EVERYONE WALKS.

Understanding & Addressing Pedestrian Safety

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The views and recommendations in this publication do not necessarily reflect those of GHSA, State Farm or the individuals or organizations represented on the Expert Panel.

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Introduction

EVERYONE IS A PEDESTRIAN. WHETHER YOU DRIVE A CAR, RIDE a bicycle or take a bus to school, work, shop or play, your journey always begins and ends on foot. While we continue to ponder the age old question, *What came first, the chicken or the egg?*, when it comes to mobility there is no doubt our feet preceded the wheel.

The invention of the automobile and completion of the U.S. highway system provided Americans the means to go anywhere, anytime, sparking a significant decline in walking. Between 1980 and 2010, commuting by foot dropped 50% (American Association of Highway Safety Officials [AASHTO], 2015). This uptick in motor vehicle travel has come at a price – thousands of deaths annually involving not only motorists and their passengers, but also pedestrians.

The good news is that pedestrian fatalities in the U.S. have fallen sharply – from 7,516 in the mid-1970s, to 4,735 in 2013, a 37% decline. A closer look at the numbers, however, reveals a troubling trend. Pedestrians accounted for 17% of all motor vehicle fatalities in the late 1970s and 1980s. That rate fell to 13% to 14% between 1989 and 1998, and 11% to 12% through the 2000s. However, the rate changed course between 2010 and 2013, climbing back to 14% (Williams, 2015). Equally concerning is the fact that one pedestrian was killed every two hours and injured every eight minutes in motor vehicle crashes in 2013 (National Highway Traffic Safety Administration [NHTSA], 2015a).

Ensuring the safety of all roadway users is paramount; particularly when you consider that everyone walks. The renewed focus on encouraging walking over driving for both environmental and health reasons also points to the need to make pedestrian safety a priority. As more and more communities recognize

the positive impact *walkable* neighborhoods, downtowns and entire communities have on property values, jobs, tourism, and local spending, the ability to walk safely takes on a new level of importance. Add to that a potential cost savings of approximately $26 billion annually (based on 2012 U.S. pedestrian injury and fatality data) if pedestrian fatalities and injuries are prevented, and the safety of people on foot is literally an economic engine (National Safety County as cited by Pedestrian & Bicycle Information Center, 2014).

According to both the U.S. Census and National Household Travel Survey, which measures walking to and from work, the historical decline in walk commuting levels appears to have ended and stabilized (AASHTO, 2015). On the flip side, an analysis of census data found that commuting by car declined from 88% in 2000 to 86% between 2010 and 2013, a small but noteworthy change. The declines are most dramatic in urban areas, while only three states – Louisiana, North Dakota and South Dakota – experienced increases (Harrison, 2014).

Most of us correctly assume that people who walk to work tend to be in highly urbanized areas such as Washington, D.C. and New York. But surprisingly, they are also in states like Alaska, Vermont and Montana. Walking mode share, not unexpectedly, is also high in university towns and small to moderate-sized communities such as State College, Pennsylvania (9.24%) and Iowa City, Iowa (8.34%). In fact, the walk share in these same areas surpasses the New York-Northern New Jersey-Long Island metropolitan area (5.94%), where transit users are likely to begin and end their trip on foot (AASHTO, 2015).

Pedestrian injuries and fatalities, however, are more likely to occur in urban rather than rural areas. For example, in 2013 pedestrians accounted for 45% of all motor vehicle fatalities in Washington, D.C., but just 0.7% in North Dakota. Total pedestrian fatalities in 2013 were highest in the large and densely populated states of California (701), Florida (501) and Texas (480). But an examination of the pedestrian fatality rate per 100,000 population reveals that Delaware, which accounts for just .002% of the nation's population, surpasses all other states at 2.70. Simply put, no state is immune from the potential conflict that can occur when people walking, biking and driving share the road. Add in distraction, which new research suggests is an issue for all roadway users, and the issue becomes even more problematic and complex.

About This Publication

THIS PUBLICATION IS ONE OF A SERIES FUNDED BY STATE FARM®. It provides an overview of current pedestrian safety data and research and discusses how states are using this and other information to address the issue. Taking a 3 "E" approach – engineering, education and enforcement – is essential for making gains in pedestrian safety. While there are evidence-based engineering countermeasures shown to reduce pedestrian-motor vehicle crashes, this report does not address infrastructure improvements. Rather, it focuses on legislative, enforcement and educational initiatives at the national, state and local level that work in tandem with engineering solutions to foster safe mobility for those on foot. It is not intended to be inclusive of all pedestrian safety policies or initiatives, nor does inclusion of a particular program or policy imply endorsement. This report is designed to help Governors Highway Safety Association (GHSA) member states, safety advocates and others tackle the behavioral aspects of pedestrian safety, which are critical for fully addressing the problem. Sprinkled throughout the report, as well as listed collectively on the next page, are 21 key takeaways states should consider when examining their current pedestrian safety programs, policies and practices.

The state and local policies and programs detailed in this report were identified through a survey of State Highway Safety Offices (SHSOs) conducted by GHSA in January 2015. Forty states, D.C. and the Virgin Islands provided responses about their pedestrian safety laws, policies, programs, and activities. After reviewing survey responses and consulting with an expert panel of federal and state highway safety officials, safety advocates and researchers, telephone interviews were conducted with a select number of state and local officials to gain a better understanding of their activities. Some, but not all, of the initiatives included in this report have been or are being evaluated through crash data analyses, pre- and post-surveys or peer review, which are essential for gauging impact and informing future efforts.

Key Takeaways

The following key takeaways are listed in the order in which they appear in this report and identified with the icon shown on the left on the page where they are discussed in more detail. They are provided in this format to help states assess their current pedestrian safety programs, policies and practices.

- ❑ **Educate motorists about what to do in the event of a vehicle breakdown or roadside stop to minimize their risk.** (page 10)
- ❑ **Ensure a state's Move Over Law includes all traffic incident responders, explicitly tells motorists what to do as they approach a vehicle on the side of the road and is actively promoted year-round.** (page 11)
- ❑ **Expand the focus on the dangers of distracted driving to include distracted walking.** (page 17)
- ❑ **Conduct a pedestrian safety program technical assessment to identify opportunities to strengthen state policies and programs.** (page 19)
- ❑ **Apply for a Section 403 enforcement grant (available to FHWA-designated pedestrian focus cities).** (page 20)
- ❑ **Partner with mayors and other elected officials to advance pedestrian and bicycle safety.** (page 21)
- ❑ **Coordinate efforts to maximize resources and minimize duplication of efforts to grow Safe Routes to School programs.** (page 24)
- ❑ **Take a holistic, 3 E (engineering, education and enforcement) approach to investing in and addressing pedestrian safety.** (page 25)
- ❑ **Examine all available data, including a community's walkability score.** (page 26)
- ❑ **Track and promote how high visibility enforcement addressing speed, distraction and impairment benefits all roadway users.** (page 26)
- ❑ **Flex Highway Safety Improvement Program funds for behavioral safety purposes.** (page 28)

- ❑ **Develop a Pedestrian Safety Action Plan that focuses funding and resources in those areas with the greatest potential to reduce pedestrian-motor vehicle crashes.** (page 29)
- ❑ **Collaborate with the public health sector to enhance data collection and promote safe walking.** (page 29)
- ❑ **Enact a Vulnerable User Law that provides clear guidance to prosecutors in the event a motorist injures or kills a pedestrian, but also allows for consideration of the motorist's behavior.** (page 31)
- ❑ **Allow communities to reduce speed limits or establish slow speed zones in areas with a history of pedestrian-motor vehicle crashes and in neighborhoods with schools, parks, and day care and senior centers.** (page 33)
- ❑ **Provide comprehensive training to law enforcement.** (page 35)
- ❑ **Provide traffic incident management training for all emergency responders and tow truck operators.** (page 38)
- ❑ **Integrate pedestrian safety enforcement into an officer's regular shift so that pedestrian safety enforcement is viewed as traffic enforcement.** (page 39)
- ❑ **Include community members and students in neighborhood audits and pedestrian safety information forums to foster understanding, engagement and ownership.** (page 41)
- ❑ **Require that evaluation using sound science be built into all grant-funded programs and that it extend beyond crash, injury and fatality data to include measurement of behavior change.** (page 43)
- ❑ **Partner with state and county DOTs, metropolitan planning organizations (MPOs) and municipal public works departments to identify infrastructure improvements that support education and enforcement.** (page 44)

Understanding the Problem

WITH AN UPTICK IN THE NUMBER OF PEOPLE WALKING AND biking, one would expect to see an increase in injury and fatality rates for pedestrians and bicyclists due to increased exposure. However, research conducted both in the U.S. and Europe suggests just the opposite – higher levels of walking and biking actually result in fewer motor vehicle collisions. When pedestrians and bicyclists are commonplace in the street environment, motorists expect them to be there and take precautions. This concept of *safety in numbers* seems to suggest promoting walking and bicycling as a possible safety strategy (Federal Highway Safety Administration [FHWA], 2009; Jacobsen, 2009).

Problems occur, however, when people who drive, walk and bike share the road and one or both fails to observe traffic safety laws and/or look out for the other. When that happens, the consequences can be deadly – particularly for pedestrians. It is important to note, as well, that roads have primarily been designed to accommodate people who drive rather than people who walk, thus putting pedestrians at a higher rate of risk. The latter include not only people walking to and from work, school or recreation, but also joggers and the disabled who rely on wheelchairs and other devices for personal mobility. Researchers examining California crash data determined that pedestrians have the highest injury vulnerability of all

roadway users, twice that of bicyclists (Ragland, Grembek & Felschundneff as cited in Williams, 2015).

Motor vehicle occupants can also become "unintended" pedestrians if the vehicle they are driving or riding in becomes disabled, or they stop to change drivers or deal with any number of situations that can occur while on the road. According to a 2014 AAA Foundation for Traffic Safety report, from 1993 to 2012 an average of 515 pedestrians were struck and killed annually by a motor vehicle on the nation's Interstate Highway System. Some pedestrians entered the interstate intentionally, while others were drivers and motor vehicle occupants. These fatalities accounted for approximately 10% of all U.S. pedestrian deaths and 11.6% of all traffic fatalities on interstate highways. The risk of being struck on the roadside is not confined to one state, but it is particularly problematic in Wyoming and Missouri. Despite laws banning pedestrians from traversing interstate highways, pedestrians accounted for 25% and 23%, respectively, of each state's total pedestrian deaths (AAA Missouri, 2014).

Emergency responders and roadway and utility workers are also exposed to risk roadside once they exit their vehicles. Despite the adoption of laws in all 50 states requiring motorists to move over and slow down when approaching emergency and other authorized vehicles (D.C. does not currently have a Move Over Law), 145 law enforcement officials were struck on the roadside and killed between 2004 and 2013 (National Law Enforcement Officers Memorial Fund, 2015). Across the U.S., crashes that could be prevented by drivers moving over claim the life of an average of one tow truck operator every six days, 23 highway workers and one police officer every month, and five firefighters every year (Gorman as cited in Trott, 2014).

Educate motorists about what to do in the event of a vehicle breakdown or roadside stop to minimize their risk.

Keeping pedestrians off interstates and other high speed roadways is critical, but not always possible in the event of an emergency or breakdown. Educating motorists about what they should do to minimize their exposure is essential. That includes pulling as far off the roadway as possible, turning on emergency flashers, calling for assistance, and staying inside the vehicle.

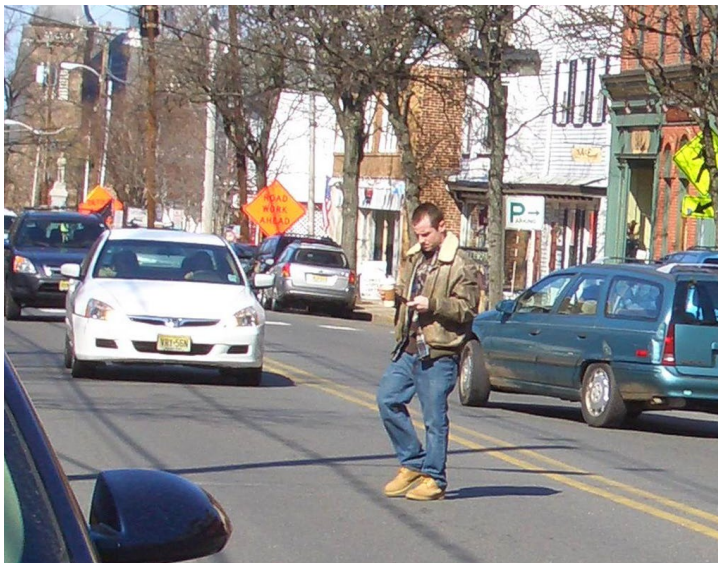
Equally important is ensuring that drivers know what to do when they see a vehicle – emergency or not – on the side of the road. While 90% of drivers believe traffic stops and

roadside emergencies are dangerous for law enforcement and first responders, nearly three-quarter are unfamiliar with their respective state's Move Over Law (Move Over America, 2007). More outreach is needed to ensure that motorists, see, hear and abide by these lifesaving statutes.

In addition to national and state public outreach efforts, state Move Over Laws should include all traffic incident responders and explicitly tell motorists what to do as they approach a vehicle on the side of the road, but leave the decision of whether to change lanes up to the drivers based on prevailing traffic and roadway conditions. Providing an alternative action of reducing speeds if a lane change maneuver cannot be safely performed is also recommended.

States with model laws that include explicit yet reasonable provisions for driver action include: Alabama, California, Florida, Georgia, Indiana, Iowa, North and South Dakota, South Carolina, Tennessee, Texas, Virginia, West Virginia, and Wyoming. States with laws that include all emergency responders include: Georgia, Indiana, Iowa, Kansas, Kentucky, Michigan, Tennessee, Utah, and Wisconsin (FHWA, 2015).

Ensure a state's Move Over Law includes all traffic incident responders, explicitly tells motorists what to do as they approach a vehicle on the side of the road and is actively promoted year-round.



Who Is Likely to Be Involved and Why

REGARDLESS OF WHY A PEDESTRIAN IS ON OR NEAR A ROADWAY, understanding exactly who the pedestrian is and why the crash occurred are essential for identifying and implementing appropriate countermeasures. Who is likely to be involved in a pedestrian crash? Males account for 70% of all pedestrian fatalities, a rate that has not changed since the 1970s (Williams, 2015). The percentage of male pedestrians killed on interstates is even higher at 80% (AAA Missouri, 2014).

What has changed is the age of fatally injured pedestrians. Since 1975, deaths involving pedestrians 20-69 years of age have surged 28%. According to the National Highway Traffic Safety Administration (NHTSA), the average age of a pedestrian killed in a traffic crash in 2013 was 46 (2015a). On the other hand, the per capita fatality rate for pedestrians 70 and older declined from 9.3 to 2.2 during the same time period, while pedestrian deaths involving children between 0 and 12 years of age fell from 21% to 4% (Insurance Institute for Highway Safety [IIHS], 2015).

Despite the reduction in pedestrian fatalities involving children and people 65 and older, injuries for these age groups remain a concern. According to NHTSA, in 2013, 15% of all pedestrians

injured in traffic crashes were children 14 and younger (10,000 of 66,000 after rounding). Of those injured, 9% were children between the ages of 10 and 14 – the highest among all age categories. On the other end of the spectrum, 10% of all pedestrians injured were 65 years of age or older. Meanwhile, the average age of those injured in traffic crashes has steadily increased from 31 in 2004 to 36 in 2013 (NHTSA, 2015a).

Pedestrians are most often killed during evening or late night hours (72% in 2013). Pedestrian fatalities are also more likely to occur in urban rather than rural areas (73% and 27%, respectively, in 2013) and at non-intersection locations (69%). Nearly all pedestrians deaths involve a single vehicle (92%) and are more likely to occur between July and December, with a particular frequency in late fall and winter. One in five pedestrians killed in 2013 were struck in crashes that involved hit-and-run drivers (NHTSA, 2015a).

Alcohol is a significant factor in pedestrian-motor vehicle crashes, with many of those deaths occurring after dark. In 2013, more than a third (36%) of pedestrians 16 years of age and older involved in fatal crashes had blood alcohol concentration (BAC) levels of .08 or higher (this statistic applies to pedestrians killed on interstates as well), a rate that remains unchanged since 2004 (AAA Missouri, 2014; NHTSA, 2015a). Meanwhile, 15% of the motorists who fatally struck pedestrians had BACs of .08 or higher, and in 6% of these fatal crashes both the pedestrian and motorist had high BAC levels. Forty-five to 54-year-olds followed by 25- to 34-year-olds accounted for the greatest number of pedestrians who were legally drunk at the time of the crash – 49% and 48%, respectively (NHTSA, 2015a).

Speed also plays a role in pedestrian-motor vehicle crashes and increases the injury potential exponentially. The average risk of a pedestrian being seriously injured is 10% at an impact speed of 17 mph, 25% at 25 mph, 50% at 33 mph, 75% at 41 mph, and 90% at 48 mph (Tefft, 2013). Since many pedestrian fatalities occur in urban areas with lower speed limits (average speeds range from 20-35 mph), ensuring that drivers comply with posted speed limits has the potential to positively impact pedestrian safety. In 2013, nearly one in five pedestrian fatalities occurred on roadways where the posted speed limit was less than 35 mph; 28% occurred where the limit was 35 to 40 mph (Williams, 2015).

The Distraction Factor

DISTRACTION POSES A RISK FOR ALL ROADWAY USERS. IN 2013, there were 2,910 fatal crashes in the U.S. involving distraction. This represents 10% of all fatal crashes, 18% of injury crashes and 16% of all police-reported crashes. Eighty-five percent of people killed in distracted driving crashes were the driver or a passenger; 12% were pedestrians (NHTSA, 2015b).

When it comes to why drivers are distracted behind the wheel, the public's attention is focused primarily on the use of cell phones and other electronic devices, yet 76% of all distraction-affected crashes in 2013 did not involve the use of a cell phone (NHTSA, 2015b). The motorist, instead, was distracted for any number of reasons ranging from talking to passengers and reaching for something, to eating, applying make-up or simply daydreaming. Ensuring that drivers keep their hands on the wheel and eyes and mind on the road at all times is essential.

This is particularly important for teens and young adults. Motorists 20 to 29 years of age are most likely to be involved in fatal crashes involving distraction (27% in 2013) as well as distraction caused by a driver using a cell phone (38% in 2013). While only 6% of drivers involved in fatal crashes were 15 to 19 years of age, they accounted for 10% and 11%, respectively, of all fatal distracted driving and cell phone-related crashes (NHTSA, 2015b). The data also show that the majority of drivers involved in fatal crashes are male (69%). Additionally, these

crashes are more likely to occur during the daytime between 6 a.m. and 5:59 p.m. (NHTSA, 2015b).

Distracted Walking

What remains unknown is how many pedestrians who were killed in a crash involving a distracted driver may have been distracted themselves. There is a growing body of research that points to an uptick in distracted walkers. Researchers at The Ohio State University found that between 2004 and 2010 the number of pedestrians killed while using a cell phone increased from less than 1% to 3.6% (Nasar and Troyer as cited in Alan M. Voorhees Transportation Center, 2014).

Using data from the National Electronic Injury Surveillance System (NEISS), a database maintained by the U.S. Consumer Products Safety Commission (CPSC), these same Ohio State researchers also discovered that in 2010, more than 1,500 pedestrians were estimated to be treated for injuries related to cell phone use while walking. That number has more than doubled since 2005, even though the total number of pedestrian injuries dropped during the same time period. Taking into account the increase over the six year period, coupled with research that suggests that the number of traffic crash-related injuries suffered by distracted drivers is actually 1,300 times higher than CPSC national estimates, the researchers projected "there may have been about 2 million pedestrian injuries related to cell phone use in 2010" (Grabmeier, 2013).

Researchers across the country are now studying the prevalence of pedestrians distracted by cell phones and other electronic

devices while walking. In 2012, a team at the University of Washington observed more than 1,100 pedestrians at 20 Seattle intersections and found that approximately one-third were engaged in a distracting activity such as emailing, talking to another person or listening to music (Kotz, 2012).

Public health professionals at the University of Georgia employed the same methodology to assess pedestrian behavior at 20 high-risk intersections. These intersections were selected using a crash risk ratio with data from the Georgia Department of Transportation and the Governor's Highway Safety Office. The researchers found that nearly half of all pedestrians performed some type of distracting activity while crossing the street. One-third were talking to other people, 26% were wearing headphones, 15% were texting, and 13% were talking on the phone. Another 6% were engaged in multiple distractions such as texting and listening to music (Littleton & Cotton, 2013).

In both the Washington and Georgia studies, the researchers noted that those who were distracted took longer to cross the street (1-2 seconds) and were more likely to engage in unsafe crossing behaviors (i.e., ignoring the light, not looking both ways) (Littleton et. al, 2013; Kotz, 2012). The Georgia team also reported an unexpected finding – pedestrians who were not distracted were less likely to obey traffic signals and use crosswalks. "This may be because they perceived their risk to be lower due to the fact that they were paying attention and therefore were more likely to engage in more dangerous crossing behaviors," wrote the study's authors (Littleton et al, 2013).

More recently, a William Paterson University (WPU) sociologist found that more than 25% of all pedestrians crossing five busy intersections with the *Walk* signal in mid-town Manhattan (New York City) were distracted by either their phones or headphones. Additionally, 50% of the pedestrians that crossed against the light (*Don't Walk*) were distracted. But most concerning were the number of near-misses – pedestrians pulling or pushing distracted walkers out of the way of oncoming vehicles – witnessed by the research team (O'Brien, 2015).

The WPU researcher noted that some of the distracted walking may have occurred because the selected intersections were adjacent to subway stops which do not have cellular service. However, she stressed that factor does not justify the unsafe behavior. She also suggested that the city consider posting public

Expand the focus on the dangers of distracted driving to include distracted walking.

service signs encouraging pedestrians to check their messages before stepping off the curb, just as drivers are encouraged to pull to the side before using their phone. But she added the effect may be minimal due to the urgency to always be in touch and the fear of missing out on something. This may be more of a concern to pedestrians than the danger posed by being distracted in traffic, she concluded (O'Brien, 2015).

Texting or talking on a cell phone while walking may not be nearly as dangerous as a driver engaged in the same behavior (after all, the driver is operating a multi-ton vehicle), but the risk for injury and death certainly escalates when a pedestrian is not focused on his or her environment. According to the Pew Research Center, 53% of all adult cell phone users have bumped into something or someone – or been on the receiving end of a bump – due to distracted walking. That bump rate is highest for 18- to 24-year-olds (51% and 71%, respectively), but even slightly more than a quarter of walkers 65 and older admit to being bumped into as well while talking on their phones (Badger, 2014). This burgeoning practice of walking while using a cell phone has even resulted in the coining of a new phrase *petextrian* – "one who texts while walking, usually unaware of their surroundings" (Urban Dictionary, 2009).

The problem is that walking and texting or talking changes the way we walk. Researchers from the University of Queensland in Australia studied how 26 healthy people walked a short distance using three scenarios – while walking normally, while reading a text and while typing a text. The experiment confirmed that pedestrians walk at a slower rate when handling a cell phone, especially when texting, and are unable to travel in a straight line. Additionally, a pedestrian using a cell phone keeps his or her head down, neck immobile and arms locked at the side. Arm swing, vital for balance while moving, also stops. Simply put a distracted pedestrian focuses on typing rather than walking and keeping the screen rather than him or herself stable (Badger, 2014). That, researchers say, is dangerous.

Teens, Technology and Walking

While no age group is immune from the problem of distracted walking, teens in particular are engaging in the behavior at levels that put them at significant risk for injury, even death. According to Safe Kids Worldwide (2014), 40% of U.S. teens 13 to 18 years of age have been hit or nearly hit by a car, bike or motorcycle while walking. Teens who have been hit or had a close call are two times

more likely than their peers who have not reported being distracted while crossing the street to cross the street unsafely (i.e., midblock, darting across the street). These same teens also believe it is okay to cross the street while texting or talking on the phone and believe most people agree with that assertion.

In addition to surveying teens, Safe Kids observed middle and high school students across the U.S. crossing in school zones. Based on more than 34,000 observations, researchers found that one in five high school students and one in eight middle schoolers crossed the street while distracted. The teens who were distracted were most frequently texting or wearing headphones (each 39%) followed by talking on a cell phone (20%). The research also revealed that girls are more likely to walk distracted, even though the pedestrian death rate is 1.8 times higher for boys. Additionally, 78% of the teens perceive the most at-risk age group for pedestrian injuries to be one other than their own (22% older, 50% younger).

Numerous initiatives exist to address distracted driving by teens, but the data points to the need to expand the focus to include walking. Currently, 78% of teens 12 to 17 years of age own a cell phone (a rate that has increased steadily over the past decade) with texting dominating their communication choices (Madden, 2013; Lenhart, 2014). Three-quarter (75%) of all teens, regardless of ethnicity and socio-economic status, text; 63% say they communicate with others via text every day, with the typical teen sending an average of 60 text messages daily. Older female teens are most likely to text, sending double what boys of the same age do (100 a day versus 50) (Lenhart, 2014).

The Federal Focus and Approach

THE U.S. DEPARTMENT OF TRANSPORTATION (USDOT) IS FOCUSED on creating safer streets, communities and policies through a new biking-walking safety initiative. The blueprint for this initiative, *Safer People, Safer Streets*, was unveiled in September 2014. The plan outlines steps the USDOT is taking to address non-motorized safety issues and help communities create safer and better connected walking and bicycling networks. New resources and research as well as existing tools are being used to address infrastructure, behavior and vehicle safety, as well as data collection and analysis.

For example, in every state, Federal Transit Administration (FTA), FHWA and NHTSA field offices are facilitating and participating in walk and bike assessments on selected corridors to identify the extent of the safety problem and appropriate solutions. SHSOs are also encouraged to advantage of pedestrian safety program technical assessments provided by NHTSA. Like impaired driving and occupant protection assessments, during a pedestrian safety assessment a five-member team of experts examines a state's program management, multidisciplinary involvement, legislation and policy, enforcement, engineering, education and public outreach efforts, and evaluation. The team then issues a consensus report with recommendations to help strengthen those activities. To date, two states – Florida and Nevada – have conducted pedestrian safety assessments.

Conduct a pedestrian safety program technical assessment to identify opportunities to strengthen state policies and programs.

To promote and foster community engagement under the *Safer People, Safer Streets* plan, the *Resident's Guide for Creating Safe and Walkable Communities*, which is designed to help people take an active role in addressing pedestrian safety in their own neighborhoods, has been updated by FHWA. The *Guide* includes examples of how communities are working to improve pedestrian and bicycle safety along with fact sheets, worksheets and materials that may be adapted for local distribution (USDOT, 2015).

The plan also calls on NHTSA to develop new behavioral countermeasures that target the choices all roadway users make including the use of electronic devices while driving, walking and biking. Additionally, NHTSA is funding research to determine how best to prevent impaired walking and biking and developing new safety campaign materials that promote pedestrians and bicyclists making good choices. All of these efforts require data. The blueprint calls for improving the quality and availability of pedestrian and bike data (i.e., volumes, crash causation) so that states and communities can make better decisions about where and how to allocate resources to mitigate crash risk (USDOT, 2014).

Evaluating effective enforcement and education techniques is another plan priority. To do that, NHTSA awarded three grants totaling $1.6 million (demonstration projects provided under Section 403 of Public Law 112-140) to New York City, Philadelphia and Louisville, cities with some of the highest pedestrian fatality rates in the nation. These programs are discussed later in this report. The grants are part of the Department's *Everyone is a Pedestrian* campaign launched in

Apply for a Section 403 enforcement grant (available to FHWA-designated pedestrian focus cities).

Partner with mayors and other elected officials to advance pedestrian and bicycle safety.

2013 and promoted on the NHTSA website. The campaign web pages detail the extent of the pedestrian safety problem and provide links to research, tools and bi-lingual educational materials targeted to parents and caregivers, children, teens, older adults, state safety officials, police officers, and safety advocates.

While the *Safer People, Safer Streets* plan outlines what USDOT and its agencies will do to ensure the safety of all roadway users, the agency expanded its outreach to include elected officials. A year-long *Mayor's Challenge*, which kicked off with a Washington, D.C. summit in March 2015, encourages mayors and other elected officials to take the lead in advancing pedestrian and bicycle safety. The initiative is based on the *2010 USDOT Policy Statement on Bicycle and Pedestrian Accommodation* and promotes seven challenges:

1. Take a Complete Streets approach to infrastructure improvements.
2. Identify and address barriers to make streets safe and convenient for all road users, including people of all ages and abilities and those using assistive mobility devices.
3. Gather and track bike and walk data.
4. Use designs that are appropriate to the context of the street and its uses.
5. Capture opportunities to build on-road bike networks during routine resurfacing.
6. Improve walking and biking safety laws and regulations.
7. Educate and enforce proper road use behavior by all.

Action steps and resources are provided to help cities implement the challenges. For example, to improve walking and biking laws, cities are encouraged to examine current statutes addressing speeding, failure to yield, safe passing, helmet use, and distracted driving. Considering vulnerable user laws (discussed on page 30) as well as land use codes and lower speed limits are also suggested. To educate and enforce proper behavior, the challenge promotes the use of highly visible, well-

publicized and targeted enforcement coupled with educational campaigns that address all roadway users. Refraining from drinking and driving or walking impaired, yielding to pedestrians, obeying speed limits, and using crosswalks are also stressed. Cities are encouraged to leverage the following tools:

- *Countermeasures that Work* (7th Edition), which highlights proven pedestrian safety programs in Chapters 8 and 9.
- *Pedestrian Safety Enforcement Operations: A How-to-Guide*, which outlines in detail how to plan, implement and evaluate enforcement activities, and also includes promising practices, case studies and sample forms and educational materials.
- *High Visibility Enforcement on Driver Compliance to Pedestrian Yield Right of Way Laws*, which discusses how the Gainesville Police Department used high-visibility pedestrian decoy crosswalk operations, along with inexpensive engineering, education and feedback road signs to encourage more motorists to yield to pedestrians. (This project is discussed in more detail on page 42.)

Investing in Pedestrian Safety

THE SHARE OF FEDERAL DOLLARS ALLOCATED TO NON-MOTORIZED transportation has long been a point of contention for pedestrian and bicycle safety advocates. According to the Alliance for Biking and Walking, a nonprofit coalition of more than 200 bicycle and pedestrian advocacy organizations, 2.1% of all federal transportation funding in 2013 went to bike and walk projects, despite pedestrians and bicyclists accounting for 11.4% of road trips and 15.9% of road deaths (Copeland, 2015). The vast majority of these funds are used by state departments of transportation (DOT) to address infrastructure projects ranging from reconfiguring intersections and adding bike lanes to installing sidewalks, pedestrian signals, traffic calming devices, and other countermeasures.

Safe Routes to School

State DOTs are tasked with overseeing the national Safe Routes to School (SRTS) program, which aims to increase the number of children in kindergarten through eighth grade who walk and bike to school. Originally designed to provide grants only for infrastructure improvements, the program's focus was expanded to include non-infrastructure activities under the federal transportation act known as SAFETEA-LU, which directed all federal transportation programs from Fiscal Year 2005-2009 (Safe Routes to School National Partnership [SRTS NP], 2015). The program remains in effect under the current transportation funding bill, Moving Ahead for Progress in the 21st Century (MAP-21), however, there is no dedicated SRTS funding. Instead, SRTS competes for funding under the Transportation Alternatives Program, which also includes Transportation Enhancements and Recreational Trails.

The bulk of SRTS funds have been used for infrastructure enhancements such as sidewalks, bike lanes and intersection improvements. However, many communities have applied for and received grants for education, encouragement and enforcement purposes. Since the program's onset, states were given flexibility to develop their own grant application guidelines and encouraged to award grants to programs that leverage the SRTS 5 Es – evaluation, education, encouragement, engineering, and enforcement (SRTS NP, 2015).

To enhance SRTS funding, some states have enacted legislation doubling fines for school zone violations. For example, *Stop When Children in Crosswalk* school zone signs in Arizona were modified to include *Fines Doubled*. Violators pay a minimum of $200 depending on the jurisdiction. In Washington State, the legislature doubled the penalty for speeding in school crosswalk and playground zones and stipulated that half of the increased fine go directly to improving school zone safety. The monies are used not only for engineering improvements, but also for aggressive enforcement of school speed limits and public education campaigns informing motorists of the law, the limits and the increased enforcement (SRTS NP, 2015).

Coordinate efforts to maximize resources and minimize duplication of efforts to grow Safe Routes to School programs.

The SHSO is an active SRTS partner in many states, and in some cases even administers the program. State highway safety officials serve on grant application review panels, offer assistance in identifying potential behavioral safety-related projects and provide other resources such as crash data, supplemental grant funds, educational materials, speakers or other guidance. Additionally, NHTSA provides staff support to the program both at headquarters and through its regional offices. Coordinating efforts between the state DOT and SHSO is encouraged to maximize all available resources and minimize duplication of effort.

The SRTS program is having a positive impact. A study in New York City found that the annual rate of injury for school-age children (5-19) fell 44% during the peak walk to school times in neighborhoods where the program was implemented. On the other hand, the injury rate remained the same in parts of the city where no SRTS program was in place (DiMaggio & Li, 2013). A follow-up study examining the benefits of SRTS projects on injury reduction and the associated cost savings found that the New York City projects would generate an overall net societal benefit of $230 million over a 50-year time period (Muenning, Epstein & DiMaggio, 2014).

Non-Motorized Pilot Program

SAFETEA-LU also established a Non-Motorized Transportation Pilot Program (NTPP), which provided approximately $25 million each to four communities – Columbia, Missouri; Marin County, California; Minneapolis, Minnesota; and Sheboygan County, Wisconsin – for pedestrian and bicycle infrastructure and non-motorized programs. Since launching in 2005, the four

Take a holistic, 3 E (engineering, education and enforcement) approach to investing in and addressing pedestrian safety.

communities have invested a total of $88.5 million in NTPP funds in pedestrian and bicycle-related projects or programs. The bulk, $79.8 million, was spent on infrastructure, but $7.5 million was used for outreach, education and marketing programs that promoted safe behavior by all roadway users. The pilots also leveraged an additional $59 million in other federal, state, local, and private funds (FHWA, 2014).

Interim and final reports to Congress detail not only the results of four years of data collection on NTPP program implementation, transportation mode shift and related health and environmental benefits, but also the impact on safety. Despite large increases in people traveling by foot (up 15.8%) and bicycle (up 44%), the pilot communities collectively experienced a 20% and 28.6% decline, respectively, in pedestrian and bicycle fatalities. Similar gains were made in reducing pedestrian injuries in three of the pilots, while pedestrian injury rates decreased between 17.9% and 55% in all four. Bicycle injuries increased in three of the four communities, but injury rates fell 8.6% to 38% in all four (FHWA, 2014).

Behavioral Safety Grant Funds

The pilot program reinforces the importance of taking a holistic, 3 E approach to investing in pedestrian and bicycle safety. SHSOs, however, receive no grant funds specifically for pedestrian or bicycle safety programs. Instead, they apportion a percentage of Section 402 State and Community Highway Grant Program funds to address pedestrian and bicycle safety. That amount is determined through an analysis of crash and other data and outlined annually in the Highway Safety Plan (HSP) each SHSO is required to submit to NHTSA. The HSP details not only the extent of the pedestrian and bicycle safety problem, but also annual performance measure targets for these roadway user groups. (A performance measure for bicycle safety has been added to the HSP requirement for FY 2016.) SHSOs reported dedicating an average of 5% of their FY 2015 Section 402 grant funds to pedestrian safety, with the amount by state ranging from zero to 25%.

It should be noted that federal funding guidelines expressly state that Section 402 funds are granted to states "to improve *driver behavior* and reduce deaths and injuries from motor vehicle-related crashes." No specific reference is made to other roadway users. MAP-21 guidelines, however, allow these

funds to be spent to improve pedestrian and bicycle safety, as well as a number of other purposes including impaired driving, speeding, occupant protection, motorcycle safety, traffic records, and more. This puts tremendous pressure on the states to ensure that the funds are dispersed not only across all modes, but also to address those modes that crash data indicate are involved in the greatest number of serious injury and fatal crashes.

Examine all available data, including a community's walkability score.

Pedestrian and bicyclists advocates encourage state safety officials to review not only crash, injury and fatality data, but other data sources as well when making funding decisions. In particular, they point to the value of examining a community's *walkability*. This is defined by the Walk Score algorithm, which works by calculating the closest amenities (restaurants, schools, parks, stores, libraries, etc.) to any U.S. address. The algorithm then assigns a score from 0 to 100, with 0 being totally car-dependent and 100 most walkable. A score of 70 or greater indicates a neighborhood where it is possible to get around without a car. From a safety standpoint, a lower walk score might suggest that a neighborhood or community is likely to have a pedestrian safety problem. On the other hand, lack of walkability may hinder foot traffic, thus reducing the incidence of pedestrian-motor vehicle crashes (CEOs for Cities, 2009). If the end game, however, is to ensure that all modes can safely navigate the roadway system, the latter is a problem that merits attention.

Track and promote how high visibility enforcement addressing speed, distraction and impairment benefits all roadway users.

MAP-21 also consolidated a number of grant programs under a new Section 405 program that provides funds for occupant protection, impaired driving countermeasures, distracted driving, motorcycle safety, and graduated driver licensing laws. Despite data confirming that alcohol impairment directly impacts pedestrian safety, Section 405 funds cannot be used to mount high visibility enforcement campaigns or purchase paid media that specifically targets impaired pedestrians. States, however, are encouraged to analyze their crash and citation data to identify locations where enforcement of impaired driving has the potential to reach intoxicated pedestrians, such as entertainment districts, sports venues, and colleges and universities. Speed and distracted driving enforcement activities also have the potential to benefit pedestrians. States, therefore, should make reference to this in outreach efforts and track enforcement's impact on all roadway users.

Flexing HSIP Funds

Utilizing Highway Safety Improvement Program (HSIP) funds for behavioral safety purposes (commonly known as "flexing") is also happening in some states. Administered by state DOTs, HSIP funds are used for infrastructure purposes. Under the flexing formula, a state may designate up to 10% of HSIP funds annually for other safety projects provided it has an approved Strategic Highway Safety Plan, met its railway-highway grade crossing and infrastructure needs, and submitted a written request to FHWA. States have flexed HSIP funds to support a variety of education and enforcement initiatives that include pedestrian safety.

For example, in 2013 the New Jersey Department of Transportation flexed $500,000 in HSIP monies to the North Jersey Transportation Planning Authority (NJTPA) to develop and pilot a pedestrian safety education campaign in geographically and ethnically diverse communities. The Metropolitan Planning Organization used the funds to create bi-lingual educational materials targeted to motorists and pedestrians (based on extensive crash data analysis), purchase

Flex Highway Safety Improvement Program funds for behavioral safety purposes.

paid media (outdoor, transit and online) and evaluate the campaign's impact through pre- and post-observational and awareness surveys. Additionally, the state highway safety office partnered with NJTPA to provide high visibility enforcement grants to police agencies in the pilot communities for pedestrian decoy operations and engagement patrols. Grassroots public outreach was also conducted through an extensive network of community partners that included business, schools, faith-based organizations, non-profits, neighborhood groups, public health entities, and individual citizens.

Pre- and post-evaluations of the four-week *Street Smart NJ* campaign showed a significant reduction in risky non-compliant behavior in three of the four pilot sites. This included reductions of 3% to 25% in pedestrians jaywalking and crossing against the signal, and 8% to 12% reductions in motorists failing to properly yield to pedestrians when turning right on red. Awareness of the campaign or pedestrian safety increased 18%, while awareness of pedestrian safety education and enforcement activities jumped 10% (NJTPA, 2015).

Flexing HSIP funds is likely to continue and increase as the FHWA works to comply with a law requiring states to include separate, non-motorized safety performance measures in their Strategic Highway Safety Plans (SHSP) that specifically call for reductions in fatalities and serious injuries for pedestrians and bicyclists. Additionally, a second round of Section 403 enforcement grants is expected to be awarded to pedestrian focus cities through NHTSA's *Everyone is a Pedestrian* program as discussed previously on page 20. Cities that had applied for the first-round of funding will have to reapply for consideration under this second grant cycle.

Allocating Funding Through State Plans

In addition to the federal requirement that all states have both a Strategic Highway Safety Plan and an annual Highway Safety Plan (which should be aligned), 51% of the responding SHSOs reported that their state has a separate Pedestrian Safety Action Plan (PSAP). Ninety percent of these PSAPs take both an infrastructure and behavioral approach to addressing pedestrian safety, with 84% of SHSOs responsible for the latter. It is particularly noteworthy that 40% of SHSOs and the Virgin Islands indicate they are the lead agency for pedestrian safety in their state. This is likely, but not always the case, in states where the highway safety office is located within the DOT.

Develop a Pedestrian Safety Action Plan that focuses funding and resources in those areas with the greatest potential to reduce pedestrian-motor vehicle crashes.

Collaborate with the public health sector to enhance data collection and promote safe walking.

The purpose of a PSAP is to focus funding and resources in those areas with the greatest potential to reduce pedestrian crashes and the resulting injuries and fatalities. Florida's plan, for example, which also includes bicycles, identifies goals, objectives, strategies, tasks, and performance measures in key program areas – data, analysis and evaluation; driver education and licensing; highway and traffic engineering; law enforcement and emergency services; communication and outreach; and legislation, regulation and policy.

Developed by a diverse stakeholder group, the five-year plan dubbed *Alert Today Alive Tomorrow* is well on its way to being implemented thanks to regular conference calls and quarterly meetings that include accountability checks coupled with guidance and support. This focus, noted an SHSO official, is working. Since its adoption in February 2013, more than 60% of the initiatives outlined in the plan have been addressed.

Cities, particularly those identified as focus cities by the FHWA, are also developing Pedestrian Safety Action Plans. (Pedestrian focus cities are selected based on the number of pedestrian fatalities or the pedestrian fatality rate per population [FHWA, 2015a]). New York City's landmark PSAP takes into account the causes, common factors and geographic distribution of more than 7,000 crashes over an 8-year period. Adopted in 2010, the plan leverages the 3 E's of traffic safety calling for street design that protects pedestrians, speed enforcement, and safety education and communications activities that change the culture to one of mutual respect and safety for all. But the plan also includes collaboration with the public health sector to not only collect better data, but also promote healthy and sustainable modes of transportation that include safe walking (New York Department of Transportation, 2010).

Policies Protecting Pedestrians

ACCORDING TO THE GHSA STATE SURVEY, WITHIN THE past three years legislation specifically addressing pedestrian safety has been enacted in seven states. Another 12 states indicate that efforts are underway to strengthen state or local pedestrian safety laws. This information is confirmed by the National Conference of State Legislatures, which noted in its latest *Traffic Safety Trends: State Legislative Action* report that state legislatures enacted a number of non-motorized road user bills in 2014 with a particular focus on bicycle safety and *vulnerable user laws* (Teigen, Shinkle & Essex, 2015).

Vulnerable User Laws

A vulnerable road user law creates a middle ground between a traffic citation with no or minimal penalties and a vehicular manslaughter or negligent homicide offense. It usually includes a more substantial fine, license suspension, community service, or participation in training, plus the charge appears on the driver license record. In the event that a pedestrian is seriously injured or killed in a motor vehicle crash, the prosecutor in a state with such a law may be more inclined to charge the motorist with reckless driving. Typically, such a law also includes language requiring a motorist to give a vulnerable user a buffer of up to three feet or to move over as far as safely possible. It may also address vehicle speed, calling on the motorist to slow down when approaching or passing the pedestrian, bicyclist or other vulnerable user.

Ten states have vulnerable user laws – Nevada, Tennessee, Washington, Oregon, Illinois, Maryland, Delaware, New York, Hawaii, Connecticut – and another 23 have provisions in statute addressing actions against vulnerable users, such as harassment or throwing of objects (Teigen et. al, 2015; McLeod, 2013).

The first vulnerable user law took effect in Oregon in 2007, while the most recent was enacted in Connecticut in October 2014 in response to the death of a jogger who was killed by a distracted teen driver. The teen was charged with negligent homicide but pled guilty to a lesser charge and received a suspended prison sentence. Connecticut's Public Act 14-31

Enact a Vulnerable User Law that provides clear guidance to prosecutors in the event a motorist injures or kills a pedestrian, but also allows for consideration of the motorist's behavior.

requires that a fine be imposed on a reckless motor vehicle driver who causes the death or serious injury of a pedestrian, cyclist, wheelchair user, or other vulnerable user who was using reasonable care. The fine is capped at $1,000.

Oregon's law establishes penalties for serious physical injury or death of a vulnerable road user under the careless driving law. Careless driving is a Class A or B traffic violation (depending on whether it involves a crash) that requires the driver attend a hearing if a vulnerable road user is seriously injured or killed. If found guilty, the motorist is subject to fines that are six times greater than the maximum fine for a Class A traffic violation and a one-year license suspension. Oregon also treats vehicular assault against pedestrians and bicyclists as a separate Class A misdemeanor. This vehicular assault law complements or provides police an alternative to issuing a citation for violation of the state's safe passing law, since it allows for consideration of the driver's behavior (McLeod, 2013).

A handful of other states have attempted to pass vulnerable user legislation, including Texas and Vermont. Despite widespread legislative and advocate support, a Texas proposal was vetoed by the Governor in 2009. Another bill calling for a safe passing distance was introduced in the Lone Star State in 2013 and passed in both the House and Senate Transportation Committees, but not in time to reach the floor for a full vote. However, safe passage or vulnerable user ordinances are in effect in 23 Texas cities including Austin, El Paso, Fort Worth, Houston, and San Antonio (Bike Texas, 2015).

Wisconsin, meanwhile, enacted a bill (Act 253) in 2013 that requires all driver education courses to include at least 30 minutes of content on the dangers motor vehicles pose to and how to interact with vulnerable highway users, who are also defined in the law. The legislation also includes a provision that allows for the use of state trails after 11 p.m. (trails had previously been closed to all foot and bike traffic between 11 p.m. and 6 p.m.).

A number of other states recently introduced vulnerable user or pedestrian safety legislation which is awaiting action. For example, Minnesota House Bill 203 defines a vulnerable user and calls for enhanced driver penalties if a motor vehicle crash results in "substantial" or "great bodily harm" to the former. It also mandates a maximum two-year prison sentence and fines

of not more than $4,000 if the crash results in the vulnerable user's death (State of Minnesota, 2014).

Florida is also considering a bill that not only defines a vulnerable user, but what constitutes bodily injury. The broad definition ranges from a cut, bruise or disfigurement to physical pain, impairment of an organ or mental faculty or any other injury. The legislation also addresses overtaking and passing a vehicle, and penalties include a maximum fine of $2,000 and a 6-month license suspension. The bill allows for the penalties to be waived if the driver completes an approved traffic safety course and at least 100 hours of community service that includes traffic safety-related activities. Finally, the bill requires that traffic laws relating to the rights and safety of vulnerable users be included in traffic safety and substance abuse education courses and driver licensing exams (Florida House of Representatives, 2015).

In Alaska, House Bill 7 seeks to increase driver awareness of pedestrians and bicyclists by establishing a new charge of reckless driving in the first degree that is punishable as a class C felony. While current statute allows "vehicle-on-person" offenses to be charged as felony assault, establishing a new crime gives prosecutors discretion regarding how and what to charge (Alaska State Legislature, 2015). The bill's sponsor cited the high rate of pedestrian/bicycle fatalities in the state in 2014 – 16 or 22.9% of all traffic deaths – when introducing the measure. It should also be noted that Alaska is surpassed only by D.C. in the number of people who walk to work – 8% compared to the national average of 2.8% (AASHTO, 2014).

Speed Policies

Speed, as noted previously in this report, is a significant factor in pedestrian-motor vehicle crashes. How fast a motorist is driving when his or her vehicle strikes a pedestrian can mean the difference between life and death. Many pedestrian deaths occur in locations with relatively low speed limits. In 2013, 19% of pedestrian fatalities occurred where the speed limit was less than 35 mph; 28% occurred where the limit was 35-40 mph (Williams, 2015). This is prompting states and municipalities to lower speed limits.

In 2011, the Oregon Legislature passed a law allowing communities to reduce their speed limits from 25 to 20 mph. The measure applies to roads with an average daily volume

Allow communities to reduce speed limits or establish slow speed zones in areas with a history of pedestrian-motor vehicle crashes and in neighborhoods with schools, parks, and day care and senior centers.

of fewer than 2,000 vehicles, with more than 85% traveling at speeds under 30 mph. Washington State followed suit in 2013 enacting a law that allows municipalities to establish a maximum speed limit of 20 mph in a residential or business district. The law allows for a lower speed limit as well as reinstatement of the previous speed limit 12 months after it was lowered without engaging in a traffic or engineering study. Portland and Seattle, cities with the nation's top and sixth highest bicycle commuter rates, respectively, took advantage of the provision and lowered the speed limit on neighborhood greenways – residential streets that prioritize travel by bike and foot (Teigen et. al, 2015).

The New York City Council is the latest legislative body to approve a measure to lower the speed limit. Done in conjunction with the City's *Vision Zero* initiative, which states that "no level of fatality on city streets is inevitable or acceptable," the bill lowered the maximum speed limit for all motor vehicles from 30 mph to 25 mph on November 7, 2014 (City of New York, 2014; McGeehan, 2014). However, before the speed limit could be lowered, the New York State Legislature had to amend a more than 50-year-old statute that did not allow a local speed limit of less than 30 mph anywhere in the state. The lower speed limit applies to all streets where a maximum speed is not posted. In other places, signs may indicate a higher or lower limit. In the case of the latter, these may apply to hospital or school zones as well as *Neighborhood Slow Zones*, where the speed limit is 20 mph (McGeehan, 2014).

First launched in 2011 in the Claremont section of the Bronx, a Slow Zone is selected via an application process that takes into consideration a neighborhood's crash history, community support, proximity to schools, daycare and senior centers, and other criteria. Slow Zones are marked by high-visibility, blue gateway signs at all streets entering the neighborhood, 20 mph speed limit signs, speed bumps, and 8-feet tall *20 MPH* markings stenciled on the roadway to make it clear to motorists they're in a reduced speed area. Currently, Slow Zones cover more than 65 miles of city streets and are used in conjunction with speed cameras, traffic calming measures, stepped up enforcement, and education. Collectively, the designation is credited with helping to reduce vehicle speeds and bring traffic fatalities in the city to record lows (City of New York, 2013).

Whether the success of these efforts to lower speed limits will have a ripple effect nationwide is yet to be seen. Safety advocates in Nevada, however, are hopeful that a bill to designate pedestrian safety zones in areas "on or near a highway which make [it] … dangerous for pedestrians" will gain legislative approval. Under the proposal, a pedestrian safety zone would need to be clearly identified by signs placed at the start and end of the area indicating that "higher fines may apply in pedestrian safety zones." The additional penalty imposed for a safety zone violation may not exceed $1,000, six months of imprisonment or 120 hours of community service (Nevada State Legislature, 2015).

The Massachusetts Legislature also introduced several provisions to enhance pedestrian safety in 2014. Senate Bill 68 (House Bill 550) allowed a city or town to establish senior citizen safety zones adjacent to areas with senior housing, hospitals, nursing homes or assisted living facilities, or community centers offering senior activities, where the speed limit could be reduced to not less than 20 mph (or the speed set for school zones). The bill also called for the installation of signs or signals to alert drivers. Another bill, H3129, sought to lower speed limits on roadways in urban districts from 30 mph to 25 mph. Both bills are expected to be reintroduced in the next legislative session.

Complete Streets

Despite failing to pass a statewide vulnerable user law, advocates in a number of Texas communities including Austin, Brownsville, Dallas, and Houston have adopted Complete Street policies. This national movement, which has taken hold in many states and cities across the nation, seeks to integrate people and places into the planning, design, construction, operation, and maintenance of the roadway system. The focus is on ensuring streets are safe for all roadway users regardless of mode, age and ability (Smart Growth America, 2015). Three cities – Austin, San Antonio and Brownsville – are also working to adopt *Vision Zero* initiatives to improve pedestrian safety, while the Texas Legislature is currently considering several distracted driving bills that have the potential to positively impact the safety of all roadway users.

National Complete Streets Coalition

Enforcing Pedestrian Safety Laws

DO PEDESTRIANS AND MOTORISTS UNDERSTAND HOW TO SHARE the road lawfully? There's considerable evidence that neither adequately understand the right-of-way rules they're obligated to follow (Hatfield, Fernandes, Soames & Smith, as cited in Williams, 2013). But what about police?

Providing education to police officers is a critical first-step in addressing pedestrian safety. They need to know not only their respective jurisdiction's law, but also why enforcement is so important and how best to engage with all violators, including pedestrians. Historically, enforcement of laws involving pedestrians has not been a priority. But over the past few years, more and more police agencies are cracking down on both motorists who fail to yield to pedestrians as well as people on foot who cross roadways illegally. Often referred to as jaywalking, a slang rather than legal term, it is not against the law to cross at a point other than a crosswalk or intersection, but a pedestrian must yield to traffic when doing so.

Training to Bolster Enforcement

Before North Carolina piloted its *Watch for Me NC* pedestrian safety education and enforcement program in the cities of Raleigh, Durham and Chapel Hill in 2012, a training course was developed for police officers. A partnership between NCDOT, the University of North Carolina – Highway Safety Research Center (UNC-HSRC) and local stakeholders, with funding support from NHTSA under Section 403 demonstration projects, the program combined active and passive outreach efforts with the enforcement of pedestrian and bicycle safety laws. Media was also used to create greater awareness of pedestrian and bicycle safety, including the possibility of being stopped for violating safety laws (Pedestrian and Bicycle Information Center [PBIC], 2015).

Over a two year period, approximately 90 officers from 20 agencies (municipal police, sheriff offices and university public safety departments) completed the course, which included classroom instruction regarding North Carolina laws and enforcement best practices. They also participated in hands-on exercises where they learned about conducting enforcement at

Provide comprehensive training to law enforcement.

intersections and crosswalks, with a goal of increasing officer knowledge of pedestrian and bicycle safety issues and their capacity for conducting future enforcement activities (PBIC, 2015).

Officers were surveyed before and after the training to gauge their increase in knowledge as well as whether they felt more capable of promoting pedestrian safety through enforcement. The post-survey showed a significant increase in knowledge of and confidence in enforcing pedestrian laws. When tested on their law knowledge, scores increased from 59% prior to the training to 85% after. A significant number of officers also agreed with the statements, *I am familiar with pedestrian laws*, *I can help prevent pedestrian crashes*, *I have lots of resources to enforce pedestrian laws*, and *I intend to enforce pedestrian laws in the next three months* (PBIC, 2015).

Following the training and the launch of the safety program, six police agencies (five of which were conducting pedestrian safety enforcement for the first time) reported the results of 37 pedestrian safety operations to the UNC-HSRC team. Police issued 460 written and verbal warnings and 172 citations to drivers and pedestrians. Drivers received 73% of the warnings and 98% of the citations for failing to yield to pedestrians. The program was credited with improving motorist yielding and pedestrian crossing behaviors and awareness of state laws. That prompted its continuation and expansion in 2013 to include six additional municipal and four university partners as well as the enforcement of laws involving bicyclists through more than 55 operations (17% of the warnings were given to bicyclists) (PBIC, 2015).

But even more importantly, the participating agencies saw real improvement in motorists stopping for pedestrians and pedestrians taking care when crossing. Residents were also more aware of state laws and the campaign messages. Officers also reported that pedestrians and other citizens thanked them while they were conducting enforcement operations. These results point to the value of their enforcement and outreach efforts, which were likely enhanced by training. However, ongoing assessment of the program's impact through pre- and post-data analysis that includes comparison sites is strongly recommended.

Crash Report Training

When training officers, the course content should include information about the extent of the pedestrian safety problem,

causation factors (with a particular emphasis on speed, distraction and impairment), who is likely to be involved, and where the crashes are occurring. According to a SHSO official, New York provides a two-day pedestrian safety training program for law enforcement along with a law *cheat sheet* to aid with enforcement. Additionally, the New York State Association of Chiefs of Police (NYSACOP) has developed several pedestrian safety-related training podcasts as part of its *All Points Bulletin* series. One addresses the important role crash reports play in identifying appropriate countermeasures for improving pedestrian and bicycle safety.

The crash report is the "single tool that can help provide engineers with the information that's just not available anywhere else," says the podcast announcer, a NYSACOP official. "Everything we learn about crashes comes from the police report," affirms the New York Department of Transportation (NYDOT) planning, research and safety professional interviewed for the podcast. The NYDOT representative goes on to stress the importance of providing as much detail as possible such as exactly where in the intersection or roadway the incident occurred, whether a pedestrian crossed against the signal or if a motorist was turning right on red. "If a lot of pedestrians are crossing against the signal," he pointed out, "they may be waiting too long which suggests the signal timing is off." The more detail provided, particularly in the narrative and diagram, the better.

The Florida Highway Safety Office (FL HSO) takes this collaboration between enforcement and engineering a step further and looks for opportunities to facilitate learning and information sharing between the two groups. "Each discipline needs to understand pedestrian and bicycle safety from the other's perspective," said a FL HSO official. "Road safety audits provide a means to do that."

Traffic Incident Management Training

Training is also essential for reducing the incidence of roadside crashes involving police and other first responders. Three crashes resulting in injury occur every minute in the U.S., putting thousands of first responders at risk (FHWA, 2015). Congestion resulting from a crash also increases the potential for secondary crashes; 2.8% for every minute a road is closed and traffic queues lengthen (Schroer as cited by Rensel, 2014). This results in even more danger for police, fire, EMS, and other at-scene personnel, making quick clearance essential.

Provide traffic incident management training for all emergency responders and tow truck operators.

Recognizing the need for traffic incident management (TIM) training, the Tennessee Highway Patrol (THP) worked with the Tennessee Department of Transportation and the Governor's Highway Safety Office to secure $1 million in grant funds to build the nation's first TIM track. Located adjacent to the THP Training Academy in Nashville, the facility is equipped with approximately 2,000 feet of highway. Since opening in 2014, more than 2,000 law enforcement, fire, EMS, transportation, and tow truck operators have been trained there.

All THP troopers have gone through the training and will participate in periodic updates. "Thanks to the track, we can set-up scenarios that enable our staff to practice decision-making," said the THP's first-in-command. The Colonel also pointed out that ensuring all first responders, not just law enforcement, are trained is a priority. "With everyone trained, we can clear the incident faster and get off scene sooner." The THP now requires all wrecker services on their tow list to complete a four-hour TIM training by the end of 2015. Facilitators trained to deliver the FHWA's National TIM Responder Training Program are working in every district of the state to help meet this requirement.

The THP Colonel also pointed out that the facility is open to all. "When TDOT provided the funds, I made one promise – we would be good stewards of the dollars and welcome first responders from across the nation." Officials from several states have visited the Tennessee track with the goal of learning from the Volunteer State and possibly building their own facility.

While participation in a TIM classroom session is strongly recommended, there are first responders in remote or rural locations as well as other areas without access to onsite classes. That prompted the National Highway Institute to launch a web-based TIM training course that can meet that need as well as serve as a refresher for those already trained. Segmented into 10 modules, the free training addresses the requirements for safe, quick clearance of traffic incident scenes; prompt, reliable and open communications; and motorist and responder safeguards (FHWA, 2015b).

Sustaining Pedestrian Safety Enforcement

ONCE POLICE ARE TRAINED TO ENFORCE PEDESTRIAN SAFETY LAWS, sustaining that effort is often a challenge due to manpower issues. Washington, D.C. is addressing the problem by using automated enforcement to catch drivers who run stops signs or red lights as well as speed cameras and cameras at uncontrolled crosswalks. The technology detects violators who are putting pedestrians at risk and has the potential to reduce these unsafe behaviors. D.C. officials indicate that fewer pedestrians who are struck by a motor vehicle are sustaining fatal injuries, which they attribute to drivers going more slowly for fear of a ticket.

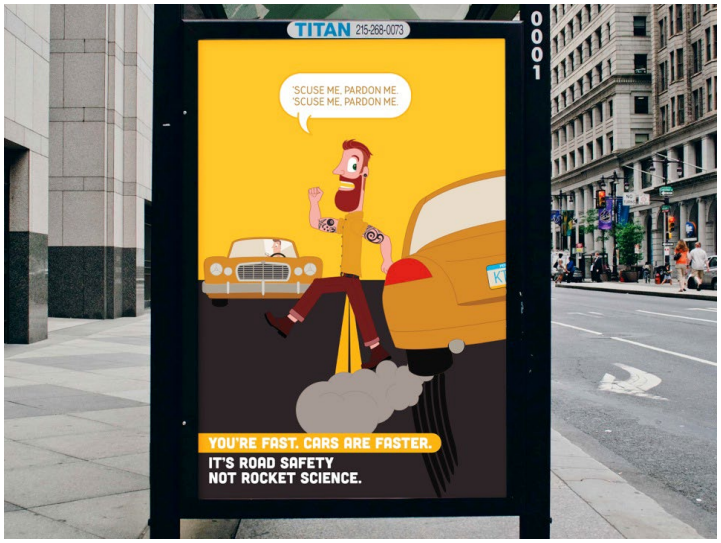
Integrate pedestrian safety enforcement into an officer's regular shift so that pedestrian safety enforcement is viewed as traffic enforcement.

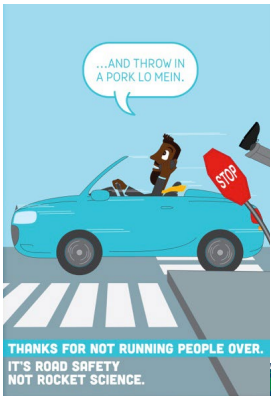
Philadelphia's Approach

While Philadelphia also uses automated enforcement to deter red light running, the police department is committed to changing the culture when it comes to pedestrian safety. That focus is directed not only externally, but also internally. Despite being one of three cities selected to receive a Section 403 grant to conduct and evaluate a pedestrian safety enforcement and education campaign, the Philadelphia Police Department opted not to use any of the $525,000 (plus $200,000 in matching funds from the SHSO) to pay for overtime enforcement. Instead, all enforcement operations are integrated into regular shifts, a decision championed by the Deputy Commissioner of Patrol.

The campaign, which features continuous 18-month enforcement waves and ongoing paid and earned media and grassroots outreach, launched in October 2014. Police officers received training from lieutenants before participating in foot, bicycle and vehicle patrols on three corridors with a high rate of pedestrian crashes. They are also partnering with the Temple University Police Department on one of the corridors, Broad Street which runs directly through the campus and is the city's main thoroughfare. In addition, SHSO funds are being used to create a training video for the police department about how to better enforce safe driver-pedestrian interactions.

Enforcement began on October 15, 2014. Police are issuing "mock" tickets or warnings branded with what a Pennsylvania SHSO official describes as a "typical in-your-face Philly





message," *It's Road Safety, Not Rocket Science*. (The warning also points out that *a car hits a pedestrian in Philadelphia every five hours*.) Since the start of the enforcement, a total of 1,525 warnings were issued along with eight citations. Pedestrians received 85% (1,290) of these warnings, while drivers received 15% (222). Of those warnings issued to pedestrians, 36% were for crossing against the light, 25% were for crossing midblock, 7% were for darting into traffic, and 33% were for distracted walking. Of the warnings issued to drivers, 56% were for distracted driving, 19% were for improper/careless turning, 18% were for red light running, and 6% were for illegal U-turns.

This enforcement is supported by a paid media campaign, directed at both motorists and pedestrians, which began in March 2015 and will run through the summer. Speed, failure to yield, distraction, and unsafe crossing practices are addressed in colorful ads strategically placed on buses and bus shelters, and at subway stations in the enforcement corridors. In addition, geo-targeted advertising is being used to send messages to the mobile devices of drivers and pedestrians to alert them when they are passing through specific high-crash intersections.

Humorous roving interactions – one involved a helmeted, bubble wrapped man texting as he walked around the city – are used to call attention to dangerous behaviors roadway users engage in on a daily basis. The goal is to spark a viral campaign fueled by pedestrians who encounter the actors,

Include community members and students in neighborhood audits and pedestrian safety information forums to foster understanding, engagement and ownership.

snap photos and post them on social media using the hastag *#notrocketscience*. There's also a website where visitors can learn more about the roving interactors and download a safety kit featuring tips and campaign posters.

To institutionalize the campaign, the Mayor's Office of Transportation and Utilities (MOTU) is working with the Bicycle Coalition of Greater Philadelphia to implement their Safe Routes to Philly curriculum, conduct walkability audits and create safe walking events such as walk to school days, a walking school bus, and walking Wednesdays at elementary schools in high risk locations. (All Philadelphia public school students walk to school; there are no school buses). The Bicycle Coalition is also engaging middle and high school students in discussions about crashes using math and physics, and what they can do to improve safety in their own neighborhoods.

With encouragement from the SHSO, MOTU worked with the Philadelphia Citizens Planning Institute to create and pilot a workshop for community and coalition leaders in the spring of 2015. These workshops will continue to be conducted in the fall in high crash corridors. They introduce the campaign, provide educational materials and encourage grassroots outreach. The city's taxi drivers are also engaged. All new drivers are required to participate in training overseen by the Parking Authority, which licenses and regulates the industry.

The campaign's impact on motorist and pedestrian behavior is being evaluated through pre- and post-crash data and observational analysis of key behaviors on corridors and at high crash intersections. Intercept interviews will gauge recall of the campaign brand and messages along with knowledge, attitudes and beliefs. All campaign activities (enforcement, media, school and community events) are being documented to measure public and private sector support and engagement. Plus, pre- and post-surveys at schools along with interviews with key community leaders are also being conducted.

The end game, said the SHSO official, is to determine not only impact, but also what did and did not work, retool as necessary, and keep the campaign going. "Our office will continue to partner with Philadelphia," he added, "plus they have all of the creative materials for ongoing use." The police department is also committed to empowering its 6,000 uniformed officers to embed pedestrian safety enforcement into its culture.

Whether Philadelphia is successful in changing behavior and sustaining pedestrian safety enforcement remains to be seen. The results of the North Carolina program discussed earlier (see page 35) as well as a previous NHTSA demonstration project conducted in Gainesville, Florida, suggest it's possible.

Gainesville's Approach

Led by the Gainesville Police Department (GPD), the year-long initiative involved conducting high visibility crosswalk enforcement using pedestrian decoys (plain-clothed officers) over four waves at six sites. (Six other sites where enforcement was not conducted were selected for comparison.) Inexpensive engineering (advance yield marketing, in-street *State Law Yield to Pedestrian* signs) and education that consisted of radio ads, motorist and pedestrian flyers addressing proper behaviors and stepped up enforcement, flyers targeted to parents at all elementary schools, and University of Florida newspaper and website coverage were also key components. During the last nine months of the program, feedback signs displayed the prior week's yielding percentage and the record to date along high traffic roadways.

The high-visibility enforcement (HVE) and education prompted a slow but steady increase in motorists yielding to pedestrians at both the enforcement and non-enforcement sites over the course of the campaign (an average improvement of 26% from the baseline rate). While it wasn't possible to determine if the program reduced crashes due to the small sample size (made even smaller when only crashes that occurred in crosswalks

related to drivers failing to yield to pedestrians were examined), the researchers concluded that the change in yielding behavior pointed to the program's success. (Van Houten, Malenfant, Blomberg, Huitema & Casella, 2013).

This finding is important for SHSOs, police and local agencies as they determine how best to measure the impact of their pedestrian safety programs. Focusing solely on the crash, injury and fatality data will not provide the complete picture. Identifying and measuring change in key behaviors (i.e., yielding, using crosswalks, observing posted speed limits, refraining from driving and walking distracted) by the roadway users most likely to be involved in pedestrian-motor vehicle crashes is key.

The researchers evaluating the Gainesville program also noted the "magnitude of recognition of the community feedback signs" which showed the rate of drivers yielding to pedestrians. The number of people who said they saw the sign jumped from 13% before erected to 53% in April, 75% in September, and 78% at the end of the campaign (Van Houten et al., 2013). The feedback signs appear to be an effective way to promote both enforcement and community support for safer driving behavior and require minimal resources to install and maintain.

Require that evaluation using sound science be built into all grant-funded programs and that it extend beyond crash, injury and fatality data to include measurement of behavior change.

Educating Roadway Users, Taking a Comprehensive Approach

STATE AND LOCAL EFFORTS TO EDUCATE ROADWAY USERS ABOUT PEDESTRIAN SAFETY TYPICALLY involve a *share the road* message coupled with information about laws and safety tips. For motorists, the tips often focus on the need to slow down, be alert and yield to pedestrians in crosswalks or when turning right on red. Pedestrians are usually encouraged to use crosswalks, wait for the walk signal, walk facing traffic where sidewalks are not provided, and be visible. Both groups also may be reminded about the dangers of impairment and distraction.

Education is also used in some communities to teach safe walking practices, with a particular focus on young children and seniors. The U.S., however, lags behind Europe in developing pervasive and widespread traffic safety education programs for children. These often start at an early age, continue through the teen years and involve a variety of organizations including schools, businesses, civic organizations, police, public health, and parks and recreation departments (FHWA, 2009). But is education alone an effective tool for addressing pedestrian safety? With the exception of the *Willie Whistle* program introduced in the 1970s, which used a film, posters and advertisements to teach children safe crossing practices, research suggests that these programs are not an effective pedestrian safety countermeasure (Williams, 2013).

Partner with state and county DOTs, metropolitan planning organizations (MPOs) and municipal public works departments to identify infrastructure improvements that support education and enforcement.

What appear to work are comprehensive programs that combine education and enforcement with engineering. A review of four formally evaluated community programs to prevent pedestrian injuries to children found that all resulted in a reduction in injuries to walkers younger than 14 (Turner, McClure, Nixon, & Sparks as cited in Williams, 2013). These programs typically educated children, parents and the community, and included engineering improvements. Education is a key component of the comprehensive and successful community-based Miami/Dade *WalkSafe* program that also includes engineering and enforcement measures (Zegeer et al. as cited in Williams, 2013). Developed by the University of Miami's Miller School of Medicine and funded with support from the FL SHSO, the program uses a 5 E model (education, encouragement, enforcement, engineering, and evaluation) to increase awareness of school-age pedestrian safety. The education component consists of a three-day curriculum for delivery to kindergarten through fifth grade students.

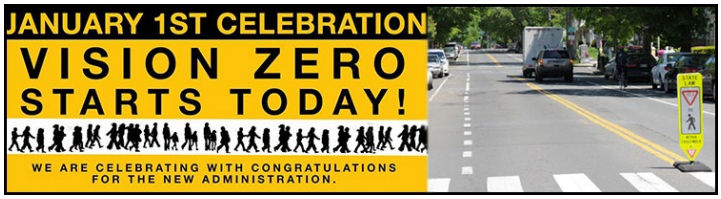
For SHSOs and their partners tasked with bolstering pedestrian safety, investing resources in developing and implementing data-driven, targeted programs that couple education, enforcement and engineering; encourage community engagement and ownership; and are rigorously evaluated offer the greatest potential for changing behavior. While highway safety offices typically do not fund engineering countermeasures, partnering with state and county DOTs, metropolitan planning organizations (MPOs) and municipal public works departments to identify infrastructure improvements that support education and enforcement is recommended. Many low cost infrastructure improvements such as restriping crosswalks, repairing or replacing pedestrian signals, inspecting and repairing broken sidewalks, trimming trees that impede walking or block sight lines, or

increasing illumination at intersections can impact how the community reacts to stepped up enforcement and messages that call on motorists and pedestrians to adopt key behaviors.

The following is summary of state and local pedestrian safety programs that are either leveraging the comprehensive approach or using one or several of the components in a new, innovative and promising way.

New York

The Empire State takes a corridor approach to pedestrian safety. Working collaboratively, the SHSO (Governor's Traffic Safety Committee [GTSC]), the New York Departments of Transportation and Health, FHWA, law enforcement, and local partners conduct ongoing crash analyses to identify high crash corridors and the appropriate mitigating strategies and countermeasures. Engineering improvements are coupled with education (the *See. Be Seen* message is disseminated through paid and earned media, on collateral material and at community events) and stepped-up enforcement targeted to motorists and pedestrians. Pedestrian safety is identified as an emphasis area in the state's SHSP and HSP, and a PSAP is in development. All traffic fatalities, including pedestrians, are down statewide, which a GTSC official credits to "taking a 3 E approach."



New York City's Vision Zero initiative has grabbed headlines, but is more than just a catch-phrase. The Vision Zero Action Plan outlines a multi-agency, neighborhood-based approach that uses traditional and automated enforcement, legislation, street design and regulation, and outreach and education to prevent motor vehicle crashes that seriously injure or kill a New Yorker every two hours. Progress is measured and reported via the Vision Zero website. The City is also leveraging its $805,000 Section 403 pedestrian safety education and enforcement grant (discussed on page 20 of this report) to conduct high visibility enforcement targeting motorists who speed or fail to yield to pedestrians, and to educate and encourage its eight million residents to adopt safe driving and walking practices. Pedestrian fatalities declined nearly 27% in 2014 to 131, an all-time low. However, pedestrians accounted for 52% all motor vehicle deaths (250) citywide (Donohue, 2014).

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Florida

Sparked by Florida's highest in the nation pedestrian fatality rate, the Florida Department of Transportation formed a multi-disciplinary coalition in 2011 that developed a data-driven program that focuses resources on improving pedestrian and bicycle safety on high crash corridors in the state's seven distracts. Due to Florida's large size and cultural diversity, the Coalition is strategic in its approach, naming district champions who are tasked with identifying and addressing the needs of their respective areas. Roundtables have also been convened across the state to garner stakeholder input and support.

Using both high visibility enforcement and a branded education and outreach campaign dubbed, *Alert Today Alive Tomorrow*, the coalition's efforts are helping to reduce pedestrian injuries and fatalities, while increasing awareness of safe walking and biking behaviors – up as much as 70% in the targeted communities. The campaign includes a one-stop website that provides easy access to information about Florida's laws along with safety tips. A series of PSAs were also created and an *Alert Today Alive Tomorrow* branded race car has made annual appearances at the Daytona International Speedway and other sites. A new branded tip card has also been developed to educate pedestrians about the danger of distracted walking. To bolster interest in reviewing the information, a DigiClean screen cleaner is affixed to the card.

The University of South Florida, one of the nation's largest college campuses, is also a key partner in the initiative, hosting

an annual *Bulls Bike and Walk Week*. Led by students, the *WalkWise, Bike Smart and Drive Carefully* program uses activities, social media, a pledge, peer exchanges and other tactics to promote personal responsibility regardless of mode. Observational surveys showed improvements in road user behavior after the campaign. Pedestrians and bicyclists were more likely to cross on the green and in crosswalks, while their rate of distraction dropped considerably as well. The program will be replicated at the University of Florida, Florida State and the University of Central Florida beginning September 2015.

Originated in Tampa Bay, *WalkWise Florida*, takes a targeted, grassroots approach to educating key audiences about pedestrian safety. Through free, 15- to 30-minute community-based presentations, citizens learn about the state's pedestrian safety laws and how their behaviors impact their safety and that of other roadway users. To motivate adoption of safe behaviors, the audience is invited to pledge to *WalkWise, Bike Smart and Drive Safely* and to become ambassadors for the program. Using an audience response system that gathers feedback to questions asked during the presentation, the program is having an impact. "Pedestrianism" increased by more than 10% over the established baseline during the presentation, and participants who responded to an email survey reported a 90% retention rate two weeks later (Center for Urban Transportation Research, USF, 2015).

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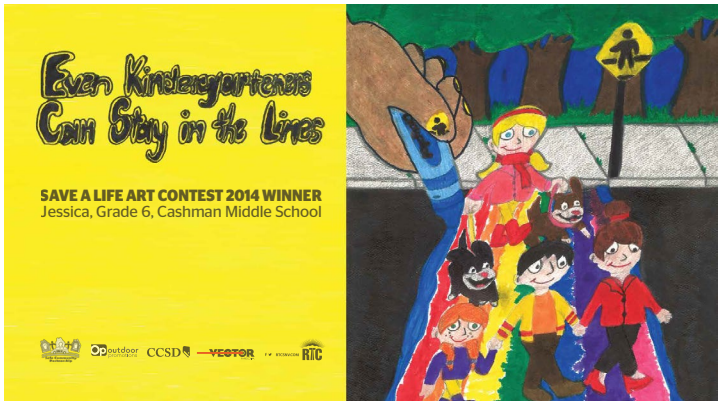
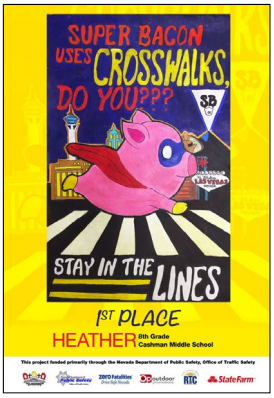


Nevada



Nevada first piloted *Joining Forces (JF)*, a multi-agency, HVE program, in 2001. More than a decade later, the initiative is going strong thanks to the involvement of more than 25 law enforcement agencies and funding from the Nevada Office of Traffic Safety (OTS) (Section 402 funds) and the Nevada Department of Transportation (NDOT) (HSIP funds). *JF* operates statewide covering approximately 95% of the state's population and targets impaired driving, seat belt use, pedestrian safety, distracted driving, and speeding through a series of HVE waves scheduled throughout the year.

Pedestrian safety enforcement was added to the *JF* initiative in 2008 in response to an uptick in fatalities. "There has been an outcry for pedestrian safety," said an OTS official. "But this isn't just a motorist problem; the data confirm that the pedestrian was at-fault in 80 to 90% of our pedestrian fatalities. Police are citing both motorists and pedestrians who violate the law."

Two pedestrian safety waves were conducted in early 2015 targeting both motorists and pedestrians, and more are planned for later in the year (a total of $413,000 is earmarked for pedestrian safety enforcement). The HVE, which uses roving and saturation patrols and pedestrian decoy details, is coupled with education and extensive media outreach that calls on all roadway users to *watch for each other on our roads. Be pedestrian safe* educational materials and radio and television public service announcements (PSAs), all carrying Nevada's *Zero Fatalities* brand, address the laws, offer tips for walkers and drivers, and include information about the impact of driving and walking impaired or distracted.

Nevada OTS also partners with the Transportation Research Center at the University of Nevada (TRC@UNLV) at Las Vegas to fund the PEDSAFE website. The site was built to help foster understanding and information that *Pedestrian Safety IS a Two-Way Street*. It houses videos, news stories, research, injury and fatality maps and tools for people of all ages.

As part of this educational outreach, TRC@UNLV has been working with the Clark County School District, the fifth largest in the nation, to invite students to design a pedestrian or bike safety poster, through its *Save a Life, Win a MacBook* program. Las Vegas is the primary city in Clark County. The first place winner receives a MacBook and his or her poster is displayed on 100 bus shelters throughout the county. The second place winner receives an iPod and his or her art is displayed inside public transit buses for a year. The Apple prizes are donated by an outdoor advertising company, while the space and poster production in the buses are donated by the Regional Transportation Commission and the bus shelter production and rental are paid with 402 funding through a grant to the University. The top 12 posters are compiled into a calendar funded by NDOT and distributed through the school district and local partners. The original artwork has been displayed in local art galleries, at the UMC Trauma Center and at city hall.

TRC@UNLV also created the Crosswalk Crusader, a superhero for Las Vegas residents and visitors, whose motto is *Saving Pedestrians One Step at a Time*. Introduced in May 2014 with a flash mob on the city's famed Fremont Street, the Crosswalk Crusader (played by a retired police officer), shares his safety message with children and adults at school and community events. His image also appears on bus shelters citywide, and in June 2015 he led a group of brightly clad pedestrian and bicyclists in a luminaria parade through town.

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Minnesota

Minnesota's *Share the Road* program has not always included a pedestrian safety focus, but that changed in 2012 when the state's Department of Transportation launched *Pedestrian safety is a two-way street*. From crosswalk events and collateral materials, to radio ads, billboards and even a train wrap (the green line between Minneapolis and St. Paul), a variety of channels are leveraged to reach both motorists and pedestrians using HSIP funds.

The collateral materials (posters, window clings, fact sheets, infographics, t-shirt logos, banners and billboards) can be downloaded from the DOT website for reproduction and distribution. The posters and fact sheets are available not only in English and Spanish, but also in Somali and Hmong. The messaging addresses key motorist and pedestrian behaviors, such as stopping for pedestrians at intersections and when turning, looking before you cross, and making eye contact with the driver, but it also tackles impaired and distracted walking. Posters and window/mirror clings distributed to bars and restaurants carry strong warnings for walkers who over imbibe such as *Getting' smashed at the bar? Don't get smashed walking home*. A fact sheet drives home the point that *distracted walking is dangerous walking*.

To foster enforcement of pedestrian safety laws, the State Non-Motorized Transportation Committee, which makes recommendations to the DOT Secretary regarding goals, policies and standards, successfully advocated for a legislative mandate that requires new police recruit training to include pedestrian and bicycle safety.

Meanwhile, public health officials in the City of Rochester capitalized on a Blue Cross/Blue Shield Active Living Grant to launch *See. Safe. Smart. Rochester.* The campaign promotes safe walking, biking and driving in the fast growing city, which has added 20,000 residents in the past decade. It was developed by Active Living Rochester, a partnership between Cardio Vision 2020/Mayo Clinic, Rochester Public Works, Olmsted County Public Health and Rochester-Olmstead Planning.

SEE.SAFE.SMART. ROCHESTER
Sponsored by ActiveLivingRochester.org

"There's been a mode shift in Rochester," said the program's coordinator. "More people are walking and biking. While a lot is being done to address this through policy adoption of a Complete Streets bike/pedestrian master plan and pedestrian-centric infrastructure improvements, education is needed as well to support these efforts. As a public health practitioner who is used to being a convener, we can bring people together to do outreach."

The campaign uses hometown heroes – recognized local residents – to promote the importance of safety to the city's health and vibrancy. For example, Diane Tucker, a crossing guard who has monitored the same corner for 31 years, appears in a back-to-school message reminding drivers to yield to school children. Another features Lieutenant K.C. Reed, a 35-year member of the Rochester Police Department, reminding pedestrians to cross at lights and asking drivers to stay alert for pedestrians downtown.

The partnership also calls attention to the campaign by conducting crosswalk banner walks in the busy downtown (the banners display safety messages to remind motorists to share the road with pedestrians and bicyclists). While police were on hand to help educate community members, they are not currently doing pedestrian safety enforcement due to funding issues.

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Street Smarts

Smart Pedestrian

Pledge of Commitment

"I pledge to use crosswalks when crossing; share the sidewalk and be courteous to those who require mobility devices to walk; not to text while walking; not to cross at unmarked mid-blocks; to display Smart Pedestrian behavior everyday; and to encourage my fellow pedestrians to also take the Smart Pedestrian pledge."

I understand the way I walk affects other people's safety just as the way they walk affects mine. In recognition of the desire of all citizens for quality of life, safety and the pursuit of happiness, I declare peace in our neighborhoods and commit to using my Street Smarts everyday by:

- Always walk on the sidewalk; if there is no sidewalk, walk facing traffic
- Watch for cars reversing in parking lots and near on-street parking spaces
- Cross streets at marked crosswalks or intersections
- Obey pedestrian and traffic signals such as the walk/don't walk signals
- Pay attention to all pedestrian signals
- Stay alert for drivers and cyclists – put away cell phones
- Make eye contact with drivers and cyclists
- Wear light/reflective clothing at night

NAME

ADDRESS

CITY/STATE/ZIP

EMAIL

SIGNATURE DATE

Please return this form to:
Transportation, Traffic & Parking Department
200 Orange St. G3
New Haven, CT 06510

Walk Smart
Bike Smart
Drive Smart

Safe Streets take Street Smarts

Connecticut

Of the ten largest cities in New England, New Haven has the greatest percentage of residents who walk or bike to work. The city's streets are community spaces. Due to the death of a Yale medical student and an 11-year-old girl in New Haven, city and university officials and a local coalition collaborated in 2008. The *Street Smarts* traffic safety campaign, which is supported by an interactive website, is unique in that it brought together various safety initiatives generated by neighborhood groups, city officials and community stakeholders, including Yale University, into one cohesive solution.

"Before Street Smarts we had three separate messages for pedestrians, bicyclists and cars," said the city's transportation, traffic and parking director. "Why have an education campaign that treats each group separately? The mayor's office hired a

consultant to develop a single program targeted to all modes. Whether you're a cyclist, pedestrian or motorist, our message is now clear: *safe streets take street smarts*."

The campaign's goal is to improve safety for all roadway users. Working with local coalitions of pedestrian and bicycle safety advocates, including key individuals from law enforcement, education, engineering, and public health as well as elected officials and the media, roadway users are called upon to go beyond simply obeying traffic regulations and the posted speed limit. *Street Smarts* calls for attentiveness at all times, patience with others and a willingness to share the road. The message is conveyed on water bottles, magnetic bumper stickers, front and rear bicycle lights, reflective stickers, pedometers, and high visibility sling bags which are all branded with the *Street Smarts* logo. Additionally, *Street Sm*arts is discussed in a triangular brochure, on target-specific educational materials such as dooring flyers for vehicles parked alongside bicycle lanes and in the *Smart Cycling Handbook* for New Haven bicyclists. The Transportation, Traffic and Parking Department actively distributes *Street Smarts* items to schools, downtown merchants, cycling groups and institutions, and at local events and festivals. It also communicates the importance of safe streets to New Haven public school students.

A mode-specific *Pledge of Commitment* was also developed to encourage drivers, pedestrians and bicyclists to adopt safety practices that will positively impact all roadway users. Residents who sign the pledge may opt to receive any number of *Street Smart* materials to help spread the message.

The New Haven Police Department is supporting the campaign through targeted enforcement. High crash locations are identified through data analysis and input from city residents who are encouraged to work with their elected officials to identify and report hot spots via a traffic hotline. Infrastructure improvements that include installation of traffic calming measures (such as roundabouts and speed humps) and new pedestrian signals as well as designated bike routes have been implemented across the city.

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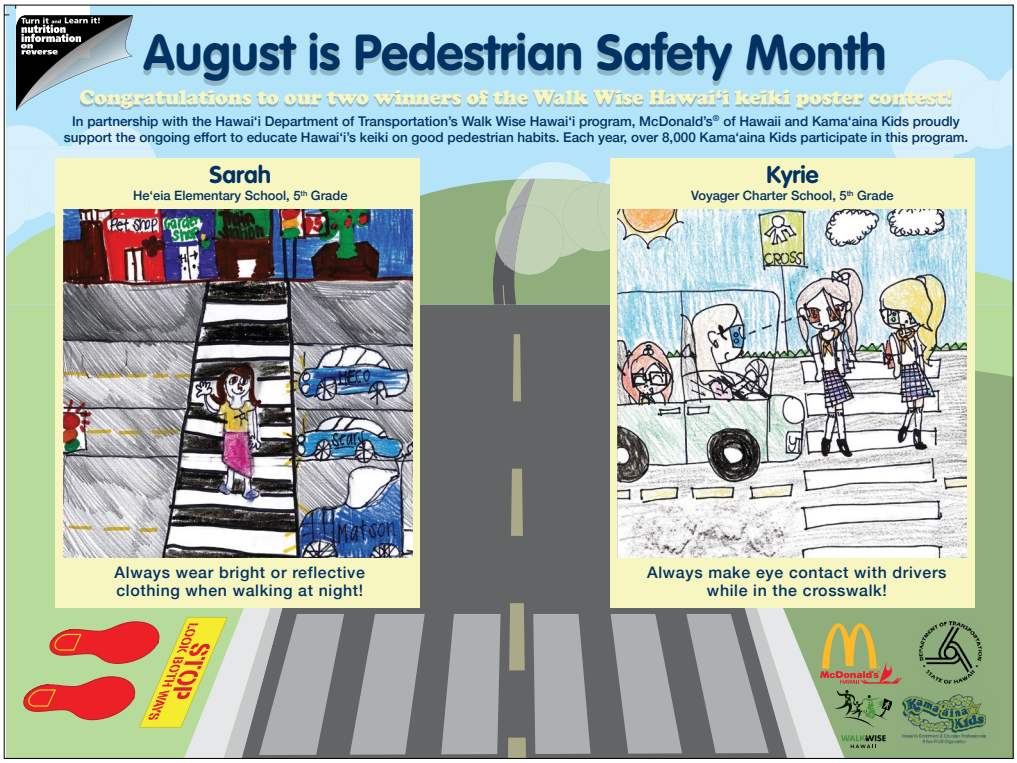

Hawaii

WalkWise Hawaii (WWH) is a pedestrian safety partnership between the Department of Transportation (HDOT), the City and County of Honolulu Department of Transportation Services, the Honolulu Police Department (HPD), and TLC Public Relations. Targeted primarily to children and seniors, WWH educates the public about good pedestrian behavior and the need for drivers to be aware of people on foot. The message is conveyed in multiple languages including Korean, Chinese, Spanish, Vietnamese, Samoan, Hawaiian, Japanese, and Filipino (Tagalog and Ilocano).

While the HPD conducts pedestrian safety enforcement (officers issued 1,549 citations to both drivers and pedestrians in 2013), community outreach and education efforts are front and center. In 2013, HDOT created *But I never saw her*, a PSA that debuted during Hawaii's Pedestrian Safety Month (August) and airs on television and in movie theaters statewide. It reminds drivers to slow down and be prepared to stop for pedestrians who may be blocked from view by other vehicles. A second PSA reminding pedestrians to look before crossing, always use crosswalks and remain vigilant by continuing to look for vehicles while crossing the street is in production.

To reach seniors, several of their peers have been recruited and trained to conduct pedestrian safety presentations and to speak with the media. HDOT staff schedules the speakers, who visit senior centers, participate in community events, and even speak at elementary schools. Plans are in the works to expand the program to the neighbor islands. WWH also targets seniors or kupuna – the Hawaiian word for elder person/caregiver – through their grandchildren.

HDOT also has partnered with McDonald's Restaurants of Hawaii to promote pedestrian safety. In addition to incorporating pedestrian safety tips into Ronald McDonald's safety presentations at schools statewide, McDonald's provides free Happy Meals to use as an incentive to encourage children to participate in the kupuna pledge card program. During the presentation, children are encouraged to take home WWH pledge cards to review with their kupuna. The cards feature seven pedestrian safety tips. The kapuna signs the pledge card saying he or she will always walk safely and the child takes it to McDonald's to receive a free Happy Meal to thank them for helping increase pedestrian safety.

The highlight of the partnership is the posters and tray liners featuring the artwork of the winners of the statewide WWH pedestrian safety poster contest for elementary students in grades 1-5. Children who participate in the Kamaaina Kids afterschool care program are invited to create pedestrian safety posters. The top 20 posters are displayed at the State Capitol during Pedestrian Safety Month, and the top two winners are reproduced on tray liners used in every McDonald's restaurant in Hawaii during August. (McDonald's pays for the design and printing of the trayliners.) In addition to this event, at least one event is conducted each day that month to raise awareness of pedestrian safety.

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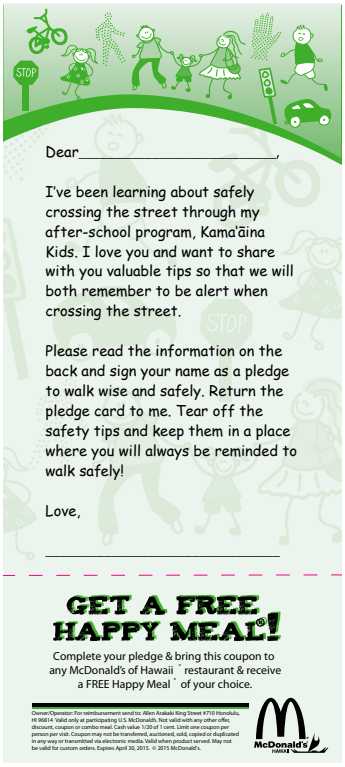

Delaware & Maryland

Traffic safety and law enforcement officials in Delaware (DE) and Maryland (MD) teamed up in 2014 to address pedestrian safety on Route 1, the Coastal Highway. The corridor, which connects resort communities from Lewes, DE south to Fenwick Island and into Ocean City, MD presents a special challenge due to the combination of heavy vehicle traffic, a large number of cyclists and pedestrians, and the fact that every week a new batch of visitors arrive who may be unfamiliar with state and local bike and pedestrian laws. The beach-to-beach initiative uses a consistent message, *Walk Smart*, and a colorful crab logo to educate and engage vacationers and residents.

First developed and launched in 2013 to address pedestrian safety in Ocean City, which hosts nine million visitors annually, the campaign uses high visibility enforcement coupled with paid and earned media and extensive grassroots outreach. In Ocean City, the data-driven enforcement is conducted two to three hours daily by 200 full-time and seasonal officers (overtime hours are attached to regular shifts) during peak times. Particular emphasis is given to engaging with pedestrians as they are coming off the beach at the end of the day and in the evenings (the resort community has 200 liquor licenses). "The focus isn't on writing tickets," explained the Ocean City Police Lieutenant who leads the program, "but on education. The officer has discretion when it comes to issuing a ticket, but overwhelmingly they are written warnings."

Delaware, meanwhile, conducts enforcement one to two weekends a month using overtime funds. All officers are on foot and 98% of tickets are issued to pedestrians versus motorists, noted a DE SHSO official. Delaware leveraged $106,000

(Section 402 and state DOT funds) to conduct both the enforcement and public education. They kicked off the campaign with a joint press event Memorial Day weekend and went as far as possible into September budget permitting. The *Walk Smart* message was conveyed via hotel key cards, realtor information kits, parking lot signs at three Tanger Outlet Centers, posters, door hangers, direct mail, and on trolleys and lifeguard stands.

In 2015, Delaware is conducting grassroots public outreach in prominent locations. A crab mascot will offer to escort pedestrians across the road correctly – in the crosswalk and with the *Walk* signal. These activities will be supported with safety materials and an educational trivia game. This public outreach will be filmed and photographed for posting on social media.

In Ocean City, you cannot go anywhere without seeing the campaign, said the OCPD official. It is on coasters, bus wraps, billboards, boats, aerial banners, water bottles, and tip cards. The message is also conveyed to visitors via signage at hotels, restaurants and businesses throughout town. Every Ocean City employee, including public officials, was given a *Walk Smart* t-shirt that they were required to wear on Fridays during the first year of the program. Employees received five t-shirts in the second year. "We've got 809 ansi green, walking billboards," he added. "Plus, a crab costume is being designed for rollout this summer."

Engineering is also included in the *Walk Smart* program. In Ocean City, significant improvements were made to Route 1 including new pedestrian signals and signage and installation of a center median barrier. Taking a 3 E approach is paying off: Ocean City has not had a motor vehicle fatality in the past three years and pedestrian crashes – which had been as high as 100 – have fallen to 30. Delaware, which is partnering with Maryland for the second year to conduct the *Walk Smart* program, convened focus groups to explore messaging that will help them address their pedestrian fatality rate – currently the highest per capita rate in the nation. Though it has been an uphill battle to make gains, SHSO officials are optimistic and digging into their data to identify specific causation factors.

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Washington

Seattle is considered one of the safest and most walkable cities in the U.S. Despite continued population growth, traffic fatalities have declined 30% over the past decade. Traffic crashes, however, are a leading cause of death for Seattle residents five to 24 years of age. Older adults are also disproportionately affected and account for the largest number of pedestrians seriously injured or killed on the city's roadways (City of Seattle, 2015).

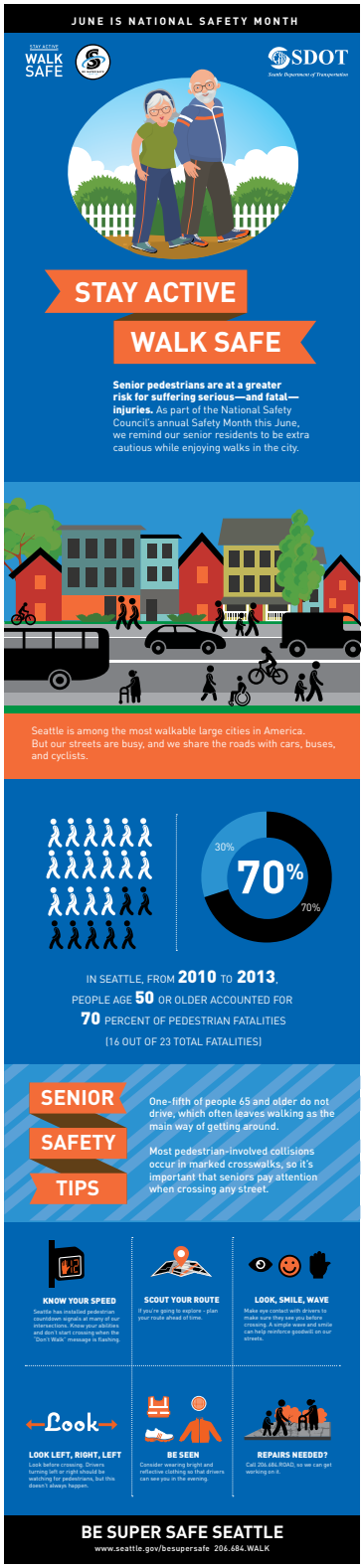
The city, which has adopted a Vision Zero goal, takes a 3 E approach to addressing pedestrian safety and has been able to expand that focus thanks to a nine-year, voter approved Bridging the Gap levy complemented by a commercial parking tax. This generated $365 million, a portion of which has been used to improve pedestrian and bicycle safety and create safe routes to schools near 30 elementary schools (City of Seattle, 2015). The city also has a photo enforcement program in school zones with the fines earmarked to improve the built environment and fund education and enforcement. In 2016, pedestrian safety education (in the classroom and the

community) will be conducted in all public elementary schools, with a goal of expanding to middle and high schools in the future. The Seattle Department of Transportation (SDOT) also allocates approximately $100,000 annually for safety outreach.

The establishment of Pedestrian Safety Zones (PSZs) that combine education, enforcement and engineering has proven particularly effective in reducing pedestrian-involved fatal and serious injury crashes in Seattle. Identified through crash data analysis, the five zones cover a large geographic area and are aligned with the major arterial corridors coming into the city. High visibility enforcement is conducted in the corridors with a focus on speeding, failure to yield and distraction. The Seattle Police Department's (SPD) Aggressive Driving Reduction Unit patrols the PSZs. The SPD's Pedestrian Emphasis Patrols, motorcycle officers who watch marked crosswalks and engage as needed with motorists and pedestrians who violate the law, work the zones as well.

Education is targeted to each key demographic, particularly pedestrians age 50 and older of various ethnicities, in the PSZs. SDOT partnered with AARP and the local ABC affiliate to develop a PSA highlighting pedestrian safety tips for older adults. Part of the *Be Super Safe Seattle* campaign, the PSA was translated into Spanish for broadcast on Univision, and print ads were placed in local ethnic newspapers. SDOT followed-up the media buy with a mass mailing to 10,000 residents in the PSZs and then conducted approximately two dozen safety presentations at senior centers and residences. The SDOT traffic safety coordinator, who conducted the presentations, talked about what older adults can do to protect themselves when walking and then engaged the audience in a discussion about specific hot spots within their community and crash causation factors. Through these presentations, SDOT not only conveyed information, but also garnered input that led to engineering improvements and how best to direct enforcement resources.

Crashes involving impaired motorists and pedestrians are a particular problem in one of the PSZs. In



response, SDOT partnered with the SPD to distribute coasters to local bars. The coasters were imprinted with targeted messages. The version for drunk walkers read, *Feeling Tipsy, walking drunk is no party. Have a buddy to lean on*. The driver coaster offered transportation choices in lieu of getting behind the wheel. SDOT also worked with the Seattle Mariners to pilot outreach at SAFECO Field, the second leading generator of DUIs in King County. Fans were invited to take the Beer Goggle Challenge (attempting to play a bean bag toss game while wearing Fatal Vision™ goggles) for a chance to win a $100 gift card. While the program was well received, it was discontinued after five games due to staffing issues.

SDOT's Traffic Safety Coordinator indicated that it is difficult to show a direct correlation between the PSZ activities and a decrease in pedestrian crashes but points to positive trends. "Activities to date have allowed us to reach thousands of older Seattle residents and provide safety information to thousands of people that will help them stay safe when walking," he said. "Preliminary collision data from January 1-September 30, 2014, show a significant decrease in the number of people killed as pedestrians on our streets. In 2013, nine pedestrians were killed in Seattle, and all but one of these was older than 50. In 2014, there were only two pedestrian fatalities in Seattle and zero involved pedestrians over age 50."

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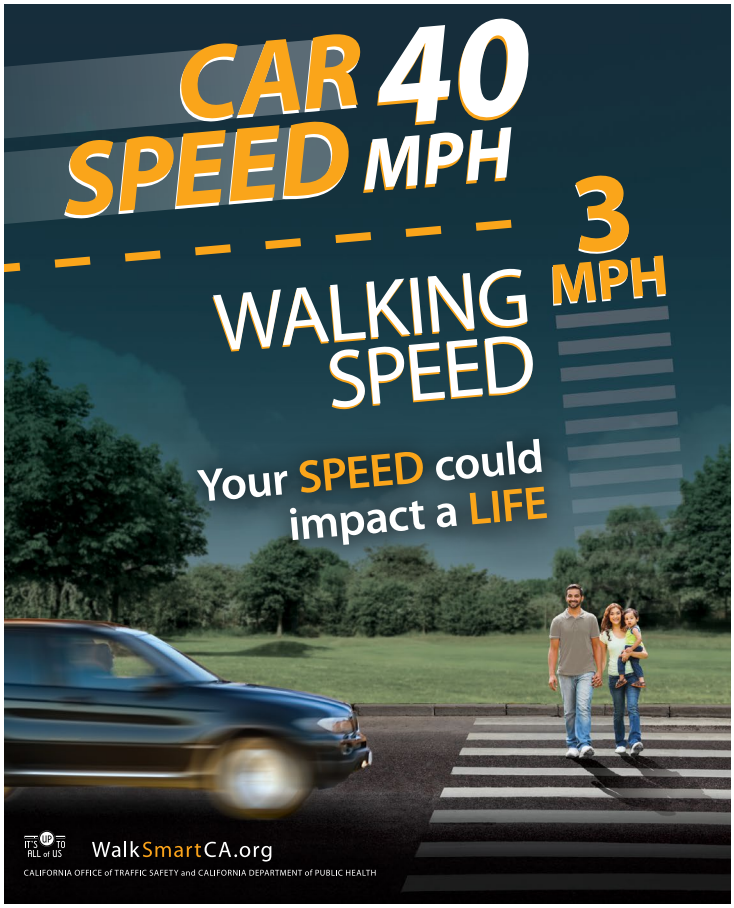


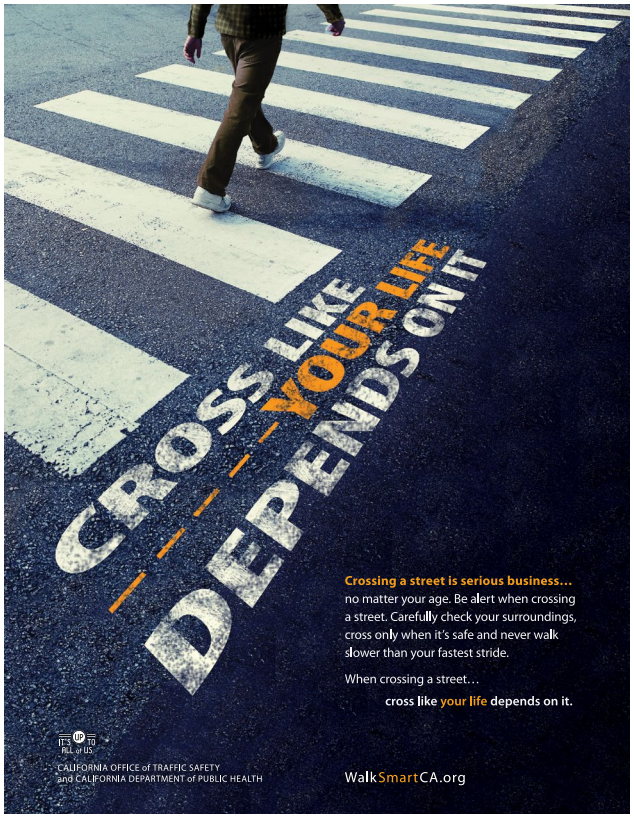
California

The California Office of Traffic Safety (OTS) provided grant funding to launch two pedestrian safety training initiatives – one targeted at the community level, the other at professionals. Each complements the other and when done in tangent can be highly beneficial to a local community seeking to address pedestrian safety.

The Community Pedestrian Safety Training (CPST) program is a four-hour, community-based workshop designed to help local advocates and community members develop pedestrian safety action plans that leverage best practices, promote walkability and ensure community engagement. Developed by the University of California Berkley's Transportation Safety Research & Education Center, the CPST is targeted to underserved communities with high pedestrian fatality and injury rates. The workshops are led by on the ground experts from California Walks, a nonprofit pedestrian safety agency with local affiliates across the state. The workshops are tailored

to each community's needs to ensure cultural and linguistic appropriateness (half are offered in Spanish), offered at times convenient for the audience (Saturdays, evenings, after school) and include food (provided through community donations). The participants, typically 40 per workshop, are given a primer on the traffic safety E's, and then examine data (including injury and crash cluster maps), demographic information and campaigns specific to their community. Walking audits of an area are conducted during the CPST to help identify safety concerns and barriers as well as positive features promoting safety and walkability. With the facilitator's guidance, the participants then identify what they want to focus on, how to secure the resources and next steps. One community, for example, wanted to apply for a Safe Routes to School grant, while another was seeking more enforcement of pedestrian safety laws. The CPST program team checks in with each community group periodically to learn what they have implemented and accomplished since the initial training and to provide follow-up support. Participants have consistently reported that the CPST was worthwhile and useful in advancing their own multifaceted, local pedestrian safety efforts.

Since launching in 2008, the CPST program has conducted 32 workshops in urban and rural communities across all regions of the state. The first was in Glendale, and five years later the CPST program went back to provide additional training. To gauge the training's impact, the CPST team has visited with 12 communities to chronicle what has happened. While there is no solid cause and effect, they can measure what has been done since the group



mobilized. Additionally, instead of attempting to link changes in crash data to the training, they look at best practices to determine what is having an impact. The CPST director also pointed out that communities that have professional representatives (school officials, city engineers, police officers) participating, tend to see more improvements across the various E's of safety.

Unlike the CPST program, the *PedSafe* Program, developed by the California Department of Public Health, trains engineers, planners, educators, public health, law enforcement, advocacy leaders, and elected officials within a city or region. The program grew out of the need to fill a gap in pedestrian safety – how to develop and deliver effective and consistent behavior change messages after a crash when the teachable moment is most salient. A workbook, *Communication for Pedestrian Safety: Risk, Response and Change*, was created to help professionals develop the necessary communication and outreach skills to educate the media and the public about pedestrian safety immediately following a collision and through ongoing prevention efforts.

In addition to the workbook, *PedSafe* developed the *It's Up to All of Us* (IUAU) campaign message and artwork templates, a campaign guide, a mini-grant program which provides seed money to help local organization get started, and campaign implementation training. (The latter is held in conjunction with PedSafe workbook trainings.) Those materials have since been updated to include additional messages addressing specific behaviors (speeding, distracted walking, crosswalk safety under the *WalkSmart* campaign brand) and an Action Response Kit also has been developed. All materials, including the workbook and artwork templates are free and may be reviewed and downloaded from California's WalkSmartCA website.

The training and IUAU campaign materials are currently being used in approximately 25 communities, many with Safe Routes to School programs. PedSafe has also provided technical assistance to the City of Berkley, a densely populated community with a large contingent of college students, who wanted to address its pedestrian safety problem. Working with California Walks to engage law enforcement and elected officials, the community embraced the training and ran with it, noted a PedSafe program manager.

How does PedSafe measure success? The ultimate goal is to reduce fatalities. However, "we look at interim outcomes, which give us a better picture of program impact," explained the program manager. "Did we increase the number of messages in a community? Did we get a risk communication plan woven into the pedestrian/bicycle master plan? Were we able to report effectively in the event of a crash? Did we form a walk advocacy coalition? Were we able to mobilize as a community? Did we build partnerships with law enforcement, engineers, and other key leaders? Are we a cohesive group that is able to build a safe, walking environment?" These interim outcomes demonstrate progress, a vital component to maintaining program success and viability.

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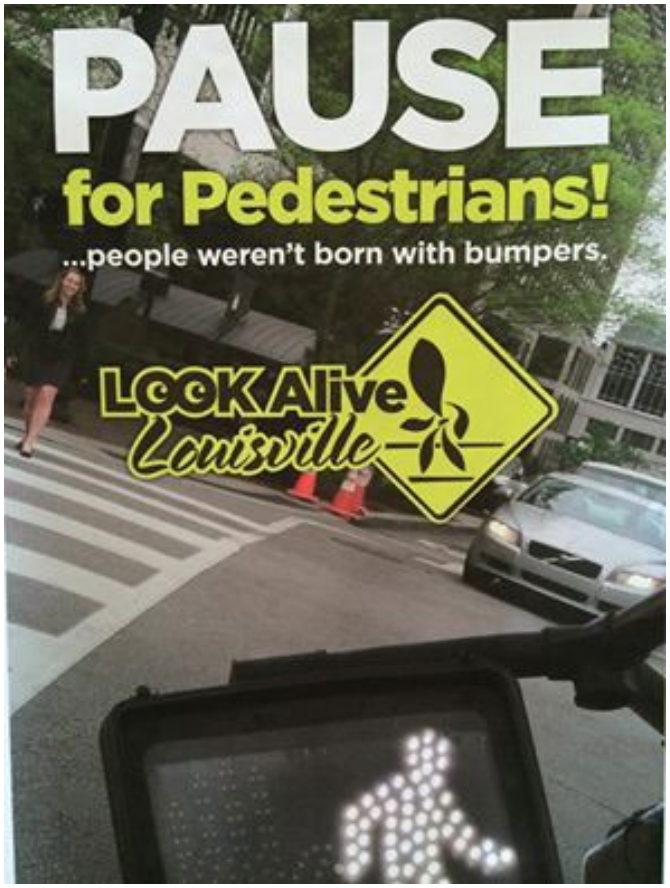

Kentucky

An average of 404 pedestrian-motor vehicle crashes occur annually in Louisville resulting in an average of 16 deaths (Louisville Metro, 2013). Last year, however, 18 pedestrians were killed on the city's roadways (Green, 2015). Some of these pedestrians were struck while using marked crosswalks, others were walking in the middle of the street or hit by drivers whose cars veered off the road. This FHWA-designated focus city has a pedestrian fatality rate of 2.57 per 100,000 residents (2.33 is the national average) and was awarded a $307,000 grant under the Section 403 program (described earlier in this report on page 20) to mount an enforcement and education program. The city's mayor is also taking part in the Mayors' Challenge issued by the U.S. DOT (described on page 21).

Look Alive Louisville focuses enforcement on ten intersections on high crash corridors such as busy Dixie Highway, which has wide lanes and few crosswalks and lights and was the

location of four pedestrian fatalities last year. While not funded through the grant, plans are underway to install pedestrian-only medians, new sidewalks and lighted crosswalks on sections of the road. Additional improvements are planned, and there have been discussions about lowering the speed limit. Making this and other roadways more accessible to those on foot is critical since a police analysis of crash data found that "pedestrians are at-fault in 60% of fatal crashes because they're jaywalking, darting into roads or not visible" (Green, 2015).

Through the grant, officers have been trained to increase their understanding of pedestrian safety laws and to deploy the pedestrian decoy program. The high visibility enforcement is supported by a 13-week ad campaign aimed at getting pedestrians and motorists to be alert at all times. An educational video is in production for viewing by the general public, but the city's bike and pedestrian coordinator who is overseeing the grant would also like to see it used in traffic school to educate motorists who violate the state's pedestrian safety laws (motor vehicle penalty points would be waived for attending). There is also a campaign website and a mascot, a walking fleur-de-lis that appears in ads and at outreach events.

Work is underway in Louisville to adopt the Miami/Dade *WalkSafe* curriculum (discussed on page 44) for use with children and adults. School-age children would be reached through after-school programs, while adult outreach would be conducted at the community-level. "To make it scalable, we'll offer train-the-trainer sessions with community partners," said the city's pedestrian and bicycle coordinator. He also indicated that the city is exploring public/private partnerships to amplify the program's message and reach.

The program will be evaluated to measure its impact on behavior change as well as knowledge of pedestrian safety laws and campaign awareness. The goal is to improve roadway user behavior with a particular focus on inattention, which the pedestrian and bike coordinator describes as "a big problem." He also recognizes, however, that the city and county's roads were "designed to accommodate cars going fast. This efficiency comes at a cost."

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Conclusion

ENSURING THE SAFETY OF ALL ROADWAY USERS IS BOTH A STATE AND NATIONAL priority. However, there are concerns about the extent of financial investment in behavioral safety programs that include all modes of transportation. Flexing HSIP funds provides a means to expand the pool of available resources, along with federal grant programs such as the non-motorized transportation pilot program and Section 403 initiatives. Clearly more funding is needed not only to ensure the roadway system accommodates all users, but also to deal with those individuals who fail to use it safely.

To maximize state and federal safety dollars, highway safety officials should continue to examine all available data to determine the extent and causes of their respective states' pedestrian safety problem and allocate resources accordingly. That includes not only looking at crash and citation data, but also working with DOTs, MPOs and local entities to collect pedestrian and bicycle data such as volume and trip information. Reviewing walkability scores or other metrics that gauge *pedestrian-friendliness* is also recommended.

Taking a comprehensive, 3 E approach to pedestrian safety is the best way to maximize limited resources and get results. That requires all of the E's to work together. The federal mandate that states develop a comprehensive Strategic Highway Safety Plan is helping to break down the silos, but more work is needed to ensure that education and enforcement are used in tandem with engineering improvements and vice versa. Enforcement and education programs, however, must be strategic and targeted to reach the right audiences. Asking motorists and pedestrians to share the road is nice, but it is not likely to change behavior. Determining why pedestrian-motor vehicle conflicts are occurring and crafting messages that call out and offer alternatives to unsafe behaviors will be more impactful. That includes expanding drunk and distracted driving campaigns to include pedestrians. Add in well planned enforcement that specifically targets the offenders at high-risk locations, and the benefits increase exponentially.

All efforts must also be carefully and thoroughly evaluated to determine their impact on improving pedestrian safety. Focusing solely on crash, injury and fatality data, however, won't tell the full story. Determining if a countermeasure prompted a behavior change – whether positive, negative or neutral – is a better way to gauge impact and determine how best to move forward. Programs implemented with a built-in evaluation component that is based on sound science should be a pre-requisite for funding any new pedestrian safety initiative.

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