

## WHAT A DIFFERENCE A QUARTER-CENTURY MAKES: COMMERCIAL MOTOR VEHICLE AND DRIVER SAFETY IN THE UNITED STATES, 1984 – 2009



Senior Transportation Specialist and National Technical Expert for Vehicle Research with the Federal Motor Carrier Safety Administration. More than 25 years of experience in highway infrastructure and commercial motor vehicle safety research and operations. Led the technical development of more than 30 regulatory actions on commercial vehicle safety, driver hours-of-service, motor carrier operations, and compliance assurance. Fellow of the Institute of Transportation Engineers and a member of SAE International, the American Society of Civil Engineers and three Transportation Research Board Committees. Obtained B.S. in Civil Engineering and M.Sc. in Transportation and Urban Systems from Washington University, St. Louis, Missouri. Registered Professional Engineer in the State of Texas.

D.M. FREUND

Federal Motor Carrier Safety Administration  
United States of America

### Abstract

In the past 25 years, the highway freight and passenger industries in the United States have experienced considerable structural changes. The removal of economic barriers to market entry and an increased demand for high-reliability and point-to-point delivery of freight and passengers has led to an explosion in the number of motor carriers to provide these services. During the same period, the legal and regulatory atmosphere has also evolved. Although the foundations for motor carrier safety regulations were established in 1935 legislation, the Motor Carrier Act of 1984 defined a “commercial motor vehicle” (CMV) and on the Act’s 25<sup>th</sup> anniversary, it is appropriate to review some of the safety outcomes that it helped to set in motion. This paper begins with a summary of key laws and regulations concerning vehicle, driver, and motor carrier operational matters. Next, it illustrates a variety of long-term trends in operational inputs and safety outcomes. Finally, it offers a view toward the next evolutionary stages in commercial vehicle safety technologies and safety regulation.

**Keywords:** Commercial Motor Vehicle, Trends, Laws, Regulations, Safety

### Abstrait

En 25 dernières années, les industries de fret de route et de passager aux Etats-Unis ont éprouvé les changements structurels considérables. Le déplacement des barrières économiques à l'entrée du marché et à une demande accrue de haut-fiabilité et de la livraison point par point du fret et des passagers a mené à une explosion dans le nombre de porteurs de moteur pour fournir ces services. Au cours de la même période, l'atmosphère légale et de normalisation a également évolué. Bien que les bases pour des règles de sécurité de porteur de moteur aient été établies en la législation 1935, la Loi de porteur de moteur de 1984 a défini « un véhicule à moteur utilitaire » (CMV) et sur le 25ème anniversaire de la Loi, il est approprié de passer en revue certains des résultats de sûreté qu'il a aidé à mettre en marche. Ce

document commence par un résumé des lois et des règlements principaux au sujet du véhicule, du conducteur, et des sujets opérationnels de porteur de moteur. Après, il illustre une série de tendances à long terme dans les entrées et les résultats opérationnels de sûreté. En conclusion, il offre une vue vers les prochaines étapes évolutionnaires en technologies de sûreté de véhicules utilitaires et règle de sécurité.

## **1. Laws: The Foundations**

Motor carrier safety oversight at the National level in the United States (U.S.) began with the Motor Carrier Act of 1935 (MCA). The MCA gave the Interstate Commerce Commission (ICC) the authority to regulate safety and business practices of for-hire motor carriers of passengers and of freight. The Department of Transportation Act of 1966 consolidated safety oversight of vehicles and motor carriers. In the 1980s, a series of laws lowered barriers to entry for new motor carriers, set minimum insurance levels for passenger motor carriers, and authorized grants for States (the Motor Carrier Safety Assistance Program (MCSAP)) to enable them to develop programs to enforce Federal and compatible State CMV safety rules.

The 1982 Surface Transportation Assistance Act formed the basis for Federal regulation of CMV dimensions. Among other things, this Act changed the law from regulating maximum vehicle length to regulating the length of trailers. Because it was no longer necessary to limit the length of truck-tractors, the predominant tractor configuration shifted from the short-wheelbase cab-over-engine type to the conventional engine ahead of the cab type.

The Motor Carrier Safety Act of 1984 (MCSA) was the first fundamental revision of the motor carrier safety statutes. Among other things, it directed the U.S. Department of Transportation (USDOT) to establish minimum vehicle and operational standards, increase fines, and strengthen administrative enforcement processes. It also required States to implement compatible safety regulations, including requiring annual inspections of CMVs.

Several other laws enacted in the 1990s and 2000s had profound influences on both the structure and content of motor carrier safety regulations. Foremost among these was the Commercial Motor Vehicle Safety Act of 1986, establishing the Commercial Driver's License (CDL) Program. A provision of the 1990 Sanitary Food Transportation Act prohibited motor carriers of passengers and hazardous materials from operating if their compliance reviews resulted in unsatisfactory safety ratings. The 1995 ICC Termination Act abolished the ICC and most of the commercial regulations that were still in place at that time. The 1998 Transportation Equity Act for the 21st Century (TEA-21) bolstered motor carrier safety enforcement authority, promoted performance-based activities and flexibility for safety grants to States, and funded improvements to information systems supporting national safety activities. The Motor Carrier Safety Improvement Act of 1999 (MCSIA) delegated responsibility for motor carrier safety to a new USDOT agency, the Federal Motor Carrier Safety Administration (FMCSA). FMCSA began operations on January 1, 2000.

The 2005 Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU) is the most recent multi-year legislation. Although it focuses primarily on driver safety matters (such as improved oversight of driver physical (medical) qualifications, modernization of CDL information systems, and allowing access to parts of the FMCSA databases to private-sector driver screening services), it also addresses private-carrier insurance and the safety of intermodal container chassis vehicles.

## **2. Driver Regulations**

### **2.1 Defining Commercial Motor Vehicles**

The MCA broadly defined “motor vehicle” to include any self-powered or towed vehicle used on highways, except those operating on rails. In 1975, vehicles with a gross vehicle weight rating (GVWR) or gross weight of 10,000 pounds or less were defined as “lightweight vehicles” and were largely exempted from the regulations. In 1984, the MCSA defined

“commercial motor vehicle” as “any self-propelled or towed vehicle used on highways in interstate commerce to transport passengers or property if such vehicle has a gross vehicle weight rating of 10,001 or more pounds.” TEA-21 redefined “CMV” to use the gross vehicle weight rather than the rating.

## **2.2 Identifying Motor Carriers**

Knowledge of the characteristics of the individual motor carriers that comprise it, including the types of cargo transported, numbers and types of CMVs (trucks, tractors, trailers, passenger vehicles) used, number of drivers, and types of operations, is necessary for an oversight agency to manage its resources. Although carriers’ operations may change substantially over time, updates were only required to be reported fairly recently. A 1988 rule required carriers to file a Motor Carrier Identification Report, Form MCS-150, within 90 days of starting operations. A 1998 regulation changed the timing of filing the Form MCS-150. Carriers now had to file it before commencing operations. MCSIA, however, called for a biennial update, and the Agency implemented this provision in March 2001.

## **2.3 Driver Licensing: CDL and Companion Regulations**

As late as the 1980s, some States allowed any person licensed to drive an automobile to legally drive a tractor-trailer or a bus without having their driving skills tested in a representative vehicle. Additionally, many drivers obtained licenses from multiple States, allowing them to hide or spread out their driving convictions and continue to drive. The CMV Safety Act of 1986 established minimum national standards for States to use to license CMV drivers. FMCSA (then called the Federal Highway Administration (FHWA) Office of Motor Carrier Safety) was given the responsibility to develop, monitor, and ensure compliance with the CDL standards and for the Commercial Driver’s License Information System (CDLIS).

A series of final rules issued from 1987 through 1989 implemented the CDL program. Since April 1, 1992, drivers have been required to hold a valid CDL if they operate in interstate, intrastate, or foreign commerce and drive one of the following types of CMVs:

Class A: Any combination of vehicles with a GVWR of 26,001 or more pounds (11,819 kilograms) provided the GVWR of the vehicle(s) being towed is in excess of 10,000 pounds (4,545 kilograms).

Class B: Any single vehicle with a GVWR of 26,001 or more pounds (11,819 kilograms) or any such vehicle towing a vehicle with a GVWR not in excess of 10,000 pounds (4,545 kilograms).

Class C: Any single vehicle, or combination of vehicles, that does not meet the definition of Class A or Class B but is designed to transport 16 or more passengers, including the driver, or is placarded for hazardous materials.

The Agency revised the CDL regulations in July 2002 to implement several MCSIA provisions. These revisions included the addition of several types of serious traffic violations that could lead to a driver’s CDL being suspended and the imposition of stricter requirements on States for verifying CDL applicants’ previously-issued drivers’ licenses.

## **2.4 Controlled Substances and Alcohol Prohibitions**

A prohibition against operating a motor vehicle while under the influence of alcohol was included in the ICC’s initial safety regulations in 1937. The regulations were revised in 1970 to extend the prohibition to include narcotics, amphetamines, and other dangerous substances and to strengthen the alcohol prohibition by prohibiting alcohol consumption within 4 hours before going on duty or operating a motor vehicle.

Responding to legislative direction in the 1986 MCSA and the 1986 Anti-Drug Abuse Act, the regulations were revised in 1988 to require driver disqualification if a driver's blood alcohol concentration (BAC) level is 0.04 percent or higher. Drivers with BAC at any measurable level were to be placed out-of-service (OOS) for 24 hours. The Agency added anti-drug programs, including driver drug testing, in a November 1988 final rule. This rule applies to safety-sensitive employees, CDL drivers, and people who assign drivers to operate CMVs. Rules issued in December 2000 and January 2001 addressed changes in drug testing technology and USDOT-wide procedures.

Current controlled substances and alcohol regulations focus on working relationships between CMV drivers and motor carriers and do not address when a driver receives a verified-positive test but subsequently leaves the carrier. An ongoing FMCSA rulemaking, expected to be completed in mid-2010, would create a central database for verified-positive test results and driver refusals to submit to testing.

## **2.5 Prohibition on Radar Detector Use**

A final rule published in December 1993 banned the use of radar detectors in all CMVs. The rulemaking responded to a 1990 petition filed by eight safety, law-enforcement, and motor carrier industry organizations and to Congressional direction in the 1992 USDOT Appropriations Act.

## **2.6 Safety Performance History of New Drivers**

A March 2004 final rule expanded the safety performance history data that new or prospective employers must obtain for applicants seeking employment as a CMV driver. Carriers must request, and former motor carrier employers must provide, general driver identification and employment verification and information regarding accidents involving the driver over the previous three years. USDOT-regulated employers must also seek information on driver violations of alcohol and controlled substances prohibitions. The rule responded to a provision in the 1994 Hazardous Materials Transportation Authorization Act.

## **2.7 Medical Certification and CDL**

The physical qualifications required for CMV drivers, part of the ICC's original regulations, have undergone numerous revisions over the years. However, they were not linked to the process of issuing a driver's license. Responding to direction in MCSIA, a December 2008 final rule linked certification of a driver's physical qualification requirements with those for issuance of a CDL. This rule will help prevent medically unqualified drivers from operating CMVs by providing State licensing agencies with a means to identify interstate CDL holders who are unable to obtain a medical certificate, and by serving as a deterrent to drivers submitting falsified medical certificates. States must comply by January 2012, and drivers must comply by January 2014.

## **2.8 CDL Learner's Permit**

Responding to direction provided in TEA-21, SAFETEA-LU, and the SAFE Port Act of 2006, FMCSA has proposed additional revisions to the knowledge and skills testing standards of the CDL program. These would establish new minimum Federal standards for States to issue commercial learner's permits. A final rule is under development.

## **2.9 Entry-Level Driver Training**

In May 2004, FMCSA published a final rule entitled, “Minimum Training Requirements for Entry-Level Commercial Motor Vehicle Operators.” The requirements covered four topics: driver medical qualification and drug and alcohol testing; driver hours of service rules; wellness; and whistleblower protection. Safety advocacy groups challenged the regulation in Federal court. In December 2007, FMCSA proposed to require behind-the-wheel and classroom training for persons who have a CDL. A final rule is under development.

### **2.10 Hours of Service (HOS)**

The first regulations, issued in 1938, set a maximum limit of 10 hours of driving in a 24-hour duty period, required an 8-hour off-duty period, and allowed a maximum of 60 hours on-duty in any seven-day period or 70 hours in any eight-day period. The first substantive changes were made in 1962 and 1963, eliminating the 24-hour window. Instead, driving was prohibited after a driver had been on-duty more than 15 hours following eight consecutive hours off-duty.

The 1995 National Highway System Designation Act created several exemptions from the HOS regulations. The Act exempted local transporters of crops and farm supplies from the regulations during planting and harvesting seasons, and allowed drivers of utility service vehicles, ground water well-drilling rigs, and vehicles transporting construction materials and equipment to “reset” their 60- or 70-hour period after a minimum of 24 hours off-duty. SAFETEA-LU added additional exemptions and made drivers of utility-service vehicles completely exempt from Federal and State HOS regulations.

In April 2003, FMCSA made substantial revisions to the HOS regulations. The Agency raised the driving limit to 11 hours. The minimum off-duty period was raised to 10 hours. Driving could not be done after the 14<sup>th</sup> consecutive hour on-duty, and the cumulative 60 and 70-hour limits could be “reset” with a minimum 34-hour off-duty period. Various safety advocacy and drivers’ organizations challenged the rule twice in Federal court, and the Agency revised several elements in 2005 and 2007. After a third challenge, the FMCSA committed to making a third revision. This revision is under development.

A 1988 regulation permitted the use of automated HOS on-board recording devices. Rulemaking is in progress to update technical standards for these devices and to require motor carriers that FMCSA has found to have serious HOS-noncompliance to use them.

## **3. Equipment Regulations**

The ICC did not update its initial body of vehicle and equipment regulations until the 1940s and 1950s. However, a quarter-century of research and rulemakings begun in the 1980s has resulted in a large body of safety regulations that has generated significant positive results.

### **3.1 Three-point occupant restraints**

Krall’s (1993) extensive discussion of cooperative industry-government safety studies and trends in heavy-truck safety outcomes included a special focus on three-point occupant restraints in heavy trucks. Although regulations for trucks and buses called for either Type 1 (lap belt) or Type 2 (combination pelvic and upper-torso) restraints, Krall noted that U.S. truck manufacturers began providing Type 2 restraints as standard equipment in model year 1990 trucks. His analysis showed occupant-restraint use increasing from about 6 percent in the early 1980s to over 55 percent in 1991. Stronger State laws requiring use of occupant

restraints and considerable public outreach by government and industry have raised the national average CMV driver usage rate to 72 percent as of 2008.

### **3.2 Automatic Brake Adjusters and Brake Adjustment Indicators**

Proper brake adjustment is critical to safe CMV operation. Out-of-adjustment brakes cannot develop the retardation force designed into the vehicle's brake system which increases stopping distances and leads to or worsens collisions.

In October 1992, National Highway Traffic Safety Administration (NHTSA) issued a final rule to require automatic brake adjusters (ABAs) on hydraulic- and air-braked CMVs, and brake adjustment indicators (BAIs) on air-braked vehicles with external adjustment mechanisms. Even though the Agency had not conducted research specifically on BAIs, NHTSA believed that they would help address the brake adjustment problem by making it easier for drivers and maintenance personnel to check brake-adjustment status, to do it more frequently, and to more readily troubleshoot and correct deficiencies.

FHWA issued a companion rule in September 1995 to require the use of ABAs on air- and hydraulic-braked CMVs and BAIs on CMVs with external adjustment mechanisms manufactured on or after the effective dates of the NHTSA's regulations.

### **3.3 Antilock Brake Systems (ABS)**

Braking systems for newly manufactured highway CMVs were one of NHTSA's earliest safety concerns. Rulemaking was initiated in October 1967. In 1971, NHTSA published a rule that included stopping distance provisions, as well as a "no lockup" provision intended to minimize skidding, spinning, and jackknifing. In 1978, responding to a lawsuit filed by a major truck manufacturer and two industry associations, the United States Court of Appeals for the 9th Circuit invalidated several provisions of Federal Motor Vehicle Safety Standards (FMVSS) No. 121, including the stopping distance and "no lockup" provisions.

After conducting extensive performance and fleet tests of ABS in the 1980s and early-1990s, NHTSA published a final rule in March 1995. Air-braked truck-tractors had to comply by March 1, 1997; air-braked trailers, converter dollies, single unit trucks, and buses had to comply by March 1, 1998; and hydraulic-braked trucks and buses had to comply by March 1, 1999. In May 1998, FHWA amended the Federal Motor Carrier Safety Regulations (FMCSRs) to cross-reference these FMVSS requirements for new CMVs and to require motor carriers to maintain the ABSs on these vehicles.

### **3.4 Rear Impact Guards**

Most collisions that involve a passenger vehicle colliding into the rear of a CMV trailer result in underride because of the differences in the height of the trailer bed and the hood and chassis of the passenger vehicle. These collisions often result in severe injuries and fatalities to passenger vehicle occupants due to passenger compartment intrusion.

The first Federal rules concerning heavy vehicle rear truck and trailer underride protection were published in 1952. Rulemaking efforts to improve rear underride protection started in the late 1960s but were discontinued in 1971 because of concerns that safety benefits would be less than implementation costs. Six years later, in response to a petition from the Insurance Institute for Highway Safety and a Congressional hearing, a comprehensive research program was initiated. The results of this research led to a solution that addressed both energy absorption, which reduces occupant accelerations by allowing the guard to "give," and limited underride, reducing the possibility of passenger compartment intrusion.

In January 1996, NHTSA issued a final rule establishing new safety standards for rear impact guards and rear impact protection. The rules specified performance requirements for the guards and required them to be installed on most trailers and semitrailers manufactured on or after January 26, 1998. FHWA's published its companion rule for in-service vehicles in September 1999.

### **3.5 Trailer Conspicuity**

A key "rule of the road" is "to see and be seen." One way to improve the visibility of trailers, particularly at night, is to improve their "conspicuity" by using retroreflective materials.

NHTSA initiated an extensive laboratory and field research program in 1980, and Congress set a one-year deadline in the Motor Carrier Act of 1990 for a rule to be issued on this subject. NHTSA published a final rule in December 1992, requiring compliance a year later. The rule required virtually all trailers with an overall width of 80 inches (2,032 mm) or more and a GVWR greater than 10,000 pounds (4,545 kilograms) to be equipped with either red-and-white retroreflective sheeting or reflex reflectors on the sides and rear.

The FMCSRs require that all lighting devices on CMVs placed in operation after March 7, 1989, meet NHTSA's requirements in effect when the vehicle was manufactured, so the FMCSRs automatically incorporate the NHTSA rule. FHWA began to develop a rule for retrofitting of trailers already in use. Again, Congress expressed an interest, and TEA-21 set a deadline for this final rule. FHWA published its rule in March 1999. It provided a two-year phase-in period for trailers to allow motor carriers to complete retrofitting at routine maintenance intervals. For motor carriers that had been using alternative conspicuity treatments before NHTSA's final rule was published, FHWA provided a 10-year phase-in period for replacing them with colors and patterns conforming to new vehicle requirements.

A NHTSA post-implementation study found that the conspicuity rule reduced side- and rear-impact crashes of other vehicles into trailers by 29 percent, reduced fatal and injury crashes in dark conditions by 44 percent, and reduced crashes into flatbed trailers by 55 percent.

### **3.6 Cargo Securement**

Performance-based cargo securement regulations have been part of U.S. CMV safety regulations since 1973. A rule issued that year provided four broad options for cargo protection: devices on the sides and ends of the vehicle; tiedown assemblies; special securement methods for metal coils and other metal articles; and other means "similar to, and at least as effective." A 1994 revision, made in response to a petition from the Commercial Vehicle Safety Alliance (CVSA), revised cargo securement device performance requirements from a "static breaking strength" basis to a "working load limit" (WLL) basis. The WLL concept provided a better-defined factor of safety and made the regulations easier to enforce because WLL is commonly marked on the devices.

A second major revision to the regulations, published in September 2002, reflected the results of a cooperative Canada-U.S. comprehensive research program. Among other things, the new rule added numerous commodity-specific requirements for certain items considered particularly challenging to secure properly, including logs, dressed lumber, paper rolls, concrete pipe, and heavy vehicles and machinery. A June 2006 revision clarified technical points and added additional commodity-specific regulations.



### **3.7 CMV Stopping Distance**

A rule published in July 2009 was the first revision on this subject since the early 1970s. It amends the Federal new vehicle standard for air brake systems by reducing stopping distance by 30 percent compared to previous levels. Most truck-tractors, when loaded to their GVWR and tested from a speed of 60 miles per hour, must stop in not more than 250 feet. Once all truck-tractors are equipped with brakes meeting the new requirements, NHTSA anticipates that 227 lives will be saved and 300 serious injuries will be prevented each year.

### **3.8 The Future: Motorcoach Safety**

In November 2009, after several severe multi-fatality crashes, USDOT issued a Motorcoach Safety Action Plan to improve vehicle safety design and driver and carrier oversight. The Agency also plans to propose a requirement in 2010 for installation of lap/shoulder belts in newly manufactured motorcoaches at all driver and passenger seating positions.

## **4. Motor Carrier Operational Oversight**

FMCSA provides safety data, including national and State crash statistics, current analysis results, and detailed motor carrier safety performance data to the industry and the public. This data helps Federal and State enforcement officials to more effectively focus their efforts on target inspections and investigations on higher-risk carriers, vehicles, and drivers.

### **4.1 Changes in Accident Reporting Requirements**

Tracking accidents involving CMVs has historically been a key element of motor carrier safety oversight. The ICC first began to require motor carriers to submit accident reports in 1962. Over the years, the “reportable accident” criteria changed. The most significant change, in September 1972, established specific criteria for a reportable accident such as property damage above a certain dollar threshold, injuries requiring medical attention other than first aid at the accident scene, or a death.

In February 1992, all Federal agencies requested comments on regulations that the public viewed as slowing economic growth, unnecessary, unnecessarily burdensome, or unnecessarily costly and complex. A popular subject for USDOT was to change the reporting regulations for CMV-involved accidents. A February 1993 final rule replaced the dollar amount threshold for “property damage only” accidents with a “disabling damage” criterion. It also eliminated the requirement for motor carriers to submit accident reports in favor of reports submitted by State safety agencies.

Since mid-2004, FMCSA has actively monitored the completeness, accuracy, and timeliness of State-submitted accident and vehicle inspection data. Data quality reports are updated quarterly and individual measures and trends are posted on a public FMCSA website, <http://www.fmcsa.dot.gov/facts-research/art-safety-progress-report.htm> .

### **4.2 MCSAP: A Safety Assurance Partnership**

FMCSA relies on partnerships with State governments to provide additional CMV safety resources. To this end, the Agency administers the MCSAP Federal grant program to provide States with financial assistance to hire staff and implement strategies to enforce State laws and regulations compatible with the FMCSRs and Hazardous Materials Regulations. Although MCSAP funds are primarily used to conduct roadside inspections, funds also are used to enable States to assist FMCSA in performing on-site compliance reviews of established motor carriers and safety audits of “new entrant” motor carriers.

Safety inspectors who perform roadside inspections must meet certain minimum Federal qualifications and must be periodically recertified. Inspections are performed according to the North American Standard Uniform Driver-Vehicle Inspection Procedure, developed in cooperation with CVSA, an association of State, Provincial, and Federal officials responsible for the administration and enforcement of motor carrier safety laws in the United States, Canada, and Mexico. Serious violations discovered during an inspection, likely to cause an accident or breakdown of the vehicle, can result in a driver or vehicle being placed OOS. These OOS violations must be corrected before the affected driver or vehicle can return to the road. In 2008, nearly 3.5 million roadside inspections were conducted.

In March 2000, FMCSA revised the MCSAP to comply with Congressionally mandated provisions of TEA-21. These new rules required States to develop performance-based plans reflecting national priorities and goals and added incentive-based funding.

### **4.3 Assessing Motor Carrier Safety Fitness**

Since late 1989, the Agency has quantified motor carriers' safety performance using Safety Fitness Rating Methodology (SFRM). Six factors make up the SFRM: General, Driver, Operational, Vehicle, Hazardous Materials, and Accidents.

The Safety Status Measurement System (SafeStat) is an automated analysis system developed for the FMCSA. It combines current and historical safety performance data to quantify the relative safety fitness of interstate motor carriers, enabling FMCSA to deploy resources so it can focus on carriers posing the greatest safety risk. SafeStat uses up to 30 months of data to evaluate the relative safety status of individual motor carriers with respect to the overall motor carrier population. Results of four analytic Safety Evaluation Areas (accident, driver, vehicle, and safety management assessments) form an overall SafeStat score.

### **4.4 Consequences of Outcomes**

Responding to a provision in the 1990 MCSA, FMCSA issued a rule in August 1991 prohibiting motor carriers with unsatisfactory safety ratings from operating CMVs to transport hazardous materials in quantities requiring the vehicle to bear a placard or more than 15 passengers including the driver. A motor carrier facing an unsatisfactory rating has 45 days to improve its safety of operations. If it does not, it must cease interstate operation.

TEA-21 strengthened the authority of the Secretary of Transportation to order unsafe motor carriers (not only those transporting hazmat or passengers) to cease operations. An August 2000 final rule implemented that motor carriers of general freight have 60 days to improve the safety of their operations after the Agency makes a determination of "unfitness."

A December 2000 final rule, responding to a provision of MCSIA, prohibits motor carriers from operating in interstate commerce if they do not pay civil penalties assessed by the FMCSA. The prohibition begins on the 91st day after payment date or a missed payment. The law and regulation exempt carriers operating under Chapter 11 of the U.S. Bankruptcy Code.

### **4.5 A Special Case: New Entrant Motor Carriers**

Between 40,000 and 50,000 new entrant motor carriers begin operating CMVs each year. Because studies indicated that new motor carriers had a much higher rate of non-compliance with basic safety management requirements, MCSIA called for increased oversight of new entrants. FMCSA's May 2002 New Entrant regulations establish an 18-month monitoring period for these new entrants. Motor carriers that do not maintain adequate safety

management controls may lose their temporary USDOT registration. FMCSA revised the regulations in December 2008, to raise the standards for passing the new entrant safety audit.

#### 4.6 The Future: Comprehensive Safety Analysis (CSA) 2010

Through its CSA 2010 initiative, FMCSA is developing a new safety oversight program. CSA 2010 will draw far more heavily on performance data and trends (specifically from roadside inspection data) and would use a broader array of compliance interventions. CSA 2010 also will replace SafeStat's four elements with a more detailed seven-element Safety Measurement System. Pilot testing of the program is underway, and the Agency is developing regulations to implement the program.

### 5. Results: Safety Improvements Quantified

Having presented a summary of CMV safety laws enacted and regulations published in the last 25 years (and earlier), it is appropriate to assess trends in CMV-involved crashes. Although it is possible to draw quantitative correlations between specific regulations and crash outcomes, it is very challenging to do so because of the complex interactions between regulations implemented during parallel time frames, as well as changes in individual motor carrier safety practices that are not often described in the open literature. Nonetheless, it is instructive to describe long-term trends.

CMV crash trends are presented using a variety of metrics. The source for all fatality data is the Fatality Analysis Reporting System, maintained by NHTSA. Figure 1 shows numerical trends for fatal crashes, CMVs involved, and occupant and total fatalities. Figure 2 focuses on rate-based trends for occupant and total fatalities in heavy-truck-involved crashes, based upon the number of power-units registered. Figure 3 updates work by Lyman and Braver (2002), who presented crash rate trends using a denominator of the U.S. population. Figure 4 compares highway exposure, using the vehicle-miles-traveled metric, and compares it to the Freight Transportation Services Index maintained by the USDOT.

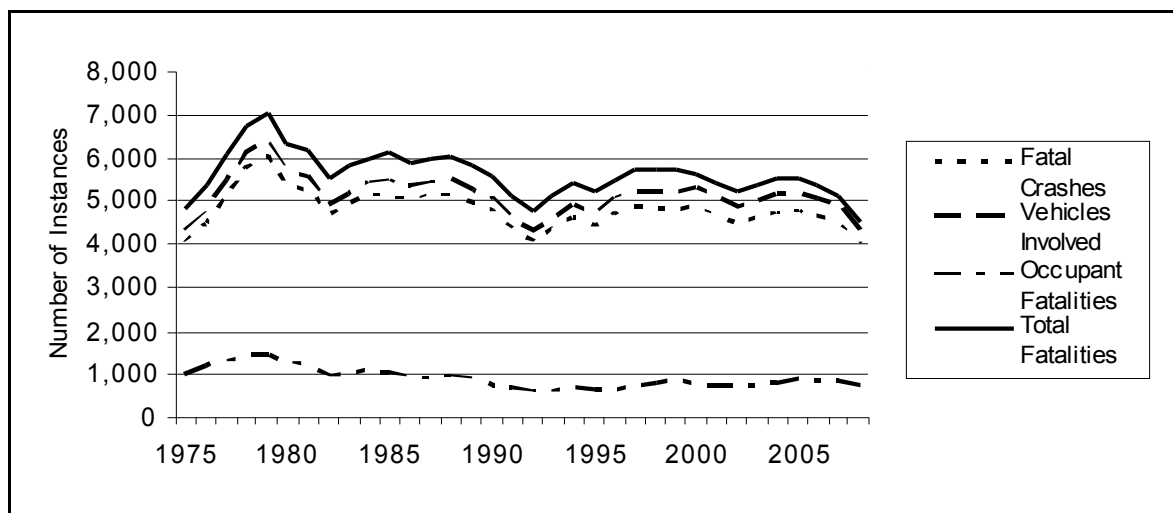
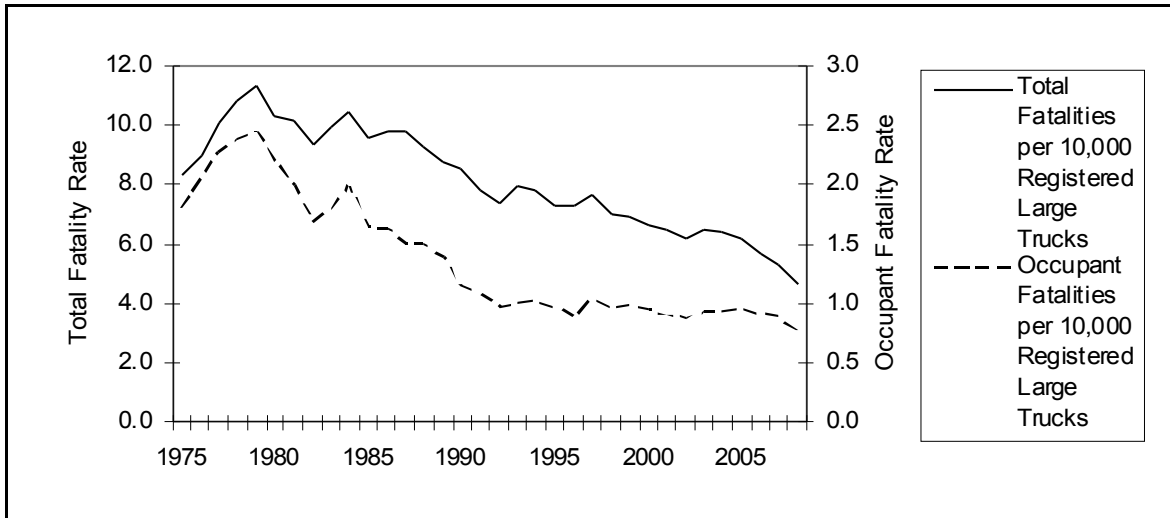
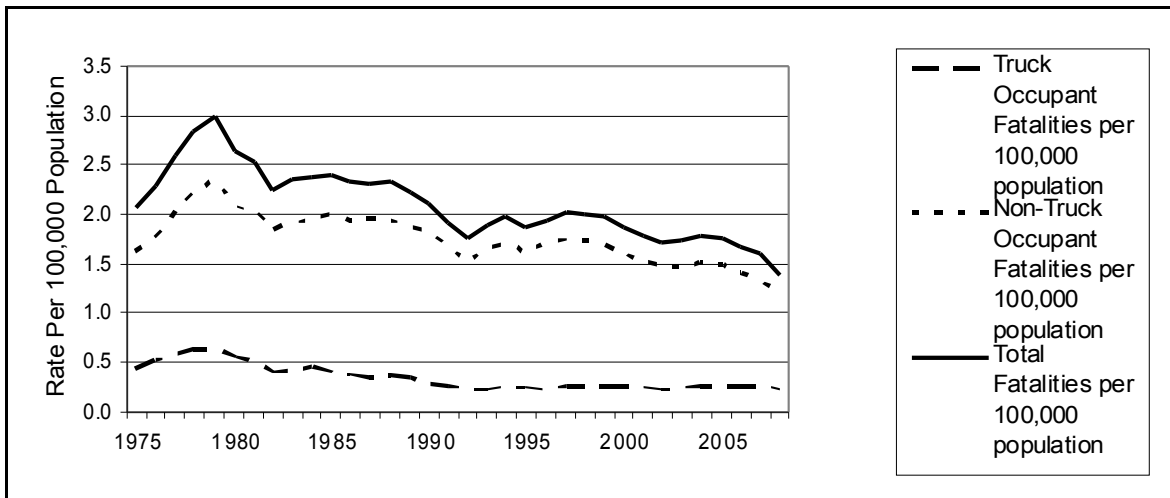


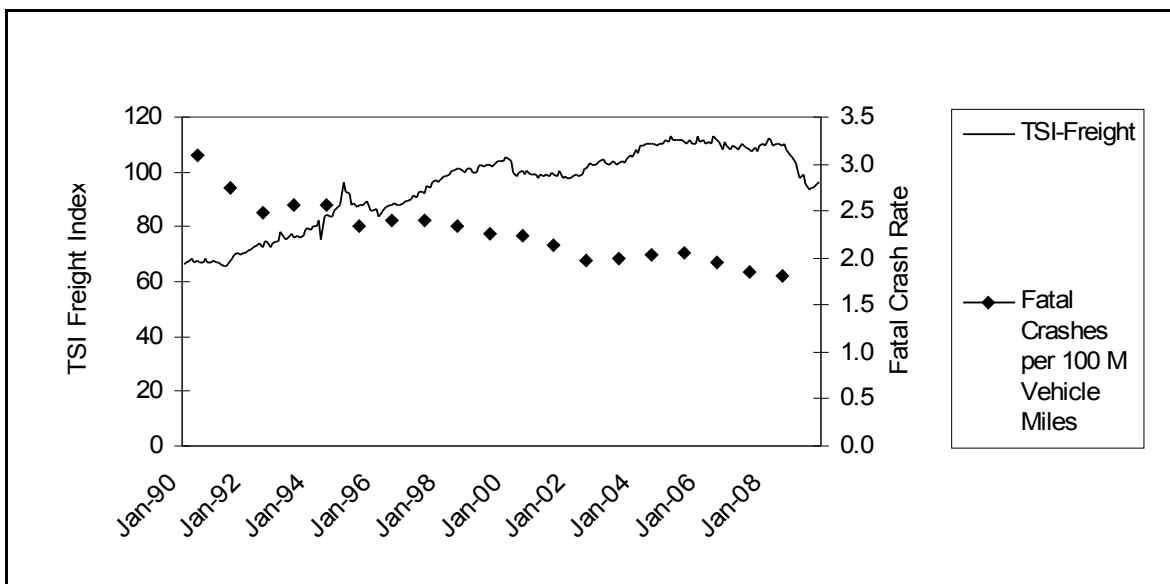
Figure 1 – Commercial Vehicle Fatal Crash Trends



**Figure 2 – Large Truck Registrations and Vehicle-Based Fatality Rates**

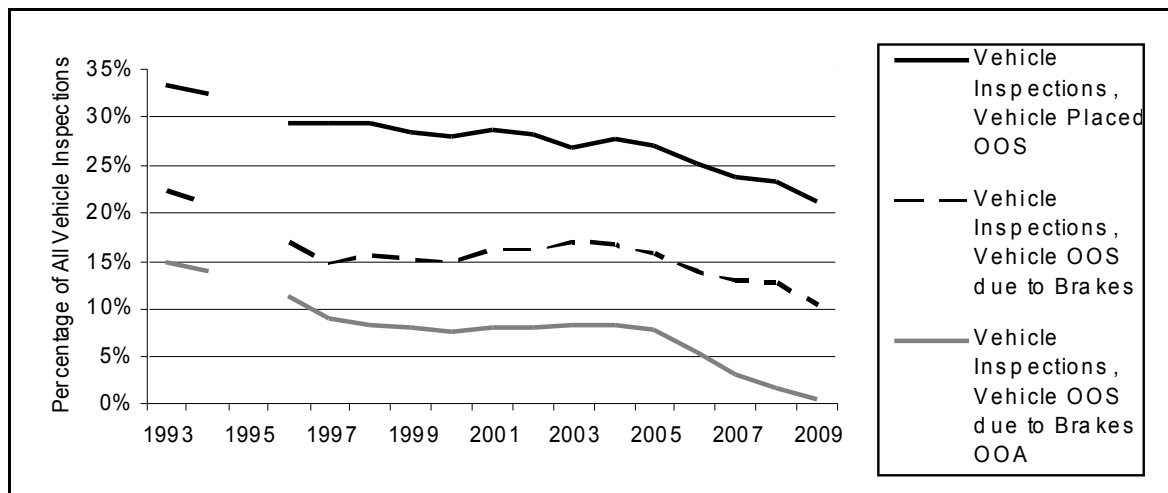


**Figure 3 - Fatality Rates in Large Truck Crashes, Population-Based Rates**



**Figure 4 – Fatal Truck Crashes Compared to Freight Transportation Services Index**

Some trends clearly illustrate the influence of specific regulations. Figure 5 shows a rapid downward trend in brake out-of-adjustment violations as a proportion of total vehicle OOS and total brake OOS violations.



**Figure 5 – Brake Regulations and Roadside Inspection Results**

Although this paper does not address changes in automotive safety, particularly passenger car crashworthiness, the 25 percent reduction (1984-2008) in fatal crashes and fatalities, the greater than 50 percent reduction in fatal crash rates (1984-2007), and the continued drop in exposure-based crash rates during times of increased freight flows all point to results of improved safety attention by motor carriers and improved safety oversight by government agencies. Higher rates of seatbelt use may be contributing to lower numbers and rates of CMV-driver fatalities, but more long-term data is needed to confirm this.

There is always more to be done to ensure that motor carrier safety moves beyond a safety plateau. For drivers, it means improved medical oversight and outreach to the medical community, as well as research and countermeasures to prevent driver fatigue and limit technology-generated distraction. For CMVs, it means testing and assessing improved crash avoidance technologies, such as stability control, forward collision warning, adaptive cruise control, and lane departure warning systems. For motor carrier safety, it means that more effective safety oversight and safety-improvement interventions are needed. All of these programs must work together to help prevent CMV-involved crashes and to reduce the severity of those that do occur. The safety and economic health of our Nation depends on it.

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