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Commercial Truck Safety: Overview

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Summary

More than 11 million large trucks travel U.S. roads, and almost 4 million people hold commercial driver's licenses. In 2015, large trucks were involved in more than 400,000 motor vehicle crashes serious enough to be registered by police, with nearly 100,000 of those crashes causing injuries and around 3,600 resulting in fatalities. To address this situation, Congress has assigned the U.S. Department of Transportation (DOT)—primarily the Federal Motor Carrier Safety Administration (FMCSA)—responsibility for regulating the safety practices of commercial motor carriers and drivers. In addition, the National Highway Traffic Safety Administration (NHTSA) in DOT is responsible for the safety of the vehicles themselves through its role in setting vehicle safety standards.

Truck crash, injury, and fatality rates have generally been rising since 2009 after declining over many years. This increase may be due in part to marginally skilled or inexperienced drivers entering the industry, or to higher levels of work and stress among veteran drivers, or to other factors.

Two FMCSA proposals concerning driver safety have proven particularly contentious.

- In March 2017, FMCSA abandoned its attempt to require drivers to take a 34-hour rest period, including two consecutive early morning periods, at least once a week. The proposed "restart rule" encountered strong objections from drivers as well as motor carriers, and an FMCSA study could not confirm that the rule would lead to sufficient improvement in safety to satisfy Congress.
- In March 2016 FMCSA began a joint rulemaking with the Federal Railroad Administration to require that commercial drivers (or train operators) who exhibit certain risk factors be screened for obstructive sleep apnea, which interferes with sound sleep and thus increases the risk of crashes. In the past, efforts to address sleep apnea among drivers met resistance from drivers who feared they might be prohibited from driving commercial vehicles, and Congress prohibited FMCSA from addressing sleep apnea among drivers except through a formal rulemaking.

FMCSA has introduced stricter training standards for new drivers, and has instituted a database intended to help prevent drivers barred from commercial driving due to convictions for driving under the influence of drugs or alcohol from bypassing the prohibition and continuing to drive. FMCSA has also barred drivers from using handheld phones or texting in order to reduce driver distraction.

Motor carriers have frequently sought to increase driver productivity and reduce costs by pushing for standards allowing longer or heavier trucks. Although efforts to permit longer trucks were rejected by Congress in 2015, Congress did approve a number of exceptions and waivers to federal weight limits. FMCSA and NHTSA have jointly proposed to require that all large trucks be equipped with speed limiters, a proposal over which the trucking industry is divided. Congress also has taken an interest in FMCSA's Compliance, Safety, and Accountability Program, which is intended to allow it to focus resources on carriers most in need of supervision from a safety standpoint. Legislation in 2015 required FMCSA to obtain external review of the system it proposes to use to measure carrier safety.

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Introduction

More than 11 million large trucks (trucks weighing over 10,000 pounds) travel U.S. roads, and almost 4 million operators hold commercial driver's licenses.[1] In 2015, large trucks were involved in more than 400,000 motor vehicle crashes serious enough to be registered by police, with nearly 100,000 of those crashes causing injuries and around 3,600 resulting in fatalities.[2] To address this situation, Congress has assigned the U.S. Department of Transportation (DOT)—primarily the Federal Motor Carrier Safety Administration (FMCSA)—responsibility for regulating the safety practices of commercial motor carriers and drivers. In addition, the National Highway Traffic Safety Administration (NHTSA) in DOT is responsible for the safety of the vehicles themselves through its role in setting vehicle safety standards.[3]

This responsibility involves oversight of an industry comprising over 500,000 motor carriers, with around 35,000 new carriers beginning operation and many existing carriers exiting the industry each year. The agencies concerned with truck safety are relatively small; FMCSA has 1,175 full-time-equivalent personnel, including 600 front-line enforcement staff, and NHTSA personnel are involved in truck safety primarily at times when vehicle safety standards are under consideration.[4] Truck safety efforts are assisted by roughly 12,000 state employees, including highway patrol officers. Federal enforcement agents and state agents enforcing federal regulations conduct over 3.5 million roadside inspections of trucks and buses annually, as well as over 16,000 on-site investigations and over 30,000 safety audits of new motor carriers. Some 10,000 motor carriers and drivers are the subject of FMCSA enforcement actions each year.[5] Freight rates and other economic matters are not subject to federal regulation.

Although crashes involving unsafe trucks or drivers often lead to public outrage, regulatory efforts to improve truck safety are often controversial. Truck safety laws and regulations directly affect the profitability of hundreds of thousands of companies, most of them small, and the livelihoods of millions of commercial drivers. Trucking regulations may also affect the cost of freight to shippers and alter the competitive balance between the trucking industry and its railroad and barge competitors.

Both government and private-sector analysts have forecast significant increases in trucking activity over the coming decades, reflecting expected growth in the U.S. economy and the role of trucks in moving freight. For example, DOT projects a 43% increase in freight ton-miles carried by truck between 2012 and 2040.[6] Greater truck mileage could result in increasing numbers of truck crashes. Some say various safety technologies now under development, culminating in "self-driving" trucks, may eventually make truck crashes less common.[7]

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[1] Federal Motor Carrier Safety Administration (FMCSA), *FY2017 Budget Justification*, p. 5.

[2] FMCSA, *Large Truck and Bus Crash Facts 2015*, early release, November 2016, pp. 7, 13, 18.

[3] FMCSA and NHTSA exercise similar shared responsibility for commercial bus safety; this report focuses on commercial trucking (i.e., the hauling of freight) and does not deal with commercial buses (i.e., the hauling of passengers).

[4] Of these, fewer than 600 are front-line enforcement staff: investigators, auditors, and inspectors. FMCSA, *FY2017 Budget Justification*, Exhibit II-8, and p. 105.

[5] FMCSA, *FY2017 Budget Justification*, p. 37.

[6] United States Department of Transportation, *Beyond Traffic 2045: Trends and Choices* (Draft), no date but approximately 2015, p. 47, https://www.transportation.gov/sites/dot.gov/files/docs/Draft_Beyond_Traffic_Framework.pdf.

[7] Jeffrey Short and Dan Murray, *Identifying Autonomous Vehicle Technology Impacts on the Trucking Industry*, American Transportation Research Institute, November 2016.

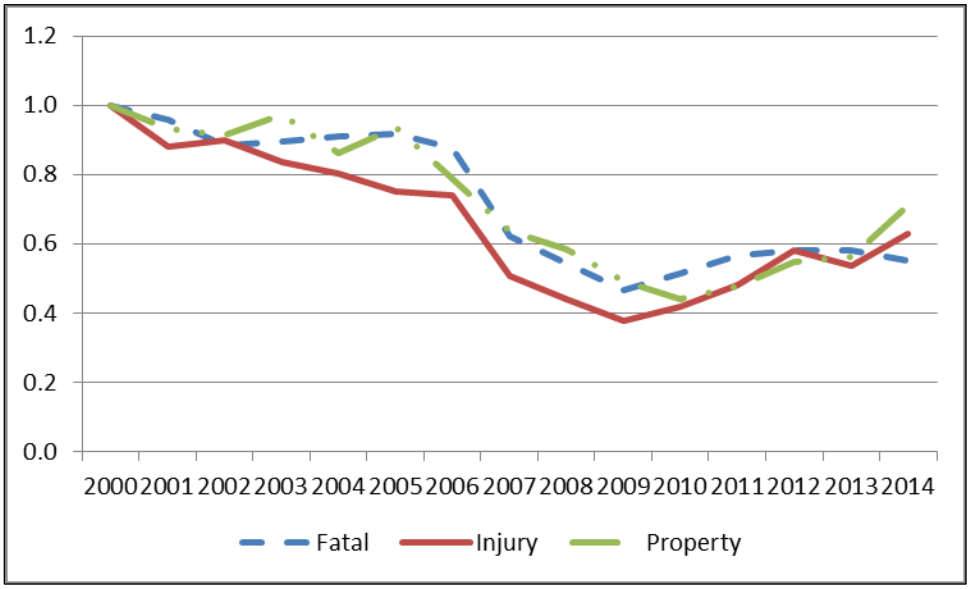
This report briefly reviews heavy truck safety trends, then looks at FMCSA's role in promoting safety in the heavy truck industry. It then divides heavy truck safety issues into three categories, and addresses each in turn: issues related to motor carriers (the companies that make up the industry, the majority of which have only a handful of vehicles); issues related to the vehicles themselves; and issues related to commercial drivers.

Heavy Truck Safety Trends

The crash rate for large trucks, measured as the number of crashes involving fatalities, injuries, or property damage per million vehicle miles traveled, has declined over time. Crash rates typically drop significantly during recessions and then rise as economic growth resumes; this dynamic was evident during the 2010-2014 period, as truck crash rates rose from their historic lows during the 2007-2009 recession (**Figure 1**). Nonetheless, the crash rate in 2014, the most recent year for which data are available, was still below the pre-2007 level.[8]

The number of people killed in crashes involving large trucks increased by 4% from 2014 (3,908) to 2015 (4,067), although it is still unknown whether the fatality rate per million vehicle miles traveled increased. Only additional data will reveal whether the long-term decline in the truck crash rate has run its course. If so, this could indicate that the safety performance of large trucks is decreasing, raising questions about FMCSA's ability to further improve truck safety.

Figure 1. Crash Trends Involving Large Trucks, 2000-2014



Source: CRS; data from Federal Motor Carrier Safety Administration, *Large Truck and Bus Crash Facts 2015*, November 2016, Trends Table 4.

Notes: The rates are indexed to their 2000 levels for ease of visual comparison of trends. The rates for injury and property damage crashes per million vehicle miles traveled are many times higher than the fatality rate.

Historically, trends in truck crashes resulting in fatalities, in injuries, and in only property damage have been roughly similar. However, in recent years the fatal crash rate has been relatively steady

[8] FMCSA released an early version of its annual *Large Truck and Bus Crash Facts* for 2015 in November 2016, but it does not include crash rates for 2015 because the underlying vehicle miles traveled data for 2015 were not yet available. See https://www.fmcsa.dot.gov/sites/fmcsa.dot.gov/files/docs/LTCF2015%20Early%20Release.pdf.

while the rates of crashes involving injuries and property damages have risen. The vast majority of fatalities in crashes involving large trucks are experienced by the occupants of the other vehicle(s), typically passenger vehicles. Safety improvements to cars and light trucks, such as the increasing number of airbags, may be reducing the number of fatalities from truck-car collisions.

According to an FMCSA study, two-thirds of commercial truck crashes are caused by the other driver, not the commercial driver.[9] This finding implies that additional attention to truck driver behavior would be relatively ineffective in reducing the number of crashes involving large trucks. However, some critics question the validity of the proportion of crashes caused by commercial drivers, noting that crashes between commercial and noncommercial vehicles kill noncommercial drivers more frequently than the commercial drivers, often leaving investigators with only the commercial driver's account of the crash. Thus, these critics assert, the proportion of crashes attributed to noncommercial drivers may be overstated.

FMCSA's Role

Congress established FMCSA as a separate administration within DOT through the Motor Carrier Safety Improvement Act of 1999 (P.L. 106-159), transferring responsibilities that had previously been handled by an office within the Federal Highway Administration. FMCSA's responsibilities can be divided into two parts: creating and enforcing safety rules and regulations, and implementing programs and procedures to promote the safety of motor carriers, commercial vehicles, and drivers.

The constitutional provision granting Congress the power to regulate interstate commerce[10] has been construed to give the federal government much greater authority over commercial vehicles and drivers engaged in interstate commerce than over commercial vehicles not engaged in interstate commerce. Commercial vehicles that typically operate within a single state, such as waste haulers and cement mixers, are generally not subject to federal safety regulations.[11]

Regulation of intrastate commercial transportation is generally a state matter. So, for example, Congress has long required that commercial drivers in interstate commerce must be at least 21 years of age, but most states allow a person to get a commercial driver's license (CDL) starting at age 18. This has resulted in a population of 18- to 20-year-olds who have CDLs but may operate commercial vehicles only within the state that issued their license. Congress can affect the operations of intrastate carriers indirectly, by encouraging states to adopt laws that govern them.

In addition to licensing truck drivers, FMCSA reviews trucking companies to check their compliance with federal requirements and audits the safety practices of companies entering the industry. Although FMCSA has authority to conduct roadside safety inspections of trucks, it usually relies on state law enforcement personnel for that purpose. State officials also conduct many compliance reviews and new entrant safety audits.

In creating FMCSA, Congress specified that its intent was the furtherance of the highest degree of safety in motor carrier transportation, and that FMCSA should consider safety as the highest

[9] FMCSA's *Large Truck Crash Causation Study* is available at https://ai.fmcsa.dot.gov/LTCCS/default.asp.

[10] Article I, §8.

[11] In practice, the line between interstate and intrastate commerce is not always clear. In some cases carriers that operate entirely within a state, but which are carrying goods that originated outside the state, are considered to be engaged in interstate commerce.

priority.[12] Congress required FMCSA to develop a long-term strategy for improving commercial motor vehicle, operator, and carrier safety, including a schedule and an annual plan for achieving certain goals set by Congress.[13] FMCSA publishes an updated strategic plan periodically;[14] the annual implementation plan is submitted to Congress as part of the annual budget process.

Carrier Safety Issues

In 1999, Congress established a two-pronged approach to improving the safety of new entrants to the motor carrier industry. It required FMCSA to conduct a safety audit of each new entrant within 18 months of starting operations, and it directed FMCSA to establish minimum requirements for firms wishing to enter the industry to ensure that they know the federal safety standards before they are granted registration.[15] The latter directive included a requirement that DOT consider establishing an examination that would test officers of new applicants on their knowledge of federal safety standards. FMCSA has not yet determined that new entrants should have to pass such an exam.

In 2015, Congress tightened these requirements, directing FMCSA to audit new entrants within 12 months of their entry into the industry.[16] The focus on new entrants is due to studies finding that new entrants to the motor carrier industry have lower rates of compliance with basic safety management requirements than do experienced carriers. FMCSA observed that the shortened time frame will increase its audit workload. An average of more than 35,000 firms enter the industry each year, but a certain percentage of carriers typically go out of business between months 12 and 18. The 12-month deadline requires FMCSA to audit many carriers that will go out of business soon after the audit.

Under current practice, a new trucking firm may engage in interstate commerce before FMCSA conducts a safety assessment. In August 2009, in response to a petition from Advocates for Highway and Auto Safety, FMCSA issued an Advanced Notice of Proposed Rulemaking in which it requested information on the costs and benefits of requiring new entrants to pass an examination of their knowledge of federal safety requirements, and of alternatives to a proficiency exam that would also improve the safety performance of new entrants.[17] In September 2009 FMCSA's Motor Carrier Safety Advisory Committee, made up of industry representatives, recommended that FMCSA take a number of steps to ensure that new entrant motor carriers are knowledgeable about safety requirements, including testing.[18] The Advanced Notice of Proposed Rulemaking continues to be listed in DOT's monthly report on the status of significant rulemakings, but FMCSA has taken no further action.

[12] Codified at 49 U.S.C. §113(b).

[13] The goals are reducing crash and fatality numbers, improving enforcement and compliance programs, targeting enforcement to high-risk operators, and improving research on safety and performance.

[14] The current Strategic Plan covers FY2015-FY2018; see https://www.fmcsa.dot.gov/sites/fmcsa.dot.gov/files/docs/FMCSA_FY2015_FY2018_Strategic_Plan_082618.pdf.

[15] P.L. 106-159, §210(a) & (b).

[16] Fixing America's Surface Transportation (FAST) Act (P.L. 114-94), §5304. The deadline is four months for passenger carriers.

[17] FMCSA, "New Entrant Safety Assurance Process: Advance Notice of Proposed Rulemaking," 74 *Federal Register* 42883, August 25, 2009.

[18] Motor Carrier Safety Advisory Committee, letter and report to FMCSA regarding Docket No. FMCSA-2001-11061, September 2, 2009, https://www.regulations.gov/document?D=FMCSA-2001-11061-0065.

The Commercial Vehicle Safety Alliance (CVSA), an association of federal, state, and local commercial motor vehicle safety officials and industry representatives, has recommended that Congress request a study of the costs and benefits of expanding the new entrant safety assurance program to include intrastate carriers.[19] The CVSA notes that only motor carriers that operate in interstate commerce, and thus are subject to federal regulation, are required to undergo a safety audit. While no official figure is available, CVSA cites estimates that half of all motor carriers operate solely with a single state and hence are not subject to federal safety audits. Congress may lack the authority to require states to conduct such audits for intrastate carriers, although it could provide incentives for states to do so.

Vehicle Safety Issues

Congress set limits for the size and weight of motor vehicles on certain portions of the nation's road network in 1956, as part of legislation providing federal funding for the creation of the Interstate Highway System.[20] These limits affect the costs of highway transportation of freight, and so are perennially contested.[21] At the time Congress established nationwide limits, some states had already established limits that allowed larger or heavier trucks than the federal limit; Congress allowed these preexisting state limits to continue (i.e., "grandfathered" them). States determine the size and weight limits for vehicles using roads not subject to the federal limits.[22]

Calls to loosen these limits typically come from industry, and are typically motivated by the desire to increase productivity by enabling a driver to haul larger or heavier loads. These efforts are typically opposed by highway safety groups, which assert that larger or heavier vehicles will pose a greater danger to other motorists.[23] Calls for heavier vehicles are also often opposed by highway agencies concerned about the costs of increased wear and tear on highways and bridges. In some cases, they have been opposed by elements of the trucking industry, who say that if larger or heavier trucks are allowed, companies using them will have a cost advantage over companies using smaller vehicles, forcing competitors to invest in new equipment.

Weight Limits

The federal weight limits—20,000 pounds on a single axle, 34,000 pounds on a tandem axle, and 80,000 pounds overall gross vehicle weight—have been unchanged since 1974.[24] But in recent years Congress has approved a number of waivers, generally on a state-by-state basis. For example, in 2015 Congress exempted emergency vehicles and certain heavy-duty tow and

[19] Commercial Vehicle Safety Alliance, "Recommendations related to reauthorization of federal surface transportation legislation," p. 10, no date (but approximately 2014), at http://cvsa.org/policypage/policy/reauthorization/.

[20] The weight standards apply to the Interstate Highway System, which is approximately 44,000 miles; the size standards apply to the National Network, which is approximately 200,000 miles and includes the Interstate Highway System. Due to requirements that vehicles have reasonable access to and from these networks, there can be some impact on adjacent roads if the federal limits exceed the limits a state has imposed on other roads. See http://ops.fhwa.dot.gov/freight/sw/faqs/qa.cfm?category=10 for information on reasonable access requirements.

[21] For example, Congress requested that the Transportation Research Board examine truck size and weight limits in 1988 and again in 1998; DOT issued its own studies of truck size and weight limits in 2000 and again in 2016.

[22] States also are allowed to issue permits for movement of oversized or overweight loads under certain conditions.

[23] For example, http://www.cabt.org/about-us/. The railroad industry, which competes with the trucking industry for hauling many types of freight, also typically opposes efforts to increase truck size or weight limits.

[24] The weight limits are subject to a separate calculation to protect bridges.

recovery vehicles from weight limits, waived weight limits on certain highways in Texas and Arkansas, and provided waivers for logging trucks in Wisconsin and Minnesota.[25]

Length Limits

Federal truck length regulations apply on the roughly 200,000 miles of road known as the National Network (although due to a requirement for "reasonable access," there is some impact on adjacent roads). Thus, states are generally prohibited from allowing twin 33-foot trailers on the National Network, but there are some exceptions. Outside of this network, states do not have to comply with federal truck size regulations.

In 2015, proponents of allowing longer trucks sought to enact a provision to increase the maximum allowable length of trailers hauled in tandem—two trailers attached together and pulled by a tractor unit—on the National Network from 28 feet each to 33 feet each. The provision was inserted into an appropriations bill,[26] so it was subject to little debate. As is often the case, industry representatives cited the benefit of the longer trucks in reducing freight transportation costs, while opponents cited safety concerns. Technical appendices to a DOT study on truck size and weight that was under way in 2015 noted the lack of data on the safety impact of 33-foot double trailers, as none were in use; an analysis of their potential impact on pavement performance found that they could cause additional damage to the road surface and thus an increase in life-cycle costs for road construction and maintenance. The provision was dropped from the final version of the appropriations bill.

Truck Underride Guards

In 2015, 17% of fatal crashes involving large trucks involved a passenger vehicle rear-ending a large truck. The reason these crashes are fatal is often because the front of the car travels under the rear of the truck so that the passenger compartment of the passenger vehicle strikes the rear of the truck, resulting in head injuries to the occupants of the passenger vehicles. NHTSA regulations require large trucks to have underride guards, which are intended to stop a car from being able to travel under the rear of the truck. However, these bars have typically not been strong enough to stop vehicles.

In 2011 the Insurance Institute for Highway Safety studied 115 crashes in which a passenger vehicle ran into the back of a heavy truck or semitrailer; it found that roughly 80% of those crashes involved the passenger vehicle going under the rear of the truck. Nearly half of the passenger vehicles had severe or catastrophic underride damage, and those vehicles accounted for 80% of the fatal crashes in the study.[27] However, in 2015 the Insurance Institute found that several trailer manufacturers were producing underride guards that exceed NHTSA regulations and prevented passenger vehicle underride even in extreme circumstances. One possible reason for the improvement in underride guards, in the absence of tighter federal regulations, is that Canada enacted stricter underride guard performance standards in 2007.

[25] P.L. 114-94, §1410.

[26] The provision was in Section 125 of H.R. 2577 (114th Congress) as passed by the House and in Section 137 of H.R. 2577 as reported in the Senate.

[27] Insurance Institute for Highway Safety, "NEW CRASH TESTS: Underride guards on most big rigs leave passenger vehicle occupants at risk in certain crashes," news release, March 14, 2013.

Electronic Stability Control

Electronic stability control is a vehicle technology that uses engine torque control and computer braking to assist a driver in maintaining control under certain challenging conditions, reducing the risk of a crash. Citing compelling evidence of the technology's safety impact, NHTSA required that trucks over 26,000 pounds manufactured after August 2017 be equipped with electronic stability control. Roughly one-quarter of trucks manufactured in 2012 were already so equipped; this rule was expected to accelerate the penetration of electronic safety control into the heavy truck fleet. It is expected to prevent roughly 1,400 to 1,700 crashes, 40 to 49 fatalities, and 500 to 650 injuries per year.[28]

Speed Limiters

NHTSA (which has authority over standards for most motor vehicles sold in the United States) and FMCSA have jointly proposed that all trucks (and buses and multipurpose passenger vehicles) over 26,000 pounds be equipped with a speed limiting device. According to NHTSA estimates, limiting the speed of heavy trucks (and buses) would save between 27 and 498 lives annually, depending upon the maximum speed allowed (**Table 1**).

Table 1. Estimated Costs and Benefits of Limiting Heavy Vehicle Speeds

Speed Limit	Lives Saved Annually	Serious Injuries Prevented Annually	Value of Greenhouse Gas Emission Reduction (millions of 2013 dollars)	Social Cost (millions of 2013 dollars)
60 mph	162 to 498	179 to 551	—	$1,561
65 mph	63 to 214	70 to 236	—	$523
68 mph	27 to 96	30 to 106	$376	$209

Source: NHTSA/FMCSA, Notice of Proposed Rulemaking, 81 *Federal Register* 61942, September 7, 2016.

Note: Estimates assume limits apply to buses as well as heavy trucks.

The proposal to require heavy vehicles to be equipped with speed limiters is supported by the American Trucking Associations, which generally represents the views of motor carriers with large fleets of vehicles, as well as by highway safety advocates. It is opposed by the Owner-Operator Independent Drivers Association, which contends that the safety benefits of speed limiters are unproven and that limiting the speed of heavy trucks would increase the risk of highway crashes by increasing the difference between the speeds of heavy trucks and passenger vehicles on highways.

Virtually all heavy trucks sold in the past decade have technology that allows a limit to be placed on their speed by controlling the revolutions per minute of the engine, so a requirement that speed limiters be installed on all trucks would have the greatest financial impact on owners of older trucks. These are more likely to be independent operators.

[28] The 2017 deadline applies to three-axle trucks; manufacturers of two-axle trucks have until 2019 to meet the requirement. NHTSA, "Final Rule: Federal Motor Vehicle Safety Standards; Electronic Stability Control Systems for Heavy Vehicles," 80 *Federal Register* 36049, June 23, 2015.

Driver Safety Issues

Truck drivers are typically paid by the mile, and face several constraints on how many miles they can drive: speed limits provide a limit on how quickly drivers can cover a mile; hours-of-service rules limit how much time drivers can spend driving in a day; and delays in loading and unloading cargo and highway congestion limit the ability of drivers to maximize their income within the limited hours they are legally allowed to drive. Drivers may have financial incentives to exceed the speed limit or the number of hours they are allowed to drive in order to drive more miles, and thus earn more income, in a day. Federal and state efforts to regulate vehicle speeds and commercial drivers' time behind the wheel are thus in conflict with the basic incentive drivers face.

One way to address this issue is to change the driver's incentive. DOT, in its 2015 surface transportation reauthorization proposal, proposed allowing the Secretary of Transportation to require that drivers who do not receive an hourly wage be paid for time spent on duty but not driving.[29] This change might reduce the financial incentive drivers feel to make up for on-duty time not spent driving. This provision was not included in the reauthorization legislation passed by Congress that year.

New Driver Training Standards

In December 2016, FMCSA issued a final rule regarding the training requirements for entry-level commercial drivers—those applying for a commercial driver's license (CDL) for the first time; or for an upgrade of their CDL; or for a hazardous materials, passenger, or school bus endorsement for the first time.[30] The rule requires applicants to complete a prescribed course covering both knowledge and behind-the-wheel performance that is provided by an entity approved by FMCSA. FMCSA will certify to state driver licensing agencies that an applicant has completed the required instruction, after which the state agencies can conduct CDL skills tests (or the knowledge test required for an endorsement to allow the driver to haul hazardous materials). The rule is to take effect in February 2020.

FMCSA's final rule omitted a provision in its earlier proposed rule that would have required new drivers to complete at least 30 hours of behind-the-wheel training in order to be eligible for a commercial driver's license. Instead, the skill of a new driver will be judged by an instructor during a skills proficiency test (as well as by the state official who administers the skills test for CDL applicants). The explanation FMCSA gave for dropping the 30-hour requirement was that there is no evidence that a certain amount of behind-the-wheel training has an impact on the safety performance of new drivers. It cited executive orders directing agencies to design regulations based on performance objectives rather than specifying the manner of compliance.[31]

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[29] §5507 of the GROW America Act, introduced in the 114th Congress as H.R. 2410 and H.R. 3064.

[30] Military drivers, farmers, and firefighters, who are generally exempted from CDL requirements, are also exempted from this rule.

[31] "… Executive Order 12866, as supplemented by Executive Order 13563, requires that Federal Agencies propose or adopt regulations that 'to the extent feasible, specify performance objective, rather than specifying the behavior or manner of compliance that regulated entities must adopt.' In light of this Executive Order, and bearing in mind the Agency's obligation to identify and use 'the least burdensome tools for achieving regulatory ends,' FMCSA has determined not to impose a mandatory minimum behind the wheel hours requirement …" Federal Motor Carrier Safety Administration, "Minimum Training Requirements for Entry-Level Commercial Motor Vehicles Operators: Final Rule," 81 *Federal Register* 88732, December 7, 2016.

Hours-of-Service Limits

Improvements in vehicles and in highway design have contributed to reductions in truck crashes over time. Improvements in driver safety are more difficult to produce. One of the limiting human factors for large truck safety is the driver's experience of fatigue. Fatigued drivers are more likely to be involved in a crash. For this reason, Congress has authorized FMCSA to limit the amount of time a commercial driver may drive;[32] FMCSA has implemented that limitation through the Hours of Service Rule.[33]

Currently, commercial drivers who are subject to the Hours of Service (HOS) rule[34] are limited to driving no more than 11 hours in a 24-hour period, and may not be on duty (working but not driving) for more than 14 hours in a 24-hour period. Over the course of a week, a driver may not drive for more than 60 hours (or more than 70 hours over eight consecutive days), unless the driver takes a 34-hour break from work during the seven- or eight-day period, in which case they can "restart" the work cycle (this is referred to as the "34-hour restart" provision).

The "34-Hour Restart" Rule

The most active regulatory issue related to commercial driver hours of service in recent years has been the "34-hour restart" requirement. In June 2013, new FMCSA regulations enacted in 2011 took effect, restricting use of the 34-hour restart period by (1) requiring that the 34-hour off-duty period cover two consecutive 1 a.m.-5 a.m. periods and (2) allowing drivers to take this 34-hour "restart" only once in a 168-hour (seven-day) span.[35]

The purpose of the amended rule was to promote highway safety by reducing the risk of driver fatigue. Under the previous rule, drivers could start their 34-hour rest period at any time of the day, and could take more than one such rest period per seven-day period. Thus a driver could work the maximum permitted time per day (14 hours) and take the 34-hour restart after five days, and then, after a rest period of as little as one night and two daytime periods, work 14 hours a day for another five consecutive days. FMCSA asserted that this schedule allowed a driver to work up to 82 hours over a seven-day period, which it judged did not allow sufficient rest to prevent driver fatigue.

By requiring that the 34-hour restart period cover two 1 a.m.-5 a.m. periods, the new requirement was intended to allow drivers to get more sleep during the night hours, when studies indicate that sleep is most restorative (compared to sleeping during other times of the day). FMCSA published a cost-benefit analysis in the final rule that implemented the 2013 changes. The analysis found that the changes were cost-beneficial, but critics of the changes said that when the change went into effect the costs were greater than FMCSA had estimated, including increased congestion during daytime traffic hours (since drivers who previously might have driven during the night were required to rest during nighttime hours).[36]

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[32] 49 U.S.C. §31502.

[33] The Hours of Service regulation (which is also commonly referred to as the Hours of Service Rule) is found at 49 C.F.R. Part 395.

[34] As of 2014, FMCSA reported that 2.84 million commercial drivers were subject to the HOS rule. "Agency Information collection activities: HOS of drivers," 79 *Federal Register* 54776, September 12, 2014.

[35] If drivers work no more than 60 hours in a week, they do not have to take the 34-hour restart; for example, if a driver works eight hours every day, for a total of 56 hours in any seven-day period, that driver could continue to work the same schedule indefinitely.

[36] Office of the Inspector General, U.S. Department of Transportation, Letter to the House and Senate Committees on

Congress suspended enforcement of the 2013 restart rule change in the FY2015 DOT appropriations act, the FY2016 DOT appropriations act, and the FY2017 Continuing Resolution adopted in December 2016, pending the results of a study of the costs and benefits of the change.[37] This effectively reestablished the restart requirement that had been in effect prior to June 2013, and the left the rollback in place unless the study required by the FY2015 act found that commercial drivers operating under the new restart provisions showed "statistically significant improvement in all outcomes related to safety, operator fatigue, driver health and longevity, and work schedules."

The cost-benefit study mandated in the FY2015 DOT appropriations act was transmitted to Congress on March 2, 2017.[38] The study did not find a net benefit from the two suspended provisions—the one restart per week and the two consecutive 1 a.m. to 5 a.m. rest periods—on driver operations, safety, fatigue, and health.

Hours-of-Service Rule Enforcement—Electronic Logging Device Requirement

To enforce the rule limiting drivers' hours of service, FMCSA requires drivers to keep records of how many hours they have driven each day and each week. These records are subject to inspection. The paper-based records require time and attention to maintain, and are subject to falsification.

In order to better enforce the hours-of-service rules and thus deter drivers from driving while fatigued, Congress mandated that commercial drivers subject to hours-of-service recordkeeping requirements should have vehicles equipped with electronic logging devices (ELDs), which will track how long they have been driving. To address concerns that carriers might use that information to harass drivers who have taken a break, Congress also directed FMCSA to prevent companies from using the ELD information to harass drivers.

FMCSA issued a final rule on ELDs in 2015. The rule provided for a two-year phase-in period, and is to take effect in December 2017.[39]

Sleep Apnea

Obstructive sleep apnea is a respiratory condition that can interfere with sound sleep. This condition interferes with a person's breathing while asleep, causing repeated awakening. As a result, a person with sleep apnea can be fatigued even after getting what might seem to be a

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Appropriations and the Secretary Regarding OIG's Audit of FMCSA's Hours of Service Restart Study, March 2, 2017, p. 3, https://www.oig.dot.gov/sites/default/files/OIG%20Correspondence%20on%20HOS%20Restart%20Study%5E3-2-17.pdf.

[37] This suspension was included in the FY2015 DOT appropriations act (§133, Division K of P.L. 113-235), repeated in a slightly different form in the FY2016 DOT appropriations act (§133 of Division L of P.L. 114-113), and in the FY2017 continuing resolution (P.L. 114-254, §180)

[38] Federal Motor Carrier Safety Administration, U.S. Department of Transportation, *Commercial Motor Vehicle Driver Restart Study Report to Congress*, https://www.fmcsa.dot.gov/sites/fmcsa.dot.gov/files/docs/CMV%20DRS%20Report%20to%20Congress%20FINAL%20March%202017.pdf; Office of the Inspector General, U.S. Department of Transportation, Letter to the House and Senate Committees on Appropriations and the Secretary Regarding OIG's Audit of FMCSA's Hours of Service Restart Study, March 2, 2017, p. 3, https://www.oig.dot.gov/sites/default/files/OIG%20Correspondence%20on%20HOS%20Restart%20Study%5E3-2-17.pdf.

[39] See FMCSA, "Final Rule: Electronic Logging Devices and Hours of Service Supporting Documents," 80 *Federal Register* 78292, December 16, 2015.

reasonable amount of sleep. Studies suggest that for people with sleep apnea, eight hours of sleep can be less refreshing than four hours of uninterrupted sleep.

Sleep apnea is associated with a higher risk of being involved in a highway crash. The National Transportation Safety Board has determined that sleep apnea played a role in several truck crashes.[40] Sleep apnea has also been linked to health problems, including high blood pressure, heart disease, and stroke. People with sleep apnea are often unaware they have it. Risk factors for developing sleep apnea include obesity, male gender, advancing age, large neck size, small throat, and family history of sleep apnea.

FMCSA has the authority to set minimum qualifications, including medical and physical qualifications, for commercial drivers operating in interstate commerce. It has determined that obstructive sleep apnea can be a physically disqualifying condition for a commercial driver.

FMCSA regulations require every commercial driver to undergo an annual examination by an authorized physician to determine whether the individual is medically fit to drive. FMCSA's guidance to medical examiners has included a reference to sleep apnea since the guidance was first issued in 2000.[41] The current guidance simply lists sleep apnea as one of several respiratory conditions that may interfere with a driver's ability to drive safely, and FMCSA's medical advisory committee has expressed concern that the guidance is not helpful in cases where a medical examiner does not have sufficient experience or information to suspect that a driver has sleep apnea.

FMCSA therefore has sought to strengthen the guidance by providing criteria for medical examiners to be alert for sleep apnea in drivers. The simplest criterion is obesity; studies indicate that around 80% of people with a body mass index (BMI) of 35 or greater have sleep apnea. In December 2011, the FMCSA's Motor Carrier Safety Advisory Committee and Medical Review Board recommended that medical examiners should routinely test drivers whose BMI is 35 or greater for sleep apnea. In April 2012 FMCSA published the recommendation in the *Federal Register*, seeking public comment. A week later FMCSA announced it was withdrawing the proposed guidance, and would reissue proposed guidance later in the year. No further guidance proposals were published. In October 2013 Congress legislated that DOT can require that commercial vehicle operators be screened for sleep disorders, including sleep apnea, only through a formal rulemaking procedure, a more rigorous process than that required for proposals for regulatory guidance.[42]

In March 2016 FMCSA began a joint rulemaking with the Federal Railroad Administration to consider requiring that any commercial driver (or train operator) who exhibits certain risk factors must be screened for obstructive sleep apnea. If adopted, such a rule would eliminate the discretion of a medical fitness examiner to determine whether such screening is necessary.[43]

[40] 81 *Federal Register* 12643, March 10, 2016.

[41] Regulations for the medical examination are at 49 C.F.R. §391.43; see http://www.fmcsa.dot.gov/rules-regulations/administration/fmcsr/fmcsrruletext.aspx?reg=391.43. FMCSA's guidance for medical examiners is available at http://nrcme.fmcsa.dot.gov/mehandbook/MEhandbook.aspx.

[42] P.L. 113-145, §1. Note that this does not apply to requirements that were in place prior to September 1, 2013.

[43] The Advance Notice of Proposed Rulemaking is at https://www.gpo.gov/fdsys/pkg/FR-2016-03-10/pdf/2016-05396.pdf.

Drug and Alcohol Enforcement

Alcohol or drug impairment appears to be a minor factor in large truck crashes resulting in fatalities, with around 1% of large truck drivers in such incidents found to be impaired by alcohol, drugs, or medicine.[44] However, the consequences of a commercial driver driving while impaired can be significant due to the size and weight of their vehicles.

Commercial drivers are subject to more stringent impairment standards than other drivers. A commercial driver with a blood alcohol concentration of 0.04 is considered impaired,[45] whereas all states now set the impairment threshold for noncommercial drivers at 0.08. A driver is to be disqualified from driving a commercial vehicle for one year upon first conviction for driving under the influence of alcohol or a controlled substance, or upon refusal to be tested for drug and alcohol use when driving any vehicle. Upon a second conviction or refusal to be tested, the driver is to be disqualified for life.[46]

Motor carriers are required to review the drug and alcohol test status of their prospective employees at the time of hiring, but must rely on the drivers to provide this information. Some drivers have failed to disclose their test results. Motor carriers are also required to test drivers for drug use prior to employment and for both drug and alcohol use after a crash, when the employer has a reasonable suspicion that a driver is impaired, and randomly.[47]

In 1999, the National Transportation Safety Board recommended that FMCSA develop a database to track drug and alcohol test results and test refusals and that it require prospective employers and certifying authorities to check the system before making decisions on job applicants.[48] This recommendation was echoed by the Government Accountability Office (GAO) in reports about commercial drivers who changed employers to evade the impact of failed tests.[49] In 2012, Congress directed FMCSA to establish such a national database with alcohol and controlled substances test results for all CDL holders.[50] FMCSA issued the final rule establishing this database in December 2016. The database is to become operational in 2020.

Driver Distraction

Federal regulations bar commercial drivers from texting or using handheld phones while driving. Regarding the ban on handheld phones, researchers contend that the primary risk to drivers using

[44] U.S. Department of Transportation, *Federal Motor Carrier Safety Administration, Large Truck and Bus Crash Facts 2014*, "People," Table 31: Drivers of Large Trucks in Fatal Crashes by Distraction-Related and Impairment-Related Factors, 2012-2014.

[45] This applies to all commercial drivers, not just those in interstate commerce.

[46] 49 C.F.R. §383.51; if the driver is transporting hazardous materials, the penalty for a first conviction or refusal to be tested is a three-year disqualification.

[47] FMCSA requires that employers conduct random tests at certain rates, based on the reported random test violation rates for the entire industry. In 2016 the required random test rates were 25% for drug testing and 10% for alcohol testing; this meant that an employer who had 100 drivers had to conduct at least 25 drug tests and 10 alcohol tests of randomly selected employees during the year.

[48] National Transportation Safety Board, *Highway Accident Report: Motorcoach Run-Off-The-Road, New Orleans, Louisiana, May 9, 1999*, NTSB Report Number HAR-01-01.

[49] GAO–08–600, *Improvements to Drug Testing Programs Could Better Identify Illegal Drug Users and Keep Them Off the Road*, May 15, 2008; and GAO–08–829R, *Examples of Job Hopping by Commercial Drivers After Failing Drug Tests*, June 30, 2008.

[50] Moving Ahead for Progress in the 21st Century Act (MAP-21), P.L. 112-141, §32402.

phones is not from the physical distraction of holding them but from the cognitive distraction of carrying on a conversation while driving.

It is difficult to enforce driver distraction laws in general, and perhaps even more difficult to enforce them against drivers who sit high above the level of highway patrol cars. Drivers who have been in crashes may be reluctant to incriminate themselves by admitting to having been in violation of such laws at the time of the crash.

Compliance, Safety, and Accountability (CSA) Program

Since 2010, FMCSA has used information from roadside inspections and crashes to rank each carrier's safety performance relative to other carriers in seven categories in an effort to identify high-risk carriers. These carriers can then be targeted to enforcement actions.

The program has three parts:

1. the Safety Measurement System (SMS), which uses roadside inspection and crash data to identify high-risk carriers;
2. a variety of compliance and enforcement interventions, ranging from warning letters to putting a carrier out of operation, which are intended to address safety problems; and
3. the Safety Fitness Determination, a rating of a carrier's safety performance based on a review of its compliance with federal rules or other investigations tied to a requirement that a carrier receiving a rating of "unsatisfactory" must cease operations within 45 days.

Safety Measurement System Issues

There are three major issues for the SMS: (1) the availability of data used in the system, (2) the quality of this data, and (3) the effectiveness of the SMS in predicting crashes given the current limitations on data availability and quality.

Data Availability

Most carriers have few trucks and are not often inspected. GAO found that there is not enough information for these carriers to produce reliable scores, so that most carriers either receive no percentile ranking or receive a ranking that has a large margin of error because it is based on a small number of data points. Because the percentile rankings of carriers are based on comparison with other carriers rather than a fixed standard, unrepresentative results for some carriers can affect the rankings of other carriers. As a result, GAO found that FMCSA had unjustifiably identified many carriers as high risk. GAO found that by limiting the carriers for which scores were generated to those that had more information available, FMCSA could better identify high-risk carriers and thus make better use of its limited resources to prevent crashes.[51]

Data Quality

The data in the SMS come from both FMCSA inspectors and state safety personnel who conduct roadside inspections, investigate crashes, and ticket moving violations. The stringency and thoroughness of the activities of these personnel vary from state to state, as well as from person to

[51] U.S. Government Accountability Office, *Federal Motor Carrier Safety: Modifying the Compliance, Safety, Accountability Program Would Improve the Ability to Identify High Risk Carriers*, GAO-14-114, February 2014.

person, and may be affected by other random factors (e.g., inspections and investigations may be less thorough in harsh weather conditions or dangerous traffic conditions).

Predictive Value

In an analysis published in 2014, GAO found that most of the regulations that are used to calculate SMS scores are not violated often enough to determine whether they are strongly associated with the risk that individual carriers will be involved in crashes.

Compliance and Enforcement Intervention Issues

Fewer Interventions

GAO found that FMCSA has been applying fewer interventions over time since implementing CSA, with about 26% fewer investigation interventions in FY2015 compared to FY2012 (from over 18,000 to under 14,000).[52] FMCSA responded that this was due to its investigators spending more time reviewing motor carriers' safety management practices to identify the underlying causes of safety problems. FMCSA said it made this change in response to a recommendation from an independent review team and as part of continuous improvement efforts instituted in FY2013.

Evaluating the Effectiveness of Interventions

FMCSA has declared that improving the effectiveness and efficiency of its safety interventions is a goal. It has evaluated its interventions and found them to be effective, but GAO reported that limitations in the design and methodology of FMCSA's effectiveness model limited the usefulness of the results. For example, the model does not assess the individual types of interventions, so that FMCSA is limited in assessing the effectiveness of intervention types. Also, FMCSA lacks current cost estimates of the various interventions, and so is limited in its ability to evaluate the efficiency (that is, the cost-effectiveness) of the various interventions.

Safety Fitness Determination Issues

FMCSA's current Safety Fitness Determination (SFD) process is resource-intensive (since it relies on compliance reviews or other investigations), reaches only a small portion of the industry each year,[53] allows carriers to receive a rating that is less than "safe" ("conditional") and yet continue to operate indefinitely, and does not make use of all the information FMCSA has about carriers' safety performance. The National Transportation Safety Board has recommended changes to the SFD process, including using SMS rating scores to help determine the safety fitness rating, and allowing FMCSA to rate a carrier as "unsatisfactory" based only on driver and vehicle performance-based data.

[52] U.S. Government Accountability Office. *Motor Carriers: Better Information Needed to Assess Effectiveness and Efficiency of Safety Interventions*, GAO-17-49, October 2016.

[53] In 2012, FMCSA and its state partners completed roughly 17,000 ratable reviews (reviews that could have resulted in an unsatisfactory SFD) out of roughly 525,000 active carriers, or 3% of the industry population. FMCSA, "Notice of Proposed Rulemaking: Carrier Safety Fitness Determination," 81 *Federal Register* 3569, January 21, 2016.

FMCSA proposed to amend the SFD process to address these issues in January 2016.[54] No schedule for the next stage of the rulemaking has been determined.[55]

Recent Congressional Actions Related to the CSA Program

Congress passed a surface transportation reauthorization act in December 2015[56] that contained several provisions affecting the CSA program. The act

- directed the National Research Council to study the CSA program, particularly its Safety Measurement System (SMS);
- directed FMCSA to give some credit or an improved SMS percentile to a motor carrier that implements certain safety measures;
- directed FMCSA to remove the percentile rankings of carriers from public view until the National Research Council study is completed;
- directed FMCSA to develop specifications to ensure consistent and accurate input of data into systems and databases relating to the CSA program; and
- directed FMCSA's Motor Carrier Safety Advisory Committee to review the treatment of preventable crashes in the SMS.[57]

FMCSA's Regulatory Backlog

Much of FMCSA's regulatory agenda is set by congressional action through new laws that need new regulations for implementation. Other sources of rulemakings include court decisions that call for revisions to existing rules. As of December 2016, FMCSA had 13 rulemakings in progress, some of which had been under way for more than a decade.[58]

Some Members of Congress and others have expressed concern that FMCSA is moving too slowly to complete its regulatory workload. In the Fixing America's Surface Transportation (FAST) Act, Congress directed that FMCSA complete outstanding rulemakings that were required by statute before beginning any new rulemakings. The same law directed FMCSA to initiate 20 new rulemakings. These include changes to FMCSA's major grant program to states to support truck safety; allowing testing of hair as an alternative to urine tests for certain drug tests; enabling certain veterans to more easily obtain commercial driver's licenses; and a variety of exemptions from commercial motor vehicle regulation for specialized vehicles.[59]

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[54] Ibid.

[55] As of the DOT's December 2016 *Status of Significant Rulemakings Report*, the most current one available as of March 2017.

[56] P.L. 114-94.

[57] Preventable is defined by reference to 49 C.F.R. 385, Appendix B: "Preventability will be determined according to the following standard: 'If a driver, who exercises normal judgment and foresight could have foreseen the possibility of the accident that in fact occurred, and avoided it by taking steps within his/her control which would not have risked causing another kind of mishap, the accident was preventable.'"

[58] U.S. Department of Transportation, *Report on Significant Rulemakings*, December 2016.

[59] Federal Motor Carrier Safety Administration, *FAST Act: Overview*, February 24, 2016, https://www.fmcsa.dot.gov/fastact/overview.

Author Information

David Randall Peterman
Analyst in Transportation Policy

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