

THE ATRI INSIDER



The American Transportation Research Institute

SPECIAL ITEMS OF INTEREST

RECENTLY RELEASED RESEARCH
AVAILABLE ONLINE AT

WWW.ATRI-ONLINE.ORG:

**Safety By Design: Optimizing
Safety in Highway Work Zones**

**Predicting Truck Crash
Involvement: Developing a
Commercial Driver
Behavior-Based Model and
Recommended
Countermeasures**

Top Industry Issues 2005

**Homeland Security and the
Trucking Industry**

**Idling Regulations
Compendium for 2005**

INSIDE THIS ISSUE:

Board of Directors	2
Letter from the President	2
Board Member Spotlight Douglas Duncan	2
Research Highlights	3
RAC Member Spotlight James J. Eberhardt, Ph.D.	3
Research Advisory Committee	3
Contact Information	4

Predicting and Preventing Large Truck Crash Involvement

Certain driver risk behaviors have been statistically linked to an increased likelihood in future crash involvement, according to a recently released ATRI study.

Predicting Truck Crash Involvement: Developing a Commercial Driver Behavior-Based Model and Recommended Countermeasures is the first study of its kind to analyze several available sets of driver-specific data and correlate past traffic violations and convictions with their likelihood of being involved in a future crash. These findings will serve as a critical aid for motor carriers and enforcement agencies to target unsafe behaviors, reduce the number of motor vehicle crashes, and improve safety.

ATRI's research analyzed the data of more than 540,000 drivers over a three-year time frame to determine future crash predictability. Driver history data regarding past inspections and crashes were derived from the Motor Carrier Management Information System (MCMIS), and past conviction data were derived from the Commercial Driver License Informa-

tion System (CDLIS).

The resulting model identified over 20 specific violations and convictions that lead to an increased likelihood of being involved in a future crash. Of these violations, the research shows that Reckless Driving and Improper Turn violations are the two violations associated with the highest increase in likelihood of a future crash. According to the report, when a driver is cited for one of these, the driver's likelihood of involvement in a future crash increases by 325 percent and 105 percent, respectively.

The next step, after determining risk behaviors, was to utilize the analysis as a basis for identifying and evaluating strategies to reduce the incidence of driver risk behaviors. With this objective in mind, ATRI and its research partner, the Commercial Motor Vehicle Safety Alliance (CVSA), conducted surveys and interviews with enforcement agencies across the country to identify specific enforcement strategies and best practices.

According to the study, successful

enforcement programs for addressing risk behaviors share several traits, including a focus on aggressive driving apprehension programs and initiatives; targeting both CMV and non-CMV behavior patterns; and utilizing both highly visible and covert enforcement activities.

ATRI's research also identified a number of carrier strategies and approaches for preventing a negative safety incident from occurring, and the reactive measures used in response to problem driver behaviors or events when they do occur.

This study will help guide the industry and enforcement agencies in the development and institutionalization of meaningful safety initiatives, using the risk behaviors identified in this report to help target both driver training and enforcement strategies as crash mitigation tools.

To request a copy of this report and other ATRI studies, please visit: www.atri-online.org.

ATRI Awarded \$500,000 EPA Idling Study Grant

ATRI was recently awarded a \$500,000 grant from the U.S. Environmental Protection Agency (EPA) to study engine idling reduction technologies as part of EPA's effort to help the trucking industry find ways to conserve fuel and reduce emissions.

The grant comes at a critical time for the trucking industry as it stands on the verge of spending a record-breaking

\$87.7 billion on fuel this year, a \$21.8 billion increase over 2004. Approximately 35 billion gallons of diesel fuel are consumed each year by trucks, of which over 2 billion gallons are estimated to be consumed during necessary idling.

ATRI will work with selected motor carriers to demonstrate and evaluate mobile idle reduction technologies installed as part of the truck manufacturing process or before the truck

is placed in service. "Our focus will be on project teams comprised of fleets, OEMs and idle reduction technology vendors," said Mike Tunnell, ATRI's Director of Environmental Research.

ATRI expects to issue a Request for Proposals (RFP) for interested teams in January. To receive a copy of the RFP, send contact information to atri@trucking.org.

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Message from the President

This October brought a change in leadership at the Institute. Jim Staley completed his term as ATRI Chairman and founding Board Member Doug Duncan was appointed to a two-year term as the Institute's new Chairman.

As the Institute's President, it has been my privilege to work with Chairman Staley through two very successful years. Jim's tenure saw the completion of several important research initiatives, most recently our landmark study on predicting truck crash involvement and the just-released *Safety by Design: Optimizing Safety in Highway Work Zones*.

Working as closely as I did with Jim, it's clear to see why he has enjoyed such success throughout his career. His determination, thoughtful deliberation, and business acumen are traits to be admired and emulated.

This next year promises to be a busy one for ATRI. The 2006 Research Agenda recommended by the RAC and recently approved by our Board includes studies on the role of speed in large truck crashes and on developing a sustainable labor pool for the industry. Early in the year we will launch the idle reduction technology demonstration project for the EPA, and we'll continue working with carriers to measure the impacts of the latest HOS rule change.

I look forward to working with our new Chairman and the entire ATRI Board as we continue to develop the research that supports industry and government efforts to maximize freight safety and productivity.

Rebecca M. Brewster
 President and Chief Operating Officer
 American Transportation Research Institute

BOARD MEMBER SPOTLIGHT

Mr. Douglas G. Duncan, President and Chief Executive Officer of FedEx Freight, has been appointed as Chairman of the ATRI Board of Directors, of which he has been a member since its founding in 2001.

A native of Hampton, Va., Doug earned his Bachelor of Science degree from Christopher Newport College in 1972. Upon graduation, he



embarked on a career in the transportation industry that has spanned twenty-five years.

Before joining FedEx Freight, Doug served as president and chief executive officer for Viking Freight.

Doug currently serves on both the Board of Directors and the Executive Committee of the American Trucking Associations. He is also a member of the National Academies Transportation Research Board Executive Committee.

"If you look at ATRI's research, you'll see critical data gathering and analysis on all the headline issues – Hours-of-Service, electronic onboard recorders, highway funding, and the looming capacity crisis. ATRI is a key source for regulators and motor carriers to turn to for credible industry research."

ATRI HOS Data Collection Continues

ATRI recently issued a new call for carrier data in order to assess the safety impacts of the latest Hours-of-Service (HOS) rules change. The Federal Motor Carrier Safety Administration's latest rules change became effective October 1st of this year. The primary change affects a driver's ability to split sleeper berth time.

Under the previous rules, drivers could split the time spent in the sleeper berth into two segments, as long as no segment was less than 2 hours. Drivers must now take one 8-hour consecutive period in the sleeper berth.

In this latest call for data, ATRI is asking carriers to provide historical safety data for solo and team drivers splitting sleeper berth time as previously allowed. Carriers are also being asked to provide information on the productivity impacts of this latest change, including costs associated with training drivers and other personnel on the new rules.

This data collection effort is a follow-on activ-

ity to ATRI's *Safety Impacts of the New Hours-of-Service*, which is scheduled to be published in early 2006. That study analyzed the safety impacts associated with the HOS rule change that went into effect in January 2004. With data on over 100,000 drivers, that study found reductions in collision rates (3.7%), preventable collision rates (4.8%), and driver injury rates (12.6%) from 2003 (under the old HOS rules) to 2004 (under the new HOS).

ATRI is also seeking carriers willing to provide on-going data to track driver safety performance under the new 8-hour sleeper berth requirement. That trend analysis, when compared to the analysis being conducted on the historical safety data, will provide the industry and FMCSA with a better understanding of how the latest rules are impacting safety.

Carriers interested in providing data to ATRI for the sleeper berth analysis are encouraged to contact ATRI's lead investigator, Dr. Virginia Dick at (770) 432-0628 or vdick@trucking.org.

Understanding Work Zone-Related Incidents

Available data on truck-involved work zone accidents indicates that both work zone design standards as well as adherence to the design standards may be two underlying causes of work zone-related truck crashes, according to a new ATRI study released in November. Unfortunately, the study also found that the lack of detailed and standardized work zone accident data makes it challenging to draw clear and technical countermeasures.

The study, *Safety by Design: Optimizing Safety in Highway Work Zones*, analyzed truck-involved work zone crash data to identify and understand contributing factors and appropriate countermeasures.

One of the most significant trends that emerged from the study is the overrepresentation of large trucks in work zone crashes.

Recent data collected by the . . .

(Continued on page 4)

RAC Member James J. Eberhardt, Ph.D.



Dr. James Eberhardt has been a member of the ATRI RAC since 2002. He currently serves as the Chief Scientist for the Office of "FreedomCAR" and Vehicle Technologies of the United States Department of Energy. In addition to his service on the RAC, Dr. Eberhardt is a 30-year member of the American Chemical Society. He is also a member of the Society of Automotive

Engineers, serves on three scientific advisory committees, and has been elected to serve on the Federal Affairs Committee of the American Society for Materials International.

Dr. Eberhardt earned his B.S. degree in Chemistry and Mathematics from Seton Hall University and his Ph.D. degree in Chemical Physics from the University of New Hampshire. After completing his studies, he took his academic pursuits abroad, spending two years at the University of Pisa in Italy as a National Research Council Postdoctoral Fellow.

Dr. Eberhardt first served as a systems analyst with the Energy Research and Development Administration (the Department of Energy's predecessor). Since 1997, Dr. Eberhardt has been known for his advocacy and research programs to develop technologies for "cleaning up the diesel engine." He has provided leadership for several multi-million dollar research and development programs of national significance, including his previous position as director of the Office of Heavy Vehicle Technologies.

2005-2006 Research Advisory Committee

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(Continued from Page 3)

... Federal Motor Carrier Safety Administration (FMCSA) indicates that nearly one-fourth of fatal crashes that occur in work zones involve large trucks, despite trucks accounting for only 16% of all vehicle miles traveled. Work zone crashes involving large trucks are often more serious and more likely to result in fatalities.

Another trend identified is that truck-involved fatal work zone accidents are more likely to occur on a weekday than those of the overall vehicle population.

The study documents that many work zones exist for only a few hours each day and night in order to avoid peak travel periods, and recommends further investigation into the relationship between truck travel and work zone activity.

While many of AASHTO Green Book guidelines for work zone designs such as lane width and pavement widening on horizontal curves appear to be adequate for truck geometrics, it is not known how closely real-world work zones adhere to the voluntary Green Book standards. There are other instances, such as lane taper lengths, where changing design and signage standards may ostensibly improve vehicle capacity but exacerbate safety problems.

The report identifies areas for additional investigation, including analyses of truck exposure as a factor, car and truck driver behaviors and contributing factors, and truck-based field testing of work design specifications. Lastly, the lack of uniform and detailed crash data collection protocols and tools makes it difficult for researchers to provide a thorough analysis. For instance, in a number of the states where "rear-end" crash data was available, states were unable to document whether the truck or car was rear-ended. Addressing these issues is crucial to further research in this area so that effective countermeasures can be more fully explored.

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