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Reduce risks of distracted driving

For local governments, reducing the risks of distracted driving in street and highway operations requires vigilance and strategies that address the root causes.

DISTRACTED DRIVING and driver fatigue are significant issues, both locally and nationally. Activities that divert attention from the road, like texting or cell-phone use, escalate a driver's risk of having an accident. Wisconsin is one of several states that outlaw texting and, although using a cell phone while driving remains legal in the state, authorities discourage drivers from holding cell-phone conversations while in traffic. Fatigue also raises crash risks. Long hours behind the wheel or at the controls in a demanding job can diminish critical response time.

For local governments, reducing the risks of distracted driving in street and highway operations requires vigilance and strategies that address the root causes. This article explores relevant research



CREDIT: POLK COUNTY

Operating a plow truck requires the driver stay alert to road conditions, other vehicles, potential hazards and an array of complex equipment controls. Unnecessary distractions can create a crash risk.

and looks at ideas from simulator training to policies on shift limits for improving a department's drive-safe record. A future issue of *Crossroads* will address drowsy driving and discuss useful prevention strategies.

Every second adds risk

Why is distraction such a big deal? Chances of a crash increase when people drive distracted. Tasks associated with driving and non-driving activities divert drivers' eyes from the road and every second away from the road counts. John Lee, a professor in the Department of Industrial and Systems Engineering in the College of Engineering at the University of Wisconsin–Madison who researches causes of driver distraction, notes that studies dating back to the 1960s found the maximum time the eye can

be diverted from a driving task without significant adverse effect is 1½ to 2 seconds. Attention to the road deteriorates dramatically the longer a driver looks away.

There is little driver distraction research specific to street and highway vehicle operations. But Lee suggests that studies of driver distraction in commercial truck and bus operations shed useful light on factors relevant in all these sectors.

A 2009 Virginia Tech study involving commercial truck and bus drivers calculated the "odds ratios" for different driver tasks that could distract them. The ratios measure how many times more likely it is a safety-critical event will occur when a driver does a particular task versus when not engaging in the task. For example, the study found that texting while



Odds Ratios for Driving Distractions

Type of risky distraction	Times more likely an event will occur
Compose/send text message	23.24
Interact with keyboard and screen	9.93
Write on pad or notebook	8.98
Read a map	7
Use electronic device, including 2-way radio	6.72
Dial cell phone	5.93
Read newspaper/do paperwork	3.97
Reach for object in vehicle	3

Virginia Tech researchers identified the odds of a safety-critical event occurring when drivers engaged in certain non-driving tasks behind the wheel. This partial list indicates the likelihood that they will create a safety risk.

Reduce risks of distracted driving

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Training drivers to recognize distractions and the factors affecting their attention to the road is an important strategy for combating distracted driving.

Resources

Driver Distraction in Commercial Operations (No. FMCSARRR-09-042), Virginia Tech, Sept. 2009. www.distraction.gov/research/PDF-Files/Driver-Distraction-Commercial-Vehicle-Operations.pdf

Distraction in Commercial Trucks and Buses: Assessing Prevalence and Risk in Conjunction with Crashes and Near-Crashes (Report No. FMCSA-RRA-10-049)

Tech Brief: www.fmcsa.dot.gov/facts-research/research-technology/tech/Distraction-in-Commercial-Trucks-and-Buses.pdf

Full report: www.fmcsa.dot.gov/facts-research/research-technology/report/Distraction-in-Commercial-Trucks-and-Buses-report.pdf

driving is nearly 24 times more likely to create an unsafe situation than *not texting* under similar conditions. The odds ratio for using a keyboard and screen scored close to 10—the odds of how much more likely it is that entering information on the device while driving could cause a safety-critical event. See the list on page 1 for more examples.

In the study, some seemingly distracting tasks did not have high odds ratios. The ratios for talking or listening to a phone call using a hand-held or hands-free phone, or consuming food and drink were only slightly higher than 1.

Lee points out that other studies suggest *any* cell phone use while driving can cause distraction, even when that use does not divert the eyes from the road.

Text messaging clearly rates as the riskiest driving behavior. But other distractions cited in the study as posing a significant hazard are comparable to tasks engaged in by street and highway department vehicle operators.

Simulating risks

Training drivers to recognize distractions and the factors affecting their attention to the road is an important strategy for combating distracted driving. Drivers can learn to minimize the length of time they look away or do so at locations with fewer potential conflicts.

“Some professional drivers know how to time their glances, unlike teens or other new drivers,” Lee observes, although he says they cannot glance away from the driving task any longer than other drivers.

Sauk County uses a driving simulator for 95 percent of the training it does in defensive driving for police, fire, public works and highway crews. Safety Risk Manager Carl Gruber says the simulator improves on traditional programs that train drivers to manage distractions while handling plowing equipment on summer pavements. The

simulator effectively replicates a variety of road/pavement types and weather conditions. It can run hundreds of scenarios with situations that highway department drivers encounter in a snow event or road project, like high-volume traffic, tailgating, reduced visibility or a blown tire.

Teaching drivers to manage distraction is part of the simulator training where Gruber can create complex challenges impossible to duplicate in on-the-road training. He recently programmed a test drive that required an operator to control the truck using only the steering wheel and gas pedal but no brakes in simulated snowstorm conditions. Among the advantages of honing people’s skills this way, he notes, is putting them in a realistic situation with only simulated damage if a maneuver fails. “You just hit reset!”

Besides simulator training every November, county crews attend the Highway Safety ROADeo sponsored each spring by the Wisconsin County Mutual Insurance Corporation. It features a driver skills course, vehicle inspection training, a written exam and other programs. Gruber says it gives employees a chance to try truck maneuvers in tight situations and to refresh their knowledge of safety issues.

The county updates its simulator training module every year to address any problems that may have occurred in the previous snow season. Gruber explains, “It allows us to keep employees driving defensively in a whole range of situations that put them or the public at risk.”

Rethink the equipment and the tasks

There is no question that more electronic devices behind the wheel increase the risk of glancing away from the road for too long. So how do local street and highway departments limit driving distractions in the cabs of department vehicles outfitted with two-way radios, Smart Phones, GPS

units, laptop computers, and an array of levers, knobs and touch screens that control truck-mounted equipment like plows and spreaders? The complexity inherent in this workplace on wheels might be inevitable. But accidents are not if agencies rethink the set-up of important communication and control equipment, and take a critical look at tasks and policies that define local snow and ice operations.

Make sure the after-market in-cab operator controls in trucks, including those for plows and spreaders, are positioned so drivers can reach them easily. Minimize the distance the eye must travel between road and driving task so the total time glancing away is no more than 2 seconds. Tasks that involve scrolling through on-screen menus or require the input of data are especially difficult to accomplish in this time frame. Keep tasks involving a series of steps to 1½ seconds per step and limit the total time for completing all the steps. GPS navigation systems often use SAE guidelines that provide for a total time of from 15 to 20 seconds for multi-step tasks depending on the measurement method.

When specifying controls for new vehicles, keep in mind the need to minimize driver distraction. Verify the installer understands where to place each control and does not deviate from those specifications without approval.

Policies influence practice

Policies are another way local governments influence safe practices behind the wheel, like a no-cell-phone policy or a prohibition against texting. When cell phones are necessary work tools, a policy that requires the operator to place or take calls only after safely stopping out of traffic helps reduce the crash risk.

Sauk County has a policy of no cell phones in county vehicles. Gruber says the county’s truck and plow operators communicate via radio and use the devices sparingly.



Sauk County road maintenance crews practice plow truck maneuvers on an obstacle course at the Highway Safety ROAdeo sponsored by Wisconsin County Mutual Insurance Corporation. These programs augment training sessions on the county's driving simulator.

Other policies could prohibit map reading, or doing paperwork while in motion. Adopt a policy of "no driving" while typing information or navigating multiple menus on touch screens or keyboards in the truck cab.

Make sure policies have the intended impact: Train employees to follow them and be prepared to enforce them.

Role of technology

Advances in technology may help reduce driver distraction. New Hampshire recently installed voice-activated technology in over 1,000 police cars in the state. The system uses a single interface operated by voice or touch screen to control multiple in-car technologies from different vendors. It is likely similar technologies will be available in the future for public works and highway applications.

A new generation of Head-Up displays are another tool on the horizon. The displays project information from sensors onto the windshield glass, enhancing the driver's ability to see objects in the road ahead. While the technology is improving, Professor Lee cautions it has limitations because drivers can only see and process a few things at a time. It takes careful design to display key information without creating excess visual stimulus that distracts the driver.

Alert to distractions

As Lee points out, "There's always a risk when a driver looks away from the road since there is no certainty about when an incident will happen. And this risk increases as the length of time they looking away increases."

Local road officials committed to making operations like winter road maintenance safer for plow operators and the general public need to address the risks of driver distraction. Both new and experienced drivers benefit from regular training that helps them better identify the hazards. Such training also should improve their ability to work safely in a

cab equipped with a range of communication and control devices that demand their time and attention.

Local governments have to manage many risks. A critical one is keeping street and highway crews alert to conditions that cause distracted driving. ■

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Contacts

Carl Gruber
Sauk County
608-355-4400
CGruber@co.sauk.wi.us

John Lee
UW-Madison
608-890-3168
jlee@engr.wisc.edu

Compliance dates change, standards remain

On August 30, the U.S. Department of Transportation published for comment a proposed amendment that extends or eliminates compliance dates for meeting a range of standards in the *Manual on Uniform Traffic Control Devices* (MUTCD). One change would extend by two years the compliance date for implementation of a sign management or assessment method to meet retroreflectivity standards. And, although another amendment proposes eliminating the compliance dates for meeting those standards, local governments are still responsible to comply as they replace worn out signs. The FHWA is asking for feedback on the proposed amendment during a comment period that ends October 31. Local road officials can review and post comments by going to <http://www.regulations.gov> and entering ID number FHWA-2010-0159-0646.

