

Research Division
Significant Activities Report - 12 months, FY '10

Produce Safer Drivers

- Completed **Crash Analysis using Naturalistic Driving Data and Large Truck Crash Causation (LTCCS) data.** This study compared the Large Truck Crash Causation Study (LTCCS) and naturalistic driving (ND) data sets to identify discrepancies and determine the source(s) of these discrepancies. The project included a generalized comparative analysis of the LTCCS, General Estimates System, and ND data sets and then focused on five specific analyses using only two data sets (LTCCS and ND).
 - Completed a **Pilot Test of Low Cost Onboard Monitoring System (DriveCam) to Improve Driver Performance.** This pilot test was conducted with two motor carriers and 100 outfitted trucks. Results indicated that feedback provided by the DriveCam system and coaching drivers can reduce driver errors by nearly 50 percent. FMCSA developed and launched a web-based.
 - Completed the **Commercial Motor Vehicle (CMV) Driving Simulator Validation Study (Phase II).** This study examined the effectiveness of a driving simulator for entry-level Commercial Motor Vehicle (CMV) driver training and testing. The study's findings support the use of simulators in CMV entry-level driver training, but did not support simulator-based testing for CMV drivers. The study also examined the advanced capabilities of a simulator and provided a case study of existing implementations of CMV simulator training, indicating benefits and drawbacks, as well as drivers' overall opinions.
 - Managed the **Onboard Monitoring System (OBMS) Field Operational Test (FOT).** The OBMS FOT will include a minimum of three carriers and 270 trucks to evaluate the importance of feedback on changing driver performance; we completed a review of the experimental and analysis plan and provided comments and feedback to the University of Washington. We completed a peer-review of the study methodology. The peer-review panel provided many useful comments and input to the data collection and analysis plans.
- ***HOS Rulemaking***
- Completed **Investigation into Motor Carrier Practices to Achieve Optimal CMV Driver Performance** study. This study investigated the effectiveness of the current 34-hour restart provision in restoring driver performance. Findings: The 34-hour restart was effective at mitigating sleep loss and consequent performance impairment for day-time drivers, but not effective for night-time drivers. We hosted the final briefing on the project and the report is currently in the publication process. Initiated the second phase of this study which will examine a restart provision for night-time drivers of two nocturnal sleep periods. This study began in Feb 2010 and will be completed Oct 2010.
 - Completed **Heavy Truck Ergonomics to Reduce Fatigue and Improve Driver Health and Performance** study. This study simultaneously measured air pollutioconcentrations, noise, and vibration inside truck cabs and sleeping berths while driving at different speeds and idling at a truck stop. The study found that noise levels were well below the OSHA standards; whole-body vibration levels were below the EU standards; and in some instances air quality particularly PM 2.5 exceeded EPA standards. We hosted the final briefing on the project and the report is currently in the publication process.

- ***Driver Distraction Rulemaking***

- Completed **Synthesis of Literature & Operating Safety Practices Relating to Cell Phone/PDAs Use in Commercial Truck and Bus Operations** study. This project will synthesize research findings relating to cell phone use in commercial vehicle operations. Second, this project will identify current cell phone practices (including limitations on the use of PDAs) of motor carrier operations to identify the magnitude of the use in the industry. We hosted the final briefing on the project and the report is currently in the publication process.
- Completed the **Driver Distraction Study in Commercial Vehicle Operations**. This study evaluated 20,000 crashes, near-crashes, crash relevant conflicts (i.e., safety-critical event) and baseline events recorded in naturalistic driving data. The data include 203 CMV drivers and about 3 million miles of continuously collected kinematic and video data. CMV drivers who were using their cell phones to send and receive text messages were 23.2 times more likely to be involved in a safety-critical event while texting than when not texting. During 6-second intervals, texting drivers took their eyes off the forward roadway for 4.6 seconds. This equates to a driver traveling the length of a football field at 55 mph without looking at the roadway.
- Initiated and completed a new driver distraction study entitled, **Driver Distraction in Commercial Trucks and Buses: Assessing Prevalence in Conjunction with Crashes and Near-crashes**. This study will investigate driver distraction in commercial trucks and motor coaches using DriveCam's database of nearly 14 million driving events (crashes and near-crashes). The kickoff meeting was held. The draft final briefing is scheduled for April 7, 2010, which is ahead of schedule.

Produce Safer Vehicles

- Completed a study to **Identify Factors That Affect the Service Life of Cargo Tanks**, which provided guidelines for testing, inspection, assembly, and repairing cargo tanks, as well as information needed to update the FMCSRs regarding cargo tanks.

Produce Safer Carriers

- Completed **Efficacy of Web-Based Instruction for Training CMV Regulations and Best Practices study**. Because of resource constraints and the sheer number of motor carriers, the FMCSA must employ state-of-the-art training methods to reach the Nation's 700,000 motor carriers. This study examined the efficacy of using WBI to disseminate information and train personnel within the motor carrier industry regarding FMCSRs.
- Initiated and awarded a new driver risk study entitled **Case-Control Commercial Driver Individual Differences Study (CDIDS)**. Revised the task order and issued a PR for \$3,000,000. This study will identify and prioritize commercial driver individual differences with respect to risk factors such as demographic characteristics, medical conditions, personality traits, personal attitudes, and behavioral history.
- Managed the **Effectiveness of Fostering Safety Culture in Motor Carriers study**. Developed the work plan and coordinate resource assignment of new entrants to SAGE for training and then to Montana Dept. of Trans for scheduling SA. We held the first peer review committee meeting in Billings, Montana. We jointly developed and presented a paper at TRB that evaluated the analysis of training effectiveness from 2005-6 effort with new entrants in Montana.

- Managed the **Cost Effectiveness of FMCSA Providing CDL, Carrier Licensing and Insurance, Other Public Safety and Credentialing Data to the Nlets Community study**. We facilitated the development of Nlets message design and conduct kick-off meeting with Kentucky. We held a follow up meeting with Oregon discussing revision of screening procedures using FMCSA data.
- **Rulemaking Support:**
 - The Research and Analysis Divisions worked together with the FMCSA Policy Office as part of a rulemaking team to investigate ways to reduce CMV driver distraction. The team wrote the Notice of Proposed Rulemaking for prohibiting texting while driving a commercial motor vehicle. The proposed rule will impose sanctions, including civil penalties and disqualification, on such drivers who do not comply with this rule. Recent studies, including one commissioned by FMCSA, show that text messaging is among the riskiest behaviors of all the distracting activities performed by CMV drivers. The rulemaking team is currently working on Phase II, a proposed rule to ban cell phone use for motorcoach drivers.
 - The Research and Analysis Divisions worked together with the FMCSA Policy Office as part of a rulemaking team to reevaluate FMCSA's Hours of Service Rule, the goal of which is to reduce CMV driver fatigue. The team reviewed the research published since the last rule and ongoing research being conducted for FMCSA. The team identified alternatives and developed a methodology for costing issues related to the impact of long working hours on driver health.
 - The ART Office hosted the annual ART Forum during the Transportation Research Board's 89th annual meeting in Washington, DC. The Forum's keynote speaker, FMCSA Administrator Anne Ferro, kicked off the event by sharing her strategy for achieving the Agency's safety priorities. More than 200 people attended the forum, six FMCSA project leads made presentations on a diverse slate of topics and took questions from the audience.