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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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Let's Talk...

...about leadership updates, new products, and resolutions. What will you do to keep drivers safe on the road in 2020? Catch up on previous issues of our newsletter.

NIOSH CMVS Tweets

Subscribe to Behind the Wheel at Work for work-related motor vehicle safety resources: https://t.co/SQSuKEz2cz... https://t.co/wc9aDV6m0A

In this issue

CMVS Chat

Thank you to Stephanie Pratt for directing the Center for Motor Vehicle Safety (CMVS) since 2010! With Stephanie's upcoming retirement, Dawn Castillo is now the Manager of the CMVS. Rosa Rodríguez-Acosta remains involved in the CMVS as Assistant Coordinator. Congratulations to Kyla Retzer, who recently began her new role as CMVS Coordinator! Keep reading to view Stephanie and Kyla's conversation about motor vehicle safety (MVS).

First things first. How did you connect to the CMVS? –

NIOSH had been doing motor vehicle safety research for at least 10 years, but until the Center for Motor Vehicle Safety (CMVS) was created in 2010, there wasn't a structure to coordinate this work. I've led the CMVS since it was created, and I think we've made good progress in several areas. We've determined how NIOSH research fits in and built a research portfolio that takes advantage of our strengths and fills gaps that research hadn't addressed. We've also developed partnerships with the most important stakeholders and encouraged information exchange and collaboration among our own researchers. – Stephanie Pratt (SP)

My connection to the CMVS is a bit more recent than Stephanie's. I was hired at NIOSH to do research about motor vehicle safety best practices in the oil and gas extraction industry, and the CMVS staff became a great resource to me in my work. My interactions with employers and workers in this industry have helped me to understand how our research can be used. Now that I am serving in a leadership role at the CMVS, I get to work with employers across all industries. I am excited to continue to learn more about their road safety challenges and for opportunities to meet their research needs. – Kyla Retzer (KR)

If an employer asked you for 1 MVS action and 1 MVS resource, what would you recommend? –

It's difficult to name just one! I would say that the most important action is to compare your motor vehicle safety policies and procedures against resources that list best practices, and decide where your policies can be strengthened. We have a NIOSH fact sheet that includes a checklist of the most important policy areas employers should address - seat belt use, distracted driving, fatigue, and vehicle selection, among others. Another good resource is the ANSI/ASSP Z15.1 fleet safety standard, which you can also use to review your current program or develop a new one. – SP

I would recommend implementing a fatigue risk management policy/program. As many as one in five fatal crashes in the general population involve driver fatigue, and over one-third of U.S. workers don't get enough sleep. Like any other workplace hazard, there are steps that employers can take that will protect workers from being in a fatigue-related crash. Employers can check out our new Driver Fatigue on the Job webpage for guidance. – KR

Let's talk 2020. What are 3 MVS topics you plan to keep an eye on in the new year? –

Even after my time with NIOSH and the CMVS has ended, I know I'll continue to follow: 1) the progress of vehicle automation – the growth of crash avoidance technology, and eventually true self-driving vehicles; 2) how employers and society handle the effects of opioid use and cannabis legalization on safe driving; and 3) global safety and sustainability initiatives to make roads safer for everyone. – SP

As my involvement in the CMVS continues to expand, in the new year I will keep an eye on: 1) emerging road safety issues relevant to employers; 2) success stories of the use of in-vehicle technologies that improve driver behavior and reduce risk; and 3) ways employers are incorporating fatigue management into traditional fleet safety programs– KR

About Stephanie Pratt, PhD –

Stephanie Pratt has been an epidemiologist at NIOSH since 1993, directing the Center for Motor Vehicle Safety from its founding in 2010 until October 2019. During her NIOSH career, she has written numerous scientific articles and NIOSH publications and has given nearly 100 presentations at scientific and industry conferences. Stephanie's research interests include analysis of crash data, motor vehicle safety management systems, driver fatigue, and automated vehicles. She holds a PhD in political science and public policy from West Virginia University.

About Kyla Retzer, MPH –

Kyla Retzer is a research epidemiologist at NIOSH. She has been with the Institute for over nine years. She has published multiple scientific papers, book chapters, videos, hazard alerts, conference proceedings papers, and surveillance reports on various safety and health topics. Her most passionate interest is motor vehicle

safety. Kyla's research interests include the use of in-vehicle monitoring systems, journey management programs, survey design, driver distraction, and driver fatigue. She has a master's degree in public health from the University of North Texas.

Safety Tip

If your driver is involved in a collision, check mobile phone records to be sure they weren't using a phone in violation of company policies.

New research on the relationships between motor vehicle safety program elements and collision rates

With colleagues from Miami University and the Network of Employers for Traffic Safety (NETS), NIOSH CMVS researcher Dr. Stephanie Pratt co-authored a journal article on 2016 collision and program data for 70 U.S. fleets operated by NETS member companies. The NETS data covered **70 fleets**, almost **333,000 vehicles** from passenger cars to tractor-trailers, a variety of industries, and almost **5.5 billion vehicle miles driven**. The analysis used motor vehicle safety (MVS) data submitted by these companies, along with their responses to a detailed questionnaire about elements of their MVS program.

Why it's important

To our knowledge, this is the first research of its type. It's important because companies with MVS programs may adopt a wide range of strategies to prevent collisions and reduce their severity: driver training, in-vehicle monitoring systems (IVMS), fatigue risk management, mobile phone policies, motor vehicle record checks, to name a few. But which of these really make a difference when it comes to reducing collisions and injuries?

What we analyzed

We looked at 3 different outcome measures:

- Collisions per million miles driven (CPMM)
- The percentage of fleet vehicles involved in a collision in 2016 (%Fleet)
- Injuries per million miles (IPMM)

CPMM is probably the most commonly used outcome measure for fleets' collision experience, but we also included %Fleet because: (1) not all companies were able to provide the vehicle mileage data necessary to calculate CPMM; and (2) %Fleet may be a more valid measure for fleets that operate in congested urban areas.

For the 70 companies combined, CPMM was 4.94, %Fleet was 10.1, and IPMM was 0.27.

Comparing outcomes for companies with and without program elements

Next, we statistically compared average values for CPMM, %Fleet, and IPMM for companies with and without each of the individual program elements. Several program areas showed statistically significant differences between those companies with and without certain elements:

Fatigue risk management (FRM) for drivers of light vehicles

This was the strongest set of results in the entire analysis. It shows that that there are substantial safety benefits if MVS programs include FRM for light-vehicle drivers.

Companies that provided fatigue awareness training for newly-hired drivers had less than one-third the CPMM of companies that did not (1.57 vs 5.15). Other elements linked to significantly lower CPMMs for light-vehicle drivers were refresher fatigue training for all drivers, medical screening for fatigue, and restrictions on night driving. These and other elements of fatigue risk management were also linked to lower %Fleet and IPMM.

Driver training

Some types of driver training were linked to significantly better outcomes. Companies that included commentary drives as part of behind-the-wheel (BTW) training had an overall CPMM of 3.78 vs 5.27 for those that did not. Several types of training were linked to lower IPMMs: any form of driver training for all employees, including newly-hired employees who will be driving personal vehicles; and classroom and BTW training for drivers who have been classified as high-risk.

One unexpected finding was that remote or online training for high-risk drivers was linked to *higher* CPMM. In light of other positive results for classroom and BTW training for high-risk drivers, we interpret this to mean that online training wasn't sufficient to get these drivers to change.

Management processes

We found significant associations between management philosophy and practices and better outcomes. Companies that had a corporate executive team that championed road safety had an IPMM of 0.12 vs 0.30 for those that did not, and companies whose field managers reportedly did a better job in managing road risks had a lower IPMM.

We also found positive results for a number of specific program elements:

- Companies that checked employees' driving records at the time of hiring had average %Fleet that was about half that of companies that did not (5.9% vs 10.5%).
- Companies that included a determination of collision severity in collision reviews had significantly lower CPMM, %Fleet, and IPMM; our interpretation is that this level of review implies a general commitment to looking at collisions in depth.
- Companies that used IVMS had a significantly lower CPMM than those that did not: 4.50 vs 5.58, and those whose IVMS included driver cameras had a significantly lower IPMM: 0.13 vs 0.30.
- Companies that banned use of mobile equipment while driving had significantly lower %Fleet: 8.19% vs 10.99%.

Testing hypotheses

We also tested two general hypotheses: (1) the more MVS program elements in place, the better the outcomes (in other words, we'd expect lower CPMM, %Fleet, and IPMM); and (2) the stronger the MVS policy, the better the outcomes (for example, do companies that ban all use of mobile phones do better than those that simply discourage their use?). We didn't find that more policies or stronger policies overall resulted in more positive outcomes, but we did find this to be true for certain policy areas:

- More policy elements: The greater the number of FRM practices for light-vehicle drivers, the lower the CPMM and %Fleet. Each additional FRM practice was equivalent to a CPMM that was 0.29 lower and %Fleet that was 0.79 lower.
- Stronger policies: For both CPMM and %Fleet, outcomes got better as the strength of the policy for checking employees' mobile phone records increased. For example, CPMM for companies that didn't check phone records was 5.35 vs 4.88 for those that checked after serious collisions only, and 2.25 for those who checked after all collisions.

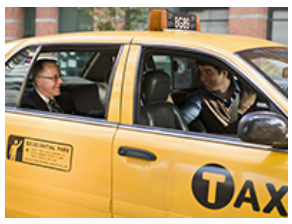
The takeaway

This analysis was a first step in helping us understand how MVS program elements contribute to road safety outcomes for fleets. The elements associated with better outcomes included fatigue risk management for light-vehicle drivers, checking mobile phone records after all collisions, managers' commitment to motor vehicle safety, determining severity as part of collision reviews, and some elements of IVMS use and driver training. Not all the results were what we had expected – we thought that certain program elements would be shown to be highly effective, but they weren't. We need to look at the data in more detail – by industry, fleet size, or vehicle type, for example – so that we can determine whether what we found here is consistent across all kinds of fleets.

Source

Vivoda JM, Pratt SG, Gillies SJ [2019]. The relationships among roadway safety management practices, collision rates, and injury rates within company fleets . Safety Science 120:589-602. https://doi.org/10.1016/j.ssci.2019.07.033

Keep Taxi Drivers Safe



Motor vehicle crashes and violence are leading causes of taxi driver deaths. Evidence shows that fatigue is associated with both violence and crashes among this worker group. Keep reading to learn about recent publications related to taxi drivers.

Survey Results on Driver Fatigue

To better understand injuries among taxi drivers, NIOSH investigators developed a survey asking about a wide range of work (e.g., shift and taxi driving tenure) and social (e.g., demographics and safety climate) factors. In 2015, a total of about 1,000 taxi drivers in two large western and southwestern U.S. cities responded to the 30-minute survey. According to the survey results published in the Journal of Safety Research , most of the drivers reported driving while tired. Get more survey highlights in this issue of NIOSH Research Rounds. Key findings were:

- Taxi drivers who reported receiving useful road safety training were less likely to drive while tired.
- Taxi drivers who reported greater job demands were more likely to drive while tired.
- Drivers who reported that safety was a high priority for their company were less likely to drive while tired.
- In the southwestern city, drivers who reported a negative safety climate were more likely to report driving while tired.
- In both cities, drivers who reported driving while tired were also more likely to have reported experiencing passenger violence during the past 12 months.

Fast Facts About Violence Prevention

The most serious workplace violence issues facing taxi drivers are homicide and physical assaults, which are often related to a robbery. View NIOSH Fast Facts for specifics about these 4 strategies to prevent or reduce the likelihood of violence during a shift:

- Greater visibility into your taxi can help reduce violence.
- Less cash in your taxi makes you a less likely target for robbery.
- Ask your cab company to equip your taxi with safety measures.
- Prepare for possible unsafe situations with customers.

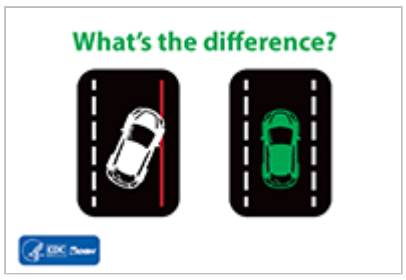
What's New

New Animated Images

What's New

We've added some new online resources! Visit our Driver Fatigue on the Job webpage for data and recommendations related to driver fatigue. Look for CMVS Evaluation 2014-2018 materials on our Research Program webpage. Stay tuned for the new CMVS Strategic Plan 2020-2029

New Animated Images



What's the difference between Lane Departure Warning and Lane Keeping Assist? View the new Safety Feature GIF for the answer. Also, check out our other new animated image, Speeding GIF, for a message about how speeding increases likelihood of a crash, injury, and death.

Questions? Comments? Email kur4@cdc.gov.

What motor vehicle safety topics do you want to read about? Tweet or email us to share your thoughts.

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