TechBrief

OFFICE OF MOTOR CARRIER SAFETY

Contact: Mary Pat Woodman, HMCS-20, (202) 366-6333.

The Performance and Registration Information Systems Management (PRISM) Pilot Demonstration Project

The mission of the Office of Motor Carrier Safety is to develop and promote, in coordination with other Departmental modes, data-driven, analysis-based, and innovative programs to achieve continuous safety improvements in the Nation's highway system, intermodal connections, and motor carrier operations. The Office of Motor Carrier Research and Standards manages the safety regulatory program and the central research management function for Motor Carrier Safety.

There are eight major research and technology focus areas: regulatory evaluation and reform; compliance and enforcement; driver training and performance management; driver alertness and fatigue; driver physical qualifications; car-truck proximity; HAZMAT safety and cargo tank integrity; and crash causation and profiling.

***Compliance and enforcement* concentrates on studies directed toward improving carrier compliance with, and/or enforcement of, existing Federal Motor Carrier Safety Regulations.**

Office of Motor Carrier Research and Standards
400 Seventh Street, SW
HMCS-30; Room 3107
Washington, DC 20590

Introduction

The Intermodal Surface Transportation Efficiency Act of 1991 mandated a study to explore the potential of the commercial motor vehicle (CMV) registration process as a safety enforcement tool for reducing CMV accidents. The project sought to establish a link between the motor carrier safety information network systems of the U.S. Department of Transportation (USDOT) and similar CMV registration and licensing systems used by States. It had two goals:

- to determine the safety fitness of motor carriers prior to issuing license plates; and
- to cause unsafe motor carriers to enhance performance through a performance-based improvement process, and, when necessary, apply sanctions.

A study design for The Performance and Registration Information Systems Management (PRISM) program was developed and piloted in five States over a period of 4 years, ending in 1997. The results of the PRISM study proved conclusively that a link could be established between Federal and State information systems, and that the CMV registration process could serve as a powerful enforcement tool in both Federal and State motor carrier safety programs.

In 1998, Congress authorized additional funding for 6 years through the Transportation Equity Act for the 21st Century and directed the Federal Highway Administration to implement the PRISM program nationwide. PRISM is an Office of Motor Carrier Safety (OMCS) priority program. Currently, there are 12 States participating in the PRISM program; OMCS expects 4 to 5 States to join the PRISM program per year.

Purpose

A Steering Committee comprising Federal, State, and industry representatives was established to oversee the development and testing of the PRISM program. The committee sought to "create a federal/state/private partnership to improve the safety of commercial vehicle operations nationwide and cross border by denying registration to unsafe motor carriers."

Main Processes

The PRISM program includes two major processes - the Commercial Vehicle Registration Process and the Motor Carrier Safety Improvement Process (MCSIP). These processes work to identify motor carriers and hold them responsible for the safe operation of their vehicles and to improve the performance of unsafe carriers through a comprehensive system of identification, education, awareness, safety monitoring, and enforcement.

The Commercial Vehicle Registration Process

The International Registration Plan (IRP) provides the framework within which the PRISM demonstration project operated. The IRP is a reciprocal agreement among the States and Canadian Provinces for uniformly registering CMVs engaged in interstate commerce. Vehicles registered under the IRP receive a license plate issued by the home State bearing the word "apportioned" and a registration card listing the jurisdictions in which the vehicle is registered to operate. Carrier safety is a prerequisite for obtaining (and keeping) an IRP license plate.

Key innovations of PRISM ensure that all carriers engaged in interstate commerce are uniquely identified by a USDOT number when they register their vehicles, and that the safety fitness of each carrier is checked prior to issuing vehicle registrations. Thus, State registration agencies may deny an unfit carrier the ability to register vehicles, or have existing State vehicle registrations suspended or revoked.

Motor Carrier Safety Improvement Process (MCSIP)

MCSIP is the means by which the performance of potentially unsafe carriers is monitored and improved. The MCSIP was designed to improve the safety performance of high risk carriers with demonstrated poor safety performance through more accurate identification, performance monitoring, and treatment. Unsafe carriers are given many opportunities to improve their performance; if performance does not improve, carriers face progressively more stringent treatment, culminating in a possible Federal Operations Out-of-Service Order.

For carriers within the MCSIP, performance is monitored more frequently and the resulting safety data (e.g., crashes, violations, inspections, and results of compliance reviews) are uploaded to a national motor carrier safety database called the Motor Carrier Management Information System (MCMIS). Carriers are assigned a preliminary safety indicator using the Motor Carrier Safety Status (SafeStat) prioritization algorithm. Developed specifically for the PRISM program, SafeStat uses highway safety and compliance data from MCMIS to calculate values in four broad Safety Evaluation Areas: Accident, Driver, Vehicle, and Safety Management.

Depending on their SafeStat value, unsafe carriers are given either a Warning Letter, or are subjected to a compliance review. Carriers that improve their safety performance after a 6-month monitoring period may exit the MCSIP process. Carriers that fail to improve proceed to a more stringent step in the improvement process. Sanctions are invoked to improve performance only as a last resort, to remove an unsafe carrier's vehicles from the roadway if, despite all efforts, the carrier continues to pose an extreme safety risk to the public.

PRISM Program Support Systems

In addition to the Commercial Vehicle Registration Process and MCSIP, two support systems were developed to ensure the operational effectiveness of the PRISM program.

PRISM Data Improvement System

PRISM is a performance-oriented, data-driven program, and the accuracy with which SafeStat is able to identify poorly performing carriers is dependent on the quality of the data. The PRISM data improvement system is a collection of data quality initiatives at both Federal and State levels to improve the overall timeliness, accuracy, and reliability of carrier safety data originating from several major sources — the OMCS census, roadside inspections, National Governors' Association crash reports, and on-site reviews.

Several data needs and improvement strategies were identified and incorporated into the design of the PRISM program, including: uniquely identifying all carriers by their USDOT number, obtaining current and accurate carrier census information, identifying all interstate carriers, ensuring the integrity of the USDOT number and safety data, and reducing the number of unassignable safety records.

PRISM Roadside Monitoring System

One key to a performance-based approach to safety is the ability to monitor and evaluate safety improvement based on actual highway performance and on-site reviews. To do so, PRISM States needed a means of identifying vehicles belonging to MCSIP carriers at the roadside, so that those vehicles and drivers could be inspected more often. The problem of how to identify vehicles and drivers assigned to MCSIP carriers was solved by the development of the PRISM target file.

The PRISM target file is a compilation of a carrier's USDOT number and all vehicles assigned to that carrier; it is available to all PRISM States and is updated nightly to reflect any changes in the carrier's fleet of vehicles. A variety of methods and technologies may be used to enable roadside officers to access the information, including: an "electronic bridge" between the PRISM target file and the National Law Enforcement Telecommunications System; license plate readers in PRISM States; OMCS's Inspection Selection System; and transponder and roadside reader systems.

Photo courtesy of Turner-Fairbank Highway Research Center

Under PRISM, a carrier's safety performance is assessed based on all available information, including roadside inspection data.

Benefits of the PRISM Program

The PRISM pilot project produced major safety, economic, and productivity benefits grouped in five categories: accountability for safety; performance-based approach to safety management; improved productivity; improved data quality; and improved safety performance.

Accountability for Safety

The PRISM program requires all carriers to obtain a USDOT number as a condition of registration, and includes the carrier's USDOT number on the vehicle registration record, making it possible to identify the carrier responsible for the safe operation of a specific registered vehicle. Motor carriers are held accountable for any safety event (e.g., inspections, crashes, driver moving violations) that affect a PRISM registered vehicle. In addition to the motor carrier, PRISM also involves the registrants and owner as participants in the safety process by notifying them of a carrier's safety status within MCSIP.

Performance-Based Approach to Safety Management

Under the PRISM program, the primary means for determining which carriers should receive a compliance review is through an accumulation of safety event data that are tied back to the carrier through its USDOT number. One important safety benefit resulting from the PRISM program was the development of SafeStat, a data-driven, performance-based safety identification and evaluation methodology. The true benefit of this performance-based safety program is that carriers are identified, treated, and released from a safety improvement program based upon demonstrated highway safety performance and the results of current on-site reviews.

Improved Productivity

PRISM allows OMCS and the States to target resources on high risk carriers, both for compliance reviews and at the roadside. SafeStat has proven to be an accurate means of targeting high-risk carriers and has resulted in a far more efficient targeting of limited staff

Researcher
This study was performed by Cambridge Systematics, Inc., Cambridge, Massachusetts, in collaboration with Battelle Memorial Institute, Columbus, Ohio.

Distribution
This Tech Brief is being distributed according to a standard distribution. Direct distribution is being made to the Resource Centers and Divisions.

Availability
The study final report will be available from the National Technical Information Service, Telephone: (703) 605-6000.

Key Words
commercial motor vehicle registration, Performance and Registration Information Systems Management (PRISM), enforcement tool, Motor Carrier Safety Improvement Process (MCSIP), USDOT number, safety performance of high risk carriers, SafeStat, sanctions, roadside monitoring, target file.

U.S. Department of Transportation

December 1999
Publication No. MCRT-00-005

resources. Also, through the use of the PRISM Warning Letter process, the PRISM project improved the effectiveness of existing OMCS enforcement programs. Analysis of SafeStat data over an 18-month period found that safety performance improvement of carriers that received warning letters was equal to or slightly higher than that of the carriers who received compliance reviews.

Improved Data Quality

The development of procedures for increasing the amount of safety data and obtaining more accurate data has clearly been a major benefit of the PRISM program. For example, registration personnel in PRISM States can identify carriers that register as intrastate carriers, but are actually operating across State lines. During the course of the PRISM pilot study, five pilot States identified an additional 2,843 interstate motor carriers that were previously designated as intrastate.

Improved Safety Performance

The primary measurement of motor carrier safety performance is a carrier's crash rate. Reducing the crash rate is the ultimate purpose of government safety programs. Even though the PRISM project covered too short a period of time to reliably document changes in crash rates, carriers participating in the project demonstrated quantitative and qualitative improvement in overall safety performance. Of the 695 carriers that received warning letters over an 18-month period, 225 (31 percent) improved their performance sufficiently to be released from MCSIP

Conclusion

The PRISM study has proven that it is feasible to link safety performance to vehicle registration and the implementation of PRISM resulted in an improved targeting of unsafe carriers and the removal of unsafe carriers from the road by:

- Establishing a link between motor carrier registration and safety fitness;
- Checking the safety fitness of motor carriers prior to registration;
- Identifying high-risk carriers;
- Developing a performance-based improvement process for high-risk carriers; and
- Applying registration sanctions to unsafe carriers that did not improve.

Costs associated with the PRISM program are due to computer-related improvements needed to support the intensive data collection and analysis of the program. PRISM has very low, long-term operational costs, which declined during the course of the pilot project as States and carriers gained experience with the program. The program has also resulted in significant gains in the efficiency of existing regulatory and enforcement projects, showing that the PRISM program may significantly improve motor carrier safety performance at a very modest cost.