IIHS Insurance Institute for Highway Safety
News Release

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Study highlights rising pedestrian deaths, points toward solutions

ARLINGTON, Va. — The March crash of an Uber vehicle that killed a woman in Tempe, Arizona, was unusual for involving a self-driving vehicle. But in other ways, it was typical of fatal pedestrian crashes: an SUV traveling on an urban arterial road struck a person crossing midblock in the dark.

Pedestrian deaths have jumped 46 percent since reaching their lowest point in 2009, as pedestrian crashes have become both deadlier and more frequent. The increase has been mostly in urban or suburban areas, at nonintersections, on arterials — busy roads designed mainly to funnel vehicle traffic toward freeways — and in the dark, a new study by the Insurance Institute for Highway Safety shows. Crashes were increasingly likely to involve SUVs and high-horsepower vehicles.

“Understanding where, when and how these additional pedestrian crashes are happening can point the way to solutions,” says IIHS President David Harkey. “This analysis tells us that improvements in road design, vehicle design and lighting and speed limit enforcement all have a role to play in addressing the issue.”

A total of 5,987 pedestrians were killed in crashes in 2016, accounting for 16 percent of all crash fatalities. The number of pedestrians killed each year has declined 20 percent since 1975, but the 2016 toll was the highest since 1990.

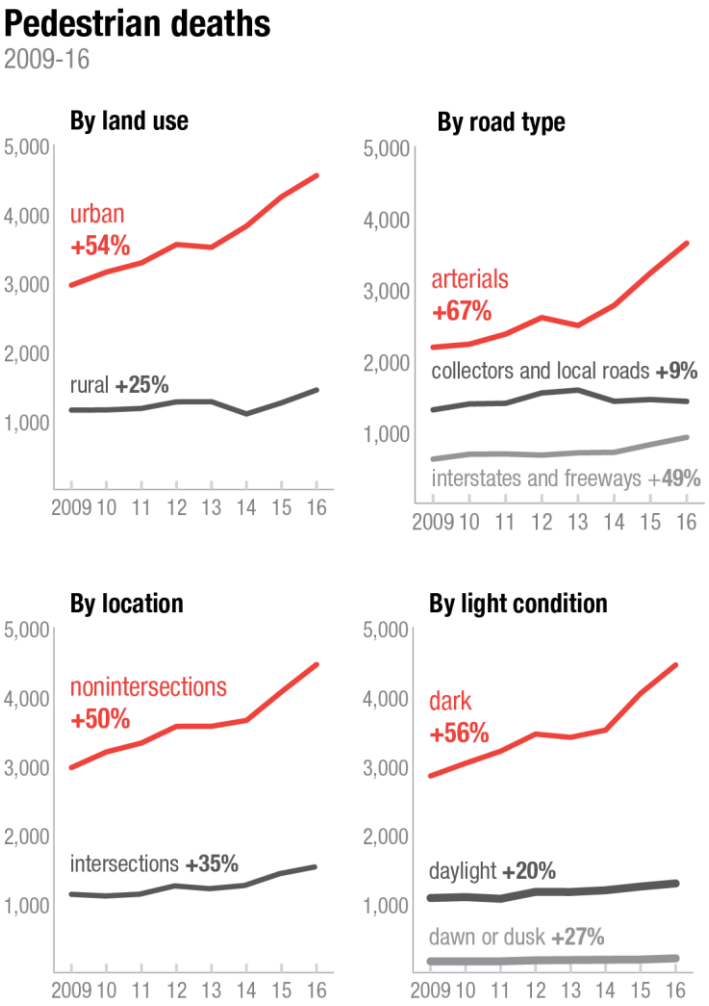
For the new study, IIHS researchers looked at pedestrian crash trends during 2009–16 to pinpoint the circumstances under which the largest increases occurred. Using federal fatality data and crash numbers, the researchers looked at roadway, environmental, personal and vehicle factors to see how they changed over the study period. They also looked at changes in the number of pedestrian deaths relative to the number of pedestrians involved in crashes.

The researchers found that not only did pedestrian crashes increase, they also became deadlier. Deaths per 100 crash involvements increased 29 percent from 2010, when they reached their lowest point, to 2015, the most recent year that data on all crashes, including nonfatal ones, were available.

From 2009 to 2016, the largest increases in pedestrian deaths occurred under the circumstances that historically have seen the highest numbers of pedestrian fatalities. Pedestrian deaths increased 54 percent in urban areas, which include both cities and what most people consider suburbs. They also increased 67 percent on arterials, 50 percent at nonintersections and 56 percent in the dark.

Although pedestrian crashes most frequently involved cars, fatal single-vehicle crashes involving SUVs increased 81 percent, more than any other type of vehicle. The power of passenger vehicles involved in fatal single-vehicle pedestrian crashes, as measured by the ratio of horsepower to weight, also increased, with larger increases at the top of the scale.

Among age groups, the largest increase in pedestrian fatalities per population was for people ages 20–69.



Designing roads for pedestrians

The large increase in pedestrian deaths on arterials isn't surprising. These roads often have a shortage of convenient and safe crossing locations.

"When people are forced to walk long distances to the nearest signalized intersection, they are more likely to choose the riskier option of sprinting across multiple lanes of traffic," Harkey says. "Communities can improve safety by providing more options to safely cross."

But, Harkey warns, it's not enough to simply paint more crosswalks on the pavement. Midblock crossings need features that alert drivers to stop, such as pedestrian-activated beacons.

One example is the pedestrian hybrid beacon, which stays dark until a pedestrian pushes a button, at which point it flashes yellow, and then moves to solid yellow before activating two solid red lights. This type of beacon, formerly known as a HAWK, has been shown to reduce crashes.

Improvements such as curb extensions or median crossing islands can shorten the distance that people must walk across or allow them to traverse just a couple of lanes and a single direction of vehicle traffic at a time.

Adding sidewalks is an obvious way to reduce the risk to pedestrians walking along a road.

These elements can be part of broader reconfigurations known as road diets, in which the number of travel lanes for vehicle traffic is reduced. In addition to reducing the number of lanes for pedestrians to cross and sometimes providing room for bike lanes, road diets have been shown to reduce vehicle speeds.

"Good design should prioritize the safety of all road users," Harkey says. "It's possible to improve streets for pedestrians while still allowing vehicle traffic to get where it needs to go."

Reining in speed increases

Of course, allowing vehicles to get where they need to go doesn't mean they need to go quite as fast as people are used to.

Faster speeds make for more frequent and deadlier crashes. The faster a car is moving, the less time the driver has to see a pedestrian and slow or stop the car. In addition, higher impact speeds result in more injurious crashes.

Reliable information on vehicle speeds is not available in fatality data, but IIHS researchers did find that the vehicles involved in fatal pedestrian crashes, like the overall vehicle fleet, are increasingly powerful. Previous IIHS research has shown that vehicles with higher horsepower-to-weight ratios tend to be driven faster and are more likely to violate speed limits.

Despite the dangers of high speeds, the story of speed limits in recent decades has been one of continual increases.

In addition to lower speed limits, broader use of speed cameras to enforce existing limits is a proven solution. IIHS research has shown that automated speed enforcement reduces speed limit violations and injury crashes.

Improving vehicles

Some risks to pedestrians could be lessened by making changes to vehicles.

A large majority of pedestrian fatalities occur in the dark, and that number increased much faster than the number of pedestrians killed in other light conditions. In 2016, 4,453 pedestrians were killed in the dark, compared with 1,290 in daylight and 205 at dawn or dusk.

Although better street lighting may be needed in some locations, another obvious solution is better headlights. IIHS has been working to encourage improvements in this area through its headlight rating program, launched in 2016. Headlights have been gradually improving. In the 2016 model year, there were just two models with available good-rated headlights. So far for the 2018 model year, there are 26 good headlight packages.

Vehicles with front crash prevention systems that recognize pedestrians would also help — particularly if they are designed to work in low light. A recent Highway Loss Data Institute analysis found that Subaru vehicles equipped with pedestrian detection had claim rates for pedestrian injuries that were 35 percent lower than the same vehicles without the system.

Finally, vehicle design changes could help lessen the severity of crashes, especially when it comes to SUVs. SUVs make up an increasingly large percentage of registered vehicles, and previous studies have found that SUVs, pickups and vans are associated with a higher risk of death or severe injury to pedestrians. Such vehicles have higher and often more vertical front ends than cars and are more likely to strike a pedestrian in the head or chest. Changes in the front-end design of these vehicles could help lessen the severity of injuries when they strike pedestrians.

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