Washington State's Strategic Highway Safety Plan

TARGET ZERO

Zero Deaths • Zero Disabling Injuries • 2030

Updated 1/07

CHRISTINE O. GREGOIRE
Governor

STATE OF WASHINGTON
OFFICE OF THE GOVERNOR
P.O. Box 40002 • Olympia, Washington 98504-0002 • (360) 753-6780 • www.governor.wa.gov

February 28, 2007

Dear Neighbors:

As part of my efforts to move Washington forward and hold government accountable for results, I am pleased to present Washington's Strategic Highway Safety Plan: *Target Zero*.

Approximately 600 Washingtonians die in traffic accidents each year — most are preventable. Seventy-seven percent of traffic fatalities involve impairment, speed, and/or no seat belt use. We need not accept these losses as a sad fact of life. *Target Zero* sets forth a vision for Washington where no one dies on our state's roads.

Target Zero identifies traffic safety needs and provides an inventory of proven, effective strategies to meet them. It sets aggressive goals and objectives to measure our progress. When it comes time to develop traffic safety budgets, this report will allow us to implement strategies that work.

When Washington State developed the Target Zero Strategic Highway Safety Plan in 2000, we led the nation by declaring that we would not accept any number of traffic deaths on our roads. With this report, we renew our commitment to reaching zero traffic deaths and zero disabling injuries by the year 2030.

Target Zero meets the new federal requirements of the Safe, Accountable, Flexible, Efficient, Transportation Equity Act — A Legacy for Users. It was developed in partnership with the Washington State Departments of Health, Licensing, and Transportation, as well as the Washington Traffic Safety Commission and the Washington State Patrol. Comments were solicited from federal, state, and local agencies, public and private organizations, and Tribal Nations.

I look forward to the day when Washington's families no longer suffer the tragic results of traffic deaths and disabling injuries. I encourage you to read this plan and join me in addressing this great challenge.

Sincerely,

Christine O. Gregoire
Governor

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

Federal Agencies
National Highway Traffic Safety Administration NW Region
Federal Highway Administration, Washington Division
Federal Motor Carrier Safety Administration
Federal Railroad Administration, Region 8
Federal Transit Administration

Private Agencies and Organizations
AAA of Washington
Washington Trucking Association
Mothers Against Drunk Driving
American Traffic Safety Services Association
Safe Kids Washington State
Washington Safety Restraint Coalition
Washington Traffic Safety Education Association
Children's Hospital and Regional Medical Center

Table of Contents

Purpose ---------- **iii**

Our Partners In Traffic Safety ---------- **v**

1. Introduction ---------- **1**
- 1.1 Our Mission ---------- 1
- 1.2 Our Vision ---------- 1
- 1.3 Our Goal ---------- 1
- 1.4 Background ---------- 3

2. Washington's Traffic Safety Trends ---------- **5**

3. Target Zero Plan Process ---------- **9**
- 3.1 Development Process ---------- 9
- 3.2 Data Analysis Process ---------- 10
- 3.3 Scope ---------- 11
- 3.4 Where to Find More Information ---------- 12

4. Priority Objectives and Strategies ---------- **13**
- 4.1 Priority One: Impaired Driving and Speed-Related Collisions ---------- 14
- 4.2 Priority Two: Occupant Protection, Traffic Data Systems, Run-Off-Road Collisions, and Intersection Collisions ---------- 15
- 4.3 Priority Three: Distracted and Drowsy Drivers; Young Drivers; Unlicensed Drivers; Pedestrian Safety; Motorcycle Safety; Commercial Vehicle Safety; Head-On Crashes; and Emergency Medical Services ---------- 16
- 4.4 Priority Four: Older Drivers; Aggressive Drivers; Bicycle Safety; Pupil Transportation; Vehicle-Train Crashes; Work Zone Collisions; Wildlife Collisions; Integrated Interoperable Communications ---------- 17

5. Driver Behaviors ---------- **21**
- 5.1 Impaired Drivers ---------- 21
- 5.2 Speed ---------- 28
- 5.3 Unrestrained Drivers and Passengers ---------- 33
- 5.4 Distracted and Drowsy Drivers ---------- 42
- 5.5 Unlicensed Drivers ---------- 46

6. Other Users ---------- 53
6.1 Young Drivers ---------- 53
6.2 Pedestrian Safety ---------- 58
6.3 Motorcycle Safety ---------- 64
6.4 Commercial Motor Vehicle Safety ---------- 69

7. Roadway Improvements ---------- 75
7.1 Reducing Run-Off-Road Crashes ---------- 75
7.2 Reducing Crashes at Intersections ---------- 79
7.3 Reducing Head-On Crashes ---------- 84

8. Emergency Medical Service and Trauma Care Systems ---------- 89
8.1 Enhancing Emergency Medical Capabilities to Increase Survivability ---------- 89

9. Traffic Information Systems ---------- 95
9.1 Improve Traffic Data Collection Systems ---------- 95

10. Next Steps ---------- 99
10.1 Implementation Process ---------- 99
10.2 Evaluation Process ---------- 99

Appendix A, Glossary and List of Acronyms ---------- 101

Appendix B, 2000 Target Zero Stakeholders ---------- 107

Appendix C, Screens Used to Develop Collision Data ---------- 109

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.

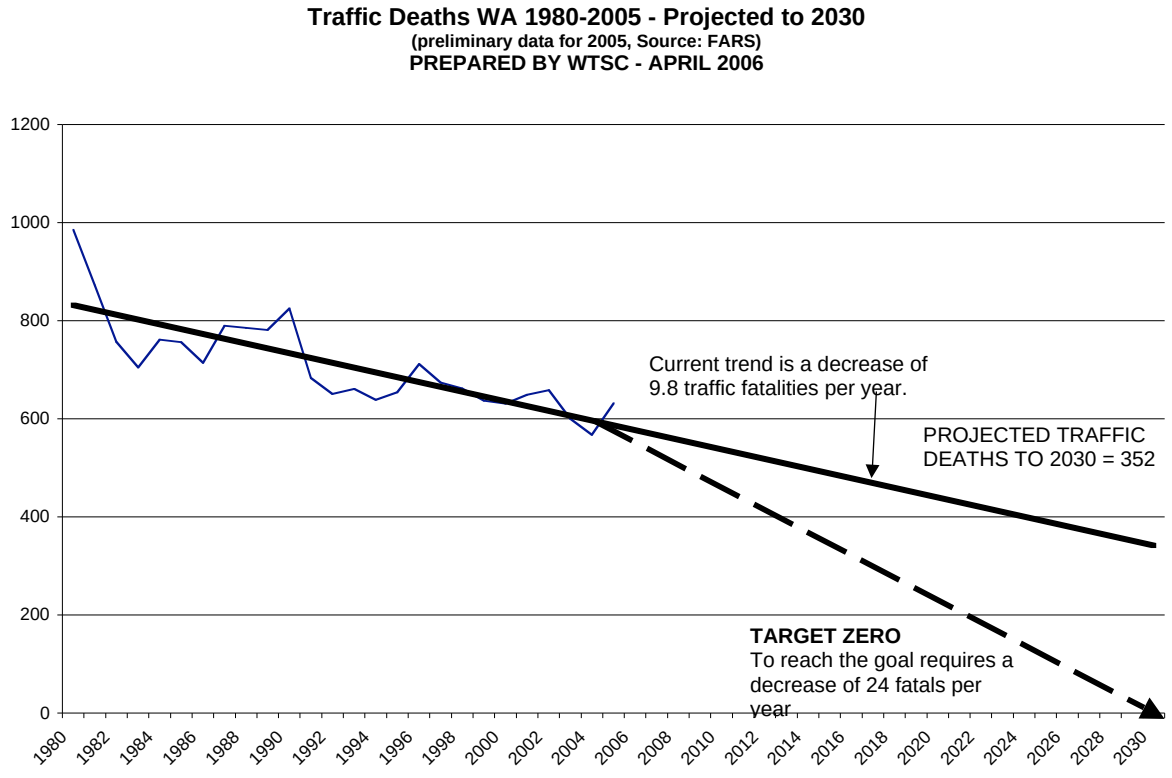
1.2 Our Vision

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

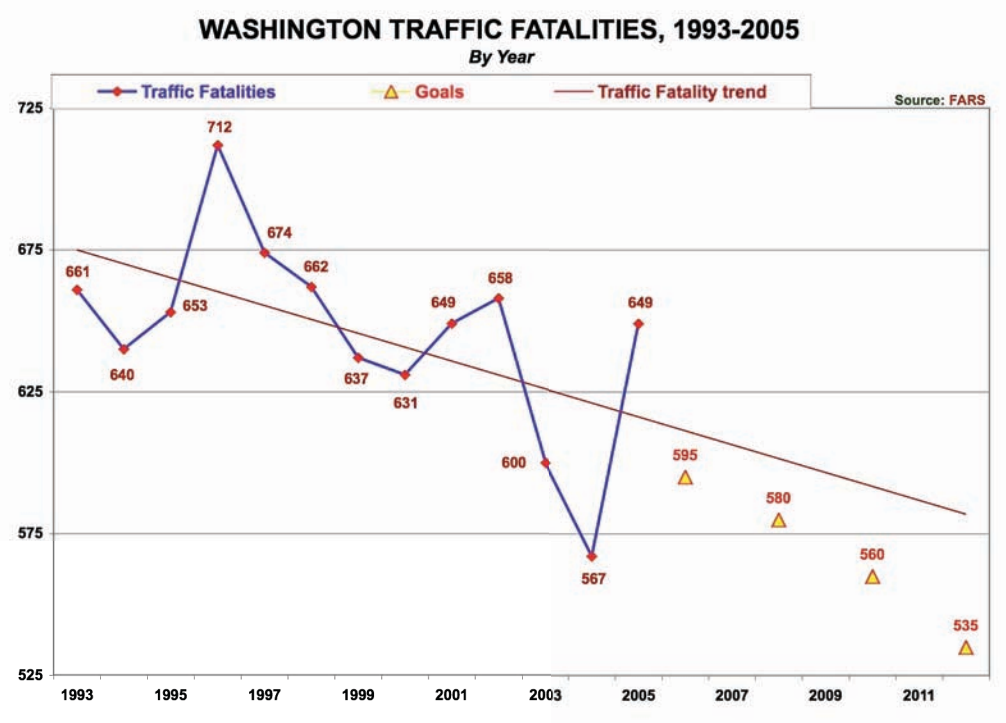
1.3 Our Goal

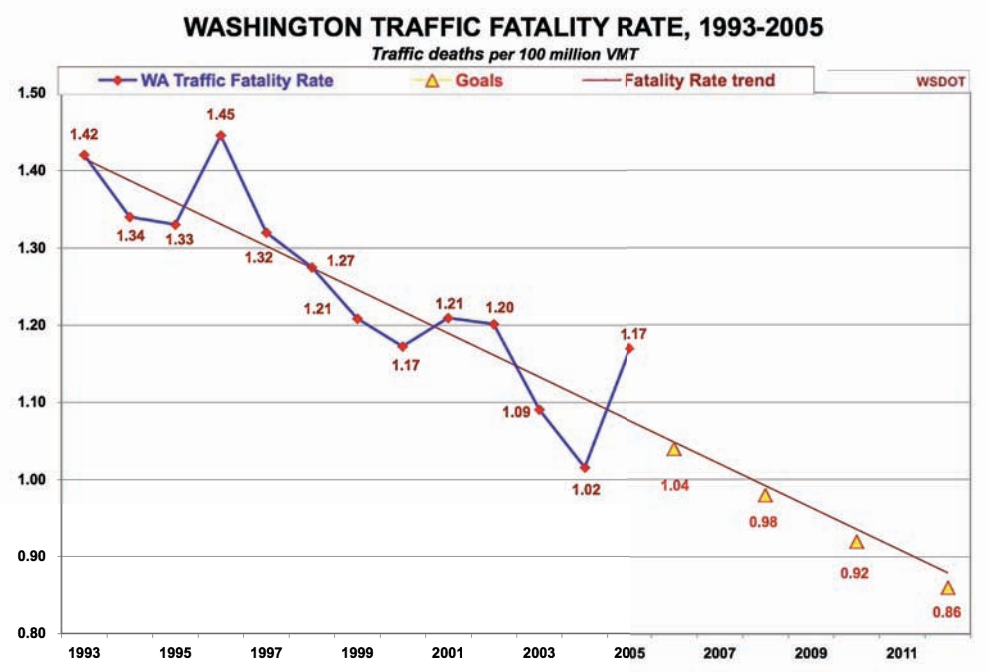
Washington State seeks to eliminate their traffic deaths and disabling injuries. In order for Washington State to achieve Target Zero, the State must experience 24 fewer fatalities each year for the next 25 years. See Figure 1-1, "Achieving the Target Zero Vision," below.

Figure 1-1: Achieving the Target Zero Vision



Target Zero also sets shorter term stretch goals for 2006 through 2012. These goals, as shown in the chart below, push our current trend aggressively, but do not yet match the trend line required to meet zero deaths by the year 2030. This reflects the way that implementation of this plan will reduce deaths while also acknowledging that factors outside the control of this plan, such as technological and medical advances, will also have an impact in our ability to reach zero deaths by 2030.





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 33[1]. 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)

measure the effects of these strategies and keep us on course toward our target of zero deaths and disabling injuries. This guide shows us how.

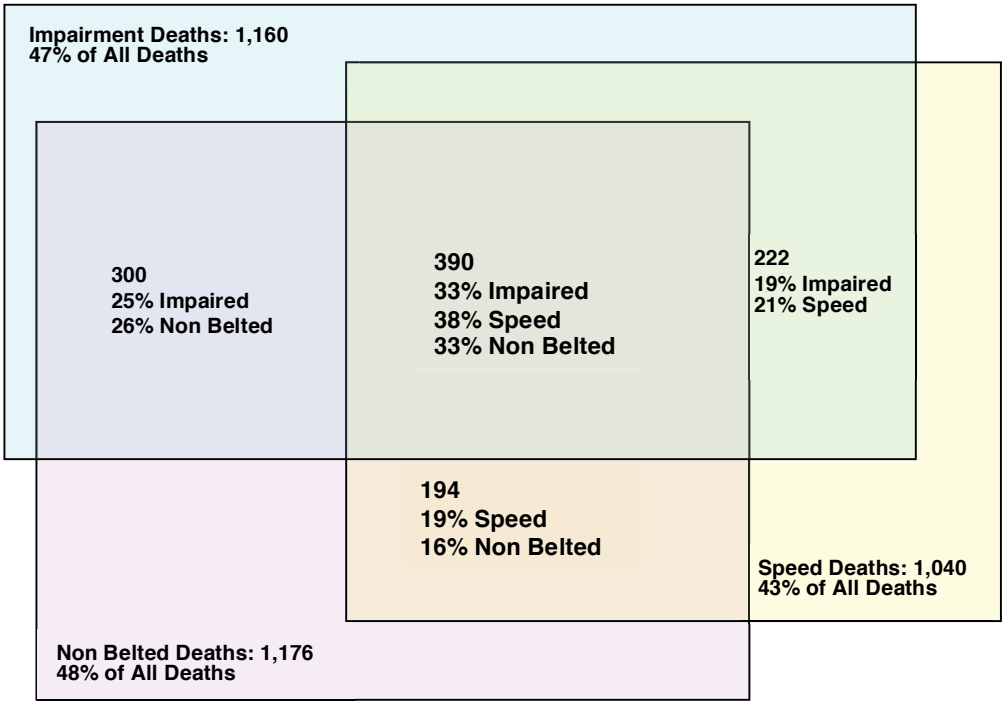
Ch 2 / Washington's Traffic Safety Trends

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.



Trends in Washington's traffic deaths over the past ten years provide an overview of our traffic safety progress.

From 1993–2005, data from the Fatality Analysis Reporting System (FARS) show, about 80 percent of people who died in traffic collisions were vehicle occupants, 11 percent were pedestrians, seven percent were motorcyclists, and two percent were bicyclists. Males accounted for 68 percent of traffic deaths, while females accounted for 32 percent. By age group, 15–20 year-olds suffered the highest number of fatalities with 1,359, followed by 21–25 year-olds with 1,104 deaths.

Sixty-one percent of traffic fatalities occurred on rural roads, while 39 percent occurred on urban roads. By road type, 38 percent of deaths occurred on state or US highways, 31 percent on county roads, 18 percent on city streets, and 11 percent on interstates. However, if we consider the rate of fatalities per 100 million vehicle miles traveled (VMT), then county roads suffered the highest fatality rate at 2.28 per 100 million VMT, followed by state and US highways at 1.61, city streets at 0.88, and interstates at 0.52 per 100 million VMT.

Run-off-the-road, impairment, and speed were the top factors cited in investigations of Washington traffic fatalities. Drinking-driver-involved fatalities occurred most often among 21-25 year olds (19 percent), males (77 percent), vehicle occupants (88 percent), and on rural roads (64 percent). Speed-involved fatalities occurred predominantly among 15-20 year olds (24 percent), males (74 percent), vehicle occupants (86 percent), and rural roads (62 percent).

Throughout the remainder of this report, traffic fatality and disabling injury data are further presented and analyzed for all of the Target Zero plan elements within each emphasis area.

Note—Impairment and Traffic Crashes:

Washington State has focused on impaired driving for many years and as a result the topic of impairment yields ample data, giving us many ways of looking at the problem. Here is a short list of impairment terms and their definitions as used in this document:

Impairment related collision: Any driver, pedestrian, cyclists, etc with a BAC of .08 or greater and/or a positive result on a drug test. On average for 2001 to 2005, impairment related collisions accounted for 47 percent of all traffic crashes.

Impaired driver: Any driver with a BAC of .08 or greater and/or any driver with a positive result on a drug test. On average for 2001 to 2005, impaired drivers were involved in 39 percent of all traffic crashes.

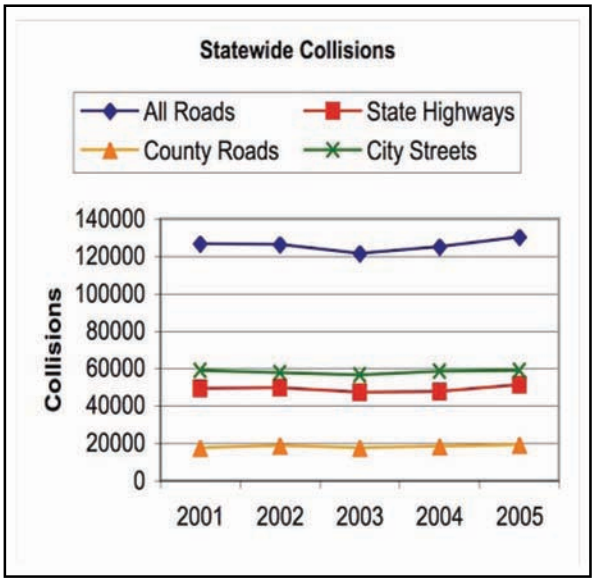
Alcohol impaired driver: Any driver with a BAC of .08 or greater. On average for 2001 to 2005, alcohol impaired drivers were involved in 34 percent of all traffic crashes.

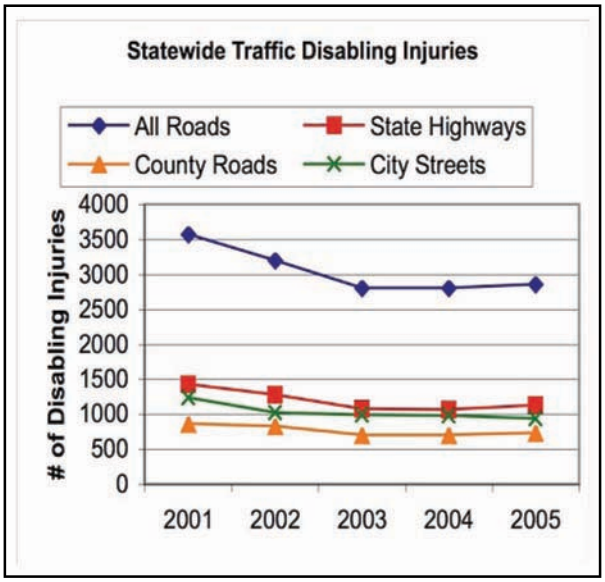
Drinking driver: Any driver with a positive BAC or a police report of "had been drinking impaired," "had been drinking not impaired" or "had been drinking impairment unknown." On average for 2001 to 2005, alcohol impaired drivers were involved in 38 percent of all traffic crashes.

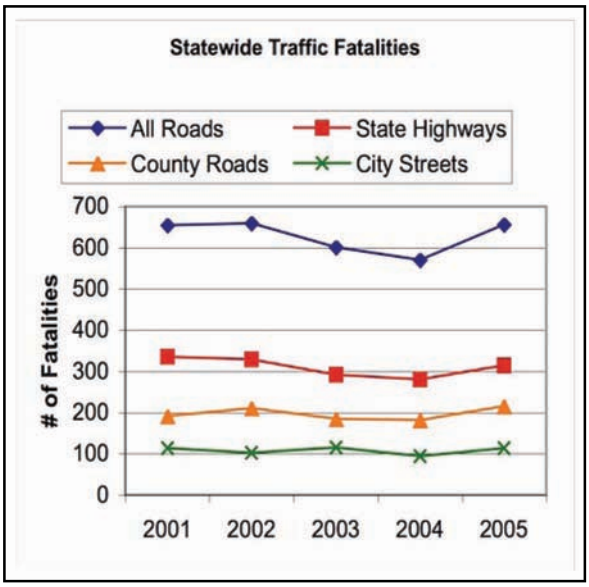
(Definition source: WTSC; Data source: FARS)

Figure 2-2

Washington State Traffic Collisions, 2001–2005







The Percent of All Fatalities That Were Speed Related

Road Type	2001	2002	2003	2004	2005
State Highways	29%	30%	30%	28%	28%
County Roads	44%	50%	49%	60%	49%
City Streets	41%	44%	43%	36%	44%
Other/Unknown	50%	58%	38%	53%	45%
*All Roads**	*36%*	*40%*	*39%*	*40%*	*38%*

The Percent of All Fatalities That Were Impairment Related

	2001	2002	2003	2004	2005
State Highways	44%	48%	41%	41%	38%
County Roads	45%	52%	55%	64%	57%
City Streets	43%	52%	50%	47%	45%
Other/Unknown	50%	32%	13%	47%	45%
*All Roads**	*44%*	*49%*	*47%*	*49%*	*46%*

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 Committee[2], 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.

the larger group of stakeholders (listed under Our Partners on page v) reviewed the draft and provided their comments and suggestions. During July and August, after extensive input from our traffic safety partners, the goals, emphasis areas, strategies, and performance measurers were finalized. The SHSP was submitted for Governor Gregoire's review and approval in November 2006.

This document records the plan that was developed. It provides guidance to all agencies, groups, and individuals working in the field of traffic safety. It serves as a statewide strategic highway safety plan and will be incorporated into the plans and programs of key traffic safety agencies. It directs the commitment of agency resources and funding. It seeks to support agencies, groups, and individuals working together to implement Target Zero strategies. It provides a strong evaluation process that will allow the examination of the progress towards the goals, suggest changes to the strategies, and feed results back into the planning process, so that priorities can be revisited and the plan updated periodically.

3.2 Data Analysis Process

Washington's Traffic Records System is comprised of hardware, software, and accompanying processes that capture, store, transmit, and analyze the following types of data: collisions; citations and adjudication; drivers and registered vehicles; motor carriers; injury surveillance including emergency medical services, hospital emergency departments, trauma centers, hospital inpatient and death records; and roadway information including traffic volume, features inventory, and geometrics; and location information including geographic information systems.

This data system serves as the critical link in identifying problems, selecting appropriate countermeasures, and evaluating the performance of these programs. As documented throughout this plan, the traffic safety data was thoroughly analyzed by the Target Zero committee to provide a clear picture of our State's current traffic safety successes and challenges. This information was used to select the emphasis areas and to set the statewide traffic safety priorities listed in this document.

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.

In November 2003 the TRC hosted a state traffic records assessment conducted in cooperation with the National Highway Traffic Safety Administration (NHTSA), an agency of the US Department of Transportation. This assessment provided a number of recommendations as to how the current system architecture could be improved. In addition, the TRC held numerous strategic planning sessions to develop a foundation for the State's

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.

3.4 Where to Find More Information

Most of the strategies in the Target Zero plan are proven, effective strategies. This means that the strategy has been used in one or more places and found to be effective by a properly designed evaluation.

Some of the strategies in the Target Zero plan have not yet been proven effective. These strategies are ones that have been tried and may even be accepted strategies, but for which no valid evaluations that provide a link between the project and an actual reduction in traffic deaths and injuries has been found. When funding such a strategy, the State will require an extensive, properly designed evaluation component be a part of the project.

When building the strategies in this document, two main sources were used to determine if strategies were proven or not. The American Association of State Highway and Transportation Officials (AASHTO) has developed a national Strategic Highway Safety Plan[3], available on their website. The comprehensive plan will substantially reduce vehicle-related fatalities and injuries on the nation's highways. Along with the plan, National Cooperative Highway Research Program (NCHRP) has developed guides that document strategies for significantly reducing roadway injuries and fatalities. These guides, which contain proven, tried, and experimental strategies, are linked in this document in the emphasis areas that apply to them.

The second guidance document is Countermeasures that Work[4], 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 US Department of Transportation. This guide lists countermeasures, best practices and expected effectiveness.

Other reference material is also linked throughout this document to provide detailed information about these objectives and strategies.

[3] http://safety.transportation.org/plan.aspx
[4] http://www.nhtsa.dot.gov/people/injury/airbags/Countermeasures/index.htm

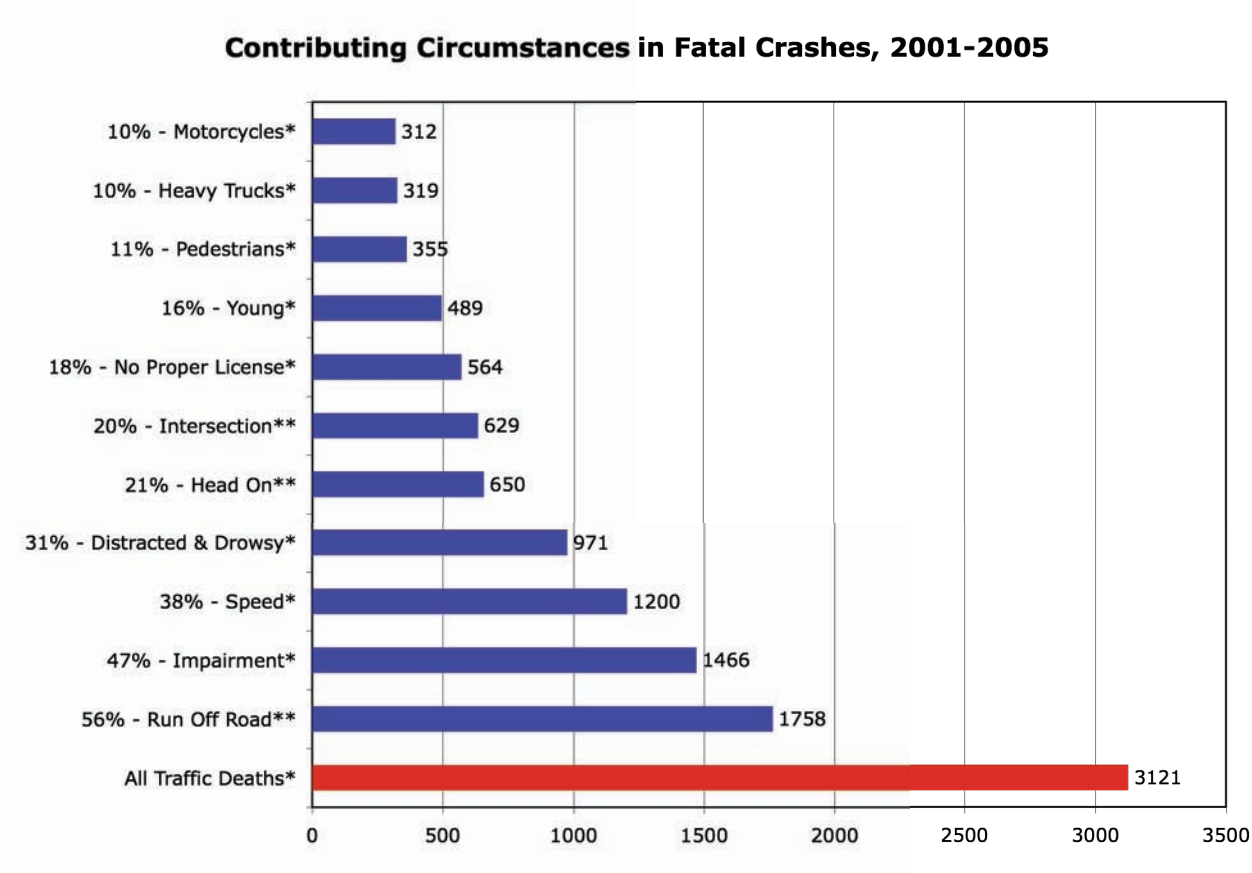
Ch. 4 / Priority Objectives and Strategies

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 injuries. Figure 4.1, "Contributing Circumstances in Fatal Crashes," below shows an analysis of fatality crash data by contributing circumstance.

Figure 4.1



source: *FARS, **WSDOT

As mentioned before (Figure 2.1, “The Role of Impairment, Speed, and No Seat Belt in Traffic Fatalities”), multiple factors occur in traffic collisions, with impairment and speed playing a role in every other category of crashes. For example, while figure 4.1 shows that run-off-the-road was a contributing circumstance in 56 percent of the fatal crashes during 2001-2005, and impairment and/or speed accounted for over half of all run-off-the-road collisions. Therefore, the Target Zero Committee concluded that if Washington State can meaningfully reduce impaired driving and speed, we could cut the death rates across the board. This makes impaired driving and speed our top priority areas.

In setting priorities for the remaining traffic safety issue areas, the committee looked at the number of over-all traffic crashes, disabling injuries, and deaths; the ability of strategies to reduce traffic disabling injuries and deaths; and the role of the importance of the issue in promoting overall traffic safety (such as improving traffic data and EMS services). The committee also noted that impairment and speed play a role across all categories.

This section describes issue areas by grouping them in terms of the most critical traffic safety issues, provides a brief description of the problems associated with each area, and the reason for it’s placement in the tiers of critical issues.

4.1 Priority One: Impaired Driving and Speed

Impaired driving and speed are the top two factors most often cited in death and disabling injuries on Washington’s roadways. On average over the last five years (2001–2005), 47 percent of traffic deaths occurred in impairment related crashes and 38 percent occurred in speed related crashes. Considerable overlap exists between these categories—about 60 percent of all speed related crashes also involve impairment. For more information, refer to Figure 2-2 “Washington State Traffic Collisions, 2001-2005” on page 7.

From 2001 to 2005, 3,121 people were killed on Washington’s roads. Impairment claimed 1,466 lives during these years, and speed claimed 1,200 lives.

To cut the death rate from impaired driving and speed, we believe Washington needs to fully employ two proven strategies: sobriety checkpoints and photo-radar speed enforcement. For more information on impaired driving statistics and strategies, see section 5.1, “Impaired Drivers” on page 21. For more information on speed statistics and strategies, see section 5.2 “Speed” on page 28.

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.

4.3 Priority Three: Young Drivers, Unlicensed Drivers, Distracted and Drowsy Drivers, Aggressive Drivers, Pedestrian Safety, Motorcycle Safety, Commercial Vehicle Safety, Head-On Crashes, Congestion-Related Crashes, and Emergency Medical Services

Significant traffic safety issues comprise the priority three category. Crash data show that these areas are important to address in order to reduce disabling injuries and deaths. Further information about these issues is included in the emphasis areas that comprise the remainder of this document.

Young Drivers: When we look at traffic fatality data by age group, we find that 15–20 year-old drivers have the highest fatality collision involvement rate in Washington—4.37 fatal crashes per 10,000 licensed drivers. In addition, between 1993 and 2005, 15–20 year-olds suffered the highest number of fatalities at 1,359 deaths and had the State's highest fatality rate at 22.4 per 100,000 population, twice the rate of most other age groups. Strategies that address compliance with the State's intermediate drivers license law and underage drinking laws will go a long way toward reducing deaths and disabling injuries for this age group. For more information, see section 6.1 "Young Drivers" on page 53.

Distracted and Drowsy Drivers: Between 2001 and 2005, drivers who were distracted and/or drowsy contributed to 971 fatal crashes, making this category the fourth most deadly. However, this category may be significantly under-reported due to the difficulty investigators experience in accurately identifying distracted and drowsy drivers. Some national studies estimate that nearly 80 percent of crashes involved some form of driver inattention within three seconds before the crash. For more information, see section 5.4 "Distracted and Drowsy Drivers" on page 42.

Unlicensed Drivers: Between 2001 and 2005, 18 percent of drivers involved in fatal crashes were not properly licensed, meaning they were unlicensed or had suspended, revoked, expired, canceled, or denied licenses. Of the drivers without a valid license at the time of the crash, 38 percent were also impaired and 43 percent were cited for speed. For more information, see section 5.5 "Unlicensed Drivers" on page 46.

Pedestrian Safety: From 2001 to 2005, an average of 68 pedestrians were killed each year in collisions with vehicles. The majority of these collisions occurred in urban areas. Children under age 14 are the most likely pedestrian fatalities, followed by adults ages 41–45. For more information, see section 6.2 "Pedestrian Safety" on page 58.

Motorcycle Safety: From 2001 to 2005, an average of 61 motorcyclists were killed each year on Washington's roadways. This represents an increasing trend when compared to the previous five years, from 1996 to 2000, when the average number of motorcyclists killed was 39. When we examine motorcyclist deaths by age, we find the biggest increase is

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, Bicycle Safety, Pupil Transportation, Vehicle-Train Crashes, Work Zone Collisions, Wildlife Collisions

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 actual number of traffic fatalities remains low–an average of 22 deaths a year in the 70–74 age range (compared to an average of 118 deaths each year for the 15-20 year old age

group). However, over the next 25 years, the number of older drivers in the United States will double so that by 2030, 20 percent of Americans will be age 65 or older[5]. Although age itself does not determine driving capabilities, older drivers can experience declines in their sensory, cognitive, or physical functioning that can put them at an increased risk of involvement in traffic crashes. Washington State will continue to monitor data pertaining to older drivers and develop strategies to plan for an aging population with the goal of enabling older drivers to retain as much mobility as possible for as long as possible when consistent with their safety and the safety of others. Many highway design and traffic control elements can be improved to better serve their needs. Older drivers can work with occupational therapists through programs such as AAA's "Carfit," to make sure their vehicles have necessary equipment such as extra mirrors or hand controls to deal with their driving limitations. Older drivers may extend their ability to drive through the use of medical treatments such as eyeglasses or cataract surgery. Finally, older drivers who can no longer drive safely in some situations may need to have their driver's licenses restricted or revoked. Establishing a State Medical Advisory Board to establish medical guidelines for driving and determining the conditions when drivers with medical conditions (regardless of age) can still safety drive, could help determine when driver license restrictions or revocation might be needed. While such strategies are not part of this document, Washington State will continue to explore and develop effective programs for coping with an aging population.

Aggressive Drivers: The National Highway Traffic Safety Administration (NHTSA) defines aggressive driving as, "the commission of two or more moving violations that is likely to endanger other persons or property, or any single intentional violation that requires a defensive reaction of another driver. " According to the National Highway Traffic Safety Administration (NHTSA), more than 60 percent of drivers see unsafe driving by others as a major personal threat to themselves and their families. In Washington State, there is no specific statute that defines aggressive driving, however law enforcement officers can charge aggressive drivers with negligent driving in the second degree, a $500 fine, or they can cite the driver for each individual driving infraction at $101 per violation. While aggressive drivers are a problem, the lack of a specific aggressive driving statute makes it hard to measure. For instance, we have no data to show the number of collisions, disabling injuries, or deaths that are aggressive driving related. Defining aggressive driving by statute would be the first step for setting goals and objectives for reducing aggressive driving. Washington State will continue with programs designed to address and reduce aggressive driving—such as the Washington State Patrol (WSP) Aggressive Driving Apprehension Team—however, aggressive driving is not further addressed in this plan.

[5] Administration on Aging, "Profile of Older Americans," 2000, http://www.aoa.gov/prof/statistics/profile/2002/2.asp.

Bicycle Safety: Safer bicycle travel remains an important goal for Washington State, even through 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

improve government services at all levels. The SIEC is comprised of fourteen voting members representing State agencies and local associations. The Committee has been aggressively working on the interoperability challenge through a series of steps culminating in a statewide technical implementation plan. The Washington State Patrol was selected as lead agency for the technical implementation plan efforts. Further information regarding committee membership and planning documents can be found at http://isb.wa.gov/committees/siec/index.aspx.

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 in1999. 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-involved[6]. (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

Washington Courts data show an increase in DUI arrests, from 37,673 DUI arrests in 2000 to 41,872 arrests in 2005. Washington's new primary seat belt law may help to account for the increase in DUI arrests since impaired drivers are less likely to wear seat belts. In addition, increased seat belt enforcement under Washington's primary law has increased the number of law enforcement contacts and thus expanded the potential for DUI arrests. A further positive development is that 2005 saw a decrease in the average BAC at arrest of these drivers—from 0.14 to 0.13.

NHTSA's National Center for Statistics and Analysis reports that nationwide, "data showed that the percentage of fatally injured drivers who were drinking was highest for Native Americans (57 percent) and Hispanics or Latinos (47 percent)."[7] The report noted that the percentage of drinking vs. non-drinking fatally injured Asian drivers is the lowest at about 20 percent followed by white and black drivers at about 30 percent.

Impaired driving is a societal issue that pushes us beyond traditional traffic safety partnerships. Washington seeks partnerships with prosecutors and courts, prevention and intervention systems, health care communities and hospital emergency room personnel, in an ever-expanding effort to continue to eliminate impairment as a factor in traffic crashes.

Figure 5.1-1

Selected Washington Annual Traffic Fatality Numbers, 2001-2005

Drinking-driver-involved, Alcohol-related, Impaired-driver-involved, Impairment-related, and Total fatalities

	2001	2002	2003	2004	2005*
TOTAL Fatalities	649	658	600	567	647
Drinking-Driver-Involved Fatalities[1]	243	262	221	214	268
% TOTAL Fatalities	37%	40%	37%	38%	41%
Alcohol-Related Fatalities[2]	270	286	247	235	288
% TOTAL Fatalities	42%	43%	41%	41%	44%
Impaired-Driver-Involved Fatalities[3]	256	295	255	254	264
% TOTAL Fatalities	40%	45%	42%	45%	41%
Impairment-Related Fatalities[4]	286	325	281	279	295
% TOTAL Fatalities	44%	49%	47%	49%	46%

*Based on preliminary data subject to change. Source FARS.

[1]Resulted from crashes involving at least one driver with a BAC > .00 or police-reported alcohol use.

[2]Same definition as #1 but also adding drinking nonmotorists struck by non-drinking drivers.

[3]Resulted from crashes involving at least one driver with a BAC ≥ .08 or a toxicological test showing drug use.

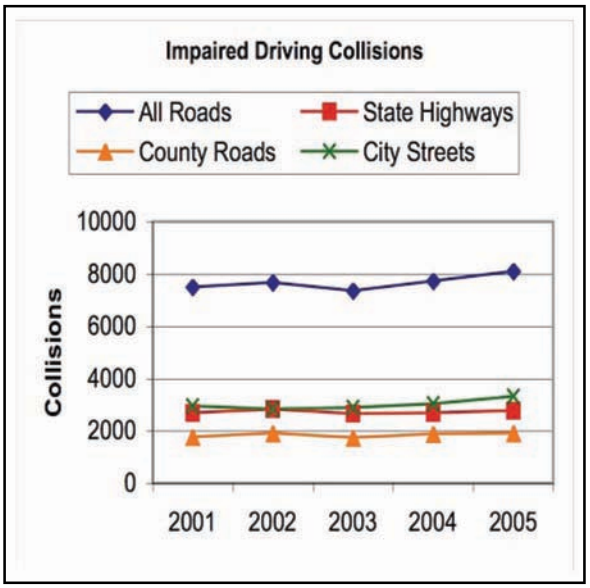
[4]Same definition as #3 but also adding impaired nonmotorists struck by non-impaired drivers.

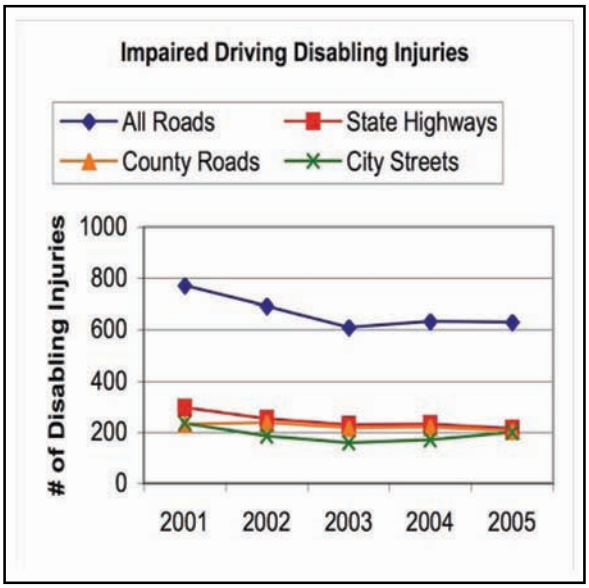
[7] NHTSA's National Center for Statistics and Analysis, "Race and Ethnicity in Fatal Motor Vehicle Traffic Crashes 1999–2004." http://www-nrd.nhtsa.dot.gov/pdf/nrd-30/NCSA/Rpts/2006/809956.pdf

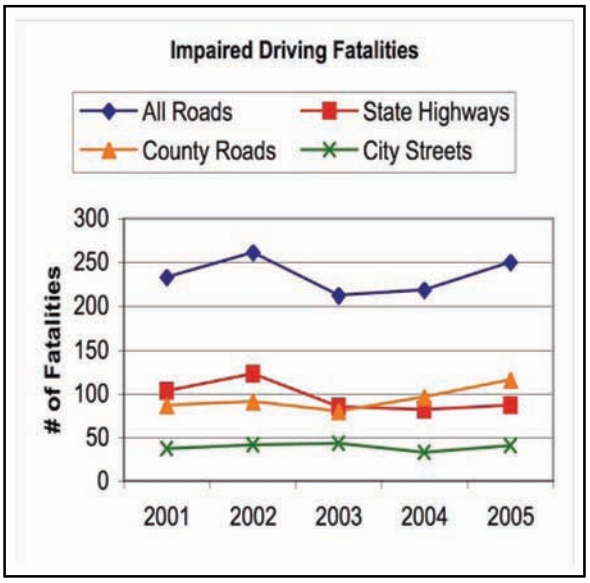
Figure 5.1-2

Impaired Driving Collisions, 2001–2005

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







The Percent of Impairment Related Fatalities That Were Also Speed Related

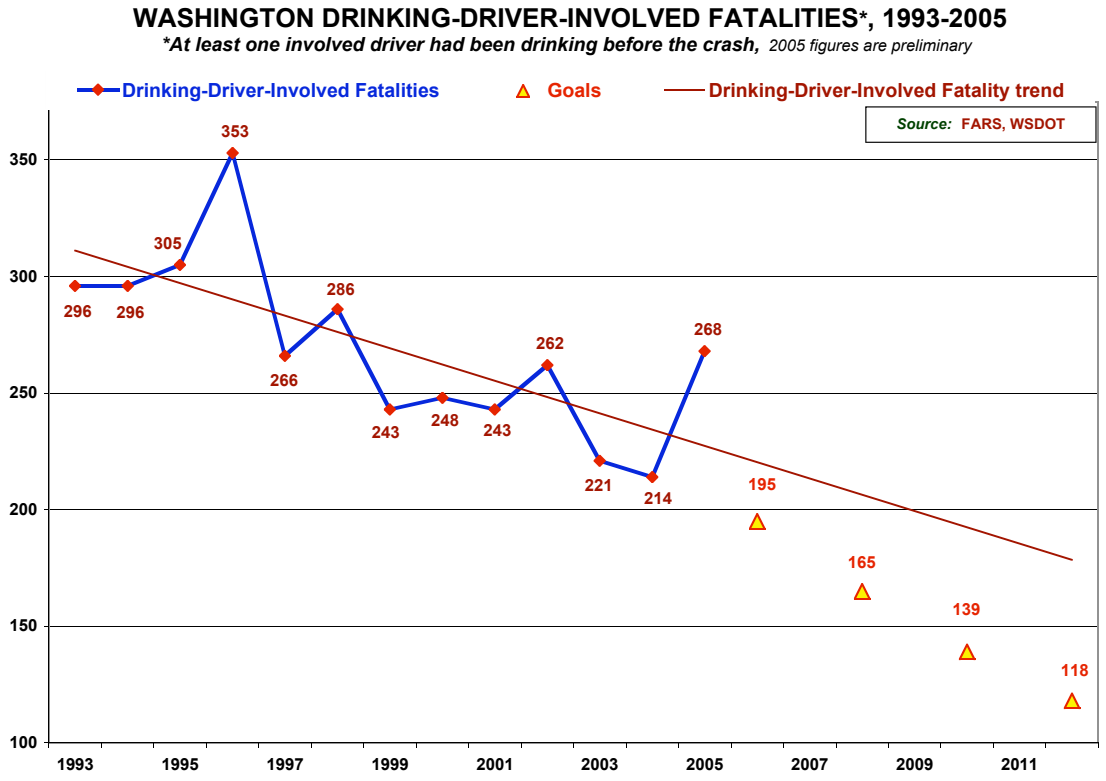
Road Type	2001	2002	2003	2004	2005
State Highways	48%	48%	48%	49%	48%
County Roads	58%	66%	63%	68%	73%
City Streets	67%	75%	72%	63%	61%
Other/Unknown	50%	36%	33%	38%	60%
*All Roads**	*56%*	*60%*	*59%*	*60%*	*62%*

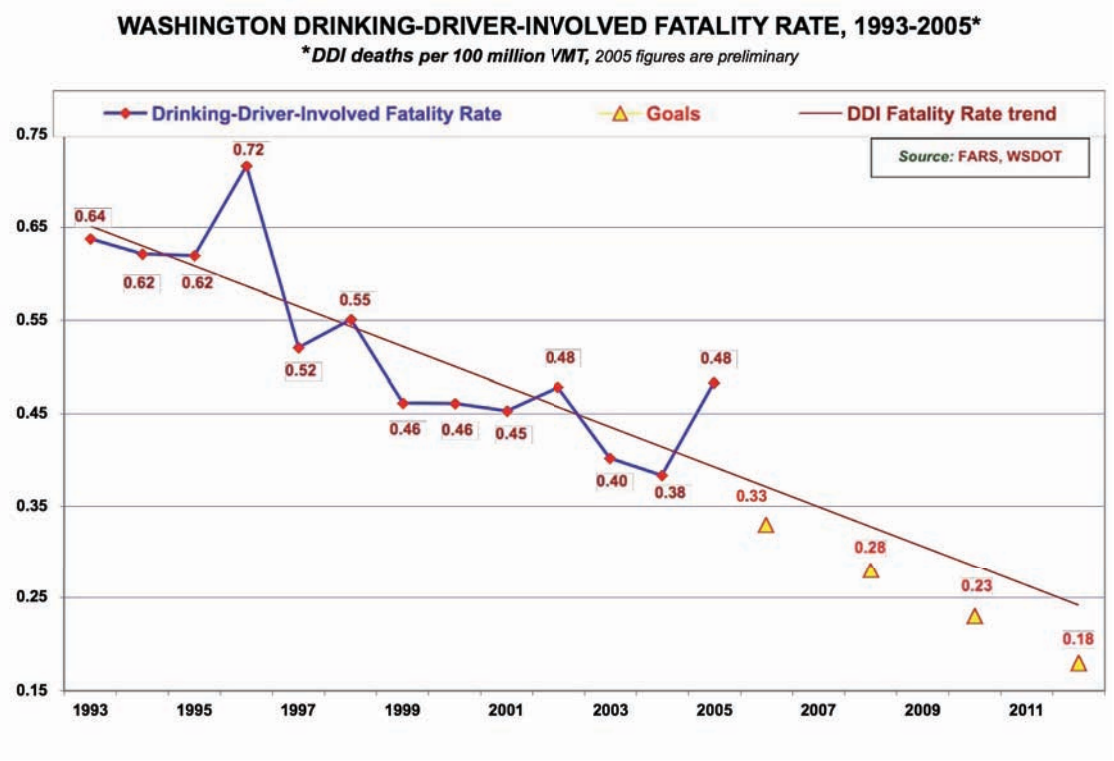
Charts data source: WSDOT. Table data source: FARS. *There was 1 fatality on a frontage road in 2003.

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.

Goals and Performance Measures





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) • 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) • 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) • 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 El 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)

	5.1.A6. Continue and expand the Liquor Control Board DUI Reduction Project to reduce over-service by licensed liquor premises.
5.1.B. Eliminate Hard Core Drinking Driver	5.1.B1. Establish a comprehensive program that is designed to reduce the incidence of alcohol-related crashes, injuries, and fatalities caused by hard core drinking drivers. (T) • Develop a system of centralized screening, assessment, referral and monitoring of DUI offenders.
5.1.C. Target Drug-Impaired Driving	5.1.C1. Expand the Drug Recognition and Classification Program. (P) • Include tribal police in Drug Recognition Expert training. • Support on-going Drug Recognition Expert training.

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.

Impaired Driver Resources

NCHRP Report 500, Volume 16: A Guide for Reducing Alcohol-Related Collisions. http://trb.org/news/blurb_detail.asp?id=5478

National Highway Traffic Safety Administration, National Criminal Justice Association (NCJA), Criminal Justice Leadership Meeting, Traffic Safety Today, Final Report, December 2003. http://www.nhtsa.dot.gov/people/injury/enforce/TrafficSafetyToday/index.html

System Improvements for Dealing with the Hard Core Drinking Driver, Traffic Injury Research Foundation. http://trafficinjuryresearch.com/DWI_systemImprovements/dwi_system.cfm#project

National Traffic Safety Board, Most Wanted Transportation Safety Improvements, Eliminate Hard Core Drinking Driver. http://www.ntsb.gov/recs/mostwanted/hard_core_drinking.htm

National Highway Traffic Safety Administration, Strategies for Addressing the DWI Offender: 10 Promising Sentencing Practices. 2004 http://www.nhtsa.gov/people/injury/enforce/PromisingSentence/pages/

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

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

5.2 Speed

Background

Speed is the second-most commonly cited driver error, accounting for 38 percent of all fatal crashes in Washington over the past five years. From 2001 to 2005, an average of 27,000 speed-related crashes occurred each year, resulting in 920 disabling injuries and 237 fatalities annually. Fifty-eight percent of speed-related fatalities were also impaired-driving related. Please refer to Figure 5.2-1 “Speed-Related Collisions 2001-2005” on page 29 for more information.

Although speed-related collisions occur most frequently on freeways, speed-related fatalities occur most frequently on county roads. Run-Off-Road crashes on curves are often speed-related.

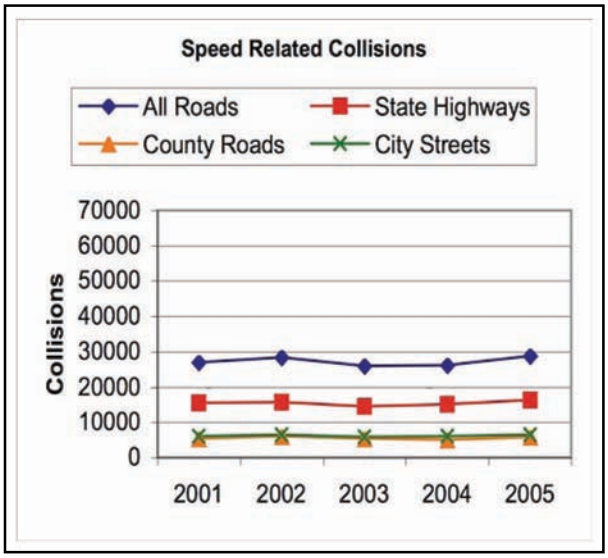
Two types of speed contribute to traffic collisions–speed too fast for conditions and exceeding the speed limit. Speed too fast for conditions may not necessarily include cases where drivers were traveling over the posted speed limit, but more typically pertains to the speeds at which drivers will lose control of their vehicles under certain conditions (such as on wet, icy, or debris-covered roads, in heavy traffic, or involving poorly maintained vehicles).

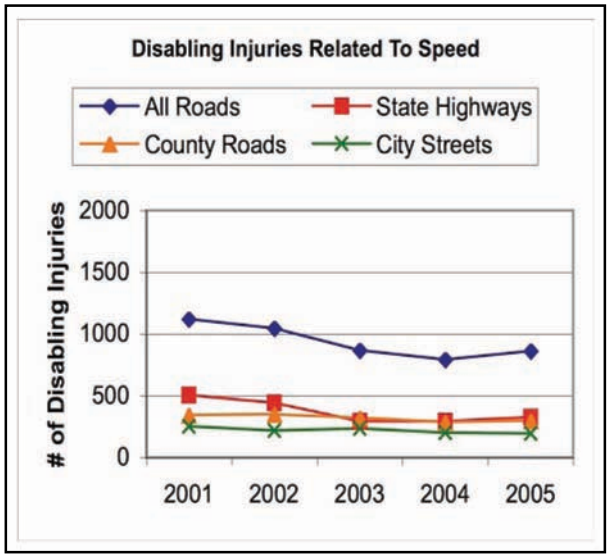
Engineering, education, and enforcement can all play a role in getting drivers to slow down.

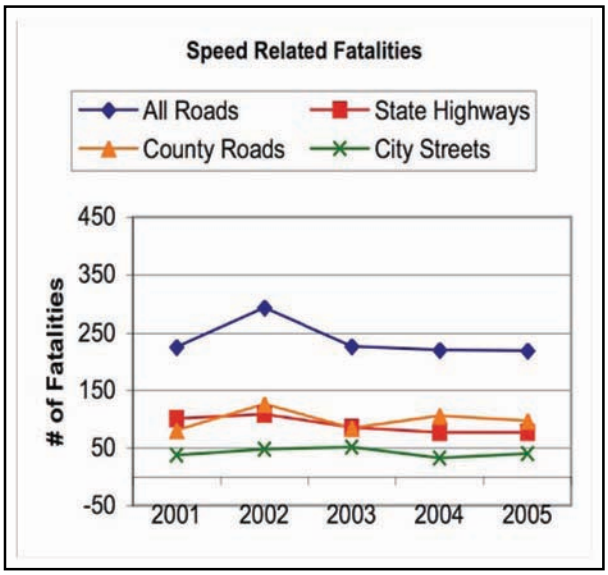
Figure 5.2-1

Speed-Related Collisions, 2001-2005

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







The Percent of Speed Related Fatalities That Were Also Impairment Related

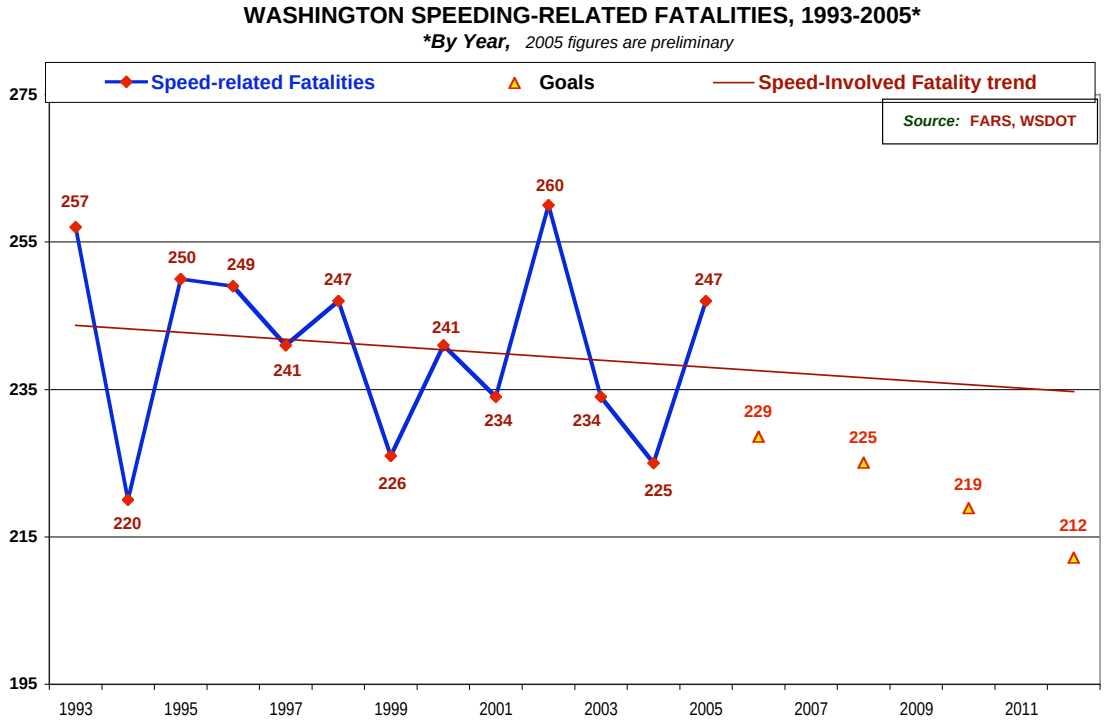
	2001	2002	2003	2004	2005
State Highways	48%	48%	48%	49%	48%
County Roads	58%	66%	63%	68%	73%
City Streets	67%	75%	72%	63%	61%
Other/Unknown	50%	36%	33%	38%	60%
*All Roads**	*56%*	*60%*	*59%*	*60%*	*62%*

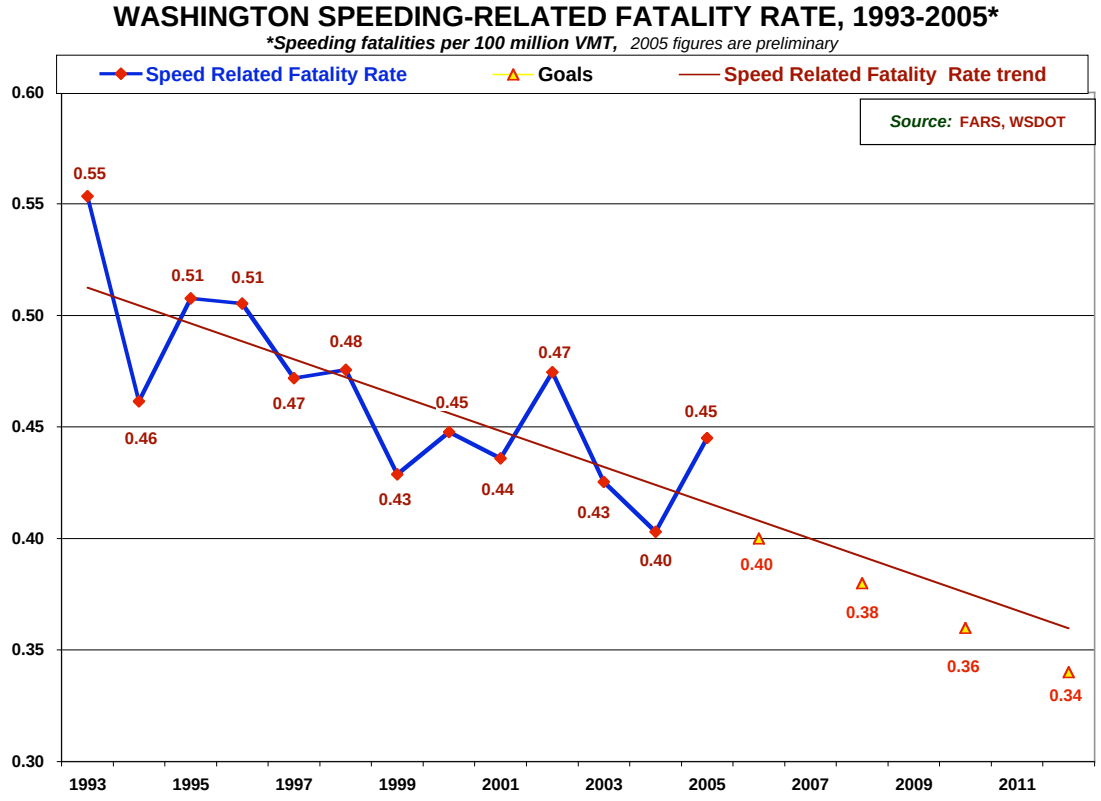
Charts data source: WSDOT. Table data source: FARS. *There was 1 fatality on a frontage road in 2003.

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.

Goals and Performance Measures





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) • 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.C6. Expand the El Protector program. (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.

Speed Management Resources

National Highway Traffic Safety Administration, "Speed Management Strategic Initiative," September 2005, DOT HS 809 924. http://www.nhtsa.dot.gov/people/injury/enforce/SpeedManagement-content/index.html

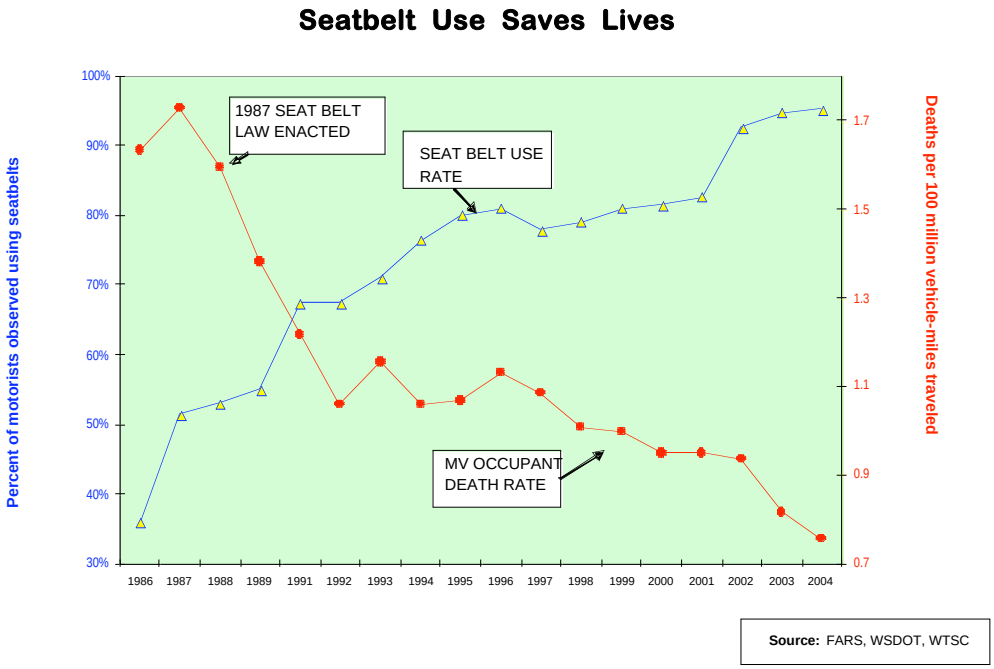
NCHRP plans to release an implementation guide addresses speed-related collisions in 2006.

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 State[8]," 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: A*n 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

- In 2002, Washington initiated its statewide "Click it or Ticket" enforcement and public information campaign.

Non-belted users represent only four percent of the population, yet almost half of those killed in traffic crashes are unbelted, thus further demonstrating the extremely high risk of death for unbelted passengers in traffic crashes. Therefore, even though the increase in percentage usage will be smaller in the future, the potential savings in both lives and economic loss can be proportionately higher. In a recent study of Washington seat belt violators, the authors compared subjects who had received traffic tickets for seat belt violations to subjects who have received tickets for other violations and found that non-seat belt users were more likely to be males over age 40 who drove pick up trucks and had poor driving records.[9]

The importance of proper restraints in preventing disabling injuries can be seen by comparing all traffic collisions and all occupants who were wearing restraints to those who were not wearing restraints. Of those wearing restraints, less than one percent received disabling injuries, while among occupants who were not restrained, more than eight percent received disabling injuries. The percentage of occupants who were not restrained and received disabling injuries increases to more than 12 percent when we look at county roads alone. See figure 5.3-2 "Seat Belt Usage of Driver and Occupants" on page 36.

A 2005 study by the Washington State University found that 70 percent of children under 40 pounds were using child safety seats and that about half of children between the ages of 4 to 8 were using some type of booster seat.[10]

Booster seats have been shown to protect children from serious injury better than adult seat belts alone. A 2003 study at Children's Hospital of Philadelphia found that booster seats reduce the risk of injury by 59 percent compared to using only a seat belt. (Durbin et al, JAMA, 289:21)

In 2005, Washington State upgraded its child passenger safety law to require that all children under the age of 13 must ride in the back seat and that children under age eight must use an appropriate child restraint system, such as child car seats or booster seats. This change in the law is effective June 1, 2007.

Ensuring proper use of child restraint systems, as children grow and "graduate" from rear-facing child safety seats to front-facing child safety seats to booster seats to adult seat belts, can provide a challenge. Nationally, very high misuse rates have been documented.

---

[9] Beard, Melissa M., MA and Salzberg, Phillip M., PhD. "The Last Five Percent: Who Are the Non-Users of Seat Belts in Washington State?" 2005. Traffic Research and Data Center, Washington Traffic Safety Commission, Olympia, WA.

[10] Stehr, Steven D. and Lovrich, Nicholas P. "An Assessment of Child Safety Restraint Usage in the State of Washington: Results of a Statewide Observational Study Conducted in 2004." Washington State University, Pullman, WA. February 2005.

According to a national study by USA Safe Kids Campaign[11], 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, 2005. http://www.nhtsa.dot.gov/people/injury/research/SBUseIndianNation/images/textfinal.pdf

Figure 5.3-2

Seat Belt Usage of Driver and Occupants

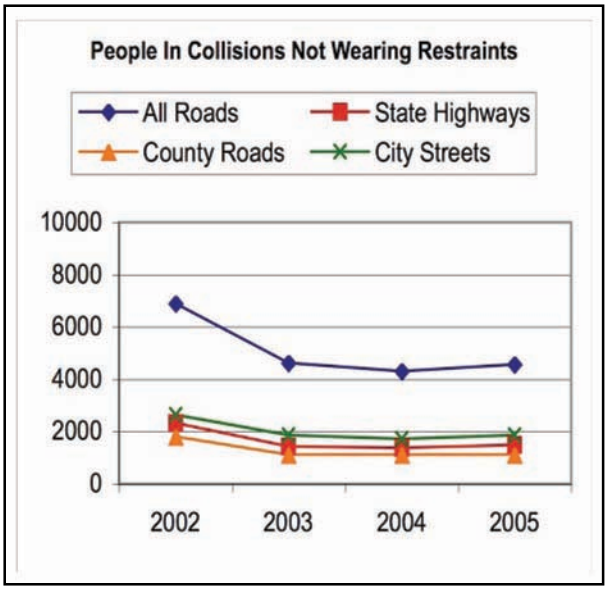
Percent of all occupants involved in collisions who received disabling injuries by belt use.

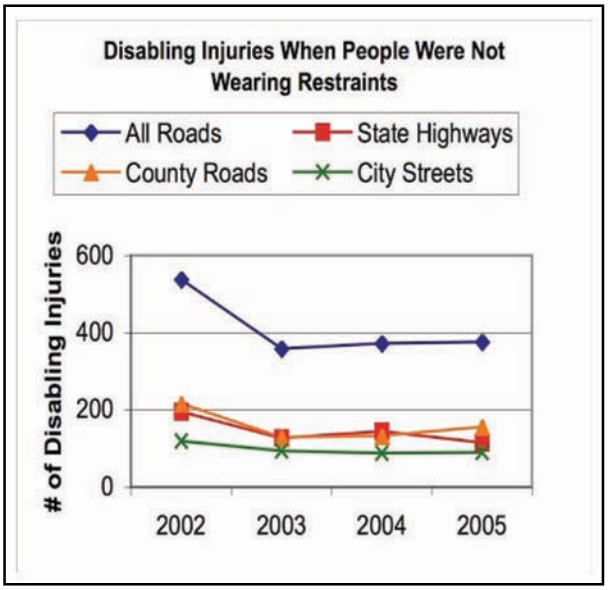
source: WSDOT

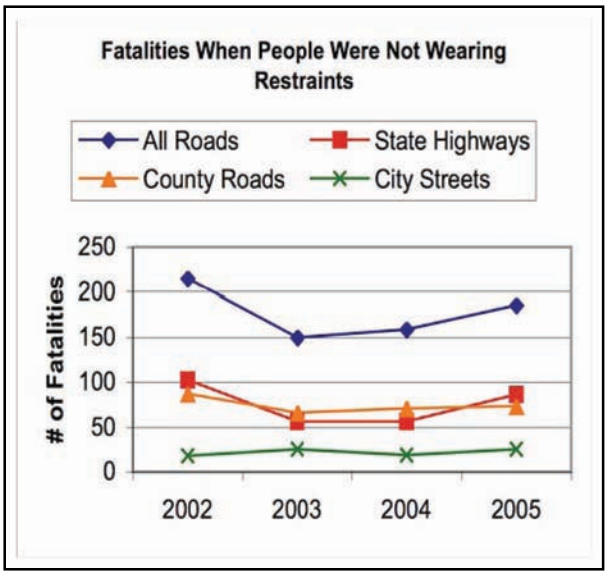
Figure 5.3-3

Collisions with Unbelted Occupants, 2001-2005

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







The Percent of Unbelted Related Fatalities That Were Also Speed Related

Road Type	2001	2002	2003	2004	2005
State Highways	36%	35%	43%	28%	29%
County Roads	55%	63%	63%	73%	59%
City Streets	71%	74%	64%	60%	72%
Other/Unknown	60%	70%	50%	56%	100%
*All Roads**	*49%*	*53%*	*56%*	*54%*	*47%*

The Percent of Unbelted Related Fatalities That Were Also Impairment Related

	2001	2002	2003	2004	2005
State Highways	60%	56%	48%	49%	46%
County Roads	55%	62%	58%	67%	68%
City Streets	65%	81%	67%	72%	59%
Other/Unknown	60%	20%	0%	56%	0%
*All Roads**	*59%*	*60%*	*55%*	*61%*	*56%*

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

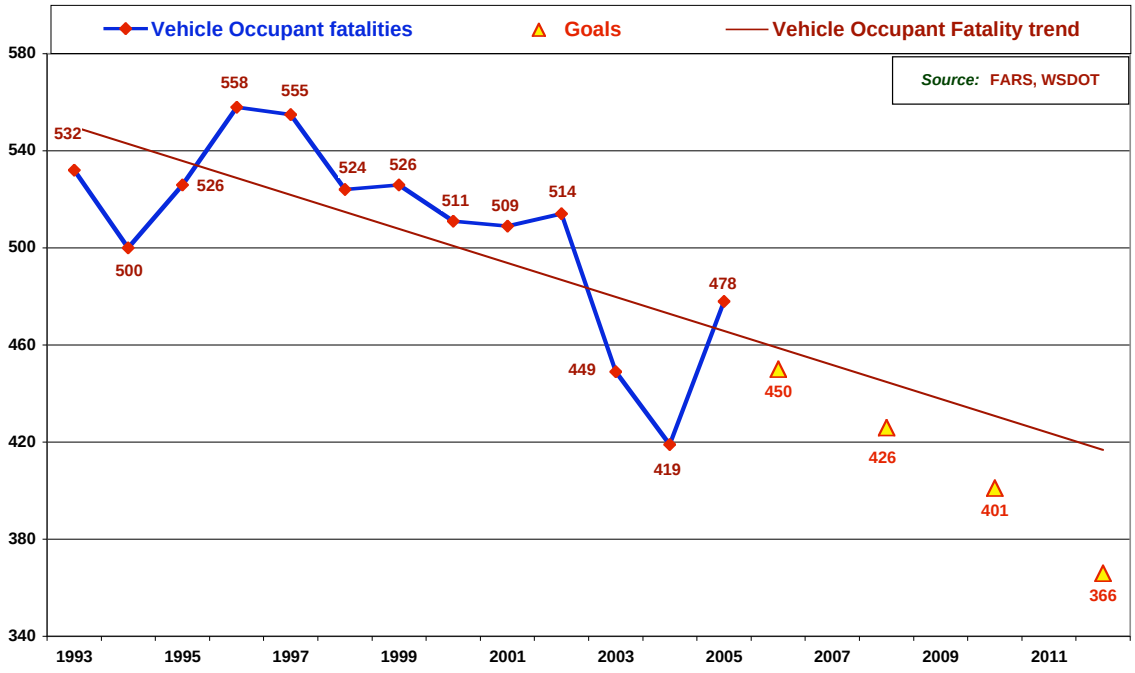
Impairment in drivers, pedestrians, or cyclists; defined as a collision where at least one driver or non-occupant (pedestrian or cyclist) was coded with any of the following: BAC was .08 or above; presence of any drug in one of the three drug test results with codes 100 - 995. Drug codes 000-995 include: 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.

Goals and Performance Measures

WASHINGTON VEHICLE OCCUPANT FATALITIES, 1993-2005*

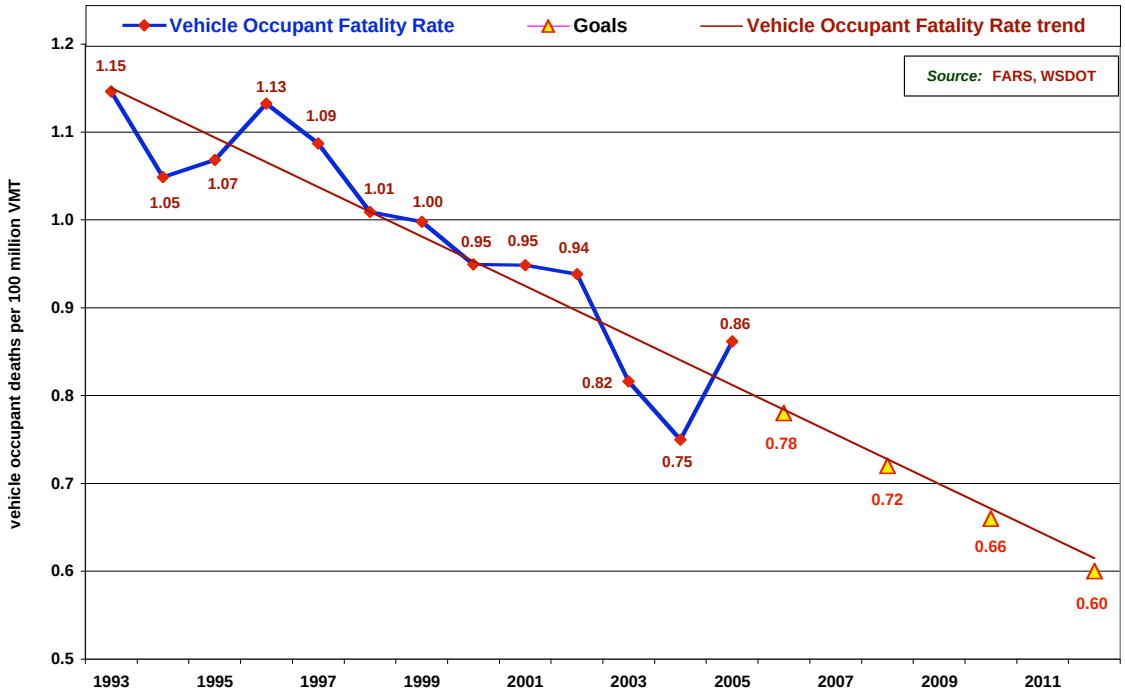
Excludes motorcycles, ATVs, farm equipment, etc.



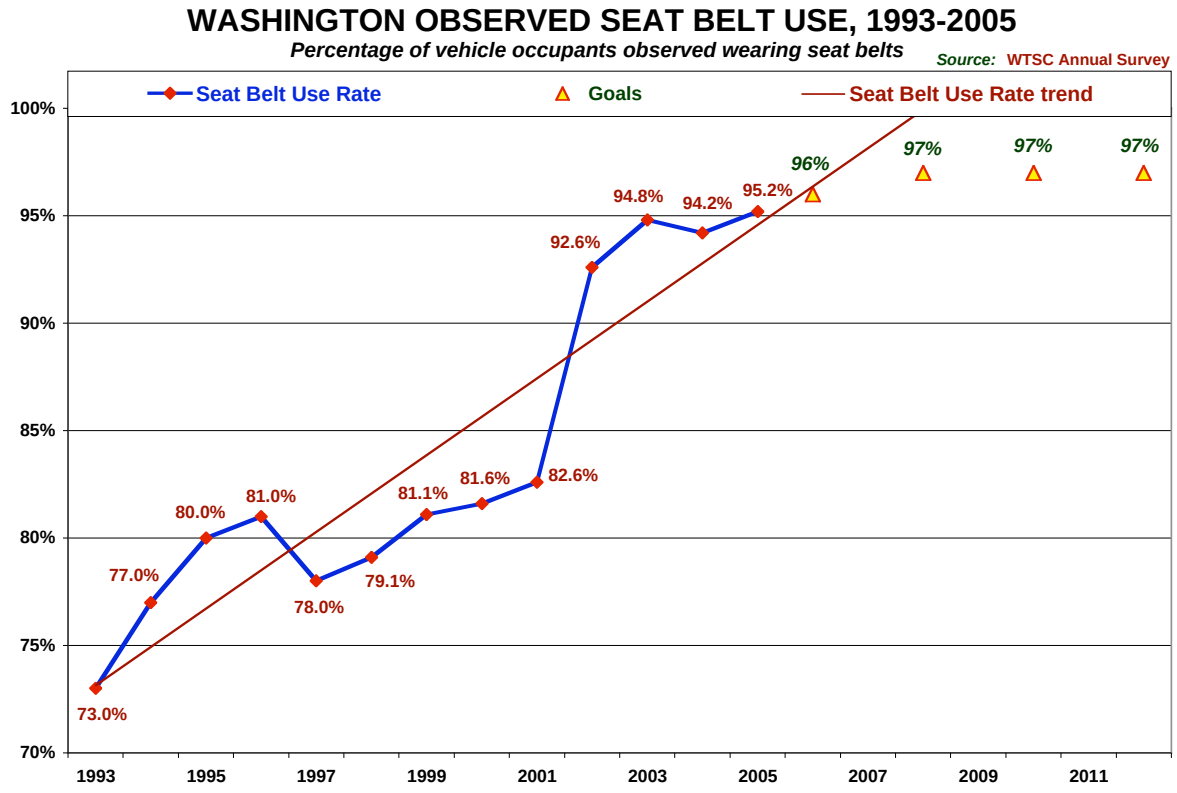
* 2005 figures based on preliminary data

WASHINGTON VEHICLE OCCUPANT FATALITY RATE, 1993-2005*

Vehicle occupant deaths per 100 million vehicle-miles traveled, *2005 figures are preliminary*



* 2005 figures based on preliminary data



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.	5.3.A1. Continue statewide high-visibility enforcement and media campaigns to maximize restraint use. (P) • 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.
	5.3.A2. Provide enhanced public education to population groups with lower than average restraint use rates. (P) • 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.

	5.3.A3. Employ corridor safety model in high-crash locations where data suggests low seat belt use. (P)
	5.3.A4. Encourage the enactment of State and tribal laws that will enhance enforcement of occupant protection laws. (T) • Support efforts to retain the State primary seat belt law. • Support upgrades to the State child passenger safety law.
5.3.B. Insure that restraints, especially child and infant restraints are properly used.	5.3.B1. Conduct high-profile "child restraint inspection" events at multiple community locations. (P)
	5.3.B2. Provide community locations for instruction in proper child restraint use, including both public safety agencies and health care providers, that are almost always available. (T) • Send child passenger safety law violators to education class.
	5.3.B3. Partner with Safe Kids Coalitions, EMS providers and other public health constituents to provide training and education. (T)
	5.3.B4. Train law enforcement personnel to check for proper child restraint use in all motorist encounters. (T)
5.3.C. Provide access to appropriate information, materials, and guidelines.	5.3.C1. Enhance the statewide child passenger safety website, toll free information line, child safety seat distribution and education programs. (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.

(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.

Occupant Protection Resources

NCHRP Report 500, Volume 11: A Guide for Increasing Seat Belt Use.
http://safety.transportation.org/guides.aspx?cid=28

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

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

5.4 Distracted or Drowsy Drivers

Background

A distracted driver is one whose attention has been drawn away from the demands of driving. He or she can be distracted visually, for instance, by looking at something inside the car, like a music CD, or by looking at something outside the car, like a crash on the side of the road. Drivers may be distracted audibly, for example, by construction noise or children fighting in the back seat. Distraction may also result from intentional behaviors, such as reaching for food or dialing a cell phone number. Additionally, cognitive distraction may result, for example, from being lost in thought or deep in conversation. Cell phones and other wireless devices may distract drivers in any of these four ways.

Drowsy drivers include those who are suffering from a lack of sleep as well as drivers who are physically tired from activity or long drives. A drowsy driver risks falling asleep at the wheel, but even those who manage to stay awake can suffer from poor driving performance and are at increased risk of being involved in a collision.

In Washington State between 2001 and 2005, 31 percent of drivers (971) involved in fatal crashes were cited for inattention or drowsiness. However, the actual contributions of these factors are possibly much higher due to the difficulty investigators experience in accurately identifying them; many cases of distraction and drowsiness are self-reported.

On July 1, 2006, Washington State law requires law enforcement to collect additional fields of data on the causes of collisions including drowsy and distracted drivers. In future revisions of this document, that information will become available and a better understanding of the extent of the problem will result.

According to a new study by NHTSA and the Virginia Tech Transportation Institute (VTTI), nearly 80 percent of crashes involved some form of driver inattention within three seconds before the event. The study found that:

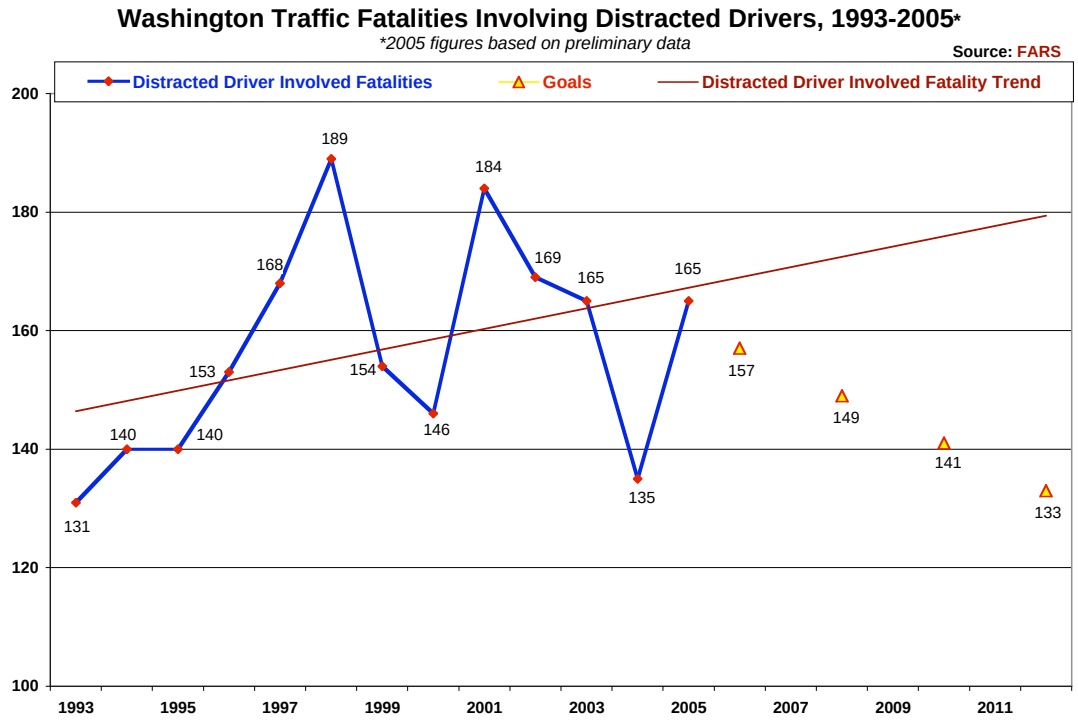
- Drowsiness increased the risk of a crash or near-crash by at least a factor of four, but noted that drowsiness may be under-reported by police crash investigations.

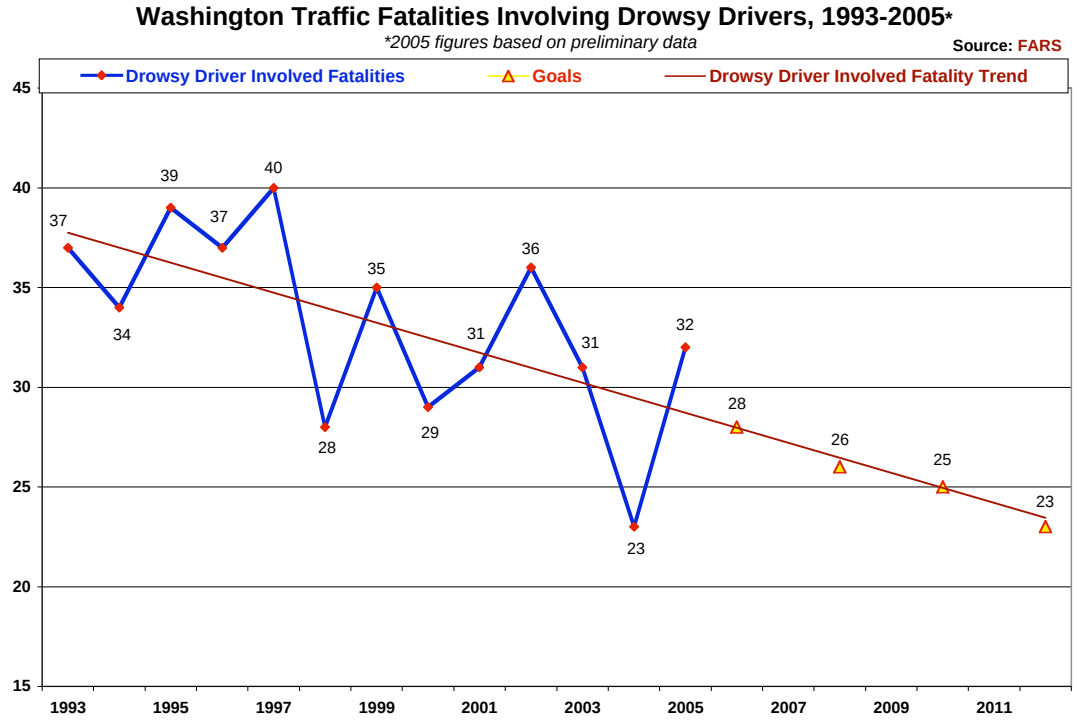
- Reaching for a moving object increased crash risk by a factor of nine; looking at an external object by 3.7 times; reading by three times; applying makeup by three times; dialing a hand-held device (typically a cell phone) by almost three times; and talking or listening on a hand-held device by 1.3 times.

- The most common distraction for drivers is the use of cell phones.

- Drivers who engage frequently in distracting activities are more likely to be involved in an inattention-related crash or near-crash.

Goals and Performance Measures





Strategies to Reduce Collisions Involving Drowsy or Distracted Drivers.

Objectives	Strategies
5.4.A. Gather data	5.4.A1. Analyze new distracted driver data being collected with the new Police Traffic Collision Report beginning in July 2006. (T)
5.4.B. Make roadways safer for drowsy or distracted drivers.	5.4.B1. Employ corridor safety model on high crash locations where data indicates a high incidence of drowsy or distracted crashes. (P)
	5.4.B2. Implement a targeted shoulder rumble strip program. (P/T)
	5.4.B3. Implement strategies designed for reducing run-off-road collisions (section 8.1) and reducing head-on and across the centerline collisions (section 8.2). (P/T)
	5.4.B4. Improve areas for drivers to pull off the road and get sleep when needed. (T)
5.4.C. Increase driver awareness of the risks of drowsy and distracted driving and promote driver awareness.	5.4.C1. Conduct statewide educational campaigns (T) 5.4.C2. Develop a drowsy driver awareness and prevention program and encourage employers to offer it to employees who rotate shifts or work nights. (P) 5.4.C3. Utilize community traffic safety task forces to address drowsy or distracted driver issues. 5.4.C4. Develop education campaigns for high-risk populations. (T/E)
5.4.D. Enforce and strengthen laws and regulations aimed at reducing distracted and drowsy driving.	5.4.D1. Strengthen the intermediate driver's license law to reduce distractions for young drivers. (P/T) 5.4.D2. Implement strategies for commercial motor vehicle safety (Section 7.3).

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.

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

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

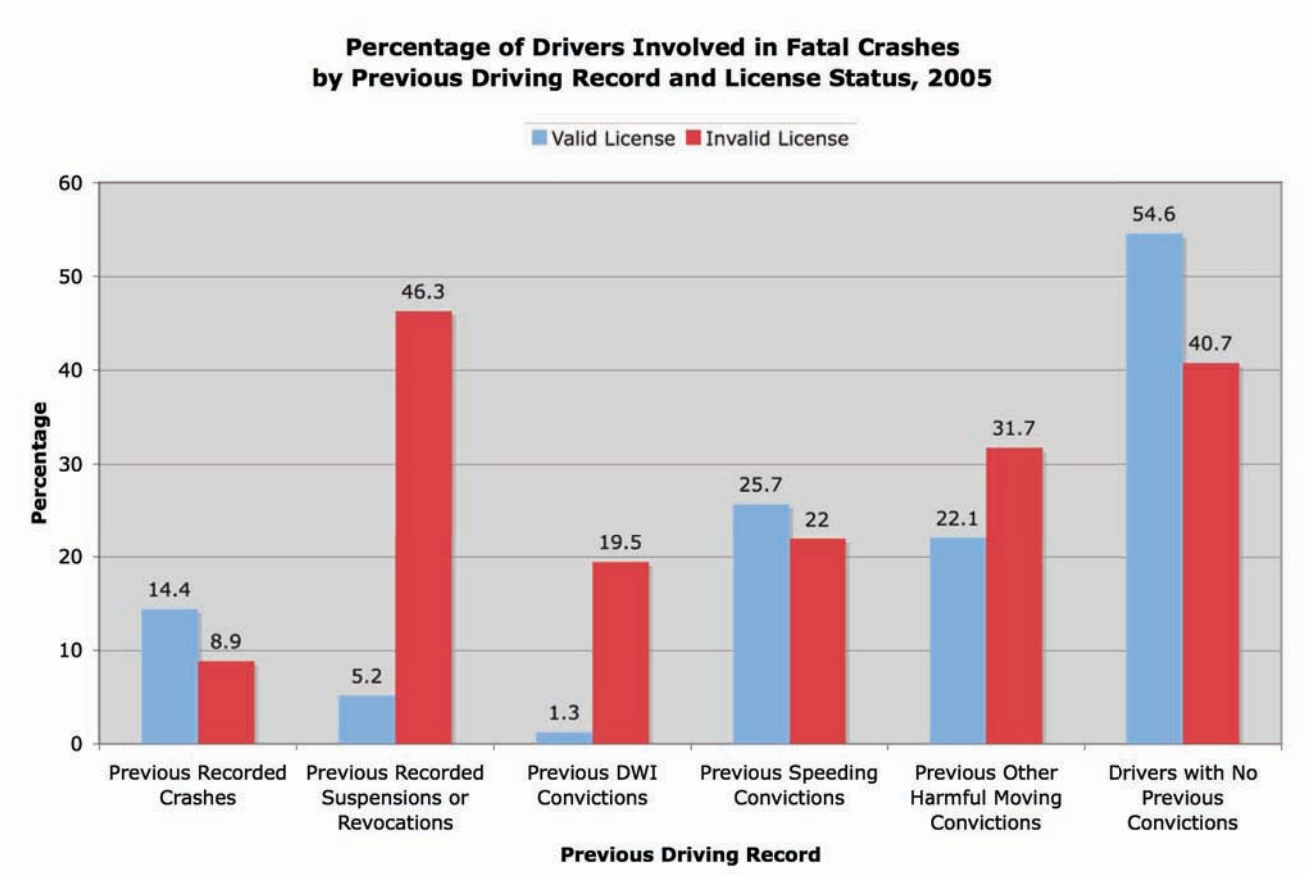
5.5 Unlicensed Drivers

Background

In Washington State between 2001 and 2005, 18 percent of the drivers involved in fatal crashes were not properly licensed, meaning they were unlicensed or had suspended, revoked, expired, canceled, or denied licenses. Of crashes involving drivers without valid licenses at the time they crashed, 38 percent were impairment related and 43 percent were speed related. See Table 5.5-2 "Driver's Without Proper License in Collisions, 2002-2005" on page 48.

According to data from FARS, 123 drivers involved in fatal crashes in Washington in 2005 had an invalid license at the time of the crash. Forty-six percent of those drivers with invalid licenses had previously recorded license suspensions or revocations. See Table 5.5-1, below.

Table 5.5-1



source: FARS

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]

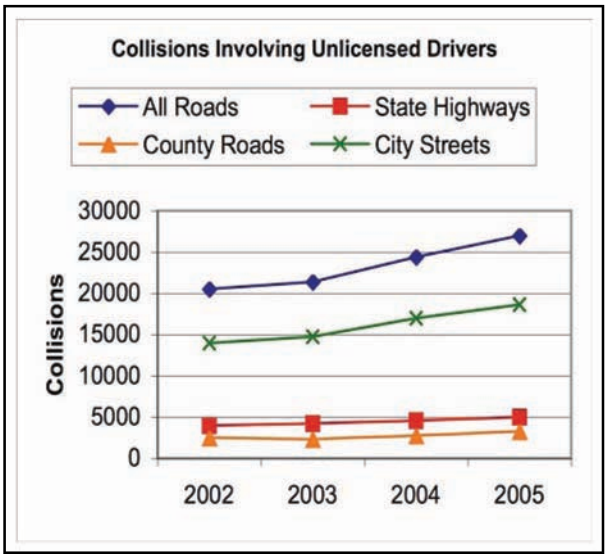
In 2002, there were 59,000 convictions for Driving While License Suspended or Revoked (DWLS/R) in Washington State. Department of Licensing data shows that of the 59,000 convictions issued, four percent were for DWLS/R in the first degree (issued mostly to "habitual traffic offenders,") and eight percent 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.

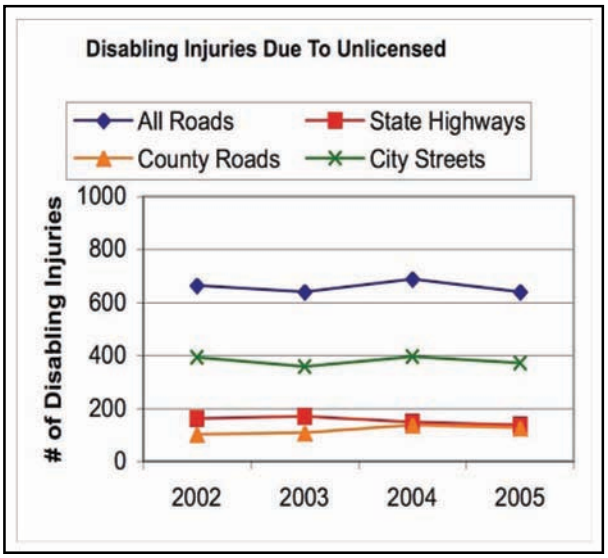
[13] NCHRP Report 500, Volume 2, A Guide for Addressing Collisions Involving Unlicensed Drivers and Drivers with Suspended or Revoked Licenses, addresses many of these strategies in detail. http://safety.transportation.org/guides.aspx?cid=23

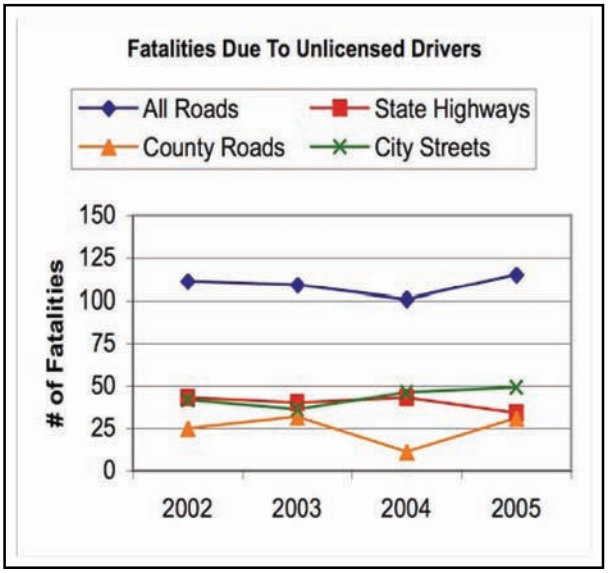
Figure 5.5-2

Driver's Without Proper License in Collisions, 2002-2005

Drivers with no proper license were involved in 18 percent of all fatalities during 2002-2005.







The Percent of Fatalities Related to Unlicensed Drivers That Were Also Speed Related

Road Type	2001	2002	2003	2004	2005
State Highways	38%	40%	17%	21%	32%
County Roads	46%	67%	57%	70%	43%
City Streets	70%	67%	67%	69%	61%
Other/Unknown	100%	57%	0%	75%	-
*All Roads**	*46%*	*56%*	*48%*	*53%*	*40%*

The Percent of Fatalities Related to Unlicensed Drivers That Were Also Impairment Related

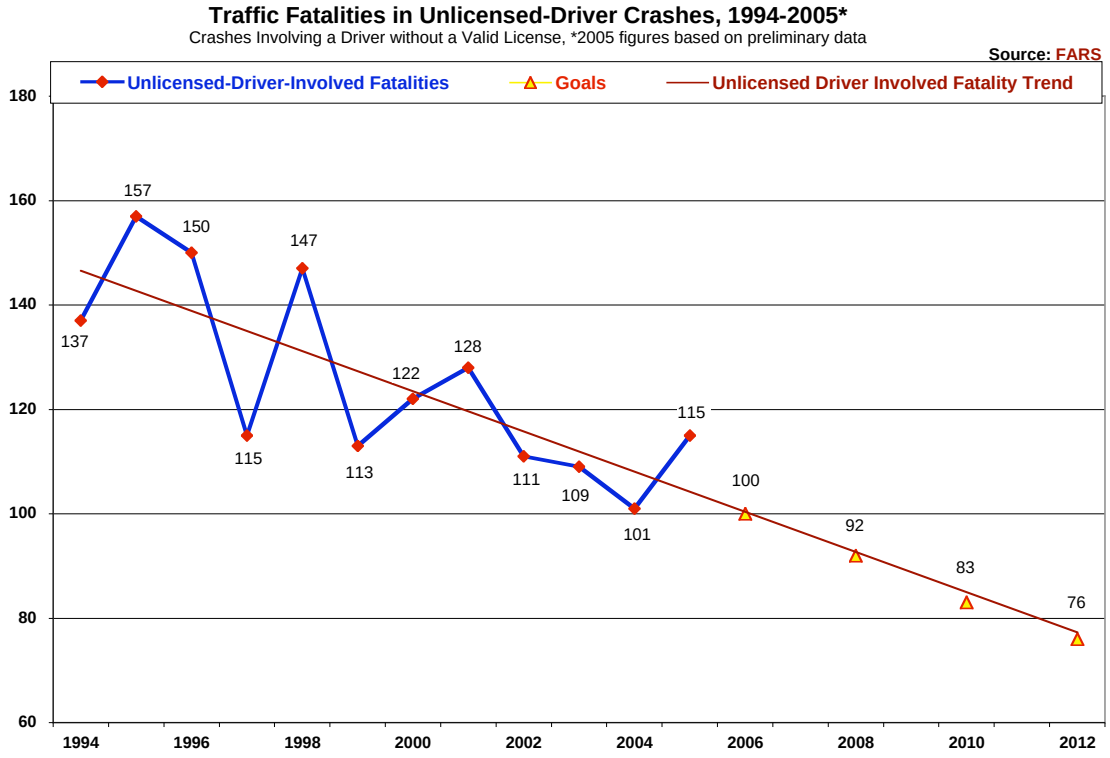
	2001	2002	2003	2004	2005
State Highways	59%	60%	60%	44%	50%
County Roads	59%	76%	72%	77%	73%
City Streets	75%	80%	83%	63%	67%
Other/Unknown	100%	43%	0%	25%	-
*All Roads**	*62%*	*68%*	*71%*	*61%*	*60%*

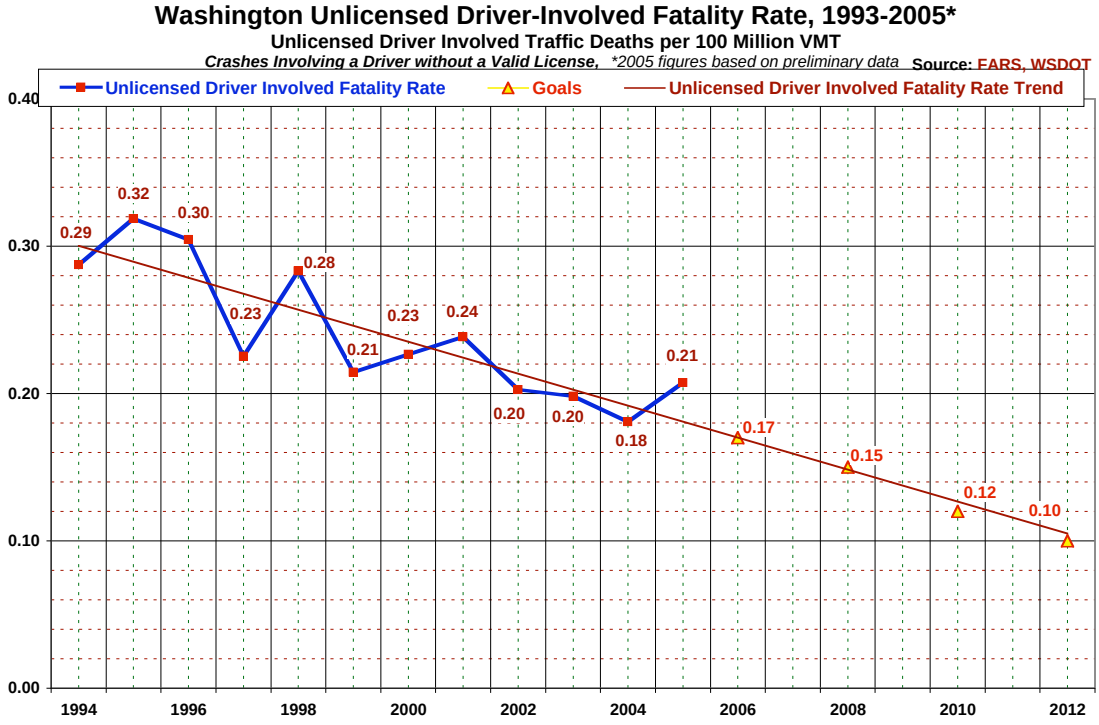
Charts data source: WSDOT. Table data source: FARS. *There was 1 fatality on a frontage road in 2003.

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.

Goals and Performance Measures





Strategies to Reduce Collisions involving Unlicensed Drivers

Objectives	Strategies
5.5.A. Apply special enforcement practices.	5.5.A1. Increase enforcement in areas with detected high rates of unlicensed drivers based on crashes, violations, or routine license checks. (T)
	5.5.A2. Routinely link citations with driver records. (T)
	5.5.A3. Create and distribute "hot sheets." (T)
	5.5.A4. Employ corridor safety model in locations where data suggests high number of crashes involving suspended, revoked, or unlicensed drivers.
5.5.B. Restrict mobility through license plate modification or removal.	5.5.B1. Modify license plate with "zebra" stripe, easily identifiable to law enforcement, but not to the public at large. Such modification alerts law enforcement to the possibility that the driver may not be properly licensed. (P)
	5.5.B2. Impound license plate. (P)
5.5.C. Restrict mobility through vehicle modification.	5.5.C1. Immobilize/impound/seize vehicle. (P)
	5.5.C2. Install ignition interlock device. (P)
5.5.D. Restrict mobility through direct intervention with offender.	5.5.D1. Monitor electronically. (P)
	5.5.D2. Incarcerate. (P)
5.5.E. Eliminate need to drive.	5.5.E1. Provide alternative transportation service. (P)
5.5.F. Increase the courts ability to effectively process DWLS/R cases.	5.5.F1. Evaluate the impact of new legislation on DWLS/R 3rd degree
	5.5.F2. Evaluate the effectiveness of DWLS/R laws.

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.

Unlicensed Driver 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

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

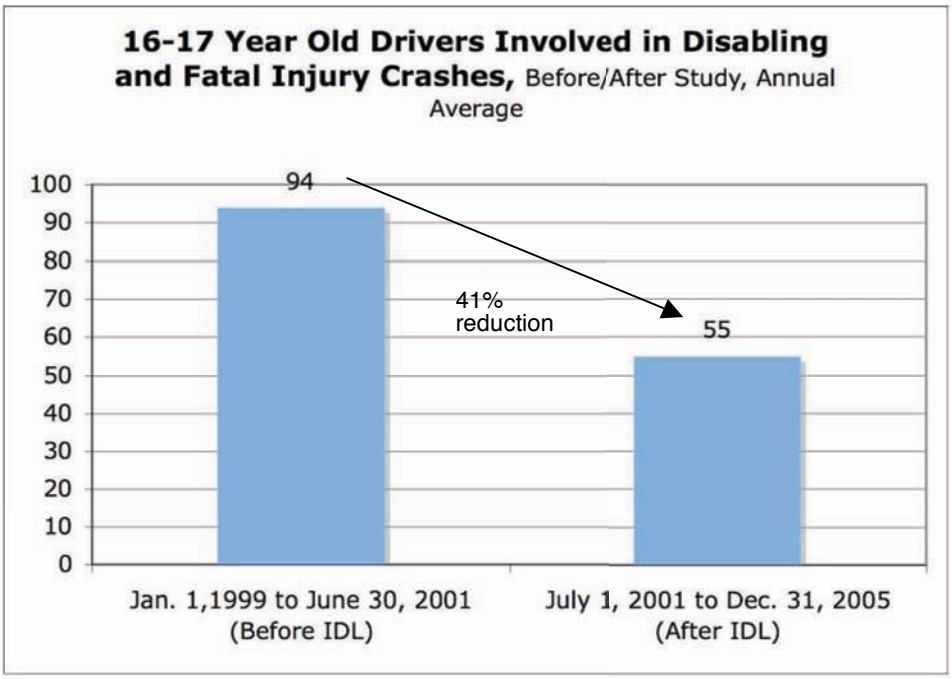
Background

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

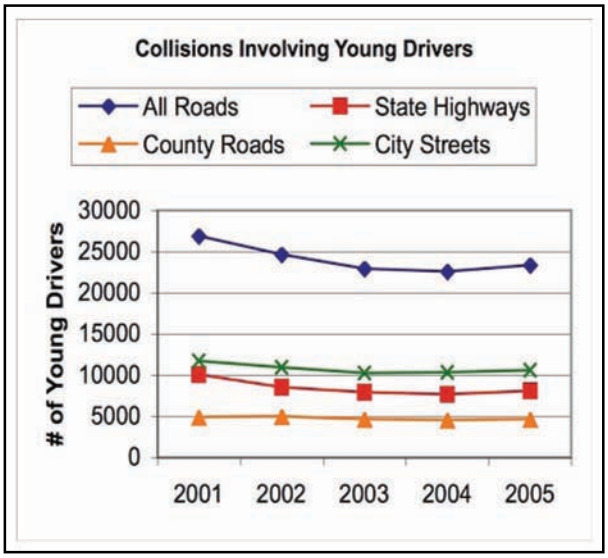


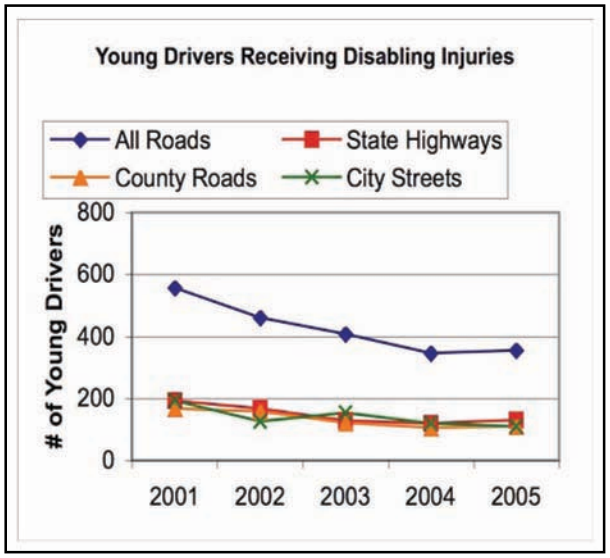
Nevertheless, ensuring better enforcement of the IDL remains a traffic safety priority in Washington.

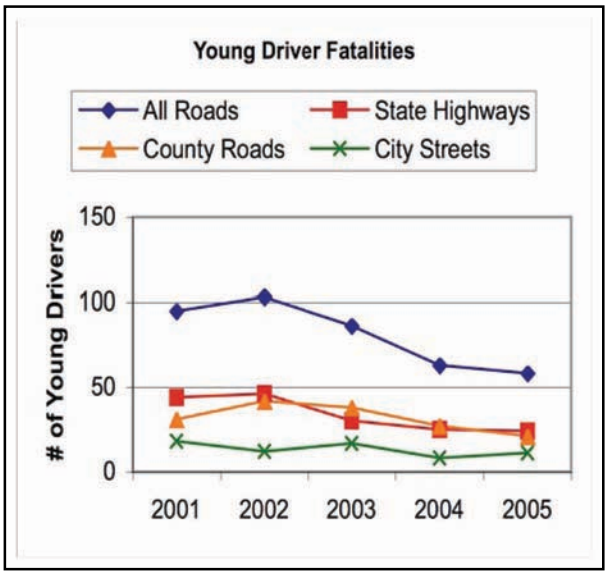
Figure 6.1-2

Collisions Involving 16 to 19 Year Old Drivers, 2001-2005

Drivers ages 16-19 were involved in 16 percent of all fatal collisions during 2001 to 2005.







The Percent of Young Driver Related Fatalities That Were Also Speed Related

Road Type	2001	2002	2003	2004	2005
State Highways	30%	37%	39%	31%	41%
County Roads	56%	64%	60%	76%	59%
City Streets	60%	71%	60%	58%	47%
Other/Unknown	-	25%	0%	60%	50%
*All Roads**	*45%*	*52%*	*52%*	*57%*	*49%*

The Percent of Young Driver Related Fatalities That Were Also Impairment Related

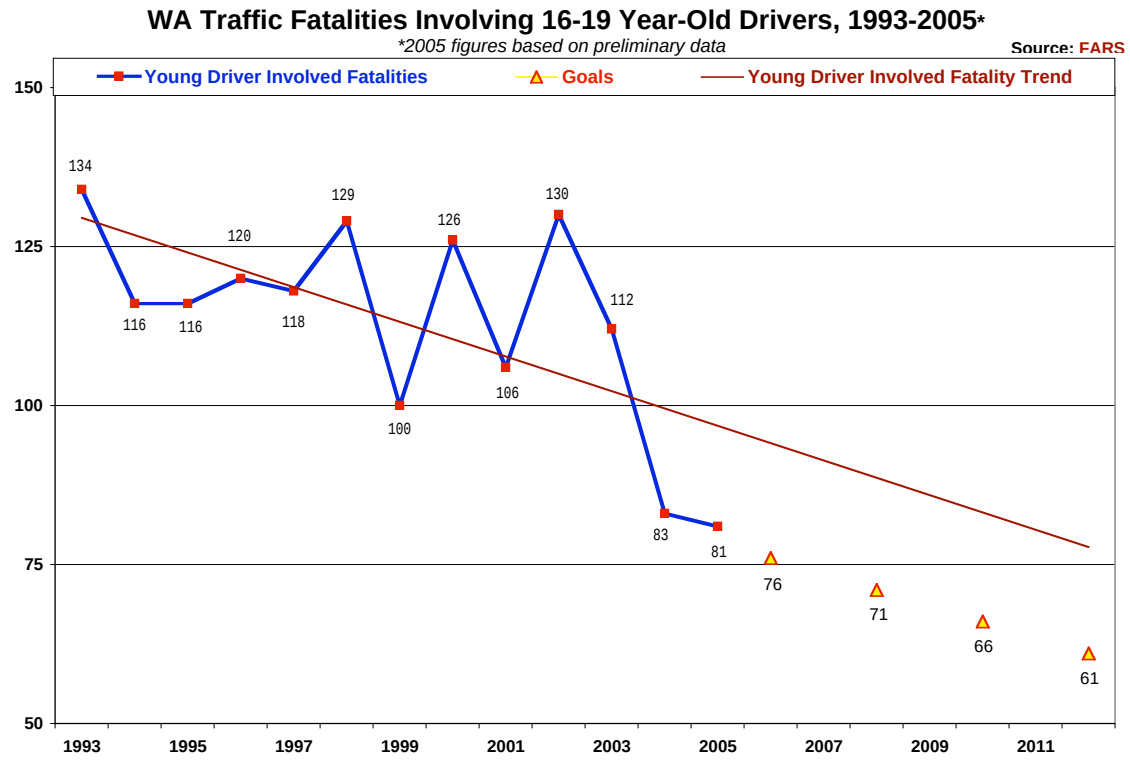
	2001	2002	2003	2004	2005
State Highways	28%	25%	32%	31%	19%
County Roads	50%	42%	56%	62%	45%
City Streets	45%	65%	48%	58%	47%
Other/Unknown	-	25%	0%	40%	75%
*All Roads**	*39%*	*38%*	*45%*	*49%*	*36%*

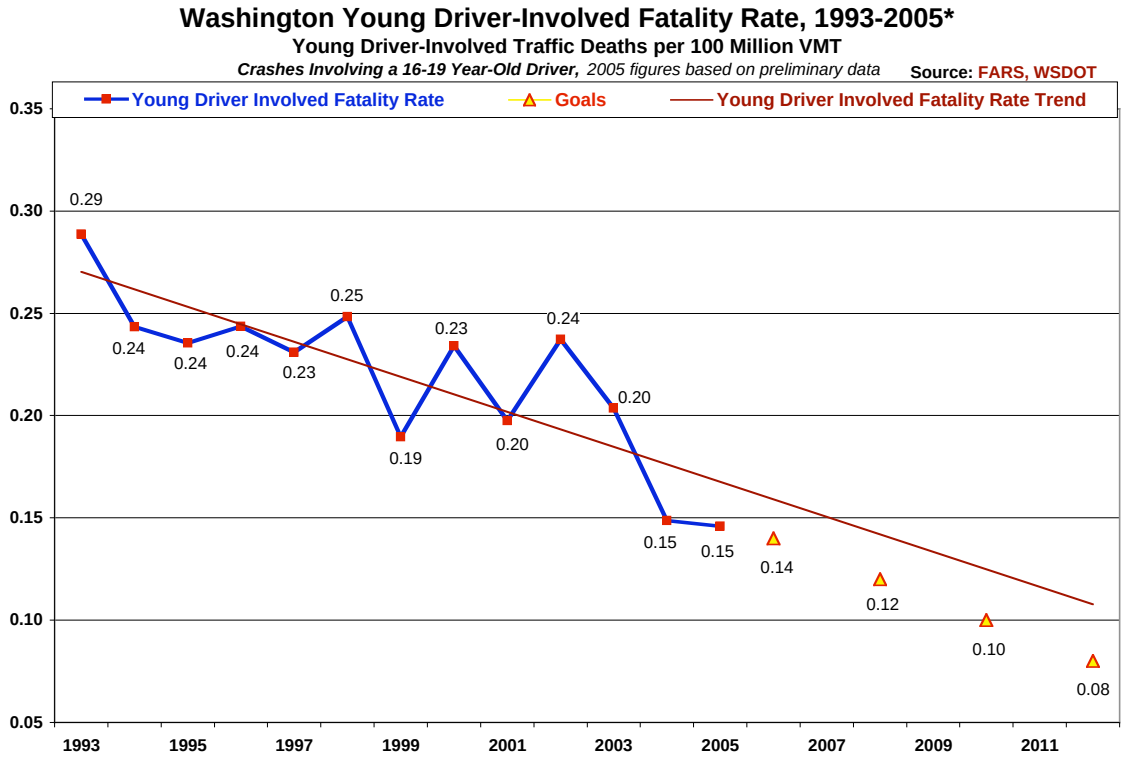
Charts data source: WSDOT. Table data source: FARS. *There was 1 fatality on a frontage road in 2003.

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.

Goals and Performance Measures





Strategies to Reduce Collisions Involving Young Drivers

Objectives	Strategies
6.1.A. Encourage compliance with the State's Intermediate Driver's License law.	6.1.A1. Provide education and training. (T) • Educate teen drivers and their parents about intermediate license restrictions and penalties. • Educate law enforcement officers about intermediate license laws.
	6.1.A2. Encourage enforcement of intermediate driver's licensing law. (T) • Provide overtime funding for law enforcement agencies for enforcement of intermediate license law.
	6.1.A3. Encourage changes to State intermediate license laws that will enhance clarity and effectiveness of the law. (P) • Recommend adjustments to Intermediate License laws as research-based data suggests is needed.
	6.1.A4. Continue to build partnerships to ensure the intermediate driver's license law is as effective as possible. (T) • Support the activities of the Intermediate Driver License Implementation Committee which includes the Traffic Safety Commission, law enforcement agencies, the Office of Superintend of Public Instruction, Department of Health, Department of Licensing, Washington State University, and Commercial Driver Training Schools. • Utilize community traffic safety task forces to implement programs to reduce collisions involving young drivers. • Collaborate with BIA, Indian Health Services, and NAETO to support Tribal Nations seeking to reduce collisions involving young drivers. (E)
	6.1.A5. Employ corridor safety model in high-crash locations where data suggests high young driver crashes. (P)
6.1.B. Encourage compliance with the State's underage drinking law.	6.1.B1. Encourage zero tolerance enforcement of underage drinking laws. (T)
6.1.C. Improve pre-licensure driver education.	6.1.C1. Create model traffic safety education curriculum. (E)
	6.1.C2. Explore increasing minimum standards for traffic safety education instructors based on best practices. (E)

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.

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/

6.2 Pedestrian Safety

Background

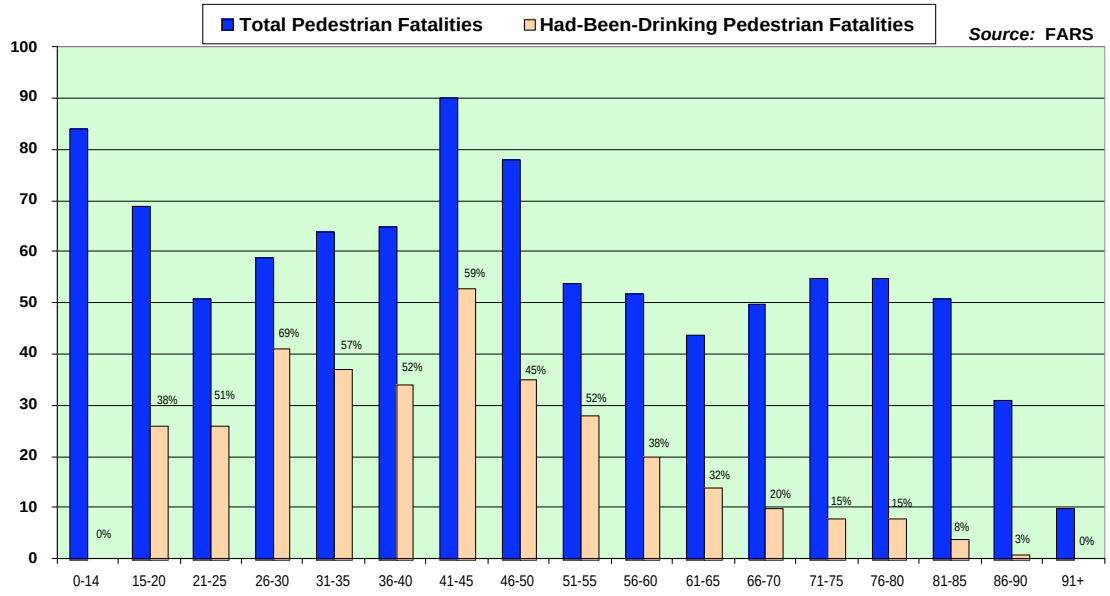
Most of us are pedestrians at some point each day, and all modes of transportation include a pedestrian component. Many people in Washington walk to work, to school, for recreation, for shopping, and to connect with transit and other services. Reducing pedestrian deaths and injuries while at the same time providing for and improving opportunities to walk will require partnership and commitment that includes efforts in education, enforcement, and engineering.

Between 2001–2005, pedestrian deaths accounted for 11 percent of all traffic deaths in Washington State. Seventy-three pedestrians were killed in 2005 in Washington State, up from 60 in 2004 but down from a 15-year high of 92 in 1996. More than 50 percent of pedestrian fatalities between the ages of 21 and 65 had been drinking, according to WTSC data from 1993 to 2005, as shown below in Table 6.2-1.

Table 6.2-1

WASHINGTON PEDESTRIAN FATALITIES, 1993-2005

***By Age Group and Alcohol Status,** 2005 figures are preliminary*



In Washington, impairment played a role in an average of 44 percent of pedestrian deaths between 2001–2005 (about 10 percent were struck by drinking drivers). See Table 6.2-2 "Pedestrian Collisions, 2001-2005" on page 60.

Speed is a major factor contributing to the severity of pedestrian-vehicle crashes. The faster the motorist drives prior to a collision with a pedestrian, the more likely the pedestrian

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 older[15]. 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.

---

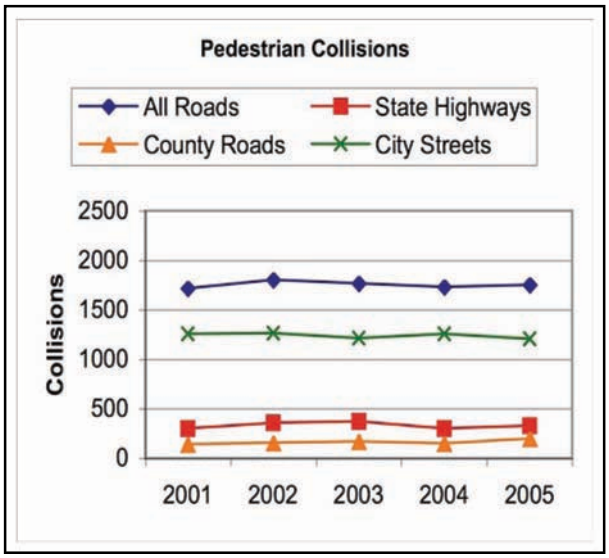
[14] NCHRP Report 500, Volume 10: A Guide for Reducing Collisions Involving Pedestrians discusses many of these strategies in detail. http://safety.transportation.org/guides.aspx?cid=29

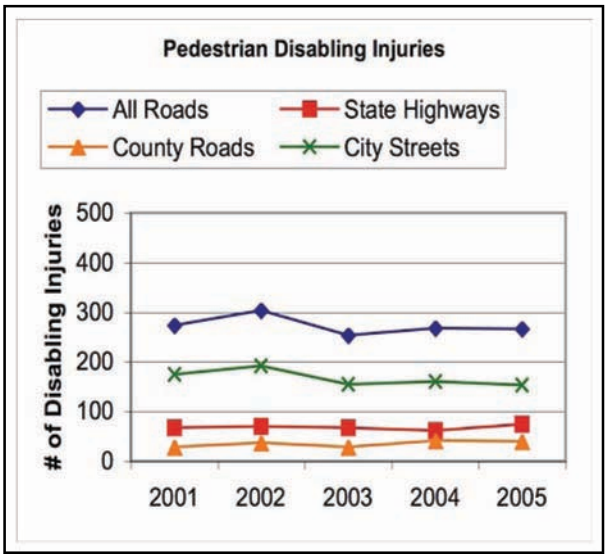
[15] Administration on Aging, "Profile of Older Americans," 2000, http://www.aoa.gov/prof/statistics/profile/2002/2.asp.

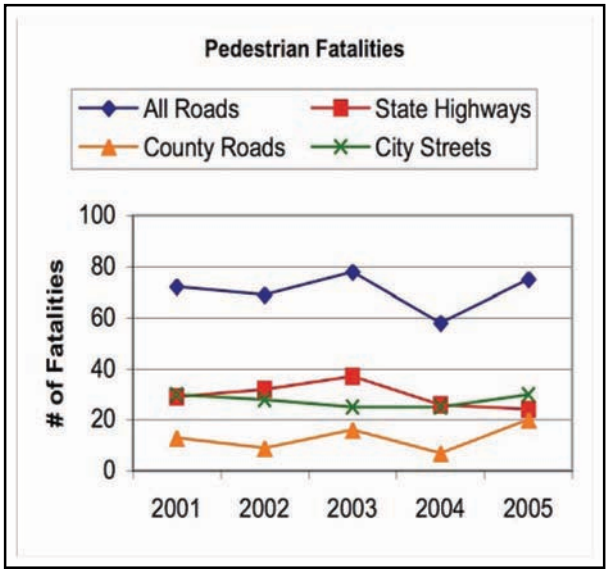
Table 6.2-2

Pedestrian Collisions, 2001-2005

Pedestrians deaths accounted for 11 percent of all traffic deaths between 2001-2005.







The Percent of Pedestrian Related Fatalities That Were Also Speed Related

Road Type	2001	2002	2003	2004	2005
State Highways	0%	3%	7%	16%	4%
County Roads	0%	0%	6%	14%	5%
City Streets	6%	0%	3%	7%	7%
Other/Unknown	0%	-	-	-	0%
*All Roads**	*3%*	*1%*	*5%*	*12%*	*5%*

The Percent of Pedestrian Related Fatalities That Were Also Impairment Related

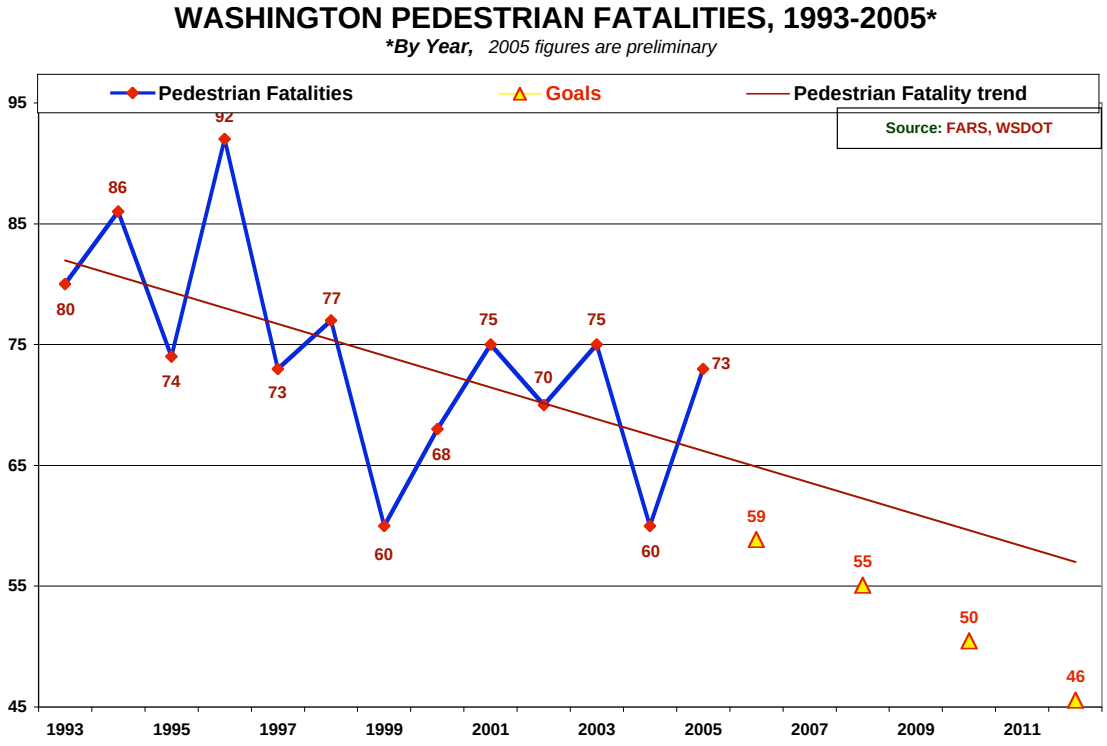
	2001	2002	2003	2004	2005
State Highways	50%	67%	53%	56%	46%
County Roads	36%	40%	56%	71%	47%
City Streets	33%	30%	26%	29%	47%
Other/Unknown	-	-	-	-	-
*All Roads**	*40%*	*47%*	*43%*	*45%*	*47%*

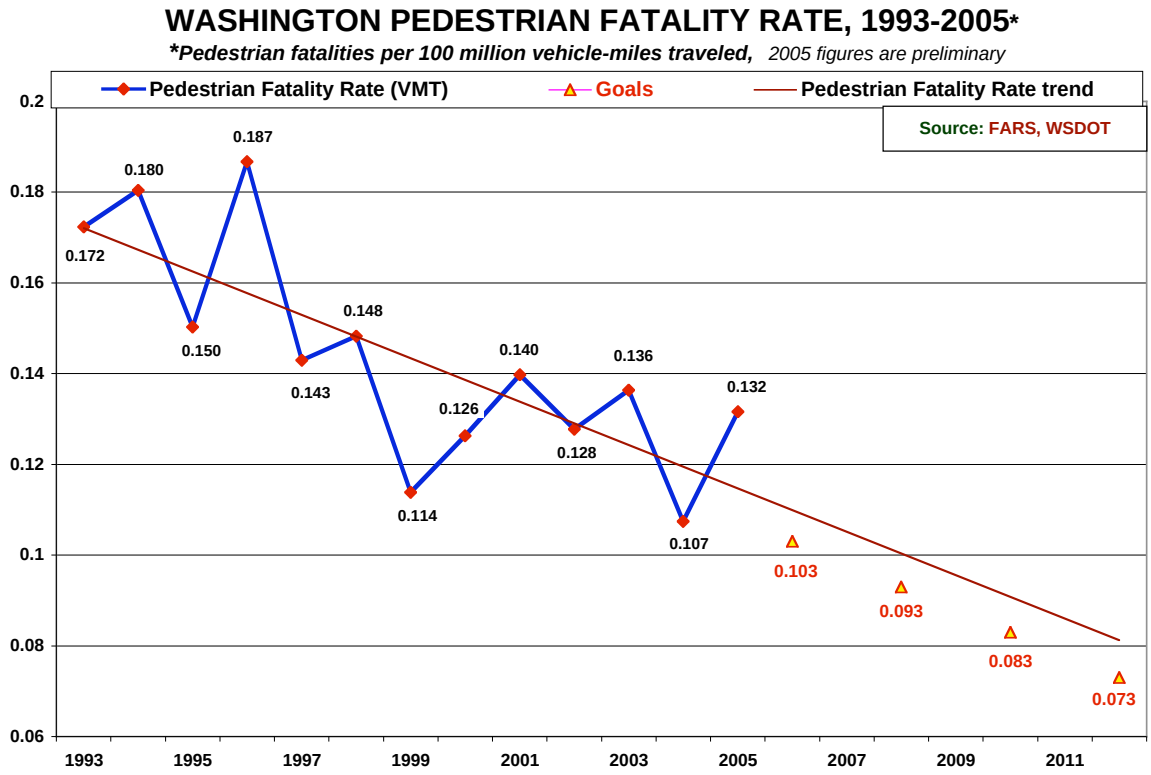
Charts data source: WSDOT. Table data source: FARS. *There was 1 fatality on a frontage road in 2003.

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.

Goals and Performance Measures





Strategies to Reduce Pedestrian Fatalities

Objectives	Strategies
6.2.A. Improve Pedestrian and Motorist Safety Awareness and Behavior	6.2.A1. Continue to provide education, outreach, and training (P) • Distribute School Zone Safety Curriculum Kit and Resource Guide and the School Administrator's Guide the School Walk Routes and Student Pedestrian Safety. • Improve pedestrian and motorists safety awareness and behavior. Focus education efforts on improving public understanding of Washington's crosswalk laws and the positive effects of targeted cross walk enforcement. • Expand the printed education materials to include multiple languages. • Educate judges on pedestrian laws and targeted crosswalk enforcement projects. • Continue to build partnerships designed to reduce the incidence of pedestrian fatalities. • Utilize community traffic safety task forces to address pedestrian safety issues. • Implement programs (engineering, enforcement and education) to influence impaired pedestrians. Solutions for improving the built environment should focus on appropriate zoning, crossing treatments and other safety improvements near high speed, high volume, multi-lane arterials.
	6.2.A2. Expand enforcement campaigns. (P) • Expand cross walk enforcement. • Improve academy and in-service pedestrian safety education for law enforcement officers at State and local levels, including pedestrian collision investigation training.
6.2.B. Improve Pedestrian Facilities.	6.2.B1. Update existing and develop new warrants, guides, and standards for the safe accommodation of pedestrians. (P)
	6.2.B2. Develop programs to improve pedestrian safety accommodations at intersections and interchanges. (P)
	6.2.B3. Implement pedestrian safety programs targeting pedestrian crash concerns in major urbanized areas and select rural areas with the construction of additional pedestrian facilities. (P) • Provide safer crossings. • Reduce pedestrian exposure to vehicular traffic. • Improve sight distances and/or visibility between motor vehicles and pedestrians. • Reduce vehicle speeds.

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 discusses many of these strategies in detail. http://safety.transportation.org/guides.aspx?cid=29

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

6.3 Motorcycle Safety

Background

Seventy-one motorcyclists were killed in Washington traffic crashes in 2005, nearly twice the 37 motorcyclists killed ten years ago. Washington mirrors a national trend of increasing motorcyclist fatalities, especially an increase in the over-forty age group and involving motorcycles with larger engine sizes. However, when viewed as a rate of motorcycle miles traveled, after a sharp rise from 39.4 in 2002 to 46.0 in 2003, the fatality rate has declined over the past three years, to 42.7 in 2005. See Goals and Performance Measures on page 67 for more information.

The most common contributing factors to motorcycle fatalities, based on law enforcement scene reports, are lane errors, speeding, impairment, and inattention. One-third of the motorcyclists who died in 2005 did not have a valid motorcycle endorsement. Impaired-driving crashes accounted for an average of 48 percent of motorcyclist deaths over the five years from 2001-2005. Speed-related collisions accounted for an average of 48 percent of motorcyclist deaths over the same time period. See Figure 6.3-1 “Motorcycle Collisions” on page 66 for more information.

Between 1993 and 2003, 38 percent of motorcycle fatalities occurred on country roads, 26 percent on state routes, 22 percent on city streets, seven percent on interstate routes, and five percent on US highways. The vast majority of motorcycle fatalities occur during daylight hours, in dry weather. More than 80 percent of fatalities occur during the prime-riding season, April thru September. More than 50 percent of fatalities were single vehicle occurrences, with no other vehicle involved other than the motorcycle. Two-thirds of those involved alcohol.

In November 2005, the State Agency Public Safety Team (Department of Licensing, Washington State Patrol, and Washington Traffic Safety Commission) briefed Governor Gregoire on risk factors associated with traffic safety. One focus of that briefing was the rising number of fatalities among motorcyclists. Governor Gregoire requested that the team undertake efforts to reduce fatalities by 10 motorcyclists per year. In January 2006, the Department of Licensing created a task force of interested parties to assess the factors that lead to motorcycle fatalities and injuries and develop a set of recommendations to counter this trend. This task force included members of motorcycle rider groups and state agency representatives, including the public safety agencies, the Department of Transportation, and the Department of Health.

After reviewing the data, the Task Force concluded that many of the factors that contribute to motorcycle crashes resulting in fatalities or serious injury are within the control of the rider. Efforts to reduce fatalities and serious injuries should focus on rider skill and behavior. A combination of increased training, greater public awareness, and enforcement

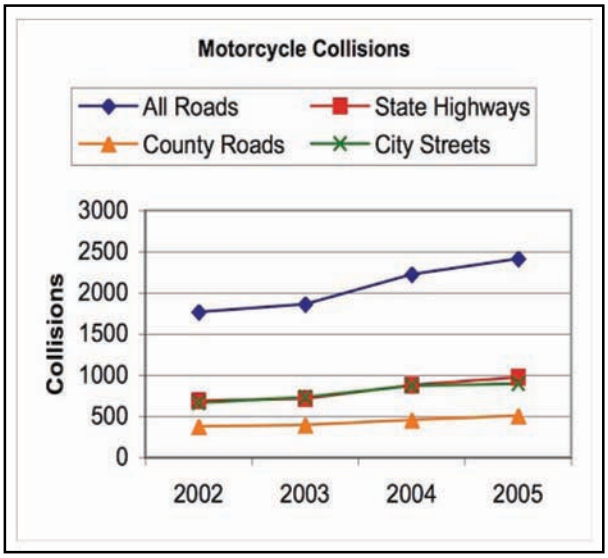
targeting the primary risk factors should lead to a reduction of fatalities and serious injuries among motorcyclists.

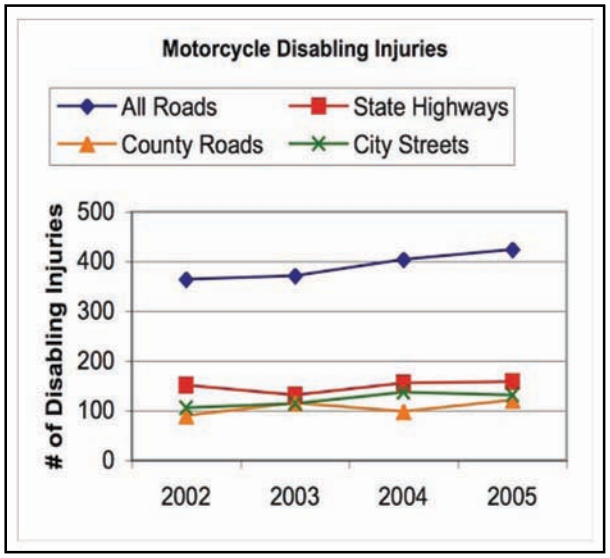
Together, the motorcycle community and state public safety agencies should study performance indicators to see if implementation of the recommendations contained in the Motorcycle Task Force Report achieves the desired results (fewer fatalities and serious injury collisions). In partnership, these entities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

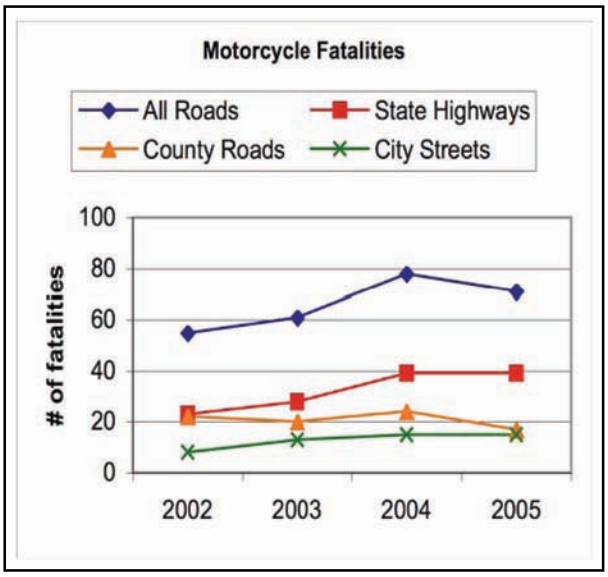
Figure 6.3-1

Motorcycle Collisions, 2001-2005

Motorcycle collisions account for 10 percent of all fatal collisions during 2001–2005.







The Percent of Motorcycle Related Fatalities That Were Also Speed Related

Road Type	2001	2002	2003	2004	2005
State Highways	37%	45%	26%	33%	50%
County Roads	52%	25%	79%	52%	73%
City Streets	43%	80%	69%	41%	64%
Other/Unknown	-	50%	-	-	100%
*All Roads**	*45%*	*44%*	*53%*	*41%*	*59%*

The Percent of Motorcycle Related Fatalities That Were Also Impairment Related

	2001	2002	2003	2004	2005
State Highways	47%	50%	37%	24%	53%
County Roads	45%	55%	53%	70%	60%
City Streets	57%	60%	54%	47%	32%
Other/Unknown	-	50%	-	-	100%
*All Roads**	*47%*	*54%*	*46%*	*44%*	*49%*

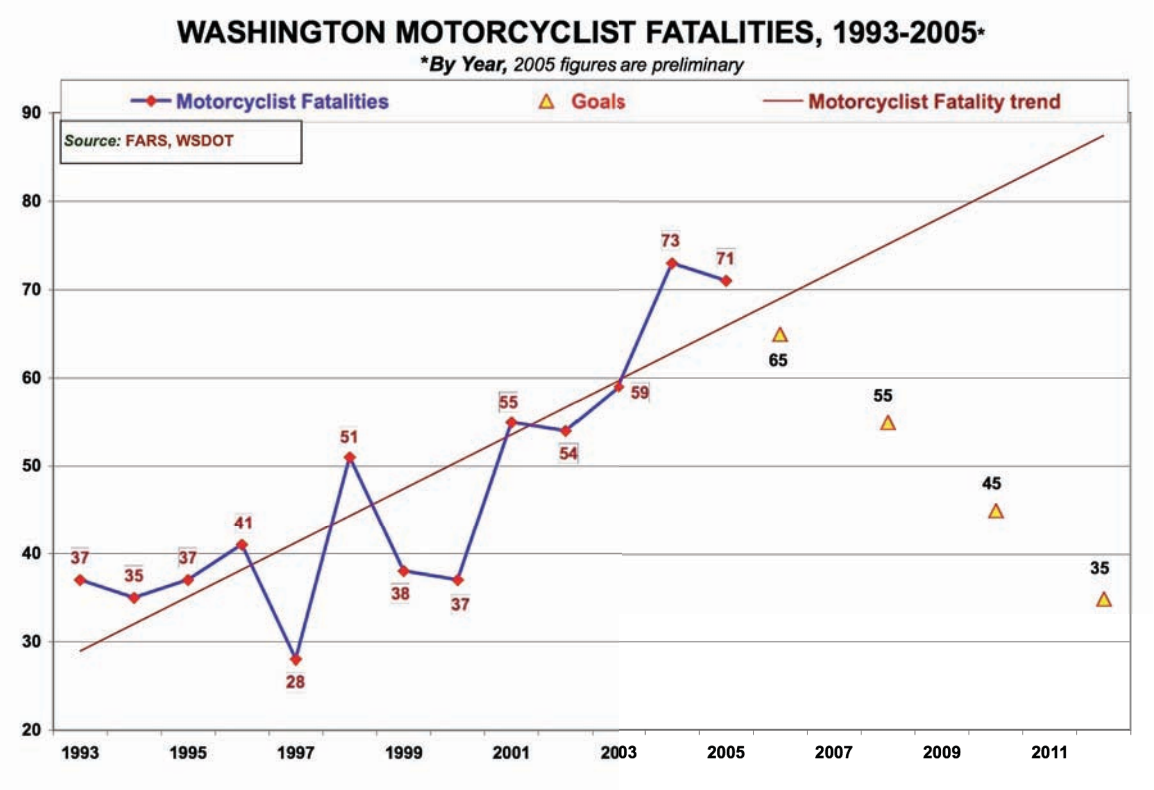
Charts data source: WSDOT. Table data source: FARS. *There was 1 fatality on a frontage road in 2003.

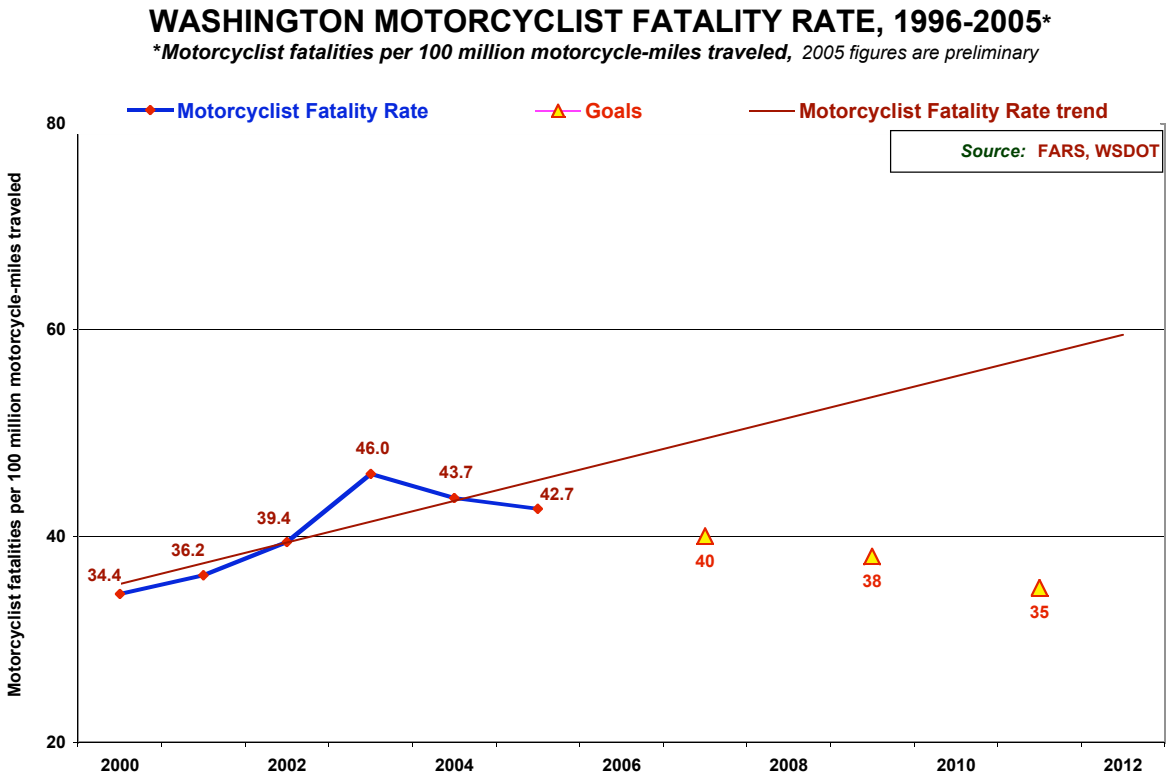
Impairment in drivers, pedestrians, or cyclists; defined as a collision where at least one driver or non-occupant (pedestrian or cyclist) was coded with any of the following: BAC was .08 or above; presence of any drug in one of the three drug test results with codes 100 - 995. Drug codes 000-995 include: 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.

.

Goals and Performance Measures





Strategies to Reduce Collisions Involving Motorcycles

Objectives	Strategies
6.3.A. Reduce numbers of untrained riders.	6.3.A1. Management review of class distribution. (T)
	6.3.A2. Change program model (assess Oregon State model). (T)
	6.3.A3. Increase number of classes. (E)
	6.3.A4. Provide tuition incentives for completion of training. (E)
6.3.B. Reduce numbers of impaired, unskilled, and unsafe riders.	6.3.B1. WTSC public safety campaign/partnership. (T)
	6.3.B2. Clarify impoundment policy. (T)
6.3.C. Reduce numbers of non-endorsed riders.	6.3.C1. Clarify impoundment policy. (T)
	6.3.C2. Dealership cooperation. (E)
6.3.D. Increase driver awareness. Increase rider safety awareness.	6.3.D1. WTSC public safety campaign/partnership. (T)
	6.3.D2. Increase field training. (T)
	6.3.D3. Use owner's bike in training courses. (E)
6.3.E. Improve enforcement.	6.3.E1. Support specialized law enforcement training in motorcycle DUI detection and motorcycle crash investigation.

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 sound 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.

Motorcycle 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

"Promising Practices in Motorcycle Rider Education and Licensing," National Highway Traffic Safety Administration (NHTSA), DOT HS 809 852, July 2005
http://www.nhtsa.dot.gov/people/injury/pedbimot/motorcycle/MotorcycleRider/

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.

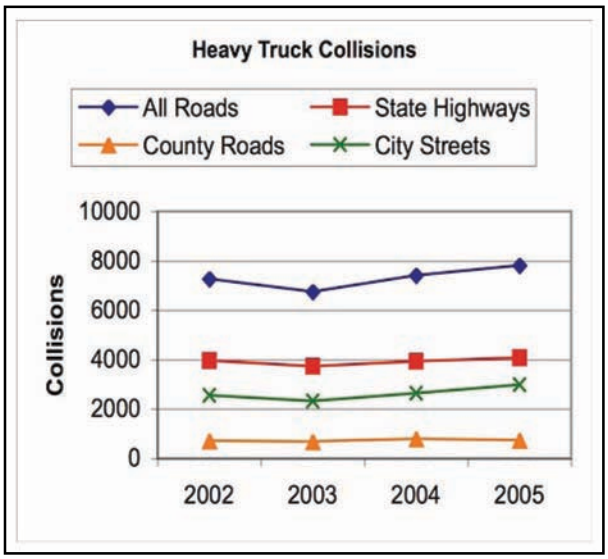
Washington State Patrol (WSP) statistics show that in 2004, 75 percent of all fatal collisions involving commercial motor vehicles were caused by the passenger car. To help address this situation, the Ticketing Aggressive Cars & Trucks (TACT) project, initially the Step Up and Ride Program was developed. 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.

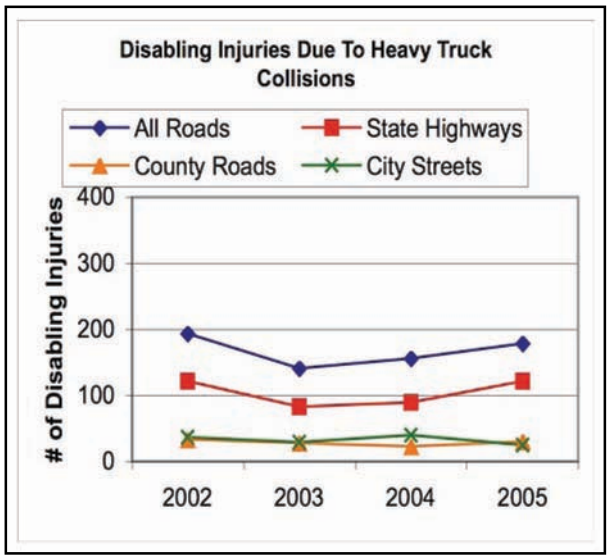
In 2005, the WSP Commercial Vehicle Division conducted 126,644 Commercial Vehicle Safety Alliance (CVSA) inspections. These inspections are conducted to help reduce collisions involving equipment failure.

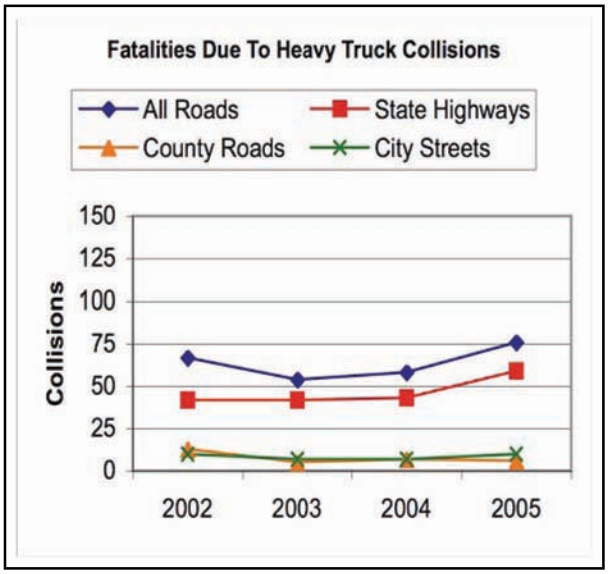
Table 6.4-1

Heavy Truck Collisions, 2001-2005

Heavy trucks were involved in 10 percent of fatal collisions between 2001-2005.







The Percent of Heavy Truck Related Fatalities That Were Also Speed Related

Road Type	2001	2002	2003	2004	2005
State Highways	24%	11%	31%	20%	21%
County Roads	0%	33%	0%	11%	0%
City Streets	0%	38%	25%	0%	13%
Other/Unknown	-	-	-	0%	-
*All Roads**	*21%*	*20%*	*30%*	*17%*	*18%*

The Percent of Heavy Truck Related Fatalities That Were Also Impairment Related

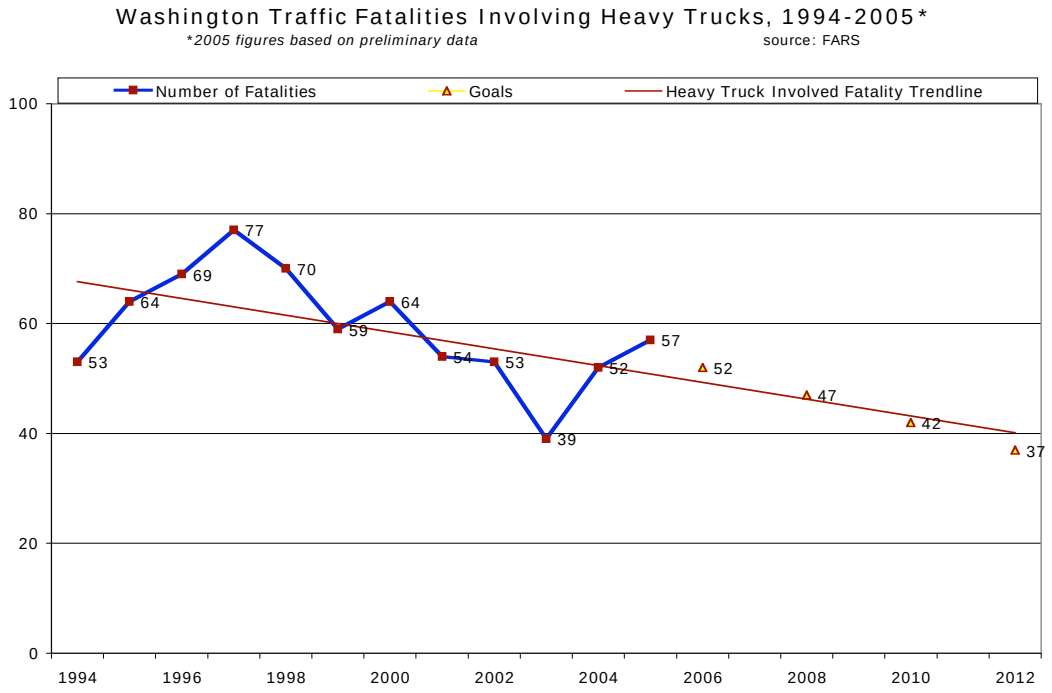
	2001	2002	2003	2004	2005
State Highways	29%	54%	31%	30%	21%
County Roads	20%	25%	67%	67%	0%
City Streets	0%	0%	75%	33%	38%
Other/Unknown	-	-	10%	0%	-
*All Roads**	*27%*	*40%*	*37%*	*36%*	*21%*

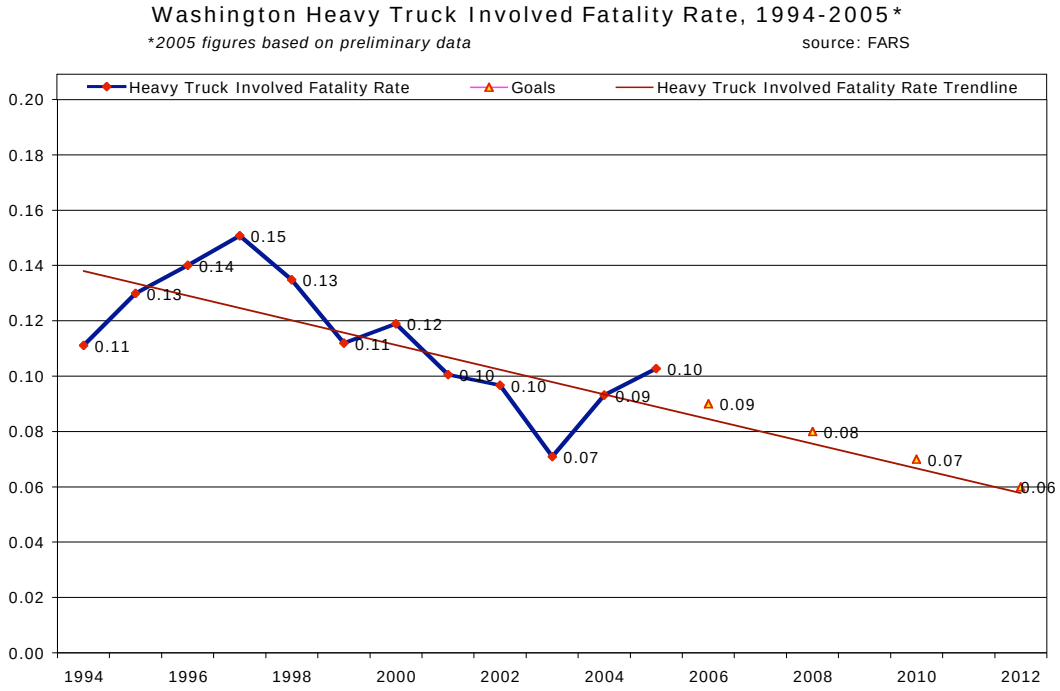
Charts data source: WSDOT. Table data source: FARS. *There was 1 fatality on a frontage road in 2003.

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.

Goals and Performance Measures





Strategies to Reduce Collisions Involving Heavy Trucks

Objectives	Strategies
6.4.A. Reduce CMV collisions involving passenger vehicles	6.4.A1. Expand the TACT education and enforcement strategies in areas identified as having a higher than average number of aggressive driver complaints, and passenger vehicle caused CMV collisions. (T) 6.4.A2. Provide education through, media ride-a-longs, personal contacts, and letters to complainants, to change public perception that CMV related collisions are usually caused by the truck.
6.4.B. Reduce collisions caused by fatigue and inattention	6.4.B1. Provide areas for truckers to pull off the road and get required sleep. (T)
	6.4.B2. Increase truck driver compliance with hours of service requirements through education, enforcement, and continued collaboration with industry.
	6.4.B3. Utilize data to identify contributing factors of collisions involving CMVs and respond with resource reallocation, enforcement, and education strategies. (E)
6.4.C. Reduce collisions caused by defective equipment	6.4.C1. Provide inspection facilities to identify mechanical deficiencies. 6.4.C2. Provide officers conducting inspections with initial and on-going training for completing thorough CVSA safety inspections. 6.4.C3. Enhance existing programs to effectively partner and monitor industry through compliance and education of Washington-based CMV companies regarding federal and state regulations. 6.4.C4. Utilize data to identify CMV companies involved in collisions resulting from defective equipment and subsequently conducting audits of those Washington-based companies. Further, data will support increased enforcement areas to target defective equipment.
6.4.D. Reduce collisions in areas with high potential for impacts to the barrier.	6.4.D1. Improve barrier designs in such areas. (T) 6.4.D2. Employ rumble strips in such areas. (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.

(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.

Commercial Motor Vehicle Safety Resources

NCHRP Report 500, Volume 13, A Guide for Addressing Collisions Involving Heavy Trucks, 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.

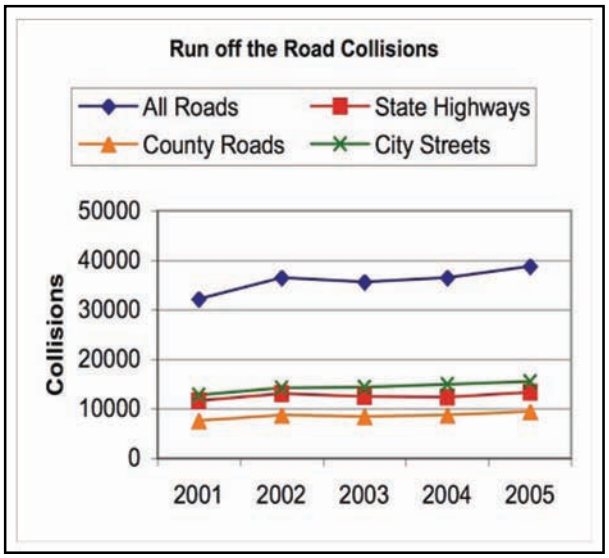
Between 2001 and 2005, Washington State averaged 12,593 run-off-road crashes each year, resulting in an average of 1,298 disabling injuries and 159 deaths. This represents 56 percent of all traffic deaths during this period. Speed was a factor in run-off-the-road crashes 57 percent of the time and impairment 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.

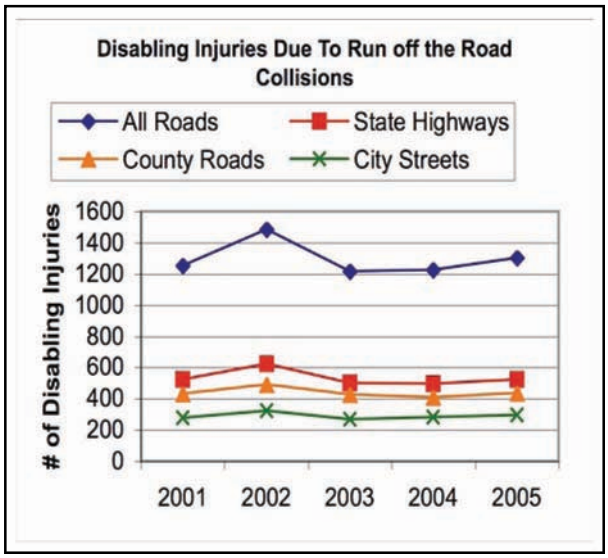
In Washington State from 2001 to 2005, there were 939 fatalities, 2,959 disabling injuries, and 13,839 collisions involving collisions with fixed objects

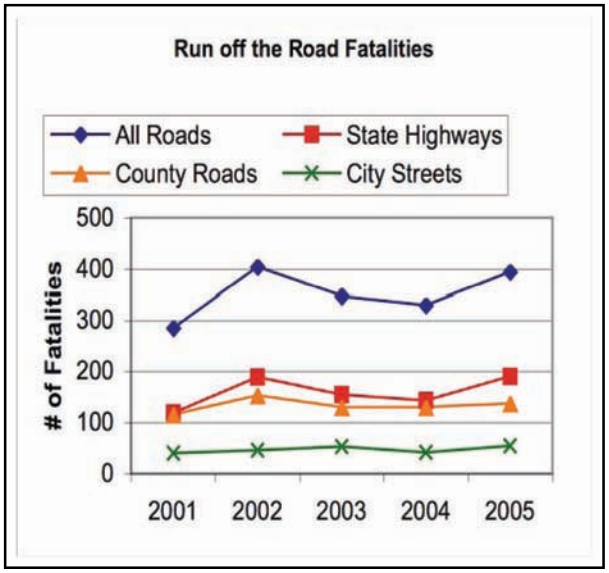
Figure 7.1-1

Run-Off-Road Collisions, 2001-2005

Run-Off-Road collisions account for 56 percent of all fatal collisions during 2001–2005.







The Percent of Run off the Road Related Fatalities That Were Also Speed Related

	2001	2002	2003	2004	2005
State Highways	45%	48%	39%	44%	44%
County Roads	56%	67%	60%	68%	71%
City Streets	67%	81%	80%	59%	81%
Other/Unknown	67%	67%	43%	42%	63%
*All Roads**	*53%*	*61%*	*54%*	*55%*	*61%*

The Percent of Run off the Road Related Fatalities That Were Also impairment Related

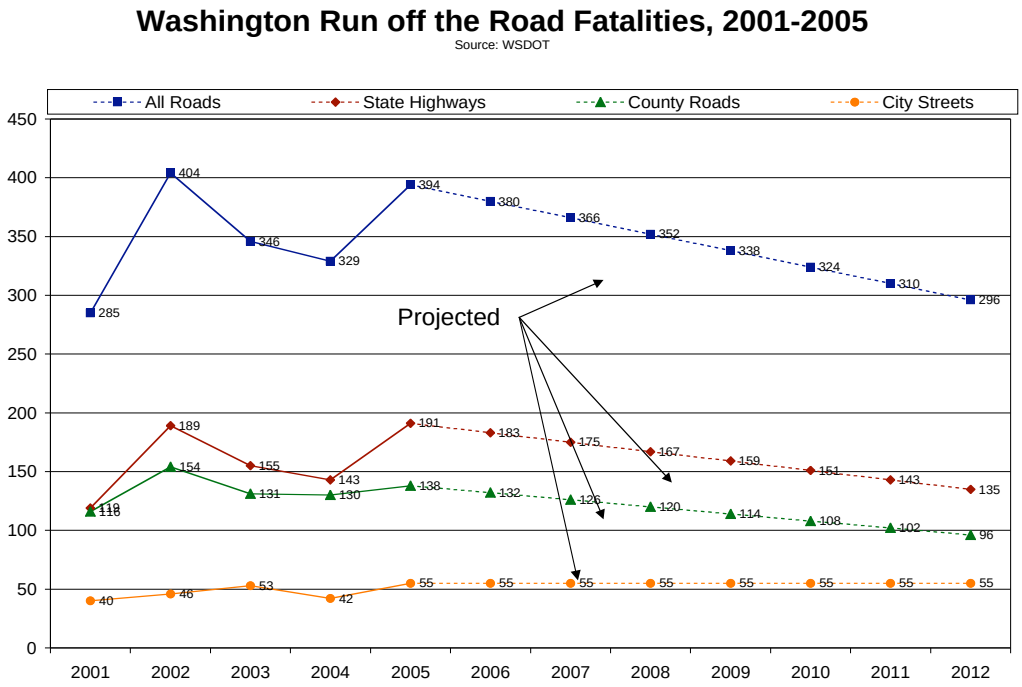
	2001	2002	2003	2004	2005
State Highways	45%	51%	45%	48%	44%
County Roads	52%	64%	57%	67%	75%
City Streets	59%	81%	83%	62%	51%
Other/Unknown	0%	0%	14%	0%	0%
*All Roads**	*49%*	*58%*	*55%*	*55%*	*55%*

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.

Goals and Performance Measures



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)

7.1.B5. Develop and implement guidelines for safe urban streetscape design. (P)
7.1.B6. Complete all guardrail infill where necessary. (P)
7.1.B7. Replace all non-standard guardrail ends. (P)
7.1.B8. Reduce roadside hazards such as flattening slopes and removing hard objects. (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.

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

Reducing Run-Off-Road Collision Resources

NCHRP Report 500, Volume 6, A Guide for Addressing Run-Off-Road Collisions, addresses many of these strategies in detail. http://safety.transportation.org/guides.aspx?cid=27

NCHRP Report 500, Volume 3, A Guide for Addressing Trees in Hazardous Locations, addresses many of these strategies in detail. http://safety.transportation.org/guides.aspx?cid=24

NCHRP Report 500, Volume 8, A Guide for Addressing Collisions Involving Utility Poles, addresses many of these strategies in detail. http://safety.transportation.org/guides.aspx?cid=31

The American Traffic Safety Services Association, Low Cost Local Road Safety Solutions, addresses many of these strategies in detail. http://www.atssa.com/galleries/default-file/LowCostLocalRoads.pdf

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 intersections[16], 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 shows[17] 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.

---

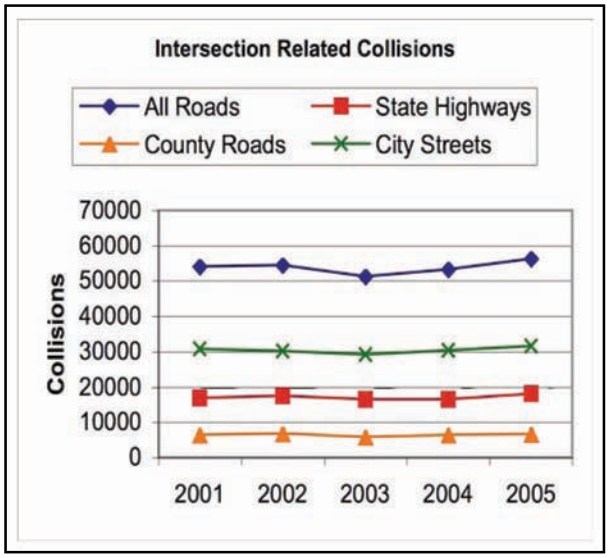
[16] NCHRP Report 500, Volume 12, A Guide for Addressing Collisions at Signalized Intersectionsl. http://safety.transportation.org/guides.aspx?cid=33 and NCHRP Report 500, Volume 05, A Guide for Addressing Collisions at Unsignalized Intersections. http://safety.transportation.org/guides.aspx?cid=26

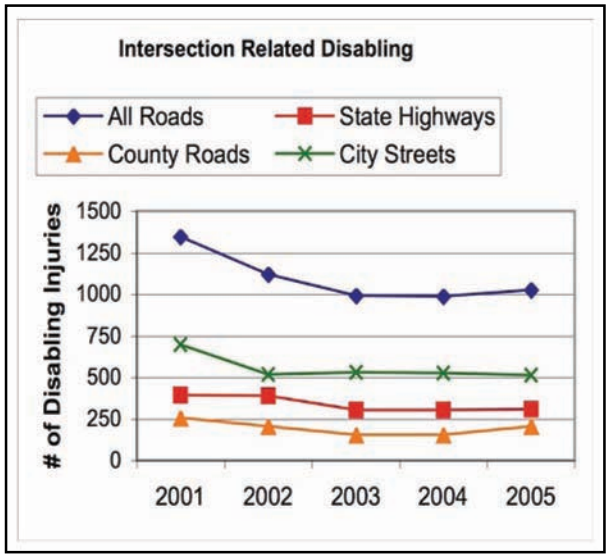
[17] Ibid.

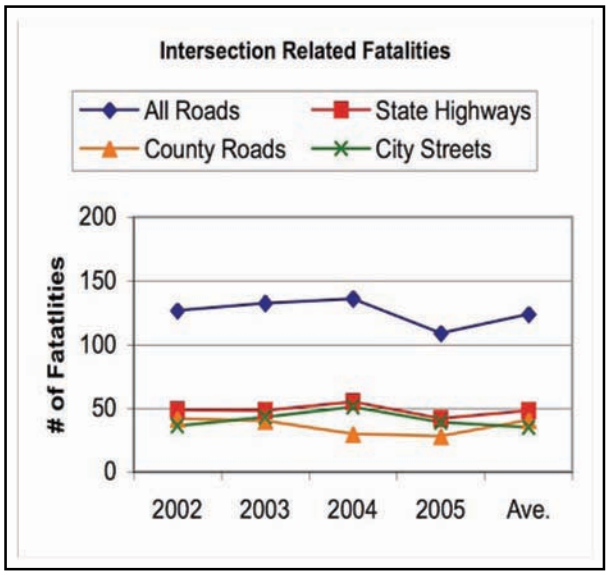
Figure 7.2-1

Intersection Related Collisions, 2001-2005

Intersection related crashes accounted for 20 percent of all fatal crashes from 2001 to 2005.







The Percent of Intersection Related Fatalities That Were Also Speed Related

Road Type	2001	2002	2003	2004	2005
State Highways	7%	8%	21%	13%	9%
County Roads	23%	28%	48%	43%	25%
City Streets	31%	29%	33%	29%	29%
Other/Unknown	-	50%	-	-	-
*All Roads**	*20%*	*24%*	*33%*	*27%*	*22%*

The Percent of Intersection Related Fatalities That Were Also Impairment Related

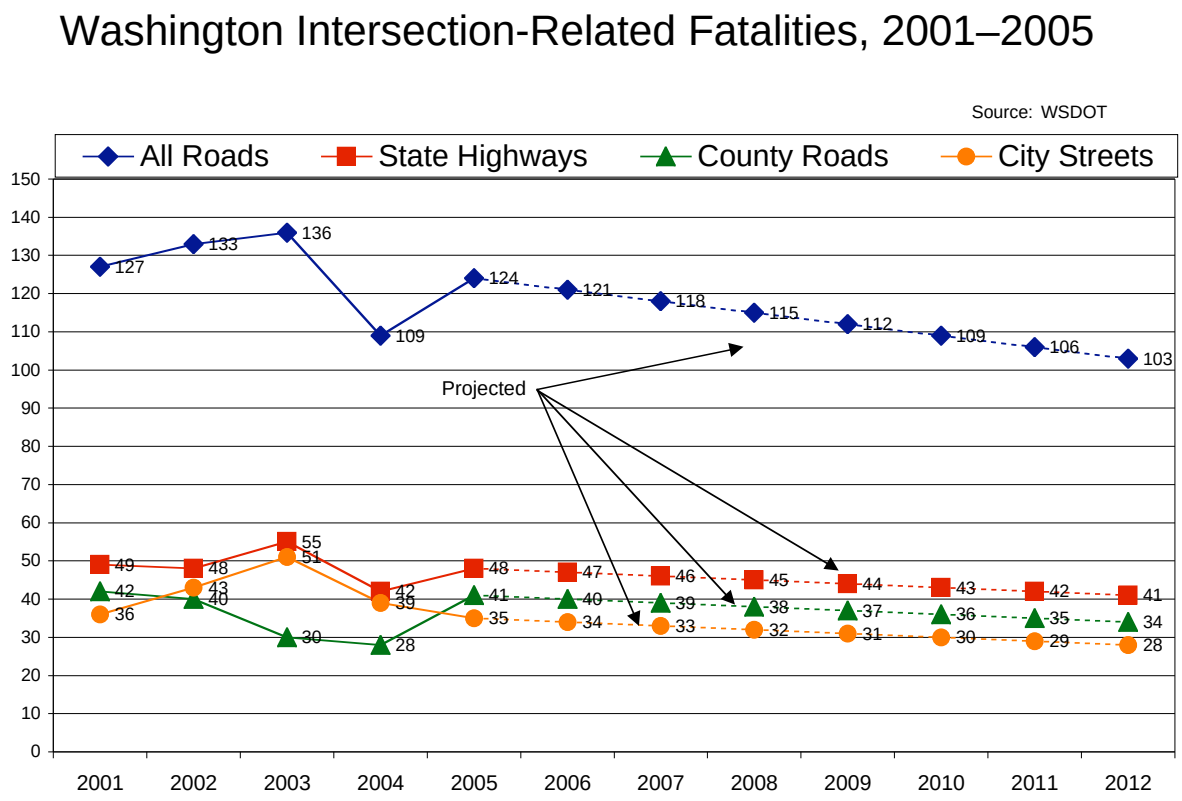
	2001	2002	2003	2004	2005
State Highways	48%	22%	27%	20%	16%
County Roads	26%	23%	50%	51%	31%
City Streets	31%	38%	37%	30%	39%
Other/Unknown	-	50%	-	-	-
*All Roads**	*35%*	*28%*	*37%*	*33%*	*29%*

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.

Goals and Performance Measures



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

Objectives	Strategies
7.2.A. Reduce collisions at intersections.	7.2.A1. Consider traffic control and operational improvements where appropriate: • 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)
	7.2.A2. Consider geometric improvements where appropriate: • 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)

	• Provide full-width paved shoulders in intersection areas (T) • Restrict or eliminate turning maneuvers by signing (T) • Restrict or eliminate turning maneuvers by providing channelization or closing median openings (T) • Close or relocate "high-risk" intersections (T) • Convert four-legged intersections to two T-intersections (T) • Convert offset T-intersections to four-legged intersections (T) • Use indirect left-turn treatments to minimize conflicts at divided highway intersections (T) • Improve pedestrian and bicycle facilities to reduce conflicts between motorists and nonmotorists (varies) • Install roundabouts. (P)
	7.2.A3. Install illumination where appropriate. (P)
7.2.C. Continue and/or enhance effective access management policies with a safety perspective	7.2.C1. Develop a statewide proactive strategy to reduce the number of access points prior to the development of the highway.
	7.2.C2. Develop a twenty-year plan for access control on state highways.
7.2.D. Improve driver compliance at intersections.	7.2.D1. Implement automated enforcement (cameras) of red-light running. (P)
	7.2.D2. Provide targeted enforcement at intersections and intersection approaches. (T)
	7.2.D3. Provide public information and education. (T)
7.2.E. Improve driver awareness of intersections and signal control	7.2.E1. Improve visibility of intersections on approach. (T)
	7.2.E2. Improve visibility of signals and signs at intersections. (T)
	7.2.E3. Improve sight distances. (P and T)
7.2.F. Reduce collisions at intersection with new technology and devices.	7.2.F1. Utilize new technology and devices to improve intersection safety.

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.

Note: Strategies to reduce impaired driving listed in Section 5.1, and Speed, Section 5.2 will also have a positive impact on reducing intersection-related fatalities, because speed and impaired driving are a factor in about one-third of intersection-related fatalities.

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

7.3 Reducing Head-On Crashes

Background

A head-on crash typically occurs when one vehicle crosses over a centerline or a median and crashes into an approaching vehicle; or occasionally, when a vehicle is traveling the wrong way in traffic lane. Collisions occurring at intersections are not included in this definition. Occasionally, a driver's deliberate actions (such as passing on a two-lane road) can cause a head-on collision, but more frequently head-on collisions are caused by a driver's impairment, speed, drowsiness, or distraction.[18]

During 2001–2005, Washington State averaged 2,400 head-on crashes each year, which accounted for only two percent of all collisions. However, they represented an average of 11 percent (351) of all disabling and 21 percent (130) of all fatal collisions during the same time frame. Speed was a factor in 26 percent of the deaths and impairment in 49 percent of the deaths.

While head-on crashes occur with almost equal occurrence on state highways (two percent), county roads (four percent) and city streets (one percent), fatal head-on collisions happen more frequently on state highways (30 percent). See Figure 7.3-1 "Head-On Collisions" on page 85 for more information.

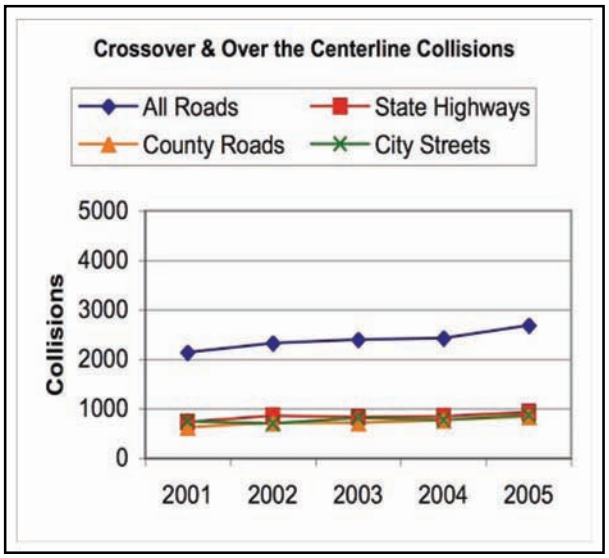
Nationwide, (1999 FARS data) 75 percent of head-on crashes occurred on undivided two-lane roads, but only four percent of those related to passing or overtaking another vehicle. The remaining related to vehicles going straight or negotiating a curve.

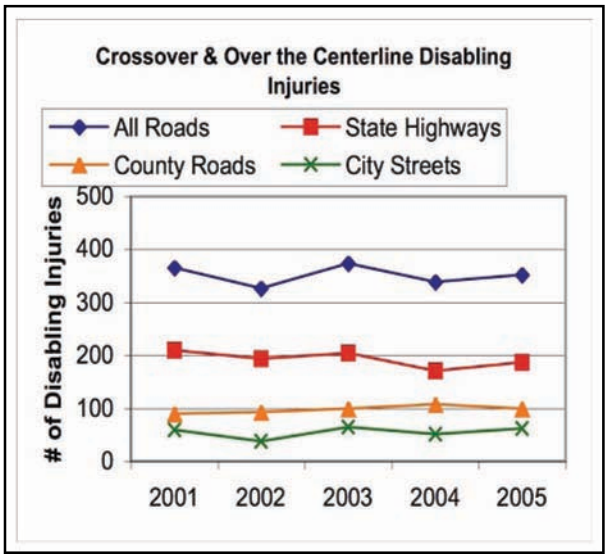
[18] NCHRP Report 500, Volume 4, A Guide for Addressing Head-On Collisions. http://safety.transportation.org/guides.aspx?cid=25

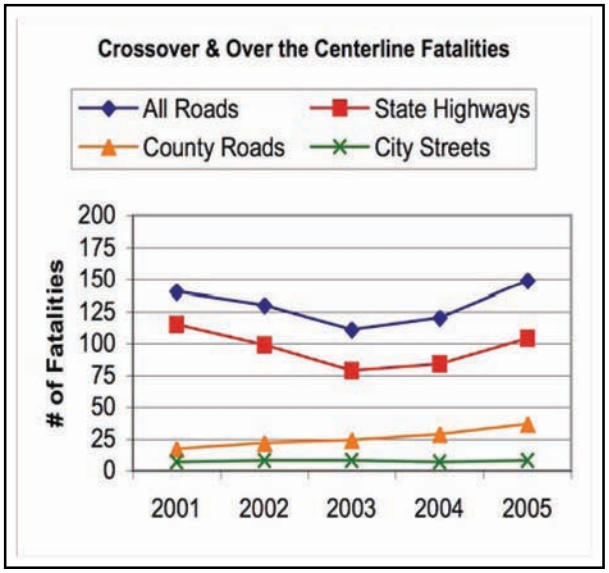
Figure 7.3-1

Head-On Collisions, 2001-2005

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







The Percent of Head On Related Fatalities That Were Also Speed Related

	2001	2002	2003	2004	2005
State Highways	26%	7%	18%	7%	3%
County Roads	60%	36%	41%	76%	26%
City Streets	60%	25%	43%	0%	71%
Other/Unknown	-	-	-	-	-
*All Roads**	*33%*	*13%*	*26%*	*23%*	*15%*

The Percent of Head On Related Fatalities That Were Also Impairment Related

	2001	2002	2003	2004	2005
State Highways	51%	47%	40%	41%	36%
County Roads	50%	71%	71%	82%	67%
City Streets	60%	50%	57%	100%	57%
Other/Unknown	-	-	-	-	-
*All Roads**	*50%*	*51%*	*49%*	*52%*	*46%*

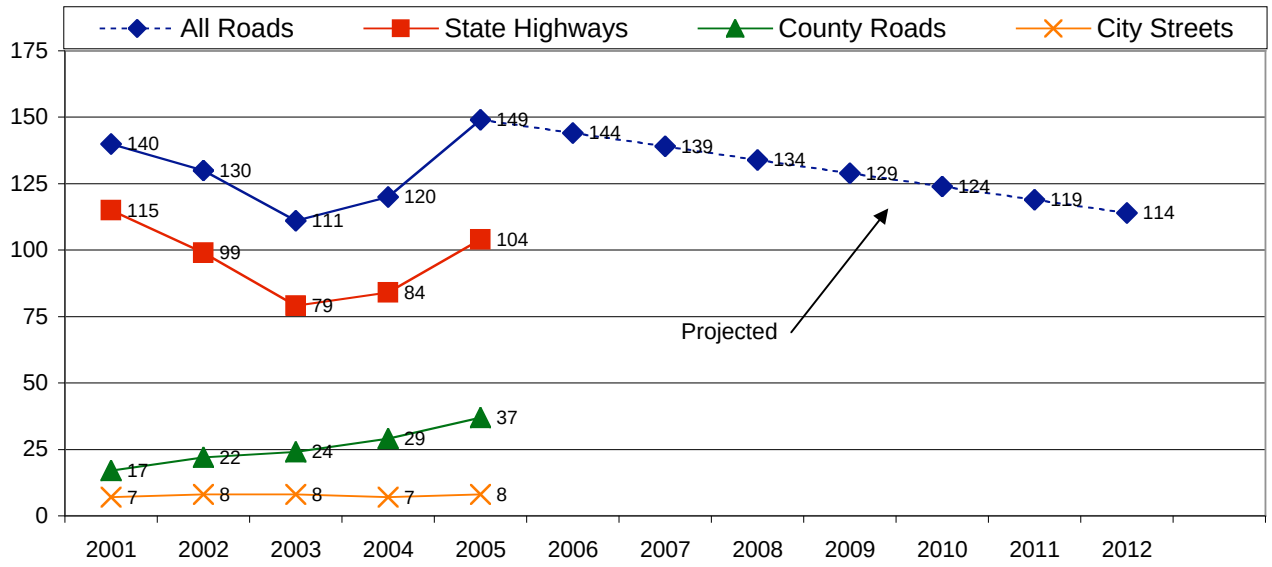
Charts data source: WSDOT. Table data source: FARS. *There was 1 fatality on a frontage road in 2003.

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 Crossover & Over the Centerline Fatalities, 2001-2005

Source: WSDOT



Strategies to Reduce Head-On Crashes

Objectives	Strategies
7.3.A. Reduce Head-On Crashes	7.3.A1. Implement innovative centerline treatments to reduce head-on crashes on two lane highways. (P)
	7.3.A2. Provide safe passing opportunities on two-lane rural highways by constructing passing lanes where cost effective. (T)
	7.3.A3. Focus on across median crashes on highways with narrow medians. (T)
	7.3.A4. Add raised medians or other access control on multi lane arterials. (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.

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, discuses 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

rural and wilderness). EMS agencies must meet these criteria on 80 percent of all calls. Expeditious response to trauma scenes equates to faster hospital access times for major trauma patients. Therefore, increasing the percentage of compliance by pre-hospital resources will equate to improved outcomes. In order to adequately assess pre-hospital response times, a central data repository must be developed and pre-hospital data gathered and analyzed to appropriately assess system efficacy.

Integrated Interoperable Communications: Response time efficiencies are affected by a number of dynamics including, but not limited to, the distribution of available EMS resources, public access to those resources, effective communications systems, and rapid recognition and routes of travel to the collision scene by EMS providers. Sophisticated communications systems allowing a multiplicity of response personnel to effectively communicate are essential to an efficacious EMS response system. In 1973, Congress enacted the Emergency Medical Services Systems Act (public law 93-154), identifying 15 essential components to an EMS System. Communications is one of these 15 essential components and represents a significant challenge for the State's EMS response community. A comprehensive communications system provides EMS personnel with access to additional resources that may be required as well as medical direction. Additionally, an effective communications system allows responding personnel to coordinate activities related to scene management ensuring optimum patient care. The ability to communicate with other responding resources both on the ground and in the air, ensure rescuer safety and efficient preparation of the patient for transport. It is also imperative that all responding personnel have the ability to communicate among each other as the scene unfolds. During any response to a motor vehicle crash, agencies representing EMS, Fire Service, and Law Enforcement will be engaged. The ability to easily and effectively communicate between response agencies promotes an effective response system. The current level of interoperability between response agencies is minimal and the economic and technical barriers must be addressed.

Medical Dispatch Protocol: Equally important to coordinating the response activities of the various agencies is the presence of communications personnel utilizing medical dispatch protocols. Several medically oriented dispatch protocol packages are utilized nationally and provide a solid foundation for appropriate deployment of EMS resources as well as providing pre-arrival instructions to citizens reporting a collision or EMS incident. Currently, communication centers throughout the State vary in the level of medical dispatch protocol from none at all in some centers, to well developed, computerized medical dispatch triage processes. The disparity in the presence of these essential protocols lends itself to inconsistent deployment of EMS resources. Without consistent medical dispatch protocols, EMS resources are prone to over or under utilization. The EMS system in the State should pursue implementation of medical dispatch protocols in every EMS dispatch center.

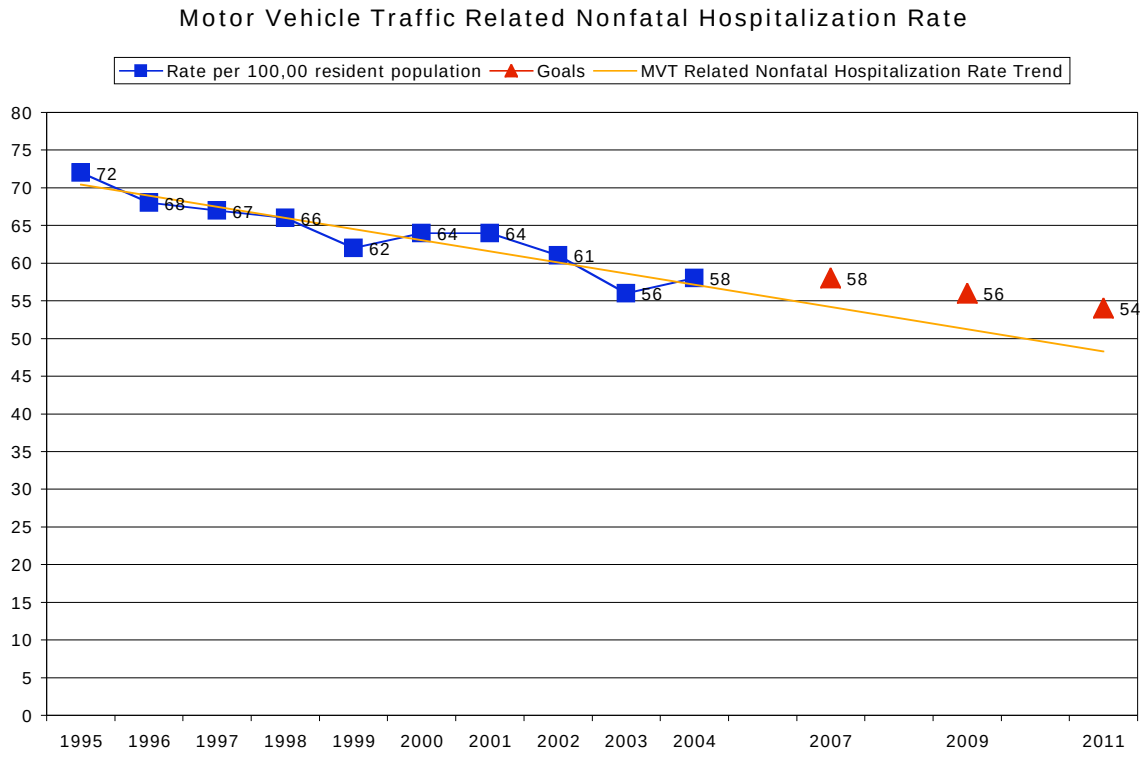
Global Positioning Satellites (GPS): Emerging technology utilizing Global Positioning Satellites (GPS) in EMS vehicles is one manner of reducing EMS response times to incident scenes. With an increase in the number of citizens traveling rural and wilderness roads, it is important that EMS providers know the exact location of a motor vehicle collision and, just

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.

Goals and Performance Measures



Strategies to Enhance Emergency Medical Capabilities to Increase Survivability

Objectives	Strategies
8.1.A Reduce injury deaths Reduce injury hospitalizations	8.1.A1. Ensure all pre-hospital EMS personnel receive adequate trauma training through Ongoing Training and Evaluation Programs (OTEP). (P)
	8.1.A2. Ensure efficient and adequate distribution of Level 1 and Level 2 Designated Trauma Centers. (P)
	8.1.A3. Ensure that all major trauma patients are transported to the highest level of designated trauma center within a 30 minute transport. (P)
	8.1.A4. Develop and implement statewide EMS data system that promotes efficient and accurate assessment of EMS System performance related to all EMS incidents. (P)
	8.1.A5. Increase the percentage of EMS on-scene arrival responses that are within State requirements. (P)
	8.1.A6. Ensure adequate and efficient distribution of pre-hospital EMS resources at all levels (aid and ambulance). (P)
	8.1.A7. Obtain all response time data for pre-hospital EMS agencies and archive in a central EMS data repository for analysis. (P)
	8.1.A8. Implement Medical Dispatch Protocols in each EMS communications center within Washington State. (P)

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.

In November 2003, the TRC hosted a State traffic records assessment conducted in cooperation with the National Highway Traffic Safety Administration (NHTSA), a division of the U.S. Department of Transportation. This assessment provided a number of recommendations as to how the current system architecture could be improved. In addition, the TRC held numerous strategic planning sessions to develop a foundation for the State's future direction in traffic records. As a result of these efforts, the TRC has created the Washington Traffic Records Strategic Plan. This document serves as a blueprint for future improvements to the State's system of collecting, distributing, and using traffic records data. The goals, objectives, and strategies listed below have been taken directly from the Washington Traffic Records Strategic Plan.

Goals

1. Leverage technology and appropriate government and industry standards to improve the collection, dissemination, and analysis of traffic records data.
2. Improve the interoperability and exchange of traffic records data among systems and stakeholders for increased efficiency and enhanced integration.
3. Provide an ongoing statewide forum for traffic records and support the coordination of multi-organizational initiatives and projects.
4. Promote the value of traffic records data and encourage training opportunities to maximize its effectiveness as decision support.

Strategies to Improve Information and Decision Support Systems

Objectives	Strategies
9.1.A Replace paper-based data collection processes with automated electronic systems.	9.1.A1. Issue bar code imprinted driver licenses and vehicle registrations to Washington drivers to expedite in-vehicle electronic forms preparation for law enforcement officers. (P)
	9.1.A2. Provide a data collection software application to law enforcement agencies pursuing mobile field reporting solutions. (T)
	9.1.A3. Support the eTRIP Initiative, Objective #1 to provide law enforcement with methods to issue tickets and collision reports electronically. (T)
9.1.B. Reduce paper exchanges among traffic records systems and stakeholders.	9.1.B1. Support the eTRIP Initiative, Objective 3 to prepare agency repositories to accept and file elect5onically transmitted citations, infractions, and collision report data. (T)
	9.1.B2. Support the eTRIP Initiative, Objective 2 by coordinating with the JIN Board to utilize the JINDEX platform as the primary message broker for citations and collision reports. (T)
	9.1.B3. Design a process for city & county engineers to view images of collision reports, code location, and electronically submit location information. (T)
	9.1.B4. Develop a method for citizens to submit collision reports electronically. (E)

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.

(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.

Resources

National Highway Traffic Safety Administration, Traffic Records, A Highway Safety Program Advisory. Draft December 2005.
http://www.nhtsa-tsis.net/workshops/pdfs/_E_TR%20Advisory_12_28_2005_Working_Draft.pdf

National Highway Traffic Safety Administration, Initiatives to Address Improvements of Traffic Safety Data July 2004. http://www.nhtsa-tsis.net/workshops/pdfs/_Q_Data_IPT_Report.pdf

Washington Traffic Safety Commission, Washington Traffic Records Committee Resource Manual. July 2004. http://www.trafficrecords.wa.gov/pdfs/traffic_records_resource_manual.pdf

National Safety Council, A National Agenda for the Improvement of Highway Safety Information Systems. 1997. http://www.atsip.org/oldsite/pdf_doc/NationalAgenda.pdf

National Highway Traffic Safety Administration, DOT HS 808 662. Model Minimum Uniform Crash Criteria (MMUCC). December 1998. http://www-nrd.nhtsa.dot.gov/pdf/nrd-30/NCSA/MMUCC/2003/intro.html

National Highway Traffic Safety Administration Technical Assessment Team. State of Washington Traffic Records Assessment. January 2004.
http://www.trafficrecords.wa.gov/pdfs/Washington%20Traffic%20Records%20Assessment.pdf

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.

Appendix A

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.

Electronic Traffic Information Processing (eTRIP) Initiative	A collaborative effort among State and local agencies to create a seamless and integrated system through which traffic-related information can travel from its point of origin to its end use and analysis. The heart of this undertaking is to move from the current paper-based process to an automated system that will enable law enforcement agencies to electronically create tickets and collision reports in the field and transmit this data to State repositories and authorized users. http://www.trafficrecords.wa.gov/etrip.htm
Fatality	A person who died within 30 days of a collision as a result of injuries sustained in the collision
Fatality Analysis Reporting System (FARS)	Contains data on a census of fatal traffic crashes within the 50 States, the District of Columbia, and Puerto Rico. To be included in FARS, a crash must involve a motor vehicle traveling on a trafficway customarily open to the public and result in the death of a person (occupant of a vehicle or a non-occupant) within 30 days of the crash. FARS collects information on over 100 different coded data elements that characterizes the crash, the vehicle, and the people involved.
Fatality Collision	Any collision that results in the death of one or more persons due to injuries received from the collision within 30 days of the collision.
Fatality Rate	Number of deaths resulting from reportable collisions for a specified segment of public roadway per 100 million vehicle miles of travel.
Government Management, Accountability and Performance System G-MAP	Data-driven management and performance systems designed to measure the effectiveness of how State services are delivered and whether or not the results that are intended were accomplished. Governor Gregoire's G-map web site contains examples of g-map reports. http://www.governor.wa.gov/gmap/default.asp
Head-on collision	Refers to a collision where the front end of one vehicle collides with the front end of another vehicle while the two vehicles are traveling in opposite directions. Over the centerline collisions, where a vehicle crossed the yellow line into the opposing lane, and cross median collisions, where a vehicle drove across a median into the opposing lane, are included in this definition.
Impaired driver	Any driver with a BAC of .08 or greater and/or any driver with a positive result on a drug test. On average for 2001 to 2005, impaired drivers were involved in 39 percent of all traffic crashes.
Impairment related collision	Any driver, pedestrian, cyclists, etc with a BAC of .08 or greater and/or a positive result on a drug test. On average for 2001 to 2005, impairment related collisions accounted for 47 percent of all traffic crashes.
License plate modification	Modifying the license plate with a "zebra" striping of the plate. Vehicles displaying these plates alert officers to the possibility of driver who is not properly licensed (unlicensed, or licensed suspended or revoked), although a validly licensed driver may drive the vehicle. Nevertheless, such striping makes the vehicle more likely to be checked.

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).

List of Acronyms

AASHTO	American Association of State Highway and Transportation Officials
ADAT	Aggressive Driving Apprehension Team
BAC	Blood Alcohol Concentration
CMV	Commercial Motor Vehicle
CVSA	Commercial Vehicle Safety Alliance
DUI	Driving Under the Influence
DWLS/R	Driving While Suspended or Revoked
EMS	Emergency Medical Services
EMSTC	Emergency Medical Services and Trauma Care
FARS	Fatality Analysis Reporting System
FHWA	Federal Highway Administration
FMCSA	Federal Motor Carrier Safety Administration
FRA	Federal Railroad Administration
FTA	Federal Transit Administration
GMAP	Government Management, Accountability and Performance System
GPS	Global Positioning Satellites
IACP	International Association of Chiefs of Police
MADD	Mothers Against Drunk Driving
NAETO	North American Tribal Enforcement Officers
NCHRP	National Cooperative Highway Research Program
NHTSA	National Highway Traffic Safety Administration
NHTSA	National Highway Traffic Safety Administration
OSPI	Office of Superintendent of Public Instruction
SAFTEA-LU	Safe, Accountable, Flexible, Efficient, Transportation Equity Act – A Legacy for Users
SHSP	Strategic Highway Safety Plan
SIEC	Washington State Interoperability Executive Committee
TACT	Ticket Aggressive Cars and Trucks
TRB	Transportation Research Board
TRC	Traffic Records Committee
TRC	Traffic Records Committee
VMT	Vehicle miles traveled
VTTI	Virginia Tech Transportation Institute
WAC	Washington Administration Code
WSDOT	Washington State Department of Transportation

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

Appendix C

Screens Used to Develop Collision Data

Bicycles

Collision Type
1) Bicycle
2) Tricycle

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)*

Heavy Truck Collisions

Ad Hoc (Vehicle Type)
1) Truck and Trailer
2) Truck (Flatbed, Van, etc.)
3) Truck Double Trailer Combination
4) Truck Tractor
5) Truck Tractor and Semi Trailer

Intersection Related

Junction Relationship
1) At Intersection and Related
2) Intersection Related But Not at Intersection
3) At Driveway
4) At Driveway Within Major Intersection
5) Driveway Related But Not at Driveway
6) Circulating Roundabout
7) Entering Roundabout
8) Exiting Roundabout

Pedestrian

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

Run of the Road

Collision Type
1) One Parked One Moving
2) Fixed Object
3) Other Object
4) Vehicle Overturned

Trains

Collision Type	1) Train Struck Moving Vehicle 2) Train Struck Stopped or Stalled Vehicle 3) Vehicle Struck Moving Train 4) Vehicle Struck Stopped Train

Speeding

Contributing Cause	1) Exceeding Stated Speed Limit 2) Exceeding Reasonable Safe Speed

Workzone

Ad Hoc (Workzone)	1) External Traffic Backup Caused by Workzone 2) Traffic Backup From Workzone 3) Within Workzone 4) Workers Present 5) Workers Not Present

Wildlife

Collision Type	Non Domestic Animal (deer, bear, elk, etc.)

Target Zero

Zero Deaths • Zero Disabling Injuries • 2030