Certain road users are more susceptible to vehicle collisions. Some are types of drivers, such as younger and older drivers. Others are non-drivers who are inherently vulnerable in vehicle collisions, such as pedestrians and bicyclists. In this section of the Target Zero Plan, we analyze who these users of our roadways are, why they are more likely to be involved in fatalities and serious injuries, and how to safeguard them.
The leading cause of unintentional death for young people aged 16–25 in Washington is motor vehicle crashes. From 2012–2014, 32% of all traffic fatalities involved a young driver. The good news is there has been a 13% decrease in young driver involved fatalities and 24% decrease in young driver involved serious injuries since 2009–2011. Washington State is making good progress among young drivers, and we are on track to meet our goal of zero deaths and serious injuries by 2030.

Key Facts

Impairment was involved in nearly 57% of all young driver involved fatality crashes in 2012–2014. Male drivers 16–25 years of age in particular are more than twice as likely to be impaired in fatal crashes as compared to men aged 36–45.

Distracted driving continues to be a problem among young drivers. A Washington Healthy Youth survey conducted in 2014 found that 59% of high school seniors reported riding in the car with a driver who was texting or emailing.

Despite tremendous attention to new drivers under 18 years of age, the data continue to show that newly licensed drivers ages 18–20 are some of the riskiest drivers on the road, as demonstrated by high traffic citation issuance rates.
Overview

Young drivers fall into three distinct groups:

1. Newly licensed teen drivers under age 18. This group represents the largest number of newly licensed drivers annually in Washington.
2. Newly licensed drivers aged 18–20. These drivers often have not taken a traffic safety education course, which is not required for new drivers over 18.
3. Drivers aged 21–25, who often have driving experience but require special attention because they are of legal drinking age and are more likely to drive impaired.

What’s New

DOL and WTSC created a new Action Council on Young Drivers to build on the successes of the Young Driver Task Force, develop legislative proposals, and increase public outreach.

DOL, in partnership with WTSC, driver training schools, and other traffic safety partners, is working to improve driver training and testing — an effort that will better prepare young drivers to handle hazards on the road and make safe driving decisions.
Drivers in these three groups behave differently on the road, and have unique characteristics. Reducing young driver involved fatalities and serious injuries requires different strategies based on these differences.

**Inexperience and developmental changes**

Young drivers face an increased crash risk due to both their inexperience and immaturity. Nearly all newly licensed drivers in Washington States fit into the aged 16–25 young driver age bracket, making young drivers and new drivers nearly synonymous. Studies show that young drivers, who are just learning to drive, lack the skills and experience necessary to recognize and respond to risk appropriately. Additionally, studies also recognize age-related immaturity, which is associated with adolescent brain development, as a key factor in dangerous decision-making on the road. Further 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.

It’s for these reasons that the strategies to reduce young driver involved fatality and serious injury crashes must take a two-pronged approach: helping these drivers gain valuable experience, while mitigating their risk by keeping them out of dangerous situations.

**Washington’s Intermediate Driver License (IDL) law helps young drivers gain valuable experience safely**

In Washington, drivers aged 16–17 receive an intermediate driver license that carries certain restrictions around nighttime driving, passengers, and phone use, among other things. As these newly licensed drivers mature and gain experience driving, they’re no longer subject to these restrictions. These young drivers can lose their driving privilege for certain violations, however. After a third violation, the young driver’s license is suspended until age 18.

**Intermediate Driver License (IDL) requirements for drivers ages 16-17**

- 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 1–5 a.m., unless with a parent, a guardian, or a licensed driver who is at least 25 years old.
- Refrain from using phones while driving, even hands-free. This includes talking on phones and sending or receiving text messages. Wireless devices may be used to report an emergency.
Drivers are waiting until age 18 to get their license

Continuing a trend noted in the 2013 Target Zero, a significant number of newly licensed drivers are waiting until age 18 to get their license. In Washington, intermediate driving restrictions and driver training requirements do not apply to drivers once they turn 18. Approximately 41,000 16-year-olds, 11,000 17-year-olds, and 16,000 18-year-olds obtain a first time license annually. About 9,000 19-year-olds obtain first time licenses each year.

A 2012 AAA Foundation study found that less than half of all teens were licensed within 12 months of the minimum age in their state, while 54% were licensed before their 18th birthday. Survey respondents gave several reasons for why they delayed getting their license.

Washington citation data shows that newly licensed drivers ages 18–20, who are not required to undergo the same training as 16–17 year olds, are some of the riskiest on the road. They are far more likely to receive traffic infractions within six months of driving, often the predictor of a future crash.

There are similar differences for those young drivers that die in a fatal crash within their first year of licensure.
This graph makes apparent the role of impairment and the legal drinking age (21) in young driver crashes.

A young driver in Washington who got her license at age 16 and died in a crash, on average, died around age 21.

A young driver in Washington who got her license at age 19 and died in a crash, on average, also died around 21.
Contributing circumstances and factors

Impairment is the greatest contributing factor in young driver fatalities.

Impairment was a factor in nearly 57% of all young driver involved fatality crashes in 2012–2014. Male drivers 16- to 25-years old in particular are more than twice as likely to be impaired in fatal crashes as compared to 36- to 45-year-old men.

A closer examination of 2014 young driver fatalities reinforces the role impairment plays. As shown on the graph in the graph on the facing page, of those young drivers who died, the average age at death was 21, the legal drinking age, regardless of age at licensing.

Distracted driving also plays a significant role in young driver crashes

Distraction is another factor present in a significant number of young driver involved crashes. Just under a third of all their fatality crashes involved distraction, and just over 20% of all young driver involved serious injury crashes involved distraction. Even though the rates of distraction aren’t as high as impairment or speeding, studies suggest that it’s prevalent, as discussed in the distracted driving chapter. In a recent Washington Healthy Youth survey conducted in 2014, 59% of high school seniors reported riding in the car with a driver who was texting or emailing.
What percentage of YOUNG DRIVER crashes involved another factor?

For example, 63% of fatal crashes involving a YOUNG DRIVER also involved a lane departure.
Young men are more likely to be impaired, and young women are more likely to be distracted, in fatal crashes

Gender differences are stark in young driver involved fatalities. Even though licensed drivers are about 50/50 male/female, just over 75% of all young drivers who died in 2012–2014 were male.

Gender differences are particularly prevalent when it comes to impairment. 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- to 25-year-old males, who are over five times more likely to be impaired than their female counterparts.

Female young drivers, on the other hand, drive distracted at a greater rate than their male counterparts. Sixteen- to 17-year-old female drivers involved in fatal crashes were more than twice as likely to have been driving distracted as their male counterparts.
Limiting nighttime driving protects young drivers

Under a current law that took effect in 2001, drivers under age 18 cannot drive between the hours of 1 a.m. and 5 a.m. during their first year of driving. The only exception is if they are accompanied by a licensed driver who is at least 25 years of age. According to the National Highway Traffic Safety Administration, the nighttime restriction is an extremely effective countermeasure in saving lives. The Traffic Injury Research Foundation goes even further: they identified 9 p.m. as the most effective start time, based on their research as well as an evaluation of national data.

Even with an exception for school, work, and other sanctioned extracurricular activities, changing the start time of the nighttime restriction from 1 a.m. to 9 p.m. could greatly reduce the number of teen drivers killed on Washington’s roadways during the early nighttime hours.

It’s important to stress that the nighttime driving restriction is not a curfew. Instead, it is a key strategy to keep young drivers safe in light of their inexperience and the inherent dangers associated with nighttime driving, such as reduced visibility, and drivers on the road who are under the influence of alcohol or positive for drugs.
Young passengers in the car pose a risk for young drivers

There is a direct correlation between the number of young passengers in a vehicle and crash risk. A 2012 study by the AAA Foundation found that having young passengers in the car with a young driver is a significant risk factor in crashes. That study found that just one passenger under age 21 increases a 16- or 17-year-old driver’s risk per mile driven of being killed by 44%. Under current law, a driver under age 18 cannot drive with passengers who are under 20 years old during their first six months of driving, and they cannot drive with more than three passengers who are under 20 years old during the next six months of driving.

Programs and successes

Improving driver training and testing

Driver training sets the stage for a lifetime of safe driving. Nearly 60,000 people take driver training each year in Washington State. Since traffic safety education funding was decreased dramatically in 2001, a large majority of driver training in Washington has been conducted by private driver training schools. DOL regulates private driving schools, and the Office of Superintendent of Public Instruction (OSPI) regulates public school programs.

In 2013, DOL evaluated its curriculum, driver education, and testing standards relative to the Target Zero plan. Through this work as well as grant funding from WTSC, DOL has increased coverage of key subjects in its model driver training curriculum, expanded content in the Washington Driver Guide, and added new questions to the written knowledge test to ensure drivers have the knowledge they need to make safe driving decisions.

Washington State laws relating to young drivers

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

Early warning letters are reducing subsequent infractions and crashes

In March of 2011, DOL began sending letters to all drivers aged 18–21 receiving their first moving violation. DOL implemented this program because data show a driver’s chances of crashing doubles after receiving their first violation. Intermediate driver license holders already receive similar letters after violations or crashes.

The early warning letter is sent on the first day of the month the violation shows on the driver’s record. The letter is intended only to provide advice and is not punitive. The goal of the letter is to make young drivers realize the risks associated with continued violations and reduce repeat offenses.

The data show the letter is making a difference. After a 22-month review involving more than 100,000 drivers, DOL found that the Early Warning Letter Program reduced secondary violations by 13%, which translates to 15,126 fewer infractions. DOL is continuing to evaluate the effectiveness of the program and is working to identify additional opportunities to reach high risk drivers.
Young Driver Task Force and Action Council on Young Drivers

For nearly a decade, the Young Driver Task Force, made up of representatives from both public and private organizations, has been working to improve young driver safety. In order to build on this effort, WTSC and DOL, along with the other member organizations have transitioned the Task Force into a new Action Council on Young Drivers. The Action Council meets at least quarterly to support statewide efforts to reduce fatalities and serious injuries among young drivers in Washington. The Action Council is also focused on developing and recommending legislative changes that will increase compliance with the IDL and expand driver training to newly licensed young adult drivers.

Parent involvement keeps kids safe

Parents play an integral role in keeping their kids safe on the road, as seen in GHSA’s Promoting Parent Involvement in Teen Driving report. This is why WTSC, DOL, WSP and other traffic safety partners are supporting programs and efforts that help parents educate their teen drivers. In 2015, DOL began providing a parent’s guide to new teen drivers at its licensing offices throughout the state. DOL has also worked closely with driver training schools to add a Parent Night at the beginning of each traffic safety education course. The goal is to help parents understand the requirements teen drivers face in getting their licenses.

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 young person’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. Its “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.
Party Intervention Patrol addresses impairment and young drivers

Pierce and Thurston Counties have implemented Party Intervention Patrol (PIP) projects that use multi-jurisdictional 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 youths 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, projects use media campaigns and news media outreach to publicize the 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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<th>Implementation areas</th>
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<tr>
<td>YDI.1. Foster compliance with Washington State’s IDL laws</td>
<td>YDI.1.1 Encourage Tribes to pass IDL laws. (P, CTW)</td>
<td>Leadership/Policy</td>
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<td>YDI.1.2 Provide resources to Young Driver Action Council to improve awareness — 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)</td>
<td>Leadership/Policy</td>
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<td>YDI.1.3 Promote increased enforcement of IDL by passing legislation requiring a sticker program to identify vehicles used by IDL license holders. (R, LIT)</td>
<td>Leadership/Policy</td>
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<td>YDI.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)</td>
<td>Education Leadership/Policy</td>
</tr>
<tr>
<td>YDI.2. Strengthen Intermediate Driver License restrictions</td>
<td>YDI.2.1 Adjust curfew to include 9 p.m. – 5 a.m., the hours when young driver serious injury and fatality crashes are highest. (P, CTW)</td>
<td>Leadership/Policy</td>
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<td>YDI.2.2 Lengthen permit holding period beyond six months. (R, CTW)</td>
<td>Leadership/Policy</td>
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<td>YDI.2.3 Extend passenger restriction to one full year after licensed. (R, NCHRP)</td>
<td>Leadership/Policy</td>
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<td>YDI.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)</td>
<td>Leadership/Policy</td>
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<td>YDI.2.5 Strengthen restrictions so penalties kick in with the first ticket IDL driver gets. (U)</td>
<td>Leadership/Policy</td>
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<td>YDI.3. Improve young driver education and intervention</td>
<td>YDI.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)</td>
<td>Leadership/Policy</td>
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<td>YDI.3.2 Conduct a recidivism study to assess the impact of the DOL early warning letter program for 18- to 21-year-olds. (U)</td>
<td>Leadership/Policy</td>
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<td>YDI.3.3 Consider expanding driver restrictions and driver education requirements to new drivers of all ages. (U)</td>
<td>Leadership/Policy</td>
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<td>YDI.3.4 Update model traffic safety education curriculum to match NHTSA standards. (U)</td>
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<td>YDI.3.5 Consider implementation of licensing standards used in countries with superior driving statistics such as the United Kingdom. (U)</td>
<td>Leadership/Policy</td>
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<td>YDI.3.6 Promote teen/parent safe driving contract. (U)</td>
<td>Education</td>
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<tr>
<td>YDI.4. Improve enforcement of high risk behaviors among young drivers</td>
<td>YDI.4.1 Conduct statewide high visibility enforcement and media campaigns focused on young drivers. (U)</td>
<td>Enforcement, Education</td>
</tr>
<tr>
<td>YDI.5. Enforce compliance with the state’s underage drinking law</td>
<td>YDI.5.1 Conduct well-publicized enforcement aimed at underage drinking parties. (R, CTW)</td>
<td>Education, Enforcement</td>
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<tr>
<td>YDI.5.2 Publicize and enforce underage drinking and driving laws. (R, CTW)</td>
<td>Education</td>
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P: Proven  R: Recommended  U: Unknown
Motorcycles represent just 4% of the registered passenger vehicles in Washington, but accounted for 17% of fatalities and 18% of serious injuries between 2012 and 2014. The federal government estimates that, per vehicle mile traveled in 2013, the number of deaths on motorcycles was over 26 times the number in cars. Washington’s rate of motorcycle fatalities is consistent with other states in the nation, so this problem is not unique to our state—but it is a troubling trend that deserves our attention. Washington is using education for both motorcycle operators and other drivers, as well as a focus on training and endorsement (licensing for motorcyclists), to address motorcycle fatalities and serious injuries.

Key Facts

Washington has not seen any notable reduction in motorcycle fatalities over the last decade. Neither measure is on track to meet Target Zero goals by 2030.

Serious injuries, while showing a slight decline using five year rolling averages, have been essentially unchanged for the last five years.

Training saves lives: about 60% of endorsed riders take a training course prior to riding on their own; these trained riders are far less likely to be involved in fatalities, representing only 25% of those killed in motorcycle crashes.
Overview

The fatality 2030 trend line is flat, which means we’re not on track to achieve our Target Zero goal. Declines among seriously injured motorcyclists are more promising; however, they are not quite on track to reach zero in 2030. One positive note: in 2014, the rate of fatalities relative to registered motorcycles was at its lowest point since 2005. This means that while the total volume of registered motorcycles — and likely ridership and exposure — has increased over time, the number of fatalities has stayed the same.

What’s New

Sport bikes have increased in their proportion of fatal crashes. They are primarily ridden by younger operators who are more likely to be unendorsed riders.

DOL recently produced a high-quality video “Training is Everything.” This video targets motorcycle riders and promotes the importance of initial and ongoing training. The video makes a parallel between motorcycle riders and boat racers, athletes, and pilots, emphasizing the need for training to develop and maintain physical and mental skills.

Since 2012, DOL has been sending letters to registered motorcycle owners who lack endorsement, explaining that they need to obtain endorsement before riding. In the most recent letter mailing campaign in June 2015, the results showed that 1,743 (12% of those contacted) riders got permits and 918 (6.5%) became newly endorsed.
Motorcycles are riskier than automobiles

Riding a motorcycle has inherent risks. Save for protective riding gear and helmets, a rider who crashes is completely exposed to the crash elements, unlike the car driver who has multiple safety mechanisms. It’s not a surprise that NHTSA calculates the risk of death on a motorcycle at 26 times that of automobiles.

Who’s involved in fatal motorcycle crashes?

Motorcycle riders involved in fatal and serious injury crashes are primarily male, comprising 91% of the fatalities during 2012–2014.

At first glance, it appears that the distribution of fatalities by age is fairly evenly spread between age 21 and about 60. However, when we look at the type of motorcycle ridden by age, we see a distinct pattern emerge: younger operator deaths are far more likely to be associated with sport bikes, versus older riders and cruisers. Fatalities in the other category, meanwhile, are lesser in number and fairly evenly distributed across age groups. This discovery opens the door for targeted training and outreach programs to these specific demographics.

Challenges to motorcycle safety – and opportunities to influence those factors

The common belief that most motorcycle crashes are caused by other motorists is inaccurate. In actuality, 75% of all 2012–2014 fatalities can be traced to causal factors committed by the motorcyclist. When we break this down by type of motorcycle, the risky nature of sport bikes again shows up — 86% of their fatalities were rider-caused. Looking at the 25% of the overall fatalities where the rider is not at fault, the data indicates that older riders are more likely to be the victim of others’ errors.

Endorsement and training of operators is another factor. Currently, motorcycles may be purchased and registered in Washington without a valid motorcycle endorsement. This contributed to the fact that from 2012–2014, 36% of riders involved in fatal crashes were not endorsed to be riding a motorcycle.

The recreational nature of riding can help us target educational efforts. In general, motorcycle riders make the most of Washington’s good weather while putting their bikes away in wet, cold, and snowy weather, and fatality trends track that behavior.

Motorcycle Types

- **Sport bikes**: a general term describing high-performance motorcycles designed to be ridden faster and more aggressively.
- **Cruisers**: a term for motorcycles that are bigger, heavier, and generally designed for long ride comfort. They are generally more expensive than sport bikes.
- **Others**: Similar vehicles that don’t fit in the two main categories, such as dual-sport, adventure, trikes, off-road, classics, and some others. It does not include mopeds or scooters.
Types of motorcycle rider certifications

Certifications include either an endorsement or a permit. There are two ways to get a motorcycle endorsement:

- Successfully complete a motorcycle safety course at an approved motorcycle training school. The safety course includes the knowledge and riding skills tests.
- Pass the knowledge and riding skills tests without taking a safety course.

Preceding the endorsement is an optional three-month permitting step, to provide novice riders practice time prior to receiving the full endorsement.

Three-wheeled vehicles such as a sidecar or trike require a similar, separate endorsement process.

Criteria for inclusion in motorcycle fatality and serious injury data

- Motorcycle must have been riding on a state roadway, not off-road riding.
- Not competing in sanctioned races.
- Must have died as result of a crash—not other circumstances (heart attack, standing in traffic and being hit after crash, etc.).
MOTORCYCLISTS
Related fatalities & serious injuries: overlap with other Target Zero factors

What percentage of MOTORCYCLIST crashes involved another factor?

For example, 25% of fatal crashes involving a MOTORCYCLIST also involved a young driver.
Contributing circumstances and factors

In this 2012–2014 review, motorcycle riders were more prone to both alcohol impairment and drug positivity than all other drivers. Clearly substance abuse is a larger problem for the motorcycle community and efforts to address that should be a priority.

Endorsement is legally required in Washington. Despite this, 36% of the fatal crashes involved unendorsed motorcyclists who chose to ride without the proper credential and without any formal training.

To gain the motorcycle operator endorsement on one’s Washington State driver license, a rider can either pass a test by a licensed tester, or take a training course and receive a certificate of completion. Training is universally recognized as producing safer motorcycle operators, and the Motorcycle Safety Program at DOL strives to promote the training avenue for endorsement applicants. About 75% of fatal motorcycle crash victims have no record of a training program completion.

Washington has a strict law that requires all riders, regardless of age or motorcycle type, to wear a DOT compliant helmet. Only 8% of the riders involved in fatalities were not wearing helmets. Helmets are about 37% effective in preventing motorcycle deaths and about 67% effective in preventing brain injuries. This is important because there are annual challenges to Washington’s helmet laws by advocates wishing the law repealed. To reach zero fatalities and serious injuries, it is important that this law stay in place.
Programs and successes

Letters to unendorsed owners

Endorsement improves motorcycle safety by ensuring that riders have the minimum skills needed to ride. Since 2012, DOL has been sending letters to registered motorcycle owners who lack endorsement, explaining that they need to obtain endorsement before riding. In the most recent letter mailing campaign in June 2015, the results showed that 1,743 (12% of those contacted) riders got permits and 918 (6.5%) became newly endorsed. This reminder inspired many to become legally endorsed, and therefore a safer rider.

Raising driver awareness of motorcycles

In 25% of fatal motorcycle crashes, an automobile driver is at fault. To raise driver awareness of motorcycles, DOL and WTSC collaborated to place “Look Twice — Save a Life” signs in rest stops around the state. They’ve been installed now for about three years and have been seen by countless motorists.

DOL also produced a high-quality video that has received critical acclaim worldwide and is being used with DOL’s approval in many state and national safety programs. The response to the driver awareness of motorcycles, A Second Look, has been astounding, with over 370,000 views on social media from the DOL website, as well as thousands of hits on numerous other websites. This video, along with supplemental training materials, is provided to all driver training schools in Washington, ensuring all new drivers received this critical information.

Washington State laws 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 46.61.613** Motorcycle temporary suspension of restrictions for parades/public demonstrations.
- **RCW 46.61.614** Riding on motorcycles — Clinging.

Encouraging training and impounding unendorsed riders’ motorcycles

In 2012, DOL moved the motorcycle endorsement testing location for all applicant riders exclusively into DOL-approved training facilities. A benefit of this move was that it affords an opportunity to encourage applicants to take a training course, which is a known way to improve operator safety.

In 2007, Washington passed a law allowing law enforcement to impound a motorcycle being ridden by an unendorsed operator. In the following years, the data have shown a shift in the percent of riders opting to take training courses in order to become endorsed. Where the split was traditionally about 50/50, getting a training certificate versus testing only, the split is now about 60% trained and 40% testing only. Further, impounding the bikes of non-endorsed riders has been shown to increase the rate of motorcycle endorsement through training, mostly due to the motorcyclist’s desire to avoid having their motorcycle impounded — another benefit of the 2007 impound law.
## Strategies for reducing motorcyclist (MCX) fatalities and serious injuries

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<tr>
<td><strong>MCX.1. Reduce numbers of unendorsed and untrained riders</strong></td>
<td><strong>MCX.1.1</strong> Collaborate with dealers and manufacturers to promote motorcycle training and endorsement. (R, NCHRP)</td>
<td>Education</td>
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<td><strong>MCX.1.2</strong> Increase number of riders participating in safety training. (U)</td>
<td>Education</td>
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<td><strong>MCX.1.3</strong> Provide training tuition incentives for riders’ completion of training. (U)</td>
<td>Education</td>
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<td><strong>MCX.1.4</strong> Conduct targeted safety/endorsement media outreach and education. (U)</td>
<td>Education</td>
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<td><strong>MCX.1.5</strong> Conduct outreach to motorcycle registration owners who are not endorsed. (U)</td>
<td>Education</td>
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<td><strong>MCX.1.6</strong> Place emphasis on impoundment policy and education; change RCW 46.55.113 (2) from “officer may” to “officer will” impound. (U)</td>
<td>Education, Leadership/Policy</td>
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<td><strong>MCX.1.7</strong> Increase opportunities for motorcyclist field training. (U)</td>
<td>Education</td>
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<tr>
<td><strong>MCX.2. Reduce numbers of impaired, unskilled, and unsafe riders</strong></td>
<td><strong>MCX.2.1</strong> Lower the per se BAC limit for motorcycle riders from .08 to .05. (P, META)</td>
<td>Leadership/Policy</td>
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<td><strong>MCX.2.2</strong> Increase motorcyclist awareness of the risks of impaired motorcycle operation. Promote self-policing within the motorcycle community by expanding existing prevention programs, including at specific motorcycle events. (R, NCHRP)</td>
<td>Education, Leadership/Policy</td>
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<td><strong>MCX.2.3</strong> Re-establish a tiered endorsement program with specific endorsements based on motorcycle engine size. (U)</td>
<td>Leadership/Policy</td>
</tr>
<tr>
<td></td>
<td><strong>MCX.2.4</strong> Implement re-testing for endorsement every five years. (U)</td>
<td>Enforcement, Leadership/Policy</td>
</tr>
<tr>
<td></td>
<td><strong>MCX.2.5</strong> Require novice rider training (including knowledge and skills testing) to obtain permit. (U)</td>
<td>Leadership/Policy</td>
</tr>
<tr>
<td></td>
<td><strong>MCX.2.6</strong> Implement mandatory on-street training and testing. (U)</td>
<td>Leadership/Policy</td>
</tr>
<tr>
<td><strong>MCX.3. Increase rider safety awareness</strong></td>
<td><strong>MCX.3.1</strong> Educate motorcyclists to increase their visibility to drivers by wearing bright reflective clothing. (P, CTW)</td>
<td>Education</td>
</tr>
<tr>
<td><strong>MCX.4. Increase rider safety awareness</strong></td>
<td><strong>MCX.4.1</strong> Support specialized law enforcement training in motorcycle DUI detection and motorcycle crash investigation. (R, CTW)</td>
<td>Education, Enforcement</td>
</tr>
<tr>
<td></td>
<td><strong>MCX.4.2</strong> Increase use of WSP aviation for enforcement of high risk behaviors. (U)</td>
<td>Enforcement</td>
</tr>
<tr>
<td></td>
<td><strong>MCX.4.3</strong> Mandatory motorcycle impound if riding without an endorsement. (U)</td>
<td>Enforcement</td>
</tr>
<tr>
<td></td>
<td><strong>MCX.4.4</strong> Maintain resistance to proposals to law changes that work to repeal MC helmet safety standards. (U)</td>
<td>Education, Enforcement</td>
</tr>
</tbody>
</table>

*P: Proven  R: Recommended  U: Unknown*
<table>
<thead>
<tr>
<th>Objective</th>
<th>Strategies</th>
<th>Implementation areas</th>
</tr>
</thead>
<tbody>
<tr>
<td>MCX.5. Engage stakeholders in improving motorcycle safety</td>
<td>MCX.5.1 Promote public forums to share/receive feedback concerning safety strategies and/or needs. (U)</td>
<td>Education, Leadership/Policy</td>
</tr>
<tr>
<td></td>
<td>MCX.5.2 Form a new working group similar to the Washington Impaired Driving Advisory Council (WIDAC) to include members from DOL, DOT, WTSC, WSP, Motorcycle Dealers association, motorcycle safety school contractors, members of the riding community. (U)</td>
<td>Education, Leadership/Policy</td>
</tr>
<tr>
<td>MCX.6. Strengthen and improve motorcycle laws to increase motorcycle safety</td>
<td>MCX.6.1 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)</td>
<td>Education, Leadership/Policy</td>
</tr>
<tr>
<td></td>
<td>MCX.6.2 Require mandatory motorcycle insurance coverage—minimum of liability just as automobiles require. (U)</td>
<td>Leadership/Policy</td>
</tr>
</tbody>
</table>

P: Proven  R: Recommended  U: Unknown
Training saves lives: about 60% of endorsed riders take a training course prior to riding on their own; these trained riders are far less likely to be involved in fatalities, representing only 25% of those killed in motorcycle crashes.
Pedestrians

In 2012–2014, pedestrian fatalities accounted for 15% of total traffic deaths, an increase from 14% in 2009–2011. The number of pedestrian fatalities increased by 5.2% and serious injuries increased by 3.5% compared to 2009–2011. The flat trend line in the graph below indicates that we are not on target to reach zero pedestrian fatalities by 2030.

There are a multitude of variables involved in pedestrian fatal and serious injury crashes. Getting to zero will take a variety of approaches. For example, strategies for roads with higher posted speeds will be different and require more of an iterative approach than those at lower speeds. Focusing on vehicle speed, pedestrian crossings, and visibility are key first steps to addressing deaths and serious injuries among pedestrians. Also important is enforcement to reduce driver distraction, education related to pedestrian impairment, and a greater awareness about pedestrian visibility and what we can do to avoid crashes.

Key Facts

The data show that 14% of fatalities occurred on roads with a posted speed of 25 mph or less, 42% occurred on 30-35 mph roads, 17% on 40-45 mph roads, and 23% on roads with a posted speed of 50 mph and above.

Most pedestrian fatalities (69%) and serious injuries (67%) happen within cities.

More than half (60%) of pedestrian fatalities and 62% of serious injuries occurred while the pedestrian was crossing the road.

These percentages reflect a mix of how vehicle impact speed affects injury severity and how crashes are more common where there are more conflicts. It points to the need to prioritize efforts where the expected prevalence of pedestrians is highest. While less prominent, the two behavioral factors most often cited when there were pedestrian fatalities are driver distraction (32%) and pedestrian impairment (43%).
Overview

Almost all Washingtonians walk on a daily basis, even if it’s just between a parked car and a door. For the estimated 25% to 30% of Washington’s population who do not drive, however, walking is a necessary means of transportation. This includes children, people with disabilities, the elderly, and those who either cannot afford a vehicle, or choose not to own one.

What’s New

In 2015, the legislature passed a law to create a pedestrian fatality and serious injury review panel charged with using data to find pedestrian crash patterns that Target Zero partners can address.

WSDOT awarded $30.2 million to 73 Pedestrian and Bicycle and Safe Routes to School projects for the 2015–2017 biennium, part of an all-time high for walking and biking safety investments in Washington. WSDOT plans to contribute another $37.5 million in the 2017–2019 biennium for these programs.

WSDOT has endorsed the Urban Streets and Bikeway Design Guides developed by the National Association of City Transportation Officials (NACTO). Work continues to expand multi-modal networks and reduce the design speed of roads, consistent with WSDOT’s Strategic Plan.

WSDOT revised its design manual in November 2015, part of a formal policy change which embraces the NACTO guides. This included updates allowing for changes to our roads based more on the context and modal needs of the locations they pass through, rather than on a strict application of pre-determined design criteria. This makes it easier to take speeds into account for all road users.
Getting to the target zero goal for pedestrians means focusing on three aspects of exposure

Volume exposure. Where there are higher numbers of pedestrians and vehicle traffic, there is a higher likelihood of conflicts between the two, and a higher potential for crashes. Most pedestrian fatalities (69%) and serious injuries (67%) happen within cities where the prevalence of pedestrians tends to be higher. The data also show the following pedestrian fatality percentage splits by posted speed: 14% at 25 mph or less, 42% at 30–35 mph, 17% at 40–45 mph, and 23% at 50 mph and above. These percentages reflect a mix of the volume exposure and the severity exposure as defined below.

Severity exposure. The potential for fatal or serious injury increases as speed increases because the forces imparted on the pedestrian are much greater at higher speeds.

Exposure to event. Numerous factors may increase the exposure to events. Examples include:

- Drivers not being able to see a pedestrian.
- The time that a pedestrian may be exposed to a conflict, such as time to cross a street.
- A pedestrian’s time to react to a vehicle: higher speeds are more difficult for the pedestrian to judge the speed of the vehicle.
- Pedestrians crossing at unexpected locations; this makes it more difficult for the driver to perceive, react, and determine what action to take.
- Driver and pedestrian behaviors that reduce judgment capabilities, such as drugs and alcohol.

Many factors go into a safe environment for all pedestrians. The first major step toward pedestrian safety involves understanding that pedestrians’ characteristics are different from those of most other road users:

- People who walk are more vulnerable in motor vehicle crashes than motorists, who are protected by their vehicles.
- Pedestrians may include those who do not know or cannot follow the same rules of the road.
- Pedestrians are physically free to change direction quickly, and to go where vehicles cannot.

In addition to these unique characteristics, pedestrians are not physically constrained in their crossing locations. Many pedestrians are not willing to go out of their direct line of travel to cross at an intersection. State law allows pedestrians to cross outside of a crosswalk upon yielding the right of way to the other road users.

Finally, vehicle speed at impact is the leading factor in determining the extent of injury to a pedestrian in a crash.

Pedestrian injury and fatality rates in Washington need more study

Between 2012 and 2014, there were 204 pedestrian fatalities and 906 serious injuries in Washington. Pedestrian fatalities represent 15% of total traffic deaths in the state. This percentage remains disproportionately high, given that national level data from 2009 show that pedestrians accounted for only 10.4% of all trips. The number of pedestrian crashes are not decreasing, and we are not on target to reach zero by 2030.

Unfortunately, we do not have more recent national data, nor Washington State-specific data, on the number of pedestrian trips. Currently, Target Zero partners are working to collect this data and to sponsor related research in order to gain a better understanding of how best to reduce pedestrian crashes. For example, WSDOT is funding the installation of permanent bicycle and pedestrian counters, and continuing support for the Pedestrian and Bicycle Documentation Project.
Driver actions and contributing factors (2012–2014)

- **None**: In more than a third of the pedestrian fatalities and serious injuries, there were no driver contributing circumstances reported. The motorist was following the rules of the road but was unable under existing conditions and the posted speed to avoid a fatal or serious injury crash with a pedestrian.

- **Vehicle Going Straight**: In most fatal pedestrian crashes, the vehicle was going straight.

- **Driver Distraction**: Driver distraction was the most prevalent driver contributing circumstance for pedestrian fatalities. See distracted driving chapter.

- **Driver Failure to Yield**: Driver failure to yield was the most prevalent driver contributing circumstance for pedestrian serious injuries.

- **Exceeding Reasonable Safe Speed or Exceeding Stated Speed Limit**: Few pedestrian fatalities and serious injuries involved a motorist who was exceeding the posted speed limit.

- **Driver Hit and Run**: 18% fatalities, 17% serious injuries.

- **Driver Impairment**: 18% fatalities, 6% serious injuries.

Pedestrian contributing circumstances, action or factors (2012–2014)

- **None**: In more than a quarter of the pedestrian fatalities and serious injuries, there were no pedestrian contributing circumstances reported.

- **Crossing the Road**: More than half of pedestrian fatalities and serious injuries involved a person trying to cross the road. Only about half of the time those collisions were intersection related.

- **Improper Crossing**: Pedestrian did not use either a marked crosswalk or an unmarked legal crosswalk to cross the road.

- **Pedestrian Impairment**: Pedestrian impairment is the most prevalent pedestrian contributing circumstance in pedestrian fatalities.

- **Pedestrian Distraction**: See distracted driving chapter.

- **Pedestrian Failure to Yield**: 22% fatalities, 20% serious injuries.
Beyond this, the analysis for vehicle-pedestrian crashes brings to light the need for more data, better quality data, and a deeper understanding of the details involved in each crash. For example, it indicates a need to take a closer look at how traffic control at the crash location is recorded, the role of traffic control at pedestrian crashes, and how best to use that information to determine the types of places where more traffic control is needed. The currently available data show the following patterns.

Pedestrian fatalities occur most commonly to males and middle-aged people

More than two-thirds (69%) of pedestrians killed were male. The highest percent of pedestrian fatalities occurred among people between the ages of 46–55 (21%), followed by those aged 56–65 (17%).

Most pedestrian fatalities occur in the winter and fall, and in dark or dusk

Most pedestrian fatalities happen during the fall and winter, with 18% happening during the month of December. They are more prevalent during the early evening between 6 and 9 p.m. More than two-thirds (69%) occurred when it was dark or dusk.

Where do pedestrian fatalities and serious injuries occur?

More than half (58%) of pedestrian fatalities and 50% of serious injuries occurred when the pedestrian was using the roadway as opposed to the shoulder, crosswalk, or sidewalk. Only three percent of pedestrian fatalities and serious injuries occurred when the pedestrian was using a sidewalk or walkway.

In terms of jurisdiction, most pedestrian fatalities (69%) and serious injuries (67%) happen within cities. Fatalities occurred 47% of the time on city streets, versus 35% of the time on state routes (some of which are inside cities) and 16% of the time on county roads. Serious injuries occurred 64% of the time on city streets, 25% of the time on state routes, and 10% of the time on county roads. Given the prevalence of pedestrians in urban areas, the overrepresentation of cities in pedestrian fatality and serious injury data is not surprising.

Washington State laws relating to pedestrians

RCW 46.61.245 Driver responsibility to avoid colliding with any pedestrian.

RCW 46.61.235 Marked and unmarked crosswalks.

RCW 46.61.240 Pedestrian yield the right of way to vehicles at non-crosswalk locations.

RCW 46.61.050 Pedestrian responsibilities.

RCW 46.61.261 Drivers and bicyclists must yield to pedestrians on sidewalks and in crosswalks.

RCW 46.61.250 Pedestrians must use sidewalks, or walk on the side of the roadway or shoulder facing traffic.

RCW 46.61.235 No pedestrian or bicycle shall suddenly leave a curb and move into traffic so that the driver cannot stop.

RCW 46.61.526 Negligent driving and pedestrians and bicyclists.

RCW 46.61.415 (3)(a) Cities and towns may establish a maximum speed limit of 20 mph on certain roads.
More investigation is needed to better understand how traffic control at the crash location is recorded, the role of traffic control at pedestrian crashes and how best to use the information to determine the types of places where more traffic control is needed.
**PEDESTRIANS**
Related fatalities & serious injuries: overlap with other Target Zero factors

<table>
<thead>
<tr>
<th>Category</th>
<th>Fatalities</th>
<th>Serious Injuries</th>
</tr>
</thead>
<tbody>
<tr>
<td>Impairment</td>
<td>54%</td>
<td>14%</td>
</tr>
<tr>
<td>Speeding</td>
<td>7%</td>
<td>6%</td>
</tr>
<tr>
<td>Distracted</td>
<td>39%</td>
<td>19%</td>
</tr>
<tr>
<td>Unrestrained</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Unlicensed</td>
<td>10%</td>
<td>**</td>
</tr>
<tr>
<td>Drowsy</td>
<td>0%</td>
<td>1%</td>
</tr>
<tr>
<td>Lane Departure</td>
<td>3%</td>
<td>3%</td>
</tr>
<tr>
<td>Intersection</td>
<td>33%</td>
<td>51%</td>
</tr>
<tr>
<td>Young Driver</td>
<td>23%</td>
<td>19%</td>
</tr>
<tr>
<td>Motorcycle</td>
<td>0%</td>
<td>&lt;1%</td>
</tr>
<tr>
<td>Older Driver</td>
<td>5%</td>
<td>8%</td>
</tr>
<tr>
<td>Heavy Truck</td>
<td>5%</td>
<td>4%</td>
</tr>
<tr>
<td>Bicycle</td>
<td>0%</td>
<td>&lt;1%</td>
</tr>
</tbody>
</table>

What percentage of crashes involving **PEDESTRIANS** also involved another factor?

For example, 33% of fatal crashes involving **PEDESTRIANS** also involved an intersection.

Percentage of overlap:
- Low (<10%)
- Medium (10-30%)
- High (>30%)
Contributing circumstances and factors

There are many variables involved in pedestrian fatal and serious injury crashes. The most common road characteristics of these crashes are a posted speed above 25 mph, and a lack of traffic control (no signals, stop signs, yield signs, or flashing beacons) at the location. The most common road type is a two-way undivided road with two or more lanes. The most common driver action is traveling straight ahead, and the most common pedestrian action is crossing the street. Other important contributing behavioral factors most often sited when there were pedestrian fatalities are driver distraction and pedestrian impairment.

Getting to zero pedestrian fatalities and serious injuries requires engineering that emphasizes how speeds, visibility, and roadway/roadside traffic features affect pedestrians. The challenge is in providing engineering improvements for pedestrian safety while meeting the needs of other road users and transportation priorities. A zero-based strategy will also:

- Use enforcement and education.
- Focus on those locations based on land use context where people are most likely to walk.
- Include consideration for an emphasis on countermeasures that reduce the likelihood of a pedestrian’s death in the event of a vehicle/pedestrian crash. Ideally if a pedestrian makes a mistake, the consequences would not result in death or serious injury. A safe system approach does not place blame on the individual making the mistake; rather the system should attempt to address the potential consequence should error occur.
Addressing vehicle speeds reduces pedestrian deaths and serious injuries

Not only does vehicle speed affect the likelihood of a crash with a pedestrian, it has a major effect on the severity of a pedestrian’s injury, should a crash occur. As seen in the graph on page 143, at higher vehicle impact speeds, the chances of a pedestrian involved crash resulting in a fatality increases.

A similar pattern appears in Washington State data (2012–2014) when looking at the posted speed of a roadway and the number of pedestrian crashes. The graph on this page shows how posted speed is related to pedestrian crash severity or severity exposure: as posted speed increases, the injury severity for pedestrians also increases.

In 2012–2014 there were no fatalities on roads with a posted speed of 20 mph. At this time, there are not many miles of 20 mph roads, but current legislation allows cities to lower speed limits to 20 mph more easily. Only 14% of fatal crashes occurred on roads with a posted speed of 25 mph, even though it is likely that most walking occurs on these lower-speed roads. Higher posted speeds are still common on urban roads, as indicated by the 69% of pedestrian fatalities that happened in cities on roads 30 to 45 mph. There are also roads in suburban areas with pedestrian generators on the edge of cities that have high posted speeds to consider. The data represent the impact of the mix between volume exposure and severity exposure.

Roads with different posted speeds call for different approaches to reduce vehicle operating speed. For those roads with posted speeds of 30–40 mph, a priority of speed management and traffic calming measures may be appropriate. With changes to the design and operating speeds, changes to the posted speeds would follow.
For roads with speed limits above 40 mph, the most critical first steps are addressing the issues of separation, exposure, and reduction in conflicts. Addressing pedestrian crash and injury reduction on roads with posted speeds between 45–50 mph would include a more iterative approach, beginning with an emphasis on pedestrian/vehicle separation. For roads with posted speeds higher than 50 mph, other techniques to reduce the possibility of conflicts may be needed. Separate countermeasures will need to be developed for limited access roads. This is an area for further investigation to help pinpoint solutions. All of these efforts will be most successful if done in combination with education and enforcement to highlight the importance of lower speeds and to achieve compliance with the target speed limit.

**Addressing road crossings for pedestrians**

More than half of fatal and serious injury pedestrian crashes occurred while the pedestrian was crossing the street. Many of these were not at marked crossings. An increase in the frequency of crosswalks and increasing the frequency of use of these crossings by pedestrians will help to address these crashes.

#### Enhanced crosswalk treatments include:

- Median islands.
- Rectangular rapid flashing beacons.
- Roundabouts are highly effective as they are designed to lower entering and exiting speeds, reduce pedestrian exposure with crossing islands, and provide clear views of pedestrians entering the roundabout. There were no pedestrian fatalities or serious injuries at roundabouts from 2012-2014.
- A traffic signal pedestrian phase leading interval, which allows for the pedestrian to get a head start into the intersection before the light turns green for the motor vehicles.
- A pedestrian “scramble” phase, which allows for the pedestrian to cross the street while all other traffic is stopped.
- Curb extensions.

Road re-configurations (also known as road diets, which reduce the number and/or width of travel lanes), reductions to turning radii, and right-turn-on-red restrictions are other measures that have been shown to reduce vehicle speeds and improve pedestrian crossing safety.
The minimum typical perception, reaction, and braking distance needed between first spotting a pedestrian and coming to a stop increases with speed. At 20 mph a vehicle will travel 115 feet before it comes to a stop. At 40 mph it will travel 250 feet, and at 55 mph a vehicle will need almost 425 feet before coming to a stop.

A driver's peripheral vision at 20–25 mph

A driver's peripheral vision at 40+ mph

Photos courtesy of NACTO
Pedestrian visibility also affects likelihood of crashes

More than two-thirds (69%) of crashes involving pedestrians occur when visibility is less than optimal, such as during nighttime or dusk. The motorist must be able to perceive the pedestrian, recognize the importance of what she is seeing, and take action in time to avoid a crash.

Increasing visibility and conspicuity (the ease at which a thing is recognized) requires a combination of factors. Again, speed is critical: at slower speeds, pedestrians are better able to judge how long it will take for a vehicle to get to them and motorists are more likely to perceive and react to pedestrians in the roadway in time to stop. When traveling at a higher rate of speed, the eye needs to focus more, and a driver’s ability to register what is happening in her peripheral vision wanes, as seen in the images on page 144. Visibility becomes more complicated in urban environments at higher speeds where there are more things to see, greater distractions, and more movement choices.

Pedestrians could lower their crash risk by better understanding what the motorist can see and by wearing reflective, higher visibility clothing. Educational efforts to make that shift have been ongoing for decades, but with little result.

Engineering efforts to increase visibility and conspicuity include the installation of more high visibility pedestrian crossing options and pedestrian scale illumination on the sidewalk and at those crossings. Traditional street lights do not always sufficiently illuminate pedestrians, making it difficult for motorists to anticipate pedestrians crossing the street. In addition, it is important that motorists and pedestrians are aware that street lights provide no improvement in visibility at dusk and dawn. Awareness efforts should be used to help all road users understand visibility limitations and what they can do to avoid a crash. As discussed in the vehicle technology chapter, future enhancements to vehicles will likely include pedestrian detection technologies, which could also have a significant effect in reducing crashes.
Pedestrian impairment calls for a focus on the motorist’s ability to see and react in time to prevent a fatality

Pedestrian impairment is an important factor contributing to the high number of pedestrian traffic deaths in Washington State. In addition to educational efforts to prevent risk among impaired pedestrians, roadway modifications can help motorists see and react in time to prevent a fatal crash. These roadway modifications can include countermeasures such as providing enhanced pedestrian scale illumination and visibility features, coupled with traffic calming and reductions in road design speeds as discussed previously. Some pedestrian design options also exist, such as using decorative railing as means of guiding pedestrians to a more appropriate crossing location. Other interventions that might be helpful include:

- Education to increase awareness of the risks of impaired walking.
- Providing transit or taxi subsidies.
- Enforcement efforts to reduce speeding, distracted driving, and motorist impairment.

Equity: pedestrian facilities in lower-income neighborhoods often require improvement

National pedestrian fatality rates (deaths per 100,000 people) in lower-income neighborhoods are twice as high as in other neighborhoods. For this research, lower-income neighborhoods are those in the bottom third of census tracts, in terms of per capita income. Pedestrian safety issues tend to affect a higher percent of people living in poverty, which includes an overrepresentation of people who are minorities, the elderly, and people with disabilities. Pedestrian facilities are not always available in lower income neighborhoods where pedestrian activity is likely higher due to fewer transportation choices. This results in higher volumes of pedestrians with fewer opportunities to safely and securely walk as part of daily routines.

Identifying and addressing these challenges will lower pedestrian crash risk in lower-income neighborhoods, increasing opportunities for these underserved populations to safely access their jobs, community resources, and healthy food.

Next steps for improving pedestrian safety in Washington State

Reducing pedestrian fatal and serious injury crashes requires collaboration by engineering, education, enforcement, and evaluation experts. This includes:

- Better designs for safer speeds for all road users.
- Enforcement to reduce speed.
- Improved design to protect pedestrians.
- Education of drivers and pedestrians.
- Improved data collection on pedestrian numbers and locations.
Programs and successes

Seattle school zone photo enforcement is convincing drivers to ease off on the pedal

The City of Seattle has invested in the installation of 14 school zone speed enforcement cameras. They selected sites based on speed and volume of traffic. Average violations cited per camera per day have steadily declined between December 2012 and December 2014.

Plus, 90% of people who were ticketed by these cameras never got another ticket, which means that the cameras are working to change behavior and make school zones safer. Revenue from violations was reinvested in additional school zone safety improvements.

“Stickman Knows” campaign improve traffic safety in Spokane

Spokane Regional Health District implemented the “Stickman Knows” safety education campaign, targeted to pedestrians, bicyclists, and motorists. The campaign emphasized traffic safety rules and tips for all users of the road to increase personal safety behaviors and reduce crashes. The media component included:

- TV commercials.
- Billboard and bus advertising.
- Print ads.
- Promotional items.
- Earned media.
- The presence of Stickman Knows at community events, in neighborhoods, and in school.

Overall, the campaign was successful, with evaluations showing that residents who were exposed to the campaign know more about pedestrian, bicyclist, and motorist traffic safety. http://www.stickmanknows.org/
Seattle’s Rainier Avenue South road re-configuration reduces crashes and speeding

As part of its Vision Zero program, Seattle Department of Transportation (SDOT) has completed multiple road re-configurations over the last few years with great results in reducing speeds and crashes. One example is Rainier Avenue South between South Alaska and South Kenney Streets. SDOT’s goal was to improve safety by reducing pedestrians’ exposure to multiple lanes of traffic, and to increase driver compliance with the speed limit. Prior to the re-configuration, there were two travel lanes in each direction. The street was re-striped to one lane in each direction, with a center two-way left-turn lane and transit lanes. The operating speed (85th percentile speed) was 38 mph before the project and 34 mph after the project.

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, promote an active lifestyle, 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 2005–2015:

- The program provided almost $71 million for 182 projects across the state.
- Recipients completed 99 Safe Routes to School projects, with 83 more underway.
- SRTS’s statewide bicycle and pedestrian safety education program reached approximately 42 school districts, providing approximately 18,000 children a year with traffic safety education in the classroom.

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

- An average increase of 20% in the number of children walking and biking to school.
- A reduction in motorist travel speeds and traffic citations in school zones.
- Students showing improved safe crossing behaviors.
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<thead>
<tr>
<th>Objective</th>
<th>Strategies</th>
<th>Implementation areas</th>
</tr>
</thead>
<tbody>
<tr>
<td>PED.1.1</td>
<td>Revise design practices to emphasize context and target speed to reflect the needs of all road users. (R) (P, AASHTO)</td>
<td>Engineering/Policy</td>
</tr>
<tr>
<td>PED.1.2</td>
<td>Use roadway design features to change operating speeds to support reduction in posted speeds. (P, NCHRP)</td>
<td>Engineering</td>
</tr>
<tr>
<td>PED.1.3</td>
<td>Use enforcement and speed feedback signs to help motorists change speeding behavior. (R, NCHRP)</td>
<td>Enforcement</td>
</tr>
<tr>
<td>PED.2.1</td>
<td>Promote the use of reflective apparel among pedestrians. (R, CTW)</td>
<td>Education</td>
</tr>
<tr>
<td>PED.2.2</td>
<td>Educate pedestrians about the risks of distracted walking. (U)</td>
<td>Education</td>
</tr>
<tr>
<td>PED.2.3</td>
<td>Conduct communication and outreach efforts, including using the proven Brief Intervention and Screening approach to contact crash-involved impaired pedestrians, as well as with law enforcement agencies, alcohol servers, social and health service providers to reduce impairment as a factor in pedestrian-involved crashes. (U)</td>
<td>Education</td>
</tr>
<tr>
<td>PED.1.4</td>
<td>Increase public awareness of the significance of speed on pedestrian injury severity. (R, CTW)</td>
<td>Education</td>
</tr>
<tr>
<td>PED.3.1</td>
<td>Implement pedestrian safety zones, targeting geographic locations and audiences with pedestrian crash concerns. (P, CTW)</td>
<td>Education, Enforcement, Engineering</td>
</tr>
<tr>
<td>PED.3.2</td>
<td>Expand targeted crosswalk enforcement and education for both motorists and pedestrians. (R, CTW)</td>
<td>Education, Enforcement</td>
</tr>
<tr>
<td>PED.3.3</td>
<td>Improve training on pedestrian laws for law enforcement officers at state, Tribal, and local levels. (R)</td>
<td>Education</td>
</tr>
</tbody>
</table>

P: Proven  R: Recommended  U: Unknown
<table>
<thead>
<tr>
<th>Objective</th>
<th>Strategies</th>
<th>Implementation areas</th>
</tr>
</thead>
<tbody>
<tr>
<td>PED.4. Expand and improve pedestrian facilities</td>
<td>PED.4.1 Improve safety at pedestrian crossings by investing in and installing refuge islands, and shortening crossing distances with curb extensions where these crosswalk enhancements are needed. (P, NCHRP)</td>
<td>Engineering</td>
</tr>
<tr>
<td></td>
<td>PED.4.2 Invest in and increase the use of rectangular rapid flashing beacons and pedestrian hybrid beacons where these crosswalk enhancements are needed. (R, CMF)</td>
<td>Engineering</td>
</tr>
<tr>
<td></td>
<td>PED.4.3 Implement programs that improve the built environment. Solutions should focus on appropriate zoning, and pedestrian connections to public transit. (R, LIT)</td>
<td>Engineering and land use planning</td>
</tr>
<tr>
<td></td>
<td>PED.4.4 Improve sight distance and visibility at pedestrian crossings by clearing vegetation, extending crossing times, adding pedestrian leading intervals or adding pedestrian scale illumination. At midblock location provide adequate distance between stop bars and the crossing. (R, CMF, NCHRP).</td>
<td>Engineering</td>
</tr>
<tr>
<td></td>
<td>PED.4.5 Implement Complete Streets policies to provide for all modes of transportation. (R, NCSC)</td>
<td>Leadership/Policy, Engineering</td>
</tr>
<tr>
<td></td>
<td>PED.4.6 Invest in and construct roadway reconfigurations, round-abouts and other FHWA proven safety countermeasures specific to pedestrian safety. (P, FHWA)</td>
<td>Engineering</td>
</tr>
<tr>
<td></td>
<td>PED.4.7 Provide for more frequent pedestrian crossing opportunities. (U)</td>
<td>Engineering</td>
</tr>
<tr>
<td></td>
<td>PED.4.8 Invest in and construct separated pedestrian facilities (sidewalks and multi-use paths). (P, NCHRP)</td>
<td>Engineering</td>
</tr>
<tr>
<td>PED.5. Improve safety for children walking to school</td>
<td>PED.5.1 Expand high visibility speed enforcement in school zones, including automated speed photo enforcement. (R, P, CTW)</td>
<td>Education, Enforcement</td>
</tr>
<tr>
<td></td>
<td>PED.5.2 Implement middle school pedestrian and bicycle safety training curricula in schools. (U)</td>
<td>Education</td>
</tr>
<tr>
<td></td>
<td>PED.5.3 Apply consistent signing and other pedestrian crossing features in school zones as appropriate (based on the number of lanes, speeds, age of pedestrians, etc.). (R, FHWA)</td>
<td>Engineering</td>
</tr>
<tr>
<td></td>
<td>PED.5.4 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 to assist schools in creating school walk route maps. (R, WSDOT)</td>
<td>Education, Engineering</td>
</tr>
<tr>
<td></td>
<td>PED.5.5 Encourage school districts to implement appropriate elements of the Safe Routes to School program, including walking campaigns such as Walking School Buses. (U)</td>
<td>Education, Engineering</td>
</tr>
<tr>
<td></td>
<td>PED.5.6 Invest in and implement the Safe Routes to School Program to construct pedestrian and bicycle facilities near schools. (U)</td>
<td>Engineering</td>
</tr>
<tr>
<td>PED.6. Improve data and performance measures</td>
<td>PED.6.1 Collect miles walked data (similar to collecting VMT); continue to track pedestrian counts through Washington’s Pedestrian and Bicycle Documentation Project. (R, DDACTS)</td>
<td>Leadership/Policy</td>
</tr>
</tbody>
</table>

P: Proven  R: Recommended  U: Unknown
More than half (57%) of pedestrian fatalities and 67% serious injuries occurred while the pedestrian was crossing the road.

In 2012–2014 there were no pedestrian fatalities on roads with a posted speed of 20 mph.
Road Users: Older Drivers 70+ Involved

Between 2012–2014, drivers aged 70 and older were involved in 12% of all traffic fatalities and 8.6% of all serious injuries, while they represented 10% of the state licensed drivers. The elderly driving population in Washington State is projected to expand greatly in the coming years. By 2030, citizens over 70 will reach 1.3 million — nearly double the size of today’s over-70 population. This demographic change presents public safety challenges that will require new approaches for an aging population.

Key Facts

Washington’s elderly driving population is growing dramatically. The population of those aged 70 and over is expected to grow 94%, from 661,000 today to almost 1.3 million by 2030. By contrast, our young adult population aged 17–22 is expected to grow by only 8% during this same time period.

Even though older drivers are involved in fewer crashes than young drivers, they are more likely to be at fault than middle-aged drivers, and the crashes they are involved in are far more likely to result in serious injury or death — most commonly, their own.

Older drivers routinely give up their driver licenses voluntarily. Only 56% of those aged 85+ have a driver license, compared to nearly 100% for those age 25–54.
Overview

Washington State will see an unprecedented growth in the 70+ age population over the next fifteen years. The expected 94% increase in citizens over 70 is going to impact the traffic safety community in many ways. Despite media alarm over increased fatalities and injuries, and amplified risks to all motorists on the road due to the graying of America, there is actually a great degree of nuance to the experience of older drivers.

What’s New

Target Zero partners changed the older drivers road user group from age 75+ in the last Target Zero plan to 70+ in this plan. The research shows that drivers 70 and older have elevated risk levels under conditions including driveways, alleys, and at intersections controlled by stop or yield signs. This age change moves the older drivers road user group from previous priority three to priority two in this plan rewrite.

The most recent national data indicate that the injury and fatality rate has improved for elderly drivers in recent years. Turning to the state level data, the trend is the same. While the older driver population has increased year after year, the number of older driver fatalities has been flat.

This is likely due to a host of factors including better assessment at license renewal, improved equipment in vehicles, ongoing outreach efforts to help elderly drivers improve their skills, improved emergency response, better road engineering, and improved average health standards.
Older drivers are involved in fewer crashes, but are more likely to be in fatal or serious crashes

Despite significant media attention to elderly drivers, younger drivers are responsible for far more crashes on Washington’s roadways. In fact, drivers aged 70+ make up 10% of the driving population and account for 6% of all crashes. Younger drivers aged 16–34, on the other hand, make up 31% of the driving population and account for 45% of crashes.

Even though elderly drivers are involved in fewer crashes, drivers aged 70–79 are two times more likely to be at fault when they are in a crash compared to drivers aged 30–69. It’s even higher for drivers over 80 years of age, who are four times more likely to be at fault. And due to their frailty from aging, the crashes are far more likely to result in their own serious injury or death.

**Crash Involvement Ratio (CIR)**

The method used to determine risk level is a ratio of at-fault to not-at-fault drivers for various crash types for each age group. This is called the Crash Involvement Ratio or CIR. Values lower than 1.0 indicate lower than average rates of at-fault crashes, and higher than 1.0 represent higher at-fault rates.

Older drivers are prone to make driving errors which become more pronounced as they age. Overall, FARS data indicate that drivers 60 to 69 had a CIR of 0.75, indicating a below-average risk of being found at fault in a crash. This risk increased to 1.75 for drivers 70 to 79, and to 4.0 for those 80 and older, indicating a growing problem of risk as drivers age.
Elderly drivers choose to limit their own driving

As drivers age, they routinely opt not to drive. In Washington, drivers over 70 must renew their license in person at a licensing office instead of online. This gives Department of Licensing (DOL) staff an opportunity to see firsthand whether a driver’s ability to operate a vehicle should be evaluated more closely. Although Americans are healthier and living longer than ever before, seniors are outliving their ability to drive safely by an average of seven to ten years. Most older drivers recognize and avoid situations where their limitations put them at risk. They drive less after dark, during rush hour, or in bad weather, and avoid difficult locations such as highways and intersections.

However, the proportion of the 70+ population who drives is likely to grow in the future. National-level research from University of Michigan’s Transportation Institute (UMTRI) indicates for age group 16–44, there was a continuous decrease in the proportion of people with a driver’s license from 1983 through 2014. For the age 70+ group, however, there was an increase in the proportion of persons with a driver’s license from 1983 to 2011 — though followed by a slight decrease from 2011 to 2014 — due to better general health among that group. Washington State data shows a similar pattern. So not only will the total 70+ population of our state grow substantially in the next decade, members will be more likely to retain their driver’s license than in the past.
OLDER DRIVERS (70+)
Related fatalities & serious injuries: overlap with other Target Zero factors

What percentage of OLDER DRIVER crashes involved another factor?

For example, 49% of fatal crashes involving an OLDER DRIVER also involved a lane departure.
**Rates of older driver involved crashes have dropped**

Along with voluntary surrender of their licenses, elderly drivers have reduced their number of fatal crashes in recent years, by both number of licensed drivers and by miles driven. A recent report from the Insurance Institute for Highway Safety (IIHS) compared trends for drivers ages 70+ with those for drivers aged 35–54 for national fatal passenger vehicle crash involvement. No matter how they looked at the fatal crash data for this age group — by licensed drivers or miles driven — the fatal crash involvement rates for drivers 70+ declined, and did so at a faster pace than the rates for drivers ages 35–54.

**Contributing circumstances and factors**

Yielding maneuvers, intersections in general, and left turns are especially problematic for the elderly. Distraction is also a big issue among older drivers: 24% were distracted in fatality crashes, and 17% were distracted in serious injury crashes. Further, the physical condition of elderly drivers makes them as much as five times as likely to die in a crash than younger drivers.

In the end, what we have is a population that is more often at fault in a crash, gets in relatively fewer of them than younger counterparts, has difficulty with recognition of danger due to diminished cognitive skills, and who is far more prone to be injured or killed compared to others.
Intersection situations pose an elevated risk for older drivers

Left turns can have a Crash Involvement Ratio (CIR) of 4 to 8 for older drivers, while flashing signals also pose a problem for older drivers, with a CIR of 2 to 4. Yield signs, however, are by far the greatest obstacle for them, with a CIR of 26 for those over 80 years of age; this means that for every 27 fatal crashes involving an 80+ year-old at a yield sign intersection, 26 of them would be the fault of the elderly driver. Clearly there is a limitation in older drivers’ ability to navigate yielding to traffic. Road designers are working to make intersections more accessible for older drivers; see Programs and Successes for more information.

Formal guidelines for older drivers

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.

Washington State laws relating to older drivers

**RCW 46.20.031** DOL is prohibited from issuing a license to a person who has a physical or mental condition that could impact driving.

**RCW 46.20.041** Permits DOL to require a medical evaluation if it has reason to believe that a person may have a physical or mental condition that could impact driving.

**RCW 46.20.305** Permits DOL to require a driver’s license examination if it has reason to believe that a person is incompetent or otherwise not qualified to be licensed.
Programs and successes

Highway design and traffic control for older drivers

Statewide, partners are implementing changes that can help the growing older driver population, among others. First, with the installation of roundabouts, road designers are working to remove the need to make left turns, a common source of fatal and serious injury crashes for older drivers. Further, converting permitted left turns from green circles to flashing yellow arrows helps avoid driver confusion that might lead some to assume they can go on the green without yielding. Finally, engineers are increasing sign sizes to make their messages clearer, especially those with diminishing vision such as older drivers.

New defensive driving classes for older drivers

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.

Research on licensing for older drivers

DOL researched elderly driver crash data and policy approaches in other states. Based on this research, DOL has identified a series of recommendations that the agency can focus on to address the impacts of our growing elderly driver population. These include training DOL representative to watch for medical red flags, offering no-cost IDs for drivers over 65 who wish to surrender their license, and implementing shorter renewal cycles for elderly drivers, instead of the regular six-year cycle.

Fatality risk at intersections for two-vehicle crashes
National Crash Involvement Ratio (CIR) by age and vehicle maneuver

Source: NHTSA Office of Behavioral Safety Research
<table>
<thead>
<tr>
<th>Objective</th>
<th>Strategies</th>
<th>Implementation areas</th>
</tr>
</thead>
<tbody>
<tr>
<td>ODI.1. Identify older drivers who are at an elevated crash risk</td>
<td>ODI.1.1 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)</td>
<td>Leadership/Policy, Education</td>
</tr>
<tr>
<td></td>
<td>ODI.1.2 Provide training to law enforcement, medical professionals, licensing representatives, and community members for recognizing physical and cognitive deficiencies affecting safe driving in older drivers, including submitting reevaluation referrals to DOL. (P, CTW)</td>
<td>Enforcement, Leadership/Policy, Education</td>
</tr>
<tr>
<td></td>
<td>ODI.1.3 Continue to restrict driver license online eligibility and renewals for drivers age 70+. (U)</td>
<td>Leadership/Policy</td>
</tr>
<tr>
<td></td>
<td>ODI.1.4 Develop and provide educational materials at DOL offices that encourage family discussions about driving and medical and optical reviews by doctors. (U)</td>
<td>Education</td>
</tr>
<tr>
<td>ODI.2. Improve older driver competency</td>
<td>ODI.2.1 Increase driver education opportunities for older drivers. (U)</td>
<td>Education</td>
</tr>
<tr>
<td>ODI.3. Reduce risk of serious injury and fatalities</td>
<td>ODI.3.1 Provide incentives for older drivers who use alternative modes of transportation. (R, FTA)</td>
<td>Education, Leadership/Policy</td>
</tr>
<tr>
<td></td>
<td>ODI.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)</td>
<td>Education</td>
</tr>
<tr>
<td></td>
<td>ODI.3.3 Follow current guidelines/standards to improve readability of road signs for older drivers. (U)</td>
<td>Engineering</td>
</tr>
</tbody>
</table>

P: Proven  R: Recommended  U: Unknown
Heavy Trucks

Heavy trucks, or vehicles weighing more than 10,000 pounds, carry freight in Washington State and play a vital role in the state’s economy.

However, due to their size and weight, heavy trucks pose higher risks of death and serious injury in crashes, particularly for the other involved drivers. During the period of 2012–2014, over 1.7 billion heavy trucks traveled on Washington State roadways, an increase of 11% from 2009–2011.

Key Facts

Analysis shows that 59% of fatal crashes with heavy trucks were caused by passenger cars and motorcycles. Although it isn’t entirely clear why, a reasonable assumption is that passenger vehicle drivers often don’t realize that heavy trucks need more space to come to a complete stop, and therefore position themselves at unsafe distances in front of heavy trucks.

Although the known rate of drowsy heavy truck drivers in Washington State fatal crashes was 2%, Target Zero partners believe that this is underreported. The Large Truck Crash Causation Study (LTCCS) produced by the Federal Motor Carrier Safety Administration reported that 13% of heavy truck drivers nationwide were fatigued at the time of their crash.
Overview

In 2012–2014, heavy trucks were involved in 122 (9.1%) of Washington's traffic fatalities and 318 (5.2%) of the serious injuries. Analysis of fatal crashes involving heavy trucks during this time period showed that 59% of the crashes were caused by passenger cars and motorcycles. Heavy trucks accounted for 30%, and the remaining 11% were due to other causes. Fatalities increased by 21% during 2012–2014 when compared to 2009–2011, likely due to an increase in heavy trucks on the road.

What's New

WSP has taken steps to reduce the number of heavy truck crashes in the state through the use of a data-driven deployment model.

The model analyzes crash data and uses this information to identify high crash areas, which allows for the deployment of law enforcement resources to focus efforts on crash-causing violations, such as aggressively driven passenger cars and heavy trucks, in order to reduce the number of fatalities.

For this edition of Target Zero, the data definition of heavy trucks was revised to be more inclusive of all types of commercial motor vehicles. 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).
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**Road Users: Heavy Trucks**

**Heavy Truck Definitions**

1. Any vehicle with a trailer classified at gross vehicle weight rating (GVWR) of 10,001 lbs. or more, a single vehicle with GVWR of 26,001 lbs. or more, or a single vehicle of 26,000 lbs. or less that is commercial driver license (CDL)-required, or a commercial vehicle supplement to the crash 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.

While Washington State’s heavy truck fatality numbers have increased, they are still below the national trend. Nationally, in 2012, heavy trucks were involved in 3,484 (11.2%) fatal crashes and in 2013, heavy trucks were involved in 3,541 (11.8%) fatal crashes. Numbers for 2014 are not yet available.

**Contributing circumstances and factors**

Compared to 2009–2011 figures, the number of heavy trucks traveling on Washington’s highways increased by approximately 11%. In 2012–2014, over 71% of heavy truck involved fatal crashes occurred where posted speeds are 50 mph or greater, with 86% of these crashes occurring on state routes.

Heavy truck drivers are underrepresented for impairment and speeding in fatal crashes, compared to passenger vehicle drivers. In fatal crashes from 2012–2014, 7.1% of heavy truck operators were found to be impaired and a similar number, approximately 7.1%, were speeding. During the same time period, 33% of passenger vehicle drivers involved in fatal crashes were impaired, and 22% were speeding.

Other factors contributing to the fatal crashes involving heavy truck drivers were:

- Less than 2% of heavy truck drivers were found to be drowsy. However, based on research from the NHTSA and the Federal Motor Carrier Safety Administration, Target Zero partners believe that this is underreported.
- 9.7% were distracted.
- 15 drivers were improperly endorsed or unlicensed.

Analysis shows that 59% of heavy truck involved fatal crashes were caused by passenger cars and motorcycles. Although it isn’t entirely clear why, a reasonable assumption is that passenger vehicle drivers often don’t realize that heavy trucks need more space to come to a complete stop, and position themselves at unsafe distances in front of heavy trucks.

**Programs and successes**

**Commercial Vehicle Enforcement Bureau (CVEB) inspections**

WSP is recognized as a national leader in implementing technology to reduce heavy truck crashes, as well as support freight mobility. With the increased focus on crash-causing violations, in 2014 Washington enforcement officers inspected 89,204 heavy trucks, a decrease of 10,885 inspections compared to 2013. The reduction in total inspections was caused by a 6% decrease of WSP personnel over the past three years. However, even with a shortage of personnel, Washington State still continues to work hard and conducted more inspections per year than the national average. In 2014, Washington State performed 41% more inspections than the national average, and 54% above the national average in 2013. WSP uses this data to identify high-risk carriers at roadside and weigh station inspection facilities, and to prioritize compliance reviews.
Fatigued driving emphasis on heavy truck drivers

Drowsiness makes drivers less attentive, slows reaction time, and affects a driver’s ability to make decisions.

Although the known rate of drowsy heavy truck drivers in Washington State fatal crashes was 2%, we believe that this is underreported. The Large Truck Crash Causation Study (LTCCS) produced by the Federal Motor Carrier Safety Administration reported that 13% of heavy truck drivers nationwide were fatigued at the time of their crash. NHTSA has found a similar underreporting in their research. WSP focuses enforcement on fatigued heavy truck drivers by participating in four statewide fatigue driving campaigns each year. In addition, at the local level, officers use heavy truck crash data to develop location-specific efforts that focus on heavy truck drivers exhibiting driving behaviors such as inattention and fatigue.

Ticket Aggressive Cars and Trucks (TACT) Program

In 2005, the WTSC, in cooperation with WSP, the Washington Trucking Association (WTA), the Washington Association of Sheriffs and Police Chiefs (WASPC), and many other stakeholders, implemented a pilot project called Ticket Aggressive Cars and Trucks (TACT) in Washington. The TACT program uses education and enforcement to help car and heavy truck drivers share the road safely and reduce heavy truck related crashes. This successful program has now been implemented nationwide. In 2014, the nine WSP TACT officers assigned to the statewide TACT program contacted 12,176 drivers of all vehicle types, who committed the following moving violations:

- 2,614 driving aggressively
- 6,899 speeding
- 278 not wearing seatbelts
- 26 driving negligently
- 14 arrested for DUI
- Eight arrested for drug violations
- Five driving recklessly

In addition, TACT officers completed 872 roadside heavy truck inspections.
<table>
<thead>
<tr>
<th>Objective</th>
<th>Strategies</th>
<th>Implementation areas</th>
</tr>
</thead>
<tbody>
<tr>
<td>HTX.1. Increase safety and reduce crashes through quality driver and vehicle inspections and enforcement</td>
<td>HTX.1.1 Increase and strengthen commercial vehicle safety and performance inspections, including focus on heavy truck and commercial vehicle drivers. (P, NCHRP)</td>
<td>Enforcement</td>
</tr>
<tr>
<td></td>
<td>HTX.1.2 Promote industry safety initiatives by performing safety consultations with carrier safety management. (P, NCHRP)</td>
<td>Education</td>
</tr>
<tr>
<td></td>
<td>HTX.1.3 Provide ongoing education and outreach utilizing “Share the Road” information. (R, NCHRP)</td>
<td>Education</td>
</tr>
<tr>
<td></td>
<td>HTX.1.4 Establish commercial vehicle compliance checkpoints in areas identified as high risk for crashes involving heavy trucks and commercial vehicles. (R, DDACTS)</td>
<td>Enforcement</td>
</tr>
<tr>
<td></td>
<td>HTX.1.5 Increase commercial vehicle enforcement contacts targeting the top five crash-causing moving violations. (R, DDACTS)</td>
<td>Enforcement</td>
</tr>
<tr>
<td></td>
<td>HTX.1.6 Increase enforcement personnel use of FMCSA’s PORTAL for identifying high-risk carriers. (U)</td>
<td>Enforcement</td>
</tr>
<tr>
<td></td>
<td>HTX.1.7 Provide CMV training to enforcement officers at the state, county, and local levels. (U)</td>
<td>Enforcement, Education</td>
</tr>
<tr>
<td>HTX.2. Improve roadway infrastructure to reduce heavy truck/commercial vehicle crashes</td>
<td>HTX.2.1 Install interactive truck rollover and curve warning signage. (P, NCHRP)</td>
<td>Engineering</td>
</tr>
<tr>
<td></td>
<td>HTX.2.2 Incorporate rumble strips into new and existing roadways to reduce fatigue-related crashes. (R, CMF)</td>
<td>Engineering</td>
</tr>
</tbody>
</table>

P: Proven  R: Recommended  U: Unknown
Bicyclists

Twenty-nine bicyclists were killed by motor vehicles during 2012–2014, an increase of 12% compared to 2009–2011. The number of bicyclists seriously injured by vehicles decreased by 14% in the same time periods. The trend line indicates that we are not on target to reach zero bicyclist fatalities by 2030. Target Zero partners need to pursue a combination of engineering, enforcement, and education efforts to make greater progress in reducing bicyclist deaths and serious injuries from motor vehicle crashes.

Key Facts

Speed is a critical factor in motor vehicle-bicycle crashes. Seventy percent of bicyclist fatalities occurred where the posted speed of the roadway was 30 mph or more.

Men accounted for a disproportionate share of bicyclist fatalities and serious injuries, at 93% and 77% respectively.

Target Zero partners are working to gather more accurate information about the total number of people bicycling. Without this information, it is difficult to know if rates of bicycling — and therefore exposure — are changing.
Overview

Like pedestrians, people who bicycle are more vulnerable than motorists. Due to the mass and speed differentials between bicycles and motor vehicles, bicyclists are much more likely to suffer severe injuries as motor vehicle speeds increase, regardless of the contributing circumstances.

Between 2012–2014 in Washington, there were 29 bicyclist fatalities and 294 bicyclist serious injuries in crashes with motor vehicles. Bicyclist fatalities represent 2.2% of total traffic deaths for this time period, an increase from 1.8% in 2009–2011. The number of bicyclists seriously injured decreased by 14%, from 339 in 2009–2011 to 294 in 2012–2014.

What’s New

As part of Connecting Washington, the legislature has committed $220 million over the next 16 years to improve conditions for bicyclists and pedestrians.

In implementing Practical Solutions, WSDOT became the first state DOT to endorse the Urban Streets and Urban Bikeway Design Guides from the National Association of City Transportation Official (NACTO). Consistent with this, WSDOT updated the WSDOT Design Manual to allow for greater flexibility in designing facilities for bicyclists and their safety needs.

Through the Safer People – Safer Streets initiative, WSDOT, in collaboration with Target Zero partners and USDOT, is using a comprehensive approach to reduce bicycle fatal and serious injury crashes. This approach addresses infrastructure safety, education, vehicle safety, and data collection.
Target Zero partners do not have accurate information about the total number of people bicycling. Without this information, it is difficult to know if rates of bicycling — and therefore exposure — are changing. There is some indication that the number of people bicycling has been increasing. According to sample bicycle volume data collected through the Washington State Pedestrian and Bicycle Documentation Project, there has been a 2% increase in the number of people bicycling in Washington State from 2010–2012 to 2013–2015. Target Zero partners are currently expanding the bicycle and pedestrian count program to more accurately capture changes in the number of people walking and bicycling.

**Men and middle-aged bicyclists are most likely to be killed or seriously injured**

Nationally, men make up about 75% of all trips made by bicycle. However, they accounted for a disproportionate share of Washington’s bicyclist fatalities at 93%. They accounted for 77% of serious injuries.

![Washington bicyclist fatalities by age](image)

Looking at age, the highest percent of bicyclist fatalities occurred among those aged 40–49 (24%), followed by those aged 60–69 and 50–59 (both 17%). Twenty percent of bicyclist fatalities involved bicyclists under the age of 18.

**WSDOT uses target speeds for roadway design**

WSDOT has always approached setting speeds with the safety of all roadway users in mind, based on the best available information. WSDOT now uses a “target speed” approach for determining design speed. The objective of the target speed approach is to design the roadway to encourage drivers to drive at the desired speed. For instance, adding trees on a street constrains drivers’ concept of driving space, which encourages slower speeds. The target speed selection takes into account transportation and land use characteristics to better meet the safety and mobility needs of all roadway users.
Driver actions and contributing factors

<table>
<thead>
<tr>
<th>Condition</th>
<th>Fatalities</th>
<th>Serious Injuries</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td>62%</td>
<td>38%</td>
</tr>
<tr>
<td>Vehicle Going Straight</td>
<td>83%</td>
<td>50%</td>
</tr>
<tr>
<td>Vehicle Making Left Turn</td>
<td>7%</td>
<td>19%</td>
</tr>
<tr>
<td>Vehicle Making Right Turn</td>
<td>3%</td>
<td>15%</td>
</tr>
<tr>
<td>Driver Distraction</td>
<td>3%</td>
<td>14%</td>
</tr>
<tr>
<td>Driver Failure to Yield</td>
<td>10%</td>
<td>28%</td>
</tr>
<tr>
<td>Exceeding Reasonable Safe Speed</td>
<td>3%</td>
<td>70%</td>
</tr>
<tr>
<td>or Exceeding Stated Speed Limit</td>
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Roadway characteristic

<table>
<thead>
<tr>
<th>Condition</th>
<th>Fatalities</th>
<th>Serious Injuries</th>
</tr>
</thead>
<tbody>
<tr>
<td>Posted Speed Limit: 25 mph or less</td>
<td>30%</td>
<td>35%</td>
</tr>
<tr>
<td>Posted Speed Limit: 30 mph or more</td>
<td>70%</td>
<td>65%</td>
</tr>
<tr>
<td>Crossing the Road</td>
<td>38%</td>
<td>34%</td>
</tr>
<tr>
<td>Turning</td>
<td>21%</td>
<td>13%</td>
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</table>

Bicyclist contributing circumstances, action or factors

<table>
<thead>
<tr>
<th>Condition</th>
<th>Fatalities</th>
<th>Serious Injuries</th>
</tr>
</thead>
<tbody>
<tr>
<td>Riding with Traffic</td>
<td>28%</td>
<td>40%</td>
</tr>
<tr>
<td>Bicyclist Failure to Yield ROW</td>
<td>34%</td>
<td>24%</td>
</tr>
<tr>
<td>Bicyclist Impairment</td>
<td>22%</td>
<td>4%</td>
</tr>
</tbody>
</table>
Bicyclist fatal and serious injury crashes predominantly occur on urban and suburban roadways

Most bicycle fatal (69%) and serious injury (80%) crashes happen in cities. Between 2012–2014, 62% of bicyclist fatal crashes occurred on city streets; 21% on state routes (some of which can be inside cities), and 17% on county roads. Bicyclist serious injury crashes occurred 69% of the time on city streets, 19% of the time on state routes, and 12% of the time on county roads.

Washington State laws relating to bicyclists

RCW 47.04.330 Street projects, consultation with local jurisdictions, and context-sensitive design solutions.

RCW 47.36.025 Traffic control signals are required to detect bicycles.

RCW 46.61.755 Traffic laws apply to bicyclists. When riding on a roadway, a cyclist has all the rights and responsibilities of a vehicle driver.

RCW 46.61.750 Bicyclists who violate traffic laws may be ticketed.

RCW 46.61.700 Parents or guardians may not knowingly permit bicycle traffic violations by children.

RCW 46.61.770 On roadways and bicycle paths, bicyclists may ride side by side, but not more than two abreast. Bicyclists may choose to ride on the path, bike lane, shoulder, or travel lane as suits their safety needs.

RCW 46.61.780 Night bicycle riding requires a white front light visible for 500 feet, plus a red rear reflector.

Contributing circumstances and factors

Speed is a major factor in the outcome of bicycle crashes

Looking at posted speeds in the locations where bicycle crashes occurred in our state, 70% of bicyclist fatalities and 65% of bicyclist serious injuries occurred where the posted speed of the roadway was 30 mph or more. This data supports the findings of current research, which shows that crash severity and risk for bicyclists and other non-motorized roadway users increase as motor vehicle speeds increase. For instance, research has shown that bicyclists and pedestrians who are hit by a vehicle traveling at 40 mph have an 85% chance of being killed; at 30 mph the fatality rate is 50%; while at 20 mph, the fatality rate is only 5%. Target Zero advocates roadway designs that use target speeds to better meet the safety needs of all roadway users.

Intersections and crossings are a common vehicle/bicycle crash location

The majority of crashes between bicyclists and motor vehicles occur at intersections, crossings, and other roadway access points. More than 68% of bicyclist fatalities and 72% of bicyclist serious injuries occurred at intersections, or at locations where the bicyclist was crossing or turning. Strategies should focus on creating slower speed and higher visibility conditions for bicyclists at these locations by creating bicycle lanes, adding lane markings that indicate bicyclists, reducing curb radius for turning vehicles, and increasing the visibility, conspicuity, and predictability of actions for all road users.

One known crossing intervention is roundabouts. Roundabouts are highly effective for all modes of traffic as they are designed to lower entering and exiting speeds, and to provide clear views of bicycles entering the roundabout.
Engineered treatments to reduce speed for vehicles near bicycles

**Narrower travel lanes** reduce vehicle speeds, reduce crossing distances, and allow for the repurposing of roadway space for other users (e.g., create space for bicycle lanes).

**Medians** create a pinchpoint for traffic in the center of the roadway and can reduce crossing distances for pedestrians and bicyclists.

**Chokers or pinchpoints** restrict motorists from operating at high speeds on local streets.

**A horizontal lane shift** (also known as a chicane) deflects a vehicle and may be designed with striping, curb extensions, or parking.

**Vertical traffic calming** treatments vertically deflect vehicles and may be combined with a midblock crosswalk, including speed humps, speed cushions, speed tables, and raised intersections.

**Traffic diverter islands** built at residential street intersections prevent certain through and/or turning movements by motor vehicles while maintaining through-movements for pedestrians and bicyclists.

**Roundabouts** reduce traffic speeds at intersections by requiring motorists to move with caution through conflict points.

**Two-way streets**, especially those with narrower profiles, encourage motorists to be more cautious and wary of oncoming traffic.

**Trees** narrow a driver's field of vision, which encourages slower speeds.

**Tighter curb radii** reduce the speed of turning vehicles.

Photos on this page Courtesy of NACTO unless otherwise noted.
Creating dedicated spaces for bicycles reduces roadway conflicts

More than 20% of bicyclist fatalities occurred when both the bicyclist and the motor vehicle driver were moving straight ahead and in the same direction. Building dedicated facilities for bicycles can help mitigate such conflicts. An exclusive space for bicyclists creates separation, while facilitating predictable behavior and movements between bicyclists and motorists.

Education and enforcement are also key to reducing bicycle fatalities and serious injuries

Although speed is a major determinant of outcomes in crashes involving bicyclists and motor vehicles, high risk behaviors of drivers and bicyclists also contribute to crashes. Distracted driving contributed to 26% of fatal bicyclist crashes, driver impairment was involved in 16%, driver speeding was involved in 10%, and driver failing to yield the right of way was involved in 10% of these crashes. The most frequent bicyclist contributing action for fatal crashes was failing to yield the right of way (34%), followed by bicyclist impairment (21%), then distraction (16%). In addition to the engineering and speed management strategies mentioned above, education can be a major contributor to encourage safe driving and bicycling behavior on shared roadways, and at intersections and crossings. Finally, increased enforcement should be used to discourage high-risk behaviors by both drivers and bicyclists.

Helmets do not prevent crashes, and bicyclists can be badly hurt or killed in a crash with a moving vehicle whether or not they are wearing a helmet. However, helmets may help reduce traumatic head injuries in certain situations. From 2012–2014, 57% of Washington bicyclists killed in vehicle crashes were not wearing a bike helmet.

Programs and successes

Updated WSDOT Design Manual adds new tools to address bicyclists

With the 2015 update to the WSDOT Design Manual, design policies at WSDOT have seen significant changes in many areas. These changes provide for a collaborative approach to establishing project boundaries, criteria, and design controls such as modal priority and target speed.

For example, the Design Manual now includes guidance on the application and use of speed management treatments to achieve a targeted speed. These changes allow for greater consideration of the trade-offs between road improvements that lower motor vehicle speed, versus those that may only promote motor vehicle mobility or congestion benefits. The new policy supports greater flexibility in the application of design treatments and standard dimensions in order to better serve all road users. This approach uses information about land use context, the presence of intermodal connections, businesses, schools, medical facilities, and destinations where pedestrians and bicyclists will likely be present.

Several other chapters of the manual have been revised to incorporate emerging guidance on multimodal design from AASHTO, NACTO, and others. This work includes a comprehensive update to design policy on roadway bicycle facility selection and design. The manual also features low-cost options for reconfiguring roadways to address multimodal needs, providing for various retrofit possibilities, including road diets.

The updated Design Manual also provides for a performance-based approach to design rather than one focused only on achieving design standards. By going beyond a simple standards-based approach, projects can be expected to result in roadway and intersection facilities that specifically address the identified performance outcomes for pedestrians, bicyclists, and other users.
**Intersection crossing** markings indicate the intended path of bicyclists. They guide bicyclists on a safe and direct path through intersections, including driveways, and ramps.

**Green-colored pavement** within a bicycle lane increases the visibility of the facility, identifies potential areas of conflict, and reinforces priority to bicyclists in conflict areas.

**Bike boxes** are designated areas at the head of traffic lanes at signalized intersections. They provide bicyclists with a visible way to get ahead of queuing traffic during the red signal phase.

**Two-stage turn boxes** offer bicyclists a protected way to make left turns at multi-lane signalized intersections from a right side separated or standard bicycle lane.

**Bicycle signals** are traffic signals used specifically for bicycle movements at intersections. They are used in combination with existing conventional traffic signals or hybrid beacons, and can operate with a leading bicycle interval.

**Median refuge islands** are protected spaces placed in the center of the street to facilitate bicycle and pedestrian crossings.

**Active warning beacons** are user-actuated amber flashing lights that supplement warning signs at unsignalized intersections or mid-block crossings. **Rectangular Rapid Flashing Beacons** are examples of such traffic control devises.

**Hybrid beacons** are special types of beacons used to warn and control traffic at unsignalized locations. They assist pedestrians and bicyclists in crossing roadways at marked crossing locations.

*Source: WSDOT*

*Photos on this page courtesy of NACTO unless otherwise noted*
Washington State invests in bicyclist and pedestrian improvements

Washington supports bicycling and walking as part of an integrated, multimodal transportation system. Investments in bicyclist and pedestrian facilities, along with Americans with Disabilities Act (ADA) improvements, provide for a Washington State transportation system that allows for travel options for everyone. As part of Connecting Washington, the Legislature has committed $220 million over the next 16 years to improve conditions for bicycling and walking. In addition, the federal transportation act includes several programs that fund pedestrian and bicycle improvements. These resources, in combination with recent policy changes that increase the consideration of pedestrian and bicycle improvements in all projects, have and will continue to be used to address pedestrian and bicycle fatalities and serious injury crashes in Washington.

Meanwhile, WSDOT’s Pedestrian and Bicycle Safety Program has administered $54 million for 132 projects improving known pedestrian and bicyclist safety risk locations. Through Washington’s Safe Routes to Schools Program, WSDOT has administered an additional $71 million for 182 projects that reduce risks for children walking and biking to school, and provided safety education for schools across Washington.

WSDOT expands statewide bicycle and pedestrian count program to better account for exposure rates

WSDOT’s Bicycle and Pedestrian Count Program is part of the National Documentation Project, an annual bicycle and pedestrian count and survey effort sponsored by the Pedestrian and Bicycle Council of the Institute of Transportation Engineers. Over the past eight years, WSDOT, the Cascade Bicycle Club, and Feet First have organized volunteers to count bicyclists and pedestrians at 282 locations in 50 cities across the state.

To more accurately estimate bicyclist and pedestrian safety and mobility needs, WSDOT has begun to install a network of permanent bicycle counters to supplement the manual count sample data. WSDOT has invested in 16 electronic counters to automatically count bicyclists and pedestrians in locations across the state. The agency will install an additional 50 permanent counters throughout 2016. WSDOT hosts an open data website that will provide both the manual and electronic count information publicly in order to share data used in the decision-making process.
<table>
<thead>
<tr>
<th>Objective</th>
<th>Strategies</th>
<th>Implementation areas</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>BIC.1. Improve bicyclist and driver safety awareness and behavior</strong></td>
<td><strong>BIC.1.1 Promote the use of reflective apparel and bicycle lights among bicyclists. (R, CTW)</strong></td>
<td>Education</td>
</tr>
<tr>
<td></td>
<td><strong>BIC.1.2 Increase the number of people bicycling to achieve safety in numbers. (R, LIT)</strong></td>
<td>Leadership/Policy, Education</td>
</tr>
<tr>
<td></td>
<td><strong>BIC.1.3 Increase use of Safe Routes to School Pedestrian and Bicycle Safety Education curriculum in schools. (U)</strong></td>
<td>Education</td>
</tr>
<tr>
<td></td>
<td><strong>BIC.1.4 Provide bicycle safety awareness as part of driver education programs. (U)</strong></td>
<td>Education</td>
</tr>
<tr>
<td><strong>BIC.2. Enact policies/laws to improve bicycle safety</strong></td>
<td><strong>BIC.2.1 Encourage bicycle helmet use for children and adults. (U)</strong></td>
<td>Leadership/Policy, Education</td>
</tr>
<tr>
<td></td>
<td><strong>BIC.2.2 Improve training on bicycle laws for law enforcement officers at state, Tribal, and local levels. (R, WSDOT)</strong></td>
<td>Education</td>
</tr>
<tr>
<td><strong>BIC.3. Improve bicyclist facilities</strong></td>
<td><strong>BIC.3.1 Implement traffic calming techniques. (P, NCHRP)</strong></td>
<td>Engineering</td>
</tr>
<tr>
<td></td>
<td><strong>BIC.3.2 Implement speed management using target speeds and context sensitive solutions. (P, AASHTO)</strong></td>
<td>Engineering</td>
</tr>
<tr>
<td></td>
<td><strong>BIC.3.3 Utilize road reconfigurations/diets to improve safety for all roadway users. (R, CMF)</strong></td>
<td>Engineering</td>
</tr>
<tr>
<td></td>
<td><strong>BIC.3.4 Follow national guidelines on the use of reflective markings and sign materials. (R, FHWA)</strong></td>
<td>Engineering</td>
</tr>
<tr>
<td></td>
<td><strong>BIC.3.5 Construct more bike lanes, separated bicycle lanes, and separated bicycle facilities, especially in urban areas. (R, CMF)</strong></td>
<td>Engineering</td>
</tr>
<tr>
<td></td>
<td><strong>BIC.3.6 Create bicycle boulevards on low volume, low speed streets. (R, CMF)</strong></td>
<td>Engineering</td>
</tr>
<tr>
<td></td>
<td><strong>BIC.3.7 Implement Complete Streets policies to provide for all modes of transportation. (R, NCSC)</strong></td>
<td>Leadership/Policy, Engineering</td>
</tr>
<tr>
<td></td>
<td><strong>BIC.3.8 Install colored bicycle boxes at intersections. (U)</strong></td>
<td>Engineering</td>
</tr>
<tr>
<td><strong>BIC.4. Improve safety for children bicycling to school</strong></td>
<td><strong>BIC.4.1 Expand high visibility speed enforcement in school zones, including automated speed photo enforcement. (R, CTW)</strong></td>
<td>Education, Enforcement</td>
</tr>
<tr>
<td></td>
<td><strong>BIC.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” to assist schools in creating school biking route maps. (R, WSDOT)</strong></td>
<td>Education, Engineering</td>
</tr>
<tr>
<td></td>
<td><strong>BIC.4.3 Encourage school districts to implement the Safe Routes to School program. (U)</strong></td>
<td>Education, Engineering</td>
</tr>
<tr>
<td><strong>BIC.5. Improve data and performance measures</strong></td>
<td><strong>BIC.5.1 Collect Bicycle Miles Traveled (similar to collecting Vehicle Miles Traveled); continue to track bicycle counts through Washington’s Pedestrian and Bicycle Documentation Project (R, DDACTS)</strong></td>
<td>Leadership/Policy</td>
</tr>
</tbody>
</table>

P: Proven  R: Recommended  U: Unknown
From 2012–2014, 63 American Indians and Alaskan Natives (AIANs) died in traffic crashes according to the national Fatality Analysis Reporting System (FARS) database. FARS records race and ethnicity from Washington Death Certificates; this information is used to calculate race-specific death rates. Using data from 2005–2014, which represents 267 AIAN traffic deaths, to produce a reliable population rate estimate, the AIAN traffic fatality rate is 27.6 deaths per 100,000 people in the population. This rate is more than three times higher than the next highest death rate.

In addition to calculating death rates based on race/ethnicity, the Tribal traffic safety community and partners also analyzed fatal and serious crash events occurring on reservations. From 2012–2014, there were 66 fatalities occurring on reservations, of which 21 (32%) were AIAN deaths. There were also 187 serious injuries on reservation roads. Since race/ethnicity is gathered from death certificates, it is unknown how many of the 187 serious injuries were AIANs.

**Overview**

There are twenty-nine federally-recognized Tribes in 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.

Today, Tribes play a vital role and are active partners with other agencies in addressing the goals identified in Target Zero. Transportation planning and engineering, as well as the human factors of traffic safety on Tribal lands, are important areas of focus in our state. Reservations in Washington often include a mix of Tribal, state, county, city, and Bureau of Indian Affairs (BIA) roads, which creates jurisdictional complexities with law enforcement, EMS, crash reporting, road maintenance, and capital safety projects. Additionally, many tribes in the state hold properties that are non-contiguous to their reservations and provide vital services to their communities.
To address this complex mix of jurisdictions and experts, Tribes have multiple forums that meet regularly for transportation and traffic safety issues. The Tribal Traffic Safety Advisory Board is dedicated to Tribal traffic safety issues. The Board meets monthly to discuss Tribal traffic safety concerns and partnership opportunities, and to implement projects identified through its strategic planning. Its members include Tribal leaders, planners, law enforcement, and representatives from WTSC and WSDOT. Other, more general forums that occasionally address Tribal traffic safety issues include:

- The Washington Indian Transportation Policy Advisory Committee (WITPAC)
- Tribal Transportation Planning Organization (TTPO)
- The Northwest Association of Tribal Law Enforcement Officers (NATEO)
- Northwest Tribal Technical Assistance Program (NWTTAP)

### Fatalities and serious injuries on reservations

Through a partnership with the BIA and using US Census data, WSDOT was able to include reservation boundaries in its data collection and reporting program. Of the 63 AIAN crash deaths from 2012–2014, 21 (32%) occurred on reservations. Target Zero partners suspect that this number is underreported due to gaps in data sharing between the State and Tribes. Additionally, several Tribal representatives have shared that the number of fatalities and serious injuries occurring on their reservations in the recent past exceeded what has been reported to the state.

The table below shows the over-representation of American Indians and Alaskan Native fatalities by county. These counties reflect higher AIAN proportion of traffic fatalities compared to the proportion of AIAN population.

<table>
<thead>
<tr>
<th>County</th>
<th>Percent American Indian and Alaskan Native Population</th>
<th>Percent American Indian and Alaskan Native Traffic Fatalities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clallam</td>
<td>5.3%</td>
<td>13.7%</td>
</tr>
<tr>
<td>Ferry</td>
<td>17.6%</td>
<td>25.0%</td>
</tr>
<tr>
<td>Grays Harbor</td>
<td>4.9%</td>
<td>9.2%</td>
</tr>
<tr>
<td>Jefferson</td>
<td>2.4%</td>
<td>5.1%</td>
</tr>
<tr>
<td>Kitsap</td>
<td>1.7%</td>
<td>4.0%</td>
</tr>
<tr>
<td>Lincoln</td>
<td>1.7%</td>
<td>7.1%</td>
</tr>
<tr>
<td>Okanogan</td>
<td>12.0%</td>
<td>26.4%</td>
</tr>
<tr>
<td>Pierce</td>
<td>1.6%</td>
<td>3.7%</td>
</tr>
<tr>
<td>Spokane</td>
<td>1.5%</td>
<td>4.1%</td>
</tr>
<tr>
<td>Stevens</td>
<td>5.7%</td>
<td>8.0%</td>
</tr>
<tr>
<td>Walla Walla</td>
<td>1.1%</td>
<td>8.2%</td>
</tr>
<tr>
<td>Whatcom</td>
<td>3.0%</td>
<td>5.7%</td>
</tr>
<tr>
<td>Whitman</td>
<td>0.8%</td>
<td>3.6%</td>
</tr>
<tr>
<td>Yakima</td>
<td>5.3%</td>
<td>24.1%</td>
</tr>
</tbody>
</table>
The map below illustrates where AIAN fatalities are over-represented based on the AIAN population for the county where the fatality occurred (based on 2010 Census data and FARS fatalities for Native Americans 2005–2014). This map blends both data sources available to Washington state: race/ethnicity from death certificates, and the locations where fatal AIAN crashes occur.

**Overrepresentation of American Indian and Alaskan Native Traffic Fatalities in Washington State Counties**
American Indian and Alaskan Natives have higher death rates involving high risk factors than other races. For example, the rate of AIAN unrestrained vehicle occupant deaths per 100,000 population are more than seven times higher than other races combined.

**Data challenges: how different data sources tell different stories**

Target Zero partners used three data sets in order to tell the most complete story possible about American Indian and Alaskan Native (AIAN) traffic fatalities and serious injuries in Washington:

- **Statewide fatality rates for AIANs.** This data is based on ethnicity derived from state death certificates and provides traffic fatality data for the entire State of Washington, regardless of jurisdiction. This data is captured using the Fatality Analysis Reporting System (FARS).

- **On-reservation fatalities.** This data is captured by focusing on crashes occurring on roadways located within reservation boundaries. This data set includes all recorded fatalities and serious injuries occurring on these lands, regardless of the race/ethnicity of the people involved.

- **Fatality proportion compared to population proportion.** The population data estimates of race/ethnicity are produced by the US Census Bureau.

Data gaps continue to exist, and in some cases the data sources tell a conflicting story. Pedestrian fatalities are a prime example. Fatality information that considers ethnicity based on death certificates from crashes occurring both on and off reservations is in alignment with national data and anecdotal information from Tribal representatives: pedestrian safety is a significant issue among American Indian and Alaskan Native people. That data source shows that the pedestrian fatality rates are five times higher for AIANs than non-AIANs.

However, crash information that considers the location of crashes on reservations, regardless of ethnicity, indicates that pedestrian safety is a lower priority. Pedestrian fatalities occurring on reservation lands comprised just 7.6% of the fatalities and serious injuries. Target Zero partners believe that this demonstrates significant under-reporting of fatalities and serious injuries occurring on non-state roadways within reservations. This interpretation (under-reporting) is in alignment with information from WSDOT on the identity of reporting law enforcement agencies.
Based on this analysis and diagnosis, Target Zero partners believe that pedestrian safety is a significant issue for American Indians and Alaskan Natives in Washington, both on- and off-reservation. Despite the rural character of many reservations, a high percentage of the residents walk, bicycle, and use other non-motorized transportation. Unfortunately, several factors on reservation roads can create unsafe conditions and contribute to the disproportionate fatality rates:

- Minimal availability of transit services
- Lack of sidewalks, crosswalks, and street lights
- High speeds
- Lack of enforcement due to staffing and geography

How Target Zero determined Tribal priorities

To focus efforts on eliminating deaths and serious injuries on our state’s roadways, Target Zero partners grouped the primary factors found in statewide fatal and serious traffic crashes into priority levels one, two, and three. The levels are based on the percentage of traffic fatalities and serious injuries associated with each factor in 2012–2014. This chapter looks at just the subset of data that includes reservation roads in order to set Tribal Target Zero priorities. It uses the same cut-off points for priority levels as the statewide figures do.

Priority level one includes the factors associated with the largest number of fatalities or serious injuries occurring on reservations. Each of these factors was involved in at least 30% of traffic fatalities or serious injuries occurring on reservations.

Priority level two factors, while frequent, are not as common as priority level one factors. Level two factors were seen in at least 10% of traffic fatalities or serious injuries, but fewer than 30%.

Priority level three factors are associated with less than 10% of fatalities and serious injuries occurring on reservations.

Differences in Tribal Target Zero priorities

Many of the Tribal categories end up in the same Priority Level as the overall population. However, major differences between Tribal Target Zero priorities and overall Target Zero priorities include:

- Unrestrained occupants are a priority 1 instead of priority 2.
- Unlicensed drivers are a priority 1 instead of a priority 2.
- Heavy trucks are a priority 2 instead of priority 3.
- Older drivers are a priority 3 instead of a priority 2.
**Tribal Target Zero Priorities**

Given the disproportionately high rate of American Indian and Alaskan Native fatalities in Washington, it’s important that the priorities in Target Zero are tailored to meet Tribal needs. Recently, several Tribes throughout Washington State received funding under the federal Tribal Transportation Program in MAP-21 and the FAST Act to develop their own Traffic Safety Plans for their reservations. The unique priorities of individual tribes are reflected in those plans. Based on fatalities and serious injuries that have occurred on reservation roads statewide, the overall Tribal Priorities are as follows:

<table>
<thead>
<tr>
<th>Fatalities and serious injuries occurring on reservation roads in Washington State 2012–2014</th>
<th>Fatalities</th>
<th>Serious Injuries</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td># of People</td>
<td>% of total for all fatalities on reservations</td>
</tr>
<tr>
<td><strong>Priority Level One</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Impairment Involved</td>
<td>42</td>
<td>63.6%</td>
</tr>
<tr>
<td>Lane Departure</td>
<td>39</td>
<td>59.1%</td>
</tr>
<tr>
<td>Unrestrained Vehicle Occupants</td>
<td>28</td>
<td>42.4%</td>
</tr>
<tr>
<td>Intersection Related</td>
<td>14</td>
<td>21.2%</td>
</tr>
<tr>
<td>Young Driver Aged 16–25 Involved</td>
<td>21</td>
<td>31.8%</td>
</tr>
<tr>
<td>Speeding Involved</td>
<td>21</td>
<td>31.8%</td>
</tr>
<tr>
<td>Unlicensed Driver Involved</td>
<td>20</td>
<td>30.3%</td>
</tr>
<tr>
<td><strong>Priority Level Two</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Distraction Involved</td>
<td>19</td>
<td>28.8%</td>
</tr>
<tr>
<td>Motorcyclists</td>
<td>8</td>
<td>12.1%</td>
</tr>
<tr>
<td>Heavy Truck Involved</td>
<td>6</td>
<td>9.1%</td>
</tr>
<tr>
<td>Pedestrians*</td>
<td>5</td>
<td>7.6%</td>
</tr>
<tr>
<td><strong>Priority Level Three</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Older Drivers 70+ Involved</td>
<td>3</td>
<td>4.5%</td>
</tr>
<tr>
<td>Drowsy Driver Involved</td>
<td>3</td>
<td>4.5%</td>
</tr>
<tr>
<td>Bicyclists</td>
<td>0</td>
<td>0.0%</td>
</tr>
</tbody>
</table>

* Data based on the ethnicity of the fatal person show that 21% of American Indian and Alaskan Native fatalities (occurring anywhere in the state) are pedestrians.
Programs and successes

Suquamish Tribal Police’s Drug Recognition Experts (DREs)

Data from 2012–2014 show that impairment is the most common contributing factor (64%) in fatalities and serious injuries on reservation roads statewide. Of those impaired, 26% were impaired by alcohol, while 44% were both impaired by alcohol and positive for drugs. Another 31% were positive for one or more drugs. Among traffic fatalities occurring on Tribal reservations in Washington State, not counting alcohol, cannabis was the most frequently occurring drug, followed by central nervous system stimulants (methamphetamine, cocaine) and narcotic analgesics (painkillers, heroin).

Ten years ago, a Suquamish Tribe police officer (now a Deputy Chief) received training and became certified as a Drug Recognition Expert (DRE). A DRE is a law enforcement officer trained to recognize impairment in drivers who are positive for drugs other than, or in addition to, alcohol. DREs have specialized training to identify the symptoms of intoxication for seven different categories of drugs. They conduct a 12-step standardized and systematic examination of persons arrested or suspected of drug-positive driving or similar offenses. A DRE’s expert opinion on a case improves the entire process to identify, arrest, and prosecute impaired drivers for their crimes. Currently there are more than 230 DREs in Washington who perform more than 1,600 evaluations annually.

The rigorous training and certification maintenance requirements call for a significant commitment on the part of the individual and the law enforcement agency. The Suquamish Police Department has a DRE instructor and a DRE in training to become an instructor. They are often called on by neighboring jurisdictions to conduct evaluations.

One year later the Suquamish Tribe police officer became a DRE, and the Suquamish Tribe used a grant from their drug court to host a DRE class at the Clearwater Casino, which is now an annual location for the Spring DRE class for all law officers, including non-Tribal. Since then, a second Suquamish Tribe police officer has received this certification, making them the only two DRE’s operating on Tribal reservations in Washington State.

Representatives of the Northwest Association of Tribal Enforcement Officers (NATEO)
Data challenges and improvements for American Indians and Alaskan Natives and traffic data

Having accurate data is key to identifying safety problems, selecting appropriate countermeasures, and evaluating performance. Without data, the evaluation, analysis, and diagnosis of traffic safety becomes more difficult. It’s also more difficult for Tribes to compete for safety funding and justify their needs if they lack supporting data.

Given the disproportionate impact of traffic crashes on Tribal communities, it is critical that we close these gaps and use data to help identify and address problems. Some of these challenges are described below.

Reporting

It’s important for Tribes and the state to share data on traffic crashes, fatalities, and serious injuries. It will allow both Tribes and state agencies to have a comprehensive picture of traffic safety issues. Tribal attorneys, law enforcement, WSP, and WTSC are working together to resolve concerns with data sharing across jurisdictions. Notably, eTRIP managers and Tribal representatives with expertise in jurisdictional and contractual law, policing procedures, and information technologies are working to remove obstacles to data sharing through contractual and computer programming remedies.

Roadway Jurisdiction

Through a partnership with the BIA, WSDOT was able to include reservation boundaries in its data collection and reporting program, and can now identify whether a crash occurred within a specific reservation. Additional information is still needed regarding roadway ownership. Target Zero partners want to work with Tribes to identify tribally owned road networks.

Nooksack Mobility and Safety Education Program

Thirty percent of fatalities or serious injuries occurring on reservation roads in 2012–2014 involved an unlicensed driver. Tribal representatives report limited access to driver education programs on or near their reservations. To help address several traffic safety needs, the Nooksack Tribe is developing a Safety Mobility Education Program. The goal of this project is to establish a holistic approach to educating communities about all modes of transportation. The program includes instruction in operating a vehicle, walking, biking, and busing. A component part of the Mobility Safety Education Program will be a public awareness program that will address:

- Impaired driving
- Unlicensed driving
- Occupant protection
- Distracted driving
- Sharing the road and with motorcyclists, pedestrians, and bicyclists
- Bicycle Safety
- Water/land foot traffic safety

It will also cover alternative transportation services, designated driving programs, and alternative ride programs. The Nooksack Tribe plans to begin offering classes in Spring and Fall 2016.
Culturally appropriate traffic safety materials
The WTSC’s Tribal Traffic Safety Advisory Board developed and distributed culturally relevant traffic safety educational materials. They sent these materials to volunteer contacts from each of the 29 federally recognized tribes in October 2015. The materials included posters, rackcards, vinyl banners, and brief videos covering the five top factors contributing to AIANs dying in traffic crashes. On behalf of the BIA, NHTSA requested and received electronic files of the print materials to allow any Tribe in the US to customize these educational materials for their communities. The project was highlighted during the 2015 National Tribal Transportation Conference. Print materials will be available during Washington’s 2016 Canoe Journey, hosted by the Nisqually Tribe.

Videos and materials are available on WTSC’s Programs and Priorities page for Tribes.

NATEO grants help Washington’s Tribal Police get funding and equipment for traffic safety
Tribal police in Washington are an important partner in reducing the disproportionate traffic fatality rate of AIAN people. For several years NATEO, through the Chehalis Tribal Police Department, has been administering $40,000 worth of grants to Tribal police departments each year. These grants have funded important traffic safety equipment purchases and enabled officers to receive traffic safety training.
Eastern Washington University (EWU) study leads to sharing best practices across tribes

In 2014–2015, the Northwest Tribal Technical Assistance Program (NWTTAP) and participating tribes, funded by WTSC, conducted traffic safety assessments on six reservations:

- Confederated Tribes of the Colville Reservation
- Kalispel Tribe of Indians
- Lummi Nation
- Spokane Tribe
- Swinomish Indian Tribal Community
- Confederated Tribes and Bands of the Yakama Nation

For the assessments, NWTTAP used Eastern Washington University (EWU) faculty and graduate students who were working on Executive Tribal Planning Graduate Certificates. The assessments collected data from several sources including WSDOT, WTSC, Tribal police departments, and EMS organizations. The assessments found significant variation in data collection and ease of accessing data. Each Tribe, however, was using a best practice in at least one area of traffic safety. The study found that Tribes could benefit from sharing information on successful programs.

Based on the assessment, EWU developed a concept of an interdisciplinary Tribal traffic safety committee that could be adapted to meet the needs of any Tribe — large or small, rural or urban. EWU staff and students have made several national and regional presentations on the highly regarded project. WTSC Commissioners have approved funding a second phase of implementing the assessments on a portion of the participating reservations.