



Center for Motor Vehicle Safety

Strategic Plan, 2020-2029

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Board of Scientific Counselors | April 2020

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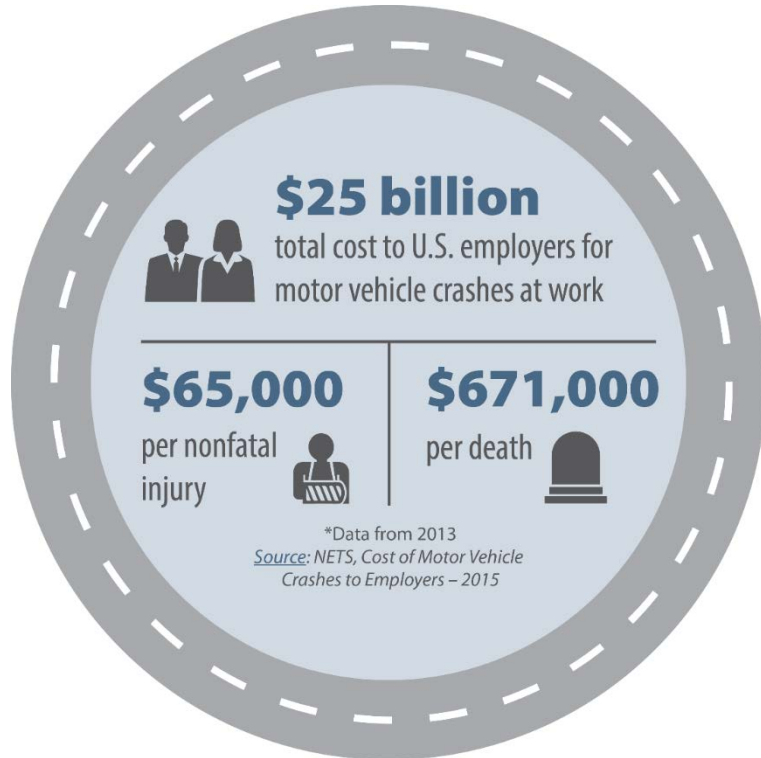
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Today we will talk about...

- Background
- CMVS Strategic Plan Evaluation, 2014-2018
- CMVS Strategic Plan, 2020-2029
- Themes:
 - Automation, Fatigue, Distraction, Safety culture and management
- Communication results and recommendations
- Input from BSC

Background

Motor vehicle crashes at work



- Leading cause of U.S. work-related deaths
- Over 29,000 deaths from 2003–2018
- 36% of all deaths
- 1st or 2nd leading cause in every major industry group

Purpose of NIOSH CMVS

Conduct research and develop strategies to prevent work-related motor vehicle crashes and resulting injuries.

How we do it:

- Set priorities for research
- Develop partnerships
- Obtain funding and conduct needed research
- Communicate results and recommendations
- Ensure translation into standards, regulations, policy, and guidance

Things for you to consider

- How can we effectively stimulate priority research in the extramural community?
- Which academic, industry associations, and others could partner with us to advance the plan's objectives?
- How can we effectively get our findings into the hands of those who can put them into practice?
- How can we capture usage of NIOSH motor vehicle outputs by organizations outside of NIOSH?

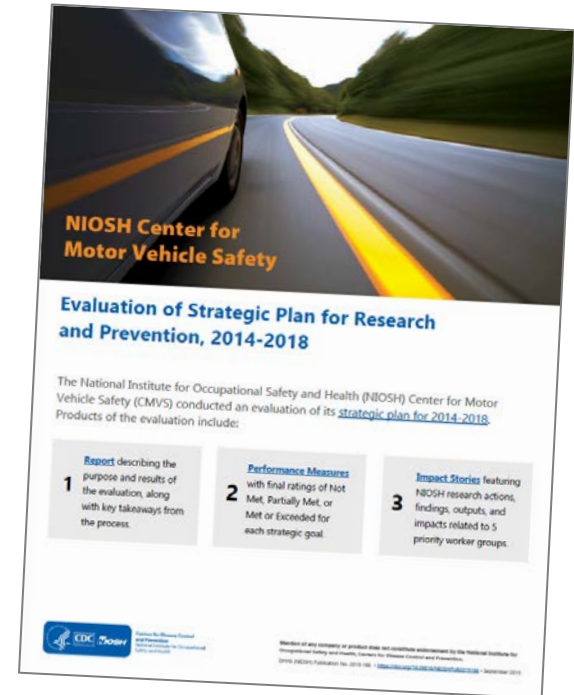


CMVS Strategic Plan Evaluation, 2014-2018

Evaluation of 2014-2018 strategic plan

- Assessed progress on 5 strategic goals
- Process evaluation: 80% of performance measures partially or fully met
- Contribution analysis: 5 impact stories on key worker groups
- Posted to Research Program webpage

www.cdc.gov/niosh/motorvehicle/ncmvs/research.html



Report and Performance Measures



NIOSH Center for Motor Vehicle Safety

Report: Evaluation of Strategic Plan for Research and Prevention, 2014-2018

This document describes the purpose and results of the evaluation, along with key takeaways from the process.



This product is a component of the NIOSH Center for Motor Vehicle Safety Evaluation of Strategic Plan for Research and Prevention, 2014-2018.
DHHS (NIOSH) Publication No. 2019-106 • <https://www.cdc.gov/niosh/2019-106/>

Goal 1

Identify risk factors for work-related crashes continued >

Performance Measures	Status	Examples
Performance Measure 1.1.1: By 2018, complete at least two research projects addressing the role of operating environment factors on work-related motor vehicle crashes. Publish results.	●	Law enforcement motor vehicle safety: Findings from a statewide survey [NIOSH publication] Addressing occupational safety and health hazards in oil & gas drilling & servicing [Completed project]
Performance Measure 1.1.2: By 2018, complete at least two research projects or analyses, related to hours of work, long hours of driving, or fatigue to provide evidence-based recommendations, particularly for workers not covered by FMCSA regulations.	▶	Factors associated with truck crashes in a large cross section of commercial motor vehicle drivers [Journal article] The influence of daily sleep patterns of commercial truck drivers on driving performance [Journal article]
Performance Measure 1.2.1-1: By 2014, publish one methods paper on case identification and data linkage procedures in a peer-reviewed journal.	●	Work-related fatal motor vehicle traffic crashes: Matching of 2010 data from the Census of Fatal Occupational Injuries and Fatality Analysis Reporting System (CFOI/FARS) [Journal article]
Performance Measure 1.2.1-2: By 2015, submit a second publication based on matched CFOI and FARS data to a peer-reviewed journal.	▶	Analysis of CFOI/FARS matched data [Conference presentations] Analysis of CFOI/FARS data on seat belt use in fatal crashes [Conference presentations]
Performance Measure 1.2.1-3: By 2017, submit a third publication to a peer-reviewed journal based on analysis of matched CFOI and FARS for later data years.	▶	Analysis of CFOI/FARS data for the construction and oil & gas industries [Conference presentations]
Performance Measure 1.2.2-1: By 2016, initiate at least one research project to identify and evaluate sources of exposure data estimates.	—	
Performance Measure 1.2.2-2: By 2018, if initial efforts are successful, begin to develop annual exposure estimates on work-related trips or miles traveled.	—	

Performance Measures Status Key

— Not Met
 ▶ Partially Met
 ● Met or Exceeded

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Impact Story: EMS workers

- Examined nonfatal injuries and exposures to workers
- Partnered with Dept. of Homeland Security and others to crash test ambulances
- Developed award-winning video series
- **Impact:** Society of Automotive Engineers published 10 new test methods to improve worker safety
- **Impact:** Test methods adopted into three national bumper-to-bumper standards

EMS Workers & Firefighters
NIOSH Motor Vehicle Safety Impact Story

Emergency medical services (EMS) workers and firefighters are vital to disaster response. Their duties expose them to hazards that increase their risk for on-the-job injuries.

46% of all EMS provider fatalities between 2013-2017 were related to motor vehicle crashes.¹
100 firefighters died as a result of motor vehicle crashes between 2008-2017.²

Key Actions:

- Partner with the Department of Homeland Security, other federal agencies, and manufacturers to crash-test ambulances and major components (e.g., patient cot).
- Collaborate with the Office of Emergency Medical Services in the National Highway Traffic Safety Administration to describe nonfatal injuries and exposures to EMS providers.
- Work with industry to improve firefighter personal protective equipment (PPE) and fire apparatus design.
- Investigate fatal firefighter motor vehicle incidents.

Key Findings:

- Ambulances fall outside most federal motor vehicle safety standards and, as a general rule, are not regulated by the federal government. Guidelines for ambulance design, purchasing, and licensing are the responsibility of individual states.
- Motor vehicle incidents led to about 2,000 injured EMS workers seeking emergency department treatment each year from July 2010 to June 2014. Most injured workers in the patient compartment were not wearing seat belts.
- Current seat belt design does not accommodate some firefighters, especially if they wear turnout gear.
- Technically sound design of PPE and fire apparatus requires scientific measurement of firefighters' body dimensions, not self-reported information.

Key Actions:

- Antropometric (body measurement) [guide](#) for U.S. firefighters published on NIOSH website.
- [Applied Ergonomics article](#): Seat and seatbelt accommodation in fire apparatus: Anthropometric aspects.

and validate 10 new test methods, each...
The Society of Automotive Eng...
to-bumper standards, and the educa...
provide changes to ambulance design...
investigations in risk management...
on the pros and cons of volunteer...
...firefighter anthropometric data to design safer...
...turnout gear.

NIOSH is a part of the U.S. Department of Health and Human Services. © 2018 NIOSH. This product is a component of the NIOSH Center for Motor Vehicle Safety, Evaluation of Design for the Motor Vehicle Safety (CEMS) Study. For more information, visit [www.niosh.gov](#).

Impact Story: Truck drivers

- Collected body measurement data from >1,900 truck drivers
- Conducted a survey of 1,265 long-haul truck drivers
- **Impact:** Project partners able to design next generation of truck cabs with proper body dimensions
- **Impact:** FMCSA cited survey results in 2 commercial vehicle operator rules

Truck Drivers

Truck transportation is essential to the U.S. economy. Long-haul truck drivers work long hours and drive long distances increasing their risk for crashes.

More than 1 in 3 long-haul truck drivers have experienced a serious truck crash during their career.¹

Key Actions:

- Collect body measurement data from more than 1,900 truck drivers across 15 states.
- Share data with 8 major truck manufacturers, parts suppliers, and software developers.
- Partner with Virginia Tech Transportation Institute to study sleep patterns of 96 commercial truck drivers during non-work periods, and evaluate the influence on subsequent driving performance.
- Conduct a survey of 1,265 long-haul truck drivers from 32 truck stops across 48 states.
- Evaluate healthy food options, site safety, and exercise facilities at 16 of the 32 stops.

Key Findings:

- Truck drivers are heavier—13.5 kg (28.8 lbs) for males and 15.4 kg (34 lbs) for females—than the general U.S. population, demonstrating the need for updated cab designs to improve trucker safety.
- Truck drivers with less sleep overall, sleep starting near the middle of a non-work period, and less sleep 1-5 a.m. had the highest rates of high-risk road events.
- 37% of long-haul truck drivers reported being noncompliant with hours-of-service rules at least some of the time.
- 67% of truck drivers reported having 2 or more health risk factors (e.g., hypertension, obesity, smoking, high cholesterol, no physical activity, 6 or fewer hours of sleep per 24-hour period).
- Most truck stops did not provide healthy food options, a safe walking area, or exercise facilities.

CDC www.cdc.gov

1. CDC, National Safety Council. 2019.

CDC Vital Signs based on survey results

Learn more about the health of the U.S. workforce.

Information on truck cabs to better accommodate driver model for truck-cab design.

Findings from the survey of long-haul truck drivers.

Survey results in 2 commercial vehicle operator rules.

1. CDC, National Safety Council. 2019.

CMVS Strategic Plan, 2020-2029

Inputs to the plan

- Previous strategic plan, midcourse review, evaluation
- Partners' research needs and strategic plans
- Published literature
- Internal expertise
- Feedback from the public



Who will use the plan?

1. NIOSH internal researchers
2. NIOSH-funded external researchers
3. External research community and government agencies



About the plan

- Adopts 4 priority sectors defined in the NIOSH Strategic Plan: FYs 2019-2023
- Provides detailed research needs for 4 sectors and their priority worker groups
- Proposes research needs that would benefit ALL sectors
- Defines targeted actions by stakeholders



Oil and Gas Extraction



Public Safety



**Transportation,
Warehousing, and
Utilities**



**Wholesale and
Retail Trade**

Three strategies

1. Identify crash and injury risk factors
2. Develop and evaluate engineering and technology-based interventions
3. Develop and evaluate motor vehicle safety management programs and practices



Themes

Topics that appear throughout the strategic plan

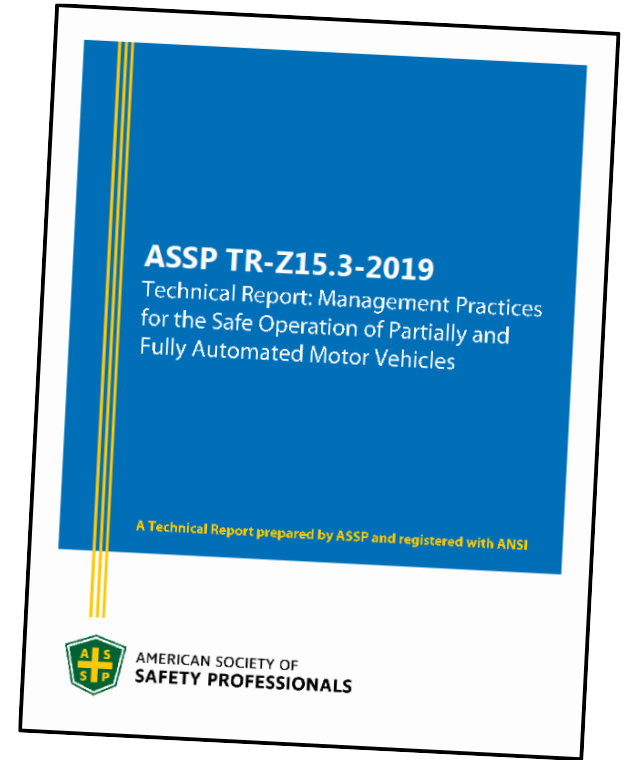
1. Automation
2. Fatigue
3. Distraction
4. Safety culture and management



Theme 1: Automation

ASSP Z15.3 Technical Report

Management Practices for the Safe Operation
of Partially and Fully Automated Vehicles



Report: *Ensuring American Leadership in Automated Vehicle Technologies*

- Led by White House National Science and Technology Council
- Content: Potential benefits of technology, administration efforts supporting technology growth, government activities
- Notes NIOSH role and research



Theme 1: Automation

NIOSH niche: safe adoption and effective management systems surrounding these technologies in the workplace

- Assessing the use and understanding of automated features
- Developing and evaluating strategies to improve driver comprehension
- Adapting technologies for specialized vehicles



Theme 2: Fatigue

Recent fatigue-related outputs

1. COVID-19 fact sheets for truck drivers
2. Journal article: Factors associated with fatigue among taxi drivers¹
3. NIOSH Working Hours, Sleep, and Fatigue Forum (OGE, TWU, PSS)
4. June 2019 issue of *Behind the Wheel at Work* e-newsletter
5. New webpage: Driver Fatigue on the Job
6. Industry presentations

¹ Menéndez C et al. [2019]. Individual, business-related, and work environment factors associated with driving tired among taxi drivers in two metropolitan U.S. cities. *J Saf Res* 70: 71-77.

Theme 2: Fatigue

- Quantify role of work organization policies (scheduling, payment, etc.)
- Assess use of fatigue risk management systems and integration into other systems
- Evaluate specific strategies such as training (e.g. North American Fatigue Management Program), napping (EMS workers)
- Evaluate fatigue detection technologies
- Determine cost effectiveness of fatigue management



Theme 3: Distraction

Recent distraction-related outputs

1. Webpage: Recommends employers have full cell phone ban
2. National Safety Council distracted driving awareness month
3. Animated images to promote message



Theme 3: Distraction

- Describe sources of distraction, attentional overload
- Examine impacts of interaction of distraction with driver fatigue
- Identify methods to reduce cognitive distraction
- Evaluate acceptance/effectiveness of cell-blocking technologies



Theme 4: Safety culture and management

Fleet safety management practices¹

- Analysis of 70 fleets in multiple industry sectors
- Examined relationship between fleet safety programs and policies and collision/injury metrics
- Identified policies associated with better metrics:
 - FRM for light-vehicle drivers, cell phone record checks post-collision, some forms of driver training, determination of collision severity

¹Vivoda JM, Pratt SG, Gillies SJ [2019]. The relationships among roadway safety management practices, collision rates, and injury rates within company fleets. *Safety Sci* 120:589-602.

Theme 4: Safety culture and management

- Evaluate effects of operational and work organization strategies (e.g., journey management, in-vehicle monitoring)
- Develop/evaluate initiatives to gain worker and front line-management buy-in of policies and programs
- Identify incentives and barriers to adoption of effective strategies
- Demonstrate business case for training, policies, and programs



**Communicating results
and recommendations**

Officer Road Code Toolkit



Officer Road Code Toolkit Manager Sheet

get started

Motor vehicle-related incidents are a leading cause of line-of-duty deaths for law enforcement officers in the United States—they are also preventable. It is important to promote **motor vehicle safety** among patrol officers so they can live safe while serving public-safety communities.

This toolkit provides core messages to encourage and communicate about **seat belt use**, **speeding**, **distractions**, and **cell phone use** for patrol officers working behind the wheel. **Alert messages** for patrol officers working behind the wheel. All safety messages covering **four topics**, plus an **other law enforcement leaders** can cover the message your way, one theme per week. Because there are **extra messages**, you can adapt the toolkit to your agency's schedule, policies, and other needs.

involve your officers

incorporate messaging into the workday

- Roll Call** Talk about safety when you have the group's attention at the start of the workday or include a printed safety message in the roll call book.
- Posters** Print safety messages and post them in a common area.
- Dispatch** On each shift, have dispatchers send out alerts to show safety.
- Mobile Data Terminal** Display safety messages when officers are on duty.
- Decision** Give officers the decision for their vehicles.

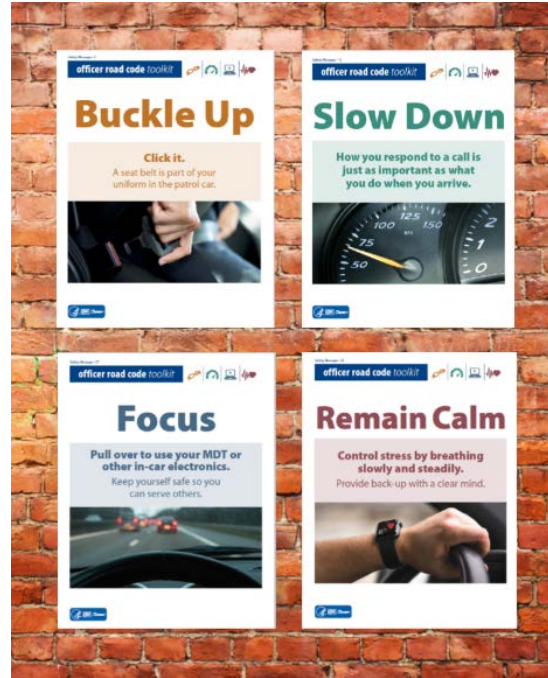
download the toolkit

Visit www.iacp.org/roadcode/toolkit to access safety messages and a sheet to share with your patrol officers.

local printing instructions

For wallpaper use, print on a white vinyl background with UV coating to make it last longer. It gluing you set with UV coating will work for outdoor use. Printing: Most online printers allow 300 dpi resolution for professional printing.

Drive to arrive alive.



Officer Road Code Toolkit

Buckle Up

Click it.
A seat belt is part of your uniform in the patrol car.

Officer Road Code Toolkit

Slow Down

How you respond to a call is just as important as what you do when you arrive.

Officer Road Code Toolkit

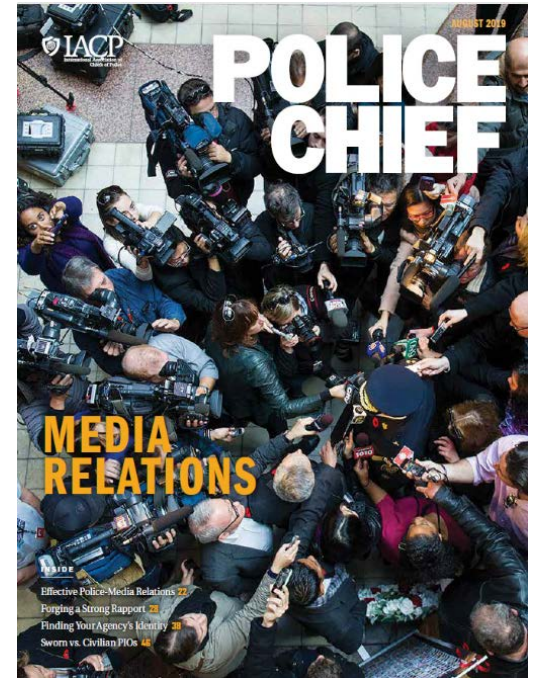
Focus

Pull over to use your MDT or other in-car electronics.
Keep yourself safe so you can serve others.

Officer Road Code Toolkit

Remain Calm

Control stress by breathing slowly and steadily.
Provide back-up with a clear mind.



IACP
POLICE CHIEF
AUGUST 2019

MEDIA RELATIONS

Effective Police-Media Relations 22
Forging a Strong Rapport 12
Finding Your Agency's Identity 30
Sworn vs. Civilian PIOs 40

Strategy for sharing findings

- Tailored to industry audiences, brief, simple
- Visually engaging
- End with a call to action



Evaluating the plan

- Track research projects and outputs (process)
- Track target actions taken by others (intermediate outcomes)
- Impact stories



Summary of comments

- Received 11 comments
- Commenters included:
 - National Safety Council, safety researchers, international researchers, individuals from multiple industries
- Topics included:
 - Safety management systems, distracted driving, fatigue, leading indicators, bike couriers



Implementing the new plan

Anticipated publication date: May 2020

- Market plan to NIOSH and other researchers to address CMVS priorities
- Develop MOUs with key partners
- Work to obtain data use agreements
- Increase extramural research on MV safety and align it with CMVS research priorities



Input from BSC

Questions to BSC members

- How can we effectively stimulate priority research in the extramural community?
- Which academic, industry associations, and others could partner with us to advance the plan's objectives?
- How can we effectively get our findings into the hands of those who can put them into practice?
- How can we capture usage of NIOSH motor vehicle outputs by organizations outside of NIOSH?



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*Thank
You!*

The findings and conclusions in this presentation are those of the authors and do not necessarily represent the official position of the National Institute for Occupational Safety and Health, Centers for Disease Control and Prevention.

