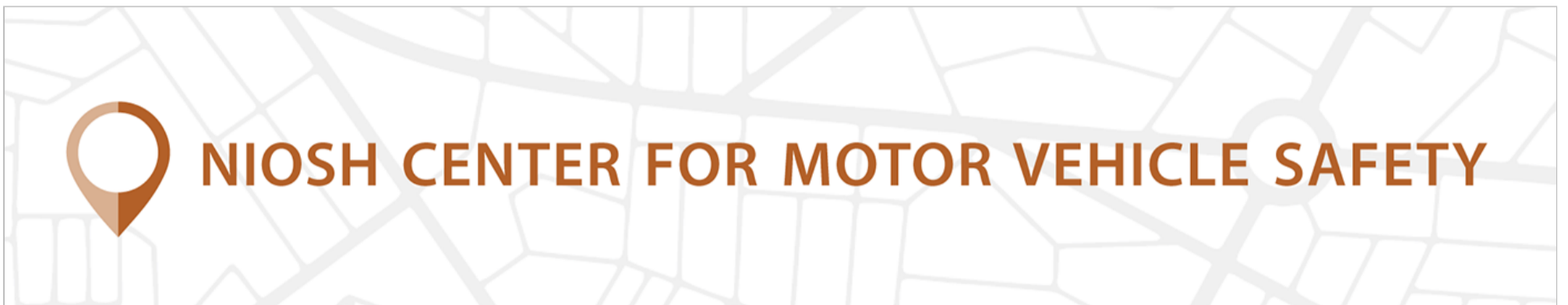


Behind the Wheel at Work



Behind the Wheel at Work is a quarterly eNewsletter bringing you the latest news from the NIOSH Center for Motor Vehicle Safety.

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Pedestrian Struck-by-vehicle Incidents

What is a pedestrian struck-by-vehicle incident? How can employers keep pedestrian workers safe? What are the most common scenarios involving pedestrian struck-by-vehicle incidents in specific industries? Continue reading for answers to these questions and others.

Update on the Coronavirus Disease 2019 (COVID-19) Response

While the NIOSH Center for Motor Vehicle Safety will continue to share valuable safety information in our quarterly Behind the Wheel at Work eNewsletter, you can stay up to date on the COVID-19 response in real time on CDC's [COVID-19 webpage](#) or sign up for CDC's [COVID-19 newsletter](#).

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The Facts



What is a pedestrian struck-by-vehicle incident?

A pedestrian struck-by-vehicle incident occurs when a **worker on foot is struck by a vehicle or other mobile equipment in normal operation.**

These incidents can take place on or off a road open to traffic—when a worker is crossing a city street, working in a construction work zone, or at a parking lot, farm, loading area, or mining site.

Pedestrian workers fit into a few different groups:

- Some spend much of their workday on foot near vehicle traffic (crossing guards, road construction workers).
- Others are outside their vehicles for shorter periods but may have to work next to high-speed traffic (law enforcement officers, firefighters, tow truck drivers).
- Some are on foot at off-road worksites working alongside vehicles and equipment (truck drivers, refuse collection workers, agricultural workers, building construction workers).

What do we know about pedestrian struck-by-vehicle incidents?

From 2014 through 2018:[1]

- 1,587 pedestrian workers in the U.S. died in struck-by-vehicle incidents—on average, 317 deaths per year (about 18% of all motor vehicle deaths at work).
- These deaths most often occurred off-road in areas such as construction sites, factories, public buildings, or farms (599; 38%), followed by on roads (378;24%), on the side of the road (273; 17%), and in construction work zones (269; 17%).
- 1 of every 5 workers killed in a struck-by incident (342) was a heavy or tractor-trailer truck driver.
- Other occupations with high numbers of struck-by-vehicle deaths from 2014-2018 were: construction laborers (122); landscaping and groundskeeping workers (59); highway maintenance workers (58); first-line supervisors of construction trades and extraction workers (53); crossing guards (51); laborers and freight, stock, and material movers and handlers (48); refuse and recyclable material collectors (46); and police and sheriff's patrol officers (38).

[1] Bureau of Labor Statistics [2021]. [Census of Fatal Occupational Injuries, 2014-2018](#)  . Create customized tables.




How to Stay Safe and Keep Others Safe



Photo by ©Petro Bevz / Getty Images

If you're an employer, you can inform all workers how to stay safe as pedestrians, and you can inform those who drive for work how to avoid striking a pedestrian.

Drivers

- Remember that pedestrians can be anywhere. Watch out for pedestrians who may be crossing in places other than a crosswalk or intersection. It's difficult to see pedestrians who are walking out from between cars, especially children. Poor lighting, darkness, and bad weather all make pedestrians more difficult to see.
- Slow down and be prepared to stop as you approach an intersection or crosswalk. Look for pedestrians in front of you and when you're making a turn.
- Follow the speed limit and be aware of reduced speed limits in school zones and construction work zones.
- Observe your state's "move over" law   . [These laws](#)  require vehicles to change lanes and/or slow down as they approach an emergency vehicle stopped on the side of the road.
- Pedestrians can be impaired by alcohol and other substances or distracted by their phones, just as drivers might be.

All Pedestrian Workers







- Walk on a sidewalk or path when one is available. Otherwise, walk on the shoulder, facing traffic.
- Cross the street at a crosswalk or intersection – this is where drivers expect to see you.
- If there isn't a crosswalk or intersection nearby, cross in a well-lit area. Wait until there is enough of a gap in traffic for you to cross safely and continue to watch for vehicles as you cross.
- Avoid stepping out from between vehicles.
- Stay alert. Don't allow yourself to be distracted by your phone – you'll miss the visual and auditory cues that warn you of traffic hazards.
- Don't assume that a driver sees you and will stop for you. The driver may be impaired or distracted, ignoring laws that give pedestrians the right of way, or might not see you. Make eye contact with the driver before you step into the crosswalk or intersection.

Working Near Traffic




In a road construction work zone: Highway construction workers may be struck by traffic vehicles that intrude into the work zone, or by construction vehicles or equipment within the workspace.

Employers

- Require workers to wear high-visibility clothing that meets the [ANSI/ISEA 107—2020 standard](#) .
- Offer [specialized training](#)  for flaggers, spotters, and road construction workers.
- Use [positive protection devices](#)  such as portable concrete barriers to separate workers from traffic vehicles.
- Use temporary traffic control plans as shown in the [Manual on Uniform Traffic Control Devices \(MUTCD\)](#)  to set up a workspace that protects workers from being struck by traffic vehicles.
- Consider using automated flagging options and alarms that warn that a traffic vehicle is intruding into the workspace.
- Ensure proper lighting for the workspace while controlling glare so as not to blind workers or passing motorists.
- Within the workspace, designate paths for vehicles to follow and prohibit pedestrians from entering them.
- Make sure that equipment operators and pedestrian workers know the [blind spots](#) for their equipment.
- Require equipment operators to use spotters to prevent them from hitting workers they can't see.
- Install proximity and backup warning devices on vehicles and equipment.


Workers

- Wear high-visibility clothing that meets the [ANSI/ISEA 107—2020 standard](#) .
- Understand the flow of construction vehicles within the workspace and between the traffic space and workspace. Stay out of any pedestrian-free zones.
- Drivers should shut off the engine and engage the parking brake before exiting their vehicle or equipment.


At the side of the road: Emergency responders (law enforcement, firefighters, emergency medical technicians, and tow truck operators) assist stranded motorists, make traffic stops, and help crash victims. Their work puts them at the side of the road, inside and outside their vehicles.

victims. Their work puts them at the side of the road, inside and outside their vehicles.

Employers


- Train workers in [traffic incident management](#)  .
- Ensure the scene set up follows temporary traffic control plans as shown in the MUTCD to protect workers from being struck by emergency vehicles or traffic vehicles.
- Consider dispatching more than one vehicle to the scene of an incident. The extra vehicle is used to shield responders from oncoming traffic.
- Coordinate with other responders on site. Make sure everyone knows who is in charge, where response vehicles will be placed, and where workers on foot will be.
- Use tow trucks equipped with remote controls to reduce tow truck drivers' exposure to traffic vehicles.

Workers

- Wear high-visibility clothing that meets the [ANSI/ISEA 107—2020 standard](#)  .
- Make the work area visible using safety cones, flares, and flashing lights.
- Exit your vehicle on the side away from traffic. Walk on the traffic side as little as possible.
- Coordinate with other responders on the scene.

Working at a Construction, Industrial, or Mining Site


Employers

- Designate paths for vehicles to follow and prohibit pedestrians from entering them.
- Determine how work can be accomplished with minimal numbers of pedestrians in the work area.
- Invest in equipment and technology that allows vehicles and equipment to be operated from a remote location.
- Require equipment operators to use spotters to prevent them from hitting workers they can't see.
- Instruct equipment operators to do a 360-degree walkaround before entering the cab.
- Require workers to wear high-visibility clothing that meets the [ANSI/ISEA 107—2020 standard](#)  .

Equipment Operators

- Know the [blind spots](#) of the equipment you're operating.
- Use a spotter to prevent you from hitting workers you can't see.
- Do a 360-degree walkaround before entering the cab.

Workers

- Wear high-visibility clothing that meets the [ANSI/ISEA 107—2020 standard](#)  .
- Understand the flow of vehicles within the workspace and stay out of pedestrian-free zones.
- Be aware of the [blind spots](#) for equipment you regularly work around.
- Make eye contact with drivers and equipment operators before walking.

Resources

Pedestrian Safety

- National Center for Statistics and Analysis. (2021, May). [Pedestrians: 2019 data \(Traffic Safety Facts. Report No. DOT HS 813 079\)](#) [↗](#) . National Highway Traffic Safety Administration.
- National Highway Traffic Safety Administration:
 - [Pedestrian Safety](#) [↗](#)
 - [Pedestrian Safety Toolkit For Hispanics](#) [↗](#)

Work Zone Safety

- Federal Highway Administration:
 - [Traffic Incident Management Quick Clearance Laws: A National Review of Best Practices](#) [↗](#)
 - [Worker Safety](#) [↗](#)
- National Work Zone Safety Information Clearinghouse:
 - [Library of Resources to Improve Roadway Work Zone Safety for All Roadway Users](#) [↗](#)
 - [Guidelines on the Use of Positive Protection in Temporary Traffic Control Zones](#) [↗](#)
- Safety+Health Magazine: [Safer work zones](#) [↗](#)

Emergency Responder Safety

- [Emergency Responder Safety Institute](#) [↗](#)
- Federal Highway Administration: [Traffic Incident Management Quick Clearance Laws: A National Review of Best Practices](#) [↗](#)
- Traffic Safety Marketing: [Move Over](#) [↗](#)
- Wisconsin Department of Transportation: [Emergency Traffic Control and Scene Management Guidelines](#) [↗](#) [↗](#)
- Kentucky FACE Program: [Tow Truck Driver Struck and Killed by Van While Entering His Tow Truck](#) [↗](#)

Prevent Struck-by Incidents at Crash Scenes



More than 200 law enforcement officers died due to struck-by incidents from 2005-2019 (24% of motor vehicle-related officer deaths). NIOSH published an [infographic](#) [↗](#) outlining four ways that law enforcement officers can lower their risk of being struck by a passing vehicle while outside the patrol vehicle. [Graphics](#) are also available to promote this message.

Q&A with Safety Experts



Carl Heinlein

Sr. Safety Consultant, American Contractors Insurance Group

Heinlein joined American Contractors Insurance Group in 2002, where he contributes to the successful safety initiatives, including active jobsite involvement and leadership training, for multiple construction clients representing both union and open-shop contractors. These contractors combine to represent over 45,000 direct-hire employees and approximately 1% of the entire construction performed in the United States each year.

Jack Sullivan

Director of Training, Emergency Responder Safety Institute (ERSI)



Sullivan is a subject matter expert on roadway incident operations and emergency personnel safety and promotes proactive strategies and tactics for protecting emergency workers from being struck by vehicles. He was a volunteer firefighter and chief officer for 23 years and recently retired from a 40-year career as a safety and risk management consultant for the public and private sector. He teaches Roadway Incident Safety & Survival Workshops for emergency responders for ERSI and is a Master Instructor for the Federal Highway Administration (FHWA) Strategic Highway Research Program (SHRP2) Traffic Incident Management Train-the-Trainer program.

What are common scenarios for struck-by-vehicle incidents involving pedestrian workers in your industry? [^](#)

CH: I work for a capstone insurance company owned by 40 contractors, one-third of which are in heavy and civil engineering construction. That is where we see our greatest exposure of workers being struck by motor vehicles, both from passing motorists and vehicles on the jobsite. However, all types of construction have these risks, including industrial and general building construction. Our contractors may experience struck-by-vehicle incidents when using crosswalks, entering and exiting construction sites, and working alongside moving traffic with distracted, fatigued, and/or impaired drivers, among other scenarios.

JS: Emergency responders across the country regularly deal with all kinds of roadway incidents, including secondary crashes.

- Law enforcement officers respond to motor vehicle crashes and citizen requests for assistance, conduct a variety of activities (traffic stops, searches, medical assists, traffic control), and provide support for other responders.
- Fire, rescue, and emergency medical personnel respond to crashes, vehicle/brush/structure fires, medical emergencies, hazardous materials incidents, and technical rescues (rope rescue, confined space rescue, etc).
- Towing and recovery operators respond to assist disabled motorists and crashes.
- Department of Transportation /safety service patrols assist motorists on highways and provide valuable traffic control duties at other emergency scenes along heavily traveled roads and highways.

These activities put emergency responders at risk of being struck by vehicles operated by “D” drivers. The “D” stands for drivers who are driving while drunk, drugged, drowsy, distracted, disgruntled, disturbed, and disrespectful.

What can employers do to lower the risk of pedestrian workers being struck by vehicles or mobile equipment? [^](#)

CH: Employers can work with property owners, local municipalities, police officers, and security guards to lower the risk of struck-by incidents. They can encourage contractors to set up clearly defined lines of separation between pedestrian workers and moving traffic and mobile construction equipment. When eliminating the risk isn't possible, other effective controls are the next best thing. For example, use clear signage, stop signs, flaggers, lighting, warning devices, high visibility garment, and controlled access zones. Also, raise awareness of the risk among drivers, as well as those who work near passing vehicles.

JS: The first and most important step is to make sure all personnel are trained in traffic incident management, responder safety strategies and tactics, and hazard awareness. These trainings will support practices and procedures needed for safe operation at roadway incidents. Use proper positioning of emergency vehicles, warning lights, temporary traffic control devices, and advance warning techniques to advise motorists of approaching traffic hazards and protect responders at the incident scene. Employer-issued uniforms, high visibility safety garments, and/or assigned personal protective gear should be worn as appropriate, depending on the type of incident and environmental conditions. Collaboration, communication, and cooperation between all agencies and personnel on scene is critical for well-managed roadway incidents.

What could help to improve employers' ability to prevent pedestrian struck-by-incidents on the job?

CH: In the past 20 years, many organizations have been working together to develop best practices for preventing workers from being struck by operating vehicles. An example of these best practices is focusing on controlled work zone setup and maintenance—both in terms of what guides the motorist through the work zone and what guides construction operators within the work site. We need to work together to figure out how best to integrate new technologies (e.g., smart hard hat which sends warning alerts to the construction vehicle driver) into the jobsite to enhance worker safety.

Employers can also consider improving the visibility of ground workers to motor vehicle drivers and mobile equipment operators by improving lighting, ensuring clear sight lines, and giving proper training on vehicle operating and backing procedures.

JS: We need all drivers to focus when operating their vehicles and to be aware and alert for unusual circumstances (slowing traffic, flashing warning lights, advance warning signs, flares, cones, and other temporary traffic control devices). Drivers should obey “Move Over” and “Slow Down” laws by changing lanes or slowing down to give emergency personnel room to do their job at incident scenes. There is a “Move Over” law in every state, but we need to continue to educate motorists about how to react to the presence of emergency vehicles that are parked at incident scenes or traveling to an emergency. More consistent and frequent traffic citations for infractions of “Move Over” laws would help to get drivers' attention and encourage them to change their driving habits.

Agencies could benefit from a use of technology that is available to better manage the glare and intensity of warning lights at incident scenes in all ambient lighting conditions. Digital alerting technology, which provides real-time audible warning to drivers, is gaining in popularity. In many cases, these digital alerts reach motorists sooner and more effectively than warning lights, sirens, and signs.

More Information

- Please send your comments and suggestions to us: kur4@cdc.gov
- Follow us on Twitter: [@NIOSH_MVSafety](https://twitter.com/NIOSH_MVSafety)
- Visit our webpage: [Motor Vehicle Safety at Work](#)