

# Washington State's Strategic Highway Safety Plan 2010

Zero Deaths | Zero Serious Injuries | 2030

**TARGET  
ZERO**



**Zero Deaths  
Zero Serious  
Injuries  
2030**



CHRISTINE O. GREGOIRE  
Governor



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OFFICE OF THE GOVERNOR

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August 27, 2010

Dear Neighbors:

It has been ten years since our state set an aggressive goal for itself: **zero traffic deaths and serious injuries on Washington State roads by 2030**. Washington became a national leader of states working to eliminate traffic related fatalities and serious injury crashes. Many partners and stakeholders from around Washington – including local governments, Tribes, state and federal agencies, the private sector, and non-profit and community organizations – continue to work together to realize the vision of *Target Zero*.

We are making progress. Traffic fatalities have fallen to their lowest levels in nearly 60 years, despite major increases in vehicle travel. In 2008, Washington had the seventh lowest fatality rate in the country. We have continued to lower the traffic death rate in 2009 and are on track to do so again in 2010.

Approximately 500 Washingtonians die in traffic accidents each year—most are preventable. Seventy-one percent of traffic fatalities involve impairment, speed, and/or run-off-the-road crashes. This update of *Target Zero* lists over a hundred strategies to further reduce fatal and serious injury crashes on our roads.

No one should lose a child, parent, spouse, family member, friend, or colleague in a traffic crash. With the help of the many partners supporting *Target Zero*, the setting of aggressive goals, the use of effective strategies, the targeted investment of resources, and a culture of accountability we can make our vision of a safer and healthier Washington a reality.

I encourage you to read this plan and join me in helping our state realize the vision of *Target Zero*.

Sincerely,

A handwritten signature in blue ink that reads "Christine O. Gregoire".

Christine O. Gregoire  
Governor



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# About Target Zero

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Washington State is building traffic safety partnerships throughout the state to align priorities and leverage our resources to improve traffic safety. The Strategic Highway Safety Plan: *Target Zero* is the outgrowth of that partnership, setting forth a vision to reduce traffic fatalities and serious injuries to zero by the year 2030. It identifies Washington State's traffic safety needs, helping to guide investments to achieve significant reductions in traffic fatalities and serious injuries on all public roads.

*Target Zero* provides a comprehensive framework of specific goals, objectives, and strategies for reducing traffic fatalities and serious injuries. It serves as a statewide strategic highway safety plan and will be incorporated into the plans and programs of key traffic safety agencies. The plan directs the commitment of agency resources and funding, and seeks to support agencies, groups, and individuals working together to implement Target Zero strategies. This is a "practitioner's plan" intended to unite the contributing agencies and organizations and make sure we are all moving toward common goals.

*Target Zero* is strongly data driven, closely following the successful model adopted in the American Association of State Highway & Transportation Officials (AASHTO) *Strategic Highway Safety Plan*, which was developed in cooperation with the Federal Highway Administration (FHWA), the National Highway Traffic Safety Administration (NHTSA), and the Transportation Research Board (TRB). In keeping with its data-driven nature, *Target Zero* proposes an evaluation process to examine 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.

The federal Safe, Accountable, Flexible, Efficient, Transportation Equity Act – A Legacy for Users (SAFETEA-LU), 23 USC 148 requires each state have a Strategic Highway Safety Plan. This document meets those federal requirements for Washington State.

# The Traffic Safety Partnership

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

## Washington State Agencies

Governor Gregoire  
Governor's Centennial Accord (Governor/Tribes)  
Governor's Office of Indian Affairs  
Governor's Transportation Policy Office  
Governor's Accountability and Performance Office  
Washington Traffic Safety Commission  
Department of Transportation  
Washington State Patrol  
Department of Health  
Department of Licensing  
Department of Social and Health Services  
DSHS Division of Behavioral Health and Recovery  
State House and Senate  
Washington Transportation Commission  
County Road Administration Board  
Administrative Office of the Courts  
Office of Superintendent of Public Instruction  
Transportation Improvement Board  
Harborview Injury Prevention and Research Center  
Washington State Liquor Control Board  
Office of Financial Management  
Washington State Office of Public Defense

## Federal Agencies

National Highway Traffic Safety Administration Northwest Region  
Federal Highway Administration, Washington Division  
Federal Highway Administration, Federal Lands Highway  
Federal Motor Carrier Safety Administration  
Federal Railroad Administration, Region 8

## Private and Non-Profit Organizations

AAA Washington  
Affordable Ignition Interlock  
ATSSA, the American Traffic Safety Services Association  
Ignition Interlock of Washington  
Mothers Against Drunk Driving  
Swerve Driving School  
Towing and Recovery Association of Washington  
Washington Road Riders Association  
Washington Trucking Association

## Tribal Nations and Organizations

Chehalis Tribe  
Colville Confederated Tribes  
Cowlitz Tribe  
Kalispel Tribe  
Lummi Nation  
Muckleshoot Indian Tribe  
Nisqually Tribe  
Puyallup Tribe  
Quileute Nation  
Shoalwater Bay Tribe  
Squaxin Island Tribe  
Suquamish Tribe  
Swinomish Tribe  
Northwest Association of Tribal Enforcement Officers  
Tribal Transportation Planning Organization  
Bureau of Indian Affairs  
Eastern Washington University Tribal Technical Assistance Program

## Community, Local, and Regional Agencies and Organizations

23 Target Zero Community Traffic Safety Task Forces  
Representing Counties, Cities, and Tribes  
The Association of Washington Cities  
City of Bellevue Police Department  
City of Wenatchee Police Department  
Cooper Jones Bicycle & Pedestrian Committee  
County Road Administration Board  
Evergreen Safety Council  
Greater Spokane Substance Abuse Council  
King County Metro Transit  
Metropolitan Planning Organizations  
Puget Sound Regional Council  
Regional Transportation Planning Organizations  
State Criminal Justice Training Commission  
The Washington Association of Counties  
The Washington Association of County Engineers  
Washington Association of Prosecuting Attorneys Washington  
Washington Association of Sheriffs and Police Chiefs  
Washington Traffic Incident Management Coalition

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# Introduction

## Vision and goals

Our vision is that Washington State will reduce traffic fatalities and serious injuries to zero by 2030. In order for Washington to achieve Target Zero, the State must achieve approximately 23 fewer fatalities and 130 fewer serious injuries each year for the next 20 years. From 2002 through 2008, Washington averaged 12 fewer traffic fatalities and 86 fewer serious injuries each year. While this is a great achievement, it is still not enough to reach the goal of zero fatalities and serious injuries in 2030. We must do more.

We have identified specific short-term goals for each priority area of the plan. Recognizing that there is an actual rate of decline as well as an aspirational one, we have chosen to set our shorter-term stretch goals for 2010, 2012, and 2014 at halfway between these two trends. Therefore, the goal for fatalities in 2010 is 532, halfway between the predicted number (based on the ten-year trend) of 545 and the zero-in-2030 trend of 519. The goals for 2012 and 2014 are similarly chosen.

For priority areas in which we are meeting or exceeding the Target Zero goal, we have chosen goals that match the current trend. For the one priority area in which deaths are increasing at a high rate (motorcyclists), we have set the goals on the Target Zero trend line.

This method reflects the belief that implementation of this plan will reduce deaths, while also acknowledging that there are factors outside of the control of the Target Zero partners. Trends in the driving population, such as the number of people on the road (and therefore exposed to the risk of traffic collisions), can affect the number of traffic fatalities. Meanwhile, technological improvements and medical advances can reduce the risk of fatalities. All of these factors and more will influence our ability to reach zero fatalities and zero serious injuries by 2030.

## Background

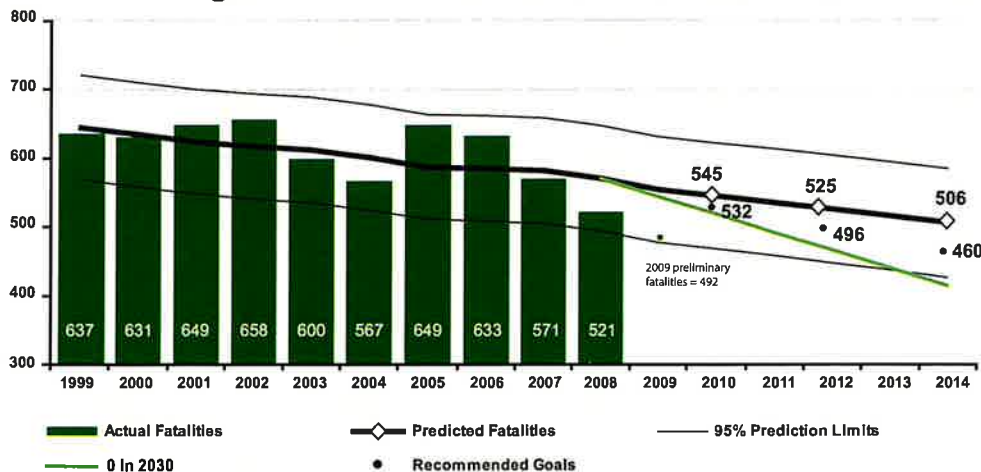
For the past couple of years, national traffic safety trends have shown significant improvement. Figures from the National Highway Traffic Safety Administration (NHTSA) show that 37,261 people died in US motor vehicle crashes in 2008, down 10.5% from 2007; preliminary numbers for 2009 show an estimated 8.9% drop.<sup>1</sup> Washington State fatalities are also dropping, down 8.6% from 2007 to 2008 (from 571 to 521), with preliminary figures for 2009 showing a 5.6% decline in fatalities. Although far too many people are still dying on U.S. and Washington State roads, these recent drops are encouraging.

The traffic fatality rate is also trending downwards, dropping in Washington State from 4.91 deaths per 100 million vehicle miles traveled (VMT) in 1966 to 0.94 deaths per 100 million VMT in 2008, the state's lowest traffic fatality rate on record. This is well below the 2008 national rate of 1.27 traffic fatalities per 100 million VMT calculated by the National Highway Traffic Safety Administration (NHTSA).

Reasons for the decline in traffic fatalities and fatality rates are varied. Decreased driving due

<sup>1</sup> The 2009 figure is based on statistical projections done by NHTSA in March 2010. From Traffic Safety Facts DOT HS 811 291.

**All Washington Traffic Fatalities: Trends, Forecasts, and Goals**



Source: Washington Traffic Safety Commission - Fatality Analysis Recording System (FARS)

# Introduction

to the high price of gasoline in much of 2008, augmented by the economic recession that began in late 2008, have reduced people's exposure to the risk of traffic collisions. Improvements in roadway engineering, vehicle design, and safety equipment have all helped save lives.

It is also true that successful traffic safety education programs, tougher legislation, improved roadways, faster emergency response times, and strategically focused enforcement efforts have contributed greatly to the continuing decline in traffic deaths. It is in these areas that Washington State's traffic safety partners have worked in close collaboration to bring about changes that contributed to our State's record low 2008 traffic fatality rate.

## Achievements

Our state is proud of the safety improvements made in areas where we have focused a great deal of time, attention, and funding:

**Unrestrained vehicle occupants.** The fatality rate among unrestrained vehicle occupants, i.e., vehicle passengers not wearing appropriate safety restraints, has dropped more quickly than the trend needed to reach zero unrestrained vehicle occupant deaths in 2030. (see pages 39-43 for more information). This success reflects the effectiveness of the Click-It-or-Ticket campaign's combination of education and enforcement, as well as several other innovative efforts to encourage greater seat belt use.

**Run-off-the-Road fatalities.** While the fatalities are still numerous enough to be classed as a Level One priority area, run-off-the-road deaths are dropping at a rate that closely tracks the overall Target Zero rate. We believe that this reflects the success of roadside treatments such as rumble strips and cable median

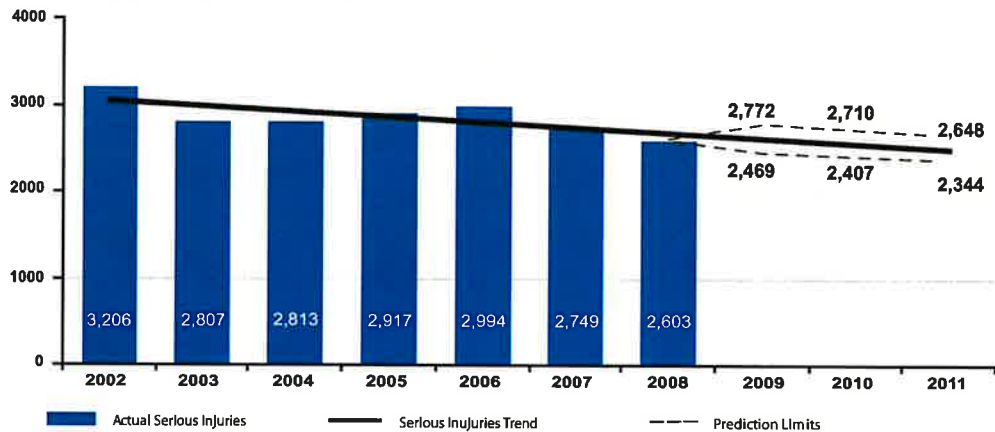
barriers in reducing run-off-the-road collisions. For more information, see pages 26-28.

**Young Drivers Age 16-20.** The fatality trend for collisions involving young drivers aged 16 to 20 closely follows the zero-in-2030 trend. The implementation of the Intermediate Drivers License in 2001, which placed training requirements and driving restrictions on 16- and 17-year-old drivers, has helped with this decrease. More information is on pages 32-38.

## Areas for Improvement

Although we are proud of our accomplishments, we believe there is room for improvement in many areas. For instance, motorcycle fatalities are going up, a trend opposite to those of all other types of traffic fatalities addressed in *Target Zero*. Impairment-related fatalities, the number one priority of this plan, are dropping, but not quickly enough to enable us to reach zero fatalities by 2030. These and other problem areas are highlighted for analysis in this plan, including lists of effective strategies and countermeasures. We cannot prevent all traffic collisions, but a growing number of highly regarded research studies has demonstrated that most traffic deaths and serious injuries are preventable.

### All Washington State Serious Injuries: Trends and Forecasts

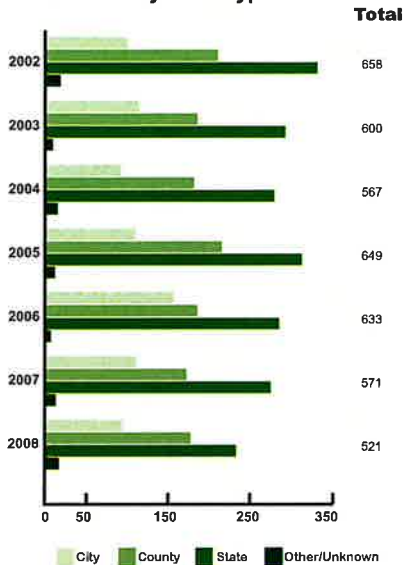


Source: WSDOT Collision Database



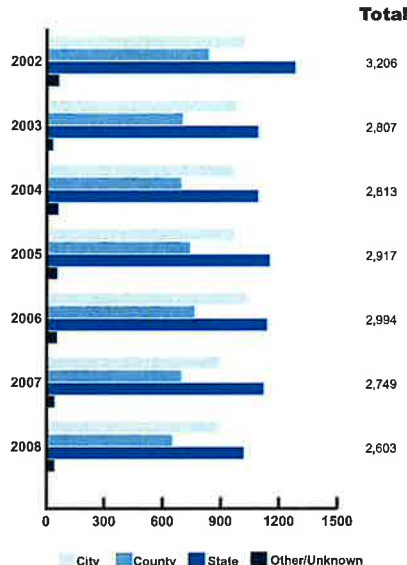
# Introduction

**All Washington State Motor Vehicle Fatalities by Road Type**



Source: Washington Traffic Safety Commission - Fatality Analysis Recording System

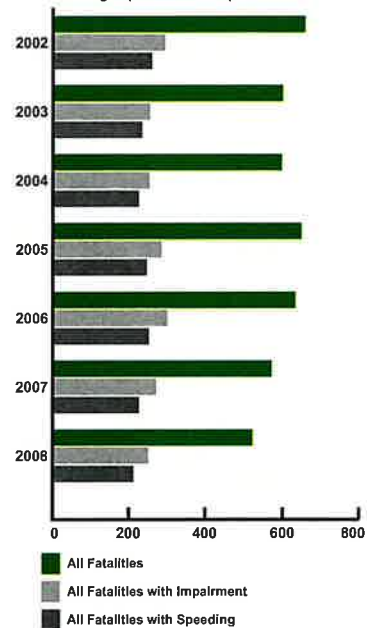
**All Washington State Serious Injuries**



Source: WSDOT Collision Database

**All Fatalities**

Including Impairment and Speed Related



Source: Washington Traffic Safety Commission - Fatality Analysis Recording System (FARS)

In this update of *Target Zero*, several changes have been made to address new trends in the factors contributing to fatality and serious-injury collisions:

- Run-off-the-road collisions have been elevated to Priority Level One, based on their involvement in 42% of all fatalities between 2006 and 2008.
- Young drivers 16-20 years old and 21-25 years old have been combined into one group and moved to the top of Priority Level Two, based on their collective involvement in 38% of all fatalities.
- Distracted drivers have been separated from drowsy drivers and moved to a Level Two priority based on their significant involvement in fatal collisions. (Drowsy drivers were moved to Level Four).
- Compared with previous editions of *Target Zero*, this plan includes much more input from Washington’s Native American Tribes regarding both traffic safety problems and the strategies to combat them (see pages 15-16 for more information).

## Target Zero Strategies

This plan includes dozens of strategies for further reducing traffic fatalities and serious injuries in our state. These strategies were developed using national-level research, existing pilot programs, and input from many statewide stakeholders. Most of the strategies in *Target Zero* have been proven effective through professional evaluation in Washington or in other states or countries.

Some of the strategies outlined in *Target Zero* have not yet been proven effective. These strategies are ones that have been tried and perhaps even accepted, but for which no valid evaluations have yet demonstrated a link between the strategy and an actual reduction in traffic deaths. When funding such a strategy, we will require that a properly designed evaluation component be a part of the project.

When building the strategies in this document, two main sources were used to determine strategies’ legitimacy: AASHTO’s *Strategic Highway Safety Plan*, and NCHRP’s

# Introduction

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guides documenting strategies for significantly reducing roadway injuries and fatalities. These guides, which contain proven, tried, and experimental strategies, are linked in this document to the applicable priority areas. Another guidance document is *Countermeasures that Work, A Highway Safety Countermeasure Guide for State Highway Safety Offices* by the Governors Highway Safety Association for NHTSA and the USDOT. This guide lists countermeasures, best practices, and expected effectiveness. Other reference material, listed in the Appendix (pages 82-85), provides detailed information about these objectives and strategies.

The majority of the Target Zero strategies focus on the four “E’s” of Education, Enforcement, Engineering, and Emergency Medical Services (EMS):

**Education.** Give drivers the information to make good choices, such as not driving while impaired, wearing a seatbelt, and avoiding distractions while in their vehicles.

**Enforcement.** Use data-driven analysis to help law-enforcement officers pinpoint locations with a high number of fatal and serious-injury collisions related to driver behaviors, such as speeding and impairment.

**Engineering.** Design roads and roadsides using best practices to reduce collisions, or reduce the severity of collisions if they do occur.

**Emergency Medical Services (EMS).** Provide high-quality and rapid medical and emergency response to injury collisions.

While the strategies listed are comprehensive, there are several areas for future research. For instance, analysis of the possible benefits of motorcycle liability insurance, and of the high rate of motor vehicle fatalities among Native Americans, are areas of further research for the next edition of this plan.

Meanwhile, there are many things we can do right now to improve safety and reduce fatalities and serious injuries on our state’s roads. We can improve roadway design to better accommodate pedestrians, bicyclists, motorcyclists, and commercial motor vehicles. We can use education to decrease the likelihood of dangerous behaviors like speeding and impaired driving. We can fund enforcement patrols at locations where these and other dangerous behaviors are likely to occur. We can enhance emergency medical capabilities to increase survivability when a collision does occur. Finally, we can improve our traffic data collection systems to enhance our ability to measure the effects of these strategies and keep us on course toward our target of zero deaths and zero serious injuries.

This guide shows us how.

# Priority Rankings

*Target Zero* contains four levels of priorities based on the percentage of traffic fatalities associated each factor. Priority One has the three areas - impairment, run-off-the-road collisions, and speeding - associated with the largest number of fatalities in the state. Each of these areas were factors in 40% or more of the traffic fatalities between 2006 and 2008.

Each are of Priority Two, which includes young drivers, distracted drivers, unrestrained vehicle occupants, and intersection-related crashes, accounted for somewhere between 21% and 38% of traffic fatalities. Traffic Data Systems, while not a cause of fatalities, is considered a Level Two priority because of the potential for better data to

## Comparison of Factors Involved in Washington Traffic Fatalities from 2003-2005 to 2006-2008

Target Zero Priority Areas	2003-2005		2006-2008		2006-08 vs. 2003-05
	Deaths (N=1,816)	% of Total Deaths	Deaths (N=1,725)	% of Total Deaths	Percent Change in Number of Deaths
<b>Priority One</b>					
Alcohol and/or Drug Impaired Driver Involved	794	43.7%	828	48.0%	4.3%
Drinking Driver Involved	706	38.9%	712	41.3%	0.8%
Alcohol Impaired Driver Involved	557	30.7%	544	31.5%	-2.3%
Drug Impaired Driver Involved	412	22.7%	474	27.5%	15.0%
Run off the Road	771	39.2%	722	41.9%	-6.4%
Speeding Involved	707	38.9%	693	40.2%	-2.0%
<b>Priority Two</b>					
Young Drivers <sup>1</sup>	714	39.3%	654	37.9%	-8.4%
Drivers 21-25 Involved	381	21.0%	358	20.8%	-6.0%
Drivers 16-20 Involved	362	19.9%	318	18.4%	-12.2%
Unrestrained Passenger Vehicle Occupant	552	30.4%	481	27.9%	-12.9%
Distracted Driver Involved	478	26.3%	426	24.7%	-10.9%
Intersection Related	367	20.2%	356	20.6%	-3.0%
Traffic Data Systems					
<b>Priority Three</b>					
Unlicensed Driver Involved	323	17.8%	352	20.4%	9.0%
Opposite direction multi-vehicle collisions	340	18.7%	323	18.7%	-5.0%
Motorcyclist	203	11.2%	225	13.0%	10.8%
Unendorsed Motorcycle Operator	63	3.5%	84	4.9%	33.3%
Unhelmeted Motorcyclist	9	0.5%	16	0.9%	77.8%
Pedestrian	211	11.6%	198	11.5%	-6.2%
Heavy Truck	171	9.4%	198	11.5%	15.8%
Emergency Medical Services					

<sup>1</sup> The number of fatalities involving drivers age 16-20 and drivers age 21-25 will not total the number of fatalities involving drivers age 16-25 due to inci-

dents that involved drivers of both age groups. A total of 61 fatalities involved both a driver 16-20 and a driver 21-25

## Priority Rankings

improve our analysis of traffic fatalities and serious injuries.

Priority Three areas were each involved in somewhere between 12% and 20% of fatalities between 2006 and 2008. They include unlicensed drivers, opposite direction multi-vehicle collisions, motorcyclists, pedestrians, and heavy trucks. Emergency Medical Services is also a Level Three priority area.

Priority Four includes areas that each involved less than 10% of all fatalities during this time, including older

drivers, drowsy drivers, bicyclists, work zones, vehicle-train collisions, and school-bus-related collisions. While these areas do not have dedicated chapters in *Target Zero*, there is a brief discussion of current efforts included on pages 77-78. We believe that if we address more common factors such as impairment, speeding, and run-off-the-road collisions, the roads will be safer for all users.

Many fatalities involved more than one factor, so they will be represented more than once in the table.

### Comparison of Factors Involved in Washington Traffic Fatalities from 2003-2005 to 2006-2008, continued

Target Zero Priority Areas	2003-2005		2006-2008		2006-08 vs. 2003-05
	Deaths (N=1,816)	% of Total Deaths	Deaths (N=1,725)	% of Total Deaths	Percent Change in Number of Deaths
<b>Priority Four</b>					
Older Driver Involved	160	8.8%	120	7.0%	-25.0%
Drowsy Driver Involved	86	4.7%	77	4.5%	-10.5%
Bicyclist <sup>1</sup>	30	1.7%	30	1.7%	0.0%
Work Zone	32	1.8%	21	1.2%	-34.4%
Wildlife	7	0.4%	9	0.5%	28.6%
Vehicle-Train Involved	5	0.3%	8	0.5%	60.0%
School Bus-Related	7	0.4%	1	0.1%	-85.7%
Aggressive Driver Involved					
Integrated Interoperable Communications					
<b>Additional Measures</b>					
Rural Road	1,129	62.2%	1,003	58.1%	-11.2%
Urban Road	684	37.7%	721	41.8%	5.4%
State Highway and Interstate	883	48.6%	792	45.9%	-10.3%
State Highways Operated by Cities	74	4.1%	55	3.2%	-25.7%
County Road	581	32.0%	534	31.0%	-8.1%
City Street	316	17.4%	362	21.0%	14.6%
Unlicensed Driver Involved	323	17.8%	352	20.4%	9.0%
Passenger Vehicle Occupant <sup>2</sup>	1,324	72.9%	1,208	70.0%	-8.7%

Groups are not mutually exclusive; therefore, percentages will total more than 100%.

<sup>1</sup> Bicyclists include unicyclists and tricyclists as well.

<sup>2</sup> Passenger Vehicle Occupants do not include motorcyclists, pedestrians, and bicyclists, or occupants of buses, motorhomes, and heavy trucks.

# Target Zero Fatality Trends

WSDOT data shows that from 2006 through 2008, the period of time since the last update of this plan, an average of 381,243 reported collisions occurred each year on Washington’s roadways. Annually, an average of 2,782 people received serious injuries, and an average of 575 people died.

Of the 1,725 traffic fatalities that occurred from 2006 to 2008, 71% involved one or more of the Priority One factors of impairment, speed, and/or running off the road. During the same time period, 40% of traffic deaths occurred in speeding-related crashes and 48% of traffic fatalities occurred in impaired-driver related crashes. Forty-two percent involved vehicles running off the road. Nearly 450 (26%) of these motor vehicle deaths involved two of these factors, and nearly 300 (17%) involved all three. If Washington State could significantly reduce impaired driving, control speeding, and keep vehicles from leaving the roadway (or reduce the severity of the collisions that occur when they do), we could go a long way toward the Target Zero goal.

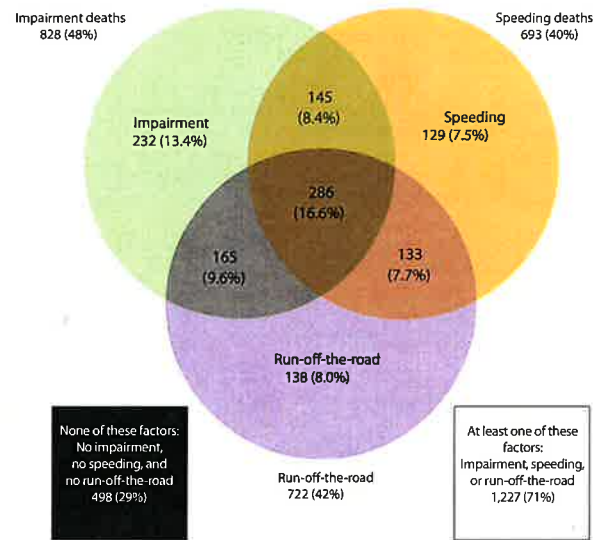
## Analysis of the Ten Year Fatality Trends

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

From 1999–2008, data from the Fatality Analysis Reporting System (FARS) show about 75% of people who died in traffic collisions were passenger vehicle occupants, 11% were pedestrians, 10% percent were motorcyclists, and 2% were bicyclists.<sup>1</sup> Males accounted for 71% of traffic deaths, while females accounted for 29%. By age group, 15–20 year-olds suffered the highest number of fatalities with 953 deaths (15.6%) followed by 21–25 year-olds with 840 deaths (13.7%).

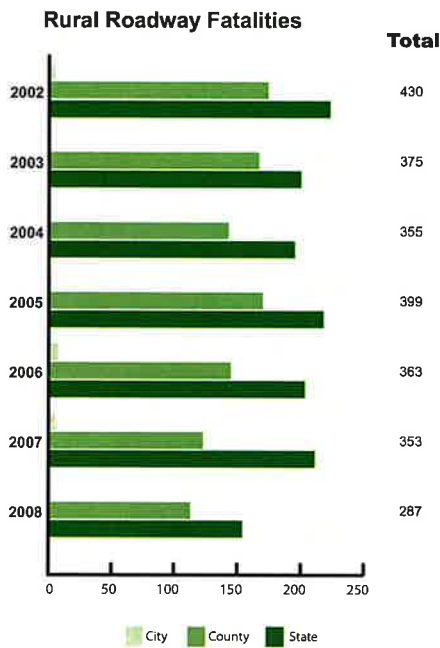
<sup>1</sup> The remaining 2% of fatalities included ATVs, snowmobiles, tractors, heavy trucks, buses, and motorhomes, among other categories

## The role of impairment, speed, and run-off-the-road collisions in 1,725 traffic fatalities in Washington 2006-2008

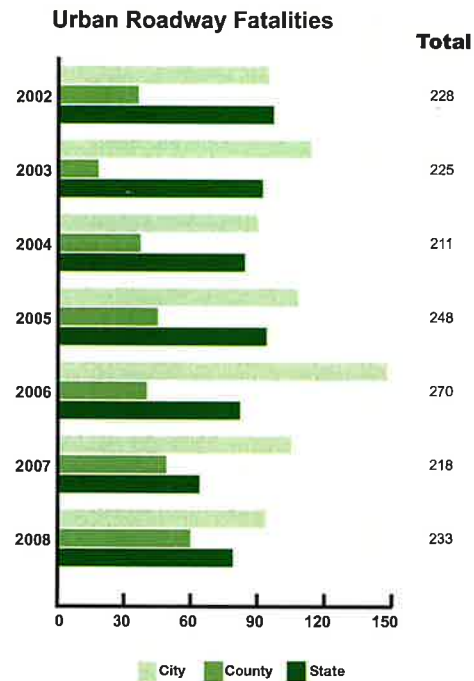


Data source: FARS and WSDOT Collision Database.

# Target Zero Fatality Trends



Source: Washington Traffic Safety Commission - Fatality Analysis Recording System



Source: Washington Traffic Safety Commission - Fatality Analysis Recording System

Sixty-one percent of traffic fatalities occurred on rural roads, while 39% occurred on urban roads. By road type, 39% of deaths occurred on state or US highways, 31% on county roads, 18% on city streets, and 11% on interstates.<sup>2</sup>

However, if we consider the rate of fatalities per 100 million vehicle miles traveled (VMT), county roads suffered the highest fatality rate at 2.12 per 100 million VMT, followed by state and US highways at 1.47, city streets at 0.77, and interstates at 0.43.

Throughout the remainder of this report, traffic fatality and serious injury data are further presented and analyzed for all of the *Target Zero* plan elements within each emphasis area. We will also consider the contribution of impairment and speeding within each of these areas.

<sup>2</sup> The remaining 1% include "other" roads, such as private drives and forest service roads.

# Native American Tribes and Target Zero

There are 29 Federally Recognized Tribes located within the borders of Washington State. Through the Centennial Accord, the State of Washington and Tribes have formally committed to working together on a government-to-government basis to address a number of common problems, including traffic safety issues. Native American reservations in Washington often include a mix of tribal, state, county and city roads, which creates jurisdictional complexities with law enforcement, collision reporting, road maintenance, and capital safety projects. Reservation roads are an important focus of traffic safety in our state, and the tribes are partners in the Target Zero effort. The active, professional and committed efforts by the Tribes to improve the quality and usefulness of *Target Zero* continues to result in fewer crash related deaths and serious injuries for all who live in or travel through Washington.

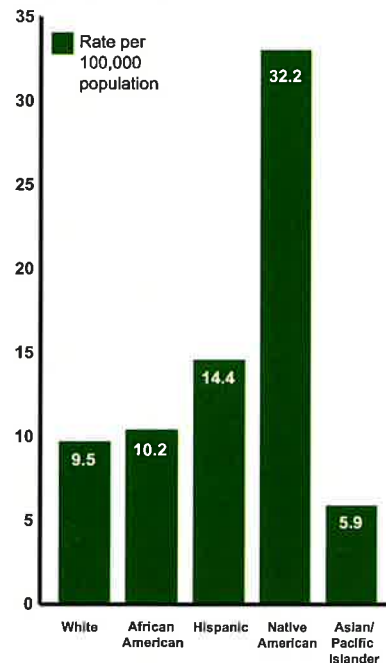
## Tribes' Involvement in 2010 Update

During the October 2008 Tribal-State Transportation Conference, tribal planners and representatives of WSDOT and WTSC discussed traffic safety concerns and partnership opportunities. This led to the May 2009 Tribal Traffic Safety Summit, where WSDOT, WTSC, WSP, FHWA and BIA joined many tribes in the discussion about reducing traffic fatalities and serious injuries on reservation roads and among Native Americans in the state. During this summit, tribal, state and federal staff focused on the "Four E's" of traffic safety: Education, Enforcement, Engineering, and Emergency Medical Services. Many of the recommendations, strategies, and action items were incorporated into this update of *Target Zero*. This update also includes strategies from the National Strategic Highway Safety Plan for Indian Lands. Kirk Vinish, Lummi Nation Transportation Planner and Chair of the Tribal Transportation Planning Organization, and Mike Lasnier, Suquamish Chief of Police, were members of the Target Zero steering committee.

WSDOT circulated a draft of *Target Zero* strategies to tribal transportation planners in January 2010 for comment. WSDOT and WTSC then released a preliminary version of the plan in April 2010 for formal tribal consultation before presenting it to Governor Gregoire's office in July 2010.

## Washington Traffic Fatality Rate

By Race/Ethnicity, 1999-2008



Source: Source; FARS, OFM

Note: Ethnic classification are per the U.S. Census Bureau and are mutually exclusive.

## Disproportionate Impacts to Native Americans

In Washington, the fatality rate for Native Americans is 3.3 times higher than for non-Native Americans. FARS data from 1999 through 2008 shows that Native American fatalities are high across all types of motor vehicle collisions. One example is the pedestrian fatality rate, which is 4.8 times higher for Native Americans than for Caucasians. The FARS data notes that over half (56.8%) of Native American pedestrian fatalities occurred in rural areas. Case studies focused on pedestrian fatalities have been conducted by individual tribes across the U.S.; these studies point to a number of additional causes including poor lighting, inadequate shoulders, and lack of pedestrian facilities on reservation roads. The rural nature of many reservation roads also increases response time for Emergency Medical Services.

# Native American Tribes and Target Zero

## Data Challenges

Unfortunately, significant data gaps exist, making it difficult to analyze data specific to reservations in Washington. Data serves as the critical link in identifying safety problems, selecting appropriate countermeasures, and evaluating performance. Without data, traffic safety and roadway engineering-related statistical analysis becomes more difficult. It is also more difficult for tribes to compete for safety funding and justify their needs. Many of the charts in *Target Zero* that display information by state, city, or county roads do not include data for reservation roads. Given the disproportionate impact to tribal communities, it is critical that we close these gaps and use data to help identify and address problems. Some of these challenges are described below.

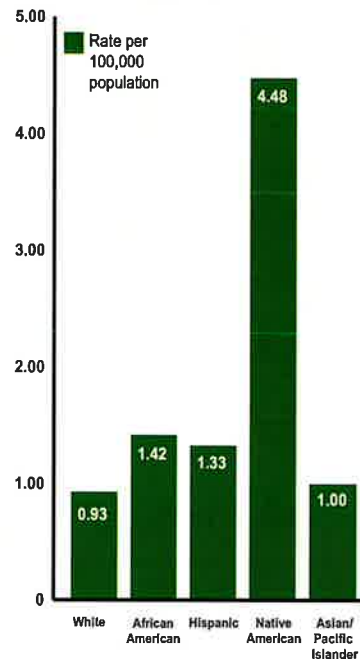
**Geospatial Data.** Reservations in Washington often include a mix of tribal, state, county and city roads, but currently WSDOT is not able to report data specific to a reservation, or for all reservations in the state. To close some of these data gaps, WSDOT is working with tribes to obtain maps of all reservation roads. Five Tribes have submitted maps to date. Our goal is to have maps for each reservation in the state before the next edition of *Target Zero*.

**Collision Reporting.** Researchers and traffic safety experts agree that crash data on tribal lands is under-reported. WTSC is working with tribal law enforcement to provide technical assistance and equipment, and to address confidentiality concerns with reporting. This effort has already shown some success. Recently, WTSC, the Confederated Tribes of Colville, and the Bureau of Indian Affairs's Safety Office worked together to secure funding to install SECTOR software into all Colville patrol cars, resulting in direct transmittal of traffic collision reports to WSDOT.

**Funding.** Lack of funding is another barrier to proper data collection. The WTSC has \$50,000 in grant funding to support projects promoting traffic safety initiatives in local tribal communities. During the 2009 Centennial Accord Meeting, WTSC and WSDOT offered to partner with tribes to address problems with a national tribal traffic safety grant program. The chronic under-funding of tribal roads through the Bureau of Indian Affairs Indian Reservations Road Program also

## Pedestrian Fatalities

By Race/Ethnicity, 1999-2008



Source: Washington Traffic Safety Commission - Fatality Analysis Recording System (FARS)

makes it difficult for tribes to construct safety projects, including some related to basic maintenance. WSDOT has offered to collaborate with tribes on the reauthorization of the federal surface transportation act to help alleviate this funding issue.

## Further Work on Tribal Traffic Safety

The many tribes and agencies who developed this edition of *Target Zero* remain committed to partnering to address tribal traffic safety issues. Over the next few years, these partners will work to close the data gaps described above, and to identify additional research related to the causes and solutions to the high traffic fatality rates among Native Americans. Our goal is to include more comprehensive tribal traffic safety data in the next update of *Target Zero*.



# Target Zero Planning Process

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The partners who have developed Washington State's Strategic Highway Safety Plan intend for it to coordinate their safety programs, align their goals and objectives, and leverage their collective resources.

The *Target Zero* traffic safety partnership is headed by the Washington Traffic Safety Commission, which is structured by law to provide a collaborative mix of leaders 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
- The Department of Licensing
- The Department of Transportation
- The Washington State Patrol
- The Department of Health
- The 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.

The Washington Traffic Safety Commission and the Washington State Department of Transportation took the lead developing the 2010 update of *Target Zero*, the third update of the plan since its inception in 2000. They established an initial working group of data analysts that included WTSC, WSDOT, Washington State Patrol, and Department of Licensing. This team spent from June to November 2009 analyzing traffic data and reviewing existing traffic safety planning documents. Meanwhile, *Target Zero* partners gathered stakeholder input in three traffic safety conferences: the July 2009 Steering Committee Conference, the Summer 2009 Tribal Traffic Safety Conference, and the October 2009 Traffic Safety Stakeholder Summit.

A list of proposed strategies went out for comment in December 2009. Between January 2010 and April 2010, those strategies were honed into the final lists seen at the end of each chapter in this plan. In April 2010, a draft of the plan went out for external review by partners and stakeholders. In June 2010, *Target Zero* was submitted to Governor Gregoire for her review and approval.

## Target Zero Data Sources

The many databases that make up Washington's Traffic Records System contain data on 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.

This data system serves as the critical link in identifying problems, selecting appropriate countermeasures, and evaluating the performance of these programs. The Washington State traffic data contained in this document comes primarily from Washington State Department of Transportation Collision Database and FARS. (More information on those databases is available on page 88 in the appendix of this plan.) As documented throughout this plan, the traffic safety data was thoroughly reviewed 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 Traffic Data Systems process is itself a priority area in *Target Zero*. To read more about the system and strategies for its development, please visit pages 51-54.

# Priority Level One: Impaired Driving

In Washington, a driver is considered to be Driving Under the Influence (DUI) if the driver's blood alcohol concentration is .08 or higher, or if the driver is impaired by other drugs, or both. This applies to both legal and illegal drugs, including prescription medication and over-the-counter drugs. Drivers under age 21 can be arrested for DUI with a blood alcohol concentration of .02 or higher.

Alcohol and drug impairment was the most commonly cited factor in fatal collisions in Washington, contributing to approximately 48% percent (828 of 1725) of all traffic deaths occurring between 2006 and 2008.

Washington has been combating impaired driving for decades and has made impressive progress. Since 1980, the number of traffic fatalities involving an alcohol impaired driver has decreased by 57%, from 390 to 166. In addition, even though there has been an increase in vehicle travel during this time, the fatality rate per vehicle miles traveled has decreased by 78%, from 1.35 in 1980 to 0.3 in 2008.

Much of this progress can be attributed to aggressive campaigns to change the public perception of the acceptability and consequences of drinking and driving. The Legislature has enacted tougher laws, from the voter-passed 1968 implied consent law<sup>1</sup> to the law lowering the blood alcohol concentration (BAC) threshold to .08 for impaired drivers in 1999. The state also imposed ignition interlock requirements on all DUI offenders and applied tougher sanctions for repeat and high-BAC offenders, including the 2007 felony DUI law that applies to those

<sup>1</sup> The implied consent law states that when you get a driver's license in Washington, you are giving your consent to submit to a breath or blood test when requested to do so. If you refuse to take the breath test (withdraw your consent), then your license is suspended for one year.

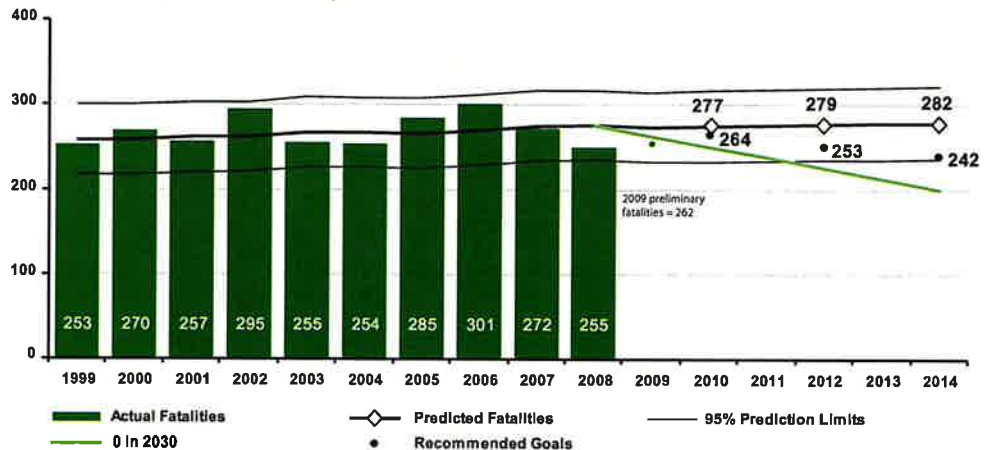
**Alcohol- or drug-impaired drivers were a factor in approximately 48% percent (828 of 1725) of all traffic deaths between 2006 and 2008.**

offenders with four prior DUI convictions within ten years. Strict penalties are imposed for drivers under age 21 who drink and drive as part of the "Zero Tolerance" statute.

Despite these intensive efforts, impaired driving remains a challenging issue, both for Washington State and for the nation. If Washington is going to reach our goal of zero impaired driving fatalities, we must continue with the successful endeavors of the past while also pursuing new initiatives, instituting additional proven strategies, and employing other best practices to continue to drive down the number of impaired drivers.

**Integrated Systems Approach.** Impaired driving is a

## Alcohol and/or Drug Impaired Driver Involved Fatalities: Trends, Forecasts, and Goals



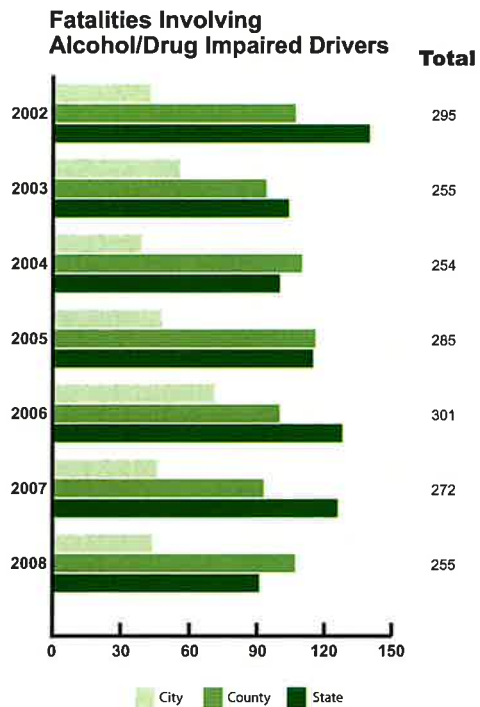
Source: Washington Traffic Safety Commission - Fatality Analysis Recording System

# Priority Level One: Impaired Driving

societal issue that pushes us beyond traditional traffic safety partnerships. To that end, the Washington Traffic Safety Commission hosts the Washington Impaired Driving Advisory Council, which consists of representatives from law enforcement, health, injury prevention, treatment, prosecution, judiciary, toxicology, training, private business, advocacy, community task forces, probation, corrections, tribal nations, and liquor control. The Council seeks to reduce impaired driving statewide through coordinated planning, training, programs and evaluation.

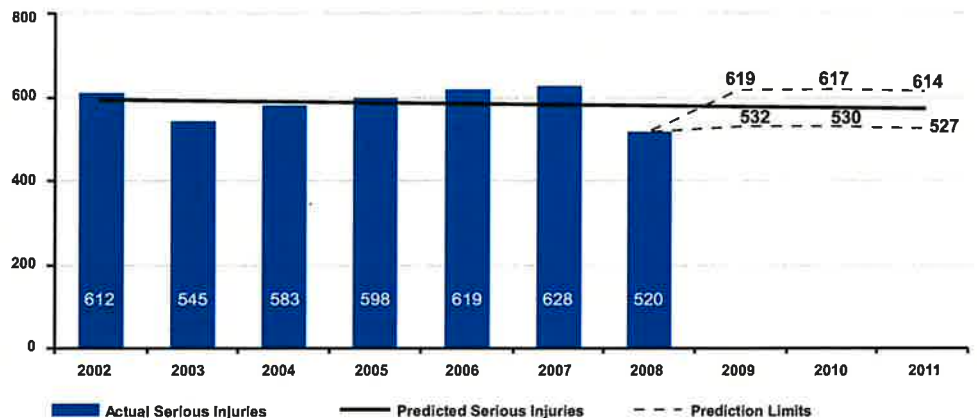
**DUI Arrests.** Washington Court data shows 40,205 DUI charges were filed in 2008. There were also 17,804 DUI guilty convictions, 19,562 charges reduced, and 9,512 deferred prosecutions granted. Only 185 cases resulted in acquittals.

**High Visibility DUI Enforcement Programs.** Washington Traffic Safety Commission funds quarterly “X52” DUI Patrols and the annual “Drive Hammered Get Nailed DUI Crackdown” as part of the NHTSA August/Labor Day national campaign. One hundred and sixty law enforcement agencies will be participating in these campaigns during 2010-2011, which represents a 60% increase in the number of participating agencies over 2008-2009. Each dollar of law enforcement overtime funding was matched with paid media messages to inform the public of the increased enforcement. A new program, Target Zero Teams, will place full-time Washington State Patrol DUI squads in King, Pierce and Snohomish Counties. The WSP teams will be joined by local law enforcement officers on the weekends or other high DUI times. These multi-jurisdictional squads will focus their efforts on those locations with the highest concentrations of DUI collisions.



Source: Washington Traffic Safety Commission - Fatality Analysis Recording System

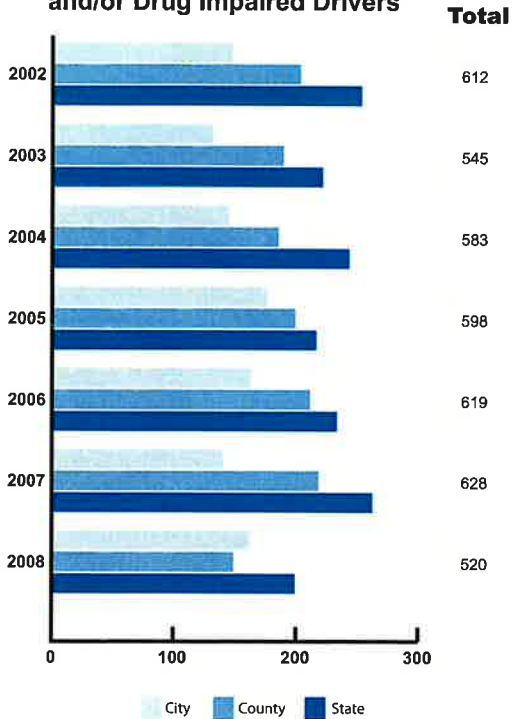
## Serious Injuries Involving Drug and/or Alcohol Impaired Drivers: Trends and Forecasts



Source: WSDOT Collision Database

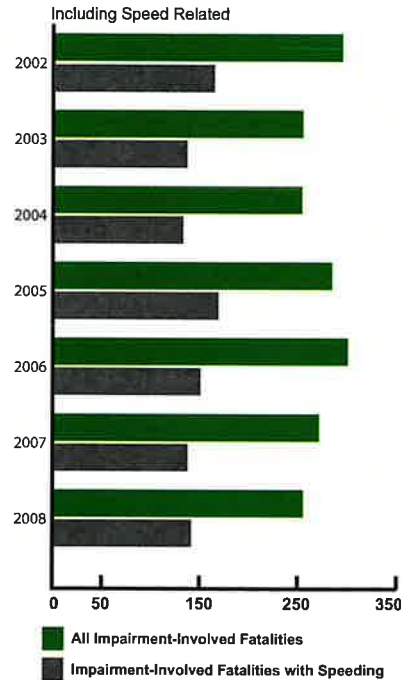
# Priority Level One: Impaired Driving

**Serious Injuries Involving Alcohol and/or Drug Impaired Drivers**



Source: WSDOT Collision Database

**Fatalities Involving Alcohol/Drug Impaired Drivers**



Source: Washington Traffic Safety Commission - Fatality Analysis Recording System (FARS)

**Law Enforcement Training in Alcohol and Drug Detection.** The Drug Evaluation and Classification Program (DEC), established in February 1996, trains law enforcement officers to become Drug Recognition Experts (DREs). Once the officer completes the rigorous training course and passes certification, he or she is able to recognize the symptoms of intoxication for seven different categories of drugs. A 12-step standardized process is used to identify drug impairment. The Washington State Patrol provides DRE training to both WSP troopers and officers from local law enforcement agencies. Since the program’s inception, the number of trained DREs has steadily grown from 16 DREs in 1996 to 238 to date, representing 73 law enforcement agencies. A 2010 statewide training program, the Statewide Standard Field Sobriety Test (SFST) Coordinator Program, provides comprehensive, consistent, timely, and training for all law enforcement agencies statewide.

**Reducing Excessive Drinking.** Research has shown that about 50% of people arrested for DUI were drinking at a licensed establishment, and further, that 70-89% of bars will serve alcohol to intoxicated persons in violation of the law. The Liquor Control Board’s Enforcement and Education Division identifies establishments with the greatest number of reported DUIs and focuses resources on these establishments through a program called “Locations of Strategic Interest.”

**Prosecute, Sanction, and Treat DUI Offenders.** Washington implemented the Traffic Safety Resource Prosecutor Program in August 2009 to deliver training, technical and courtroom assistance, and reference materials to prosecutors and law enforcement officers in an effort to increase the vigorous and consistent prosecution of impaired drivers. The Administrative

# Priority Level One: Impaired Driving

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## Impaired Driving Facts for 2004-2008

### Age and Gender

- Nearly half (49%) of persons killed in impairment-related crashes were between the ages of 16 and 30.
- Of impaired drivers involved in fatal crashes, 84% were male.

### Location

- Almost two-thirds (63%) of impairment-related deaths occurred in rural areas.
- Five counties in Washington account for almost half of impairment-related deaths – King (18%), Pierce (11%), Snohomish (7%), Yakima (6%), and Clark (5%).

### Time

- Two out of three impairment-related deaths (66%) occurred at night between 6 pm and 5:59 am.
- More than half (52%) of impairment-related deaths occurred during the weekend, between 6 pm Friday and 5:59 am Monday.
- Impairment-related deaths spiked during June to September with 42% occurring during these months. The fewest deaths occurred in February.

Office of the Courts conducts annual DUI judicial educational trainings to keep judges apprised of new legal and technical issues surrounding DUI cases. A new initiative to monitor ignition interlock providers, installers, and offenders required to have these devices was initiated in 2008 as part of the new Ignition Interlock Driver's License legislation. The Ignition Interlock Program Coordinator serves as the statewide expert on ignition interlock devices, conducting manufacturer and installation site audits, addressing offender compliance checks, and providing educational training to law enforcement and the ignition interlock community to ensure the continued effectiveness of ignition interlocks.

There are currently four DUI Courts in Washington supported

## More Impaired Driving Facts for 2004-2008

### Single vehicle crashes and sole occupants

- Two-thirds (67%) of impaired drivers were the sole vehicle occupant or rider.
- Three out of five impairment-related deaths (58%) involved a single vehicle.

### Other Factors

- Fifty percent of impaired drivers involved in fatal crashes were also speeding.
- Over half of passenger vehicle occupants involved in impaired driving fatal crashes were not wearing seat belts at the time of the crash.

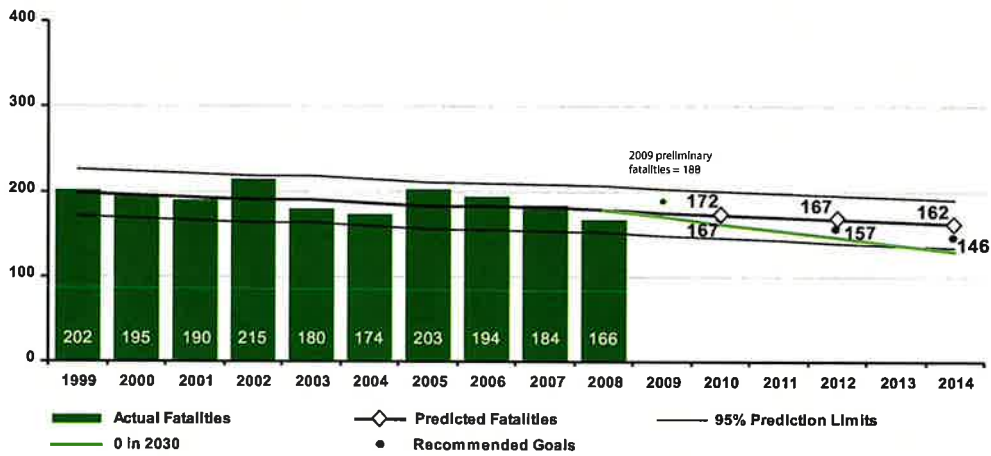
### Drugged Driving

Over the last ten years, known drug-involved traffic deaths have increased by 104% (from 75 deaths involving drug-impaired drivers in 1999 to 153 deaths in 2008). However, during this time, the proportion of deceased drivers tested for drugs increased by 54% (from 59% in 1999 to 91% in 2008). Consequently, much of the increase in drug-involved deaths is likely due to an increase in drug testing.

by the WTSC. Each court has its own characteristics, but all share the common goal of implanting the ten DUI Court principles promulgated in the training sessions developed by the National Center for DWI Courts. More information on those principles can be found at [dwicourts.org/learn/about-dwi-courts/-guiding-principles](http://dwicourts.org/learn/about-dwi-courts/-guiding-principles).

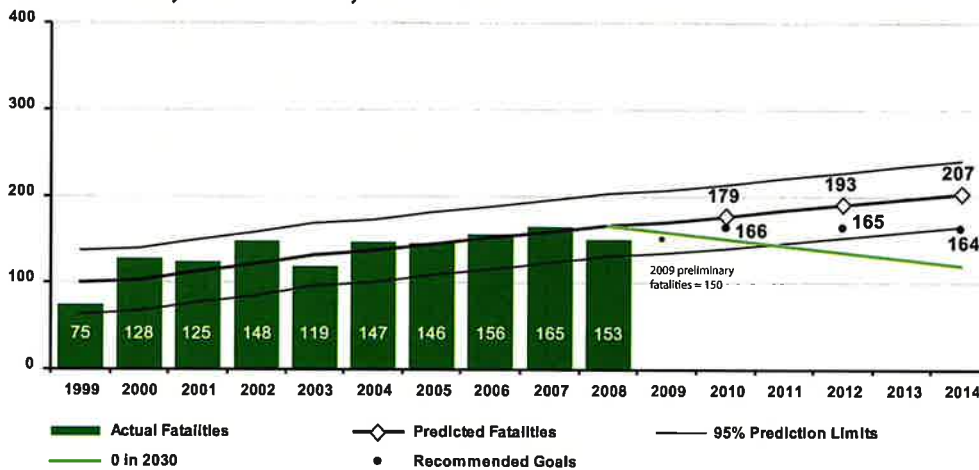
# Priority Level One: Impaired Driving

## Alcohol Impaired (BAC ≥.08) Driver Involved Fatalities: Trends, Forecasts, and Goals



Source: Washington Traffic Safety Commission - Fatality Analysis Recording System

## Drug Impaired Driver Involved Fatalities: Trends, Forecasts, and Goals



Source: Washington Traffic Safety Commission - Fatality Analysis Recording System

Note: Over the last ten years, known drug-involved traffic deaths have increased by 104% (from 75 deaths involving drug-impaired drivers in 1999 to 153 deaths in 2008). However, during this time, the proportion of deceased drivers tested for drugs increased by 54% (from 59% in 1999 to 91% in 2008). Consequently, much of the increase in drug-involved deaths is likely due to an increase in drug testing.

# Priority Level One: Impaired Driving

## Definitions for Impaired Driving

Washington State has focused on impaired driving for many years and as a result, there is a great deal of data on impairment. This gives 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, motorcycle rider, pedestrian, cyclist, etc with a BAC of .08 or greater and/or a positive result on a drug test. On average for 2006 to 2008, impairment-related collisions accounted for 55% of all traffic fatalities.

**Impaired driver.** Any driver with a BAC of .08 or greater and/or any driver with a positive result on a drug

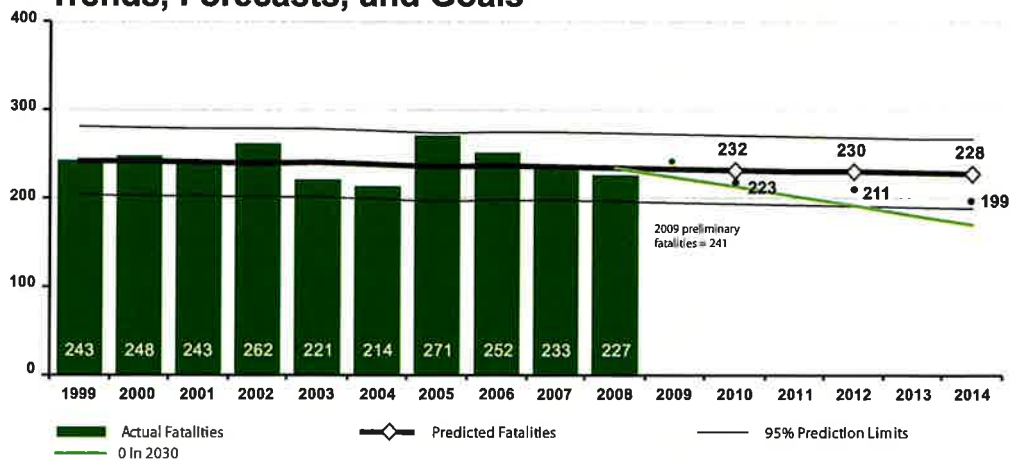
test. From 2006 to 2008, impaired drivers were involved in 48% of all traffic fatalities.

**Alcohol-impaired driver.** Any driver with a BAC of .08 or greater. From 2006 to 2008, alcohol impaired drivers were involved in 32% of all traffic fatalities.

**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.” From 2006 through 2008, alcohol impaired drivers were involved in 41% of all traffic fatalities.

Definition source: Washington Traffic Safety Commission; Data source: FARS

## Drinking Driver<sup>1</sup> Involved Fatalities: Trends, Forecasts, and Goals



Source: Washington Traffic Safety Commission - Fatality Analysis Recording System  
<sup>1</sup> A drinking driver is one identified on the collision report as “had been drinking”, and would include all BAC levels above zero.

# Priority Level One: Impaired Driving

## 1.1 Objectives and Strategies to Reduce Impaired Driving

### 1.1.A Reduce excessive drinking and underage drinking

- 1.1.A1 Explore an increase on the state excise tax on beer. (P)
- 1.1.A2 Continue mandatory alcohol server training and explore expanding responsible beverage service policies for alcohol retailers. (P)
- 1.1.A.3 Enforce underage drinking laws.
  - Conduct well publicized compliance checks of alcohol retailers to reduce sales to underage persons. (T)
  - Conduct well publicized enforcement aimed at underage drinking parties. (E)
  - Target middle schools and high schools with education programs related to impaired driving.
- 1.1.A.4 Continue and expand the use of brief intervention and screening in medical settings. (P)
- 1.1.A.5 Explore alternative ride and designated driver programs. (E)
- 1.1.A.6 Identify and utilize cross-cultural training opportunities for law enforcement. (P)

### 1.1.B Enforce DUI laws

- 1.1.B1 Continue statewide, high-visibility enforcement and media campaigns to reduce the incidence of impaired driving. (P)
  - Enhance law enforcement training in alcohol and drug detection.
  - Expand the Drug Recognition and Classification Program. (P)
  - Include tribal police in Drug Recognition Expert training.
  - 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.
  - Support efforts to simplify and streamline the DUI arrest process, such as using the mobile impaired driving unit and BAC processors in conjunction with high visibility enforcement campaigns.
- 1.1.B2 Enhance DUI detection through special DUI Patrols; target areas with high numbers of DUI-related crashes.
- 1.1.B3 Publicize and enforce zero tolerance laws for drivers under age 21. (P)
- 1.1.B4 Encourage tribes to enact and enforce .08 BAC laws.
- 1.1.B5 Eliminate need for impaired individuals to drive by supporting alternative transportation services such as transit, designated drivers programs, and taxi rides. (T)

### 1.1.C Prosecute, sanction, and treat DUI offenders

- 1.1.C1 Establish and support a Traffic Safety Resource Prosecutor Program. (T)
- 1.1.C2 Develop a system of centralized screening, assessment, referral and monitoring of DUI offenders. (P)
  - Improve record keeping in order to ensure that prior DUI arrests are counted.
  - Explore options to enhance treatment and probation.
- 1.1.C3 Continue to require stronger penalties for BAC test refusal than test failure. (T)
- 1.1.C4 Continue to suspend driver's license administratively upon arrest. (T)
- 1.1.C5 Support requirements for ignition interlock driver's license. (E)
- 1.1.C6 Encourage mandatory attendance at DUI Victims Panels for all DUI offenders. (P)

*continued on next page*

P=Proven, T=Tried, E=Experimental



# Priority Level One: Impaired Driving

## 1.1 Objectives and Strategies to Reduce Impaired Driving (continued)

<b>1.1.D Control high-BAC and repeat DUI offenders</b>	1.1.D1 Continue to require ignition interlocks as a condition for license reinstatement. (P) 1.1.D2 Monitor all convicted DUI offenders closely. (P) 1.1.D3 Support the establishment and expansion of DUI Courts. (T) 1.1.D4 Incarcerate offenders. (P)
<b>1.1.E Foster leadership to facilitate impaired driving system improvements</b>	1.1.E1 Continue to build partnerships designed to reduce the incidence of impaired driving. (P) <ul style="list-style-type: none"><li>• Establish and support the Washington Impaired Driving Advisory Council.<ul style="list-style-type: none"><li>o Conduct an NHTSA Administered Impaired Driving Assessment.</li><li>o Use Assessment to guide Impaired Driving System Strategic Plan to address system deficiencies.</li><li>o Facilitate recommending, prioritizing and overseeing the implementation of the strategic plan to improve the system on an on-going basis.</li></ul></li><li>• Continue and expand judicial and prosecutorial education addressing DUI issues. (P)</li><li>• Continue efforts such as the Annual Impaired Driver Traffic Safety Conference.</li><li>• Utilize community traffic safety task forces to address impaired driving issues.</li><li>• Collaborate with BIA, Indian Health Services, and the Northwest Association of Tribal Enforcement Officers (NAETO) to support Tribal Nations who would like to reduce the incidence of impaired driving on tribal lands. (E)</li><li>• Expand outreach programs for ethnic populations, such as the EI Protector Program.</li><li>• Include tribal resources such as brochures and flyers within the Department of Printing's General Store website.</li></ul> 1.1.E2 Encourage the enactment of State laws that will enhance enforcement, prosecution, and adjudication of impaired driving laws. (P) <ul style="list-style-type: none"><li>• Explore options that would allow sobriety checkpoints in Washington. (P)</li><li>• Support efforts to develop a DUI statutory scheme that provides laws that are sound, rigorous, and easy to enforce and administer.</li><li>• Support efforts to use any money collected from DUI fines in excess of \$101 to support impaired driving programs.</li></ul> 1.1.E3 Implement corridor safety model to high-crash locations where data suggests a high rate of impaired driving. (P)

P=Proven, T=Tried, E=Experimental

# Priority Level One: Run-Off-the-Road Collisions

A run-off-the-road crash occurs when a vehicle leaves the road during a collision. In Washington State between 2006 and 2008, run-off-the-road crashes contributed to 2,510 serious injuries and 722 deaths, or 30% of all serious injuries and 39% of all fatalities during this period. Run-off-the-road collisions were especially high on county roads, making up 63% percent of all fatalities and serious injuries on rural county roads, and 35% on urban county roads. Due to the frequency of running-off-the-road as a factor in serious and fatal crashes, this issue has been elevated to Priority One in *Target Zero*.

Based on 2006-2008 Washington State collision data, once a vehicle leaves the roadway, the most harmful event is likely to be an overturn (40%), an impact with a tree (13%), an impact with a utility pole (9%), an impact with a ditch (6%), or an impact with a fence (5%).

Improving driver behavior will continue to be a strong factor in reducing run-off-the-road collisions: from 2006 through 2008, speed was a factor for 39% of drivers involved in fatal or serious injury run-off-the-road crashes; impairment was a factor 30% of the time; and driver distraction was a factor in 9%. By implementing effective strategies to combat impaired driving, speed, and distracted driving, Washington

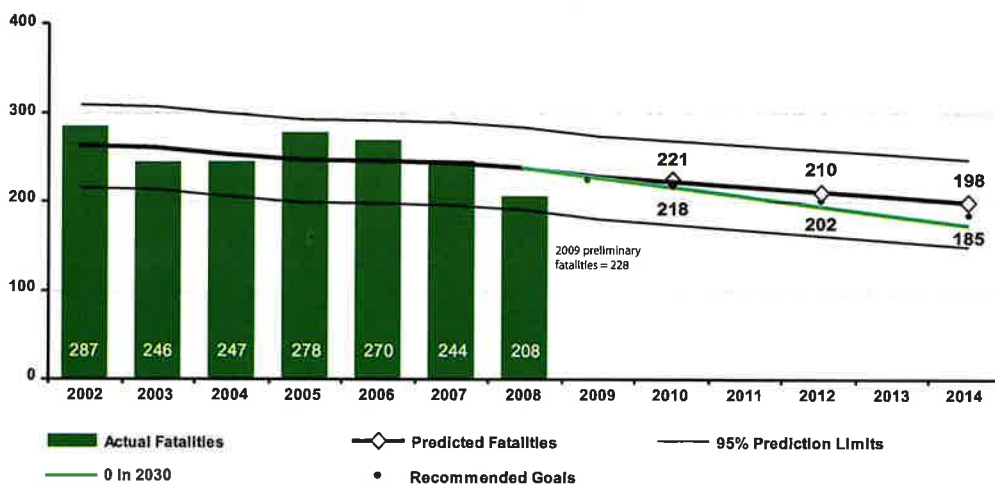
State hopes to reduce the behaviors causing a vehicle to leave the roadway in the first place. Strategies to address these behaviors are listed under those categories. In addition, applying engineering strategies such as installing rumble strips, flattening curves, and improving signing and striping can also decrease the likelihood that a vehicle will leave the roadway. These are the first set of strategies listed at the end of this chapter.

**Run-off-the-road collisions were part of 63% of all fatalities and serious injuries on rural county roads from 2006 through 2008.**

Although preventing a vehicle from leaving the road in the first place is the ideal solution, run-off-the-road collisions are still occurring. Therefore, the second set of strategies for reducing run-off-the-road fatalities and serious injuries involve minimizing the consequences of leaving the road. By removing or relocating roadside objects, flattening slopes, and improving ditch design, roadway engineers can reduce

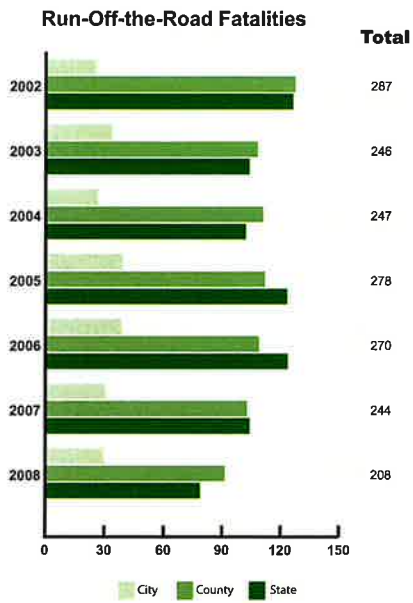
deaths and injuries from a vehicle crashing or overturning. In addition, installing roadside safety hardware can reduce the severity of impacts that do occur.

## Run-Off-The-Road Fatalities: Trends, Forecasts, and Goals

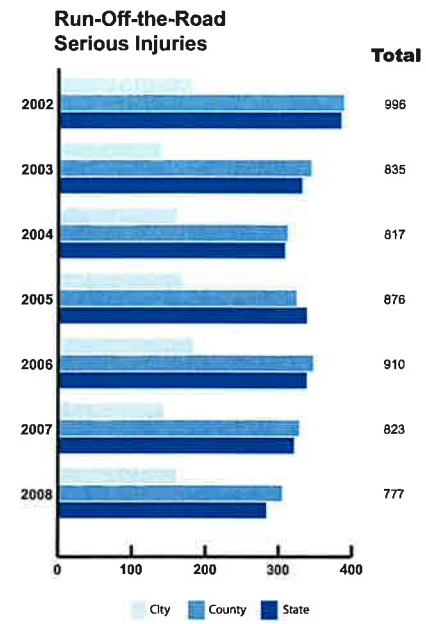


Source: WSDOT Collision Database

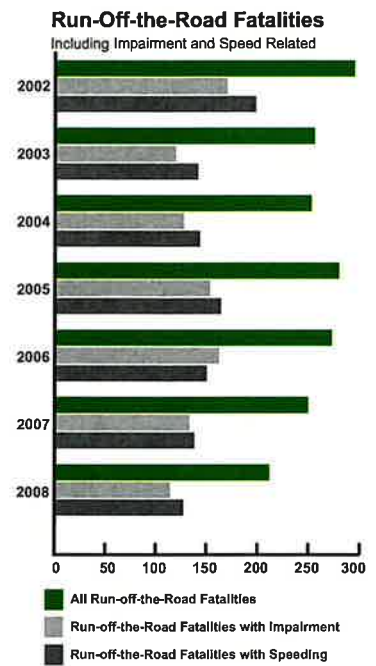
# Priority Level One: Run-Off-the-Road Collisions



Source: WSDOT Collision Database

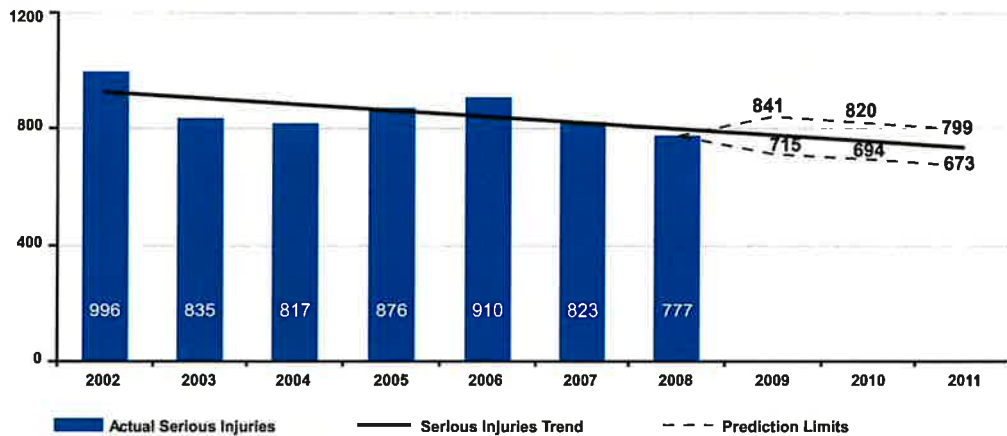


Source: WSDOT Collision Database



Source: WSDOT Collision Database

## Run-Off-the-Road Serious Injuries: Trends and Forecasts



Source: WSDOT Collision Database

# Priority Level One: Run-Off-the-Road Collisions

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## 1.2 Strategies to Reduce Run-Off-the-Road Crashes

<b>1.2.A Reduce run-off- the-road collisions</b>	1.2.A1 Establish or maintain programs to improve roadway maintenance to enhance highway safety. (P)
	1.2.A2 Install rumble strips where appropriate. (P)
	1.2.A3 Improve roadway geometrics. (P)
	1.2.A4 Improve the pavement surface and/or establish better maintenance practices in regard to wet pavements and snow and ice control.
	1.2.A5 Improve roadway signage and delineation. (P)
<b>1.2.B Minimize the consequences of leaving the roadway</b>	1.2.B1 Expand the use of, and maintain, existing best practices for the selection, installation, and maintenance of roadside safety hardware. (P)
	1.2.B2 Develop and implement guidance to improve ditches and back slopes to minimize crash severity. (P)
	1.2.B3 Develop and implement guidelines for safe urban streetscape design. (P)
	1.2.B4 Install guardrail/barriers where necessary. (P)
	1.2.B5 Remove or replace all non-standard guardrail. (P)
	1.2.B6 Improve the clear zone. Enhance roadside safety by flattening slopes and removing hazardous objects. (P) <ul style="list-style-type: none"><li>• Reduce the hazard from roadside utility poles by removing, redesigning, relocating, shielding, or delineating them. (P)</li><li>• Implement, in an environmentally acceptable manner, an effort to address hazardous trees. (P)</li><li>• Locate and inventory fixed objects inside the clear zone to support development of programs and projects to reduce the severity of run-off-the-road collisions.</li></ul>
	1.2.B7 Install safety edge on all resurfacing projects on high speed facilities. (P)
<b>1.2.C Reduce speed-related run-off-the-road collisions</b>	1.2.C1 Improve roadway geometrics. (P)
	1.2.C2 Improve roadway signage and delineation. (P)

P=Proven, T=Tried, E=Experimental

# Priority Level One: Speeding

Speeding occurs when drivers travel above the posted speed or when they travel too fast for conditions. Drivers may be traveling well under the posted speed but weather conditions (such as icy roads) or poor visibility (such as a foggy night) could still cause drivers to lose control of their vehicles if they don't have enough stopping time.

Speeding is the second-most common driver error, after impairment, reported in fatal and serious injury crashes on Washington roads. Between 2006 – 2008, over 40% of all fatal crashes and 30% of all serious injury crashes involved speeding. Speeding remains the number one factor in fatal crashes involving drivers age 16 to 25, and the second most common factor in motorcycle fatalities.

Nearly one-third of all fatal crashes resulting from speeding occur between July and September. The fewest deaths occur during the winter months, from December through February.

Half of all speeding-related deaths occur during the weekend, between 6:00 pm on Friday and 6:00 am on Monday. Nearly half of all the speeding-related serious injuries occur earlier in the day, between 3:00 pm and 6:00 pm, Friday through Sunday.

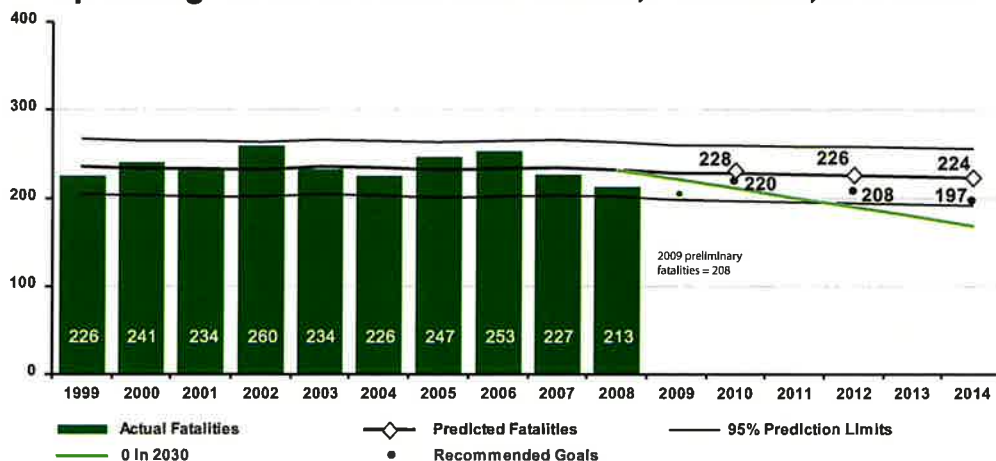
Other driver behaviors also influence speeding-related fatalities. Three out of five speeding drivers in fatal crashes were impaired by alcohol or drugs; three out of ten speeding drivers in serious injury crashes were impaired. Forty-four percent of speeding passenger vehicle drivers in fatal crashes were not wearing a seat belt.

County roads account for 40% of all speeding fatalities, but only 16% of all vehicle miles traveled. Between 2006 and 2008, 80% of drivers involved in speeding related fatal or serious injury crashes were male.

**Over 40% of all fatal crashes in Washington between 2006 and 2008 were related to speeding.**

Education, enforcement, and engineering can all play a role in getting drivers to slow down. Educating the public on speeding laws can also help reduce speeding. Enforcement efforts such as photo enforcement and high visibility speeding campaigns such as Slow Down or Pay Up can also cause drivers to slow down. On the engineering side, traffic calming devices and speed feedback signs have also been shown to reduce speeding.

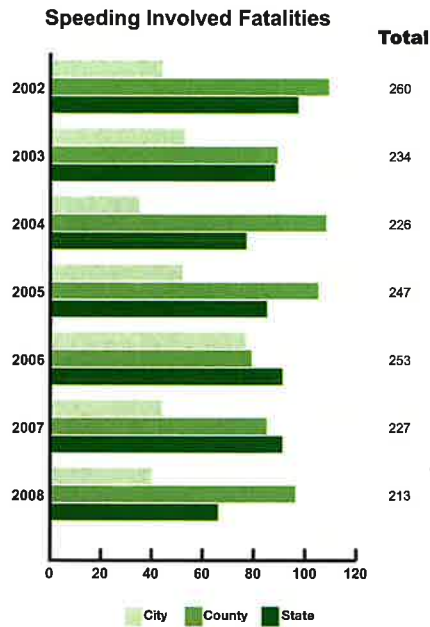
**Speeding Involved Fatalities: Trends, Forecasts, and Goals**



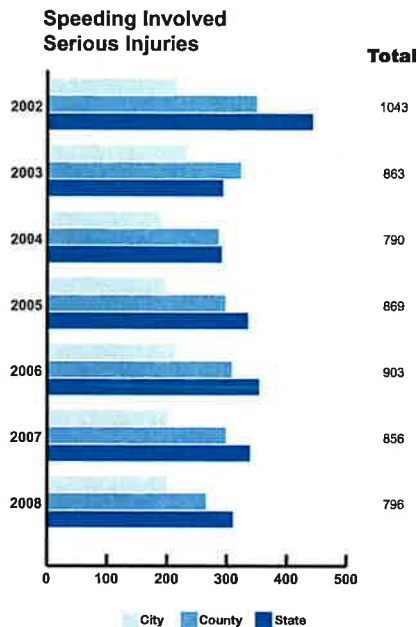
Source: Washington Traffic Safety Commission - Fatality Analysis Recording System

# Priority Level One: Speeding

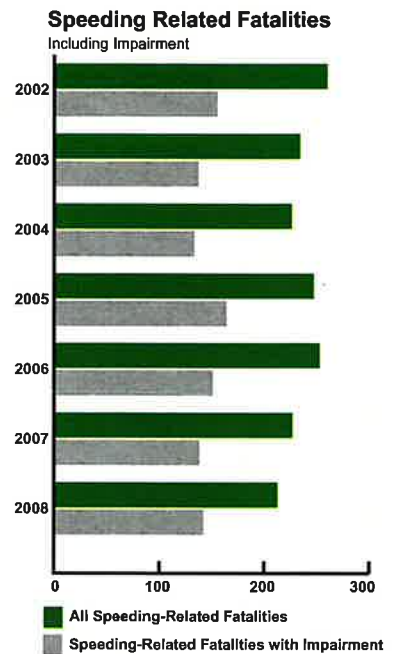
## Speeding Graphs



Source: Washington Traffic Safety Commission - Fatality Analysis Recording System

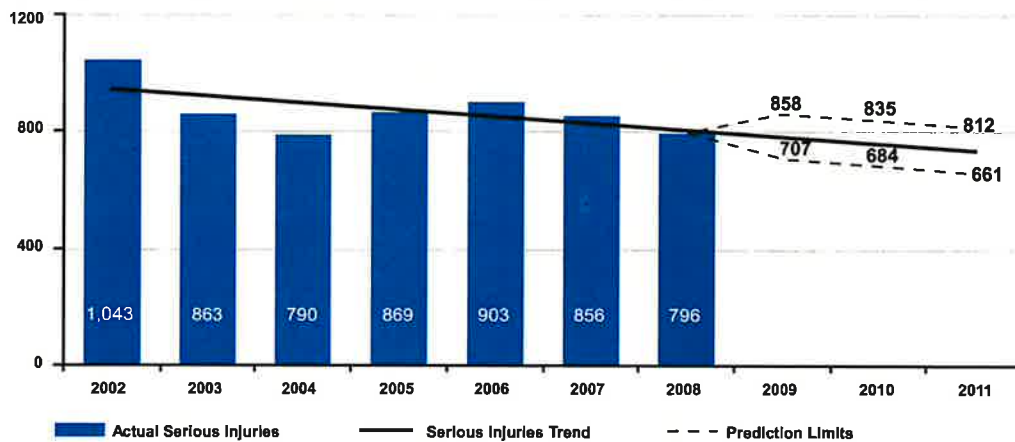


Source: WSDOT Collision Database



Source: Washington Traffic Safety Commission - Fatality Analysis Recording System (FARS)

## Speeding Involved Serious Injuries: Trends and Forecasts



Source: WSDOT Collision Database

# Priority Level One: Speeding

## 1.3 Objectives and Strategies to Reduce Speeding Related Collisions

<b>1.3.A Reduce speeding through enforcement activities</b>	1.3.A1 Increase use of photo-radar automatic speeding enforcement. (P)
	1.3.A2 Conduct high visibility enforcement efforts that strategically address speeding; locations; and conditions most common, or most hazardous, in fatal and serious injury speeding-related crashes. (T)
	1.3.A3 Ensure law enforcement officers have appropriate equipment for speeding enforcement. (T)
<b>1.3.B Use engineering measures to effectively manage speed</b>	1.3.B1 Use roadway design factors to influence driver speed; make design selections appropriate to type of roadway. (P)
	1.3.B2 Ensure that speed limit and warning signs are visible and installed at appropriate intervals.
	1.3.B3 Employ traffic calming devices where appropriate. (P)
	1.3.B4 Support the limited use of speed feedback signs to warn motorists that they are exceeding the speed limit; continue to research the most effective locations for these signs. (E)
	1.3.B5 Separate motorized traffic from non-motorized traffic using shared-use paths, sidewalks, bridges, etc.
	1.3.B6 Ensure that speed limit and warning signs are visible and installed at appropriate intervals and locations.
<b>1.3.C Build partnerships to increase support for speed reducing measures</b>	1.3.C1 Educate the public about the dangers of excessive speed and speed too fast for conditions, and its role in traffic fatalities. (T) <ul style="list-style-type: none"><li>• Develop appropriate messages and methods to reach segments of the population inclined to speeding or driving too fast for conditions. (E)</li><li>• Develop education messages in multiple languages. (E)</li><li>• Educate about the effects of weather on appropriate speed.</li></ul>
	1.3.C2 Educate prosecutors and judges to ensure speeding violations are treated seriously and fairly. (T)
	1.3.C3 Expand corridor safety model to high-crash locations where data suggests a high rate of speeding-related fatal or serious injury crashes. (P)
	1.3.C4 Utilize community traffic safety task forces to address speeding issues. (T)
	1.3.C5 Collaborate with BIA, Indian Health Services, and NATEO to support Tribal Nations who seek to reduce speeding-related collisions on tribal lands. (T)
	1.3.C6 Encourage data sharing between local and tribal police and engineering agencies to identify and develop solutions for areas where speeding is a problem.

P=Proven, T=Tried, E=Experimental

# Priority Level Two: Young Drivers

Motor vehicle crashes are the leading cause of death for young people ages 16-25 in Washington. Drivers in this age group have the highest crash rate, and the highest rates of speeding, impaired driving, and distracted driving of any driver age group in the state. According to Ferguson (2003), teenage drivers and passengers also have lower seat belt use rates than older drivers and passengers.

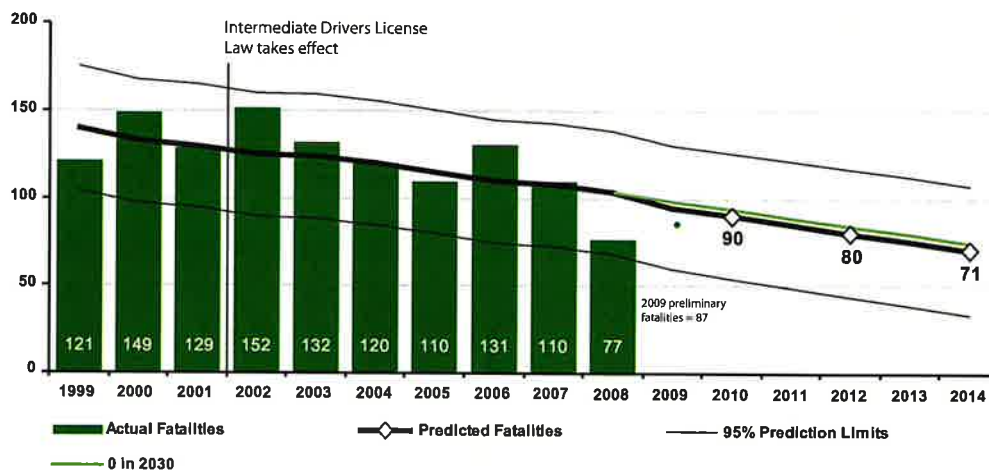
In comparison with adult drivers, young drivers are substantially over-involved in serious crashes. While young drivers made up only 15.2% percent of all licensed drivers in 2004-2008, they were involved in 37.7% percent of fatal and serious injury crashes. Compared to 26+ year-old drivers in fatal crashes, 16-25 year-old drivers in fatal collisions were about twice as likely to be speeding or passing improperly, and over one-third more likely to be impaired. Overall, they are approximately 50% more likely to commit errors identified by investigators as contributing to the collision.

## Fatalities Involving 16-20 Year Old Drivers are Decreasing More Quickly than Those Involving 21-25 Year Old Drivers

Over the past 10 years, the number of fatalities involving drivers age 16-20 have decreased substantially, while those involving age

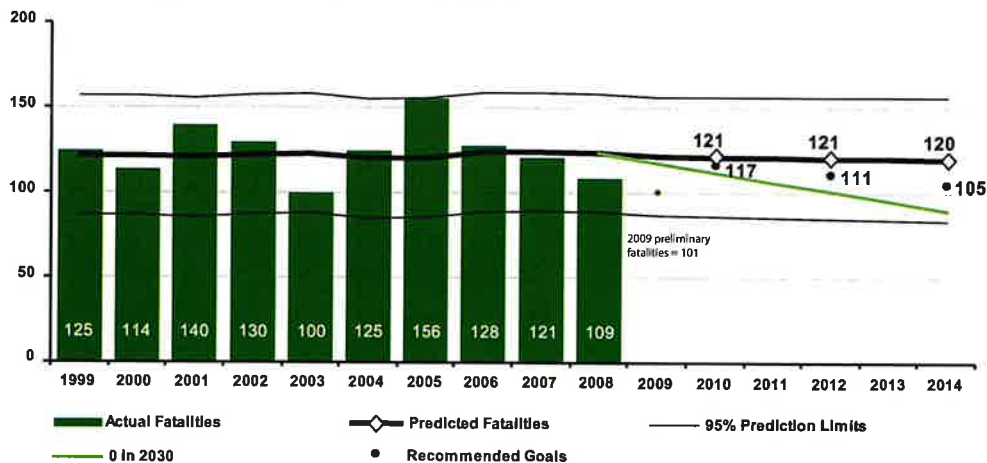
21-25 have remained unchanged. This may be due to the restrictions imposed on 16- and 17-year old drivers by Washington's current Intermediate Driver Licensing (IDL) Law. After implementing the IDL in 2001, collisions among 16-year olds decreased by 54% and among 17-year olds by 16.5%. One of the factors contributing to the decline in

### Fatalities Involving Drivers Age 16-20: Trends, Forecasts, and Goals



Source: Washington Traffic Safety Commission - Fatality Analysis Reporting System

### Fatalities Involving Drivers Age 21-25: Trends, Forecasts, and Goals



Source: Washington Traffic Safety Commission - Fatality Analysis Reporting System



# Priority Level Two: Young Drivers

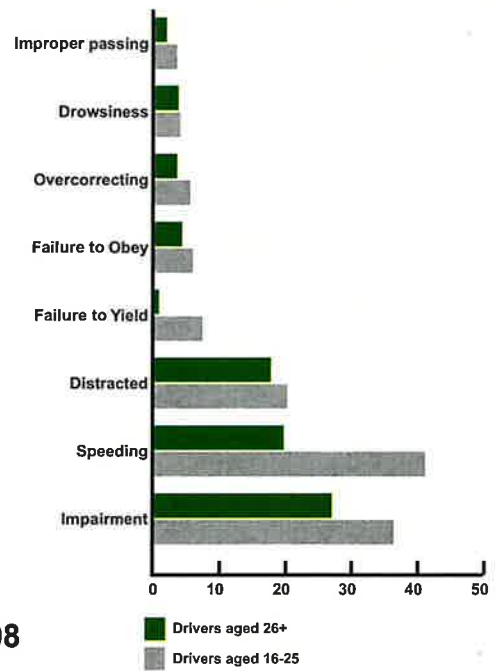
deaths involving 16-20 year-old drivers is a decrease in impairment in fatal crashes. Between 2006 and 2008, the percentage of 16-20 year-old drivers in fatal crashes who were impaired by alcohol or other drugs dropped by 8.6% compared to 2003-2005. In contrast, the percentage of 21-25 year-old drivers in fatal crashes who were impaired rose by 4.8% during the same period.

Although speeding-related fatal and serious injury crashes declined in both young driver age groups, the drop was eight times greater for 16-20 year-olds than 21-25 year olds. Nevertheless, speeding still contributes to fatal and serious crashes more often among drivers age 16-20 years old than those 21-25.

One area in which drivers age 21-25 are improving over those age 16-20 is distracted driving. Drivers age 16-20 years-old have the highest percentage of distracted driving in fatal crashes of any age group. In fact, between 2006 and 2008, the percentage of 16-20 year-olds driving distracted in fatal crashes increased by 26% compared to 2003-2005. Among 21-25 year-olds, however, the percent driving distracted in fatal crashes dropped by 9% for the same time period.

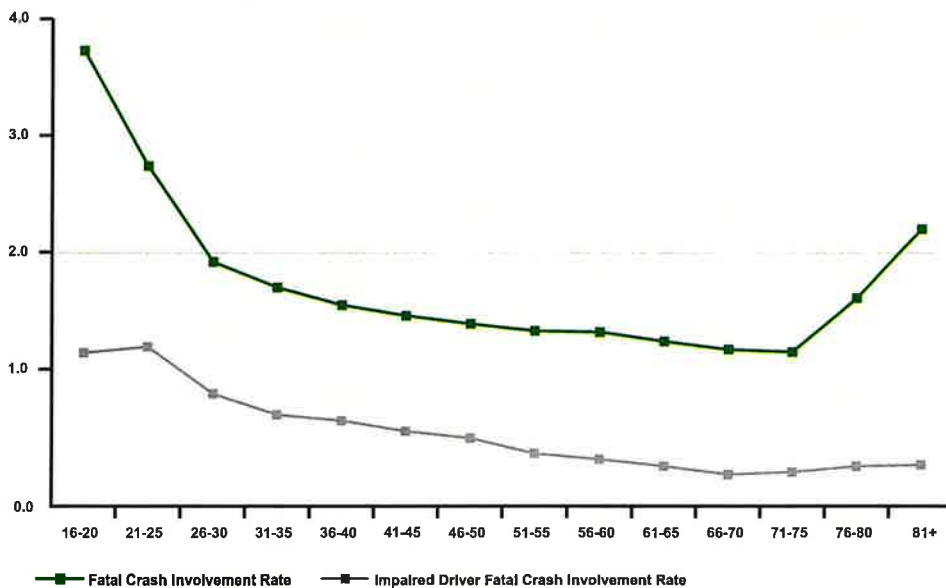
## Driver Errors In Washington Fatal Crashes, 1999-2008

By Age Group, 16-25 year-olds vs 26+ year-olds  
By percentage of age-group drivers in fatal crashes



## Washington Fatal Crash Involvement Rate, 1999-2008 Total and Impaired\* Drivers in Fatal Crashes

per 10,000 Licensed Drivers, by Driver Age Group



Source: FARS, DOL  
\*Drivers with either a BAC = or > .08 or a positive drug test

# Priority Level Two: Young Drivers

## More Young Drivers are Waiting Until Age 18 to Get Driver Licenses

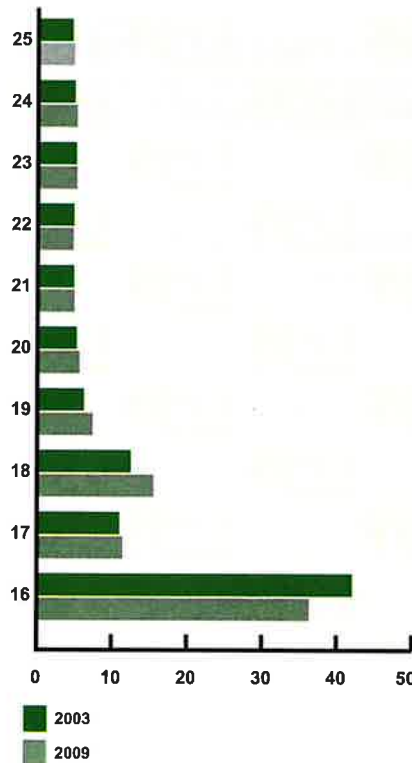
First-time drivers in Washington State who are 16 or 17 years old face license restrictions that are intended to improve their safety, as well as the safety of other drivers who share the road with them. Sixteen- and 17-year-old drivers are required to complete Driver Training School (DTS) curriculum and other prerequisites. Following licensure, these 16 and 17 year olds then have restrictions on their driving privileges (see green box on p.35), and lose graduated driving privileges if they commit violations. With a third violation, the license is suspended until age 18.

However, if a person waits until age 18 to apply for a driver license, the only licensure requirements are to pass the knowledge and driving test, the same as for all other new drivers in Washington.

Target Zero analysts have found a trend, as shown in the chart to the right, of fewer new drivers becoming licensed in the IDL period and more waiting until age 18 to become licensed. As of 2009, of the 16 and 17 year olds, about one third of the men and about one quarter of the women are waiting to become licensed until age 18.

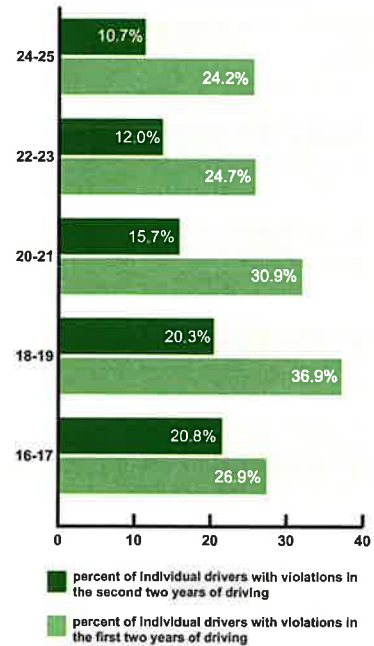
Licensing data show a larger proportion of teens are becoming licensed at 18 year old rather than 16-17 year old, potentially to avoid the IDL restrictions. All of the reasons for later licensure have not been identified, nor have all the differences between teens who are licensed under the IDL and teens who are first licensed at age 18.

**The Young Driver Population:**  
Percent of 16 through 25 Years Olds at the Age of Their First Licensure in Washington State  
2003 vs. 2009



Source: Washington State Department of Licensing  
Note: This data also includes drivers who have received their initial drivers licenses in other states, then surrendered their licenses for Washington State drivers licenses.

**Percent of Young Drivers Newly Licensed in Washington State with Violations in the first 4 years Following Licensure, 2003-2009, by age of first licensing**



Source: Washington State Department of Licensing  
Note: This reflects the percent of individual drivers who received at least one violation within the first 24 or second 24 months of driving.  
Note: This data also includes drivers who have received their initial drivers licenses in other states, then surrendered their licenses for Washington State drivers licenses.

### What is a Driving Violation?

A violation, for the purposes of the young driver data in *Target Zero*, is any driving infraction that will be placed on an individual's driving record. This would include relatively minor infractions, such as driving 5 mph over the speed limit, up to the most serious, such as vehicular homicide. It does not include the most minor infractions, such as a parking ticket.

## Priority Level Two: Young Drivers

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A review of citation data by age at first licensure revealed distinct differences in violation rates between drivers licensed at age 16-17 and those licensed at age 18-19. As seen in the graph on the previous page, in the first two years after being licensed, 27% of drivers who obtained IDL licenses at age 16 or 17 committed violations. By comparison, 37% of drivers licensed for the first time at age 18 or 19 committed violations in their first two years of driving. Interestingly, this disparity evens out during the second two-year period of driving for both sets of drivers. Other factors than licensure under the IDL law may also contribute to this citation-rate difference, i.e., differences in miles of driving, the absence of parental oversight, and disparities in income. In any case, those who elect to wait until age 18 for a first license are clearly a higher risk set of new drivers than those who become licensed under the IDL law at 16 or 17s

### Intermediate Driver License Requirements

- Get the consent of a parent or guardian
- Hold an instruction permit for at least six months
- Complete a Driver Training School course
- Complete 50 hours of supervised driving, 10 of which are at night
- Commit no violations within six months of application
- Pass a knowledge test and driving test
- During the first six months of licensure, carry no passengers under 20 years old except members of the driver's immediate family
- During the second six months of licensure, carry no more than three passengers under 20 years old except members of the driver's immediate family
- Refrain from driving between 1:00 am and 5:00 am unless with a parent, a guardian, or a licensed driver who is at least 25 years old

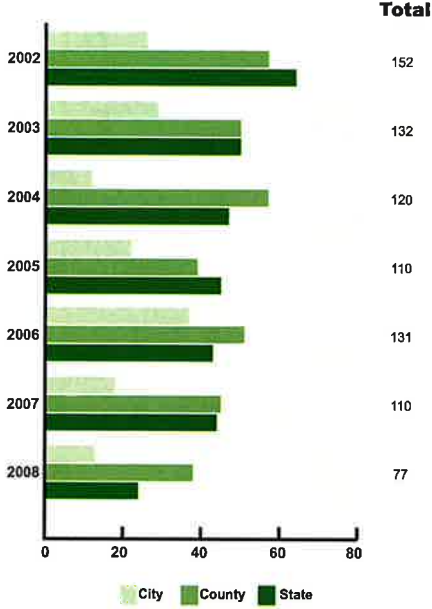
### Reducing Young Driver Fatalities and Serious Injuries

Strategies to reduce young driver fatalities and serious injuries focus on enforcing and strengthening the IDL, discouraging young driver drinking, and improving young driver education. According to recent studies, Washington's IDL law could be strengthened by implementing a nighttime curfew that starts at 9 or 10 p.m. (versus the current 1 a.m. requirement) and by extending the young passenger restrictions beyond the first six months of licensure (Williams, 2003; Williams, Ferguson, & McCart, 2007).

In Washington, we are working to improve young driver safety through the work of the Young Driver Task Force. This group, comprised of representatives from both public and private entities, meets at least quarterly to ensure a coherent approach to reducing fatalities and serious injuries among young drivers in Washington. The task force's priorities include working to increase compliance with the IDL by involving parents and law enforcement, strengthening pre-licensure driver education, and encouraging improvements to the IDL.

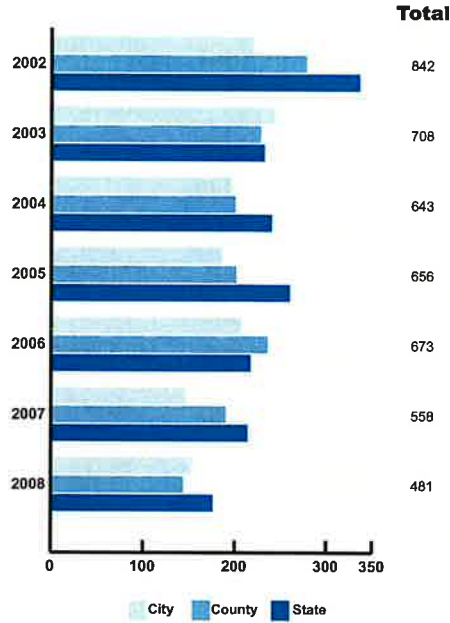
# Priority Level Two: Young Drivers

**Fatalities Involving Drivers 16 to 20**



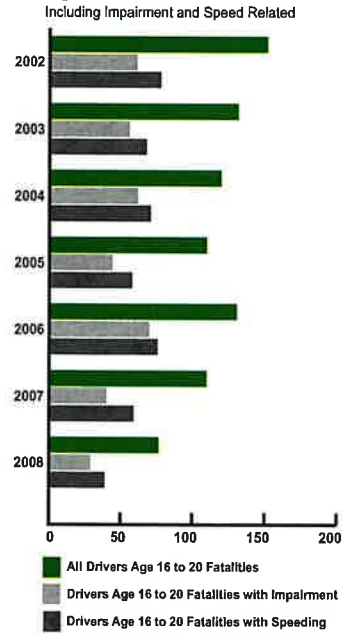
Source: Washington Traffic Safety Commission - Fatality Analysis Recording System

**Serious Injuries Involving Drivers 16 to 20**



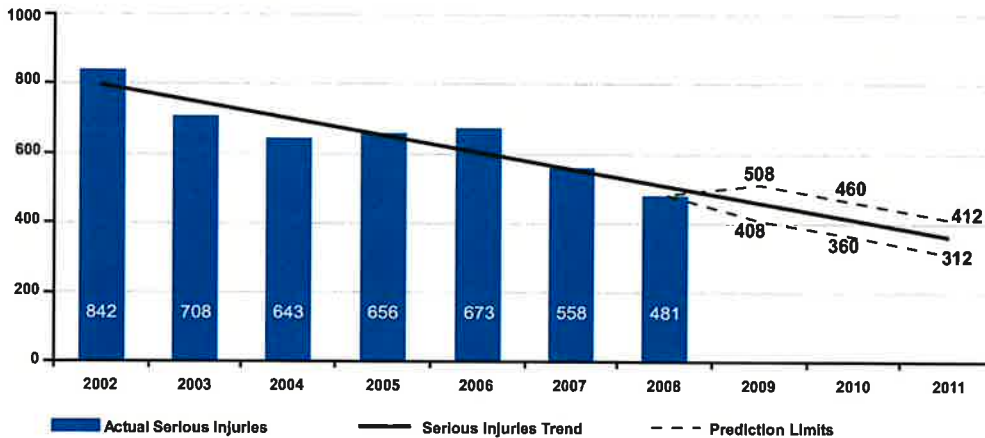
Source: WSDOT Collision Database

**Fatalities Involving Drivers Age 16 to 20**



Source: Washington Traffic Safety Commission - Fatality Analysis Recording System (FARS)

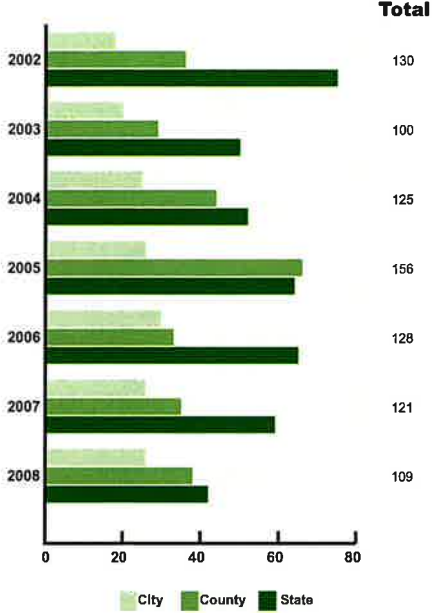
## Serious Injuries from Involving Drivers 16 to 20: Trends and Forecasts



Source: WSDOT Collision Database

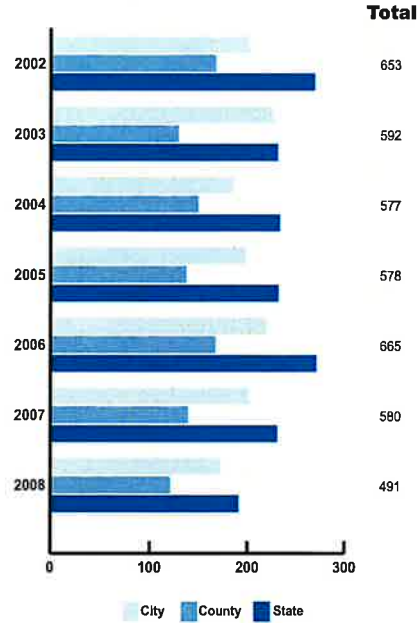
# Priority Level Two: Young Drivers

**Fatalities Involving Drivers Age 21 to 25**



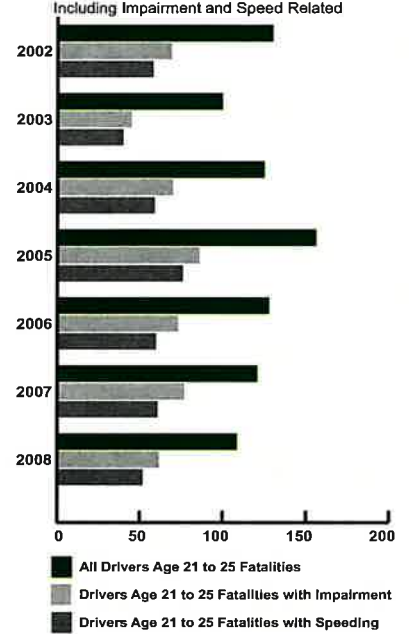
Source: Washington Traffic Safety Commission - Fatality Analysis Recording System

**Serious Injuries Involving Drivers Age 21 to 25**



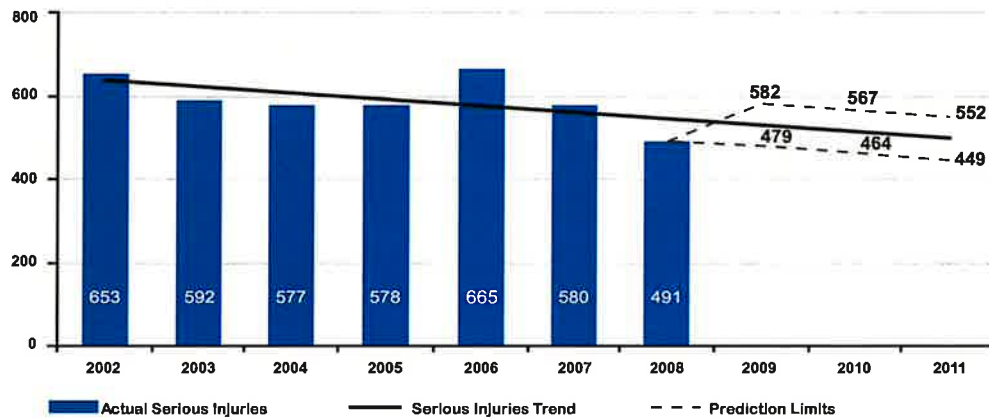
Source: WSDOT Collision Database

**Fatalities Involving Drivers Age 21 to 25**



Source: Washington Traffic Safety Commission - Fatality Analysis Recording System (FARS)

## Serious Injuries Involving Drivers Age 21 to 25: Trends and Forecasts



Source: WSDOT Collision Database

# Priority Level Two: Young Drivers

## 2.1 Strategies to Reduce Collisions Involving Young Drivers

### 2.1.A Emphasize compliance with the State's Intermediate Driver's License law

- 2.1.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.
  - Encourage Tribes to pass intermediate driver license laws for young drivers. (P)
- 2.1.A2 Continue statewide high-visibility enforcement and media campaigns to maximize enforcement of intermediate driver's licensing law. (T)
  - Provide overtime funding for law enforcement agencies to enforce the intermediate license law.
  - Allow parents to opt-in to marking vehicles of IDL license holders. (E)
- 2.1.A3 Encourage changes to State intermediate license laws that will bring them into alignment with the model proposed by NHTSA and the Governors' Highway Safety Association. (P)
  - Adjust curfew to avoid hours when young driver serious injury and fatality crashes are highest.
- 2.1.A4 Continue to build partnerships to ensure the intermediate driver's license law is as effective as possible. (T)
  - Support the activities of the Young Driver Task Force.
  - Use Target Zero 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)

### 2.1.B Enforce compliance with the State's underage drinking law

- 2.1.B1 Track the results of Pierce County's Party Intervention Patrol model, and consider expanding the program.

### 2.1.C Improve young driver education and intervention.

- 2.1.C1 Continue updating model traffic safety education curriculum to match new NHTSA standards. (P)
- 2.1.C2 Expand the warning letter program as an early intervention to more young drivers at their earliest stage of increasing risk. (E)
- 2.1.C3 Consider expanding new driver restrictions. (E)

### 2.1.D Support the new state law banning wireless devices

- 2.1.D1 Provide education and enforcement to implement the state law prohibiting Learner's Permit and Intermediate Driver License holders from driving while communicating with any wireless device, including a hands-free cell phone. (T)

P=Proven, T=Tried, E=Experimental

# Priority Level Two: Unrestrained Vehicle Occupants

One of the leading factors in the steady decline in traffic fatalities and serious injuries in Washington has been increased seat belt usage. Fatalities related to non-usage of seat belts have dropped at a rate of 10 deaths per year since 2002, when the Click-It-or-Ticket (CIOT) campaign began. The graph below shows the dramatic reduction in unrestrained vehicle occupant related fatalities in recent years.

Washington State seat belt enforcement efforts began in 1986 with the passage of a secondary seat belt law. Under the secondary law, a law enforcement officer could not stop a vehicle with an unbuckled occupant unless he or she also spotted a primary violation. The primary enforcement law went into effect in June 2002, resulting in policies and programs that had a dramatic effect on seat belt use rates. During this time, the Washington State Patrol made seat belt enforcement one of its core missions and the WTSC launched the Click-It-or-Ticket program.

To increase seat belt usage, the Click-It-or-Ticket campaigns use grants to fund law enforcement patrols that focus primarily on seat belt violators. These campaigns also use extensive publicity about the increased law enforcement patrols for seat belt usage, including television ads, radio spots, and public

relations activities. In addition, the semi-annual Click-It-or-Ticket special emphasis events are advertised via WSDOT's 125 variable message signs on freeways and highways across the state. Also, 625 permanent seat belt road signs advertise the program at all hours on all road types.

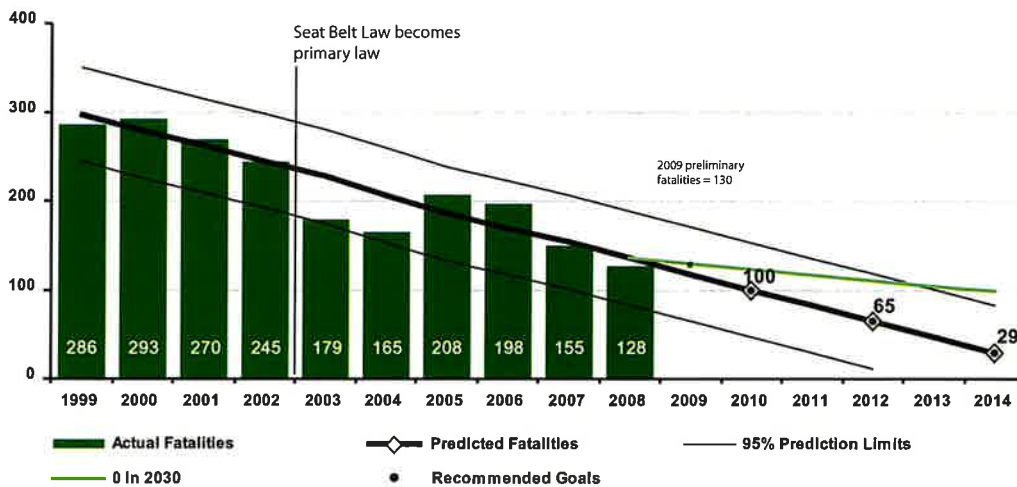
## Nighttime enforcement efforts

In 2006, in partnership with NHTSA, the WTSC focused its seatbelt efforts on unbuckled motorists who travel at night. The reason: the nighttime vehicle occupant death rate is at least four times higher than the daytime rate. Preliminary research indicates that nighttime unbuckled motorists have more traffic violations and are more likely to be involved in a fatal or serious injury collision than their buckled counterparts. They are also more likely to have criminal records than other motorists. Further, there is a correlation between impairment and being unbuckled. The nighttime seat belt patrol ticket data shows that officers are getting not only unbuckled motorists, but also more impaired drivers.

The Nighttime Seat Belt Project Enforcement (NTSBE) partnership included \$1.3 million in additional grant funding from NHTSA, plus funding from WTSC. Beginning with the May 2007 statewide mobilization, all grant-funded seat

belt patrols and media messages focused on nighttime drivers. The table on the next page illustrates why nighttime unbuckled motorists are a concern, as well how beneficial the impacts of the nighttime focus have been.

## Unrestrained Passenger Vehicle Occupant Fatalities: Trends, Forecasts, and Goals



Source: Washington Traffic Safety Commission - Fatality Analysis Recording System

# Priority Level Two: Unrestrained Vehicle Occupants

## Washington State Passenger Vehicle Occupant Fatalities<sup>1</sup> and Seatbelt Use, 1998-2008

Period	Years	Average annual vehicle occupant fatalities <sup>1</sup>		Average annual vehicle occupant nighttime fatalities <sup>1</sup>		Statewide Seatbelt usage rate	Seatbelt Usage rate in nighttime <sup>2</sup> fatal collisions
		number	% change	number	% change		
Before Primary Seat Belt Law and Click It or Ticket (CIOT)	1998-2002	507	n/a	218	n/a	83%	31%
After Primary Seat Belt Law and Click it or Ticket (CIOT), before Nighttime Seatbelt Enforcement (NTSBE)	2003-2006	445	-12%	199	-9%	95%	46%
After CIOT & NTSBE	2007-2008	376	-16%	171	-14%	96%	47%

Source: FARS, Statewide Observational Seat Belt Survey

<sup>1</sup> These figures do not include pedestrian, bicycle, and motorcycle fatalities, nor passengers in motorhomes, buses, or commercial motor vehicles.

<sup>2</sup> Nighttime collisions occur from 7pm to 4:59 am for the purposes of this table

### New strategies focus on tribes, child restraints, and teens

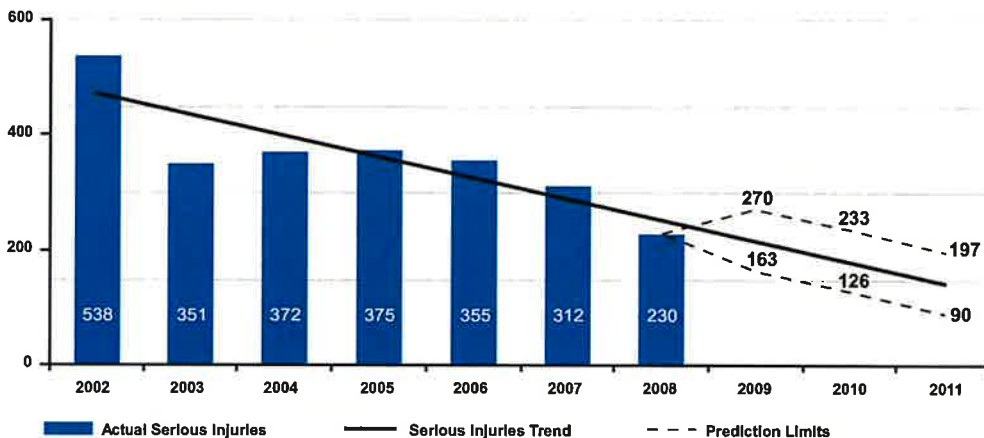
Car crashes are the leading cause of death for Washington's teens. In 2002, a NHTSA-sponsored study of seat belt use determined that the lowest seat belt use of any age category nationally was teens ages 16 – 20.

aimed at increasing seat belt use among teens. Piloted in the Tri-Cities at Southridge High School in Kennewick, the project promoted seat belt use with a mix of positive reinforcement and peer-to-peer education. A later evaluation found that it raised seat belt use among the school population from 81% to 96% during the project; an observational survey conducted three months after the end of the project found that seat belt use had remained high at 95%.

In 2007, WTSC spearheaded a seat belt promotional program

Because the research shows low seat belt use patterns on Tribal reservations, and over-representation of seat-belt non-use for Native Americans in fatality collisions, this seat belt promotional project is being expanded to tribal reservations in 2009 and 2010.

### Unrestrained Passenger Vehicle Occupant Serious Injuries: Trends and Forecasts

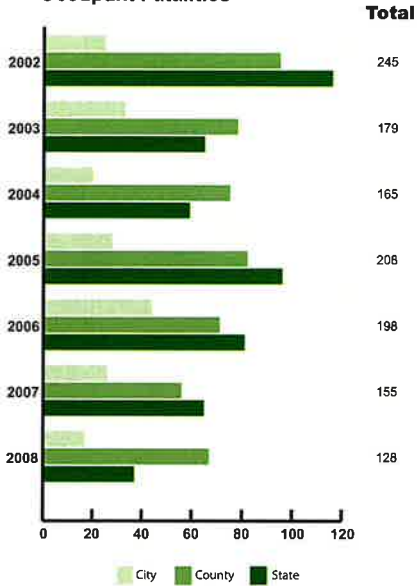


Source: WSDOT Collision Database



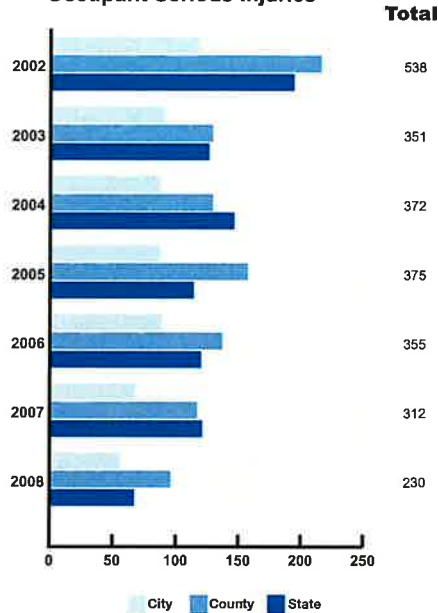
# Priority Level Two: Unrestrained Vehicle Occupants

**Unrestrained Passenger Vehicle Occupant Fatalities**



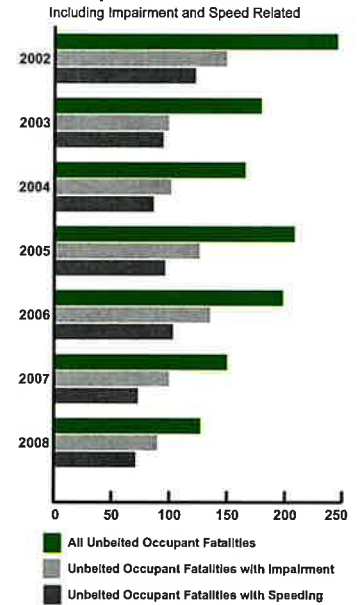
Source: Washington Traffic Safety Commission - Fatality Analysis Recording System

**Unrestrained Passenger Vehicle Occupant Serious Injuries**



Source: WSDOT Collision Database

**Unrestrained Passenger Vehicle Occupant Fatalities Including Impairment and Speed Related**



Source: Washington Traffic Safety Commission - Fatality Analysis Recording System (FARS)

## Child Car Seat Initiatives

Seat belt usage is just one part of appropriate restraint; babies and young children must use car seats proportionate with their size in order to be protected in the event of a collision. Washington state collision data shows that children who incur either minor injuries or none at all in collisions are appropriately restrained at least 86% of the time. When a child is seriously injured or killed in a collision, he or she is only likely to be using appropriate restraints between 77% and 83% of the time.

In 2008-09, Washington developed Click-It-or-Ticket-style patrols aimed at improving parental compliance with Washington's child car seat law. In Spokane, Moses Lake, Aberdeen/Hoquiam and Wenatchee, organizers used local radio and television public service announcements, bright orange pop up signs and variable message signs on busy roads, and posters and banners to raise awareness about the child car seat law and the patrols conducted as part of the project.

## Washington's Child Car Seat Law

- Infants up to age 1 (up to 20 pounds) must ride in rear-facing infant seats
- Children ages 1 to 4 (up to 40 pounds) must ride in child car seats with a five point harness
- Children up to age 8 or 4'9" tall must ride in booster seats
- Children up to age 13 must ride in the back seat when it is practical to do so

## Priority Level Two: Unrestrained Vehicle Occupants

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### **Child Passenger Safety Public Education and Technician Training**

WTSC's comprehensive child passenger safety project, organized by the non-profit Washington State Safety Restraint Coalition (WSSRC), conducts on-going efforts to reduce injuries and deaths by educating parents about the importance of correctly installing and using child safety seats, booster seats, and seat belts.

The Coalition trains safety technicians who check for correct placement of child car seats at such venues as child car seat check stations and safety fairs.

The Coalition also distributes educational materials to parents via the 1-800-BUCK-L-UP hotline. The hotline has a Spanish-language component since research shows lower-than-average car seat use among the children of Spanish-speaking parents. In 2009, the hotline received nearly 5000 calls. Parents and caregivers can access detailed child passenger safety information through the WSSRC website: [www.800bucklup.org](http://www.800bucklup.org).

### **Reducing Unbelted Collisions**

Effective strategies for this issue focus on getting more people to use restraints properly. Enforcement and education are the two main components of these strategies. They include more statewide seat belt mobilizations focused on nighttime drivers, ongoing and regular enforcement focused on low seat belt use areas, teen-focused seat belt promotional projects in high schools across Washington, and additional projects aimed at improving the correct use of child car seats.

## Priority Level Two: Unrestrained Vehicle Occupants

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

#### 2.2.A Maximize use of occupant restraints by all vehicle occupants

- 2.2.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.
  - Continue program to address nighttime seat belt enforcement.
- 2.2.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, such as Spanish speakers, Native Americans, and people who live in rural areas.
  - 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.
- 2.2.A3 Encourage the enactment of State and tribal laws that will enhance enforcement of seat belt laws. (T)
- Encourage tribes to enact seatbelt laws.
- 2.2.A4 Promote seat belt and child restraint use among Tribal Nations.
- 2.2.A5 Take appropriate steps to promote parental and care giver adherence to Washington's child car seat law and to ensure that children are properly restrained.
- Conduct and research pilot projects aimed at gaining compliance with the WA child restraint law but which use the Click-It-or-Ticket program model.
  - Promote child car seat law education among grandparents.
  - Conduct high profile "child restraint inspection" events at multiple community locations, and expand areas in the community where people can get their child car seats checked and expand the types of professionals who check child car seats. (P), (E)
  - Increase child car seat resources for low-income families, such as subsidized car seats and education.
  - Continue the statewide child passenger safety website, toll free information line, and education programs.
- 2.2.A6 Continue researching the impact of the teen-focused Click-It-and-Ticket Project. If research shows that the program is successful, expand the project to other areas (colleges, tribal programs, etc.).

# Priority Level Two: Distracted Drivers

Distracted driving<sup>1</sup> is any non-driving activity that diverts a driver's attention from the primary task of driving and increases the risk of crashing. Safety researchers recognize three main types of driver distractions: visual, manual, and cognitive. Distractions that take a driver's eyes off the road are visual. Manual distractions take a driver's hands off the steering wheel, and those that take a driver's mind off the road are cognitive. Driver distractions include activities such as cell phone use, texting while driving, eating, drinking, talking with passengers, and using in-vehicle technologies and portable electronic devices. Some non-driving activities, such as texting, are particularly dangerous because they involve all three types of distractions.

Between 2006 and 2008, distracted driving in Washington State was a factor in 1,060 serious injuries and 451 fatalities, or 12.7% of all serious injuries and 26.1% of all fatalities, according to state collision data. Distracted driving deaths peaked on weekends and weekday afternoons. Forty percent of all distracted driving fatalities occurred during the weekend; between 6 pm Friday and 6 am Monday. Another one-quarter (26.6%) occurred on weekdays, Monday through Thursday between 12 pm and 6 pm.

The true size of the distracted driving problem is unknown because collision data collected by crash investigators often under-reports driver distraction. In 2006, specific distraction items were added to Washington's Police Traffic Collision Report to better identify the types of distractions that contributed to crashes (see box on page 45). Nonetheless, to select any of the 13 distraction items on the collision report, either the officer or an involved party needs to witness the distraction, or else it must be self-reported by the driver.

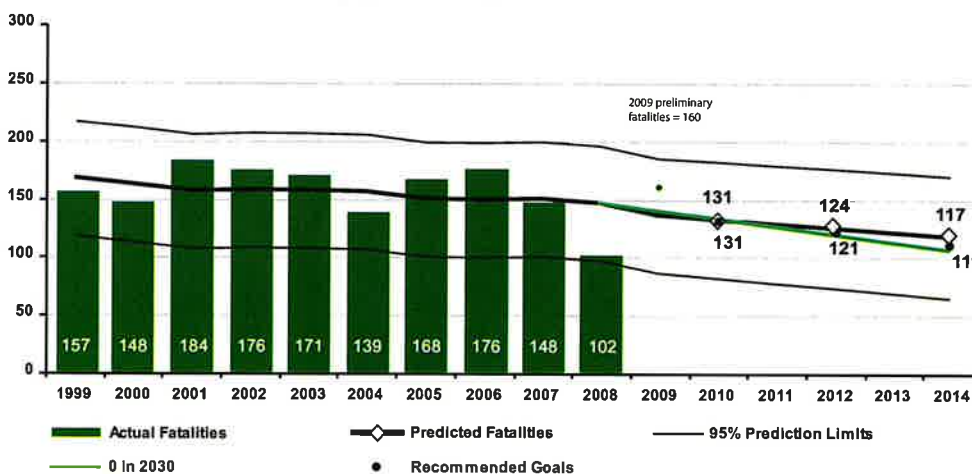
In 2008, the number of fatalities involving distracted driving decreased while the number of serious injuries remained unchanged. The reason(s) for the decrease in fatalities has not been identified, and will be the subject of further analysis.

Distracted driving has received more attention in light of increased use of wireless communication devices and safety research on the risks associated with driving while talking or texting on a cell phone. In 2009, 85% of the total US population subscribed to a wireless device (Lenhart 2009). A 2008 national survey estimated that 11% of US drivers were using either hand-held or hands-free cell phones during daylight hours (NHTSA 2009). Researchers are in nearly-unanimous agreement that using a cell phone—hand-held or hands-free—while driving significantly degrades many skills essential to driving and increases crash risk (Caird and Scialfa 2005).

Virginia Tech Transportation Institute (VTTI) conducted a two-year study monitoring driver behavior using

Virginia Tech Transportation Institute (VTTI) conducted a two-year study monitoring driver behavior using

## Fatalities Involving Distracted Drivers: Trends, Forecasts, and Goals



Source: Washington Traffic Safety Commission - Fatality Analysis Recording System

<sup>1</sup> In the previous edition of Target Zero, distracted driving was combined with drowsy driving and ranked as Priority Three. These two safety issues have been separated with distracted driving elevated to Priority Two. Drowsy driving, which accounted for 4.5% of traffic fatalities, is now ranked as Priority Four.

## Priority Level Two: Distracted Drivers

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video equipment (2009). Study results showed that drivers of cars and light trucks who dial a cell phone are 2.8 times more likely to have a crash or near-crash than non-distracted drivers. Drivers of heavy trucks who dial a cell phone are 5.9 times more likely to have a crash or near-crash than their non-distracted counterparts. Drivers of heavy trucks who text are 23.2 times more likely to have a crash or near crash than their non-distracted counterparts. An analysis of distracted driving research in the Journal of the American Medical Association JAMA showed that “young drivers who text spend up to 400% more time with their eyes off the road than drivers who do not text, have 6-fold greater odds of a collision, and in simulated driving have impaired lateral and forward vehicle control.” (2010)

### Reducing Distracted Driving Collisions

Using a hand-held wireless communications device or texting while operating a motor vehicle became a primary enforcement law in Washington effective June 10, 2010. Additionally, this primary law prohibits the holder of either an Intermediate Driver’s License (IDL) or an instruction permit from operating a motor vehicle while using a wireless communication device except in the case of an emergency. Target Zero partners are currently working on a coordinated effort to publicize the law and educate the public on the dangers of driving while texting or talking on a phone.

Distracted driving regulations have also been strengthened at the national level. The USDOT now prohibits text messaging by commercial motor vehicle drivers, and federal employees are not allowed to text while driving.

In addition to tougher laws, Washington plans to decrease fatal and serious injury collisions involving distracted driving by increasing driver awareness of the risks associated with distracted driving. Roadway engineering solutions will also help, including adding centerline and shoulder rumble strips, a proven low-cost engineering strategy to alert inattentive drivers with noise and vibration when their vehicles deviate from the lane.

### Gathering Distracted Driver Data

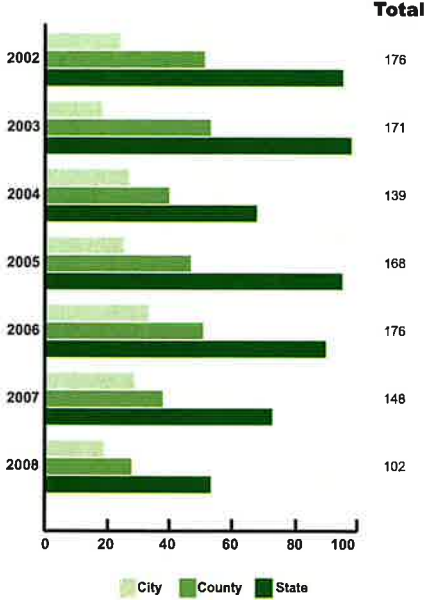
When preparing reports on collisions, law enforcement officers currently have a total of 44 possible items from which to identify the causes of a collision. The officer may select up to three different items for each driver. Of the 44 items, there are 13 different “distraction” items, for instance: driver operating handheld telecommunication device.

The collection of the 13 distraction items became effective January 1, 2006. In order to use one of the 13 distraction items, either the officer or any involved party needs to witness the situation, or the item must be “self-reported” by the driver. Because of this, it is very likely that the distraction items may be under-reported within the collision data repository.

In 2010, FARS will begin gathering more specific distracted driving information. Included will be such pre-crash data as, “[driver] talking or listening to cellular phone,” “[driver] adjusting climate controls/radio, etc.,” “cellular telephone present in vehicle,” and “cellular phone in use in vehicle.”

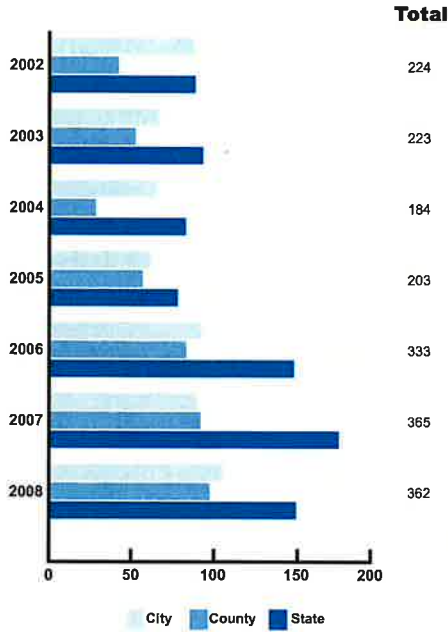
# Priority Level Two: Distracted Drivers

**Distracted Driver Related Fatalities**



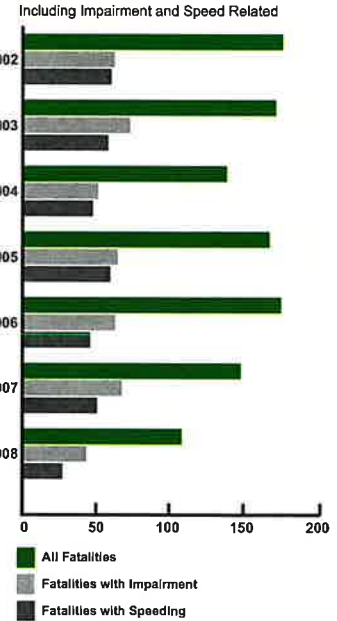
Source: Washington Traffic Safety Commission - Fatality Analysis Recording System

**Serious Injuries Involving Distracted Drivers**



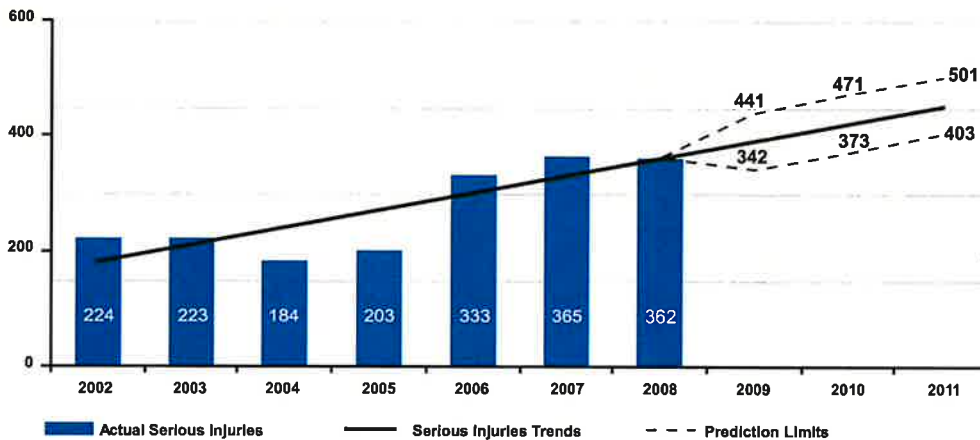
Source: WSDOT Collision Database

**Fatalities Involving Distracted Drivers**



Source: Washington Traffic Safety Commission - Fatality Analysis Recording System (FARS)

## Serious Injuries Involving Inattentive/Distracted Drivers: Trends and Forecasts



Source: WSDOT Collision Database

## Priority Level Two: Distracted Drivers

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### 2.3 Strategies to Reduce Collisions Involving Distracted Drivers

<b>2.3.A Gather data</b>	2.3.A1 Analyze new distracted driver data being collected with the new Police Traffic Collision Report beginning in July 2006. (T)
<b>2.3.B Use roadway engineering to reduce the consequences of distracted driving</b>	2.3.B1 Implement corridor safety model on high crash locations where data indicates a high incidence of distracted crashes. (P)
	2.3.B2 Implement a targeted shoulder rumble strip program. (P/T)
<b>2.3.C Increase driver awareness of the risks of distracted driving and promote driver awareness</b>	2.3.C1 Conduct statewide education combined with targeted enforcement. (T)
	2.3.C2 Utilize community traffic safety task forces to address distracted driver issues. (E)
<b>2.3.D Enforce and strengthen laws and regulations aimed at reducing distracted driving</b>	2.3.D1 Explore ways to develop and implement strategies to reduce deaths and serious injuries due to distracted driving. (E)

# Priority Level Two: Intersections

Intersections, where two or more roads join or cross, are a major source of encounters between road users. Intersections involve turning and crossing maneuvers that provide abundant opportunities for vehicle-vehicle, vehicle-pedestrian, and vehicle-bicycle conflicts, some of which will result in collisions.

Between 2006 and 2008, intersection-related collisions in Washington State resulted in 2,916 serious injuries and 356 fatalities, 35% of all serious injuries and 21% of fatalities. During this time period, intersections on city streets were involved in 51% of serious injuries and 39% of fatalities. On city-operated state routes, intersections were involved in 54% of serious injuries and 40% of fatalities.

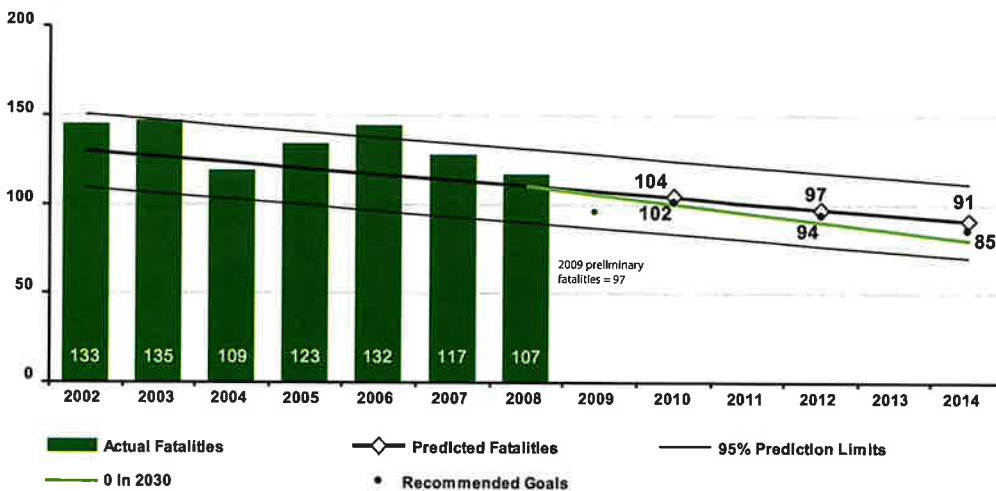
Angle crashes are the number one fatal or serious injury intersection-related crash type on all roadway facilities. Angle collisions usually involve vehicles turning in front of an oncoming vehicle, or vehicles entering an intersection at 90 degrees in front of an oncoming vehicle. Between 2006 and 2008, angle crashes were responsible for 184 fatalities and 1,345 serious injuries, 52% and 46%, respectively, of all intersection-related fatalities and serious injuries. Other common fatal and serious injury collisions at intersections

include pedestrian or bicyclist involved collisions (22%) and rear-end collisions (12%).

From 2006-2008, speed was a factor for 13% of drivers involved in fatal or serious injury intersection-related crashes; impairment was a factor 11% of the time. Addressing these issues with related strategies will help reduce fatalities and serious injuries involving intersections. It should be noted that, while significant, this is a relatively low percentage for these factors as compared to most other types of collisions in *Target Zero*.

A major goal of intersection safety is not only to improve intersections for motor vehicles, but also for the pedestrians and bicyclists who use them. We can reduce the opportunities for pedestrian collisions by adjusting signal timing so pedestrians have enough lead time to cross ahead of turning vehicles, creating “refuge” islands in the middle of crossings, and installing lighting for pedestrians. Other solutions include providing more guidance to drivers at intersections, such as installing flashing yellow arrows, better signing and striping, and illumination at nighttime. Bicyclist safety at intersections can be improved with the installation of colored bicycle lanes and bicycle boxes.

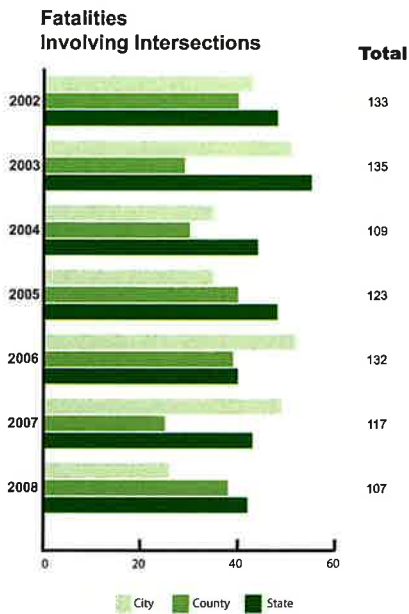
## Fatalities Involving Intersections: Trends, Forecasts, and Goals



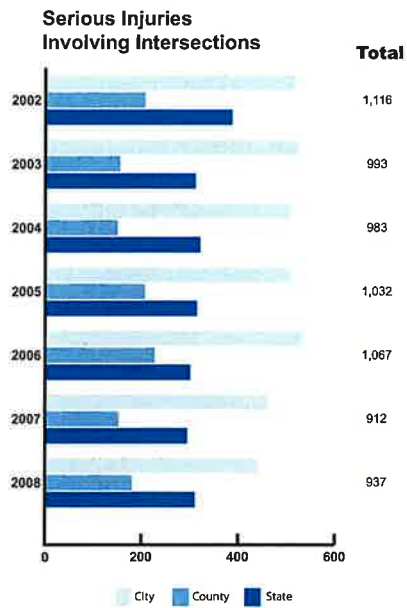
Reducing the number of conflict points for roadway users will also reduce collisions. This can be done with improvements like roundabouts and turn lanes, operational restrictions with signs or signals, and modifications in vehicle access, such as reducing the number of driveways in or adjacent to intersections.



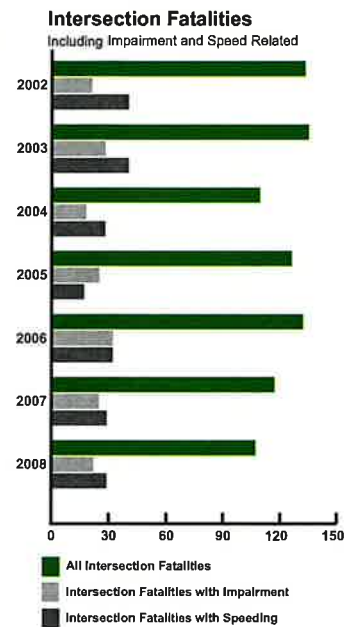
# Priority Level Two: Intersections



Source: WSDOT Collision Database

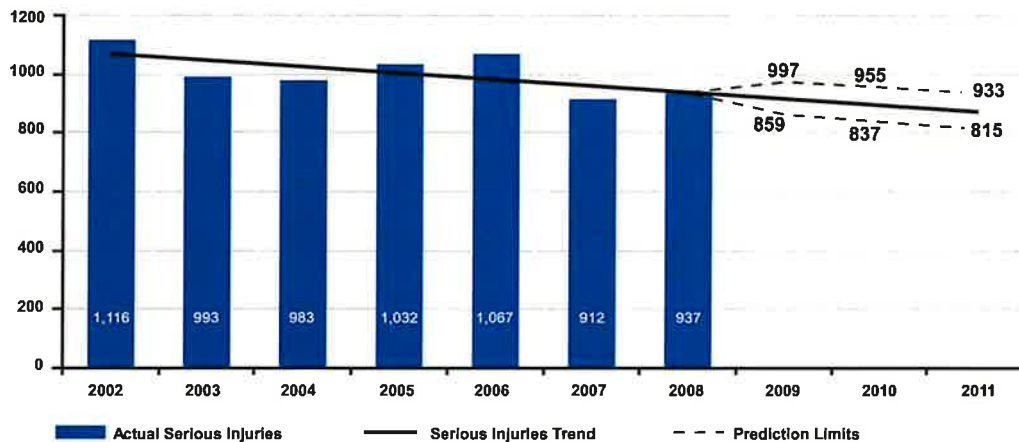


Source: WSDOT Collision Database



Source: WSDOT Collision Database

## Serious Injuries Involving Intersections: Trends and Forecasts



Source: WSDOT Collision Database

# Priority Level Two: Intersections

## 2.5 Strategies to Reduce Intersection-Related Collisions

<b>2.5.A Reduce motor vehicle collisions at intersections</b>	<p>2.5.A1 Implement traffic control and operational improvements where appropriate:</p> <ul style="list-style-type: none"> <li>• Optimize clearance intervals. (P)</li> <li>• Improve signal timing to reduce rear-end collisions.</li> <li>• Employ emergency vehicle preemption. (P)</li> <li>• Remove unwarranted signals. (P)</li> <li>• Employ flashing yellow arrows at signals. (E)</li> <li>• Limit turning movements at intersections to reduce conflict points.</li> <li>• Improve the pavement surface and/or establish better maintenance practices in regard to snow and ice control.</li> </ul> <p>2.5.A2 Implement geometric improvements where appropriate:</p> <ul style="list-style-type: none"> <li>• Provide left- and right-turn channelization when warranted. (P)</li> <li>• Reduce speeds at intersections through engineering.</li> <li>• Install roundabouts and educate drivers. (P)</li> </ul> <p>2.5.A3 Install illumination where appropriate. (P)</p>
<b>2.5.B Reduce the occurrence of existing driveways, and discourage the use of new driveways, within or adjacent to intersections</b>	
<b>2.5.C Improve driver compliance at intersections</b>	<p>2.5.C1 Implement automated enforcement (cameras) of red-light running. (P)</p> <p>2.5.C2 Provide targeted enforcement at intersections and intersection approaches. (P)</p> <p>2.5.C3 Provide public information and education, especially related to bicycles and pedestrians. (T)</p>
<b>2.5.D Improve driver awareness of intersections</b>	<p>2.5.D1 Improve visibility of intersections on approaches. (T)</p> <p>2.5.D2 Improve visibility of signals and signs at intersections. (T)</p> <p>2.5.D3 Improve sight distances at intersections. (P)</p> <p>2.5.D4 Provide advance warning of intersections. Provide advance warning signs at strategic locations, including real time flashing lights warning of traffic signals ahead and transverse rumble strips.</p>
<b>2.5.E Reduce vehicle collisions involving pedestrians and bicyclists at intersections</b>	<p>2.5.E1 Improve intersection geometry to increase bicycle and pedestrian safety; provide refuge islands and raised medians for pedestrians. (P)</p> <p>2.5.E2 Improve signal timing for pedestrians, such as providing countdowns and crossing lead-times. (P)</p> <p>2.5.E3 Improve pavement markings with high visibility crosswalks and bicycle lanes. (T)</p> <p>2.5.E4 Install colored bicycle lanes and bicycle boxes. (E)</p> <p>2.5.E5 Improve visibility for all users through pedestrian scale lighting at intersections. (E)</p> <p>2.5.E6 Accommodate non-motorized users through roundabouts. (T)</p>

P=Proven, T=Tried, E=Experimental

# Priority Level Two: Traffic Data Systems

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Timely, accurate, integrated, and accessible data is the underpinning of the campaign to reach zero deaths and serious injuries on the state's roadways in 2030. This data serves as the critical link in the process of identifying problems, selecting appropriate countermeasures, and evaluating the resulting performance.

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:

- Traffic fatalities and serious injuries
- Collisions
- Driver citations, infractions & adjudication
- Drivers & Registered Vehicles
- Commercial motor vehicles
- Injury treatment data from sources such as emergency medical services, emergency department, trauma records, and hospital inpatient records
- Roadway data such as traffic volume, roadside features inventory, geometrics, etc.
- Location data from Geographic Information Systems (GIS)

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 identify problems and support decisions regarding public and transportation safety. Information derived from these systems is central to enhancing management and accountability in public service by gauging progress toward key measures of performance.

## The Washington Traffic Records Committee

The Washington Traffic Records Committee (TRC) is a partnership of state, local, and federal interests from the transportation, law enforcement, criminal justice, and health fields. This statewide stakeholder forum was created to foster collaboration and to facilitate the planning, coordination and implementation of projects to improve the state's traffic records system.

In February 2009, Washington hosted a NHTSA-sponsored Traffic Records Assessment, its first assessment since the initial 2003 assessment that initiated Washington's multi-year strategic planning effort. The 2009 assessment team essentially affirmed the work the TRC has produced since 2003. The following is an excerpt from the Executive Summary of the 2009 assessment report:

In 2003 the State's Traffic Records Committee (TRC) had neither the organizational structure nor the governing fundamentals to serve as a well-functioning State TRC. It has since re-constituted itself and has become an essential advisory and oversight body to guide the State's traffic records system development. As stated in a 2005 letter from Governor Chris Gregoire to WTSC Director Lowell Porter, "A well-supported and representative TRC is essential to provide the necessary leadership to coordinate traffic records improvement projects across multiple agencies. This collaborative approach minimizes duplication of work by enabling agencies to leverage one another's efforts in achieving common goals."

Testimony to the level of achievement that is possible when such collaboration becomes a reality is the eTRIP Governance Team. The State TRC formed this impressive and remarkably successful group that operates as a permanent subcommittee under the authority of the TRC, comprised of members representing most of the highway safety and traffic records stakeholder agencies in the State. Its purpose is to provide policy oversight and program direction as well as business and technical leadership in the implementation, maintenance, update, and enhancements of the eTRIP Initiative throughout the State including the SECTOR field data collection application.

- 2009 Washington State Traffic Records Assessment  
by NHTSA

## Priority Level Two: Traffic Data Systems

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The 2009 assessment report highlighted several of the major accomplishments Washington has made in traffic records improvements, including:

- Development and implementation of the state's electronic ticketing and collision reporting program, or eTRIP. Electronic tickets, collision reports, and dispositions now make up more than 30% of the statewide volume for tickets and collision reports.
- Completion of the Electronic County Location Coding project to automate the collection of county road collision location data.
- Development of the state's first Emergency Medical Information System to centrally collect data on first responder call-outs.
- Creation of a seven-county integrated dataset within the Washington State Transportation Framework (WA-Trans) for more accurate road feature and event location data.
- Establishment of a Data Integration Team to link crash and injury outcome data.

In addition, the 2009 assessment provided a number of areas in which further improvements can be made. The TRC is addressing some of those improvements in strategies related to enhanced collision location, data integration and analysis, and performance measurement.

The TRC has used the 2009 assessment as a tool to help evaluate and revise the state's Traffic Records Strategic Plan, which will be finalized in 2010. The new strategic plan aims to create a singular vision for a more innovative, efficient, and integrated system for traffic records in Washington.

### Key Traffic Records strategies for the future

A few of the strategies from the table on the following pages:

- Aggressive expansion of Statewide Electronic Collision

### Traffic Record Committee Mission & Goals

#### Mission

The Washington Traffic Records Committee enhances transportation and public safety through coordinated projects to provide the most timely, accurate, integrated and accessible traffic records data.

#### 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.

and Ticket Online Records (SECTOR) and the state's infrastructure for electronic ticketing, collision reporting, and dispositions.

- Development of systems to improve location data for traffic-related features and events.
- Development of the state's first central repository for emergency department data.
- Revision of the statewide collision report form.
- Development of an automated system to retrieve and disseminate collision reports.
- Integration of injury surveillance and collision data for improved analysis of the human and financial costs of collisions.

# Priority Level Two: Traffic Data Systems

## 2.6 Strategies to Improve Information and Decision Support Systems

<p><b>2.6.A Replace paper-based data collection processes with automated electronic systems</b></p>	<p>2.6.A1 Incorporate new features and functional enhancements to the Statewide Electronic Collision &amp; Ticket Online Records (SECTOR) software application. (T)</p> <p>2.6.A2 Develop and deploy enhancements to the SECTOR application to allow prosecutors statewide to create, review, amend and electronically file criminal cases with courts. (P)</p> <p>2.6.A3 Support the expansion of the eTRIP Initiative, by aggressively expanding use of SECTOR and the state infrastructure for electronic reporting. (P)</p> <p>2.6.A4 Develop an in-vehicle incident location tool for use in SECTOR to enhance ticket and collision report location data. (P)</p>
<p><b>2.6.B Reduce paper exchanges among traffic records systems and stakeholders</b></p>	<p>2.6.B1 Support the eTRIP Initiative, to enhance state and local repositories to more efficiently process and file electronic tickets collision reports, and dispositions. (P)</p> <p>2.6.B2 Support the eTRIP Initiative, by leveraging the Justice Information Network Data Exchange (JINDEX) infrastructure to more efficiently disseminate ticket, collision report, and disposition data to state and local users. (P)</p> <p>2.6.B3 Design a process for city engineers to electronically access collision reports, code their locations, and automatically submit this information to WSDOT for analysis. (T)</p>
<p><b>2.6.C Develop and expand integrated patient care information systems for enhanced injury surveillance</b></p>	<p>2.6.C1 Increase EMS reporting by first responders throughout the state to the Washington Emergency Medical Services Information System (WEMSIS). (P)</p> <p>2.6.C2 Implement the Coded Emergency Department Data Information System (CEDDS). (P)</p> <p>2.6.C3 Expand use of the Electronic Death Registration System (EDRS) to all Washington State counties. (T)</p>
<p><b>2.6.D Create a more accurate statewide system for roadway feature and event location</b></p>	<p>2.6.D1 Expand Washington’s statewide transportation data layer (WA-Trans) to include the entire state. (P)</p> <p>2.6.D2 Develop a system at the point-of-entry into the state’s Collision Locations and Analysis System (CLAS) to pinpoint more accurate collision location data. (P)</p> <p>2.6.D3 Develop a new linear referencing system to maintain geospatial location data and advance overall integration. (T)</p>

*continued on next page*

### Washington Receives National Recognition for SECTOR Program

Washington State developed the Statewide Electronic Collision & Ticket Online Records (SECTOR) program to allow WSP and local law enforcement officers to electronically create tickets and collision reports at the scene of a traffic stop or collision. This makes the reports available instantly for processing and analysis. In August, the National Association of State Chief Information Officers (NASCIO) formally recognized SECTOR’s value and innovation by choosing the SECTOR application as a finalist, from among 117 nation-wide applications, for their 2009 Award for Outstanding Achievement in the Field of Information Technology.

P=Proven, T=Tried, E=Experimental

## Priority Level Two: Traffic Data Systems

### 2.6 Strategies to Improve Information and Decision Support Systems, continued

<b>2.6.E Improve the accuracy, timeliness, completeness, and accessibility of statewide collision data</b>	2.6.E1 Acquire or develop a collision analysis software application to provide to state and local transportation safety officials for in-depth analysis. (T)
	2.6.E2 Improve collision data processing efficiencies at the Dept. of Licensing. (T)
	2.6.E3 Revise the Police Traffic Collision Report (PTCR) and accompanying data systems for statewide release in 2012. (P)
	2.6.E4 Create a collision investigation training DVD to improve on-scene data collection practices. (T)
	2.6.E5 Develop an electronic system to more efficiently retrieve and disseminate collision reports to authorized recipients. (P)
	2.6.E6 Develop and make available a data dictionary for CLAS. (P)
	2.6.E7 Ensure the availability of timely collision data to support customer needs for analysis and performance measurement of safety projects, programs, and Target Zero strategies. (P)
	2.6.E8 Work with Tribal Governments to obtain reservation road maps so WSDOT can provide tribes with collision data specifically for the reservation. (P)
	2.6.E9 Encourage tribal law enforcement to submit collision reports to the state. (P)
<b>2.6.F Enhance the structure and activities of the Traffic Records Committee</b>	2.6.F1 Support training opportunities in traffic records for transportation and safety professionals. (T)
	2.6.F2 Develop a meaningful and valid set of system-level performance measures to identify problems, develop solutions, and monitor system improvements. (P)
<b>2.6.G Enhance data integration and accessibility for analysis among traffic records components</b>	2.6.G1 Conduct an injury and collision data integration proof of concept. (T)
	2.6.G2 Promote use and expand capabilities of the WSDOT GIS Workbench. (P)
	2.6.G3 Develop methods for FARS analysts to electronically access EMS and Trauma Registry data for FARS cases. (T)
	2.6.G4 Develop a Judicial Information System (JIS) DataMart for improved access and analysis of citation and adjudication data. (P)
<b>2.6.H Develop and enhance safety data analysis evaluation methods</b>	2.6.H1 Develop coordinated and consistent analytic approaches to analyzing safety data.
	2.6.H2 Improve and support statistical analysis skills of agency data analysts.
	2.6.H3 Develop project scoping safety teams that use a quantitative approach to evaluating projects for educational, engineering, enforcement, and EMS improvements.

P=Proven, T=Tried, E=Experimental

# Priority Level Three: Unlicensed Drivers

Between 2006 and 2008, there were 1,725 traffic fatalities in Washington State, involving 2,357 drivers. Among those 2,357 drivers, 318 (13%)<sup>1</sup> did not have a valid Washington driver license, meaning that either they had no license<sup>2</sup>, or else their license status was suspended, revoked<sup>3</sup>, expired, cancelled<sup>3</sup>, or denied. For purposes of *Target Zero*, these drivers are considered “unlicensed drivers”.

Seventy-three percent of these 318 unlicensed drivers had already lost their driving privileges for cause. At the time of their collision, the license status of the 318 individuals was found to be:

- Suspended: 198 (62%)
- Revoked, expired, cancelled, or denied: 33 (11%)
- No Washington license: 87 (27%)

## Causes of Serious Collisions Involving Unlicensed Drivers

Most of these fatal collisions involved similar causes to the fatal collisions involving validly licensed drivers, although at higher percentages.

- Impairment was involved in 71% of the unlicensed driver

fatal collisions, compared to 48% of the validly licensed driver collisions.

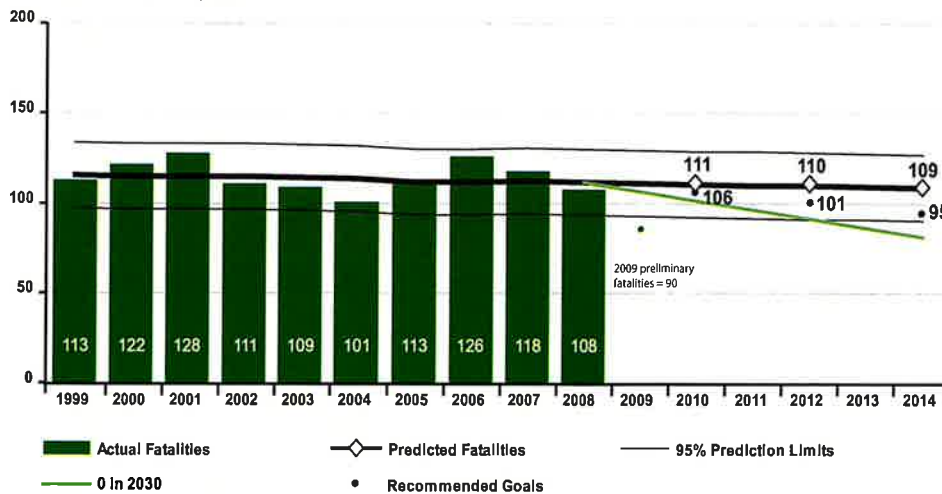
- Speeding was involved in 53% of the unlicensed driver fatal collisions, compared to 40% of the validly licensed driver collisions.
- Impairment and speeding were often co-occurring causes in fatal collisions, whether involving unlicensed or validly licensed drivers (see page 13).
- Unrestrained vehicle occupants, distracted drivers, and young drivers were also factors that often co-occurred with one another, as well as with speed and impairment, in fatal collisions involving unlicensed drivers.

## Strategies to Reduce Fatal and Serious Injury Collisions Involving Unlicensed Drivers

Based on the prevalence of impairment, speeding, and other driver behaviors among unlicensed drivers involved in fatal and serious injury collisions, applying strategies aimed at those causes may contribute to reducing these types of collisions. But more is needed, as these drivers are especially difficult to reach and influence: some are unknown, having never received a license, and many continue to drive without proper licensure. National research estimates that 75% of

drivers with suspended or revoked licenses continue to drive (NCHRP Report 500 Volume 2). Some intervention strategies have shown promise and are worthy of further implementation. They are included in the table at the end of this chapter.

## Fatalities Involving Unlicensed Drivers: Trends, Forecasts, and Goals



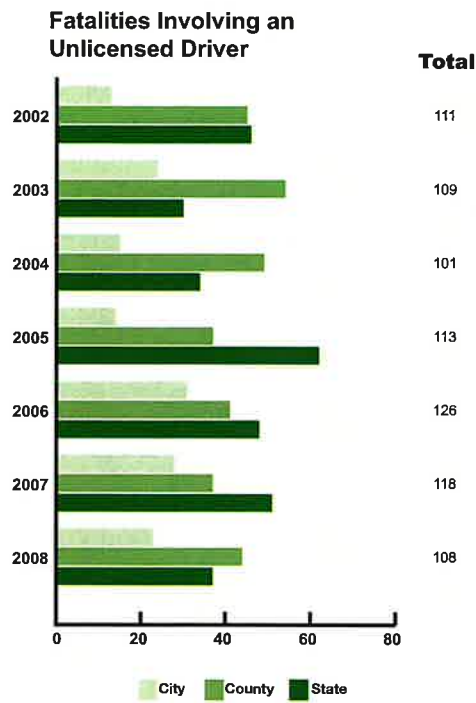
Source: Washington Traffic Safety Commission - Fatality Analysis Recording System

<sup>1</sup> These drivers were involved in 352 (20.4%) of the 1,725 fatalities.

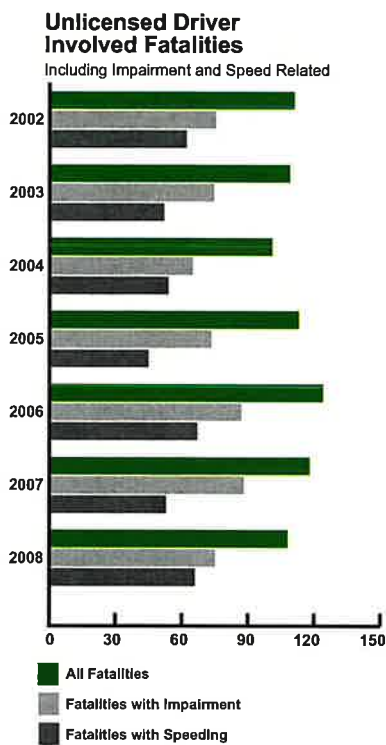
<sup>2</sup> The driver potentially could be licensed by another state.

<sup>3</sup> **Revoked** – license was invalidated, generally because of driver behavior. **Cancelled** – license was issued in error and then cancelled, generally because the driver did not have full qualifications.

# Priority Level Three: Unlicensed Drivers



Source: Washington Traffic Safety Commission - Fatality Analysis Recording System



Source: Washington Traffic Safety Commission - Fatality Analysis Recording System (FARS)

## Why is There No Serious Injury Data for Unlicensed Drivers?

Unlike the factors presented in the other chapters of *Target Zero*, license status data is not captured in WSDOT's collision database. Driver identification numbers are captured, but 21% of those numbers for serious injury collisions from 2003 through 2008 could not be matched to DOL's driver identification numbers, and only suspended and revoked data could be matched to serious injury collisions. Because the serious injury data is not complete, it will not be presented in *Target Zero*.



# Priority Level Three: Unlicensed Drivers

2.4 Strategies to Reduce Unlicensed-Driver-Involved Collisions	
<b>2.4.A. Apply special enforcement practices.</b>	2.4.A1. Routinely link citations with driver records and ensure timely transmittal from courts to DOL of suspended status. (T) 2.4.A2. Create and distribute “hot sheets.” (T)
<b>2.4.B Change the law to restrict mobility through license plate modification or removal.</b>	2.4.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) 2.4.B2. Impound license plate. (P)
<b>2.4.C. Restrict mobility through vehicle modification.</b>	2.4.C1. Immobilize/impound/seize vehicle. (P) 2.4.C2. Install ignition interlock device. (P)
<b>2.4.D. Restrict mobility through direct intervention with offender.</b>	2.4.D1. Monitor electronically. (P) 2.4.D2. Incarcerate offenders. (P)
<b>2.4.E. Eliminate need to drive.</b>	2.4.E1. Provide alternative transportation service. (P)
<b>2.4.F. Increase the courts ability to effectively process “driving while license suspended or revoked” cases.</b>	2.4.F1. Evaluate the impact of new legislation on “driving while license suspended or revoked” 3rd degree. 2.4.F2. Evaluate the effectiveness of “driving while license suspended or revoked” laws.

# Priority Level Three: Opposite-Direction Multi-Vehicle Collisions

An opposite-direction multi-vehicle crash typically occurs when one vehicle crosses over a roadway center line or a median and crashes into a vehicle traveling in the opposite direction. It can also occur when a vehicle is traveling the wrong way in a traffic lane. Occasionally, a driver's deliberate actions (such as passing on a two-lane road) can cause this type of collision, but more frequently an opposite-direction multi-vehicle collision is caused by a driver's impairment, speed, or distraction. Addressing those behavioral issues will reduce this type of collision.

Between 2006 and 2008, Washington State experienced 860 serious injuries and 323 deaths related to opposite-direction multi-vehicles collisions. This represents 10.3% of serious injuries and 18.7% of fatalities during this period.

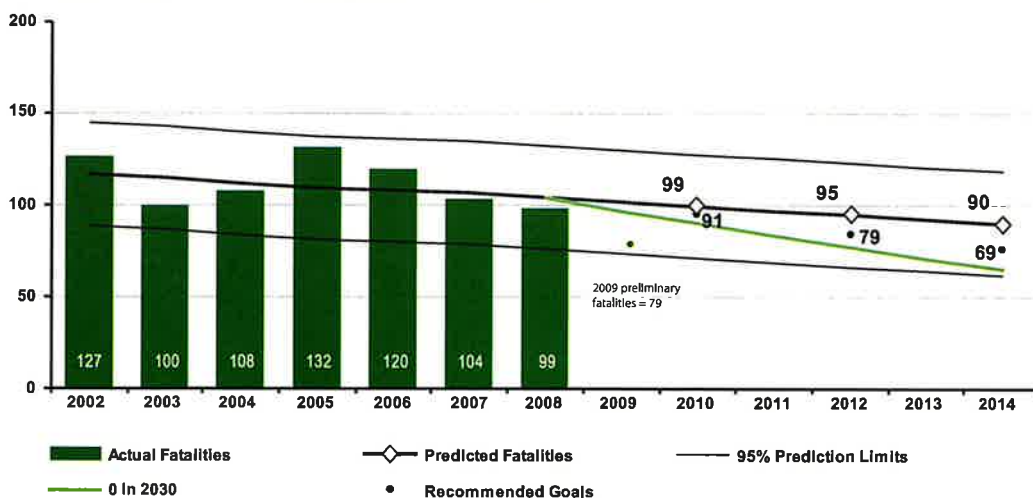
From 2006-2008, speed was a factor for 16% of drivers involved in fatal or serious injury opposite-direction multi-vehicle crashes; impairment was a factor 16% of the time. During the same time period, only 2% of drivers involved in fatal or serious injury opposite-direction multi-vehicle collisions were making an improper passing maneuver.

Engineering strategies can help reduce the likelihood of opposite-direction multi-vehicle fatalities and serious injuries. These strategies include the installation of center line rumble strips on two-lane roadways, the placement of median barriers on divided highways, and the creation of safe passing opportunities where possible on two-lane roadways. Installation of center line rumble strips on Washington state routes has led to a 57% decrease in fatal and serious injuries in cross-over collisions, of which opposite-direction multi-vehicle crashes are a subset. (This study also showed an 80% reduction on tangents and 24% reduction on curves).

## Why Doesn't Target Zero Focus on Cross-Over Collisions?

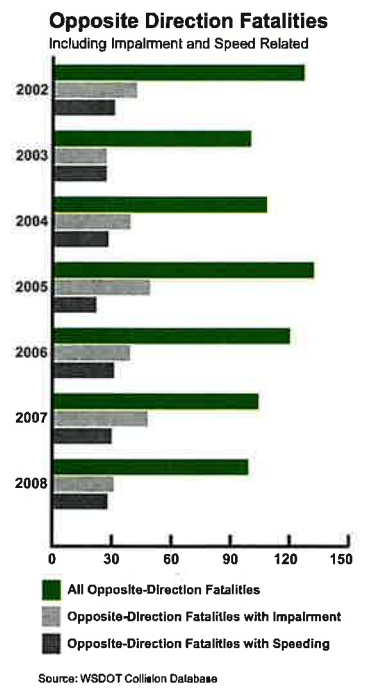
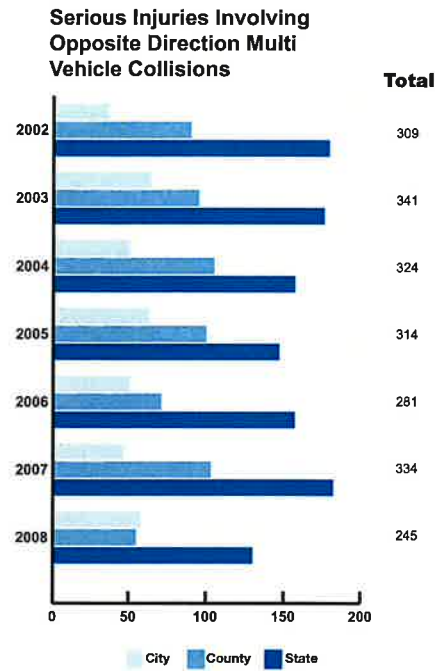
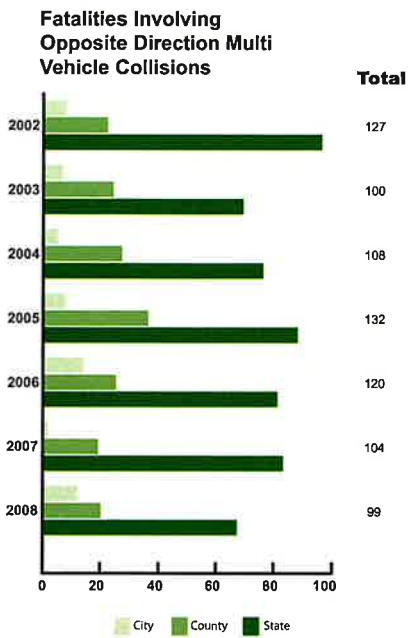
Current data collection methods only allow for statewide collection of opposite-direction multi-vehicle crashes, and not for cross-over collisions involving only one vehicle. Current studies of crossover collisions have focused on specific locations where centerline rumble strips were installed. Improvements planned for future data collection methods will allow for collection of all cross-over collisions in future versions of Target Zero.

## Opposite Direction Multi-vehicle Collision Fatalities: Trends, Forecasts, and Goals

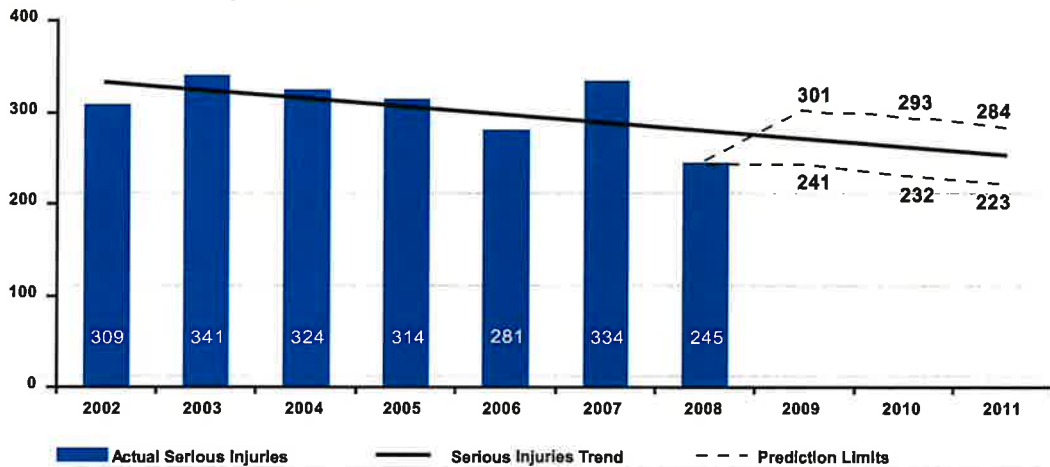


Source: WSDOT Collision Database

# Priority Level Three: Opposite-Direction Multi-Vehicle Collisions



## Opposite Direction Multi Vehicle Collision Serious Injuries



# Priority Level Three: Opposite-Direction Multi-Vehicle Collisions

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## 3.1 Strategies to Reduce Opposite Direction Multi-Vehicle Collisions

### 3.1.A Reduce opposite-direction multi-vehicle collisions

- 3.1.A1 Implement centerline treatments such as rumble strips to reduce head-on crashes on all two lane highways where possible. (P)
- 3.1.A2 Provide safe passing opportunities on two-lane rural highways by constructing passing lanes where cost effective. (T)
- 3.1.A3 Install appropriate median barrier on highways with narrow medians. (P)
- 3.1.A4 Add raised medians or other access control on multi lane arterials. (P)
- 3.1.A5 Improve maintenance practices in regard to snow and ice control.

P=Proven, T=Tried, E=Experimental

# Priority Level Three: Motorcyclists

In recent years, motorcycle rider fatalities have risen steadily in Washington State, mirroring a national trend. Rider deaths in Washington State totaled 73 in 2005 and rose to 78 in 2008, one of the worst years in the state since reinstatement of the comprehensive helmet law in 1990. This upward trend is in clear opposition to the overall decline in all other traffic fatalities occurring both in Washington and nationally.

In 2006, Governor Gregoire asked the Governor’s Task Force on Motorcycle Safety, including the Washington State Patrol, Washington Traffic Safety Commission, and the Department of Licensing, to study the rise in motorcycle fatalities, and set a goal of reducing those fatalities by ten riders per year.

Data from the Department of Licensing shows that motorcycle registrations increased 132% between 1999 and 2008. During the same period, motorcycle fatalities increased over 100%. The data shows that the number of registered riders is moderately outpacing the number of motorcycle fatalities.

Between 2006 and 2008, a total of 225 motorcyclists (217 operators and 8 passengers) lost their lives on Washington roads. Of these motorcyclist fatalities, 58.3% involved impairment on the part of the motorcycle operator or the

## Washington State Motorcycle Fatalities vs. Registrations, 1999 and 2008<sup>1</sup>

	1999 <sup>1</sup>	2008 <sup>1</sup>	% increase
Motorcycle Registrations	97,990	227,371	132%
Motorcycle Fatalities	38	78	105%

Source: FARS and Department of Licensing

<sup>1</sup>Years are calendar years, January through December.

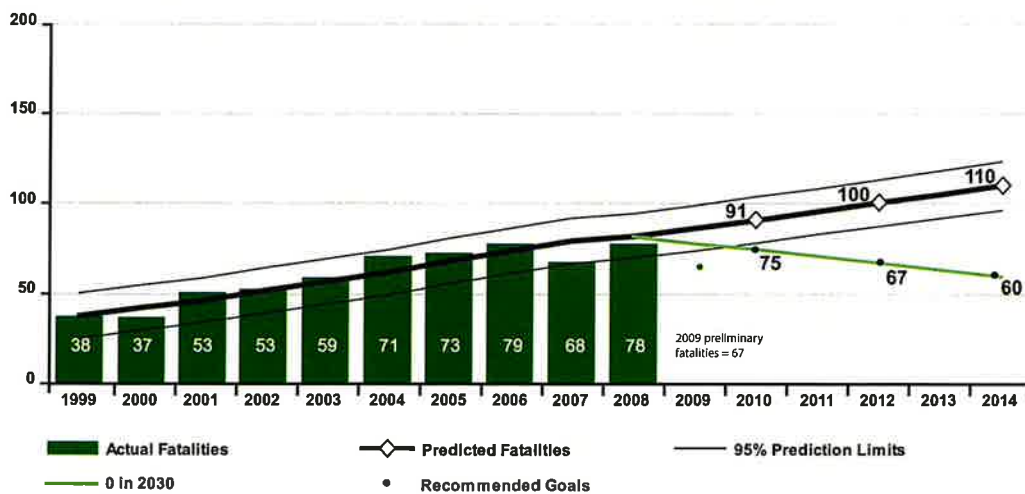
## In recent years, motorcycle rider fatalities have risen steadily in Washington State, mirroring a national trend.

driver of the other vehicle. The second most common factor contributing to motorcyclist fatalities is speeding (51.1%). Almost one-third (29.8%) of fatalities involved both impairment and speeding.

Between 2006 and 2008, 116 of the 231 (50.2%) motorcycle operators involved in fatal crashes were impaired by alcohol and/or other drugs. Of these 116 impaired motorcycle operators, 46.6% were impaired by drugs only, 31.9% were impaired by alcohol only, and 21.6% impaired by both alcohol and other drugs. Cannabinoids are the most common class of drugs paired with alcohol among motorcycle operators involved in fatal crashes.

Motorcycle fatalities involve collisions with other vehicles a little over half the time (55.8%). In motorcycle-vehicle

## Motorcyclist Fatalities: Trends, Forecasts, and Goals



Note: In this definition, "Motorcycle" includes Body Types 80, 82, 83

Source: Washington Traffic Safety Commission - Fatality Analysis Recording System

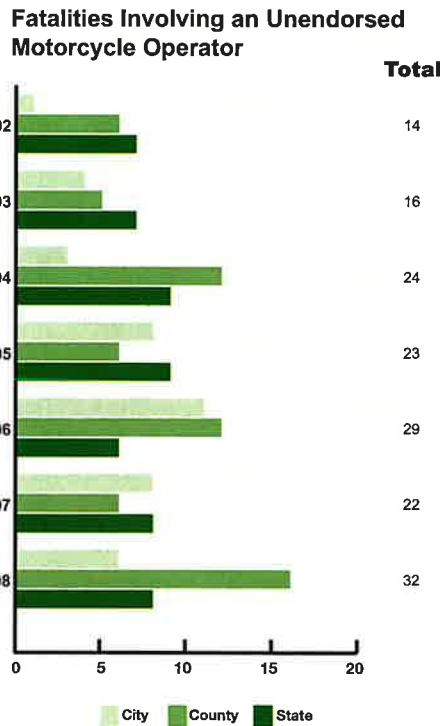
# Priority Level Three: Motorcyclists

fatal crashes from 2003-2007, the most common vehicle driver errors reported are distraction or failure to yield. About half (52.9%) of vehicle drivers involved in motorcycle-vehicle fatal crashes were found to have committed driver errors that led to the collision; 72.1% of the motorcycle operators involved were found to have committed errors leading to the collision (in many cases, both parties committed errors).

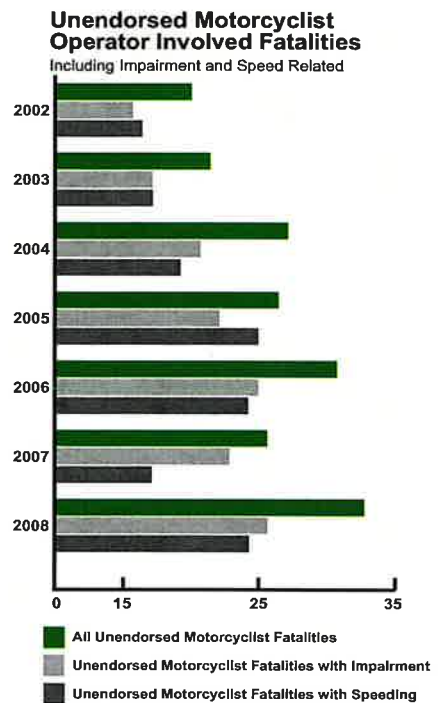
Between 2006 and 2008, most motorcyclist fatalities occurred on state highways (45.3%), while 30.2% occurred on county roads and 23.5% on city streets. The remainder (about 1%) occurred on other types of roads, such as Forest Service roads.

Spring and summer months are the main months for motorcycle fatalities, when motorcyclists are likely riding more often due to favorable weather and longer daylight hours; 78.9% of motorcycle fatalities occur between April and September every year. Over 90% of all motorcyclists killed are male.

Age does play a role in motorcycle crashes. In fact, younger motorcycle operators aged 35 and under are involved in 46% of fatal motorcycle collisions, but hold only 20% of motorcycle registrations in the state. However, this does not take into account a potential difference in the number of miles each age group rides, since no data currently exists in our state on motorcycle VMT by age. If younger motorcycle operators travel more miles, they have a higher likelihood of involvement in a collision.



Source: Washington Traffic Safety Commission - Fatality Analysis Recording System



Source: Washington Traffic Safety Commission - Fatality Analysis Recording System (FARS)

## Background on Motorcycle Fatality Rates

Vehicle-miles-traveled (VMT) for motorcycles is not currently available in the State of Washington, so it is not possible to create a fatalities per motorcycle VMT rate. Therefore the baseline for the motorcycle riding population is the number of registered motorcycles. This data is reliable, readily available from the Department of Licensing, and accurately depicts the popularity of motorcycle riding within the state. In addition, this measure segregates motorcycles by type (2-wheel, 3-wheel, etc), and excludes non-licensable motorcycles (such as dirt bikes).

Washington intends to have motorcycle VMT data in future updates of *Target Zero*.

# Priority Level Three: Motorcyclists

## Laws affecting motorcycle riders

Under Washington law, individuals need a special endorsement on their driver licenses to operate a motorcycle. This endorsement can be obtained either by passing the motorcycle endorsement examination or by satisfactorily completing a motorcycle operator training course. To encourage motorcycle operator training, Washington State passed a law in 2007 that allows law enforcement officers to impound the motorcycles of those riders who do not have a motorcycle endorsement. Between 2006 and 2008, 35% of motorcycle operators involved in fatal crashes were unendorsed.

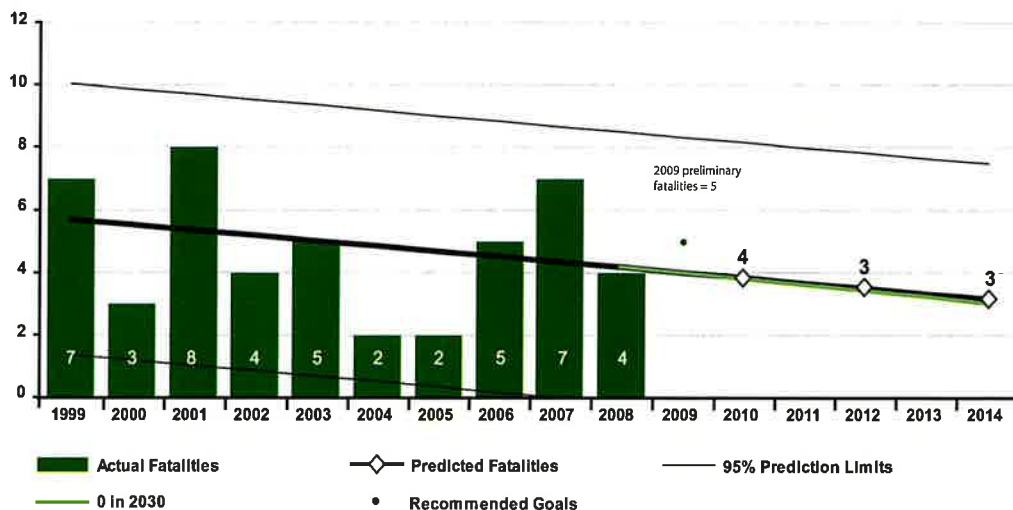
Another recent change that affects motorcyclists is the helmet law passed in 2009. That law requires all motorcyclists to wear helmets that meet federal standards (FMVSS 218). Those standards include thick foam padding, a secure chin strap, a manufacturer's label on the inside of the helmet, and a permanent, legible USDOT sticker on the outside rear of the helmet. Unhelmeted riders comprise a small percentage of motorcyclist fatalities every year.

## The Motorcycle Task Force

The Governor's Task Force on Motorcycle Safety was formed in 2006. The Task Force consisted of a diverse group of stakeholders including the Traffic Safety Commission, the State Patrol, the Department of Licensing, motorcyclist rights groups, and industry representatives. The Task Force's goal was to identify and analyze the factors related to motorcycle collisions, and to provide recommendations for countermeasures likely to reduce fatalities and serious injuries.

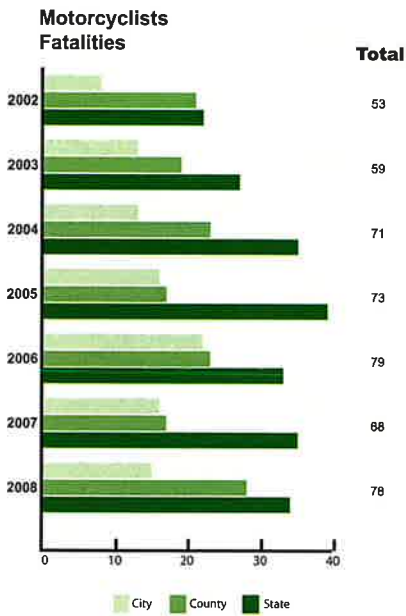
The Task Force studied ten years of motorcycle crash data and concluded that while there are multiple contributions to motorcycle crashes that result in fatalities or serious injuries, it appears that the most important factors are within the control of the rider. Efforts to reduce fatalities and serious injuries should focus on rider skill and behavior. The Task Force published its recommendations to reduce fatalities and serious injuries by improving rider behavior and skills through three areas: training, public awareness, and accountability. A full copy of the report is available at [www.dol.wa.gov/about/reports/mototaskforce.pdf](http://www.dol.wa.gov/about/reports/mototaskforce.pdf).

## Unhelmeted Motorcyclist Fatalities: Trends, Forecasts, and Goals

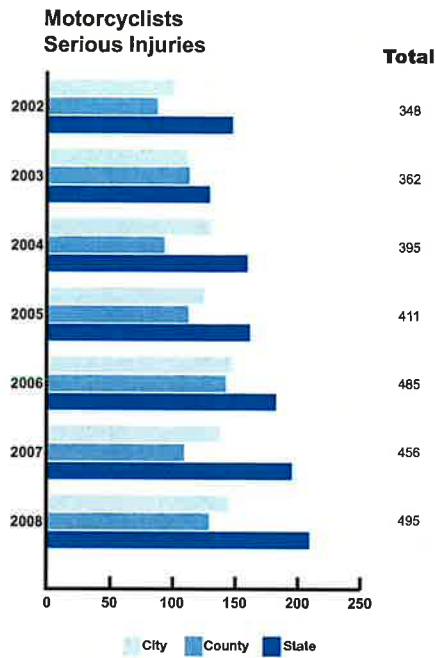


Source: Washington Traffic Safety Commission - Fatality Analysis Recording System

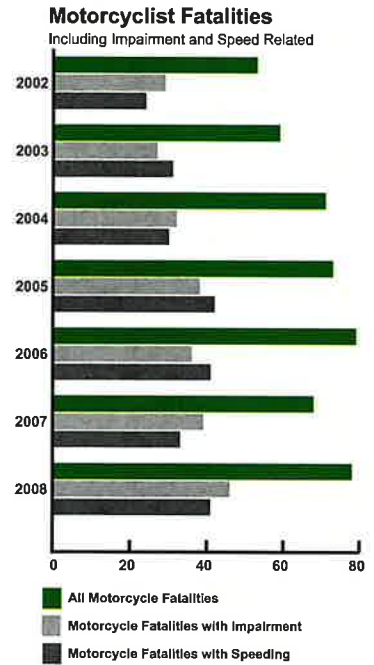
# Priority Level Three: Motorcyclists



Source: Washington Traffic Safety Commission - Fatality Analysis Recording System

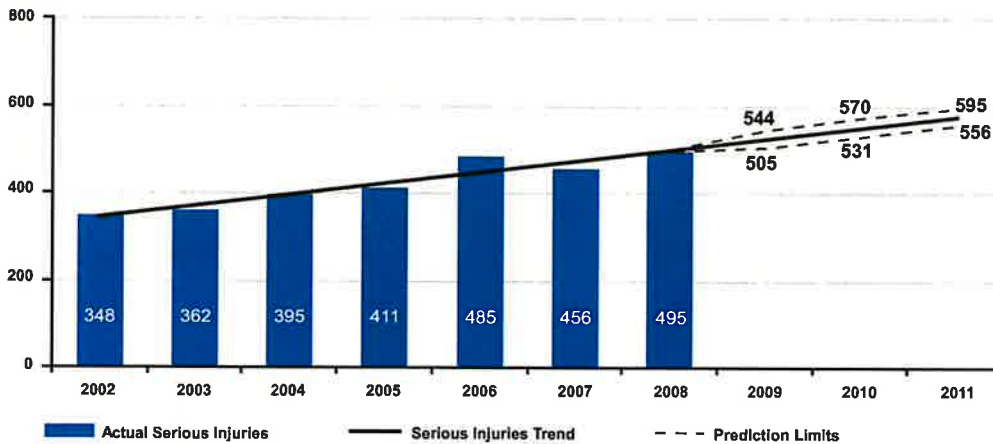


Note: In this definition, "Motorcycle" includes Body Types 80, 82, 83  
Source: WSDOT Collision Database



Source: Washington Traffic Safety Commission - Fatality Analysis Recording System (FARS)

## Motorcyclist Serious Injuries: Trends and Forecasts



Note: In this definition, "Motorcycle" includes Body Types 80, 82, 83

Source: WSDOT Collision Database



## Priority Level Three: Motorcyclists

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### 3.2 Strategies to Reduce Collisions Involving Motorcycles

<b>3.2.A Reduce numbers of untrained riders</b>	3.2.A1 Management review of class distribution. (T)
	3.2.A2 Increase number of classes. (E)
	3.2.A3 Provide tuition incentives for completion of training. (E)
<b>3.2.B Reduce numbers of impaired, unskilled, and unsafe riders</b>	3.2.B1 WTSC public safety campaign/partnership. (T)
	3.2.B2 Use motorcycle helmet violation trend data to inform enforcement efforts.
	3.2.B3 Promote self-policing within the motorcycle community – operators help other operators make good decisions.
<b>3.2.C Reduce numbers of non-endorsed riders</b>	3.2.C1 Clarify impoundment policy. (T)
	3.2.C2 Dealership cooperation. (E)
	3.2.C3 WTSC public safety campaign/partnership. (T)
	3.2.C4 Continue to increase field training. (T)
<b>3.2.D Increase driver awareness and increase rider safety awareness</b>	3.2.D1 Use owner’s bike in training courses. (E)
<b>3.2.E Improve enforcement</b>	3.2.E1 Support specialized law enforcement training in motorcycle DUI detection and motorcycle crash investigation.
	3.2.E2 Increase use of WSP aviation for enforcement.
<b>3.2.F Continue convening DOL’s Motorcycle Advisory Committee</b>	

P=Proven, T=Tried, E=Experimental

# Priority Level Three: Pedestrians

Walking is a critical component of our transportation system, and keeping pedestrians safe is a priority. Almost everyone is a pedestrian at one time or another—going to school or work, running errands, recreating, and connecting with transit or other services. Walking can improve the quality of life by reducing traffic congestion, improving personal health, and reducing the release of pollutants into the environment. For some without access to vehicles, particularly children and older citizens, walking is a necessity.

Creating livable communities that increase the safety of walking for all citizens is becoming increasingly important. Making transportation investments that reduce pedestrian deaths and injuries, while making walking comfortable and convenient, will be key to achieving these communities.

## Pedestrian Fatalities

In Washington State there were a total of 682 traffic-related pedestrian fatalities between 1999 and 2008, accounting for 11% of all traffic deaths. Sixty-four pedestrians were killed in 2008, up slightly from 62 in 2007, yet still lower than the 10-year average of 68 fatalities. In terms of jurisdiction, 41.8% of pedestrian deaths occurred on city streets, 38.4% on state routes, and 19.4% on county roads. The number of pedestrian fatalities has generally trended downward over the years due to an overall decrease in walking, yet the fatality rate remains high in many urban areas and for specific segments of the population.

Certain parts of the population are more vulnerable to pedestrian fatalities. From 1999 to 2008, more than 70% of pedestrian fatalities occurred in urban areas, while 21% were rural<sup>1</sup>. The elderly are disproportionately represented and have been identified as an at-risk population for pedestrian deaths.

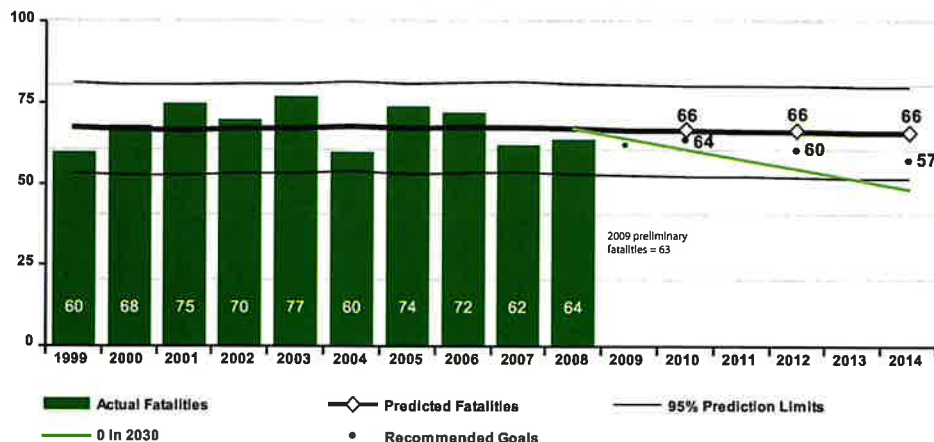
<sup>1</sup> The remaining 9.4% had an unknown roadway classification.

Currently, adults age 65 and older in Washington represent 12% of the population, yet they make up approximately one-fourth of the state's pedestrian deaths. Older adults often walk more, as indicated by the National Institute of Aging, which also reports that more than one in five adults age 65 and older do not drive. This segment of the population is growing both nationally and within our state. By 2020, over one and a half million people in Washington State will be 65 or older – almost twice the number of people in that age group today. Addressing issues that imperil older pedestrians is crucial to reducing our state's traffic fatality rate.

Although they are low in pedestrian fatalities based on population rate, children are also considered a vulnerable pedestrian population. In Washington, pedestrian injuries remain the third leading cause of injury deaths for children ages one to 16, according to the Department of Health. Children are often on foot because it is their only independent means of transportation. Typically, children under the age of 13 cannot accurately determine the speed of an approaching vehicle, a limitation which makes them more vulnerable to being hit than other age groups.

The location of pedestrian crashes also plays a role. In Washington, slightly more than 15% of pedestrian fatalities occurred within marked crosswalks, while over 45% occurred at unmarked crossings. On state highways, approximately

**Pedestrian Fatalities: Trends, Forecasts, and Goals**



Source: Washington Traffic Safety Commission - Fatality Analysis Recording System

## Priority Level Three: Pedestrians

10% of all legal crosswalk locations are marked and 4% are signalized. A sampling of city and county roads indicates a similar percentage of marked legal crossings and a higher percentage of signalized locations.

### Impairment and Speed as Factors in Pedestrian Fatalities

The proportion of pedestrian collisions involving alcohol or drugs is the same as the proportion of all traffic related fatalities and serious injuries where impairment is a factor – roughly half. In 39% of the fatalities, the pedestrian alone was impaired; in 4% of the fatalities, the driver alone was impaired; and in 5% of the fatalities, both driver and pedestrian were impaired. The remaining 53% of fatalities involved no impairment on the part of either the pedestrian or the driver.<sup>1</sup> Of the pedestrian fatalities occurring between midnight and 6 am, over two-thirds involved alcohol or drug impairment.

Speed is also a major factor contributing to the severity of pedestrian-vehicle crashes. Studies have shown that a small increase in speed has a large effect on pedestrian fatality risk. Anderson et al. (1997) estimated the probability of a pedestrian being fatally injured at various impact speeds as a function of injury severity scores. One in ten (10%) pedestrians struck by a vehicle traveling 23 mph is likely to be fatally injured. About six out of 10 (58%) of pedestrians struck by a vehicle traveling 28 mph would be fatally injured – nearly a six-fold increase in fatality risk resulting from only a five-mph increase in vehicle speed. Speeding was a factor in 8.4% (28 of 332) of Washington State pedestrian deaths between 2004 and 2008.

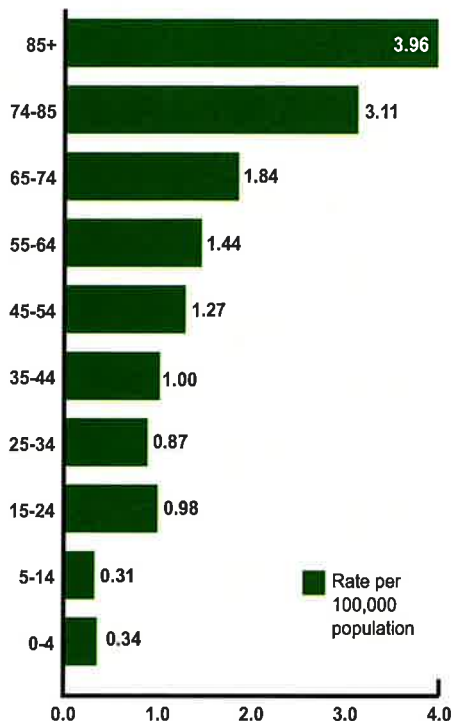
### Addressing Pedestrian Safety in Target Zero

Pedestrian safety strategies focus on three of the four “E’s”: Education, Enforcement, and Engineering (EMS strategies are generally applicable across all types of collisions, both pedestrian and motor-vehicle-related, and can be found on page 70). Some of these strategies include:

- Education approaches targeting both pedestrians and motorists focus on impairment, school zone safety, and reflective apparel, among other items.

### Pedestrian Fatality Rate

By Age Range, 1999-2008

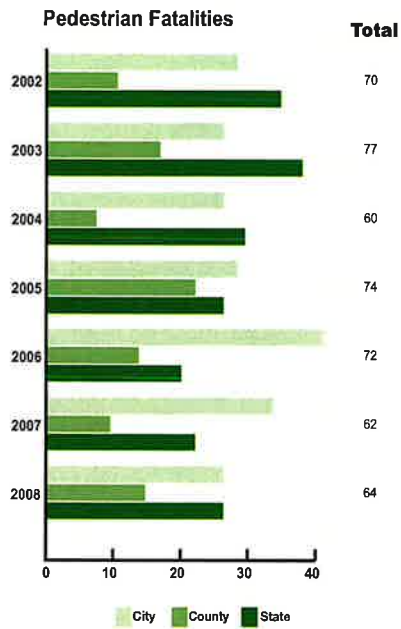


Source: Washington Traffic Safety Commission - Fatality Analysis Recording System (FARS)

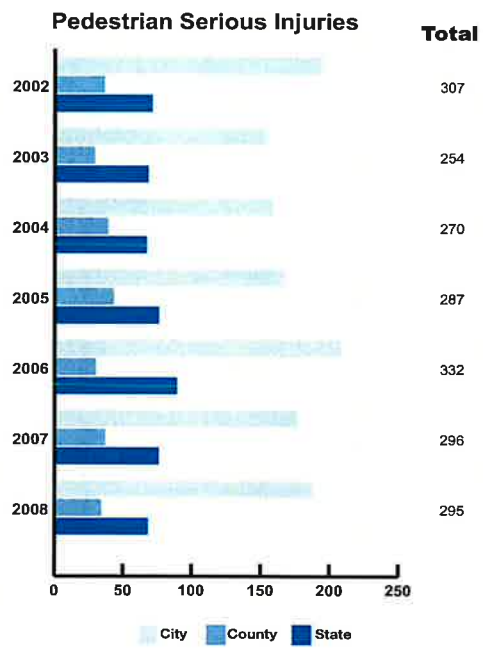
- Enforcement efforts addressing driver and walker behavior in crosswalks and school zones.
- Engineering solutions focusing on roadway improvements such as better lighting, traffic calming features, and “refuge” islands for pedestrians in the median.

<sup>1</sup> Numbers do not add up to 100% due to rounding.

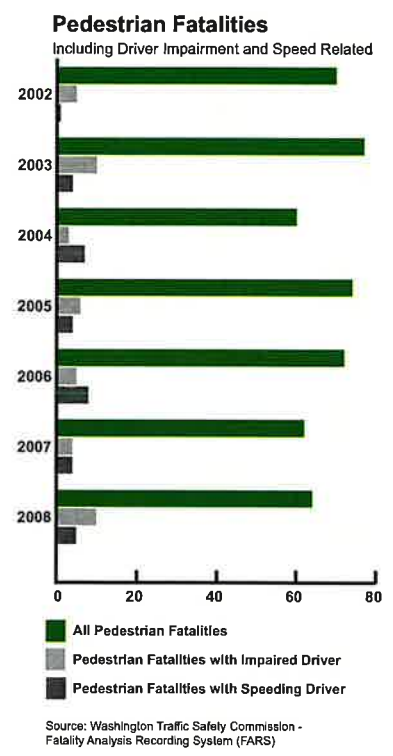
# Priority Level Three: Pedestrians



Source: Washington Traffic Safety Commission - Fatality Analysis Recording System

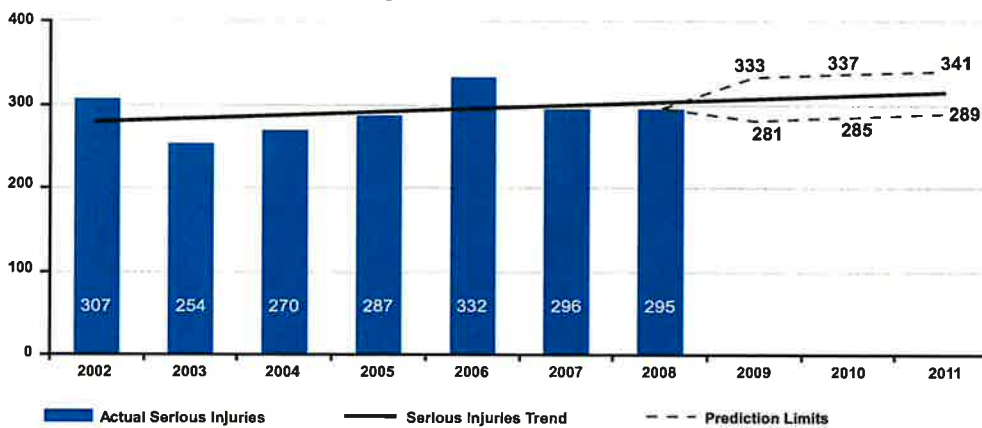


Source: WSDOT Collision Database



Source: Washington Traffic Safety Commission - Fatality Analysis Recording System (FARS)

## Pedestrian Serious Injuries: Trends and Forecasts



Source: WSDOT Collision Database

## Priority Level Three: Pedestrians

### 3.3 Strategies to Reduce Collisions Involving Pedestrians

#### 3.3.A Improve pedestrian and motorist safety awareness and behavior

- 3.3.A1 Continue to provide education, outreach, and training. (P)
- Distribute *School Zone Safety Curriculum Kit and Resource Guide* and the *School Administrator's Guide to School Walk Routes and Student Pedestrian Safety*.
  - Utilize community traffic safety task forces to address pedestrian safety issues. (P)
  - 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, multilane arterials.
  - Promote use of reflective apparel.
  - Ensure that transportation agencies are following national guidelines on the use of reflective markings and sign materials.

#### 3.3.A2 Expand enforcement campaigns. (P)

- Expand cross walk enforcement and education for both vehicles and pedestrians.
- Improve academy and in-service pedestrian safety education for law enforcement officers at State, tribal, and local levels, including pedestrian collision investigation training.
- Encourage mobile camera enforcement in school zones.
- Continue targeted crosswalk enforcement. (P)

#### 3.3.B Improve pedestrian facilities

3.3.B1 Develop and update design guidance for the safe accommodation of pedestrians. (P)

3.3.B2 Develop programs to improve pedestrian safety accommodations at intersections and interchanges. (P)

3.3.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 by installing refuge islands, lighting, pedestrian lead interval at signals and shortening of crossing distances.
- Reduce pedestrian exposure to vehicular traffic.
- Improve sight distances and/or visibility between motor vehicles and pedestrians; move the stop bar farther back from the intersection.
- Reduce vehicle speeds through traffic calming features in urban centers where appropriate.

3.3.B4. Maintain lights that increase pedestrian illumination.

#### 3.3.C Improve safety for children walking to school

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

3.3.C2 Continue WSDOT's safe routes to school grant opportunities. (P)

3.3.C3 Install computer controlled and timed school zone flashing lights at K-12 schools where appropriate. (P)

#### 3.3.D Improve data and performance measures

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

# Priority Level Three: Heavy Trucks

Between 2006 and 2008, collisions involving heavy trucks<sup>1</sup> killed 198 people on Washington's roadways, an average of 66 fatalities per year. Likewise, another 384 people were seriously injured in Washington heavy truck-involved (HTI) crashes during this time, an average of 128 per year. Because of the large weight disparity between trucks weighing over 10,000 pounds (many can reach weights of up to 100,000 lbs when fully loaded) and most passenger vehicles, any crash involving a heavy truck is more likely to involve fatalities. One piece of evidence to support this assertion is the finding that heavy trucks are over-represented in Washington fatal crashes. For example, WSDOT data for 2006 shows that while heavy trucks were involved in only 5% of all minor-injury collisions, they were involved in over 13% of all fatal crashes that year.

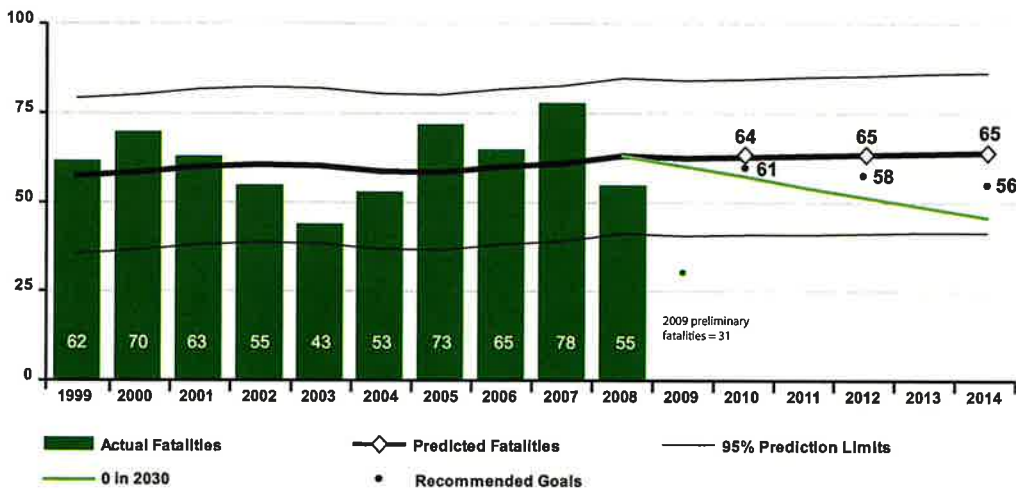
About 87% of 2006-2008 HTI fatalities were vehicle occupants; the remaining 13% were pedestrians and bicyclists. Occupants of passenger vehicles (automobiles, SUVs, vans, and light trucks) constituted nearly two-thirds (63%) of all HTI fatalities, followed by heavy-truck occupants themselves (17%) and motorcyclists (7%). Passenger vehicle occupants ages 16 through 25 made 15% of all HTI deaths and 23% of all passenger vehicle occupant deaths. Roughly three-fourths

(76%) of all HTI fatalities occurred in crashes involving multiple vehicles, while the remainder (24%) were single-vehicle. Of the 47 deaths in single-vehicle HTI crashes, 21 (45%) were bicyclists or pedestrians.

More than two-thirds of all HTI fatalities (68%) resulted from crashes on state routes or interstates, and nearly as many (66%) stemmed from crashes occurring between 10 a.m. and 5 p.m. Forty-three percent of HTI crashes leading to fatalities occurred in six west-side counties (King, Snohomish, Pierce, Lewis, Grays Harbor, and Thurston), and another 25% of HTI deaths stemmed from crashes in six east-side counties (Walla Walla, Spokane, Grant, Yakima, Whitman, and Benton). About 43% of HTI fatalities resulted from crashes between the months of June and September.

The leading contributors to HTI fatalities were impaired driving (73 fatalities, 37%), distraction (61 fatalities, 31%), and speeding (42 fatalities, 21%). Drivers of vehicles other than heavy trucks were much more likely to commit serious driving errors leading to these crashes. For instance, these other drivers were about six times more likely to be impaired by either alcohol or drugs, twice as likely to be speeding or driving distracted, and three times as likely to fail to yield

## Fatalities Involving Heavy Trucks (GVWR > 10,000 lbs.): Trends, Forecasts, and Goals



Source: Washington Traffic Safety Commission - Fatality Analysis Recording System

<sup>1</sup> "Heavy trucks" are defined in Target Zero as all vehicles with a gross vehicle weight of 10,000 pounds or greater.

## Priority Level Three: Heavy Trucks

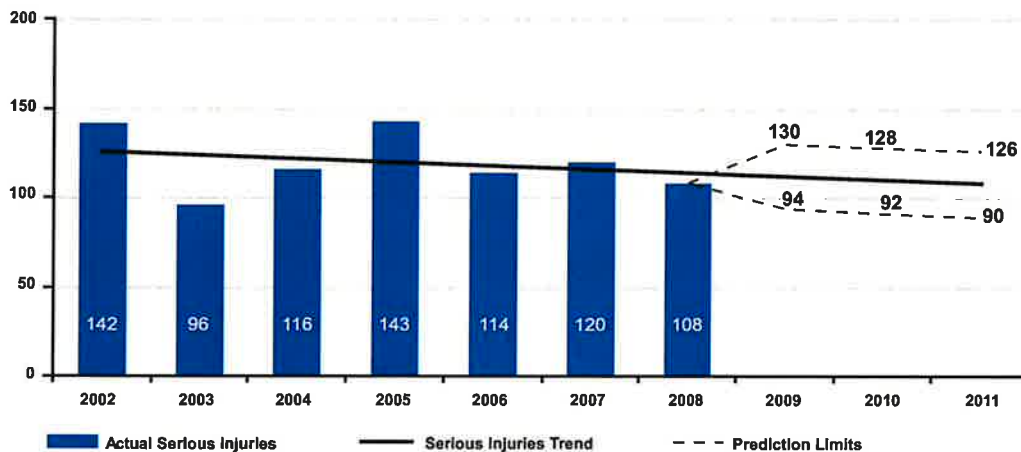
the right-of-way to another vehicle or nonmotorist. Finally, equipment problems also contributed to HTI fatalities: ten of the heavy trucks (5%) and five of the other vehicles (3%) in these crashes had problems with their brakes, lights, or power trains.

In 2005, Washington State initiated the Ticketing Aggressive Cars and Trucks (TACT) project, a program designed to deter the unsafe driving practices of both heavy-truck operators and the other vehicle drivers around them through a combination of public education and targeted enforcement. A research evaluation of TACT found that the project led to a significant reduction in the actual number of unsafe driving behaviors.

Strategies to reduce heavy-truck-involved fatal and serious injury collisions include the following:

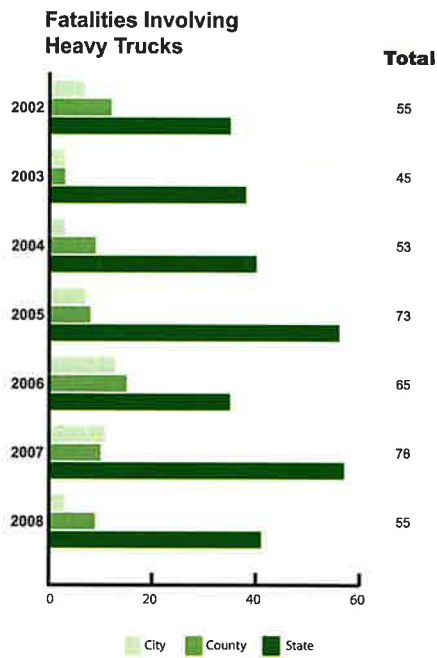
- Focus on improved driving by passenger vehicle drivers near heavy trucks with projects like TACT
- Reduce the likelihood of distracted and drowsy driving by providing ample safe places for heavy truck drivers to pull off the road
- Improve the safety of heavy truck equipment and reduce mechanical defects.

### Serious Injuries Involving Heavy Trucks: Trends and Forecasts

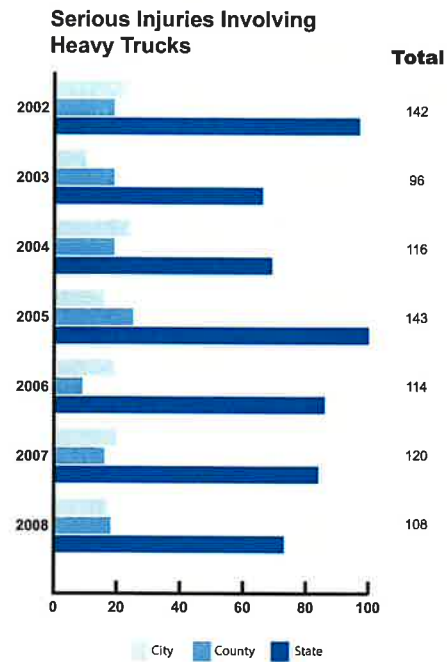


Source: WSDOT Collision Database

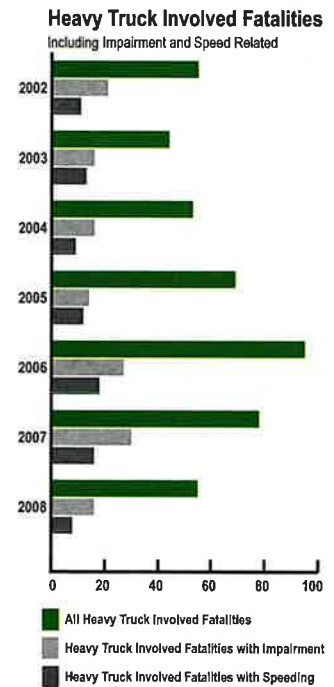
# Priority Level Three: Heavy Trucks



Source: Washington Traffic Safety Commission - Fatality Analysis Recording System



Source: WSDOT Collision Database



Source: Washington Traffic Safety Commission - Fatality Analysis Recording System (FARS)



# Priority Level Three: Heavy Trucks

## 3.4 Strategies to Reduce Collisions Involving Heavy Trucks

<b>3.4.A Reduce heavy truck collisions involving passenger vehicles</b>	3.4.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 heavy truck collisions. (P)
	3.4.A2 Provide education through media ride-a-longs, personal contacts, and letters to complainants to change public perception that heavy-truck-involved collisions are usually caused by the truck.
<b>3.4.B Reduce collisions caused by fatigue and inattention</b>	3.4.B1 Provide areas for truckers to pull off the road and get required sleep. (T)
	3.4.B2 Increase heavy truck driver compliance with hours of service requirements through education, enforcement, and continued collaboration with industry.
	3.4.B3 Utilize data to identify contributing factors of collisions involving heavy trucks and respond with resource reallocation, enforcement, and education strategies. (E)
<b>3.4.C Reduce collisions caused by defective equipment</b>	3.4.C1 Provide inspection facilities to identify mechanical deficiencies.
	3.4.C2 Continue to provide officers conducting inspections with initial and on-going training for completing thorough safety inspections.
	3.4.C3 Enhance existing programs to effectively partner and monitor industry through compliance and education of Washington-based heavy trucking companies regarding federal and state regulations.
	3.4.C4 Utilize data to identify heavy trucking 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.
<b>3.4.D Reduce collision severity in areas with high potential for impacts with barrier</b>	3.4.D1 Improve barrier designs in such areas. (P)
	3.4.D2 Employ rumble strips in such areas. (P)

P=Proven, T=Tried, E=Experimental

# Priority Level Three: Emergency Medical Services

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Washington's Emergency Medical Services and Trauma Care (EMSTC) System (or EMS) has contributed to a steady decrease in the number of motor vehicle related deaths. First, by providing critical care as soon as possible after an injury, EMS is helping reduce deaths and serious injuries. The minutes directly following a traumatic injury are often critical to saving lives or minimizing the long term effects of injury; timeliness and clinical expertise are critical factors in the success of post trauma care.

In addition to the minutes immediately following an injury, a patient's success is dependent on other important facets of trauma care, including prevention activities, hospital care, and rehabilitation resources. Each of these components work together to reduce death and disability of injured people throughout Washington.

Washington's trauma care system strives to assure that the "right" patient arrives at the "right" facility in the "right" amount of time. In a 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. 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 for the EMS system to continue its successes, we must strive to improve the following: analysis of response time data; communication between response agencies; use 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 is also important to continued success.

**Response Time.** Thirty to forty 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. It is important to analyze the response times

of pre-hospital resources to assess their ability 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, rural, and wilderness). EMS agencies must meet these criteria on 80% of all calls. Timely response to trauma scenes equates to faster hospital access for major trauma patients. Therefore, increasing the percentage of response time 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.

**Thirty to forty 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.**

**Integrated Interoperable Communications.** During any response to a serious injury collision, agencies representing EMS, Fire Service, and Law Enforcement will be engaged. Integrated interoperable communications - the ability to easily and effectively communicate between response agencies - is a challenge and the economic as well as technical barriers to communications must be addressed.

Sophisticated communications systems allowing response personnel to effectively communicate are essential to successful EMS response systems. A comprehensive communications system provides EMS personnel with access to medical direction and additional resources that may be required at a trauma scene. Additionally, an effective communications system allows responding personnel to coordinate scene management activities. The ability to communicate with responding resources, both on the ground and in the air, assures rescuer safety and efficient preparation of the patient for transport. Responding personnel must have

## Priority Level Three: Emergency Medical Services

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the ability to communicate between each other as the scene unfolds.

**Medical Dispatch Protocol.** The use of medical dispatch protocols is an important part of the EMS response, allowing 9-1-1 dispatchers to provide instructions to citizens who are on-scene at a serious injury collision before the arrival of emergency responders. Currently, communication centers throughout the state vary in the use of medical dispatch protocols. The level of sophistication of these protocols varies from computerized medical dispatch triage protocols to minimal call screening using no formal medical dispatch program. The disparity in the level and use of these essential protocols lends itself to inconsistent deployment of EMS resources, causing these resources to be over- or under-used. The EMS system in the state should pursue use of consistent medical dispatch protocols in every EMS dispatch center.

**Global Positioning Satellites.** Global Positioning Satellites (GPS) will reduce EMS response times to incident scenes by giving EMS responders the exact location of a motor vehicle collision and the most appropriate and rapid route to the scene. Mobile data terminals included with on-board GPS systems allow dispatchers to provide responding personnel with important information about the incident via computer. While

increasingly prevalent in some urban areas of the state, most if not all of the rural areas of the state lack this technology. Use of this technology will assure better statewide response times.

**Partnership.** Washington's EMS system has been built upon broad consensus among a divergent group of health care professionals and industry experts. These groups have continuously worked to address the complex political, economic, logistical, legal and clinical issues associated with trauma care in the state. Addressing the challenges in a collaborative approach will allow the EMS system to continue reducing the number of fatalities and long-term affects of trauma related to motor vehicle crashes.

**Data Driven.** Developing forward thinking strategies and making decisions based on empirical data is critical to the continued success of the EMS system in Washington. Therefore, any goals and performance measures should incorporate the gathering, analysis and archiving of data related to EMS and trauma incidents. This evidence based focus will ensure that EMS realizes its full potential and continues to favorably impact the outcomes of injured people in the state.

## Priority Level Three: Emergency Medical Services

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### Strategies to Enhance Emergency Medical Capabilities to Increase Survivability

#### 3.5.A Reduce injury deaths and reduce injury hospitalizations

3.5.A1 Ensure all pre-hospital EMS personnel receive adequate trauma training through Ongoing Training and Evaluation Programs (OTEP). (P)

3.5.A2 Ensure efficient and adequate distribution of Level 1 and Level 2 Designated Trauma Centers. Increase the number of Level 2 trauma centers in the state, especially in eastern Washington. (P)

3.5.A3 Ensure that all major trauma patients are transported to the highest appropriate level of designated trauma center within a 30 minute transport. (P)

- Identify funding strategies that assist air medical services in filling gaps in coverage for emergency air medical response as identified in the state EMS and Trauma System Plan.

3.5.A4 Increase the percentage of EMS on-scene arrival responses that are within state requirements. (P)

3.5.A5 Ensure adequate and efficient distribution of pre-hospital EMS resources at all levels (aid and ambulance) according to evidence-based EMS and Trauma State and Regional Plans. (P)

3.5.A6 Promote the use of a computerized system of Emergency Medical Dispatch protocols including pre-arrival instructions in all EMS communications centers in Washington State. (P)

3.5.A7 Ensure that all EMS communications personnel are trained in emergency medical dispatch methods to ensure appropriate utilization of available EMS resources. (P)

3.5.A8 Encourage use of GPS technology by EMS agencies throughout the State. Fund GPS units for all 'first responders'. (E)

3.5.A9 Assure that seamless communications capabilities between EMS, law enforcement, and fire service agencies are achieved through interoperability. (P)

3.5.A10 Expand the Comprehensive Hospital Abstract Reporting System (CHARS) to include emergency department data to promote assessment of EMS system performance and enhance injury surveillance capabilities. (P)

3.5.A11 Improve enforcement and public understanding of 'move-over' law.

## Priority Level Four

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### Older Road Users

By 2030, over one and a half million people in Washington will be 65 or older – twice the number of people in that age group today. 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.

Between 2006-2008, older road users accounted for 120 (7.0%) of traffic fatalities. 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.

Many highway design and traffic control elements can be improved to better serve their needs. WSDOT has been using enlarged road signs and improved nighttime reflectivity to assist older drivers. In addition, the WSDOT design manual has promoted intersections that meet at 90 degrees, in part to improve safety for older drivers.

Additionally, 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 safely 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.

### Drowsy Drivers

Between 2006-2008, drivers who were drowsy contributed to 77 (4.5%) of fatal crashes. However, this category may be significantly under-reported due to the difficulty investigators experience in accurately identifying drowsy drivers. Currently, WSDOT is attempting to reduce fatalities and serious injuries from drowsy drivers through the use of rest areas, as well as installing cable median barrier, shoulder rumble strips, and centerline rumble strips. WSDOT is also working on a program to expand existing parking for heavy trucks to reduce the likelihood of heavy truck operators driving while they are tired.

### Bicyclists

From 2006 to 2008, there were 30 fatal traffic collisions involving bicyclists (1.7% of the total). The 2008-2027 Washington State Bicycle Facilities & Pedestrian Walkways Plan establishes objectives and performance measures in each of the State's five transportation areas as established in state law. The plan also sets a statewide goal of decreasing fatal and serious injury collisions involving bicyclists and pedestrians by 5% per year for the next 20 years, while doubling the amount of biking and walking. To achieve the goal, the number of fatal and serious injuries to bicyclists and pedestrians must be decreased from approximately 400 statewide to 150 or fewer by 2027. Strategies in the plan focus on:

- Making connections and improving bicycle facilities in urban areas where housing and employment mix.
- Reducing barriers to bicycling on higher speed, higher volume arterials.
- Improving and increasing connected, separated paths and trails.
- Increasing information about bicycle laws in Washington.
- Increasing how-to type training, and teaching safe cycling in Washington.

## Priority Level Four

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### **Safer Work Zones**

Between 2006 and 2008, 21 traffic fatalities (1.2%) occurred in work zones. With regards to work zones on state routes, Washington State is continuing to improve work zone operations and driver behavior in work zones through training, education, and enforcement.

WSDOT is currently providing its employees training to help increase safety and mobility through the design and implementation of work zones. The agency is also updating guidance documents to reflect new federal rules on work zone safety and changes in WSDOT work zone policy, and has recently completed a work zone self-assessment with the Federal Highway Administration (FHWA). WSDOT is also promoting the use of barriers for separating workers from traffic, as well as new work zone safety related devices and technology, such as camera enforcement. WSDOT has also adopted a new work zone speed limit reduction policy.

### **Wildlife Collisions**

Wildlife collisions accounted for nine fatalities (0.5%) between 2006-2008. To address this, Washington State will integrate safety elements during project scoping and development, designed to prevent wildlife-vehicle crashes.

### **Vehicle-Train Collisions**

Vehicle-train crashes accounted for eight fatalities between 2006 and 2008, or 0.5% of the total. 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 intersections.

### **School Bus-Related Collisions**

School bus travel remains the safest way to send children to school and Washington State will continue to ensure that 100% of school buses receive safety inspections and school bus drivers receive training in vehicle dynamics, precision driving skills, obstacle avoidance, and evasive maneuvers. Most of the fatalities involving school buses have been occupants of other vehicles or non-motorists. Only one school-bus occupant was killed in a collision between 1994 and 2008, a school-bus driver in 1996.

## Appendix A: Abbreviations and Acronyms

AAA	American Automobile Assosiation	NATEO	Northwest Association of Tribal Enforcement Officers
AASHTO	American Association of State Highway and Transportation Officials	NASCIO	National Association of State Chief Information Officers
BAC	Blood Alcohol Concentration	NCHRP	National Cooperative Highway Research Program
BIA	Bureau of Indian Affairs	NHTSA	National Highway Traffic Safety Administration
CEDDS	Coded Emergency Department Data Information System	NTSBE	Nighttime Seat Belt Project Enforcement
CHARS	Comprehensive Hospital Abstract Reporting System	OTEP	Ongoing Training and Evaluation Programs
CIOT	Click It or Ticket	PSA	Public Service Announcement
CLAS	Collision Locations and Analysis System	PTCR	Police Traffic Collision Report
CMV	Commercial Motor Vehicle	SAFETEA-LU	Safe, Accountable, Flexible, Efficient, Transportation Equity Act – A legacy for Users
CVSA	Commercial Vehicle Safety Alliance	SECTOR	Statewide Electronic Collision and Ticket Online Records
DEC	Drug Evaluation and Drug Detection	SFST	Statewide Field Sobriety Test
DJS	Driver Training School	SHSP	Strategic Highway Safety Plan
DOL	WA State Department of Licensing	TACT	Ticketing Aggressive Cars and Trucks
DRE	Drug Recognition Expert	TRB	Transportation Research Board
DSHS	Washington State Department of Social and Health Services	TRC	Traffic Records Committee
DTS	Driver Training School	USDOT	United States Department of Transportation
DUI	Driving Under the Influence (alcohol/ drugs)	VMT	Vehicle Miles Traveled
DWI	Driving While Intoxicated	WAC	Washington Administrative Code
EDRS	Electronic Death Registration System	Wa-Trans	Washington State Transportation Framework
EMS	Emergency Medical Services	WEMSIS	Washington Emergency Medical Services Information System
EMSTC	Emergency Medical Services and Trauma Care	WSDOT	Washington State Department of Transportation
e-TRIP	Electronic Traffic Information Processing	WSP	Washington State Patrol
FARS	Fatality Analysis Reporting System	WSSRC	Washington State Safety Restraint Coalition
FHWA	Federal Highway Administration	WTSC	Washington Traffic Safety Commission
GIS	Geographic Information Systems		
GMAP	Government Management Accountability and Performance		
GPS	Global Positioning System		
IDL	Intermediate Drivers License		
JINDEX	Justice Information Network Data Exchange		
JIS	Judicial Information System		

## Appendix B: Definitions

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### **Alcohol-impaired driver**

Any driver with a BAC of .08 or higher.

### **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 0.08 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**

The 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.

### **Serious 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.

### **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."

### **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.

### **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. More information is available on page 85.

### **Fatality Rate**

Number of deaths resulting from reportable collisions for a specified segment of public roadway per 100 million vehicle miles of travel or per 100,000 people.

### **Government Management, Accountability and Performance System (GMAP)**

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.

[www.accountability.wa.gov/](http://www.accountability.wa.gov/)



## Appendix B: Definitions

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### **Impaired driver**

Any driver with a BAC of .08 or greater and/or any driver with a positive result on a drug test.

### **Impairment related collision**

Any driver, pedestrian, cyclists, etc with a BAC of .08 or greater and/or a positive result on a drug test.

### **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. Bicyclists, tricyclists, and unicyclists 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.

### **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.

### **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). More information on page 85.

### **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).

## Appendix C: Additional Resources

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### Impairment

NCHRP Report 500, Volume 16: A Guide for Reducing Alcohol-Related Collisions. (2005)  
[onlinepubs.trb.org/onlinepubs/nchrp/nchrp\\_rpt\\_500v16.pdf](http://onlinepubs.trb.org/onlinepubs/nchrp/nchrp_rpt_500v16.pdf)

National Highway Traffic Safety Administration, National Criminal Justice Association (NCJA), Criminal Justice Leadership Meeting, Traffic Safety Today, Final Report, December 2003.

[www.nhtsa.dot.gov/people/injury/enforce/TrafficSafetyToday/index.html](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.

National Traffic Safety Board, Most Wanted Transportation Safety Improvements, Eliminate Hard Core Drinking Driver.

[www.nts.gov/recs/mostwanted/hard\\_core\\_drinking.htm](http://www.nts.gov/recs/mostwanted/hard_core_drinking.htm)

National Highway Traffic Safety Administration, Strategies for Addressing the DWI Offender: 10 Promising Sentencing Practices. 2004

[www.nhtsa.gov/people/injury/enforce/PromisingSentence/pages/](http://www.nhtsa.gov/people/injury/enforce/PromisingSentence/pages/)

Countermeasures that Work, The Fifth Edition, 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.

[www.nhtsa.gov/staticfiles/nti/enforcement/pdf/Countermeasures\\_HS811258.pdf](http://www.nhtsa.gov/staticfiles/nti/enforcement/pdf/Countermeasures_HS811258.pdf)

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

[www.nhtsa.gov/people/injury/alcohol/EmergCare/toc.htm](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  
[www.wa.gov/wtsc/programs/impaired.htm](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.

[64.26.129.106/DWI\\_systemImprovements/documents/TIRFBooklet\\_000.pdf](http://64.26.129.106/DWI_systemImprovements/documents/TIRFBooklet_000.pdf)

Strategies for Addressing the DWI Offender: 10 Promising Sentencing Practices, National Highway Traffic Safety Administration, DOT HS 809 850, March 2005,

[www.nhtsa.dot.gov/people/injury/enforce/PromisingSentence/pages/](http://www.nhtsa.dot.gov/people/injury/enforce/PromisingSentence/pages/)

### Speeding

National Highway Traffic Safety Administration, "Speed Management Strategic Initiative," September 2005, DOT HS 809 924.

[www.nhtsa.dot.gov/people/injury/enforce/SpeedManagementcontent/index.html](http://www.nhtsa.dot.gov/people/injury/enforce/SpeedManagementcontent/index.html)

NCHRP Report 500, Volume 23: A Guide for Reducing Speeding-Related Crashes

[onlinepubs.trb.org/onlinepubs/nchrp/nchrp\\_rpt\\_500v23.pdf](http://onlinepubs.trb.org/onlinepubs/nchrp/nchrp_rpt_500v23.pdf)

### Run-Off-the-Road Collision Resources

NCHRP Report 500, Volume 6, A Guide for Addressing Run-Off-Road Collisions, addresses many of these strategies in detail.

[safety.transportation.org/guides.aspx?cid=27](http://safety.transportation.org/guides.aspx?cid=27)

## Appendix C: Additional Resources

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NCHRP Report 500, Volume 3, A Guide for Addressing Trees in Hazardous Locations, addresses many of these strategies in detail. [safety.transportation.org/guides.aspx?cid=24](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. [safety.transportation.org/guides.aspx?cid=31](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/defaultfile/LowCostLocalRoads.pdf>

### Young Driver Safety Resources

Countermeasures that Work, The Fifth Edition, 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. [www.nhtsa.gov/staticfiles/nti/enforcement/pdf/Countermeasures\\_HS811258.pdf](http://www.nhtsa.gov/staticfiles/nti/enforcement/pdf/Countermeasures_HS811258.pdf)

Healthy States, Council of State Governments (CSG) Initiative, Graduated Driver Licensing Tool Kit, 2007. [www.healthystates.csg.org/NR/rdonlyres/72C6F412-47D3-4433-BA2A-3F72C0B4C885/0/gdltoolkit.pdf](http://www.healthystates.csg.org/NR/rdonlyres/72C6F412-47D3-4433-BA2A-3F72C0B4C885/0/gdltoolkit.pdf)

Centers For Disease Control and Prevention – Motor Vehicle Safety, Teen Driver Information [www.cdc.gov/Motorvehiclesafety/Teen\\_Drivers/index-fs.html](http://www.cdc.gov/Motorvehiclesafety/Teen_Drivers/index-fs.html)

Insurance Institute for Highway Safety [www.iihs.org/research/topics/teenagers.html](http://www.iihs.org/research/topics/teenagers.html)

Williams, A. F. (2003). Teenage drivers: patterns of risk. *Journal of Safety Research*, 34, 5-15.

Williams, A. F., Ferguson, S. A., & McCartt, A. T. (2007). Passenger effects on teenage driving and opportunities for reducing the risks of such travel. *Journal of Safety Research*, 38, 381-390.

### Unrestrained Vehicle Occupants

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

Countermeasures that Work, The Fifth Edition, 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. [www.nhtsa.gov/staticfiles/nti/enforcement/pdf/Countermeasures\\_HS811258.pdf](http://www.nhtsa.gov/staticfiles/nti/enforcement/pdf/Countermeasures_HS811258.pdf)

National Center for Injury Prevention and Control. Community-Based Interventions to Reduce Motor Vehicle-Related Injuries: Evidence of Effectiveness from Systematic Reviews.

National Safe Kids Campaign, Report to the Nation: Trends in Unintentional Childhood Injury Mortality, 1987-2000 (May 2003) [www.safekids.org/assets/docs/ourwork/research/research-report-safe-kids-week-2003.pdf](http://www.safekids.org/assets/docs/ourwork/research/research-report-safe-kids-week-2003.pdf)

RCW 46.61.687 (child car seat law)  
RCW 46.61.688 (seat belt law)

### Distracted Driver Resources

NCHRP Report 500, Volume 14: A Guide for Reducing Crashes Involving Drowsy and Distracted Drivers. [onlinepubs.trb.org/onlinepubs/nchrp/nchrp\\_rpt\\_500v14.pdf](http://onlinepubs.trb.org/onlinepubs/nchrp/nchrp_rpt_500v14.pdf)

Countermeasures that Work, The Fifth Edition, A Highway Safety Countermeasure Guide for State Highway Safety Offices by the Governors Highway Safety Association for the National Highway Traffic Safety Administration

## Appendix C: Additional Resources

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and the U.S. Department of Transportation.  
[www.nhtsa.gov/staticfiles/nti/enforcement/pdf/Countermeasures\\_HS811258.pdf](http://www.nhtsa.gov/staticfiles/nti/enforcement/pdf/Countermeasures_HS811258.pdf)

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CTIA – The Wireless Association. Wireless quick facts, 2009. Accessed April 9, 2010 at  
[www.ctia.org/advocacy/research/index.cfm/AID/10323](http://www.ctia.org/advocacy/research/index.cfm/AID/10323).

Jacobson, P.D., Gostin, L.O. Reducing Distracted Driving Regulation and Education to Avert Traffic Injuries and Fatalities. *JAMA*. 2010;303(14):1419-1420.

Klauer, S. G., Dingus, T. A., Neale, V. L., Sudweeks, J. D., & Ramsey, D. J. (2006). The impact of driver inattention on near-crash/crash risk: An analysis using the 100-car naturalistic driving study data. DOT HS 810 594. Washington, DC: National Highway Traffic Safety Administration.

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### Unlicensed Driver Resources

NCHRP Report 500 Volume 2  
[safety.transportation.org/doc/1P%20Unlicensed%20Drivers.pdf](http://safety.transportation.org/doc/1P%20Unlicensed%20Drivers.pdf)

### Intersections Resources

NCHRP Report 500, Volume 12, A Guide for Addressing Collisions at Signalized Intersections, addresses many of these strategies in detail.  
[safety.transportation.org/guides.aspx?cid=33](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.  
[safety.transportation.org/guides.aspx?cid=26](http://safety.transportation.org/guides.aspx?cid=26)

### Data Systems Resources

National Highway Traffic Safety Administration, Traffic Records, A Highway Safety Program Advisory.  
[www.nhtsa.gov/people/perform/pdfs/Advisory.pdf](http://www.nhtsa.gov/people/perform/pdfs/Advisory.pdf)

National Highway Traffic Safety Administration, Initiatives to Address Improvements of Traffic Safety Data July 2004.  
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Washington Traffic Safety Commission, Washington Traffic Records Committee Resource Manual. July 2004.  
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National Safety Council, A National Agenda for the Improvement of Highway Safety Information Systems. 1997.

MMUCC Guideline: Model Minimum Uniform Crash Criteria, 3rd Edition (2008).  
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National Highway Traffic Safety Administration Technical Assessment Team. State of Washington Traffic Records Assessment. January 2004.

## Appendix C: Additional Resources

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Washington Traffic Records Strategic Plan. Available at:  
[www.trafficrecords.wa.gov/AboutTRC/Docs/trc\\_docs/traffic\\_records\\_strategic\\_plan.pdf](http://www.trafficrecords.wa.gov/AboutTRC/Docs/trc_docs/traffic_records_strategic_plan.pdf)

### Opposite-Direction Multi-Vehicle Collision Resources

NCHRP Report 500, Volume 4, A Guide for Addressing Head-On Collisions, discusses many of these strategies in detail.

[safety.transportation.org/guides.aspx?cid=25](http://safety.transportation.org/guides.aspx?cid=25)

### Motorcycle Safety Resources

Countermeasures that Work, The Fifth Edition, 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.

[www.nhtsa.gov/staticfiles/nti/enforcement/pdf/Countermeasures\\_HS811258.pdf](http://www.nhtsa.gov/staticfiles/nti/enforcement/pdf/Countermeasures_HS811258.pdf)

“Promising Practices in Motorcycle Rider Education and Licensing,” National Highway

Traffic Safety Administration (NHTSA), DOT HS 809 852, July 2005

[www.nhtsa.dot.gov/people/injury/pedbimot/motorcycle/MotorcycleRider/](http://www.nhtsa.dot.gov/people/injury/pedbimot/motorcycle/MotorcycleRider/)

### Pedestrian Safety Resources

Administration on Aging, “Profile of Older Americans,” 2008

[www.aoa.gov/AoARoot/Aging\\_Statistics/Profile/index.aspx](http://www.aoa.gov/AoARoot/Aging_Statistics/Profile/index.aspx)

Anderson, R.W.G., McLean, A.J., Farmer, M.J.B., Lee,

B.H., and Brooks, G.B. Vehicle travel speeds and the incidence of fatal pedestrian crashes. *Accident Analysis and Prevention*, 29(5), pp. 667-674, 1997.

NCHRP Report 500, Volume 10: A Guide for Reducing Collisions Involving Pedestrians discusses many of these strategies in detail.

[onlinepubs.trb.org/onlinepubs/nchrp/nchrp\\_rpt\\_500v10.pdf](http://onlinepubs.trb.org/onlinepubs/nchrp/nchrp_rpt_500v10.pdf)

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

### 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.

[safety.transportation.org/guides.aspx?cid=34](http://safety.transportation.org/guides.aspx?cid=34)

### 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.

## Appendix D: Methodologies

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### Fatality and Serious Injury Rates

Fatality and serious injury rates are the number of fatalities or serious injuries in each category per 100 million vehicle miles traveled except for motorcyclist and pedestrian rates. The numerator, number of fatalities, is from FARS or the WSDOT Collision Database (see p. 85 for more information). The denominator, annual vehicle miles traveled, is from vehicle travel estimates developed by WSDOT.

Motorcyclist fatality and serious injury rates are the number of motorcyclist fatalities or serious injuries per 10,000 registered motorcycles. The numerator, number of motorcyclist fatalities, is from FARS and motorcyclist serious injuries from the WSDOT Collision Database. The denominator, registered motorcycles, is from vehicle and vessel statistics produced by DOL.

Pedestrian fatality and serious injury rates are the number of fatalities or serious injuries in each category per 100,000 persons in Washington. The numerator, number of fatalities, is from FARS or the WSDOT Collision Database. The denominator, statewide population estimate, is from population estimates developed by the Office of Financial Management (OFM).

Age- and race/ethnicity-specific fatality and serious injury rates are the number of fatalities or serious injuries in each category per 100,000 persons in Washington. The numerator, depending on whether the data is focused on number of fatalities or serious injuries, is from FARS or WSDOT. The denominator, statewide population estimate, is from population estimates developed by OFM.

### Fatality and Serious Injury Forecasts

Target Zero data analysts produced forecasts for measures in priorities one through three to aid strategic planning and short-term goal setting. Analysts used Holt's Method for fatalities and simple linear regression for serious injuries. Both of these forecasting techniques operate under the assumption that conditions in the past will continue to operate in the future. Therefore, current trends in fatalities and serious injuries give us an idea about predicted numbers and what we can expect to see in the future.

### Fatality Forecasts

Also known as linear exponential smoothing, Holt's Method is an extension of the single exponential smoothing forecasting method. It "smoothes" past fluctuations and extrapolates into the future for forecasts. The method gives more weight to most recent observations and less weight to older observations. In other words, the number of fatalities predicted next year depends more upon the number of fatalities last year than from 5 years ago (Chatfield 2001; Holt 2003; Hyndman 2008; McAllister 2002).

Fatality forecasts were generated using the ESM producer in SAS/STAT® software, Version 9.2 (SAS Institute Inc., Cary, NC). Fatal crash dates from 1999 to 2008 were modeled using the ESM procedure. The linear model option was specified and total fatalities were accumulated on yearly intervals. The resulting model then predicted the number of fatalities from 2009 to 2014 and calculated 95% confidence limits for each prediction. Forecasts were output by using the Output Delivery System (ODS) and graphed using Microsoft® Office Excel 2003.

### Serious Injury Forecasts

Due to a limited number of years of serious injury data, analysts were unable to use Holt's method to produce serious injury forecast numbers (Holt's Method requires at least 10 years of data points). Instead, analysts used linear regression to project serious injuries to 2011. Linear regression generally performs better than other projection methods when given a smaller number of data points to work with, but the more distant the projection, the less accurate the prediction. As the result of these limitations, this method was not considered to be reliable in long-range projections to 2030.

Ordinary Least Squares Method (OLS) was used to estimate coefficients and the measures of fit of the linear trend model. A predicted forecast range for serious injuries from 2009 to 2011 was then calculated using a standard error of estimate (the STEYX formula in Excel) at a 68% confidence for each prediction. Forecasts were created and graphed using Microsoft® Office Excel 2007.

## Appendix D: Methodologies

### Forecasting limitations

The Holt and linear regression methods used in this report extrapolated historical data to produce the forecast. Extrapolative methods of forecasting assume that safety initiatives will continue to be introduced at a similar rate and with similar effectiveness as in the past. Known and unknown external factors including more rapid introduction of safety measures, accelerated application of existing initiatives, changing enforcement tactics or substantial decreases in vehicle travel may result in fatality numbers below those forecasted.

### Trend Line to Reach Target Zero in 2030

The trend line to reach Target Zero in 2030 represents the overall trend change needed to achieve 0 fatalities in 2030. Analysts established this line by calculating the slope of the line segment between the predicted number of fatalities in 2008 and 0 fatalities in 2030. The slope of the line equals the overall fatality decrease needed each year to reach Target Zero in 2030.

$$\text{slope} = \frac{(0 - \text{number of predicted fatalities in 2008})}{2030 - 2008}$$

The number of fatalities to reach Target Zero in 2030 was then computed by the slope-intercept equation,  $y = mx + b$ , with a slope of  $m$  and a  $y$ -intercept of  $b$ . Thus, the following equation yields the number of fatalities in a given year,  $i$ , needed to reach 0 fatalities in 2030:

$$\text{TZ fatalities in year}_i = (\text{slope} \times (\text{year}_i - 2008)) + \text{number of predicted fatalities in 2008}$$

### Fatality Goals

When fatality trends were flat, or decreasing at a rate less than the “zero-in-2030” line, Washington set goals for halfway between the predicted value for each year and the “zero-in-2030” value. In instances where fatality trends are meeting or exceeding the “zero-in-2030” trend (such as Drivers age 16-20 and unrestrained vehicle occupants), goals were set to match the current trend line. Finally, in the one instance where

the trend is going in the wrong direction (motorcyclists) goals were set to match the “zero-in-2030” values.

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- Gottlieb S, Arenberg S, Singh R. (1998) *Crime Analysis: From First Report to Final Arrest*. Alpha Publishing, CA.
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## Appendix E: Data Sources for Target Zero

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### The Fatality Analysis Reporting System (FARS)

The Fatality Analysis Reporting System (FARS) is a nationwide database that characterizes the crash, the vehicles, and the people involved in each fatal crash reported. FARS contains more than 100 coded data elements that are collected from official documents, including Police Traffic Crash Reports, State Driver Licensing & Vehicle Registration Files, Death Certificates, Toxicology Reports, and Emergency Medical Services Reports. To be included in FARS, a crash must involve a motor vehicle traveling on a traffic way customarily open to the public and result in the death of a person (either an occupant of a vehicle or a non-motorist) within 30 days of the crash. The Washington Traffic Safety Commission contracts with NHTSA to provide FARS for Washington State.

### Collision Location & Analysis System (CLAS)

The collision data repository, otherwise known as the Collision Location & Analysis System (CLAS), is housed at the Washington State Department of Transportation. The source for CLAS collision data is either from law enforcement officers via the Police Traffic Collision Report or citizens via the Vehicle Collision Report, with an approximate split of 90%/10% submitted reports, respectively. CLAS stores all reportable traffic collision data for Washington State public roadways. A collision needs to meet at least one of the two following criteria to be considered as a “reportable” collision thereby making the collision record available to customers: 1) a minimum property damage threshold of \$700, and/or 2) bodily injury occurred as a result of the collision.

Within *Target Zero*, CLAS collision data was used for counts of seriously injured people. However, there are three sections within *Target Zero* that also used CLAS collision data for counts of fatally injured people as well. Those section are as follows: 1) Opposite Direction Multi Vehicle Collisions, 2) Run-off-the-Road Collisions, and 3) Intersection Collisions. CLAS collision data will also be used during the Target Zero strategy evaluation phase.

### DOL Drivers Data Mart

Data used in this document from the Department of Licensing (DOL) was gathered from a database known as the DOL Drivers Data Mart. This data is updated daily from several sources that comprise the DOL driver records and stored in a SQL Server 2005 format. The Drivers Data Mart database is a replication of the DOL Driver database, which is the primary data store for the automated systems supporting the DOL Driver Division. Drivers Data Mart is in a relational format with friendly data names and additional indexes. The primary purpose of this database is to support ad-hoc queries. The database contains the complete driver records for all Washington drivers, which number slightly over 5 million as of January 2010.

### Population Data

Population estimates, including age-, gender-, and race/ethnicity-specific are from the Office of Financial Management (OFM). Population estimates used in this report are available electronically at <http://www.ofm.wa.gov/pop/default.asp>.

### Vehicle Miles Traveled (VMT) Database

VMT is a measure of the total number of miles traveled by all vehicles over a segment of road or a network of roads with known length over a specific period of time, either a day or a year. The WSDOT Transportation Data Office (TDO) collects and reports several different types of road and street data to the Federal Highway Performance Monitoring System (HPMS) each year. The TDO collects traffic data for state highways and relies on local jurisdictions to provide traffic data for their roads and streets.

VMT is calculated by multiplying (length of road segment) x (the Average Annual Daily Traffic [AADT] that traveled on that road segment). For example, a 15 mile road with 10,000 AADT would equate to 150,000 daily VMT or 54,750,000 annual VMT. The total VMT for a highway network or region is a summation of VMT for all segments of roads that make up the network or region. Statewide VMT is a summation of all segments of road statewide.



# Appendix F: FARS and CLAS Codes

## Data Included in the Target Zero Measures: Definitions and Codes

Measure	FARS Definition	FARS Codes	CLAS Definition	CLAS Codes
<b>Priority Level One</b>				
Drug and/or Alcohol Impaired Driver Involved	Fatality resulting from crash involving one or more drivers with a BAC of .08 or more or positive drug test result	if ((7<alc_res<95) or (99<drugres1<996) or (99<drugres2<996) or (99<drugres3<996)) then idi=1; *limited to drivers;	Serious injury resulting from crash with a driver contributing circumstance 1--3 of alcohol, drugs, or medication.	If Motor Vehicle Driver and Contributing Circumstance 1,2 or 3 is "Under Influence of Alcohol", "Under Influence of Drugs", "Had taken Medication"
Drug Impaired Driver Involved	Fatality resulting from crash involving one or more drivers with a positive drug test result	if (((99<drugres1<996) or (99<drugres2<996) or (99<drugres3<996))) then drug-imp=1; *limited to drivers;	Serious injury resulting from crash with a driver contributing circumstance 1--3 of drugs or medication.	If Motor Vehicle Driver and Contributing Circumstance 1,2 or 3 is "Under Influence of Drugs", "Had taken Medication"
Alcohol Impaired Driver Involved	Fatality resulting from a crash involving one or more drivers with a BAC of .08 or more.	if (7<alc_res<95) then alc_imp=1;	Serious injury resulting from crash involving one or more drivers with contributing circumstance 1--3 of alcohol.	If Motor Vehicle Driver and Contributing Circumstance 1,2 or 3 is "Under Influence of Alcohol"
Drinking Driver Involved	Fatality resulting from crash involving one or more drivers with positive BAC or police reported alcohol involvement	if (alcohol=1 or (0<alc_res<95)) then ddi=1; *limited to drivers;	Serious injury resulting from crash involving one or more drivers with positive BAC or police reported alcohol involvement	If Motor Vehicle Driver and ((Contributing Circumstance 1,2 or 3 is "Under Influence of Alcohol", "Under Influence of Drugs", "Had taken Medication") or (Sobriety Level is "Had Been Drinking-Ability Impaired", "Had Been Drinking-Ability Unknown", "Had Been Drinking-Ability Not Impaired"))
Run-Off-The-Road	FARS Data Not Used	FARS Data Not Used	First collision occurring outside the travelled way.	if (first_collision_type_code in(32 50 51 52) and object_struck in(22 25 26 27 28 40 49 52 53 54 55 60 62 67 79 80 81 82) ; check 49, 52, 53, 67
Speeding	Crash involving a driver going too fast for conditions or exceeding the posted speed limit.	1993-2007: if (dr_cf1=44 or dr_cf2=44 or dr_cf3=44 or dr_cf4=44) then speed=1;  2008: if (43<=dr_cf1<=44 or 43<=dr_cf2<=44 or 43<=dr_cf3<=44 or 43<=dr_cf4<=44) then speed=1;  2009: if speed_related=1 then speed =1	Crash involving a driver going too fast for conditions or exceeding the posted speed limit.	If Motor Vehicle Driver and Contributing Circumstance 1,2 or 3 is "Exceeding Stated Speed Limit", "Exceeding Reasonable and Safe Speed"

Source: WTSC's FARS database, WSDOT's CLAS database

# Appendix F: FARS and CLAS Codes

## Data Included in the Target Zero Measures: Definitions and Codes

Measure	FARS Definition	FARS Codes	CLAS Definition	CLAS Codes
<b>Priority Level Two</b>				
Young Drivers	Drivers between 16 and 25 years old involved in fatal crash	if (per_typ=1 and 16<=age<=25) then yngdrv=1;	Drivers between 16 and 25 years old involved in serious injury crash	if (involve_person_type='MV Driver' and 16<=age<=25)
Drivers 21-25	Drivers between 21 and 25 years old involved in fatal crash	if (per_typ=1 and 21<=age<=25) then yngdrv=1;	Drivers between 21 and 25 years old involved in serious injury crash	if (involve_person_type='MV Driver' and 21<=age<=25)
Drivers 16-20	Drivers age 20 or younger involved in fatal crashes.	if (per_typ=1 and 16<=age<=20 then dr20=1;	Drivers age 20 or younger involved in serious injury crashes.	if (involve_person_type='MV Driver' and age<=20)
Distracted	Driver with an officer-reported contributing circumstance of Inattentive/ Careless (Talking, Eating, Car Phones, etc.)	if (dr_cf1 in(3 6 94) or dr_cf2 in(3 6 94) dr_cf3 in(3 6 94) or dr_cf4 in(3 6 94)) then inatfn=1; *limited to drivers;	Driver with an officer reported contributing circumstance in the crash of inattentive or one or more driver distraction codes.	if (cc1=23 or cc2=23 or cc3=23 or 40<=cc1<=50 or 40<=cc2<=50 or 40<=cc3<=50) then inatt=1;
Unrestrained Passenger Vehicle Occupant	Occupant of a passenger vehicle either not using or improperly using a seat belt, child safety seat, booster seat	if (0<body_typ<=49 and per_type in(1 2 9) and rest_use in(0 13 14));	Occupant of a passenger vehicle not using a seat belt, child safety seat, booster seat	if (vehicle_type in(1 2) and restraint_type=1);
Intersection Related	FARS data not used	FARS data not used	Intersection related	if junction_relationship_code in('1' '2' '6' 'A' 'B' 'C' 'E' 'F') then intersect=1;
<b>Priority Level Three</b>				
Opposite direction multi-vehicle collisions	FARS data not used	FARS data not used	Fatal and Serious injuries resulting from opposite direction vehicle crashes, excluding intersection related crashes	if (first_collision_type_code in(24 25 26 27 30) and junction_relationship_code ^in('1' '3' '6' 'A' 'B' 'C' 'D'));
Motorcyclist	Number of motorcyclist fatalities; (excludes scooters/mopeds)	if body_typ in(80 82 83)	Number of motorcyclist serious injuries	if vehicle_type=12
Pedestrian*	Number of pedestrian fatalities	if per_typ in(5 8) ;	Number of pedestrian serious injuries	if involved_person_type='Pedestrian';
Unendorsed Motorcycle Operator	Motorcycle operator without license for class of vehicle or an invalid non-commercial license status	if (body_typ in(80 82 83) and per_type=1) then do; if (l_comp=1 or (l_comp=3 and l_status in(5 6 7 8))) then lic=1; *proper; else if (l_comp=9 or l_status=9) then lic=3; *unknown; else lic=2; *improper; end;	CLAS Database Not Used	CLAS Database Not Used
Unhelmeted Motorcyclist	Motorcycle operator or passenger fatality not using a helmet.	if (body_typ in(80 82 83) and per_type=1 and rest_use=0);	Motorcycle operator or passenger serious injury not using a helmet.	if helmet_usage=2;
Heavy Truck	Crash involving a vehicle greater than 10,000 lbs. except buses & motorhomes.	if (body_typ in(60 61 62 63 64 66 67 68 69 70 71 72 74 75 76 77 78)) then hti=1;	Crash involving a vehicle greater than 10,000 lbs.	if (vehicle_type_code in(4 5 6 7) or vehicle_usage in(21 28 29 30 31 32 33 34));

Source: WTSC's FARS database, WSDOT's CLAS database

# Appendix F: FARS and CLAS Codes

## Data Included in the Target Zero Measures: Definitions and Codes

Measure	FARS Definition	FARS Codes	CLAS Definition	CLAS Codes
<b>Priority Level Four</b>				
Older Drivers 75+	Fatalities resulting from crash involving driver age 75 or older	if per_typ=1 and 70<=age<=97	Serious injuries resulting from crash involving driver age 75 or older	if (involved_person_type="MV Driver" and age>=75;
Drowsy	Driver with an officer reported contributing circumstance in the crash of apparently asleep or apparently fatigued	if (dr_cf1=1 or dr_cf2=1 or dr_cf3=1 or dr_cf4=1) then drowsy=1; *limited to drivers;	Driver with an officer reported contributing circumstance in the crash of apparently asleep or apparently fatigued	if (cc1 in(14 32) or cc2 in(14 32) or cc3 in(14 32)) then drowsy=1;
Bicyclist	Unicyclist, bicyclist, or tricyclist fatality involving motor vehicle.	if per_typ in(6 7);	Seriously injured unicyclist, bicyclist, or tricyclist involving a motor vehicle.	if involved_person_type in('Pedcyc Driver' 'Pedcyc Passenger') ';
Work Zone	Fatalities occurring in construction or maintenance zone	if 1<c_m_zone<=4	Serious injuries occurring in construction or maintenance zone	if (1<=workzone_status_code <=5)
Wildlife	Fatalities caused by collisions with wildlife	if seq1=11;	Serious injuries occurring in construction or maintenance zone	if (1<=workzone_status_code <=5)
Vehicle-Train Involved	Fatalities caused by collisions with trains	if seq1=10;	Serious injuries cause by collision with train	if 40<=first_collision_type_code<=43
School Bus Related	Fatalities resulting from a crash involving a vehicle functioning as a school bus	if sch_bus=1;	Serious injuries resulting from a crash involving a school bus	if vehicle_type=11
Aggressive Drivers	Road Rage/Aggressive Driving (since 2004)	if (dr_cf1=8 or dr_cf2=8 or dr_cf3=8 or dr_cf4=8) then aggress=1; *limited to drivers	CLAS Database Not Used	CLAS Database Not Used
<b>Other Measures</b>				
Rural	Fatalities on rural roads	if 1<=road_fnc_class<=9;	Serious injuries on rural roads	
Urban	Fatalities on urban roads	if 11<=road_fnc_class<=19;	Serious injuries on urban roads	
Fatal Traffic Crash	Any motor vehicle crash entered into FARS.		Crash where most severe injury is 'Dead on Arrival', 'Dead at Scene', or 'Died at Hospital'	if 2<=most_severe_injury_type_code<=4
Serious Injury Crash	FARS data not used	FARS data not used	Crash where most severe injury is 'Serious Injury'	if most_severe_injury_type_code=5
Traffic Fatalities	A person who dies within 30 days of a motor vehicle crash as a result of injuries sustained in the crash.	if inj_sev=4;		if injury_type in('Dead at Scene' 'Dead on Arrival' 'Died at Hospital')
Serious Injuries	FARS data not used	FARS data not used		if injury_type='Serious Injury';

Source: WTSC's FARS database, WSDOT's CLAS database

# Washington State's Strategic Highway Safety Plan 2010

Zero Deaths | Zero Serious Injuries | 2030

