Spotlight on Highway Safety

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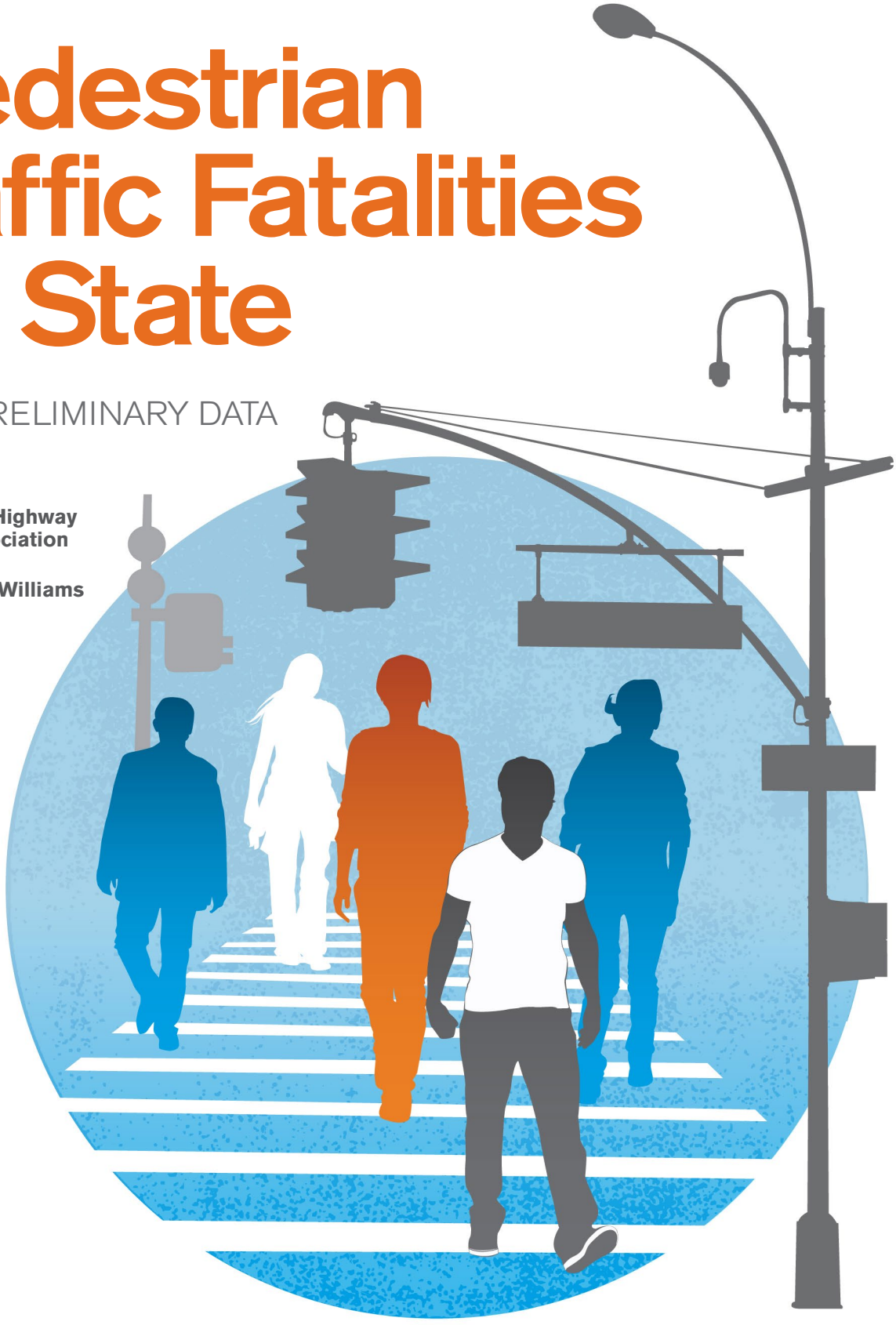
Pedestrian Traffic Fatalities by State

2014 PRELIMINARY DATA

Prepared for
Governors Highway Safety Association

by **Dr. Allan Williams**



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SUMMARY

Pedestrian fatalities in the United States decreased from 2006 to 2009 and then increased 15 percent from 2010 to 2012, a period in which other motor vehicle deaths decreased. In 2013, pedestrian deaths decreased slightly. Earlier studies by the Governors Highway Safety Association (GHSA), based on preliminary data reported by State Highway Safety Offices, were the first to indicate that the decrease that occurred between 2006 and 2009 had halted in 2010 and resumed in 2013. Despite this decrease, the number of deaths in 2013 (4,735) was 15 percent higher than the low of 4,109 in 2009.

The present study, based on preliminary data from all states and the District of Columbia for the first six months of 2014, found a decrease of 2.8 percent in fatalities compared with 2013. After adjusting for underreporting in the preliminary state data, GHSA anticipates there has been little change in the number of pedestrians killed in 2014 compared with 2013. The number of deaths remains relatively high and is cause for concern.

The preliminary data indicate that 24 states and the District of Columbia had decreases in pedestrian fatalities in the first half of 2014 compared with the same period in 2013. Meanwhile, 21 states had increases, and five remained the same. States differ widely in fatality numbers. In 2013, the last full year of data available, the number of deaths ranged from one in North Dakota to 701 in California. Four states - California, Florida, Texas and New York - accounted for 43 percent of all pedestrian deaths. Delaware and Florida had the highest rates of pedestrian deaths per resident population. The District of Columbia, New York, Nevada and Delaware had the highest percentages of all motor vehicle deaths that were pedestrians.

States use a mixture of education, enforcement, and engineering countermeasures to address pedestrian safety. It is important to use evidence-based tactics to reduce pedestrian/motor vehicle collisions and the resulting fatalities and injuries. These include a variety of infrastructure improvements, such as raised medians and refuge islands for pedestrians; pedestrian-activated, high-intensity crosswalk signals; and measures to slow motor vehicles down.

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INTRODUCTION

People travel on foot for a variety of reasons and in a variety of locations. While some travel occurs off the roadway system, there are many instances in which pedestrians share space with motor vehicles, crossing roads or traveling on or alongside them. In so doing, they are exposed to the possibility of injuries. Roads have been designed primarily to accommodate motor vehicle travel, and in some cases have design features that endanger pedestrians. Collisions with motor vehicles can have serious consequences. A study based on California data found pedestrians have the highest injury vulnerability of all road users, more than twice that of bicyclists (Ragland, Grembek, & Felschundneff, 2013).

Pedestrian injuries are a worldwide problem, resulting in nearly three-quarters of a million deaths per year. Globally, pedestrian deaths comprise 22 percent of all motor vehicle-related deaths, with especially high contributions in low- and middle-income countries that are becoming motorized. In some countries, more than half of those killed on the road are pedestrians (World Health Organization, 2013).

In the United States, pedestrian deaths are identified through the Fatality Analysis Reporting System (FARS), a yearly census of motor vehicle fatalities on public roads, first available in 1975. FARS includes deaths of people on foot, whether walking, running or sitting. Excluded are pedestrian deaths in parking lots, driveways, and garages, where some are known to occur.

Since 1975, both pedestrian and other motor vehicle deaths in the United States have declined, but the drop has been steeper for pedestrians. Pedestrian deaths fell 37 percent, from 7,516 in 1975 to 4,735 in 2013, compared with a 24 percent drop in all other motor vehicle deaths (37,009 to 27,984) for the same time period. The proportion of all motor vehicle deaths that were pedestrians ranged from 15 to 17 percent between 1975 and 1988, 13 to 14 percent between 1989 and 1998, and 11 to 12 percent through the 2000s. Between 2010 and 2013, the rate climbed back to to 14 percent.

Recent trends in pedestrian deaths cause concern. Table 1 shows changes in pedestrian and other motor vehicle deaths from 2000 to 2013. Pedestrian deaths declined between 2002 and 2004 and between 2006 and 2009, reaching a low of 4,109 in 2009. A report by GHSA (Hedlund, 2011), based on preliminary data from State Highway Safety Offices for the first half of 2010, provided the first indication that the downward trend had halted. Pedestrian deaths rose between 2010 and 2012, and these increases stand out because other motor vehicle deaths decreased in 2010 and 2011, and increased much less than pedestrian deaths in 2012.

The possibility of further increases prompted a second study by GHSA based on preliminary data for the first six months of 2013, and provided early indication

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that pedestrian deaths had decreased (Williams, 2014). Full-year data from FARS confirmed the 2013 decrease. Despite this decline, pedestrian deaths were still up 15 percent from their lowest point in 2009, whereas other motor vehicle deaths dropped 6 percent during this same period.

Bicyclist deaths in collisions with motor vehicles have also increased since 2010, including a slight rise in 2013. Both bicycling and walking have been heavily promoted in recent years as ways to reduce the health risks associated with physical inactivity and obesity, as well as greenhouse gas emissions resulting from motor vehicle travel. The increase in deaths associated with these activities has sparked interest in how to better protect pedestrians and bicyclists when they are on the road.

Table 1 **Trends in Pedestrian and All Other Motor Vehicle Fatalities, 2000-2013**

Year	Pedestrian Fatalities	% change from previous year	Other Motor Vehicle Fatalities	% change from previous year	Pedestrian Fatalities as a % of all Motor Vehicle Fatalities
2000	4,763	–	37,182	–	11
2001	4,901	+3	37,295	+<1	12
2002	4,851	-1	38,154	+2	11
2003	4,774	-2	38,110	-<1	11
2004	4,675	-2	38,161	+<1	11
2005	4,892	+5	38,618	+1	11
2006	4,795	-2	37,913	-2	11
2007	4,699	-2	36,560	-4	11
2008	4,414	-6	33,009	-10	12
2009	4,109	-7	29,774	-10	12
2010	4,302	+5	28,697	-4	13
2011	4,457	+4	28,022	-2	14
2012	4,818	+8	28,964	+3	14
2013	4,735	-2	27,984	-3	14

Source: Fatality Analysis Reporting System

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THE PRESENT STUDY

The continuing interest in pedestrian death trends prompted GHSA to undertake the present study for the first half of 2014. Using the same methods as in the two prior studies, State Highway Safety Offices were asked to provide preliminary counts of pedestrian deaths that had occurred in the first half of 2014. This is intended to provide an early look at 2014 trends, many months before FARS data for 2014 are available. (Annual FARS data are typically released toward the end of the following year; for example, 2013 FARS data were made available in December 2014.)

It should be noted that the reported state data are preliminary and in some cases incomplete. This was not an issue in the GHSA study based on 2010 data: FARS numbers were only slightly higher (1,906) than earlier-reported state data (1,891). In the GHSA report based on 2013 data, state counts for the first six months of 2013 were the same or only slightly different from FARS in most states, but in some larger states there were undercounts, which skewed the results. Although the 2013 decline was detected, it was overestimated (8.7 percent) in the GHSA report compared with the final FARS data (2.0 percent drop for the first six months, 1.5 percent for the second six months, 1.7 percent for the full year).

All 50 states and the District of Columbia (D.C.) provided counts of pedestrian deaths for the first six months of 2014. Comparing these results with the first six months of 2013 as reported by FARS, pedestrian deaths decreased by 2.8 percent, as summarized in Table 2. The National Highway Traffic Safety Administration (NHTSA) (2015) has estimated a decrease of 2.2 percent for all motor vehicle fatalities in the first half of 2014.

Table 2 Pedestrian Fatalities, January-June, 2013 vs. 2014

	January – June
2013 (reported by FARS)	2,141
2014 (preliminary data from states)	2,082
Change from 2013	-59
States with Decrease	24 + D.C.
States with Increase	21
States Unchanged	5
States with Decrease of 10 or more	8
States with Increase of 10 or more	7

Sources: 2013 data - FARS; 2014 data - reported by states

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Table 3

Pedestrian Fatalities by State for First Six Months of 2013 and 2014

Sources: 2013 data - FARS
2014 data - reported by states

Specific state data are displayed in Table 3. About half the states reported decreases, slightly fewer indicated increases, and five were unchanged. Some states had large increases or decreases. For example, Florida's pedestrian deaths increased by 50. In California and New York, however, fatalities reportedly decreased by 65 and 44, respectively.

State	Jan-June 2013	Jan-June 2014	Change from 2013
Alabama	31	36	+5
Alaska	2	6	+4
Arizona	74	77	+3
Arkansas	23	14	-9
California	315	250	-65
Colorado	33	23	-10
Connecticut	15	14	-1
Delaware	11	9	-2
District of Columbia	7	5	-2
Florida	242	292	+50
Georgia	76	50	-26
Hawaii	14	17	+3
Idaho	6	6	--
Illinois	54	54	--
Indiana	34	37	+3
Iowa	11	10	-1
Kansas	7	17	+10
Kentucky	24	30	+6
Louisiana	42	43	+1
Maine	2	5	+3
Maryland	55	45	-10
Massachusetts	28	26	-2
Michigan	47	66	+19
Minnesota	7	5	-2
Mississippi	18	6	-12
Missouri	34	24	-10
Montana	9	3	-6
Nebraska	6	1	-5
Nevada	30	25	-5
New Hampshire	4	8	+4
New Jersey	67	75	+8
New Mexico	22	30	+8
New York	156	112	-44
North Carolina	75	74	-1
North Dakota	0	4	+4
Ohio	35	26	-9
Oklahoma	24	23	-1
Oregon	20	19	-1
Pennsylvania	53	74	+21
Rhode Island	4	6	+2
South Carolina	42	42	--
South Dakota	2	4	+2
Tennessee	37	47	+10
Texas	247	231	-16
Utah	9	21	+12
Vermont	2	2	--
Virginia	36	35	-1
Washington	20	31	+11
West Virginia	10	7	-3
Wisconsin	18	14	-4
Wyoming	1	1	--
TOTAL	2,141	2,082	-59

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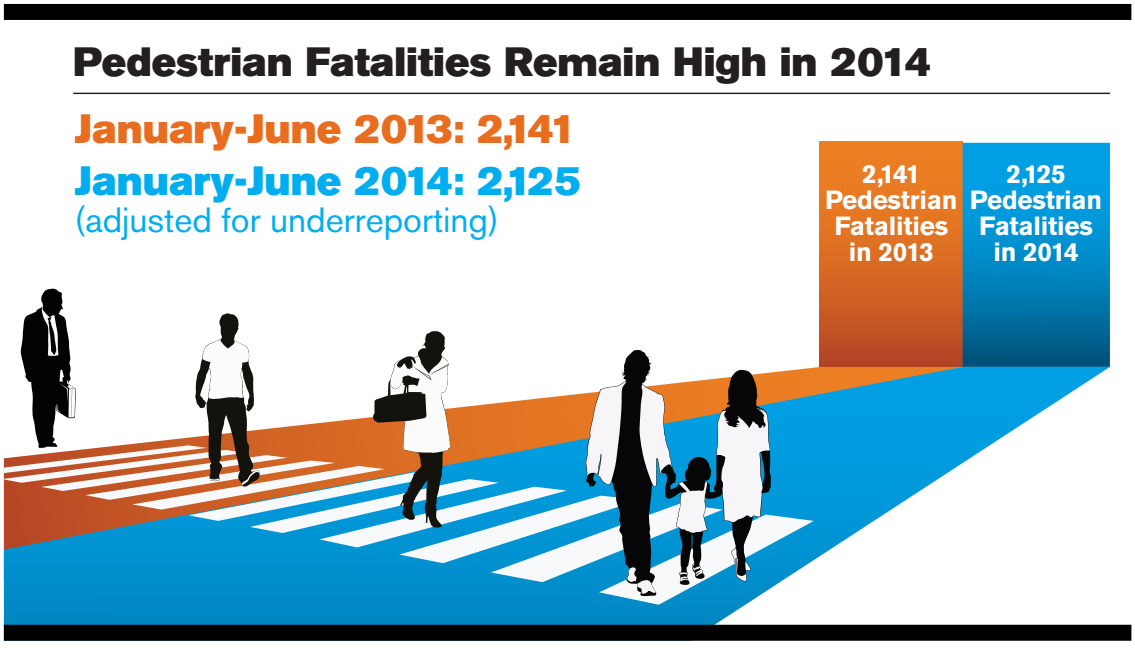
The actual change in the number of pedestrian deaths in 2014 is expected to be less than the 2.8 percent decrease reported in Tables 2 and 3 because some deaths are not yet recorded in state traffic records systems. This same situation has existed in prior GHSA *Spotlights on Highway Safety* studies based on preliminary state data. For *Motorcyclist Fatalities by State* (Hedlund, 2014), estimates of underreporting have shown a consistent pattern, averaging 4 percent in recent years (3.2 percent in 2012, 4.7 percent in 2011, 4.5 percent in 2010). For *Pedestrian Fatalities by State* (Hedlund, 2011 and Williams, 2014), underreporting has not been consistent. The FARS and state numbers were nearly the same for 2010, but for 2013, states undercounted FARS numbers by 7.9 percent. For 2014, if state counts were adjusted upward by 7.9 percent, the decrease in Tables 2 and 3 would convert to an increase.

It seems more reasonable to assume, given the conflicting data in the 2010 and 2013 pedestrian studies, that the undercounting is closer to 4 percent, as in the motorcyclist studies. Increasing the 2014 count by 4 percent would mean there were 2,125 pedestrian deaths in the first half of 2014, compared with 2,141 in the first half of 2013. This leads to the conclusion that **there has been little change in pedestrian fatalities between 2013 and 2014, based on data for the first half of 2014.**



California, the state with the highest number of pedestrian deaths, notes that their preliminary data will underreport final numbers, in part because there are 450 reporting jurisdictions, each with its own reporting system. In 2013, the preliminary number of state-reported deaths for the first six months was 29 percent fewer than eventually reported by FARS for that time period. Removing California's data from the 2013 to 2014 comparison (see Table 3) results in 1,826 deaths for 2013 and 1,832 for 2014: essentially, no change.

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PEDESTRIAN FATALITY CRASH PATTERNS

Some notable changes in pedestrian fatality crash patterns have occurred between 1975 and 2013 (Insurance Institute for Highway Safety [IIHS], 2015). For example, while pedestrians age 70 and older have always had the highest per capita fatality rate, their per capita rate has dropped from 9.3 to 2.2. There also has been a substantial reduction in pedestrian fatalities among children ages 0 to 12, who accounted for 21 percent of the deaths in 1975, 4 percent in 2013, and now have the lowest per capita rate of any age group. On the other hand, the proportion of pedestrian deaths represented by those ages 20 to 69 has surged from 48 percent in 1975 to 76 percent.

Other distinguishing features of pedestrian deaths include location, gender, time of day, and alcohol impairment. Pedestrian deaths are now more likely to occur in urban settings, increasing from 59 percent in 1975 to 73 percent in 2013. Since 1975, males have consistently represented about 70 percent of pedestrian fatalities. The deaths commonly occur in evening or late-night hours. In 2013, 44 percent took place between 9 p.m. and 6 a.m., and 26 percent between 6 p.m. and 9 p.m. In 2013, 36 percent of pedestrians age 16 and older involved in fatal crashes had blood alcohol concentrations (BACs) of 0.08 grams per deciliter (g/dl) or greater (50 percent of those killed between 9 p.m. and 6 a.m. were 0.08 or higher) (IIHS, 2013). According to NHTSA (2014), 14 percent of drivers colliding with pedestrians who were killed in 2012 had BACs of 0.08 g/dl or greater, and in 6 percent of the deaths both the pedestrian and the driver had high BACs.

Pedestrian deaths are somewhat more likely to occur in the second half of the year than the first. In the past five years, 54-57 percent occurred between July and December. Pedestrian deaths are slightly more likely to occur in late fall and winter than in the spring or summer.

Pedestrian Deaths by Time of Day, 2013

70%

between 6 p.m. and 6 a.m.

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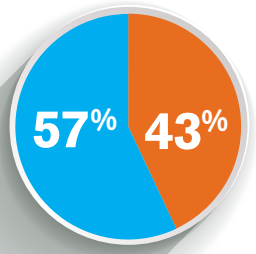
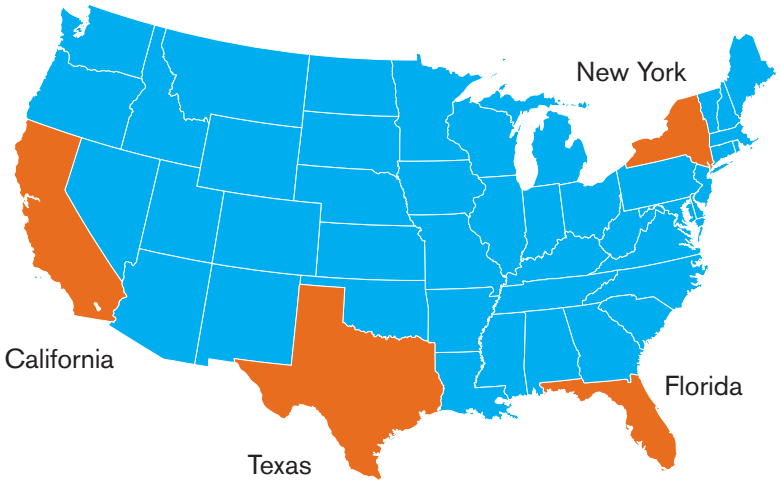
Just four states accounted for

43%

of all pedestrian deaths in 2013.





PEDESTRIAN FATALITIES BY STATE

Table 4 displays state pedestrian fatalities and fatality rates for the last full year for which FARS data are available. States are listed from highest to lowest in terms of total number of deaths. This illustrates the great variation in number of deaths, ranging from one in North Dakota to 701 in California. The top four states – California, Florida, Texas and New York – accounted for 43 percent of all pedestrian deaths in 2013.

States with the largest number of pedestrian deaths are large-population states with many urban centers, both of which contribute to higher death totals. Table 4 also shows deaths per 100,000 residents, which takes into account population differences. Delaware had the highest per capita death rate (2.70), followed by Florida (2.56). Other states with per capita death rates above 2.0 were Montana, (2.36), New Mexico (2.35), Nevada (2.33), Arizona (2.28), Louisiana (2.10), and South Carolina (2.09). Seventeen states had death rates lower than 1.0 per 100,000 population.

Table 4 also illustrates the percentage of motor vehicle deaths in each state that were pedestrians. Along with the total number of deaths, State Highway Safety Offices take this statistic into account when developing their highway safety programs. As with the other data presented in Table 4, there is substantial variation. The highest percentage (45) was in the entirely urban District of Columbia. Pedestrians accounted for a quarter or more of all motor vehicle deaths in New York (28 percent), Nevada (25 percent) and Delaware (25 percent). In seven other states – California, Florida, Hawaii, Maryland, Massachusetts, New Jersey and Rhode Island – pedestrians represented between 20 and 24 percent of all deaths. However, in 20 states, fewer than 10 percent of motor vehicle deaths were pedestrians.

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Table 4

Number, Per Capita Rate and Percentage of Pedestrian Fatalities by State, 2013

Source: FARS

State	Pedestrian Fatalities	Pedestrian Fatalities/100,000 Population	% Pedestrians/ All Fatalities
California	701	1.83	23
Florida	501	2.56	21
Texas	480	1.81	14
New York	335	1.70	28
Georgia	176	1.76	15
North Carolina	173	1.76	13
Arizona	151	2.28	18
Michigan	148	1.50	16
Pennsylvania	147	1.15	12
New Jersey	129	1.45	24
Illinois	125	0.97	13
Maryland	108	1.82	23
South Carolina	100	2.09	13
Louisiana	97	2.10	14
Ohio	85	0.73	9
Tennessee	80	1.23	8
Indiana	77	1.17	10
Virginia	75	0.91	10
Missouri	73	1.21	10
Massachusetts	68	1.02	21
Nevada	65	2.33	25
Alabama	59	1.22	7
Oklahoma	58	1.51	9
Kentucky	55	1.25	9
Mississippi	53	1.77	9
Colorado	50	0.95	10
New Mexico	49	2.35	16
Washington	49	0.70	11
Oregon	48	1.22	15
Arkansas	45	1.52	9
Wisconsin	37	0.64	7
Connecticut	36	1.00	13
Minnesota	32	0.59	8
Utah	28	0.97	13
West Virginia	28	1.51	8
Delaware	25	2.70	25
Kansas	25	0.86	7
Montana	24	2.36	10
Hawaii	23	1.64	23
Iowa	20	0.65	6
Idaho	14	0.87	7
Rhode Island	14	1.33	22
Nebraska	12	0.64	6
New Hampshire	12	0.91	9
Maine	11	0.83	8
District of Columbia	9	1.39	45
South Dakota	9	1.07	7
Alaska	6	0.82	12
Vermont	5	0.80	7
Wyoming	4	0.69	6
North Dakota	1	0.14	1
TOTAL	4,735	1.34 (average)	14

EFFORTS TO REDUCE PEDESTRIAN FATALITIES AND INJURIES

There are several approaches for reducing pedestrian deaths and non-fatal injuries, including laws and their enforcement, education of pedestrians and motorists, engineering and environmental changes, and vehicle design enhancements.

The U.S. Department of Transportation has made pedestrian safety a high priority, providing NHTSA-administered, competitive education and enforcement grants to cities with high pedestrian crash and fatality rates. NHTSA has provided a guidance document to help law enforcement and public safety officials develop and execute pedestrian safety enforcement operations. NHTSA and the Federal Highway Administration have also partnered to develop a website with safety tips and resources for local leaders, city planners, advocates and community members: ***www.nhtsa.gov/everyoneisapedestrian***.

Given the prominence of alcohol impairment in pedestrian deaths, it is also appropriate to review policies that may impact alcohol consumption on the part of motorists and especially pedestrians, and environmental policies that may help protect alcohol-impaired pedestrians and road users in general from collisions, such as improved lighting at night in urban areas.

Education

Education has always been a component of efforts to reduce pedestrian/motor vehicle collisions. Pedestrians and motorists need to know about the risk factors associated with sharing the road, but studies have indicated that many have limited understanding of right-of-way rules they are legally obliged to follow at crosswalks and other locations (Hatfield et al., 2007; Mitman & Ragland, 2007). Situational awareness also is needed at intersections, where there is an inherent conflict between motor vehicle and pedestrian movements, such as a driver turning left on green and encountering a pedestrian who has a walk signal, or a motorist turning right and only scanning for traffic coming from the left. These and other situations can be addressed by signage alerting drivers to watch for and yield to pedestrians, a form of ongoing education. Drivers of hybrid cars and pedestrians must be particularly alert and increase visual surveillance, since these vehicles are over-involved in collisions with pedestrians due to lack of engine noise (Wu, Austin, & Chen, 2011).

Public information and education efforts can increase knowledge and awareness of risky situations and the appropriate actions all roadway users can take to reduce risks. When used alone, they are likely to have limited impact in influencing drivers and pedestrians to actually adopt vigilant, protective and law-abiding behaviors. However, when combined with engineering and enforcement as part of a broad-based community program, education can be an important contributor in successfully reducing pedestrian injuries (Turner et al., 2004; Zegeer et al., 2008).

Enforcement

Enforcement of laws involving motor vehicle/pedestrian interactions is another common tactic for improving pedestrian safety. Typically, these efforts are directed at motorists who fail to yield to pedestrians and pedestrians who "jaywalk." This is often done via short-term enforcement campaigns, which may raise awareness and have a temporary effect on behavior. As in the case of education programs, enforcement can be a part of a comprehensive, concentrated approach to reducing pedestrian/motor vehicle collisions.

Engineering

Engineering changes are critical to improving pedestrian safety. They have the advantage that once in place, any positive effects presumably are permanent. There are many engineering countermeasures that are evidence-based, best summarized by Mead, Zegeer, & Bushell (2013). Exclusive pedestrian signal phases; sidewalks; pedestrian overpasses and underpasses; raised and refuge medians; pedestrian-activated, high-intensity crosswalk (HAWK) signals; and many other treatments are all associated with a reduction in pedestrian/motor vehicle crashes.

Speed Reduction

Another key to pedestrian safety is slowing motor vehicles down. Speed increases injury potential exponentially. Tefft (2013) calculated that the average risk of serious pedestrian injury was 10 percent at an impact speed of 17 mph, 25 percent at 25 mph, 50 percent at 33 mph, 75 percent at 41 mph, and 90 percent at 48 mph. The importance of speed reduction is illustrated by the fact that many pedestrian deaths occur in locations with relatively low speed limits. In 2013, 19 percent of pedestrian deaths occurred where the speed limit was less than 35 mph; 28 percent occurred where the limit was 35-40 mph.

Vehicle Design

Vehicle design issues should not be overlooked. Rear cameras becoming available in new cars may help to prevent backover collisions with pedestrians. Some forward collision warning systems are designed to detect pedestrians and alert the driver or autonomously brake or steer the vehicle. Changes to the front ends of vehicles to make them less injurious to pedestrians has been a subject of research and testing programs in some countries other than the United States.

WHAT STATES ARE DOING

In addition to reporting their preliminary pedestrian fatality data, State Highway Safety Offices were asked to comment about pedestrian safety programs in use and share particular characteristics of the pedestrian/motor vehicle collisions problem in their state, including the impact of distracted driving and walking.

States use a mixture of education, enforcement and engineering to address pedestrian safety. Larger, urban states with high numbers of pedestrian deaths, such as **California** and **Florida**, generally have extensive programs, while it is less of a priority in states with very small numbers of pedestrian injuries. Pedestrian and bicycle safety are often addressed in tandem. Several states discussed overall goals in terms of making streets safer for pedestrians and encouraging walking for its potential health and safety benefits. In doing so, they recognized that pedestrian safety often seems to be overlooked during roadway design. For example, **Nevada** noted the problems caused by the presence of wide, multilane arterial streets with high speed limits and long stretches without safe places to cross. **Maine** said most of their pedestrian fatalities took place on rural roads without adequate shoulders for pedestrian travel.

Educational approaches vary, targeting motorists, children, older pedestrians, or pedestrians in general, through health education courses, posters, billboards, press events, transit signage, videos, and community outreach. **California** provides communities a "how to" guide for applying risk communication and norm change principles and practices to pedestrian safety. **Pennsylvania** has stationed "crossing guards" at high-risk intersections, who point out safety concerns and distribute educational materials. **Delaware** provides overtime funding to police departments for education patrols. Officers stop and educate pedestrian violators about the importance of lawful and careful behavior on the roads, and if appropriate, provide them with visibility aids, such as flashlights.

State enforcement and engineering activities often focus on particular areas, typically larger cities or high-risk corridors within urban or suburban areas. Most states with active pedestrian safety programs include an enforcement component, aimed at motorists or pedestrians, or both. The emphasis tends to be on addressing and changing motorist behavior. For example, in **California**, police are targeting drivers who speed, fail to yield to pedestrians, run red lights or use cell phones. **D.C.** takes a different approach, using automated enforcement that includes cameras to catch drivers who run stop signs or red lights, as well as speed cameras and cameras at uncontrolled crosswalks. This 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 are dying, which they attribute to lower speeds.

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In this regard, **New York City** lowered its speed limit from 30 mph to 25 mph in November, 2014. As indicated, almost half of pedestrian deaths involve vehicles traveling at less than 40 mph, and the likelihood of death for pedestrians struck at 40 mph is about triple what it is at 25 mph. Thus lowering vehicle speeds has enormous potential to reduce injury severity, while also giving pedestrians and motorists extra time to avoid a collision in the first place.

Many states are also making engineering changes to improve pedestrian safety, often in conjunction with education and enforcement efforts. Some states are designating high-risk areas, sometimes referred to as pedestrian safety zones, which include pedestrian safety infrastructure improvements such as enhanced signage, more visible crosswalks and additional lighting. The program in **Washington State** exemplifies this approach, with emphasis on crossing treatments and refuge islands. **Maryland** has identified a major arterial corridor with a high number of pedestrian injuries and applied treatments such as increasing the number and visibility of crosswalks, providing refuge islands, and lengthening pedestrian signal timing, combined with education and enforcement. Leading pedestrian intervals have been installed at 120 intersections in **D.C.**, giving pedestrians a head start in crossing the street and reducing pedestrian/vehicle conflicts.

REASONS FOR FLUCTUATIONS IN PEDESTRIAN FATALITIES

Why are pedestrian deaths fluctuating? As discussed in the 2013 GHSA *Pedestrian Traffic Fatalities by State* spotlight report, the reasons for changes in highway deaths in general are difficult to pinpoint. Possible explanations offered by states for the increase in pedestrian deaths between 2010 and 2012 included:

- the economic recession that may have increased walking over driving;
- changes in demographics that may have increased pedestrian populations unfamiliar with the rules of the road; and
- warmer weather patterns that may have increased walking.

Unfortunately, pedestrian exposure data are not readily available to fully address these and other potential explanations for the uptick.

Now that the increase in pedestrian deaths has halted, at least temporarily, deaths are still high relative to recent years. Understanding why is important since this may suggest how to drive the numbers down. The most popular hypothesis is that distracted driving and walking play a substantial role in contributing to pedestrian/motor vehicle fatalities. There is some evidence from FARS and emergency room data that both distracted driving and walking are increasingly contributing to pedestrian injuries (Stimpson, Wilson, & Muelleman, 2013; Nasar & Troyer, 2013). The effects are modest, although these data sets may underestimate the contribution of distraction to crash involvements due to underreporting on crash forms.

Recently there has been increased emphasis on distracted walking. Washington State noted an observational study conducted by the Harborview Injury Prevention and Research Center (Thompson et al, 2013). Of the 1,102 pedestrians observed crossing at 20 high-risk intersections, 30 percent were distracted by the use of mobile devices, and this group was four times more likely than non-distracted crossers to ignore safety practices such as crossing with the lights or scanning for cars. A recent survey of 1,000 adults indicated that 60 percent reported doing other activities while walking, including texting, emailing, talking on the phone, or listening to music (Liberty Mutual, 2014). Several recent news articles focus on distracted walking (e.g., Henderson, 2014; Bilton, 2014).

Most states report little solid evidence on the role driver or pedestrian distraction plays in pedestrian/motor vehicle crashes, other than anecdotal. Some expressed concern that distraction may be eclipsing other issues, such as alcohol impairment, that

warrant more attention. Only two states reported on the extent to which distraction was thought to be a factor in crashes. Utah said 17 percent of its pedestrian fatalities involved a distracted driver, compared with 8 percent of all fatal crashes. Washington State reported that between 2009 and 2013, 15 percent of pedestrians killed and 26 percent of drivers involved in pedestrian/motor vehicle collisions were identified as being distracted at the time of the crash.

Distraction has captured the public's attention, but the magnitude of the role distraction plays in pedestrian crashes has not been firmly established. However, distracted driving and distracted walking are clearly risk factors. As noted in the initial GHSA report on pedestrian fatalities (Hedlund, 2011), "the price of pedestrian safety is eternal vigilance."

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DISCUSSION

Waking - and biking - are being encouraged for their potential health and environmental benefits. When these activities take place on the road, there are potential health hazards as well. The goal is to make roadways safe for all users. There are steps pedestrians can and should take to protect themselves when they are on the road, and motorists have responsibilities for ensuring the safety of pedestrians. While education and enforcement are important components of a comprehensive pedestrian safety program, the key is making structural changes in roadway design that better separate motor vehicles and pedestrians, slowing down motor vehicles, and enhancing visibility and awareness through signage and lighting. Although the 2010-2012 increases in deaths appear to have halted, pedestrian deaths remain substantially higher than their low point in 2009, so these are all important steps to take.

REFERENCES

Bilton, N. (2014). Message to self: In 2015, stop texting and walking. *New York Times,* December 24, 2014

Hatfield, J., Fernandes, R.F., Soames, J., & Smith, K. (2007). Misunderstanding of right-of-way rules at various pedestrian crossings: Observational study and survey, *Accident Analysis & Prevention*, 39, 833-842.

Hedlund, J. (2011). Pedestrian traffic fatalities by state: 2010 preliminary data. Washington, DC: Governors Highway Safety Association.

Hedlund, J. (2014). Motorcyclist traffic fatalities by state: 2013 preliminary data. Washington, DC: Governors Highway Safety Association.

Henderson, T. (2014). Cities combat distracted walkers; oblivious pedestrians using their phones are becoming a risk to themselves and others. *Los Angeles Times*, December 21.

Insurance Institute for Highway Safety. (2015). Fatality facts: Pedestrians. Arlington, VA.

Liberty Mutual Insurance. (2014). Distracted walking: Danger on the crosswalk. Boston, MA.

Mead, J., Zegeer, C., & Bushell, M. (2013). Evaluation of pedestrian-related road measures: a summary of available research. Report no. DTF H61-1-11-H-00024. Washington DC: Federal Highway Administration.

Mitman, M.F., & Ragland, D.R. (2007). Crosswalk confusion: More evidence why pedestrian and driver knowledge of the vehicle code should not be assumed. *Transportation Research Record*, 2002, 55-63. Washington, DC: National Research Council.

Nasar, J.L., & Troyer, D. (2013). Pedestrian injury due to mobile phone use in public places. *Accident Analysis & Prevention*, 57, 91-95.

National Highway Traffic Safety Administration. (2014). Traffic Safety Facts: Pedestrians; 2012 data. Washington DC

National Highway Traffic Safety Administration. (2015). Early estimate of motor vehicle traffic fatalities for the first half (Jan-Jun) of 2014. Report No. DOT HS 812 093. Washington, DC.

Ragland, D.R., Grembek, O., & Felschundneff, G. (2013). Roadway/urban design and pedestrian/bicyclist safety –Basic principles, applications, and benefits. In *Safety, Sustainability & Future Urban Transport* (ed. D Mohan). New Delhi: Eicher Goodearth.

Stimson, J.P., Wilson, F.A., & Muelleman, R.L. (2013). Fatalities of pedestrians, bicycle riders, and motorists due to distracted driving motor vehicle crashes in the U.S., 2005-2010. *Public Health Reports*, 128, 436-442.

Tefft, B.C. (2013). Impact speed and a pedestrian's risk of severe injury or death. *Accident Analysis & Prevention*, 50, 871-878.

Thompson, L.L., Rivara, F.P., Ayyagari, R.C., & Ebel, B.E. (2013). Impact of social and technological distraction on pedestrian crossing behaviour: An observational study. Injury Prevention, 19, 232-237.

Turner, C., McClure, R., Nixon, J., & Spinks, A. (2004). Community-based programmes to prevent pedestrian injuries in children 0-14 years: A systematic review. *Injury Control and Safety Promotion*, 11, 231-237.

World Health Organization. (2013). More than 270,000 killed on roads each year. Geneva, Switzerland.

Williams, A.F. (2014). Pedestrian traffic fatalities by state: 2013 preliminary data. Washington, DC: Governors Highway Safety Association.

Wu, J., Austin, R., Chen, C-L. (2011). Incidence rates of pedestrian and bicyclist crashes by hybrid electric passenger vehicles: An update. Report No. DOT HS-811-526, Washington, DC: National Highway Traffic Safety Administration.

Zegeer, C.V., Hendersen, D., Blom, K., Marchetti, L., Masten, S., Fan, Y., Sandt, L., Brown, A., Stutts, J., & Thomas, L. (2008). Evaluation of the Miami-Dade pedestrian safety demonstration project. Report No. DTNNH22-93-H-05183. Washington, DC: National Highway Traffic Safety Administration.

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