California Strategic Highway Safety Plan

Business, Transportation, and Housing Agency Contributing Departments

In addition to the Stakeholder Group listed in Appendix A, the Departments within the Business, Transportation and Housing Agency who contributed to this plan are:

The Department of Transportation
WILL KEMPTON, Director
1120 N Street
Sacramento, CA 95814

The California Highway Patrol
MIKE BROWN, Commissioner
2555 1st Avenue
Sacramento, CA 95818

Office of Traffic Safety
CHRISTOPHER J. MURPHY, Director
7000 Franklin Blvd., Suite 440
Sacramento, CA 95823

The Department of Motor Vehicles
GEORGE VALVERDE, Director
2415 1st Avenue Mail Station F101
Sacramento, CA 95818

Department of Alcoholic Beverage Control
JERRY R. JOLLY, Director
3927 Lennane Drive, Suite 100
Sacramento, CA 95834

STATE OF CALIFORNIA

ARNOLD SCHWARZENEGGER
Governor

Department of Alcoholic Beverage Control
Department of Corporations
Department of Financial Institutions
California Highway Patrol
California Housing Finance Agency
Department of Housing & Community Development
Department of Managed Health Care

SUNNE WRIGHT MCPEAK
Secretary

Department of Motor Vehicles
Office of the Patient Advocate
Department of Real Estate
Office of Real Estate Appraisers
Office of Traffic Safety
Department of Transportation

BUSINESS, TRANSPORTATION AND HOUSING AGENCY

September 2006

Dear Fellow Californians:

I am pleased to present the California Strategic Highway Safety Plan (SHSP). The SHSP, a requirement of the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU), serves as the map to guide the future of roadway safety for the State of California.

Californians traveled an estimated 328.4 billion miles on our 347,000 lane miles of roadway in 2004. Although an overwhelming majority of these trips ended without incident, California lost 4,069 drivers, vehicle occupants, pedestrians, and bicyclists on our roads that year. This represents an average of 11 deaths on California's roadways *each and every day* of 2004. Put another way, our State experienced 1.25 fatalities per 100 million vehicle miles traveled in 2004. This is unacceptable. California will use both proven techniques and innovative new approaches to improve the safety of our roadways and become the national leader in roadway safety.

The SHSP is the result of a statewide collaborative effort that involved more than 190 active participants from 80 California public and private stakeholder groups. As the State implements the SHSP, the continued consensus and participation of these contributors will allow California to effectively apply our resources to implement life-saving strategies and achieve our goal of 1.0 fatality per 100 million vehicle miles traveled.

The 16 Challenge Areas discussed in this document focus our attention and resources on the major roadway safety issues facing California. It is my hope that efficient and effective implementation of the strategies listed within each Challenge Area will create safer California roadways by 2010 and save hundreds of lives.

Sincerely,

Sunne Wright McPeak

SUNNE WRIGHT MCPEAK
Secretary

980 9th Street, Suite 2450 • Sacramento, CA 95814-2719 • (916) 323-5400 • 1 (800) 924-2842 • Fax: (916) 323-5440
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What is the Strategic Highway Safety Plan (SHSP)?

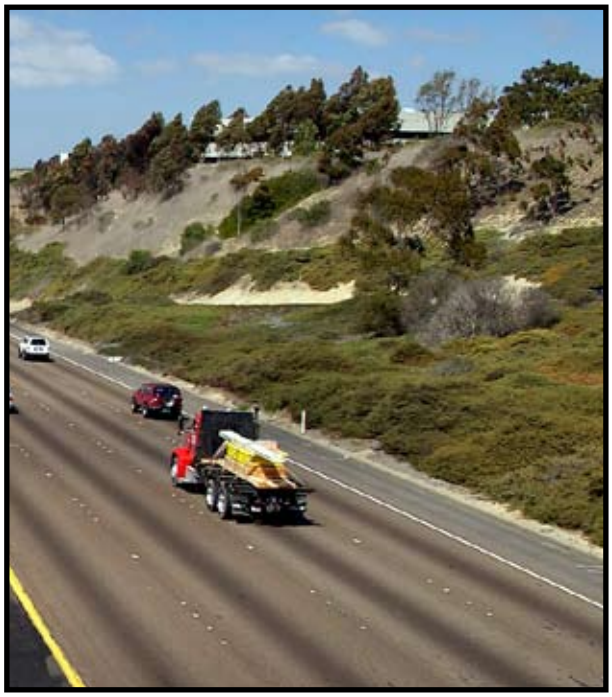
The SHSP guides safety activities within the State of California regarding all roadway users on all public roadways. This plan:

- Highlights challenges to roadway user safety on California's roads.
- Paints the picture of fatalities experienced on California's roads.
- Proposes high level strategies to reduce fatalities for each challenge.
- Serves as a guide for the implementation of specific projects and activities through 2010.

Before looking at the individual challenges facing California, a discussion of the State as a whole is warranted.

A Tale of Two Californias

Imagine the pain you would feel today if a traffic collision killed someone in your family. Perhaps it was your spouse going to work or your child riding his or her bike to school or your grandmother crossing a busy street. Now imagine that pain happening 11 times each day. Imagine it happening 4,000 times in a single year. Add to those lives lost another 300,000 persons injured and more than $25 billion in economic damages. That is what traffic collisions cost California in a single year.



Now look forward to the year 2010. If current trends in population growth, vehicle use, and travel patterns hold steady, the number of fatalities and injuries will increase. Traffic deaths will grow more than 17 percent to exceed 4,700 per year. Injuries and economic losses will grow at a similar pace. The pain experienced by Californians will get worse.

Traffic safety is not like the weather – something everyone talks about but something no one can change. California can take action to make roadways safer. California can reduce the terrible burden traffic collisions place on the State. The year 2010 can look different.

California's first SHSP offers a roadmap to a better, safer future. It provides a common framework for California's traffic safety stakeholders to share knowledge, coordinate actions, leverage current resources, and set priorities for the future.

The SHSP goal for California is less than one roadway fatality per 100 million vehicle miles traveled (VMT).

The SHSP sets out a strategy California can follow to reduce traffic collisions in the State. Table 1 offers four potential scenarios for California's traffic fatality future.[1]

- Scenario 1, Status Quo, projects the number of fatalities and the fatality rate in 2010 if the upward trend in the fatality rate seen in the past five years continues through 2010.
- Scenario 2, No Change, applies the 2004 fatality rate to the 2010 VMT estimate. There is no improvement or deterioration in the 2004 fatality rate in this scenario.
- Scenario 3, Modest Improvement, shows what would • happen if California returned to a rate of 1.19, the lowest rate in recent history.
- Scenario 4, Aggressive Improvement, shows what could happen if California aggressively pursues safety strategies between now and 2010 and achieves the national goal of 1.0 fatality per 100 million VMT.

[1] Note: The fatality rates assume a 2010 VMT of 365.6 billion miles. Even if California achieves the historic low fatality rate of 1.19 (1999), California will experience an increase in total fatalities in 2010 of 258 fatalities more than 2004 due to the increase in VMT.

Table 1 - California's Traffic Fatalities in 2010

Scenario	Description	2010 Rate	2010 Fatalities [2]	2004 Fatalities [3]	Change (#)	Change (%)
1. Status Quo Trend	The fatality rate increases annually by the average of the increase in fatality rates from 1999-2004 (0.01 per year)	1.31	4,789	4,094	695	17.0%
2. No Change	The fatality rate remains the same as it was in 2004 through 2010	1.25	4,570	4,094	476	11.6%
3. Modest Improvement	The fatality rate returns to what it was in 1999, the lowest in recent history	1.19	4,351	4,094	257	6.3%
4. Aggressive Improvement	The combined efforts of the SHSP achieve the national fatality rate goal	1.00	3,656	4,094	-438	-10.7%

While one fatality is too many for California's roadways, the 3,656 deaths in 2010 seen in scenario 4 would mark a substantial improvement in safety.

If California aggressively implements action items for the strategies listed in the SHSP, monitors progress against the goals, and regularly updates the action plans in light of the latest data, California can make roads safer. The SHSP seeks to provide California with the safest roadway system in the nation. The rest of this document sets out how California can achieve its goal.

It explains:

- ☐ The current safety situation – the case for action.
- ☐ How California went about building the SHSP.
- ☐ The 16 challenges the plan addresses.
- ☐ How the strategies will be implemented.

Which California is desired for 2010? One where Californians shrug their shoulders and accept the toll traffic collisions exact? Or one where California makes steady progress to improve roadway safety and lessens the burden of preventable traffic deaths and injuries?

[2] Note: Assumes a 2010 VMT of 365.6 billion miles.

[3] Statewide Integrated Traffic Records System (SWITRS) - www.chp.ca.gov/switrs/.

The Current Safety Situation – the Case for Action

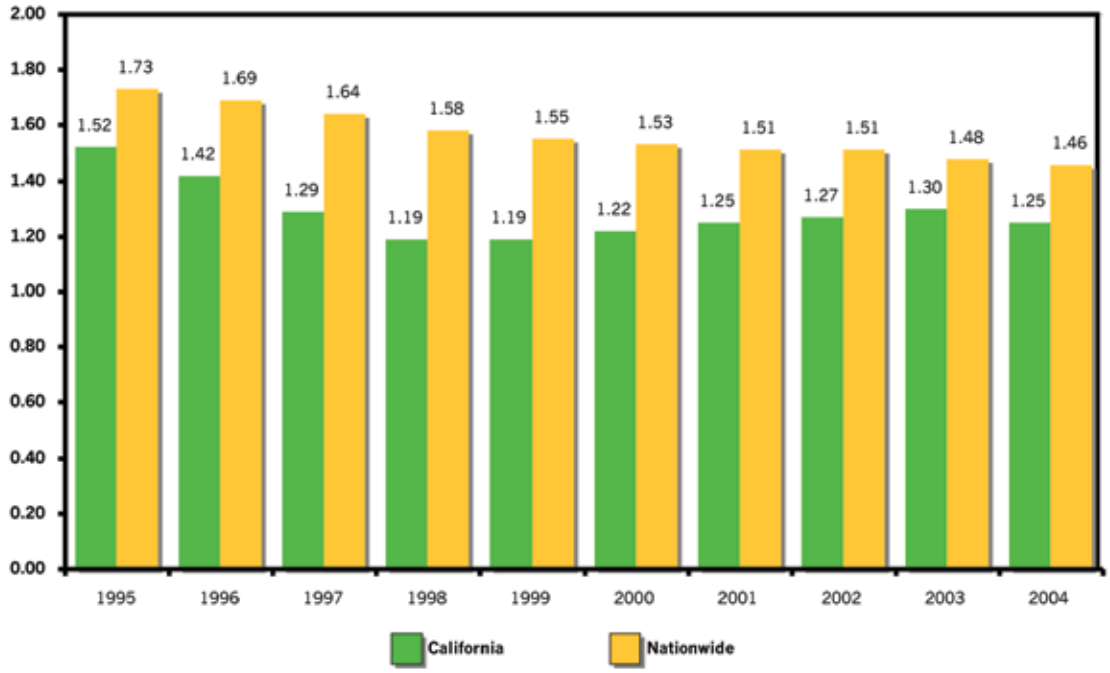
California has a large and complex road transportation system. California's roadways constitute one of the most valuable resources and are essential to the daily lives of over 36 million residents.[4] California has invested in over 347,000 lane miles of roadways.[5] These roads are used by over 26 million registered vehicles,[6] as well as a large number of bicyclists and pedestrians, and are a key foundation of the California economy, the sixth largest in the world.[7] Over 166 billion tons of freight moved over the State's roads in 2002.[8] This volume is expected to grow over 30 percent by 2020. Continued population and economic growth will only create more demand for the existing roads.

California's 347,000 lane miles of public roads have been subjected to traffic volumes significantly greater than their design capacity. The growth in use each year continues to exceed the ability of transportation agencies in California to add roadway infrastructure. This increasing intensity of use raises the density of traffic on California's roads and makes safety more critical than ever.

California's roads serve diverse users and communities. Commuters, bicyclists, tourists, truck drivers, pedestrians, and motorcyclists are some of the many users of the State's roadways. All face significant safety challenges. From rural roads maintained by county governments, to the busy urban streets, to the State Highway System, and to growing numbers of bikeways, California's transportation system has to serve many diverse communities that pose a wide variety of safety challenges. There is no single 'silver bullet' approach to improving traffic safety. California's approach must address these different user needs and community environments.

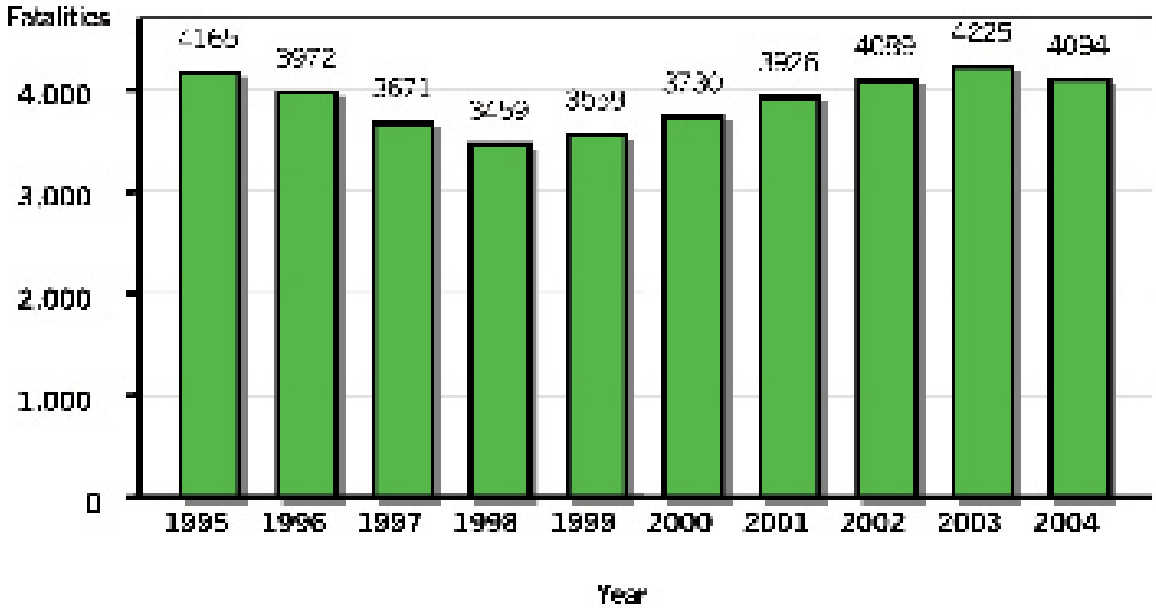
California has had a positive record in terms of traffic safety. As Figure 1, Fatality Rate per 100 Million VMT 1995-2004 shows, California's 2004 fatality rate of 1.25[9] is lower than the national rate of 1.46.[10] The recent trend however in California is troubling. After experiencing a steady decline (that is, improvement) from the early 1990s through 1998, California's fatality rate has begun to increase, even while the national rate continues a steady decline. Since 1998 when California's fatality rate hit a low of 1.19, it has risen to 1.25 in 2004. This increase in the fatality rate is also reflected in Figure 2, Total Number Traffic Fatalities, California 1995 – 2004.

Figure 1 - Fatality Rate per 100 Million VMT 1995–2004



[4] US Census Data - http://quickfacts.census.gov/qfd/states/06000.html.
[5] Caltrans HPMS - http://www.dot.ca.gov/hq/tsip/hpms/index.html.
[6] Statewide Integrated Traffic Records System (SWITRS) - www.chp.ca.gov/switrs/.
[7] Public Policy Institute of California, "Just the Facts – California's Economy," October 2004.
[8] The Bureau of Transportation Statistics - http://www.bts.gov/publications/freight_in_america.
[9] NHTSA - http://207.59.85.19/STSI/State_Info.cfm?Year=2004&State=CA&Accessible=0.
[10] Fatality Analysis Reporting System (FARS) - www-fars.nhtsa.dot.gov/.

Figure 2 - Total Number Traffic Fatalities, California, 1995–2004



As Figure 2 illustrates, from a low of 3,459 deaths in 1998, California has seen fatalities grow to 4,094 in 2004, an increase of 18.4 percent in the space of 6 years.[11] This is well in excess of California's population growth of 11.1 percent during the same period.[12]

In addition to trends in fatality data for California, a review of the factors attributed to fatalities on the State's roadways is in order. Figure 3 shows collisions result from a combination of three factors: the vehicle, the driver, and the road. For example, a collision may result from faulty brakes, an impaired driver, or a curve that is too tight for the prevailing speed. The Venn diagram shows that 12 percent of all collisions involved some factor of the vehicle traveling the roadway; 34 percent for some characteristic of the roadway, and 93 percent due to human factors. When situations involving other collision factors are removed the data attribute the majority (57 percent) of traffic collisions to human factors. Ultimately, California can design the safest vehicles and roadways; however, safer human behavior seems to warrant additional attention for long-term, consistent reductions in fatalities on California's roadways.

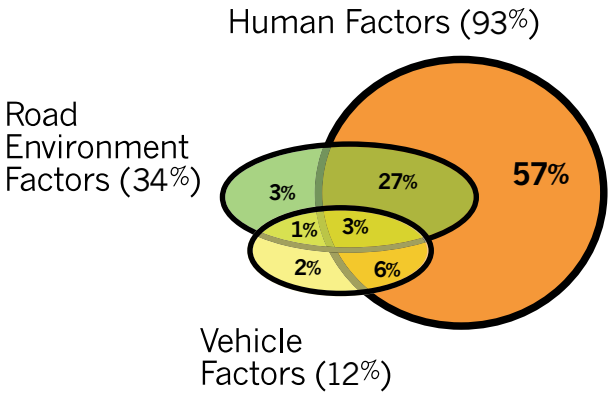
As the data illustrate, California faces a challenge. How can California help its citizens be safer in the face of rising population, more intense use of the State's roadways, and an increase in the rate of fatal collisions? The answer is to build a safety strategy, based on facts about the current environment and sound research about what actions can help California achieve the goals detailed in this plan.

How California Built the Strategic Highway Safety Plan

The Catalyst

The safety facts facing California are a call to action. The immediate catalyst for the development of this SHSP was the enactment of the federal Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU). The act, signed into law by President Bush in August 2005, requires each state to develop and implement an SHSP. The law established a new core Highway Safety Improve-

Figure 3 - Collision Factors[13]



[11] Statewide Integrated Traffic Records System (SWITRS) - www.chp.ca.gov/switrs/.
[12] Source, Dept of Finance, Table E-7, California Population Estimates with Components of Change, July 1, 1900 to July 1, 2005. (http://www.dof.ca.gov/HTML/DEMOGRAP/ReportsPapers/ReportsPapers.asp).
[13] Lum & Reagan, Public Roads 58 (3), Winter 1995 "Interactive Highway Safety Design Module."

ment Program (HSIP) to reduce highway fatalities and injuries. As required by SAFETEA-LU, the California Department of Transportation (Caltrans) will lead the effort to develop and implement California's SHSP. Each state must have an SHSP in place by October 1, 2007 to receive its full share of federal transportation funds.

A Collaborative Process

SAFETEA-LU requires the SHSP to be developed through a collaborative process that involves safety stakeholders. Caltrans assembled a community of federal, State, and local government agencies who manage different parts of the State's complex roadway system. Caltrans also invited a wide variety of other groups, such as law enforcement, trucking, pedestrian and bicycle advocates, railroads, and traffic safety advocate groups, to provide valuable input to the SHSP.

Governance

To develop the SHSP, Caltrans created a Steering Committee comprised of representatives from 18 local, state, and federal entities. The Steering Committee provided the primary guidance and input, monitored progress, and was responsible for completing the SHSP on time. A broader Stakeholder Group, consisting of representatives from 80 different agencies, was created to provide much of the content of the SHSP (See Appendix A – California SHSP Participants). Finally, Caltrans held two SHSP Summit meetings (one each in Northern and Southern California) in March of 2006. The workshops held at the summits generated feedback and ideas from over 500 transportation and safety policy stakeholders.

A Strategy Based on Research and Data

The structure of the SHSP is based on research conducted by the American Association of State Highway and Transportation Officials (AASHTO). AASHTO and the National Cooperative Highway Research Program (NCHRP) have been searching for ways to help the nation make roads safer. As a result of this research, AASHTO developed a list of 22 Emphasis Areas where actions would be most effective in improving roadway safety. The SHSP Steering Committee used the AASHTO Emphasis Areas as starting points for developing the State's plan. The SHSP team sharpened the focus from 22 areas to 16 areas in order to better address the specific needs of California. Those 16 areas are the basis of the 16 Challenges discussed in the SHSP.

All work on the SHSP and each Challenge Area were driven by data. Data was drawn from national sources such as the National Highway Traffic Safety Administration (NHTSA) Fatality Analysis Reporting System (FARS) and various state sources, principally the California Highway Patrol (CHP) Statewide Integrated Traffic Records System (SWITRS). The importance of timely, accurate, and consistent collision data cannot be emphasized enough. Sound data is essential to monitoring traffic safety trends, developing effective strategies and action plans, and making adjustments in response to changing conditions. Sound data analysis is also critical to ensure the effectiveness of safety countermeasures. Newer statistical techniques can help separate the myriad of factors operating in crash situations, and will assist in evaluating the most effective safety interventions as we move into the SHSP Implementation Plan.

The goals of each Challenge Area were set by the SHSP team based on an analysis of data trends, and an assessment of how difficult it would be to reduce fatalities for each Challenge Area. In general, the team determined that only modest reductions could be achieved for Challenge Areas with lower fatalities. The team also determined that the reversal of upward trends for some Challenge Areas would be difficult. In addition, several Challenge Areas showed steady increases from 1998 – 2003 only to post a decrease in 2004. Without 2005 data the team cannot attribute the decrease to a new trend or a temporary decline. Achievement of the goals will stretch the ability of the Implementation Team and Challenge Area Champions.

Table 2, Annual Average Number of Fatalities, Severe Injuries, Minor Injuries, and Total Fatalities and Injuries, 2002-2004, summarizes safety data for California. The table contains the annual average of fatalities, severe injuries, minor injuries, and total fatalities and injuries for each Challenge Area from 2002 through 2004. The information is sorted by the average number of fatalities from highest to lowest. The sort does not imply priority of one Challenge Area over another and does not imply any level of funding for implementation. The table provides an excellent overview of the safety situation in California. The table helps in understanding the relative importance of the various factors contributing to California's roadway safety problems.

Following Table 2, the SHSP Challenge Area discussions begin. Each Challenge Area contains the following elements:

1. Establishment of a goal for improving safety by 2010.
2. Background information on the Challenge Area including a history of fatalities from 1995 – 2004.
3. Strategies being considered for implementation to achieve the Challenge Area goal.
4. Institutional and other issues that could affect the success of the implementation.

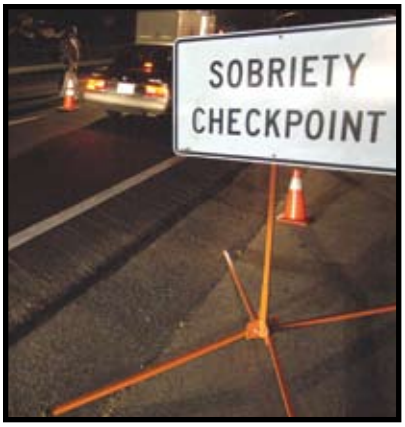
Table 2, Annual Average Number of Fatalities, Severe Injuries, Minor Injuries, and Total Fatalities and Injuries, 2002-2004

CHALLENGE AREAS - *Sorted by Fatalities*	Fatalities (1)		Severe Injuries (2)		Minor Injuries[14] (3)		Total Fatalities and Injuries (1+2+3)	
	No.	%[15]	No.	%	No.	%	No.	%
TOTAL	4,136	100%	13,357	100%	293,383	100%	310,873	100%
1: *Reduce Impaired Driving Related Fatalities*	1,858	45%	3,783	28%	29,850	10%	35,502	11%
2: *Reduce the Occurrence and Consequence of Leaving the Roadway and Head-on Collisions*	1,395	34%	3,734	28%	36,653	12	41,782	13%
3: *Ensure Drivers are Licensed and Competent*	1,143	-	n/a[16]	-	n/a	-	n/a	-
4: *Increase Use of Safety Belts and Child Safety Seats*	1,035	25%	2,102	16%	12,749	4%	15,886	5%
5: *Improve Driver Decisions about Rights of Way and Turning*	957	23%	2,758	21%	47,522	16%	51,237	16%
6: *Reduce Young Driver Fatalities*	878	21%	3,206	24%	76,421	26%	80,506	26%
7: *Improve Intersection and Interchange Safety for Roadway Users*	784	19%	3,307	25%	99,740	34%	103,832	33%
8: *Make Walking and Street Crossing Safer*	703	17%	1,865	14%	12,234	4%	14,802	5%
9: *Improve Safety for Older Roadway Users*	689	17%	1,454	11%	38,193	13%	40,336	13%
10: *Reduce Speeding and Aggressive Driving*	629	15%	2,202	16%	94,287	32%	97,119	31%
11: *Improve Commercial Vehicle Safety*	439	11%	875	7%	14763	5%	16077	5%
12: *Improve Motorcycle Safety*	345	8%	1,642	12%	7,694	3%	9,681	3%
13: *Improve Bicycling Safety*	124	3%	742	6%	10,227	3%	11,092	4%
14: *Enhance Work Zone Safety*	60	1%	179	1%	4,063	1%	4,302	1%
15: *Improve Post Crash Survivability*	n/a	-	n/a	-	n/a	-	n/a	-
16: *Improve Safety Data Collection, Access and Analysis*	n/a	-	n/a	-	n/a	-	n/a	-

[14] 'Visible injury' and 'complaint of pain' combined.
[15] Percentages in each column do not sum to 100 because Challenge Area categories are not mutually exclusive (see footnote 12, above). Percents presented in each column represents the percent of that specific column total.
[16] n/a = Data not available or incomplete.

Challenge 1: Reduce Impaired Driving Related Fatalities

Goal: *By 2010, reduce the number of roadway user fatalities attributed to alcohol and drug use by 15 percent from their 2004 level.*



Background

Among all traffic safety issues, alcohol-impaired driving has perhaps the highest profile, and combating it has been vigorously pursued for decades with aggressive campaigns in both the public and private sectors. California reformed driving under the influence (DUI) laws in the early 1980s and experienced a steady downward trend until 1998. Since then the trend has not only halted, but somewhat reversed. During 2004, in vehicle collisions where alcohol and/or drugs were found to be involved, 1,908 persons were killed.[17] Though in recent years California has generally seen an increase in alcohol-involved roadway fatalities, the State's alcohol fatality rate per 100 million vehicle miles of travel remains below the national average: 0.50 versus 0.57.[18] However, impaired drivers and the harm they cause continue to be a significant traffic safety issue facing California.

Figure 4 illustrates a sustained increase in the number of fatalities related to impairment in recent years, despite steady improvements since the early 80s. The upward trend in alcohol and/or drug involved fatalities is significantly more pronounced than that observed for overall traffic fatalities. The increase over the most recent 7-year period is much greater than that for all traffic fatalities (57 percent vs. 18 percent). Thus, increases in drug and alcohol crashes appear to be a leading factor responsible for the overall increase in traffic-related deaths in California. Though alcohol impairment accounts for the vast majority of the fatalities for this Challenge Area, data show that increases in drug-impaired fatalities warrant attention. Figure 4 shows that the detection of drug involvement has increased notably among fatal collisions on California's roadways. In 1998 drug-involved fatalities (drug-only fatalities as well as alcohol and drug fatalities) accounted for 22 percent of all drug and/or alcohol involved fatalities; however, by 2004 California saw drug-involved fatalities increased to 42 percent of all alcohol and/or drug involved fatalities; an increase of 91 percent. Additionally, SWITRS data reveal 344 (18 percent) of the 1,908 fatalities involved impaired pedestrians. Clearly, impaired roadway users warrant attention if California intends to see a substantial and sustained reduction in impaired driving-related fatalities.

While there are undoubtedly many contributing factors to the upward trend in alcohol and/or drug involved fatalities since 1998 which must be explored, one possibility may reside with a decrease in DUI arrests. The California Departement of Motor Vehicles (DMV) reports that the number of DUI arrests decreased by 49 percent, from 366,834 DUI arrests in 1990 to 188,327 per year in 1998 during the time that fatalities were decreasing, but have generally continued to decrease despite the increase in fatalities.[19]

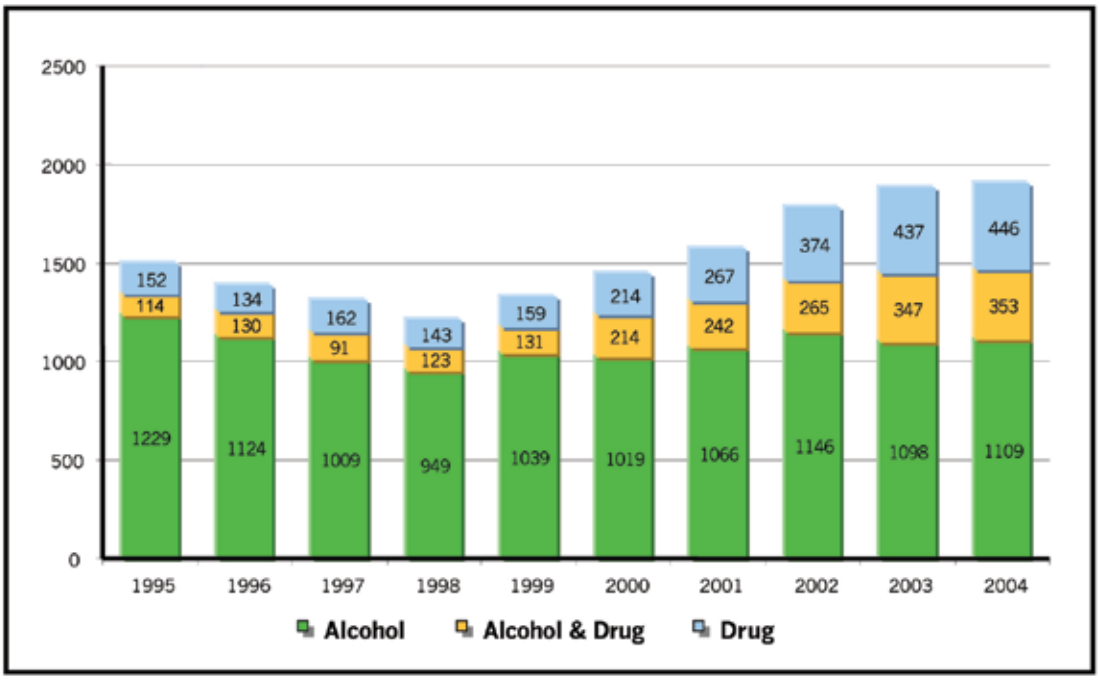
It should be noted that the pattern for alcohol-involved fatalities in California is similar to the pattern for the rest of the nation. The underlying causes of these changes are not well understood. However, impaired driving continues to be a persistent traffic safety problem in California and nationwide.

Strategies

California intends to employ the following strategies to reduce the number of fatalities attributed to impaired drivers. The SHSP Implementation Plan will present specific action items to implement these strategies:

[17] Statewide Integrated Traffic Records System (SWITRS) - www.chp.ca.gov/switrs/.
[18] Office of Traffic Safety 2006 Highway Safety Plan, 2005 rates.
[19] DMV California DUI Management Information System Annual Report.

Figure 4 - Traffic fatalities from alcohol and/or drug involved roadway users, California, 1995-2004



1. Educate roadway users regarding the dangers of impaired roadway use.
2. Restrict access to sources of alcohol/drugs for persons under 21 years of age, and for others as appropriate.
3. Enhance law enforcement training and the tools for detection of impaired roadway users.
4. Review effectiveness of existing sanctions as a deterrent to impaired driving.
5. Streamline and ensure consistent adjudication of arrested impaired drivers.
6. Improve the tracking of convicted impaired drivers.
7. Enhance the use of treatment programs to reduce recidivism of impaired drivers.
8. Increase and improve the application of administrative sanctions regarding impaired drivers.
9. Develop educational programs that combat the social acceptance of drinking and driving.
10. Develop new and innovative ways to approach repeat offenders.

Implementation Issues

Key issues connected with the implementation of action items to reduce the number of fatalities attributed to impaired drivers:

1. Reinforcing public consensus that driving under the influence is unacceptable behavior.
2. Continue to apply resources that focus on high-visibility enforcement, education, and community involvement.
3. Difficulty in changing the behaviors that lead to impaired driving among drivers aged 21 to 34.

Challenge 2: Reduce the Occurrence and Consequence of Leaving the Roadway and Head-on Collisions

Goal: *By 2010, reduce the number of fatalities attributed to vehicles leaving the roadway by 15 percent from their 2004 level.*

Background

This Challenge Area covers vehicles leaving the roadway as well as head-on collisions, a consequence of leaving the lane or roadway. When a vehicle leaves the roadway, the result is often disastrous. National data attribute 31.4 percent of fatal collisions to vehicle collisions with fixed objects, 10.8 percent to head-on collisions, and another 10.6 percent to vehicles overturning.[20] Within California, data shows that the number of fatalities from vehicles leaving the roadway and head-on collisions accounted for 34 percent of total fatalities from 2002 – 2004.[21] Although lower than the national average, further safety improvements are possible. In order to reduce the fatalities and injuries resulting from vehicles leaving the road, efforts must be made to: (1) keep vehicles from leaving the road, (2) reduce the likelihood and severity of errant vehicles crashing into fixed objects, and (3) reduce the likelihood of errant vehicles overturning.

Nationally, one of the most severe types of crashes occurs when a vehicle crosses into an opposing traffic lane and crashes head-on with an oncoming vehicle. Nationally, there were 5,063 fatalities resulting from head-on crashes in 2003.[22] Severe crashes of this sort occur primarily on rural conventional roads and freeways with narrow medians. The consequences of two vehicles travelling in opposite directions and collisding are severe.

Figure 5 shows a gradual reduction in collisions due to vehicles leaving the roadway and/or head-on collisions. SWITRS data attributed one-third of 2004 traffic fatalities to vehicles leaving the roadway and/or head-on collisions indicates significant potential for improved safety in this Challenge Area.

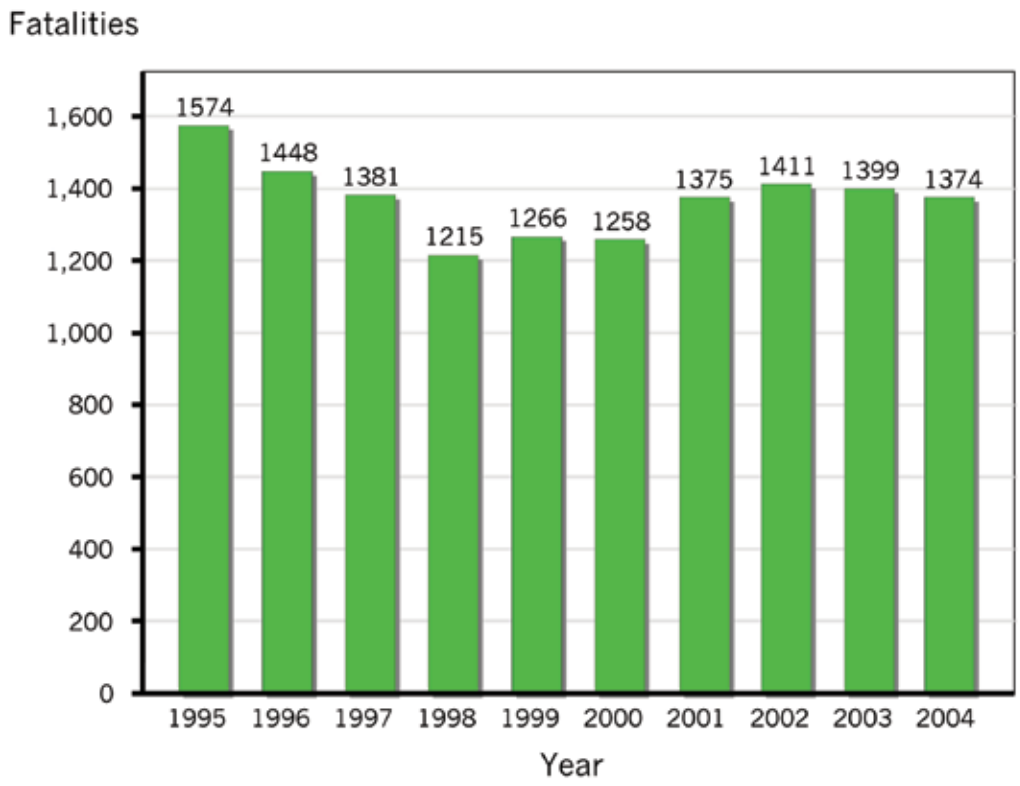
Strategies

California intends to employ the following strategies to reduce the occurrence and consequence of leaving the roadway. The SHSP Implementation Plan will present specific action items to implement these strategies:

1. Keep vehicles on the roadway.
2. Minimize the consequences of leaving the roadway.
3. Reduce head-on collisions.
4. Apply advanced technology to reduce collisions.

[20] NHTSA 2004 Traffic Safety Facts - http://www-nrd.nhtsa.dot.gov/pdf/nrd-30/NCSA/TSFAnn/TSF2004.pdf .
[21] Statewide Integrated Traffic Records System (SWITRS) - www.chp.ca.gov/switrs/.
[22] Fatality Analysis Reporting System (FARS) - www-fars.nhtsa.dot.gov/.

Figure 5 – Fatalities due to leaving the roadway and/or head-on, California, 1995 - 2004



Implementation Issues

Key issues connected with the implementation of action items to reduce the occurrence and consequence of leaving the roadway include:

1. Limited funding to implement strategies to reduce vehicles leaving the roadway and/or head-on collisions.
2 Limited education and training for drivers on how to correct when their vehicle departs the roadway and how to avoid head-on collisions.

Challenge 3: Ensure Drivers are Licensed and Competent

Goal: *By 2010, reduce the number of fatalities attributed to drivers with no license, invalid license, or not licensed for class of vehicle by 15 percent from their 2004 level.*

Background

National research indicates that substantial numbers of drivers continue to drive after their privileges have been suspended or revoked. One of every five fatal crashes involves at least one driver who is not properly licensed (not licensed for type of vehicle, unlicensed, suspended, revoked, expired, or canceled license). California research shows that drivers with a suspended license are almost 4 times as likely to cause a fatal crash as the average driver, and unlicensed drivers are about 5 times as likely to cause a fatal crash. Research conducted in California and New Mexico shows that as many as seventy-five percent of drivers with suspended or revoked licenses continue to drive, although they drive more cautiously and less often. In addition, some people continue to drive even though their cognitive and motor skills have declined to levels that make them unfit to operate a motor vehicle. The loss of one's driving privilege often stems from serious issues associated with the driver's inability to drive safely. The need to keep such identified drivers, who have had their driving privilege revoked, off the road deserves careful and thoughtful attention.

Figure 6 shows an upward trend in fatalities atrributed to unlicensed drivers (expired, suspended, or revoked license, not licensed for type of vehicle) from 1995 through 2004. The most significant increase occurs between 1999 and 2004.

Strategies

California intends to employ the following strategies to address the challenge of unlicensed and incompetent drivers. The SHSP Implementation Plan will present specific action items to implement these strategies:

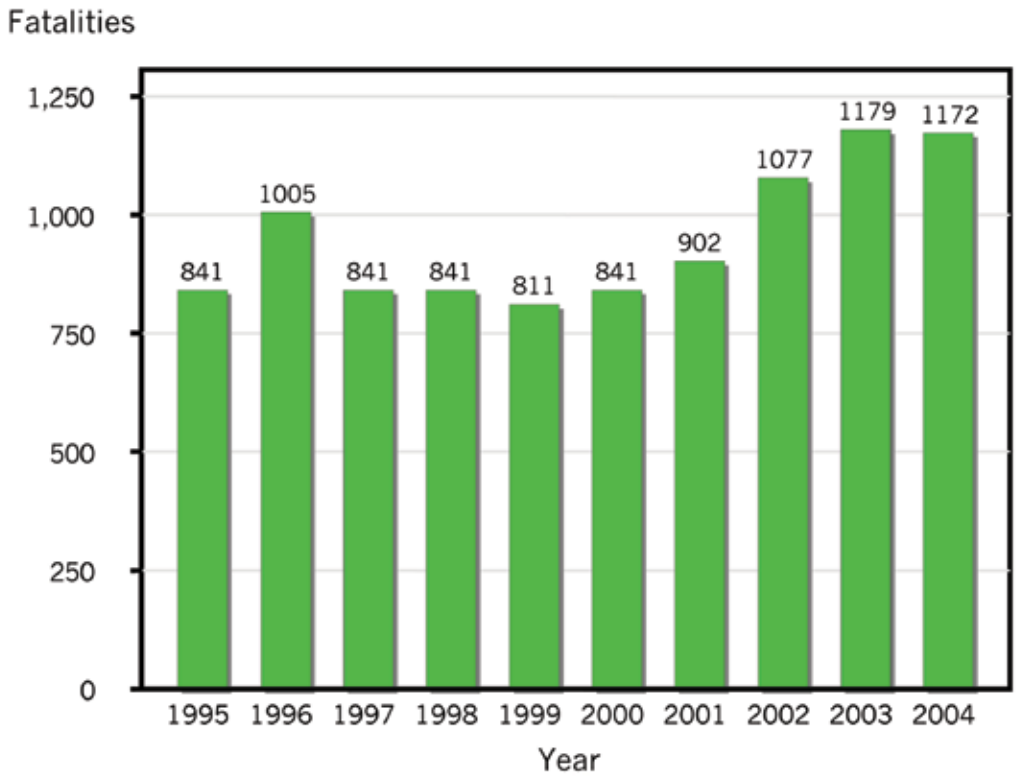
1. Improve the initial licensing process.
2. Improve the competency of licensed California drivers.
3. Improve how California manages unlicensed drivers.
4. Improve how California manages drivers who operate vehicles with a suspended or revoked license.

Implementation Issues

Key issues affecting the implementation of action items to address the challenge of licensed and competent drivers:

1. Limited incentives and penalties for violators that effectively eliminate repeat offenders.
2. Limited funding.

Figure 6 - Fatalities in which one or more drivers were unlicensed (expired, suspended, or revoked license, not licensed for type of vehicle),[23] California, 1995 - 2004



3. Limited public awareness regarding the problem.
4. Limited range of effective deterrents.
5. Laws that prescribe license suspension for a variety of non-driving offenses.

[23] No license; expired, suspended, or revoked license, not licensed for type of

Challenge 4: Increase Use of Safety Belts and Child Safety Seats

Goal: *By 2010, increase statewide safety belt usage from the 2005 level of 92.5 percent to 95 percent, improve the use of child safety seats from 2005 level of 86.9 percent to 90.0 percent, and increase the percent of all vehicle occupant fatalities that are restrained to 70 percent - this is an indicator of higher total "observational" vehicle occupant restraint use, because a higher percentage of vehicle occupant fatalities that are restrained means that a higher percentage of total vehicle occupants are restrained.* [24]

Background

The combination of air bags and lap and shoulder safety belts offers the most effective safety protection available for passenger vehicle occupants. In 2005, safety belt use nationwide reached 82 percent and 14,903 lives were saved as a result.[25] Nevertheless, data confirm that at least 52 percent of passenger car occupants who die in crashes are not belted.[26] Because safety belts are approximately 50 percent effective for preventing fatalities in crashes in which motorists would otherwise die,[27] NHTSA believes the number of lives saved could be substantially increased—an additional 7,000 lives—if more people used safety belts. If the NHTSA assumptions hold true and all Californians properly used their restraint devices, California could avoid many fatalities every year.

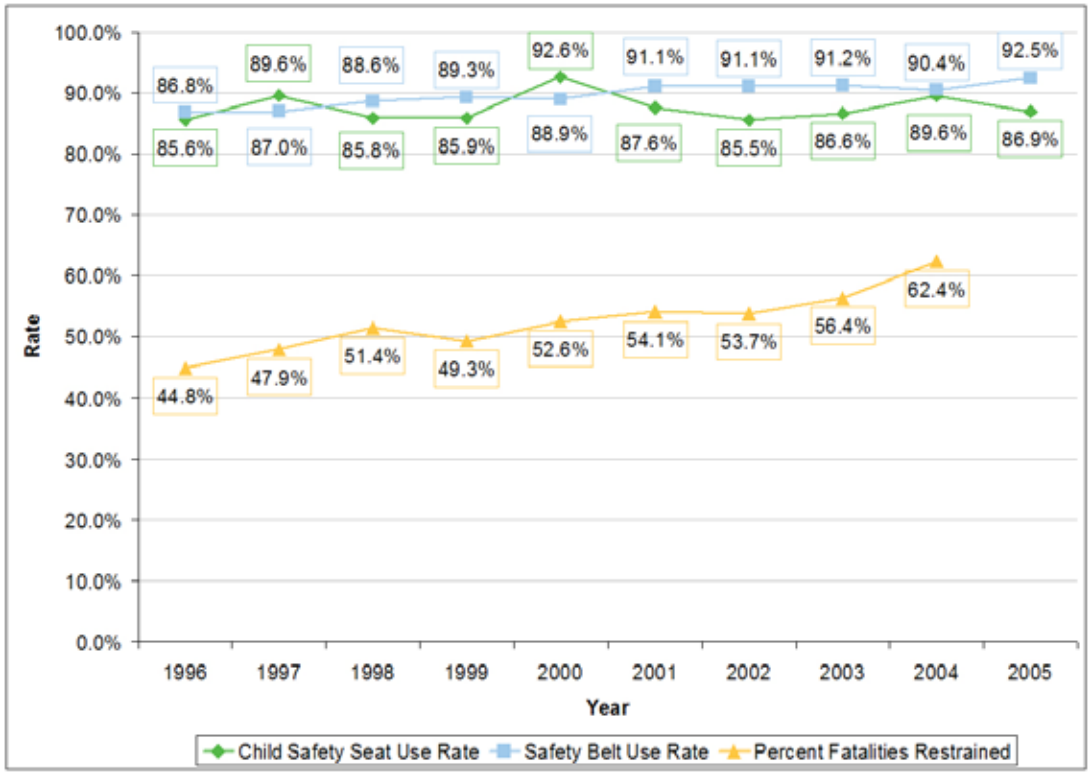
California law requires all vehicle occupants to wear a safety belt. With a strong law, education, and enforcement, California reports a 92.5 percent usage of safety belts in motor vehicles for 2005 – the seventh highest in the country.[28] After the passage of a mandatory safety belt law in 1986, California's usage rate went from 26 percent to approximately 45 percent. By 1992, California's usage had increased to 71 percent. With the passage of the primary enforcement law in 1993, California's usage rate jumped to 83 percent, steadily climbing to the current rate.[29]

Car seats, when correctly installed and used, are extremely effective in saving children's lives, reducing the risk of death by as much as 71 percent for infants. However, federal safety programs estimates that 85 percent of all car seats in use are improperly installed.[30]

Figure 7 shows California's track record for three safety restraint performance measures: safety belt use, child safety seat use, and the percent of fatalities retrained (i.e., the percent of vehicle occupants killed restrained). Safety belt use shows a steady increase since 1995. Child safety seat use, while trending up, is punctuated by broad increases and declines. The steady gains seen in the percent of fatalities restrained indicates a reduction in unrestrained fatalities possibly due to the increase in safety restraint use by Californians. Ultimately, California would like to see 100 percent use of vehicle safety restraints. Only then will the maximum number of lives be saved due to the proper use of in-vehicle safety restraints.

[24] This Challenge Area uses 2005 data due to information from California OTS.
[25] Buckle Up America - www.buckleupamerica.org.
[26] NHTSA Traffic Safety Facts - 2004, Table 88.
[27] Motor Vehicle Traffic Crash Fatality and Injury Estimates for 2000, NHTSA, November 2001.
[28] NHTSA Seat Belt Use Rates 2005 - http://www-nrd.nhtsa.dot.gov/pdf/nrd-30/NCSA/RNotes/2005/809970.pdf.
[29] The Prevention Institute - http://www.preventioninstitute.org/traffic_seatbelt.html.
[30] Safe Kids - www.safekids.org.

Figure 7 - Child safety seat and safety belt use rates, California, 1996-2005 [31]



Strategies

California intends to employ the following strategies to increase safety belt use and occupant protection. The SHSP Implementation Plan will present specific action items to implement these strategies:

1. Improve the availability, use, and proper installation of child restraint systems.
2. Target education and enforcement for demographic groups that show low safety belt usage rates.
3. Collect safety belt use information from first responders.
4. Increase education and enforcement on teen safety belt usage.

Implementation Issues

Key issues affecting the implementation of action items to increase use of safety belts and child safety seats include:

1. Public perception that child safety seats are properly installed.
2. Limited resources for education about and inspection of child restraint systems.
3. Segments of the public remain unconvinced of the benefits of using safety restraints.

[31] California Office of Traffic Safety Highway Safety Plan (HSP) - http://www.ots.ca.gov/Publications.

Challenge 5: Improve Driver Decisions about Rights of Way and Turning

Goal: *By 2010, reduce the number of fatalities attributed to improper rights of way and turning decisions by 10 percent from their 2004 level.*

Background

California's roadway users suffer from collisions resulting from poor driver decisions made regarding turns and rights of way. CHP data attribute improper passing, turning, lane change, right-of-way, or "other improper driving" as a primary collision factor in 23 percent of all fatal injury collisions from 2002 – 2004.[32] California should focus on ways to improve driver decisions for this Challenge Area.

Figure 8 shows a substantial and rapid increase of 68 percent in fatalities related to improper turning and rights of way violations between 1998 and 2003 before we saw a decline in 2004. It is unclear what accounts for this overall increase. Possible explanations include: poor decision-making by motorists; possible changes in attribution of cause at collisions; or a fundamental change in driving behavior within a large segment of the population. However, these explanations are highly speculative. Nonetheless, this observed increase in improper turning and rights of way violations has likely been a strong contributor to the overall increase in traffic fatalities observed since 1998.

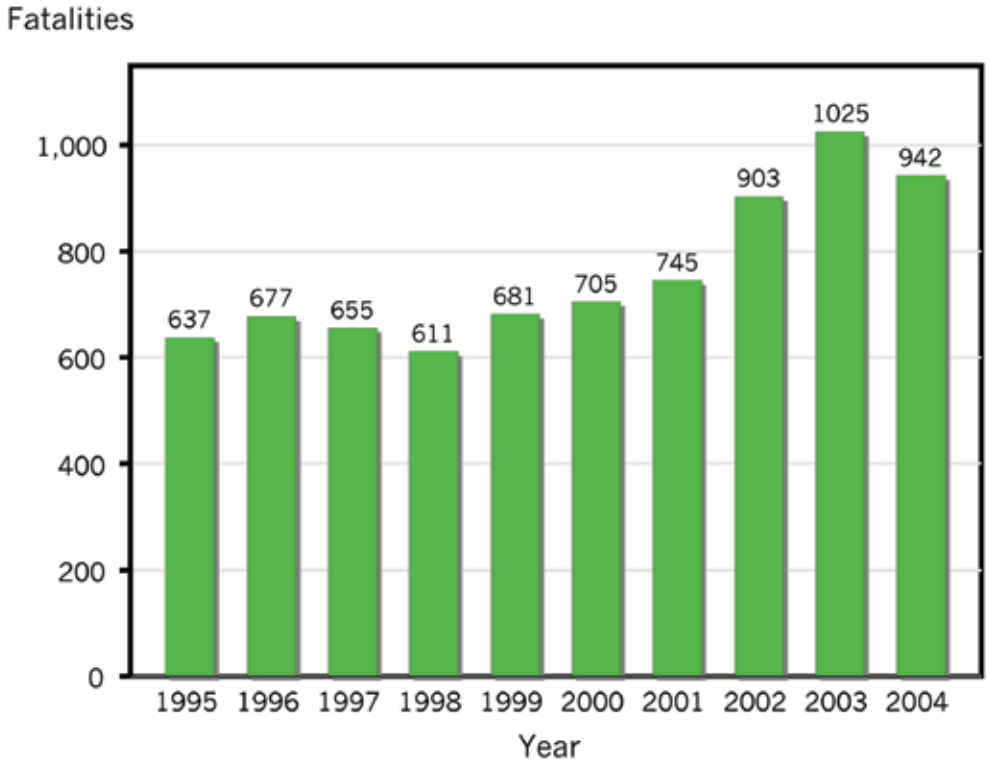
Strategies

California intends to employ the following strategies to reduce the number of fatalities attributed to improper rights of way and turning decisions. The SHSP Implementation Plan will present specific action items to implement these strategies:

1. Educate drivers on turning rules to support proper turning decisions.
2. Increase enforcement of drivers who make unsafe turns.
3. Employ traffic control devices, traffic calming, and speed-reduction design practices to reduce the likelihood and severity of crashes related to turning movements.
4. Improve roadway geometrics to restrict unsafe turns by motor vehicles.
5. Apply advanced technology to reduce collisions.

[32] Statewide Integrated Traffic Records System (SWITRS) - www.chp.ca.gov/switrs/.

Figure 8 - Fatalities related to improper turning and rights of way violations, California, 1995-2004



Implementation Issues

Key issues connected with the implementation of action items to reduce the number of fatalities attributed to improper rights of way and turning decisions:

1. Importance of providing driver education in California schools.
2. Limited number of personnel to monitor and enforce violations.
3. Incomplete understanding of the “rules of the road” by roadway users.

Challenge 6: Reduce Young Driver Fatalities

Goal: *By 2010, reduce the number of fatalities attributed to drivers age 15 – 20 by 15 percent from their 2004 level.*

Background

Newly licensed young drivers with less than one year of driving experience have the highest crash rate of any driver group. Young drivers are more likely to engage in risky driving behaviors, such as speeding and tailgating, and, lacking experience, they are least able to cope with hazardous situations. As a result, motor vehicle crashes are the leading cause of death for young drivers. Though young drivers constitute less than six percent of California's licensed drivers, they accounted for an average of 21 percent of California's traffic fatalities from 2002 to 2004.[33] This disproportionate fatality rate demonstrates the need for California to improve how it manages young drivers.

Figure 9 shows California's traffic fatalities from 1995-2004 among drivers aged 15-20: fatalities declined between 1995 and 1998, increased between 1998 and 2002, and then decreased again in 2003 and 2004. The increase in traffic fatalities associated with young drivers has been higher than for other age groups. The increase in young driver fatalities occurred despite the implementation of the graduated driver license (GDL) by California in July 1998. In part, the GDL restricts nighttime driving and the transport of young passengers for drivers under age 18.

According to CHP, the top five primary collision factors (PCFs) for young drivers were: unsafe speed, right-of-way auto (unsafely pulling in front of on-coming vehicles), improper turning, stop sign/signal violations, and driving under the influence of alcohol or drugs. These data reveal the need to implement strategies aimed at easing young and new drivers into the challenges and responsibilities that come with operating a motor vehicle in the State of California.

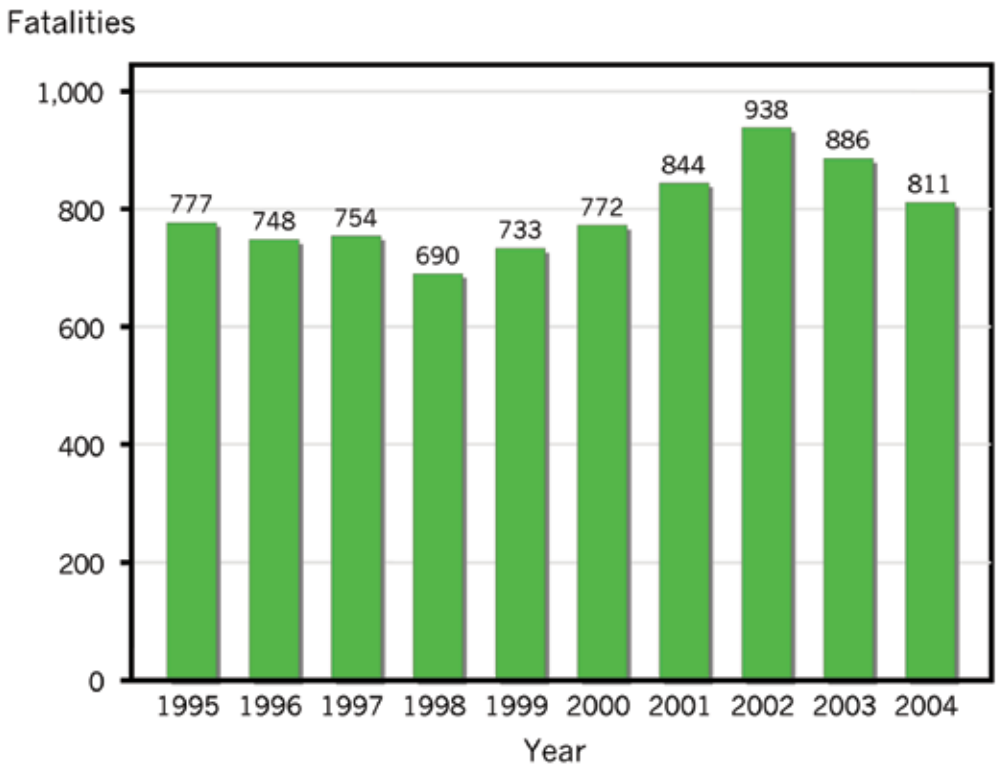
Strategies

California intends to employ the following strategies to reduce young driver crashes.
The SHSP Implementation Plan will present specific action items to implement these strategies:

1. Improve the education and behind the wheel training of young drivers.
2. Increase parental involvement, knowledge and buy-in to the graduated driver's license.
3. Improve the process of testing young drivers to obtain a driver's license.
4. Enforce compliance of young drivers with the graduated driver's license and rules of the road.
5. Enhance existing positive and constructive reinforcement of young driver behavior.
6. Enhance effective DUI countermeasures targeting drivers under age 21.

[33] Statewide Integrated Traffic Records System (SWITRS) - www.chp.ca.gov/switrs/.

Figure 9 - Traffic fatalities from crashes involving drivers aged 15-20, California 1995-2004



Implementation Issues

Key issues affecting the implementation of action items to reduce young driver crashes include:

1. Limited funding for education and driver training in public schools.
2. Limited resources for enhanced law enforcement of GDL restrictions on young drivers.
3. Gaining widespread support from parents, teens, and the general public to increase teen compliance with GDL restrictions.

Challenge 7: Improve Intersection and Interchange Safety for Roadway Users

Goal: *By 2010, reduce the number of intersection crash fatalities by 15 percent from their 2004 level.*

Background

Injury and fatality statistics for highway intersections and interchanges constitue ample evidence that strategies to improve the safety of these crash-prone areas are urgently needed. On average, there are five crashes at intersections every minute and one person dies every hour of every day at an intersection somewhere in the nation. In addition, national statistics show that almost one in every four fatal crashes occurs at or near an intersection, one-third of which are signalized.[34] Safety literature also indicates that the two most prominent crash scenarios at intersections involve left turns and being struck from the rear. Furthermore, boradside collisions are a predominate cause of death at signalized intersections.

California's pattern of intersection crash fatalities shown in Figure 10 is similar in pattern to the trend for all crashes observed in this same time period.[35] This is not surprising, given that intersection crashes account for approximately 19 percent of total fatal crash locations. However, the post-1999 increase in fatal intersection crashes is not as steep as for total fatal crashes, indicating that recently implemented intersection countermeasures—such as additional traffic lights and changes to traffic light design for increased visibility—may be having a beneficial effect on fatal crash rates at these locations.

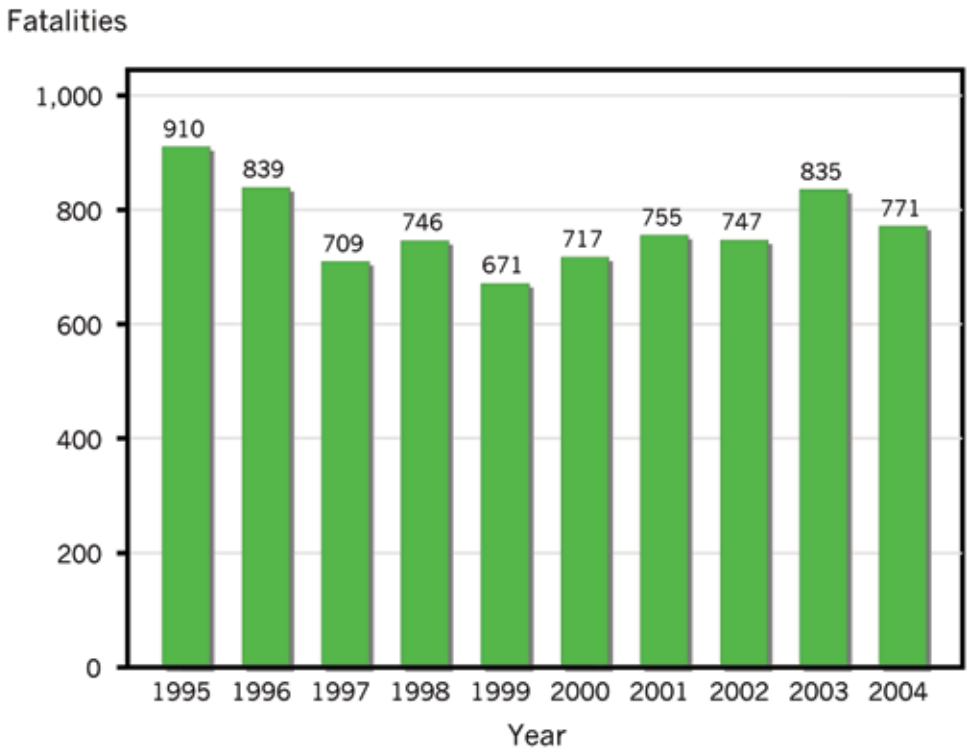
Strategies

California intends to employ the following strategies to reduce intersection crashes.
The SHSP Implementation Plan will present specific action items to implement these strategies:

1. Improve land use planning regarding impacts to intersections.
2. Educate the public on intersection safety and the rules of the road.
3. Increase enforcement at and near intersections.
4. Improve the visibility of and at intersections (illumination, marking and advanced warning).
5. Improve the design of traffic control devices.
6. Enhance the safety of rail-highway intersections.
7. Improve roadway design at intersections.
8. Reduce high risk rural road collisions.
9. Apply advanced technology to reduce collisions.
10. Improve design and operation of freeway interchanges.

[34] AASHTO SHSP - http://safety.transportation.org/doc/Safety-StrategicHighwaySafetyPlan.pdf.
[35] Statewide Integrated Traffic Records System (SWITRS) - www.chp.ca.gov/switrs/.

Figure 10 - Fatalities from intersection crashes, California, 1995-2004



Implementation Issues

Key issues connected with the implementation of action items to reduce intersection crashes include:

1. Limited funding and resources to implement safety enhancements to intersections.
2. The difficulty in changing driver behavior at intersections.
3. Finding an appropriate balance of design considerations for all roadway users including bicyclists and pedestrians (especially young, older, and disabled persons).
4. Inadequate data regarding intersection collisions relevant to improving roadway safety.

Challenge 8: Make Walking and Street Crossing Safer

Goal: *By 2010, reduce the number of pedestrian fatalities attributed to vehicle collisions by 25 percent from their 2000 level.*[36]

Background

Although the annual number of pedestrian deaths has declined, pedestrians still account for about 11 percent of traffic fatalities nationwide.[37] In 2004, a pedestrian was killed or injured, on average, every 7 minutes on the nation's roadways—nearly 73,000 injuries and deaths.[38] California's pedestrian fatalities as a portion of total fatalities are much higher than the nation's 11 percent, exceeding 17 percent of total fatalities.[39] In other words, the rate for pedestrian fatalities is 50 percent higher in California than the national average. California averaged 731 fatalities per year over the last 10 years,[40] of which half were either children/youths under the age of 20 or senior citizens age 65 or older.[41] The NHTSA publication "Designing for Pedestrian Safety" states that "Crashes involving pedestrians are the third highest crash type of traffic related fatalities." California needs to explore new strategies that address the various issues associated with pedestrian-vehicle collisions.

Figure 11 shows a small reduction in the number of fatally injured pedestrians during the early to mid-1990's and then the number levels off through 2004 despite the increase in vehicle miles driven and the increase in the number of licensed drivers in California. These numbers indicate pedestrian safety shows room for substantial reduction. Many attribute the decrease in deaths to the decrease in rates of walking due to the lack of a safe environment. California has taken actions to reduce pedestrian crashes, including better marked pedestrian crosswalks, better and more pedestrian signals, better lighting, pedestrian walkway bulb-outs, median refuges and other devices, increased sidewalk construction, and walk-to-school programs. Collectively, these actions have been shown to be effective in reducing traffic deaths. In addition, increased prevention, education, and enforcement also hold promise in further reducing pedestrian deaths.

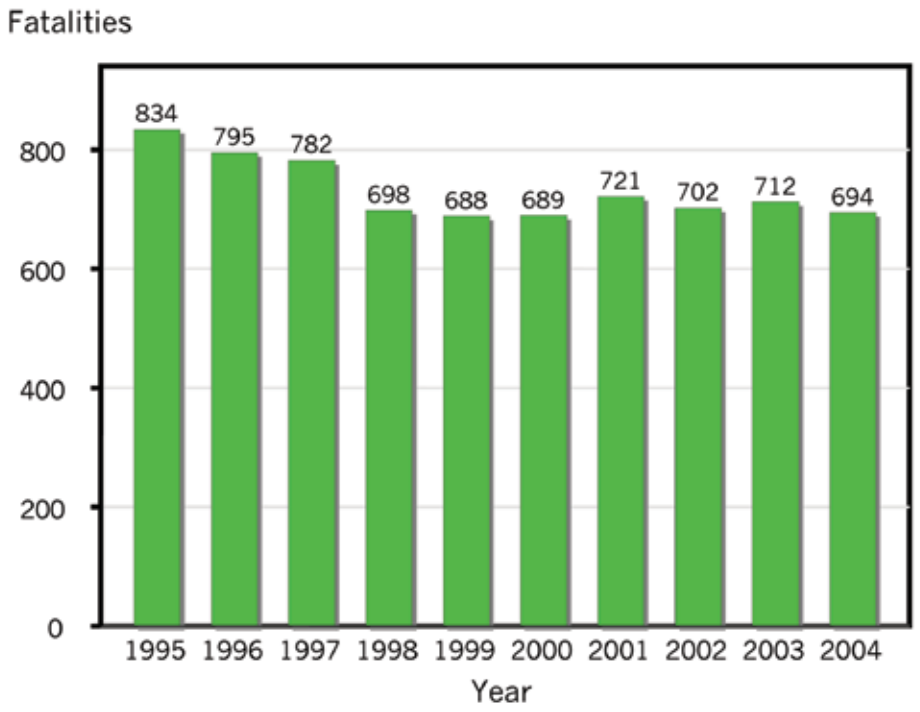
Strategies

California intends to employ the following strategies to reduce pedestrian fatalities on California's roadways. The SHSP Implementation Plan will present specific action items to implement these strategies:

1. Incorporate pedestrian roadway users into smart growth, land use planning, and other local plans.
2. Enhance the enforcement of violations of pedestrian law by pedestrians and motorists.
3. Educate all roadway users regarding the rights and responsibilities of pedestrians.
4. Promote and improve roadway safety infrastructure for pedestrians including the use of advanced technology.
5. Improve the visibility of pedestrians on the roadway.
6. Improve the safety of pedestrians traveling to and from schools.
7. Improve data collection and analysis regarding pedestrian trip characteristics, level of service, injuries and fatalities on California roadways.

[36] This goal, established by the Legislature in the California Blueprint for Bicycling and Walking (2002), assumes that the Legislature's mobility goal of a 50% increase in pedestrian trips by 2010 will also be achieved." - http://www.dot.ca.gov/hq/tpp/offices/bike/CABlueprintRpt.pdf.
[37] Fatality Analysis Reporting System (FARS) - www-fars.nhtsa.dot.gov/.
[38] Fatality Analysis Reporting System (FARS) - www-fars.nhtsa.dot.gov/.
[39] Statewide Integrated Traffic Records System (SWITRS) - www.chp.ca.gov/switrs/.
[40] Statewide Integrated Traffic Records System (SWITRS) - www.chp.ca.gov/switrs/.
[41] California DHS, EPIC Vital Statistics: www.applications.dhs.ca.gov/epicdata/default.htm. Note: EPIC data show higher fatalities for pedestrians than SWITRS probably due to under-reporting to the CHP.

Figure 11 - Fatally injured pedestrians, California, 1995-2004



8. Improve pedestrian safety expertise among transportation professionals.
9. Consider pedestrian needs in all roadway and transit projects.

Implementation Issues

Key issues affecting the implementation of action items to reduce pedestrian fatalities on California's roadways include:

1. Limited funding to complete pedestrian infrastructure (e.g. sidewalks, refuge medians, etc.).
2. Limited funding for effective means to educate all roadway users about the rights of pedestrians on California's roadways.
3. Limited existing statutory means to require the incorporation of pedestrian needs into land use planning, design, construction, and maintenance projects.
4. Limited data on pedestrians and walking trips that is relevant to roadway safety.
5. The constraints of existing right of way available for pedestrian infrastructure.
6. Limited coordination/collaboration/partnership among agencies and stakeholders concerned with pedestrian safety.

Challenge 9: Improve Safety for Older Roadway Users

Goal: *By 2010, reduce the number of fatalities attributed to drivers age 65 and older by 10 percent from their 2004 level.*

Background

The increasing number of older drivers using the nation's roadways in future decades will pose many challenges. Nationally, the 65 and older age group, which numbered 35 million in 2000, is expected to swell to 70 million by 2030, accounting for roughly one-fifth of the country's driving population. The California Department of Aging (CDA) estimates California's elderly population will rise from 4.9 million in 2000 to over 6.5 million in 2010, an increase of 32 percent.[42] According to the California Task Force on Older Adults and Traffic Safety (OATS) Report, traffic collisions continue to be a major cause of serious injury to California's seniors.[43] Persons 65 and older are more likely to receive fatal injuries when compared with persons from any other age group, due to their increased physical frailty. Most older drivers are good drivers, but the effects of aging ultimately affect the safe driving abilities of some seniors.

Figure 12 shows relatively little change in the number of fatalities from collisions involving drivers aged 65 and older, despite very substantial increases in both the number of older residents in the State and in the amount of driving that older adults engage in. It is encouraging that the number of fatalities has not increased over the past decade, and this may reflect programs that help older adults adjust their driving habits to accommodate changes in skills and capacities related to aging. Because the number of older driving adults is projected to increase dramatically over coming years in California, directing resources toward older driver interventions may result in great safety benefits in the coming decade.

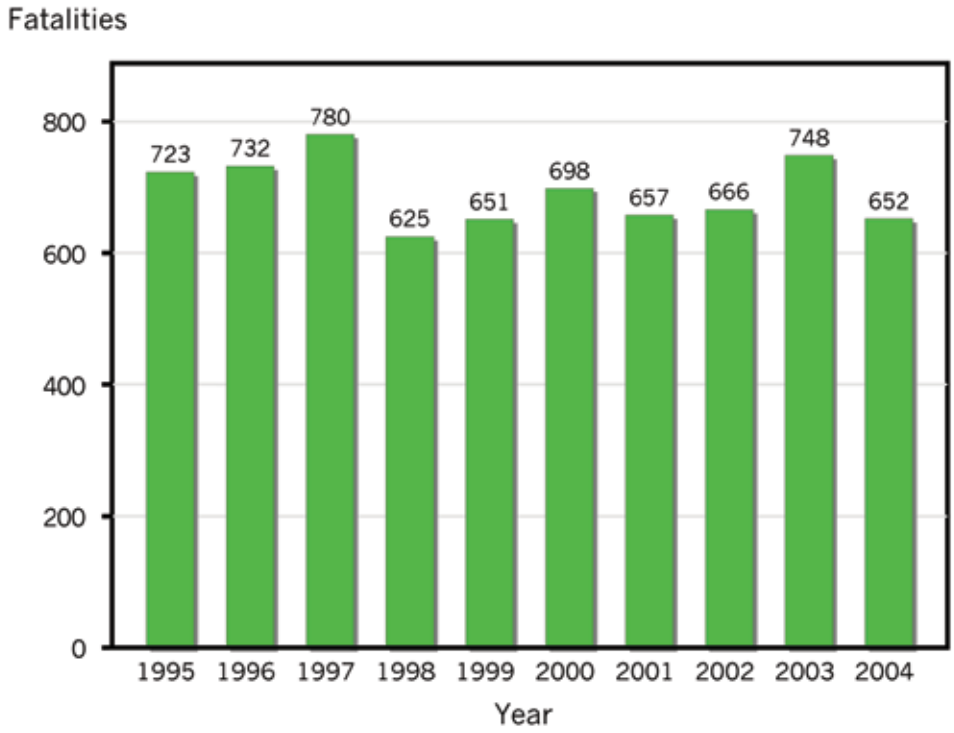
Strategies

California intends to employ the following strategies to reduce older driver crashes.
The SHSP Implementation Plan will present specific action items to implement these strategies:

1. Improve driver licensing testing and assessment procedures to more accurately reflect behind-the-wheel capabilities.
2. Create and promote wellness and behavioral strategies for older persons, making it possible for them to drive safely for added years.
3. Enhance law enforcement training to recognize older driver behaviors that may necessitate priority drivers license re-examinations, and provide law enforcement with a broader understanding of older driver sensitivities.
4. Develop public education materials, programs and tactics that clearly explain how the aging process affects driving and what families, friends and the public can do to help seniors (1) drive for more years safely and (2) transition comfortably to alternate forms of transportation when driving ceases.
5. Explain and encourage older persons' self-assessment of driving abilities and how to take advantage of that information to make appropriate decisions about driving.
6. Seek the cooperation and coordination of the transit (bus, light rail, etc.) community to make these transportation options more accommodating and practical for older persons who can no longer drive.
7. Implement advancements in highway lighting, striping, signing and engineering practices

[42] California Department of Aging - http://www.aging.state.ca.us/html/stats/oldest_old_population.html.
[43] OATS - http://www.eldersafety.org/.

Figure 12 - Traffic fatalities from crashes involving drivers aged 65 years and older, California, 1995-2004



to make the highway environment safer for older drivers.

8. Leverage the programs and resources of the Older Californian Traffic Safety Task Force to help with accomplishment of stated objectives.
9. Promote the establishment and enhanced capacity of occupational therapy driving evaluation and rehabilitation programs that serve seniors.
10. Improve the ability of health care professionals to provide effective assessment, counseling, and remediation to improve safe mobility of seniors.

Implementation Issues

Key issues affecting the implementation of action items to reduce older driver crashes include:

1. Rapid growth in California's licensed drivers aged 65 and older.
2. Preference of older adults to drive versus ride in a car, walk or take another form of transportation even when driving may not be safe for them.

Challenge 10: Reduce Speeding and Aggressive Driving

Goal: *By 2010, reduce the number of fatalities attributed to speeding and other forms of aggressive driving by 15 percent from their 2004 level.*

Background

Nationally, more than 60 percent of drivers see unsafe driving by others as a major personal threat to themselves and their families.[44] Aggressive driving [45] threatens motorists, bicyclists, and pedestrians by vehicular speeding, following too closely, changing lanes frequently without signaling, flashing lights, driving on shoulders to pass, driving across marked barriers, and angry shouting or gesturing at other drivers. Aggressive drivers also tend to be high-risk drivers more likely to ride unrestrained and also drink and drive.[46] Because aggressive driving often reflects the attitude of a driver violating traffic laws, it can be difficult to measure precisely. It is defined for the purposes of this report as a crash that was caused by unsafe speed or following too close.[47]

In reported collisions during 2004, unsafe speed and following too close were attributed to 603 fatalities. Figure 13 shows a dramatic increase in the number of fatalities related to speeding and following too close between 1998 and 2003 with a decrease in 2004. Before the decrease in 2004, these fatalities increased by 69 percent between 1998 and 2003.[48] This increase is substantially higher than the overall 22 percent increase in traffic fatalities over the same period, and indicates that speeding and following too close are some of the primary causes of the recent traffic fatality increase in California.

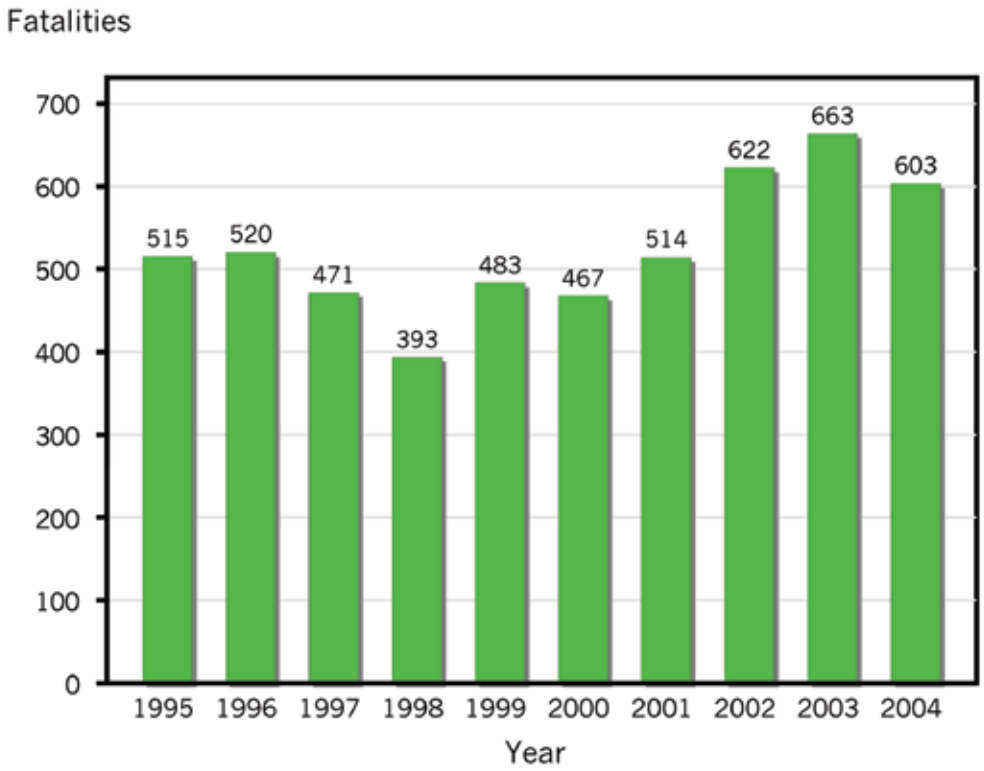
Strategies

California intends to employ the following strategies to reduce speeding and aggressive driving collisions. The SHSP Implementation Plan will present specific action items to implement these strategies:

1. Change our social norms to reduce the acceptability of speeding and other forms of aggressive driving.
2. Provide targeted enforcement to locations prone to speeding and other forms of and aggressive driving.
3. Employ engineering methods to deter speeding and other forms of aggressive driving (e.g. traffic calming).
4. Ensure consistent adjudication of drivers cited for speeding and other forms of aggressive driving.
5. Apply advanced technology to reduce collisions.
6. Reduce the presence of speeding, unsafe and aggressive driving on the television and in movies.

[44] NCHRP Report 500 - http://gulliver.trb.org/publications/nchrp/nchrp_rpt_500v1.pdf .
[45] Aggressive driving is not a PCF in SWITRS. For the purpose of this Challenge Area, fatalities coded with a PCF of unsafe speed or following too closely were used to identify aggressive driving fatalities.
[46] NCHRP Report 500 - http://gulliver.trb.org/publications/nchrp/nchrp_rpt_500v1.pdf.
[47] A rear-end collision that involves a vehicle following too closely can be attributed to unsafe speed because, by definition, the following vehicle was traveling at an unsafe speed for the existing conditions.
[48] Statewide Integrated Traffic Records System (SWITRS) - www.chp.ca.gov/switrs/.

Figure 13 - Traffic fatalities from crashes related to speeding and and other forms of aggressive driving, California, 1995-2004



Implementation Issues

Key issues connected with the implementation of action items to reduce speeding and aggressive driving crashes include:

1. Making the risks of aggressive driving a component of driver education.
2. Limited funding for enforcement and prevention of aggressive driving.
3. Lack of a widely accepted common definition of what constitutes "aggressive driving."

Challenge 11: Improve Commercial Vehicle Safety

Goal: *By 2010, reduce the number of commercial vehicle crash fatalities by 10 percent from their 2004 level.*

Background

Year after year, commercial vehicles (large trucks and busses) are involved in thousands of crashes. Heavy-truck crashes, especially those involving other vehicles, are more likely to result in death or serious injuries. In 2004 for the nation, a total of 5,137 fatal collisions involved heavy trucks (4,862) and buses (275), 13 percent of the total fatal collisions (38,253).[49] California data show that an average of 439 (11 percent of the total) fatalities occurred between 2002 and 2004 as a result of collisions with trucks and buses.[50] The net result is 2.03 fatalities per 100 million miles of truck travel. In addition, California is seen as a major commerce gateway to the nation with four of the 15 highest volume seaports and our shared border with Mexico. It is easy to see how the forced coexistence of trucks, buses, motor vehicle traffic, pedestrians, and bicyclists on congested roads can produce fatal results.

CHP SWITRS information points to poor driver performance (including driver fatigue) and an inadequate level of truck awareness on the part of other roadway users as major contributing factors to commercial vehicle crashes. Also of concern are the unsafe operational condition of too many trucks, particularly their tires, braking, and steering systems.

Figure 14 shows a gradual decrease in the number of fatalities related to truck collisions. This gradual decrease may represent an underlying improvement that is more substantial when it is compared with the increasing number of traffic fatalities seen overall for 1999-2004. Nonetheless, truck collisions remain a relatively large source of traffic fatalities, and this area presents an opportunity for making significant gains in traffic safety.

Commercial vehicle safety has been an area that has received considerable attention and the changes in deaths associated with truck collisions demonstrate this fact. Recent traffic safety efforts that may have impacted the fatality rate include better tires, changes to safety design features, enforcement of regulations controlling driving hours, and the increased monitoring of truck weight. It should be noted that the graph does not reflect fatalities from when truck drivers were at fault—only for when trucks were involved. Hence, many of the fatalities associated with trucks may be the result of driver error by automobile drivers and not errors of the truck driver.

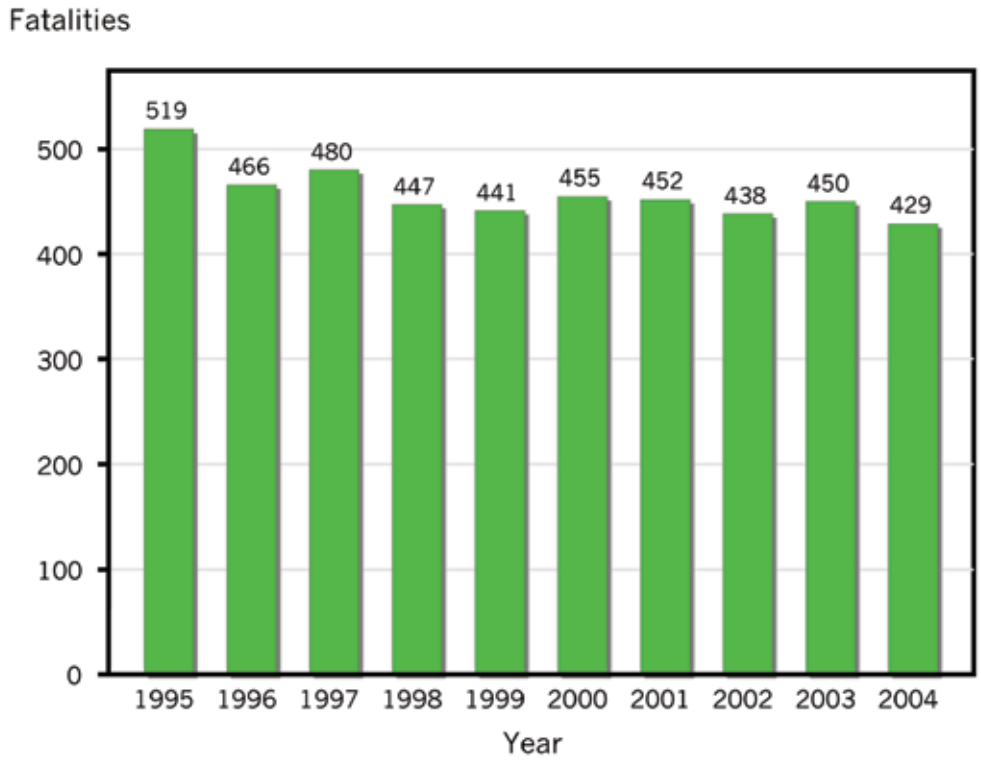
Strategies

California intends to employ the following strategies to reduce the number of fatalities attributed to commercial vehicle collisions. The SHSP Implementation Plan will present specific action items to implement these strategies:

1. Educate the public on commercial vehicle safety.
2. Improve the training, testing, and licensing of commercial vehicle drivers.
3. Increase the enforcement of commercial vehicle and operator violations.
4. Improve commercial vehicle maintenance.
5. Increase the use of commercial vehicle safety equipment.
6. Improve commercial vehicle drivers' detection of other roadway users.
7. Improve infrastructure for commercial roadway drivers.

[49] Fatality Analysis Reporting System (FARS) - www-fars.nhtsa.dot.gov/.
[50] Statewide Integrated Traffic Records System (SWITRS) - www.chp.ca.gov/switrs/.

Figure 14 - Fatalities from bus and truck-involved collisions, California, 1995-2004



8. Improve commercial vehicle safety design.
9. Apply advanced technology to reduce collisions.

Implementation Issues

Key issues connected with the implementation of action items to reduce the number of fatalities attributed to commercial vehicle collisions:

1. Lack of availability and knowledge of areas for commercial drivers to rest (e.g. Rest Havens).
2. Need for improved licensing and testing procedures.
3. Limited motorist awareness of safe driving practices and laws about operating safely around large trucks.
4. Lack of safety restraint use by commercial vehicle drivers.

Challenge 12: Improve Motorcycle Safety

Goal: *By 2010, decrease the number of motorcycle rider fatalities by 10 percent from their 2004 level.*

Background

In 2004, 4,008 motorcyclists were killed and an additional 76,000 were injured in traffic crashes in the nation – 8 percent more than the 3,714 motorcyclist fatalities and 14 percent more than the 67,000 motorcyclist injuries reported in 2003. The 2004 fatalities were 89 percent higher than the national total of 2,116 in 1997.[51] California motorcycle rider fatalities have also been on the rise since 1998, reaching 368 in 2003 before declining slightly in 2004. Of the 368 fatalities, 48 were killed in alcohol-related crashes. Since 1997 the percentage of fatal and injury motorcycle "at fault" collisions, due to DUI, has decreased from 44 percent to 20 percent of the total in 2004. Over the same time period data shows that speed-related "at fault" motorcycle collisions have increased from 28 percent of the total in 1997 to 37 percent in 2004. CHP data also show that of the motorcycle-involved collisions, 65 percent of the fatal collisions and 56 percent of the injury collisions were the fault of the motorcyclist. Despite the fact that fewer than 3 percent of registered passenger vehicles nationwide are motorcycles, they account for nearly 9 percent of all passenger vehicle occupant fatalities.[52]

Motorcycles are over-represented in the recent increase in traffic deaths in California, accounting for 150 (24 percent) of 635 additional traffic deaths seen in 2004 over 1998.[53] One conspicuous trend in the data involves the number and age of motorcyclist fatalities. From 1999 through 2004 the 35 – 44 age group had the most fatalities. In addition, the 45 – 54 age group is the age group with the largest percentage increase in fatalities and injuries over the same time period.[54] It seems that strategies targeting middle-age motorcyclists could help reduce the number of fatalities seen in this Challenge Area.

Figure 15 shows the substantial and persistent increase in the number of fatally injured motorcycle riders since the late 1990's, an increase that can be seen in national data as well. This increase in motorcycle fatalities mirrors the overall increase in traffic fatalities seen in California during this period. Part of this similarity is due to the relatively large contribution of motorcycles to the increased fatality rate.

Strategies

California intends to employ the following strategies to reduce motorcyclist fatalities.
The SHSP Implementation Plan will present specific action items to implement these strategies:

1. Educate the public on motorcycle safety.
2. Improve the training, testing, and licensing of motorcyclists.
3. Enhance the enforcement of motorcyclist violations and violations by the operators of other vehicles.
4. Increase the use of safety equipment by motorcyclists.
5. Improve motorcyclist visibility to other roadway users.
6. Improve roadway design to enhance motorcycle safety.
7. Promote the use of helmets that meet USDOT standards.

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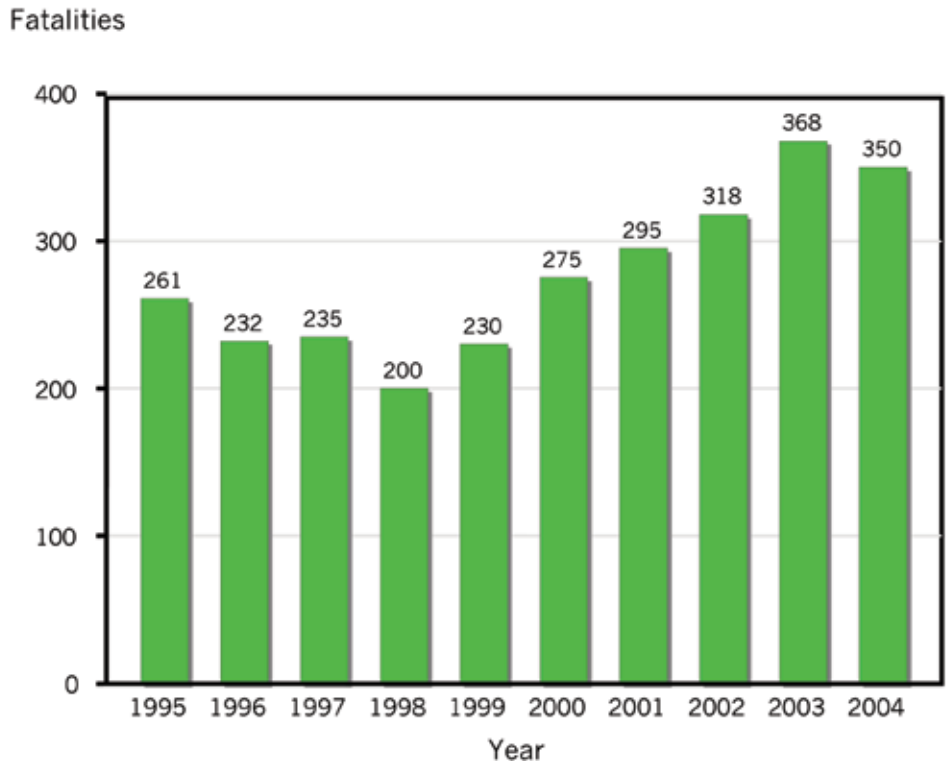
[51] NHTSA Traffic Safety Facts 2004 - http://www-nrd.nhtsa.dot.gov/pdf/nrd-30/NCSA/TSF2004/809908.pdf.
[52] Statewide Integrated Traffic Records System (SWITRS) - www.chp.ca.gov/switrs/.
[53] Statewide Integrated Traffic Records System (SWITRS) - www.chp.ca.gov/switrs/.
[54] Statewide Integrated Traffic Records System (SWITRS) - www.chp.ca.gov/switrs/.

Figure 15 - Fatally injured motorcycle riders, California, 1995-2004



Implementation Issues

Key issues connected with the implementation of action items to reduce motorcyclist fatalities include:

1. It is difficult and expensive to address all the roadway conditions such as roadway surfaces (gaps, groves, bumps, holes), changes in roadway surfaces (lane shifts, etc.), and varying surface compounds, that create safety challenges for motorcyclists.
2. Technical and practical constraints on the enforcement of existing helmet integrity laws.
3. Proper training for older riders, the fastest growing demographic among motorcyclists.

Challenge 13: Improve Bicycling Safety

Goal: *By 2010, reduce the number of bicycle roadway fatalities by 25 percent from their 2000 level.*[55]

Background

The first automobile crash in the United States occurred in New York City in 1896, when a motor vehicle collided with a bicycle rider.[56] In 2003, the nation recorded 622 bicyclist fatalities. In 2004 this number jumped to 725 – a 17 percent increase.[57] For 2004, California bicyclist fatalities per million population were 23 percent above the national rate, 3.06 compared to the 2.47 national average.[58] California's temperate climate and culture of outdoor activity are perfect settings for bicycling, and according to the 2001 Nationwide Personal Transportation Survey, 41 percent of trips in the nation are two miles or less, the perfect length for bicycling. There is a marked contrast between bicycle and motor vehicle size, speeds, and operation. In addition to these inherent differences, many bicyclists are very young and inexperienced, and even experienced motorists tend to forget or ignore the presence and rights of bicyclists as evidenced by the higher than average fatalities per million.

Figure 16 shows that in California, the number of fatally injured bicyclists has been holding relatively steady over the last 10 years.[59] This compares favorably with the increase in traffic fatalities seen overall in the same period. Factors that may have contributed to keeping bicyclist fatalities relatively steady include mandatory helmet use for children and increased helmet use amongst adults, an increased number of dedicated bicycle routes and bicycle lanes on roads, more neighborhoods designed to be bicycle-friendly and other prevention efforts. However, there is still much that could be done in order to bring the State's fatality rate per million to levels below the national average.

Strategies

California intends to employ the following strategies to reduce bicyclist fatalities on California's roadways. The SHSP Implementation Plan will present specific action items to implement these strategies:

1. Improve data collection regarding bicyclist trips, injuries, and fatalities on California roadways.
2. Incorporate bicyclists into smart growth, land use planning, and other local plans.
3. Enhance the enforcement of bicyclist and motorist roadway laws.
4. Educate all roadway users regarding the rights and responsibilities of bicyclists.
5. Promote and improve roadway safety infrastructure for bicyclist use.
6. Improve the visibility of bicyclists on the roadway.
7. Improve the safety of bicyclists traveling to and from schools, utilizing education, encouragement, enforcement and engineering techniques.
8. Increase the use of helmets and enforcement of related laws.
9. Improve bicycle safety expertise among transportation professionals.

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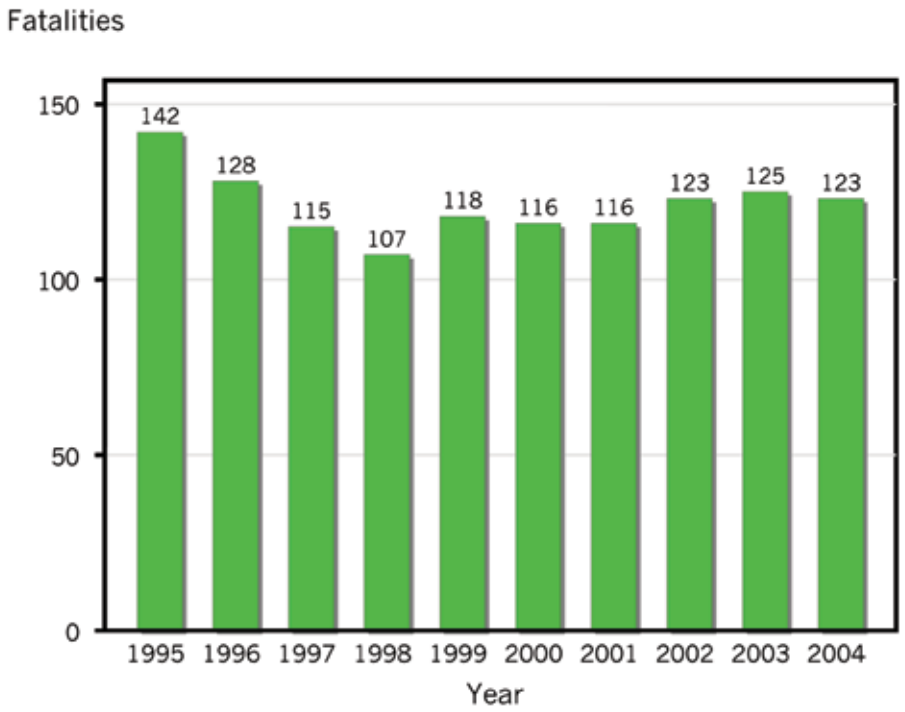
[55] This goal, established by the Legislature in the California Blueprint for Bicycling and Walking (2002), assumes that the Legislature's mobility goal of a 50% increase in bicycle trips by 2010 will also be achieved." - http://www.dot.ca.gov/hq/tpp/offices/bike/CABlueprintRpt.pdf.
[56] Famous First Facts, by Joseph Kane.
[57] NHTSA - www-nrd.nhtsa.dot.gov/pdf/nrd-30/NCSA/TSF2004/809912.pdf.
[58] NHTSA - www-nrd.nhtsa.dot.gov/pdf/nrd-30/NCSA/TSF2004/809912.pdf.
[59] Statewide Integrated Traffic Records System (SWITRS) - www.chp.ca.gov/switrs/.

Figure 16 - Fatally injured bicyclists, California, 1995-2004



Implementation Issues

Key issues affecting the implementation of action items to reduce bicyclist fatalities on California's roadways include:

1. Limited funding to complete bicycle infrastructure (e.g. bike lanes).
2. Limited means to effectively educate all roadway users about the rights of bicyclists on California's roadways.
3. Limited means to require the incorporation of bicyclist needs into land use planning, design, construction, and maintenance projects.
4. Limited data on bicyclists relevant to improving roadway safety.
5. The constraints of existing right of way available for bicyclists infrastructure.
6. Limited coordination/collaboration/partnership among agencies and stakeholders concerned with bicyclist safety.

Challenge 14: Enhance Work Zone Safety

Goal: *By 2010, reduce work zone fatalities by 10 percent from their 2004 level.*

Background

Highway work zones create a major safety concern for roadway users and workers alike. In 2003, national fatalities in work zones totaled 1,068. This number included 117 pedestrians, most of whom were construction workers, and 943 vehicle drivers and occupants.[60] Data indicate that work zone fatalities occur in every functional highway classification (e.g. freeway, rural, etc.). Highway workers routinely work in proximity to construction vehicles and motor vehicle traffic. Flaggers and other workers on foot are exposed to the risk of being struck by traffic vehicles or construction equipment, if they are not visible to motorists or equipment operators. Workers who operate construction vehicles or equipment risk injury due to overturn, collision, or being caught in running equipment. Highway workers, regardless of their assigned task, work in conditions of low lighting, low visibility, and inclement weather, and may work in congested areas with exposure to high traffic volume and speeds. The Census of Fatal Occupational Injuries (CFOI) for 2004 shows that work zone fatalities comprise 24 percent of all occupational fatalities.[61] Work zones require increased attention because roadway users are often faced with unique situations requiring special care.

On average, 98 work zone fatalities occurred per year in California over the period of 1995-2004; which places California third behind Texas and Florida in work zone fatalities.[62] The number of work zone fatalities has gradually been decreasing since 2000 as shown in Figure 17. Recent efforts by Caltrans and other organizations—such as the "Slow for the Cone Zone" campaign, the increased presence of patrol cars at construction and maintenance zones and the double fine laws—appear to have enhanced safety. The number of fatalities has not risen along with increases in vehicle miles traveled and the number of construction zones over the same period.

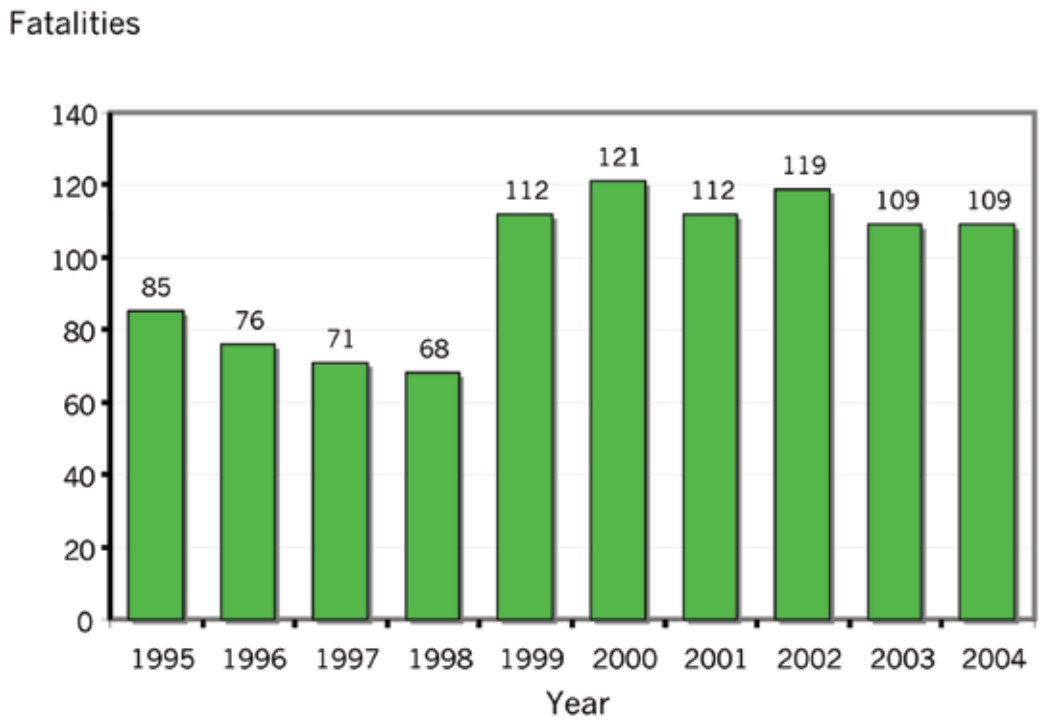
Strategies

California intends to employ the following strategies to reduce work zone fatalities. The SHSP Implementation Plan will present specific action items to implement these strategies:

1. Enhance safe driving through work zones with education and enforcement.
2. Improve traffic control in work zones.
3. Reduce worker exposure and improve worker visibility.
4. Apply advanced technology to enhance work zone area.
5. Improve data collection and analysis.

[60] Fatality Analysis Reporting System (FARS) - www-fars.nhtsa.dot.gov/.
[61] Census of Fatal Occupational Injuries (CFOI) - www.bls.gov/news.release/cfoi.nr0.htm.
[62] Fatality Analysis Reporting System (FARS) - www-fars.nhtsa.dot.gov/.

Figure 17 - Fatalities from crashes in construction or maintenance zones, California, 1995-2004



Implementation Issues

Key issues connected with the implementation of action items to reduce work zone fatalities include:

1. Limited availability of skilled work zone safety resources.
2. During full road closures, work often runs 24 hours a day which can impact near-by residences – leading to opposition to full road closures.
3. Proposed increased highway funding will lead to more roadway work zones and thus more opportunities for work zone collisions.
4. Increased project costs associated with the implementation of safety strategies.

Challenge 15: Improve Post Crash Survivability

Goal: *By 2010, reduce crash-related fatalities in California at least 5 percent from their 2004 level through focused improvements in Emergency Medical Services (EMS) system communications, response and safety education.*[63]

Background

No amount of preventive action will completely eliminate crashes and injuries from California's roadways. As a consequence, California needs a well-prepared and highly responsive emergency medical response system. After traumatic injuries are sustained, the following minutes, or the so-called "golden hour" of survival, are critical with regard to saving the victim's life and minimizing the effects of injuries. Both the timeliness and level of expertise of the care provided are crucial factors in the equation. Emergency medical response scenarios are markedly different in urban, rural, and remote settings and require strategies and protocols tailored to meet the realities of each. In 2004 data showed 302,176 persons in California required EMS as a result of a serious motor vehicle collision.[64] The need for effective EMS capability is clear.

Strategies

California intends to employ the following strategies to improve post-crash survivability. The SHSP Implementation Plan will present specific action items to implement these strategies:

1. Improve technology for locating crash sites and for improving EMS access routes and response times.
2. Ensure interoperability of communications systems between all responders to crash sites.
3. Improve patient transportation and destination from crash location.
4. Increase availability of appropriate-level trauma centers, with emphasis on rural areas.
5. Improve access to trauma-related training courses for Emergency Medical Technicians and paramedics.
6. Encourage Emergency Medical Dispatch programs to train dispatchers to assist victims awaiting arrival of EMS.
7. Improve data access to meet the needs of EMS.
8. Increase public access to first aid, cardio pulmonary resuscitation CPR, and automated external defibrillation training.

Implementation Issues

Key issues connected with the implementation of action items to improve post-crash survivability include:

1. Inadequate mechanisms for sharing prehospital data, as well as information on innovative programs.
2. Limited access to training programs, and inadequate recruitment and retention of EMS staff, especially in rural areas.
3. Lack of radio infrastructure to support communication needs for rural solutions.
4. Increases in special populations, including non-English speaking groups, that may be harder for the EMS system to serve without special training.
5. Shortages of trauma centers, especially in rural areas.

[63] Adjusted for increases in the annual vehicle miles traveled from 2004 to 2010.
[64] Statewide Integrated Traffic Records System (SWITRS) - www.chp.ca.gov/switrs/.

Challenge 16: Improve Safety Data Collection, Access, and Analysis

Goal: *Improve the quality, timeliness, accessibility, and usefulness of traffic safety data.*

Background

Good information properly used is one of the underpinnings of a sound traffic safety program. The who, what, when, where, why, and how of crashes need to be recorded in a uniform and consistent format statewide. The technology exists to gather, integrate, and utilize information on a wide variety of important traffic safety issues. Quality data systems are vital tools that allow traffic safety professionals and others to monitor crash injuries and deaths, identify emerging problems, and evaluate safety interventions.

Collision data determined how the SHSP team selected the previous 15 Challenge Areas and data will continue to drive implementation decissions. In short, data drive the SHSP. In order for data to effectively facilitate the SHSP decision-making process, data must be timely, accurate, accessible, and understandable. Unfortunately, as indicated in some of the other Challenge Areas, this is not always the case.

Strategies

California intends to employ the following strategies to improve safety data collection, access, and analysis. The SHSP Implementation Plan will present specific action items to implement these strategies:

1. Improve the quality, completeness, and uniformity of data collection practices.
2. Improve data sharing among State, federal, and local agencies and stakeholders.
3. Improve accessibility to real-time information by California roadway users.
4. Enhance accessibility of traffic safety data.
5. Improve data collection and analysis regarding trip characteristics of all roadway users, level of service, injuries, and fatalities on California road ways.
6. Coordinate traffic safety information system improvements through the State Traffic Records Coordinating Committee.

Implementation Issues

Key issues connected with the implementation of action items to improve data collection and access include:

1. Data quality issues affect the analysis of safety issues - data are only as accurate as the 'on-scene' personnel who initially collect and code the data.
2. Data gaps - California should identify if or where data are missing that affects project development and implementation.
3. Sometimes the most useful data are also the most difficult and costly to obtain.

Next Steps with the SHSP

Once the SHSP is approved the next steps will include development of the Implementation Plan, the challenge area Action Plans, and proposed methodologies for evaluating the Action Plans.

The 16 Challenges just discussed form the basis of the SHSP. The development and approval of the SHSP accomplish the following:

- Establishes common statewide goals.
- Strengthens existing safety partnerships and helps create new ones.
- Creates a framework for sharing data, know-how, and resources.
- Leverages existing resources towards common goals and objectives.
- Meets federal requirements under SAFETEA-LU.

Success Requires a Champion

Each Challenge Area needs at least one Champion. The Champion(s) will be responsible for achieving their specific Challenge Area's safety goal. In order to be successful the Champion(s) should be people who influence decisions and priorities for California's roadways. The Champion(s) will work with the SHSP team to establish Challenge Area implementation teams, set priorities, secure funding for key strategies, and determine how to best track progress.

Success Requires a Detailed Implementation Plan

Once the SHSP is adopted, the stakeholders will develop a detailed Implementation Plan. When completed, the Implementation Plan will:

- Establish 16 Challenge Area Teams and a leader for each team.
- Evaluate annual collision data.
- Evaluate and validate proposed strategies.
- Prioritize Challenge Area strategies and action items.
- Develop Challenge Area action plans.
- Approve and consolidate the highest priority Challenge Area strategies and action steps.
- Determine project selection criteria.
- Recommend how to fund and finance the projects that will flow from the SHSP.
- Establish statewide safety project evaluation criteria.
- Establish a process for tracking progress against the SHSP goals.

Success Requires a Multi-Disciplinary Approach

The strategies set out in the SHSP illustrate an important point. There is no single approach to improving safety. California cannot meet the SHSP goals by a single-minded focus on engineering or law enforcement solutions. Achieving the safety goals requires the use of tools from many disciplines. The strategies call on the skills of planners, engineers, law enforcement organizations, injury prevention professionals, educators, community groups, and emergency medical services in order to attack the causes of roadway safety problems. Collectively known as the 4-E's (engineering, education, enforcement, and emergency medical services), all related disciplines must be brought to bear to carry out the SHSP.

Success Requires Keeping Score

An essential aspect of implementing a strategy is tracking progress towards stated goals. As the famous management expert Peter Drucker said, "A goal that cannot be measured is just a slogan." For the SHSP to be more than a collection of slogans, California needs to monitor progress towards the goals in the plan. Timely, accurate data must be used to determine if strategies and related implementation plans are on track. Two broad types of information must be monitored:

- Outcome measures (fatalities, injuries, and collisions) must be tracked against the various Challenge Area goals set out in the SHSP.
- Process measures (enforcement actions,

roadway improvements made, education campaigns, etc.) must be used to monitor the execution of implementation actions designed to carry out each strategy.

Tracking a combination of data will help decision makers measure the effectiveness of the SHSP implementation. It will help in securing adequate funding and in making adjustments in the Implementation Plan if a goal is not met.

Success Requires Collaboration

Success in reaching the SHSP goals for reducing fatalities and collisions will require the actions of many stakeholders. State and federal transportation agencies must be joined by city and county public works officials, State legislators, law enforcement, educators, the transportation industry, groups representing user communities (motorists, bicyclists, motorcyclists, pedestrians), as well as parents, community groups, and safety advocates. Only if these groups come together around the challenges in the SHSP will California have an opportunity to meet its safety goals. A collaborative effort will make California's roadways safer.

Appendix A – California SHSP Participants

Alameda County	Department of Alcohol and Drug Programs (ADP)
America Walks	Department of Alcoholic Beverage Control (ABC)
American Association of Retired Persons (AARP)	Department of Health Services (DHS)
American Traffic Safety Services Association (ATSSA)	Department of Motor Vehicles (DMV)
Automobile Club of Southern California	Department of Transportation (Caltrans)
Butte County	Emergency Medical Services Authority (EMSA)
C&W Construction Specialties	Federal Highway Administration (FHWA)
California Association of Coordinated Transportation (CalACT)	Federal Motor Carrier Safety Administration (FMCSA)
California Bicycle Advisory Committee (CBAC)	Federal Railroad Administration (FRA)
California Bicycle Coalition	Foster City
California Department of Education (DOE)	Humboldt County
California Highway Patrol (CHP)	Institute of Transportation Studies at UC Berkeley
California League of Cities	Merced County
California Pedestrian Advisory Committee (CalPed)	Metropolitan Transportation Commission (MTC)
California Police Chiefs Association (Folsom Police Department)	Mothers Against Drunk Driving (MADD)
California Public Utilities Commission	Motorcycle Safety Foundation
California State Association of Counties (CSAC)	National Highway Traffic Safety Administration (NHTSA)
California State Automobile Association (CSAA)	National Indian Justice Center
California State Sheriff's Association (CSSA)	Office of Traffic Safety (OTS)
California State University, Sacramento (CSUS)	Pasadena Fire Department
California Transit Association	Plumas County
California Transportation Commission (CTC)	Private Citizen
California Trucking Association (CTA)	Reservation Transportation Authority (RTA)
California Walks	Riverside County
Chrisp Company	Road-Tech Safety Services, Inc.
City of Benicia	Sacramento County DOT
City of Citrus Heights	Sacramento County Sheriff Department
City of Fairfield	Safe Kids Worldwide
City of Folsom Police Dept.	Safe Routes to School National Partnership
City of Los Angeles	San Joaquin County
City of Petaluma	San Luis Obispo County
City of San Francisco (Dept. of Parking and Traffic)	Santa Barbara County Association of Governments
City of Santa Rosa	Senate Transportation and Housing Committee
City of South Gate	Southern California Association of Governments (SBCAG)
City of Stockton	Southern California Regional Rail Authority / METROLINK
City of Vacaville	Traffic Safety Center (TSC), U.C. Berkeley
City of Whittier	Transportation Authority Marin
Contra Costa County	UC Davis Medical Center
County Engineers Association of California (CEAC)	UC Irvine School of Medicine
County Transportation Committee	WALKSacramento

Appendix B – SHSP Acronym List

- **4 E's:** *Education, Engineering, Enforcement, and EMS*
- **AASHTO:** *American Association of State Highway and Transportation Officials*
- **ADA:** *Americans with Disabilities Act*
- **AED:** *Automatic External Defibrillator*
- **Caltrans:** *The California Department of Transportation*
- **CDA:** *California Department of Aging*
- **CEMSIS:** *California EMS Information System*
- **CFOI:** *Census of Fatal Occupational Injuries*
- **CHP:** *California Highway Patrol*
- **CPR:** *Cardio-Pulmonary Resuscitation*
- **DHS:** *California Department of Health Services*
- **DMV:** *California Department of Motor Vehicles*
- **DUI:** *Driving under the influence*
- **EMS:** *Emergency Medical Services*
- **EPIC:** *Epidemiology and Prevention for Injury Control (a branch of the California DHS)*
- **FARS:** *Fatality Analysis Reporting System, the foundation for most of the national data reported in the California SHSP*
- **FHWA:** *Federal Highway Administration*
- **FMCSA:** *Federal Motor Carrier Safety Administration*
- **GDL:** *Graduated Driver's License*
- **GDP:** *Gross Domestic Product*
- **GIS:** *Geographic Information Systems*
- **HPMS:** *Highway Performance Monitoring System*
- **HSIP:** *Highway Safety Improvement Program*
- **MADD:** *Mothers Against Drunk Driving*
- **MUTCD:** *Manual on Uniform Traffic Control Devices*
- **NCHRP:** *National Cooperative Highway Research Program*
- **NHTSA:** *National Highway Traffic Safety Administration*
- **OATS:** *California Task Force on Older Adults and Traffic Safety*
- **PCF:** *Primary Collision Factors, used to code collisions types in the CHP SWITRS data base (e.g. unsafe speed, right-of-way auto (improperly entering the roadway), improper turn, stop sign/signal violations, and driving under the influence)*
- **PDO:** *Property Damage Only*
- **PHTLS:** *Pre Hospital Trauma Life Support*
- **SAFETEA-LU:** *Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users*
- **SHSP:** *Strategic Highway Safety Plan*
- **SWITRS:** *Statewide Integrated Traffic Records System, the foundation for most of the California data in the California SHSP*
- **VMT:** *Vehicle Miles Traveled, can be used to calculate the traffic fatality rate per 100 million vehicle miles traveled.*

Appendix C – Virtual Appendices

SHSP Summit Data

In order to develop the 16 Challenge Areas and their high level strategies, the SHSP team held two SHSP Summits: one in Sacramento on March 7, 2006 and the other in Ontario on March 9, 2006. Each Summit offered ten workshops to gather California-specific SHSP strategies. The information gathered from the workshops is available online at: www.dot.ca.gov/SHSP/VirtualAppendices.htm.

Online Data Sources

SWITRS – Maintained by the CHP, the Statewide Integrated Traffic Records System (SWITRS) database contains statewide collision information from motor vehicle traffic collision reports received from local police and sheriff jurisdictions and from California Highway Patrol. SWITRS extracts are available online at: http://www.chp.ca.gov/switrs/.

FARS – Maintained by the NHTSA, the Fatality Analysis Reporting System (FARS) online database contains national and state collision information. FARS extracts are available online at: http://www-fars.nhtsa.dot.gov.

The AASHTO SHSP – The national Strategic Highway Safety Plan (SHSP) was created by AASHTO and the NCHRP. The national plan consists of 22 Emphasis Areas and may be viewed online at: http://safety.transportation.org.

Appendix D – SWITRS Queries for SHSP Challenge Area Data

SWITRS data were used to produce the summary tables and fatality trend graphics for the SHSP report. The SWITRS database is comprised of three data tables – Collision, Party, and Victim. The tables have a hierarchical structure. The Collision table contains one record per collision. The Party table contains one record per party (driver, pedestrian, etc.); one or more parties are associated (by a numeric identifier) with each record in the Collision table. The Victim table contains one record per person; one or more victims are associated (by two numeric identifiers) with each record in the Party table.

Frequencies were queried from the SWITRS files by counting fatalities in the Victim table and applying the following data restrictions.

E = SHSP Challenge Area	Fatalities queried	File	Variable
1: Reduce Impaired Driving Related Fatalities	Victims in crash	Party	Party sobriety = B ("HBD" - under influence") or G ("HBG" - not under influence") or H ("HBD" - impairment unk") Party drug physical = G ("under drug influence")
2: Reduce the Occurrence and Consequence of Leaving the Roadway and Head on Collisions	Victims in vehicle	Party	Movement preceding accident = "C" (vehicle left roadway) or Movement preceding collision = "H" (crossed into opposing lane)
3: Ensure Drivers are Licensed and Competent	N/A - TARS	N/A - ARS	N/A - DATA OBTAINED FROM TARS
4: Increase Use of Safety Belts and Child Safety Seats	Victims in crash	Victim	Safety equipment = one of following: "N" (None in vehicle) "LP" (Lap belt not used) "S" (Shoulder harness not used) "HP" (Lap/shoulder harness not used) "R" (Passive restraint not used) "N" (Child restraint in vehicle not used) "IP" (Child restraint in vehicle, improper use) "UP" (No child restraint in vehicle)
5: Improve Driver Decisions about Rights of Way and Turning	Victims in crash	Collision	Primary collision violation category – one of the following: 06 (improper passing) 07 (unsafe lane change) 08 (improper turning) 22 (other improper driving)
6: Reduce Young Driver Fatalities	Victims in crash	Party Party	Party type = 1 (driver) Party age = 15 - 22
7: Improve Intersection and Roadway Safety for Bicycles and Peds	Victims in crash	Collision	Intersection = "Y" Vehicle involved with = "N" (Train)
8: Make Walking and Street Crossing Safer	Pedestrians	Victim	Victim type = 3 (pedestrian)
9: Improve Safety for Older Roadway Users	Victims in crash	Party Party	Party type = 1 (driver) Party age = 65 - 997
10: Reduce Speeding and Aggressive Driving	Victims in crash	Collision	Primary collision violation category = 03 ("unsafe speed") or 04 (following too closely")
11: Improve Commercial Vehicle Safety	Victims in crash	Collision Party	Hit and collision = "Y" (Yes) OR Vehicle type = "H" or "I"
12: Improve Motorcycle Safety	Victims in (all) vehicle	Party	Vehicle type = "M" (motorcycle) or "O" (moped)
13: Improve Bicycling Safety	Bicyclists	Victim Party Victim	Victim type = 4 (bicyclist) OR Party type = 4 (bicycle) AND Victim type = 2 (passenger) or 4(bicyclist)
14: Enhance Work Zone Safety	Victims in crash	Collision	Road condition 1 = "D" (construction or repair zone) OR Road condition 2 = "D" (construction or repair zone)
15: Improve First Responder Survivability	NA	NA	NA
16: Improve Safety Data	NA	NA	NA

Appendix C & D

SHSP Contact Information:

California Department of Transportation
Division of Traffic Operations, MS 36
1120 N Street
Sacramento, CA 95814