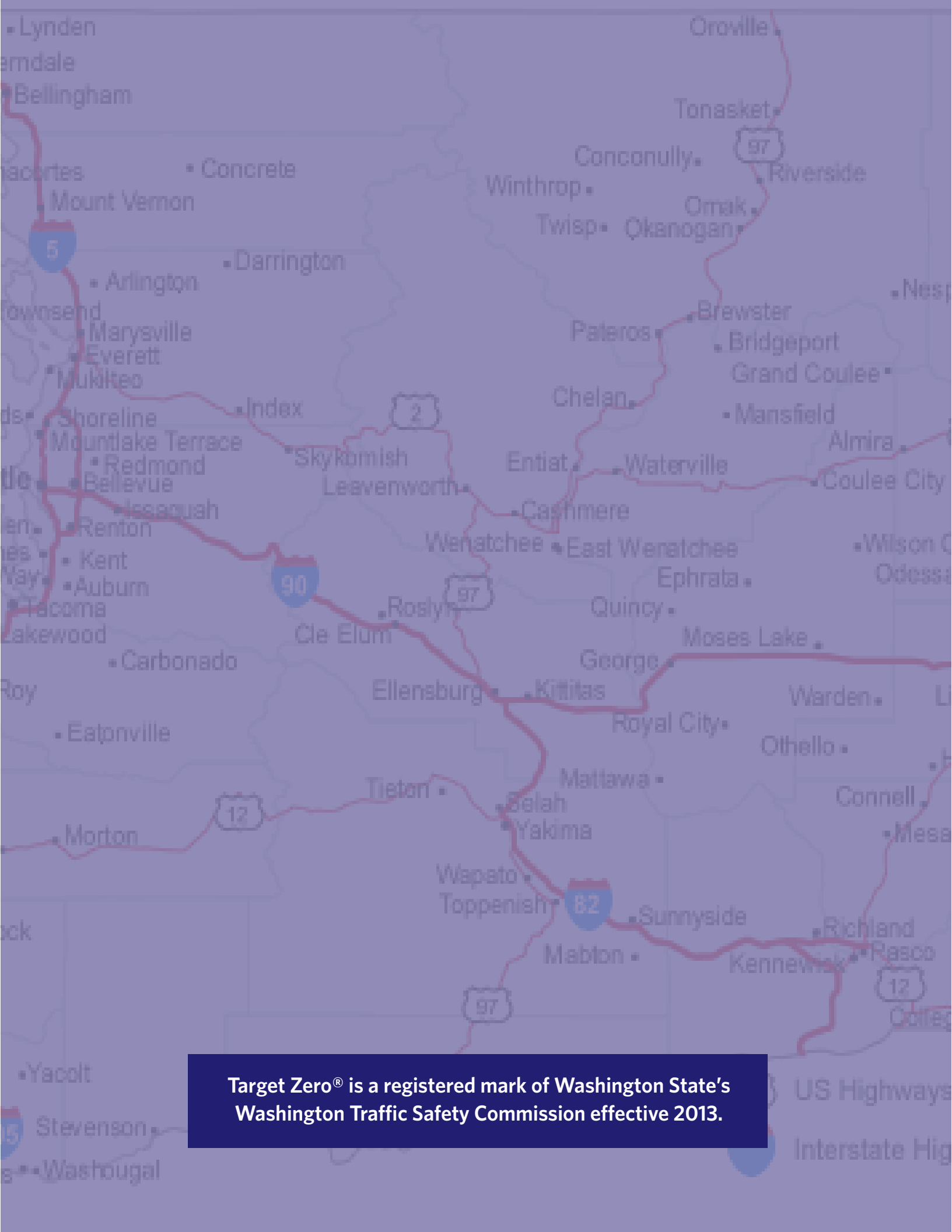
Washington State Strategic Highway Safety Plan

2013

Zero Deaths & Zero Serious Injuries by 2030

Target ZERO

Washington's Strategic Highway Safety Plan



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Governor's Letter

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Washington Traffic Safety Commissioners

Governor Jay Inslee • Commission Chair *Signature pending*

Lynn Peterson • Department of Transportation *Signature pending*

Chief John Batiste • Washington State Patrol *Signature pending*

Pat Kohler • Department of Licensing *Signature pending*

John Wiesman • Department of Health *Signature pending*

Judge James P Swanger • Clark County District Court *Signature pending*

Randy Dorn • Superintendent of Public Instruction *Signature pending*

Kevin Quigley • Department of Social and Health Services *Signature pending*

Sharon Dillon • Washington State Association of Counties *Signature pending*

Jon Snyder • Association of Washington Cities *Signature pending*

Darren Grondel • Director
Washington Traffic Safety Commission *Signature pending*

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Overview

Zero by 2030: Ambitious... yes! Doable... absolutely!

The federal Moving Ahead for Progress in the 21st Century Act (MAP-21), 23 USC 148, requires each state to have a Strategic Highway Safety Plan. This document meets that federal requirement for Washington State.

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About Target Zero®

Why a Goal of Zero?

The Target Zero plan reflects the collective, the "many." It is filled with data driven analysis, shining a light on the big picture of where our limited resources of time, talent and treasure will have the most impact.

But our goal – of zero deaths and serious injuries in 2030 – is about the "one"... the individual. It's about the Washington State Trooper struck by a truck. It's about the child who went through the front window of a car because she wasn't buckled in. It's about the recent high school graduate who left the road and hit a tree. It's about our colleagues, friends and family. How many of them are we okay with being killed or seriously injured in a crash? The answer is obvious: zero. So our goal, for every citizen in the State of Washington, is zero.

Ambitious...yes! Doable...absolutely! Look at the data in this plan and see the progress that's already been made, the areas that need more focus and our strategies for reaching zero deaths and serious injuries by 2030.

Target Zero is a high-level strategic plan which:

- *Sets state-wide priorities for all traffic safety partners*
- *Provides a resource for potential strategies to address each of the priority areas*
- *Monitors outcomes at a statewide level for each of the priority areas*

What is the Strategic Highway Safety Plan (SHSP)?

Each state must have a Strategic Highway Safety Plan and Washington's is called Target Zero. It is created through a collaboration of traffic safety professionals and activists from many different organizations and disciplines: engineers from WSDOT and local public works; Tribal and city police, county sheriffs' deputies, and troopers from State Patrol; medical professionals from hospitals and public health agencies; and other people from every corner of the state dedicated to making our roads safer.

Target Zero is a "practitioner's plan" intended to unite the contributing organizations as well as traffic safety organizations state-wide. The plan will help us coordinate traffic safety programs, better align priorities and strategies, and have a common language and approach to traffic safety efforts across Washington State. The plan is data driven, identifying the factors contributing to fatal and serious injury collisions on Washington roads, as well as listing proven and recommended strategies for reducing traffic deaths and serious injuries.

Target Zero is intended to be incorporated into the plans and programs of key state traffic safety agencies, as well as Tribes, cities, counties and private organizations. State agencies are required to follow Target Zero and it is strongly recommended for all other organizations and individuals involved in traffic safety.

The specific projects that implement Target Zero strategies and measures for their success are formulated in each organization. They are documented in agencies and organizations' strategic and operational plans throughout the state, wherever the strategies are being implemented. In the process of evaluating the effectiveness of Target Zero, scheduled to begin in 2014, there will be an examination of individual organizations' projects and their measures.

The first Target Zero plan was created in 2000. It set this ambitious goal and we have made significant progress. Since the 2007 revision we have seen positive trends in almost every area, with the strengthening of DUI laws, increased enforcement of impaired driving, improvements in automotive safety equipment, significant roadway/engineering improvements, and implementation of anti-texting and cell use laws.

We must do everything in our power to eliminate traffic deaths and serious injuries. However, if Washington State is to reach Target Zero by 2030, we must have help from others beyond our borders.

In the last several decades the auto industry has given us air bags, more crash resistant vehicles and roll-over protection technology. Organizations such as the National Comprehensive Highway Research Program, MADD, the United States Department of Transportation (USDOT), the Governor's Highway Safety Association, and the Insurance Institute for Highway Safety have provided tools to make our roads safer.

Reaching our Target Zero goal will only be accomplished through partnerships with those beyond our borders, leveraging their innovation, research and commitment to complement our state's efforts. Together we will realize zero traffic deaths and serious injuries by 2030.

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Executive Summary

The Target Zero vision is:
Washington State will reduce traffic fatalities and serious injuries to zero by 2030.

Every Person Counts

Each year from 2009 to 2011, an average of 469 people died and 2,421 people were seriously injured on Washington's roadways.

To achieve Target Zero, Washington State must have an average of 24 fewer fatalities and 120 fewer serious injuries each year. From 2002 through 2011, Washington averaged 22 fewer traffic fatalities and 80 fewer serious injuries each year. While this is a great achievement, it is not enough to reach the goal of zero fatalities and serious injuries by 2030. Even one traffic fatality or serious injury is one too many. We must do more.

Target Zero Goals

We have identified near-term goals to achieve Target Zero for fatalities and serious injuries, in total and for each priority area of the plan. To reach the goal of zero by 2030, we need to be aggressive, and strive to reach at least the minimum annual reductions to stay on track. In some areas Target Zero goals seem easy to achieve, and in others the goals are incredibly aggressive.

In every area, as we get closer to 2030, the later years of decline will be the most challenging, as the remaining fatalities and serious injuries will likely be occurring among the most high-risk populations. Therefore, setting these ambitious, but achievable, Target Zero goals is crucial to maintaining momentum toward achieving the vision of zero deaths and serious injuries by 2030.

MAP-21 requires that our Strategic Highway Safety Plan coordinates with the Commercial Vehicle Safety Plan and the Highway Safety Improvement Plan. The performance measures and targets in these three plans should be consistent, but do not necessarily have to be the same. The specific rules regarding these requirements are still uncertain and as of the publishing of Target Zero 2013, not all the information needed was available. Once federal rulemaking is complete we will review Target Zero near-term goals and may adjust or update the Target Zero Plan.

National and Statewide Trends

For the past couple of years, national traffic safety trends have shown significant improvement. Figures from the National Highway Traffic Safety Administration (NHTSA) show 29,757 people died in U.S. motor vehicle crashes in 2011, down 2% from 2010.

Washington State fatalities are also dropping, down 1.3% from 2010 to 2011 (from 460 to 454), with preliminary figures for 2012 showing another 3.79% decline in fatalities. Although far too many people are still dying on U.S. and Washington State roads, these recent drops are encouraging. The improvements made over time are particularly telling in the chart on page 4.

In 2010, Washington had the 4th lowest traffic fatality rate in the nation, up from #11 in 2005.

Throughout the Target Zero Plan, traffic fatality and serious injury data are presented for each priority emphasis area. Fatalities are represented with the color green and serious injuries with purple.

The fatality and serious injury graphs throughout this plan display five-year and ten-year trend lines, and the Target Zero line. The Target Zero line is where we need to be to achieve our vision of zero deaths by 2030. Many of the five-year trends show an impressive decline. However, most ten-year trends show we must push harder in order to reach zero fatalities and serious injuries by 2030. The area between the ten-year trend and the Target Zero line is our "Performance Gap" (shaded in light orange) and shows the improvement needed to achieve Target Zero.

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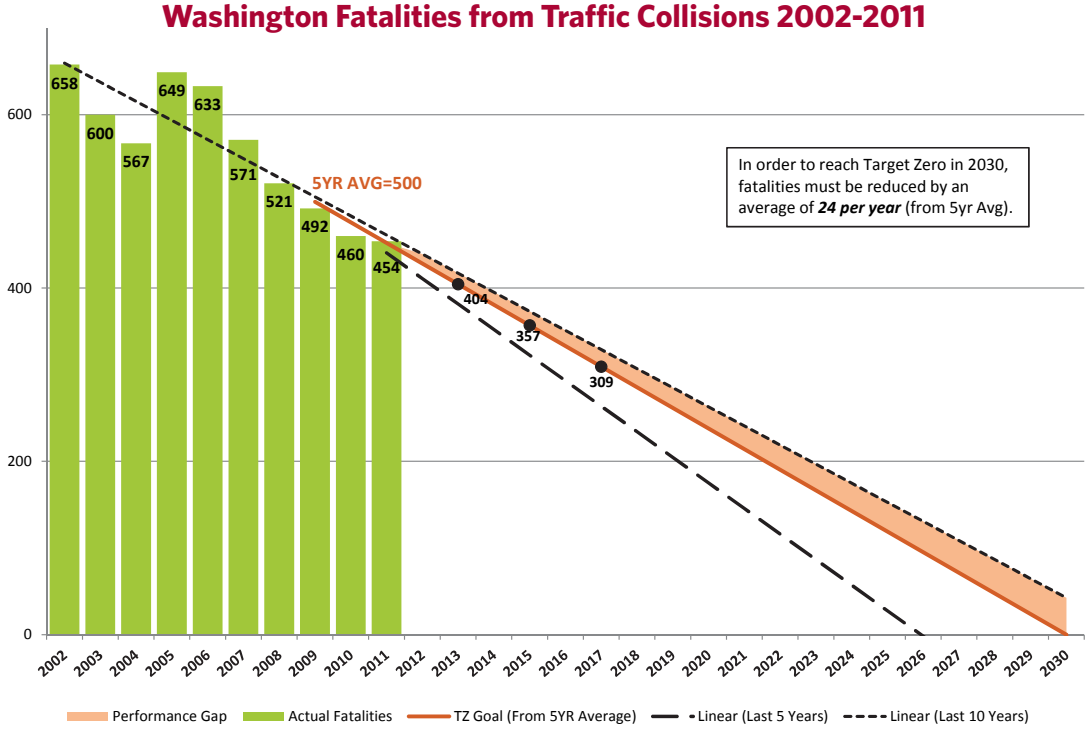
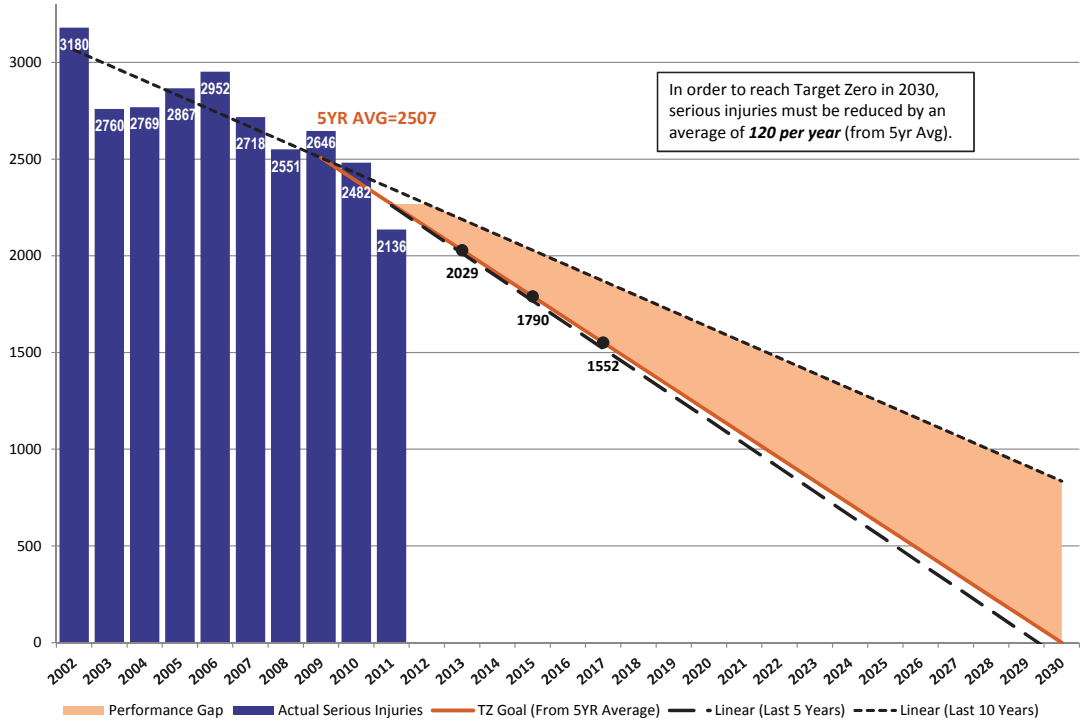
Washington Fatalities from Traffic Collisions 2002-2011



Washington Serious Injuries from Traffic Collisions 2002-2011



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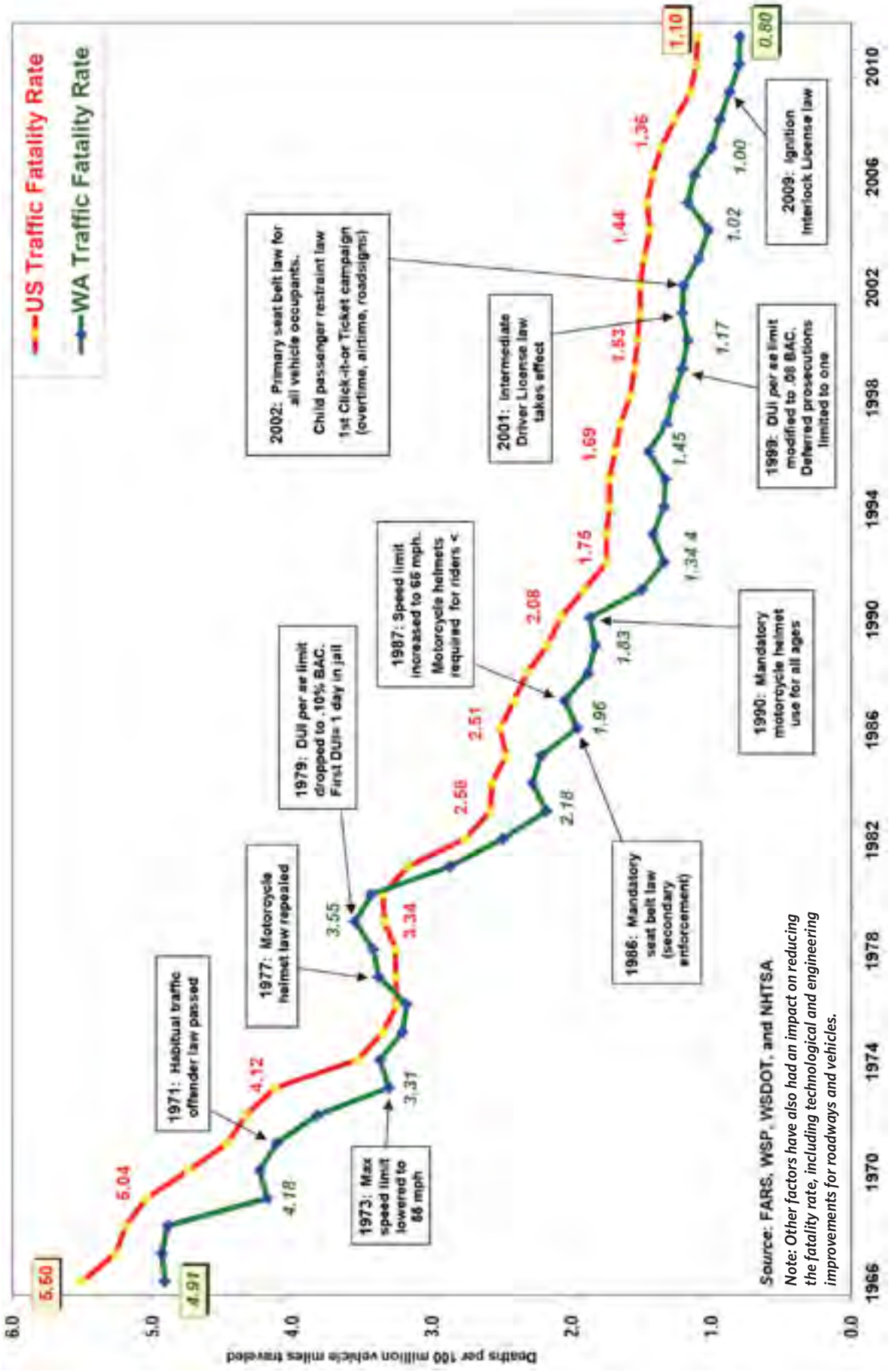
Key Washington State Traffic Safety Laws and Policies Impacting Traffic Fatality Rates, 1966 - 2011

Traffic fatalities per 100 million VMT



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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. Washington State's traffic safety partners have worked in close collaboration to bring about the changes that contributed to our state's record low 2011 traffic fatality rate.

However, we also acknowledge that there are factors outside 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. In a down economy, we may see few high-risk drivers on the roadways. This could 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.

Achievements

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

- **Young Drivers Age 16-25** (see pages 51-65 for more information). Fatalities involving younger drivers aged 16-25 have seen significant reductions since 2007. Current projections based on the 10-year trend show zero fatalities in 2023 and zero serious injuries in 2027. The decline in young driver involved fatalities over the last five years is even more promising, showing that if the most recent 5-year decline continues, we could reach zero fatalities as early as 2020. This success reflects effectiveness of the implementation of intermediary driver licenses, high visibility enforcement and programs such as the Party Intervention Patrol. Another factor may be youth postponing getting their driver license.

- **Unrestrained Vehicle Occupants** (see pages 92-99 for more information). Fatalities among vehicle passengers not wearing appropriate safety restraints have dropped more quickly than in other areas. Currently, projections based on the 10-year trend show zero fatalities in 2018 and zero serious injuries in 2019. 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.

- **Opposite Direction** (Head-on) Collisions (see pages 106-110 for more information). Fatalities and serious injuries resulting from head-on collisions have seen dramatic reductions. Current 10-year trends show zero head-on fatalities by 2027, and zero head-on serious injuries by 2029. The reductions in head-on fatalities and serious injuries in the most recent five years have been dramatic, and if we continue on the current 5-year decline, we will reach zero head-on fatalities in 2018, and zero serious in injuries in 2020. This success is a reflection of various engineering improvements and safety enhancements made to Washington roads.

Areas for Improvement

There are other areas where we are not seeing these positive trends. We are not seeing the declines we need to achieve Target Zero.

- **Pedestrians** (see pages 120-126 for more information). Despite numerous engineering improvements and other strategies, current trends for pedestrian fatalities and serious injuries indicate that they are on the rise. Although the total fatal and serious injury numbers are lower than other traffic safety priorities, the trends show that more must be done and provide an opportunity to implement aggressive strategies that may inform other traffic safety priorities as we near 2030.

- **Motorcyclists** (see pages 112-119 for more information). The 10-year trends in motorcyclist fatalities indicate that both fatalities and serious injuries are on the rise. The 5-year trend for fatalities shows we are closing this gap and reversing the upward trend to more of a neutral one, but still not declining. The declines in motorcyclist serious injuries are more promising, showing that if we can maintain our current 5-year decline, we could be on track to reach zero serious injuries in 2024. Consistent helmet use is critical to progress. Despite Washington's primary law requiring all motorcyclists wear helmets, nearly 25% of seriously injured motorcycle riders are not wearing helmets.

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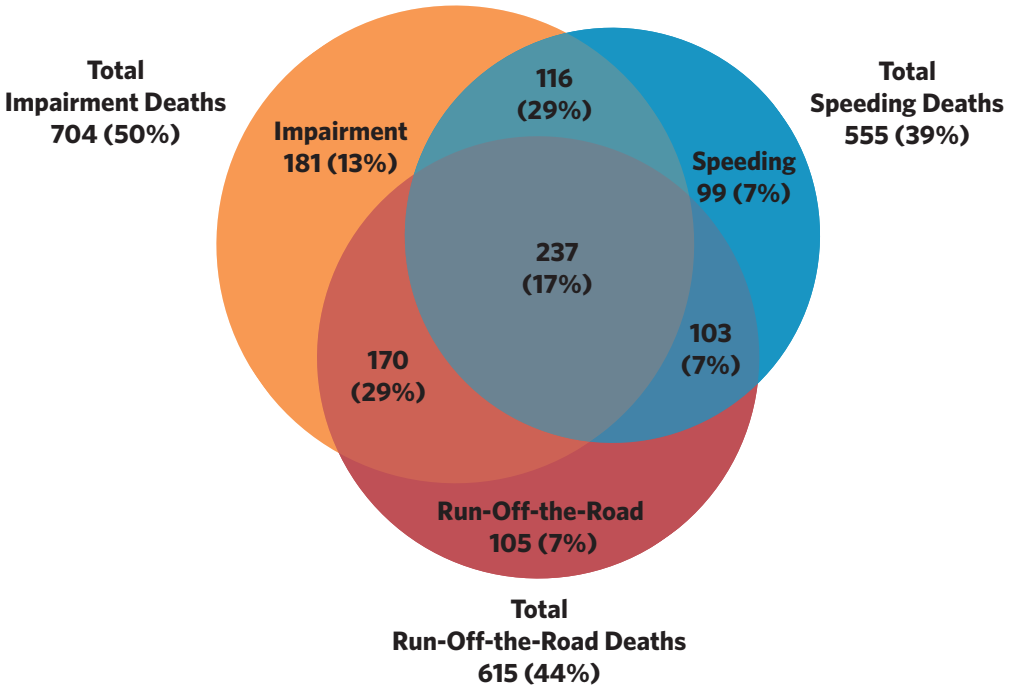
Most Common Factors Involved in 1,407 Washington Fatalities (2009-2011)



Overlap for the top three contributing factors, 2009-2011.
Percentages are based on total traffic fatalities (1,407) during that time period.

Impaired driving was involved in 50% of fatalities between 2009-2011, run-off-the-road in 44% and speeding in 39%. In 29% of fatalities, both impairment and run-off-the-road were factors. In another 29%, both impairment and speed were involved. When combined, 17% of fatalities involved all three factors. Impairment was the only contributing factor in 13% of fatalities. Run-off-the-road and speeding, each by themselves, were the only contributing factor in 7% of fatalities. In another 7% of fatalities, run-off-the-road and speeding were both involved.

Largest Contributing Factors

Target Zero sets statewide traffic safety priorities based upon the most frequently cited contributing factors. During the 2009 to 2011 period, the top three factors were:

- **Impaired Drivers** – contributing to 50% of total traffic fatalities
- **Run-Off-the-Road** – indicated in 44% of fatal traffic fatalities
- **Speeding** – involved in 39% of fatal traffic fatalities

Overall, 72% of traffic fatalities involved at least one of these top three traffic safety priorities, and 17% involved all three.

Significantly reducing impaired driving, controlling speeding, and keeping vehicles from leaving the roadway (or reducing collision severity when vehicles do leave the roadway), is needed to make Washington State's vision of zero traffic fatalities and serious injuries a reality.

To that end, the contribution of driver impairment and speeding is shown for each Priority Level One and Priority Level Two factor in subsequent chapters. For impairment and speeding, the contributing factor of run-off-the-road is displayed.

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Target Zero Strategies

This plan includes specific strategies for further reducing traffic fatalities and serious injuries. These strategies were developed using national-level research, existing pilot programs, and input from many statewide stakeholders. Each of the strategies in Target Zero has been given one of the following effectiveness ratings:

- **(P) Proven** effective through professional evaluation in Washington or in other states or countries
- **(R) Recommended** based on documented best practices or federal recommendations
- **(U) Unknown** strategies that are new or with limited evaluations

These effectiveness ratings are indicated by the initial – P, R, or U – at the end of each strategy. The best strategies are **Proven** or **Recommended**, but it's also important to experiment with some **Unknown** strategies. In those cases, it's critical to have a properly designed evaluation component as part of the project.

When determining effectiveness of the strategies in this document, three main sources were used:

- Countermeasures that Work (CTW), A Highway Safety Countermeasure Guide for State Highway Safety Offices by the Governors' Highway Safety Association for NHTSA and the USDOT
- National Cooperative Highway Research Program (NCHRP) Report 500, Volumes 1-23
- Crash Modification Factors (CMF) Clearinghouse

The majority of the Target Zero strategies focus on the four E's. To make it easy to find the kind of strategies you are looking for, we have indicated which area the strategies fall into:

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.

Leadership/Policy – Not an "E", these are strategies that involve laws, agency rules, or policy changes.

Even in an era of shrinking resources and economic recession, our downward decline toward zero fatalities and serious injuries has not only maintained momentum but gained, making Washington roads some of the safest in the nation.

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Target Zero Priorities

In any endeavor, addressing the biggest issues first will provide the most favorable results. Eliminating deaths and serious injuries on our roadways is no different. To focus efforts, the primary factors in fatal and serious traffic collisions have been grouped into three Priority Levels. The levels are based on the percentage of traffic fatalities and serious injuries associated with each factor.

Priority Level One includes the factors associated with the largest number of fatalities and serious injuries in the state. Each of these factors was involved in at least 30% of the traffic fatalities or serious injuries between 2009 and 2011. Traffic Data Systems, while not a cause of fatalities, is considered a Level One priority because of the potential for better data to significantly improve our analysis of traffic fatalities and serious injuries.

Priority Level Two factors while frequent, are not seen as often as Priority Level One items. Level Two factors were seen in at least 10% of traffic fatalities or serious injuries. Emergency Medical Services (EMS) is included here due to the significant impact effective EMS response has on preserving life and minimizing injury.

Priority Level Three factors are associated with less than 10% of fatalities and serious injuries. There is less discussion of these areas in the Target Zero plan. However, we believe if we address the more common factors in Priority Levels One and Two – such as impairment, speeding, and run-off-the-road collisions – Level Three factors will see numbers go down as well. The roads will be safer for all users.

In past editions of Target Zero, priorities have been set based on fatalities only. For the first time, the priorities have now been set considering both fatality and serious injury numbers. The numbers are based on the contributing circumstances identified by specially-trained law enforcement personnel on collision reports. However, as with any large-scale system, there is always the opportunity to improve the accuracy of the data.

The Traffic Data Systems chapter details an important project that brings together separate databases to improve serious injury data. But even with the current limitations of serious injury data, considering both fatalities and serious injuries in setting priorities broadens the scope of Target Zero to include serious injuries, while still giving appropriate emphasis to fatalities.

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Washington State 2009-2011	Fatalities # of People	Fatalities % of Total	Serious Injuries # of People	Serious Injuries % of Total
Priority Level One				
Impaired Driver Involved	704	50.1%	1,519	21.0%
Run-Off-the-Road	615	43.7%	2,156	29.7%
Speeding Involved	555	39.5%	2,126	29.3%
Young Driver 16-25 Involved	487	34.6%	2,763	38.0%
Distracted Driver Involved	426	30.3%	868	11.9%
Intersection Related	290	20.6%	2,474	34.1%
Traffic Data Systems	**	**	**	**
Priority Level Two				
Unrestrained Vehicle Occupants	348	24.8%	764	10.5%
Unlicensed Driver Involved	253	18.0%	n/a	n/a
Opposite Direction	221	15.7%	702	9.7%
Motorcyclists	206	14.7%	1,230	17.0%
Pedestrians	193	13.7%	869	12.0%
EMS and Trauma Care Systems	**	**	**	**
Priority Level Three				
Older Driver 75+ Involved	126	9.0%	378	5.2%
Heavy Truck Involved	115	8.2%	341	4.7%
Drowsy Driver Involved	45	3.2%	258	3.6%
Bicyclists	26	1.8%	339	4.7%
Work Zone	9	0.6%	132	1.8%
Wildlife	8	0.6%	78	1.1%
School Bus Involved	3	0.2%	18	0.2%
Vehicle-Train	2	0.6%	3	0.0%
Total*	**1,406**		**7,247**	

More than one factor is commonly involved in fatalities and serious injuries. Therefore, each fatality and serious injury tallied in "Total" may be represented in multiple factors in the table.

This Target Zero update reflects data for 2009-2011, and the previous Target Zero plan was reflective of 2006-2008 data. Nearly all comparisons, unless otherwise noted, will be between these two periods.

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Local Agencies and Target Zero

The success of the Target Zero plan is dependent on local participation, both in creating the plan and using it. Washington's continued progress toward our goal of zero deaths and serious injuries is due in large part to work by local agencies and organizations.

Assisting, working with, and sometimes being led by local partners is most effective when guided by state and local data. It is critical to get the message out about Target Zero to share with:

- Local Target Zero Managers
- Police Departments
- Public Works Departments
- Sheriffs' Offices
- Community Organizations
- Emergency Medical Organizations
- Schools
- Anyone interested in traffic safety

Local Data Available

The data presented in Target Zero is at the state-wide level. But comparison data broken down by local areas – Regional Transportation Planning Organizations (RTPO's), counties and many cities' data – is available. This can be very useful for prioritizing resources and programs at the local level using the same data-driven approach.
An important component of the Target Zero plan is that the information highlights which factors locally are contributing to the most fatalities and serious injuries.

This information is updated regularly and can be found on the Research and Data page of the Washington Traffic Safety Commission website (http://www.wtsc.wa.gov/statistics-reports/), or can be requested from WSDOT's Highways and Local Programs division.

The community specific data will help local and regional agencies prioritize safety projects and programs, as well as assist them in developing localized Target Zero plans. Using data-driven approaches to problem identification and prioritization provides local-level justification for allocating funds and resources.

The Traffic Safety Commission will consider local data-determined priority areas in evaluating grant requests. Local priorities can vary significantly from statewide priorities, based on the data, as illustrated below:

Statewide Priorities – Top 5			Okanogan County Priorities – Top 5			City of Kent Priorities – Top 5		
	FAT	SI		FAT	SI		FAT	SI
Impaired Driver Involved	50%	21%	Run-Off-the Road Involved	66%	45%	Impaired Driver Involved	50%	20%
Run-Off-the-Road	44%	30%	Impaired Driver Involved	55%	25%	Intersection Related	45%	51%
Speeding Involved	40%	29%	Speeding Involved	45%	32%	Young Driver Age 16-25 Involved	45%	32%
Young Driver Age 16-25 Involved	35%	35%	Unrestrained Vehicle Occupants	45%	25%	Unrestrained Vehicle Occupants	35%	5%
Distracted Driver Involved	30%	12%	Distracted Driver Involved	35%	10%	Unlicensed Driver Involved	30%	N/A

FAT = Fatalities
SI = Serious Injuries

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Target Zero Managers (TZMs)

Washington State is known for strong state and local partnerships in traffic safety efforts. For over thirty years we have invested in a coordinated network of local traffic safety professionals. This network has evolved over time as the traffic safety picture has changed at the local, state and national levels. Even the name of the network has adapted to reflect our goals. We now have Target Zero Managers (TZMs) across Washington State.

Each TZM guides a local task force represented ideally by engineering, enforcement, education, emergency medical services, as well as other community agencies and organizations with an interest in traffic safety. The task forces coordinate traffic safety local efforts and resources at the local level by tracking data, trends, and issues in their area. They provide a variety of programs, services and public outreach throughout their communities by working with local partners.

Funding for Local Organizations

Funding is available for local governments and organizations through two statewide grant programs, one from the Washington Traffic Safety Commission (WTSC) and one from the Washington State Department of Transportation (WSDOT). The WTSC Federal Grant process funds behavioral change projects.

The WTSC process now closely mirrors the WSDOT Federal Highway Safety Improvement Program (HSIP) funding program. The HSIP program is managed by WSDOT's Highways and Local Programs division, and awards funding for local traffic safety engineering improvements.

Local Partnerships with Cities and Counties

City and county government representatives are an important part of our state's traffic safety effort. The Governor appoints a member of the Washington State Association of Counties and the Association of Washington Cities, and a local judge, to the WTSC so they can work with state agency directors involved in traffic safety. The WTSC commissioners oversee and approve the work and grant funding recommendations of WTSC staff.

Target Zero Manager Network members.

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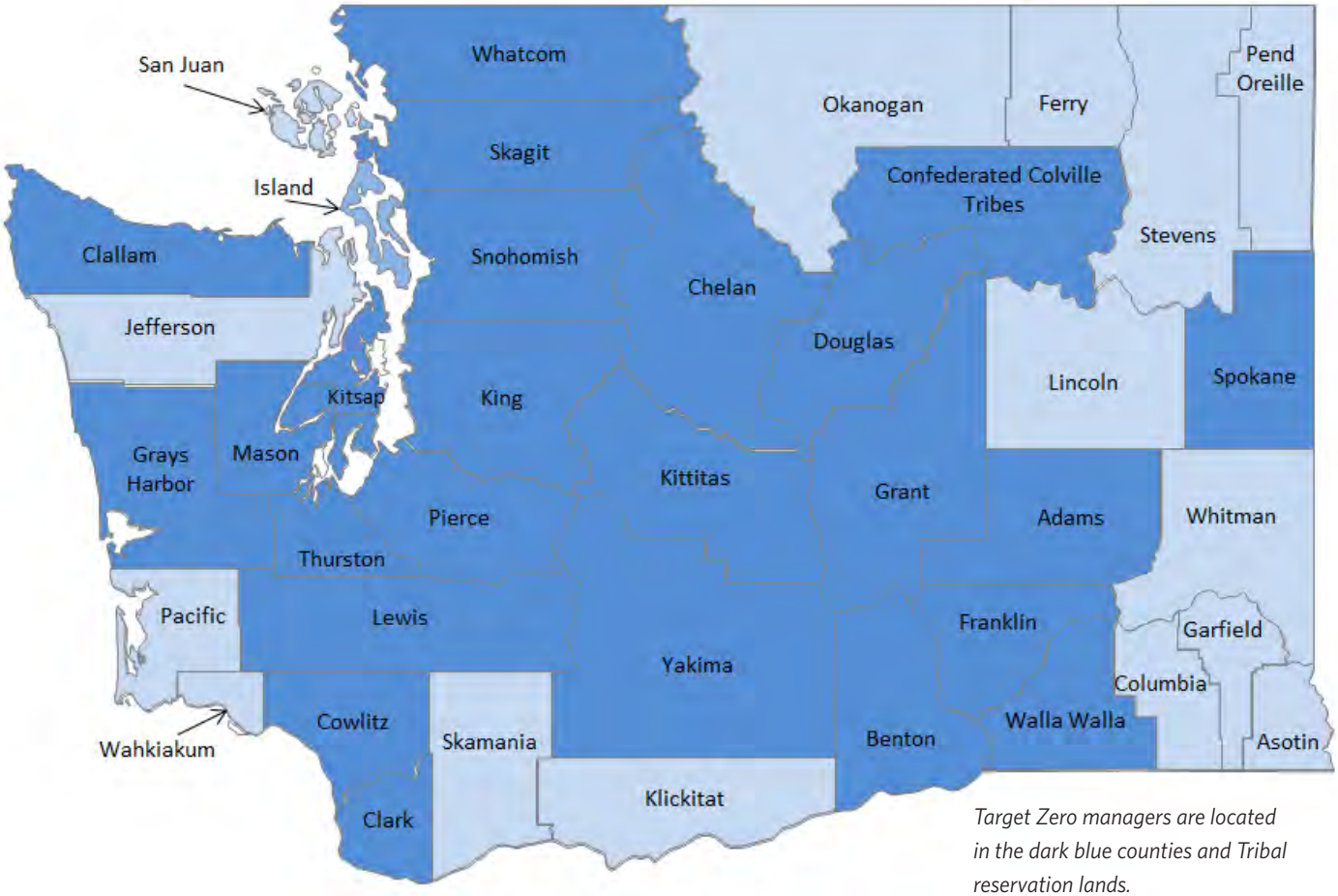

Target Zero managers are located in the dark blue counties and Tribal reservation lands.

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Local Program Examples

Emergency Medical Services (EMS) and Trauma Services – Local EMS and Trauma programs play a significant role in prevention efforts. Examples include the Chelan-Douglas Safe Kids coalition with their distracted pedestrian program, and the Okanogan/North Douglas EMS Council's work on a child car seat distribution program.

Target Zero Teams, Full-time DUI Patrols – Target Zero Teams is a project highlighted in the impaired driving section of this document on page 32. Target Zero Managers (TZMs) provide mission-critical project coordination at the local level. (http://www.wtsc.wa.gov/wp-content/uploads/downloads/2010/08/tztrackcard2010.pdf)

Corridor Traffic Safety Program – Through this locally-led program, WSDOT and WTSC fund low-cost, near-term projects to address engineering, education, enforcement and emergency medical service needs. These projects aim to improve safety on short stretches of roadway with a higher than average number of fatalities and serious injuries. (www.corridorssafetyprogram.com)

Local Target Zero Plans – Development of a local Target Zero plan, with priorities and strategies developed from community-specific fatality and serious injury data, can be an effective way to expand partnerships with area agencies and develop a common vision. The City of Seattle was one of the first local jurisdictions in Washington to adopt a goal of eliminating traffic fatalities and serious injuries. Their plan can be found at http://www.seattle.gov/transportation/docs/SDOTRoadSafetyActionPlan.pdf

For Target Zero to remain a viable program at the local level, agencies need to:

- *Connect with their county's Target Zero Manager*
- *Develop their own local Target Zero Plan*
- *Understand the benefit of Target Zero and the role they can play*

Coordinated High Visibility Enforcement Campaigns – Currently, an important focus of the TZM network is coordination of statewide high visibility DUI and seatbelt campaigns. These managers work with city and Tribal police departments, county sheriffs' offices, and the Washington State Patrol to ensure patrols happen in the right places, at the right times, and show drivers a united force of all law enforcement agencies working together. High visibility enforcement involves educating the public about the issue of upcoming patrol, and then coordinating multiple agencies to create a very visible enforcement presence on the roads. Deterrence is the main goal, with swift and sure penalties when caught.

Additional Resources

Target Zero Manager Network: http://www.wtsc.wa.gov/programs-priorities/task-forces/

Washington Traffic Safety Commissioners : http://www.wtsc.wa.gov/about/overview/commissioners/

Local data at WTSC Research and Data web page: http://www.wtsc.wa.gov/statistics-reports/

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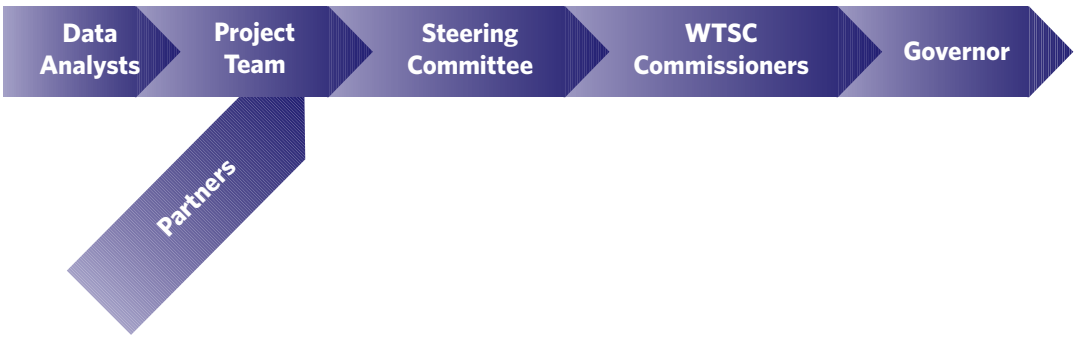
Target Zero Plan Development

The partners who developed Washington State's Strategic Highway Safety Plan (SHSP), Target Zero, intend for it to coordinate traffic safety programs across the state, align priorities and strategies, and provide a common language and approach to traffic safety efforts.

The 2013 update of Target Zero is the fourth update of the plan since its inception in 2000. Although this is a revision of an existing plan, we took a completely fresh look at the data and strategies. This created extra work, but has resulted in a plan that is effective and useful for a wide range of Washington's citizens, government policy makers and traffic safety professionals.

We started by bringing together the data experts from the state agencies that hold the critical traffic safety data: Collisions (WSDOT), Fatalities (WTSC), Driver and Vehicle Licensing (DOL), and EMS/Hospital/Trauma data (DOH). This group coordinated updating of the fatality and serious injury data and made recommendations – based on the latest data – on what factors were the biggest contributors to people dying and being seriously injured on our roadways.

With this latest data in hand, all of the key players were brought together in a formal multi-organizational project structure to create the Target Zero Project Team and Steering Committee. Key players included representatives from the agencies that form the Traffic Safety Commission, Tribal organizations, regional planning organizations and private traffic safety organizations. There were engineers, law enforcement officers, collision data managers, epidemiologists, program managers and communication specialists.



Roles

There were three project groups that were instrumental in re-writing the Target Zero plan.

- The Data Analyst Group consisted of data experts from the agencies responsible for maintaining traffic safety related data systems. They carefully analyzed 2009-2011 data for priority setting, calculated trends, and developed charts and graphs.
- The Project Team consisted of manager-level representatives. They coordinated the work, made tactical level decisions, wrote the content and evaluated strategies.
- The Steering Committee consisted of senior level management. They provided strategic direction and ensured appropriate resources.

To gather input from a broader stakeholder group, a Target Zero Partners' meeting was held in March 2013. There, more than 150 additional people involved in traffic safety across the state provided feedback and input on strategies for addressing the priority areas. In August 2013, a draft of the plan went out for external review by Tribes, partners, and stakeholders.

Each project group provided recommendations to the next, with the Steering Committee recommending the Plan to the WTSC Commissioners (see page prior to the Table of Contents), who ultimately recommended Governor Inslee approve the Plan.

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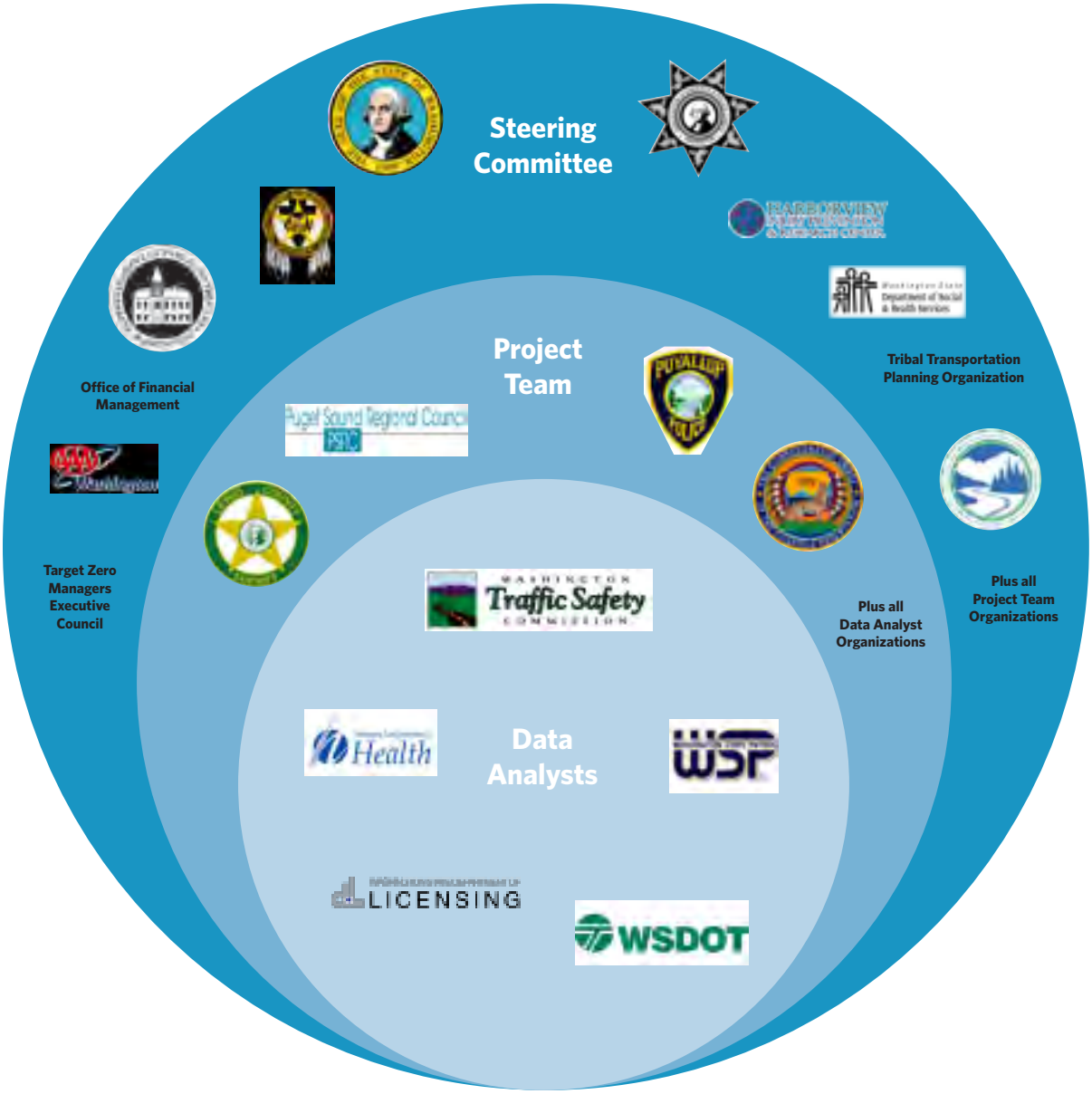
Target Zero Plan Project Members



Target Zero Data Sources

Many databases make up Washington's Traffic Data System, which contains 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).

These databases serve as the critical link in identifying problems, selecting appropriate strategies and countermeasures, and evaluating the performance of these programs. 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 85-91.

Most of the Washington State traffic data contained in this plan comes from Washington's Department of Transportation Collision Location and Analysis System (CLAS) and the Washington Traffic Safety Commission's Fatality Analysis Reporting System (FARS). The latest data available is from the three year span of 2009 to 2011. This 2009-2011 span is generally compared to 2006-2008 (the 3 year span referenced in the 2010 Target Zero Plan) when determining changes in a specific measure or area.

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MAP-21

On July 6, 2012, the President signed into law the Moving Ahead for Progress in the 21st Century Act (MAP-21). This law created some specific requirements that all states' SHSPs must follow. During the development of Washington's 2013 SHSP, Target Zero, some of the details of these requirements were still uncertain. However, the requirements that were clear have been incorporated accordingly. Specifically:

1. The SHSP needs to coordinate with other plans, including the Highway Safety Improvement Plan (HSIP), Highway Safety Plan (HSP) and Commercial Vehicle Safety Plan (CVSP). Representatives from the agencies that created these plans also authored the associated sections in Target Zero, ensuring coordination.

2. The Special Rule for Older Drivers required there be continuing improvement in the safety outcomes for older drivers and pedestrians. To ensure our focus and compliance with this, the Road Types and Vulnerable Road Users section contains a measure of combined fatalities and serious injuries for road users over the age of 65. This is different from the Older Drivers section, which pertains to drivers 75 years old or older.

3. The Special Rule for High Risk Rural Roads (HRRR) safety states: "If the fatality rate on rural roads in a State increases over the most recent 2-year period for which data are available, that State shall be required to obligate in the next fiscal year for projects on high risk rural roads an amount equal to at least 200 percent of the amount of funds the State received for fiscal year 2009 for high risk rural roads." The Washington State definition of High Risk Rural Roads is included in the Road Types and Vulnerable Road Users section.

Next Steps

The development of the Target Zero Plan lays the foundation for achieving the vision of zero fatalities and serious injuries. However, it can only become a reality if intentional steps are taken to implement and evaluate the plan on an ongoing basis.

SHSP Implementation

To successfully implement Target Zero, Priority Area Leadership Teams should coordinate (at a minimum) all Priority Level One areas. These teams meet regularly to develop and coordinate action plans. Action plans provide a road map to give stakeholders and partners specific direction and ensure continuous focus on implementation. They contain measurable objectives, specific projects, action steps, tracking measures and funding sources.

Washington already has many of these teams established and actively working. Groups such as the Washington Impaired Driving Advisory Committee (WIDAC) and the Traffic Records Committee (TRC) provide an excellent model for inter-agency coordination and project prioritization and tracking.

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SHSP Evaluation

Target Zero will be evaluated regularly. Safety improvements depend on a program of data driven priorities and proven effective strategies. Evaluation will help Washington achieve such a program by analyzing SHSP process and performance and determining whether current activities deserve enhancement, revision, or replacement. Evaluation will also help:

- Determine progress in meeting our SHSP safety goals and objectives.
- Validate emphasis areas and strategies, or reveal the need to revise them.
- Uncover challenges in prioritizing or implementing programs and strategies.
- Identify opportunities for greater efficiencies and improvements to the SHSP.
- Demonstrate our SHSP's contribution to Washington's transportation safety.

More simply put, SHSP evaluation will help us answer: what are we trying to do; how well are we doing it; and, how can we improve?

We will develop an evaluation plan to guide our SHSP evaluation. It will detail specific evaluation objectives (questions), outline the data needed to address the objectives, and identify the resources needed and the roles and responsibilities for the various evaluation tasks. The plan will also highlight how we plan to use our evaluation results.

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Traffic Safety Partnership List

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

State Agencies

Governor's Office and Office of Financial Management
Governor Inslee
Office of Indian Affairs
Transportation Policy
Results Washington
Administrative Office of the Courts
Department of Transportation
Department of Health
Department of Licensing
Department of Social and Health Services
Office of Superintendent of Public Instruction
State House and Senate Members and Staff
Harborview Injury Prevention and Research Center
County Road Administration Board
Office of Public Defense
Traffic Safety Commission
Transportation Commission
Transportation Improvement Board
Liquor Control Board
Washington State Patrol

Federal Agencies

National Highway Traffic Safety Administration, Region 10
Federal Highway Administration, Washington Division
Federal Highway Administration, Federal Lands
Federal Motor Carrier Safety Administration
Federal Railroad Administration, Region 8

Local Law Enforcement

Bellingham Police Department
Bonney Lake Police Department
Centralia Police Department
Clark County Sheriff's Office
Cowlitz County Sheriff's Office
Ferndale Police Department
Grays Harbor County Sheriff's Office
Island County Sheriff's Office
Kent Police Department
Kitsap County Sheriff's Office
Lewis County Sheriff's Office
Mason County Sheriff's Office
Puyallup Police Department
Renton Police Department
Seattle Police Department, DUI Unit
Shelton Police Department
Skagit County Sheriff
Thurston County Sheriff's Office
Yakima Police Department

Other names to add?

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Private and Non-Profit Organizations

AAA Washington
Affordable Ignition Interlock
ATSSA, the American Traffic Safety Services Association
DKS Associates
DN Traffic Consultants
Driver Training Group
Driving 101
Eco Resource Management Systems
Feet First
Governor's Highway Safety Association
HDJ Design Group
Ignition Interlock of Washington
IvS Analytics
Kittitas County Community Network
LifeSafer, Inc.
Mothers Against Drunk Driving
Margo's Safety-1 & Arlington High School
Progressions
Project Imprint
Tacoma Pierce County Community Connections
The Blairs
Washington Road Riders Association
Washington Trucking Association
Western Systems

Tribal Nations and Organizations

The Confederated Tribe of the Chehalis Reservation
Confederated Tribes of the Colville Reservation
Cowlitz-Wahkiakum Council of Governments (CWCOG)
Lummi Nation
Muckleshoot Indian Tribe
Nooksack Indian Tribe
Quinault Indian Nation
Shoalwater Bay Tribe
Spokane Tribe of Indians
Swinomish Indian Tribal Community
Tulalip Tribes
Bureau of Indian Affairs
Northwest Association of Tribal Enforcement Officers
Northwest Tribal Communications
NW Tribal Transportation Assistance Program - Eastern WA Univ.
Tribal Transportation Planning Organization

Community, Local, and Regional Agencies/Organizations

22 Target Zero Community Traffic Safety Task Forces representing Counties, Cities, and Tribes
Association of Washington Cities
Bicycle Alliance of Washington
Cooper Jones Bicycle & Pedestrian Committee
City of Bellevue
City of Everett
City of Gig Harbor
City of Kirkland
City of Mountlake Terrace
City of Pasco
City of Spokane (John Snyder)
City of Tacoma
Dr. Beth Ebel
Educational Service District #113
King County Metro Transit
King County Public Health
Kitsap County Public Works
Lewis County Public Health & Social Services
NWTTAP (Northwest Tribal Transportation Assistance Program)
Operation Lifesavers
Puget Sound Regional Council
Quinault Indian Nation
Seattle Children's/Safe Kids South King County
Seattle Department of Transportation
Shoalwater Bay
Spokane City Council
Spokane County Prosecutor's Office
State Criminal Justice Training Commission
Thurston County Prosecuting Attorney's Office
Thurston County Public Works
Thurston Regional Planning Council
Washington Association of Counties
Washington Association of County Engineers
Washington Association of Prosecuting Attorneys
Washington Association of Sheriffs and Police Chiefs
Washington Traffic Incident Management Coalition
Washington Traffic Safety and Education Association
Washington Trucking Association
Young Drivers Group

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Native American Tribes and Target Zero

Tribal Involvement in the 2013 Target Zero Update

Representatives of the Tribes and state agencies have met a number of times during the past two years to discuss traffic safety concerns and partnership opportunities. Dedicated forums included the annual Affiliated Tribes of Northwest Indians (ATNI) and Northwest Tribal Technical Assistance Program (NWTTAP) Transportation Symposium and the 2012 Tribal/State Transportation Conference.

Traffic safety discussions highlighted meetings of the Tribal Transportation Planning Organization, Washington Indian Transportation Policy Advisory Committee (WITPAC), and Northwest Association of Tribal Enforcement Officers (NATEO).

Tribes participated at all levels of the Target Zero update structure: Steering Committee, Project Team and Writing Team. Twelve Tribal members, representing six Washington Tribes, participated in the 2013 Target Zero Partners Meeting. A preliminary version of the Target Zero plan was released for formal Tribal review before presenting it to Governor Inslee's office for endorsement.

Twenty-nine federally-recognized Tribes are 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 helps all of us move closer to zero traffic deaths and serious injuries.

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Disproportionate Impacts to Native Americans

In Washington, the traffic fatality rate for Native Americans is 3.9 times higher than for non-Native Americans.

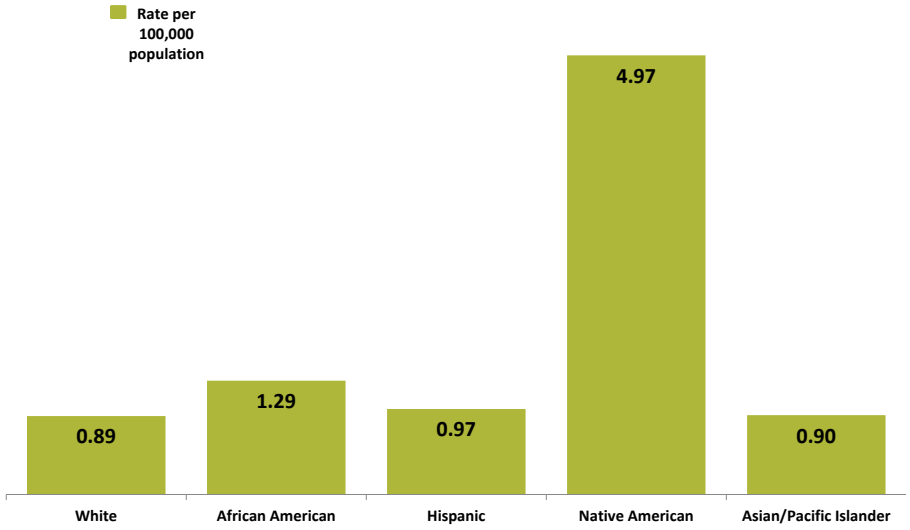
FARS data from 2002 through 2011 shows Native American fatalities are high across all types of motor vehicle collisions. One example is the pedestrian fatality rate, which is 5.4 times higher for Native Americans than for non-Native Americans.

The FARS data shows two-thirds (66.7%) of Native American pedestrian fatalities within Washington boundaries occurred in rural areas. When all pedestrian deaths are combined, only 23.5 percent occur in rural areas.

Chronic underfunding of traffic safety initiatives and related programs plays a significant role in these disproportionate fatality rates. Inadequate or non-existent bus systems increase the number of pedestrians on Tribal lands. Some Tribes have non-contiguous lands with housing and services on separate assets. Many communities have few or no sidewalks, marked crosswalks or street lighting.

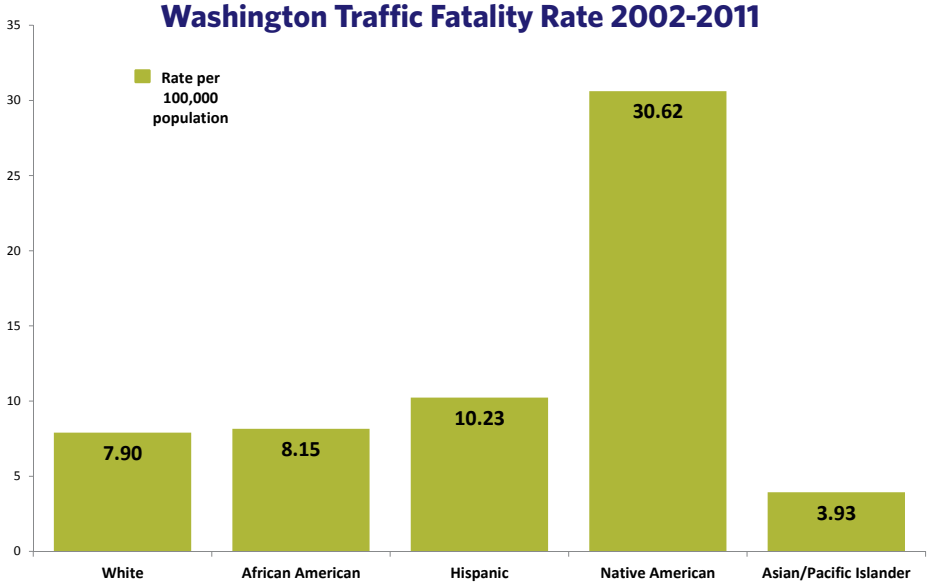
Additionally, many communities lack driver education on defensive driving and a high number of unlicensed drivers compounds the driver education issue. There is also a lack of pedestrian education covering topics such as reflective clothing and safe walking techniques.

Washington Pedestrian Fatality Rate 2002-2011



Source: FARS, OFM Population Unit
Note: Classifications are per the U.S. Census Bureau and are mutually exclusive. Rates are based on average population 2000-2010.

Washington Traffic Fatality Rate 2002-2011



Source: FARS, OFM Population Unit
Note: Classification are per the U.S. Census Bureau and are mutually exclusive. Rates based on average population 2000-2010.

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Data Challenges and Improvements

Unfortunately, significant data gaps exist, making it difficult to analyze information 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 is difficult.

Incomplete data also makes it more difficult for Tribes to compete for safety funding and justify need. Many of the charts in Target Zero that display information by state, city, or county roads do not include data for reservation roads, unless those collisions were reported through a Washington Police Traffic Collision Report or through data outreach efforts. Given the disproportionate impact to Tribal communities, it is critical that we close these data gaps to help identify and address problems.

Geospatial Data

As mentioned previously, reservations in Washington often include a mix of Tribal, state, county and city roads. WSDOT has attempted to collect as many reservation maps as possible to determine whether or not a collision occurred within a reservation. More efforts are needed to gather maps, as only 11 of 29 Tribes had submitted maps as of July 2013.

As of this publication, a transformation is in progress. WSDOT recently developed the Incident Location Tool (ILT) to be implemented by the end of 2013. It is replacing the less productive method of using hardcopy map resources to associate collision locations with Tribal reservations. In addition to capturing a collision location's latitude and longitude information, the ILT is used to query map layers and automatically populates several database fields. This includes city, county, Tribal reservation name, roadway name, milepost, as well as the name, direction and distance to the nearest cross street where the collision occurred.

The availability of accurate Tribal collision location information will improve significantly with this development. This will make it easier to identify the most pressing safety problems, select the most appropriate countermeasures and evaluate performance. For more information about the ILT, see page 89.

A Success Story

The Confederated Tribes of the Colville Reservation have experienced phenomenal traffic safety successes in recent years by approaching traffic safety through the four E's: Education, Enforcement, Engineering and Emergency Medical Service. Two key elements of the successes have been:

- A collaborative approach in the community to leverage resources.
- The supportive leadership by Colville Business Council, the elected legislative body.

Traffic deaths on the Colville Reservation have been reduced from about 24 a year to two traffic deaths in 2011.

The documentary *Traffic Safety Successes on the Colville Reservation* relates this remarkable feat. The story received additional exposure from its official 2012 nominee selection for the American Indian Film Festival in San Francisco, where it was screened and received an award on the final evening of the festival. The video is available for web-viewing through www.wtsc.wa.gov (Resources > Videos > Tribal) or directly through this link: http://vimeo.com/40528456.

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Rates, Road Types and Vulnerable Road Users

Rates

The Washington State traffic fatality rate is trending downward, dropping from 4.91 deaths per 100 million vehicle miles traveled (VMT) in 1966 to 0.80 deaths per 100 million VMT in 2011, the state's lowest traffic fatality rate on record. This is well below the 2011 national rate of 1.10 traffic fatalities per 100 million VMT calculated by the National Highway Traffic Safety Administration (NHTSA).

Reasons for the decline are varied. Decreased driving, due to the high price of gasoline augmented by the economic recession that began in late 2008, has reduced people's exposure to the risk of traffic collisions. Improvements in roadway engineering, vehicle design and safety equipment have all helped save lives as well.

Risk of Dying Greater on Rural Roads

Overall, Washington traffic fatality and serious injury rates have declined steadily since 2005. This decline is occurring in both urban and rural settings. However between 2002 and 2011, 61% (858 Rural vs. 548 Urban) of traffic fatalities occurred on rural roads, even though many more miles are traveled on urban roads. The risk of dying in a traffic collision on rural roads is about 3.5 times greater per 100 million vehicle miles traveled than on urban roads.

Between urban and rural settings, differences in road design and development play a significant role in collision rates. Fifty percent (50%) of fatalities on rural roads involved run-off-the-road collisions, compared to 32% on urban roads; 23% of fatalities on rural roads were attributed to head-on collisions, compared to 11% on urban roads. Furthermore in rural areas, medical response times are generally greater than in urban areas and access to emergency services is more limited.

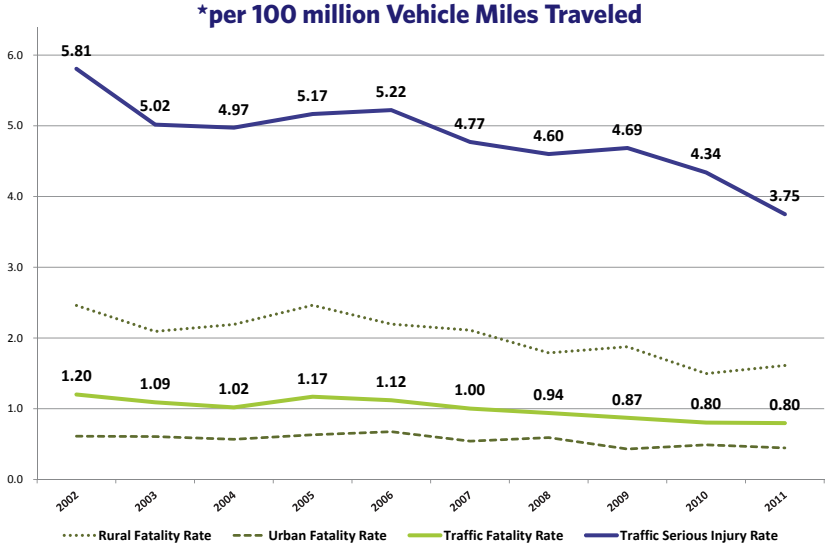
High Risk Rural Roads

The Moving Ahead for Progress in the 21st Century Act (MAP-21), signed into federal law in 2012, requires each state include its definition for High Risk Rural Roads (HRRR) and created a Special Rule for improvements in safety for HRRR.

Washington State defined High Risk Rural Roads as any road with a functional classification of rural major or minor collector or rural local road that has a fatality and serious injury crash rate above the statewide average for similar functionally classed roads.

The HRRR Special Rule applies if "the fatality rate on rural roads in a state increases over the most recent 2-year period for which data are available." Five-year averages, rounded to one-tenth, separated by a 2-year period, are compared in order to monitor HRRRs. In Washington, the rural road fatality rate from 2005-2009 was 2.1, compared to the 2007-2011 rate of 1.8. This trend mirrors the overall decline in fatalities observed on all roads in the state. In the case of Washington, the Special Rule does not apply for fiscal year 2014.

Traffic Fatality and Serious Injury Rates* 2002-2011
***per 100 million Vehicle Miles Traveled**



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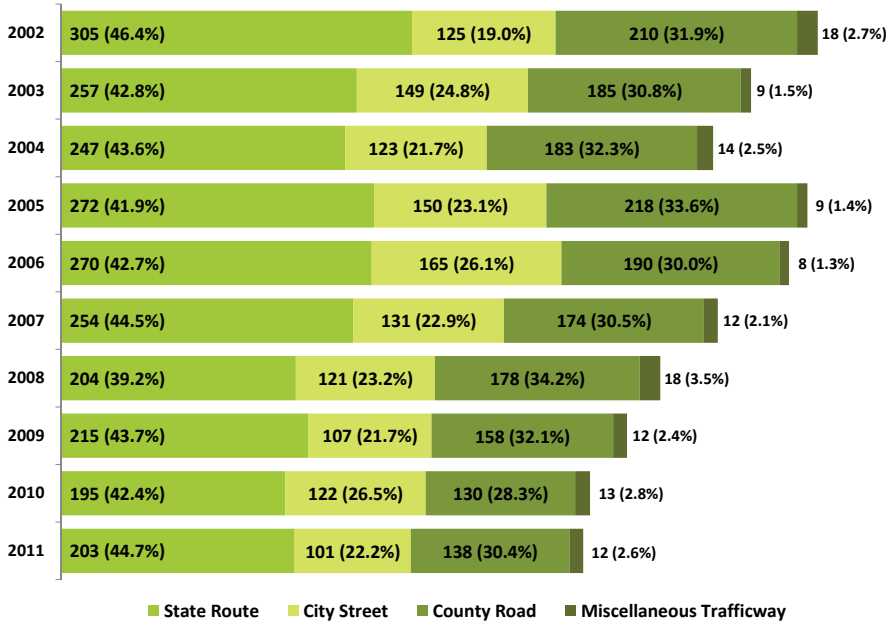
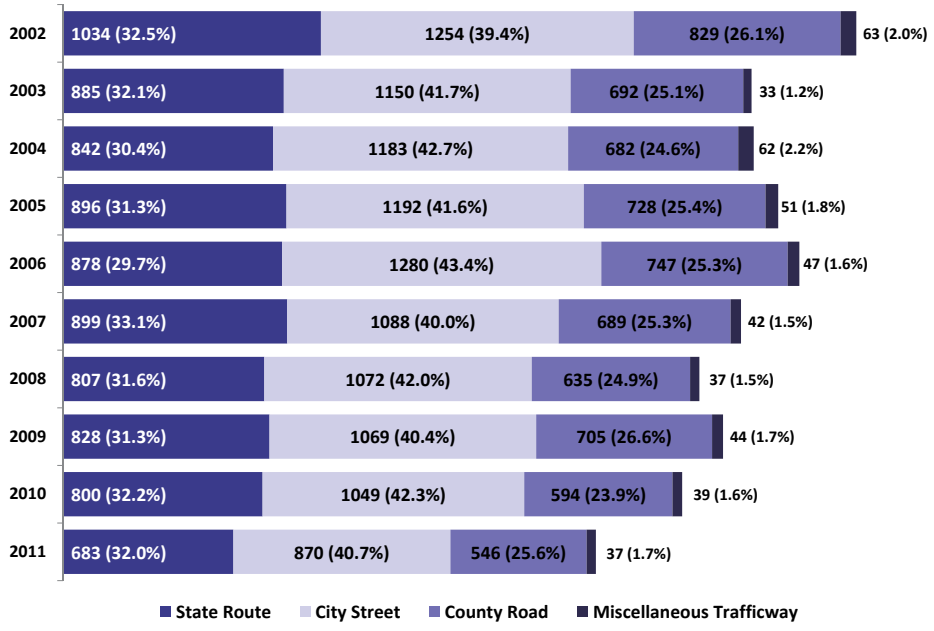
Fatalities and Serious Injuries by Jurisdiction

In 2010, there were 7,060 miles of state highways, while county roads accounted for more than five times that amount, with 39,748 miles of road. Comparing these two classes of roadways, state routes carry more traffic volume and county roads have narrower lanes and shoulders, fixed objects closer to the road, and steeper slopes beside the road. The majority of fatalities have occurred on state routes, followed by county roads. The majority of serious injuries have occurred on city streets, followed by state routes.

Total Fatalities by Jurisdiction 2002-2011



Total Serious Injuries by Jurisdiction 2002-2011



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Vulnerable Road Users

Looking at the last ten years (2002-2011), approximately 71% of traffic fatalities were occupants of passenger vehicles, 12% were motorcyclists, 12% were pedestrians and 2% were bicyclists (see figure below). Males accounted for 73% of traffic deaths, while females accounted for 27%.

Although the majority of fatalities involve passenger vehicle occupants, certain road user groups are at much greater risk of death and injury when they are involved in traffic collisions. Vulnerable road users include pedestrians, bicyclists, motorcyclists and older road users.

Pedestrians, Bicyclists and Motorcyclists

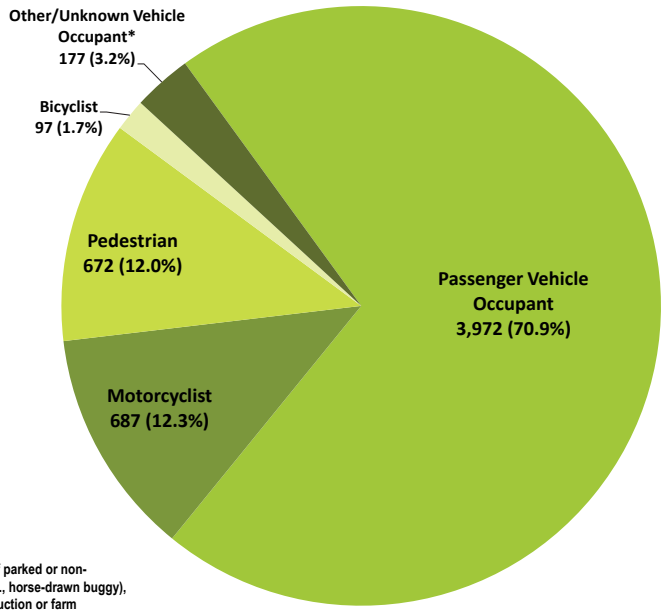
Vulnerable road users are persons who are at greater risk of death or injury when involved in traffic collisions. Passenger vehicle occupants comprise the majority of deaths and serious injuries overall because they are involved in the most collisions. However, pedestrians, bicyclists and motorcyclists, when involved in collisions, are more likely to be seriously injured or killed than an occupant of a vehicle.

As shown in the chart on the next page, when a fatal or serious injury collision involves a pedestrian, bicyclist or motorcyclist, over 90% of these vulnerable road users are the persons seriously injured or killed in that collision. This compares to 45% of passenger vehicle occupants being killed or seriously injured when they're involved in a fatal or serious injury collision.

Beyond this type of comparison, the actual risk of death or injury among these vulnerable road users are unknown. For motor vehicles, we calculate risk by deriving the rate of death or injury per 100 million vehicle miles traveled (0.8 in 2011). Without similar measures for vulnerable road users (i.e. miles traveled by motorcyclists or older drivers, miles walked, and miles biked), a measure of overall risk based on exposure to roadways is not possible.

Current pedestrian, bicyclist and motorcyclist trends show that death and serious injury among these vulnerable road users is not declining like overall trends in our state. In some instances, these deaths and serious injuries are actually on the rise. Although the total numbers of deaths and serious injuries among these vulnerable road users are lower than other Target Zero® priority areas, the flat or even increasing trends show that we must do more.

Traffic Fatalities by Person Type 2002-2011



*Includes occupants of parked or non-motorized vehicles (e.g., horse-drawn buggy), scooters, ATVs, construction or farm equipment, motorhomes, street sweepers, etc.

Compared to the overall fatality decline from 2006-2008 to 2009-2011 (18.5%), pedestrians, bicyclists, motorcyclists, and older road users are not experiencing the same declines. During this time period, pedestrian deaths declined 2.5%, bicyclist deaths 13.3%, motorcyclist deaths 8.4% and older driver involved deaths 8%.

We must carefully monitor these vulnerable road user groups to ensure the limited past progress is not lost and new progress is initiated in order to realize our vision of zero. How we approach safety among vulnerable road users may provide some early insight into future challenges and strategies to deal with flattening or reversing trends in traffic deaths and serious injuries.

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Older Road Users

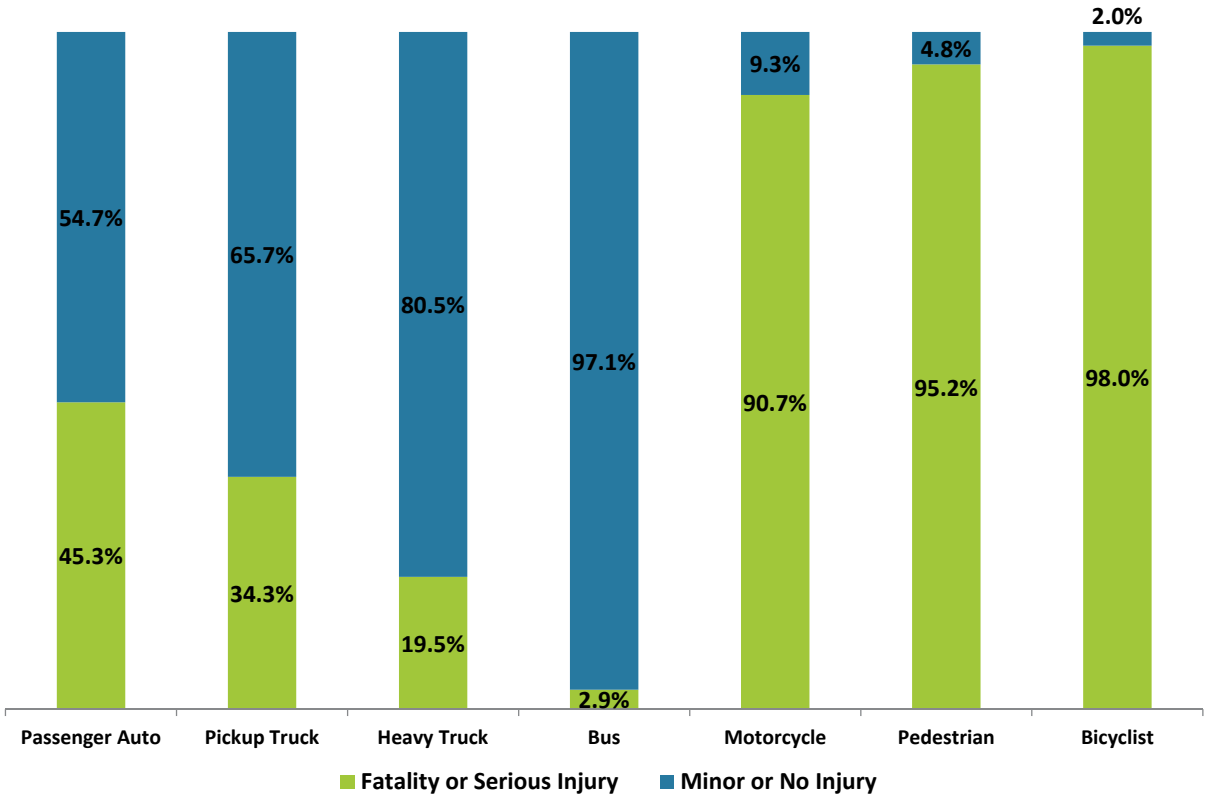
By 2030, the Washington population age 65 and older will be double what it is today and will comprise the largest vulnerable road user group. Physical vulnerability and frailty among older drivers puts them at higher risk for death and injury when involved in traffic collisions.

Improvements to the EMS and Trauma System have improved survivability outcomes among older drivers involved in collisions. However, with the dramatic growth of this vulnerable road user group over the next several decades, coupled with older drivers staying licensed longer and driving more miles than in the past, we must carefully monitor trends among older drivers to prepare for future challenges.

Target Zero currently defines older road users as age 75 and older. With new MAP-21 requirements, and in particular a Special Rule for older drivers, the definition may be revised for the next edition. The Special Rule for older drivers applies if "traffic fatalities and serious injuries per capita for drivers and pedestrians over the age of 65 in a State increases during the most recent 2-year period for which data are available." Five-year average population rates, rounded to one-tenth, separated by a 2-year period, are compared in order to monitor older road users age 65 and older. Traffic fatalities and serious injuries are combined for any road user (driver, passenger, pedestrian, bicyclist, etc.) age 65 and older.

In Washington, the older road user population fatal/serious injury rate per 1,000 population from 2005-2009 was 0.37, compared to the 2007-2011 rate of 0.34. In the case of Washington, the Special Rule does not apply for fiscal year 2014. However, even if it were to apply, Washington fulfills the requirement by outlining strategies to address older road user traffic fatalities and serious injuries in Target Zero.

Comparison of Injury Severity of Vulnerable Road Users and Others Involved in Fatal or Serious Injury Collisions 2002-2011



Priority Level One

Washington State 2009-2011	Fatalities # of People	Fatalities % of Total	Serious Injuries # of People	Serious Injuries % of Total
Priority Level One				
Impaired Driver Involved	704	50.1%	1,519	21.0%
Run-Off-the-Road	615	43.7%	2,156	29.7%
Speeding Involved	555	39.5%	2,126	29.3%
Young Driver 16-25 Involved	487	34.6%	2,763	38.0%
Distracted Driver Involved	426	30.3%	868	11.9%
Intersection Related	290	20.6%	2,474	34.1%
Traffic Data Systems	**	**	**	**
Total*	**1,406**		**7,247**	

** "Total" is for all fatalities and serious injuries in Levels One, Two and Three combined. More than one factor is commonly involved in fatal and serious injury collisions. Therefore, each fatality and serious injury in "Total" may be represented multiple times in the Level tables. For the Target Zero Priorities Chart with all three priority levels, see page 9.*

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Impaired Driver Involved

Executive Summary

Impaired drivers were a factor in 50% of all traffic deaths (704 of 1,406) and 21% of all serious injuries (1,519 of 7,264) between 2009 and 2011. Drivers in fatal crashes were as likely to be impaired by drugs as by alcohol, with almost 25% impaired by both. Fortunately, Washington is experiencing declines in impaired driving. In 2009-2011, impaired driver involved deaths and serious injuries both decreased by 15% when compared to 2006-2008. Washington's system wide approach to addressing impaired driving has led to support for prevention initiatives, comprehensive ignition interlock laws, better law enforcement and prosecutor training, more Driving Under the Influence (DUI) courts, and innovative, targeted, full time DUI enforcement.

Washington Governor Jay Inslee signing DUI legislation (SB 5912) into law in Tacoma on July 18, 2013.

Fifty percent (50%) of all traffic deaths in the last three years involved an alcohol or drug impaired driver, the most common factor in roadway fatalities.

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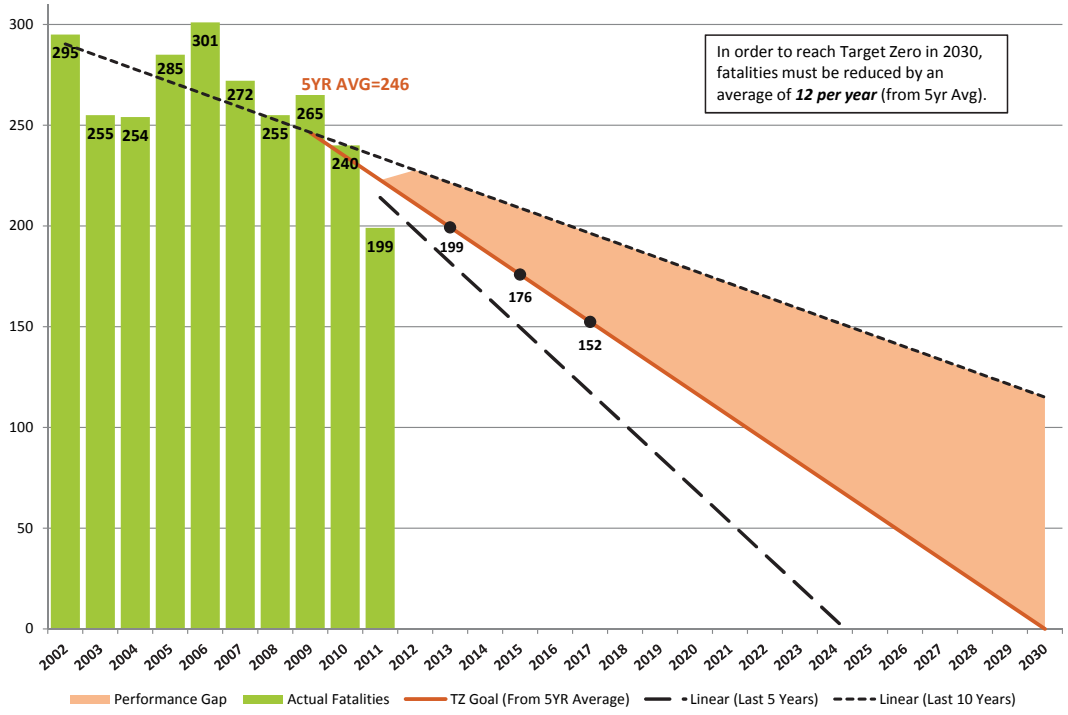
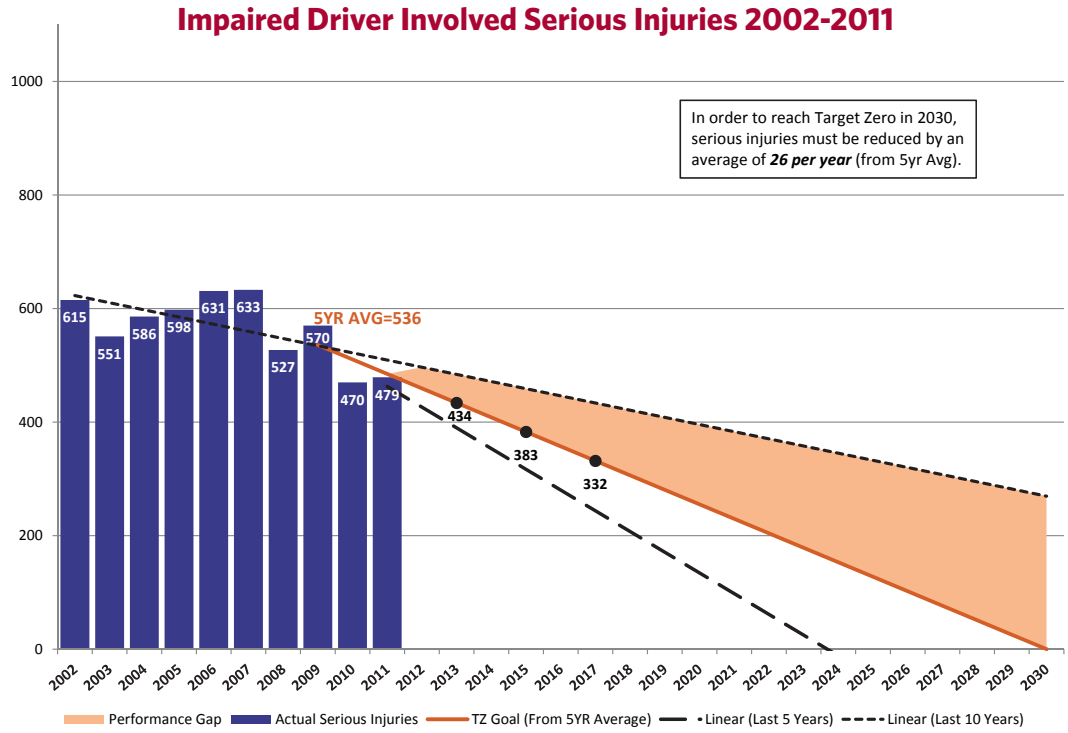
Impaired Driver Involved Fatalities 2002-2011



Impaired Driver Involved Serious Injuries 2002-2011



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Background

Washington has been combating impaired driving for decades and has made significant progress. While deaths and serious injuries from impaired driving both declined by 15% compared with 2006-2008, impaired driving continues to be the main factor in fatal collisions in Washington.

Much of the decline can be attributed to aggressive campaigns to change the public perception of the acceptability and consequences of drinking and driving. These have been coupled with tougher laws, from the 1968 voter-passed implied consent law to the 1999 law lowering blood alcohol concentration (BAC) per se limit to 0.08.

The state has imposed ignition interlock requirements on all DUI offenders and applied tougher sanctions for repeat and high BAC offenders. This includes the 2007 felony DUI law that applies to those offenders with four prior DUI convictions within ten years. Strict penalties are also 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 for both Washington and for the nation.

Current Washington law has a 0.08 BAC level at which drivers in Washington are guilty per se of the crime of DUI. However, a rigorous analysis by Peck et al (2009) found that drivers ages 21 and above with a BAC of 0.07 are 39% more likely to be involved in a traffic crash than drivers with a BAC of 0.00. Furthermore, drivers under the age of 21 (who are not legally allowed to drink at all) with a BAC of 0.07 are five times more likely to crash than young drivers with a BAC of 0.00. Drivers at any BAC level, even those below 0.08 can be arrested for DUI if alcohol is impairing their ability to drive.

Recently, the National Traffic Safety Board has recommended that the per se BAC limit be lowered to 0.05 because most drivers begin to have difficulties with depth perception and other visual functions at that level. They believe if all 50 states adopted this standard, 1,000 lives could be saved nationwide annually.

The impacts of both Initiative 1183 (privatizing sales of hard liquor in Washington) and Initiative 502 (legalizing the sale and distribution of marijuana in Washington) have presented us with new challenges. The number of stores with hard liquor licenses has gone from 328 to 1,419, and the number of hours during which liquor can be purchased has nearly doubled – from 78 hours per week to 140, according to the Washington State Division of Behavioral Health and Recovery. Marijuana will become more easily available as well.

Many other states are watching what the impacts of these initiatives will be. We need to formulate new strategies and policies to address these changes which have the potential to slow our progress toward zero traffic deaths and serious injuries by 2030.

If Washington is going to reach the goal of zero impaired driving fatalities and serious injuries, we must continue past successful endeavors while also pursuing new approaches, proven strategies and best practices.

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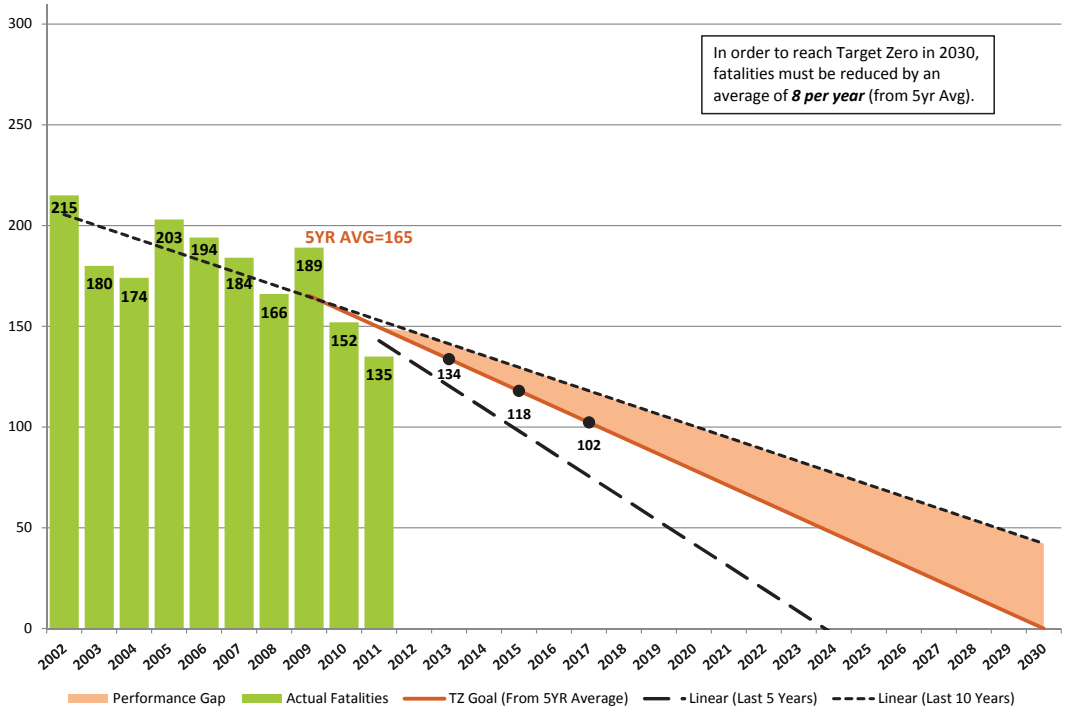
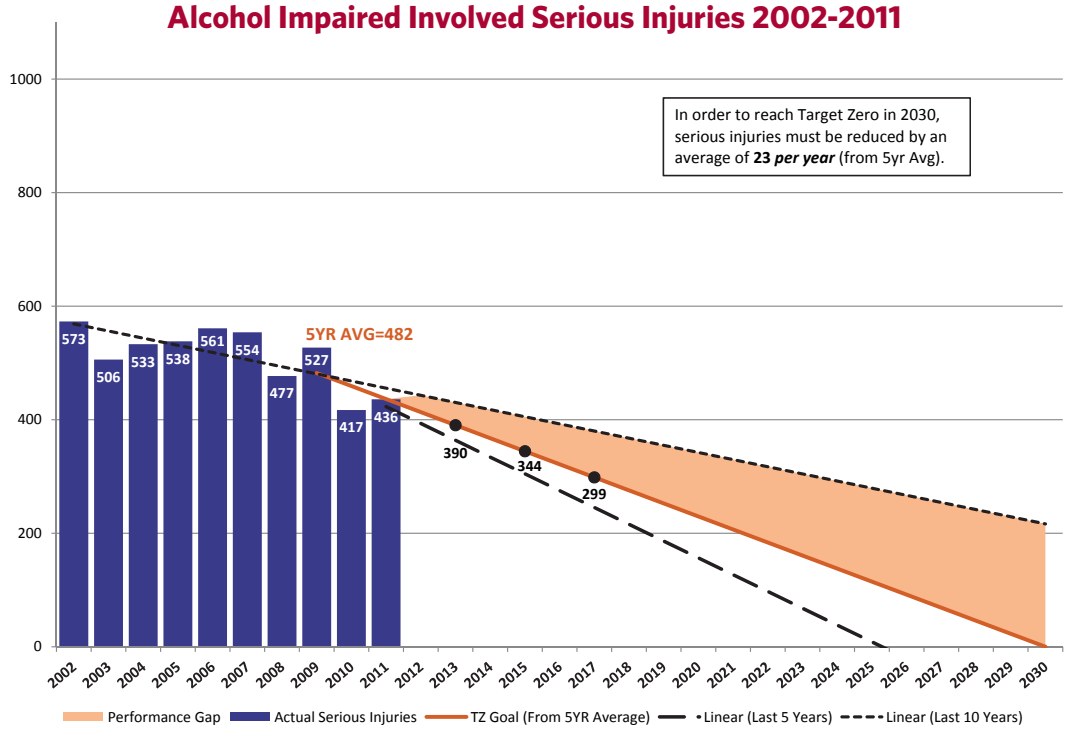
Alcohol Impaired Involved Fatalities 2002-2011



Alcohol Impaired Involved Serious Injuries 2002-2011



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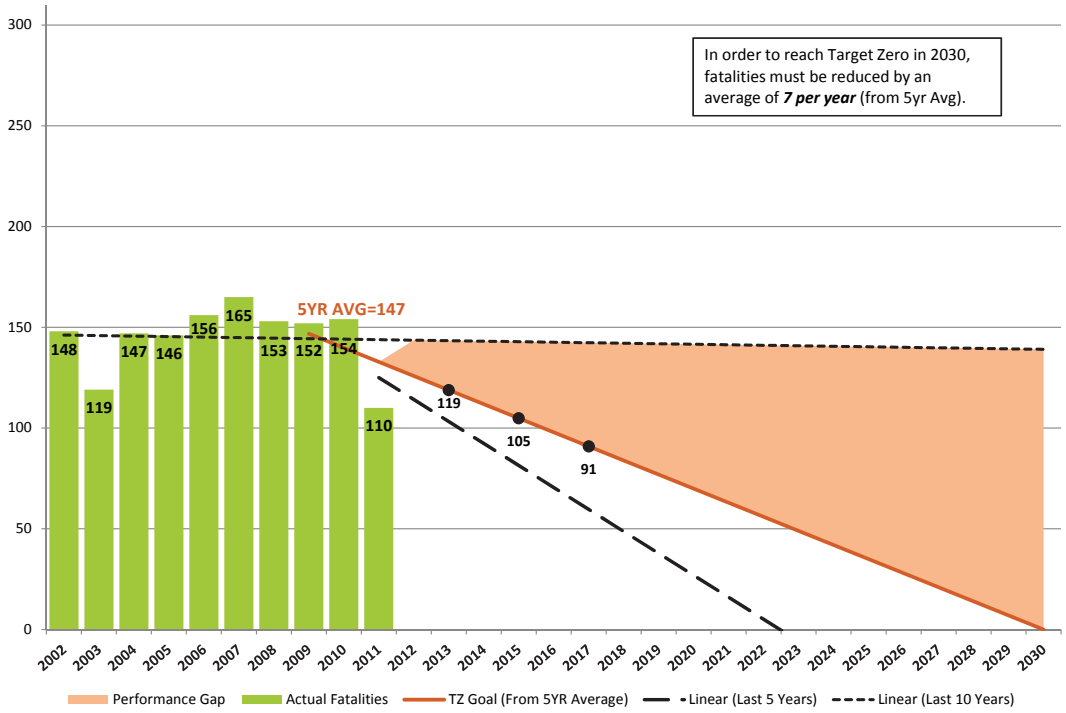
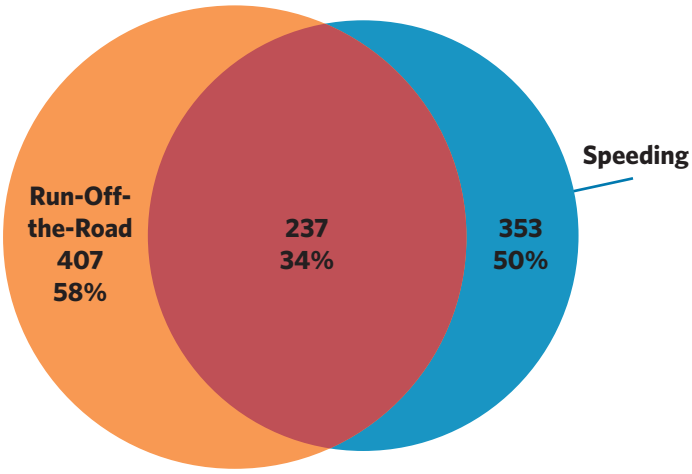
Drug Impaired Involved Fatalities 2002-2011



Impaired Driver Involved Fatalities
Total = 704



Of the 704 impaired driver involved fatalities 2009-2011, 58% also involved run-off-the-road and 50% involved speeding. Combined, 34% of these fatalities involved both run-off-the-road and speeding.

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Contributing Circumstances and Factors

Age and Gender

- Just over half of people killed and seriously injured in impairment-related crashes were ages 16-34
- Just over half (53%) of impaired drivers in fatal crashes were ages 16-34
- Four out of five impaired drivers in fatal crashes were male

Location

- Sixty-one percent of fatalities occurred on rural roads
- Five counties in Washington account for over 50% of impaired driving fatalities: King, Pierce, Snohomish, Yakima, and Spokane

Time, Day, Month

- Nearly sixty percent of deaths occurred at nighttime (7 p.m. - 4:59 a.m.)
- Over half of fatalities occurred on the weekend (between 7 p.m. Friday and 4:59 a.m. Monday)
- The summer months of June through September account for 42% of impairment related deaths
- The most impaired driving involved deaths occurred in August (13%) and the fewest in April (6%)

Other

- Sixty-three percent of those killed died in single-vehicle crashes
- Forty-four percent of those impaired were the sole occupants in their vehicles
- Twenty-six percent of impaired drivers were also distracted
- Motorcyclists are the only person group in which drug impairment, involved in 29% of fatalities, exceeds alcohol impairment
- Impaired drivers are 38% more likely to disobey traffic signs, signals, officers or laws

Programs & Successes

Integrated Systems Approach

Impaired driving is a societal issue that pushes us beyond traditional traffic safety partnerships. To that end, the Washington Traffic Safety Commission (WTSC) chairs the Washington Impaired Driving Advisory Council. This council 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.

Target Zero Teams (TZT)

A new program, Target Zero Teams placed full-time Washington State Patrol (WSP) DUI squads in King, Pierce, and Snohomish Counties. The WSP teams were joined by local law enforcement officers on the weekends or other high DUI times. These multi-jurisdictional squads focused their efforts on those locations with the highest concentrations of DUI collisions. During the first 24 months of this project:

- TZT members contacted more than 34,000 motorists and arrested 6,693 DUI offenders
- TZT arrests for DUI and tickets for speeding and seat belt violations have resulted in over $14 million in fines and fees being levied
- Preliminary evaluation of the project showed that alcohol and drug-impaired fatalities decreased by 34.4% in TZT counties during the first ten months of the project (compared to the 5-year average for the same 10 month period), whereas the control counties (Clark and Spokane) experienced a 28.4% increase in the same period (NHTSA, Nov. 2012).

Based on the Federal Highway Administration's fatality cost estimate, this project showed a 115:1 return on investment for the project funds. Following on these successes, the project has been expanded to include Yakima and Spokane Counties.

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High Visibility DUI Enforcement Programs

WTSC funds quarterly statewide DUI Patrols called "Drive Sober or Get Pulled Over." Over 150 law enforcement agencies participate in these campaigns. Paid media messages are purchased to inform the public of the increased enforcement. Information campaigns in advance, paired with high visibility emphasis enforcement patrols, and follow-up reporting of the results, have proven to be an effective combination as documented in *Countermeasures That Work.*

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). Officers complete a rigorous training course and certification process. This enables them to recognize the symptoms of intoxication for seven different categories of drugs using a 12-step standardized process to identify drug impairment.

The WSP provides DRE training to both WSP troopers, as well as officers from local law enforcement agencies. Since the program's inception, the number of trained DREs has risen from 16 to over 220, representing 73 law enforcement agencies. The Statewide Standard Field Sobriety Test (SFST) Coordinator Program provides comprehensive, consistent, timely impaired driving training for all law enforcement agencies statewide.

Reducing Excessive Drinking and Underage Drinking

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."

Parental influence is an important factor in helping keep children from drinking and drug use. WTSC partners with the Liquor Control Board and MADD to educate parents with the "Power of Parents" curriculum. This curriculum, developed by MADD and Pennsylvania State University's Dr. Robert Turrisi, provides guidance for talking with teens about the dangers of drinking before age 21, and is based on research proven to reduce underage drinking by up to 30 percent.

Prosecute, Sanction and Treat DUI Offenders

Washington implemented the Traffic Safety Resource Prosecutor Program in August 2009. The program provides 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. WTSC established the Judicial Outreach Liaison program in 2013 to keep judges apprised of new legal and technical issues surrounding DUI cases.

In 2008 the new Ignition Interlock Program was created to monitor ignition interlock providers, installers and the offenders required to have them. The program 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 DUI courts in Washington supported by the WTSC. Each of these treatment based courts has its own characteristics, but all use the DUI court principles 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.

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Objectives & Strategies		
Objectives (What)	**Strategies (How)**	**Implementation Arena(s)**
1. Foster leadership to facilitate impaired driving system improvements	1.1 Continue to build partnerships designed to reduce impaired driving. (P, NCHRP)	Leadership/Policy
	1.2 Implement the corridor safety model in high-crash locations where data suggests a high rate of impaired driving. (P, NCHRP)	Leadership/Policy, Education, Engineering, Enforcement
	1.3 Utilize Target Zero Managers and community-based traffic safety taskforces to address impaired driving issues. (R, WTSC)	Leadership/Policy, Education, Engineering, Enforcement
2. Prevent excessive drinking, underage drinking, and impaired driving	2.1 Conduct well-publicized compliance checks of alcohol retailers to reduce sales to underage persons. (R, CTW)	Enforcement
	2.2 Conduct well-publicized enforcement aimed at underage drinking parties. (R, CTW)	Enforcement
	2.3 Encourage parents to talk with their children about the risks of alcohol and other drugs. (R, DBHR)	Education
	2.4 Continue mandatory alcohol server training, and explore mandating training for people who sell alcohol in the retail environment. (U)	Education
	2.5 Support alternative transportation services such as transit (especially at night), designated driver programs, and other alternative ride programs to help eliminate need for impaired individuals to drive. (U)	Leadership/Policy
3. Encourage the enactment of laws when research suggests such laws will result in impaired driving fatality and serious injury reductions.	3.1 Encourage laws that will allow the state to utilize sobriety checkpoints. (P, CTW)	Leadership/Policy
	3.2 Explore the implications to Washington for lowering the per se BAC limit from .08 to .05 (R, META)	Leadership/Policy
	3.3 Place limits on plea agreements. (R, CTW)	Leadership/Policy
	3.4 Increase the state excise tax on beer. (R, NCHRP)	Leadership/Policy
	3.5 Encourage laws that use any money collected from DUI fines in excess of $101 to support impaired driving efforts. (R, GHSA)	Leadership/Policy
	3.6 Establish 24/7 sobriety program. (R, CTW)	Leadership/Policy
	3.7 Require ignition interlock installation as condition of pre-trial release. (U)	Leadership/Policy

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Objectives & Strategies		
Objectives (What)	**Strategies (How)**	**Implementation Arena(s)**
4. Discourage the enactment of laws when research suggests such laws will result in impaired driving fatality and serious injury increases.	4.1 Discourage expansion of access to alcohol, marijuana, and other drugs. (U)	Leadership/Policy
5. Enforce and publicize DUI laws	5.1 Continue statewide, high-visibility saturation enforcement and media campaigns to reduce impaired driving. (R, CTW)	Enforcement, Education, Communication
	5.2 Expand full-time DUI squads targeting areas with high numbers of DUI-related crashes. (R, DDACTS)	Enforcement, Education, Communication
	5.3 Enforce and publicize zero tolerance laws for drivers under age 21. (R, CTW)	Enforcement, Education, Communication
6. Enhance law enforcement training in alcohol and drug detection	6.1 Enhance law enforcement DUI training with Standard Field Sobriety Test (SFST) training and refresher training. (P, NHTSA)	Education
	6.2 Enhance law enforcement DUI training with Advance Roadside Impaired Driving Enforcement (ARIDE) training. (P, NHTSA)	Education
	6.3 Expand the Drug Evaluation, Recognition, and Classification Program. (R, CTW)	Education
7. Encourage consistent and vigorous DUI prosecution	7.1 Support DUI training for prosecutors and law enforcement officers. (R, NHTSA)	Education
	7.2 Provide prosecution of DUIs as part of the Target Zero Teams. (U)	Education
8. Promote evidence-based and promising court sentencing and supervision practices	8.1 Incarcerate offenders who fail to comply with court-ordered alternative sanctions. (P, NCHRP)	Leadership/Policy
	8.2 Establish and support the Judicial Outreach Liaison program. (R, NHTSA)	Education
	8.3 Support and establish DUI Courts. (R, CTW)	Leadership/Policy
	8.4 Establish method for conducting home compliance checks on DUI offenders. (R, CTW)	Leadership/Policy
	8.5 Conduct alcohol/drug assessments on all DUI offenders, and enhance treatment and probation when warranted. (R, CTW)	Leadership/Policy
	8.6 Encourage attendance at DUI Victim's Panels. (U)	Leadership/Policy

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Objectives & Strategies		
Objectives (What)	**Strategies (How)**	**Implementation Arena(s)**
9. Use licensing sanctions shown to be effective at reducing recidivism and protecting the public	9.1 Suspend driver license administratively upon arrest. (P, CTW)	Leadership/Policy
	9.2 Require ignition interlock as a condition for license reinstatement. (P, NCHRP)	Leadership/Policy
10. Expand the use of Ignition Interlocks	10.1 Monitor ignition interlock manufacturers and installers to ensure a continued viability and validity of program. (P, CTW)	Leadership/Policy
	10.2 Monitor reports from ignition interlock manufacturers on alcohol failures on ignition interlocks and conduct compliance checks. (P, CTW)	Leadership/Policy
	10.3 Investigate ignition interlock circumvention attempts. (P, CTW)	Leadership/Policy
11. Identify, intervene, and refer individuals for appropriate substance abuse treatment	11.1 Continue and expand use of screening, brief intervention and referral to treatment. (P, CTW)	Emergency Medical Services
12. Establish and maintain substance abuse treatment program availability	12.1 Match treatment and rehabilitation to the diagnosis. (P,NIH)	Leadership/Policy
13. Establish programs to facilitate close monitoring of impaired drivers	13.1 Monitor DUI offenders closely. (R, CTW)	Leadership/Policy
14. Provide timely, accurate, integrated, and accessible traffic records data	14.1 Support efforts to simplify and streamline the DUI arrest process including developing an electronic DUI arrest package, utilizing the mobile impaired driving unit and BAC processors for high-visibility campaigns. (R, NHTSA)	Leadership/Policy

P = Proven **R = Recommended** **U = Unknown**

CTW = Countermeasures that Work
DBHR = Division of Behavioral Health and Recovery
DDACTS = Data Driven Approaches to Crime and Traffic Safety
GHSA = Governor's Highway Safety Association
META = Meta Study
NCHRP = National Cooperative Highway Research Program
NHTSA = National Highway Traffic Safety Administration
NIH = National Institute of Health
WTSC = Washington Traffic Safety Commission

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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:

Impaired Driver Involved

Fatalities: Any driver with a Blood Alcohol Concentration (BAC) of 0.08 or higher or a positive drug result as confirmed by the state Toxicology Laboratory.

Serious Injuries: Any collision in which the investigating officer or Drug Recognition Expert (DRE) indicated that the driver was impaired by drugs or alcohol and recorded in contributing circumstances.

Drug Impaired Driver Involved

Fatalities: Any driver with a positive drug result as confirmed by the state Toxicology Laboratory.

Alcohol Impaired Driver Involved

Fatalities: Any driver with a BAC of 0.08 or higher as confirmed by the state Toxicology Laboratory.

Serious Injuries: Any collision in which the officer or DRE indicated that the driver was impaired by alcohol and recorded in contributing circumstances.

Drinking Driver Involved

Fatalities: Any driver with a BAC of any value except 0 as confirmed by the state Toxicology Laboratory (also includes alcohol impaired drivers).

Serious Injuries: Any collision in which the investigating officer or DRE indicated that the driver was impaired by alcohol and recorded in contributing circumstances or driver sobriety is reported as "Had been drinking."

Terms and Definitions

Driving Under the Influence (legal definition): In Washington State a person is guilty of driving while under the influence – of intoxicating liquor, marijuana, or any drug – if the person drives a vehicle within this state and:

- The person has, within two hours after driving, an alcohol concentration of 0.08 or higher as shown by analysis of the person's breath or blood made under RCW 46.61.506; or
- The person has, within two hours after driving, a THC concentration of 5.00 or higher as shown by analysis of the person's blood made under RCW 46.61.506; or
- The person is under the influence of or affected by intoxicating liquor, marijuana, or any drug; or
- The person is under the combined influence of or affected by intoxicating liquor, marijuana, and any drug.

Drug: Any substance that, when taken into the human body can impair the ability of the person to operate a vehicle safely.

Per se alcohol and marijuana limit: When a person is found to have, within two hours after driving, an alcohol concentration of 0.08 or higher or a THC concentration of 5.00 nanograms per milliliter of blood or higher as shown by an analysis of the person's breath or blood, that person is guilty "per se" of driving under the influence. No further proof is needed.

Tetrahydrocannabinol (THC): The principal psychoactive constituent of the cannabis plant. Marijuana consists of the dried flowers and leaves of cannabis plants often selectively bred to produce high levels of THC and other psychoactive cannabinoids.

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Additional Resources

Countermeasures That Work: A Highway Safety Countermeasure Guide for State Highway Safety Offices, 7th Edition, Chapter 1 (National Highway Traffic Safety Administration), http://www.nhtsa.gov/staticfiles/nti/pdf/811727.pdf

NCHRP Report 500, Volume 16: A Guide for Reducing Alcohol-Related Collisions (National Cooperative Highway Research Program, Transportation Research Board), http://onlinepubs.trb.org/onlinepubs/nchrp/nchrp_rpt_500v16.pdf

Washington's Target Zero Teams Project: Reduction in Fatalities During Year One (National Highway Traffic Safety Administration), www.nhtsa.gov/staticfiles/nti/pdf/811687.pdf

NCHRP Report 501: Integrated Safety Management Process (National Cooperative Highway Research Program, Transportation Research Board), http://onlinepubs.trb.org/onlinepubs/nchrp/nchrp_rpt_501.pdf

The Guiding Principles of DWI Courts (National Center for DWI Courts), http://dwicourts.org/learn/about-dwi-courts/-guiding-principles

Washington State laws (RCWs) relating to impaired drivers:

- *RCW 46.61.502 – Driving under the influence.*
- *RCW 46.61.503 – Driver under twenty-one consuming alcohol or marijuana.*
- *RCW 46.61.504 – Physical control of vehicle under the influence.*

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Run-Off-the-Road

Nearly half of all traffic fatalities were run-off-the-road collisions.

Executive Summary

From 2009-2011, nearly half of all fatal collisions (44%), and nearly one third of all serious injury collisions (30%), involved vehicles leaving the road. Speeding and impairment remain the most frequent contributors in run-off-the-road collisions, even though their numbers are declining. Keeping vehicles on the road, and reducing the impacts when they leave the road, are keys in reducing run-off-the-road fatalities and serious injuries.

Over half (53%) of all fatal and serious injury run-off-the-road collisions (56% of fatal collisions, 52% of serious injury collisions) occurred in horizontal curves. This represented 1,277 of 2,418 run-off-the-road collisions. Addressing driver behavior in curves, where curves represent a small part of the overall roadway system, can be one of the best ways to reduce run-off-the-road collisions.

Background

In 2009-2011, run-off-the-road fatal and serious injury collisions decreased by 14% when compared to 2006-2008 numbers. This decline rate is similar to the overall decline rate for fatal and serious injury collisions. The top contributing factors continue to be speeding and impaired driving, which are also decreasing at a similar rate. To achieve Target Zero for run-off-the-road collisions, there will need to be 10 fewer fatalities and 36 fewer serious injuries each year until 2030.

From 2009-2011, 36% of fatal and serious injury run-off-the-road collisions occurred on state routes. In comparison, 39% occurred on county roads. Annual breakouts of where these collisions are occurring are presented in the graphs on page 41.

In 2010, there were 7,060 miles of state highways, while county roads accounted for more than five times that amount, with 39,748 miles of road. Comparing these two classes of roadways, state routes carry more traffic volume and had 881 run-off-the-road collisions (257 fatalities; 772 serious injuries). On the other hand, lower volume county roads had 940 collisions (243 fatalities; 812 serious injuries). This is due in part to county roads that include narrower lanes and shoulders, fixed objects closer to the road, and steeper slopes or ditches beside the road.

For all roads, but especially county roads, run-off-the-road collisions are dispersed over a large number of miles. Systematic, low-cost improvements spread over a wide area, in combination with enforcement of impaired driving and speeding, is an efficient approach to reducing run-off-the road collisions.

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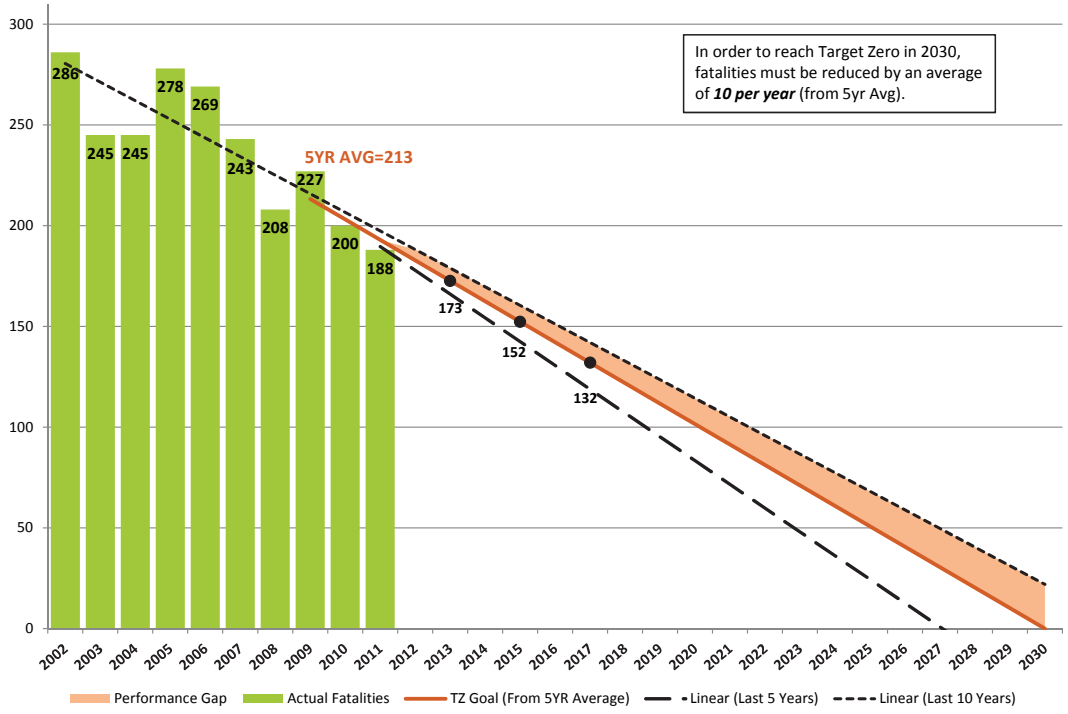
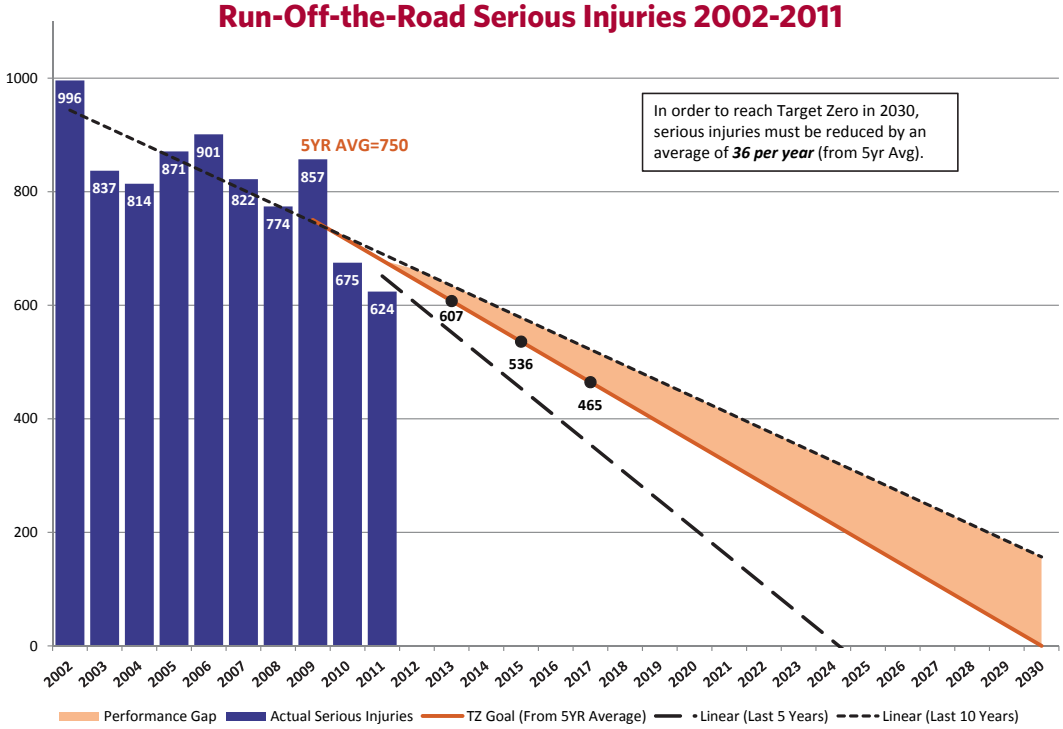
Run-Off-the-Road Fatalities 2002-2011



Run-Off-the-Road Serious Injuries 2002-2011



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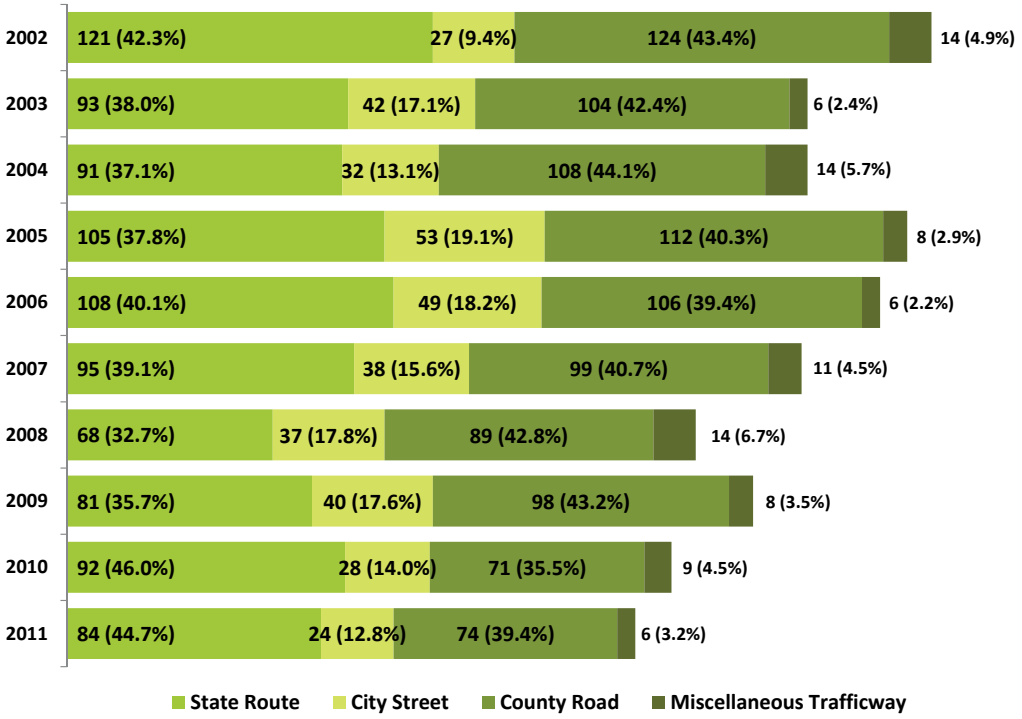
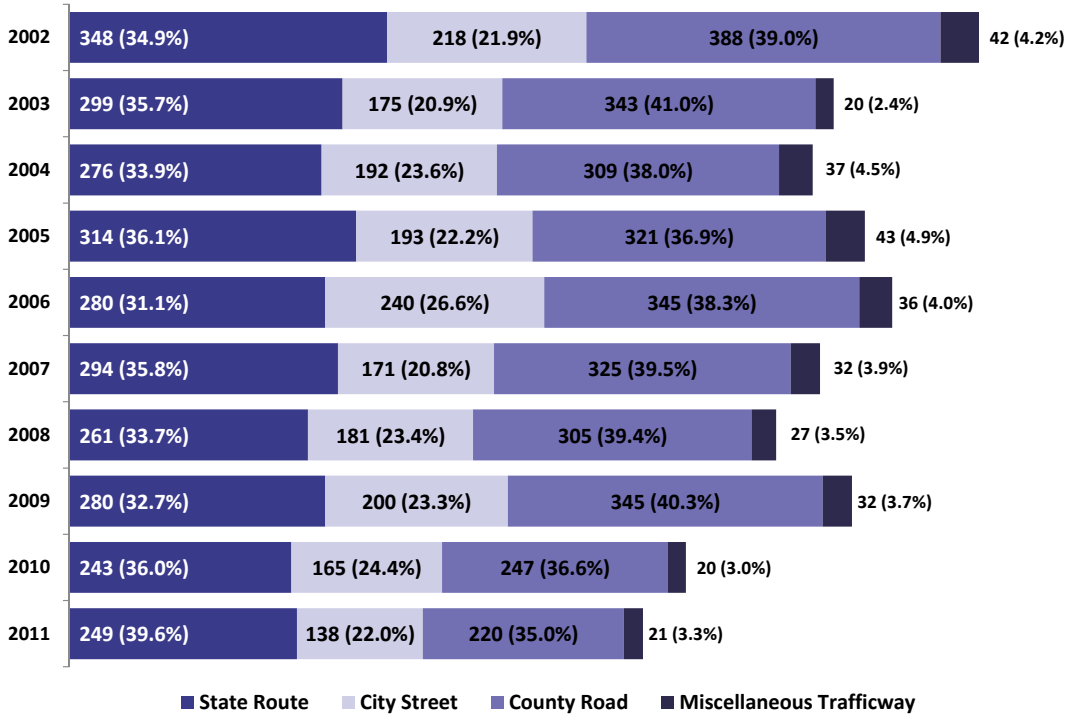
Run-Off-the-Road Fatalities by Jurisdiction 2002-2011



Run-Off-the-Road Serious Injuries by Jurisdiction 2002-2011



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Contributing Circumstances and Factors

From 2009-2011, the most common contributing factors in fatal or serious injury run-off-the-road collisions were speeding (48%), impairment (41%), inattention or distraction (18%), crossing the center line (16%) and falling asleep/fatigued (8%). In fatal collisions, all of these factors are present more often.

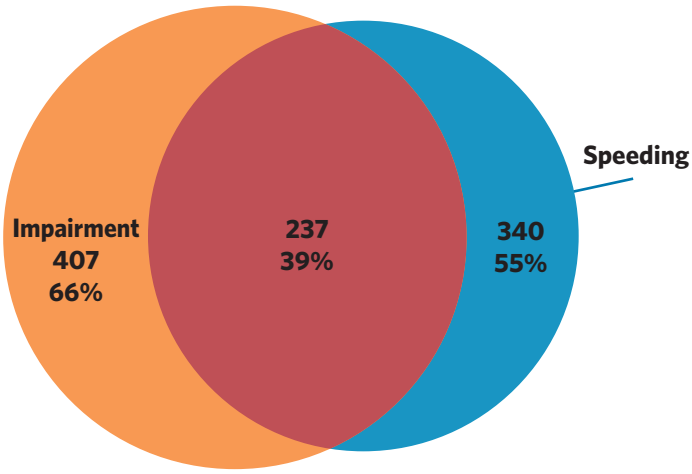
Speeding was involved in 55% of run-off-the-road fatalities and in 44% of serious injuries. Impairment contributed to 66% of fatalities and 33% of serious injuries. Impairment is underreported in serious injury collisions, compared to fatalities where impairment is confirmed by toxicology. Inattention or distraction contributed to 32% of fatalities and 13% of serious injuries.

Young drivers age 16-25 were involved in over 35% of fatal and serious injury run-off-the-road collisions.

Once a vehicle left the roadway, the most common occurrences in fatal and serious injury collisions were: overturn (18%), hit tree (15%), ran into ditch (8%), hit utility pole (7%), ran over embankment (7%), hit earth bank (6%), hit guardrail (6%), hit fence (5%) and hit parked car (4%).

Over 90% of fatal and serious injury run-off-the-road collisions involve only one vehicle.

Run-Off-the-Road Fatalities
Total = 615



Of the 615 run-off-the-road fatalities 2009-2011, 66% also involved impairment and 55% involved speeding. Combined, 39% of these fatalities involved both impairment and speeding.

Programs and Successes

Keeping Vehicles on the Road

By implementing effective strategies to combat impaired driving, speeding, and distracted driving, Washington hopes to reduce the behaviors causing a vehicle to leave the roadway. Strategies to address these behaviors are listed in the respective chapters. In addition, applying engineering strategies – such as installing rumble strips, installing high friction surface treatments, and improving signing and striping – can reduce the chance a vehicle will leave the roadway.

Minimizing Consequences of Leaving the Road

Although preventing a vehicle from leaving the road in the first place is the best solution, run-off-the-road collisions still occur. The second line of defense for reducing fatalities and serious injuries is minimizing the consequences of leaving the road. By removing or relocating roadside objects, creating more gentle roadside slopes, and improving ditch design, engineers can reduce deaths and serious injuries from a vehicle crashing or overturning. In addition, installing guardrails and other barriers can reduce the severity of impacts.

Future Technology

Vehicle technology improvements also have the potential to help reduce run-off-the-road collisions. For example, some vehicles entering the marketplace have lane departure warning systems, alerting drivers when they're crossing over a road edge line. These types of systems, along with other future technology developments, will assist with keeping drivers on the road.

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Objectives & Strategies		
Objectives (What)	**Strategies (How)**	**Implementation Arena(s)**
1. Reduce the number of vehicles leaving the roadway	1.1 Improve roadway signing and shoulder delineation, especially in curves. (P, NCHRP)	Engineering
	1.2 Improve roadway geometry. (P, NCHRP)	Engineering
	1.3 Increase road surface skid resistance (higher friction factor) using high friction surface treatments. (P, NCHRP)	Engineering
	1.4 Install center and/or edge line rumble strips. (P, WSDOT)	Engineering
	1.5 Install/increase illumination at locations with night time crashes. (R, FHWA)	Engineering
	1.6 Install optical speed markings at curves. (R, LIT)	Engineering
	1.7 Install delineation on fixed objects that cannot be removed from the clear zone. (U)	Engineering
	1.8 Install profiled center and edge lines. (U)	Engineering
	1.9 Install wider edge lines. (U)	Engineering
	1.10 Install dynamic curve warning signs. (U)	Engineering
2. Minimize the consequences of leaving the roadway	2.1 Widen the clear zone. (P, NCHRP)	Engineering
	2.2 Install/maintain roadside safety hardware such as guardrail, cable barrier, concrete barriers, crash cushions, etc. (P, NCHRP)	Engineering
	2.3 Design safer slopes and ditches to prevent rollovers. (P, NCHRP)	Engineering
	2.4 Remove/relocate objects, such as trees and utility poles, in hazardous locations in the clear zone. (P, NCHRP)	Engineering
	2.5 Implement safe urban street designs. (P, NACTO)	Engineering
	2.6 Remove or replace all non-standard guardrail. (R, NCHRP)	Engineering
	2.7 Install safety edge. (R, FHWA)	Engineering
	2.8 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. (R, WSDOT)	Leadership/Policy

P = Proven **R = Recommended** **U = Unknown**

FHWA = Federal Highway Administration
NACTO = National Association of City Transportation Officials
WSDOT = Washington State Department of Transportation
LIT = Literature Review
NCHRP = National Cooperative Highway Research Program

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Additional Resources

Crash Modification Factors Clearinghouse, http://www.cmfclearinghouse.org/

Low Cost Local Road Safety Solutions (American Traffic Safety Services Association), http://safety.fhwa.dot.gov/intersection/resources/fhwasa09027/resources/Low%20Cost%20Local%20Road%20Safety%20Solutions.pdf

NCHRP Report 500, Volume 3, A Guide for Addressing Collisions with Trees in Hazardous Locations (National Cooperative Highway Research Program, Transportation Research Board), http://onlinepubs.trb.org/onlinepubs/nchrp/nchrp_rpt_500v3.pdf

NCHRP Report 500, Volume 6, A Guide for Addressing Run-Off-Road Collisions (National Cooperative Highway Research Program, Transportation Research Board), http://onlinepubs.trb.org/onlinepubs/nchrp/nchrp_rpt_500v6.pdf

NCHRP Report 500, Volume 7, A Guide for Reducing Collisions on Horizontal Curves (National Cooperative Highway Research Program, Transportation Research Board), http://onlinepubs.trb.org/onlinepubs/nchrp/nchrp_rpt_500v7.pdf

NCHRP Report 500, Volume 8, A Guide for Reducing Collisions Involving Utility Poles (National Cooperative Highway Research Program, Transportation Research Board), http://onlinepubs.trb.org/onlinepubs/nchrp/nchrp_rpt_500v8.pdf

Roadway Departure Safety Resources (Federal Highway Administration), http://safety.fhwa.dot.gov/roadway_dept/

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Speeding Involved

Executive Summary

Speeding is the third-most common factor contributing in fatal and serious injury collisions. From 2009-2011, speeding was involved in nearly 40% of fatalities and 30% of serious injuries, right behind impaired driving and run-off-the-road. While speeding contributes to a large percentage of collisions, the number of speeding involved crashes keeps going down. Ongoing education of the public about the dangers of speeding, partnered with high visibility patrols to enforce speed limits, have proven to be effective countermeasures.

Background

Speeding involves drivers traveling above the posted speed limit or too fast for conditions. The risk of death and injury increases substantially as collision speed increases. As vehicle speed increases, the amount of energy generated increases exponentially as a result. For example, crashing into a wall at 80 mph generates four times as much kinetic energy (the harmful force in a crash) as hitting the same wall at 40 mph (Department for Transport, London, September 2010).

A review of 2009-2011 fatal and serious injury speed related collisions shows the collisions almost equally split on city streets, county roads and state highways. On state highways, most of the collisions are on routes with a 60 mph speed limit. Most speed related fatal and serious injury collisions on city streets and county roads are occurring with posted speed limits of 35 mph.

For pedestrians, the risk of death is nine times higher when struck at 30 mph than at 20 mph. For both older and child pedestrians, this increase in risk is even greater but occurs at lower speeds (just over 20 mph). (see Pedestrians chapter for more information.)

From 2009-2011, speeding-involved fatalities and serious injuries declined slightly faster than overall statewide fatalities and serious injuries. Compared with 2006-2008, speeding-involved fatalities have declined 20% and serious injuries have decreased 17%. Speeding continues to frequently be coupled with impairment and run-off-the-road. In 2009-2011, 64% of speeding involved fatalities also included impairment, and 61% resulted in a run-off-the-road collision.

Speeding was involved in nearly 40% of all traffic fatalities in Washington 2009-2011.

Although the decline in speeding involved fatalities and serious injuries is promising, much work remains to be done. A statewide advisory council on reducing speeding involved deaths and serious injuries is in the process of being formed. The council is modeled after the successful structure of the Traffic Records Committee (TRC) and the Washington Impaired Driving Advisory Council (WIDAC). This advisory body will meet to examine recent data and research, and also to identify and recommend strategies for reducing these crashes.

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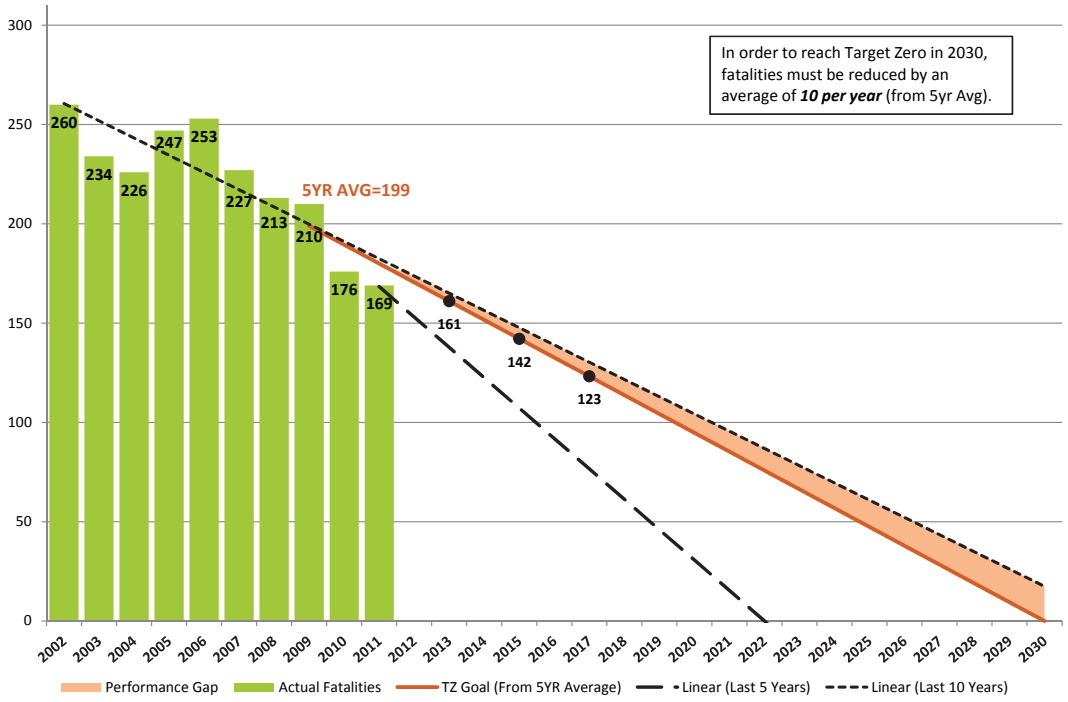
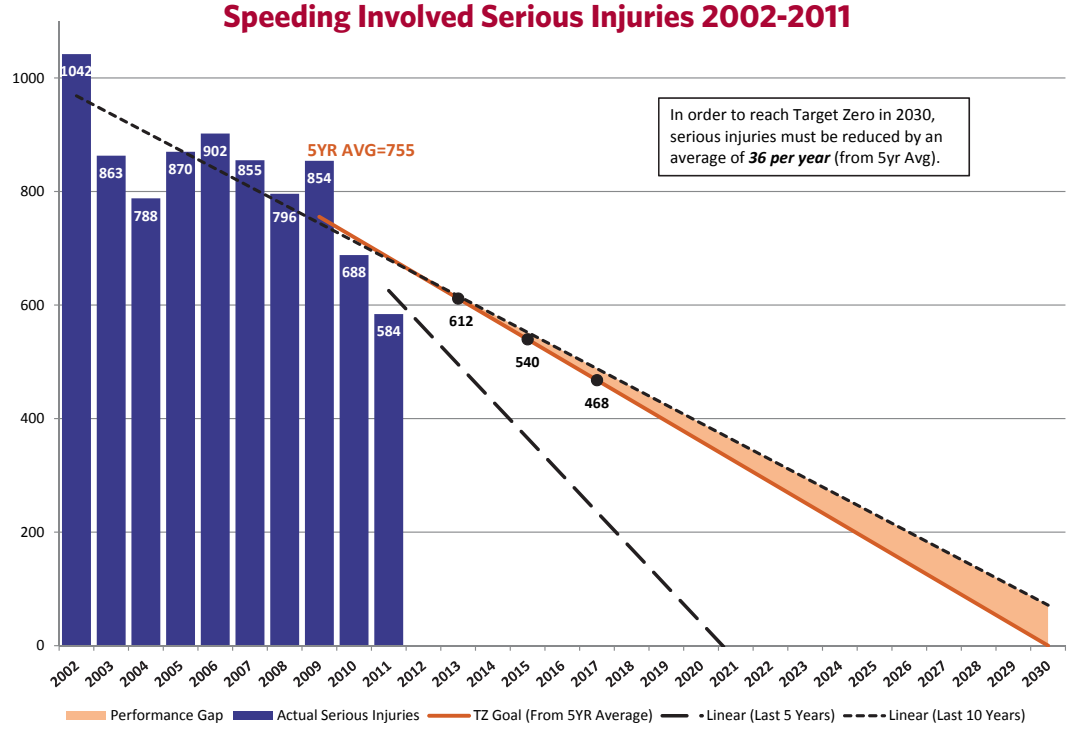
Speeding Involved Fatalities 2002-2011



Speeding Involved Serious Injuries 2002-2011



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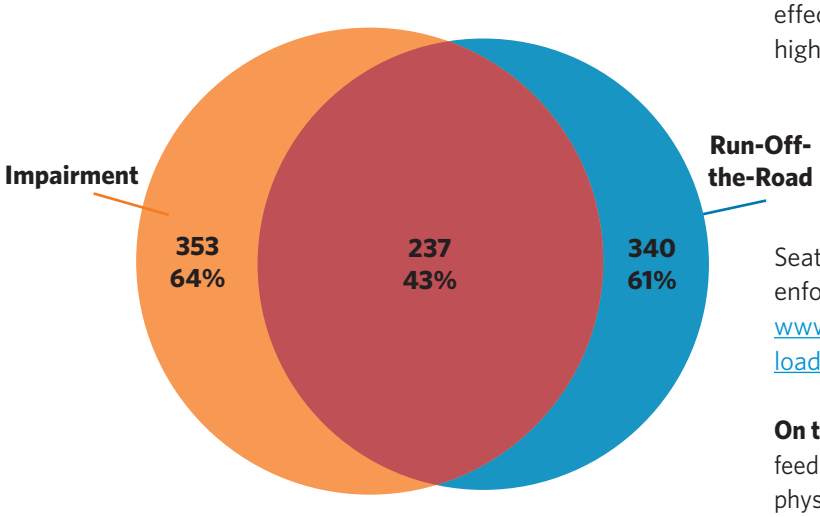
Contributing Circumstances and Factors

While speeding may be the only contributing factor in some fatal and serious injury crashes, it is often combined with other dangerous driving behaviors. These include aggressive driving, impairment by drugs or alcohol, and not wearing a seat belt.

Impairment was involved in 64% of speeding involved fatalities. Sixty-one percent (61%) of speeding involved fatalities resulted in run-off-the-road crashes. In 43% of speeding involved fatalities, both impairment and run-off-the-road were factors.

Speeding occurs more often among male drivers, young drivers and motorcyclists. Males accounted for over 78% of speeding-involved fatalities and over 66% of speeding-involved serious injuries. Young drivers (ages 16-25) represented 33% of speeding-involved fatalities and 35% of speeding-involved serious injuries. Over half of all motorcyclist fatalities involved speeding.

Speeding Involved Fatalities
Total = 555



Of the 555 speeding involved fatalities 2009-2011, 64% also involved impairment and 61% involved run-off-the-road. Combined, 43% of these fatalities involved both impairment and run-off-the-road.

There are also trends with respect to when and where speeding involved fatalities and serious injuries occur. Speeding fatalities are highest when the weather is warmer, on weekends, and on rural roads. More than half of speeding related fatalities 2009-2011 were on rural roads. Nearly one-third of both speeding involved fatalities and serious injuries occurred between June and August. Almost half of fatalities and 33% of serious injuries involving speeding occurred on weekends.

Programs and Successes

Education, enforcement, and engineering all play a role in getting drivers to slow down.

High visibility campaigns, such as "Slow Down or Pay Up," are effective in changing and maintaining safe driving behavior. They increase public awareness about a particular issue, as well as educate about how to reduce unsafe driving behaviors. The education is paired with emphasis enforcement patrols, which deter targeted behaviors by enforcing the moving violations with which they are associated. These emphasis patrols are even more effective when conducted in areas identified as having a high number of speed related collisions.

Automated Speed Enforcement (ASE) cameras, which have been installed in school zones and at some railroad crossings across the state, are another means of enforcement. The cities of Seattle and Tacoma have piloted automated speed enforcement cameras in other areas as well. (http://www-stage.wtsc.wa.gov/wp-content/uploads/downloads/2013/01/ASEReport123112.pdf)

On the engineering side, traffic calming techniques and speed feedback signs help reduce speeds. Traffic calming measures physically alter the road or layout to slow traffic. Examples include speed bumps, narrowing roads by expanding sidewalks, and even removing lanes. Speed feedback signs are triggered when drivers exceed the speed limit, sending a visual cue to slow down. These measures have been found most effective in areas with posted speeds of 25-35 mph.

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Objectives & Strategies		
Objectives (What)	**Strategies (How)**	**Implementation Arena(s)**
1. Reduce speeding through enforcement activities	1.1 Increase use of speed enforcement. (P, CTW)	Enforcement
	1.2 Conduct high visibility enforcement efforts at locations where speeding-related crashes are more prevalent. (P, NCHRP)	Enforcement
	1.3 Increase penalties for repeat and excessive speeding offenders. (R, CTW)	Leadership/Policy
	1.4 Ensure law enforcement officers have appropriate equipment for speeding enforcement. (R, WSP)	Enforcement, Leadership/ Policy
	1.5 Establish and enforce lower speed limits for commercial vehicles on higher-speed roads. (R, NCHRP)	Engineering, Enforcement
	1.6 Increase use of aerial speed enforcement. (U)	Enforcement
2. Use engineering measures to effectively manage speed	2.1 Set speed limits which account for roadway design, traffic, and environment, including traffic volume, modal mixed-use, and local and regional function. (R, NCHRP)	Engineering
	2.2 Use traffic-calming and other design factors to influence driver speed. (R, NCHRP)	Engineering
	2.3 Design and maintain speed limit and ensure warning signs are visible and installed at appropriate intervals. (R, NCHRP)	Engineering
	2.4 Use electronic variable speed limit signs that change according to conditions such as weather and congestion. (R, NCHRP)	Engineering
	2.5 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. (R, NCHRP)	Engineering, Education
	2.6 Separate motorized traffic from non-motorized traffic using shared-use paths, sidewalks, bridges, etc. (R, NCHRP)	Engineering
	2.7 Implement timed and coordinated traffic signals to improve traffic flow, reduce red-light running, and manage speeds. (R, NCHRP)	Engineering
	2.8 Set consistent speed limits based on existing operation considering for road design, traffic flows, traffic mix and other environmental factors. (R, NCHRP)	Engineering

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Objectives & Strategies		
Objectives (What)	**Strategies (How)**	**Implementation Arena(s)**
3. Build partnerships to increase support for speed reducing measures	3.1 Expand corridor safety model to high-crash locations where data suggests a high rate of speeding-related fatal or serious injury crashes. (P, CTW)	Leadership/Policy Education, Engineering, Enforcement
	3.2 Educate the public about the dangers of excessive speed and speed too fast for conditions, and its role in traffic fatalities. (R, CTW)	Education
	3.3 Encourage data sharing between local officers, Tribal police and engineering agencies to identify and develop solutions for areas where speeding is a problem. (R, DDACTS)	Leadership/Policy
	3.4 Educate prosecutors and judges to ensure speeding violations are treated seriously and fairly. (R, NCHRP)	Education, Enforcement
	3.5 Work with Washington Trucking Association and WSP's Commercial Vehicle Enforcement Division to encourage company policies which, when backed with speed monitors or speed regulators, can reduce speeding in commercial vehicles. (R, WSP)	Leadership/Policy
	3.6 Develop appropriate messages and methods to reach segments of the population inclined to speeding or driving too fast for conditions. (U)	Education
	3.7 Develop education messages in multiple languages. (U)	Education
	3.8 Educate about the effects of weather on appropriate speed. (U)	Education
	3.9 Collaborate with BIA, Indian Health Services, and NATEO to support Tribal nations who seek to reduce speeding-related collisions on Tribal lands. (U)	Leadership/Policy
	3.10 Implement neighborhood speed watch/traffic management programs. (U)	Education, Enforcement

P = Proven **R = Recommended** **U = Unknown**

CTW = Countermeasures That Work
NCHRP = National Cooperative Highway Research Program
DDACTS = Data Driven Approaches to Crime and Traffic Safety
WSP = Washington State Patrol

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Additional Resources

Countermeasures That Work: A Highway Safety Countermeasure Guide for State Highway Safety Offices, 7th Edition, Chapter 3 (National Highway Traffic Safety Administration), http://www.nhtsa.gov/staticfiles/nti/pdf/811727.pdf

Guidelines for Developing a High-Visibility Enforcement Campaign to Reduce Unsafe Driving Behaviors among Drivers of Passenger and Commercial Vehicles (National Highway Traffic Safety Administration, 2007), http://www.nhtsa.gov/DOT/NHTSA/Traffic Injury Control/Articles/Associated Files/HS810851.pdf

"Literature review on vehicle travel speeds and pedestrian injuries among selected racial/ethnic groups," Figure 1, Chapter III (W.A. Leaf and D.F. Preusser, National Highway Traffic Safety Administration, 1999), http://www.nhtsa.gov/people/injury/research/pub/hs809012.html

"National Traffic Speeds Survey 1: 2007" (National Highway Traffic Safety Administration, 2012), www.nhtsa.gov/staticfiles/traffic_tech/811644.pdf

NCHRP Report 500, Volume 23: A Guide for Reducing Speeding-Related Crashes (National Cooperative Highway Research Program, Transportation Research Board), http://onlinepubs.trb.org/onlinepubs/nchrp/nchrp_rpt_500v23.pdf

Road Safety Web Publication No. 16: Relationship between Speed and Risk of Fatal Injury: Pedestrians and Car Occupants (UK Department for Transport, 2010), http://assets.dft.gov.uk/publications/pgr-roadsafety-research-rsrr-theme5-researchreport16-pdf/rswp116.pdf

Washington State laws (RCWs) relating to speeding:

- *RCW 46.61.400 – Basic rule and maximum limits.*
- *RCW 46.61.410 – Increases by secretary of transportation – Maximum speed limit for trucks.*
- *RCW 46.61.440 – Maximum speed limit when passing school or playground crosswalks.*
- *RCW 46.61.465 – Exceeding speed limit evidence of reckless driving.*
- *RCW 46.61.470 – Speed traps defined, certain types permitted – Measured courses, speed measuring devices, timing from aircraft.*
- *RCW 46.61.275 – Reporting of certain speed zone violations – Subsequent law enforcement investigation.*

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Young Driver 16-25 Involved

Executive Summary

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.

From 2009-2011, 35% of traffic fatalities involved a young driver age 16-25. In that same time frame, young drivers were involved in 38% of all serious injury collisions. Compared to 2006-2008, there has been a 26% decrease in traffic fatalities involving a young driver and a 15% decrease in serious injuries. These declines are greater than declines in overall fatalities and serious injuries and both the five- and ten-year trend lines predict zero young driver involved fatalities and serious injuries before 2030.

Nevertheless, we must press ahead with further improvements to our young driver safety program. The core problem comes down to poor choices and behaviors greatly heightening their risk of crash involvement. The reasons for this young driver pattern stems from brain developmental processes, recently identified in research studies. Further reductions in young driver involved serious injury and fatality collisions will require us to deepen our understanding of adolescent development and alter our interventions accordingly.

Young drivers constituted 30% of impaired drivers, 40% of speeding drivers, and 27% of distracted drivers in 2009-2011 fatal crashes.

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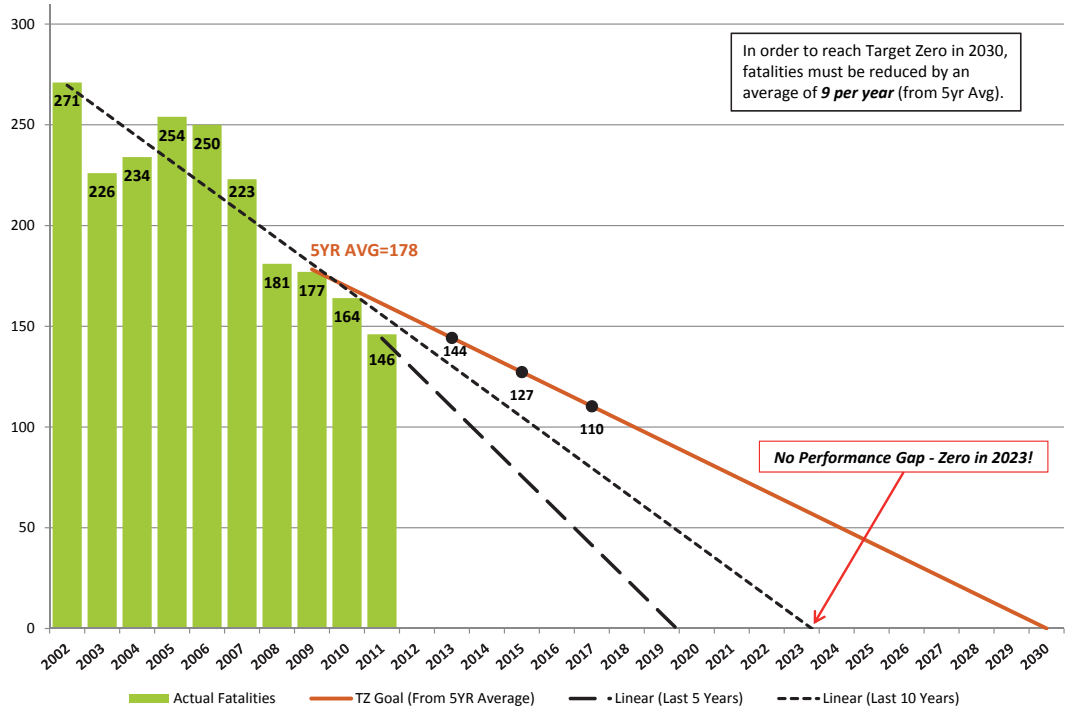
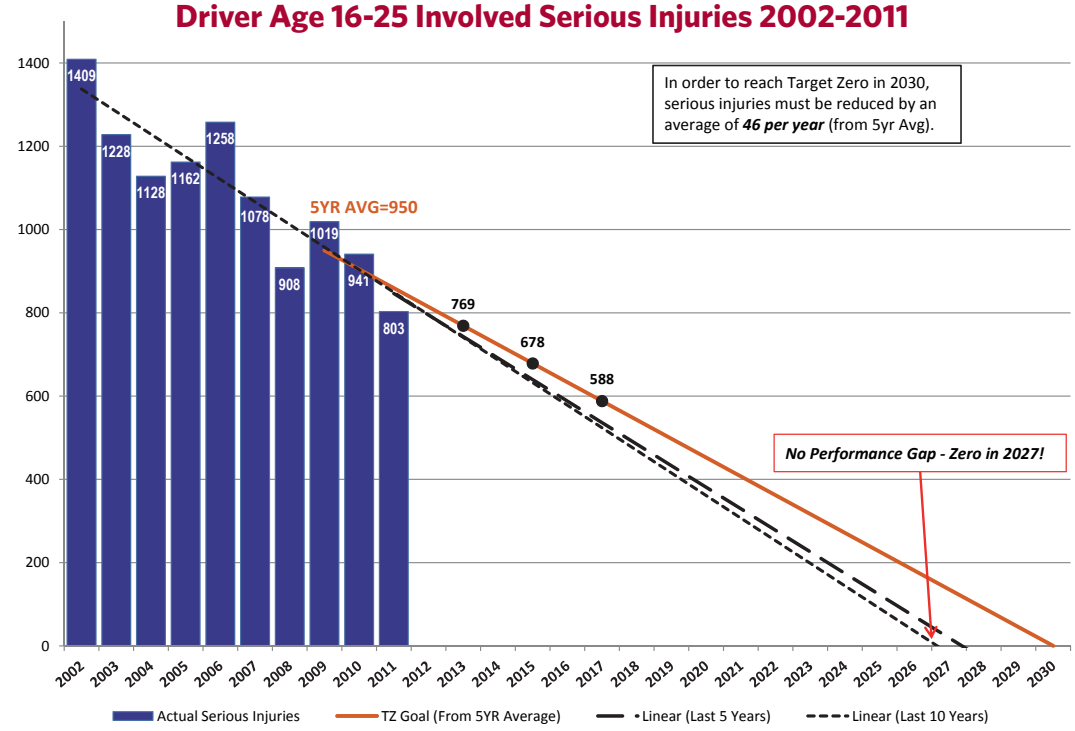
Driver Age 16-25 Involved Fatalities 2002-2011



Driver Age 16-25 Involved Serious Injuries 2002-2011



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Between 2009 and 2011, young drivers (ages 16-25) made up 14% of Washington licensed drivers, but were involved in crashes leading to 35% of traffic fatalities and 38% of serious injuries.

Background

Developmental Factors

Numerous research studies have shown young drivers are more likely to crash for two principal reasons: 1) inexperience and 2) immaturity (see, e.g., Hedlund, Shults, & Compton, 2003).

Young drivers are just learning to drive, so the "basics" (e.g., staying centered in the traffic lane) require more of their attention than that of experienced drivers. Their inexperience also means that they have insufficient skill at recognizing potential driving risks – or responding appropriately to those risks.

However, new drivers of all ages are more likely to crash. The difference is that young drivers are also developmentally immature, sometimes seeking risks for the thrills involved. They are also generally less able or willing to think ahead to the potentially harmful consequences of their risky actions. In fact, research on adolescent development suggests key areas of the brain (especially in the prefrontal cortex, the brain center for judgment, decision-making, and deferring immediate reward) are not fully developed until about age 25 (Dahl, 2008; Keating, 2007; Steinberg, 2007).

During the same developmental period, the area of the adolescent brain that mediates the anticipation of reward becomes much more responsive to the presence and influence of other teens than to that of adults.

These and other developmental changes combine to render all young people much more vulnerable to the dangers of driving (as well as other privileges associated with adult life; see Van Leijenhorst et al, 2009; Chein et al 2010). Inexperience and immaturity combine to make young drivers especially at-risk for crashing. Their risk is especially heightened at night, after consuming alcohol or drugs, with passengers in the car and when distracted.

Washington's Intermediate Driver License Law

In Washington, drivers who are 16-17 years old face license restrictions designed to improve their safety, as well as the safety of others. They are required to complete a state certified driver training school curriculum and other prerequisites to receive an Intermediate Driver License. Following IDL licensure, those 16-17 years old have restricted driving privileges (see box) which can be lost with certain violations. After a third violation the young driver's IDL is suspended until age 18.

In the twelve years since implementation of Washington's IDL Law, fatal and serious injury collisions involving 16- and 17-year-old drivers have declined an average of 9% per year.

Young drivers who wait until age 18 to apply for a driver license are currently required only to pass the driving knowledge and skill tests, the same as for new drivers of any age in Washington.

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Impact of Waiting to Get a License until 18 years old

Department of Licensing data shows that a significant number of teens wait until age 18 to get a driver license. This is of concern because newly licensed drivers at age 18 may begin driving without any driver training, road experience, or any of the IDL restrictions imposed on 16- and 17-year-old drivers.

Approximately 35,000 16-year-olds, 10,000 17-year-olds and 15,000 18-year-olds obtain a first time license annually. About 5,000 19- to 25-year-olds obtain first time licenses each year. Not all of the reasons some adolescents are waiting for licensure until 18 years old have been identified, though possible causes include the high cost of driver education programs, a desire to avoid IDL restrictions, and economic burdens related to the recent recession. Differences, if any, between teens who are licensed under the IDL and teens who are first licensed at age 18 have not yet been identified.

Privatization of Knowledge and Skill Tests

In October 2012, the Washington State Department of Licensing (DOL) implemented legislation allowing private and public driver training schools to administer the knowledge and skills tests for licensure in Washington. Formerly, this test was administered exclusively by DOL. From October 2012 to May 2013, approximately 100,000 tests have been administered by over 280 approved driver training schools, making the testing more available to the public. Prior to October 2012, there were only 56 licensing services offices across the state providing testing.

All driving schools providing testing will be audited annually to ensure compliance with rules and regulations. DOL is collecting data to identify and address any issues or concerns regarding this transition. The impact on competency in driving skills has not been assessed, as time must pass to determine needed changes, if any.

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
- Refrain from using wireless devices while driving, even hands-free. This includes talking on cell phones and sending or receiving text messages. Wireless devices may be used to report an emergency.

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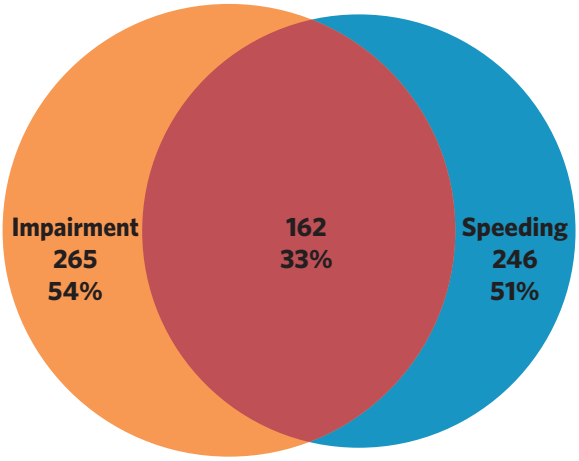
Contributing Circumstances and Factors

In fatal collisions 2009-2011, drivers age 16-25 were about twice as likely to be speeding, and three times more likely to be passing improperly, compared to drivers ages 26 and older. Drivers ages 16-25 were also 20% more likely to be impaired. Fatalities and serious injuries involving 16-17 year-old drivers are decreasing twice as fast as those involving 18-20 year-old drivers. The reasons for this progress are unclear, though Washington's IDL restrictions may play a role.

Young Driver 16-25 Involved Fatalities
Total = 487



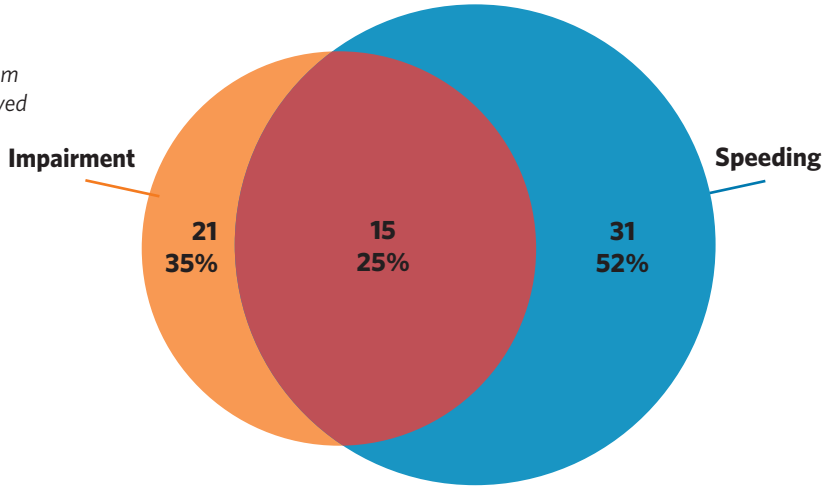
Of the 487 young driver (age 16-25) involved fatalities from 2009-2011, 54% also involved impairment and 51% involved speeding. Combined, 33% of these fatalities involved both impairment and speeding.

Impairment remains a critical issue for young drivers. During 2009-2011, over 40% of 16-25 year-old drivers in fatal collisions were impaired, a higher percentage than for any other age group. The Venn diagram above (with 54% impairment) represents the percentage of fatalities involving 16 to 25-year-olds regardless of who was impaired: the young driver or an older driver in another vehicle.

Male 16-25 year old drivers in particular are more than twice as likely to be impaired in fatal crashes as 36-45 year-old males. Sixteen and 17-year-old male drivers were twice as likely to be impaired by drugs as by alcohol. Far and away, the drug of choice in this age and gender group was marijuana. Conversely, 21 to 25-year-old male drivers were twice as likely to be impaired by alcohol as by drugs.

Both 16- and 17-year-old males and 18 to 20-year-old males were over three times more likely to be impaired in fatal crashes than their female counterparts. An even greater disparity exists with 21-25 year-old males, who are over five times more likely to be impaired than their female counterparts. They are also nearly three times more likely to be impaired than male drivers ages 36-45.

Young Driver 16-17 Involved Fatalities
Total = 60



Of the 60 fatalities involving young drivers age 16-17 from 2009-2011, 35% also involved impairment and 52% involved speeding. Combined, 25% of these fatalities involved both impairment and speeding.

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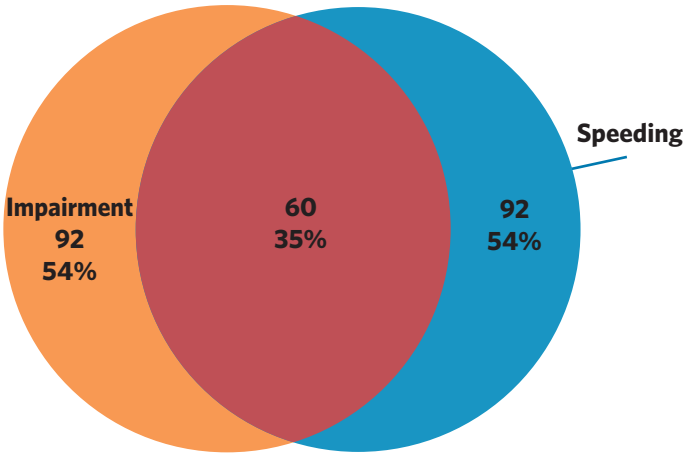
Speeding is more frequent among drivers age 16-25 than any other age group. Drivers age 16-25 involved in fatal collisions were nearly twice as likely to be speeding as drivers ages 36-45. Overall, speeding contributed to 51% of fatalities involving a driver age 16-25. Males in this age group were five times more likely to be speeding as their female counterparts, and over six times more likely to be speeding as 36 to 45-year-old males.

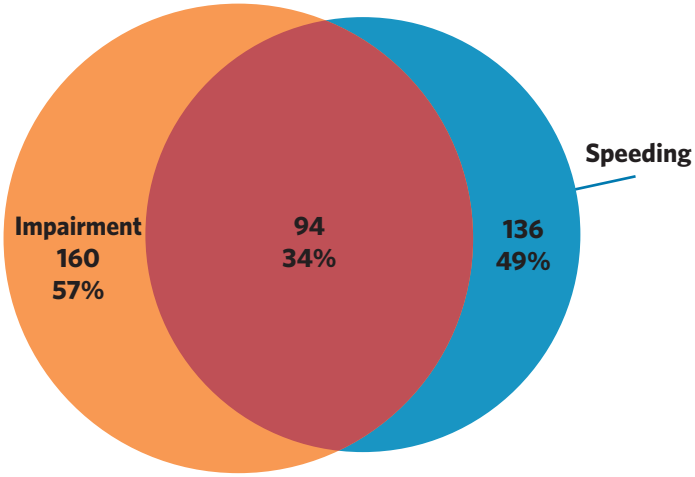
Looking at all ages, male drivers outnumber female drivers in fatal crashes by roughly 3 to 1. However, female drivers in fatal crashes drive distracted at a greater rate than their male counterparts. In particular, 16 to 17-year-old female drivers involved in fatal collisions were more than twice as likely to have been driving distracted as their male counterparts. Over 44% of 16-17 year-old female drivers involved in fatal collisions were identified by police as driving distracted, compared to 23% of 18-25 year-old females.

Young Driver 18-20 Involved Fatalities
Total = 171



Of the 171 fatalities involving young drivers age 18-20 from 2009-2011, 54% also involved impairment and 54% involved speeding. Combined, 35% of these fatalities involved both impairment and speeding.

Young Driver 21-25 Involved Fatalities
Total = 279



Of the 279 fatalities involving young drivers age 21-25 from 2009-2011, 57% also involved impairment and 49% involved speeding. Combined, 34% of these fatalities involved both impairment and speeding.

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Violation Rates of Younger Drivers

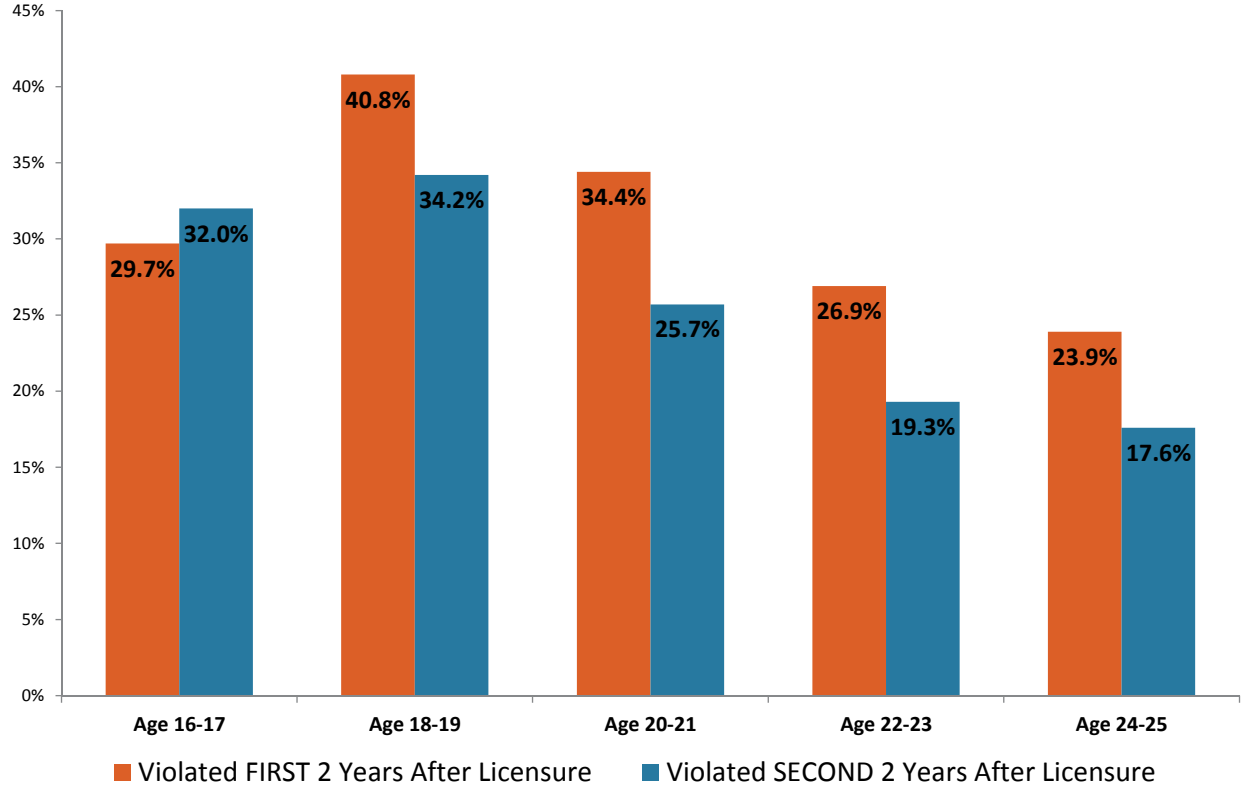
A 2013 DOL analysis compared violation rates among newly-licensed 16-25 year-old drivers during their first four years of licensure. Violation figures for each driver were grouped into an initial two-year period and the following two-year period (after licensure).

The analysis showed 40% of newly-licensed 18-19 year-olds received a violation in their first two years of driving but then improved slightly in their second two years, the violation rate dropping to 34%, still highest among all age groups. It is important to note that the initial violation rate among 18-19 year-olds was far worse than the comparable rate for 16-17 year-olds (29.7%).

However, 16-17 year-olds were the only group whose violation rates deteriorated in their second two-year period. This outcome may result from the fact that at age 18 or 19 they were no longer driving under IDL restrictions, less likely to receive parental supervision, and more likely to increase their driving mileage, thus becoming more exposed to opportunities for committing (and being cited for) driving violations.

The remaining newly-licensed groups (ages 20-25) all progressively improved during their second two-year period of licensure.

Young Driver Newly Licensed in 2007-2008 with Violation(s) in the First Four Years Following Licensure



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Programs and Successes

Young Driver Task Force

The Young Driver Task Force, comprising representatives from both public and private organizations, is working to improve young driver safety. They meet at least quarterly to ensure a coherent policy and program 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 recommending improvements to the IDL law.

Department of Licensing Letters

In March of 2011, the DOL began sending letters to all 18- to 21-year-old drivers receiving their first moving violation. DOL implemented this program because data shows a driver's chances of collision doubles after receiving their first violation. Sixteen and 17-year-olds were already receiving a similar letter while under the rules of the IDL. About 2,000 letters per month have been sent to young drivers since the start date. Review and analysis began in the spring of 2013 to determine if the program reduced recidivism among these first-time violators.

Seat Belt and Impaired Driving Patrol Media Outreach

For over ten years, Washington State has been conducting High Visibility Enforcement (HVE) patrols to decrease impaired driving and increase seat belt use. Prior to conducting these patrols, a media campaign is made to warn citizens about the impending extra enforcement. This model has been shown to change behavior over time. Because young drivers are over-represented in fatal and serious injury crashes, media campaigns are heavily focused on the media outlets to which they pay attention.

Driver Training Programs

Since traffic safety education funding was decreased dramatically in 1999, a large majority of driver training schools in Washington are now privately owned businesses. Currently there are over 300 private business-based and 82 public school-based driver training school programs in place across the state. Regulation of private driving schools is done by DOL. Regulation of programs in high schools is handled by the Office of Superintendent of Public Instruction. Efforts are underway to align these programs.

Washington State Coalition to Reduce Underage Drinking (RUaD)

The RUaD Coalition provides state-level leadership to reduce underage drinking by leveraging resources and strengthening communities in Washington State. Reducing underage access to alcohol is one way to curb young driver crashes involving impairment. The coalition goals are to:

- Analyze and disseminate information and, as appropriate, promote public or corporate policy changes (Includes information on laws, ordinances, advertising, packaging, energy drink mixing, emerging issues, and others)
- Monitor pertinent legislation and rule-making
- Support youth influencers such as parents, caregivers, educators, coaches, religious leaders and other youth

RUaD's StartTalkingNow.org program is based on research showing parents are a significant influence in a child's life. The program supports parents and other youth influencers such as coaches, religious leaders and educators by providing information and resources that help youth make healthy choices and lead substance-free lives. Their Let's Draw the Line between Youth and Alcohol (LDTL) program helps support groups across the state, mostly comprised of youth, carry out a variety of underage drinking prevention activities in their communities. The range of LDTL activities has included partnering with law enforcement, assessing local alcohol advertising, and promoting the positive, healthy norms most teens have.

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High School Outreach

The Washington Traffic Safety Commission (WTSC) partnered with State Farm® Insurance to promote awareness among high school students about distracted and impaired driving, as well as seat belt use. Teens reach a developmental stage where the influence of other teens is much more powerful than that of parents and other adults. Therefore peer-to-peer education programs provide a valuable format for promoting healthy behaviors.

Through the program, teens are given a list of educational action steps to guide them in the process of learning about the dangers of distracted and impaired driving. They learn ways to re-package the information and share it with teens, as well as members of the community at large. During one school calendar year (September 2012 – June 2013) 102 high school educational projects were conducted on themes that included distracted driving, teen alcohol use and impaired driving and the promotion of seat belt use.

Party Intervention Patrol (PIP)

Pierce and Thurston Counties have implemented Party Intervention Patrol (PIP) projects that use multijurisdictional law enforcement teams to locate underage drinking parties. This project uses the core components of successful intervention programs: alcohol screening and motivational interviewing.

Immediate volunteer and professional support is provided to the kids and their parents through an alcohol screening process known as "Brief Intervention." Alcohol screenings and brief interventions, at a location other than the party, have been shown to successfully reduce future underage drinking (D'Onofrio and Degutis, 2004). Youth have the opportunity to meet one-on-one with chemical dependency professionals and receive referrals to relevant resources.

In advance of the PIP patrols, media campaigns and news media outreach are used to publicize PIP patrols to both teens and their parents in an effort to deter the behavior before it happens. Mass media campaigns are a proven countermeasure when combined with program activities. Alcohol compliance checks using underage decoys, citations and rechecks of offending stores are also a part of the PIP program.

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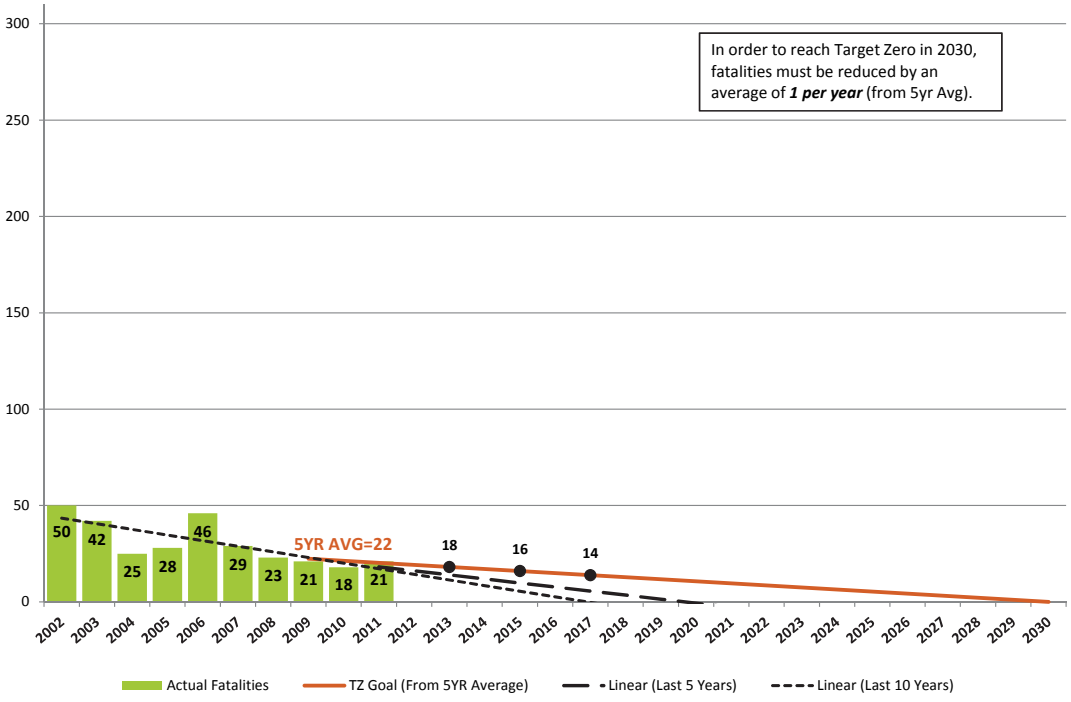
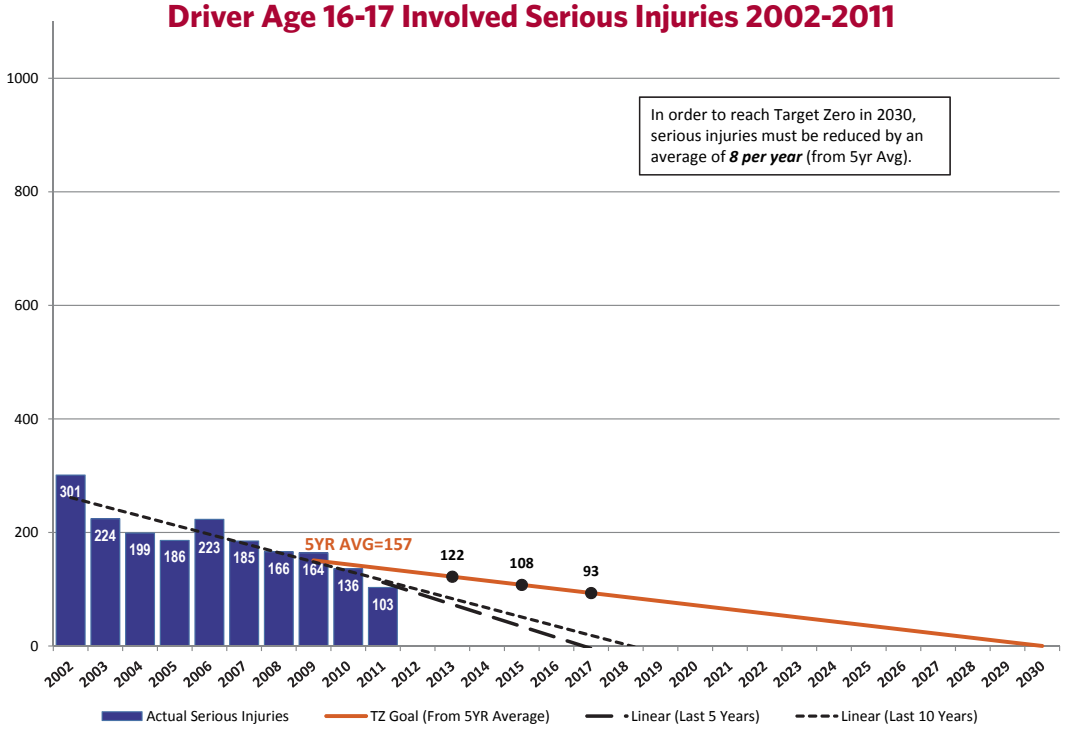
Driver Age 16-17 Involved Fatalities 2002-2011



Driver Age 16-17 Involved Serious Injuries 2002-2011



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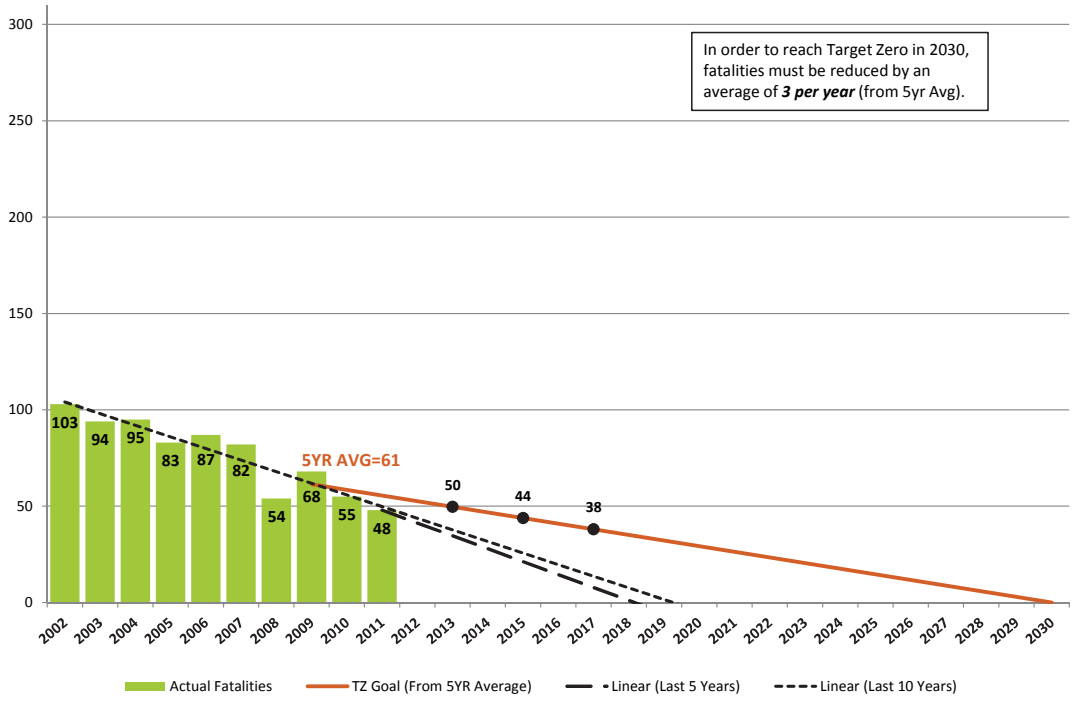
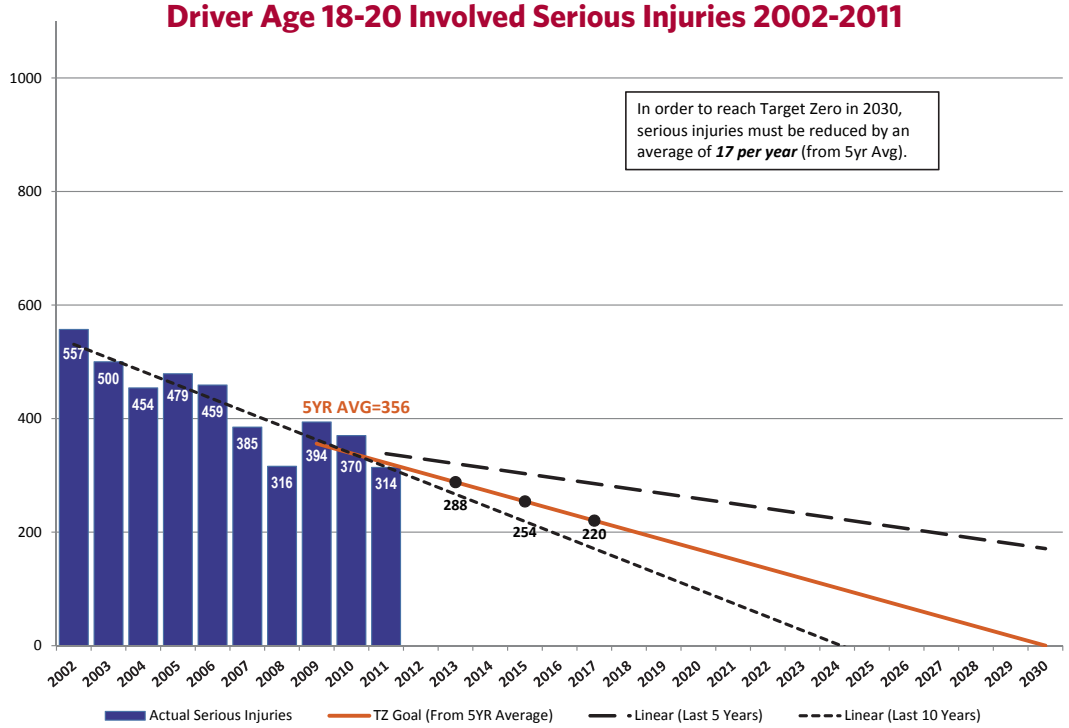
Driver Age 18-20 Involved Fatalities 2002-2011



Driver Age 18-20 Involved Serious Injuries 2002-2011



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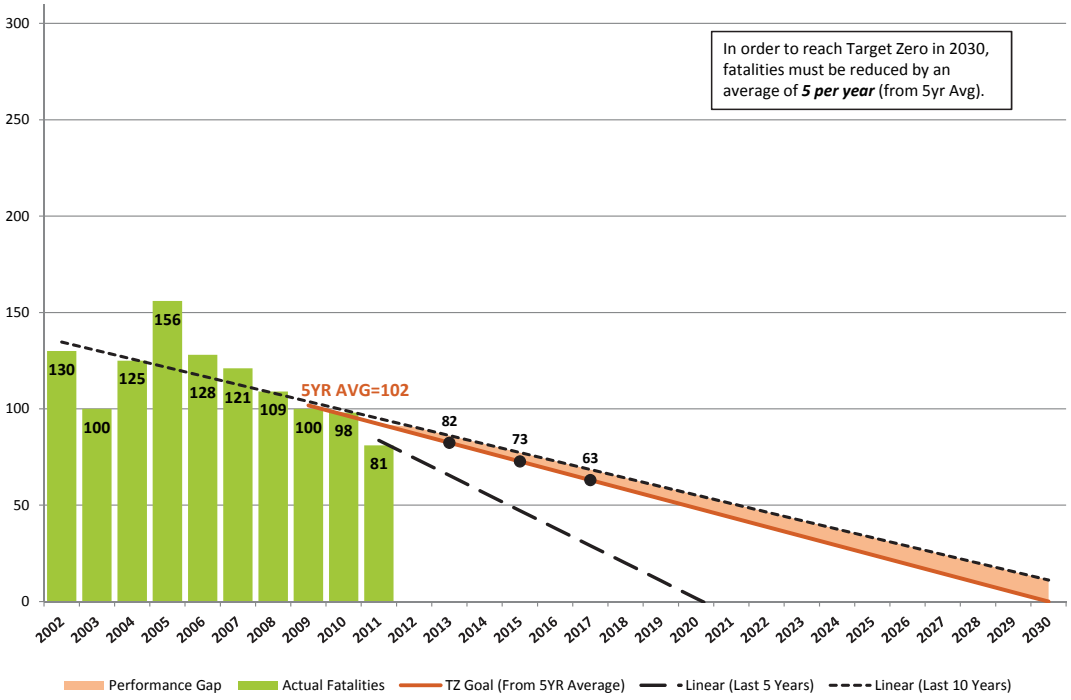
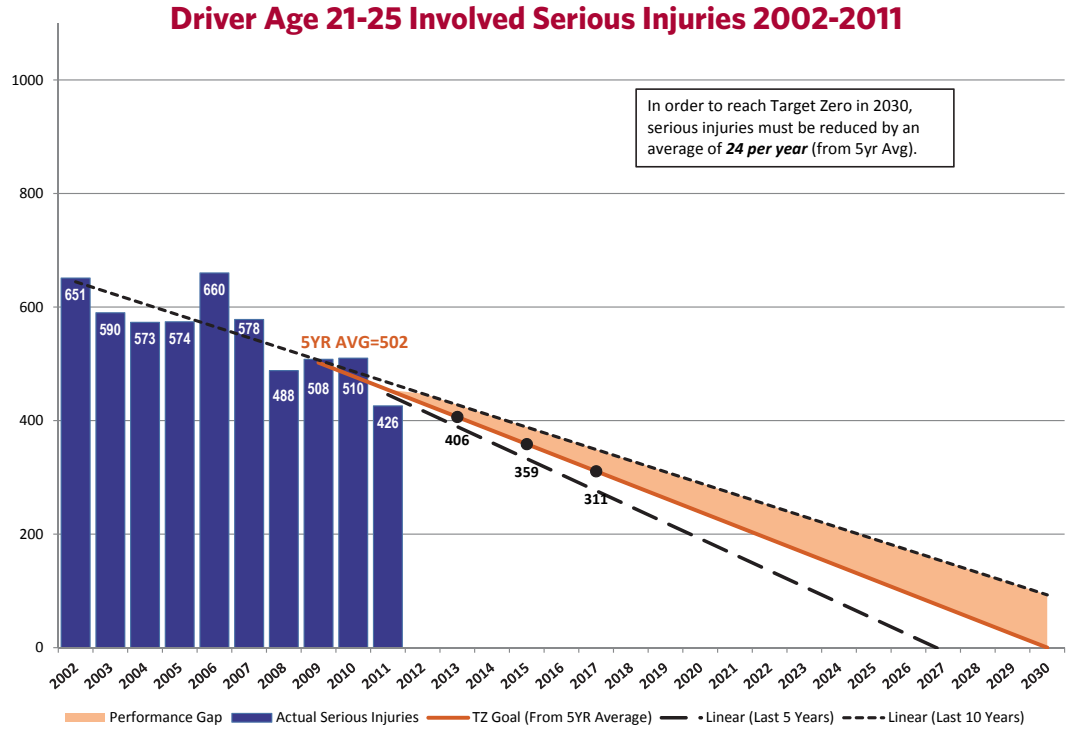
Driver Age 21-25 Involved Fatalities 2002-2011



Driver Age 21-25 Involved Serious Injuries 2002-2011



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Objectives & Strategies		
Objectives (What)	**Strategies (How)**	**Implementation Arena(s)**
1. Foster compliance with the State's IDL laws	1.1 Encourage Tribes to pass IDL laws. (P, CTW)	Leadership/Policy
	1.2 Provide resources to Young Driver Task Force to improve awareness of (especially for parents and teens) and compliance with the IDL law. Highlight high-risk situations where clear parental limit-setting will be most effective. (R, CTW)	Leadership/Policy
	1.3 Promote better enforcement of IDL by passing legislation requiring a "sticker" program for marking vehicles used by IDL license holders and by educating and encouraging officers to enforce the law. (R, LIT)	Leadership/Policy
	1.4 Provide local Target Zero Task Forces with information and materials about IDL for teens, parents, law enforcement, and driver education programs. (R, WTSC)	Education Leadership/ Policy
2. Strengthen Intermediate Driver License restrictions	2.1 Adjust curfew to include 9pm-1am, the hours when young driver serious injury and fatality crashes are highest. (P, CTW)	Leadership/Policy
	2.2 Lengthen permit holding period beyond six months. (R, CTW)	Leadership/Policy
	2.3 Extend passenger restriction to one full year after licensed. (R, NCHRP)	Leadership/Policy
	2.4 Strengthen requirements for parents around the documentation and certification of the 50-hour behind-the-wheel time young drivers are to complete before licensure. (U)	Leadership/Policy
	2.5 Strengthen restrictions so penalties kick in with the first ticket IDL driver gets. (U)	Leadership/Policy

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Objectives & Strategies		
Objectives (What)	**Strategies (How)**	**Implementation Arena(s)**
3. Improve young driver education and intervention	3.1 Review and revise the Driver Guide, testing process, curriculum guidelines, and training standards to construct an overall driver training package focused more on hazard identification and less on skill training. (R, CTW)	Leadership/Policy
	3.2 Conduct a recidivism study to assess the impact of the DOL early warning letter program for 18- to 21-year-olds. (U)	Leadership/Policy
	3.3 Consider expanding driver restrictions and driver education requirements to new drivers of all ages. (U)	Leadership/Policy
	3.4 Update model traffic safety education curriculum to match NHTSA standards. (U)	Leadership/Policy
	3.5 Consider implementation of licensing standards used in countries with superior driving statistics such as the United Kingdom. (U)	Leadership/Policy
	3.6 Promote teen/parent safe driving contract. (U)	Education
4. Improve enforcement of high risk behaviors among young drivers	4.1 Conduct statewide high-visibility enforcement and media campaigns focused on young drivers. (U)	Enforcement, Education
5. Enforce compliance with the State's underage drinking law	5.1 Conduct well-publicized enforcement aimed at underage drinking parties. (R, CTW)	Education Enforcement
	5.2 Publicize and enforce underage drinking and driving laws. (R, CTW)	Education
	5.3 Track underage drinking violations pre- and post-liquor privatization. (U)	Leadership/Policy

P = Proven **R = Recommended** **U = Unknown**

CTW = Countermeasures that Work
LIT = Literature (Although we could not locate a meta study, there is sufficient independent literature with favorable results to justify as a recommended strategy)
NCHRP = National Cooperative Highway Research Program
NHTSA = National Highway Traffic Safety Administration
WTSC = Washington Traffic Safety Commission

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Additional Resources

Countermeasures That Work: A Highway Safety Countermeasure Guide for State Highway Safety Offices, 7th Edition, Chapter 6 (National Highway Traffic Safety Administration), http://www.nhtsa.gov/staticfiles/nti/pdf/811727.pdf

OECD Young Drivers, The Road to Safety (2006) www.internationaltransportforum.org/Pub/pdf/06YoungDrivers.pdf

Promoting Parent Involvement in Teen Driving: An In-Depth Look at the Importance and the Initiatives (Governor's Highway Safety Association, 2013), http://www.ghsa.org/html/publications/pdf/sfteens13.pdf

RUaD Coalition Strategic Plan 2011-2013 (Washington State Coalition to Reduce Underage Drinking), http://www.starttalkingnow.org/our-efforts/strategic-plan-2011-2013

Screening and Brief Intervention in the Emergency Department (Gail D'Onofrio, MD, MS and Linda Degutis, DrPH, in *Alcohol Research & Health*, 2004), http://pubs.niaaa.nih.gov/publications/arh28-2/63-72.pdf

Teen Driver Safety (AAA Foundation for Traffic Safety), https://www.aaafoundation.org/teen-drivers

Washington State Department of Licensing Website, http://www.dol.wa.gov/

Washington State laws (RCWs) relating to young drivers:

- *RCW 46.20.055 – Instruction permit.*
- *RCW 46.20.075 – Intermediate license.*
- *RCW 46.20.267 – Intermediate licensees.*

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Distracted Driver Involved

Executive Summary

Distracted driving includes any non-driving activity that diverts a driver's attention from the task of driving itself. This includes general inattentiveness/carelessness, cell phone use, eating, drinking, smoking, attending to objects inside or outside of the vehicle and manipulating vehicle controls.

From 2009 through 2011 distracted driving was a factor in 426 fatalities (30%) and 868 serious injuries (11.9%). During this period Washington saw a 6% decrease in distracted driver involved fatalities and an 18% decrease for distracted driver involved serious injuries compared to 2006-2008. While this decrease is encouraging, the five- and ten-year trend lines point out where we appear to be losing ground.

Distracted driving as a contributing factor in collisions is difficult to estimate as crash investigators can identify it only through actual evidence such as self-reporting, witness testimony and evidence indicating distraction. It is suspected to be underreported in fatal and serious injury collisions because police investigators frequently have difficulty confirming distraction as a factor.

Furthermore, while cell phone involved distraction currently gets a lot of attention, it is rarely reported as a contributing factor in collisions when distractions are noted. For instance, 2009-2011 period, crash reports for only seven fatalities noted driver cell phone use as a contributing factor. Despite collision data limitations, observation data suggests distracted driving is increasing.

The data in this chapter reflects only those collisions that police are certain involved a distracted driver. However, it is believed distracted driving plays a larger role in fatal and serious injury collisions than these numbers indicate.

Male drivers typically engage in high risk behaviors, such as impairment and speeding, more often than female drivers. However, female drivers in fatal collisions were slightly more likely to be distracted than their male counterparts, 23% versus 21%.

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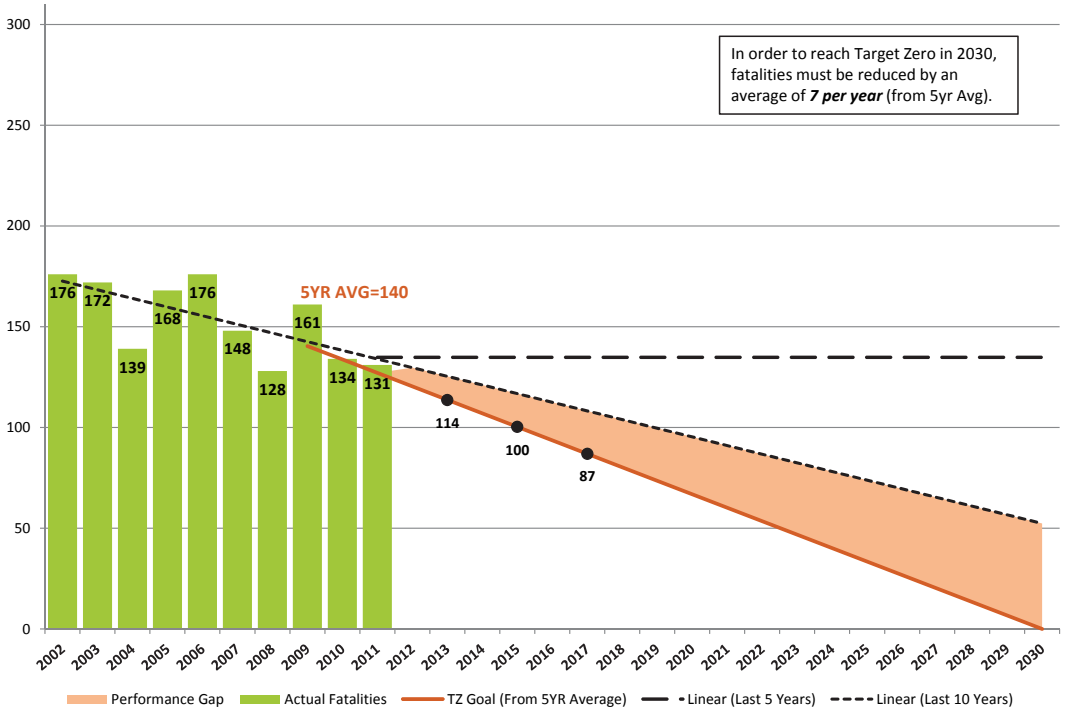
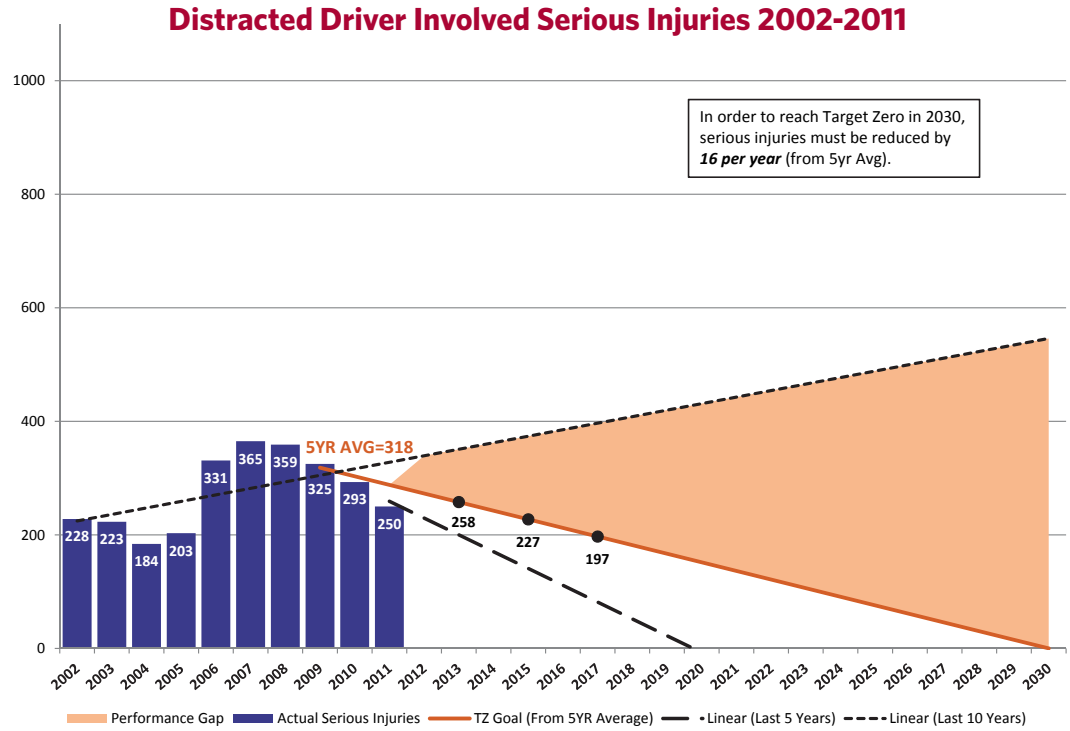
Distracted Driver Involved Fatalities 2002-2011



Distracted Driver Involved Serious Injuries 2002-2011



In 2006, the Police Traffic Collision Report was modified to more accurately capture driver distraction in traffic collisions, as directed by the Washington State Legislature (RCW 46.52.060). This change resulted in more detailed, accurate reporting of distracted driving but also in a 'data spike' of distracted driving in collisions. The ten-year trend has been distorted by this change, so it appears as if we are losing ground. The five-year trend line represents a more complete picture of distracted driving, including the downward trend in distraction involved serious-injury collisions.

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Background

Compared to 2006-2008, between 2009-2011 Washington saw a 6% decrease in traffic fatalities and an 18% decrease in serious injuries where distracted driving was involved.

Who's Driving Distracted?

From 2009-2011, male drivers outnumbered female drivers by roughly 3-to-1 in all fatal collisions statewide. However, a greater proportion of those female drivers (23%) were identified by investigators as distracted than their male counterparts (21%).

This gender gap is most distinct for 16- to 17-year old drivers. Law enforcement noted distraction as a contributing factor for 47% of 16- to 17-year-old female drivers involved in fatal collisions, but for only 20% of same-age males. This is contrary to the more common pattern of males being greater represented in other contributing factors. For instance, 55% of male drivers 16 to 17 years old were cited for speeding, versus only 21% of same-age females.

Challenges Documenting Distracted Driving

It's hard to track collisions caused by distracted driving. While distracted drivers are a common spectacle on our roads, identifying distraction as a contributing factor of a collision is not so easy to do. By the time investigators arrive at the scene, the distraction has passed or been put away. Drivers rarely volunteer the information they were talking on their phone or distracted in some other way. Additionally, independent witnesses or specific evidence is rare.

Before selecting any of the 13 specific distraction codes listed on the collision report, an officer or an involved party needs to witness the distraction, a driver must self-report the action or cell phone records must be subpoenaed, as sometimes happens in a serious injury or fatality collision investigation.

Surveys of driver handheld cell phone use in Washington reported 2-3% of daytime drivers were observed talking on these devices (phone to ear, thus excluding hands-free use). However, less than one-half of one percent of drivers in crashes are identified by police as talking on hand-held cell phones. Therefore the conclusion is cell phone use is underreported in both fatal and serious injury collisions.

Cell Phone Use

Cell phone use has increased dramatically in a short time. The National Center for Health Statistics estimates in 2011, 55% of Washington households used cell phones exclusively or mostly (versus landline phones). This is an increase of 25% in one year, up from 44% of households in 2010. This fast rise in mobile technology has allowed us to stay connected to people and information no matter where we are.

Unfortunately this connectivity also extends to our time behind the wheel. Even so, there has not been a sharp rise in collisions involving cell phone use, or even a rise in "unknown distraction" collisions, which could be attributable to cell phones. More detailed information is needed on the role of cell phones in Washington traffic collisions.

Inexperience and immaturity combine to make young drivers especially at-risk for crashing. Their risk is especially heightened at night, after consuming alcohol or drugs, with passengers in the car and when distracted.

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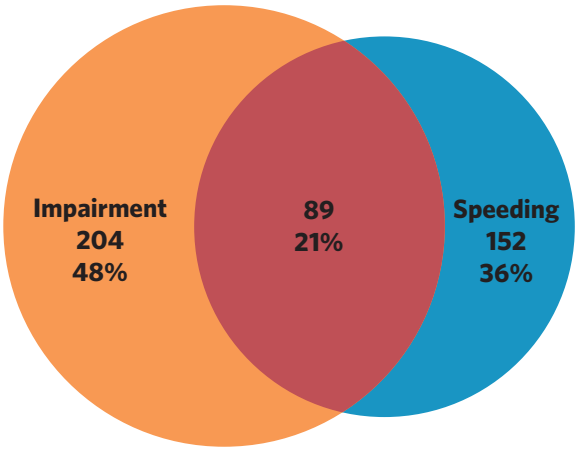
Contributing Circumstances and Factors

Other high-risk behaviors are also often coupled with distracted driving. During the 2009-2011 period, impairment was involved in 48% of distracted driver involved fatalities and speeding was involved in 36%. Twenty-one percent (21%) of fatalities included both speeding and impairment. Not surprisingly, 47% of distracted driver involved fatalities also included a run-off-the-road event.

Surprisingly, among all distracted drivers involved in 2009-2011 fatal collisions, 30% were drivers ages 66 and older. These older drivers were followed by drivers age 16-25, who represented 23% of distracted driving involved fatalities.

Distracted Driver Involved Fatalities
Total = 426



Of the 426 distracted driver involved fatalities 2009-2011, 48% also involved impairment and 36% involved speeding. Combined, 21% of these fatalities involved both impairment and speeding.

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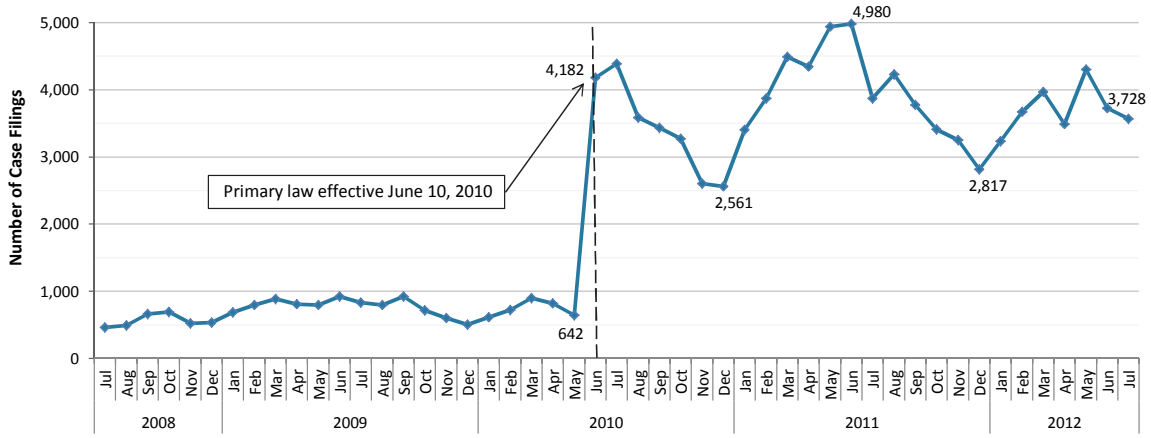
Programs and Successes

Washington's Cell Phone Law is Being Enforced

Enforcement of using a handheld wireless communications device or texting while operating a motor vehicle became a primary enforcement law in Washington effective June 10, 2010. In the years preceding this change, handheld cell phone citations averaged 700 per month. After the law changed, the average rose to 4,000 per month.

Washington Case Filings for 'Hand Held Cell Phone Use' Violaiton



Data source: Adminstrative Offices of the Courts (AOC). Number of cases filed under RCW 46.61.667 (using wireless telecommunications device while driving) for violations identified by WSP and local law enforcement. Does not include cases filed in Seattle Municpal Court (SMC).

Texting while driving is harder to enforce, as evidenced by a lower number of citations both before and after the law change. Texting citations prior to the change averaged 30 per month, and after, 130 per month (source: Administrative Offices of the Courts). To combat this enforcement challenge with texting, law enforcement officers sometimes work in tandem. One will be posted at a safe observation point and radio a downstream officer after witnessing someone breaking the law.

Click It or Ticket Mobilization Dual Messaging and High Visibility Enforcement

Washington included a cell phone component in their media messages for the 2013 Click It or Ticket (CIOT) campaign. The sharp increase in cell phone citations referenced above was also reflected in previous years' annual CIOT campaign statistics. Warning the public of their increased chance of receiving both seat belt and cell phone violations seemed like the right thing to do. A new radio ad was developed to address this dual message.

During the 2013 fiscal year, the King County Target Zero® Task Force implemented a multijurisdictional high visibility enforcement campaign to reduce distracted driving. Law enforcement agencies conducted patrols. An educational component informed motorists not only of the hazards of distracted driving, but warned about extra patrols. This reinforced the message that distracted driving carries consequences.

Some city and county prosecutor's offices have enjoyed successes by dedicating "Rule 9 intern" prosecutors in their district courts to distracted driving infractions. The interns have paid for themselves through upheld infractions with stiffer fines and gained valuable court experience.

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High School Distracted Driving Project

The Washington Traffic Safety Commission (WTSC) and State Farm® Insurance have partnered to promote awareness about the dangers of distracted driving among high school students. Many teens reach a developmental stage where the influence of other teens is much more powerful than that of parents and other adults. Therefore, peer-to-peer education programs provide a valuable format for promoting healthy behaviors.

As part of this program, teens are given a list of educational action steps which guide them in the process of learning about the dangers of distracted driving. They learn ways to re-package the information and then share it (i.e. promote anti-distracted driving safety messages) with other teens, members of the education community and the community at-large. Students then document their efforts to qualify for $500 grants. The program is funded by State Farm and administered by the WTSC. It began in February 2012, and as of June 2013 distracted driving and teen alcohol projects have taken place in over 90 Washington high schools.

Intervention Strategies for Implementation of Distracted Driving Laws

The Intervention Strategies for Implementation of Distracted Driving Laws project grew from a statewide collaboration in Washington State between the Harborview Injury Prevention & Research Center, Public Health – Seattle & King County, and King County prosecutorial leadership. The project's overarching goal is to reduce cell phone use among Washington drivers by identifying effective strategies to improve implementation, enforcement and prosecution of distracted driving legislation.

Project components include law enforcement focus groups, interviews with legal and judicial experts, observations of cell phone use among Washington drivers and development of a public health law database. Tailored intervention strategies for law enforcement and prosecutors are planned to be developed, conducted and evaluated in six Washington counties. Results will be shared to inform state policy makers and to provide recommendations to other states.

Driving Expectations Contracts

Some insurance companies, schools and parents are utilizing signed contracts with young drivers who promise not to use cell phones or text while driving. Part of the success of these contracts is also for the adults to lead by example.

Distracted Driver Definition:

Any driver with the following attributes as recorded by the investigating officer:

- ***Looked but did not see***
- ***Distracted by vehicle occupant or object***
- ***While using a cell phone (talking, listening, dialing, etc.)***
- ***Adjusting vehicle controls***
- ***Distracted by object/person outside the vehicle***
- ***Eating, drinking, or smoking; emotional or lost in thought; other or unknown distraction.***

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Objectives & Strategies		
Objectives (What)	**Strategies (How)**	**Implementation Arena(s)**
1. Better understand the distracted driving problem in Washington	1.1 Explore options for gaining a measure of statewide cell phone use while driving, such as expanding the annual seatbelt observation survey to include observations of cell phone use, including hands free use. (R, DDACTS)	Leadership/Policy
	1.2 Revise fields on the Police Traffic Collision Report to enhance clarity for officers coding distraction in collision investigations. (R, WSDOT)	Leadership/Policy, Education
	1.3 Encourage law enforcement to thoroughly investigate distraction during crash investigation. (R, WTSC)	Enforcement, Leadership/ Policy
	1.4 Encourage all law enforcement agencies to adopt no tolerance cell phone and driving policies in their agencies. Track citations given by law enforcement agencies with/without strict cell phone and driving policies. (U)	Enforcement, Leadership/ Policy
2. Use roadway engineering to reduce the consequences of distracted driving	2.1 Continue a targeted shoulder rumble strip program: centerline, shoulder, horizontal curves. (P, NCHRP)	Engineering
	2.2 Implement corridor safety model at high-crash locations where data indicates a high incidence of distracted crashes. (R, DDACTS)	Leadership/Policy, Education, Engineering, Enforcement
3. Increase driver awareness of the risks of distracted driving	3.1 Conduct statewide distracted driving high-visibility enforcement campaigns. (P, CTW)	Enforcement, Education
	3.2 Add distracted driving information and questions to driver license test and guide. (R, GHSA)	Leadership/Policy
	3.3 Promote applications which shut off or limit phones while driving. (U)	Education
	3.4 Encourage large employers to implement employee bans/ agreements on cell phone use and other distracted driving behaviors. (U)	Leadership/Policy
4. Increase/strengthen fines and assist in improved adjudication of distracted driving citations	4.1 Classify distracted driving offenses as "moving violations" so they affect insurance rates. (U)	Enforcement, Leadership/ Policy
	4.2 Visibly enforce existing statutes to deter distracted driving. Consider increasing penalties for distracted driving collisions. (U)	Enforcement, Leadership/ Policy
	4.3 Have Rule 9 interns appear in traffic infraction court. (U)	Enforcement

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Objectives & Strategies		
Objectives (What)	**Strategies (How)**	**Implementation Arena(s)**
5. Strengthen distracted driving laws	5.1 Modify existing cell phone law to clarify "when a car is running on a public roadway" to clear up ambiguity about use at traffic lights, etc. (U)	Leadership/Policy
	5.2 Align current cell phone law with commercial vehicle statute; no device in hand at all. (U)	Leadership/Policy
	5.3 Encourage cities/counties to pass ordinances that are tougher than the state law. (U)	Leadership/Policy

P = Proven **R = Recommended** **U = Unknown**

CTW = Countermeasures that Work
DDACTS = Data Driven Approaches to Crime and Traffic Safety
GHSA = Governor's Highway Safety Association
NCHRP = National Cooperative Highway Research Program
WSDOT = Washington State Department of Transportation
WTSC = Washington Traffic Safety Commission

Additional Resources

Countermeasures That Work: A Highway Safety Countermeasure Guide for State Highway Safety Offices, 7th Edition, Chapter 4 (National Highway Traffic Safety Administration), http://www.nhtsa.gov/staticfiles/nti/pdf/811727.pdf

NCHRP Report 500, Volume 14: A Guide for Reducing Crashes Involving Drowsy and Distracted Drivers (National Cooperative Highway Research Program, Transportation Research Board), http://onlinepubs.trb.org/onlinepubs/nchrp/nchrp_rpt_500v14.pdf

Washington State laws (RCWs) relating to distracted drivers:

- *RCW 46.61.667 – Holding a wireless communications device to ear while driving.*
- *RCW 46.61.668 – Sending, reading, or writing a text message while driving.*
- *RCW 46.20.055 – Using a wireless device of any kind during permit phase of licensure.*
- *RCW 46.20.075 – Using a wireless device of any kind while in intermediate driver license status.*
- *RCW 46.52.060 – Tabulation and analysis of reports – Availability for use.*

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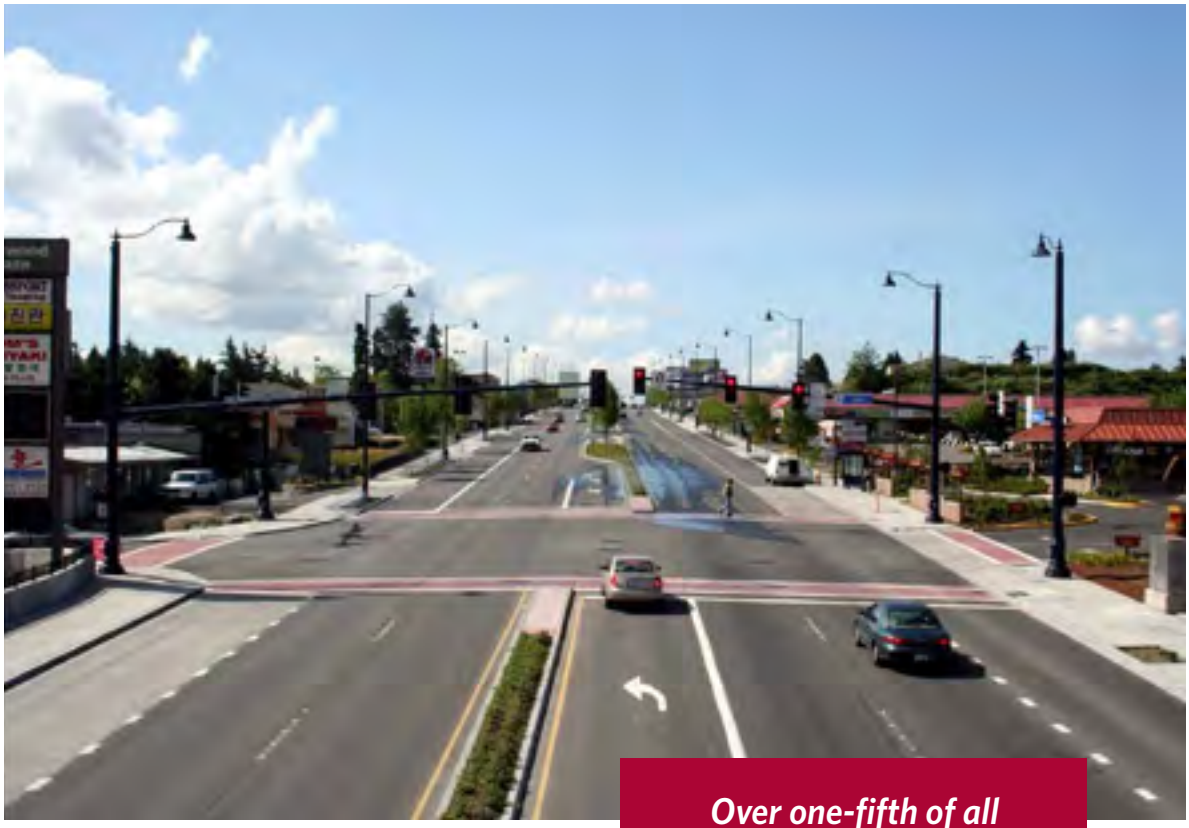
Intersection Related

Executive Summary

While declining at a rate similar to overall fatalities and serious injuries, intersection related collisions have been elevated to the Priority One Level. This is primarily due to the number of serious injuries occurring at intersections. From 2009-2011 more than one-fifth of fatalities and one-third of all serious injuries were intersection related.

Forty-four percent (44%) of fatal and serious injury collisions at intersections came from "T-bone" and "left turn" angle collisions. Nineteen percent (19%) were from pedestrians being hit. Implementing current intersection safety technologies, including roundabouts and flashing yellow arrows, while also focusing more on pedestrians, will help to achieve Target Zero® for intersection related collisions.



Over one-fifth of all Washington traffic fatalities, and one-third of serious injuries, were intersection related.

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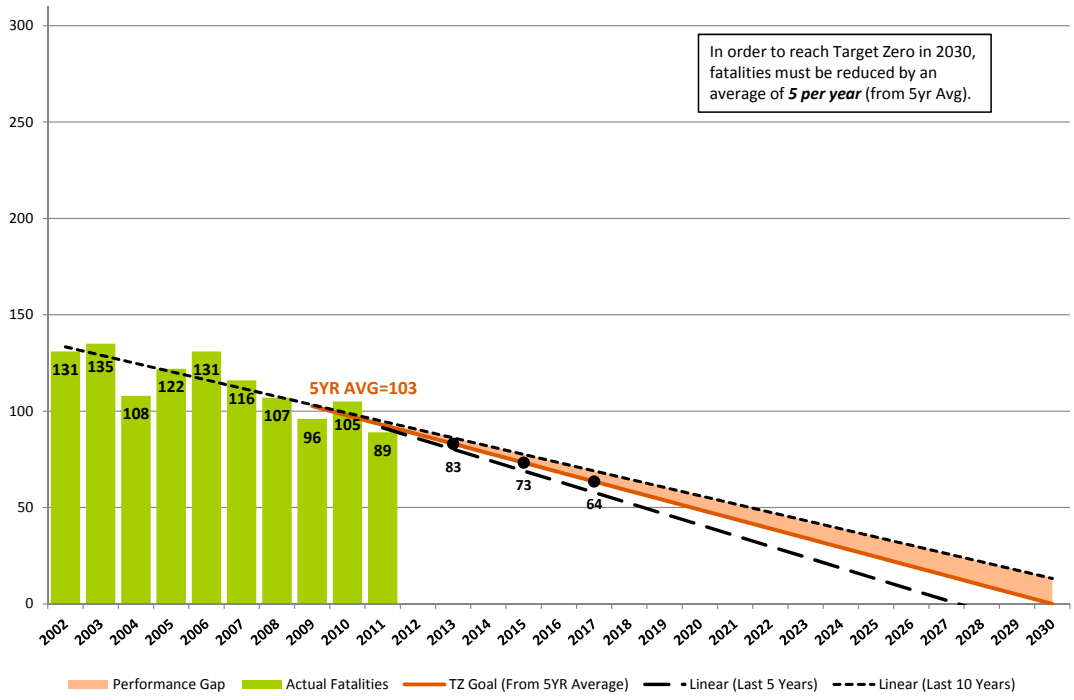
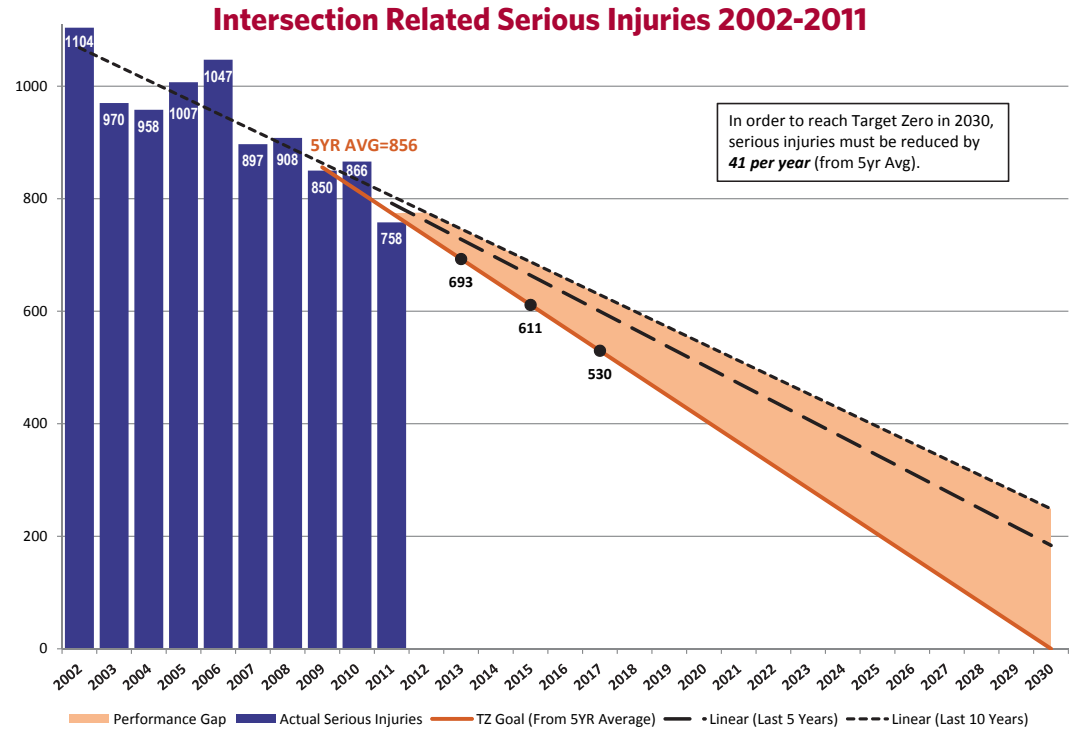
Intersection Related Fatalities 2002-2011



Intersection Related Serious Injuries 2002-2011



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Background

For intersection related collisions there was a combined 13% decrease in fatal and serious injury collisions (20% decrease in fatal collisions and 12% decrease in serious injury collisions), when comparing 2009-2011 to 2006-2008. This is similar to the overall decline rate for fatalities and serious injuries. To achieve Target Zero for intersection related collisions, there needs to be five fewer fatalities and 41 fewer serious injuries each year until 2030.

There are many kinds of intersection related collisions. From 2009-2011, the top types of fatal or serious injury intersection related collisions were:

- Angle (T-bone) - 29%
- Hit pedestrians - 19%
- Angle (left turn) - 14%
- Rear-end with - 12%
- Hit bicyclists with - 8%

Protected Left Turn = At a traffic signal, left turns that have a green arrow are protected (no other conflicting vehicles or pedestrians are being allowed to go).

Permitted Left Turn = At a traffic signal, left turns that do not have a green arrow are permitted (other conflicting vehicles or pedestrians are also being allowed to go).

The greatest number of these collisions occurred on city streets. Looking at fatal and serious injuries combined from 2009-2011, 60% of intersection related collisions were on city streets, resulting in 130 fatalities and 1,492 serious injuries. Another 22% (88 fatalities and 553 serious injuries) were on state highways and 17% (70 fatalities and 419 serious injuries) were on county roads. See the charts for intersection related collisions by jurisdiction (page 78) for annual fatality and serious injury break outs.

Angle (T-bone) Collision

Angle (Left Turn) Collision

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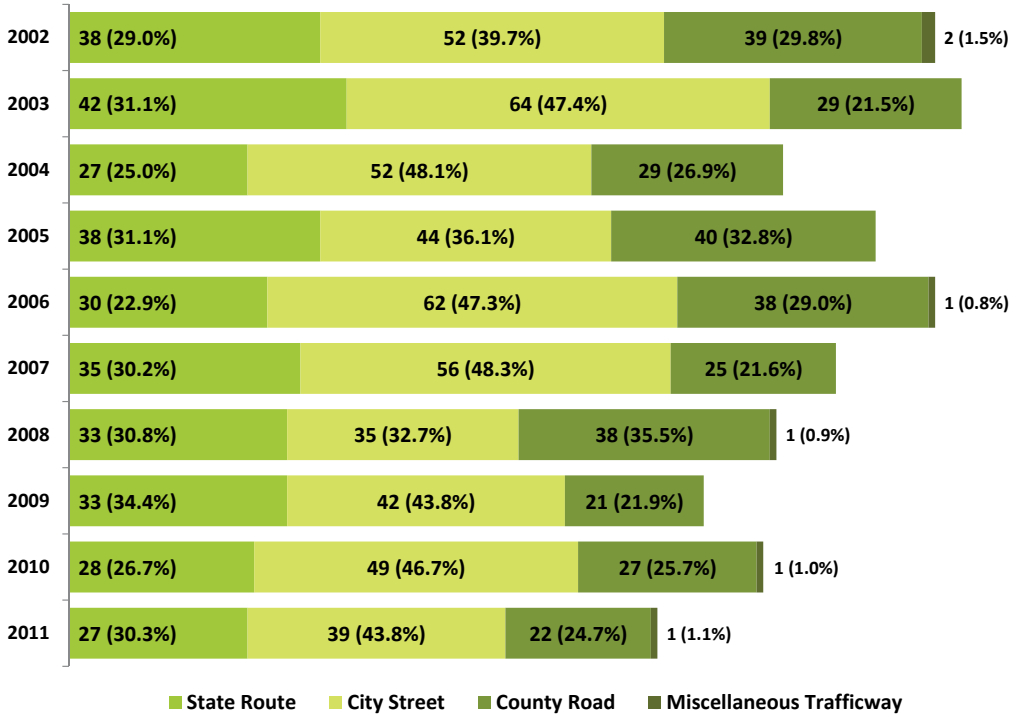
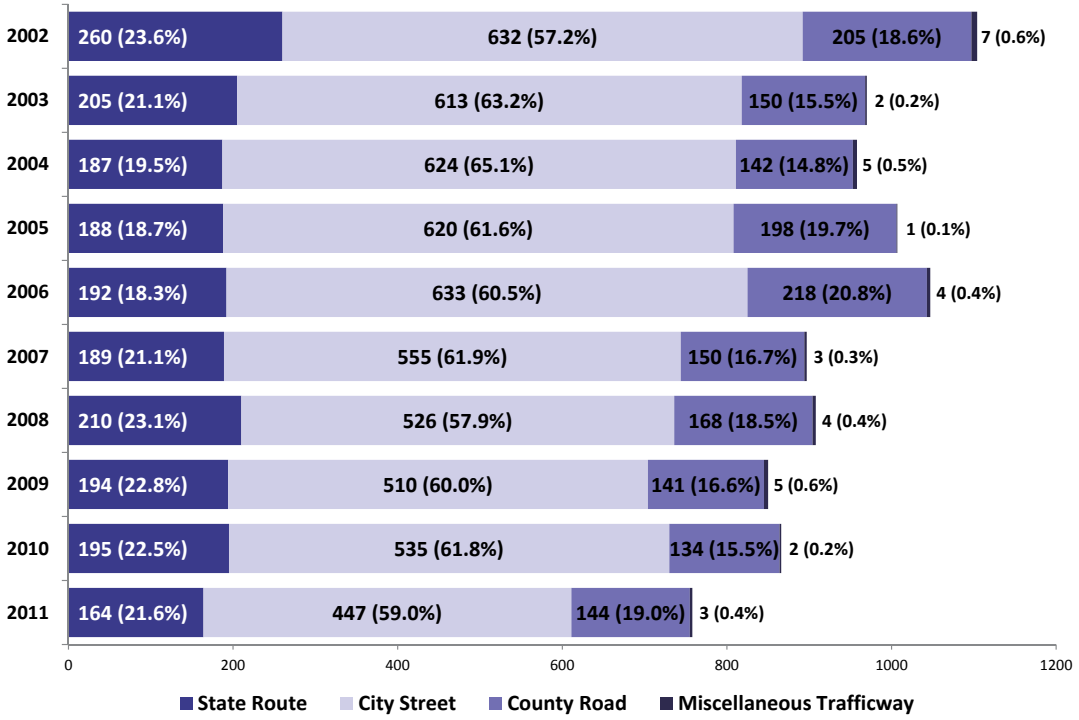
Intersection Related Fatalities by Jurisdiction 2002-2011



Intersection Related Serious Injuries by Jurisdiction 2002-2011



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Contributing Circumstances and Factors

From 2009-2011, the top contributing circumstances in fatal or serious injury intersection related collisions were failing to yield (39%), speeding (16%), impairment (14%), driver inattention or distraction (13%) and running red lights (11%).

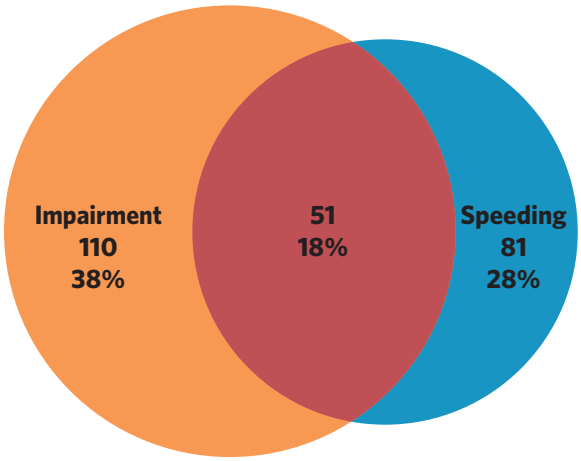
There are two major types of failure to yield. Failing to yield to vehicles was involved in 26% of fatal and serious injury collisions. Failing to yield to a pedestrian or bicyclist was involved in another 13% of fatal and serious injury collisions.

Impairment and speeding are more likely to be factors in fatal intersection related collisions than in serious injury collisions. Impairment was involved in 35% of fatal collisions (contributing to 38% of intersection fatalities) and speeding in 27% of collisions (contributing to 28% of intersection fatalities). Impairment is underreported in serious injury collisions (although documented in 12% of collisions) compared to fatalities, where impairment is confirmed by toxicology.

Speeding was noted in 15% of serious injury intersection collisions. For fatal and serious injury collisions combined, impairment is involved in 14%, contributing to 16% of fatalities, and speeding in 16%, contributing to 18% of fatalities.

Driver inattention or distraction, involved in 13% of collisions, is likely underreported yet still contributed to 32% of intersection related fatalities and 11% of serious injuries. A significant percentage of bicyclist and pedestrian fatalities and serious injuries occur at intersections. From 2009-2011, 55% of bicyclist fatalities and serious injuries occurred at intersections (54% of fatalities and 55% of serious injuries). For pedestrians, over 45% of fatalities and serious injuries occurred at intersections (32% of fatalities and 55% of serious injuries).

Intersection Related Fatalities
Total = 290



Of the 290 intersection related fatalities 2009-2011, 38% also involved impairment and 28% involved speeding. Combined, 18% of these fatalities involved both impairment and speeding.

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Programs and Successes

Several high- and low-cost strategies can reduce collisions at intersections. Many low-cost strategies make changes to existing traffic controls (signals or signs), such as modifying signal timing or adding flashing beacons to signs. Higher-cost strategies often involve changing traffic control devices, such as converting signs to signals or roundabouts, or converting signals to roundabouts. A balanced approach of making systematic low-cost improvements area-wide, in addition to addressing key locations with higher-cost improvements, can have the greatest impact in reducing collisions.

Roundabouts

Converting intersections to roundabouts has been shown to reduce fatal and serious injury collisions by 90% (Transportation Research Record 1751, 2001). In Washington similar results – an 80% reduction – have been found (WSDOT Gray Notebook 27, 2007). There are currently 245 roundabouts installed across the state, including both urban and rural locations.

Left Turn Flashing Yellow Arrows

One of the most recently embraced low-cost improvements is using flashing yellow arrows at "permitted" (not protected with a green arrow) left turns. This helps prevent drivers from seeing a green ball for the permitted left turn, and assuming they can proceed even when there is opposing traffic. The flashing yellow arrow helps to more appropriately display that a left turn should be made with caution.

Depending upon the location in the state, some agencies have made complete conversions to the flashing yellow arrow for all appropriate locations. Many other agencies have begun to convert some of their locations to use this display. While most installations of flashing yellow arrows are new, one study of locations in Washington, Oregon and North Carolina showed a 19% decrease in left turn collisions when converting from protected and permitted left turns to the flashing yellow arrow (Srinivasan et al., 2011).

Pedestrians

Significant progress has yet to be made in reducing pedestrian fatalities and serious injuries at intersections. This is the only area out of the top collision types at intersections that has not improved during 2009-2011 compared to 2006-2008. Rather than a decrease, the total number of intersection related pedestrian fatal and serious injury collisions has increased by 2%. Although fatal collisions decreased from 69 to 61, the number of serious injury collisions increased from 393 to 411.

Addressing pedestrian collisions at intersections has the potential to have a significant impact on intersection and pedestrian safety. (See section on Pedestrians on page 120 for programs being implemented to address pedestrian safety.)

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Objectives & Strategies		
Objectives (What)	**Strategies (How)**	**Implementation Arena(s)**
1. Reduce motor vehicle collisions at intersections	1.1 Install or convert intersections to roundabouts. (P, NCHRP)	Engineering
	1.2 Optimize traffic signal clearance intervals. (P, NCHRP)	Engineering
	1.3 Provide/improve left- and right-turn channelization. (P, NCHRP)	Engineering
	1.4 Install illumination at locations with night time crashes. (P, NCHRP)	Engineering
	1.5 Convert permitted left turns to protected left turns at signals. (P, HSM)	Engineering
	1.6 Remove unwarranted signals. (P, NCHRP)	Engineering
	1.7 Employ signal coordination. (P, NCHRP)	Engineering
	1.8 Employ flashing yellow arrows at signals. (P, CMF)	Engineering
	1.9 Restrict or eliminate turning maneuvers at intersections. (R, NCHRP)	Engineering
	1.10 Implement restricted access to properties/driveways adjacent to intersections using closures or turn restrictions. (R, NCHRP)	Engineering, Leadership/ Policy
	1.11 Provide skid resistance in intersections and on approaches. (R, NCHRP)	Engineering
	1.12 Improve visibility of intersections by providing enhanced signing and delineation. (R, NCHRP)	Engineering
	1.13 Provide dynamic intersection warning (real-time) to drivers on mainline or side streets of conflicting vehicle traffic at rural intersections. (U)	Engineering
2. Improve driver compliance at intersections	2.1 Implement automated enforcement (photo red cameras) of red-light running at locations with angle crashes. (P, NCHRP)	Enforcement, Engineering, Leadership/Policy
	2.2 Provide targeted speed enforcement. (P, NCHRP).	Enforcement
	2.3 Provide targeted conventional traffic law and stop sign/signal enforcement at intersections and intersection approaches. (R, NCHRP)	Enforcement
	2.4 Implement automated enforcement (cameras) of approach speeds. (R, NCHRP)	Enforcement, Engineering, Leadership/Policy

Continued on next page.

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Objectives & Strategies		
Objectives (What)	**Strategies (How)**	**Implementation Arena(s)**
3. Improve driver awareness of intersections	3.1 Redesign intersection approaches to improve sight distances. (P, NCHRP)	Engineering
	3.2 Add back plates with retro-reflective borders to signals. (P, CMF)	Engineering
	3.3 Provide advance warning of intersections using dynamic signal warning flashers or actuated advance warning dilemma zone protection systems at high-speed signalized intersections. (P, CMF)	Engineering
	3.4 Improve visibility of intersections on approaches. (R, NCHRP)	Engineering
	3.5 Improve visibility of signals and signs at intersections. (R, NCHRP)	Engineering
	3.6 Install transverse rumble strips on intersection approaches. (R, NCHRP)	Engineering
	3.7 Provide targeted public information and education on safety problems at specific intersections. (R, NCHRP)	Education
4. Reduce vehicle collisions involving pedestrians and bicyclists at intersections	4.1 Improve safety at pedestrian crossings by installing refuge islands, scale lighting, and shortening crossing distances. (R, CMF)	Engineering
	4.2 Expand targeted crosswalk enforcement and education for both vehicles and pedestrians. (R, CTW)	Enforcement, Education
	4.3 Improve sight distances and/or visibility between motor vehicles and pedestrians at high risk and high volume pedestrian crossings. Move the stop bar farther back from the intersection, clear vegetation, extend crossing times, and implement pedestrian lead intervals. (U)	Engineering
	4.4 Upgrade pavement markings using high visibility crosswalks and bicycle lanes. (U)	Engineering
	4.5 Install bicycle lanes and bicycle boxes. (U)	Engineering

P = Proven **R = Recommended** **U = Unknown**

CMF = Crash Modification Factors
CTW = Countermeasures That Work
HSM = Highway Safety Manual
NCHRP = National Cooperative Highway Research Program

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Additional Resources

Crash Modification Factors Clearinghouse, http://www.cmfclearinghouse.org/

Intersection Safety Resources (Federal Highway Administration), http://safety.fhwa.dot.gov/intersection/

NCHRP Report 500, Volume 5, A Guide for Addressing Unsignalized Intersection Collisions, (National Cooperative Highway Research Program, Transportation Research Board), http://onlinepubs.trb.org/onlinepubs/nchrp/nchrp_rpt_500v5.pdf

NCHRP Report 500, Volume 10, A Guide for Reducing Collisions Involving Pedestrians, (National Cooperative Highway Research Program, Transportation Research Board), http://onlinepubs.trb.org/onlinepubs/nchrp/nchrp_rpt_500v10.pdf

NCHRP Report 500, Volume 12, A Guide for Reducing Collisions at Signalized Intersections, (National Cooperative Highway Research Program, Transportation Research Board), http://onlinepubs.trb.org/onlinepubs/nchrp/nchrp_rpt_500v12.pdf

Q&A: Roundabouts (Insurance Institute for Highway Safety), http://www.iihs.org/research/qanda/roundabouts.aspx

The Gray Notebook, Edition 27 (Washington State Department of Transportation), http://wsdot.wa.gov/publications/fulltext/graynotebook/Sep07.pdf

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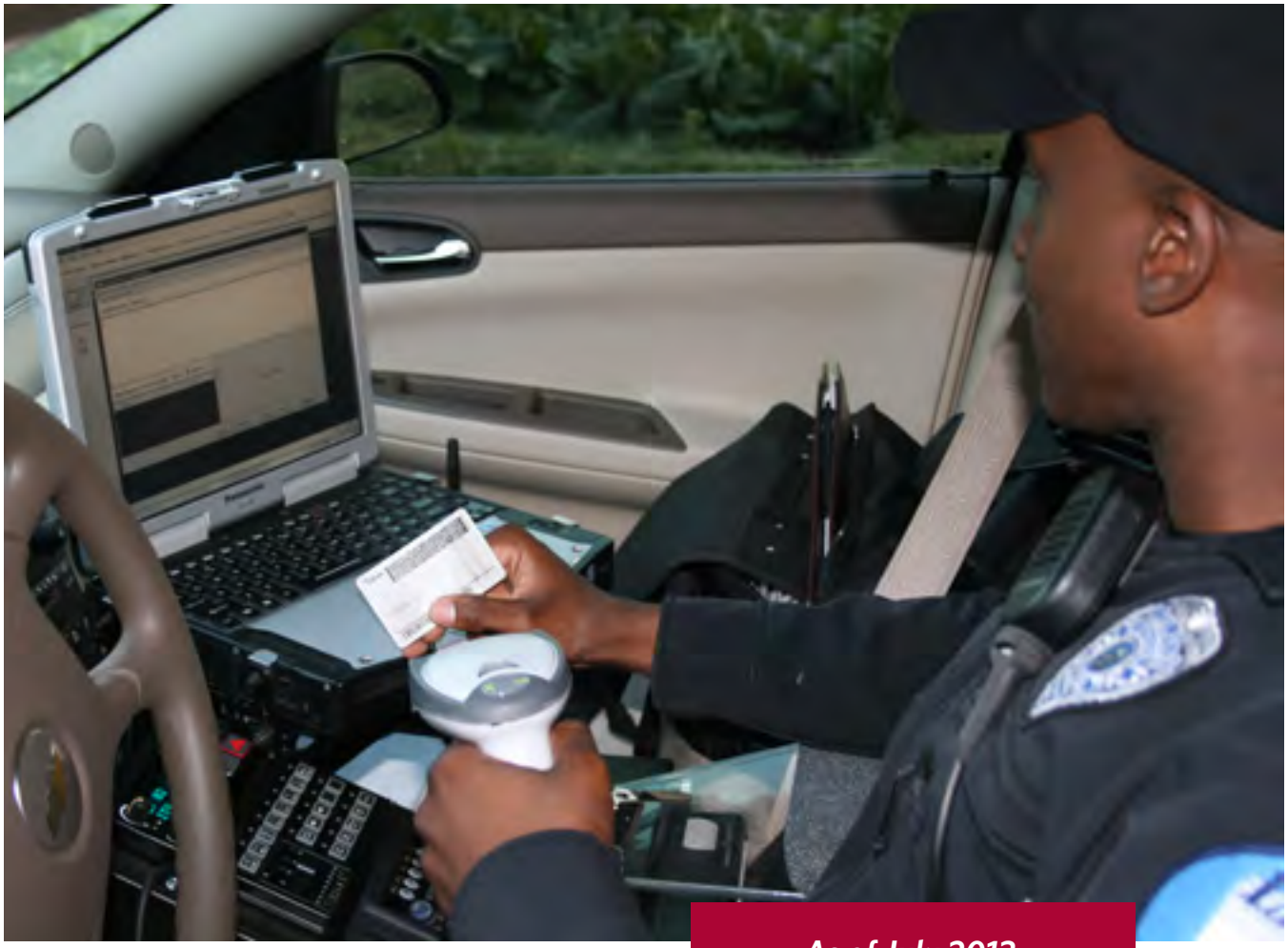
Traffic Data Systems



As of July 2013, 70% of tickets and collisions are processed electronically statewide.

Executive Summary

Target Zero® is a data-driven approach to reducing traffic fatalities and injuries. Timely, accurate, integrated, and accessible data is the foundation for targeting resources and monitoring progress toward zero traffic fatalities and serious injuries by 2030. Quality data is essential in the ever evolving need to diagnose the contributing factors to crashes and assessment of implemented countermeasures. The data assists in identification of innovative and targeted strategies in areas that will have the greatest impact on achieving our goal.

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Background

Washington's traffic information and support data systems are comprised of hardware, software, and accompanying processes that capture, store, transmit, and analyze a variety of data. The following information is used to make up Washington's Traffic Records System:

- Traffic fatalities and serious injuries
- All statewide traffic collisions
- Driver citations
- Criminal history and judicial outcome data
- Driver licenses and registered vehicles
- Commercial motor vehicles
- Emergency Medical Systems
- Vital statistics
- Trauma and inpatient hospital records
- Roadway geometrics and features
- Traffic volumes, traffic mix and freight
- Location information via Geographic Information Systems
- Population estimates

The Washington Traffic Records Committee

The Washington Traffic Records Committee (TRC) is a partnership of federal, state, local, and tribal stakeholders from transportation, law enforcement, criminal justice, and health disciplines. The statewide TRC was created to foster collaboration and facilitate the planning, coordination, and implementation of projects which will improve the state's traffic records system. The TRC website may be accessed at http://trafficrecords.wa.gov/ and contains the TRC Strategic Plan and current project portfolio.

Each component of Washington's Traffic Records System provides key information for diagnosing the contributing factors to collisions and decision support related to public and transportation safety. The information enhances management and accountability in public service by gauging progress toward key measures of performance.

Washington's strategic goals (shown in dark green) and the resulting objectives are driven by the National Agenda for the Improvement of Highway Safety Information Systems (http://www.atsip.org/committees/documents/natagenda/National_Agenda.pdf)

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Programs and Successes

Electronic Ticketing and Collision Reporting Program (eTRIP)

The eTRIP Initiative is a series of projects coordinated by the TRC and implemented by various state and local agencies. It's designed to create a seamless and integrated system for collision reports and tickets, as well as a way for information on subsequent activity on those events to be disseminated to agencies. This significantly reduces the inefficiencies of the paper-based system. The following diagram provides a conceptual illustration of how the eTRIP Initiative functions:

There has been significant adoption of the electronic records systems statewide since 2010. As of July 2013, 202 or 73% of all law enforcement agencies in Washington are using the Statewide Electronic Collision and Ticket Online Records (SECTOR). Agencies have benefitted in many ways, including:

- For law enforcement, use of SECTOR resulted in a 15% reduction in the total time of a collision response or traffic stop through reduced data entry time
- Court staff have reported a reduction in ticket errors and can process SECTOR infractions 80% faster than paper-filed infractions
- Department of Transportation receives SECTOR collision reports approximately 85% faster than paper reports, usually within one day of the collision
- SECTOR collision reports are also processed 40% faster, and fewer than 1% are returned to officers for corrections, compared to 11% for paper reports
- Department of Licensing can completely automate creation of citizen reports for Financial Responsibility cases with SECTOR collision reports and 98% of electronically submitted dispositions post to the DOL driver database without any action by DOL staff

Pictured from left: Assistant Chief Jim Lever, WSP; Marcus Bailey, DOL; Mike Martin, DOL; Tom Wallace, WSP; Deputy Chief David Karnitz, WSP; Lowell Porter, WTSC Director; Keri Sullivan, WTSC; Dirk Marler, AOC; Doug Mah, Office of the Chief Information Officer; John Rosen, WSDOT and Warren Stanley, WSDOT.

The functionality of the electronic system continues to expand to benefit users. Tickets and collision reports can now move seamlessly to agencies' Records Management Systems. Prosecutors can now access tickets and collisions reports directly.

This type of progress is attributable to the group of operation managers from seven agencies and organizations that meet weekly, and the dedicated system support group that works continually to address technical problems and provide user enhancements. The system has been so successful that Washington State was nationally recognized with the Council of State Governments' 2011 Innovation Award.

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Data Integration

The TRC has a Data Integration Subcommittee to promote the integration of different data records to create a population-based, comprehensive and representative crash outcome dataset. Data integration enhances data's value beyond the limited, agency-specific purpose for which it was initially gathered. Linked together, data provides a more complete picture of crash causes and outcomes.

Furthermore, utilizing health care provider assessments of injury severity will significantly enhance the quality and accuracy of collision data, which guides the state's public safety investments in both behavioral and roadway improvement programs. This comprehensive information is needed to develop best practice traffic safety strategies and countermeasures, and evaluate their effectiveness.

Since the last edition of Target Zero, the data integration subcommittee supported two proof of concept projects. The first involved linking three years of collision data from CLAS to Washington Trauma Registry data. In the second, one year of emergency department data from seven hospitals was linked to collision data from CLAS.

Both of these projects included analysis of the clinical accuracy by on-the-scene officers in assessing injuries. Both revealed serious injuries are both over and underestimated by officers, resulting in about 40% accuracy for serious injury assessment. Currently, data collected by officers at the scene are the only source of traffic serious injury data, and it's highly relied upon for problem identification, resource allocation and targeting.

The Data Integration Subcommittee is currently proceeding with the development of linkage procedures for the initial phase of developing an integrated traffic records system. This initial phase will link collision and health records. The second phase of the project will include broad analysis to demonstrate the value of the linked information. Throughout the project, the Data Integration Subcommittee continuously informs the TRC and provides recommendations for action outside the scope of the subcommittee.

Incident Location Tool (ILT)

The Washington State Department of Transportation (WSDOT) recently developed the Incident Location Tool (ILT) which could be implemented as early as 2014. The ILT will greatly increase WSDOT's efficiency and accuracy in processing collision records by replacing the less productive method of using online map resources to verify collision locations. The tool is used to query map layers and automatically populate several database fields such as city, county, Tribal reservation name, roadway name, milepost, and the direction and distance to the cross street nearest to the collision location.

The ILT also captures the latitude and longitude of the collision, allowing collisions to be geocoded to map-based software, such as ArcGIS. This provides advanced spatial analysis opportunities for the traffic safety community. WSDOT will share the tool with Washington State Patrol and other local law enforcement officers to ensure accurate data collection while in the field.

Emergency Department Data System

In 2011, the Department of Health completed a pilot study on the feasibility and utility of establishing a statewide emergency department (ED) data system using the existing CHARS (hospital inpatient discharge billing records) infrastructure. While the pilot was successful, the Health Information Exchange (HIE) is being implemented in Washington and may fill the need for ED data and be even more comprehensive and detailed than an administrative data system would be. For this reason an ED data system has been postponed to allow for further development of the HIE.

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Objectives & Strategies

Objectives (What)		Strategies (How)	Implementation Arena(s)
1. Expand the capabilities and use of the eTRIP system for electronic data generation, transfer, filing, reporting, and analysis.	1.1	Develop new features in SECTOR to address user needs, including additional ticketing options and report types. Expand SECTOR software edit checks to enhance reporting accuracy and consistency. (R, eTRIP GT)	Leadership/Policy, Enforcement
	1.2	Expand prosecutors' use of SECTOR statewide to create, review, amend, and electronically file criminal cases with the courts. (R, TRC)	Leadership/Policy, Enforcement
	1.3	Increase the number of electronic tickets and collision reports through expanded adoption and agency-wide implementation of SECTOR. (R, TRC)	Leadership/Policy, Enforcement
	1.4	Incorporate the incident location tool (ILT) component into SECTOR to enhance accurate reporting of location data. (R, TRC)	Leadership/Policy, Enforcement, Engineering
	1.5	Provide officers with roadside access to driver and vehicle history information through SECTOR. (R, TRC)	Leadership/Policy, Enforcement
	1.6	Expand the use of the Justice Information Network Data Exchange (JINDEX) system to electronically disseminate ticket, collision, and disposition data to state and local records management systems. (R, TRC)	Leadership/Policy, Enforcement
	1.7	Create a maintenance and support model for SECTOR that further that improves operations, speeds change request implementation, and enhances user support. (R, eTRIP GT)	Leadership/Policy
	1.8	Develop an electronic system for DUI reporting and tracking. (R, NHTSA)	Leadership/Policy, Enforcement
	1.9	Enhance SECTOR functionality to allow violations bureaus (not part of the state JIS system) to electronically process tickets from SECTOR to DOL. (R, TRC)	Leadership/Policy
	1.10	Expand Violation Bureaus use of JIS to electronically process tickets (R, TRC)	Leadership/Policy
2. Develop and expand integrated traffic information systems and enhance injury surveillance.	2.1	Derive a more accurate classification of injury severity based on clinical assessments from medical records to augment the investigating officer's assessment of traffic collision injury severity. (P, CODES)	Leadership/Policy, EMS
	2.2	Initiate a statewide Emergency Department Data System to enhance Injury Surveillance capabilities. (P, CODES)	Leadership/Policy, EMS
	2.3	Create a central repository for integrated, linked data records including collision records, health (EMS, Trauma, CHARS) records, court records, licensing records, and state toxicology records. (P, CODES)	Leadership/Policy, EMS
	2.4	Increase EMS reporting by first responders throughout the state to the Washington Emergency Medical Services Information System (WEMSIS). (R, DOH)	Leadership/Policy, EMS Leadership/Policy,
	2.5	Implement Data-Driven Approaches to Crime and Traffic Safety (DDACTS) model in local law enforcements agencies statewide. (R, DDACTS)	Enforcement
	2.6	Make system changes necessary at WSDOT and DOL to enable analysts to identify unlicensed drivers involved in serious injury collisions.(R, DDACTS)	Leadership/Policy

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Objectives & Strategies		
Objectives (What)	**Strategies (How)**	**Implementation Arena(s)**
3. Improve data quality through reporting timeliness, data collection consistency, and data accuracy.	3.1 Develop a linear referencing system (LRS) for remaining public roadways without a LRS to maintain geospatial location data, improve location accuracy and advance overall integration. (P, NSDI EO12906)	Leadership/Policy
	3.2 Educate data reporting agencies about state/federal timeliness reporting statutes and increase enforcement of these statutes. (P, WTSC)	Leadership/Policy, Education
	3.3 Revise the Police Traffic Collision Report, including both SECTOR and paper reports, to improve nomenclature and ensure business needs are met with stakeholder involvement. (R, TRC)	Leadership/Policy, Enforcement
	3.4 Provide more frequent and enhanced traffic safety trend reporting. Present data/trends in a manner that is easy to understand and is actionable. (R, DDACTS)	Leadership/Policy, Education
4. Enhance the structure and activities of the TRC	4.1 Develop a meaningful and valid set of traffic records performance measures to gauge the timeliness, completeness, accuracy, and integration of traffic safety data. (R, DDACTS)	Leadership/Policy
	4.2 Support training opportunities to enhance traffic safety data analysis and research skills. (U)	Leadership/Policy

P = Proven **R = Recommended** **U = Unknown**

CODES = Crash Outcomes Data Evaluation System
DOH = Department of Health
NHTSA = National Highway Traffic Safety Administration
TRC = Traffic Records Committee
DDACTS = Data Driven Approaches to Crime and Traffic Safety
eTRIP GT = eTRIP Governance Team
NSDI EO12906 = National Spatial Data Infrastructure, Executive Order 12906

Additional Resources

Association of Transportation Safety Information Professionals Website, www.atsip.org

Fatal Analysis Reporting System (National Highway Traffic Safety Administration), http://www.nhtsa.gov/FARS

International Association of Chiefs of Police Technology Clearinghouse, www.iacptechnology.org

Model Minimum Uniform Crash Criteria (US Dept. of Transportation and Governors' Highway Safety Association), www.mmucc.us

National Emergency Medical Services Information System (NEMSIS) Website, www.nemsis.org

NHTSA Traffic Records Website (National Highway Traffic Safety Administration), http://www.nhtsa-tsis.net/

Traffic Records Assessment Program Advisory (National Highway Traffic Safety Administration), http://www.nhtsa-tsis.net/stateAssessments/docs/NHTSA_TRProgram_Assessment_Advisory_811644.pdf

Washington State Traffic Records Strategic Plan (Washington State Traffic Records Committee), http://trafficrecords.wa.gov/AboutTRC/Docs/wa_trs_an_overview.pdf

Washington State Traffic Records Website (Washington State Traffic Records Committee), http://trafficrecords.wa.gov

Washington Traffic Records Committee Resource Manual (Washington Traffic Safety Commission, 2004), www.trafficrecords.wa.gov/AboutTRC/Docs/trc_docs/traffic_records_resource_manual.pdf

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Priority Level Two

Washington State 2009-2011	Fatalities Number	Fatalities % of Total	Serious Injuries Number	Serious Injuries % of Total
Priority Level Two				
Unrestrained Vehicle Occupants	348	24.8%	764	10.5%
Unlicensed Driver Involved	253	18.0%	n/a	n/a
Opposite Direction	221	15.7%	702	9.7%
Motorcyclists	206	14.7%	1,230	17.0%
Pedestrians	193	13.7%	869	12.0%
EMS and Trauma Care Systems	**	**	**	**
Total*	**1,406**		**7,247**	

** "Total" is for all fatalities and serious injuries in Levels One, Two and Three combined. More than one factor is commonly involved in fatal and serious injury collisions. Therefore, each fatality and serious injury in "Total" may be represented multiple times in the Level tables. For the Target Zero Priorities Chart with all three priority levels, see page 9.*

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Unrestrained Vehicle Occupants

Executive Summary

Washington has consistently been a national leader on seat belt use. Since the adoption of Click it or Ticket, and the primary enforcement seat belt law in 2002, Washington has had one of the highest rates of seat belt use in the country. Strong support from the law enforcement community, aggressive efforts to publicize seat belt patrols and assistance from Target Zero® Managers in 22 local areas provide the backbone of this success. These efforts have done more to reduce traffic fatalities and serious injuries than any other behavioral project to date.

In Washington in 1986 seat belt use was at 36%. In 2012 it was at an astonishing 96.9%.

Unrestrained vehicle occupant fatalities were reduced by 29.7% in 2009-2011. However, fatality reductions for children in the 2009-2011 time period did not see the same considerable improvement.

Car collisions are the number one killer of children 1 to 12 years old in the United States.

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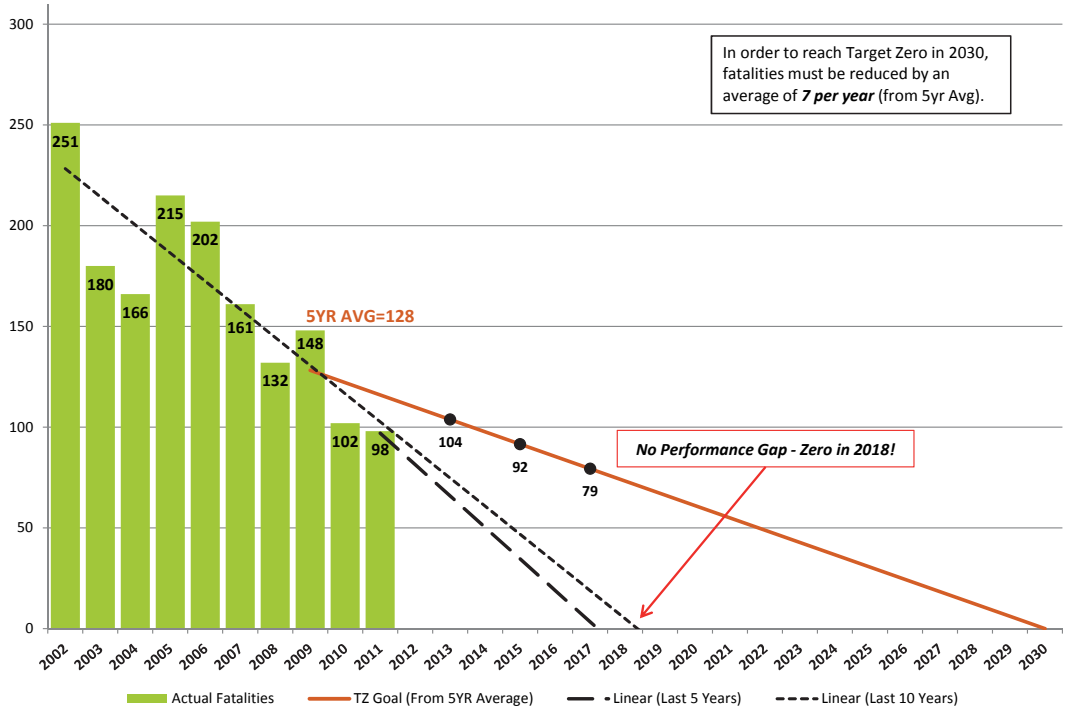
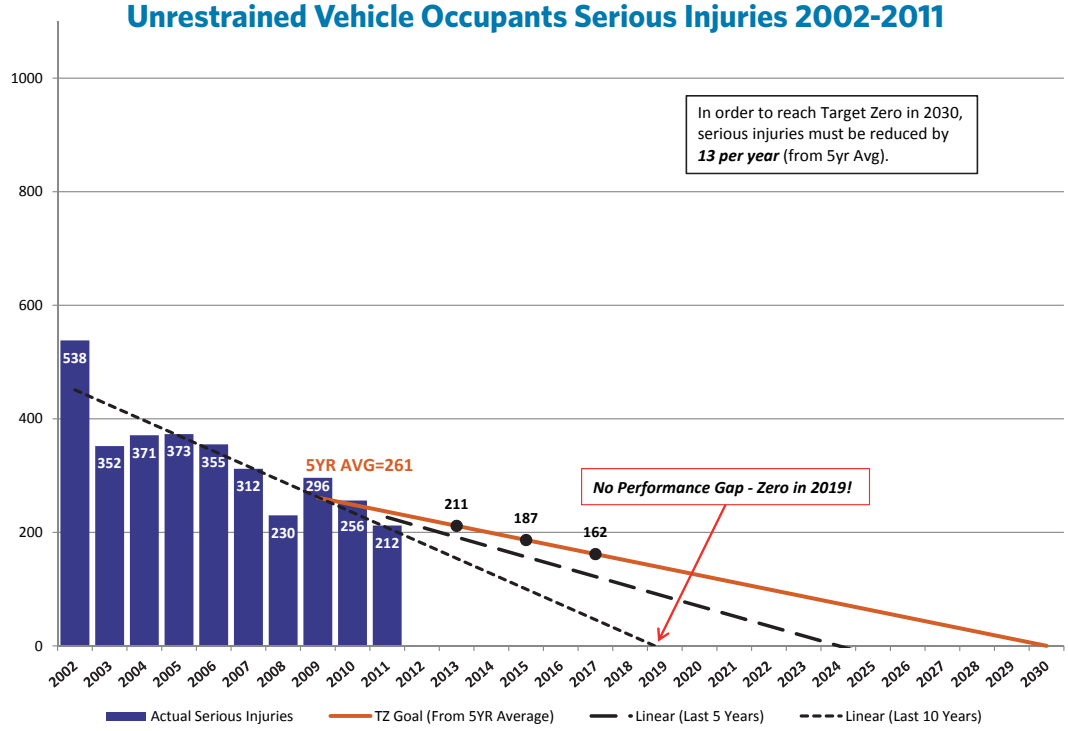
Unrestrained Vehicle Occupants Fatalities 2002-2011



Unrestrained Vehicle Occupants Serious Injuries 2002-2011



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Background

Fatalities and serious injuries resulting from unrestrained vehicle occupants have been steadily declining. In 2009-2011, unrestrained vehicle occupant fatalities decreased by 29.7% and serious injuries decreased by 14.8%, compared with 2006-2008. These types of declines in unrestrained vehicle passenger death and serious injury have been consistently occurring since the primary seatbelt law was passed in 2002, allowing an officer to stop a vehicle and issue a citation when they observe an unbuckled driver or passenger.

Washington's first seat belt law was adopted in 1986. It was a "secondary" law, meaning an officer couldn't stop a motorist for the offense, but could issue a citation if the motorist was stopped for a primary infraction such as speeding, a burned out tail light out or expired tabs. At that time the first survey was undertaken to measure and document seat belt use in the state. It showed a 36% seat belt use rate.

The observational survey has been repeated every year since, following the same design and methodology. The 2012 results showed an astonishing seat belt use rate of 96.9%. This number represents 6,683,204 Washington motorists buckled up. Despite these gains, the majority of unrestrained vehicle occupant deaths are coupled with other high risk behaviors, such as impairment and speeding.

Washington Child Restraint Law

RCW 46.61.687 covers all passengers under 16 years of age

- A child must be restrained in a child restraint system: if the passenger seating position equipped with a safety belt system allows sufficient space for installation, until the child is 8 years old, unless the child is 4 feet 9 inches or taller. The child restraint system must comply with standards of the U.S. Department of Transportation and must be secured in the vehicle in accordance with instructions of the vehicle manufacturer and child restraint manufacturer.
- A child who is 8 years of age or older or 4 feet 9 inches tall or taller: shall be properly restrained with the motor vehicle safety belt properly adjusted and fastened around the child body or an appropriately fitted child restraint system.
- The driver of a vehicle transporting a child who is under 13 years old: shall transport the child in the back seat positions in a vehicle where it is practical to do so.
- Does not apply to: 1) for hire vehicles, 2) vehicles designed to transport 16 or less passengers (including the driver) operated by transportation companies as defined in RCW 81.68, 3) vehicles providing shuttle service between parking, convention and hotel facilities and airport terminals, and 4) school buses.
- Required to use a booster seat: does not apply to any seat position where there is only a lap belt available and the child weighs more than 40 pounds.

Children

In 1971, the federal government established minimum standards for child safety seats and Washington adopted a child passenger safety law in 1983. It has since undergone numerous modifications and upgrades. According to the current law, children must ride in correct child restraints up to age eight or 4'9" tall, whichever comes first. Child restraints must be correctly installed according to the instructions for the vehicle, as well as the manufacturer of the child car seat (see inset box for further details).

Child safety seats reduce the risk of death in passenger vehicles by 71% for infants and by 54% for toddlers. 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. Despite the effectiveness of proper use of child restraints and adherence to Washington's strong child restraint law, many children are either not restrained or are incorrectly restrained. These children are at risk for injury or death.

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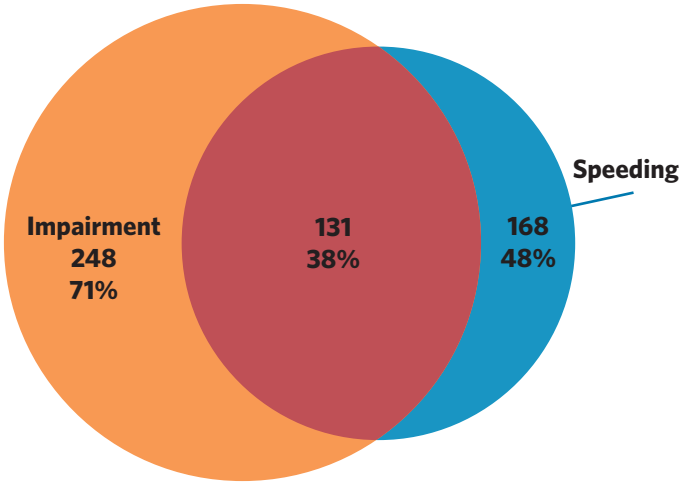
Contributing Circumstances and Factors

The majority of unrestrained vehicle occupant deaths are coupled with other high risk behaviors such as impairment and speeding. In 2009-2011, impairment was a factor in 71% of unrestrained vehicle occupant deaths and speeding contributed to 48%. Combined, speeding and impairment contributed to 38% of these deaths.

The collision death rate at night is at least three times higher than during the day. Seat belt use typically declines at night, often 6 to 8 percentage points lower at night than during the day. There are also more impaired driving deaths at night. From 2009-2011, 64% of unrestrained occupant deaths and 62% of unrestrained occupant serious injuries occurred at night (6 p.m. - 5:59 a.m.). Among unrestrained occupant deaths occurring at night, over 80% also involved impairment.

Additionally, based on National Highway Traffic Safety Administration (NHTSA) evaluation of a Washington nighttime seat belt project, people driving unbuckled at night have worse driving and criminal histories, more tickets and collisions on their driving records and a greater likelihood of having violent criminal histories. Night unbelted drivers were found to be 2.7 times more likely than day-belted drivers to have a felony arrest on their criminal records and 3 times more likely to have an alcohol citation on their driving records.

Unrestrained Vehicle Occupant Fatalities
Total = 348



Of the 348 unrestrained vehicle occupant fatalities 2009-2011, 71% also involved impairment and 48% involved speeding. Combined, 38% of these fatalities involved both impairment and speeding.

Programs and Successes

Click it or Ticket (CIOT)

The Click it or Ticket program is a high visibility enforcement model involving law enforcement and publicity mobilizations. The effort begins with aggressive publicity to inform people that law enforcement will be ticketing seat belt law violators. This is followed by enforcement patrols statewide. Publicity efforts include public service announcements, paid advertising and encouragement of news media to cover the issue.

Additional opportunities are identified by the county level traffic safety program managers (called Target Zero Managers) located in 22 communities statewide. Banners, posters, flyers, law enforcement ride-alongs, press events to encourage media publicity, rented and borrowed variable message road signs and other street level signage are all samples of the kinds of additional publicity the Target Zero Managers have obtained to increase exposure to the Click it or Ticket message at the community level.

The Washington Department of Transportation has been an important partner in this effort with road signs on 125 freeways and highways across the state advertising Click it or Ticket during the mobilization periods. They also helped with the placement of 625 permanent signs along highways, county roads and city streets.

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Seat Belt Patrols during Nighttime Hours

In Washington, about the same number of traffic deaths occur during the daytime hours as at night, even though traffic volumes at night are only 12-15% of what they are during the day.

In late 2005, the Washington State Patrol (WSP) developed a plan to conduct a nighttime seatbelt emphasis patrol. Before patrols began, baseline observational surveys were conducted during the day and at night using special night vision goggles. The findings were consistent with research conducted in other areas of the USA: nighttime seat belt use was 5% lower. The most pronounced difference was on Saturday night when it was 9% lower than during the daytime hours.

The first nighttime seatbelt emphasis patrol (Vancouver, WA) consisted of a stationary officer observing unbuckled motorists and then notifying strategically parked officers who made the stop. In just a four hour period, on a Wednesday from 6 – 10 p.m., one WSP Sergeant (observer) and four WSP Troopers (chase cars) generated the following activity:

- 41 total contacts
- 29 seatbelt violations
- 1 DUI arrest
- 6 Drug arrests
- 2 Warrant arrests (1 felony/1 misdemeanor)
- 5 suspended driving arrests
- 6 uninsured motorist infractions
- 2 stolen vehicle recoveries

In 2006, the WTSC received a pilot grant from the National Highway Traffic Safety Administration to develop a seat belt promotional program targeting motorists who travel at night. The demonstration project involved two large-scale, statewide Click it or Ticket style mobilizations, along with smaller "sustained enforcement" projects: May 2007, October 2007, and May 2008.

Results showed people driving unbuckled at night had more: 1) driving and criminal histories, 2) tickets and collisions and 3) violent criminal histories. Notably, night unbelted drivers were 2.7 times more likely than day-belted drivers to have a felony arrest on their criminal records and 3 times more likely to have an alcohol citation. Based on the results of this program, the WTSC continues to promote annual nighttime-focused seat belt patrols.

Comprehensive Child Passenger Safety Program

Washington's comprehensive child passenger safety program is under the supervision of a Project Manager housed at the Bonney Lake Police Department. Under the new leadership, a grant process has been established and utilized to support child passenger safety efforts at the local level. The network of active members includes 22 Target Zero Traffic Safety Task Forces, 18 SafeKids Coalitions, and 7 community child passenger safety teams. See the box on page 94 for Washington's Child Restraint Law (RCW 46.61.687) which covers all passengers under 16 years of age.

Grant funding is available to a qualifying school, government agency or 501(c)(3) nonprofit that provides child passenger safety efforts intended to reduce the number of deaths and serious injuries to children resulting from traffic collisions on Washington roads. They must be able to demonstrate their commitment to child passenger safety and ensure efficient and effective management of funds.

This program also improves retention and recruitment of nationally certified child passenger safety technicians (CPST's) and support of statewide child restraint inspection stations. The Project Manager provides consistent communication of opportunities for Child Passenger Safety Technician courses, continuing education unit (CEU) training opportunities, available resources for conducting required seat sign-offs for recertification and funding to accomplish these activities.

Supporting the Child Restraint Law, visual inspections by law enforcement determine if the child restraint system in use is appropriate for the child's individual height, weight and age. If not, a violation notice is issued. However, if proof of acquisition of an approved child passenger restraint system or a child booster seat, as appropriate, is presented within seven days, and the person has not had a violation of this type previously dismissed, the jurisdiction shall dismiss the notice of traffic infraction.

A CIOT-style child car seat program pioneered by WTSC resulted in a significant increase in proper child restraint use, increased education and awareness in relation to child passengers, provided training of police officers and increased enforcement of the child restraint law.

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Objectives & Strategies		
Objectives (What)	**Strategies (How)**	**Implementation Arena(s)**
1. Strengthen efforts to increase compliance, enforcement, and adjudication of the seat belt and child restraint laws	1.1 Identify population groups with lower than average restraint use rates and provide enhanced public education targeted at these groups. (P, NCHRP)	Education
	1.2 Implement communications, outreach, and enforcement campaigns directed at groups/areas where restraint use is lowest, particularly rural areas. (P, CTW)	Education, Enforcement
	1.3 Engage and collaborate with all levels of law enforcement to effectively carry out high-visibility communications, outreach, and enforcement of seat belt use, such as the Click It or Ticket campaign. (P, CTW)	Education, Enforcement
	1.4 Promote nighttime patrols during the May Click it or Ticket statewide seat belt mobilization. Combine short-term, high-visibility seat belt use enforcement with nighttime enforcement programs. (P, CTW)	Enforcement
	1.5 Implement "Click It or Ticket-style" child car seat short-term, high-visibility enforcement campaigns. (P, CTW)	Education, Enforcement
	1.6 Encourage law enforcement and other emergency responders to adopt seat belt use policies for their employees. (R, NHTSA)	Education, Leadership/ Policy, EMS
	1.7 Promote car seat awareness and instruction classes in diverse community locations targeting child transport agencies, hospitals, daycare centers, PTAs, parent workplace, and counties with a Target Zero Task Force, SafeKids Coalition or local CPS team. (R, NCHRP)	Education
	1.8 Engage and educate prosecutors and judges about the importance of restraint programs, enforcement, and adjudication of these violations. (R, NHTSA)	Education, Enforcement
	1.9 Collaborate with WA's Criminal Justice Training Commission and the WA State Patrol Academy to conduct trainings for new law enforcement officers and seasoned officers on Washington's child restraint law, increasing comfort level for spotting and citing violations. (R, NCHRP)	Education, Enforcement
	1.10 Promote child restraint distribution programs including redistribution of previously owned child restraints. (U)	Education

Continued on next page.

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Continued from previous page

Objectives & Strategies		
Objectives (What)	**Strategies (How)**	**Implementation Arena(s)**
2. Promote legislative and policy efforts to promote restraint use	2.1 Undertake policy and educational efforts to require proper restraint use by people who transport foster children and Medicaid transports. (R, ABACCL)	Leadership/Policy
	2.2 Enact law to make it illegal to transport unrestrained humans in the back of pickup trucks. (R, IIHS)	Leadership/Policy
	2.3 Explore the feasibility and effectiveness of using photo enforcement to increase seat belt compliance. (U)	Enforcement
	2.4 Strengthen CPS law with a legislative change to add $25 administrative fee for violators to fund CPS efforts, or allow local governments to initiate the change. (U)	Leadership/Policy
3. Maintain and support the statewide network of child passenger safety technicians	3.1 Establish CPS Team Leaders in every county/major city to coordinate and lead local efforts. Work collectively with Washington's Target Zero Task Forces, SafeKids Coalitions, and local child passenger safety teams. (R, WTSC)	Leadership/Policy
	3.2 Explore options for gaining a measure of statewide child restraint use, such as expanding the annual seatbelt observation survey to include observations of child restraint use. (R, DDACTS)	Leadership/Policy
	3.3 Continuously monitor fatality and serious injury collision data involving unrestrained or improperly restrained child passengers to help direct geographic/demographic areas of focus. (R, DDACTS)	Education
	3.4 Convene a group of CPS stakeholders from different disciplines and areas of the state to participate in product review, media efforts, trainings, and local project implementation. (U)	Leadership/Policy
	3.5 Support opportunities for child car seat inspection events, CPS Technician certification courses, and recertification of technicians. (U)	Education
	3.6 Establish a database to collect all of Washington's car seat inspection data. Analyze information received to determine major misuse issues; share with statewide CPS network; incorporate findings into media campaigns. (U)	Education

Continued on next page.

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Objectives & Strategies		
Objectives (What)	**Strategies (How)**	**Implementation Arena(s)**
4. Increase visibility of child passenger safety issues in Washington	4.1 Provide access to appropriate information, materials, and guidelines for implementing media and programs to increase child passenger safety. (U)	Education
	4.2 Develop and implement media campaigns targeting major misuse issues in Washington State; currently booster age children and riding in the front seat. (U)	Education
	4.3 Look for ways to offer positive reinforcement to parents correctly transporting children. (U)	Education

P = Proven **R = Recommended** **U = Unknown**

ABACCL = American Bar Association Center on Children and the Law
CTW = Countermeasures That Work
DDACTS = Data Driven Approaches to Crime and Traffic Safety
IIHS = Insurance Institute for Highway Safety
NCHRP = National Cooperative Highway Research Program
NHTSA = National Highway Traffic Safety Administration
WTSC = Washington Traffic Safety Commission

Additional Resources

2011 Washington State Collision Data Summary (Washington State Department of Transportation), http://www.wsdot.wa.gov/mapsdata/collision/pdf/Washington_State_Collision_Data_Summary_2011.pdf

2012 Certification Program Accomplishments (National Child Passenger Safety Certification), http://cert.safekids.org/

2012 Global Activity Report (SafeKids Worldwide), http://www.safekids.org/worldwide/news/Safe-Kids-2012-Global-Activity-Report.html

Countermeasures That Work: A Highway Safety Countermeasure Guide for State Highway Safety Offices, 7th Edition, Chapter 2 (National Highway Traffic Safety Administration), http://www.nhtsa.gov/staticfiles/nti/pdf/811727.pdf

Evaluation of the First Year of the Washington Nighttime Seat Belt Enforcement Program (National Highway Traffic Safety Administration), http://www.nhtsa.gov/staticfiles/nti/pdf/811295.pdf

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Unlicensed Driver Involved

Executive Summary

From 2009-2011, 18% of all fatalities involved a driver who was unlicensed. Unlicensed driver involved fatalities are showing a significant decline, as represented by the recent five-year trend. Unlicensed drivers involved in fatalities have declined 28% compared with 2006-2008.

Background

From 2009-2011, 14.4% of all drivers involved in fatal collisions were unlicensed, contributing to 18% of total fatalities. Among unlicensed drivers involved in fatal collisions, 78% were driving with a suspended license.

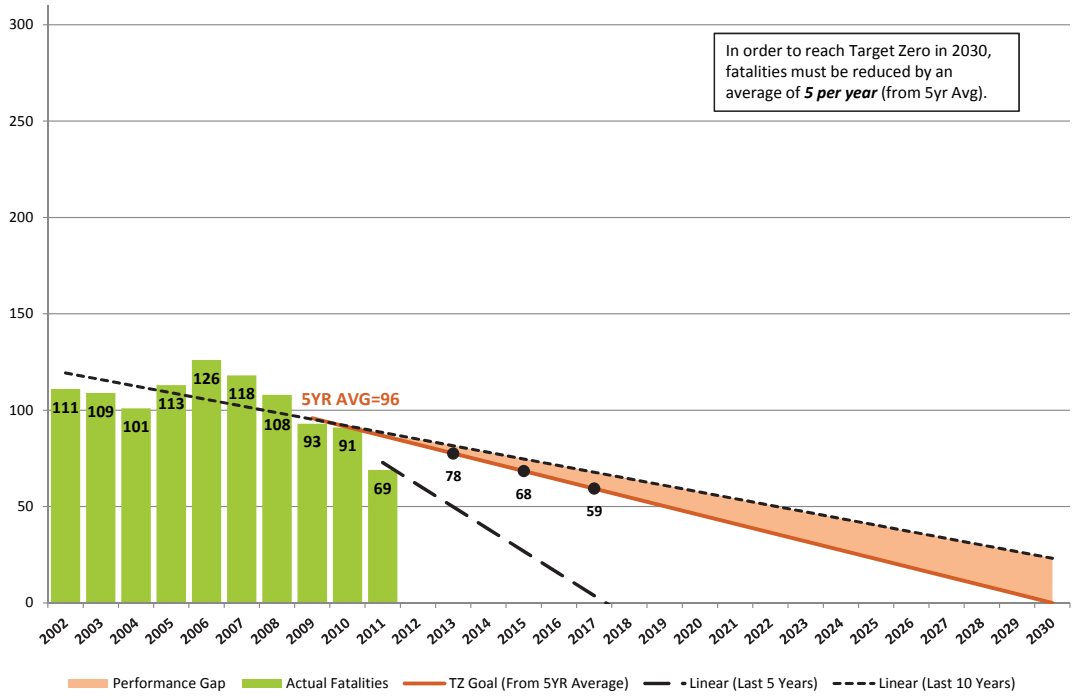
Driving while suspended seems to be on the rise. From 2006-2008, 62% of unlicensed drivers involved in fatal collisions had suspended licenses. In addition to suspensions, unlicensed drivers also include those having no license or an expired license, a revoked license, or issuance of a license refused or canceled. License status of unlicensed drivers involved in fatal crashes 2009-2011 were as follows:

- No license or expired license, 50 (21.4%)
- Suspended/revoked license, 184 (78%)

Seventy-five percent (75%) of unlicensed drivers involved in fatal crashes were also impaired.

Impairment and speed remain problematic among unlicensed drivers. Based on the prevalence of these additional factors in fatal crashes involving unlicensed drivers, applying strategies aimed at those contributing factors may reduce unlicensed driver involved deaths and serious injuries. However more also needs to be done on the challenging task of keeping unlicensed drivers off the road.

Unlicensed Driver Involved Fatalities 2002-2011



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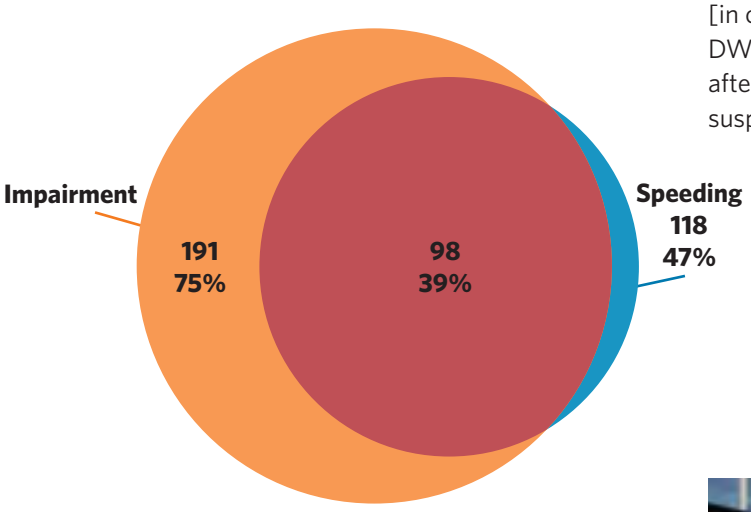
Contributing Circumstances and Factors

Among all fatalities 2009-2011 involving an unlicensed driver, 75% of these also included impairment as a contributing factor. Unlicensed drivers involved in fatal collisions have the highest rate of impairment involvement of any driver group. In addition, speeding was involved in 47% of these fatalities, and both impairment and speeding were involved in 39%.

Unlicensed Driver Involved Fatalities
Total = 253



Of the 253 unlicensed driver involved fatalities 2009-2011, 75% also involved impairment and 47% involved speeding. Combined, 39% of these fatalities involved both impairment and speeding.

These trends are concerning, clearly suggesting unlicensed drivers not only operate a vehicle knowing they do not have the legal right to do so, they also engage in other high-risk, deadly behaviors, putting themselves and innocent others in harm's way.

Unlicensed drivers are also more likely to drink excessively and then drive than licensed drivers. Among all drivers involved in fatal collisions 2009-2011, nearly 40% of unlicensed drivers had a Blood Alcohol Concentration (BAC) at twice the legal limit or higher, compared to only 13% of licensed drivers. Equally alarming, 3.5% of unlicensed drivers involved in fatal collisions had a BAC in excess of 0.3, compared to less than 1% of licensed drivers.

From 2009-2011, 52% of unlicensed drivers involved in fatal collisions were age 21-35. This age group also comprised 50% of the impaired (BAC above 0.08) unlicensed drivers involved in fatal collisions. Among unlicensed drivers with a suspended license, 57% were age 21-35.

Statistically, an unlicensed driver is more likely to be involved in a collision than a licensed driver. According to Rand's 2003 "Evaluation of the Impact of Seattle's DWLS Impound Law" prepared for the City of Seattle, people charged with Driving While License Suspended (DWLS) offenses "were more important predictors of involvement [in collisions] than gender or age." The summary reported DWLS 3 drivers (charged with operating a motor vehicle after their license was suspended, the most minor of the suspension violations) were 2.9 times more likely to be involved in a collision than a driver with no suspensions.

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Challenges Tracking Unlicensed Driver Data and Traffic Safety Impact

Data collection is problematic for unlicensed drivers. The databases at the Department of Licensing (DOL) can provide the current status of a citizen's driving privileges, but can only determine license status retrospectively via an individual record manual review process.

In the case of fatalities, the license status review is conducted and recorded, but for the thousands of injury and non-injury collisions, it is not. This limitation makes serious injury data collection impossible, and therefore this publication does not include serious injury data for unlicensed drivers.

One area of concern that continues to grow and deserves discussion is unlicensed drivers who are licensed in another country. In the US, all states share the license status of their drivers so that if a driver is involved in a collision in Washington while suspended in another state, authorities in Washington will immediately know of the suspension. This reciprocity agreement suspends driving privilege in Washington if a driver is suspended in another state.

The problem arises when a reciprocity agreement does not exist, as is the case between the US and British Columbia (BC). Canadian drivers from BC can get a ticket in Washington and fail to pay it, but their driving privileges remain in place in BC. Washington technically "suspends" the Canadian's driving privilege in Washington, but cannot take any action unless the driver is again stopped while in Washington State.

In a 2011 review of all out-of-state drivers who have been suspended in Washington for failure to pay a ticket, 41% were from British Columbia and 21% were from a combination of our Oregon and Idaho neighbors.

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Programs and Successes

Ignition Interlock Licenses

In 2009, an interlock program was initiated to allow persons who received a DUI to legally drive during their suspension period. This is called the Ignition Interlock License (IIL). A first time offender will have a mandatory 90 day suspension period following a DUI conviction.

Data showed many people who received a DUI citation continued driving, often resulting in additional citations for driving with a suspended license. The intent of IIL is to require the person to partake in treatment programs, remain infraction free, establish support group participation, and have the ability to drive to and from work without violating the law.

Since January 2009 there have been over 35,000 IIL's issued, averaging about 7,800 per year. These people took the steps to legally retain their driving privileges during their suspension period while abiding by the rules of the IIL. This program has contributed to the reduction of unlicensed drivers on the road.

No Suspension for Failure to Appear on Non-moving Violations

In 2013, the Washington State Legislature revised suspension criteria for Failure to Appear (FTA) violations. The previous practice of suspending driving privileges for failure to pay non-moving violations has been rescinded, leaving suspensions for FTAs only applicable to moving violations.

This change will have a two-pronged impact. The court caseloads will be lessened by eliminating a large number of DWLS 3 cases for FTA of a non-moving violation. Additionally, the recipients of non-moving violations will not run the risk of suspension for failure to pay. This will likely contribute to a reduction in unlicensed drivers.

Unlicensed Driver Definition

An "unlicensed driver" is a person who does not have driving privileges in Washington State. These include drivers who:

- Never obtained a license
- Had their license invalidated by a court of law, another state's licensing agency, or the WA State Dept. of Licensing (suspension and revocation)
- Have an expired license
- Voluntarily surrendered their license
- Have a valid out of state license but had a driving incident in Washington, resulting in Washington based restrictions

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Objectives & Strategies

Objectives (What)	Strategies (How)	Implementation Arena(s)
1. Restrict mobility of unlicensed drivers through administrative actions and vehicle modifications	1.1 Mandatory incarceration period for repeat unlicensed driving offenders. (P, NCHRP)	Enforcement
	1.2 Impose electronic monitoring of repeat unlicensed driving offenders. (P, NCHRP)	Enforcement
	1.3 Expand the use of ignition interlock for drivers suspended due to a DUI. (P, CTW)	Enforcement
	1.4 Impound or destroy license plates of vehicles registered to repeat unlicensed driving offenders. (P, NCHRP)	Enforcement
	1.5 Immobilize or impound vehicles registered to repeat unlicensed driving offenders. (P, NCHRP)	Enforcement
	1.6 Allow registrations of vehicles operated by unlicensed drivers to be cancelled and license plates denoted with stickers. (P, NCHRP)	Enforcement
2. Educate public through public awareness initiatives	2.1 Provide alternative transportation and encourage reduced fares for persons without driving privileges. (P, NCHRP)	Leadership/Policy
	2.2 Emphasize administrative and criminal sanctions for unlicensed driving offenders and re-offenders. (R, NCHRP)	Education
	2.3 Expand public awareness of public transportation options. (U)	Education
3. Enhance enforcement	3.1 Standardize vehicle actions against unlicensed drivers with mandatory immobilization/impound. (P, NCHRP)	Enforcement
	3.2 Perform enhanced selective enforcement during times and in areas where unlicensed driving has been detected. (R, NCHRP)	Enforcement
	3.3 Create and distribute "hot sheets," a frequently updated list of current unlicensed drivers who live in the vicinity and distribute to area enforcement agencies. (R, NCHRP)	Enforcement, Education
	3.4 Enact laws to allow for stopping a vehicle registered to an unlicensed driver (without other cause for stop) to ensure unlicensed driver is not at the wheel. (U)	Enforcement
	3.5 Evaluate the impact of the removal of suspension for failure to appear on non-moving citations. (U)	Leadership/Policy
4. Enhancement of data gathering and reporting ability	4.1 Make system changes necessary at WSDOT and DOL to enable analysts to identify unlicensed drivers involved in serious injury collisions. (R, DDACTS)	Leadership/Policy
	4.2 Ensure routine linkage of citations to driver records so appropriate citations may be added to the collision being investigated. (R, NCHRP)	Leadership/Policy

P = Proven **R = Recommended** **U = Unknown**

CTW = Countermeasures That Work **DDACTS** = Data Driven Approaches to Crime and Traffic Safety
NCHRP = National Cooperative Highway Research Program

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Additional Resources

Countermeasures That Work: A Highway Safety Countermeasure Guide for State Highway Safety Offices, 7th Edition (National Highway Traffic Safety Administration), http://www.nhtsa.gov/staticfiles/nti/pdf/811727.pdf

"Evaluation of the Impact of Seattle's DWLS Impound Law" (RAND Safety and Justice Program, 2003), http://www.dol.wa.gov/about/docs/DWLSreport.pdf

NCHRP Report 500, Volume 2: A Guide for Addressing Collisions Involving Unlicensed Drivers and Drivers with Suspended or Revoked Licenses (National Cooperative Highway Research Program, Transportation Research Board), http://onlinepubs.trb.org/onlinepubs/nchrp/nchrp_rpt_500v2.pdf

Washington State laws (RCWs) relating to unlicensed drivers:

Restricting the Driving Privilege:
RCW 46.20.207 – Cancellation.
RCW 46.20.215 – Nonresidents – Suspension or revocation – Reporting offenders.
RCW 46.20.245 – Mandatory revocation – Notice – Administrative, judicial review – Rules – Application.
RCW 46.20.265 – Juvenile driving privileges – Revocation for alcohol or drug violations.
RCW 46.20.270 – Conviction of offense requiring withholding driving privilege – Procedures – Definitions.
RCW 46.20.285 – Offenses requiring revocation.
RCW 46.20.289 – Suspension for failure to respond, appear, etc.
RCW 46.20.300 – Extraterritorial convictions.
RCW 46.20.305 – Incompetent, unqualified driver – Reexamination – Physician's certificate – Action by department.
RCW 46.20.3101 – Implied consent – License sanctions, length of.
RCW 46.20.311 – Duration of license sanctions – Reissuance or renewal.
RCW 46.20.315 – Surrender of license.
RCW 46.20.317 – Unlicensed drivers.
RCW 46.20.320 – Suspension, etc., effective although certificate not delivered.

Driving or Using License while Suspended or Revoked:
RCW 46.20.338 – Display or possession of invalidated license or identicard.
RCW 46.20.341 – Relicensing diversion programs – Program information to administrative office of the courts.
RCW 46.20.342 – Driving while license invalidated – Penalties – Extension of invalidation.
RCW 46.20.345 – Operation under other license or permit while license suspended or revoked – Penalty.
RCW 46.20.355 – Alcohol violator – Probationary license.

Ignition Interlock, Temporary Restricted, Occupational Licenses
RCW 46.20.385 – Ignition interlock driver's license – Application – Eligibility – Cancellation – Costs – Rules.
RCW 46.20.391 – Temporary restricted, occupational license – Application – Eligibility – Restrictions – Cancellation.
RCW 46.20.394 – Detailed restrictions – Violation.
RCW 46.20.400 – Obtaining new driver's license – Surrender of order and current license.
RCW 46.20.410 – Penalty – Violation.

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Opposite Direction

Executive Summary

From 2009-2011, 16% of all fatalities and 10% of all serious injuries were from opposite direction collisions. The numbers are declining at a rate (22%) which will achieve our target of zero deaths or serious injuries by 2030.

Installation of rumble strips and median barriers are reducing the frequency of these collisions. Continued expansion of these efforts is needed to continue this trend.

The reduction of opposite direction collisions on state highways is 2.5 times greater than the reduction on county roads. There was a decrease of 30% on state routes (31% for fatal collisions and 24% for serious injury collisions) compared to a decrease of only 12% on county roads (28% decrease in fatal collisions and a 2% increase in serious injury collisions). These numbers are derived from comparing 2009-2011 to 2006-2008. The greater decrease on state routes is likely a factor of the comprehensive coverage (more than 1,400 miles) of center line rumble strips installed on these roads in the past decade.

Opposite direction collisions are declining more quickly on state routes (30% decrease) than on county roads (12% decrease).

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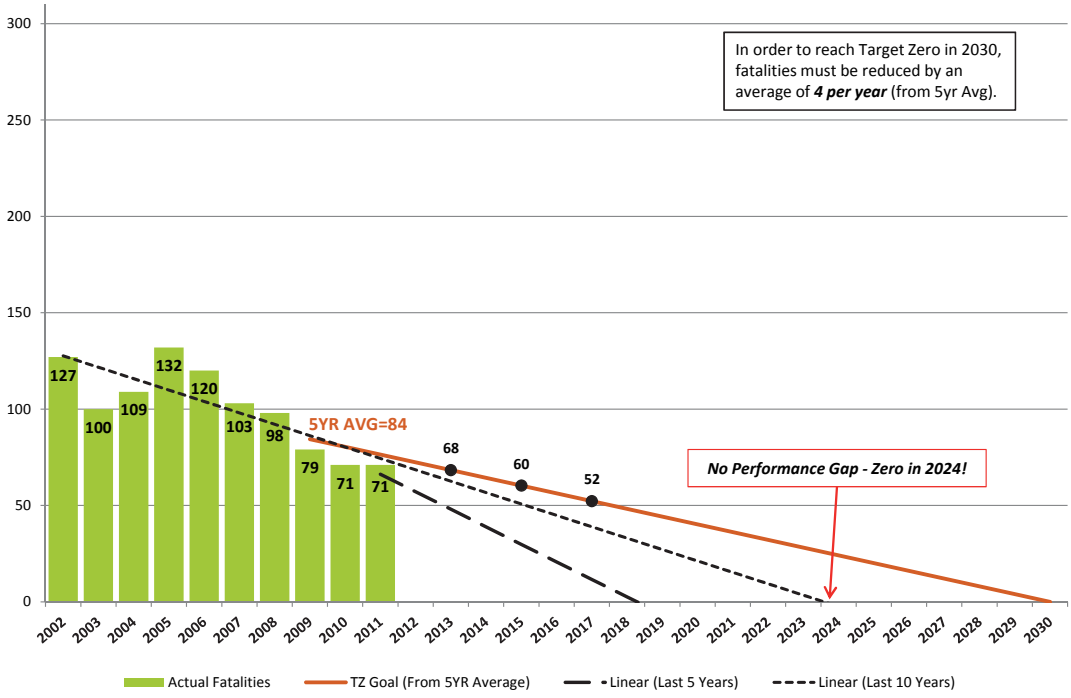
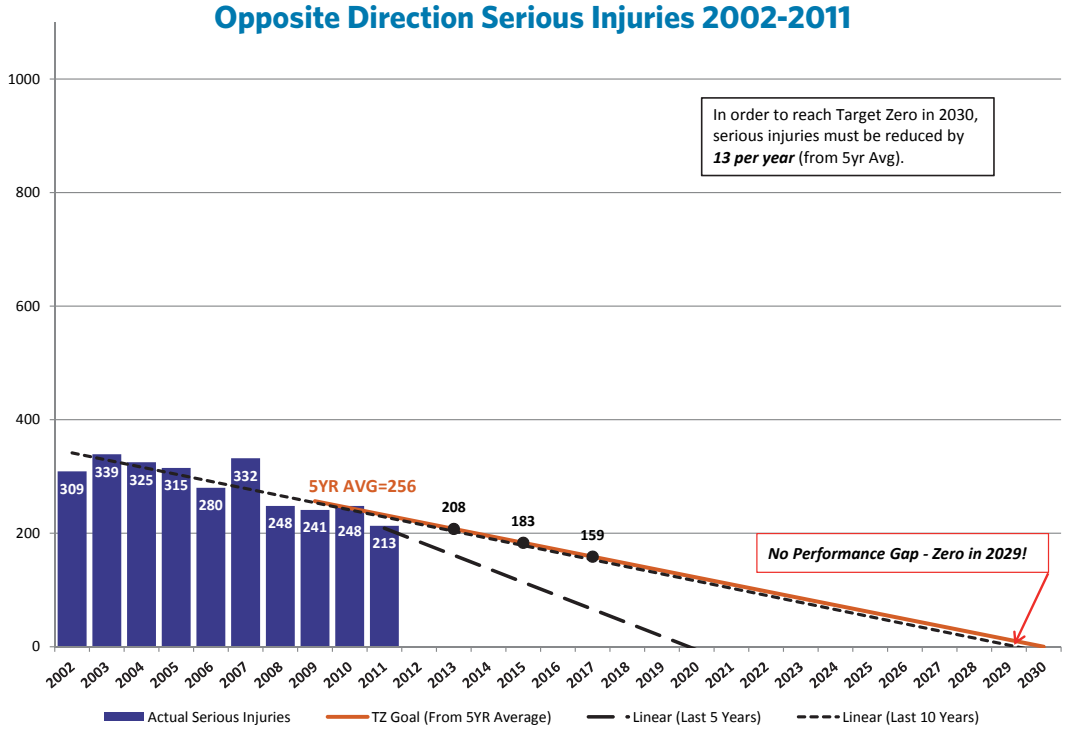
Opposite Direction Fatalities 2002-2011



Opposite Direction Serious Injuries 2002-2011



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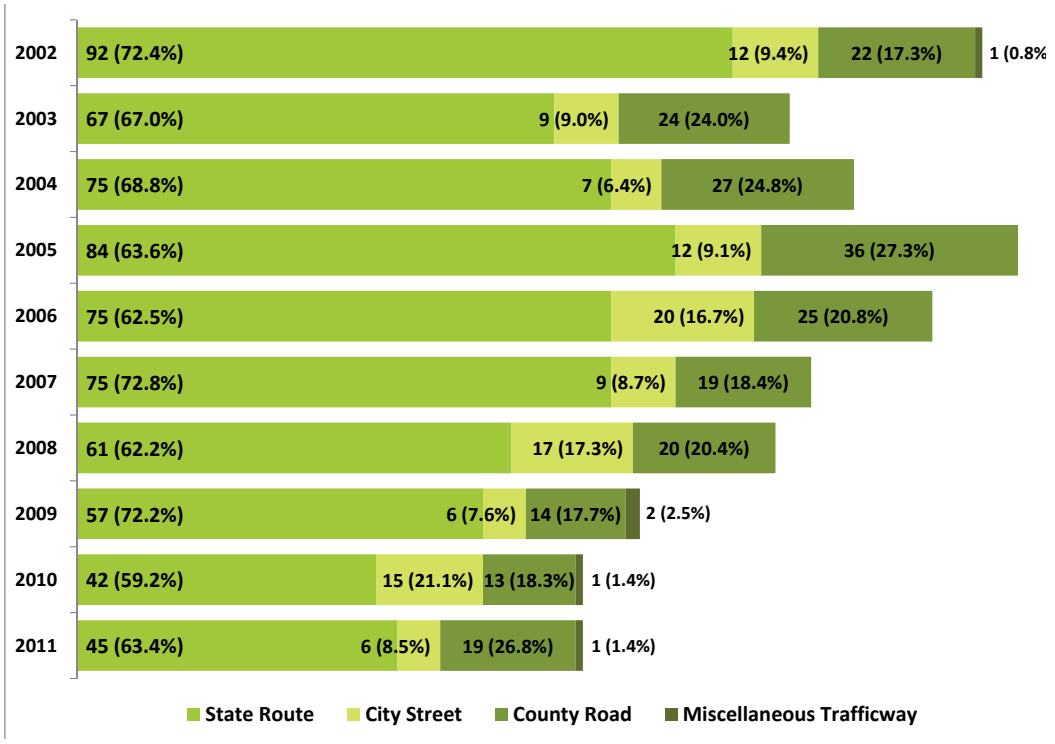
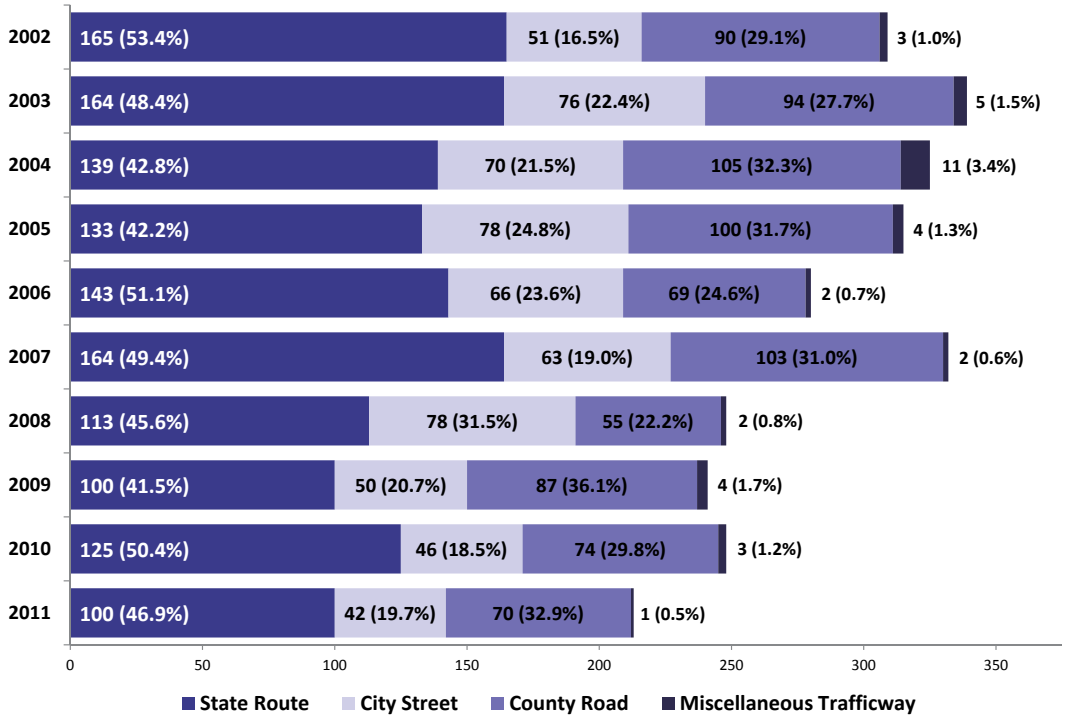
Opposite Direction Fatalities by Jurisdiction 2002-2011



Opposite Direction Serious Injuries by Jurisdiction 2002-2011



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Background

While opposite direction collisions are less frequent than collisions in some other areas, it is worth noting they tend to be a severe type of crash. There is one opposite direction fatality for every three serious injuries. By comparison, when looking at fatalities across all Target Zero® priority areas, there is one fatality for every five serious injuries.

An Opposite Direction Crash...

...typically occurs when one vehicle crosses over a roadway center line or a median and collides into a vehicle traveling in the opposite direction. It does not include wrong way drivers on freeways.

Comparing 2009-2011 to 2006-2008, the decrease (22%) in opposite direction fatalities and serious injuries has been more significant than the decrease (13%) in overall fatalities and serious injuries across all Target Zero areas. There has been a 31% decrease in opposite direction collision fatalities versus an overall decrease of 18%. There has been an 18% decrease in opposite direction serious injuries versus an overall decrease of 12%.

The majority (48%) of opposite direction collisions occurred on state routes, resulting in 144 fatalities and 325 serious injuries. Smaller numbers occurred on county roads (31%, 46 fatalities and 231 serious injuries) and city streets (20%, 27 fatalities and 231 serious injuries). To achieve Target Zero for opposite direction collisions, there need to be four fewer fatalities and 13 fewer serious injuries each year until 2030.

Contributing Circumstances and Factors

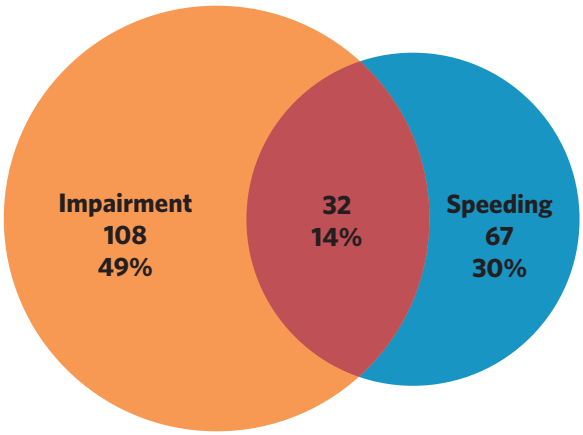
From 2009-2011, the top contributing factors in fatal or serious injury opposite direction collisions (not including over center line) were impairment (35%), speeding (30%), inattention or distraction (15%), falling asleep (6%) and improper passing (5%). Impairment, and inattention or distraction, are more frequent in fatal collisions.

Impairment contributed to 49% of opposite direction fatalities and 31% of serious injuries. Impairment is underreported in serious injury collisions compared to fatalities, where impairment is confirmed by toxicology. Inattention or distraction contributed to 27% of fatalities and 7% of serious injuries.

Younger drivers, age 16-25, were involved in 46% of the fatal and serious injury opposite direction collisions.

The majority of opposite direction collisions are on undivided 2- and 4-lane roadways, with a minority involving crossover collisions on divided highways (freeways).

Opposite Direction Fatalities
Total = 221



Of the 221 opposite direction fatalities 2009-2011, 49% also involved impairment and 30% involved speeding. Combined, 14% of these fatalities involved both impairment and speeding.

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Programs and Successes

Driver Behavior

Occasionally, a driver's actions (such as making an unsafe pass on a two-lane road) can cause an opposite direction collision. More frequently, this type of collision is caused by a driver's impairment, speed or distraction. By implementing effective strategies to combat these driver behaviors, Washington hopes to reduce opposite direction collisions. Strategies to address these behaviors are listed in their respective chapters.

Engineering

Engineering strategies can help reduce opposite direction fatalities and serious injuries. Major initiatives in recent years have included the use of more center line rumble strips and the installation of barriers in the medians of divided highways (freeways).

Centerline rumble strips are especially effective when the contributing factors of a crash include distracted, drowsy or asleep drivers. An on-going analysis indicates that centerline rumble strips are a cost-effective approach to reducing cross-centerline collisions.

Objectives & Strategies

Objectives (What)	Strategies (How)	Implementation Arena(s)
1. Reduce opposite direction collisions	1.1 Install center line rumble strips. (P, WSDOT)	Engineering
	1.2 Add raised medians or other access control on multi-lane arterials. (P, CMF)	Engineering
	1.3 Install median barriers for narrow-width medians on multilane roads. (R, NCHRP)	Engineering
	1.4 Improve center line delineation by adding raised pavement markers or profiled center lines. (R, NCHRP)	Engineering
	1.5 Increase the widths of center medians where possible. (U)	Engineering

P = Proven **R = Recommended** **U = Unknown**

CMF = Crash Modification Factors
NCHRP = National Cooperative Highway Research Program **WSDOT** = Washington State Department of Transportation

Additional Resources

Crash Modification Factors Clearinghouse, http://www.cmfclearinghouse.org/

NCHRP Report 500, Volume 4, A Guide for Addressing Head-On Collisions (National Cooperative Highway Research Program), http://onlinepubs.trb.org/onlinepubs/nchrp/nchrp_rpt_500v4.pdf

Roadway Departure Safety Resources (Federal Highway Administration), http://safety.fhwa.dot.gov/roadway_dept/

The Gray Notebook, Edition 38 (Washington State Department of Transportation), http://wsdot.wa.gov/publications/fulltext/graynotebook/Jun10.pdf#page=20

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Motorcyclists

Executive Summary

Motorcycle fatalities have not been decreasing like other traffic fatalities in Washington. This mirrors a national trend and is alarming. In our state, motorcycles make up just 4% of the registered vehicles, but account for 14.7% of the traffic fatalities. Impairment and speeding are major contributing factors, and most fatalities are male. On a positive note, endorsements have increased considerably and motorcycle training prior to endorsement has increased as well. However, with a growing numbers of riders on the road, reducing the number of motorcycle fatalities is an uphill challenge.

Background

There were 68 rider deaths in Washington State in both 2009 and 2010. That number rose to 70 in 2011, comprising 14.7% of the state's total traffic fatalities. Preliminary data for 2012 shows 83 motorcyclist fatalities, one of the highest in our state's history.

Motorcycles represent only 4% of registered vehicles, and yet motorcyclists represented nearly 15% of fatalities.

When we compare 2006-2008 to 2009-2011 data, there was an 8.4% decrease in motorcyclist fatalities and a 14.8% decrease in serious injuries. However, the ten-year trend shows fatalities rising, taking us further from our goal of zero deaths and injuries by 2030.

While motorcyclist fatalities are not trending downward, there are areas in which progress is being made. Alcohol and drug impairment is showing slight decreases, and endorsements and motorcycle trainings are increasing.

A license endorsement is required in Washington to ride a motorcycle. Endorsed riders have fewer infractions and are less likely to be involved in fatal collisions when compared to unendorsed riders.

Two methods are available to become an endorsed rider:

1. Successfully complete a motorcycle safety course at an approved training school
2. Pass the knowledge and riding skills test (the traffic safety community prefers riders complete a training course)

In 2007 legislation was passed to strengthen the likelihood riders would be endorsed. The law allows law enforcement to impound unendorsed riders' bikes when they've been pulled over for a routine traffic stop. The result in 2007 was a dramatic increase in new riders taking training courses on their path to endorsement.

Motorcycle helmets are highly effective in protecting riders' heads in a crash. State universal helmet laws are effective at increasing helmet use, and are recommended by NHTSA as a "countermeasure that works". Yet year after year, legislation is introduced to repeal Washington's helmet law. Washington must maintain its current helmet law as we work toward Target Zero.

Additional legislation has been introduced to allow motorcyclists to ride between lanes of traffic and to stop and proceed through traffic signals under certain conditions. So far these attempts have been unsuccessful.

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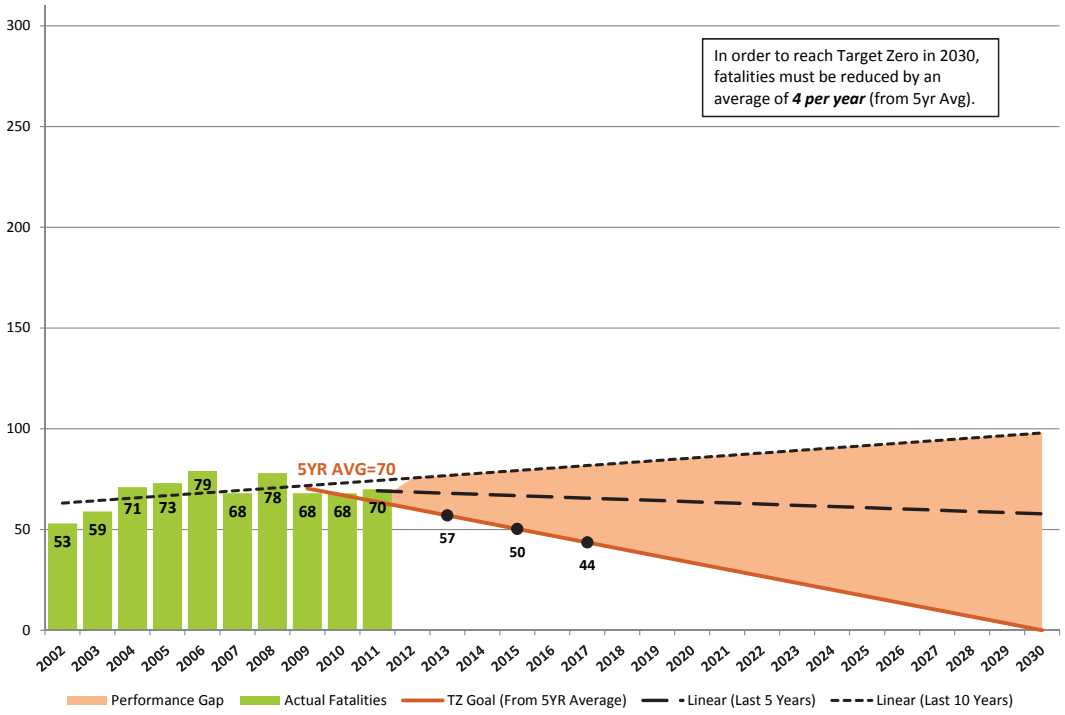
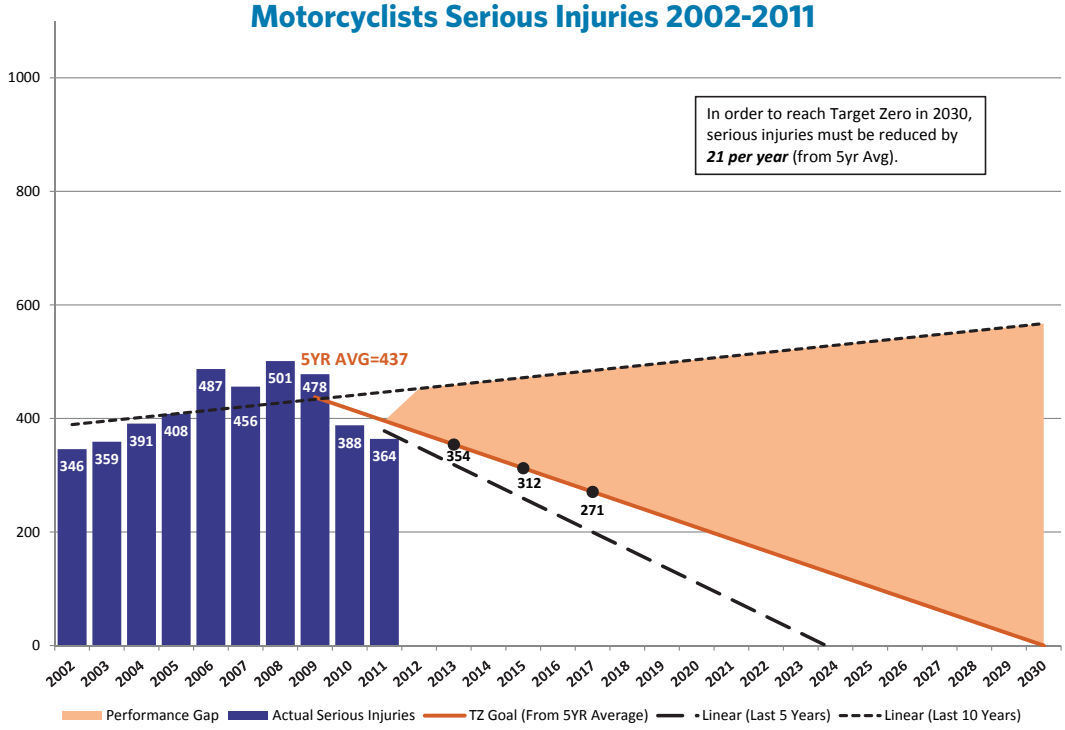
Motorcyclists Fatalities 2002-2011



Motorcyclists Serious Injuries 2002-2011



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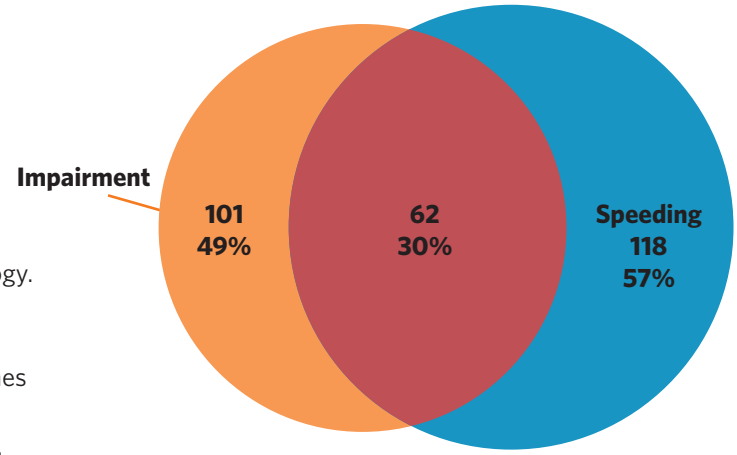
Contributing Circumstances and Factors

Speeding and impairment continue to be major contributing factors in motorcyclist crashes. Speeding was involved in 57% of fatalities and 30% of serious injuries among motorcyclists in 2009-2011. Alcohol impairment was involved in 25% of fatalities and in 10% of serious injuries. Impairment is underreported in serious injury collisions compared to fatalities where impairment is confirmed by toxicology.

Motorcycle operators are the only group of drivers in which drug impairment is more prevalent in fatal crashes than is alcohol use. Currently 29% of fatal motorcycle crashes involve drugs, down from 36% in 2006–2008. While the reduction is encouraging, still more than 1 in 4 motorcyclists killed on our roads was under the influence of drugs.

Motorcyclist Fatalities
Total = 206



Of the 206 motorcyclist fatalities 2009-2011, 49% also involved impairment and 57% involved speeding. Combined, 30% of these fatalities involved both speeding and impairment.

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Young and middle aged riders are over-represented in fatal crashes. Overwhelmingly younger riders choose a "sport bike," a lightweight, high-performance race-replica type motorcycle. Middle aged riders frequently choose "cruisers" which are heavy, large, highway type motorcycles designed for comfort and longer rides.

Compared to the number of endorsed riders by age group, younger riders represent a higher proportion of fatalities, but a much smaller proportion of endorsed riders. Experience levels are predictive in fatal crashes. On average, approximately 30-40% of motorcyclist fatalities are untrained, unendorsed riders.

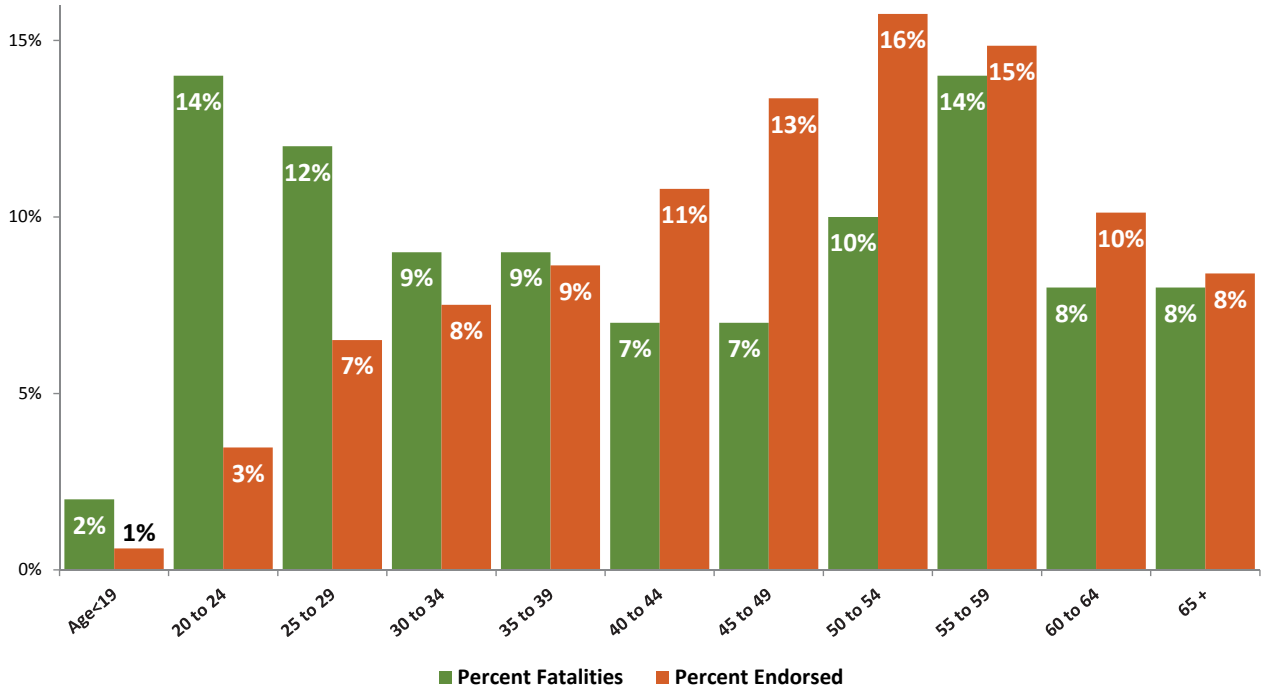
Around 75% of fatalities involve one or more of the following:

1. Rider with less than two years' experience
2. Unendorsed rider
3. Rider with unknown experience level

Of all endorsed riders in Washington, about 85% are male and 15% are female. In 2009-2011, male riders were involved in 92% of motorcyclist fatalities and 83% of serious injury collisions. Alternatively, female riders experience a higher rate of motorcyclist serious injuries (14.6 per 10,000 endorsed females) than males do (10.8 per 10,000 endorsed males).

Prior violation history also sheds light on crash risk. The average number for all endorsed motorcyclists is just over one (1.1) violation. The average for endorsed riders involved in fatal collisions is just over four (4.1) violations.

Motorcyclists Fatalities and Endorsed Riders By Age Group 2009-2011



According the Department of Licensing, younger motorcyclists make up only a small portion of endorsed riders, yet account for a larger proportion of motorcyclist fatalities.

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Programs and Successes

Motorcycle Taskforce

Beginning in 2006, a multi-agency Motorcycle Taskforce began to research motorcycle fatalities. The collision reports were studied and common factors determined. Speed, lane changes and impairment were found to be the top contributing factors. The most unexpected revelation was the contribution of rider related factors in fatal collisions. From 2009-2011, among fatal collisions involving a motorcyclist AND another vehicle, 32% of motorcyclists had driver related factors contributing to the collision, compared to 49% of drivers in other motor vehicles. However, 52% of motorcycle involved fatalities did not involve any other vehicles.

Impound Law and Endorsement Reminder Mailings

The 2007 Impound Law, a result of the Motorcycle Taskforce, allows law enforcement officers to impound the motorcycles of those motorcyclists operating without a proper motorcycle endorsement. This has had the effect of increasing rider training and rider endorsements.

When the law first went into effect in 2007, the Washington State Department of Licensing (DOL) launched a friendly reminder campaign where unendorsed owners of registered motorcycles were mailed a reminder notice of endorsement requirements. DOL service offices reported an increase in customers coming in to get their motorcycle endorsement after receiving the postcard. Many motorcycle training schools reported an influx of new students who claimed they were inspired to pursue endorsement because of the DOL notice. In the summer of 2013, DOL repeated that effort and expects to see a similar jump in endorsements.

Media Campaigns & High Visibility Enforcement

The "Look Twice–Save a Life" media campaign involves billboards, messaging on buses, and radio ads. Although most motorcycle crashes in Washington are caused by rider error (not by another motorist), this campaign was designed to increase automobile driver awareness of traffic safety as it relates to motorcycles. Usually motorcycle crashes involve rider impairment, speeding, run-off-the-road or a combination of these factors. To address these factors, High Visibility Enforcement (HVE) is a model that has proven successful.

HVEs are statewide media campaigns focused on informing drivers of emphasis enforcement efforts regarding a targeted behavior, accompanied by a large, organized, law enforcement effort. HVE summer DUI campaigns target all impaired motorists with a special emphasis on impaired motorcycle riders.

Motorcycle Strategy Group

Currently a multi-agency Motorcycle Strategy Group is studying ways to reduce motorcycle fatalities and serious injuries. The entire traffic safety community is engaged in this effort, including WTSC, DOL, WSP, WSDOT, Motorcycle Dealers Association, representatives from several law enforcement agencies and NHTSA Region 10. Each motorcycle crash that resulted in a serious injury or fatality for the last several years is being reviewed to determine the best ways to utilize our resources to change rider behavior and raise awareness of this increasing problem.

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Impairment and Reckless Behavior Enforcement Emphasis

Three factors contribute to almost every fatal and serious injury motorcycle crash: impairment, speed and operator error or loss of control. Impairment is a contributing factor in 50% of all traffic fatalities. This includes motorcycle fatalities. As of July 1, 2013, Target Zero® Teams in five of the largest counties in the state – King, Pierce, Snohomish, Yakima, and Spokane Counties – are dedicated to finding and arresting impaired drivers, including motorcycle riders.

In addition to the Target Zero Teams, law enforcement traffic officers statewide receive special training to detect impaired motorcycle riders. Many agencies also have taken a zero tolerance stance on reckless motorcycle rider behaviors such as speeding, recklessness and aggressive riding. Officers are encouraged to give citations and no warnings for this potentially deadly behavior.

Free Safety Clinics: Law Enforcement and Dealership Partnerships

There are various law enforcement partnerships with motorcycle dealers and law enforcement officers, where free safety tips and training are provided. These free clinics usually occur on a Saturday or Sunday morning when large numbers of riders are gathered at dealerships preparing for a weekend ride. While these clinics are free, data isn't collected on the number of attendees. Anecdotally we know hundreds of riders have participated in these safety training sessions.

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Objectives & Strategies

Objectives (What)	Strategies (How)	Implementation Arena(s)
1. Reduce numbers of unendorsed and untrained riders	1.1 Collaborate with dealers and manufacturers to promote motorcycle training and endorsement. (R, NCHRP)	Education
	1.2 Increase number of riders participating in safety training. (U)	Education
	1.3 Provide training tuition incentives for riders' completion of training. (U)	Education
	1.4 Conduct targeted safety/endorsement media outreach and education. (U)	Education
	1.5 Outreach to motorcycle registration owners who are not endorsed. (U)	Education
	1.6 Emphasis on impoundment policy and education. (U)	Education
	1.7 Increase opportunities for motorcyclist field training. (U)	Education
2. Reduce numbers of impaired, unskilled, and unsafe riders	2.1 Lower the per se BAC limit for motorcycle riders from .08 to .05 (P, META)	Leadership/policy
	2.2 Increase motorcyclist awareness of the risks of impaired motorcycle operation. Promote self-policing within the motorcycle community by expanding existing prevention programs to include motorcycle riders and at specific motorcycle events. (R, NCHRP)	Education, Leadership/ Policy
	2.3 Target law enforcement to specific motorcycle rider impairment behaviors that have been shown to contribute to crashes. (R, NCHRP)	Enforcement
	2.4 Re-establish endorsements by class size. Three-tier program according to motorcycle engine size. (U)	Leadership/Policy
	2.5 Re-testing for endorsement every five years. (U)	Enforcement, Leadership/ Policy
	2.6 Require mandatory motorcycle insurance coverage—minimum of liability just as automobiles require. (U)	Leadership/Policy
3. Increase driver awareness	3.1 Increase visibility of motorcyclists through use of bright reflective clothing. (P, CTW)	Education
4. Increase rider safety awareness	4.1 Promote use of owner's actual motorcycle in training courses. (R, DOL)	Education

Continued on next page.

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Objectives & Strategies		
Objectives (What)	**Strategies (How)**	**Implementation Arena(s)**
5. Improve enforcement	5.1 Support specialized law enforcement training in motorcycle DUI detection and motorcycle crash investigation. (R, CTW)	Education, Enforcement
	5.2 Increase use of WSP aviation for enforcement of high risk behaviors. (U)	Enforcement
	5.3 Mandatory motorcycle impound if riding without an endorsement. (U)	Enforcement
6. Continue convening DOL's Motorcycle Advisory Committee	6.1 Promote public forums to share/receive feedback concerning safety strategies and/or needs. (U)	Education, Leadership/ Policy
7. Work with Legislature/ Judicial System	7.1 Promote the option for motorcyclists to take a safety class in lieu of a traffic ticket being added to his/her driving record. Currently some county courts offer drivers of other vehicles the option of traffic school to dismiss certain driving violations from their record and insurance. (U)	Education, Leadership/ Policy

P = Proven **R = Recommended** **U = Unknown**

CTW = Countermeasures that Work
META = Meta Study
DOL = WA State Dept. of Licensing
NCHRP = National Cooperative Highway Research Program

Additional Resources

An Examination of Washington State's Vehicle Impound Law for Motorcycle Endorsements (National Highway Traffic Safety Administration), www.nhtsa.gov/staticfiles/nti/pdf/811698.pdf

Countermeasures That Work: A Highway Safety Countermeasure Guide for State Highway Safety Offices, 7th Edition, Chapter 5 (National Highway Traffic Safety Administration), http://www.nhtsa.gov/staticfiles/nti/pdf/811727.pdf

NCHRP Report 500, Volume 22: A Guide for Addressing Collisions Involving Motorcycles (National Cooperative Highway Research Program), http://onlinepubs.trb.org/onlinepubs/nchrp/nchrp_rpt_500v22.pdf

Promising Practices in Motorcycle Rider Education and Licensing (National Highway Traffic Safety Administration, 2005), http://icsw.nhtsa.gov/people/injury/pedbimot/motorcycle/MotorcycleRider/pages/PromisingPractices.pdf

Washington State laws (RCWs) relating to motorcyclists:

- *RCW 46.37.530 – Motorcycles – Helmets, other equipment.*
- *RCW 46.81A – Motorcycle skills education program.*
- *RCW 46.61.608 – Operating motorcycles on roadways laned for traffic.*
- *RCW 46.61.610 – Riding on motorcycles.*
- *RCW 46.61.611 – Motorcycles – Maximum height for handlebars.*
- *RCW 46.61.612 – Riding on motorcycles – Position of feet.*
- *RCW 46.61.614 – Riding on motorcycles – Clinging.*

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Pedestrians

Executive Summary

In 2009-2011 there were 193 pedestrian fatalities and 869 serious injuries, accounting for 13.7% of traffic deaths and 12% of serious injuries. The rate of decrease for pedestrian deaths and serious injury collisions has been slower than that of overall fatalities and serious injuries.

Background

In 2009 through 2011, pedestrian fatalities decreased by 2.5% compared to 2006-2008, while overall traffic fatalities decreased by 18.5%. Likewise, serious injuries to pedestrians decreased by 4.2% during the same period, while serious injuries overall decreased by 11.4%.

Since pedestrians and bicyclists share common characteristics, they are discussed together in some instances. In order to better assess pedestrian and bicycle collisions in Washington State, the traffic safety community is trying to assess the number of people walking and biking statewide to determine pedestrian or bicycle exposure rates.

In 2008, Washington State Department of Transportation (WSDOT) initiated the Washington State Bicycle and Pedestrian Documentation Project to collect data on walking and biking. WSDOT completed its fifth annual documentation project in 2012. Volunteers counted more than 40,000 pedestrians and 20,000 bicyclists at 200 locations in 38 cities. According to WSDOT, counts at selected locations showed walking and biking in Washington increased by 10% between 2008 and 2012.

Walking is an integral component of our transportation system. 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. For some without access to vehicles, particularly children and older citizens, walking is a necessity.

According to WSDOT, most crosswalk locations are unmarked. Approximately 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.

A joint research project between WSDOT and the University of Washington identified a subset of state highways that operate as city main streets in more than 180 cities. These city main street highways account for 9% of the state highway system (600 miles out of 7,044). In 2009- 2011, these routes experienced 26% of pedestrian and bicyclist fatalities occurring on state highways.

Pedestrian deaths account for 14% of all traffic fatalities, up from 11 percent in 2006-2008.

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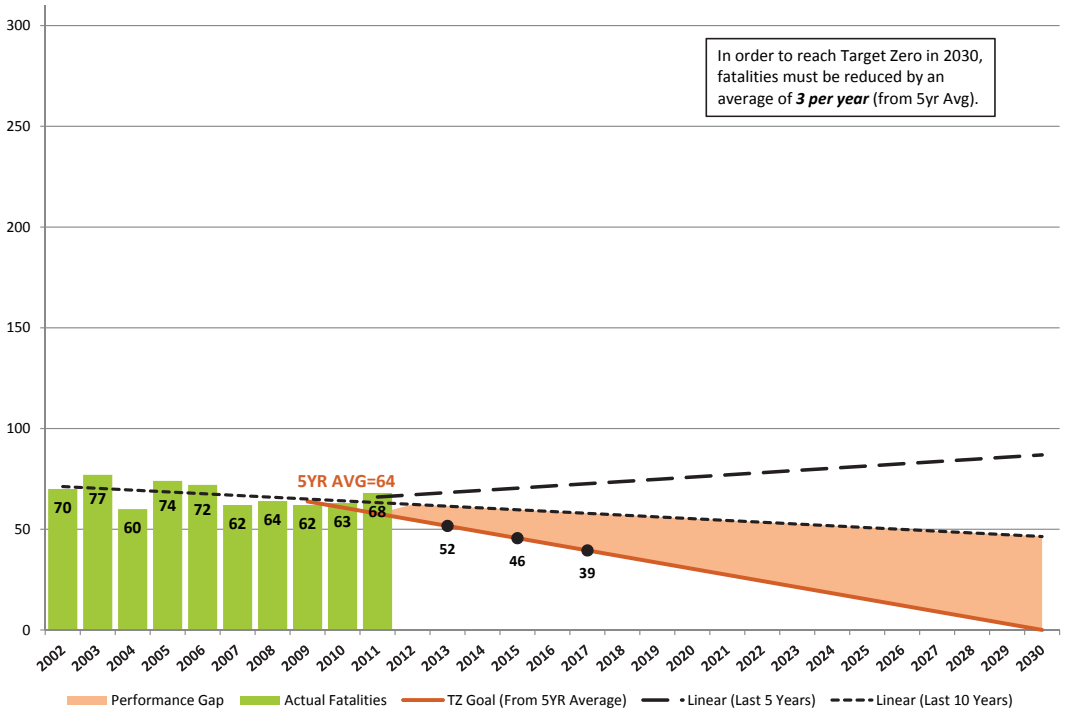
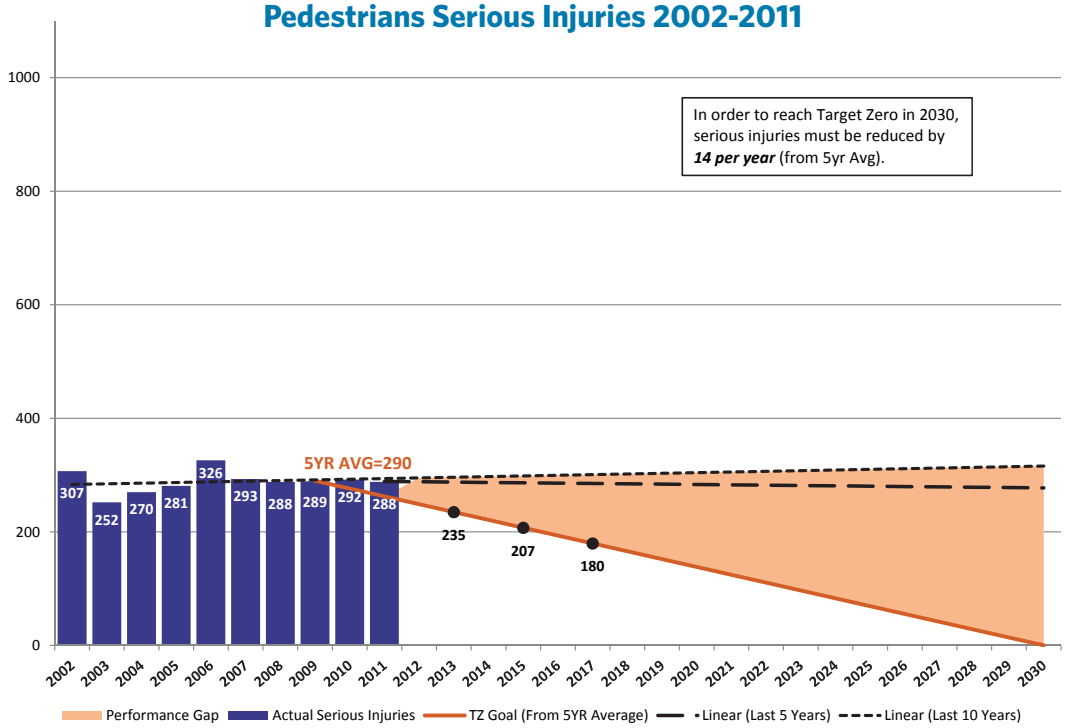
Pedestrians Fatalities 2002-2011



Pedestrians Serious Injuries 2002-2011



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Contributing Circumstances and Factors

The top contributing factors in pedestrian-vehicle collisions are different from those in other types of vehicle collisions.

In 2007-2011, vehicle driver actions were not a factor in 57% of pedestrian fatalities. Among the 43% of pedestrian fatalities involving driver contributing factors, the following were most common:

1. Driver distraction (21%)
2. Failure to yield right-of-way (13.5%)
3. Driver impairment (12%)
4. Speeding (6.9%)

Consistent with all traffic fatalities, young drivers (age 16-25) were involved most frequently (21%). Drivers age 26-35 and 46-55 were both involved in 17% of pedestrian fatalities.

Pedestrian contributing factors were not involved in 38% of pedestrian fatalities. Of the 62% of fatal pedestrian collisions involving a pedestrian factor, the following were the most common:

1. Pedestrian impairment (50.8%)
2. Not visible to the driver (31%)
3. Crossing improperly (28.5%)
4. Improper action in the road, including standing, lying, and playing (21%)

Nearly two-thirds (63.3%) of pedestrians killed were male. Looking at age, the highest percent of pedestrian fatalities occurred among those age 46-55 (17.9%), followed by those age 56-65 (15.4%). Just over two percent (2.2%) of pedestrian deaths involved those under age 10, and 4.7% were age 11-15.

Nearly one-third of pedestrian deaths occur in the winter months of October – March, between the hours of 3-9 p.m. This time period constitutes the deadliest time for pedestrians, as do the months of April – September.

Location of Pedestrian Collisions

From 2007-2011, almost half (46%) of pedestrian fatalities occurred at or were related to an intersection. Statewide, 70% of pedestrian deaths occurred in urban areas. However, when developing targeted countermeasures, it is important to note that two-thirds of Native American pedestrian deaths occurred in rural settings. Over half (54.2%) of all pedestrian fatalities occurred in areas with posted speeds of 25-35 mph, and 16.6% occurred on roadways with 60-70 mph posted speeds.

Programs and Successes

High Visibility Enforcement

A High Visibility Enforcement campaign helped reduce annual pedestrian deaths in Spokane County from 11 in 2009 to two in 2010. The campaign focused on both drivers and pedestrians in cities. The locations were selected based on crash and complaint data. Education and publicity targeted drivers and pedestrians using a multi-pronged approach with news coverage, television advertising, rackcards, giveaways, and a presence at large events.

Enforcement used previously developed protocols for three operational plans: vehicle driver / pedestrian sting, pedestrian education / enforcement operation, and pedestrian enforcement operation. Motorcycle police were so successful that their usage was expanded during the project. As motorcycle officers handed out rackcards, giveaways and citations by shopping malls, hundreds of people approached them to learn what was happening (Spokane County Pedestrian Safety Project, Engineers Office, March 2011).

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Safe Routes to School Program

Washington's Safe Routes to School (SRTS) program is designed to get more children walking and bicycling to school safely, reduce congestion around schools and improve air quality. The program provides technical assistance and resources to cities, counties, schools, school districts and state agencies.

Through WSDOT's SRTS Grant Program, between 2005 and 2012:

- $32 million has been made available for 96 projects from the over $137 million in requests
- 41 Safe Routes to School projects have been completed, 51 are underway, three are pending and one was cancelled.
- Almost 70 percent of projects awarded in the first three cycles have been completed
- A statewide bicycle and pedestrian safety educating program had reached approximately 25 school districts and over 10,000 children in 5th through 8th grades by spring of 2012

According to WSDOT, SRTS projects that have provided evaluation results show:

- An average increase of 20 percent in the number of children walking and biking to school
- Completion of about 75,000 additional feet of sidewalks near schools
- A reduction in motorist travel speeds and traffic citations in school zones
- Increased student compliance with safe crossing behaviors
- No collisions occurring at completed project locations

Nickerson Street Rechannelization

In the summer of 2008, Seattle removed three marked crosswalks along Nickerson Street that no longer met marked crosswalk guidelines. After analysis, Seattle Department of Transportation (SDOT) determined reconfiguring Nickerson Street from four lanes to three, with a center turn lane, would accommodate traffic and allow better pedestrian crossings. In addition to the rechannelization, two new marked crosswalks were added. The project improved traffic safety dramatically while maintaining traffic volumes.

There was a 27% reduction in total collisions compared to the previous five-year average. In the 18 months following the rechannelization, there was more than a 67% reduction in vehicle-bicycle collisions and no vehicle-pedestrian collisions (2011 Seattle Traffic Report, Seattle DOT).

Aurora Traffic Safety Project

Using short-term, low-cost engineering, education, and enforcement tactics, collisions on Aurora Avenue North in Seattle dropped more than 20%, with all fatal and serious injury collisions down by 28%. The two-year project (2009-2011) used education and enforcement efforts to bring attention to behaviors like failure to yield to pedestrians, speeding and inattention/distracted driving. This focus paid off with the following reductions, according to Seattle DOT:

- Failure to yield collisions down by 34%
- Inattention/distracted driving collisions down by 28%
- Speeding involved collisions down by 20%

Longview Elementary – Moses Lake, WA

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Objectives & Strategies		
Objectives (What)	**Strategies (How)**	**Implementation Arena(s)**
1. Improve pedestrian safety awareness and behaviors	1.1 Promote the use of reflective apparel among pedestrians (conspicuity enhancement). (R, CTW)	Education
	1.2 Educate pedestrians about the risks of distracted walking. (U)	Education
	1.3 Develop and conduct communication and outreach efforts, including the proven 'brief intervention and screening' approach to contact crash-involved impaired pedestrians, as well as local law enforcement agencies, alcohol servers, social and health service providers, and other involved parties for reducing impairment as a factor in pedestrian crash-related injuries and deaths. (U)	Education
2. Increase enforcement of laws pertaining to pedestrians	2.1 Implement pedestrian safety zones, targeting geographic locations and audiences with pedestrian crash concerns. (P, CTW)	Education, Enforcement, Engineering
	2.2 Expand targeted crosswalk enforcement and education for both vehicles and pedestrians. (R, CTW)	Education, Enforcement
	2.3 Reduce and enforce speed limits. Implement traffic calming features to reduce speeds in locations with a high number of pedestrians. (R, CTW)	Education, Enforcement, Engineering
	2.4 Improve pedestrian rights and responsibilities training for law enforcement officers at state, Tribal, and local levels. (R, WSDOT)	Education
3. Expand and improve pedestrian facilities	3.1 Improve safety at pedestrian crossings by installing refuge islands, scale lighting, and shortening crossing distances. (R, CMF)	Engineering
	3.2 Increase the use of rectangular rapid flashing beacons and pedestrian hybrid beacons. (R, CMF)	Engineering
	3.3 Follow national guidelines on the use of reflective markings and sign materials. (R, FHWA)	Engineering Education, Enforcement,
	3.4 Implement programs that improve the built environment. Solutions should focus on appropriate zoning, crossing treatments, and pedestrian connections to public transit. (R, LIT)	Engineering
	3.5 Improve sight distances and/or visibility between motor vehicles and pedestrians at high risk and high volume pedestrian crossings. Move the stop bar farther back from the intersection, clear vegetation, extend crossing times, and implement pedestrian lead intervals. (U)	Engineering

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Objectives & Strategies		
Objectives (What)	**Strategies (How)**	**Implementation Arena(s)**
4. Improve safety for children walking to school	4.1 Expand high visibility speed enforcement in school zones, including automated speed photo enforcement. (R, CTW)	Education, Enforcement
	4.2 Implement elementary and middle school pedestrian training curricula in schools. (R, CTW)	Education
	4.3 Apply consistent traffic control (signs, devices, speed zones, etc.) in school zones across the State. (R, FHWA)	Engineering
	4.4 Distribute and encourage the use of "School Walk and Bike Routes: A Guide for Planning and Improving Walk and Bike to School Options for Students" and assist schools in creating school walk route maps. (R, WSDOT)	Education, Engineering
	4.5 Encourage and support school districts to implement elements in the Safe Routes to School program including Walking School Buses, walking campaigns. (U)	Education, Engineering
5. Improve data and performance measures	5.1 Enhance the collection of a measure of 'miles walked' (similar to VMT). Continue to track pedestrian counts through Washington's Pedestrian and Bicycle Documentation Project. (R, DDACTS)	Leadership/ Policy

P = Proven **R = Recommended** **U = Unknown**

CMF = Crash Modification Factors
CTW = Countermeasures that Work
DDACTS = Data Driven Approaches to Crime and Traffic Safety
FHWA = Federal Highway Administration
LIT = Literature (Although we could not locate a meta study, there is sufficient independent literature with favorable results to justify as a recommended strategy)
WSDOT = Washington State Department of Transportation

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Additional Resources

Countermeasures That Work: A Highway Safety Countermeasure Guide for State Highway Safety Offices, 7th Edition, Chapter 8 (National Highway Traffic Safety Administration), www.nhtsa.gov/staticfiles/nti/pdf/811727.pdf

Effectiveness of a Safe Routes to School Program in Preventing School Aged Pedestrian Injury (Charles DiMaggio, PhD, MPH and Guohua Li, MD, DrPH, in *Pediatrics* journal)

NCHRP Report 500, Volume 10: A Guide for Reducing Collisions Involving Pedestrians (National Cooperative Highway Research Program, Transportation Research Board), http://safety.transportation.org/guides.aspx?cid=29

Relationship between Speed and Risk of Fatal Injury: Pedestrians and Car Occupants (UK Department for Transport), http://assets.dft.gov.uk/publications/pgr-roadsafety-research-rsrr-theme5-researchreport16-pdf/rswp116.pdf

State Highways as Main Streets: A Study of Community Design and Visioning (Washington State Department of Transportation and University of Washington), http://www.wsdot.gov/research/reports/fullreports/733.1.pdf

The Gray Notebook, Edition 48, page 5-8 (Washington State Department of Transportation), http://wsdot.wa.gov/publications/fulltext/graynotebook/Dec12.pdf

Washington State Bicycle and Pedestrian Documentation Project (Washington State Department of Transportation), http://www.wsdot.wa.gov/bike/Count.htm

Washington State Bicycle Facilities and Pedestrian Walkways Plan (Washington State Department of Transportation), http://www.wsdot.wa.gov/bike/bike_plan.htm

Washington State Laws (RCWs) relating to pedestrians:

- *RCW 46.61.050 – Traffic signals*. Pedestrians must obey traffic signals and traffic control devices unless otherwise directed by a traffic or police officer.
- *RCW 46.61.235 – Crosswalks*. No pedestrian or bicycle shall suddenly leave a curb and move into traffic so that the driver cannot stop. Vehicles shall stop at intersections to allow pedestrians and bicycles to cross the road within a marked or unmarked crosswalk. See Washington's Crosswalk Law for more information.
- *RCW 46.61.240 – Yield to vehicles outside intersections*. Every pedestrian crossing a roadway at any point other than within a marked crosswalk or within an unmarked crosswalk at an intersection shall yield the right of way to all vehicles upon the roadway.
- *RCW 46.61.245 – Drivers exercise due care*. Every driver of a vehicle shall exercise due care to avoid colliding with any pedestrian upon any roadway and shall give warning by sounding the horn when necessary.
- *RCW 46.61.250 – Pedestrians on roadways*. Pedestrians must use sidewalks when they are available. If sidewalks are not available, pedestrians must walk on the left side of the roadway or its shoulder facing traffic.
- *RCW 46.61.261 – Sidewalks, crosswalks*. Drivers and bicyclists must yield to pedestrians on sidewalks and in crosswalks.
- *RCW 47.04.330 – Street projects – Consultation with local jurisdictions – Context sensitive design solutions.*

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Emergency Medical Services (EMS) and Trauma Care System

Nearly 40% of all deaths from trauma occur within hours of injury. Washington's trauma care system strives to assure the "right" patient arrives at the "right" facility in the "right" amount of time.

Executive Summary

Unintentional injury is the leading cause of death for young people age 15-24. In Washington in 2011, there were 483 deaths in this age group, approximately 40% of them due to unintentional injury. Almost half of those unintentional injuries were from motor vehicle collisions. Many of these types of deaths are preventable with access to an effective trauma system.

Nearly 40% of all deaths from trauma – defined as a major injury requiring medical or surgical care to prevent death or permanent disability – occur within hours of injury. Timely and appropriate emergency medical response to collisions saves lives and reduces disability.

Our comprehensive, statewide EMS and trauma system provides a continuum of care for patients with severe injuries, and in-hospital mortality rates are significantly lower at trauma centers than at hospitals without trauma centers. It gets the right patient to the right care in the right amount of time.

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Background

Washington's Emergency Medical Services (EMS) and Trauma Care System is a coordinated system to assure appropriate and adequate care with the goal of reducing death and disability.[1,2,3,4,5,6,7] By providing emergency care as soon as possible, EMS helps 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 serious 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 outcome is dependent on other important facets of trauma care. These include prevention activities, hospital care and rehabilitation resources. These components work together to reduce death and disability of injured people throughout Washington.

Washington's trauma care system strives to assure the "right" patient arrives at the "right" facility in the "right" amount of time. Nearly 40% of all trauma deaths occur within hours of injury, and in-hospital mortality rates are significantly lower at trauma centers than at hospitals without trauma centers. Many of these deaths are preventable with access to an effective, organized trauma system.

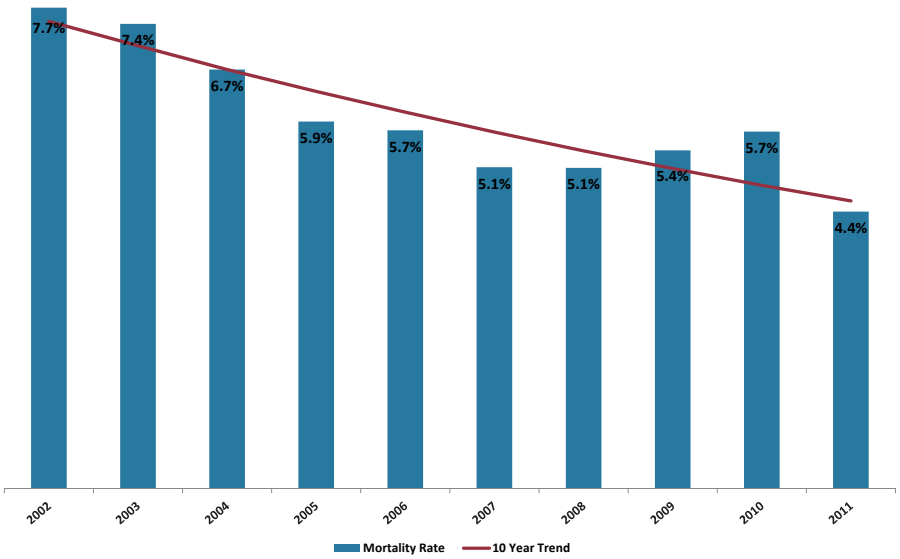
In a national evaluation of the effect of trauma center care on mortality, MacKenzie et al. discussed the importance of triaging severely injured patients to the highest level trauma center.[4,6,7] Their results underscored the fact that overall risk of death is "significantly lower when care is provided 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 trauma center in the most optimum time span.

The EMS and Trauma System currently consists of:

- 466 trauma verified pre-hospital (EMS) agencies
- 8 EMS and trauma regions
- 85 designated acute care trauma centers
- 14 trauma rehabilitation centers

This system has contributed to a steady decrease in the number of motor vehicle related deaths. The death rate for trauma patients involved in traffic collisions decreased from 7.7% in 2002 to 4.4% in 2011. The Washington State Department of Health (DOH) translates this downward trend into 147 additional lives saved by Washington's EMS and Trauma Care system.

Mortality of Trauma Patients Involved in Traffic Crashes 2002-2013



There is a downward trend for death from trauma, defined as a major injury requiring medical or surgical care to prevent death or permanent disability. During 2002-2011, similar downward trends were evident in most age groups. Younger (ages 15-24) and older (age 65+) groups had the most significant decreases in deaths.

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Data Driven

Developing forward thinking strategies and making decisions based on empirical data is critical to the continued success of Washington's EMS and Trauma Care System. 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.

Data must be collected on the care provided by the EMS and hospital-based providers treating the patient. This includes the amount of time the patient remains on the scene after the arrival of EMS, whether or not the patient was transported to the appropriate level of trauma hospital, and whether the patient survived or not. These three points of analysis – on scene time, patient destination and patient outcome – allow us to evaluate the effectiveness of pre-hospital EMS and trauma care.

This data is collected through two sources: the Washington EMS Information System (WEMSIS) and the Washington Trauma Registry. WEMSIS is Washington's version of the national EMS database. As the number of EMS agencies contributing data to WEMSIS increases, better analysis will be possible. The Trauma Registry collects demographic and clinical data only on trauma patients from EMS agencies and trauma-designated acute care hospitals. These two data sources together capture a comprehensive picture of EMS and hospital care received by trauma patients.

The data integration subcommittee of the State's Traffic Records Committee is exploring linking data from the WEMSIS and the Trauma Registry, as well as hospital inpatient discharge records, with collision records. Linking these datasets will provide insights on how to best deliver care to those severely injured in collisions.

Partnerships

Washington's EMS and Trauma Care System has been built upon broad consensus amongst a diverse 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 allows us to continue reducing the number of collision related fatalities and serious injuries.

1 Chiara, O. and S. Cimbanassi. "Organized trauma care: does volume matter and do trauma centers save lives?" *Current Opinion in Critical Care*. 2003; 9(6):510-514.

2 Miller, T.R. and D.R. Levy. "The effect of regional trauma care system on costs." *Archives of Surgery*. 1995; 130(2):188-193.

3 Celso, B., J. Tepas, B. Langland-Orban. "A systematic review and meta-analysis comparing outcomes of severely injured patients treated in trauma centers following the establishment of trauma systems." *Journal of Trauma*. 2006; 60(2):371-378.

4 Mann, N.C., R.J. Mullins, et al. "Systematic review of published evidence regarding trauma system effectiveness." *Journal of Trauma*. 1999; 47(suppl 3):S25-S33.

5 Mullins, R.J. and N.C. Mann. "Population-based research assessing the effectiveness of trauma systems." *Journal of Trauma*. 1999; 47(suppl 3):S59-S66.

6 Mackenzie, E.J. "Review of evidence regarding trauma system effectiveness resulting from panel studies." *Journal of Trauma*. 1999; 47(suppl 3):S34-S41.

7 MacKenzie, E.J., F.P. Rivara, et al. "A national evaluation of the effect of trauma-center care on mortality." *New England Journal of Medicine*. 2006; 354(4):366-378.

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Objectives & Strategies

Objectives (What)	Strategies (How)	Implementation Arena(s)
1. Reduce injury deaths and hospitalizations through EMS response and access to trauma care	1.1 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, META)	EMS
	1.2 Ensure that all major trauma patients are transported to the highest appropriate level of designated trauma center within a 30-minute transport. (R, DOH)	EMS
	1.3 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. (R, DOH)	Leadership/Policy, EMS
	1.4 Increase injury prevention programs that reduce traffic related injuries and death. (R, LIT)	Education
	1.5 Increase the percentage of EMS on-scene arrival responses that are within state requirements. (R, DOH)	EMS
	1.6 Ensure adequate and efficient distribution of pre-hospital EMS resources at all levels (aid and ambulance) according to the EMS and Trauma State and Regional Plans. (R, DOH)	Leadership/Policy, EMS
	1.7 Improve enforcement and public understanding of 'move-over' law. (U)	Education, Enforcement
	1.8 Consider EMS access in engineering development plans. (U)	EMS, Engineering
2. Increase communication and data capacity	2.1 Assure that seamless communications capabilities among EMS, law enforcement, and fire services agencies are achieved through interoperability. (R, NCHRP)	EMS, Enforcement, Leadership/Policy
	2.2 Ensure that the Washington State EMS and Trauma Care System has a statewide comprehensive, robust prehospital data system utilizing the prehospital data set with standard definitions - WEMSIS. (R, NCHRP)	Leadership/Policy, EMS
	2.3 Increase the number of EMS agencies reporting to WEMSIS. (R, NCHRP)	Leadership/Policy, EMS
	2.4 Prioritize WEMSIS availability for linking to collision records. (R, DOH)	Leadership/Policy, EMS
	2.5 Ensure that the Washington State EMS and Trauma Care System collects, integrates, links, and analyzes data from all system components. (R, DOH)	EMS

P = Proven **R = Recommended** **U = Unknown**

DOH = WA State Dept. of Health
META = Meta Study
LIT = Literature (Sufficient independent literature with favorable results)
NCHRP = National Cooperative Highway Research Program

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Additional Resources

Countermeasures That Work: A Highway Safety Countermeasure Guide for State Highway Safety Offices, 7th Edition (National Highway Traffic Safety Administration),
http://www.nhtsa.gov/staticfiles/nti/pdf/811727.pdf

Death Data (Washington State Department of Health, Center for Health Statistics, 2012),
http://www.doh.wa.gov/DataandStatisticalReports/VitalStatisticsData/DeathData.aspx

EMS and Trauma (Washington State Department of Health),
http://www.doh.wa.gov/PublicHealthandHealthcareProviders/EmergencyMedicalServicesEMSSystems/EMSandTrauma.aspx

NCHRP Report 500, Volume 15: A Guide for Reducing Alcohol-Related Collisions (National Cooperative Highway Research Program, Transportation Research Board),
http://onlinepubs.trb.org/onlinepubs/nchrp/nchrp_rpt_500v15.pdf

Washington State laws (RCWs) relating to EMS and Trauma Care System:

- *RCW 18.71 – Physicians.*
- *RCW 18.73 – Emergency medical care and transportation services.*
- *RCW 70.168 – Statewide trauma care system.*

Priority Level Three

Washington State 2009-2011	Fatalities # of People	Fatalities % of Total	Serious Injuries # of People	Serious Injuries % of Total
Priority Level Three				
Older Driver 75+ Involved	126	9.0%	378	5.2%
Heavy Truck Involved	115	8.2%	341	4.7%
Drowsy Driver Involved	45	3.2%	258	3.6%
Bicyclists	26	1.8%	339	4.7%
Work Zone	9	0.6%	132	1.8%
Wildlife	8	0.6%	78	1.1%
School Bus Involved	3	0.2%	18	0.2%
Vehicle-Train	2	0.6%	3	0.0%
Total*	**1,406**		**7,247**	

** "Total" is for all fatalities and serious injuries in Levels One, Two and Three combined. More than one factor is commonly involved in fatal and serious injury collisions. Therefore, each fatality and serious injury in "Total" may be represented multiple times in the Level tables. For the Target Zero Priorities Chart with all three priority levels, see page 9.*

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Older Drivers 75+ Involved

Executive Summary

Between 2009-2011, older road users were involved in 9% (126) of all traffic fatalities. By 2040, people in Washington 75 or older will comprise 11.7% of our state's population, compared to 5.5% in 2010. We 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.

By 2040, over one million people in Washington will be 75 or older – almost three times the number of people in that age group today.

Background

The number of older road users is increasing as the baby boomer population ages. This group of 75 and older Washington citizens will number over a million by 2040, making up 11.7% of our state's population. Although age itself does not determine driving capabilities, older drivers can experience declines in their sensory, cognitive or physical functioning, increasing their risk of involvement in traffic collisions.

From 2009-2011, older road users were involved in 126 (9%) traffic fatalities. This is an 8% decrease when compared with 2006-2008 numbers. On the other hand, serious injuries involving drivers 75 and older increased by 1.3%. To achieve Target Zero for older driver involved collisions, there will need to be two fewer fatalities and six fewer serious injuries each year until 2030.

Contributing Circumstances and Factors

Among older drivers age 75 and older involved in fatal collisions, 27.8% had no driver related factors. In serious injury collisions, 38.9% of older drivers involved had no driver related factors. When older driver actions did contribute to the collision, failure to grant right-of-way was the most common driver related factor, contributing to 15.9% of fatalities and 26.4% of serious injuries.

In fatal collisions, 9.5% of older drivers were distracted and 5.2% were distracted in serious injury collisions.

Older drivers are more vulnerable than younger drivers in collisions. The skeletal structures of older persons are more easily damaged and the consequences of a collision are likely to be more serious. From 2009-2011,

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among all persons involved in fatal and serious injury collisions, persons age 75 and older were the highest risk age group for death or injury. In fatal collisions, almost half (47.7%) of persons age 75 and older involved were the ones killed, compared to the next highest age group of 45-54 at 10.8%.

Similarly in serious injury collisions, 65% of persons age 75 and older involved were the ones seriously injured, compared to only 6.4% of persons age 18-24, 25-34 and 55-64. Compared to involved persons age 65-74, persons aged 75 and older are 7.5 times more likely to be killed and over 20 times more likely to be seriously injured when involved in these collisions.

Programs & Successes

Highway Design and Traffic Control Elements

Among other things, the Washington State Department of Transportation (WSDOT) has been using enlarged road signs and improved nighttime reflectivity to increase readability. The WSDOT design manual also promotes intersections that meet at 90 degrees, in part to improve safety for older drivers.

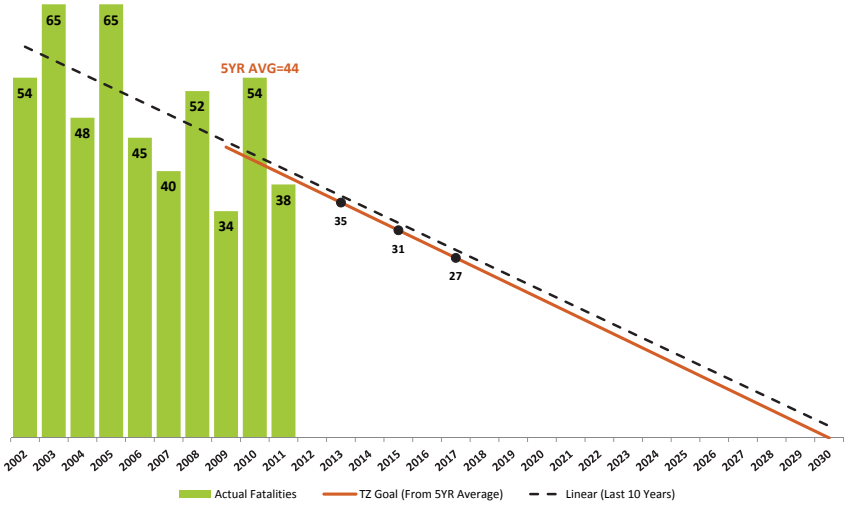
Education

Older drivers may enroll in educational classes through programs such as AAA's "Senior Defensive Driving Program." These programs focus on high-risk situations all drivers face, as well as providing tips and techniques for addressing factors more typical with age. These include changing vision, reduced response times and effects of various prescription medications.

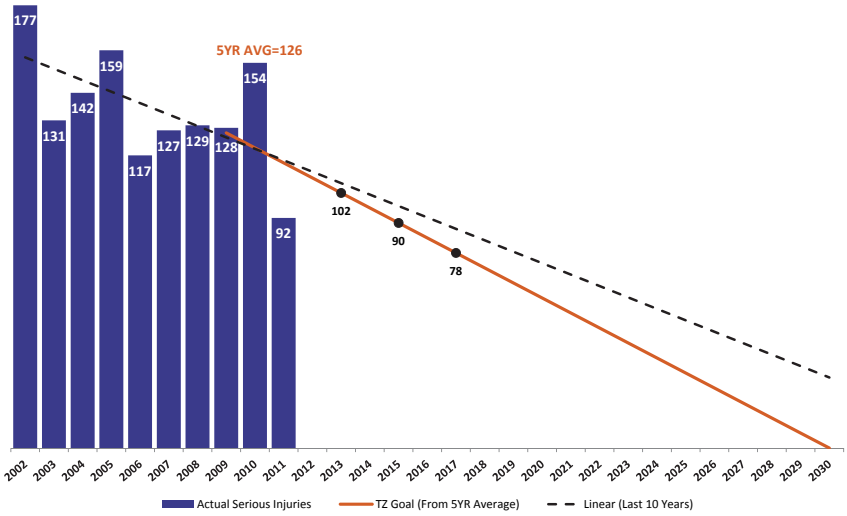
Guidelines for Aging Population

Older drivers who can no longer drive safely in some situations may need to have their driver license restricted or revoked. It may be helpful to establish a State Medical Advisory Board to develop guidelines to determine medical conditions, regardless of age, when driver license restrictions or revocation might be needed.

Older Drivers 75+ Involved Fatalities 2002-2011



Older Drivers 75+ Involved Serious Injuries 2002-2011



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Objectives & Strategies		
Objectives (What)	**Strategies (How)**	**Implementation Arena(s)**
1. Identify older drivers at an elevated crash risk.	1.1 Implement additional procedures for screening drivers' abilities and skills. (P, CTW)	Leadership/Policy
	1.2 Provide training to law enforcement, medical professionals, and community members for recognizing physical and cognitive deficiencies affecting safe driving in older drivers, including submitting reevaluation referrals to Department of Licensing. (P, CTW)	Enforcement, Leadership/ Policy, Education
	1.3 Implement Model Driver Screening and Evaluation Program Guidelines for Motor Vehicle Administrators for screening and evaluating older drivers' physical and cognitive abilities and skills. (P, CTW)	Leadership/Policy, Education
2. Improve older driver competency	2.1 Increase driver education opportunities for older drivers. (U)	Education
3. Reduce risk of serious injury and fatalities involving older drivers	3.1 Provide incentives for older drivers who use alternative modes of transportation. (R, FTA)	Education, Leadership/ Policy
	3.2 Involve caregivers and family members of older drivers in discussions and education about aging and driving and provide techniques they can use to help the older driver assess safe driving, and, when necessary, transition from driving. (R, NHTSA)	Education
	3.3 Reduce the amount of information on road signs, making them easier to read. (U)	Engineering

P = Proven **R = Recommended** **U = Unknown**

CTW = Countermeasures that Work
FTA = Federal Transit Administration
NHTSA = National Highway Traffic Safety Administration

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Additional Resources

Attracting Senior Drivers to Public Transportation: Issues and Concerns (Federal Transit Administration), http://www.fta.dot.gov/documents/TRANSPO_Attracting_Seniors_Public_Transportation_Final_Report.pdf

Characteristics of Crash Injuries Among Young, Middle-aged, and Older Drivers (National Highway Traffic Safety Administration, 2007), http://www-nrd.nhtsa.dot.gov/Pubs/810857.pdf

Countermeasures That Work: *A Highway Safety Countermeasure Guide for State Highway Safety Offices, 7th Edition,* Chapter 7 (National Highway Traffic Safety Administration), http://www.nhtsa.gov/staticfiles/nti/pdf/811727.pdf

Driving Transitions Education: Tools, Scripts, and Practice Exercises (National Highway Traffic Safety Administration), http://www.nhtsa.gov/DOT/NHTSA/Traffic%20Injury%20Control/Articles/Associated%20Files/811152.pdf

Forecast of the State Population: November 2012 Forecast (Washington Office of Financial Management), http://www.ofm.wa.gov/pop/stfc/stfc2012/stfc_2012.pdf

NCHRP Report 500, Volume 9: A Guide for Reducing Collisions Involving Older Drivers (National Cooperative Highway Research Program, Transportation Research Board), http://onlinepubs.trb.org/onlinepubs/nchrp/nchrp_rpt_500v9.pdf

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Heavy Truck Involved

Fatalities involving a heavy truck decreased 49% over three years.

Executive Summary

In 2009-2011, heavy truck involved fatalities decreased by 49% (227 to 115) and serious injuries by 26% (461 to 341) compared to 2006-2008. Several heavy truck enforcement campaigns, often paired with educational efforts, have contributed to this impressive decline, which also preserves our state's road infrastructure.

Background

In 2009-2011, heavy trucks were involved in 115 (8.2%) of Washington's traffic fatalities and 341 (4.7%) of the serious injuries. This is a significant decrease of 49% for fatalities and 26% for serious injuries compared with 2006-2008. Collisions involving heavy trucks (over 10,000 gross vehicle weight rate) pose higher risk of death and serious injury, particularly for other involved drivers, mainly due to their size and weight.

For this edition of *Target Zero*, the data definition was revised to be more inclusive of all types of commercial motor vehicles in addition to heavy trucks. The heavy truck numbers now also include any commercial vehicle classification for vehicles reported through a commercial vehicle supplement to the Police Traffic Collision Report (PTCR).

The critical and timely data used during roadside inspections was enhanced with the implementation of the Federal Motor Carrier Safety Administration's (FMCSA) Compliance Safety Analysis (CSA) project. This process improvement project provides officers with the ability to inspect a greater number of high-risk carriers and drivers while facilitating greater communication with the industry. The new enforcement and compliance model allows FMCSA and its state partners to address more safety problems before crashes occur. Rolled out in December 2010, the program establishes a new nationwide system for making the roads safer for motor carriers and the public alike.

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Contributing Circumstances and Factors

From 2009-2011, over 70% of heavy truck involved collisions occur where posted speeds are 50 mph or greater. Nearly 75% of these collisions occurred on state routes. Less than 5% of heavy truck operators involved in fatal collisions were impaired by drugs and less than 1% impaired by alcohol. Approximately 8% of heavy truck operators were speeding, compared to 12% of other drivers involved in fatal collisions with heavy trucks. Less than 2% of heavy truck operators involved in fatal collisions were drowsy, however nearly 20% were distracted (see pages 67-74). There were no improperly endorsed or unlicensed heavy truck operators involved in fatal collisions.

Programs & Successes

Commercial Vehicle Enforcement Bureau (CVEB) Inspections

The Commercial Vehicle Enforcement Bureau (CVEB) is recognized as a national leader in implementing technology to reduce commercial motor vehicle (CMV) collisions, as well as support freight mobility. In 2012, Washington enforcement officers inspected 107,823 vehicles, an increase of 5,384 inspections compared to 2011. This was 49% higher than the national average of 72,018 inspections per state. CVEB utilizes data to identify high-risk carriers at roadside and fixed facilities and prioritizes compliance reviews. The data is also used to support resource deployment, identify enforcement corridors, and plan emphasis activities and strategies targeted at reducing CMV collisions.

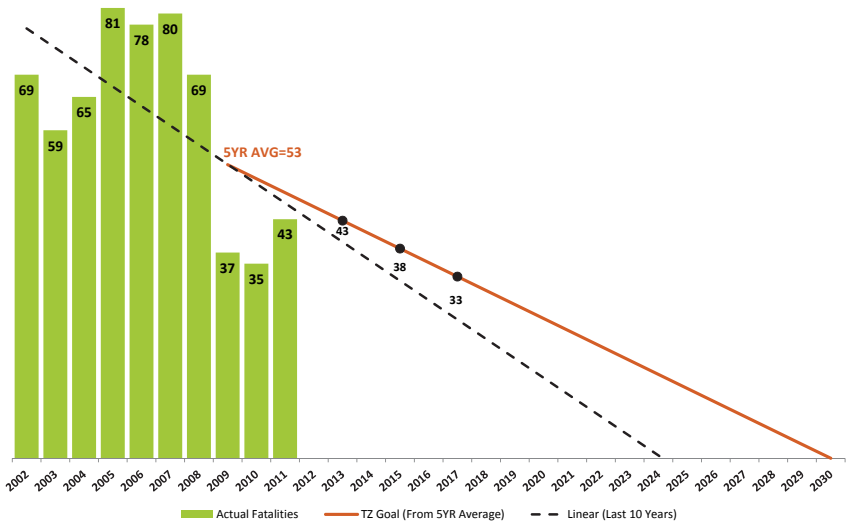
Heavy Truck Definition:

1) Any vehicle that also has a vehicle classification of trailer with GVWR of 10,001 lbs. or more, single vehicle with GVWR of 26,001 lbs. or more, or single vehicle of 26,000 lbs. or less-CDL required or a commercial vehicle supplement to the collision report.

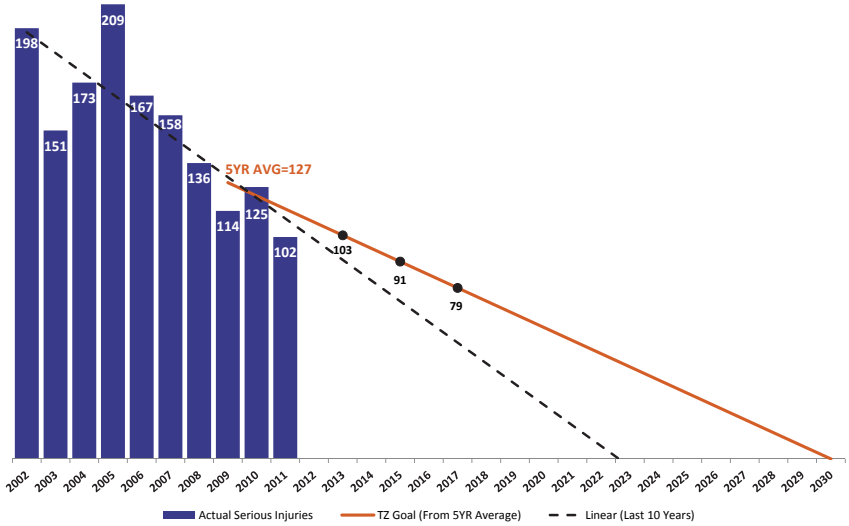
2) A vehicle type of Truck and Trailer, Truck Tractor, Truck Tractor and Semi-Trailer, or Truck-Double Trailer Combinations.

3) A vehicle usage classification of Concrete Mixer, Dump Truck, Logging Truck, Refuse/Recycle Truck, Van over 10,001 lbs, Tanker Truck, or Auto Carrier.

Heavy Truck Involved Fatalities 2002-2011



Heavy Truck Involved Serious Injuries 2002-2011



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Fatigue Driving Problem Oriented Public Safety (POPS) Project

Drowsiness makes drivers less attentive, slows reaction time and affects a driver's ability to make decisions. Cognitive impairment after approximately 18 hours awake is similar to that of someone with a blood alcohol content (BAC) of 0.05%. After about 24 hours awake, impairment is equivalent to a BAC of 0.10%, higher than the legal limit in all states (http://www.cdc.gov/features/dsdrowsydriving/).

The Washington State Patrol (WSP), in partnership with Oregon Department of Transportation, initiated a Problem Oriented Public Safety (POPS) project to combat fatigued commercial drivers and reduce related collisions and incidents. The POPS project was part of the WSP's efforts to reduce CMV collisions and fatalities.

During the year-long project (December 2011 – December 2012) the two-state alliance inspected 1,846 commercial vehicles. Washington and Oregon shared information by using new technology from Washington's Automated License Plate Readers (ALPR). The ALPR helped officers in both states map the location of CMV in relation to time. Throughout the POPS emphasis all fixed scales on Interstate 5, from southern Oregon to the Canadian Border, remained open 24 hours a day.

The information exchange between the states proved to be an extremely valuable tool for inspectors in detecting and confirming hours of service violations. Inspectors targeted fatigued drivers through close examination of drivers' logbooks. A total of 366 drivers found to be operating in excess of allowable hours of service, or in possession of falsified logbooks, were placed out of service for an average of ten hours. Top offenses were: false reporting of driver's duty status; driving over the 11/14 60/70 hour rule; logbook not current; and disqualified driver.

Ticket Aggressive Cars and Trucks (TACT) Program

The Ticket Aggressive Cars and Trucks (TACT) program is working to reduce CMV-related collisions, injuries and fatalities, through education and enforcement related to car and truck drivers sharing the road safely. The program was created in 2002 under the leadership and funding of the WTSC, working in cooperation with nearly a dozen public and private organizations statewide. The successful program has now been implemented nationwide. In 2012, the nine assigned Washington State Patrol (WSP) CVD TACT officers located around the state contacted 10,827 violators, 2,496 aggressive drivers, 6,238 speed violators, 363 seatbelt violators, seven reckless drivers, 38 negligent drivers, and completed 1,280 CVSA inspections. The officers also made 20 drug arrests and four DUI arrests.

In addition to the TACT program, WSP participates in other national public awareness and enforcement campaigns targeting commercial vehicles, such as Operation Safe Driver, Roadcheck and Operation Air Brake/Brake Safety Week.

Weight Limits on Heavy Trucks

In 1975, federal laws were implemented to provide protection and uniformity to the existing and future national highway infrastructure. Having these defined limits helps engineers to design pavements that will hold up under anticipated truck volumes. The Washington State Department of Transportation continuously monitors our state's highways and bridges for signs of repeated overweight loads or volume in excess of what was anticipated at the engineering design phases.

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Objectives & Strategies		
Objectives (What)	**Strategies (How)**	**Implementation Arena(s)**
1. Increase safety and reduce collisions through quality driver and vehicle inspections and enforcement	1.1 Increase and strengthen commercial vehicle safety and performance inspections, including focus on the heavy truck/ commercial vehicle driver. (P, NCHRP)	Enforcement
	1.2 Promote industry safety initiatives by performing safety consultations with carrier safety management. (P, NCHRP)	Education
	1.3 Provide ongoing education and outreach utilizing 'Share the Road' information. (R, NCHRP)	Education
	1.4 Establish commercial vehicle compliance checkpoints in areas identified as high risk for collisions involving heavy trucks/ commercial vehicles. (R, DDACTS)	Enforcement
	1.5 Increase commercial vehicle enforcement contacts targeting the top five collision-causing moving violations. (R, DDACTS)	Enforcement
	1.6 Increase enforcement personnel use of FMCSA's PORTAL for identifying high-risk carriers. (U)	Enforcement
	1.7 Provide CMV training to enforcement officers at the state, county, and local levels. (U)	Enforcement, Education
2. Improve roadway infrastructure to reduce heavy truck/ commercial vehicle collisions	2.1 Install interactive truck rollover and curve warning signage. (P, NCHRP)	Engineering
	2.2 Incorporate rumble strips into new and existing roadways to reduce fatigue-related collisions. (R, CMF)	Engineering

P = Proven **R = Recommended** **U = Unknown**

CMF = Crash Modification Factors
DDACTS = Data Driven Approaches to Crime and Traffic Safety
NCHRP = National Cooperative Highway Research Program

Additional strategies applicable to reducing Heavy Truck involved fatalities and serious injuries can be found in the Distracted Driver Involved section, pages 73-74.

Additional Resources

Countermeasures That Work: A Highway Safety Countermeasure Guide for State Highway Safety Offices, 7th Edition, (National Highway Traffic Safety Administration), http://www.nhtsa.gov/staticfiles/nti/pdf/811727.pdf

NCHRP Report 500, Volume 13: A Guide for Reducing Collisions Involving Heavy Trucks, (National Cooperative Highway Research Program, Transportation Research Board), http://onlinepubs.trb.org/onlinepubs/nchrp/nchrp_rpt_500v13.pdf

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Drowsy Driver Involved

Executive Summary

Between 2009-2011, statistics showed drowsy drivers contributed to 45 traffic fatalities in Washington State and 258 serious injuries. However, this contributing factor may be significantly higher because it's difficult to prove if or when a driver is drowsy. It requires self- or witness reporting, which is often inconsistent. Education and engineering efforts are the most effective ways to keep drivers awake and alert.

Background

All drivers have experienced the feeling of being drowsy at one time or another. Drowsy driving can result from such things as lack of sleep, too much time on the road without stopping, taking over-the-counter or prescription medications, or consuming drugs or alcohol.

Drowsiness makes drivers less attentive, slows reaction time and affects a driver's ability to make decisions. Cognitive impairment after approximately 18 hours awake is similar to that of someone with a blood alcohol content (BAC) of 0.05%. After about 24 hours awake, impairment is equivalent to a BAC of 0.10%, higher than the legal limit in all states (http://www.cdc.gov/features/dsdrowsydriving/).

Between 2009-2011, 73% of both fatalities and serious injuries attributed to drowsy driving involved a single vehicle. Of these collisions, 65% of fatalities and 69% of serious injuries occurred between the hours of 5am-6pm (standard daytime working hours), contrary to the popular belief that most drowsy driving happens at night. About half of fatalities (51%) and one-third (33%) of serious injuries occurred on weekends (Saturday or Sunday).

People underestimate the dangers of drowsy driving, yet fighting the urge to sleep puts everyone on the road at risk. The AAA Foundation for Traffic Safety conducted a study in 2010 of National Highway Traffic Safety Administration (NHTSA) crash data. Study results estimate drowsy driving is a factor in nearly one in six fatal crashes, and two out of five drivers surveyed (41%) admitted to falling asleep behind the wheel at some point.

Younger drivers are more likely to drive while drowsy. Based on a recent survey conducted by the AAA Foundation, one in seven licensed drivers ages 16-24 admitted to having nodded off at least once while driving in the past year as compared to one in ten of all licensed drivers who confessed to falling asleep during the same period (Washington, D.C., November 8, 2012).

Drowsiness or fatigue can happen to any driver and is likely under-reported as a cause of traffic crashes.

These new findings echo data from the AAA Foundation's NHTSA crash data study which estimates young drivers age 16-24 were 78% more likely to be drowsy at the time of a collision than drivers age 40-59. Washington State data shows between 2002 and 2011, young drivers age 16-24 were 55% more likely to be drowsy at the time of a collision as drivers age 40-59.

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Contributing Circumstances and Factors

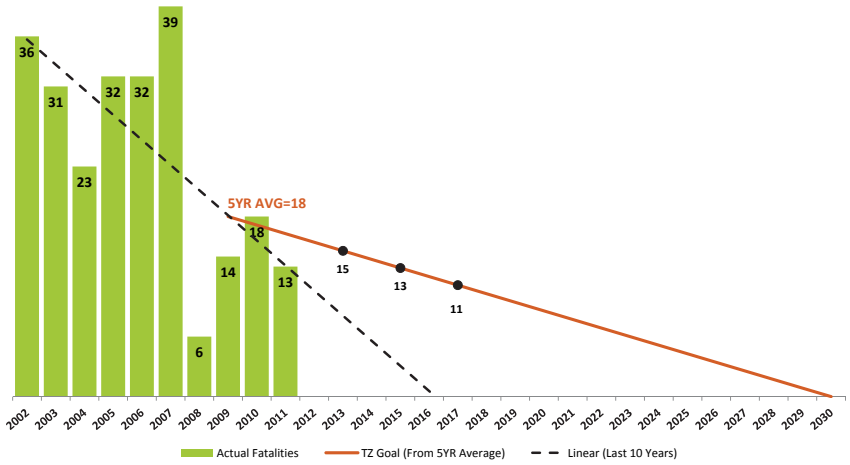
Many circumstances can contribute to drowsy driving including lack of sleep, too much time on the road without stopping, taking over-the-counter or prescription medications, or consuming drugs or alcohol. It's difficult to prove if or when a driver is drowsy, so the numbers are likely under reported. People traveling long distances often travel on highways or interstates, which is where the majority of drowsy driver involved fatalities and serious injuries occur. From 2009-2011, drowsy driver involved fatalities and serious injuries occurred most often on state routes. The majority of these crashes (over 70%) are single vehicle and/or run-off-the-road events.

Sleep Apnea

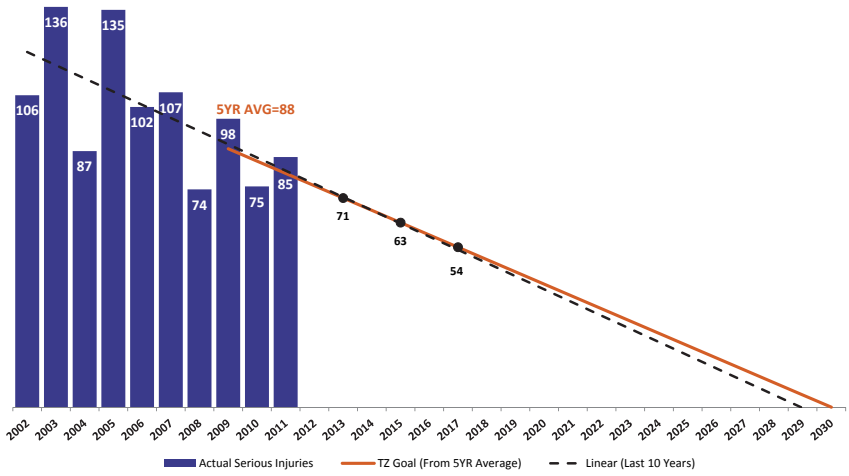
According to the Center for Sleep Disorders up to 20% of collisions that occur on monotonous roads can be attributed to sleepiness, and the most common medical cause of excessive daytime sleepiness is obstructive sleep apnea (OSA). New guidelines have been drafted to provide healthcare practitioners with a framework for the evaluation and management of sleepy driving as it relates to OSA. Center for Disease Control (CDC) representatives report that addressing the issue of drowsy driving requires the combined effort of physicians, patients and policy makers.

Specific to monotonous roads as a contributing factor in Washington State in drowsy driving collisions, 74% of fatalities and 63% of serious injuries occur on state routes. This is much higher than the average for all combined fatalities and serious injuries, 43% and 32% respectively. In contrast, drowsy driving fatalities and serious injuries occur less often on county roads (18% fatalities; 22% serious injuries) compared to the average for all fatalities (30%) and serious injuries (25%).

Drowsy Driver Involved Fatalities 2002-2011



Drowsy Driver Involved Serious Injuries 2002-2011



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Programs & Successes

Engineering

The Washington State Department of Transportation (WSDOT) is addressing drowsy driving collisions through several engineering fixes including shoulder and centerline rumble strips, cable guard rails, cable median barriers and other roadside fixes.

Rest Areas

WSDOT owns and operates 48 rest areas within our state to encourage drivers to stop and rest along their journey. Most facilities are open 24 hours a day, 7 days a week and offer a free coffee program. According to Safety Rest Areas Annual Safety and Preservation Reports, around 22.3 million travelers used WSDOT's safety rest areas in 2010, up 8.6% from the previous year.

Keeping Commercial Vehicle Drivers Alert

Commercial vehicle drivers are on the road more than the average commuter and finding ways to reduce their fatigue is a focus for WSDOT. The department is working to expand existing parking for heavy trucks and encouraging drivers to pull over and rest when tired. On the enforcement end, the Washington State Patrol's Commercial Vehicle Enforcement Bureau requires heavy truck operators to use log books and stop at weigh station scales to perform equipment safety checks. This practice provides accountability for limiting the number of miles and hours a driver can be on the road in a 24 hour period.

Drowsy Driving Prevention Week

The National Sleep Foundation's Drowsy Driving Prevention Week® is observed in November each year, just prior to the heavy Thanksgiving travel. This campaign provides public education about the under-reported risks of driving while drowsy and countermeasures to improve safety on the road. Supporting this effort to combat drowsy driving, former Washington State Governor Christine Gregoire signed a proclamation in November 2012. In it, she urged all Washington State citizens to join her in observing this week and raising awareness of the dangers of fatigue behind the wheel. For more information about drowsy driving, visit the National Sleep Foundation's drowsy driving website at www.DrowsyDriving.org.

American Automobile Association (AAA)

AAA and the AAA Foundation support a variety of educational efforts to reduce drowsy driving and improve traffic safety. AAA offers some helpful tips through brochures, videos, educational campaigns and training programs.

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Objectives & Strategies		
Objectives (What)	**Strategies (How)**	**Implementation Arena(s)**
1. Use roadway engineering to reduce the consequences of drowsy driving	1.1 Implement shoulder and centerline rumble strips. (P, NCHRP)	Engineering
	1.2 Implement roadway improvements to reduce the likelihood and severity of drowsy driving collisions involving run-off-the-road and head-on. (P, NCHRP)	Engineering
	1.3 Implement corridor safety model on high-crash locations where data indicates a high number of drowsy driving crashes. (R, DDACTS)	Education, Enforcement, Engineering
	1.4 Improve rest area access, security, and services. (R, NCHRP)	Engineering
2. Increase driver awareness of the risks of drowsy driving	2.1 Encourage employers to offer fatigue management programs to employees working nighttime or rotating shifts. (P, NCHRP)	Education, Leadership/ Policy
	2.2 Conduct statewide education combined with targeted enforcement targeted at drowsy drivers. (R, NCHRP)	Enforcement, Education
3. Enforce and strengthen laws and regulations aimed at reducing drowsy driving	3.1 Enhance enforcement of commercial motor vehicle hours of service regulations. (P, NCHRP)	Enforcement
	3.2 Visibly enforce existing statutes to deter drowsy driving. Consider increasing penalties for drowsy driving collisions. (U)	Enforcement, Leadership/ Policy

P = Proven **R = Recommended** **U = Unknown**

DDACTS = Data Driven Approaches to Crime and Traffic Safety
NCHRP = National Cooperative Highway Research Program

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Additional Resources

AAA Foundation for Traffic Safety Website, www.aaafoundation.org/drowsy-driving

Countermeasures That Work: A Highway Safety Countermeasure Guide for State Highway Safety Offices, 7th Edition, Chapter 4 (National Highway Traffic Safety Administration), http://www.nhtsa.gov/staticfiles/nti/pdf/811727.pdf

Drowsy Driving: Asleep at the Wheel (Centers for Disease Control and Prevention), www.cdc.gov/features/dsdrowsydriving

Drowsy Driving Website (National Sleep Foundation), www.drowsydriving.org

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

Performance Analysis of Centerline Rumble Strips in Washington State (Washington State Department of Transportation, 2011), http://www.wsdot.wa.gov/research/reports/fullreports/768.1.pdf

Video: Drowsy Driving (American Automobile Association), http://vimeo.com/aaapublicaffairs/review/53079717/cf11c2d33a

Video: Teens Driving while Drowsy (American Automobile Association), https://www.aaafoundation.org/videos?field_category_tid%255B%255D=40&button=DDclips

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Bicyclists

In fatal and serious injury crashes, bicyclists suffer a higher percentage of deaths and serious injuries than any other road user group.

Executive Summary

Eleven bicyclists were killed on our roadways in 2011, the majority in urban areas. This number is up from six in 2010 and slightly more than the 5-year average of 10 fatalities. In 2011, 112 bicyclists were seriously injured, slightly below the 5-year average of 116. To reach our Target Zero® goal in 2030, greater annual progress is needed in reducing bicyclist traffic deaths and serious injuries.

Background

From 2009 to 2011, there were 26 bicyclist fatalities (1.8% of total traffic deaths) and 339 seriously injured bicyclists (4.7% of all traffic-related serious injuries). When bicyclists are involved in fatal and serious injury collisions they are more frequently killed or seriously injured than any other type of roader users. (see chart on page 26.)

The 2008 Washington State Bicycle Facilities and Pedestrian Walkways Plan established statewide objectives and specific performance measures to be able to achieve zero deaths and serious injuries by 2030. Many strategies coincide with Target Zero's strategies including improving connections and bicycle facilities in urban areas, increasing safe cycling training, decreasing arterial barriers and increasing awareness about bicycle laws.

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Contributing Circumstances and Factors

Contributing factors in bicycle fatalities differ from vehicle-vehicle collisions. In 48% of fatal bicyclist collisions, vehicle driver factors did not contribute to the collision. In 37% of the collisions, bicyclist factors did not contribute to the collision. When driver factors were involved, the most prevalent factors were:

1. Distracted driving (27%)
2. Driver impairment (9.6%)
3. Speeding (3.8%)

The most frequent bicyclist-related factors included:

1. Failure to yield right of way (29%)
2. Impairment (25.4%)
3. Inattention (14%)

A recent research study, by foremost traffic-injury expert Rune Elvik (Norway), shows that bicycle helmets:

- Reduce the risk of head injury by 42%
- Reduce the risk of injury to the head, face or neck by 15%

From 2009-2011, 38.4% of Washington bicyclists killed in traffic collisions were not wearing a bike helmet. Over half (51.4%) of seriously injured bicyclists were not wearing a bike helmet.

Intersections

The largest percentage of bicyclist fatalities (63%) occurred at intersections. Strategies focusing on improving conditions for bicyclists at intersections may decrease fatal collisions. These strategies include the use of green colored bike lane pavement approaching intersections, bike boxes, revisions to curb angles, and bicycle-specific signals and beacons.

Roadways

In contrast to fatalities, the largest percentage of bicyclist serious injuries (58%) occurred on the roadway. Almost half of these serious injuries occurred while bicyclists were riding with traffic. Building dedicated facilities can increase bicycle safety and mobility. Examples include bike lanes, bicycle boulevards, separated facilities like cycle tracks, and redesign of thoroughfares using 'road diets.' Bike lanes and road diets have the potential to reduce collisions substantially between bicyclists and motor vehicle collisions.

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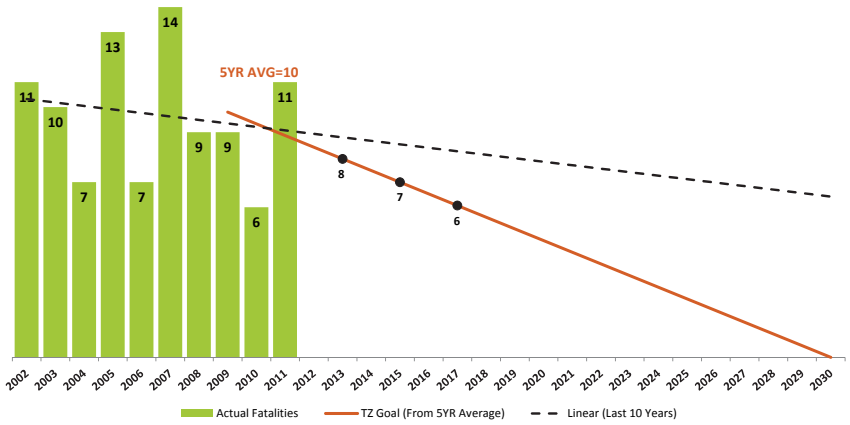
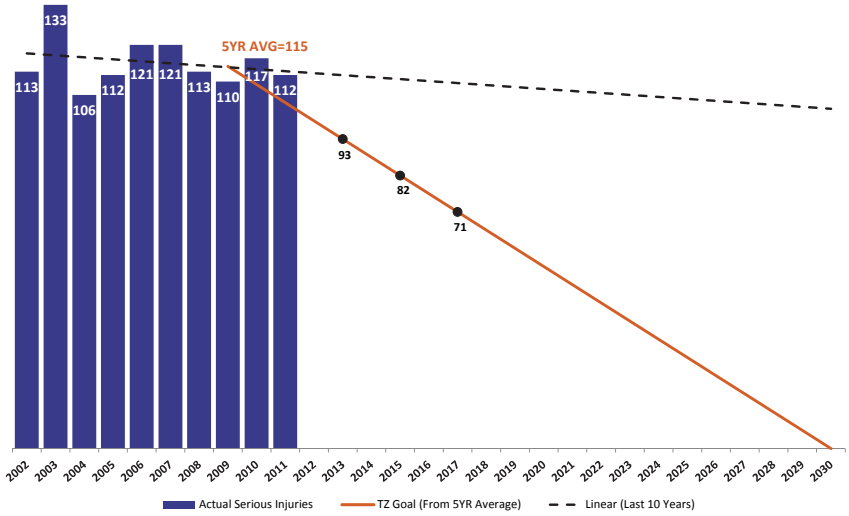
Bicyclists Involved Fatalities 2002-2011



Bicyclists Involved Serious Injuries 2002-2011



Programs and Successes

Washington State Department of Transportation (WSDOT) initiated the Washington State Bicycle and Pedestrian Documentation Project in 2008 and started collecting data on biking and walking. WSDOT completed its fifth annual documentation project in 2012, with volunteers counting more than 40,000 pedestrians and 20,000 bicyclists at 200 locations in 38 cities.

According to WSDOT, this project found that walking and biking in Washington increased by 10% between 2008 and 2012. The highest numbers of bicyclists were observed on trails, bridges and in downtown areas. In the 24 jurisdictions where helmets are required by law, 90% of observed bicyclists wore them, compared to 63% in jurisdictions without helmet laws.

Those working with the Washington State Bicycle Facilities and Pedestrian Walkways Plans are focusing on efforts to double the amount of biking and walking over the next two decades. Bicyclists' safety may be improved by increasing the numbers of bicyclists and pedestrians on the road, increasing the likelihood motorists expect to see a bicyclist and being better prepared to respond appropriately.

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Objectives & Strategies

Objectives (What)	Strategies (How)	Implementation Arena(s)
1. Improve bicyclist safety awareness and behavior	1.1 Promote use of reflective apparel among bicyclists and bicycle lights (rider conspicuity). (R, CTW)	Education
	1.2 Increase the number of people bicycling to achieve safety in numbers. (R, LIT)	Leadership/Policy, Education
	1.3 Promote bicycle helmet use with education. (U)	Education
2. Enact policies/laws to improve bicycle safety	2.1 Enact bicycle helmet laws for children (P, CTW) and adults (R, CTW).	Leadership/Policy, Education
	2.2 Improve bicyclist rights and responsibilities training for law enforcement officers at state, Tribal, and local levels. (R, WSDOT)	Education
3. Improve bicyclist facilities	3.1 Implement traffic calming techniques. (P, NCHRP)	Engineering
	3.2 Follow national guidelines on the use of reflective markings and sign materials. (R, FHWA)	Engineering
	3.3 Construct more bike lanes, cycle tracks, and separated bicycle facilities, especially in urban areas. (R, CMF)	Engineering
	3.4 Create bicycle boulevards on low volume, low speed streets. (R, CMF)	Engineering
	3.5 Implement Complete Streets policies to provide for all modes of transportation. (R, NCSC)	Leadership/Policy, Engineering
	3.6 Install colored bike boxes at intersections. (U)	Engineering
4. Improve safety for children bicycling to school	4.1 Expand high visibility speed enforcement in school zones, including automated speed photo enforcement. (R, CTW)	Education, Enforcement
	4.2 Distribute and encourage the use of "School Walk and Bike Routes: A Guide for Planning and Improving Walk and Bike to School Options for Students" and assist schools in creating school biking route maps. (R, WSDOT)	Education, Engineering
	4.3 Encourage and support school districts to implement the Safe Routes to School program. (U)	Education, Engineering
5. Improve data and performance measures	5.1 Enhance attempts to collect a measure of 'miles biked' (similar to VMT). Continue to track bicycle counts through Washington's Pedestrian and Bicycle Documentation Project. (R, DDACTS)	Leadership/ Policy

P = Proven **R = Recommended** **U = Unknown**

CMF = Crash Modification Factors
DDACTS = Data Driven Approaches to Crime and Traffic Safety
LIT = Literature (Although we could not locate a meta study, there is sufficient independent literature with favorable results to justify as a recommended strategy)
CTW = Countermeasures that Work
FHWA = Federal Highway Administration
NCSC = National Complete Streets Coalition
NCHRP = National Cooperative Highway Research Program
WSDOT = WA State Dept. of Transportation

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Additional Resources

Countermeasures That Work: A Highway Safety Countermeasure Guide for State Highway Safety Offices, 7th Edition, Chapter 8 (National Highway Traffic Safety Administration), http://www.nhtsa.gov/staticfiles/nti/pdf/811727.pdf

NCHRP Report 500, Volume 18: A Guide for Reducing Collisions Involving Bicycles (National Cooperative Highway Research Program, Transportation Research Board), http://onlinepubs.trb.org/onlinepubs/nchrp/nchrp_rpt_500v18.pdf

The Gray Notebook, Edition 48, pages 5-8 (Washington State Department of Transportation), http://wsdot.wa.gov/publications/fulltext/graynotebook/Dec12.pdf

Washington's Complete Streets and Main Street Highways Case Study Resource (Washington State Department of Transportation), http://www.wsdot.wa.gov/NR/rdonlyres/A49BBBE7-16BC-4ACE-AF2B-3C14066674C9/0/CompleteStreets_110811.pdf

Washington State Bicycle and Pedestrian Documentation Project (Washington State Department of Transportation), http://www.wsdot.wa.gov/bike/Count.htm

Washington State Bicycle Facilities and Pedestrian Walkways Plan (Washington State Department of Transportation), http://www.wsdot.wa.gov/bike/bike_plan.htm

Washington State laws (RCWs) relating to bicyclists:

- *RCW 47.04.330 – Street projects – Consultation with local jurisdictions – Context sensitive design solutions.*
- *RCW 47.36.025 – Vehicle-activated traffic control signals – Detection of motorcycles and bicycles.*
- *RCW 46.61.755 – Traffic laws apply to persons riding bicycles.* When riding on a roadway, a cyclist has all the rights and responsibilities of a vehicle driver ().
- *RCW 46.61.750 – Effect of regulations – Penalty.* Cyclists who violate traffic laws may be ticketed.
- *RCW 46.61.700 – Children Bicycling.* Parents or guardians may not knowingly permit bicycle traffic violations by their ward.
- *RCW 46.61.770 – Riding on roadways and bicycle paths.* Cyclists may ride side by side, but not more than two abreast. Cyclists may choose to ride on the path, bike lane, shoulder or travel lane as suits their safety needs.
- *RCW 46.61.780 – Riding at Night.* For night bicycle riding, a white front light (not a reflector) visible for 500 feet and a red rear reflector are required. A red rear light may be used in addition to the required reflector.

Municipal Rules relating to bicyclists:

- Bicycle Helmets – Currently, there is no state law requiring helmet use. However, some cities and counties do require helmets. See bicycle helmet requirements in Washington by municipality (http://www.wsdot.wa.gov/bike/helmets.htm).
- Roads Closed to Bicycles – Some designated sections of the state's limited access highway system may be closed to bicycles for safety reasons. See state highway sections closed to bicycles (http://www.wsdot.wa.gov/bike/closed.htm) for more information. In addition, local governments may adopt ordinances banning cycling on specific roads or on sidewalks within business districts.

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Work Zone Safety

Between 2009 and 2011, 9 (0.6%) fatalities and 132 (1.8%) serious injuries resulted from crashes occurring in or as a result of Washington work zones.

Collisions in work zones resulted in 9 fatalities and 132 serious injuries in the last three years of which only one was a roadway worker.

Efforts to reduce collisions and increase safety in work zone operations are overseen by the State's Work Zone Safety Task Force (WZSTF). This statewide, multi-disciplinary committee with representatives from Washington State Department of Transportation (WSDOT), the Washington State Patrol (WSP) and contractors, examines work zone issues and helps develop solutions. Among the tools used by the Task Force are: training, applying robust standards, encouraging best practices and using innovative products. The WZSTF emphasizes education, enforcement and legislation.

WSDOT sponsors ongoing training for its employees and local agencies in best practices, to increase safety and mobility surrounding work zone projects. From 2009 to 2011, the agency proactively used the following strategies on work zone safety:

- Updating guidance documents to reflect new federal rules on work zone safety and changes in WSDOT work zone policy (R, WSDOT)
- Promoting the use of positive protection methods such as temporary concrete barriers, truck mounted attenuators and detours for separating workers from traffic (R, FHWA)
- Evaluating new work zone safety related products, devices and technology such as automated flagger assistance devices and portable signals (R, WSDOT)
- Adopting a new work zone speed limit reduction policy (R, WSDOT)
- Conducting a self-assessment with the Federal Highway Administration (R, FHWA)

Strategies:

- Improve visibility of work zone traffic control devices and ensure they are clean and in good working condition (R, NCHRP)
- Improve work zone design practices (R, NCHRP)
- Provide safe and accessible conditions for emergency responders in work zones (R, OSHA)
- Require reflective apparel for all emergency responders (R, FHWA)
- Improve worker safety planning through basic hazard assessments and job classification requirements in the work zone area (R, OSHA)
- Certify all workers who work in the boundaries of work zones (R, OSHA)
- Use high visibility enforcement such as enhanced patrols, photo enforcement and police-operated photo radar enforcement vans in work zones (R, NCHRP)
- Ensure good public notification of conditions so drivers are prepared or may choose alternative routes (R, NCHRP)

P = Proven **R = Recommended** **U = Unknown**

FHWA = Federal Highway Administration
NCHRP = National Cooperative Highway Research Program
OSHA = Occupational Safety and Health Administration
WSDOT = Washington State Department of Transportation

Work Zone		
Year	**Fatalities**	**Serious Injuries**
2002	15	31
2003	17	27
2004	7	24
2005	8	33
2006	16	49
2007	2	45
2008	3	29
2009	1	41
2010	1	53
2011	7	38
Totals	**77**	**370**

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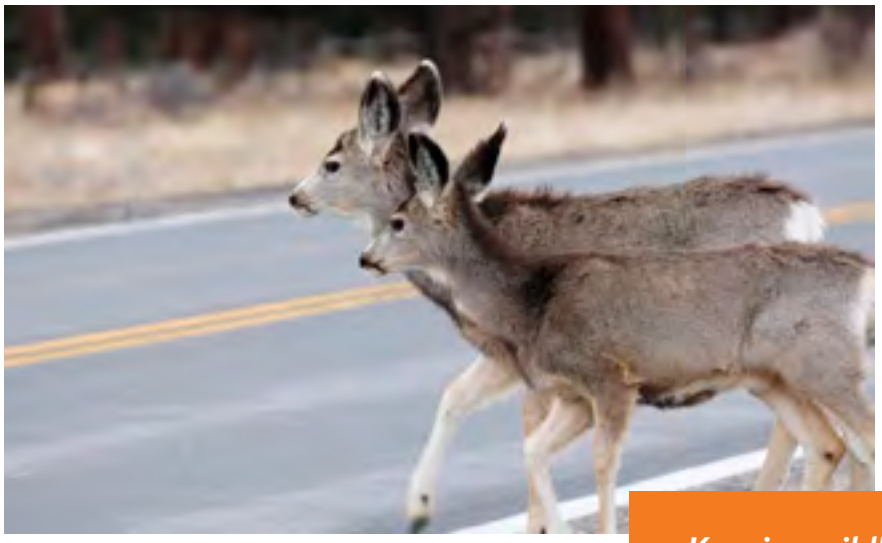
Wildlife

Wildlife collisions accounted for 8 fatalities (0.6%) and 78 serious injuries (1.1%) between 2009 and 2011 in Washington State.



The Washington State Department of Transportation (WSDOT) has adopted a habitat connectivity policy mandating consideration of habitat and wildlife in all state transportation actions. Over the last 30 years, WSDOT has invested in a wide variety of infrastructure to benefit wildlife and reduce wildlife-vehicle collisions. Projects range from building large mammal crossing structures to installing wildlife barrier fencing.

In 2005 WSDOT received funding to expand I-90 east of Snoqualmie. For many species, this section of I-90 bisects key migration corridors connecting the north and south Cascades. Because of this, WSDOT and wildlife advocates took the opportunity to create wildlife crossings that would reconnect habitat on opposite sides of the freeway. The project includes several state-of-the-art bridges that allow wildlife to travel under and over the freeway. Fences parallel to the road funnel animals into the passageways, keeping them from the roadway. Remote cameras will monitor wildlife movements to ensure the new crossings are being used.

Wildlife		
Year	**Fatalities**	**Serious Injuries**
2002	0	13
2003	0	12
2004	7	16
2005	0	18
2006	1	21
2007	3	22
2008	5	29
2009	4	34
2010	4	31
2011	0	13
Totals	**24**	**209**

Keeping wildlife off the road helps save human lives as well as animals.

Strategies

- Employ engineering strategies to decrease wildlife collisions (P, CMF)
- Increase active and passive roadway signage of wildlife crossings (R, FHWA)
- Install animal detection systems to warn motorists of wildlife (R, FHWA)
- Increase upfront funding for innovative wildlife crossings in projects built in high wildlife population areas (R, FHWA)
- Promote clear sight lines in areas with abundant wildlife (U)
- Utilize public service announcements in areas with high wildlife collision rates (U)

P = Proven
R = Recommended
U = Unknown

CMF = Crash Modification Factors
FHWA = Federal Highway Administration

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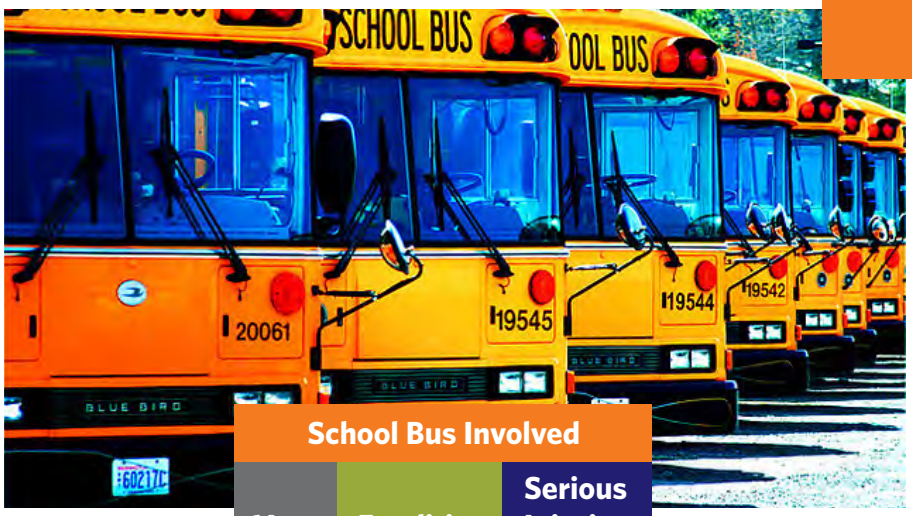
School Bus Involved

In Washington State between 2009 and 2011, school bus involved collisions have accounted for three fatalities (0.2% of state total) and 18 serious injuries (0.2%).

Only one school bus occupant has been killed in a collision in Washington State since 1994, a school bus driver in 1996. Fatalities related to school bus transportation tend to occur during loading or unloading of the school bus and are counted as pedestrians, rather than school bus occupants. The The 12 fatalities represented in the chart are either non-motorists or occupants of other vehicles, not occupants of school buses. Five of the 12 fatalities were non-motorists (all occurring between 2003 and 2008), and none of them were school children.

A one day statewide count on May 1, 2013 (required by legislation) reported enough violations of the loading flashing light system that would result (extrapolated) in over 500,000 violations per year. With that level of violations, students' safety crossing the street before getting on the bus or after disembarking is a major concern.

School bus travel remains the safest way to send children to school.



School Bus Involved

Year	Fatalities	Serious Injuries
2002	1	5
2003	2	9
2004	2	3
2005	3	5
2006	0	5
2007	0	4
2008	1	4
2009	0	8
2010	1	7
2011	2	3
Totals	**12***	**53**

*None of these fatalities were school children.

Strategies

The state will continue to ensure:

- Every school bus driver receives training modeled after 'The School Bus Driver In-Service Safety Series' (R, NHTSA)
- School districts implement, enhance, or improve student training in school bus safety (U)
- Enforcement of laws relating to overtaking or meeting a school bus when stopped for the purpose of receiving or discharging children and the bus' hazard warning lamps are activated. (U)

P = Proven
R = Recommended
U = Unknown

NHTSA = National Highway Traffic Safety Administration

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Vehicle-Train

"Highway-rail grade crossings" are intersections involving two very different modes of transportation. The unique character of these intersections is enhanced by the fact they are also multi-jurisdictional. Highway authorities and railroads have responsibility for different aspects of design and maintenance, while the Washington Utilities and Transportation Commission has regulatory authority over public safety.

Highway-rail crossings are unique junctions with responsibility for safety crossing multiple jurisdictions.

In Washington State, vehicle-train crashes occurring at grade crossings accounted for 2 fatalities (0.1% of the state's total) and 3 serious injuries (0.04%) between 2009 and 2011.

Nationally since the early 1970s, the majority of safety improvements at public railroad grade crossings have been implemented through grants from the Federal Highway-Rail Grade Crossings Safety Program authorized in successive federal transportation bills.

In the most recent bill, MAP-21 provides a set-aside for crossing hazard elimination and requires the state to use the funds for installing protective devices at railway-highway intersections. This effort is administered by WSDOT program management and includes 40 potential crossings for safety upgrades.

Vehicle-Train Involved		
Year	**Fatalities**	**Serious Injuries**
2002	0	3
2003	0	2
2004	1	0
2005	4	2
2006	5	3
2007	2	2
2008	1	1
2009	0	1
2010	1	2
2011	1	0
Totals	**15**	**16**

Strategies

- Upgrade signs to flashing lights and install gates at crossing with signs (P, CMF)
- Ensure existing warning devices are compliant with all applicable regulatory requirements (P, FHWA)
- Conduct periodic safety assessments to identify crossings in need of improvements, including upgrading warning devices, addressing hazards related to highway/railroad geometry and removing sight obstructions (R, CMF)
- Partner with railroads and the Utilities and Transportation Commission to address identified safety issues, including taking advantage of available federal and state hazard elimination grants (R, FHWA, UTC)
- Improve railroad grade crossings within Intercity High Speed Passenger Rail Program projects (R, FRA)
- Implement rail safety public education through partnership with Washington Operation Lifesaver (R, UTC)
- Include railroad crossing upgrades in corridor safety planning (U)

P = Proven **R = Recommended** **U = Unknown**

CMF = Crash Modification Factors
FHWA = Federal Highway Administration
FRA = Federal Railroad Administration
UTC = Utilities and Transportation Commission

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Appendices

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Appendix A: Acronyms

501(c)(3)	US Internal Revenue Code for federal tax exemption of nonprofit organizations
AAA	American Automobile Association
AADT	Average Annual Daily Traffic
ABACCL	American Bar Association Center on Children and the Law
ALPR	Automated License Plate Readers
AOC	Washington Administrative Office of the Courts
ARIDE	Advance Roadside Impaired Driving Enforcement
ASE	Automated Speed Enforcement
ATS	American Thoracic Society
BAC	Blood Alcohol Concentration
CDC	Centers for Disease Control
CDP	Chemical Dependency Professional
CEU	Continuing Education Unit
CHARS	Comprehensive Hospital Abstract Reporting System
CIOT	Click It or Ticket
CLAS	Collision Location and Analysis System
CMF	Crash Modification Factor
CMV	Commercial Motor Vehicles
CODES	Crash Outcome Data Evaluation System
CPS	Child Passenger Safety
CPST	Child Passenger Safety Technician
CTW	Countermeasures That Work
CVEB	Commercial Vehicle Enforcement Bureau
CVSA	Commercial Vehicle Safety Alliance
DBHR	Division of Behavioral Health and Recovery
DDACTS	Data Driven Approaches to Crime and Traffic Safety
DOH	Washington State Department of Health
DOL	Washington State Department of Licensing
DRE	Drug Recognition Expert
DSHS	Washington State Department of Social and Health Services
DTS	Driver Training School
DUI	Driving Under the Influence
DWI	Driving While Intoxicated (term used in some other states, but not in WA)
DWLS	Driving While License is Suspended or Revoked
DWLS 3	Driving While License is Suspended or Revoked Third Degree
EMS	Emergency Medical Services
eTRIP GT	eTRIP Governance Team
FARS	Fatality Analysis Reporting System
FHWA	Federal Highway Administration
FMCSA	Federal Motor Carrier Safety Administration
FRA	Federal Railroad Administration
FTA	Failure to Appear
GHSA	Governor's Highway Safety Association
GIS	Geographic Information Systems
GMAP	Government Management Accountability and Performance
GPS	Global Positioning Satellites
GNB	Gray Notebook
HPMS	Federal Highway Performance Monitoring System
HVE	High Visibility Enforcement
IDL	Intermediate Drivers License
IIHS	Insurance Institute for Highway Safety
IIL	Ignition Interlock License
META	Meta Study
ILT	Incident Location Tool
NACTO	National Association of City Transportation Officials
NCSC	National Complete Streets Coalition
NCHRP	National Cooperative Highway Research Program
NIH	National Institute of Health
NHTSA	National Highway Traffic Safety Administration
NSC	National Safety Council
OFM	Office of Financial Management
OSA	Obstructive Sleep Apnea
OSHA	Occupational Safety and Health Administration
PIP	Party Intervention Patrol
POPS	Problem Oriented Public Safety
PTA	Parent Teacher Association
PTCR	Police Traffic Collision Report
RCW	Revised Code of Washington
RTPO	Regional Transportation Planning Organization
RUaD	Reducing Underage Drinking
SECTOR	Statewide Electronic Collision and Ticket Online Records
SFST	Standard Field Sobriety Tests
SHSP	Strategic Highway Safety Plan
SRTS	Safe Routes to School
TDO	WSDOT Transportation Data Office
THC	Tetrahydrocannabinol
TRB	Transportation Research Board
TRC	Traffic Records Committee
TZM	Community Target Zero Manager
UTC	Utilities and Transportation Commission
USDOT	United States Department of Transportation
VMT	Vehicle Miles Traveled
WAC	Washington Administrative Code
WATrac	Washington's healthcare incident management system
WEMSIS	Washington EMS Information System
WIDAC	Washington Impaired Driving Advisory Council
WSDOT	Washington State Department of Transportation
WSP	Washington State Patrol
WTR	Washington Trauma Registry
WTSC	Washington Traffic Safety Commission

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Appendix B: Glossary

Alcohol-impaired Driver
Any driver with a BAC of .08 or higher.

Bicycle Boulevard
Low-volume streets that have been optimized for bicycle travel through traffic calming and diversion, signage and pavement markings, and intersection crossing treatments. Bicycle boulevards are shared roadway facilities that, when correctly implemented, are comfortable and attractive to cyclists with a wide range of abilities and ages but are inconvenient as through routes for automobiles.

Bike Box
An intersection safety design to prevent bicycle/car collisions. It is a painted green space on the road with a white bicycle symbol inside. In some locations it includes a green bicycle lane approaching the box. The box creates space between motor vehicles and the crosswalk allowing bicyclists to position themselves ahead of motor vehicle traffic at an intersection.

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 crashes. It focuses on stretches of highway that have been identified as having the highest crash 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.

Death Certificate Records
Department of Health manages all of Washington's vital statistics, including death events. Death certificates include information about the primary and underlying causes of death as determined by medical examiners and coroners. This information is used to reconcile deaths involving traffic collisions to determine if the death was traffic-related (death as a result of injuries sustained in a collision) or non-traffic (death occurs and then the collision occurs, such as a heart attack while driving).

Distracted Driver
Any driver with the following attributes as recorded by the investigating officer: looked but did not see; distracted by vehicle occupant or object; while using a cell phone (talking, listening, dialing, etc.); adjusting vehicle controls; distracted by object/person outside the vehicle; eating, drinking, or smoking; emotional or lost in thought; other or unknown distraction.

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.

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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 characterize 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/

Heavy Truck

- Any vehicle that also has a vehicle classification of trailer with GVWR of 10,001 lbs. or more, single vehicle with GVWR of 26,001 lbs. or more, or single vehicle of 26,000 lbs. or less-CDL required or a commercial vehicle supplement to the collision report.
- A vehicle type of Truck and Trailer, Truck Tractor, Truck Tractor and Semi-Trailer, or Truck-Double Trailer Combinations.
- A vehicle usage classification of Concrete Mixer, Dump Truck, Logging Truck, Refuse/Recycle Truck, Van over 10,001 lbs, Tanker Truck, or Auto Carrier.

Impaired Driver
Any driver with a BAC of .08 or greater and/or any driver with a positive result on a drug test, or an investigating officer or DRE assessment of impairment.

Impairment Related Collision
Any driver, pedestrian, cyclist, etc with a BAC of 0.08 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 but includes persons on personal conveyance devices, such as skateboards or wheelchairs.

Pedestrian Safety Zones
Pedestrian safety zone programs include education, enforcement, and engineering measures. The initiative can target at a full range of pedestrian crash problems within a limited geographic area or focused on particular types of problems that make up a large portion of the problem within a limited area.

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Per se Alcohol Limit
No further proof is needed. When a person is found to have within two hours after driving, an alcohol concentration of .08 or higher or a THC concentration of 5.00 nanograms per milliliter of blood or higher as shown by an analysis of the person's breath or blood, that person is guilty "per se" of driving under the influence.

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.

Road Diet
Roadway reconfiguration reducing the number of motor vehicle lanes to improve roadway safety. A typical reconfiguration is converting an undivided four lane roadway into three lanes made up of two through lanes and a center two-way left turn lane. The reduction of lanes allows the roadway to be reallocated for other uses such as bike lanes and/or pedestrian crossing islands.

Rural
All areas, incorporated and unincorporated, with a population of less than 5,000.

Safety Edge
A beveled application of asphalt at the edge of pavement to prevent drop-offs between the pavement edge and gravel/earth shoulder.

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. This definition applies to traffic collision data only. This is not the legal definition or medical definition of serious injury.

Speeding
Speeding occurs when drivers travel above the posted speed or 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.

Trauma
A major or single or multiple injury requiring immediate medical or surgical intervention or treatment to prevent death or permanent disability.

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 and Collision 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.

Young Driver Involved
A driver age 16 to 25 involved in a fatal or serious injury collision (involvement does not indicate fault).

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Appendix C: Methodologies

Fatality and Serious Injury Five- and Ten-Year Trend Line

This edition of *Target Zero* provides the most recent ten years of traffic fatality and serious injury data available. The vision of Washington's Target Zero – zero deaths and serious injuries by 2030 – was formed in 2000. The data needed to quantify and monitor this goal was improved in 2002.

In recent years the number of traffic safety partners adopting this vision and implementing Target Zero strategies has grown rapidly. Consequently, traffic fatalities and serious injuries are decreasing at unprecedented rates. To best display the positive impact of this rapid growth in cooperation and collaboration, the trend charts in this edition of Target Zero display both ten-year and five-year linear trend lines.

The vision of zero by 2030 itself is a linear concept. Therefore, using a linear measure of progress to compare to a linear goal makes the most sense. A linear trend is a straight line that follows a series of numbers. A trend line may indicate a declining, flat or increasing trend, depending on the average change among the series of numbers. Each year contributes equally to the average change.

Trend lines represent a future projection assuming all variation, fluctuation and preventive measures stay at historic and current levels. In practice, by continuously implementing new strategies and enhancing and maintaining existing strategies, we can drive the trend downward, closer to the overall goal of zero by 2030.

The most recent five years represent the continuous innovation that drove down the overall ten-year trend. By comparing the five-year trend to the ten-year trend, we can gauge whether we are progressing, just maintaining progress or even losing momentum.

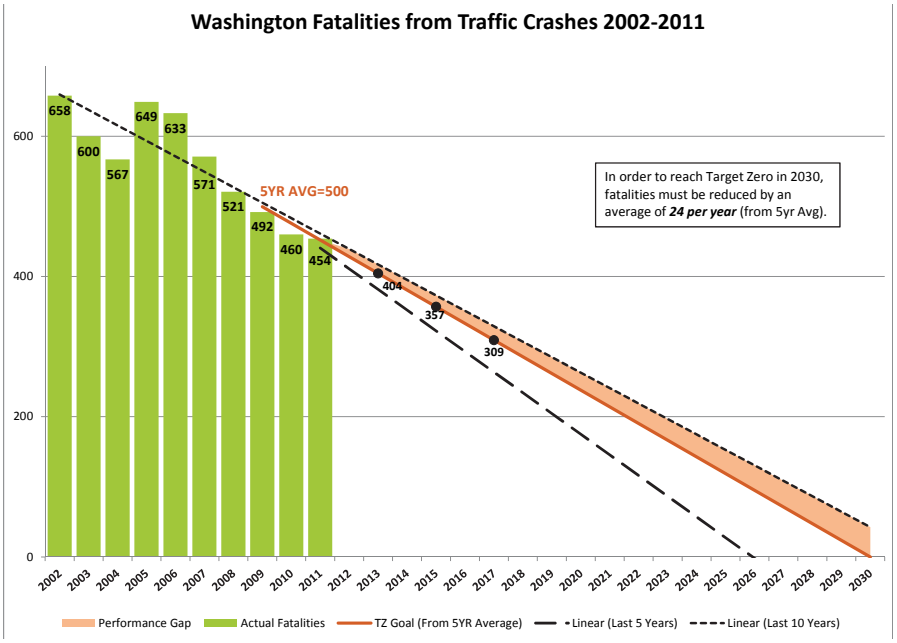
Simply put, if the five-year trend line is below the ten-year trend line, we are progressing. If it is above the ten-year trend line, we are losing momentum and more must be done to change direction.

The Target Zero Goal Line

For this edition of *Target Zero*, fatality and serious injury trend charts are projected out to the year 2030. This approach allows us to measure incremental progress within the entire 2030 timeframe and see what's required to reach zero by 2030. The Target Zero goal line is simply a straight line to zero in 2030 starting from the middle of the current five-year average (2007-2011). Using the five-year average helps mitigate the skewing effect any single year might have on our progress toward zero.

The Target Zero goal line plots the average annual decrease required to reach zero fatalities and serious injuries by 2030. Determining the necessary average annual decline enables us to monitor our progress over several years.

For example, the current 2007-2011 average traffic fatality count is 500 (see chart below). In order to reach zero by 2030 from the middle of that average (2009), it will require an average decline of 24 fatalities per year. Each trend chart also shows the Target Zero goals for 2013 (404), 2015 (357) and 2017 (309).



While the exact values of the Target Zero goal line may serve as annual targets for reaching zero, more accurate assessments of progress occur when several years of data are grouped and compared.

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The Performance Gap

The solid dark orange line on trend charts represents the Target Zero line – the downward trend needed to reach zero by 2030. The performance gap is the space between the Target Zero goal line and the ten-year trend line. The trend charts show this "performance gap" in a lighter orange color. The ten-year trend line was chosen as the reference line for the performance gap for several reasons:

- More years of data result in more stable estimates
- Fluctuations in the historic counts are likely to continue into the future
- The ten-year trend represents a more conservative and accurate trend than the five-year trend

Some charts do not show a gap because the ten-year trend actually goes to zero before 2030!

The performance gap may also be used as a monitoring tool. For example, if the performance gap is smaller in 2012 and grows on its way to 2030, it indicates we not only need a greater decrease in overall counts, but also a greater average annual decline than we have had. This type of gap represents areas in need of new and expanded strategies. However, if the gap is of similar width in 2012 as it is in 2030, then we have achieved the necessary average annual decline, but need an immediate downward drive in annual counts to close the gap.

Fatality and Serious Injury Rates

Rates are referenced in some chapters of this *Target Zero* edition. There are three types of rates referenced:

1. Rates based on vehicle miles traveled
2. Rates based on population
3. Rates based on registered or endorsed drivers

The most common rates used in traffic safety statistics are the number of fatalities or serious injuries per 100 million vehicle miles traveled (VMT). These rates represent the measure of risk for traffic deaths or serious injuries based on estimated annual traffic volume. VMT is available for state, county and rural and urban classifications (page 23).

Rates of fatalities and serious injuries specific to population subgroups, such as racial/ethnic and age-specific groups, are calculated per 100,000 population. Comparisons of these population rates enable identification of high risk groups. Such groups may be at higher risk for traffic death or serious injury than other population subgroups, as is the case with older drivers, children and the Native American population (see pages 25 and 26).

Some rates are presented based on the number of licensed or endorsed drivers. These rates are similar to VMT rates, but represent a measure of risk of traffic death or serious injury based on the estimated number of drivers. The rates are useful when comparing different categories of drivers, such as motorcyclists (page 115).

Looking to the Future

The traffic safety community recognizes there are factors related to traffic deaths and serious injuries outside the reach of listed strategies. Additionally, we recognize most strategies have immediate benefits that level off. As we look to the future, we also realize that as overall fatal and serious injury counts are driven downward, it will be harder to meet average annual reduction goals.

This is particularly true related to impacting more isolated, high risk or less receptive members of the population. As linear trends flatten and we get closer to 2030, more sophisticated statistical methods will need to be explored to monitor and predict outcomes. Our challenge is to continue to accurately monitor changing trends and keep ahead of them with new and expanded strategies.

The factors contributing to traffic fatalities and serious injuries are an intimate web of environmental and behavioral factors. Some factors are related to the triggering of the event, while others are related to the severity of the event. Using various facets of Enforcement, Education, Engineering and Emergency Medical Services, we will continue to prevent these collisions from happening in the first place and mitigate the harm incurred when they do happen.

While we may not be able to prevent every collision, we can eliminate deaths and serious injuries, which is our vision for Washington State.

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Appendix D: Data Sources for Target Zero Methodologies

The Fatality Analysis Reporting System (FARS)

The Fatality Analysis Reporting System (FARS) is a nationwide census of traffic fatalities 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 (PTCR), State Driver Licensing & Vehicle Registration Files, Death Certificates, Toxicology Reports and Emergency Medical Services (EMS) Reports.

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 (either an occupant of a vehicle or a non-motorist) within 30 days of the crash. For more information about exclusionary parameters in FARS traffic fatality counts, visit http://www.wtsc.wa.gov/statistics-reports/about-our-data/. The Washington Traffic Safety Commission (WTSC) contracts with the National Highway Traffic Safety Administration (NHTSA) to provide FARS data for Washington State.

The Collision Locator 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 (WSDOT). The source for CLAS collision data is either law enforcement officers via the PTCR (90%) or citizens via the Vehicle Collision Report (10%).

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 sections within *Target Zero* that also used CLAS collision information for deriving counts of fatally injured people through record merging with FARS. Those sections are as follows: 1) Run-off-the-Road, 2) Opposite Direction, 3) Intersection, and 4) Heavy Truck Involved. CLAS collision data were also used to reconcile jurisdictional assignment in FARS for road type/jurisdiction analysis.

It is widely acknowledged that serious injury classifications assigned by investigating officers are not as accurate as injury severity derived from clinical records. The serious injury data presented in this edition of *Target Zero* is classified by the investigating officer at the scene. However, the multiagency collaborative efforts to derive a more accurate injury severity assessment related to traffic collisions, and particularly serious injury collisions, continues and progress is being made. For more information about the efforts of the Traffic Records Committee (TRC), see the Traffic Data Systems chapter (page 85).

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Vehicle Miles Traveled (VMT) Estimates

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). 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.

Department of Licensing Drivers Data Mart

Data used in this document from the Washington State 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. 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. The primary purpose of this database is to support ad-hoc queries. The database contains the complete driver records for all Washington drivers.

Administrative Office of the Courts Citation Data

Court and citation data is obtained through the Washington Administrative Office of the Courts (AOC). This data provides information about enforcement and court processing. For example, the number of 'texting while driving' citations is obtained when they are filed with the court. Data gaps exist which must be addressed, such as tracking a single DUI case through the myriad of internal and external data systems the information passes through. The AOC recently began to actively participate in the Traffic Records Committee and the Data Integration Subcommittee to identify and find solutions for these data gaps and develop methods for linking AOC data with WTSC and WSDOT collision data.

Office of Financial Management Population Estimates

Washington has been providing annual population estimates for revenue allocation purposes since the 1940s. Population estimates, including breakouts by county, age, gender and race/ethnicity are made available through the Office of Financial Management (OFM) Population Unit (http://www.ofm.wa.gov/pop/default.asp). Intercensal estimates are reconciled with the official U.S. census bureau data every decade for postcensal estimates.

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Appendix E: Target Zero Data Definitions

Measures	Fatality Definition	Serious Injury Definition
Priority Level One:	**Fatality resulting from a collision that involved...**	**Serious injury resulting from a collision that involved...**
Impaired Driver Involved	any driver with a Blood Alcohol Concentration (BAC) of 0.08 or higher or a positive drug result as confirmed by the state Toxicology Laboratory.	any driver in which the investigating officer or Drug Recognition Expert (DRE) indicated impairment by drugs or alcohol as reported in contributing circumstances.
Drug Impaired Driver Involved	any driver with a positive drug result as confirmed by the state Toxicology Laboratory.	any driver in which the investigating officer or DRE or Drug Recognition Expert (DRE) indicated impairment by drugs as reported in contributing circumstances. Due to no confirmation by toxicology, drug impaired driver involved serious injuries are not reported.
Alcohol Impaired Driver Involved	any driver with a BAC of 0.08 or higher as confirmed by the state Toxicology Laboratory.	any driver in which the investigating officer or DRE indicated impairment by alcohol as reported in contributing circumstances.
Drinking Driver Involved	any driver with a BAC of any value except zero as confirmed by the state Toxicology Laboratory (also includes alcohol impaired drivers)	any driver in which the investigating officer or DRE indicated impairment by alcohol as reported in contributing circumstances or driver sobriety is reported as "Had been drinking".
Run-Off-the-Road	Derived from CLAS and flagged in FARS.	the primary collision type reported as one parked-one moving, struck fixed object, struck other object, or vehicle overturned AND object struck is NOT overhead sign support, closed toll gate, railway crossing gate, reversible lane control gate, underside of bridge, drawbridge crossing arm gate, falling rock or tree fell on vehicle, fallen rock or tree hit by vehicle, mud or landslide, snow slide, ridden domestic animal, animal-drawn vehicle, not stated, fallen rock on vehicle (on the road), fallen tree hit by vehicle (on the road), or miscellaneous object or debris on road. Exclude the primary collision type of vehicle overturned when coupled with specific impact locations (state routes only until 2010) and exclude those with corresponding junction relationships of described in the intersection definition.
Speeding Involved	any driver exceeding the posted speed limit or driving too fast for conditions at the time of the collision as indicated by the investigating officer.	any driver exceeding the posted speed limit or driving too fast for conditions at the time of the collision as reported in contributing circumstances.
Young Driver Age 16-25 Involved	any driver between the ages of 16 and 25 years.	any driver between the ages of 16 and 25 years.

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Measures	Fatality Definition	Serious Injury Definition
Distracted Driver Involved	any driver with the following attributes as indicated by the investigating officer: (2009 and earlier) emotional; inattentive/ careless; cellular telephone; fax machine; cellular telephone in use in vehicle; computer; computer fax machines/printers; on-board navigation system; two-way radio; or head-up display: (2010 and later) looked but did not see; by other occupants; by moving object in vehicle; while talking or listening to cellular phone; while dialing cellular phone; adjusting audio or climate controls; while using other device integral to vehicle; while using or reaching for device brought into vehicle; distracted by outside person, object, or event; eating or drinking; smoking related; other cellular phone related; distraction/inattention details unknown; inattentive or lost in thought; or other distraction.	any driver with the following attributes reported in contributing circumstances: inattention; driver operating handheld telecommunications device; driver operating hands-free wireless telecommunications device; driver operating other electronic device; driver adjusting audio or entertainment system; driver smoking; driver eating or drinking; driver reading or writing; driver grooming; driver interacting with passengers, animals, or objects inside vehicle; other driver distractions inside vehicle; other driver distractions outside vehicle; or unknown driver distraction.
Intersection Related	Derived from CLAS and flagged in FARS.	a junction relationship reported as at intersection and related; intersection related but not at intersection; at driveway within major intersection; entering roundabout; circulating roundabout; exiting roundabout; roundabout related but not at roundabout; or traffic calming circle.
Priority Level Two:	**Fatality resulting from a collision that involved...**	**Serious injury resulting from a collision that involved...**
Unrestrained Vehicle Occupant	any fatal vehicle occupant whom was not using a restraint or was improperly restrained as indicated by the investigating officer.	any seriously injured occupant of a passenger car, pickup, panel truck, or vannette under 10,000 lbs. in which the officer reported no restraints used.
Unlicensed Driver Involved	any driver with a license status of not licensed; suspended; revoked; expired; or canceled or denied as verified by Department of Licensing records.	N/A – Driver license status not available in serious injury data.

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Measures	Fatality Definition	Serious Injury Definition
Opposite Direction	Derived from CLAS and flagged in FARS.	a collision type reported as from opposite direction; from opposite direction moving/stopped head on; or from opposite direction sideswipe and excluding cases if the junction relationship was reported as at intersection and related; intersection related but not at intersection; at driveway; at driveway within major intersection; entering roundabout; circulating roundabout; exiting roundabout; at roundabout but not related; or traffic calming circle.
Motorcyclists	a vehicle body type coded as motorcycle; three-wheel motorcycle/moped – not all terrain vehicle; or off-road motorcycle 2-wheel (excludes mopeds, mini-bikes, motor scooters, and unknown motored cycle type).	a vehicle type reported as motorcycle (excludes scooter bikes and mopeds).
Pedestrians	a fatal person type coded as pedestrian or person on personal conveyances.	a seriously injured person coded as pedestrian (includes person on foot, roller skater/skateboarder, wheelchair, flagger, roadway worker, and EMS personnel).
Priority Level Three:	**Fatality resulting from a collision that involved...**	**Serious injury resulting from a collision that involved...**
Older Driver Involved (age 75+)	any driver age 75 years or older.	any driver age 75 years or older.
Heavy Truck Involved	Derived from CLAS and flagged in FARS.	any vehicle that also has a vehicle classification of trailer with GVWR of 10,001 lbs. or more, single vehicle with GVWR of 26,001 lbs. or more, or single vehicle of 26,000 lbs. or less-CDL required or a commercial vehicle supplement to the collision report; OR a vehicle type reported as truck and trailer, truck tractor, truck tractor and semi-trailer, or truck-double trailer combinations; OR a vehicle usage classification reported as concrete mixer, dump truck, logging truck, refuse/recycle truck, vannette over 10,001 lbs., tanker truck, or auto carrier.
Drowsy Driver Involved	any driver with a driver related factor coded as 'drowsy, sleepy, asleep, fatigued' (2009 and prior) or a driver condition coded as asleep or fatigued (2010 and later).	any driver with the following attributes reported in the contributing circumstances: apparently asleep or apparently fatigued.
Bicyclists	a fatal person type coded as bicyclist or other cyclist.	a seriously injured person coded as pedcyc driver or pedcyc passenger (includes bicycles and tricycles).

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Measures	Fatality Definition	Serious Injury Definition
Work Zone	a work zone status coded as construction; maintenance; utility; or work zone, type unknown.	a work zone status reported as within work zone or in external traffic backup caused from work zone.
Wildlife	sequence of events coded as animal.	a collision type reported as non-domestic animal (2008 and prior) or a collision type reported as vehicle strikes deer; vehicle strikes elk; or vehicle strikes all other non-domestic animal (2009 and later).
School Bus Involved	a vehicle coded as school bus.	a vehicle type reported as school bus.
Vehicle-Train	sequence of events coded as railway train.	a collision type reported as train struck moving vehicle; train struck stopped or stalled vehicle; vehicle struck moving train; or vehicle struck stopped train.
Other Measures:	**Fatality resulting from a collision that involved...**	**Serious injury resulting from a collision that involved...**
Rural Roads	a federal functional roadway classification of rural principal arterial-interstate; rural principal arterial-other; rural minor arterial; rural major collector; rural minor collector; rural local road or street; or rural unknown.	N/A – federal functional class missing for collisions occurring within city limits.
Urban Roads	a federal functional roadway classification of urban principal arterial-interstate; urban principal arterial-other freeways or expressways; urban other principal arterial; urban minor arterial; urban collector; urban local road or street; or urban unknown.	N/A – federal functional class missing for collisions occurring within city limits.
State Routes/ Jurisdiction	route signing coded as interstate, U.S. highway, or State highway.	a report classification of state route.
City Routes/ Jurisdiction	Derived from CLAS and flagged in FARS.	a report classification of city street OR a collision classified as state route with access control of limited access occurring within the city limits of a city having a population over 25,000.
County Roads/ Jurisdiction	route signing coded as county road.	a report classification of county road.
Miscellaneous Trafficways	route signing coded as local street-frontage road, other, or unknown.	a report classification of miscellaneous trafficway.

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Appendix F: Strategy Effectiveness Criteria

Strategies listed in *Target Zero* are given a designation of Proven, Recommended, or Unknown as described in the table below. A new process in this *Target Zero* update was to review and justify every designation given to a strategy. For this review process, three main resources were chosen to serve as the foundation for the designations:

- *Countermeasures That Work: A Highway Safety Countermeasure Guide for State Highway Safety Offices* – 7th Edition 2013
- *Report 500 Series* from the National Cooperative Highway Research Program
- Crash Modification Factors Clearinghouse

Strategy Effectiveness	Definition	Countermeasures That Work (CTW)	NCHRP 500 Report	Crash Modification Factors (CMF) Clearinghouse
Proven (P)	Demonstrated to be effective by several evaluations with consistent results	***** Demonstrated to be effective by several high-quality evaluations with consistent results	Proven (P) - Those strategies that have been used in one or more locations and for which properly designed evaluations have been conducted which show them to be effective.	***** = 14 quality points
Recommended (R)	Generally accepted to be effective based on evaluations or other sources	**** Demonstrated to be effective in certain situations OR *** Likely to be effective based on balance of evidence from high-quality evaluations or other sources	Tried (T) - Those strategies that have been implemented in a number of locations, and may even be accepted as standards or standard approaches, but for which there have not been found valid evaluations.	**** = 11-13 quality points *** = 7-10 quality points
Unknown (U)	Limited evaluation evidence, or experimental	** Effectiveness still undetermined; different methods of implementing this countermeasure produce different results OR *Limited or no high-quality evaluation evidence	Experimental (E) - Those strategies representing ideas that have been suggested, with at least one agency considering them sufficiently promising to try them as an experiment in at least one location.	** = 3-6 quality points

These sources (CTW, NCHRP 500, CMF Clearinghouse) were reviewed for the strategies identified by our statewide partners. If the strategies were found, designations were adopted according to the table above. In some instances, our strategies are slightly modified to be more specific to Washington State, but they still aligned with the strategies in these sources and are therefore designated the same.

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Strategy Effectiveness Criteria (continued from previous page)

If a strategy was not found in one of the three primary sources, then further evaluation was conducted in the following order:

- Was the strategy supported with published, favorable outcomes in the form of a metastudy (a review of several related studies for methodological strength and consistent outcomes)? These strategies were designated Proven with META as the source.
- Was the strategy supported by extensive literature but lacks a metastudy? These strategies were designated Proven or Recommended with LIT as the source, dependent on evaluation of the quality and outcomes of the available literature.
- Was the strategy a recommendation supported by a State or Federal agency, backed by cited evaluation/data? These strategies were designated Recommended with the supporting agency as the source.

If a strategy did not meet the Proven or Recommended criteria, or did not meet one of the criteria listed in a previous bullet, then the strategy was designated Unknown. The unknown designation was assigned to strategies when:

- The strategy was listed in one of the three main resources with lower quality ratings
- The literature was insufficient to designate it as recommended
- There was sufficient literature, but outcomes were inconsistent and inconclusive between studies

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Virtual Appendix G

http://www.wtsc.wa.gov/statistics-reports/crash-data/

The success of the Target Zero® plan is dependent on local participation. And local efforts are most successful when driven by local data. Though we can't include community-by-community data in this publication, it is available online as an extension of the Target Zero plan.

The online information highlights which factors are contributing to the most fatalities and serious injuries broken down by local areas. Sometimes a community will find a state priority – such as Run-Off-the-Road – is a lesser issue for their community, while another area may be near the top.

Data is broken down by local areas – Regional Transportation Planning Organizations (RTPOs), counties and cities with populations over 30,000. This local data is compared to state statistics. Information is updated regularly and can be found by accessing the "Traffic Safety Priorities in Washington State for Local Jurisdictions" link on the Crash Data page of the Washington Traffic Safety Commission website.

The community specific data will help you prioritize local and regional safety projects and programs, and assist in developing a localized Target Zero plan. Access this rich collection of online data and target your efforts on the most pressing local issues on your community's path to achieving zero deaths and serious injuries by 2030.

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Special Thanks!

Hundreds of people were involved in creating the Target Zero Plan. At the front of the publication we thanked our State's Traffic Safety Commission members and scores of partners across the state.

The people on this page represent those who really had to roll up their sleeves. For over a year they gathered data, reached out to partners, created meaningful charts, attended meetings, wrote and edited text, and collaborated inside and outside their organizations.

Their commitment to creating a data-driven, easy to understand document was fueled by their desire to realize the goal of zero traffic deaths and serious injuries by 2030.

Thank you, thank you, thank you!!!

Data Analysts & Project Team Members

Debi Besser (Project Manager)	WA Traffic Safety Commission
Cdr. Steve Aust	Lewis County Sheriff's Office
Shelly Baldwin	WA Traffic Safety Commission
Mike Bernard	WA Dept. of Transportation
Bruce Chunn	WA Dept. of Licensing
Paula Connelley	WA Dept. of Transportation
Dan Davis	WA Dept. of Transportation
Dick Doane	WA Traffic Safety Commission
Mike Dornfeld	WA Dept. of Transportation
Kathy Droke	WA Traffic Safety Commission
Matthew Enders	WA Dept. of Transportation
Dolly Fernandes	WA Dept. of Health
MJ Haught	WA Traffic Safety Commission
Staci Hoff, Ph.D	WA Traffic Safety Commission
Bob Knudson	WA Dept. of Licensing
Carla Marconi	Colville Tribes
Capt. Wes Rethwill	WA State Patrol
Stephanie Rossi	Puget Sound Regional Council
Lt. Rob Sharpe	WA State Patrol Impaired Driving Section
Zeyno Shorter	WA Dept. of Health
Lt. EJ Swainson	WA State Patrol
Sgt. Bob Thompson	Puyallup Police Dept.
Joanna Trebaczewski	WA State Patrol
Jonna VanDyk	WA Traffic Safety Commission
Angie Ward	WA Traffic Safety Commission
Haiping Zhang	WA Dept. of Licensing

Additional Key Contributors

Debbie Bray	Tulalip Tribes
Carlos Echevariia	Tulalip Tribes
Edica Esqueda	WA Traffic Safety Commission
Ian Macek	WA Dept. of Transportation
Mark Medalen	WA Traffic Safety Commission
Paula Reeves	WA Dept. of Transportation
Blake Trask	Bicycle Alliance of WA
Cesi Velez	Child Passenger Safety Strategies Program Manager

Steering Committee Members

Steve Lind (Project Sponsor)	WA State Traffic Safety Commission
John Nisbet (Project Sponsor)	WA Dept. of Transportation
Gloria Mansfield Averill	Target Zero Managers Executive Council
Sheriff Ken Bancroft	WA Association of Sheriffs and Police Chiefs
Teresa Berntsen	WA Dept. of Licensing
Dr. Fiona Couper	WA State Patrol, State Toxicologist
Alyson Cummings	WA Office of Financial Management
Kathleen Davis	WA Dept. of Transportation
Dr. Beth Ebel	Harborview Injury Prevention & Research Center
Glenn Gorton	WA Office of Superintendent of Public Instruction
Pam Pannkuk	WA Governor's Office
Janet Kastl	WA Dept. of Health
Janet Ray	AAA Washington
Stephanie Rossi	Puget Sound Regional Council
Gary Rowe	WA State Association of County Engineers
Assistant Chief Ron Rupke	WA State Patrol
Chief Tom Schlicker	Northwest Association of Tribal Enforcement Officers
Kirk Vinish	Tribal Transportation Planning Organization
Scott Waller	WA Dept. of Behavioral Health Recovery (DSHS)

Advisors

Greg Fredericksen	National Highway Traffic Safety Administration, Region 10
Don Petersen	Federal Highway Administration
Jeffrey James	Federal Motor Carriers Safety Administration

Target ZERO

Washington's Strategic Highway Safety Plan

Washington State's Strategic Highway Safety Plan 2013

Zero Deaths - Zero Serious Injuries - 2030