional, and local plans **(M)**
- Broader implementation of FHWA and NHTSA countermeasures **(M)**
- Ensure we are monitoring and assessing the development, progress, and effectiveness of the actions in the implementation plan
- Increase Challenge Area cross-collaboration **(M)**
- Leverage other partner-led outreach activities to meet people where they are **(M)**
- Leverage legislative best practices from other states to advance broader safety initiatives in California
- Integrate partner safety-related data analyses into the SHSP

For a complete and comprehensive review of the opportunities discussed, see Appendix G.

### Threats

Threats are external items that the California SHSP does not have control over and thus may not be able to be avoided, but can be at least partially mitigated through flexibility and planning. The threats identified during the SWOT Analysis and the Mid-Term Evaluation follow:

- Challenges in building consensus around divisive traffic safety issues
- Lack of champion(s) to publicly support impactful safety improvements
- Legislative process is slower than the adaptation of new technologies
- Insufficient funding, especially for ongoing operations and maintenance
- Siloed funding sources
- Competitive funding sources that place greater burden on smaller agencies
- Lack of agency/partner/public buy-in and/or conflicting goals and priorities
- Lack of resources for developing, implementing, and evaluating safety initiatives
- Delay in accessing decision makers with the authority to implement changes **(M)**
- Lack of embedded safety culture

For a complete and comprehensive review of the opportunities discussed, see Appendix H.

## SWOT Recommendations and Next Steps

The SWOT Analysis yielded the following recommendations, denoted by each letter as outlined below. The next steps and recommendations are tied to the strengths (S), weaknesses (W), opportunities (O), or threats (T) portions of the SWOT Analysis, and those that were also identified from the 2020–2024 SHSP Mid-Term Evaluation have been denoted with an (M). The recommendations are actionable steps towards addressing any gaps and concerns identified during the SWOT process. These recommendations will be used to inform the 2025–2029 SHSP. The following section contains the list of recommendations which were presented to the Steering Committee and Executive Leadership in July and September of 2024. Below are the eight categories or groupings that the recommendations tended to fall within, followed by a detailed list of recommendations made under each grouping.

1) Implement the recommendations from the Mid-Term Evaluation and Executive Safety Summit
2) Safety Culture
3) Safe System Approach (SSA) Integration
4) Data Analysis/Technology
5) Performance Measurement/Evaluation
6) Collaboration/Stakeholders
7) Communication, Outreach, and Engagement
8) Policy and Legislation

## Implement the recommendations from the Mid-Term Evaluation and Executive Safety Summit

The Mid-Term Evaluation and the Executive Safety Summit included several process improvement recommendations that could help strengthen the California SHSP, particularly with regards to the following:

- Institutionalization of the Guiding Principles
- Action development
- Challenge Area coordination
- Stakeholder engagement and outreach activities

The Mid-Term Evaluation recommended that the Guiding Principles should continue to be institutionalized by integrating equity to eliminate gaps, biases, and limitations with existing available equity-related data and involving underserved and vulnerable users in the SHSP. Gaps, biases, and limitations exist with available equity-related data as identified in the weaknesses portion of the SWOT Analysis. To remediate this issue, the California SHSP implemented the Equity-Related Data Working Group (ERDWG), which will continue to meet and give guidance during the 2025–2029 SHSP Cycle.

During the Mid-Term Evaluation, the California SHSP identified that there is not an existing infrastructure inventory that allows for analysis of where proven safety countermeasures have been or could be implemented. To address this, the California SHSP will investigate the feasibility of working with partner agencies to create a comprehensive existing infrastructure inventory that will aid Challenge Areas and local agencies when selecting safety countermeasures to implement. The California SHSP also identified that there is not the same level of specificity and/or crash reduction information for behavioral countermeasures as there are for infrastructure countermeasures. To address this the California SHSP will provide additional education on NHTSA's Countermeasures That Work to aid Challenge Areas with the development of behavioral actions.

Due to the Guiding Principle of Accelerate Advanced Technology not having an overall implementation approach, the Mid-Term Evaluation recommended that the SHSP team develop a comprehensive approach with identified implementation steps for accelerating advanced technology for road safety in California. In order to increase participation from the Connected and Autonomous Vehicle (CAV) groups, the SHSP team should look to engage the state departments currently involved in CAV development in the Emerging Technologies Challenge Area.

As a direct result of the Mid-Term Evaluation, action development for the 2025-2029 SHSP will have a focused improvement to address limited interaction amongst agencies and SHSP members and lack of guidance for behavioral actions. The Mid-Term Evaluation found that actions developed under the SHSP are often limited to one agency, leading to insufficient interaction amongst the action leads, Co-Leads, Challenge Area Teams, and state and local

agencies. To improve collaboration and break down institutional silos, the 2025-2029 California SHSP will require that two action leads from different organizations are identified per action. The Mid-Term Evaluation also found that there is not enough guidance for the Double Down on What Works Guiding Principle, especially for the behavioral actions. To address this, the California SHSP will revise the Action Development Process and associated Form, which is prepared by Action Leads and Co-Leads during action development, to include requests and support for providing additional information related to the identification for next steps for actions relating to policies, guides, and best practices, and suggestions on specific strategies to promote the use of the most impactful NHTSA Countermeasures That Work.

To address the limited time that Challenge Area Team Co-Leads have for coordination, the Mid-Term Evaluation recommended that the SHSP Consultant Team provide additional administrative support, including setting up quarterly meetings. The Mid-Term Evaluation found that many Challenge Area Team Members have limited time for conducting detailed data analyses to support SHSP action development. To address this, the SHSP Consultant Team will provide information and direction on identification of safety trends and proposed actions. The Mid-Term Evaluation also found that there is limited coordination between the 16 Challenge Areas. To address this, Challenge Area meetings will be grouped in a rotating fashion and the California SHSP will look for other opportunities to facilitate Challenge Area coordination through stakeholder engagement activities.

In the 2025-2029 SHSP, stakeholder engagement and outreach activities will be enhanced to address lack of engagement at the local and regional levels; barriers to engaging tribes, CBOs, and other underserved groups; and limited reporting on upcoming opportunities and best practices/success stories. The Mid-Term Evaluation found there was a lack of engagement at the local/regional levels with individuals that can implement the SHSP. To address this, the California SHSP will engage Caltrans District SSA staff more so they can coordinate with their local/regional safety partners, increase coordination with Steering Committee members to engage their local/regional agency colleagues in the SHSP, conduct additional region-specific outreach, get more information on local/regional actions and outcomes to use as part of the E-Newsletter and future outreach activities, and ensure outreach and engagement activities also involve decision-makers and other non-technical staff. The Mid-Term Evaluation also found that there has been difficulty engaging the tribes, CBOs, and other underserved groups in the SHSP. To address this, the California SHSP will make it a point to meet people where they are (i.e., attending pre-existing NAAC or MPO/RTPA-led meetings with CBOs). The Mid-Term Evaluation stated that there is limited reporting on upcoming opportunities and best practices/success stories associated with SHSP implementation. To address this, the California SHSP will develop a SHSP-driven awards program to recognize innovators; track Highway Safety Improvement Program (HSIP), Safe Streets and Roads for All (SS4A), and Office of Traffic Safety (OTS) grant funding recipients to

follow recent efforts; and hold quarterly one-hour lunch and learn virtual sessions that would allow for agency recognition and sharing of best practices and other important information.

## Safety Culture

The recommendations to implement a safety culture include:

- Making growth of a positive traffic safety culture a core objective **(M)**
- Develop an easy way to assess safety culture (i.e. performance measures) **(M)**
- Assess individual agency/stakeholder safety culture **(T)**
- Provide a framework and guidance for developing safety culture-based strategies for all behavioral Challenge Areas (i.e. Safer People) **(M)**

To make positive traffic safety culture a core objective, the California SHSP will develop an emotionally compelling and inclusive vision statement to be incorporated in all documents and referred to during the action development process, Challenge Area Team cross-collaboration meetings, and stakeholder outreach and engagement efforts. During discussions with Executive Leadership, multiple members expressed support for implementing a safety culture and recommended doing so by implementing prosocial changes and creating a sense of community. By providing a framework and guidance for developing safety culture-based strategies that the SHSP Challenge Areas can refer to, the California SHSP can help ensure that the safety culture is implemented throughout the development of the 2025-2029 SHSP and institutionalized within each of the organizations involved.

## Safe System Approach (SSA) Integration

The recommendations to implement a safe system approach (SSA) include:

- Adopt SSA Principles and promote a safety culture **(M)**
- Conduct a stakeholder mapping exercise to identify and assign stakeholders to each SSA element **(M)**
- Ensure strategies within each Challenge Area reflect the SSA principles **(M)**
- Adopt a framework to assess SSA alignment and list strategy outcomes that can serve as KPIs **(O)**
- Organize actions by SSA elements within each Challenge Area **(M)**
- Explore ways to identify underlying system challenges that need to be addressed to reach safety goals **(T)**
- Dedicate additional resources for developing, implementing, and evaluating safety initiatives **(W)(T)**

The implementation of a safety culture as part of the SHSP will help influence safety efforts at the regional and local levels and will be supported through Challenge Area Team cross-collaboration and the providing of additional support and resources as discussed above.

In the 2025-2029 SHSP, the guiding principles will continue to be institutionalized by implementing an SSA specific to California to address the lack of knowledge and understanding of SSA aspects. To accomplish this, the California SHSP will leverage and engage the new Caltrans District SSA leads to assist in education in the SHSP Challenge Areas, consider additional SSA-related outreach and education through coordination with MPOs/RTPAs to tap into existing local and regional meetings and educational forums, and consider SHSP-led lunch and learn sessions and/or webinars regarding how to implement the SSA.

### Data Analysis/Technology

The recommendations for data analysis and technology include:

- Ensure that trends over time (increases in fatalities and serious injuries) inform the Challenge Area team analyses **(M)**
- Integrate partner-led safety-related data analyses into the SHSP **(O)**

During discussions with Executive Leadership, multiple members from public agencies expressed support for increased crash data use and using data to guide action development within the Challenge Areas. Executive Leadership also supported utilization of new, innovative data sources and the development of data technologies. Easily accessible data analysis technology will aid agencies with implementing crash reduction countermeasures and data-driven Challenge Area action development. Additionally, access to new data sources will help strengthen performance measurement and evaluation for the SHSP.

### Performance Measurement/Evaluation

The recommendations aimed at strengthening performance measurement and evaluation are:

- Ensure the analyses for each of the Challenge Areas identify the primary collision factors associated with fatality and serious injury crashes **(W)**
- Continue developing ways to evaluate the predicted crash reduction associated with strategic/policy/planning-level actions **(M)**

Some Challenge Area action-specific performance measures in the 2020–2024 SHSP were not met due to lack of access to data or the ability to share the data used to complete the actions. Ensuring each Challenge Area action is developed based on crash data will create a cohesive action development process and identify attainable performance measures. Increased performance measure monitoring and data-driven action development will allow the California SHSP to set Challenge Area Teams up for successful implementation and impactful change across the state.

## Collaboration/Stakeholders

The recommendations aimed at improving collaboration and stakeholder relationships are:

- Integrate the statewide SHSP with other state, regional, and local plans **(O)(W)**
- Provide interagency training and education on best practices related to implementing the SSA **(M)(O)**

Successful stakeholder engagement allows the California SHSP to execute interagency collaboration, community outreach, and inclusion of disadvantaged communities. Implementation of the SSA during development of the 2025-2029 SHSP will facilitate interagency cohesiveness and foster cross-collaboration amongst organizations and stakeholders. During discussions of these SWOT recommendations with the Executive Leadership, several members from public agencies expressed interest in cross-collaboration and interagency communication to share best-practices and continue efforts towards zero fatality and serious injury crashes. Implementing the SSA is a necessary step towards interagency collaboration and cohesive state, regional, and local safety plans in California.

## Communication, Outreach, and Engagement

The recommendations for enhancing SHSP stakeholder communication, outreach, and engagement activities are:

- Ensure all organized gatherings or meetings include a safety moment **(M)**
- Celebrate improvements and highlight early gains **(O)**
- Ensure the communication is impactful to stakeholders and the public, and highlights the "why" **(M)**
- Leverage other partner-led outreach activities to meet people where they are **(M)(O)**

The California SHSP aims to implement actions that address roadway safety issues that impact the State of California's communities, which are diverse and vary by region; however, in the 2020-2024 SHSP Cycle a heavy emphasis was put into involving disadvantaged communities, such as vulnerable road users and tribal groups. Ensuring all groups have a space in discussions on roadway safety is one way the California SHSP addresses the access limitations for underrepresented communities. The California SHSP is not only focused on eliminating fatal and serious injury crashes, but also ensuring safe access to transportation is available to all communities in the State of California.

## Policy and Legislation

The recommendations for the SHSP related to policy and legislation are:

- Consider legislative best practices from other states for improving safety in California **(O)**

- Increase elected official and public education on the lifesaving impacts of best practices promoting safety **(T)**

Policy and legislation play a key role in developing and institutionalizing a comprehensive safety culture. Behavioral changes focused on changing the attitudes of road users require a collaborative effort inclusive of legislation, law enforcement, and public outreach and education. By leveraging policy and legislative best practices from other states, the SHSP can help influence the future of road safety in California, and will be supported through interagency collaboration, sharing of best practices with the public and elected officials, and leveraging of community outreach and engagement as discussed above.

# Appendix C - Challenge Area Data Definition Summary

This technical appendix has been organized into the following sections:

- Data Disclaimers
- Fatal and Serious Injuries
- Rural and Urban Areas
- State and Non-State Highway Systems
- Challenge Areas

## Data Disclaimers

1. SWITRS and FARS data used in this report was extracted in February 2025, and 2022 data was considered final at that time.
2. Information on crashes involving bicyclists or pedestrians that do not include a motor vehicle is not included in the data queries used in the SHSP but is documented separately by the California Department of Public Health (CDPH).
3. To replicate the SHSP queries, data cleansing of the raw SWITRS and FARS files is necessary to modify and join respective data files to make a complete Crash, Victim, and Party database.

## Fatal and Serious Injuries

A fatal injury is any injury that results in death within 30 days after the motor vehicle crash in which the injury occurred.
A serious injury is any injury other than a fatal one, which results in one or more of the following as a result of the motor vehicle crash:

- Severe laceration resulting in exposure of underlying tissues/muscle/organs or resulting in significant loss of blood
- Broken or distorted extremity (arm or leg)
- Crash injuries
- Paralysis
- Suspected skull, chest, or abdominal injury other than bruises or minor lacerations
- Significant burns (second and third degree burns over 10% or more of the body)
- Unconsciousness when taken from the crash scene

These definitions are consistent with the definition in the Model Minimum Uniform Crash Criteria used by both FARS and SWITRS.

## Rural and Urban Areas

For this report, rural and urban areas have been determined by the 2020 US Census "Urban Areas" dataset and are defined at the census block level. Urban areas have populations over 5,000 people or contain over 2,000 housing units. Areas not meeting these criteria are defined as rural. Crashes recorded by the Traffic Injury Mapping System (TIMS) without geolocation were not included in the analysis of rural and urban areas.

This is a change from the previous SHSP, where urban areas were defined as incorporated areas with a population of 2,500 or more, based off of the population codes provided in SWITRS data.

## State and Non-State Highway Systems

The State Highway System is defined as interstates, highways, and all roads owned and operated by Caltrans.

The Non-State Highway System includes all roads customarily open to the public that are not owned and operated by Caltrans. The data from this report was generated from SWITRS and FARS databases. The table below presents the queries used in the data analysis.

## Challenge Areas

There have been no substantial query changes from the 2020–2024 SHSP analysis. There is no query for Emerging Technologies, as there is no crash data collected with respect to emerging technology availability in vehicles.

Table C-1: Challenge Area Data Queries

| Challenge Area | Injuries Queried | Source | Query |
|---|---|---|---|
| Bicyclists | Bicyclists | SWITRS - Victim, Party | VICTIM_ROLE (Victim Role) = 4 (Bicyclist)<br>OR<br>PARTY_TYPE (Party Type) = 4 (Bicyclist) AND VICTIM_ROLE (Victim Role) = 2 (Passenger) (includes non-operator on bicycle or any victim on/in parked vehicle or multiple victims on/in non-parked vehicle) |
| Pedestrians | Pedestrians | SWITRS - Victim | VICTIM_ROLE (Victim Role) = 3 (Pedestrian) |
| Impaired Driving | Victims In Crash | SWITRS - Party | PARTY_TYPE (Party Type) = 1 - Driver (including Hit and Run) AND<br>• PCF_VIOL_CATEGORY (PCF Violation Category) = 1 (Driving or Bicycling Under the Influence of Alcohol or Drug)<br>OR<br>• PARTY_SOBRIETY (Party Sobriety) =<br>o B (Had Been Drinking, Under Influence)<br>o C (Had Been Drinking, Not Under Influence)<br>o D (Had Been Drinking, Impairment Unknown)<br>OR<br>• PARTY_DRUG_PHYSICAL (Party Drug Physical) = E (Under Drug Influence) |

| Challenge Area | Injuries Queried | Source | Query |
|---|---|---|---|
| Intersections | Victims in Crash | SWITRS - Crash | INTERSECTION = Y (Yes)<br>OR<br>MVIW (Motor Vehicle Involved With) = F (Train)<br>OR<br>RAMP_INTERSECTION (Ramp Intersection) =<br>• 5 (Intersection)<br>• 6 (Not State Highway, Intersection-related, Within 250 Feet)<br>OR<br>LOCATION_TYPE (Location Type) = I (Intersection) |
| Lane Departures | Victims in Crash | SWITRS – Crash | TYPE_OF_COLLISION (Type of Collision) =<br>• A (Head-On)<br>• E (Hit Object)<br>• F (Overturned)<br>OR<br>MOVE_PRE_ACC (Movement Proceeding Collision) =<br>• C (Ran Off Road)<br>• N (Crossed into Opposing Lane) |
| Speed Management & Aggressive Driving | Victims in Crash | SWITRS - Crash | PCF_VIOL_CATEGORY (Primary Collision Factor Violation Category) =<br>• 03 (Unsafe Speed)<br>• 04 (Following Too Closely)<br>• 12 (Traffic Signals and Signs)<br>OR<br>OAF_VIOL_CAT (Other Associated Factor Violation Category) =<br>• 23 (Failure to Heed Stop Signal)<br>• 24 (Failure to Heed Stop Sign)<br>• 25 (Unsafe Speed)<br>• 26 (Reckless Driving)<br>• 30 (Following Too Closely) |
| Aging Drivers | Victims In Crash | SWITRS - Party | PARTY_TYPE (Party Type) = 1 (Driver (including Hit and Run)) AND PARTY_AGE (Party Age) = 65-997 |
| Commercial Vehicles | Victims In Crash | SWITRS - Crash | TRUCK_ACCIDENT (Truck Collision) = Y (Yes)<br>OR<br>STWD_VEHICLE_TYPE (Statewide Vehicle Type) =<br>• H (School bus)<br>• I (Other Bus) |

| Challenge Area | Injuries Queried | Source | Query |
|---|---|---|---|
| Distracted Driving | Victims in Crash | SWITRS - Party | OAF_1 OR OAF_2 (Other Associated Factor) = F (Inattention)<br>OR<br>SP_INFO_2 (Special Information 2) = 1 (Cell Phone Handheld in Use (7/1/03) |
| Driver Licensing | Victims In Crash | FARS - Vehicle | L_COMPL (License Compliance with Class of Vehicle) =<br>• 0 (Not Licensed)<br>• 2 (No Valid License for This Class Vehicle) |
| Motorcyclists | Motorcyclists | SWITRS - Party | STWD_VEHICLE_TYPE (Statewide Vehicle Type) =<br>• C (Motorcycle/Scooter)<br>• O (Moped) |
| Occupant Protection | Victims lacking Occupant Protection | SWITRS - Victim | VICTIM_SAFETY_EQUIP_1 OR VICTIM_ SAFETY_EQUIP_2 (Victim Safety Equipment) =<br>• A (None in Vehicle)<br>• D (Lap Belt Not Used)<br>• F (Shoulder Harness Not Used)<br>• H (Lap/Shoulder Harness Not Used)<br>• K (Passive Restraint Not Used)<br>• R (Child Restraint in Vehicle, Not Used)<br>• T (Child Restraint in Vehicle, Improper Use)<br>• U (No Child Restraint in Vehicle) |
| Work Zones | Victims In Crash | SWITRS - Crash | ROAD_COND_1 OR ROAD_COND_2 (Road Condition) = D (Construction or Repair Zone) |
| Young Drivers | Victims In Crash | SWITRS - Party | PARTY_TYPE (Party Type) = 1 (Driver (including Hit and Run)) AND PARTY_AGE (Party Age) = 15-20 |

# Appendix D – Approach to Demographic and Socioeconomic Data Analyses

The 2025 Traffic Safety Factsheets include analyses of crash data by race, ethnicity, and income to better understand how certain populations are affected in terms of transportation safety. This section describes the approach to the analysis of demographic and socioeconomic datasets to support the broader effort to address transportation safety disparities as part of the SHSP.

This technical appendix has been organized into the following sections:

- Background
- Data Sources and Limitations
- Racial Data in Traffic Fatalities
- Income Data in Traffic Fatalities

## *Data Sources and Limitations*

There are challenges and limitations to analyzing transportation safety disparities related to race and income. This includes the transitory presence of tourists, long-distance commuters, freight, holiday travelers, and special community event attendees. Analyses for race/ethnicity and income used data from FARS and the US Census Bureau. Due to SWITRS data limitations, these analyses can only be conducted for fatalities and not serious injuries. At this point in time, there is not a way to determine a margin of error for the analysis.

## *Fatality Analysis Reporting System*

FARS is a nationwide census providing the National Highway Traffic Safety Administration (NHTSA), Congress and the American public yearly data regarding fatal injuries suffered in motor vehicle traffic crashes[1]. FARS has very detailed and specific information required for its database across all states. It is a different dataset that includes more detailed information than SWITRS. FARS was utilized due to the availability of demographic related data for the victim and geolocation (latitude and longitude coordinates for crash locations) for all fatal crashes. The FARS dataset includes all crashes that involve a motor vehicle traveling on a roadway customarily open to the public (including those on tribal lands) that also resulted in the death of at least one person within 30 days of the crash. FARS data from 2013 to 2022 was used.

*Source: https://www.nhtsa.gov/research-data/fatality-analysis-reporting-system-fars*

[1] Fatality Analysis Reporting System: https://www.nhtsa.gov/research-data/fatality-analysis-reporting-system-fars

## Census

ACS data is gathered by the US Census Bureau and contains demographic information such as ancestry, income, employment, and housing characteristics. The ACS 5-Year Estimates for 2020 were used to determine per capita fatality rates across each Challenge Area in relation to factors such as:

- Race/Ethnicity
- Income
- Sex
- Age

*Source: https://www.census.gov/programs-surveys/acs*

## State Population by Characteristics

Conducting a fatality rate analysis for the Young Drivers and Aging Drivers Challenge Areas related to race and ethnicity requires a dataset containing population estimates by age and race/ethnicity. This data is not included in the ACS estimates, so California population estimates by race, age, sex, and Hispanic origin were used. The estimates for the years of 2020–2022 were available as of March 2025, so an average of the populations over three years was used. This is a new analysis not conducted as part of the 2020–2024 SHSP. This analysis was created to identify possible transportation safety disparities between young and aging drivers of different racial and ethnic backgrounds.

*Source: https://www.census.gov/programs-surveys/acs*

## SWITRS

SWITRS includes all crashes in the state of California that were reported by the California Highway Patrol (CHP) or reported to CHP from local law enforcement. While SWITRS is used for the majority of the SHSP data analyses, it was not utilized for the race/ethnicity or income analysis because:

1. SWITRS only contains geolocation information (latitude and longitude coordinates for crash locations) on approximately 50% of the 159,658 FSI crashes for the 2013–2022 period, with a higher percentage of those lacking geolocation information from local law enforcement. This limits the ability to perform spatial analysis of the crashes. TIMS provides more accurate and complete geolocation information, but around 3% (5,376) of FSI crashes still lack inputted coordinates.
2. Racial data in SWITRS is documented in the party file, not at the victim level, and is based on the law enforcement officer's assessment of the race of the party (each vehicle or nonmotorized user). This means that everyone in a vehicle is coded as being the same race, regardless of if there were multiple races within the vehicle. This likely introduces error, but it is not clear if that error biases the estimates or is simply a random error. The race/ethnicity data in FARS is populated for the individual victim and are100% complete for each fatality.
3. Income impact analysis relies on specific geolocation information (latitude and longitude coordinates for crash locations) and geolocation for crashes in SWITRS is 48% complete (52% of fatalities do not contain geolocation information or show up out of state). In comparison, FARS has 100% of the geolocation data populated.

# Racial Data in Transportation Fatalities

## Data Summaries

Information from FARS and ACS were used to identify distribution of California transportation fatalities by race/ethnicity. The 2025–2029 race/ethnicity analysis compares the fatality rate by race/ethnicity to the total California population. This is a change from the 2020–2024 SHSP analysis, which compared the rate of White fatalities to other racial groups in California.

The following are the data categories contained in the FARS and ACS datasets and the race/ethnicity data reported by dataset.

## FARS Data

FARS has two different datasets to identify race and ethnicity (defined by FARS as Hispanic or Single Race origin). Race and ethnicity values within the FARS database are sourced directly from the victim's death certificate, which is typically reported by the next of kin. NHTSA issues specific guidance on how individuals responsible for the state's FARS database are to code race/ethnicity: https://crashstats.nhtsa.dot.gov/Api/Public/ViewPublication/813706 (Pages 344 & 589-591). The two FARS race/ethnicity datasets along with the categories within each dataset are summarized below:

Single Race

- Not a Fatality
- White
- Black or African American
- North American Indian or Alaska Native
- Chinese
- Japanese
- Native Hawaiian
- Filipino
- Asian Indian
- Other Indian
- Korean
- Samoan
- Vietnamese
- Guamanian or Chamorro
- Other Asian or Pacific Islander
- Asian or Pacific Islander, No Specific (Individual) Race
- Multiple Races, Unspecified
- Other Race
- Unknown

Hispanic Origin

- Not a Fatality
- Mexican
- Puerto Rican
- Cuban
- Central or South American
- European Spanish
- Hispanic, Origin Not Specific, or Other Origin
- Non-Hispanic
- Unknown

## ACS Data

ACS data contains the racial/ethnic data categories from the US Census and racial/ethnic data is self-reported by individuals who complete the US Census. The ACS race/ethnicity data categories are:

Not Hispanic or Latino
- White alone
- Black or African American alone
- American Indian and Alaska Native alone
- Asian alone
- Native Hawaiian and other Pacific Islander alone
- Some other race alone
- Two or more races
- Two races including some other race
- Two races excluding some other race, and three or more races

Hispanic or Latino
- White alone
- Black or African American alone
- American Indian and Alaska Native alone
- Asian alone
- Native Hawaiian and Other Pacific Islander alone
- Some other race alone
- Two or more races
    - Two races including some other race
    - Two races excluding some other race, and three or more races

### *Analysis Methodology for Race/Ethnicity Distribution within the Datasets*

After reviewing FARS and ACS racial/ethnic data, it was clear that the datasets do not directly align. Based on the information contained within the two datasets, data categories were defined using racial/ethnic data that are consistently comparable between the different data sources. It is important to note that there are numerous racial/ethnic groups that had to be grouped into the "Other" category due to the different naming conventions and racial/ethnic groups defined within FARS and ACS. The following racial/ethnic classifications were defined for this analysis:

- White (W)
- Hispanic (H)
- Black (B)
- Asian (A)
- American Indian/Alaskan Native alone (AI/AN)
- Other (O)

Since the Hispanic or Latino designation relates to culture based on language-spoken (Hispanic) and geographic location (Latino) and can be White, Black, Indigenous, or Asian, a matrix containing the FARS race attribute in rows and the Hispanic attribute in columns was developed showing the corresponding race and ethnicity associated with the racial/ethnic classification presented in the

2025–2029 SHSP (September 2025) and the 2025–2029 SHSP Traffic Safety Factsheets (June 2025). Fatal victims that were of multiple races, all other races, or unknown as defined within FARS were categorized as "Other." Further details regarding racial/ethnic group classifications from FARS is documented in Table D-1. For the 2025–2029 SHSP, victims are classified as Hispanic, unless their ethnicity is identified as Non-Hispanic or Unknown, which is a change from the 2020–2024 SHSP where only those who were White were identified as Hispanic. Table D-2 contains a summary of how the ACS data was grouped into the classifications defined as part of the analysis process. Table D-1 and Table D-2 have been provided to share the methodology so that the process is repeatable in the future.

*Table D-1: FARS Racial/Ethnic Classification Data Conversion Matrix*

| Race and Ethnicity | Mexican | Puerto Rican | Cuban | Central or South American | European Spanish | Hispanic, Origin Not Specified, or Other Origin | Non-Hispanic | Unknown |
|---|---|---|---|---|---|---|---|---|
| White | H | H | H | H | H | H | W | W |
| Black or African American | H | H | H | H | H | H | B | B |
| American Indian | H | H | H | H | H | H | AI/AN | AI/AN |
| Chinese | H | H | H | H | H | H | A | A |
| Japanese | H | H | H | H | H | H | A | A |
| Hawaiian | O | O | O | O | O | O | O | O |
| Filipino | H | H | H | H | H | H | A | A |
| Asian Indian | H | H | H | H | H | H | A | A |
| Other Indian | H | H | H | H | H | H | A | A |
| Korean | H | H | H | H | H | H | A | A |
| Samoan | O | O | O | O | O | O | O | O |
| Vietnamese | H | H | H | H | H | H | A | A |
| Guamanian | O | O | O | O | O | O | O | O |
| Other Asian or Pacific Islander | H | H | H | H | H | H | A | A |
| Asian or Pacific Islander, No Specific | H | H | H | H | H | H | A | A |
| Multiple Races | O | O | O | O | O | O | O | O |
| All Other Races | O | O | O | O | O | O | O | O |
| Unknown | O | O | O | O | O | O | O | O |

*Note re Codes: Asian alone (A), American Indian and Alaska Native alone (AI/AN), Black or African American alone (B), Hispanic or Latino (H), White alone (W), Other (O). The term "alone" includes fatal victims that identify as only one race. For this analysis, fatal victims that identify as only one race were separated out to recognize racial data that is exclusively from each group.*

*Table D-2 – ACS Racial/Ethnic Classification Data Conversion Matrix*

| Ethnicity | Race | Race/Ethnicity Classification |
|---|---|---|
| Not Hispanic or Latino | White alone | W |
| | Black or African American alone | B |
| | American Indian and Alaska Native alone | AI/AN |
| | Asian alone | A |
| | Native Hawaiian and other Pacific Islander alone | O |
| | Some other race alone | O |
| | Two or more races: two races including some other races | O |
| | Two or more races: two races excluding some other race, and three or more races | O |
| Hispanic or Latino | White alone | H |
| | Black or African American alone | H |
| | American Indian and Alaska Native alone | H |
| | Asian alone | H |
| | Native Hawaiian and other Pacific Islander alone | H |
| | Some other race alone | H |
| | Two or more races: two races including some other races | O |
| | Two or more races: two races excluding some other race, and three or more races | O |

*Note: The intent was to identify "Asian Alone" within the two datasets. The ACS grouping of "Native Hawaiian and Other Pacific Islander alone" involves treating either Native Hawaiians or Other Pacific Islanders differently between the two datasets. Since there can be more ambiguity regarding whether Native Hawaiians can be considered "Asian Alone" when in comparison with Other Pacific Islanders, Native Hawaiians was coded as "Other." Since Native Hawaiians are not all Asian.*

## *Analysis Methodology for Fatality Rate Comparison by Race/Ethnicity*

### Distribution of California Fatalities by Race/Ethnicity

Racial/ethnic classifications for population figures in California were developed based on the categories developed in Table D-2. Additionally, a distribution of fatalities was developed based on FARS data and racial/ethnic classifications defined as part of the data analyses process and included in Table D-1.

### Fatality Rate by Race/Ethnicity

To determine the fatality rate for each racial/ethnic group, a fatality rate per 100,000 people was calculated for each racial/ethnic group for all fatalities in California, as well as for each Challenge Area, to determine over- or under-representation. The exceptions are the Emergency Response Challenge Area and the Emerging Technologies Challenge Area because currently there is no data or methods to calculate fatalities associated with these Challenge Areas. The SHSP reports on the geographic disparities in trauma center access in California and provides a comparison of FSI crash frequency to these trauma center locations. Data is not collected with respect to emerging technology availability in vehicles; as such, fatalities cannot be associated with emerging technologies.

## Income Impact on Traffic Fatalities

Income impact analysis compares the location of fatal crashes to the median household income for the Census Tract where the fatality occurred. AB 1550 stipulates 80% of statewide median household income should be used as the threshold for disadvantaged communities, so this threshold was applied for the income impact analysis. The 2022 ACS 5-Year Estimate data for median household income at the Census Tract level was used to determine income-disadvantaged communities and calculate the fatality rates per 100,000 population. The 2022 threshold of $73,524 was used for the 10-year analysis.

This differs from the 2020–2024 SHSP, which used average income for the Census Block Group where the fatality occurred. Census Block Groups with an average household income less than $50,000 were compared to Census Block Groups with an average household income greater than $50,000, as part of the analysis.

Data is not available for the income level of transportation fatality victims in FARS. However, ACS data provides the median household income by Census Tract. Demographic information such as income level is tied to the geographic location where the crash occurred and is not correlated with the demographic data associated with the victim. FARS includes the geolocation of the fatal crash, which can be compared to the median household income data for the corresponding Census Tract. A limitation to this analysis is that income-level data can only be identified for crash locations, rather than the residence of crash victims.

### Analysis Methodology for Income Impact

Median household income is a US Census datapoint that is directly attributed to each Census Tract. A spatial analysis was conducted using FARS and ACS datasets to identify the location of the fatality and associated average household income by Census Tract. To be clear, the analysis results do not identify the household income of individual victims but **identify the median household income for the Census Tract in which the fatality occurred**. For example: a lower-income individual can suffer a fatality in a high-income Census Tract, and the event would be counted as a fatality in a high-income Census Tract, and vice versa.

The income analysis of the 2020–2024 SHSP classified fatal crashes into median household income brackets. As income increased, the transportation fatality rate generally decreased. This trend is reflected in this income analysis, as a transportation fatality is 40% more likely to occur in an income disadvantaged community.

The 2025–2029 SHSP Traffic Safety Factsheets display the fatality rate comparison for all Challenge Areas (except for Emergency Response and Emerging Technologies, as fatalities for these Challenge Areas cannot be computed). In order to determine the percentages displayed, the fatality rate calculated for all Census Tracts with median household incomes below $73,524 were compared to the fatality rate calculated for all Census Tracts with median household incomes above $73,524.

#### Contact Information

For more information on the data collection and analysis procedures, please contact: shsp@dot.ca.gov.

# Appendix E – Rail Crossing Data

Rail crossing safety is encompassed within the Intersections Challenge Area; however, the Federal Railroad Administration (FRA) maintains its own national database of crashes.

The FRA provides information for crashes along railways, which they refer to as "incidents." The data is reported by railroad owners across the country and appears to be the most complete data set for rail crashes. The FRA data used for this analysis includes:

- Form 57: Highway-Rail Grade Crossing Incident Data — Provides data on the incident.
- Form 71: Crossing Inventory Data — Provides data on the crossing for incident analysis.

This information is supplemental to the Intersections Challenge Area data. Therefore, only incidents involving an at-grade intersection crash are included.

From 2013–2022, 478 fatalities and 558 injuries occurred at rail crossings, which is displayed by location in Figure E-1 and by year in Table E-1. FRA does not distinguish between serious and minor injuries, so all injuries have been included. The cause of many incidents is unclear, due to the current coding of Form 57: Highway-Rail Grade Crossing Incident Data. Form 54: Rail Equipment Accident/Incident Data provides additional information on the cause of incidents. However, it is only completed for approximately 5% of incidents. Completing Form 54 for all incidents, including those involving bicyclists and pedestrians, could provide agencies more information on causes and how to improve safety on the railway and roadway. Table C-2 summarizes the fatalities and injuries by user type. The "Other" category includes bicyclists, since they do not have a dedicated category.

As shown in Table E-2, pedestrians make up 67% of fatalities at rail crossings and 42% of total fatalities and injuries. Auto-related incidents make up 25% of total fatalities and injuries at rail crossings, but only 15% of fatalities. This indicates that a particular focus on pedestrian rail safety could help reduce overall fatalities. Both injuries and fatalities display significant sex disparities. Over 68% of injuries and almost 75% of fatalities involve males. The California population is split almost equally among genders. More information on the cause of the incident could help identify reasons for this disparity.

*Figure E-1: Number of Injuries and Fatalities by FRA Rail Crossing, 2013–2022*

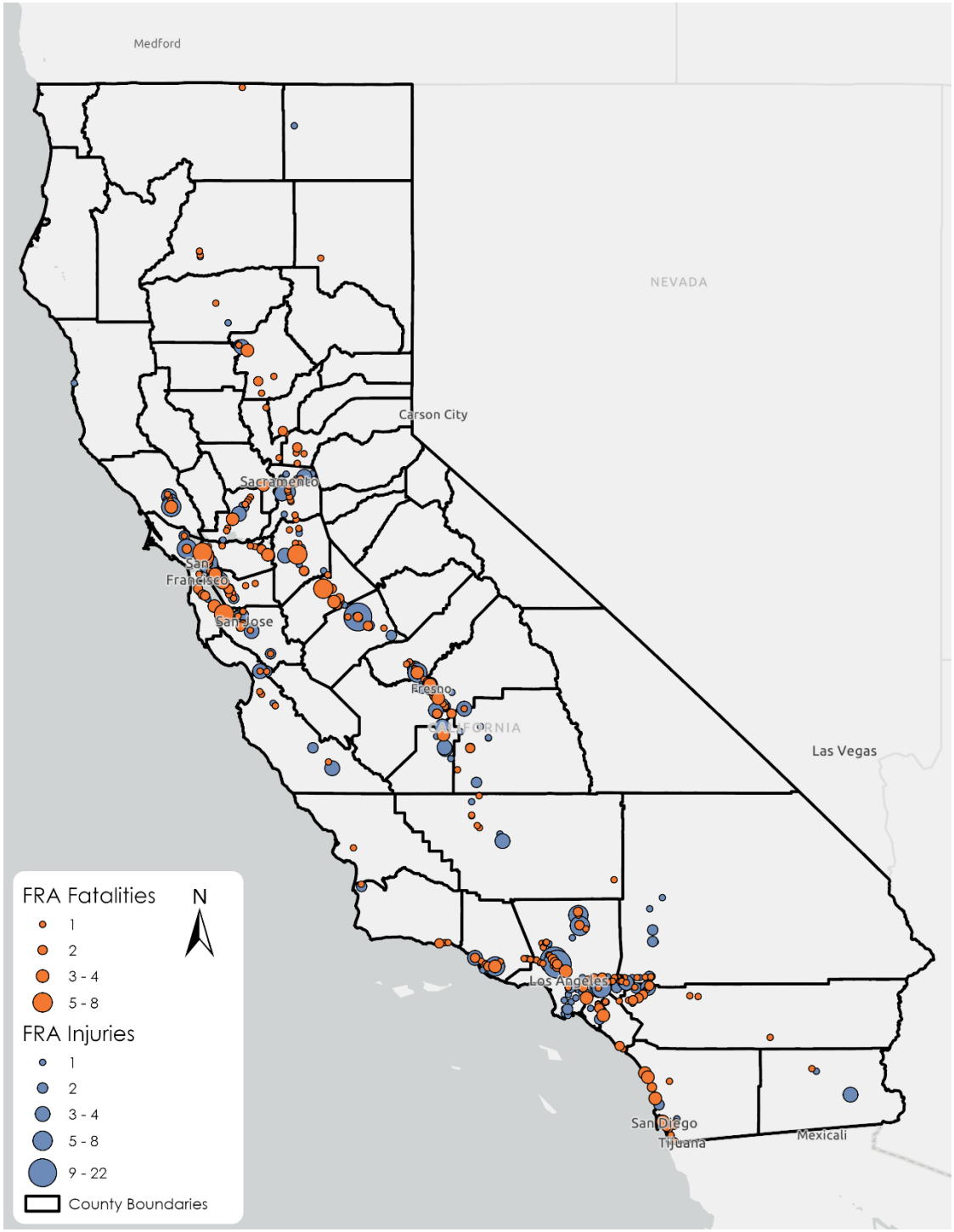


*Table E-1: FRA Rail Crossing Fatalities and Injuries 2013–2022*

| Year | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Fatalities | 50 | 40 | 44 | 61 | 45 | 47 | 65 | 40 | 39 | 47 | 478 |
| Injuries | 77 | 47 | 44 | 65 | 62 | 68 | 65 | 55 | 36 | 39 | 558 |
| Total | 127 | 87 | 88 | 126 | 107 | 115 | 130 | 95 | 75 | 86 | 1,036 |

*Table E-2: FRA Rail Crossing Fatalities and Injuries by User Type 2013–2022*

| User | Fatalities | Injuries | Total | % of Total |
|---|---|---|---|---|
| Pedestrian | 322 | 114 | 436 | 42.1% |
| Automobile | 70 | 185 | 255 | 24.6% |
| Bus | 0 | 2 | 2 | 0.2% |
| Motorcycle | 2 | 7 | 9 | 0.9% |
| Pick-Up Truck | 24 | 43 | 67 | 6.5% |
| Truck | 3 | 42 | 45 | 4.3% |
| Truck-Trailer | 3 | 74 | 77 | 7.4% |
| Van | 8 | 21 | 29 | 2.8% |
| Other Motor Vehicle | 10 | 39 | 49 | 4.7% |
| Other | 36 | 31 | 67 | 6.5% |
| Total | 478 | 558 | 1,036 | 100.0% |

# Appendix F: Thank You to All Contributors and Partners

Hundreds of stakeholders, agencies, and organizations contributed to the development of the 2025–2029 California SHSP. This includes all of the SHSP Committees and Challenge Area Team Members, as well as everyone who attended the various outreach events to provide input for this Plan. Thank you to these stakeholders, agencies, and organizations for your partnership, participation, and your continued efforts to achieve the goal of zero fatalities and serious injuries on all of California's public roadways.

1st Choice DVBE
A Sobering Choice Coalition
Abate of California
Advanced Drivers Education Products and Training Driver
Agua Caliente Band of Cahuilla Indians
Alameda County Public Works
Alameda County Transportation Commission
Albany Police Department
Alhambra Police Department
Allstate Insurance
Altadena Town Council - Traffic Safety Committee
American Association of Retired Persons, California
American Automobile Association
American Bicycling Education Association
American Motorcyclist Association
Anderson Police Department
Arrive Alive California
Arup
Association of Monterey Bay Area Governments
Augustine Band of Cahuilla Indians
Automobile Club of Southern California- Public Affairs
Autonomous Vehicle Industry Association
Ayars & Associates
Bakersfield Steps, Inc DUI Program
Banana Moments
Barona Group of Capitan Grande Band
Bay Area Metro
Bell Gardens Police Department
Big Valley Band of Pomo Indians
Bike San Diego
Bike San Gabriel Valley
Bike Santa Cruz County
BKF Engineers
Blue Lake Rancheria Tribe
Boster-Kobayashi
Bridgeport Paiute Indian Colony
Brifen USA., Inc
Buena Vista Rancheria of Me-Wuk Indians
Butte County
Butte County Association of Governments
Butte County Public Health
Cabazon Band of Mission Indians
Cachil DeHe Band of Wintun Indians
Cadence Sports
Cahuilla Band of Mission Indians
Calaveras County
Calaveras County Department of Public Works
California Ambulance Association
California American Traffic Safety Services Association
California Association for Safety Education
California Association of Bicycling Organizations
California Association of Councils of Governments
California Bicycle Coalition
California Bus Association
California City Transportation Initiative
California Council of the Alzheimer's Association
California County Planning Director's Association

California Department of Alcoholic Beverage Control
California Department of Education
California Department of Health Care Services
California Department of Justice
California Department of Motor Vehicles
California Department of Public Health
California Department of Transportation
California Emergency Medical Services Authority
California Farm Bureau Federation
California Friday Night Live Partnership
California Highway Patrol
California Office of Traffic Safety
California Police Chiefs Association
California Polytechnic State University Pomona
California Public Utilities Commission
California Safe Routes to School
California State Sheriffs Association
California State Transportation Agency
California State University of Fresno
California State University of Sacramento
California Teachers Association
California Transportation Commission
California Tribal Representative
California Trucking Association
California Walks
Calaveras County
Cambridge Systematics
Campo Band of Diegueno Mission Indians
Camtech Monitoring
Capital SouthEast Connector Joint Powers Authority
Carol Miller Justice Center
Cedars-Sinai
Cedarville Rancheria
Center for Counseling and Education
Center for Defensive Driving
Charles River Associates
Chemehuevi Indian Tribe of the Chemehuevi Reservation California
Cher-Ae Heights Indian Community of the Trinidad Rancheria
Cherryland Community Association
Chino Police Department
Chrisp Company
Circlepoint
Circulate San Diego
Citizen
City of Anaheim
City of Anderson
City of Bell Gardens
City of Berkeley
City of Beverly Hills
City of Calabasas
City of Calistoga
City of Camarillo
City of Carlsbad
City of Chino
City of Chula Vista
City of Colton
City of Concord
City of Corcoran
City of Costa Mesa
City of Cupertino Safe Routes to School
City of Cypress
City of Davis
City of Dixon
City of Eastvale
City of El Cerrito Public Works Department
City of Elk Grove
City of Emeryville
City of Escondido
City of Fairfield
City of Folsom
City of Fontana
City of Fountain Valley
City of Fremont
City of Fresno
City of Fresno Public Works
City of Glendale
City of Half Moon Bay

City of Healdsburg
City of Inglewood
City of La Habra
City of Laguna Beach
City of Laguna Hills
City of Lancaster
City of Livermore
City of Long Beach
City of Long Beach Department of Health and Human Services
City of Long Beach Public Works
City of Los Angeles
City of Los Angeles Supervising Attorney
City of Los Banos
City of Menifee
City of Menlo Park
City of Merced
City of Mission Viejo
City of Mission Viejo Public Works
City of Montebello
City of Monterey
City of Mount Shasta
City of Napa
City of Oakland
City of Oceanside
City of Ontario
City of Orinda
City of Oroville
City of Palm Springs
City of Palmdale
City of Paramount
City of Pasadena
City of Pasadena Department of Transportation
City of Patterson
City of Pico Rivera
City of Placentia
City of Placerville
City of Pleasanton
City of Pomona
City of Rancho Cordova
City of Rancho Cucamonga
City of Redding
City of Redwood City
City of Reedley
City of Richmond
City of Riverside
City of Roseville
City of Salinas
City of San Diego
City of San Jose
City of San Leandro
City of San Marcos
City of Santa Ana
City of Santa Barbara
City of Santa Clara
City of Santa Clarita
City of Santa Maria
City of Santa Monica
City of Santa Rosa
City of Santa Rosa Public Works
City of Sebastopol
City of Sebastopol Public Works
City of Shasta Lake
City of Sierra Madre
City of South Lake Tahoe
City of South Pasadena
City of St. Helena
City of Stockton
City of Thousand Oaks
City of Torrance
City of Vallejo
City of Ventura
City of Victorville
City of Visalia
City of Vista
City of Walnut Creek
City of Watsonville
City of Watsonville Public Works & Utilities Department
City of West Sacramento
City of Wildomar
City of Yorba Linda

City of Yuba City
CLEW Associates
Cloverdale Rancheria of Pomo Indians
Coach USA
Coalition for Responsible Transportation Planning
Cold Springs Rancheria of Mono Indians
Comcast
Common Spirit
Community Emergency Response
Community Health Centers
Community Medical Centers
Community Regional Medical Center
Community Traffic Safety Coalition
Contra Costa County Department of Public Works
Contra Costa Transportation Authority
Cortina Indian Rancheria of Wintun Indians
County Children & Families Commission
County Engineers Association of California
Coyote Valley Band of Pomo Indians
CSG Consultants
Culver City
Culver City Police Department
Cupertino Safe Routes to School
Dennis Kobza & Associates, Inc.
Desert Hot Springs Police
Dewberry Engineers
Dignity Health
DKS Associates
Doctors Medical Center Trauma Program
Dokken Engineering
Driving School Association of California Incorporated
Dry Creek Rancheria Band of Pomo Indians
East Side Riders Bike Club
El Dorado County
El Dorado County Department of Transportation
El Dorado County Transportation Commission
Elem Indian Colony of Pomo Indians
Elk Grove Police Department
Elk Valley Rancheria
Emergency Medical Services Authority
Emergent Transportation Concepts
Ennis Traffic Safety Solutions
Enterprise Rancheria of Maidu Indians
Ewiiaapaayp Band of Kumeyaay Indians
Families for Safe Streets, SF Bay Area Chapter
FDR Democratic Club of San Francisco
Federal Highway Administration, California Division
Federal Motor Carrier Safety Administration, California Division
Federated Indians of Graton Rancheria
Fehr & Peers
Fire Chiefs
Fontana Police Department
Fort Bidwell Indian Community
Fort Independence Indian Community of Paiute Indians
Fort Mojave Indian Tribe of Arizona California & Nevada
Fresno Council of Governments
Fresno County Bicycle Coalition
Fresno County Department of Public Health
Fresno Cycling Club
Gallagher
GHD Inc.
Gilroy Police Department
Glenn County
Glenn County Health and Human Services Agency
Green DOT Transportation Solutions
GreenlightLB
Grindstone Indian Rancheria of Wintun-Wailaki Indians
Gualala Municipal Advisory Council
GUIDE2Safeti
Guidiville Rancheria
Habematolel Pomo of Upper Lake
Hayward Police Department
Health and Human Services Agency

Hercules Police Department
Hook and Ladder Sacramento
Hoopa Valley Tribe
Humboldt County Association of Governments
Impact Teen Drivers
Imperial County Department of Public Works
Inaja Band of Diegueno Mission Indians
Innovv Tech Co. Limited
Interwest Consulting Group
Ione Band of Miwok Indians
Irvine Police Department
Jacobs Engineering
Jamul Indian Village
JBC Safety Plastic, Inc
Karuk Tribe
Karuk Tribe Department of Transportation
Kashia Band of Pomo Indians
Kern Council of Governments
Kern County Probation
Kern County Public Works
Kings County Association of Governments
Kittelson & Associates
La Jolla Band of Luiseno Mission Indians
Laguna Beach Police Department
Lake Area Planning Council
Lake County
Lake County Department of Public Works
Lassen County Transportation Commission
League of American Bicyclists
League of California Cities
LED Lighting Solutions
Lindsay
LLG Planner & Engineers
Loma Linda University Children's Hospital
Long Beach Police Department
Los Angeles County
Los Angeles County Department of Health Services
Los Angeles County Department of Public Health
Los Angeles County Metropolitan Transportation Authority
Los Angeles County Probation
Los Angeles County Public Health
Los Angeles County Public Works
Los Angeles Department of Transportation
Los Angeles Department of Water and Power
Los Angeles DUI Programs and California Association of DUI Treatment Programs
Los Angeles Metro
Los Angeles Police Department
Los Angeles Police Department Forensic Science Division Toxicology Unit
Los Angeles Street Services / Investigation and Enforcement Division
Los Angeles Walks
Los Coyotes Band of Cahuilla & Cupeno Indians
Madera Council of Governments
Madera County Road Department
Madera County Transportation Commission
Manchester Band of Pomo Indians
Manhattan Beach Police Department
Manzanita Band of Diegueno Mission Indians
Marin County
Marin County Bicycle Coalition
Mechoopda Indian Tribe
Mendocino Coast Recreation & Park District
Mendocino Council of Governments
Mendocino County Department of Transportation
Menifee Police Department
Merced County Association of Governments
Mercy Medical Center Redding
Mercy San Juan Medical Center
Mesa Grande Band of Diegueno Mission Indians
Metropolitan Planning Organizations
Metropolitan Transportation Commission
Michael Baker International
Michael Williams Company
Minagar & Associates, Inc.
MNS Engineer,s Inc

MobilityVision, Inc.
Modoc County Road Department
Monterey County
Monterey County District Attorney's Office
Monterey County Public Health Department
Monterey County Transportation Agency
Monterey Park Police Department
Mooretown Rancheria of Maidu Indians
Moraga Planning Commission
Morongo Band of Cahuilla Mission Indians
Mothers Against Drunk Driving
Motorcycle Safety Foundation
MOVE Santa Barbara County
Napa Valley Transportation Authority
National Association of City Transportation Officials
National Highway Traffic Safety Administration, Region 9
National Indian Justice Center
National Safety Council
National Trench Safety
Native American Advisory Committee
Nevada County
Nevada County Safe Routes to School
Newark Police Department
Newhalen Tribal Council
North County Transit District
Northbay Health
NorthBay Medical Center
Northfork Rancheria of Mono Indians
Occupant Protection SHSP
Orange County
Orange County Emergency Medical Services
Orange County Health Care Agency
Orange County Health Department
Orange County Public Works
Orange County Sheriff's Department
Orange County Supervisor
Orange County Transportation Authority
Pacific Safety Center
Paiute-Shoshone Indians of the Bishop Community
Paiute-Shoshone Indians of the Lone Pine Community
Pala Band of Mission Indians
Palomar Health
Parsons Engineering
Pasadena Complete Streets Coalition
Pauma Band of Luiseno Mission Indians
Pechanga Band of Luiseno Mission Indians
People with Disabilities
Picayune Rancheria of Chukchansi Indians
Pittsburg Police Department
Placer County
Placer County Department of Public Works
Placer County Transportation Planning Agency
Plumas County
Plumas County Transportation Commission
Prevention Education Program Incorporated
ProProse L.L.C.
PSOMAS
Public Safety Center
Quartz Valley Indian Community
Ramona Band or Village of Cahuilla Mission Indians
RAND Corporation
Recording Artists Against Drunk Driving
Redlands Police Department
Regional Transportation Planning Agencies
Resighini Rancheria
Resources for Independence Central Valley
Rick Engineering
Ride Redding
Rincon Band of Luiseno Mission Indians
Riverside County
Riverside County Department of Public Health
Riverside County District Attorney
Riverside County Transportation
Riverside County Transportation Commission
Road-Tech Safety Services

Robinson Rancheria Tribal Transportation Program
Round Valley Indian Tribes
Rural County Task Force
Rural Transportation Planning Agencies
Ryan Snyder Associates
Sacramento Area Bicycle Advocates
Sacramento Area Council of Governments
Sacramento County
Sacramento County Department of Transportation
Sacramento County Office of Education
Sacramento County Probation
Sacramento District Attorney Lab
Sacramento Metropolitan Fire District
Sacramento Regional Fire EMS Communications Center
Sacramento Safety Center
Sacramento Wheelmen
Safe Routes to School National Partnership
Safe System Culture
Safe System Solutions
Safety Center Incorporated
SafetyBeltSafe U.S.A.
Salinas Police Department
San Bernardino County
San Bernardino County Public Works
San Bernardino County Sheriff/Victorville Station
San Bernardino County Sheriff's Department
San Bernardino Sheriff Department Crime Lab
San Diego Association of Governments
San Diego City Attorney's Office
San Diego County
San Diego County Bicycle Coalition
San Diego County District Attorney
San Diego County Probation Department
San Diego County Sheriff's Department Regional Crime Laboratory
San Francisco Bicycle Advisory Committee
San Francisco Hills
San Francisco Municipal Transportation Agency
San Gabriel Police Department
San Joaquin Council of Governments
San Joaquin County
San Joaquin County Public Health Services
San Joaquin County Public Works
San Joaquin Court
San Joaquin General Hospital
San Jose Department of Transportation
San José Police Department
San Juan Unified School District
San Luis Obispo Council of Governments
San Luis Obispo County Department of Public Works
San Luis Obispo County Public Health
San Manuel Band of Serrano Mission Indians
San Mateo County
San Mateo County Health System
San Mateo County Office of Education
San Mateo County Public Works
San Mateo Police Department
San Pasqual Band of Diegueno Mission Indians
Santa Ana City Council
Santa Barbara County Association of Governments
Santa Barbara Police Department
Santa Clara County Health System
Santa Clara County Public Health Department
Santa Clara County Roads & Airports Dept
Santa Clara Valley Medical Center
Santa Clara Valley Transportation Authority
Santa Cruz Community Coalition
Santa Cruz County
Santa Cruz County Community Traffic and Safety Coalition
Santa Cruz County Cycling Club
Santa Cruz County Public Health Department
Santa Cruz County Public Works
Santa Cruz County Regional Transportation Commission
Santa Cruz Health Services Agency
Santa Rosa Band of Cahuilla Indians

Santa Ynez Band of Chumash Mission Indians
Santa Ysabel Band of Diegueno Mission Indians
Scripps Health
Scripps Memorial Hospital La Jolla Trauma Service
Seventh Sovereign L.L.C.
Shasta County
Shasta County Health and Human Services Agency
Shasta County Health and Human Services Public Health
Shasta Living Streets
Shasta Regional Transportation Agency
Shasta Senior Nutrition Program
Sherwood Valley Rancheria of Pomo Indians
Shingle Springs Band of Miwok Indians
Smiles2all-Creative Projects
Snell Foundation
Solano County
Solano County Department of Public Health
Solano County District Attorney's Office
Solano Transportation Authority
Sonoma County
Sonoma County Transportation Authority
South San Francisco Police Department
Southeastern Regional Transit Authority
Southern California Association of Governments
Stanford University
Stanislaus Council of Governments
Stanislaus County Health Services Agency
Starks & Hayes Consultants
Street Racing Kills
Street Smart Rental
Students Against Destructive Decisions
Susanville Indian Rancheria
Sutter County
Sutter County Children & Families Commission
Sutter Health
Swordhouse Inc
Sycuan Band of the Kumeyaay Nation
Systems Alcohol and Location Monitoring of California
Table Mountain Rancheria
Tahoe Regional Planning Agency
Teichert
The Children's Initiative
The Lombardo Group
The Toll Roads
The Transportation Corridors Agency
Tolowa Dee-ni' Nation
Total Control Training
Town of Fort Jones
Town of Moraga
Traffic Engineering Expert Witness
Traffic Management Inc
Traffic Safety Resource Prosecutors
Transportation and Parking Services
Transportation Consultant
Transportation Corridor Agencies
Transportation Priorities
Trinidad Rancheria
Trinity County Department of Transportation
Tulare County
Tulare County Association of Governments
Tulare County Office of Education
Tulare County Regional Transit Agency
Tule River Indian Tribe
Tuolumne Band of Me-Wuk Indians
Tuolumne County
Twenty-Nine Palms Band of Mission Indians
United States Department of Veterans Affairs
University of California Berkeley
University of California Berkeley, Intelligent Transportation Systems
University of California Berkeley, University Health Services
University of California Berkeley, Institute of Transportation Studies
University of California Berkeley, Safe Transportation Research & Education Center
University of California Berkeley

University of California Davis
University of California Davis, Advanced Highway Maintenance & Construction Technology Research Center
University of California Davis, Transportation Services
University of California Irvine
University of California Los Angeles, Medical Center
University of California Riverside
University of California San Diego
University of California San Diego, Transportation Research and Education for Driving Safety
University of Southern California, Health Behavior Solutions
Utilitarian Cyclists
Valley Childrens Health Care
Ventura County
Ventura County Behavioral Health
Ventura County Transportation Commission
Vespa Club of America
Viejas Group of Capitan Grande Band of Mission Indians
Vision Zero Network
Walk and Roll
WALK Sacramento
Willdan
Wilton Rancheria
Wiyot Tribe of Table Bluff
Woodland Police Department
Yolo County
Youth Educational Sports, Inc.
Yuba County Health & Human Services
Yuba County Public Health
Yurok Tribe

# Appendix G: FHWA Special Rules

### *High Risk Rural Roads*

#### *Program Overview*

High Risk Rural Roads are defined in 23 U.S.C. 148(a)(1) as "any roadway functionally classified as a rural major or minor collector or a rural local road with significant safety risks, as defined by a State in accordance with an updated State strategic highway safety plan."

### *Older Driver and Pedestrians Special Rule*

#### *Program Overview*

Per 23 U.S.C. 148(g)(2), if the rate per capita of traffic fatalities and serious injuries for drivers and pedestrians age 65 and over in a State increases over the most recent 2-year period for which data are available, the Older Driver and Pedestrian Special Rule requires a State to include strategies to address the increases in those rates in their State Strategic Highway Safety Plan (SHSP). FHWA issued the HSIP Special Rules Guidance in February 2, 2022 to provide guidance and information on how to determine if the Special Rule applies in a State.

### *Vulnerable Road Users (VRU) Safety Special Rule*

#### *Program Overview*

The Infrastructure Investment and Jobs Act established a new Special Rule under 23 U.S.C. 148(g)(3) for VRU safety.

Vulnerable road users are defined in 23 U.S.C. 148(a)(15) as "a nonmotorist—'(A) with a fatality analysis reporting system person attribute code that is included in the definition of the term 'number of non-motorized fatalities' in section 490.205 of title 23, Code of Federal Regulations (or successor regulations); or '(B) described in the term 'number of non-motorized serious injuries' in that section."

While the statutory definition for "vulnerable road user" includes both "number of nonmotorized fatalities" and "number of serious injuries," the VRU Safety Special Rule only considers non-motorized fatalities, per 23 U.S.C. 148(g)(3). Non-motorized fatalities, by reference to 23 CFR 490.205, refer to fatalities with the FARS person attribute codes for Pedestrian, Bicyclist; Other Cyclist, and Person on Personal Conveyance.