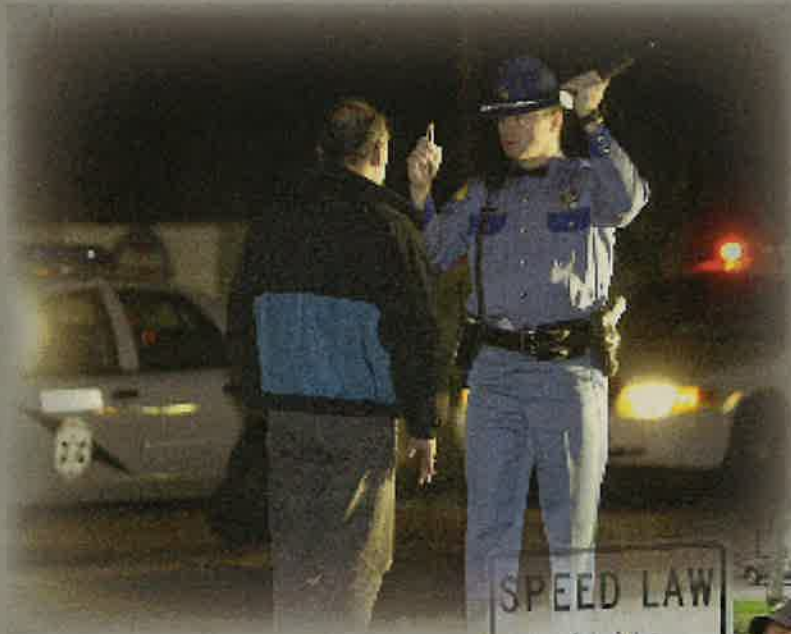




TARGET ZERO



Zero Deaths • Zero Disabling Injuries • 2030

Purpose

The Strategic Highway Safety Plan: Target Zero (SHSP) has been developed to identify Washington State's traffic safety needs and to guide investment decisions in order to achieve significant reductions in traffic fatalities and disabling injuries. In developing this plan, Washington State seeks to build traffic safety partnerships throughout the state in order to align and leverage our resources to address Washington's traffic safety challenges.

A state-developed SHSP is a new federal requirement of the Safe, Accountable, Flexible, Efficient, Transportation Equity Act – A Legacy for Users (SAFETEA-LU), 23 USC 148. This document meets those federal requirements for Washington State.

Closely following the successful model adopted in the AASHTO Strategic Highway Safety Plan, Washington State's SHSP is strongly data driven. The AASHTO SHSP model was developed in cooperation with the Federal Highway Administration (FHWA), The National Highway Traffic Safety Administration (NHTSA), and the Transportation Research Board (TRB). At the core of Washington State's SHSP are traffic safety emphasis areas and proven strategies/countermeasures that target problems on Washington roadways. These emphasis areas and proven strategies are organized under the following five basic categories:

- Driver and Occupant Behaviors,
- Other Special Users,
- Roadways,
- Emergency Medical Services, and
- Traffic Information Systems.

The SHSP provides a comprehensive framework of specific goals, objectives, and strategies for reducing traffic fatalities and disabling injuries.

Our Partners In Traffic Safety

The following organizations were consulted in development of Washington State's Strategic Highway Safety Plan (SHSP) and are critical to achieving the SHSP's goals:

Washington State Agencies

Governor's Transportation Policy Advisor
Governor's Centennial Accord (Governor/Tribes)
Governor's Office of Indian Affairs
Governor's Transportation Policy Office
Governor's GMAP
Department of Transportation
Traffic Safety Commission
Washington State Patrol
Department of Health
Department of Licensing
Department of Licensing Motorcycle Task Force
Department of Social and Human Services
State House and Senate
Washington Transportation Commission
Washington Utilities & Transportation Commission (Rail/Operation Lifesaver)
County Road Administration Board
Administrative Office of the Courts
Office of Superintendent of Public Instruction
Freight Mobility Strategic Investment Board
Transportation Improvement Board
Department of Labor and Industries
Harborview Injury Prevention and Research Center

Community, Local, and Regional Agencies and Organizations

Washington Association of Sheriffs and Police Chiefs
Community Traffic Safety Task Forces
Puget Sound Regional Council
County Road Administration Board
Metropolitan Planning Organizations
Regional Transportation Planning Organizations
The Association of Washington Cities
The Washington Association of Counties
The Washington Association of County Engineers
Sound Transit

Tribal Nations

Northwest Association of Tribal Enforcement Officers
Tribal Transportation Planning Organization

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Ch. 1 / Introduction

1.1 Our Mission

Washington State's Strategic Highway Safety Plan: Target Zero identifies Washington State's traffic safety needs and guides investment decisions to achieve significant reductions in traffic fatalities and disabling injuries on all public roads.

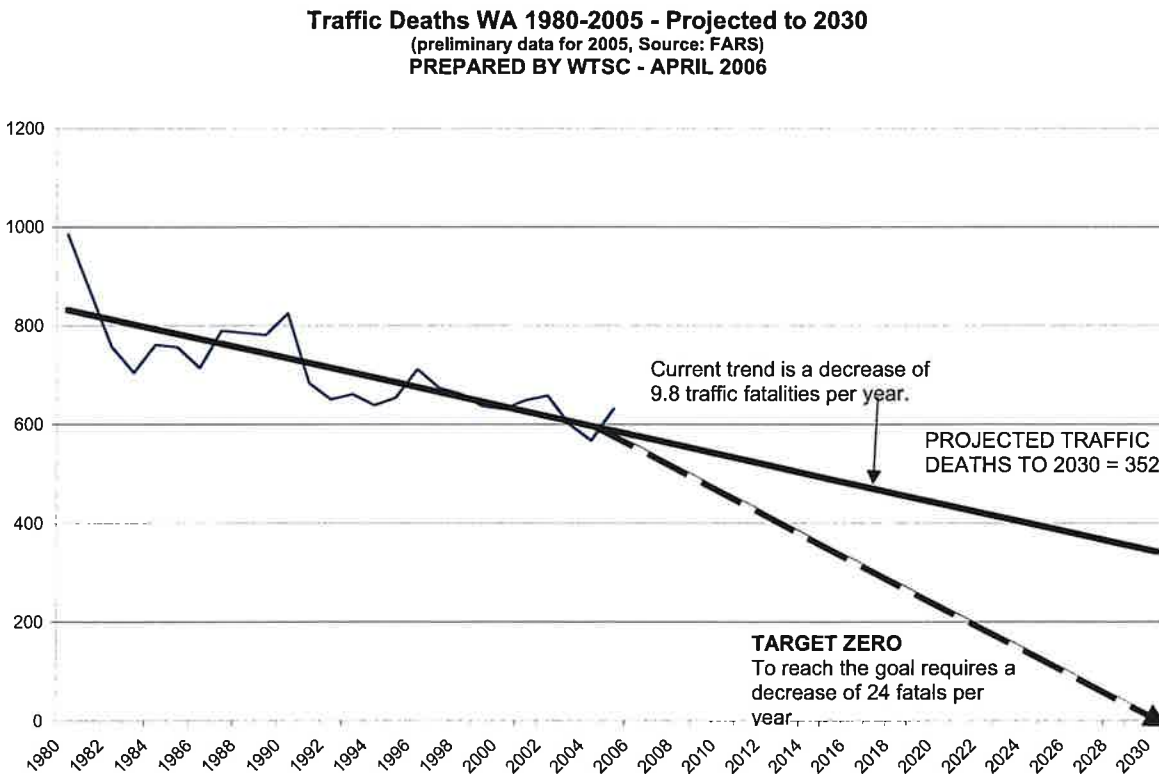
1.2 Our Vision

By the year 2030, Washington State will achieve zero traffic deaths and zero disabling injuries.

1.3 Our Goal

Washington State seeks to eliminate their traffic deaths and disabling injuries. In order for Washington State to achieve Target Zero, the State must experience 24 fewer fatalities each year for the next 25 years. See Figure 1-1, "Achieving the Target Zero Vision," below.

Figure 1-1: Achieving the Target Zero Vision



1.4 Background

According to the National Highway Traffic Safety Administration, 43,443 people died in US motor vehicle crashes in 2005. Nationwide, motor vehicle traffic crashes are the eighth leading cause of death among Americans of all ages and the number one cause of death for every age from three through 33¹. In Washington State, traffic crashes kill more people age one to 44 than disease or other injuries.

Washington State is a leader in traffic safety and our State's roadway fatalities have been dropping; from 712 in 1996 to 647 in 2005. Our State has made remarkable progress toward the Target Zero vision. Our State's primary seat belt law combined with statewide high-visibility seat belt enforcement and media campaigns have driven our seat belt use rate to a remarkable 95 percent, thereby driving down the vehicle occupant death rate to a record low in 2004. Tougher impaired driving laws, high-visibility impaired driving enforcement, and targeted media campaigns have helped drop the percentage of drinking driver fatalities to 41 percent in 2005 (from 51 percent in 1983). Initial evaluations of the intermediate driver license law show a 41 percent reduction in the number of fatal and disabling injury collisions for 16 and 17 year olds licensed under the new provisions.

We are proud of our improvements, but we believe we can do better. We cannot prevent all traffic crashes, but most deaths and disabling injuries are preventable.

A few of the methods we can use to impact those behaviors that lead to traffic deaths and disabling injuries include eliminating impaired driving, slowing down speeding drivers, increasing seat belt use, curbing aggressive driving, supporting intermediate driver licensing, keeping drivers alert, focusing on special populations with high death rates, and ensuring that all drivers are fully licensed and medically competent.

We can improve the roadway to better accommodate pedestrians, bicyclists, motorcyclists, and commercial motor vehicles keeping their needs in mind while designing and creating such facilities, and using education and design to improve motorist awareness of the needs of these groups.

We can improve roadways to prevent vehicles from leaving the road and to minimize the consequences of vehicles striking objects or overturning when they do leave the roadway. We can improve the design and operation of intersections and reduce the possibility of head-on crashes. We can design safer intersections.

We can enhance emergency medical capabilities to increase survivability when a collision does occur. We can improve our traffic data collection systems to enhance our ability to

¹ National Highway Safety Administration, Traffic Safety Facts, Research Note, January 2005, [Motor Vehicle Traffic Crashes As Leading Cause of Death in United States, 2002](http://www-nrd.nhtsa.dot.gov/pdf/nrd-30/NCSA/RNotes/2005/809831.pdf). (<http://www-nrd.nhtsa.dot.gov/pdf/nrd-30/NCSA/RNotes/2005/809831.pdf>)

Ch 2 / Washington's Traffic Safety Trends

WSDOT data shows that from 2001 through 2005 an average of 126,000 reported collisions occurred each year on Washington's roadways. In those collisions, an average of 3,050 people receive disabling injuries, and an average of 628 people die each year. On average, from 2001 through 2005, 38 percent of traffic deaths occurred in speed-related crashes and 47 percent of the traffic deaths occurred in impairment related crashes. In 2005, the total economic cost of motor vehicle collisions in Washington was more than \$5.6 billion according to WSDOT. See Figure 2-2, "Washington State Traffic Collisions," on page 7 for more information.

Fatal traffic collisions often involve impairment, speed, or non-seat belt use. The diagram below shows how, of the 2,429 motor vehicle deaths that occurred from 2000 to 2004, 1,880 deaths (77 percent) involved one or more factors of impairment, speed, and non-seat belt use. Over 700 of these motor vehicle deaths involved two of these factors, and nearly 400 involved all three. If Washington State could significantly reduce impaired driving, control speed, and keep everyone buckled up, we could go a long way toward the Target Zero goal. See Figure 2.1, "The Role of Impairment, Speed, and No Seat Belt in Traffic Fatalities."

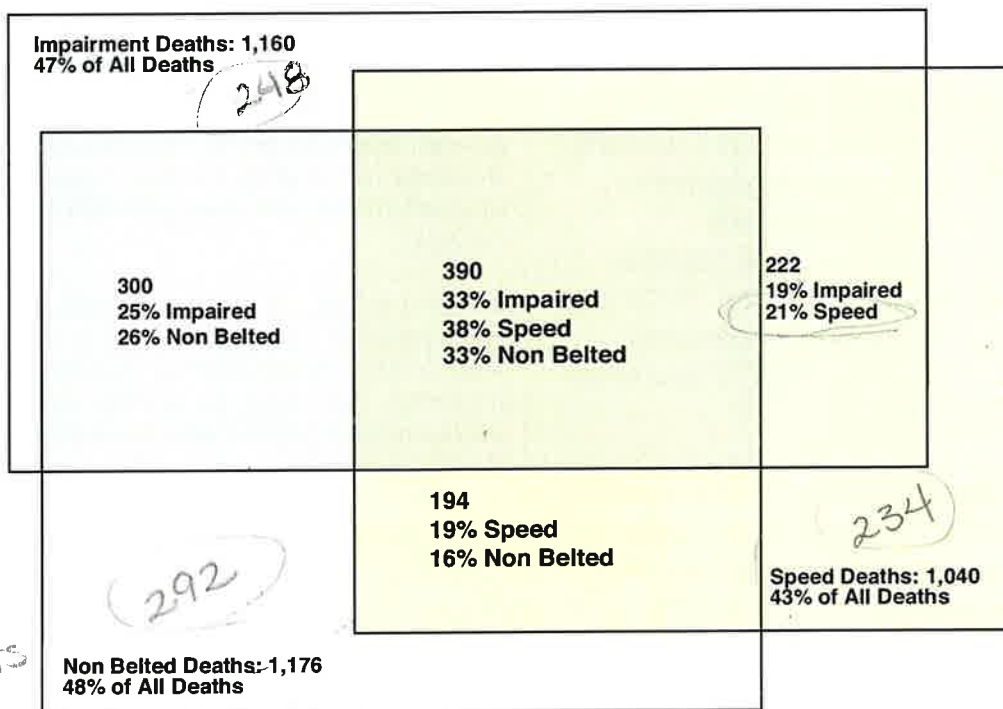
Figure 2.1, The Role of Impairment, Speed, and No Seat Belt in Traffic Fatalities.

We analyzed 2,429 traffic fatalities that occurred from 2000-2004.
 We found that 77 percent involved impairment, speed, and/or non-belt use.
 This accounted for 1880 deaths.

Vehicle Occ

veh occs = 2401

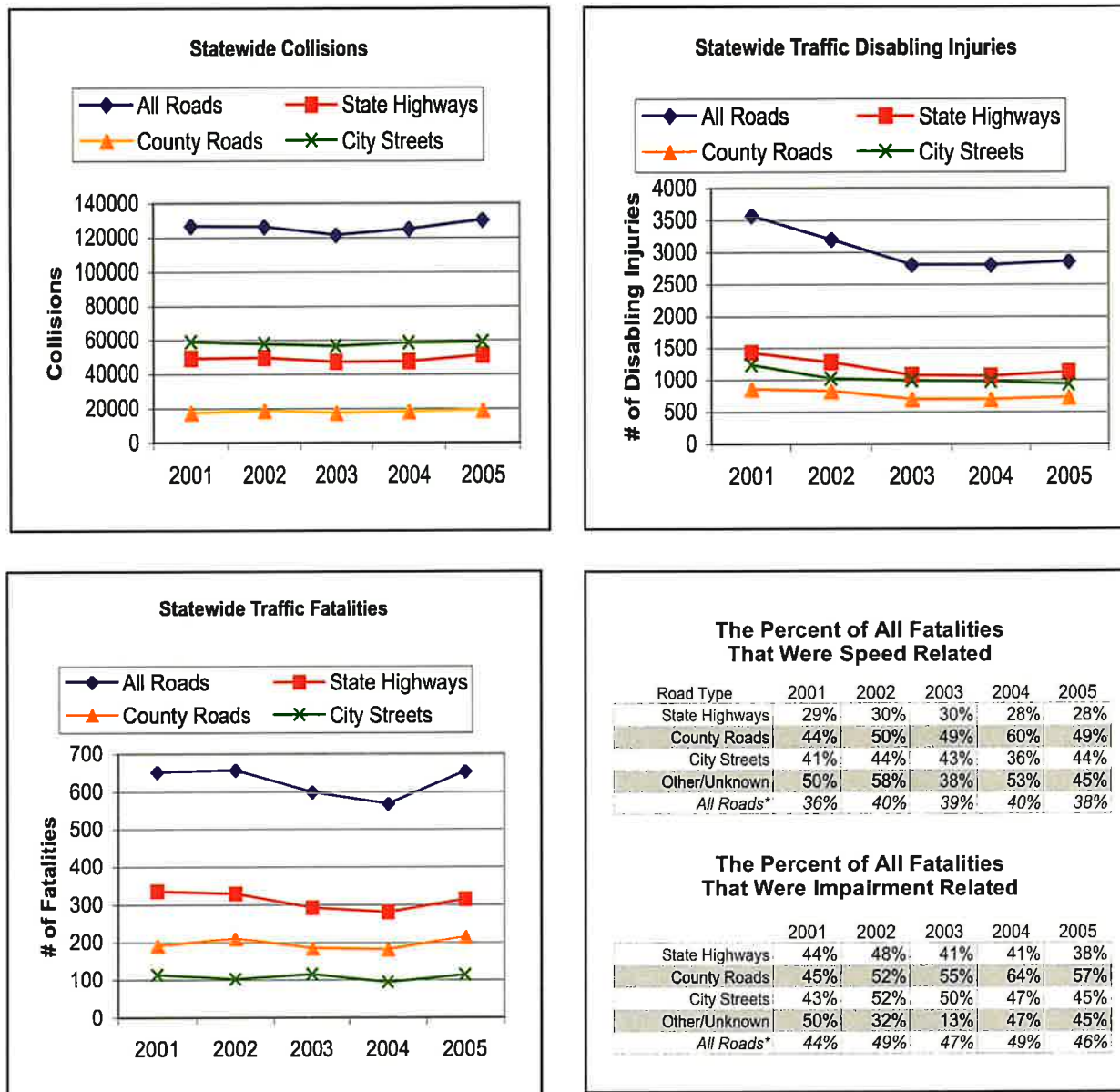
1880



*no factors
549
22.6%*

*or was this limited to vehicle occupants?
did not belted deaths only include
vehicle occs?*

Figure 2-2
Washington State Traffic Collisions, 2001–2005



Charts data source: WSDOT. Table data source: FARS. *There was 1 fatality on a frontage road in 2003.

Impairment in drivers, pedestrians, or cyclists; defined as a collision where at least one driver or non-occupant (pedestrian or cyclist) was coded with any of the following: BAC was .08 or above; presence of any drug in one of the three drug test results with codes 100 - 995. Drug codes 000-995 include: Narcotic drugs, Depressants, Stimulants, Hallucinogens, Cannabinoids, Phencyclidine (PCP) group, Anabolic Steroids, and Inhalant drugs.

Speeding was defined as Driving Too Fast for Conditions or in Driving in Excess of Posted Maximum for at least one driver involved in the collision.

Ch. 3 / Target Zero Plan Process

3.1 Development Process

Washington State is uniquely positioned to write a comprehensive, statewide Strategic Highway Safety Plan to better coordinate safety programs, align goals and objectives, and leverage resources because we seek out and value partnerships. In fact, the Washington Traffic Safety Commission was structured by law to provide a mix of leaders who could collaborate to bring about the most efficient and effective management of traffic safety resources. The Commission consists of the Governor (who serves as Chair), and the executives of the following State agencies: the Office of Superintendent of Public Instruction, Department of Licensing, Department of Transportation, Washington State Patrol, Department of Health, and Department of Social and Health Services. In addition, the Governor appoints representatives from the Association of Washington Cities, the Washington Association of Counties, and the judiciary.

In 2000, Washington State wrote “Target Zero: A Strategic Plan for Highway Safety.” The Target Zero Steering Committee², in cooperation with state, local, and private agencies focused on reducing traffic-related fatalities and disabling injuries in Washington State. They designed a plan to support the committee’s 30-year vision to achieve zero traffic deaths and disabling injuries.

In 2005, a state-developed Strategic Highway Safety Plan became a federal requirement as part of SAFETEA-LU, 23 U.S.C. §148. Washington State was well prepared to meet the challenge having already developed the original Target Zero Plan.

The Washington Traffic Safety Commission (WTSC) and the Washington State Department of Transportation (WSDOT) took the lead in re-visiting the Target Zero Initiative. They identified the WTSC Deputy Director as the initiative’s champion and enthusiastically began the task of reviewing the Target Zero document and searching literature regarding current best practices for reducing traffic collisions and fatalities. WTSC and WSDOT were familiar with what had already been done and the results of existing planning processes and stakeholder meetings in the State. They established an initial working group that included WTSC, WSDOT, Department of Health (DOH), Washington State Patrol (WSP), and Department of Licensing (DOL).

The team spent from January to March 2006 analyzing traffic data; considering the results of previous traffic safety summits such as the 2005 Annual Impaired Driving Conference, and the WSDOT 2004 Safety Conscious Workshop; and reviewing existing traffic safety planning documents. An incomplete draft of the SHSP was developed. In April, the lead state agencies reviewed the draft and provided critical details. Between June and mid-July,

² See Appendix B, “2000 Target Zero” for a complete list of steering and sub committee member agencies and organizations.

future direction in traffic records. As a result of these efforts, the TRC has created the Washington Traffic Records Strategic Plan. The goals, objectives, and strategies of that plan are available in Chapter 9, Traffic Information Systems, on page 95.

Data Note: The Washington State traffic data contained in this document comes primarily from Washington State Department of Transportation (WSDOT) and the Fatality Analysis Reporting System (FARS). Slight inconsistencies in the data result from the way the two data sources currently code their data. While every effort has been made to provide the most timely data available at the time this document was written, it should be noted that 2005 FARS data is preliminary wherever it appears and will not be finalized until December 2006.

3.3 Scope

Traffic fatalities are declining despite the fact that Washingtonians are driving more vehicles more miles. The intersection between the number of fatalities and the number of vehicle miles driven is called the traffic fatality rate. Over the years, the traffic fatality rate has dropped in Washington State from 4.91 deaths per 100 million vehicle miles traveled (VMT) in 1966 to 1.17 deaths per 100 million VMT in 2005. This is well below the National Highway Traffic Safety Administration's (NHTSA) 2005 national goal of 1.38 traffic fatalities per 100 million VMT.

The reasons that traffic fatality rates are declining are varied. Improved vehicle safety standards and advanced engineering, such as seat belts, air bags, anti-lock brakes, expanded crush zones, and stability steering systems have helped save lives.

Future improvements in vehicle manufacture, crash avoidance, and other intelligent vehicle initiatives hold much promise for further reductions in death and disabling injury rates. Even medical breakthroughs such as advances in controlling addiction and alcoholism; or improvements in eye sight, hearing, or reflexes of the aging, could also have a positive effect on the State's fatality rate.

It is also true that many successful traffic safety programs, tougher legislation, improved roadways, faster emergency responses, and stronger enforcement have contributed greatly to the decline in traffic deaths. It is in these areas that Washington State's traffic safety partners have worked together to bring about the changes that contributed to this State's 2004 traffic fatality rate of 1.01 per 100 million VMT, our lowest traffic fatality rate on record.

It is in this arena that this plan provides a comprehensive inventory of proven, effective strategies to help stakeholders identify projects designed to move our State from 656 deaths in 2005 to zero by the year 2030.

Ch. 4 / Priority Objectives and Strategies

In the past, the WTSC, WSDOT, and our partners have focused on every facet of traffic safety, trying to meet all traffic safety needs, spreading our resources over a multitude of emphasis areas and projects. The analytic nature of the SHSP made it clear that a change in tactics and strategic planning was required to more accurately prioritize the traffic safety emphasis areas and more effectively apply resources to achieve the Target Zero vision.

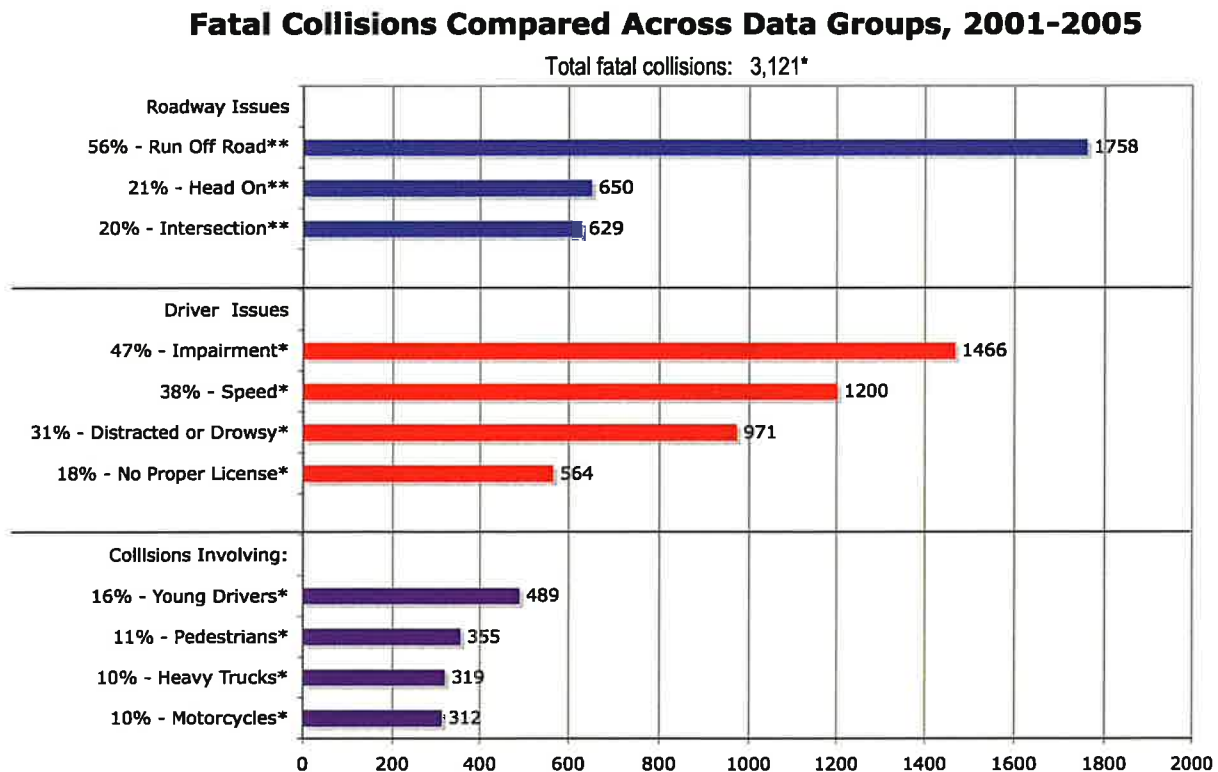
“If we can meaningfully reduce impaired driving and speed, we could cut the death rates across all program areas.”

**--Douglas B. MacDonald
Secretary, WSDOT**

The Target Zero workgroup conducted an exhaustive analysis of eleven years of crash and trend data to determine what areas of current work needed the most attention or delivered the best results in reducing deaths and disabling injuries.

Figure 4.1, “Fatal Collisions Compared Across Data Groups,” below shows the number of traffic deaths between 2001 and 2005 associated with various statistical groups of traffic safety data. Each category compares the number of fatal collisions associated with that category to the total number of fatal collisions for that five year period. A single collision may be associated with more than one category.

Figure 4.1



source: *FARS, **WSDOT

4.2 Priority Two: Occupant Protection, Run-Off-Road Collisions, Intersection Collisions, and Traffic Data Systems

Traffic data indicates that the second most important priorities are occupant protection, run-off-road collisions, intersection collisions, and improving our traffic data systems.

Occupant Protection: Seat belts save lives. From 2001 to 2005, 2,333 passenger vehicle occupants were killed in Washington traffic crashes. Forty-seven percent of them were unbelted and 52 percent of the unbelted drivers had been drinking. Since seat belts are 70 percent effective in saving lives, increasing seat belt use is very effective in reducing the highway death toll. Washington's 2006 seat belt use rate is one of the highest in the nation at 96 percent. Occupant protection remains a priority because we need to prevent the seat belt use rate from declining. Moreover, if that last four percent of motorists began to use restraints, we would see further reductions in traffic deaths and disabling injuries. For more information on unrestrained drivers and passengers, see section 5.3, "Unrestrained Drivers and Passengers" on page 33.

Run-Off-Road Crashes: From 2001 to 2005, run-off-road crashes accounted for 178,012 collisions, 6,492 disabling injuries, and 1,758 deaths, representing 56 percent of all traffic deaths during this time period and making strategies to keep vehicles on the roadway part of the second priority group for improving traffic safety. Speed was a factor in run-off-road crashes 57 percent of the time and impaired driving was a factor 54 percent of the time. More information on reducing deaths and disabling injuries due to run-off-road crashes is available in section 7.1 "Reducing Run-Off-Road Crashes" on page 75.

Intersection-Related Crashes: Intersection-related crashes are also part of the second priority group. Collision data show that they accounted for 332,504 collisions (47 percent of all collisions), 6,535 disabling injuries, and 737 deaths (20 percent of all deaths) between 2001 and 2005. Thirty-three percent of intersection-related fatalities are also impairment-related, and 25 percent are also speed-related. For more information, see section 7.2 "Reducing Crashes at Intersections" on page 79.

Traffic Data Systems: Reliable data provides the underpinnings of an effective campaign to reduce injuries and fatalities on the State's roadways. This data serves as the critical link in identifying problems, selecting appropriate countermeasures, and evaluating the performance of these programs. Fully implementing the Washington Traffic Records Strategic Plan remains a priority for the State. For more information, see Chapter 9, "Traffic Information Systems" on page 95.

occurring for motorcyclists over age 40. For more information, see section 6.3 “Motorcycle Safety” on page 64.

Commercial Motor Vehicle Safety: During 2001–2005, an average of 48 fatalities occurred in collisions involving commercial motor vehicles. Each year, about 21 percent of commercial motor vehicle fatalities involve speed and 32 percent involve impairment. WSP statistics show that in 2005, only 27 percent of all fatal collisions involving commercial vehicles were caused by the commercial motor vehicle. For more information, see section 6.4 “Commercial Motor Vehicle Safety” on page 69.

Head-On Crashes: Head-on crashes accounted for only two percent of all traffic collisions, and yet constituted 21 percent of all fatalities during 2001–2005, killing an average of 130 people each year during 2001–2005. Speed was a factor in about 22 percent of the deaths and impairment in 50 percent of the deaths from 2001–2005. For more information, see section 7.3 “Reducing Head-On Crashes” on page 84.

Emergency Medical Service and Trauma Care Systems: After a vehicle collision occurs the ability of Washington State’s emergency medical services and trauma care system to get the “right” patient to the “right” facility in the “right” amount of time can be the difference between an injury and a disabling injury or the difference between life and death. For more information, see Chapter 8 “Emergency Medical Service and Trauma Care Systems” on page 89.

4.4 Priority Four: Older Drivers, Aggressive Drivers, Bicycle Safety, Pupil School Bus Transportation, Safer Work Zones, Wildlife Collisions, Vehicle-Train Crashes, Integrated Interoperable Communications

While the traffic safety issues in the priority four area represent a smaller portion of traffic death toll, it is important to continue to address strategies directed in these areas and to keep data tabs on these issues to ensure that they continue to decline. Because of the data-driven nature of this Strategic Highway Traffic Safety Plan, these issues are not addressed in the emphasis areas that comprise the rest of this document. Many of these issues will benefit from the State placing the top emphasis on eliminating impaired driving and speed-related crashes.

Older Drivers: WTSC traffic data examined by age groups from 1993 to 2004 show the highest rate of fatalities for 15–20 years olds at 22.4 per 100,000 population; and 21-25 year olds have the second highest rate at 21.5 per 100,000 population. The fatality rate drops for ages 31–69 hovering between 11.5 and 10.6 per 100,000 population. However, the fatality rate 100,000 per population starts to rise again for people over age 70— 12.4 for 70-74 year olds, 17.1 for 75-79 year olds, and 21.1 for 80-84 year olds (which is just slightly lower than the 21-25 year olds). While the traffic fatality rate begins to rise for people over 70, the

Bicycle Safety: Safer bicycle travel remains an important goal for Washington State, even though data shows that vehicle-bicycle collisions have accounted for an average of 10 deaths per year over the past five years. Given an increasingly obese population in Washington, the importance of promoting and supporting physical activity, including the creation and maintenance of safe walking and biking environments, cannot be overstated. The State will continue to educate motorists and bicyclists on the rules of the road and to direct enforcement towards motorists and bicyclists who break the rules. The State will continue to support the adoption of policies to better accommodate bicyclists on all public roads, inventory existing bicycle infrastructure to identify deficiencies, and encourage local planners to consider non-motorized transit options.

Pupil School Bus Transportation: School bus travel remains the safest way to send children to school and Washington State will continue to ensure that 100 percent of school buses receive safety inspections and school bus drivers receive training in vehicle dynamics, precision driving skills, obstacle avoidance, and evasive maneuvers. From 1994 to present, since data has been collected on school bus passengers, no school bus passenger fatalities have occurred in school bus-related collisions.

Safer Work Zones: Between 2001 and 2005, an annual average of 1,800 collisions occurred in Washington work zones, accounting for an average of 39 disabling injuries and eight deaths each year. Washington State will continue to improve work zone operations and driver behavior in work zones through training, education, and enforcement. If the Federal Highway Administration (FHWA) requires workers on federal-aid highways to wear high-visibility safety apparel, this plan recommends the purchase of high-visibility safety apparel for law enforcement officers.

Wildlife Collisions: Wildlife collisions accounted for an average of 1,516 collisions per year between 2001-2005, causing an average of 15 disabling injuries and an average of two deaths per year. To address this, Washington State will integrate safety elements during project scoping and development designed to prevent wildlife-vehicle crashes.

Vehicle-Train Crashes: Vehicle-train crashes account for only an average 35 collisions a year, causing less than an average of two disabling injuries, and an average of less than two deaths per year in Washington State. SAFETEA-LU provides a “set aside” for rail grade crossing safety and requires the State to use the set-aside funds for installing protective devices at railway-highway crossings unless the State has met all of its needs for installing protective devices.

Integrated Interoperable Communications: The Washington State Interoperability Executive Committee (SIEC), is dedicated to finding innovative ways to help law enforcement officers, firefighters, emergency medical service providers, and other first responder professionals communicate effectively and efficiently during emergencies. SIEC, a permanent sub-committee of the Information Services Board (ISB), was formed by the Washington State Legislature in 2003 to ensure coordination of radio communications deemed essential for disaster preparedness, emergency management, and public safety. Such coordination will also result in more cost-effective use of the State's resources and will

Ch. 5 / Driver Behaviors

5.1 Impaired Drivers

Background

Impairment accounted for an average of 7,672 collisions each year during 2001-2005, which was six percent of all collisions. However, it accounted for 22 percent of all disabling injury collisions and 47 percent of all fatal collisions during these same years. See Figure 5.1-1 “Selected Washington Annual Traffic Fatality Numbers, 2001-2005” on page 22 and figure 5.1-2 “Impaired Driving Collisions” on page 23 for more information.

This State has been combating impaired driving for decades. We have vigorously pursued aggressive campaigns designed to change public perceptions of the acceptability of drinking and driving. The Legislature has enacted tough laws, from the voter-passed 1968 implied consent law to lowering the BAC (blood-alcohol concentration) threshold for impaired driving in 1999. We have also imposed ignition interlock requirements on offenders and designed tougher sanctions for repeat and high-BAC offenders. For drivers who refuse to take the breath test when asked, we have added administrative license suspension. Strict penalties are imposed for drivers under age 21 who drink and drive as part of our “zero tolerance” statute. We have instituted statewide, high-visibility enforcement campaigns. Despite these efforts, however, impaired driving remains a challenging issue, both for our State and for the nation.

Of the 647 traffic deaths in Washington State in 2005, 268 (or 41 percent) were drinking-driver-involved⁶. (Drinking-driver-involved collisions means at least one driver had been drinking alcohol regardless of the level of impairment or whether or not the drinking driver caused the crash.) This represents a substantial improvement from 1983, when 51 percent of all traffic deaths were drinking-driver-involved. Impaired drivers (those drivers—not pedestrians or cyclists—cited by the officer as impaired or drivers with a BAC greater than or equal to .08; or those drivers with a toxicology test that shows the presence of drugs) accounted for 38 percent of all traffic fatalities in 2005.

Hard core drinking drivers—defined as drinking drivers with prior DUI arrests or convictions, or offenders with a BAC of 0.15 percent or greater—create a significant portion of the impaired driver problem. The National Roadside Survey estimates that hard core drinking drivers constituted only 0.8 percent of all drivers on the road, but fully 27 percent of drivers in fatal crashes. Nationally, in 2004, hard core drinking drivers were involved in crashes leading to a minimum of 9,081 highway fatalities.

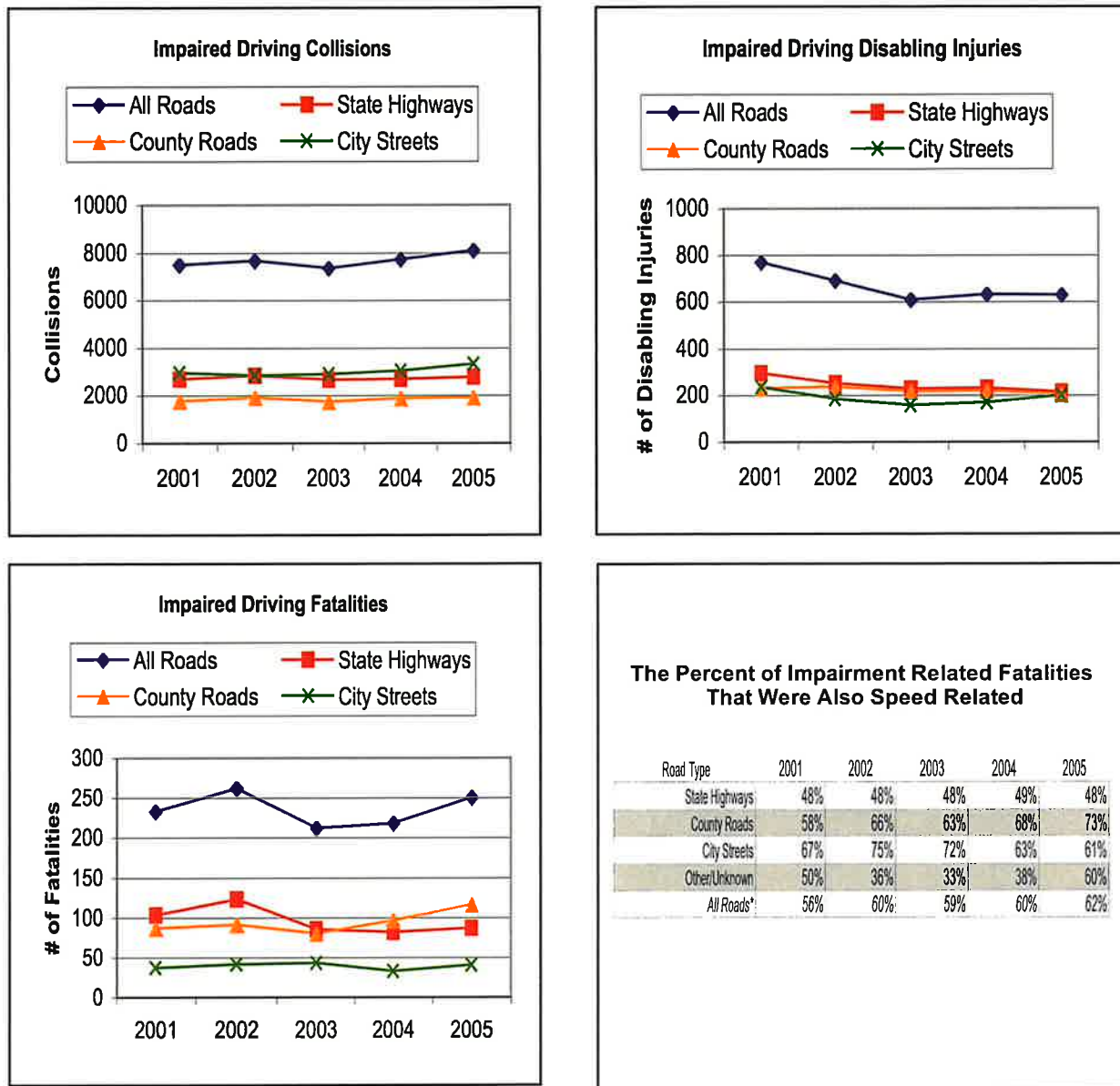
In Washington State, among drinking drivers involved in fatal crashes, drivers with a BAC of .15 or higher, out-number lower BAC drivers almost two to one.

⁶ Preliminary data, WTSC

Figure 5.1-2

Impaired Driving Collisions, 2001–2005

Impairment contributed to 47 percent of all fatalities during 2001–2005.



Charts data source: WSDOT. Table data source: FARS. *There was 1 fatality on a frontage road in 2003.

Impairment in drivers, pedestrians, or cyclists; defined as a collision where at least one driver or non-occupant (pedestrian or cyclist) was coded with any of the following: BAC was .08 or above; presence of any drug in one of the three drug test results with codes 100 - 995. Drug codes 000-995 include: Narcotic drugs, Depressants, Stimulants, Hallucinogens, Cannabinoids, Phencyclidine (PCP) group, Anabolic Steroids, and Inhalant drugs.

Speeding was defined as Driving Too Fast for Conditions or in Driving in Excess of Posted Maximum for at least one driver involved in the collision.

Objectives and Strategies to Reduce Impaired Driving

Objectives	Strategies
5.1 A. Reduce the incidence of impaired driving	5.1.A1. Continue statewide, high-visibility enforcement and media campaigns to reduce the incidence of impaired driving. (P)
	<ul style="list-style-type: none"> • Support efforts to simplify and streamline the DUI arrest process. • Enhance law enforcement training in alcohol and drug detection, and in evidence collection. • Target areas with high numbers of DUI-related crashes. • Develop appropriate messages and methods to reach segments of the population with a high incidence of impaired driving arrests. • Develop education messages in multiple languages.
	5.1.A2. Encourage the enactment of State laws that will enhance enforcement, prosecution, and adjudication of impaired driving laws. (P)
	<ul style="list-style-type: none"> • Explore options that would allow sobriety checkpoints in Washington. • Support efforts to develop a DUI statutory scheme that provides laws that are sound, rigorous, and easy to enforce and administer. • Support the establishment of DUI courts. • Support efforts to use any money collected from DUI fines in excess of \$101 to support impaired driving programs.
	5.1.A3. Continue to build partnerships designed to reduce the incidence of impaired driving. (P)
	<ul style="list-style-type: none"> • Continue and expand the use of Brief Intervention and Screening in medical settings. (P) • Continue and expand judicial and prosecutorial education addressing DUI issues. (P) • Continue efforts such as the annual impaired driver traffic safety conference. • Utilize community traffic safety task forces to address impaired driving issues. • Collaborate with BIA, Indian Health Services, and NAETO to support Tribal Nations who would like to reduce the incidence of impaired driving on tribal lands. (E) • Expand outreach programs for ethnic populations, such as the EI Protector program.
	5.1.A4. Employ corridor safety model to high-crash locations where data suggests a high rate of impaired driving. (P)
	5.1.A5. Establish a state-level Traffic Safety Resource Prosecutor to train prosecutors assigned to DUI cases and serve as a cross-jurisdiction liaison on traffic safety. (T)

Traffic Safety Administration and the U.S. Department of Transportation.
<http://www.nhtsa.dot.gov/people/injury/airbags/Countermeasures/index.htm>

National Highway Traffic Safety Administration, Emergency Nurses Association, and American College of Emergency Physicians, Developing Best Practices of Emergency Care for the Alcohol-Impaired Patient. 2000. <http://www.nhtsa.gov/people/injury/alcohol/EmergCare/toc.htm>

International Association of Chiefs of Police (IACP) Highway Safety Committee, Impaired Driving Subcommittee, Impaired Driving Guidebook: Three Keys to Renewed Focus and Success. 2006. <http://www.wa.gov/wtsc/programs/impaired.htm>

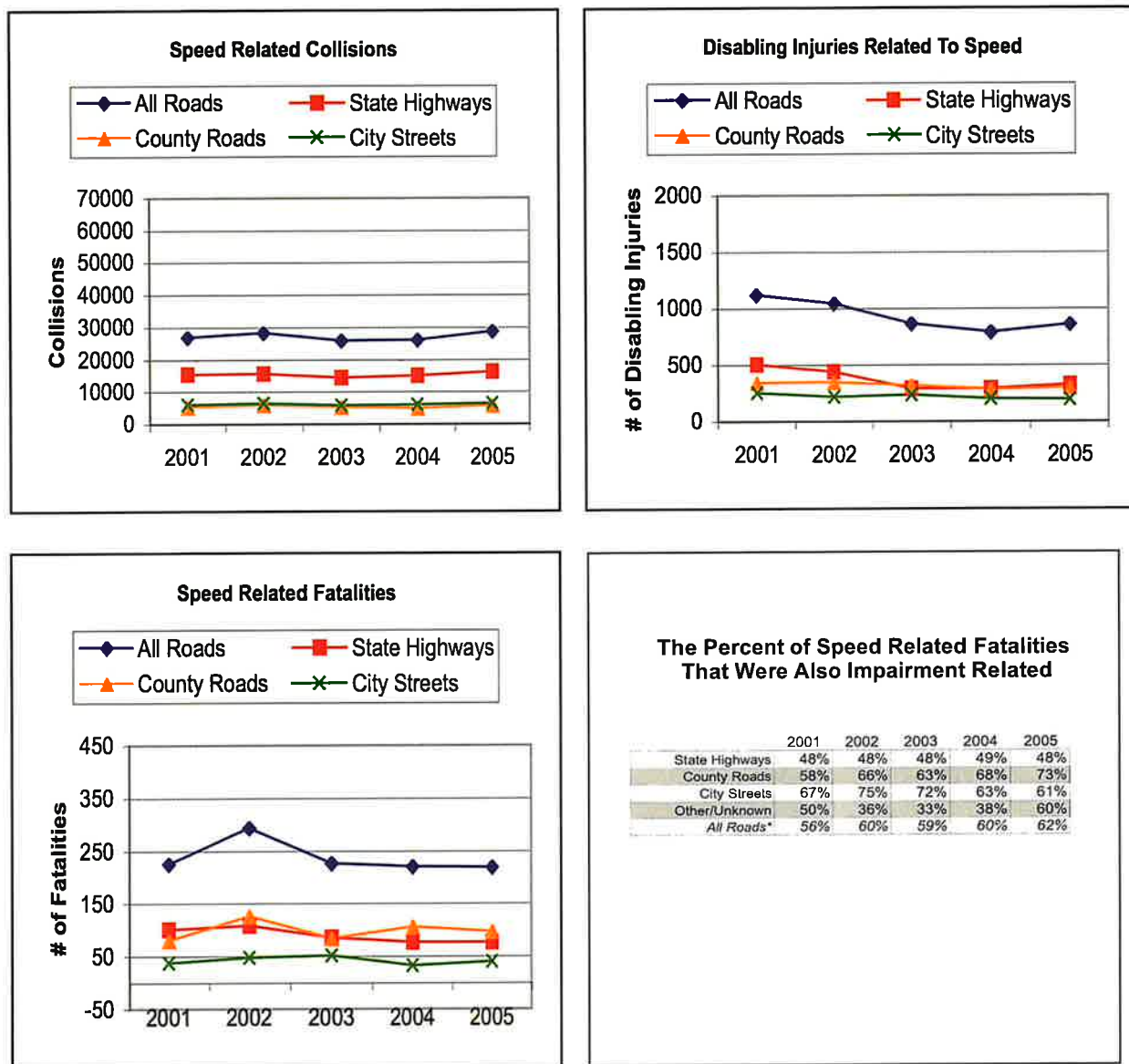
The Journal of Trauma, Injury Infection and Critical Care. Alcohol and other drug problems among hospitalized trauma patients: Controlling complications, mortality and trauma recidivism. Vol. 59 No.3, September 2005. Entire issue addresses Screening and Brief Intervention.

Traffic Injury Research Foundation, 10 Steps to a Strategic Review of the DWI System: A Guidebook for Policymakers, 2007.
http://www.trafficinjuryresearch.com/dwi_systemimprovements/workgroup_systemimprovements.cfm

Figure 5.2-1

Speed-Related Collisions, 2001-2005

Speed contributed to 38 percent of all fatalities during 2001-2005.



Charts data source: WSDOT. Table data source: FARS. *There was 1 fatality on a frontage road in 2003.

Impairment in drivers, pedestrians, or cyclists; defined as a collision where at least one driver or non-occupant (pedestrian or cyclist) was coded with any of the following: BAC was .08 or above; presence of any drug in one of the three drug test results with codes 100 - 995. Drug codes 000-995 include: Narcotic drugs, Depressants, Stimulants, Hallucinogens, Cannabinoids, Phencyclidine (PCP) group, Anabolic Steroids, and Inhalant drugs.

Speeding was defined as Driving Too Fast for Conditions or in Driving in Excess of Posted Maximum for at least one driver involved in the collision.

Objectives and Strategies to Reduce Speed Related Collisions

Objectives	Strategies
5.2.A. Reduce speed through enforcement activities.	5.2.A1. Increase use of photo-radar automatic speed enforcement and use any revenue generated for traffic safety. (P)
	5.2.A2 Conduct high visibility enforcement efforts that strategically address speed;, locations; and conditions most common, or most hazardous, in speed-related crashes. (T)
	5.2.A3 Ensure law enforcement officers have appropriate equipment for speed enforcement. (T)
5.2.B. Use engineering measurers to effectively manage speed.	5.2.B1. Use roadway design factors to influence driver speed selection appropriate to type of roadway. (P)
	5.2.B2. Employ traffic calming devices where appropriate. (P)
	5.2.B3 Use vehicle speed feedback devices in areas where speeding is a problem. (T)
5.2.C Build partnerships to increase support for speed reducing measurers	5.2.C1. Educate the public about the dangers of excessive speed and speed too fast for conditions, and its big role in traffic fatalities. (T)
	<ul style="list-style-type: none"> • Develop appropriate messages and methods to reach segments of the population inclined to speed or drive too fast for conditions. • Develop education messages in multiple languages.
	5.2.C2. Educate prosecutors and judges to ensure speed violations are treated seriously and fairly. (T)
	5.2.C3. Employ corridor safety model to high-crash locations where data suggests a high rate of speed-related crashes. (P)
	5.2.C4. Utilize community traffic safety task forces to address speed issues. (T)
	5.2.C5. Collaborate with BIA, Indian Health Services, and NAETO to support Tribal Nations who seek to reduce speed related collisions on tribal lands. (T)
5.2.D Reduce speed-related run-off-road crashes	5.2.D1 Improve roadway geometrics. (P)
	5.2.D2 Improve roadway signage and delineation. (P)

Key: To assist stakeholders, the strategies have been classified according to the AASHTO model into three categories and identified by these letters:

(P) Proven Strategy: Those strategies that have been used in one or more locations and subjected to properly designed evaluations that show them to be effective.

(T) Tried/Recommended: Those strategies that have been implemented in a number of locations and that may even be accepted as standards or standard approaches, but that lack found valid evaluations; or those strategies that are recommended best practices according to NHTSA.

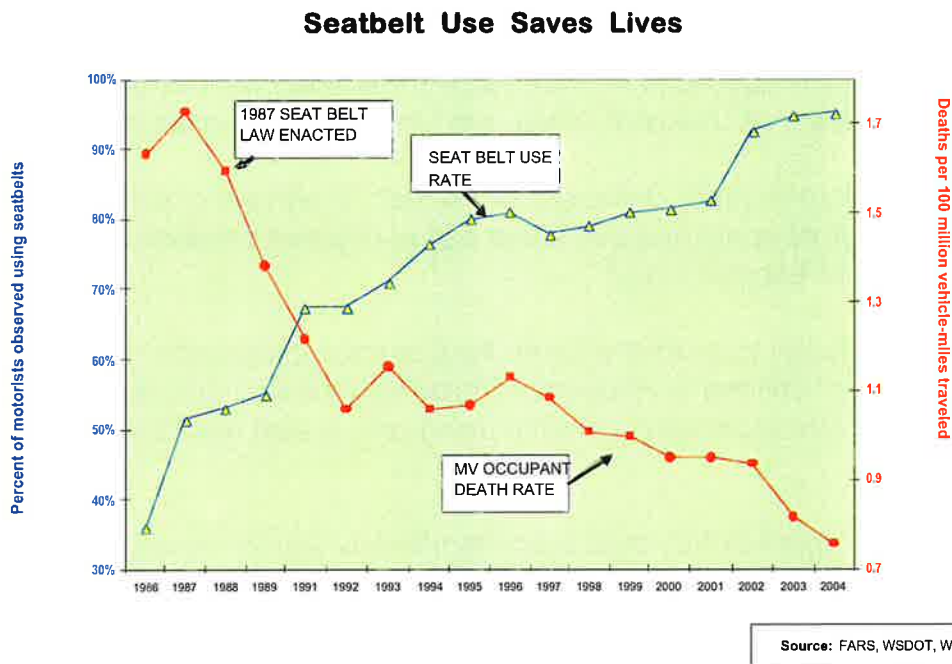
(E) Experimental: Those strategies that have been suggested and found sufficiently promising that at least one agency has considered trying them on a small scale in at least one location.

5.3 Unrestrained Drivers and Passengers

Background

According to a Harborview Injury Prevention and Research study, seat belts are up to 70 percent effective in saving lives during collisions. This means a person wearing a seat belt has a 70 percent better chance of surviving the crash than a non-belted person. In fact, as Washington's seat belt use rate has increased, motor vehicle occupant death rates have decreased. Seat belts save lives, as shown in Figure 5.3-1, below. Nevertheless, a great deal remains to be done. Between 2002-2005, 38 percent of motor vehicle occupants who were killed were not wearing their seat belts, 58 percent of unbelted drivers had been drinking, and 52 percent were cited for speed. See Figure 5.3-3 "Collisions with Unbelted Occupants, 2001-2005" on page 37.

Figure 5.3-1



Currently, 96 percent of all Washington State drivers use their seat belts. According to "Ninety Five Percent: An Evaluation of Law, Policy, and Programs to Promote Seat Belt Use in Washington State⁸," this rate is one of the highest in the nation and is directly attributable to a series of policy and program initiatives, including the following:

- In 2002, Washington's primary enforcement seat belt law became effective.
- In 2002, the Chief of the Washington State Patrol made seat belt enforcement one of the core missions of that agency.

⁸ Salzberg, Phillip M., PhD and Moffat, John M. *Ninety Five Percent: An Evaluation of Law, Policy, and Programs to Promote Seat Belt Use in Washington State*, 2003. Traffic Research and Data Center, Washington Traffic Safety Commission, Olympia, WA

According to a national study by USA Safe Kids Campaign¹¹, nearly 33 percent of children were found to be using the wrong type of restraint for their size.

According to a study by the National Highway Traffic Safety Administration and the Interior Department's Bureau of Indian Affairs, nationally about 55 percent of American Indian motorists wear seat belts, but seat belt use varies widely among tribes. Reservations with primary seat belt laws, which allow police to stop motorists who fail to use seat belts, showed a 68 percent use rate. On the other hand, the rate was 53.2 percent on reservations with secondary laws, under which police can issue a seat belt citation only if a driver is stopped for another infraction. On reservations with no seat belt laws, only about a quarter of motorists were belted.¹²

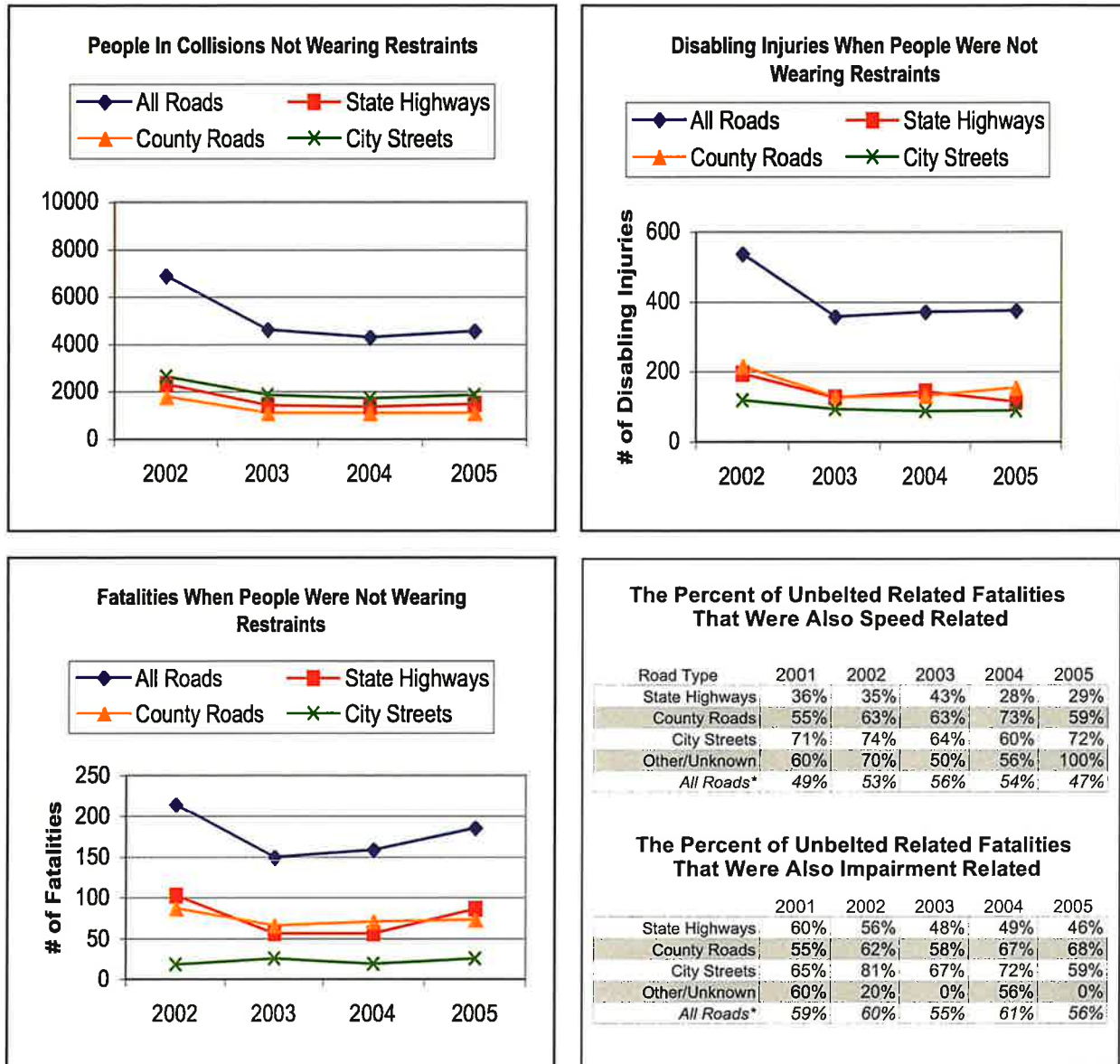
¹¹ National Safe Kids Campaign, "Child Passengers at Risk in America: A National Study of Restraint Use," February 2002, <http://www.usa.safekids.org/>

¹² NHTSA, [Safety Belt Use Estimate for Native American "Tribal Reservations" Subject to Tribal Law and Tribal Traffic Enforcement](http://www.nhtsa.dot.gov/people/injury/research/SBUseIndianNation/images/textfinal.pdf), 2005. <http://www.nhtsa.dot.gov/people/injury/research/SBUseIndianNation/images/textfinal.pdf>

Figure 5.3-3

Collisions with Unbelted Occupants, 2001-2005

Unbelted occupants accounted for 38 percent of all motor vehicle occupants killed during 2002-2005.



Charts data source: WSDOT. Table data source: FARS. *There was 1 fatality on a frontage road in 2003.

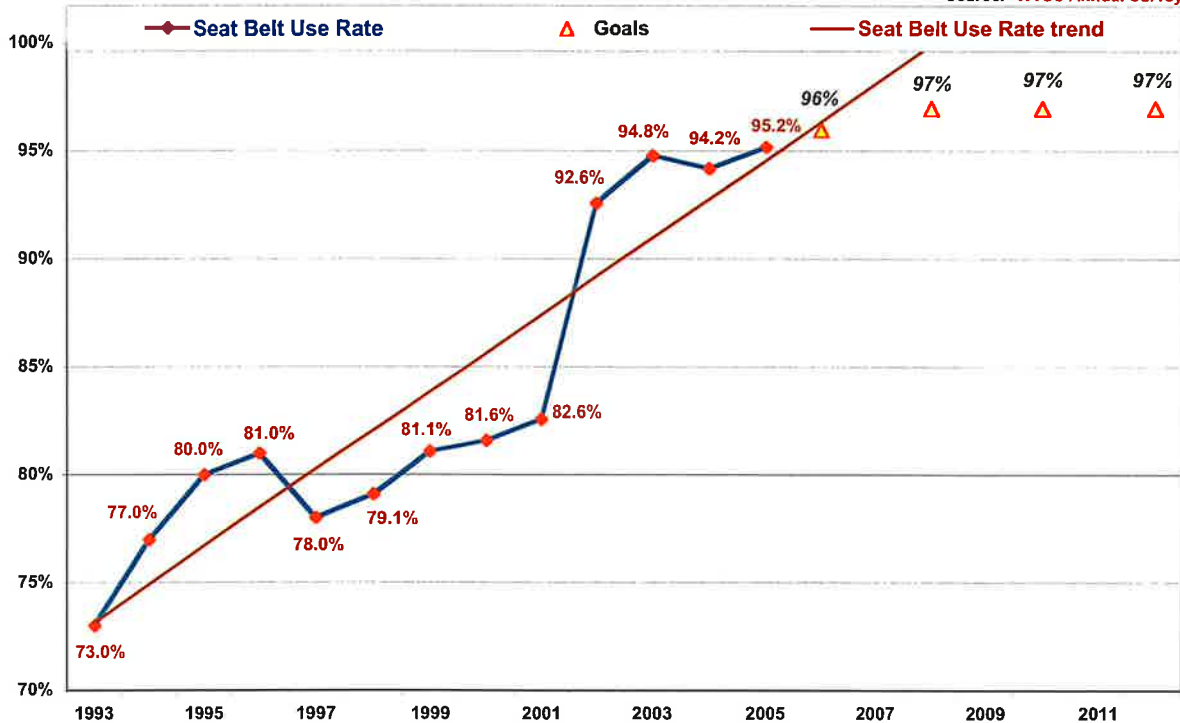
Impairment in drivers, pedestrians, or cyclists; defined as a collision where at least one driver or non-occupant (pedestrian or cyclist) was coded with any of the following: BAC was .08 or above; presence of any drug in one of the three drug test results with codes 100 - 995. Drug codes 000-995 include: Narcotic drugs, Depressants, Stimulants, Hallucinogens, Cannabinoids, Phencyclidine (PCP) group, Anabolic Steroids, and Inhalant drugs.

Speeding was defined as Driving Too Fast for Conditions or in Driving in Excess of Posted Maximum for at least one driver involved in the collision.

WASHINGTON OBSERVED SEAT BELT USE, 1993-2005

Percentage of vehicle occupants observed wearing seat belts

Source: WTSC Annual Survey



Objectives and Strategies to Increase Correct Seat Belt and Child Restraint Use

Objectives	Strategies
5.3.A. Maximize use of occupant restraints by all vehicle occupants.	<p>5.3.A1. Continue statewide high-visibility enforcement and media campaigns to maximize restraint use. (P)</p> <ul style="list-style-type: none"> • Develop programs encouraging individual law enforcement officers and law enforcement agencies to enforce the seat belt law during non-campaign times. • Develop a program to address nighttime seat belt enforcement.
	<p>5.3.A2. Provide enhanced public education to population groups with lower than average restraint use rates. (P)</p> <ul style="list-style-type: none"> • Target efforts towards sub-populations (as shown through research) of non-seat belt users. • Utilize community traffic safety task forces to address occupant protection issues. • Provide support for Tribal Nations seeking to improve seat belt and child restraint use. • Target children 7-15 years of age to ensure they are buckled up properly.

National Center for Injury Prevention and Control. Community-Based Interventions to Reduce Motor Vehicle-Related Injuries: Evidence of Effectiveness from Systematic Reviews. <http://www.cdc.gov/ncipc/duip/mvsafety.htm>

National Safe Kids Campaign, Child Passengers at Risk in America: A National Rating of Child Occupant Protections Laws (February 2001)
http://www.usa.safekids.org/content_documents/ACF15F4.pdf

National Safe Kids Campaign, Child Passengers at Risk in America: A National Study of Restraint Use (February 2002) http://www.usa.safekids.org/content_documents/ACFD68.pdf

Safe Kids USA, Transportation in Child Care Settings: Parent Knowledge and State Regulations (February 2003) http://www.usa.safekids.org/tier3_cd.cfm?content_item_id=9330&folder_id=680

National Safe Kids Campaign, Crossing the Gaps Across the Map: A Progress Report on SAFE KIDS' Efforts to Improve Child Occupant Protection Laws (February 2004)
http://www.usa.safekids.org/content_documents/ANNUAL_REPORT_2004.pdf

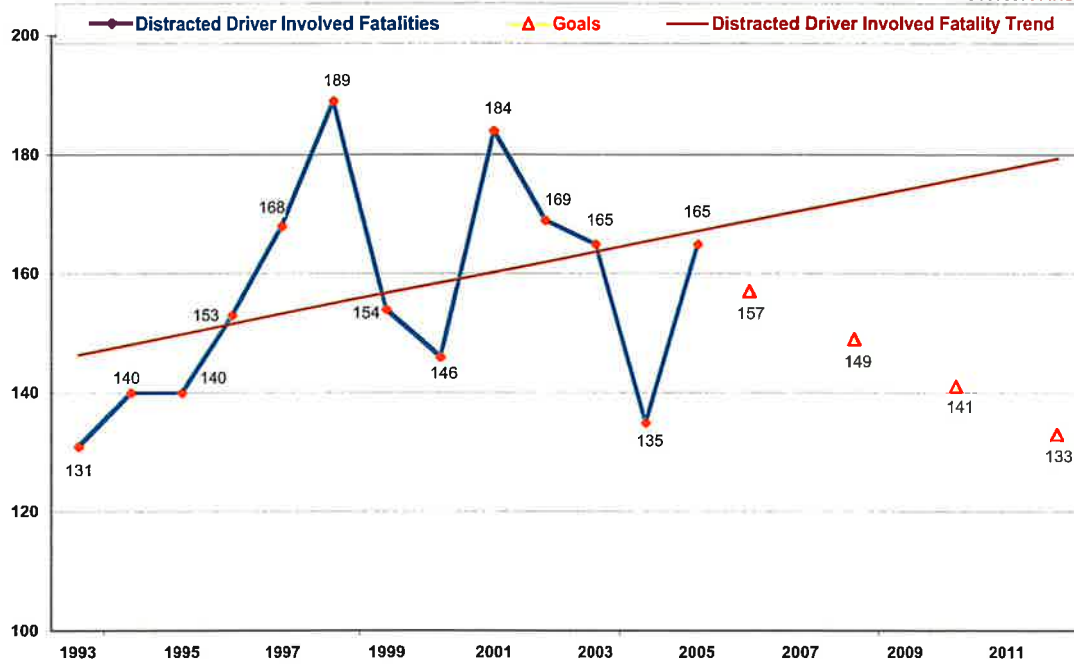
National Safe Kids Campaign, Report to the Nation: Trends in Unintentional Childhood Injury Mortality, 1987-2000 (May 2003) http://www.usa.safekids.org/content_documents/nskw03_report.pdf

Goals and Performance Measures

Washington Traffic Fatalities Involving Distracted Drivers, 1993-2005*

*2005 figures based on preliminary data

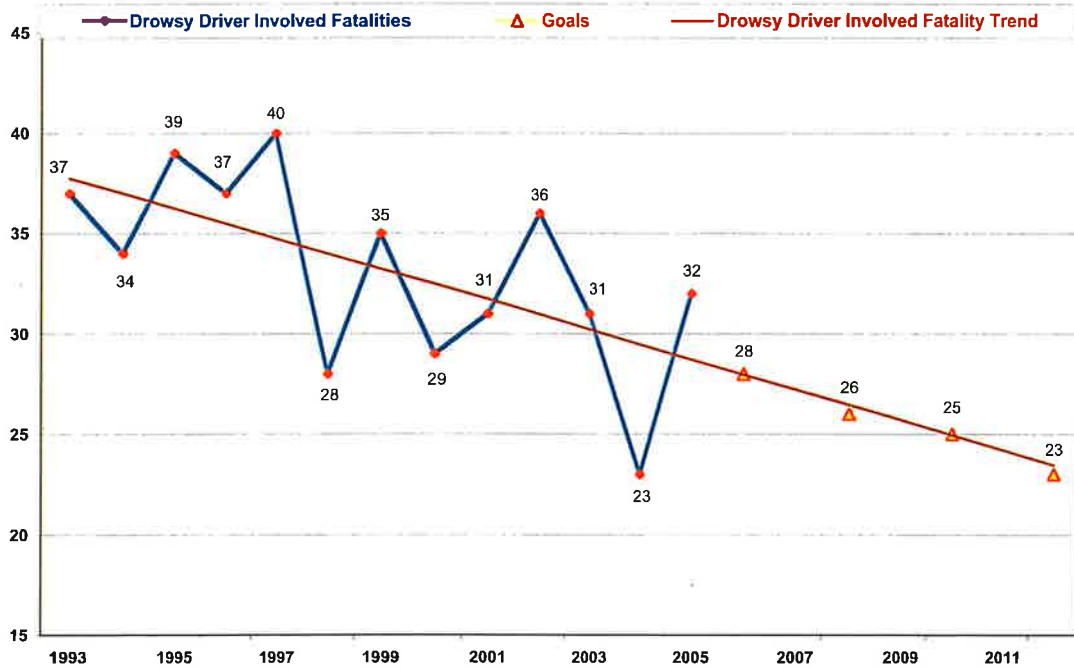
Source: FARS



Washington Traffic Fatalities Involving Drowsy Drivers, 1993-2005*

*2005 figures based on preliminary data

Source: FARS



Drowsy and Distracted Driver Resources

NCHRP Report 500, Volume 14: [A Guide for Reducing Crashes Involving Drowsy and Distracted Drivers](http://onlinepubs.trb.org/onlinepubs/nchrp/nchrp_rpt_500v14.pdf). http://onlinepubs.trb.org/onlinepubs/nchrp/nchrp_rpt_500v14.pdf

[Countermeasures that Work](http://www.nhtsa.dot.gov/people/injury/airbags/Countermeasures/index.htm), A Highway Safety Countermeasure Guide for State Highway Safety Offices by the Governors Highway Safety Association for the National Highway Traffic Safety Administration and the U.S. Department of Transportation. <http://www.nhtsa.dot.gov/people/injury/airbags/Countermeasures/index.htm>

According to a study by the Insurance Research Council (2001), 15 percent of drivers on Washington roads are not properly licensed (unlicensed, suspended, revoked, expired, or canceled). Nationally, it is estimated that 75 percent of drivers with suspended or revoked licenses continue to drive and that one in every five fatal crashes involves at least one driver who is not properly licensed.¹³

In 2002, there were 59,000 convictions for Driving While License Suspended or Revoked (DWLS/R) in Washington State. Department of Licensing data shows that of the 59,000 convictions issued, four percent were for DWLS/R in the first degree (issued mostly to “habitual traffic offenders,”) and eight percent were for DWLS/R in the second degree (issued largely to DUI offenders). The final 88 percent were issued for DWLS/R third degree which is given to people with expired driver’s licenses, people who have failed to pay traffic infractions or child support, or a variety of other offenses which are not necessarily related to dangerous driving behaviors.

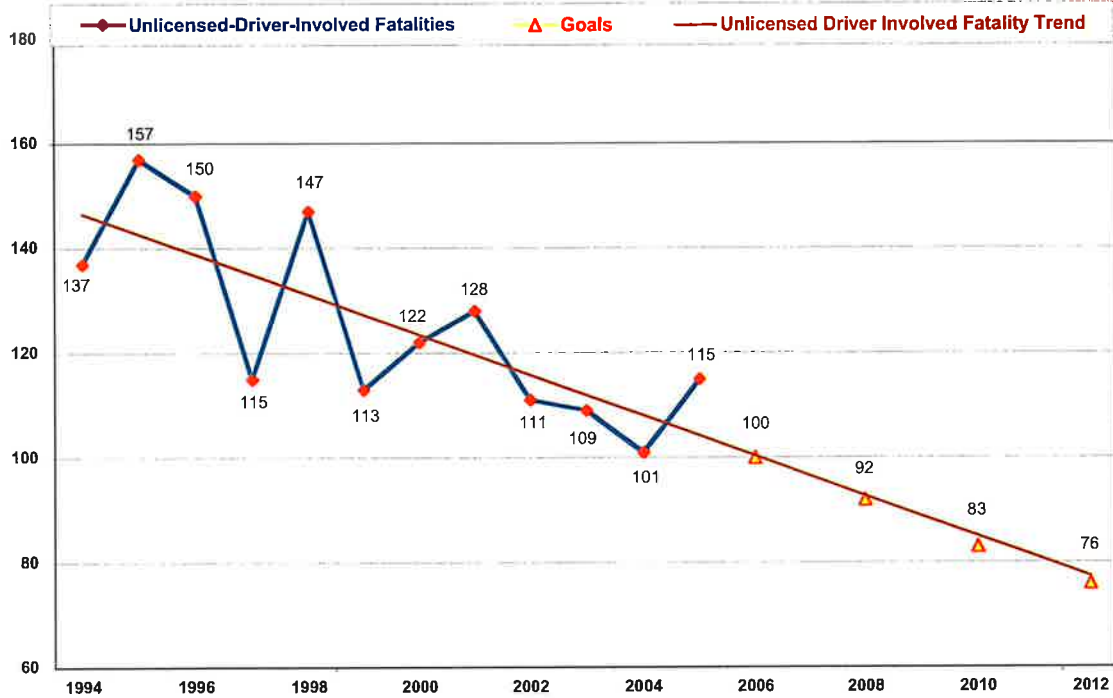
¹³ NCHRP Report 500, Volume 2, [A Guide for Addressing Collisions Involving Unlicensed Drivers and Drivers with Suspended or Revoked Licenses](#), addresses many of these strategies in detail.
<http://safety.transportation.org/guides.aspx?cid=23>

Goals and Performance Measures

Traffic Fatalities in Unlicensed-Driver Crashes, 1994-2005*

Crashes Involving a Driver without a Valid License, *2005 figures based on preliminary data

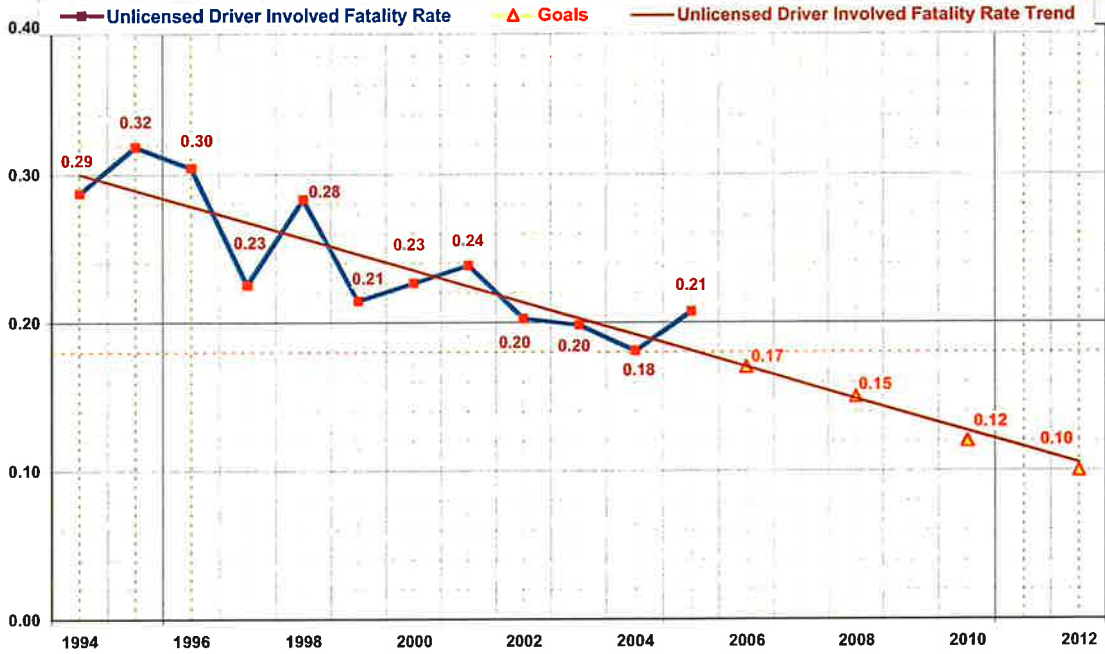
Source: FARS



Washington Unlicensed Driver-Involved Fatality Rate, 1993-2005*

Unlicensed Driver Involved Traffic Deaths per 100 Million VMT

Crashes Involving a Driver without a Valid License, *2005 figures based on preliminary data Source: FARS, WSDOT



NCHRP Report 500, Volume 2, A Guide for Addressing Collisions Involving Unlicensed Drivers and Drivers with Suspended or Revoked Licenses, addresses many of these strategies in detail. <http://safety.transportation.org/guides.aspx?cid=23>

Ch. 6 / Other Users

6.1 Young Drivers

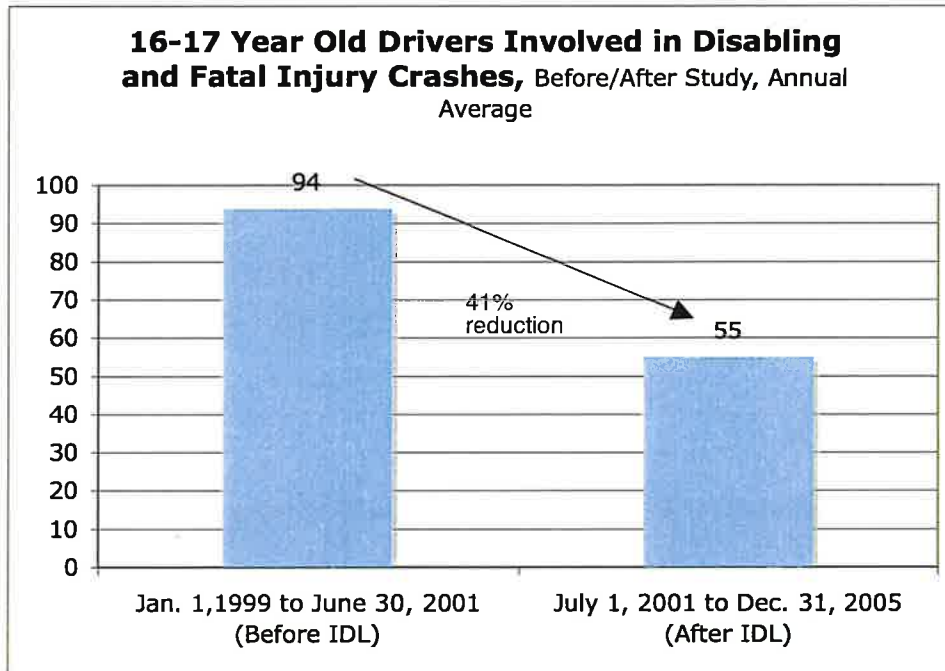
Background

Motor vehicle crashes are the leading cause of death for American teenagers. Newly licensed drivers with less than one year of driving experience have the highest crash rate of any driver group. Nearly half of the fatal crashes involving a sixteen-year-old driver were single-vehicle crashes. Nationally, two out of three teen passenger deaths occur when another teen is driving.

In Washington State, before the new intermediate driver's license (IDL) law took effect in 2001, teens made up only seven percent of all licensed drivers but were involved in 15 percent of fatal crashes and 20 percent of all crashes, giving 16-20 year-olds the highest age-based driver-involvement rate at 4.47 per 10,000 licensed drivers.

Since the new law took effect on July 1, 2001, Washington has experienced a 41 percent drop in the number of fatal and disabling injuries involving 16- and 17-year-old drivers as shown in figure 6.1-1.

Figure 6.1-1



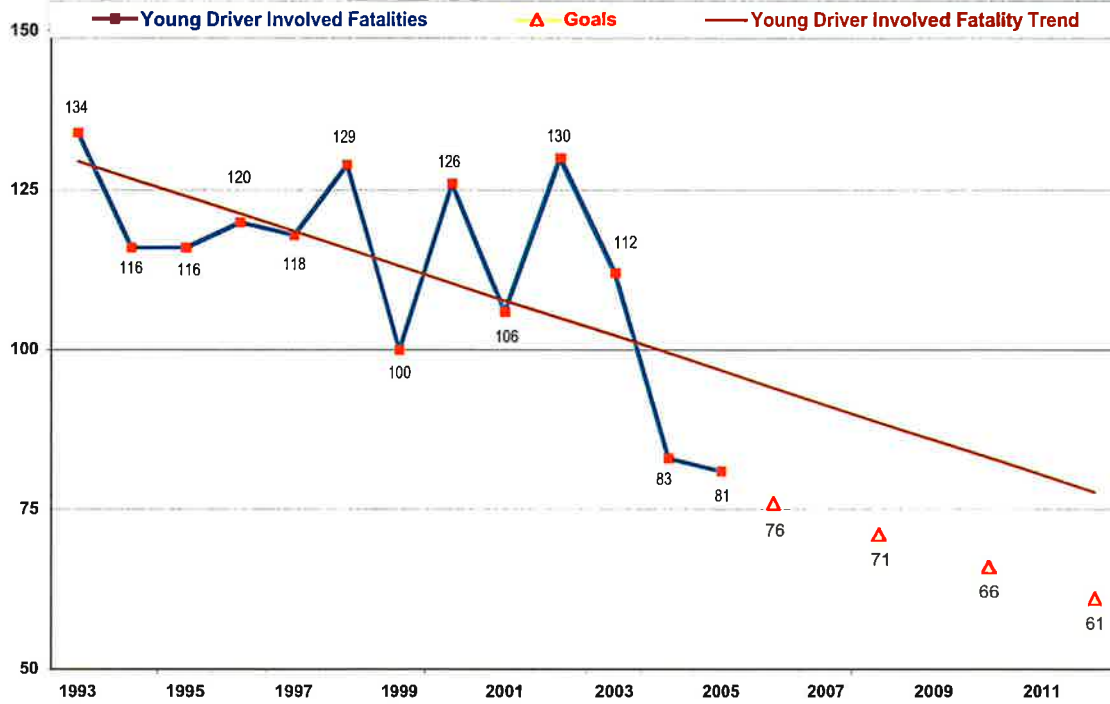
Nevertheless, ensuring better enforcement of the IDL remains a traffic safety priority in Washington.

Goals and Performance Measures

WA Traffic Fatalities Involving 16-19 Year-Old Drivers, 1993-2005*

*2005 figures based on preliminary data

Source: FARS

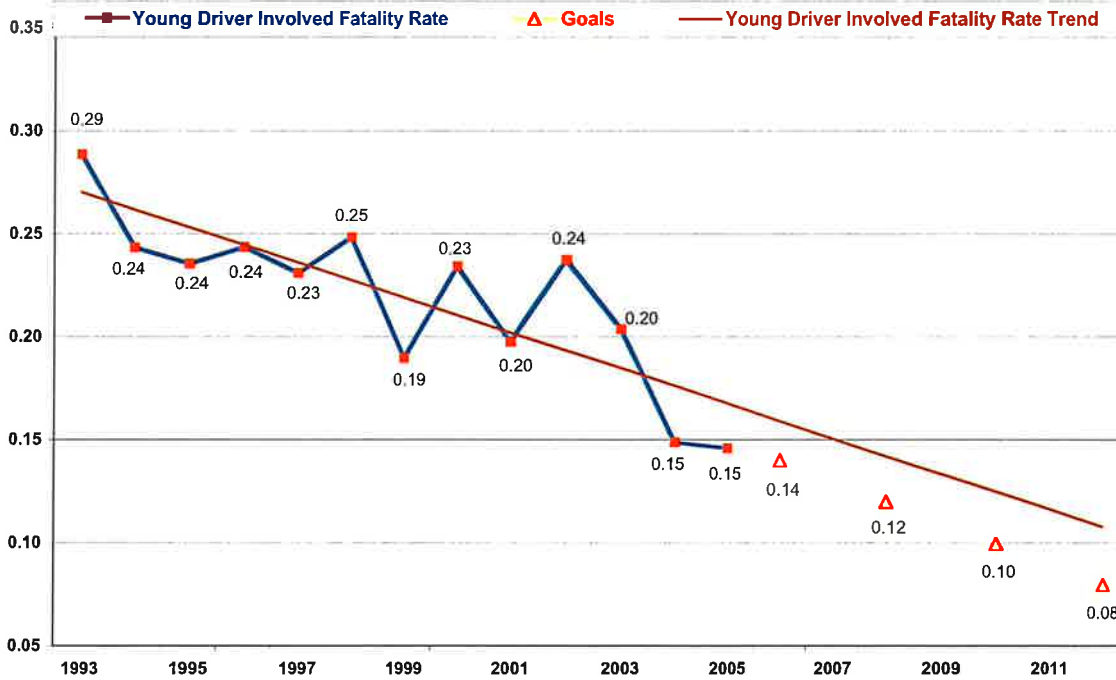


Washington Young Driver-Involved Fatality Rate, 1993-2005*

Young Driver-Involved Traffic Deaths per 100 Million VMT

Crashes Involving a 16-19 Year-Old Driver, 2005 figures based on preliminary data

Source: FARS, WSDOT



Young Driver Safety Resources

Countermeasures that Work, A Highway Safety Countermeasure Guide for State Highway Safety Offices by the Governors Highway Safety Association for the National Highway Traffic Safety Administration and the U.S. Department of Transportation.

<http://www.nhtsa.dot.gov/people/injury/airbags/Countermeasures/index.htm>

Healthy States, Council of State Governments (CSG) Initiative, Graduated Driver Licensing Tool Kit, 2007. <http://www.healthystates.csg.org/Publications/>

is to die from the injuries. A pedestrian hit while the vehicle is traveling at 40 mph has an 85 percent chance of dying, while a pedestrian hit by a vehicle traveling at 20 mph has a 95 percent chance of surviving.¹⁴

Collisions involving pedestrians are more frequent and severe in urban areas. Between 1999 and 2004, 74 percent of pedestrian fatalities occurred in urban areas, while 26 percent occurred in rural areas.

The young, particularly school age children under the age of 15, have been identified as a risk population for pedestrian-involved fatal collisions. Children under the age of 13 cannot accurately determine the speed of an approaching vehicle. In Washington, pedestrian injuries remain the third leading cause of injury deaths for children ages one to 16, according to the Department of Health.

Over the next 25 years, the number of older citizens in the United States will double; by 2030, 20 percent of Americans will be age 65 or older¹⁵. By 2020, over one million people in Washington will be 65 or older—almost twice the number of people in that age group today. The National Institute on Aging reports that more than one in five adults age 65 and older do not drive. Currently, the aging population in Washington represents 12 percent of the population, yet they make up 20 percent of the pedestrian deaths.

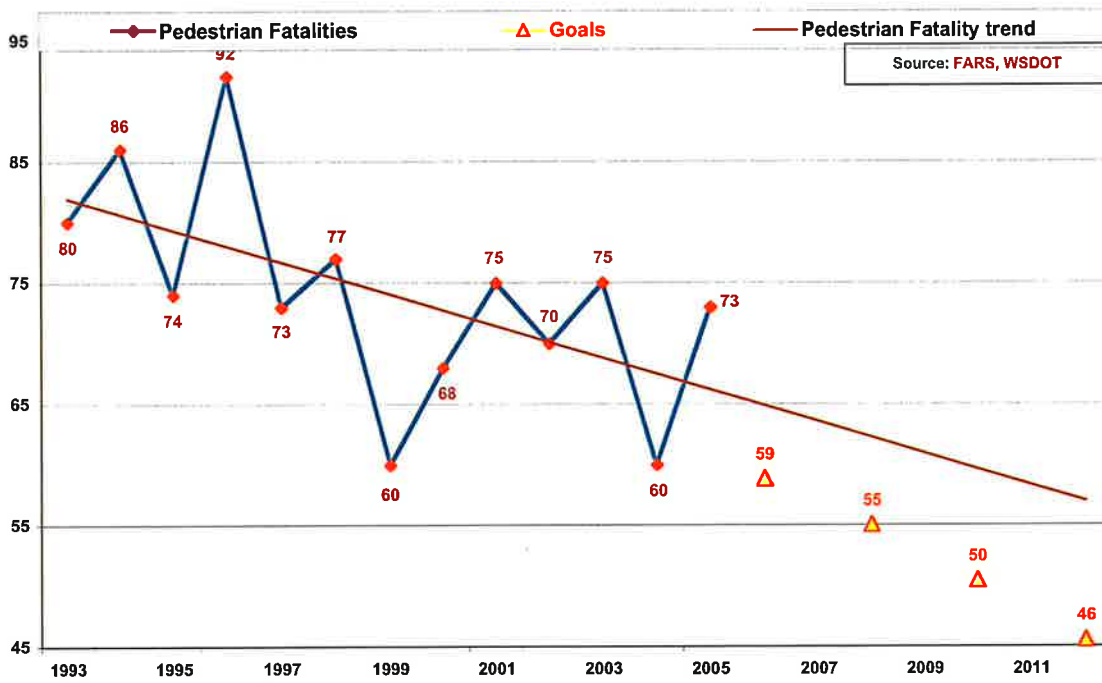
¹⁴ NCHRP Report 500, Volume 10: [A Guide for Reducing Collisions Involving Pedestrians](http://safety.transportation.org/guides.aspx?cid=29) discusses many of these strategies in detail. <http://safety.transportation.org/guides.aspx?cid=29>

¹⁵ Administration on Aging, "Profile of Older Americans," 2000, <http://www.aoa.gov/prof/statistics/profile/2002/2.asp>.

Goals and Performance Measures

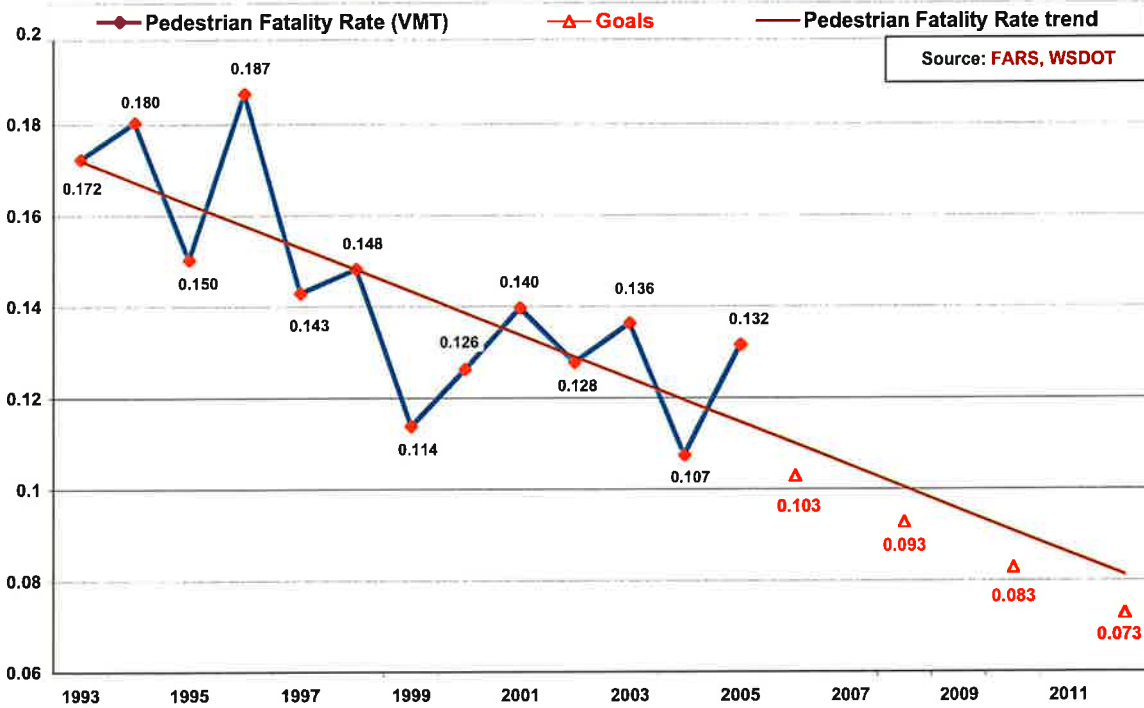
WASHINGTON PEDESTRIAN FATALITIES, 1993-2005*

*By Year, 2005 figures are preliminary



WASHINGTON PEDESTRIAN FATALITY RATE, 1993-2005*

*Pedestrian fatalities per 100 million vehicle-miles traveled, 2005 figures are preliminary



6.2.C Improve safety for children waking to school.

6.2.C1 Maintain dedicated school zone safety funding and encourage enforcement of school zone traffic laws. (P)

6.2.C2 Fully utilize WSDOT safe routes to school grant opportunities. (P)

6.2.C3 Install computer controlled and timed school zone flashing lights at K-12 schools.

6.2.D. Improve Data and Performance Measurers

6.2.D1. Inventory existing pedestrian infrastructure and identify deficiencies. (P)

Key: To assist stakeholders, the strategies have been classified according to the AASHTO model into three categories and identified by these letters:

(P) Proven Strategy: Those strategies that have been used in one or more locations and subjected to properly designed evaluations that show them to be effective.

(T) Tried/Recommended: Those strategies that have been implemented in a number of locations and that may even be accepted as standards or standard approaches, but that lack found valid evaluations; or those strategies that are recommended best practices according to NHTSA.

(E) Experimental: Those strategies that have been suggested and found sufficiently promising that at least one agency has considered trying them on a small scale in at least one location.

Pedestrian Safety Resources

NCHRP Report 500, Volume 10: [A Guide for Reducing Collisions Involving Pedestrians](http://safety.transportation.org/guides.aspx?cid=29) discusses many of these strategies in detail. <http://safety.transportation.org/guides.aspx?cid=29>



Pedestrian E.doc

Evaluation of "Targeted Pedestrian Enforcement," Salzberg, Phillip M and Moffat, John M, January 2003.

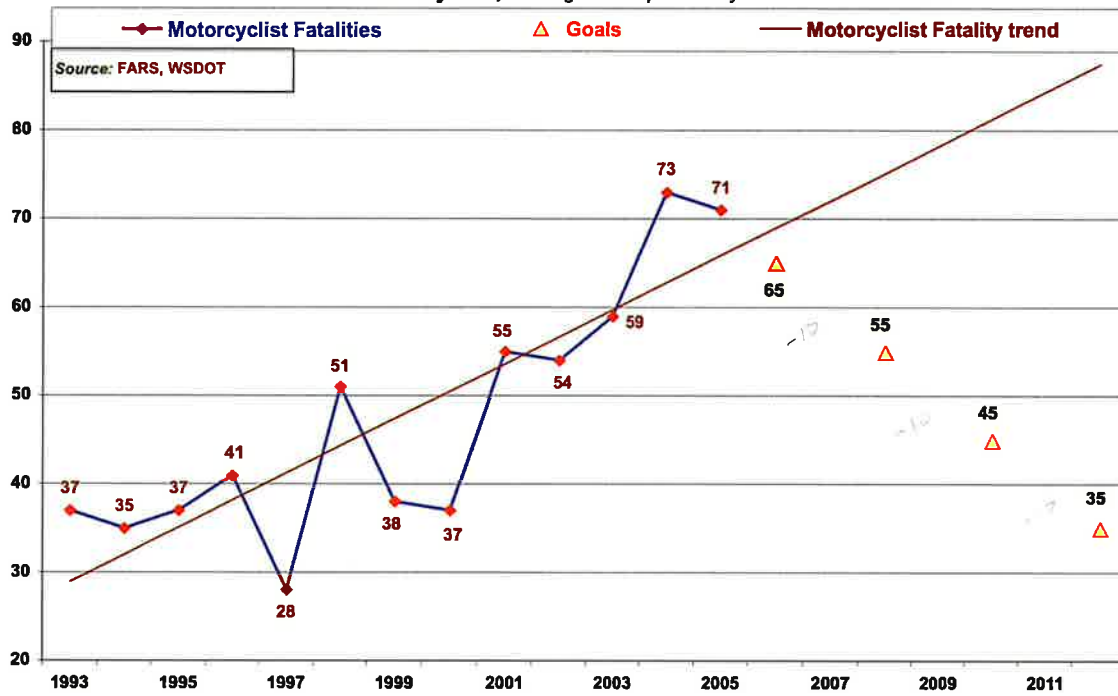
targeting the primary risk factors should lead to a reduction of fatalities and serious injuries among motorcyclists.

Together, the motorcycle community and state public safety agencies should study performance indicators to see if implementation of the recommendations contained in the Motorcycle Task Force Report achieves the desired results (fewer fatalities and serious injury collisions). In partnership, these entities should adapt and adjust public safety activities based on emerging data and the changing motorcycle market.

Goals and Performance Measures

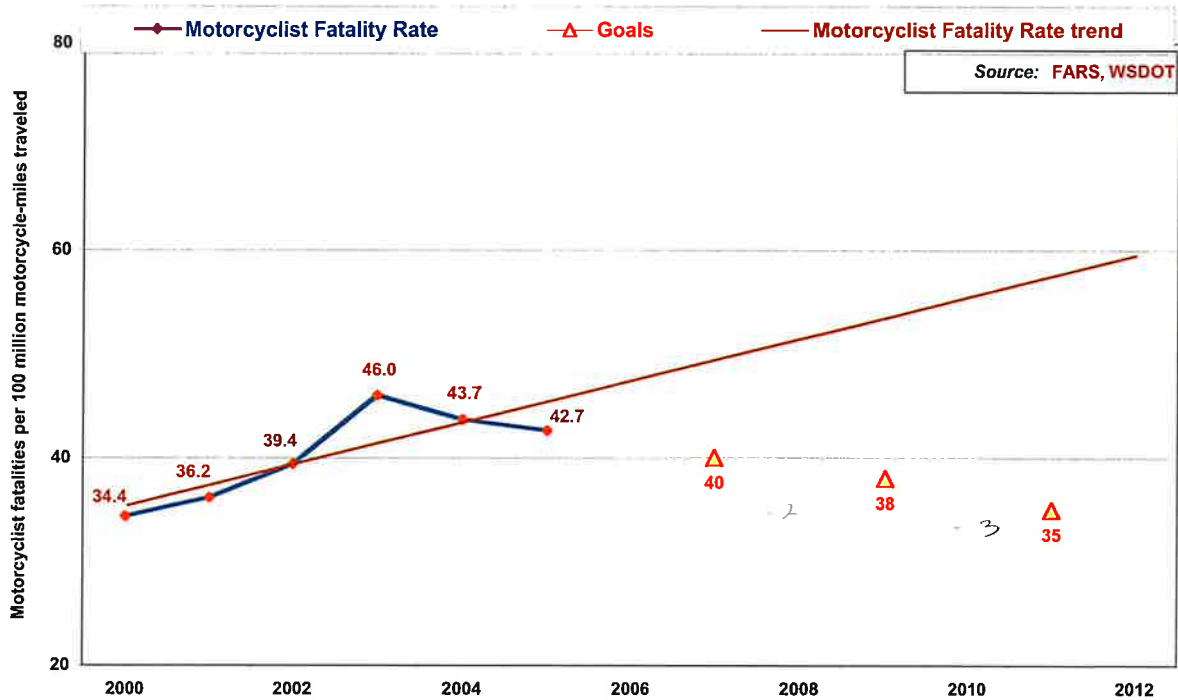
WASHINGTON MOTORCYCLIST FATALITIES, 1993-2005*

*By Year, 2005 figures are preliminary



WASHINGTON MOTORCYCLIST FATALITY RATE, 1996-2005*

*Motorcyclist fatalities per 100 million motorcycle-miles traveled, 2005 figures are preliminary



6.4 Commercial Vehicle Safety

Background

In 2005, 69 percent of the 57 Commercial Motor Vehicle (CMV) related fatalities occurred on state highways; 20 percent on interstate routes; and six percent on county and city roadways. Total number of injury and fatal collisions were down in 2005 by six percent; with a 3.8 percent decrease in CMV caused collisions.

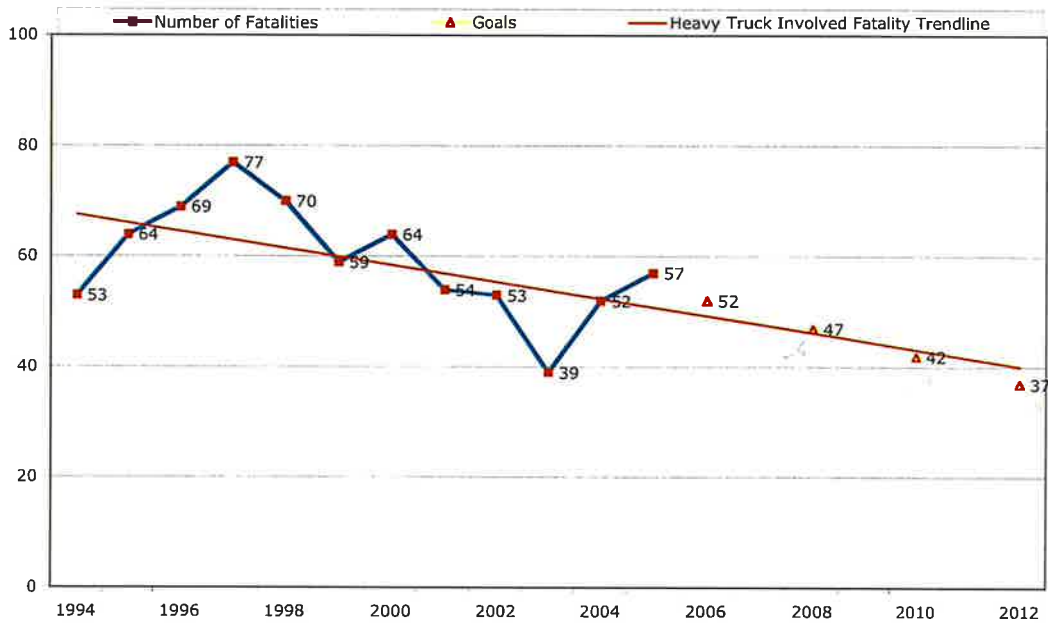
Over the past five years in Washington State, impairment was cited in 32 percent of heavy truck collision deaths and speed was cited in 21 percent of heavy truck deaths. See Figure 6.4-1 “Heavy Truck Collisions” on page 70 for more information.

Washington State Patrol (WSP) statistics show that in 2004, 75 percent of all fatal collisions involving commercial motor vehicles were caused by the passenger car. To help address this situation, the Ticketing Aggressive Cars & Trucks (TACT) project, initially the Step Up and Ride Program was developed. TACT involves enforcement and education strategies to reduce collisions between passenger vehicles and CMVs. The TACT enforcement strategy involves placing a trooper in a commercial vehicle who radios ahead to strategically located patrol cars the violations observed around the truck. The marked units stop the violator and take the appropriate enforcement.

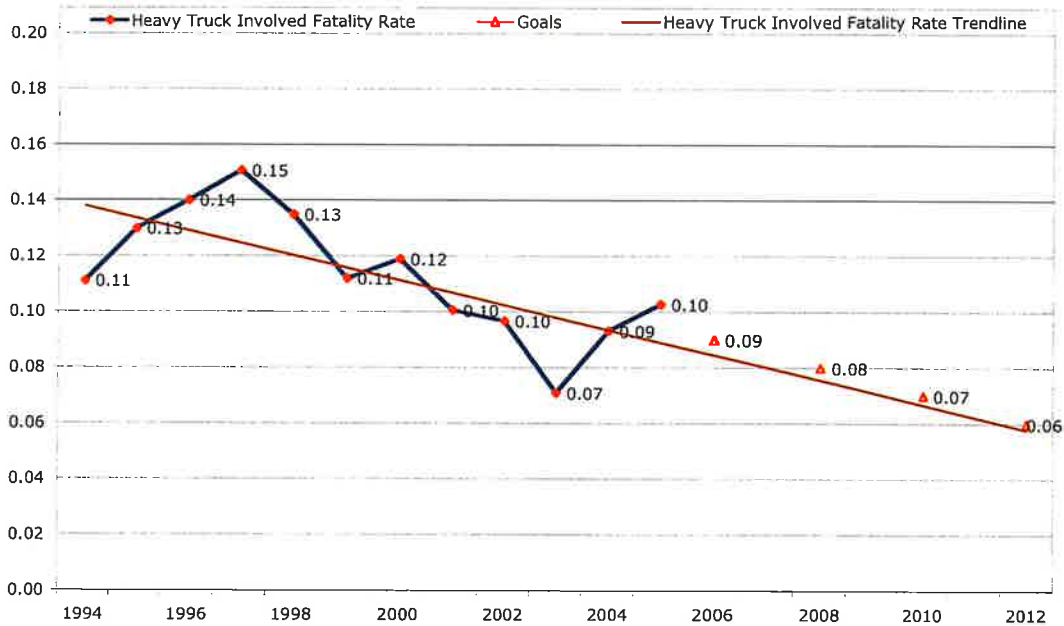
In 2005, the WSP Commercial Vehicle Division conducted 126,644 Commercial Vehicle Safety Alliance (CVSA) inspections. These inspections are conducted to help reduce collisions involving equipment failure.

Goals and Performance Measures

Washington Traffic Fatalities Involving Heavy Trucks, 1994-2005*
 *2005 figures based on preliminary data source: FARS



Washington Heavy Truck Involved Fatality Rate, 1994-2005*
 *2005 figures based on preliminary data source: FARS



Commercial Motor Vehicle Safety Resources

NCHRP Report 500, Volume 13, [A Guide for Addressing Collisions Involving Heavy Trucks](http://safety.transportation.org/guides.aspx?cid=34), addresses many of these strategies in detail. <http://safety.transportation.org/guides.aspx?cid=34>

WSP Safetynet data, 2004 and 2005.

Ch. 7 / Roadway Improvements

7.1 Reducing Fatal and Disabling Injuries Associated with Run-Off-Road Crashes

Background

A run-off-road crash involves a vehicle that leaves the lane of travel, encroaches on the shoulder, and crosses into the roadside. Such crashes usually involve a single vehicle encroaching on the right shoulder and roadside, but can also occur on the median side where the highway is separated. Once the vehicle leaves the roadway, the most harmful event is most likely to be an overturn, an impact with a tree, an impact with a utility pole, or an impact with a ditch or embankment.

The common solution to preventing death and disabling injuries associated with run-off-road crashes is to keep the vehicle in the proper lane. By implementing strategies to combat impaired driving, speed, and distracted and drowsy driving, Washington State hopes to reduce the reasons why a vehicle would leave the roadway in the first place. Engineering strategies such as installing shoulder rumble strips or flattening curves can also decrease the likelihood that a vehicle will leave the roadway.

When an errant vehicle does encroach on the roadside, death and injury can be reduced through strategies that minimize the likelihood of the vehicle crashing into a roadside object (through removal or relocation of such objects) or overturning (through sideslope flattening or improved ditch design) or through strategies designed to reduce the severity of the crash (through installing breakaway devices).

According to the Federal Highway Administration (FHA), vehicles leaving the roadway account for over half of all traffic fatalities nationally.

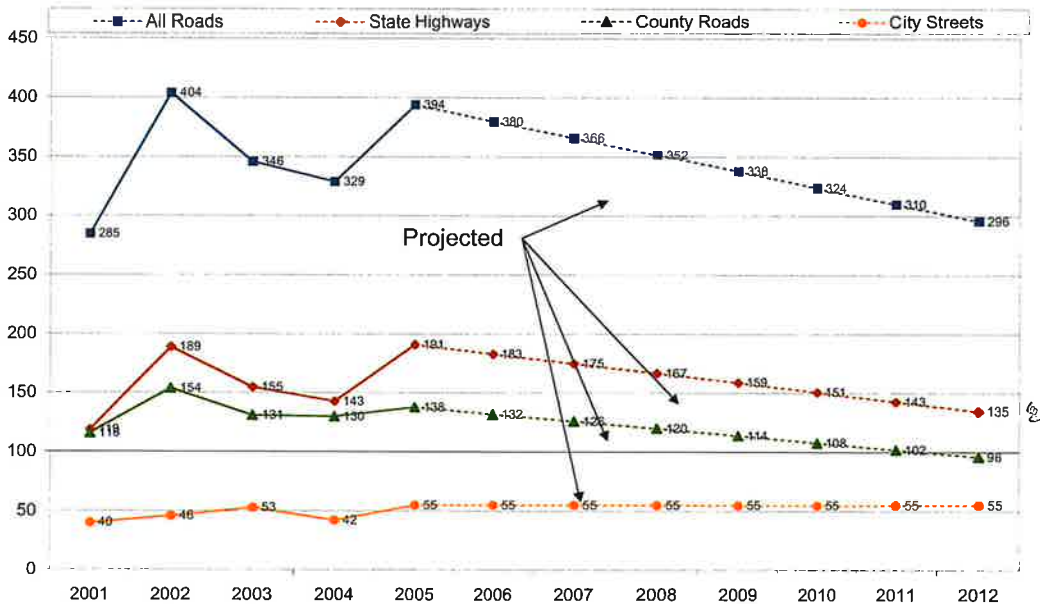
Between 2001 and 2005, Washington State averaged 12,593 run-off-road crashes each year, resulting in an average of 1,298 disabling injuries and 159 deaths. This represents 56 percent of all traffic deaths during this period. Speed was a factor in run-off-the-road crashes 57 percent of the time and impairment 54 percent of the time during 2001-2005. More information on run-off-road crash data, see Figure 7.1-1 "Run-Off-Road Collisions" on page 76.

In Washington State from 2001 to 2005, there were 939 fatalities, 2,959 disabling injuries, and 13,839 collisions involving collisions with fixed objects

Goals and Performance Measures

Washington Run off the Road Fatalities, 2001-2005

Source: WSDOT



Strategies to Reduce Fatal and Disabling injuries Associated with Run-Off-Road Crashes.

Objectives	Strategies
7.1.A. Keep Vehicles on the Roadway	7.1.A1. Implement a comprehensive program to improve driver guidance through better pavement markings, delineation, signing and illumination. (P)
	7.1.A2. Establish or maintain programs to improve roadway maintenance to enhance highway safety. (P)
	7.1.A3. Improve roadway geometrics. (P)
	7.1.A4. Install rumble strips where appropriate. (P)
	7.1.A5 Improve roadway signage and delineation. (P)
7.1.B. Minimize the Consequences of Leaving the Roadway	7.1.B1. Expand the use and maintain existing best practices for the selection, installation, and maintenance of roadside safety hardware. (P)
	7.1.B2. Develop and implement guidance to improve ditches and backslopes to minimize crash severity. (P)
	7.1.B3. Implement a statewide policy to reduce the hazard from roadside utility poles. (P)
	7.1.B4. Implement, in an environmentally acceptable manner, a statewide effort to address hazardous trees. (P)

7.2 Reducing Crashes at Intersections

Background

Intersections, the place where two or more roads join or cross, involve turning and crossing maneuvers that provide circumstances for vehicle-vehicle, vehicle-pedestrian, and vehicle-bicycle conflicts which sometimes result in traffic crashes.

Intersection crashes constituted 47 percent of all of Washington's traffic collisions between 2001 and 2005. This is in line with national traffic statistics which show that crashes at intersections account for over 50 percent of all collisions. In Washington, 53 percent of all collisions on city streets occurred at intersections while only 35 percent of collisions on state highways and county roads were intersection related.

In Washington between 2001 and 2005, only 20 percent of all fatal collisions were intersection related. This is below the national average where 25 percent of all fatal collisions are intersection related, but still accounts for a average of 147 deaths in Washington each year. See figure 7.2-1 "Intersection Related Collisions, 2001-2005" on page 80.

According to NCHRP Report 500 on intersections¹⁶, the most common fatal signalized intersection-related collision occurs between two vehicles on city streets. Signalized intersections are heavily traveled and operationally complex. While signals are designed to reduce conflicts between vehicles, pedestrians, and bicyclists, sometimes the operation of the signal itself leads to conflicts (such as rear-end crashes) and the timing and phasing of a signal can place demands on drivers that are not always met.

Unsignalized intersections are of particular concern because there are so many of them and because some experience sufficient numbers of particular crash types to indicate a need to improve safety. However, experience shows¹⁷ that intersection crash rates frequently increase with signal installation, although crashes may be less severe.

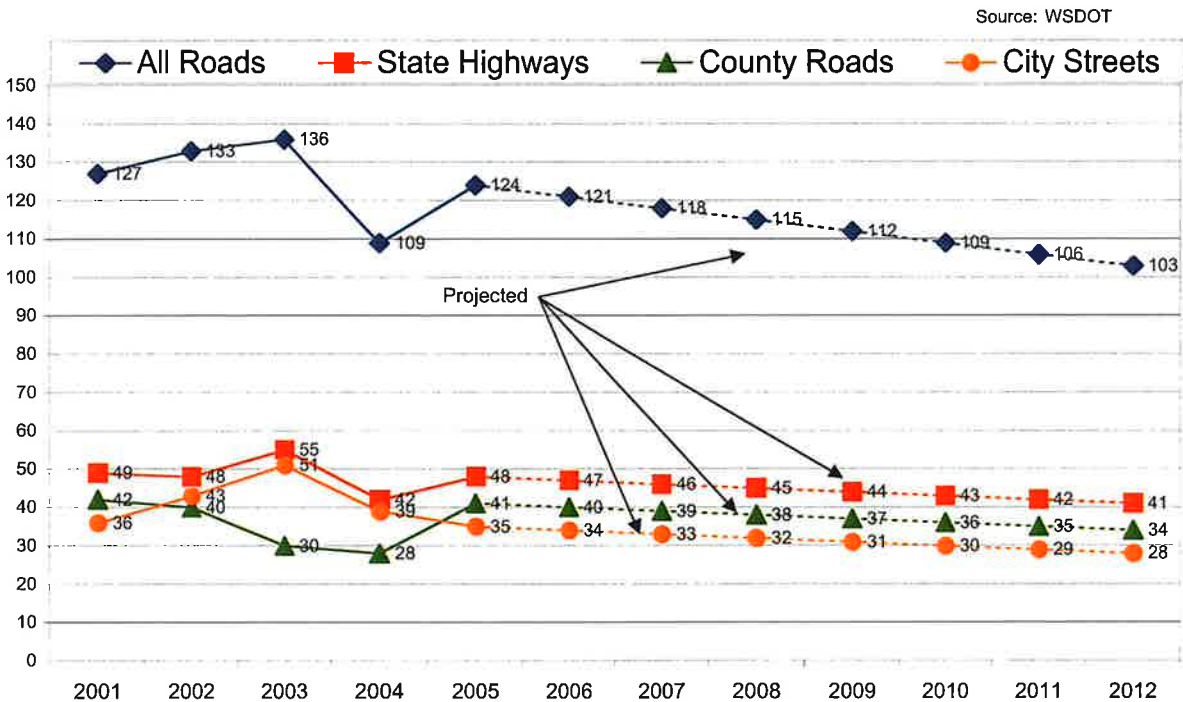
While good geometric design, combined with good traffic control can result in efficient and safer intersection, it is clear that implementing strategies to reduce impairment (33 percent of all intersection-related fatalities are also impairment related) and speed (25 percent are speed related) will go a long way toward reducing intersection related crashes. For more information, please see Figure 7.2-1 "Intersection Related Collisions" on page 80.

¹⁶ NCHRP Report 500, Volume 12, [A Guide for Addressing Collisions at Signalized Intersections](http://safety.transportation.org/guides.aspx?cid=33). <http://safety.transportation.org/guides.aspx?cid=33> and NCHRP Report 500, Volume 05, [A Guide for Addressing Collisions at Unsignalized Intersections](http://safety.transportation.org/guides.aspx?cid=26). <http://safety.transportation.org/guides.aspx?cid=26>

¹⁷ Ibid.

Goals and Performance Measures

Washington Intersection-Related Fatalities, 2001–2005



Strategies to Improve the Design, Safety, and Operation of Highway Intersections

Objectives	Strategies
7.2.A. Reduce collisions at intersections.	<p>7.2.A1. Consider traffic control and operational improvements where appropriate:</p> <ul style="list-style-type: none"> • Optimize clearance intervals. (P) • Employ signal coordination. (P) • Employ emergency vehicle preemption. (P) • Remove unwarranted signals. (P) • Improve operation of pedestrian and bicycle facilities. (P, T) • Employ multiphase signal operation. (P, T) <hr/> <p>7.2.A2. Consider geometric improvements where appropriate:</p> <ul style="list-style-type: none"> • Provide left-turn channelization. (P) • Provide right-turn channelization. (P) • Improve geometry of pedestrian and bicycle facilities. (P and T) • Provide left-turn lanes at intersections (P) • Realign intersection approaches to reduce/eliminate intersection skew (P) • Provide right-turn lanes at intersections (P) • Provide longer left-turn lanes at intersections (T) • Provide offset left-turn lanes at intersections (T) • Provide bypass lanes on shoulders at T-intersections (T) • Provide left-turn acceleration lanes at divided highway intersections (T) • Provide longer right-turn lanes at intersections (T) • Provide offset right-turn lanes at intersections (T) • Provide right-turn acceleration lanes at intersections (T)

Resources

NCHRP Report 500, Volume 12, [A Guide for Addressing Collisions at Signalized Intersections](#), addresses many of these strategies in detail.

<http://safety.transportation.org/guides.aspx?cid=33>

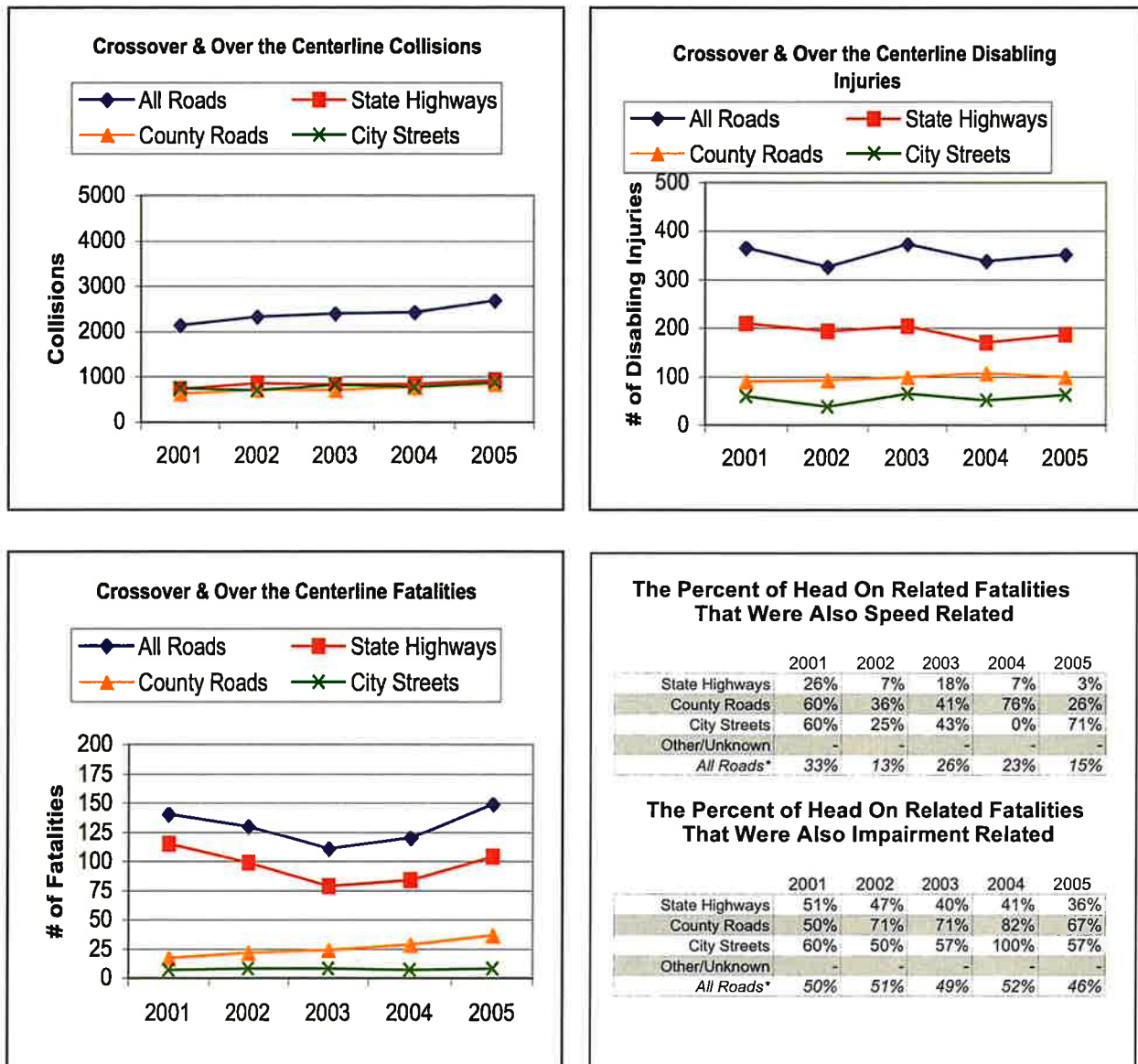
NCHRP Report 500, Volume 05, [A Guide for Addressing Collisions at Unsignalized Intersections](#), addresses many of these strategies in detail.

<http://safety.transportation.org/guides.aspx?cid=26>

Figure 7.3-1

Head-On Collisions, 2001-2005

Head-On crashes accounted for 21 percent of all fatal crashes during 2001–2005.



Charts data source: WSDOT. Table data source: FARS. *There was 1 fatality on a frontage road in 2003.

Impairment in drivers, pedestrians, or cyclists; defined as a collision where at least one driver or non-occupant (pedestrian or cyclist) was coded with any of the following: BAC was .08 or above; presence of any drug in one of the three drug test results with codes 100 - 995. Drug codes 000-995 include: Narcotic drugs, Depressants, Stimulants, Hallucinogens, Cannabinoids, Phencyclidine (PCP) group, Anabolic Steroids, and Inhalant drugs.

Speeding was defined as Driving Too Fast for Conditions or in Driving in Excess of Posted Maximum for at least one driver involved in the collision.

Note: Strategies to reduce impaired driving listed in Section 5.1, and Speed, Section 5.2 will also have a positive impact on reducing head-on fatalities, because speed and impaired driving are a factor in more than 50 percent of run-off-road fatalities.

Head-On Collision Resources

NCHRP Report 500, Volume 4, [A Guide for Addressing Head-On Collisions](http://safety.transportation.org/guides.aspx?cid=25), discusses many of these strategies in detail. <http://safety.transportation.org/guides.aspx?cid=25>

Ch. 8 / Emergency Medical Services

8.1 Enhancing Emergency Medical Capabilities to Increase Survivability

Background

The minutes directly following a traumatic injury are often critical to saving lives or minimizing the long term effects of injury. Timeliness and expertise are critical factors in the success of post trauma care. For these reasons, Washington's comprehensive EMS and Trauma Care (EMSTC) System has contributed to a steady decrease in the number of motor vehicle related deaths.

This success is dependent on all facets of care including prevention activities, pre-hospital services, hospital care, and rehabilitation resources. Each of these components work in concert to reduce death and disability of injured people throughout Washington.

Washington's trauma care system strives to assure that resources are available and the infrastructure exists to deliver the "right" patient to the "right" facility in the "right" amount of time. In a recent national evaluation of the effect of trauma-center care on mortality, MacKenzie and colleagues discussed the importance of triaging severely injured patients to the highest level trauma center.¹⁹ The results of this study underscored the fact that overall risk of death is "significantly lower when care is provided in a trauma center than when it is provided in a non-trauma center." This highlights the importance of a well-coordinated system that ensures severely traumatized patients arrive at the most appropriate level of trauma center in the most optimum time span.

In order to ensure this system continues to grow in its successes, we must strive to improve the following: a system to analyze response time data; the ability to easily and effectively communicate between response agencies; implementation of medical dispatch protocols in every EMS dispatch center; and statewide implementation of GPS technology to ensure better response times. The ability to continue to build partnerships and improve data systems are also imperative to continuing success.

Response time: 30 to 40 percent of all trauma deaths occur within hours of the injury. Many of these deaths are considered preventable when an effective, organized trauma system exists. Accordingly, it is important to analyze the on-scene response times of pre-hospital resources to assess the ability of the pre-hospital system to respond to trauma related incidents in a timely and efficient manner. Washington Administrative Code (WAC) identifies specific response time criteria within four geo-classifications (urban, suburban,

¹⁹ MacKenzie, EJ, Rivara FP, Jurkovich GJ, Nathens AB, Frey KP, Egleston BL, Salkever DS, and Scharfstein DO. A National Evaluation of the Effect of Trauma-Center Care on Mortality; *N Engl J Med*, Jan. 26, 2006; pp 366-378

as important, the most appropriate and rapid route to the scene. With the advent of on-board GPS systems, medically trained dispatchers are able to disseminate incident information via mobile data terminals. Accurate maps identifying the most appropriate route of travel to the incident scene can accompany any critical information identified during the caller interrogation process. Providing accurate travel routes shortens the time from the initial call for assistance until responding EMS units are on scene. While increasingly prevalent in some of the large urban areas of the State, most if not all of the rural areas of the State lack this technology. Achieving a statewide implementation of the technology will ensure better response times, lessening the total time from the actual incident until a patient arrives at the appropriate trauma center.

Partnership: Washington's EMSTC system has been built upon broad consensus among a divergent group of health care professionals and industry experts. These groups have continuously strived to address the complex political, economic, logistical, legal and clinical issues associated with trauma care in the State. Enhancing the capabilities of the entire EMSTC System will continue to reduce the number of fatalities and long-term affects of trauma related to motor vehicle crashes.

Data Driven: Providing education, funds to support equipment and supplies as well as developing strategically focused EMSTC System plans are all essential to the continued efficacy of the State's EMSTC System. In each of the aforementioned areas, it is important to base decisions upon reliable injury-related data. Developing forward thinking strategies and making decisions based upon empirical data is critical to the continued success of the EMSTC System in Washington. Therefore, any goals and performance measures should incorporate the gathering, archiving, and analysis of data related to EMS and Trauma incidents. This evidenced based focus will ensure the EMSTC System realizes its full potential and continues to favorably impact the outcomes of injured people in the State.

8.1.A9. Assure that all EMS Communications Centers in Washington State utilize a computerized system of Medical Dispatch protocols including pre-arrival instructions. (P)

8.1.A10. Assure that all EMS Communications Personnel are trained in Medical Dispatch techniques to ensure appropriate utilization of available EMS Resources. (P)

8.1.A11. Increase use of GPS Technology by EMS agencies throughout the State. (E)

8.1.A12. Assure that seamless communications capabilities between EMS, Law Enforcement, and Fire Service agencies is achieved through interoperability. (P)

8.1.A13. Expand the Comprehensive Hospital Abstract Reporting System (CHARS) to include emergency department data to promote assessment of EMS system performance to enhance injury surveillance capabilities. (P)
Note: This is a Federal requirement to be a CODES state.

Key: To assist stakeholders, the strategies have been classified according to the AASHTO model into three categories and identified by these letters:

(P) Proven Strategy: Those strategies that have been used in one or more locations and subjected to properly designed evaluations that show them to be effective.

(T) Tried/Recommended: Those strategies that have been implemented in a number of locations and that may even be accepted as standards or standard approaches, but that lack found valid evaluations; or those strategies that are recommended best practices according to NHTSA.

(E) Experimental: Those strategies that have been suggested and found sufficiently promising that at least one agency has considered trying them on a small scale in at least one location.

Emergency Medical Services Resources

“Model Trauma System Planning and Evaluation Tool”. Dept. of Health and Human Services, Health Resources and Services Administration; 2006

“Population-Based Research Assessing the Effectiveness of Trauma Systems”; Mullins, Richard J. MD; Mann, N. Clay PhD, MS; Journal of Trauma-Injury Infection and Critical Care; 47(3) Supplement:S59-S66; September 1999

U.S. Dept. of Health and Human Services; Health Resources and Services Administration; “A 2002 National Assessment of State Trauma System Development, Emergency Medical Services Resources, and Disaster Readiness for Mass Casualty Events.” August 2003

93rd US Congress: Public law 93-154: Emergency Medical Services System Act of 1973.

Ch. 9 / Traffic Information Systems

9.1 Improving Information and Decision Support Systems

Background

Traffic safety data is the primary source of knowledge about our State's transportation environment. Reliable data provides the underpinnings of an effective campaign to reduce injuries and fatalities on the State's roadways. This data serves as the critical link in identifying problems, selecting appropriate countermeasures, and evaluating the performance of these countermeasures.

Washington's information and decision support system is comprised of the hardware, software, and accompanying processes that capture, store, transmit, and analyze the following types of data:

- Collisions
- Citations & Adjudication
- Drivers & Registered Vehicles
- Traffic Fatalities
- Motor Carriers (Commercial Vehicles)
- Injury Surveillance (Emergency Medical Services, Emergency Department, Trauma, Hospital inpatient, Death Records)
- Roadway (Traffic Volume, Features Inventory, Geometrics, etc.) and Location (Geographic Information Systems)

Together, these data systems make up what is commonly referred to as Washington's Traffic Records System. Each component of this system provides key information to support decisions regarding public and transportation safety. Information derived from these data systems is valuable in documenting progress toward key measures of performance to enhance management and accountability in public service. Timely, accurate, integrated, and accessible traffic records data is crucial to Washington's efforts to improve public safety.

The Washington Traffic Records Committee (TRC) is a statewide stakeholder forum created to facilitate the planning, coordination, and implementation of projects to improve the State's traffic records system. The TRC is a partnership of State, local, and federal interests from the transportation, law enforcement, criminal justice, and health professions. Washington's TRC fosters understanding among stakeholders and provides an appropriate venue to formulate mutually beneficial projects to improve the timeliness, accuracy, integration, and accessibility of statewide traffic data.

9.1.C. Develop integrated patient care information systems for enhanced injury surveillance.	9.1.C1. Develop a statewide Emergency Medical Services (EMS) Registry. (P)
	9.1.C2. Develop a system for statewide collection of Emergency Department (ED) data. (T)
	9.1.C3. Create an Electronic Death Registration System (EDRS). (T)
9.1.D. Create a more accurate statewide system for roadway feature and event location.	9.1.D1. Improve the accuracy of state highways location referencing system (LRS). (P)
	9.1.D2. Develop a statewide transportation data layer (WA-Trans) for use in Geographic Information Systems across the State. (T)
	9.1.D3. Utilize WA-Trans to improve the accuracy of locating traffic-related events and for enhanced transportation/safety analysis. (T)
9.1.E. Improve the timeliness, utility, and accessibility of statewide collision data.	9.1.E1. Acquire or develop a robust collision analysis software application to provide to state and local transportation safety officials for in-depth analysis. (T)
	9.1.E2. Improve processing efficiencies of collision data at Dept. of Licensing. (T)
	9.1.E3. Perform needed collision data repository redesigns for improved collision data processing efficiency at Dept. of Transportation. (T)
	9.1.E4. Improve the identification of commercial vehicle collisions and the processing efficiency of these collisions by the Washington State Patrol's Commercial Vehicle Division. (T)
9.1.F. Design a new Police Traffic Collision Report (PTCR) and citizen report (VCR).	9.1.F1. Revise the layout and content of the current collision report (PTCR). (T)
	9.1.F2. Implement statewide law enforcement training program. (T)
	9.1.F3. Modify primary collision database and other secondary systems to accommodate revised forms. (T)
9.1.G. Enhance the structure and activities of the Traffic Records Committee.	9.1.G1. Frame a Traffic Records Committee MOU and develop a committee charter to formalize support for TRC activities. (T)
	9.1.G2. Maintain appropriations to support a full-time Traffic Records Coordinator. (T)
	9.1.G3. Support training opportunities for transportation and safety professionals. (T)

Key: To assist stakeholders, the strategies have been classified according to the AASHTO model into three categories and identified by these letters:

(P) Proven Strategy: Those strategies that have been used in one or more locations and subjected to properly designed evaluations that show them to be effective.

(T) Tried/Recommended: Those strategies that have been implemented in a number of locations and that may even be accepted as standards or standard approaches, but that lack found valid evaluations; or those strategies that are recommended best practices according to NHTSA.

Ch. 10 / Next Steps

10.1 Implementation

The Washington Transportation Plan (WTP) is a 20 year plan that establishes the policy guidance for the statewide transportation plan. The WTP is also a data driven document that is consistent with Washington State's Strategic Highway Safety Plan: Target Zero (SHSP). The WTP recommends the implementation of the SHSP.

The SHSP will be implemented through a variety of methods, including linking the Plan's strategies and goals with other elements of the transportation planning process. State agencies with traffic safety responsibilities will adopt the Strategic Highway Safety Plan's recommendations and link this document to other transportation and safety planning guides. They will use the SHSP to guide their funding decisions. They will adopt portions of the plan as part of their agency's or department's GMAP process which provides who, what, when, where, why, and how details.

The SHSP will be updated during the Spring of 2007 in an effort to provide program and budget direction to State agencies for preparation of the 2009-2011 budget. The SHSP will then be updated on a regular basis to reflect new data and the evaluation of performance measures found in the Plan.

Other non-state agencies will have the option of utilizing the strategies contained in the SHSP in the development of their transportation plans.

10.2 Evaluation

Washington State's Strategic Highway Safety Plan: Target Zero will be evaluated annually and revised at least every four or five years. Each set of traffic safety data, goals, and performance measures will be updated to evaluate progress and determine the effectiveness of the strategies to reduce traffic deaths and disabling injuries.

For each emphasis area, information will be gathered from the State agencies' GMAP process. The GMAP process documents specific projects and tasks within emphasis areas and strategies. At the specific project level, we will gather a record of crash experiences before and after the implementation of the project.

After this information is gathered, the evaluation process will look at a comparison of crash numbers, rates, and severity observed after the implementation of a strategy with the crash numbers, rates, and severity expected if the strategy had not been implemented. Finally, the cost of the safety countermeasures implemented will be compared to the safety benefits and economic savings.

These findings will be used to revise emphasis areas and strategies.

Glossary

Alcohol-impaired driver	Any driver with a BAC of .08 or greater. On average for 2001 to 2005, alcohol impaired drivers were involved in 34 percent of all traffic crashes.
Blood Alcohol Concentration	The BAC is measured as a percentage by weight of alcohol in the blood (grams/deciliter). A positive BAC level (0.01 g/dl and higher) indicates that alcohol was consumed by the person tested. A BAC level of 0.10 g/dl or more indicates that the person was intoxicated.
Collision	An unintended event that causes a death, injury or property damage and involves at least one motor vehicle or pedalcyclist on a public roadway.
Contributing Circumstance	An element or driving action that, in the reporting officer's opinion, best describes the main cause of the collision. First, second and third contributing causes are collected for each motor vehicle driver, pedalcyclist and pedestrian involved in the collision.
Corridor Safety Model	Corridor Safety Program engages communities in custom-designing their own action plan to reduce the number and severity of automobile crashes. It focuses on stretches of highway that have been identified as having the highest accident and fatality rates. The program uses low-cost engineering fixes and strong local partnerships to develop plans that include elements of education, enforcement, emergency services and engineering. Interested citizens along with businesses and agencies that have a vested interest in the safety of their roadways locally coordinate the program in each community.
Disabling Injury	Any injury other than a fatal injury that prevents the injured person from walking, driving, or normally continuing the activities the person was capable of performing before the injury occurred.
Disabling Injury Collision	Any collision in which the most severe level of injury sustained by the person(s) involved is a disabling injury.
Drinking driver	Any driver with a positive BAC or a police report of "had been drinking impaired," "had been drinking not impaired" or "had been drinking impairment unknown." On average for 2001 to 2005, alcohol impaired drivers were involved in 38 percent of all traffic crashes.
Driver (operator)	A person who is in actual physical control of a motor vehicle on a public roadway.

Licensed Driver	A person who is licensed by any State, province or other governmental entity to operate a motor vehicle on public roadways.
Motor Vehicle	Any motorized device in, upon or by which any person or property is or may be transported or drawn upon a public roadway, excepting devices used exclusively upon stationary rails or tracks. This includes every motorized vehicle that is self-propelled or propelled by electric power (excluding motorized wheel-chairs), including that obtained from overhead trolley wires but not operated on rails.
Nonmotorist	Any person who is not an occupant of a motor vehicle in transport and includes the following: 1. Pedestrians 2. Pedalcyclists 3. Occupants of parked motor vehicles 4. Others such as joggers, skateboard riders, people riding on animals, and persons riding in animal-drawn conveyances.
Passenger	Any occupant of a motor vehicle who is not a driver.
Pedalcycle	Every vehicle propelled exclusively by human power upon which any person may ride, including unicycles, bicycles and tricycles. This does not include scooters and similar devices.
Pedalcyclist	Any Person operating or riding upon a pedalcycle.
Pedestrian	Any person not in or upon a motor vehicle or other vehicle.
Restraint	A device such as a seat belt, shoulder belt, booster seat, or child seat used to hold the occupant of a motor vehicle in the seat at all times while the vehicle is in motion.
Rural	All areas, incorporated and unincorporated, with a population of less than 5,000.
Unlicensed driver “hot sheets”	A list of the unlicensed, revoked, or suspended drivers living in the area, distributed to law enforcement.
Urban	Any incorporated area with a population of over 5,000.
Vehicle Miles Traveled (VMT)	The number of miles traveled annually by motor vehicles in the State of Washington (this figure is formulated by the Transportation Data Office of WSDOT).
Work Zone	Any activity involving construction, maintenance or utility work on or in the immediate vicinity of a public roadway. A work zone may be active (workers present) or inactive (workers not present).

WSP Washington State Patrol
WTA Washington Trucking Association
WTSC Washington Traffic Safety Commission

Appendix B

2000 Target Zero Partners

AAA Washington
Association of Washington Cities
Bicycle Alliance of Washington
City of Puyallup
Cooper Jones Foundation
County Road Administration Board
The Governor's Committee on Health Emergence Medical Services
House Legislative Transportation Committee Staff
Office of Emergency Medical and Trauma Prevention
Office of Superintendent of Public Schools
Office of Superintendent of Public Transportation
Pierce County DUI Task Force
Pierce County Public Works
Safety Restraint Coalition
Snohomish County Sheriff's Office
Spokane County Engineers
Spokane Parks and Recreation Department
Spokane Regional Health District
Washington State Department of Health
Washington State Department of Licensing
Washington State Department of Social and Health Services
Washington State Department of Transportation
Washington State Department of Transportation Bicycling Advisory Committee
Washington State Patrol
Washington Traffic Safety Commission
Washington Trucking Association

Screens Used to Develop Collision Data

Bicycles

Collision Type

- unicycle 44
 1) Bicycle 45
 2) Tricycle 46

Crossover & Over the Centerline (Head-on)

Collision Type

- 1) From Opposite Direction – Both Moving – Head On
 2) From Opposite Direction – One Stopped – Head On
 3) From Opposite Direction – Both Going Straight – One Stopped - Sideswipe
 4) From Opposite Direction – Both Going Straight – Sideswipe
 5) From Opposite Direction – One Left Turn – One Right Turn
 6) From Opposite Direction – One Left Turn – One Left Turn
 7) From Opposite Direction – All Others
 8) Intersection Collisions Removed (see above)
- same* (circled 1-4)
Over the centerline used to mean head-on (circled 5-6)
~~7) From Opposite Direction – All Others~~

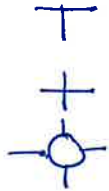
Heavy Truck Collisions

Ad Hoc (Vehicle Type)

- 1) Truck and Trailer 4
 2) Truck (Flatbed, Van, etc.) 3
 3) Truck Double Trailer Combination 7
 4) Truck Tractor 5
 5) Truck Tractor and Semi Trailer 6

Intersection Related

Junction Relationship



- 1) At Intersection and Related 1
 2) Intersection Related But Not at Intersection 2
 3) At Driveway 3
 4) At Driveway Within Major Intersection 6
 5) Driveway Related But Not at Driveway 7
 6) Circulating Roundabout B
 7) Entering Roundabout A
 8) Exiting Roundabout C

except at roundabout - not related

don't include 4, 5, 7

Pedestrian

Collision Type

- 1) Vehicle Going Straight Hits Pedestrian 0
 2) Vehicle Turning Right Hits Pedestrian 1
 3) Vehicle Turning Left Hits Pedestrian 2
 4) Vehicle Backing Hits Pedestrian 3
 5) Vehicle Hits Pedestrian – All Other Actions 4
 6) Vehicle Hits Pedestrian – Actions Not Stated 5

Run of the Road

Collision Type

- 1) One Parked One Moving 32
 2) Fixed Object 50
 3) Other Object 51
 4) Vehicle Overturned 52



