

FMCSA Research and Technology Program Update

Presentation to the Motor Carrier Safety Advisory Committee

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FMCSA Research & Technology Program

FMCSA carries out a multiyear Motor Carrier Research and Technology (R&T) Program under the authority of 49 USC 31108. R&T activities focus on:

- Reducing crashes, injuries, and fatalities involving CMVs.
- Improving the safety and efficiency of CMVs through technological innovation, including automated vehicles.
- Improving technology used by enforcement officers when conducting roadside inspections and investigations to increase efficiency and information transfers.

Key Research Activities

- Pilot Program to Allow 18- to 21-Year-Old Persons with Military Driving Experience to Operate CMVs in Interstate Commerce ("Military Under-21 CMV Driver Pilot Program").
- Assessment of Commercial Driver's License (CDL) Holders' Traffic Violations, Convictions, and Suspensions.
- Small Business Innovation Research (SBIR) projects.
- Evaluating the Effectiveness of the North American Fatigue Management Program (NAFMP).

Military Under-21 CMV Driver Pilot Program

- Required by the Fixing America's Surface Transportation Act, 2015 (FAST Act), Section 5404.
- Pilot program of up to three years to study the safety outcomes and comparison of:
 - Covered drivers (certain military training & experience, aged 18, 19, or 20)
 - Current 21-24 year-old interstate drivers
 - Current 18, 19, and 20 year old <u>intrastate</u> drivers.
- The study has begun accepting carriers and will begin accepting drivers by mid-October.
- Sample size goals are for 200 drivers per group and study will run up to three years.
- Initial findings anticipated by May 2021.

Assessment of CDL Holders' Traffic Violations, Convictions, and Suspensions

- Collecting data from up to nine States to include court and motor vehicle data.
- Looking at the lifecycle of a disqualifying traffic violation, the court proceeding and conviction, and the ensuing disqualification at the driver's licensing agency to determine where potential weaknesses are and whether FMCSA can assist in improving the process.
- Additionally looking at whether disqualified drivers are being properly identified at roadside inspections to determine if FMCSA is properly enforcing safety disqualifications at roadside.
- Study will conclude in September of 2020.

SBIR Project: Trucking Fatigue Meter

- Phase III Small Business Innovation Research (SBIR) project.
- Delivering an individualized Fatigue Management Program technology that incorporates information about sleep/wake history, driver alertness, and vehicle performance to produce individualized predictions of future performance capability.
- At one carrier, about 300 drivers were monitored each month. Over the course of a year, the Trucking Fatigue Meter helped this fleet reduce the number of safety critical events per week by 60%.
- Project is ongoing; expected completion March 2020.

SBIR Project: Secure Motor Carrier Safety Data Information Exchange Using Blockchain

- Phase I Small Business Innovation Research (SBIR) project
- Determining the feasibility of a system that uses Blockchain technology to create a secure transaction platform with a distributed ledger. The system will track records of all the actions and transactions that a motor carrier has with FMCSA and States to maintain an active USDOT# status.
- Phase I will include a feasibility study for the successful implementation of Blockchain technology in an operational environment.
- The contract will be awarded October 2019.

Evaluating the Effectiveness of the NAFMP

- The North American Fatigue Mgmt Program (NAFMP) is designed to reduce driver fatigue through a fully interactive web-based educational and training program.
- Working together with the National Institute for Occupational Safety and Health, this study will evaluate the effectiveness of the NAFMP with respect to safety, driver health, well-being, and cost.
- Working on the Information Collection Request that has to be approved by the Office of Management and Budget (OMB). The project is expected to be completed in 2022.

Primary Automated Vehicle Research Areas











Provide Voluntary Best Practices to States and Industry Automated Vehicle (AV) Implementers Research CMV Driver Factors and Vehicle Safety Components Develop Cybersecurity Guidance for CMVs Establish Data Elements and Data Sharing Guidance to Support Testing Engage and Communicate with State and Industry Stakeholders

Automated CMV Evaluation Program Focus

- Roadside Inspections of Automated Driving System (ADS)equipped CMVs
- Automated CMV Technologies and Capabilities (e.g., Platooning, Advanced Driver Assistance)
- In-service training with FMCSA field staff
- CMV Driver Readiness for Advanced Technologies
- CMV Cybersecurity





Five-Year Research, Testing, and Evaluation Timeline



FY19 R&T Accomplishments

- Initiated Military Under 21 Pilot Program.
- Reviewed preliminary findings from automated vehicle (AV) baseline safety performance measures.
- Developed AV inspection framework with the Commercial Vehicle Safety Alliance (CVSA).
- Selected Small Business Innovation Research (SBIR) contractor for "Secure Motor Carrier Safety Data Information Exchange Using Blockchain" SBIR project.



R&T Reports Published Since March 2018

Research

 <u>Testing and Recommended Practices to Improve Nurse Tank Safety:</u> <u>Phase III</u>

Technology

- Accelerating SmartPark Deployment Strategic Plan
- SmartPark Technology Demonstration Project Phase II Final Report
- <u>The Innovative Technology Deployment (ITD) Grant Program, 2017</u> <u>Annual Report</u>
- <u>Review of the Federal Motor Carrier Safety Regulations for Automated</u> <u>Commercial Vehicles: Preliminary Assessment of Interpretation and</u> <u>Enforcement Challenges, Questions, and Gaps</u>

Approximately 20 reports completed in 2018/2019 currently in Agency review/pending publication.