



FMCSA Safety and Security Accomplishments



Office of Research and Analysis

Washington, DC

January 22, 2006



U.S. Department of Transportation

Federal Motor Carrier Safety Administration



Research Division Highlights

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Federal Motor Carrier Safety Administration



Agenda

- ◆ Study Completions
- ◆ Completed TRB Synthesis Reports
- ◆ Sponsored Research Conferences
- ◆ Status of "Major" Ongoing Studies
- ◆ Future Research



Truck Driver Fatigue Management Survey

- ◆ Identify through experience of “million-milers” best practices for managing fatigue
- ◆ Recommendations for best practices:
 - Maintain more predictable and regular work schedules
 - Obtain adequate sleep before driving
 - Take rest breaks and naps to help manage fatigue
 - Recognize the warning signs and risks of drowsy driving
 - Optimize the sleeping environment



Assessment of Revised HOS Rules

- ◆ Comparison of the 10- and 11-hours of driving and sleep quantity
 - Assessment of critical incidents (CI) using naturalistic on road data – dataset included 1.69 million miles of driving data
 - Conclusions:
 - Drivers are getting more sleep under the revised HOS regulations (6.14 versus 5.5 hours)
 - There was no significant difference in CI in the 10th versus the 11th hour of driving
 - Drivers who received less sleep, than their average, were more likely to be involved in an at-fault CI



The 100-Car Naturalistic Driving Study

- ◆ **Goal:** An Analysis of Car-Truck Interactions from the Car Driver's Perspective
 - 100 cars, instrumented with 5 video views captured 9,125 CI
 - Few Car-Truck interactions (2.7%)
 - Most CI caused by car driver (64%)

Most frequent CI – Truck Drivers	Most frequent CI – Car Drivers
Lane change with insufficient gap	Late braking for stopped traffic
Lane encroachments	Lane change with insufficient gap
Left turn without clearance	Aborted lane change

Sleep Apnea Crash Risk Study



- ◆ **Goal:** Analyze crash risk due to sleep apnea
- ◆ UPenn sleep apnea database (406 drivers) was linked to Motor Carrier Management Information System (MCMIS)
- ◆ Significant positive relationship between severe sleep apnea and severe crashes
- ◆ Overall, sleep apnea in CMV drivers is not a good predictor of crash involvement



Test Dummies' Response in Tractor-Trailer Rollover Crash



- ◆ **Goal:** Collect video and data on test dummies to assess the impact during rollover crash
- ◆ Data used to validate NHTSA's crash and injury models





TRB Synthesis Reports

<http://www4.trb.org/trb/onlinepubs.nsf>

- ◆ CMV Driver Fatigue & Driver Health: Research to Support Hours of Service
- ◆ CMV Driver Safety Belt Usage
- ◆ Motorcoach Industry Hours of Service & Fatigue Management Techniques
- ◆ Operational Differences and Similarities Among the Motorcoach, School Bus, and Trucking Industries
- ◆ Training of CMV Drivers



Sponsored Research Conferences

- ◆ Future Truck and Bus Safety Research
- ◆ International Conference on Fatigue Management in Transportation Operations
- ◆ 2005 International Truck & Bus Safety and Security Symposium
- ◆ Driver Assessment Conference



"Major" Ongoing Studies

◆ North American Fatigue Management Program

- **Goal:** Provide effective driver- and carrier-based measures to enhance highway safety by reducing fatigued driving
- Implemented within the HOS rules
- **Status:** Phase III (FMP Evaluation) contract awarded in September 2005



"Major" Ongoing Studies

◆ Simulator Training and Validation

- **Goal:** Compare simulator technology with conventional training to see if it facilitates and enhances entry-level training and safety
- Completed Phase 1, a pilot test which developed and tested principal processes, procedures, and driving scenarios for conducting this study
- **Status:** Phase 2, the empirical study, will begin in 2006



"Major" Ongoing Studies

◆ On-Board Monitoring to Improve CMV Safety

- **Goal:** Identify driving metrics where drivers need feedback
- Result will be the design and development of the monitoring suite, development of a feedback program, and field operational test (FOT)
- **Status:** 1st phase to be completed in September 2006; transition to FOT



"Major" Ongoing Studies

◆ Safety Data Feasibility Study

- **Goal:** Identify the relative crash risks associated with driver characteristics, including personal data and traits, health, and medical issues, driving performance and experience, and impacts of the work environment
- **Status:** FMCSA is currently receiving proposals for this pilot test



Future Projects

- ◆ Assessment of Integrated In-Vehicle Drowsy Driver Measures and Devices
- ◆ Driver Fatigue/Distraction Monitoring and Alerting Technology (SBIR project)
- ◆ Driver Fatigue Recovery
- ◆ Evaluating the Safety Benefits of a Low Cost Driving Behavior Management System
- ◆ Improving Heavy Truck Ergonomics to Reduce Fatigue and Improve Driver Health and Performance