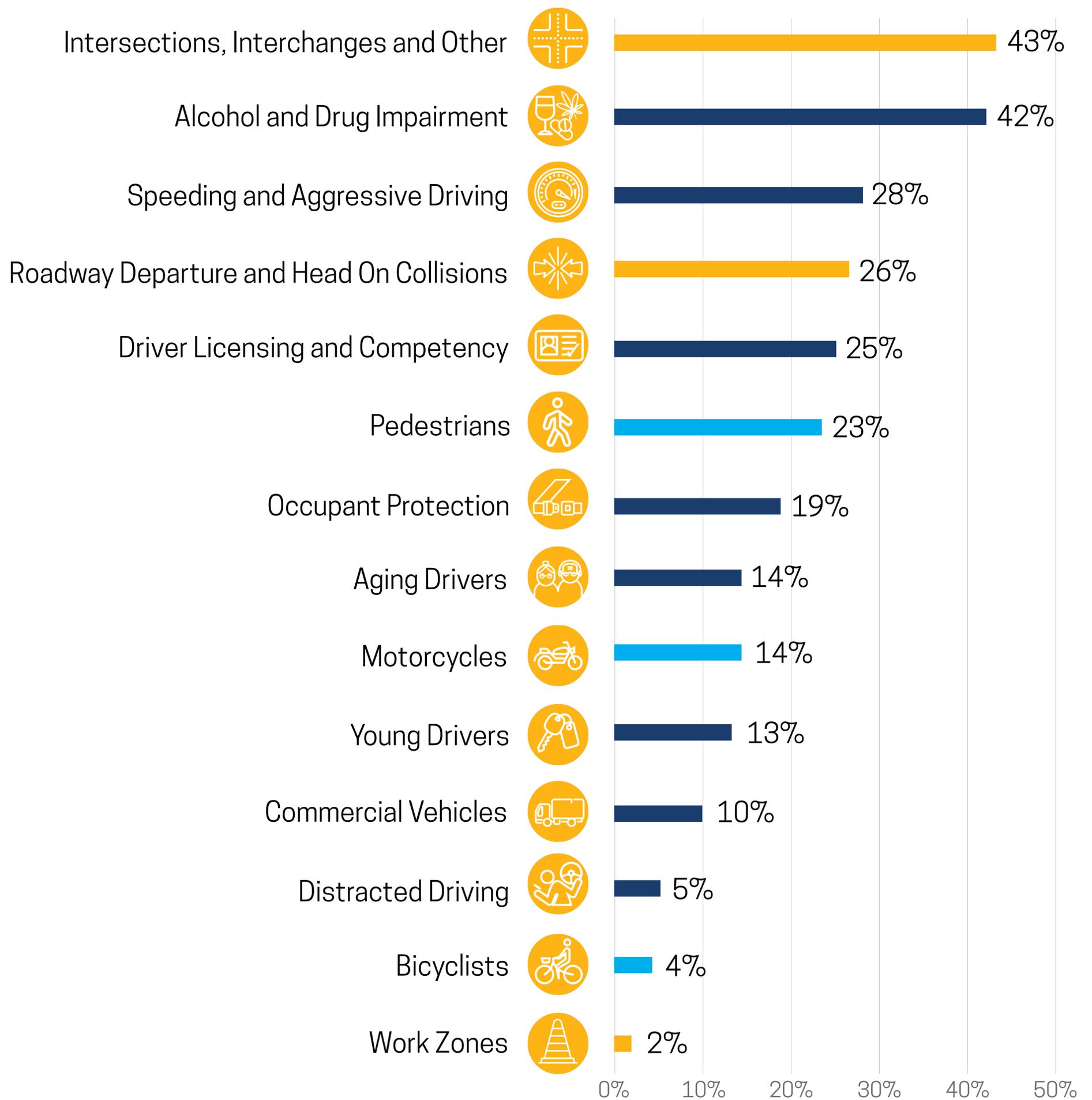


COLLISION OVERVIEW

2008 - 2017 Statewide Percent of Total Fatalities



■ Drivers and Passengers ■ Infrastructure ■ Vulnerable Road Users



CALIFORNIA SAFE ROADS
2020-2024 Strategic Highway Safety Plan

VISION

**Safe Public Roads
Across California**

MISSION

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

OBJECTIVE

**Zero Fatalities &
Serious Injuries**



VULNERABLE ROAD USERS



Pedestrians



Bicyclists



Motorcyclists



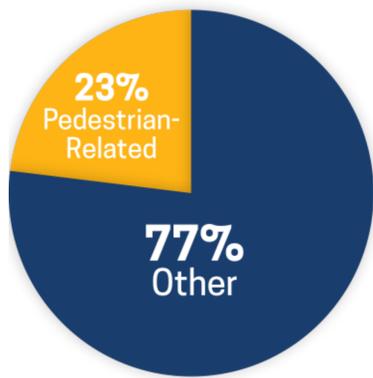


PEDESTRIANS

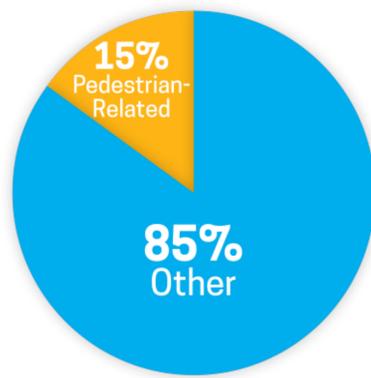
Pedestrians include any person on foot, walking, running, jogging, hiking, sitting, or lying down who is involved in a motor vehicle collision. A pedestrian-related collision includes when the victim role is pedestrian.

Walking in California is popular for both recreation and as a means of travel. Pedestrians are especially vulnerable to impact by motor vehicles. Pedestrians account for approximately 23% of traffic fatalities in California.

2008 - 2017 Statewide

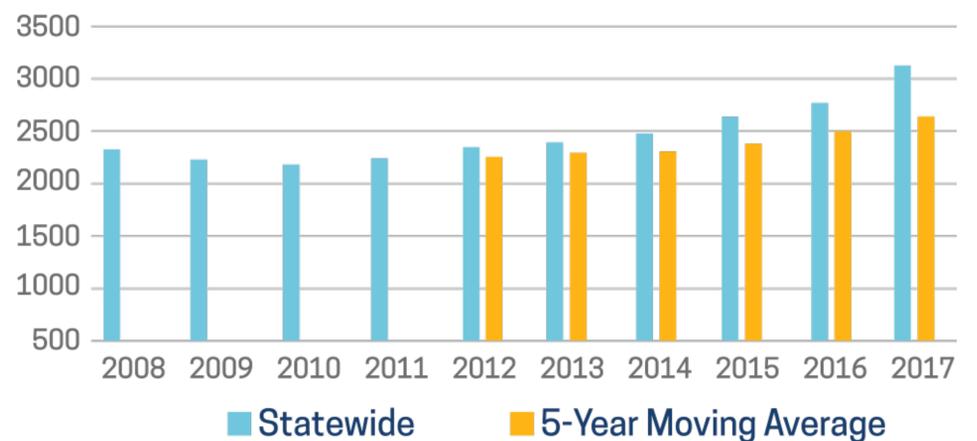


Fatalities



Serious Injuries

2008 - 2017 Collisions



How would you reduce pedestrian-related collisions?

Example Safety Countermeasures

- | | | |
|--|--|--|
| Median and Pedestrian Crossing Islands | Curb Extensions | Behavioral campaign targeted at high-risk behaviors of drivers and pedestrians |
| Pedestrian Hybrid Beacon | Lighting and Illumination | Vehicle enhancements to reduce frequency and severity of pedestrian collisions |
| Leading Pedestrian Intervals | Advance Yield/Stop Lines | Emergency response enhancements to assist pedestrian collisions |
| Walkways | Push Button & Signal Timing | |
| Road Diet | Right-Turn-on-Red Restrictions | |
| Crosswalk Enhancements | Targeted enforcement of high-risk actions of drivers and pedestrians | |

Questions

- What is the biggest safety issue in your community?
- What specific data should drive the strategies?
- What strategies/programs are most effective in your region? What can be done to improve implementation (such as additional best practice guidance/case studies, education, enforcement, or improving laws)?
- What other ideas do you have to reduce pedestrian collisions?

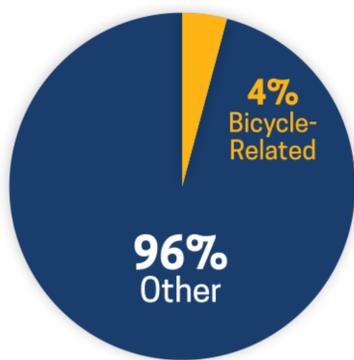


BICYCLISTS

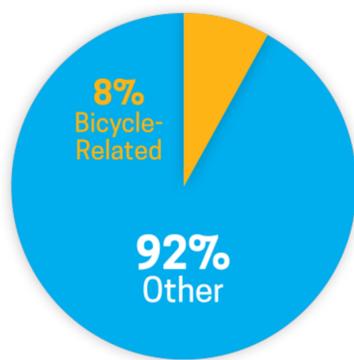
Bicyclists are riders of two-wheel, non motorized vehicles, tricycles, and unicycles powered solely by pedals.

Bicycling in California is popular for both recreation and as a means of travel. Bicyclists are often more difficult to see and are especially vulnerable to impact by motor vehicles. Bicyclists account for approximately 4% of traffic fatalities in California.

2008 - 2017 Statewide

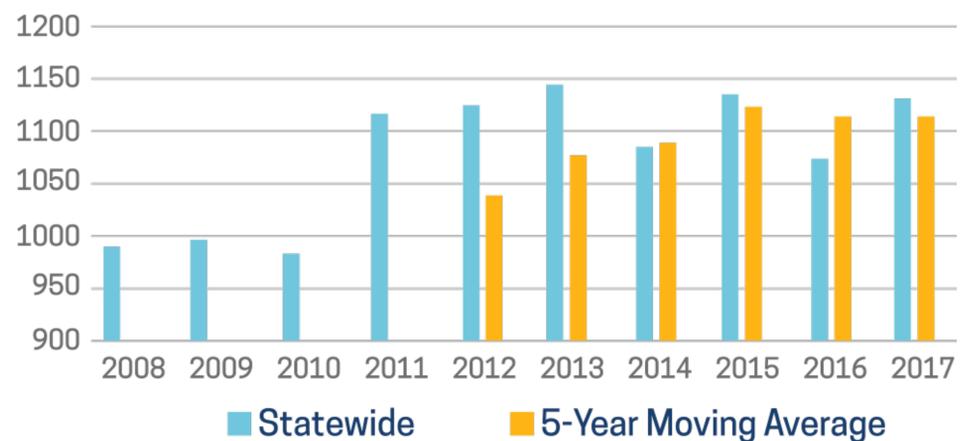


Fatalities



Serious Injuries

2008 - 2017 Collisions



How would you reduce bicycle-related collisions?

Example Safety Countermeasures

- | | | |
|--|-----------------------------------|---|
| Median and Pedestrian Crossing Islands | Repetitive/Short-term Maintenance | Targeted enforcement of high-risk actions of drivers and bicyclists |
| Pedestrian Hybrid Beacon | Signal Additions/Improvements | Behavioral campaign targeted at high-risk behaviors of drivers and bicyclists |
| Road Diet | Wayfinding | Vehicle enhancements to reduce frequency and severity of bicyclist collisions |
| Corridor Access Management | Pavement Marking Improvements | Emergency response enhancements to assist bicyclist collisions |
| Roadway Surface Improvements | Separated Facilities | |
| Lighting Improvements | | |

Questions

- What is the biggest safety issue in your community?
- What specific data should drive the strategies?
- What strategies/programs are most effective in your region? What can be done to improve implementation (such as additional best practice guidance/case studies, education, enforcement, or improving laws)?
- What other ideas do you have to reduce bicycle collisions?

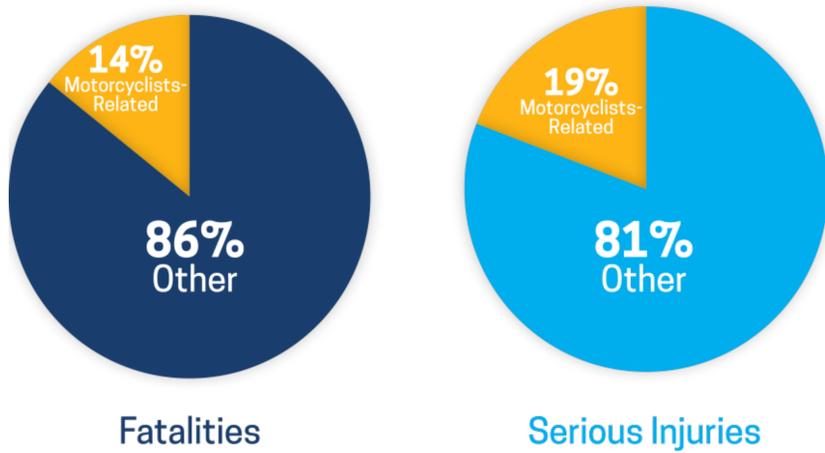


MOTORCYCLISTS

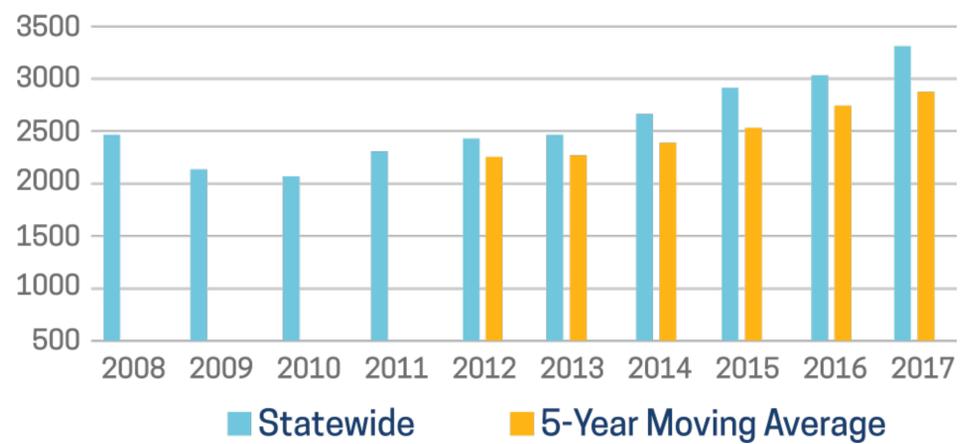
Motorcyclists are all riders on a motorcycle, motor-driven cycle (<15 hp), and motorized bicycle.

Motorcyclists are often more difficult to see and are vulnerable to impact by motor vehicles. Motorcyclists account for approximately 14% of traffic fatalities in California.

2008 - 2017 Statewide



2008 - 2017 Collisions



How would you reduce motorcycle-related collisions?

Example Safety Countermeasures

- Roadside Design Improvement at Curves
- Enhanced Delineation and Friction for Horizontal Curves
- Drainage and Shoulders
- Roadway Surface Improvements
- Wayfinding
- Sight Distance Improvements
- Targeted enforcement of high-risk actions of drivers and motorcycles
- Behavioral campaign targeted at high-risk behaviors of drivers and motorcyclists
- Vehicle enhancements to reduce frequency and severity of motorcycle collisions
- Emergency response enhancements to assist motorcycle collisions
- Motorcycle rider training

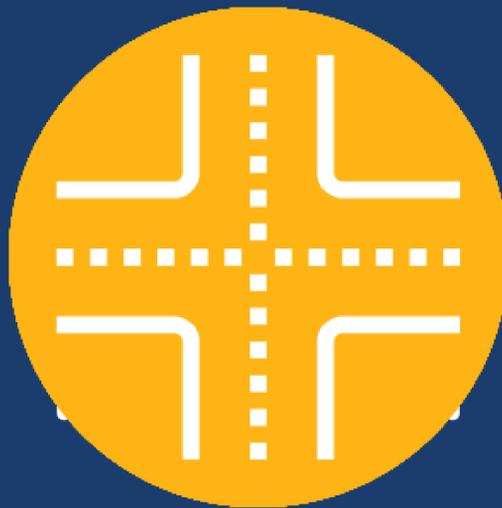
Questions

- What is the biggest safety issue in your community?
- What specific data should drive the strategies?
- What strategies/programs are most effective in your region? What can be done to improve implementation (such as additional best practice guidance/case studies, education, enforcement, or improving laws)?
- What other ideas do you have to reduce motorcycle collisions?

INFRASTRUCTURE



Roadway Departure and Head-on Collisions



Intersections, Interchanges, and Other Roadway Access



Work Zones



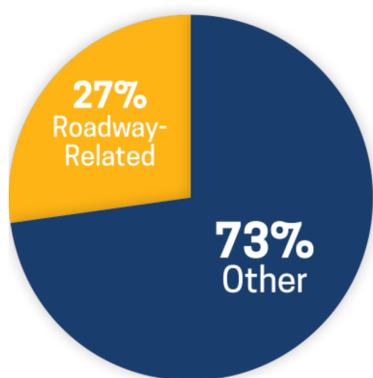


ROADWAY DEPARTURE

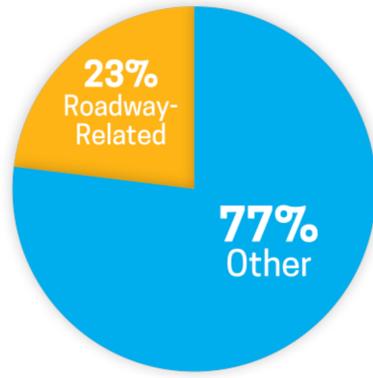
Roadway departures include run off road, crossed into opposing lanes, and head-on collisions.

Approximately 27% of all traffic fatalities in California involved roadway departure or head-on collisions.

2008 - 2017 Statewide

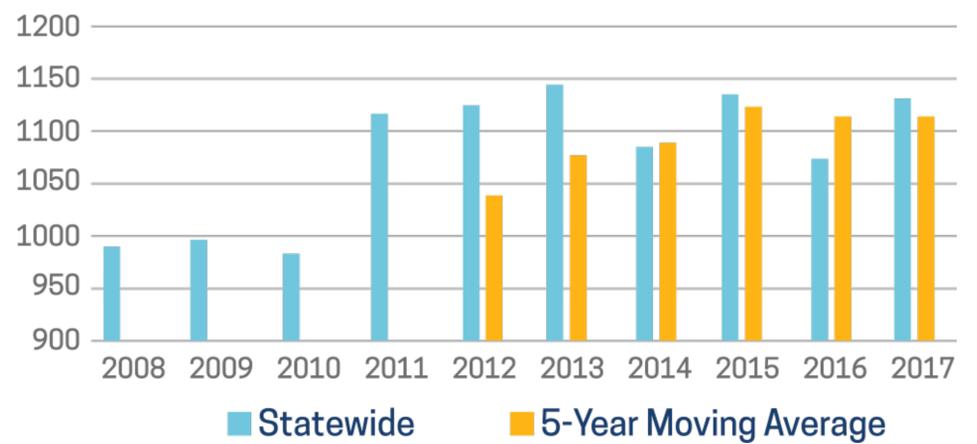


Fatalities



Serious Injuries

2008 - 2017 Collisions



How would you reduce roadway-related collisions?

Example Safety Countermeasures

-  Roadside Design Improvements at Curves
-  Enhanced Delineation and Friction for Horizontal Curves
-  Longitudinal Rumble Strips and Stripes
-  Median Barriers
-  Tapered Edge

Questions

- What is the biggest safety issue in your community?
- What specific data should drive the strategies?
- What strategies/programs are most effective in your region? What can be done to improve implementation (such as additional best practice guidance/case studies, education, enforcement, or improving laws)?
- What other ideas do you have to reduce roadway infrastructure-related collisions?

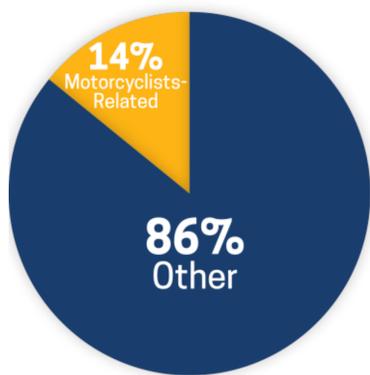


INTERSECTIONS

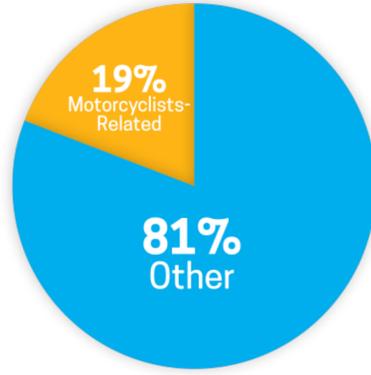
Intersection collisions include intersections, interchanges, and other roadway access.

Intersections are locations of high numbers of collisions. Approximately 43% of all traffic fatalities in California involved an intersection, interchange, or other roadway access.

2008 - 2017 Statewide

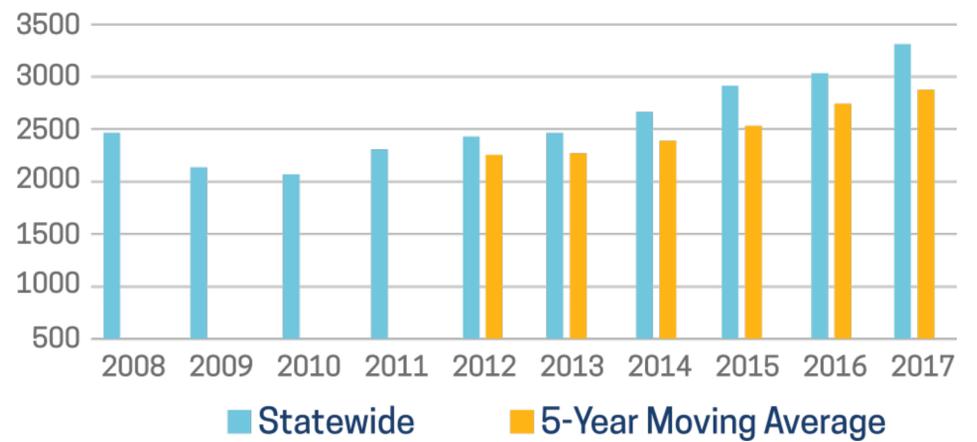


Fatalities



Serious Injuries

2008 - 2017 Collisions



How would you reduce intersection-related collisions?

Example Safety Countermeasures

- Reduced Left-Turn Conflict Intersections
- Multiple Low-Cost Measures at Stop-Controlled Intersections
- Backplates with Retroreflective Borders
- Corridor Access Management
- Dedicated Left-turn and Right-turn lanes at Intersections
- Roundabouts
- Yellow Change Intervals

Questions

- What is the biggest safety issue in your community?
- What specific data should drive the strategies?
- What strategies/programs are most effective in your region? What can be done to improve implementation (such as additional best practice guidance/case studies, education, enforcement, or improving laws)?
- What other ideas do you have to reduce intersection-related collisions?



WORK ZONES

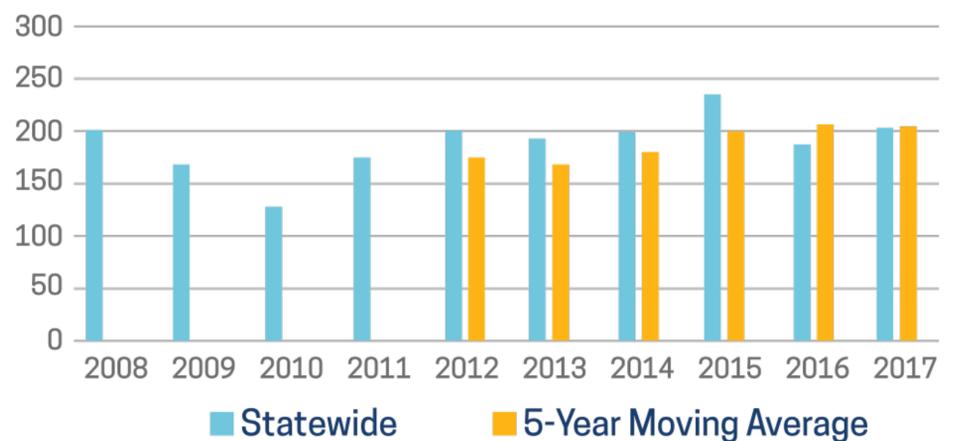
Work Zones include all roadway conditions that have construction or repair zones.

Those who work in the roadway environment are exposed to greater risk of being killed or seriously injured in traffic collisions just by being out on the road longer than most people. Approximately 2% of all traffic fatalities in California involved work zone collisions.

2008 - 2017 Statewide



2008 - 2017 Collisions



How would you reduce collisions in work zones?

Example Safety Countermeasures

-  Educate drivers on safer driving practices in work zones.
-  Improve speed management and enforcement in work zones
-  Improve work zone design and operations to reduce the risk of work zone fatalities

Questions

- What is the biggest safety issue in your community?
- What specific data should drive the strategies?
- What strategies/programs are most effective in your region? What can be done to improve implementation (such as additional best practice guidance/case studies, education, enforcement, or improving laws)?
- What other ideas do you have to reduce collisions in work zones?



DRIVERS AND PASSENGERS



Speeding and Aggressive Driving



Young Drivers



Distracted Driving



Aging Drivers



Alcohol and Drug Impairment



Occupant Protection



Commercial Vehicles



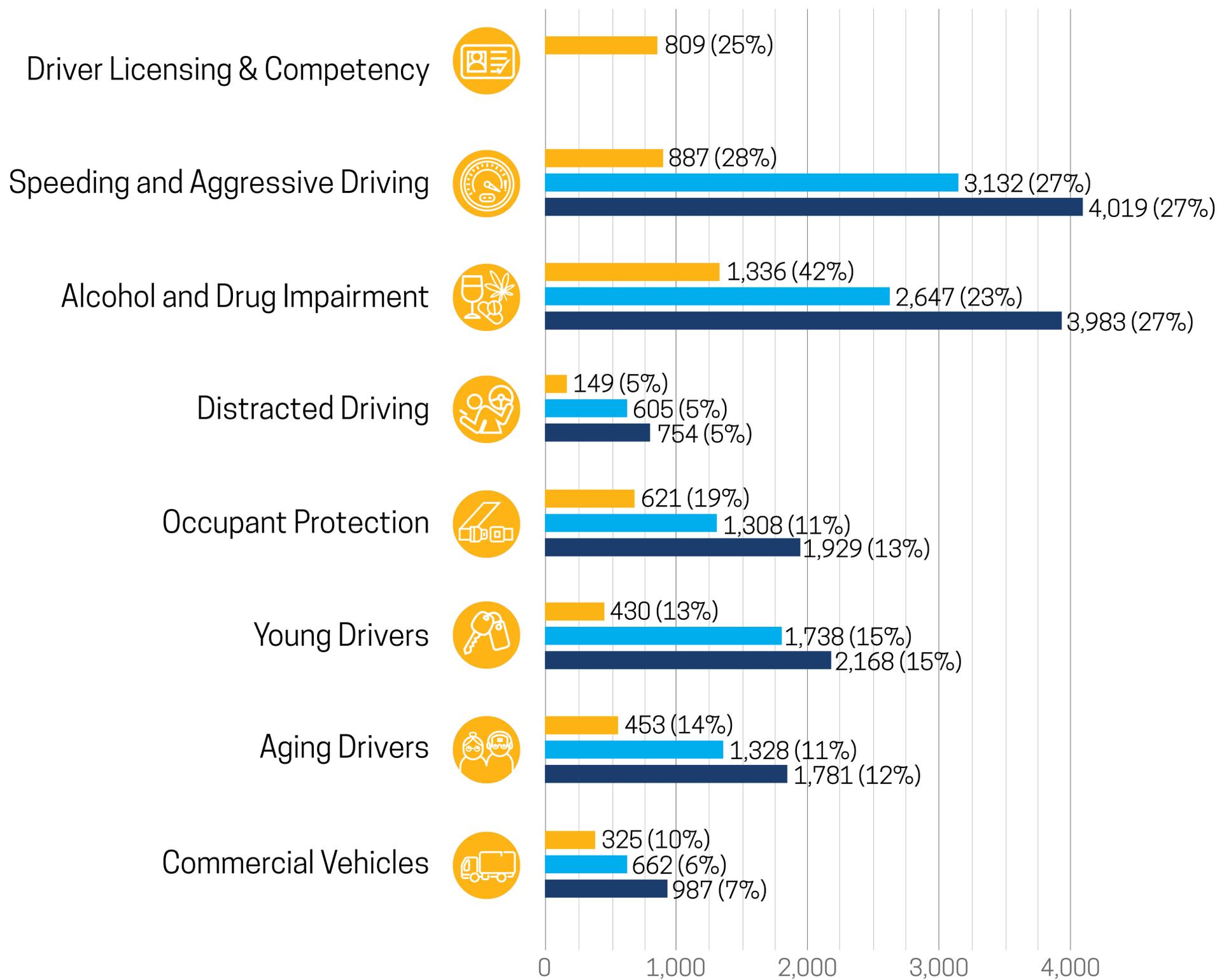
Driving Licensing and Competency





DRIVERS AND PASSENGERS

Behavior-related collisions are inclusive of a variety of collision contributing factors including aggressive driving, alcohol and drug-involved driving, distracted driving, young drivers, or aging drivers.



■ Fatalities (% of CA Total)
■ Serious Injuries (% of CA Total)
■ Fatalities and Serious Injuries (% of CA Total)

2008 - 2017 Statewide



CALIFORNIA SAFE ROADS
2020-2024 Strategic Highway Safety Plan



DRIVERS AND PASSENGERS

Example Safety Countermeasures





DRIVERS AND PASSENGERS

Example Safety Countermeasures

Enforcement

- High visibility enforcement
- Publicized sobriety checkpoints
- Saturation patrols
- Enforcement of graduated driver licensing and zero tolerance laws
- Integrated enforcement

Education

- Education campaigns about increased enforcement
- Alternative transportation programs
- Increased parental involvement programs
- Mandatory driver education for novice drivers
- Education campaigns for physicians and law enforcement about older driver screening
- Education campaigns targeted to low seat-belt users
- School programs

Technology

- Automated enforcement for speed and red light running

Policy

- All offender alcohol ignition interlock law
- DWI courts
- Stronger graduated driver licensing laws
- Screening of older drivers

Training

- Employer-based programs targeting workers that are at higher risk of drowsy-driving
- Drug recognition expert training for law enforcement
- Responsible beverage service training
- Motorcycle rider training

Questions

- What is the biggest safety issue in your community?
- What specific data should drive the strategies?
- What strategies/programs are most effective in your region? What can be done to improve implementation (such as additional best practice guidance/case studies, education, enforcement, or improving laws)?
- What other ideas do you have to reduce Drivers and Passengers-related collisions?



EMERGENCY RESPONSE

Emergency response provides the last opportunity to stabilize or save the life of a person injured in a collision and is an important partner in comprehensive safety systems.

Emergency Response includes the following components

Improve incident detection, 911 access, and enhanced 911 system capabilities.

Reliable communications systems are needed in order to provide consistent and accessible information.

Improve on-scene medical care and transport to hospitals.

Provide training for the responders to develop skills related to medical interventions, devices, and medicines. Train to evaluate the level of facility to best serve those injured.

Improve access to higher-level trauma centers.

Make Level I and II trauma systems more accessible by ground and air from any point within the roadway network.

Collaborate with safety partners to improve understanding of EMS and identify opportunities to reduce collisions and save lives.

It is imperative that all responding agencies (law enforcement, fire suppression, EMS agencies, rescue extrication, roadway maintenance, and towing) have the necessary multidisciplinary training and equipment.

How would you improve emergency response?

Example Strategies

- Fully implement enhanced 911 centers
- Participate in Next Generation 911 planning and implementation
- Implement pairing of Advanced Automated Collision Notification (AACN) data with algorithms to predict probability of injury
- Develop AACN-based predictors to alert responders of the need for vehicle extraction
- Improve and sustain excellent communications technologies for emergency medical responders
- Implement the National EMS Education Agenda for the Future, including National EMS Education Standards
- Implement field triage scheme: the Guidelines for Field Triage Injured Patient
- Develop, implement, and enforce safety engineering and design standards for ambulances, including removing Federal Motor Vehicle Safety Standards crashworthiness exemption
- Improve ambulance access to intelligent transportation systems
- Implement air medical transport (helicopter) use criteria
- Provide telemedicine applications for EMS
- Improve emergency medical response in rural locations and especially for mass casualty incidents
- Implement comprehensive and state-regulated trauma systems to improve access to collision victims
- Include EMS agencies in traffic incident management planning and training

Questions

- What is the biggest safety issue in your community?
- What specific data should drive the strategies?
- What strategies/programs are most effective in your region? What can be done to improve implementation (such as additional best practice guidance/case studies, education, enforcement, or improving laws)?
- What other ideas do you have to improve emergency response?





VEHICLES

While vehicles are rarely the sole cause of fatal collisions, they do provide opportunities for protecting occupants.

Vehicles include the following components

Alert drivers to risks	In-vehicle technologies that alert drivers to risks (such as speeding), prevent specific behaviors (such as impaired driving or speeding), monitor driver actions (such as eyelid closure), and alert drivers to problems with the vehicle (such as brake failure).
Assist drivers who are at risk of a collision	An audible or visible warning to alert of an imminent collision or lane departure, and systems that can intervene to control the vehicle.
Protect vehicle occupants during collisions	Protection that passenger and commercial vehicles provide during collisions, such as seat belts and airbags.
Enable communication with other vehicles and the roadway	Vehicle-to-vehicle (V2V) and vehicle-to-infrastructure (V2I) technologies allow vehicles to exchange data wirelessly with other vehicles, the roadway, and drivers' wireless devices in order to assess risk and then take the appropriate action.
Ensure vehicles continue to perform as designed	Vehicle titling, registration, maintenance, damage, repair, and inspection programs are critical to reducing fatalities and serious injuries related to upkeep and maintenance of the existing vehicle population.

How would you encourage safer vehicles to reduce collisions?

Example Strategies

- Expand the use of in-vehicle speed feedback and control technologies
- Implement technologies to monitor driver behaviors and vehicle safety features
- Further develop, test, and implement collision warning systems (forward, side, lane departure)
- Implement vehicle technologies that assist with controlling vehicles if a collision is imminent, including electronic stability control
- Improve structural strength of vehicles in right-angle collisions and overturning collisions to reduce risk of fatalities
- Develop and implement vehicle-to-vehicle and vehicle-to-infrastructure communications and include those technologies in infrastructure planning, engineering, design, management, and budgeting decisions
- Implement One Vehicle–One Record
- Provide universal access to vehicle history reports for vehicle damage of used vehicles

Questions

- What is the biggest safety issue in your community?
- What specific data should drive the strategies?
- What strategies/programs are most effective in your region? What can be done to improve implementation (such as additional best practice guidance/case studies, education, enforcement, or improving laws)?
- What other ideas do you have to reduce collisions with Vehicle-related improvements?