



Caltrans photos by Scott Lorenzo

To protect the most vulnerable travelers — pedestrians and bicyclists — Caltrans has been installing a new generation of high-visibility crossing systems that alert drivers and protect those crossing the road. Two Caltrans programs are bringing a host of safety improvements in the next three years.

## Safety Measures Protect Pedestrians, Cyclists Improvements Underway After Studies of Highway Locations Throughout State

After identifying State highway locations with high concentrations of pedestrian deaths and injuries through the Pilot Pedestrian Collision Monitoring Program, Caltrans has initiated a series of safety improvements at those sites to reduce collisions.

The Department has taken action, or plans to do so soon, at 129 locations throughout the State that were singled out as part of its Pilot Pedestrian Collision Monitoring Program. The safety improvement effort began in 2016 in response to a rise in pedestrian fatalities and injuries on roads statewide, including the State Highway System that Caltrans operates and maintains.

Safety traffic teams from all 12 regional Caltrans districts conducted traffic safety investigations on all 129 locations from July 2016 through March 2017. These locations were determined based on historical pedestrian-related collision data analyzed by Caltrans staff.

District traffic safety staff were trained on best practices in traffic design and operations for pedestrian safety. Subjects included sidewalk and walkway design; signs, signals, crosswalks, and other safety enhancements; interchange design and alternatives; facilities at signalized intersections;

roundabouts designed for pedestrians; and traffic calming strategies.

Applying that knowledge, district traffic safety teams came up with near- and long-term safety recommendations for 89 of the 129 high collision concentration locations. Of those proposed safety improvements, traffic safety staff concluded work at 54 sites could be done by Caltrans maintenance crews, while 29 sites required more complex and extensive repairs, generally more than \$300,000, and were classified as capital projects.

### Focus on intersection improvements

All 54 near-term improvements were completed by February 2018. Safety work included installation of pedestrian warning signs and high-visibility crosswalk markings, imposition of parking restrictions for visibility, and adoption of a “leading pedestrian interval” strategy at certain intersections where traffic signals were retimed to give people crossing the street a head start — and be more visible — before vehicles could proceed to turn.

The capital projects are currently in various stages of planning, design and construction. Improvements include the installation of highway lighting, sidewalks, interconnected

signal systems with audible/countdown pedestrian signals, rectangular rapid flashing beacon systems, pedestrian hybrid beacons that use flashing and solid lights to alert motorists of pedestrians, and other pedestrian safety improvements. More than \$63-million in projects are planned, with the majority of the funds coming from Caltrans' State Highway Operation and Protection Program (SHOPP). All are scheduled for completion within the next three years.

During the investigation process, the traffic safety teams also found that some pedestrian safety improvements were already in the planning stages, or improvements had been recently completed at 44 of the high collision concentration locations. Finally, investigations concluded that 14 sites would not benefit from improvements initiated by Caltrans, which looks for engineering improvements to enhance safety. Those locations were referred to the California Highway Patrol, Office of Traffic Safety and California Department of Public Health for review.

A similar pilot monitoring program for bicyclists was implemented in April 2018. The 2018 Pilot Bicyclist Collision Monitoring Program dispatched traffic safety teams from Caltrans' 12 districts to investigate 252 locations — nearly double the number analyzed through the Pilot Pedestrian Collision Monitoring Program. Those 252 investigations have been completed.

The pilot bicyclist collision monitoring program has already produced important safety projects.

One investigation at a South Lake Tahoe location yielded a successful funding request to improve a section of U.S. 50 between the junction with State Route 89 and Stateline — the result of work between safety staff from regional District 3, the Tahoe Regional Planning Agency and the Tahoe Transportation

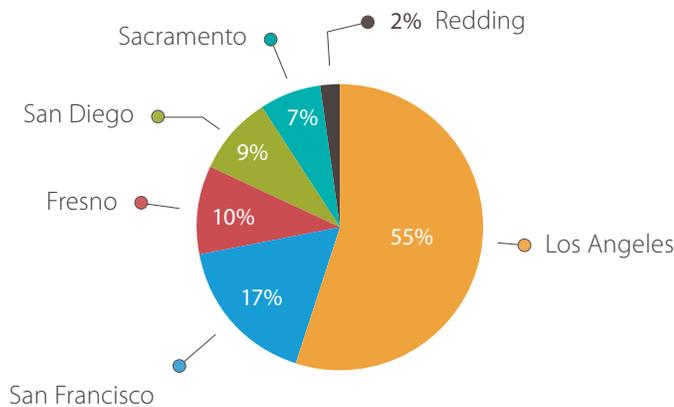


At a school zone in Woodland, north of Sacramento, lights mounted overhead and built into the pavement flash when activated.

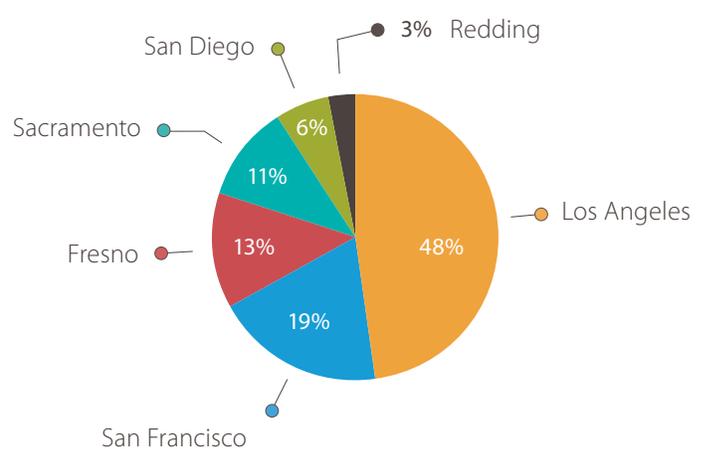
District. Working together, Caltrans conducted a Road Safety Audit (a Federal Highway Administration program) to come up with safety improvements.

This project will include roadway lighting, colored bicycle lane treatments, and mid-block crossings to improve bicyclist safety. After meeting with the South Lake Tahoe Police Department and local California Highway Patrol unit, District 3 safety staff obtained traffic collision reports for pedestrian- and bicyclist-related collisions that hadn't been entered into the CHP collision system. Roadway lighting, in particular, had been a hot topic with local stakeholder groups for many years.

### Percentage of Pedestrian Fatalities by Region



### Percentage of Bicycle Fatalities by Region



Source: 2020-2024 Strategic Highway Safety Plan Outreach Events Data. Charts reflect all reported deaths on California's public roads.

## Increase in overall State fatality, injury rates

The number of pedestrians and bicyclists either killed or injured in collisions has been rising in California overall since 2012, particularly fatalities involving pedestrians. Although most of those deaths occurred in urban settings on non-State highways, according to the Highway Safety Coalition (of which Caltrans is a member), the number of pedestrian fatalities on the State Highway System has increased since 2013, from 257 deaths recorded to 347 in 2017, according to the latest data available.

The percentage of pedestrians and bicyclists killed in California compared with the State's overall traffic deaths also is significantly higher, the Highway Safety Coalition found. In 2017, 23.8 percent of all traffic fatalities in California involved pedestrians, 7.7 percent over the national average. Cyclist deaths accounted for 2.2 percent of all national traffic fatalities in 2016, the most recent year of study, but the percentage of cyclists killed in California in collisions with vehicles was 4.1 percent — the second highest in the U.S. behind Florida, at 4.3 percent.

Incidents are tracked for Caltrans analysis by its Traffic Accident Surveillance and Analysis System (TASAS), which processed more than 190,000 traffic collision reports in 2017. The unit identifies a specific location for each incident on the State Highway System, using information from the California Highway Patrol and local agencies first responding to the scene. A small number of incidents are collected through the Caltrans district offices.

It needs to be noted that numbers can change, especially for the later years, as additional information is received from contributing agencies.

Nearly 4,900 traffic safety investigations were conducted in calendar year 2017 by Caltrans' Division of Traffic Operations, which initiated the pilot pedestrian/bicyclist collision



Caltrans photos by Thomas Ritter

In 2017, Caltrans completed a pedestrian-activated crosswalk beacon on a particularly busy stretch of State Route 1 in Los Angeles.

monitoring programs and manages the Department's overall safety investigations.

The pilot pedestrian and bicyclist collision pilot monitoring programs are among those Caltrans deploys to move "Toward Zero Deaths," which aims to reduce all traffic fatalities to zero by year 2050. Safety, and specifically reducing fatalities and injuries among users of its highway network, is Caltrans' No. 1 listed goal in its 2015-2020 Strategic Management Plan. **MM**

**Sources:** Rachel Carpenter, Pedestrian and Bicycle Safety Branch Chief, Thomas Schriber, State Traffic Safety Engineer, Traffic Accident Surveillance & Analysis System (TASAS), Division of Research, Innovation and System Information.

## Bicycle Injuries and Fatalities on State Highways 2013-2017

Year	Injuries	Fatalities
2013	1,110	30
2014	910	16
2015	914	23
2016	936	27
2017	794	20
<b>Total</b>	<b>4,664</b>	<b>116</b>

## Pedestrian Injuries and Fatalities on State Highways 2013-2017

Year	Injuries	Fatalities
2013	1,224	257
2014	1,024	227
2015	1,078	282
2016	1,212	322
2017	1,167	347
<b>Total</b>	<b>5,705</b>	<b>1,435</b>

Source: Caltrans Traffic Accident Surveillance & Analysis System (TASAS)