

# Behind the Wheel at Work

## NIOSH Center for Motor Vehicle Safety

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

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### Update on the CDC/NIOSH Coronavirus Response

In an effort to continue providing you, *Behind the Wheel at Work* readers, with valuable safety information, we are sharing this month's newsletter with an added note. In response to Coronavirus Disease (COVID-19), CDC is operationalizing all of its pandemic preparedness and response plans, working on multiple fronts to meet these goals, including specific measures to [prepare communities](#) to respond to local transmission of the virus that causes COVID-19. Additional guidance, specific to the workplace is also available in the booklet, [Preparing Workplaces for COVID-19](#). [PDF](#) [Link](#) To stay up to date on the response please visit the [COVID-19 web page](#) or [sign up for the COVID-19 newsletter](#).

## All About In-Vehicle Monitoring Systems (IVMS)

What are in-vehicle monitoring systems (IVMS)? How can employers use them to improve driver performance? Keep reading to learn about this technology. Catch up on [previous issues of our newsletter](#).

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### IVMS Basics



In-vehicle monitoring systems (IVMS) are devices designed to improve drivers' performance by identifying risky driving behaviors for self-correction and for supervisors to use to coach drivers and identify fleet-wide problems.

### Some things to know about IVMS

- An IVMS is just **one part of a company's comprehensive fleet safety management system**. If used properly, an IVMS gives drivers and supervisors information that will help them work together to improve driver performance and avoid crashes and injuries. It is not intended to spy on drivers, or to catch them in policy violations so that the employer has evidence to justify disciplinary action.
- The **IVMS unit** installed in the vehicle monitors, records, and transfers data to a computer via wireless technology. Some IVMS give visual or audible feedback in real time to warn the driver of risky driving behaviors such as speeding, harsh braking, or a lane departure; others include video cameras that are set to capture images of the road and/or the driver a few seconds before and after the actual risky driving behavior.
- **Driver behavior data** is typically available to companies through dashboards in almost real time and allows for timely driver coaching and tracking of fleet performance. IVMS is most effective when supervisors use the data to coach drivers soon after a problem is identified. IVMS data are intended to be reviewed and acted on continuously; they're not "black box" data to be examined only if there is a crash.

### IVMS might use a combination of technologies (GPS, video, or accelerometers)

- **GPS** allows the IVMS to compare the vehicle's speed against speed limits for specific road segments. The IVMS is triggered to capture a speeding event when the driver or vehicle exceeds a pre-set threshold agreed upon by the company and the IVMS provider. For example, some companies may set their threshold for speeding at the speed limit, while others may choose to record events only when vehicles go more than 5 or 10 miles over the speed limit.
- Driver-facing **video** enables supervisors to show drivers the specific behaviors they're being coached to improve. It can also provide critical evidence in a court case to show that the company driver was not responsible for a crash.
- **Accelerometers** allow the IVMS to detect vehicle maneuvers such as lane departures and harsh braking or acceleration, which can lead to crashes or near-crashes.

At the NIOSH CMVS, we're most interested in understanding how IVMS can best be used to improve driver performance and prevent motor vehicle crashes. However, to make freight pickup and delivery more efficient, some IVMS integrate tracking of idling time or routing or scheduling capabilities with safety-related measurements.

#### Safety Tip



Before beginning your IVMS program, communicate clear and consistent expectations for safe driving behaviors to all workers in your organization.

## IVMS Best Practices



In-vehicle monitoring systems (IVMS) can be a powerful tool for improving driver behaviors across an organization. Here are some best practices to consider when using an IVMS:

- When selecting an IVMS product, determine what driving behaviors you are most concerned about within your fleet. If data are available, identify common contributing factors to previous incidents. Then, select an IVMS that tracks the appropriate metrics to address these factors. Decide if your IVMS will have a forward-facing or driver-facing camera, which can provide useful context for driver coaching.
- Before beginning your IVMS program, communicate clear and consistent expectations for safe driving behaviors to all workers in your organization. Explain potential consequences of risky driving behaviors, if not corrected. For example, explain that crashes that occur at high speeds are more likely to result in injury or death. However, be sure to present the IVMS program as a positive way to create and sustain safe driving behaviors.
- Provide one-on-one coaching in a timely manner, using a positive, instructive approach. Supervisors and workers can review data together as part of a collaborative and caring conversation. Reassure workers that the goal of coaching is not to remove their autonomy but to work together to create a safer working environment.
- Set realistic IVMS-related goals for drivers and teams, for example, zero driving without a buckled seat belt or a 50% decrease in harsh braking events over a year. Celebrate when goals are achieved with a small reward or team party. Also, consider competitions between work teams to achieve the highest IVMS driving scores. To show management's commitment to safety, involve everyone from field employees to executive-level management.
- Understand that a worker's overall pattern of driving behaviors may be more valuable information than isolated events. For example, a harsh braking event may indicate that the driver made the safest choice and avoided a crash, but repeated harsh braking events over time may indicate driver fatigue or distraction.

*Acknowledgements: Andrew Miller and Andrew Krum, Virginia Tech Transportation Institute (VTTI)*

## IVMS Q&A: Chevron



*Katie Rickle is the Health, Environmental and Safety (HES) Technical Services Manager for Chevron's Permian Basin operations. In this role, Katie provides leadership and direction in the development and continuous improvement of health, safety and environmental programs to prevent serious injuries and fatalities and protect the environment. She has 20 years' experience supporting upstream, midstream and downstream operations.*

How has Chevron used in-vehicle monitoring systems (IVMS) to improve driver behavior and reduce crashes? Can you share any safety benefits?



Without a doubt, Chevron's deployment of IVMS throughout its North America Upstream operations 15 years ago contributed to a reduction in crashes and improved driver behavior. But, while the technology was a critical catalyst for change, the continuing success of the program is largely attributable to a culture change driven by sustained and consistent organizational buy-in. Managers across the organization establish consistent performance expectations and use IVMS data to measure progress toward those expectations. Supervisors use the data to provide coaching and

reinforcement. And drivers improve as they learn to recognize and eliminate adverse behaviors through knowledge, practice, and leadership engagement. Over time, this approach has ingrained a culture in which vehicle operation is essentially the only thing that matters while behind the wheel, and the distractions that lead to crashes are diminished.

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### Operating in West Texas, the busiest oil and gas area in the U.S., how has Chevron evolved its approach to using IVMS data to guide your road safety efforts? ✓

As we've seen activity ramp up in the Permian Basin, the motor vehicle safety culture established more than a decade ago is as important as ever. But we've had to expand our perspective to recognize that even the most compliant individual driver can still be at risk if the broader transportation system is challenged. With the safety of our employees and communities as a core value, Chevron is taking a proactive role as a company alongside our industry and agency colleagues to help address system challenges through logistics planning, infrastructure funding, enforcement, public awareness, and defensive driver training. This shift in mindset has also changed the way we look at IVMS data. We are evolving from not only utilizing IVMS data for coaching individual drivers to also utilizing IVMS data to describe transportation system performance. We are also using system data to anticipate issues before they are manifested in crashes. In other words, instead of seeing IVMS data as simply a record of how individual drivers perform, we see it as an up-to-the-hour record of how the transportation system is functioning.

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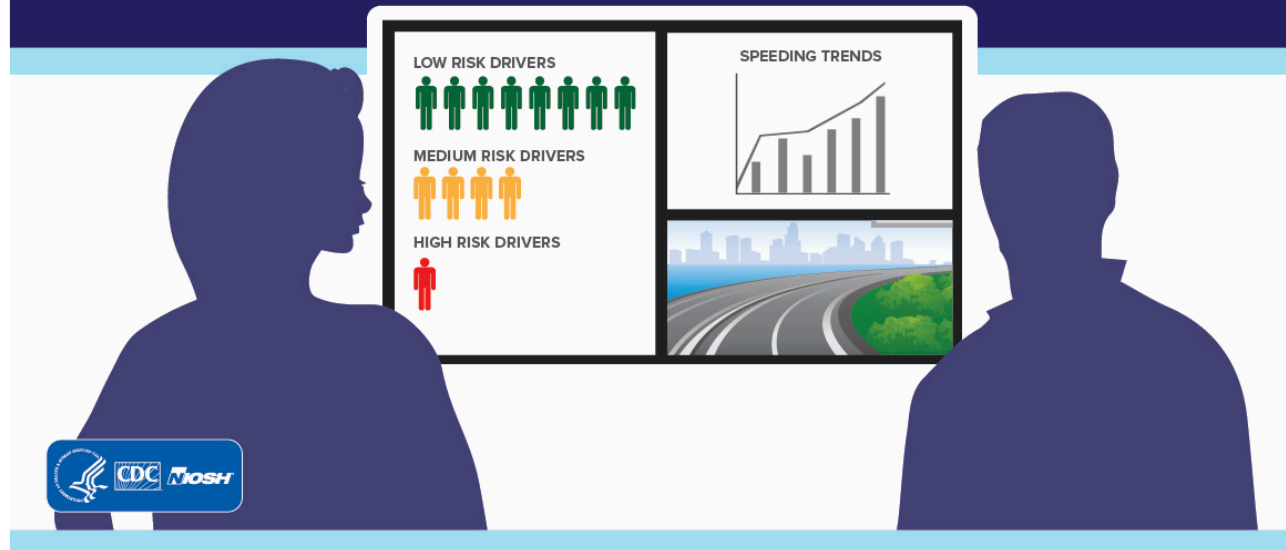
### What advice can you offer to help other road safety professionals enhance the use of their IVMS data in addition to identifying and coaching at-risk drivers? ✓

We would challenge your readers to look at road safety differently. Certainly, the original intent of IVMS still applies, and much can be gained by working with your individual drivers to build a culture of safety. But the individual driver is just one element in a much larger transportation system and, in this age of digital analytics, a robust IVMS data set will allow us to predict transportation system challenges and enact mitigative interventions in collaboration with agencies and road users.

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#### IVMS Graphic

## IF YOUR FLEET USES IN-VEHICLE MONITORING SYSTEMS, 1-ON-1 COACHING IS CRITICAL TO DRIVER IMPROVEMENT.



Download our new IVMS graphic! [PNG, 206 KB]

### New NETS Road Safety Campaign

Our friends at the Network of Employers for Traffic Safety (NETS) created the [Driven to Wellness](#) toolkit to empower employers to help their employees adopt safe driving behaviors. The free toolkit, which focuses on the link between healthy lifestyles and safe driving, includes the following topics: physical wellness, work-life balance, impaired driving, healthy vehicles, and how to develop a wellness plan.



Questions? Comments? Email [kur4@cdc.gov](mailto:kur4@cdc.gov).



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