

# Advancing Trucking Safety and Efficiency: Addressing Vital Industry Research Issues

May 2023

## Committee Chair's Corner

**By: Daniel Haake, AICP,  
ENV SP, PMP**

*Director of Project Delivery,  
Cambridge Systematics*

**W**elcome to the first edition of  
our committee's newsletter

(and a huge thanks  
to Rodrigo Mesa-  
Arango for leading  
this effort!). This  
newsletter is  
the first of many  
initiatives designed



by committee members to help  
reinvigorate the group as we  
move out of the pandemic's  
shadow. If you want to become  
more involved in the committee,  
please consider volunteering for  
one of these opportunities by  
contacting the lead committee  
member.

As always, thank you for your  
continued support and active  
participation!

**Dan Haake**

*Chair – Trucking Industry  
Research Committee*

### **Freight Lunch Hour**

**Lead:** Dan Haake

(dhaake@camsys.com)

**Description:** *Informal sessions  
where interim research results  
are presented, followed by a  
discussion.*

### **Newsletter**

**Lead:** Rodrigo Mesa-

Arango (mesaarango@  
highstreetconsulting.com)

**Brief Description:** Develop  
quarterly committee newsletter

### **Paper Reviews**

**Lead:** Guang-Xiang Chen

(gdc0@cdc.gov)

**Brief Description:** *Support our  
annual paper view process by  
reviewing papers and identifying  
qualified reviewers.*

### **Research Briefings**

**Lead:** Sue Dexter

(shdexter@usc.edu)

**Description:** *Develop 10–15  
minute research briefings for our  
committee meetings.*

### **TRBAM Sessions and Workshops**

**Lead:** Dan Haake

(dhaake@camsys.com)

**Brief Description:** *Develop  
our committee's sessions and  
potential workshops for the  
TRBAM*

### **Trucking 101**

**Lead:** Nicole Katsikides

(N-Katsikides@tti.tamu.edu)

**Brief Description:** *Update  
“Trucking 101: An Industry  
Primer”*

### **Truck Size and Weight Subcommittee**

**Lead:** Matt Elischer

(melischer@bakaness.com)

**Brief Description:** *A group  
interested in all things Truck Size  
and Weight*

### **Webinar: Zero Emissions Trucks**

**Lead:** Dan Murray

(dmurray@trucking.org)

**Brief Description:** *Develop a  
webinar on alternative-fueled  
trucks*

# Preface

**By: Rodrigo Mesa-Arango, PhD.**

*Senior Consultant,  
High Street Consulting*

**D**ear members and friends of the TRB  
AT060 Trucking Industry Research  
Committee,



Welcome to the first volume  
of the 2023 Trucking Industry  
Research Newsletter. As a  
transportation consultant, I  
am thrilled to bring you the  
latest developments in the

trucking industry through this series. Our  
first issue brings four exciting articles that  
explore various topics in trucking research,  
which can be of great significance to public  
agencies, private companies, and academia.

One of the common themes among all  
the articles is the need for improving road  
safety, which is of paramount importance to  
the trucking industry. This issue has become  
even more pressing with the phenomenon  
of “Suicide by Truck,” which is explored  
in the first article by Ronald R. Knipling,  
Ph.D. The article highlights the importance  
of understanding the causes of such fatal  
crashes and the potential liability issues  
faced by trucking companies. It also raises  
questions about how to prevent suicide by  
truck and suggests the need for further  
research in this area.

The second article brings you the highlights  
of the Western Region Commercial Vehicle  
Safety Summit that aimed to reduce  
distracted driving by commercial motor  
vehicle (CMV) drivers and improve CMV  
safety in work zones. The summit brought  
together representatives from various  
sectors to share best practices, new

research findings, and partnerships, which  
are essential in advancing the safety of the  
trucking industry.

In the third article, we explore the research  
project being conducted by the National  
Institute for Occupational Safety and Health  
(NIOSH) to evaluate the effectiveness of  
the North American Fatigue Management  
Program (NAFMP) in reducing commercial  
truck driver fatigue. The study results  
will provide scientific evidence for  
recommendations on reducing truck driver  
fatigue, which is a significant contributor to  
road accidents.

Finally, the fourth article discusses the  
issue of inadequate truck parking along  
major freight corridors, which is a significant  
concern for truckers. The article presents  
successful strategies employed by leading  
state departments of transportation (DOTs)  
to address this issue and identifies private  
sector organizations that are actively  
engaged in identifying ways to improve truck  
parking capacity and communication of real-  
time truck parking availability to truckers.

In conclusion, our first issue brings to  
light critical issues in the trucking industry  
that require attention and solutions. It  
emphasizes the importance of collaboration  
and partnerships among various sectors in  
advancing the safety and efficiency of the  
industry. We hope you enjoy reading our articles  
and take away valuable insights that can shape  
your decision-making and strategies.

What do you think is the most pressing issue  
facing the trucking industry? How do you  
think public agencies, private companies,  
and academia can work together to ad-  
dress these issues? We’d love to hear your  
thoughts and ideas.

# North American Fatigue Management Program Effectiveness in Reducing Commercial Truck Driver Fatigue

**By: Guang Chen, M.D.**

*Epidemiologist, Division of Safety Research, National Institute for Occupational Safety and Health*

**T**he number of large truck fatal crashes increased from 2010 (3271 crashes) to 2019 (4479). On average, 14 people were killed by large truck crashes every day in 2019. Large truck and bus crashes in the U.S. cost an estimated \$163 billion in 2019. Fatigued driving is an important cause of large truck crashes. To reduce truck driver fatigue, the Federal Motor Carrier Safety Administration (FMCSA) issued Hours of Service (HOS) regulations to limit hours a truck driver can drive or work a day and a week. The NIOSH national long-haul truck driver (LHTD) survey suggested that a large percentage (37%) of LHTDs reported that hours of service regulations were often or sometimes violated. In 2013, FMCSA, Transport Canada, and other stakeholders developed the North American Fatigue Management Program to educate motor carriers and drivers about fatigue risk and management. In 2015, the National Academy of Sciences recommended to comprehensively evaluate the NAFMP so that recommendations for reducing truck driver fatigue are supported by scientific evidence.

NIOSH is currently conducting a research project that is designed to evaluate the effectiveness of the NAFMP in reducing commercial truck driver fatigue (Principal Investigator, Guang Chen). The



project will observe 180 truck drivers for 8 months, 3 months before and 5 months after the implementation of NAFMP. The project will utilize state-of-the-art technology that monitors driver fatigue in near real-time. The primary outcome variables are fatigued driving events, safety critical events, and driver sleep time. The project is a collaborative effort among NIOSH, FMCSA, Transport Canada, Commercial Vehicle Safety Alliance, NAFMP steering committee, Virginia Tech Transportation Institute (VTTI), Lytx, and trucking companies. Critical resources have been made available to the project by working together with this extensive partnership. The extensive knowledge and experience of the members of this research partnership has dramatically improved the quality of this research project.

Although implementation of the project is happening during the COVID-19 pandemic, computer chip and truck driver shortages and supply chain issues that have impacted obtaining OMB approval, the availability of driver fatigue real-time detection devices, and recruitment of participating truck companies, the project protocol and data collection instruments were approved by OMB in 2021. Trucking companies are currently being recruited and data collection is set to start this summer.

The study results will provide FMCSA, the National Transportation Safety Board (NTSB), the trucking industry and other stakeholders with scientific evidence for recommendations of reducing truck driver fatigue.

# Suicide by Truck

**By: Ronald R. Knipling, Ph.D.**

Safety for the Long Haul Inc.

**A** 2014 analysis of large truck fatal crashes in Sweden (Bálint et al., 2014) attributed 17% of them to suspected suicide. The two major suicide scenarios were cars (or



other light vehicles) crossing the highway centerline and pedestrians stepping out in front of trucks. Another 9% were judged “unknown” for suicide, while the remaining 74% were coded “no.” An international trucking firm based in Australia reviewed each of its fatal crashes and estimated that 20% or more were suicides, with the majority involving pedestrians (Jones, 2020).

All of the estimated 48,000 U.S. suicides each year are tragedies. They reflect anguished individuals suffering from depression, loss, mental illness, or other overwhelming life circumstances. As a caring person I mourn all these lost lives. As a truck safety researcher, I want to quantify the problem, understand its genesis, and consider ways to reduce it.

Suicide by truck is a phenomenon that “falls through the cracks” of public safety and health reporting. The U.S.

Department of Transportation (DOT) Fatality Analysis Reporting System (FARS) is an analytic census of U.S. fatal crashes. Yet a fatal collision known by police investigators to be a suicide is technically not a “traffic accident.” It is not recorded in state and Federal crash records. Yet, in my opinion, fatal large truck crash statistics suggest that many are suicides.

Most serious crashes involving large trucks and other vehicles are precipitated by the actions of those other vehicles. Of all major large truck fatal crash scenarios, head-on crashes are those most likely to be caused by the other motorist (Knipling, 2009). These violent physical events leave distinct pavement scuffs and gouges at the point of impact. The gouges show which vehicle crossed the centerline. Crash investigators looking at fatal car-truck head-on crashes have concluded, based on this and other evidence, that about 90% involve the car crossing the center line (FHWA OMC, 1999; Moonesinghe et al., 2003).

I obtained more recent statistics on all fatal truck head-on crashes from the U.S. DOT. In 2017 there were 470 fatal large truck involvements in head-on crashes where the two opposing vehicle paths could be discerned clearly. The large truck was in its own lane going straight in

416, or 88.5% of the crashes. In other words, the other vehicle crossed the centerline or median. The 416 crashes killed 483 people. This included 413 other-vehicle drivers, 51 of their passengers, and 19 truck occupants. Three of the other-vehicle-into-truck crashes killed only the truck driver.

Vehicles cross highway center lines for many reasons, including distraction, asleep-at-the-wheel and loss-of-control. Speeding and alcohol are also well-known culprits, especially at night. Yet to me this FARS data provides more evidence, albeit indirect, that the large number of vehicle crossovers into trucks contains many intentional actions.

FARS does not contain similar scenario classifications for pedestrians. In 2017, 372 pedestrians died after being struck by trucks. Once again, known suicides would be excluded from FARS statistics. But how many suicides are embedded in the 372 pedestrian fatalities? My own nephew died when walking at night on a downtown freeway. The circumstances suggested suicide.

The two scenarios I have described killed 855 people in 2017. That’s 18% of all truck-involved crash fatalities that year. And, remember, known suicides

are not included in Federal crash data. Individuals committing suicide are primary victims, but there are also collateral victims. Among the 483 other-vehicle crossover head-on fatalities were 19 truckers and 51 crossing-vehicle passengers. Surviving people are also collateral victims because of their injuries and psychological trauma. Imagine seeing a vehicle crossing into your path and then the shock and force of the head-on impact. Or watching in horror as a pedestrian intentionally steps into your path. After one such event reported in *Overdrive* (2018), a trucker from Pennsylvania, "I can't stop having the nightmare. I can't stop screaming about dead people when I sleep."

Trucking companies can face financial liability and even bankruptcy after suicide-by-truck cases. In 2014 there was a \$90

Million judgment against Werner Enterprises, one of the largest U.S. carriers. A head-on crash occurred after a pickup truck, with two children as passengers, lost control on an icy Interstate and crossed the median into the path of an oncoming Werner tractor-trailer. The truck was in its lane traveling below the speed limit. Yet plaintiff attorneys argued successfully that the Werner driver should have pulled off the road due to the icy conditions. This fatal crash was not a suicide, but the case illustrates that "deep pocket" defendants can be held liable for the consequences of other drivers' errant actions.

How to address the calamity of suicide-by-truck? Can we prevent desperate people from acting on their premeditated intent or uncontrolled destructive impulses? As a researcher, I first want more information. I

believe that the U.S. DOT should review all relevant research and scour crash investigative reports, including State files, to better estimate and describe the problem. We need more in-depth surveillance to red flag these events, count and characterize them, and separate them from the population of true traffic accidents.

The trucking industry is unfairly blamed, in the public eye, for many crashes it does not cause. Media reports of a "truck crash" are often perceived as a "truck-caused crash." The trucking industry must be passionate about reducing all human harm associated with its operations. But it has the right to defend its record and not be blamed for the self-destructive acts of others which also take down innocent people.

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# Western Region CMV Safety Summit focused on Distracted Driving and Work Zone Safety

**By: Dr. Brenda Lantz**

*Associate Director, North Dakota State University, Upper Great Plains Transportation Institute*

**T**he most recent Western Region Commercial Vehicle Safety Summit was held November 29-30, 2022, in downtown Denver, Colorado. This was the third western region CMV Safety Summit hosted by the North Dakota State University (NDSU), Upper Great Plains Transportation Institute (UGPTI), with support from a Federal Motor Carrier Safety Administration (FMCSA) cooperative agreement.



This Summit focused on efforts to reduce distracted driving by CMV drivers and others operating around CMVs, and to improve CMV safety in work zones. It brought together more than 150 representatives from law enforcement, driver licensing agencies, universities, and industry to share best practices, resources, new research findings, and partnerships.

All presentations and materials from the Summit are available at the site [www.ugpti.org/events/safetysummit2022/agenda.php](http://www.ugpti.org/events/safetysummit2022/agenda.php).

## **State Best Practices**

A highlight of the Summit was a session focused on sharing state best practices and included a discussion on Idaho's Engaged Driving

Initiative called Shift from the Idaho Transportation Department in the Office of Highway Safety. In addition, the Nevada State Police, Highway Patrol Division provided an overview of Nevada's Strike Force Operations and Badge on Board Campaigns. This session concluded with an interesting presentation from the Insurance Institute for Highway Safety discussing the Association between Broadened Cellphone Bans and Police-Reported Rear-End Crash Rates in California, Oregon, and Washington.

## **Resources and Tools**

Another informative session at the Summit provided an overview of resources and tools available to both state agencies and industry. The Commercial Vehicle Safety Alliance (CVSA) discussed the Operation Safe Driver program and the New Outreach Opportunities with Digital Media. Attendees were also introduced to the Work Zone Safe program that Teaches Teen Drivers to Safely Navigate Work Zones. The Virginia Tech Transportation Institute (VTTI) described their Smart Work Zone System Development; and the Training, Research and Education for Driving Safety (TREDS) program at the University of California, San Diego, discussed their program called Just Drive: Deliver Distraction Free with Resources to Prevent Distracted Driving Among Commercial Drivers.



### **Research and Partnerships**

An additional session focused on university research and examples of partnerships with state agencies. The Texas A&M Transportation Institute (TTI) discussed research to Make Rural Roads Safer in Texas, including New Data Tools and Approaches to Driver Training. VTTI provided some interesting perspectives on Commercial Driver Distraction, including Recent Insights from Naturalistic Driving Studies.

This session wrapped up with a joint presentation from Lt. Dave Wolf, Regional Commander, and Lt. Adam Dvorak, Assistant Operations Commander, Motor Carrier Operations, with the North Dakota Highway Patrol (NDHP), and Dr. Kimberly Vachal, Program Director with the Rural Transportation Safety and Security Center at NDSU-UGPTI. The three presenters discussed their long-term, valuable partnership and the variety of CMV Safety Projects they have accomplished together through the years. The most recent project involves NDSU-UGPTI creating a customizable

dashboard tool dedicated to CMV crash prevention, designed to harness multiple data sources that support timely NDHP resource decisions.

### **Roundtable Discussion**

There were additional sessions on cross-agency efforts and FMCSA research, and the Summit concluded with a roundtable discussion of challenges and/or topics of interest. States learned from other states a variety of strategies and new ideas they could take back to their own state. In addition, each table shared their main takeaways from the presentations and discussion over the two days, including new information they had learned and programs they plan to consider implementing.

All the presentations and materials from the Summit are available at the site [www.ugpti.org/events/safetysummit2022/agenda.php](http://www.ugpti.org/events/safetysummit2022/agenda.php). Information and presentations from past Western Region CMV Safety Summits are available from the NDSU-UGPTI Commercial Vehicle Safety Center site at [www.ugpti.org/outreach/cvsc/](http://www.ugpti.org/outreach/cvsc/).

# Successful Approaches for Facilitating Truck Parking Accommodations Along Major Freight Corridors

By: Richard Dunne, P.E.

Greenman-Pedersen, Inc.

In 2022, NCHRP published the findings of the domestic



scan peer exchange entitled, **SUCCESSFUL APPROACHES FOR FACILITATING TRUCK PARKING ACCOMODATIONS**

ALONG MAJOR FREIGHT CORRIDORS, [SCAN20-02.pdf \(trb.org\)](#). Scan participants sought a better understanding of the process for developing truck parking information systems along with successful strategies employed by leading agencies, candidate technologies that might be considered to support sharing parking availability, and case studies of systems that may be transferable to other agencies. Additionally, the scan focused on identifying potential strategies for issues such as monitoring, ITS design, overcoming legal barriers, and potential funding mechanisms. The key audience for the scan report was DOT executive and technical staff in freight, planning, design, revenue, ITS, and facilities, and other interested outside parties including FHWA, FMCSA, state patrols, academia, and others.



I-10 Corridor Coalition TPAS Concept

Lack of adequate accommodation for truck parking along major freight corridors continues to be a critical issue for State DOTs. Truck parking at many privately and publicly operated rest areas and weigh stations routinely exceeds capacity, often leaving truck drivers without reliable options for safely taking rest periods when they are tired or legally required to do so. Drivers may resort to parking on highway ramps, shoulders, or other unsafe areas, creating hazardous situations for the truck drivers and other road users.

The Scan Team determined that State DOTs choose one of three paths, including:

1. Initiating a truck parking management system on their own.
2. Banding together with surrounding States and taking a corridor approach to a truck parking management system.

3. Monitoring/studying the parking issue, often with the assistance of an MPO or other group affiliated/associated with the freight motor carrier industry.

Several States have initiatives underway to address this situation. The I-10 Corridor Coalition, which includes Arizona, California, New Mexico and Texas, is in the process of implementing a multi-state truck parking availability system funded in part by FHWA's Advanced Transportation and Congestion Management Technologies Deployment (ATCMTD) Program.

Florida is installing a Truck Parking Availability System along several interstate freight corridors. Colorado has undertaken a comprehensive truck parking information strategy including a Truck Parking Management System on East 1-70.





Rest Areas Asset Current State vs. Future State (courtesy of Colorado DOT)

Several Midwest States have formed the MAASTO Regional Truck Parking Information Management System (TPIMS), which is intended to reduce truckers time spent searching for parking and to provide safe truck parking alternatives. The I-95 Corridor Coalition, recently renamed as The Eastern Transportation Coalition, has a Truck Parking Working Group that is looking at ways to expand parking capacity, and is identifying design options, distributing information and providing outreach and education on this topic.

In addition, FHWA has recognized the truck parking issue and as a result has enhanced their Freight Management and Operations group by initiating and leading the National Coalition on Truck Parking. The National Coalition on Truck Parking brings together stakeholders from the public sector, transportation organizations, the freight industry, and other groups to advance safe truck parking.

The National Coalition on Truck Parking has arranged itself into four working groups focused on the following topics:

1. Parking Capacity
2. Technology and Data
3. Funding, Finance, and Regulations
4. State, Regional, and Local Government Coordination

The purpose of these working groups is to share best practices and create products to disseminate information on truck parking issues related to priorities.

This Scan Team identified the following attributes that contribute to a successful approach to addressing the truck parking issue:

1. Have champions, or invested individuals, in leadership positions across the State DOT and at local/multi-jurisdictional transportation agencies.

2. Be committed to data driven decision making.
3. Have a robust stakeholder engagement program.

Finally, there are private sector organizations that are keenly aware of the issues surrounding truck parking and are actively engaged in identifying ways to improve the truck parking capacity as well as improving the communication of real-time truck parking availability to truckers. These private sector organizations are willing to share their data with State DOTs and are often members of Freight Advisory Councils, or similarly named public-private collaborations at State DOTs. For instance, Minnesota DOT has done a significant amount of research on truck parking issues, which includes partnering with the American Trucking Association's research section of the American Transportation Research Institute to assist in developing a meaningful truck parking information system.