

# Pedestrian Traffic Fatalities by State

2020 PRELIMINARY DATA

## HOW CAN WE REDUCE PEDESTRIAN FATALITIES AND INJURIES?

Many factors that contribute to pedestrian crashes are outside the control of SHSOs, which fund behavioral safety countermeasures. For example, traffic engineering considerations such as roadway and traffic signal design, sidewalk construction and street lighting fall under the purview of the engineering divisions of state and local Departments of Transportation (DOTs). These are significant strategies that can enhance pedestrian safety and have been supported by GHSA and others in the behavioral highway safety community for many years. Many highway safety advocates have also brought attention to the fact that much of the country still lacks, and desperate needs, more safety infrastructure to protect non-motorized travelers.

SHSOs are committed to improving the safety of all road users by focusing on behavioral issues that contribute to traffic crashes, such as impaired, distracted and aggressive driving; seat belt use; child passenger safety; pedestrian, bicyclist and motorcyclist safety; and teen and older driver issues. SHSOs leverage federal highway safety grants (under U.S.C. Title 23 Sections 402 and 405) to address these issues through education and enforcement. In addition, in some states, SHSOs are responsible for traffic records coordination and Safe Routes to School (SRTS) programs. SHSOs are located in state DOTs in about half of the states or work with their state DOT counterparts to align behavioral solutions with engineering efforts.

Achieving robust and sustained progress toward reducing – and ideally eliminating – pedestrian fatalities and injuries requires a comprehensive approach that includes five E's: Enforcement, Engineering, Education, Emergency Medical Response and Equity. The final E, Equity, is essential and cannot be separated from the other E's. Take infrastructure programs, for example, which have prioritized the movement of motor vehicles over walking and bicycling for many years. Equitable investment must be made in engineering initiatives that ensure cities, communities and neighborhoods are safe and accessible for all modes and all people.

At the same time, states must develop and implement public education and outreach programs with community input – using appropriate language, images and media – to be delivered by trusted leaders and spokespersons that look and sound like the audience with whom they are attempting to engage. States must continually examine traffic safety laws and their enforcement to ensure they are not disproportionately burdening BIPOC communities. States should also place emphasis on addressing unsafe motorist behaviors that pose the greatest risk to people outside of vehicles. More must be done to address the gaps in emergency medical services (EMS) – particularly in rural and underserved areas – to ensure that a pedestrian seriously injured in a motor vehicle crash has the greatest chance of survival.

Evidence-based research has identified numerous engineering, enforcement, education and EMS countermeasures that are effective at reducing pedestrian crashes. Each are addressed below and as noted above, should be viewed carefully through the equity lens to ensure transportation safety for all people regardless of age, race, gender, ability, income, background and other personal characteristics.

### Engineering

Speed management appears to offer the greatest potential for pedestrian injury prevention. Slower speeds give motorists more time to react and can lessen injuries when crashes do occur. In terms of crash reduction, states and communities should consider:

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- Installation of modern **roundabouts** in place of conventional intersections was identified as the most effective speed control intervention.<sup>3</sup> European studies indicate that, on average, converting conventional intersections to roundabouts can reduce the rate of pedestrian crashes by about 75%. Single-lane roundabouts have been reported to involve substantially lower pedestrian crash rates than comparable intersections with traffic signals. Like other states, Indiana is constructing roundabouts in place of traditional intersections to improve pedestrian safety. [Indiana](#) has more than 256 roundabouts, including more than 125 in the City of [Carmel](#). Public involvement is essential, combined with an [education](#) and communication strategy that addresses their use.
- **Traffic calming** techniques such as lane narrowing, adjustments in roadway curvature, pedestrian refuge islands and speed humps have been shown to reduce speeds and crashes. A study of “extensive” area-wide traffic calming measures, involving a before-after design without controls, reported that pedestrian-vehicle crashes decreased by 25%.<sup>4</sup> The City of Cambridge, Massachusetts, which is held up as a national model, provides examples of traffic calming techniques on its [webpage](#).
- **Automated traffic enforcement** (speed and red-light cameras) included as a component of a broader traffic safety and speed management program is also effective in areas with a demonstrated need.<sup>5</sup> The use of speed cameras has been shown to reduce motorist speed and crashes, which is critical for reducing pedestrian deaths and injuries. A [NHTSA-funded review](#) of well-controlled studies suggested injury crash reductions relating to speed cameras are likely to be in the range of 20 to 25% at conspicuous, fixed camera sites.<sup>6</sup> Chicago’s [Children’s Safety Zone Program](#) protects children, pedestrians and other vulnerable roadway users by reminding motorists to slow down and obey speed limits – especially near schools and parks. The program’s comprehensive toolbox includes enhanced signage, pavement markings, pedestrian refuge islands and speed enforcement cameras, as well as education and encouragement. Automated enforcement is also used to address speeding in school zones in New York City. The [program](#), which began in 2014 with 140 speed cameras, was legislatively expanded to allow for the installation of 750 devices by the end of 2020.
- **Pedestrian refuge islands**, which are located in the medians of two-way streets, allow pedestrians to cross in two stages, simplifying the crossing task. This is especially helpful for pedestrians who walk at slower speeds. There are significantly lower pedestrian crash rates on multilane roads with raised medians than on those without such medians.<sup>7</sup>
- Increased intensity of **street lighting** can improve pedestrian visibility at night, when 75% of all fatal pedestrian crashes occur. Increased intensity of roadway lighting at pedestrian crossings has been associated with significant reductions in nighttime pedestrian crashes.<sup>8</sup>

3 Retting, R.A., Ferguson, S.F., & McCartt, A. (2003). A review of evidence-based traffic engineering measures to reduce pedestrian-motor vehicle crashes. *American Journal of Public Health* 93/9: 1456-1463.

4 Brilon, W., & Blanke, H. (1993). Extensive traffic calming: Results of the accident analyses in six model towns. In: Proceedings of the 63rd Annual Meeting of the Institute of Transportation Engineers, 119-123 Washington, DC: Institute of Transportation Engineers.

5 Richard, C. M., Magee, K., Bacon-Abdelmoteleb, P., & Brown, J. L. (2018). Countermeasures that work: A highway safety countermeasure guide for State Highway Safety Offices, Ninth edition (DOT HS 812 478). Washington, DC: National Highway Traffic Safety Administration.

6 Decina, L. E., Thomas, L., Srinivasan, R., & Staplin L. (2007). Automated enforcement: A compendium of worldwide evaluations of results (DOT HS 810 763). Washington, DC: National Highway Traffic Safety Administration.

7 Zegeer, C. V., Stewart, J. R., Huang, H., & Lagerwey, P. (2001). Safety effects of marked versus unmarked crosswalks at uncontrolled locations, 1723:56–68. Washington, DC: Transportation Research Board

8 Pegrum, B. V. (1972). The application of certain traffic management techniques and their effect on road safety. In: Proceedings of the National Road Safety Symposium, 277-286. Perth, Western Australia: Dept of Shipping and Transport.

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- A comparative analysis of intersections with and without [exclusive pedestrian signal phasings](#) – which stops all vehicle traffic for part or all of the pedestrian crossing signal – reported that the risk of pedestrian-vehicle crashes at intersections with exclusive timing was approximately half that at intersections with standard pedestrian signals.<sup>9</sup>
- Adequately timed yellow and all-red **clearance traffic signals** are necessary to ensure that drivers have enough time to clear the intersection before indicating a pedestrian may proceed. One study showed that combined changes in the duration of yellow and all-red signal timing reduced the risk of pedestrian and bicycle crashes at intersections by 37% relative to control sites.<sup>10</sup>
- [Complete Streets policies](#) direct state and local transportation planners and engineers to routinely design and operate the entire right of way to enable safe access for all users, regardless of age, ability or mode of transportation. To date, more than 1,600 Complete Streets policies have been passed in the U.S.<sup>11</sup> [Cleveland Heights](#), Ohio was recently recognized in a national competition as having the best Complete Streets policy in the country.
- Light trucks – as well as passenger cars – can be made safer by installing [automatic emergency braking systems](#) that can detect and brake for pedestrians. This technology uses information from forward-looking sensors to automatically apply or supplement the brakes when the system determines a pedestrian is in imminent danger of being struck. A recent [study](#) found that automatic emergency-braking technology installed by one vehicle manufacturer was associated with a 35% reduction in the rate of pedestrian-related insurance claims.<sup>12</sup> As of December 2020, ten automakers have voluntarily equipped nearly all their light model vehicles with this technology ahead of a 2022-23 target, while another three have exceeded the 90% threshold.<sup>13</sup>

## Enforcement of Motorist Laws

This is an area where SHSOs play a key role, as they fund numerous enforcement activities along with education and outreach to address speeding, impaired and distracted driving, pedestrian safety and other issues. The South Carolina Office of Highway Safety and Justice Programs, for example, works with the state's 16 [Law Enforcement Networks](#), which encompass all state, local and federal agencies in the state's 46 counties, to conduct training and promote education and enforcement efforts. In Florida, the Highway Patrol and partnering agencies developed the "[Arrive Alive](#)" data-driven traffic safety initiative, which utilizes a combination of law enforcement, education and engineering efforts in "hot spots" identified through the [Data-Driven Approaches to Crime and Traffic Safety](#) model.

Although not entirely focused on pedestrian safety, reducing the incidence of impaired driving is an important consideration given the role of alcohol in fatal pedestrian crashes and the propensity for

9 Zegeer, C.V., Opiela, K.S., & Cynecki, M.J. (1982). Effect of pedestrian signals and signal timing on pedestrian accidents. *Transportation Research Record*, 847: 62–72.

10 Retting, R.A., Chapline J.F., & Williams A.F. (2002). Changes in crash risk following re-timing of traffic signal change intervals. *Accident Analysis and Prevention*, 34:215–220.

11 Smart Growth America: [Complete Streets Policies](#)

12 Insurance Institute for Highway Safety. (2018, May). Subaru crash avoidance system cuts pedestrian crashes. *Status Report*, 53(3).

13 Automotive World. (2020, Dec.). 10 automakers fulfill automatic emergency braking pledge ahead of schedule. <https://www.automotiveworld.com/news-releases/10-automakers-fulfill-automatic-emergency-braking-pledge-ahead-of-schedule/>

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these deaths to occur at night. When it comes to impaired driving, GHSA has suggested SHSOs do more to ensure their programs are comprehensive and take an [individualized approach](#) to each offender to help reduce recidivism. NHTSA, meanwhile, has identified four strategies to reduce impaired driving crashes that guide the work of the SHSOs and their law enforcement partners:<sup>14</sup>

- **Deterrence** - Enact, publicize, enforce and adjudicate laws prohibiting impaired driving so that people choose not to drive impaired.
- **Prevention** - Reduce drinking and drug use and keep impaired drivers from driving.
- **Communications and outreach** - Inform the public of the dangers of impaired driving and establish positive social norms that make driving while impaired unacceptable.
- **Alcohol and drug treatment** - Reduce alcohol dependency or addiction among drivers.

## Education

Pedestrian safety education can help change crossing behavior, but studies to assess the safety impact of pedestrian education programs have been inconclusive.<sup>15</sup> Therefore, pedestrian safety education campaigns should be developed and implemented in combination with enforcement, engineering and/or emergency medical response. SHSOs support high visibility enforcement coupled with public outreach and education, a proven countermeasure for creating deterrence and change unlawful motorist behavior. In addition, GHSA encourages SHSOs to partner with DOTs to educate road users about the engineering improvements addressed previously in this section.

The one caveat when it comes to pedestrian education programs are children. Because young children have limited traffic experience and may not fully appreciate the risks associated with crossing streets, they are a prime audience for pedestrian safety education. To meet this need, NHTSA developed [Child Pedestrian Safety Curriculum](#) that teaches and encourages pedestrian safety for students in Kindergarten through 5th Grade.

Other examples of pedestrian safety programs that include a strong education component along with enforcement and/or engineering include:

- North Carolina's "[Watch for Me NC](#)" program and New Jersey's "[Street Smart](#)," aim to reduce pedestrian and bicycle injuries and deaths through a comprehensive, targeted approach of public education, community engagement and high visibility law enforcement. Both programs have been evaluated and shown to be effective in changing motorist and pedestrian behavior.
- The Georgia Office of Highway Safety (GOHS) has awarded grants to implement education programs in cities with significant increases in pedestrian fatalities and where walking is the primary mode of transportation. This is one of a number of educational strategies identified in the state's five-year, multidisciplinary [Pedestrian Safety Action Plan](#) that are designed to work in consort with engineering, enforcement and EMS strategies.

<sup>14</sup> Richard, C. M., Magee, K., Bacon-Abdelmoteleb, P., & Brown, J. L. (2018). Countermeasures that work: A highway safety countermeasure guide for State Highway Safety Offices, Ninth edition (DOT HS 812 478). Washington, DC: National Highway Traffic Safety Administration.

<sup>15</sup> Duperré, O., Bunn, F., & Roberts, I. Safety education of pedestrians for injury prevention: a systematic review of randomized controlled trials. *BMJ*. 2002 May 11; 324(7346): 1129.

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- The Michigan Office of Highway Safety Planning's (MI OHSP) statewide campaign, "[Everybody's Road, Everybody's Rules](#)," includes education and enforcement activities. Last October during the nation's first observance of Pedestrian Safety Month, MI OHSP partnered with 12 law enforcement agencies in 12 cities to educate and engage with motorists and pedestrians. They focused on motorists making illegal turns, failing to stop at a signal or crosswalk and not yielding to pedestrians, and spoke with pedestrians about using sidewalks where provided or walking against traffic on a roadway without a sidewalk. The MI OHSP also launched "[Stay in Your Car](#)," a campaign to remind motorists involved in a roadside emergency to stay in their vehicle until help arrives. Between 2014-2018, 10% of the state's pedestrian deaths involved a roadside emergency.

## Emergency Medical Response

When pedestrian crashes do occur, timely and high-quality emergency medical response is essential to increase the chance of survival. Emergency Medical Services (EMS) refers to an integrated system of trained personnel, facilities and services such as ambulances, medivac helicopters, emergency medical technicians and trauma care centers. NHTSA's Office of EMS maintains a comprehensive [website](#) with a range of EMS resources. In October 2020, the agency released a multi-language public service announcement (PSA) in conjunction with the first national observance of Pedestrian Safety Month. The PSA urges bystanders to "[Stop. Call. Stay.](#)" at the scene of a pedestrian-vehicle crash until EMS arrives. Because every moment counts when it comes to emergency medical response, the website "[You Are the Help Until Help Arrives](#)," which is maintained by a conglomerate of federal agencies, provides important information for bystanders while waiting for trained medical personnel to arrive.



## Delaware Making Gains in Driving Down Pedestrian Deaths

As noted earlier this report, Delaware is one of two states (along with Kentucky) projected to have achieved three consecutive years of declining numbers of pedestrian fatalities. Although definitive reasons for these declines are not known, some of the measures recently implemented or supported by the Delaware Highway Safety Office in combination with engineering and other efforts to improve pedestrian safety include:

- Summer beach pedestrian high visibility enforcement and education mobilizations that address safe walking by the many tourists visiting Delaware Beaches.
- Updated pedestrian information on the "[Arrive Alive DE](#)" website.
- Pedestrian safety outreach conducted by Delaware Rapid Transit Bus Street Teams along high crash routes.
- A new focus on visibility messaging to address the high incidence of pedestrian fatalities occurring after dark.

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## Multidisciplinary Approaches

**Pedestrian safety zones** can increase the cost-effectiveness of interventions by using education, enforcement and engineering measures aimed at specific audiences in geographic areas where a significant number of pedestrian crashes occurred.<sup>16</sup> USDOT developed the [Zone Guide for Pedestrian Safety](#) that describes multidisciplinary measures and systematic improvements to enhance pedestrian safety. Results of implementing [four pedestrian safety zones](#) in Miami-Dade County, Florida showed at the peak of the program effects in 2003 and 2004, pedestrian crash rates were reduced by 8.5% to 13.3%. This translated into approximately 180 fewer pedestrian crashes annually.

Florida includes pedestrian safety action items in its **Strategic Highway Safety Plan (SHSP)** that is implemented by a multidisciplinary pedestrian safety team led by the SHSO pedestrian coordinator. The five-year plan, dubbed "[Alert Today Alive Tomorrow,](#)" is well on its way to being fully implemented thanks to regular conference calls and quarterly meetings that include accountability checks coupled with guidance and support.

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<sup>16</sup> National Highway Traffic Safety Administration. (2008). Zone guide for pedestrian safety (DOT HS 808 743). Washington, DC.