Congressional Research Service
Informing the legislative debate since 1914

The Hours of Service (HOS) Rule for Commercial Truck Drivers and the Electronic Logging Device (ELD) Mandate

David Randall Peterman
Analyst in Transportation Policy

March 18, 2020

Congressional Research Service
7-....
www.crs.gov
R46276

CRS REPORT
Prepared for Members and Committees of Congress

Congressional Research Service
Informing the legislative debate since 1914

SUMMARY

R46276

March 18, 2020

David Randall Peterman
Analyst in Transportation Policy
-redacted-@crs.loc.gov

For a copy of the full report, please call 7-.... or visit www.crs.gov.

The Hours of Service (HOS) Rule for Commercial Truck Drivers and the Electronic Logging Device (ELD) Mandate

In response to the COVID-19 outbreak, on March 13, 2020, the Department of Transportation (DOT) issued a national emergency declaration to exempt from the Hours of Service (HOS) rule through April 12, 2020, commercial drivers providing direct assistance in support of relief efforts related to the virus. This includes transport of certain supplies and equipment, as well as personnel. Drivers are still required to have at least 10 consecutive hours off duty (eight hours if transporting passengers) before returning to duty.

It has been estimated that up to 20% of bus and large truck crashes in the United States involve fatigued drivers. In order to promote safety by reducing the incidence of fatigue among commercial drivers, federal law limits the number of hours a driver can drive through the HOS rule. Currently the HOS rule allows truck drivers to work up to 14 hours a day, during which time they can drive up to 11 hours, followed by at least 10 hours off duty before coming on duty again; also, within the first 8 hours on duty drivers must take a 30-minute break in order to continue driving beyond 8 hours. Bus drivers transporting passengers have slightly different limits. Approximately 3 million drivers are subject to the federal HOS rule.

For decades, drivers recorded their service hours in paper log books. This method made violations of the HOS rule easy to hide. Since many drivers are paid by the mile, some drivers violated the HOS rule in order to drive longer and make more money. Some drivers said they had to violate the rule to meet the schedules imposed on them by dispatchers. There were concerns about the safety impacts of having drivers become even more fatigued by driving longer than the maximum times allowed by the HOS rule.

In an effort to improve compliance with the HOS rule, in 2012 Congress mandated that trucks be equipped with electronic logging devices (ELDs), hardware devices that are connected to the truck engine to record driving time and transmit it during roadside inspections. In 2015, the Federal Motor Carrier Safety Administration (FMCSA) finalized regulations to implement that mandate. The mandate took effect in December 2017. FMCSA determined that the mandatory use of ELDs would improve highway safety, and could improve driver health if drivers take advantage of the rest periods mandated under the regulations to get adequate sleep.

Since the ELD mandate went into effect, certain sectors of the commercial trucking industry have raised concerns about its impact. Since the ELD mandate did not change the HOS rule, but made it harder to evade the HOS limits without being detected, those concerns suggest that some operators may have routinely been out of compliance with the HOS rule. One sector that has been particularly critical of the improved enforcement of the HOS limits is the livestock hauling industry. The industry's business model has evolved to depend on hauling livestock long distances from around the nation to feedlots and slaughterhouses located mostly in the central states, and each stop along the way poses hazards to the livestock. Congress has repeatedly provided temporary waivers from the ELD mandate for livestock haulers, pending proposed revisions of the HOS rule by FMCSA. Currently the agency is prohibited from using federal funding to enforce the HOS rule against livestock haulers until September 30, 2020.

The use of ELDs may help to quantify a challenge faced by drivers: inroads into their driving time caused by delays in loading and unloading their cargo by shippers and receivers. Drivers are typically paid by the mile, and by one estimate this unpaid "driver detention time" costs drivers $1.1 billion to $1.3 billion a year (an average of $1,300 to $1,500 per driver). This detention time is also estimated to increase the risk of crashes due in part to encouraging drivers to speed to make up for mileage that otherwise could not be driven during the allowable work time because of detention time.

As the ELD mandate has been in effect for two years now, some impacts are starting to come into focus. An array of ELDs are now offered, some at prices below FMCSA's initial estimates. The impact of improved enforcement on industry activity and truck safety is not yet clear. Legislation is being proposed to help address the shortage of parking spots for truck drivers that can make it difficult to find a safe place to stop when they reach their HOS time limit. FMCSA has proposed a set of relatively minor changes to the HOS rule to, in the agency's words, increase safety while providing flexibility to drivers.

Contents

Introduction 1
Understanding Driver Fatigue 2
    Fatigue Models 4
The Legal Background of the Hours of Service (HOS) Rule 5
HOS Rule and Enforcement 6
Fatigue Risk Management Plans and Systems 8
The Electronic Logging Device (ELD) Rule 9
    Potential Benefits of the ELD Rule 9
        Safety Benefits 9
        Operational Benefits 10
        Potential Policy/Regulatory Benefits 11
    Potential Costs of the ELD Rule 12
Issues 12
    The Impact of Pay by the Mile on Safety 12
    Detention Time 12
    Shortage of Parking Spots for Truck Drivers 13
    Lack of Data Regarding Bus Drivers and Crashes 14
Proposed Changes to the HOS Rule 14
    Adjustments Within the General Framework ("Increased Flexibility") 14
    ELD Exemption for Livestock Haulers 15

Tables

Table 1. Summary of Commercial Driver Hours of Service Regulation 6

Contacts

Author Contact Information 17

Introduction

In response to the COVID-19 outbreak, on March 13, 2020, the Department of Transportation (DOT) issued a national emergency declaration to suspend the Hours of Service (HOS) rule through April 12, 2020, for commercial drivers providing direct assistance in support of relief efforts related to the virus. This includes transport of supplies and equipment related to the testing, diagnosis, and treatment of COVID-19 and for the prevention of its spread in communities, food for emergency restocking of stores, and certain other supplies, equipment, and personnel related to the response to the virus.[1]

Driving a commercial vehicle is one of the most dangerous occupations in the country. In 2018, 28.3 out of 100,000 full-time equivalent truck transportation workers died on the job, eight times the average rate across all occupations.[2] Commercial truck driving is also dangerous to others; in 2017, 3,920 people not engaged in trucking were killed in crashes involving trucks, in addition to 841 truck occupants.[3] Nor has trucking become safer in recent years: the fatality rate for occupants of large trucks, including both drivers and passengers, rose from 0.17 per 100 million vehicle miles traveled in 2009 to 0.28 in 2017.[4] In that same year, 232 buses were involved in fatal accidents, including 13 intercity buses.[5]

It has been estimated that up to 20% of crashes involving large truck or buses involve fatigued drivers.[6] Long driving hours, irregular work schedules, and variable sleeping circumstances make driver fatigue a significant concern in the commercial truck and bus industries. Truck and bus drivers are typically driving within a few feet of other drivers whose actions are not entirely predictable, so the commercial drivers need a generally high level of alertness. Automated driver-assistance safety systems (e.g., lane departure warning, automatic emergency braking) are now becoming available for commercial vehicles to help commercial drivers deal with traffic interactions, but such systems are not yet widespread.

Congress has legislated limits on the amount of time that commercial drivers are allowed to drive in a day and in a week since 1935. These regulations are known as the HOS rule. An estimated 3.42 million drivers and 540,000 carriers are subject to the HOS rule.[7]

[1] U.S. Department of Transportation, "Emergency Declaration Under 49 CFR §390.23 No. 2020-002," March 13, 2020, https://www.fmcsa.dot.gov/emergency/emergency-declaration-under-49-cfr-ss-39023-no-2020-002

[2] Bureau of Labor Statistics, National Census of Fatal Occupational Injuries in 2018, USDL-19-2194, December 17, 2019, Table 4, https://www.bls.gov/news.release/pdf/cfoi.pdf.

[3] National Highway Traffic Safety Administration, *Traffic Safety Facts 2017*, Table 11: Persons Killed or Injured in Crashes Involving a Large Truck by Person Type and Crash Type, 1975-2017, https://crashstats.nhtsa.dot.gov/Api/Public/ViewPublication/812806.

[4] Ibid., Table 9: Large Truck Occupants Killed or Injured and Fatality and Injury Rates per Registered Vehicle and Vehicle Miles of Travel, 1975-2017.

[5] National Highway Traffic Safety Administration, *Traffic Safety Facts 2017*, Table 37: Vehicles Involved in Fatal Crashes by Body Type, https://crashstats.nhtsa.dot.gov/Api/Public/ViewPublication/812806.

[6] National Academies of Sciences, Engineering, and Medicine, *Commercial Motor Vehicle Driver Fatigue, Long-Term Health, and Highway Safety: Research Needs*, 2016, p. 17, https://doi.org/10.17226/21921.

[7] The Federal Motor Carrier Safety Administration (FMCSA) estimated that 3.42 million commercial drivers were subject to the HOS rule. "Agency Information Collection Activities: Revision of an Approved Information Collection: Hours of Service (HOS) of Drivers Regulation," 84 *Federal Register* 8564, March 8, 2019, https://www.govinfo.gov/content/pkg/FR-2019-03-08/pdf/2019-04190.pdf.

In 2012, concerned about the impact of fatigue among truck and bus drivers on highway safety, Congress mandated that most commercial drivers of trucks and buses have their hours of service recorded by electronic logging devices (ELDs). This mandate went into effect in December 2017.

This report reviews the ELD rule and the HOS rule that motivated it. The term "driver," as used in the report, refers to commercial drivers of trucks and buses, unless otherwise indicated.

Understanding Driver Fatigue

The commercial motor vehicle industry operates 24 hours a day, 7 days a week. In addition, there are typically economic incentives for both carriers and individual commercial drivers to have drivers work well beyond a standard 40-hour workweek. As a result, managing fatigue among truck and bus drivers is a challenge.

Fatigue includes a general lack of alertness and deterioration in mental and physical performance. Fatigue can increase a driver's risk of poor performance or impaired decision-making, leading to a crash or other incident harmful to the driver and to others. Studies have found that aviation, railroad, and public transportation workers face similar risks from fatigue. The National Transportation Safety Board has included managing fatigue among transportation workers on its "most wanted" list of safety improvements since 1990.

A major complication in measuring the extent of fatigue-related crashes, as well as in managing fatigue among drivers, is that there is no convenient marker for measuring fatigue, akin to a blood-alcohol content level for measuring intoxication.[8] In the absence of such a marker, it is difficult to determine the contribution of fatigue to crashes, with the result that the role of fatigue in crashes is likely underestimated.[9] A National Academies of Sciences, Engineering, and Medicine panel concluded that, in spite of a number of studies that have produced various estimates of the proportion of crashes that can be attributed to driver fatigue, there is not enough information to support a reliable estimate.[10]

In any given case, it may be difficult to determine whether fatigue played a role in a commercial motor vehicle crash incident. The prevailing theory of crash investigators is that a crash is usually the result of a number of factors, not a single factor. In the case of commercial motor vehicle crashes, crash investigators, lacking a biological marker for fatigue that they can measure and typically not trained to recognize evidence of fatigue after the fact, are reluctant to list fatigue as a factor on crash reports, because they may be expected to explain their determination in court.

While sleep is generally an antidote to fatigue, sleep is not always easy to come by and is not always restorative. Federal regulations can limit the number of hours drivers spend on duty and

[8] Researchers have developed 3-minute and 5-minute versions of the 10-minute psychomotor vigilance test; the 10-minute test is often used in sleep research and has been demonstrated as valid for identifying operator fatigue. It is not yet clear whether the 3-minute or 5-minute versions are feasible for use in transportation operational environments. National Academies of Sciences, Engineering, and Medicine, Panel on Research Methodologies and Statistical Approaches to Understanding Driver Fatigue Factors in Motor Carrier Safety and Driver Health, *Commercial Motor Vehicle Driver Fatigue, Long-Term Health, And Highway Safety: Research Needs*, 2016, p. 157, https://www.nap.edu/catalog/21921/commercial-motor-vehicle-driver-fatigue-long-term-health-and-highway-safety.

[9] FMCSA, "Hours of Service for Drivers; Driver Rest and Sleep for Safe Operations; Proposed Rule," 65 *Federal Register* 25545, May 2, 2000, https://www.gpo.gov/fdsys/pkg/FR-2000-05-02/pdf/00-10703.pdf.

[10] National Academies of Sciences, Engineering, and Medicine, Panel on Research Methodologies and Statistical Approaches to Understanding Driver Fatigue Factors in Motor Carrier Safety and Driver Health, *Commercial Motor Vehicle Driver Fatigue, Long-Term Health, And Highway Safety: Research Needs*, 2016, p. 111, https://www.nap.edu/catalog/21921/commercial-motor-vehicle-driver-fatigue-long-term-health-and-highway-safety.

operating vehicles, but the regulations cannot mandate that those drivers rest when off duty; that is the responsibility of the driver.[11] It is a common experience for a person to feel tired and attempt to fall asleep, and yet to lie awake, impatiently awaiting the onset of sleep.[12] Moreover, medical conditions such as obstructive sleep apnea can result in people getting what appear to be adequate hours of sleep and yet still being subject to fatigue because their sleep is not restorative.[13] Sleep apnea is widespread among commercial truck drivers.[14]

Many other factors contribute to the experience of, and severity of, fatigue. A study of fatigue among airline crew members, which is also relevant to drivers, identifies the following factors:

- the time of day. All else being equal, fatigue is most likely to occur and to be most severe between 2 a.m. and 6 a.m., due to circadian rhythms.[15]
- the length of time a person has been working without a break. The longer the period, the more likely the worker is to experience fatigue.
- the length of time a person has been awake is directly related to the likelihood he or she will experience fatigue.
- the amount of sleep in the previous 24-hour period. The less sleep, the more likely the person is to experience fatigue.
- the amount of sleep a person has had in the previous several days. Getting insufficient sleep for several days has cumulative effects.
- variation in individuals' responses to these factors.[16]

Translated into the nature of a driver's work, these factors appear in such forms as long periods of wakefulness, long driving hours, inadequate sleep, erratic work schedules, disruption of circadian cycles, fatigue from work-related non-driving tasks (such as helping to load and unload the vehicle), difficulties in finding a safe place to rest when it's time to stop, and insufficient time to

[11] For example, in the case of the truck driver who crashed into the rear of the stationary limousine bus carrying comedian Tracy Morgan in June 2014, killing one passenger and seriously injuring four others, the driver had driven for 12 hours in his personal vehicle from his home in Georgia to Delaware, where he then started his on-duty period. National Transportation Safety Board, *Accident Report: Multivehicle Work Zone Crash on Interstate 95, Cranbury, New Jersey, June 7, 2014*, NTSB/HAR-15/02, p. 34, https://www.ntsb.gov/investigations/AccidentReports/Reports/HAR1502.pdf.

[12] Difficulty falling sleep, waking up frequently during the sleep period, waking earlier than planned and not being able to get back to sleep, or not feeling rested after sleep are symptoms of insomnia; studies suggest that 30% or more of adults experience one or more of these symptoms periodically. American Academy of Sleep Medicine, "Insomnia," no date, https://aasm.org/resources/factsheets/insomnia.pdf.

[13] In obstructive sleep apnea (OSA) a person's throat constricts as the person's muscles relax during sleep, inhibiting or stopping breathing and causing the person to wake up enough to resume breathing. As breathing is an autonomic activity, a person may be unaware of this behavior and thus of having OSA. OSA varies in severity, measured by the number of times a person wakes during an hour of sleep. The defining symptoms of OSA are a tendency for a person to fall asleep in the course of daytime activities if given the opportunity to sit or rest, and snoring.

[14] Sleep apnea is estimated to affect around 5% of the general population, but one-quarter or more of commercial drivers. A. I. Pack, G. Maislin, B. Staley, et al., "Impaired performance in commercial drivers: role of sleep apnea and short sleep duration," *American Journal of Respiratory Critical Care Medicine*, 2006, vol. 174, pp. 446-454, cited in Stephen Tregear, James Reston, Karen Schoelles, Barbara Phillips, "Obstructive Sleep Apnea and Risk of Motor Vehicle Crashes: Systematic Review and Meta-Analysis," *Journal of Clinical Sleep Medicine*, vol. 5, no. 6, December 15, 2009, pp. 573-581, https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2792976/#B4.

[15] Circadian rhythms refer to periods of wakefulness and drowsiness occurring within a roughly 24-hour period the timing of which appears to be governed by a biological clock.

[16] Federal Aviation Administration, "Flightcrew Member Duty and Rest Requirements; Final Rule," 77 *Federal Register* 333, January 4, 2012, https://www.gpo.gov/fdsys/pkg/FR-2012-01-04/pdf/2011-33078.pdf.

recover before starting the next work period.[17] Other factors that have been cited as contributing to fatigue include prolonged experience of whole body vibration, noise, carbon monoxide exposure, extreme temperatures, and working in a high-pressure situation with little autonomy and control over one's time.[18]

Conversely, studies have identified safety practices that may help to offset fatigue-inducing factors associated with commercial driving, such as establishing a strong safety culture within a truck or bus firm, having dispatchers take account of fatigue when setting schedules, and providing assistance with fatiguing behaviors such as loading and unloading the truck.[19]

Fatigue Models

Directly studying the elements that affect driver fatigue is difficult, because individuals' reports of the quality and duration of their sleep are not very reliable, even in the absence of incentives to slant the reports. Techniques to directly measure sleep quality and duration are invasive and, at the scale needed for reliable studies, expensive.

To address these difficulties, one approach taken by fatigue researchers has been to develop biomathematical models to estimate alertness based on sleep-wake schedules and the timing of work schedules. Such models can be used to improve safety and reduce risk of fatigue by comparing different work-shift or work-rest schedules. Such models are of interest to the Department of Defense as well as the Department of Transportation (DOT). Currently, the Federal Aviation Administration uses a biomathematical model as part of its process for evaluating fatigue risk management system applications from airlines.

While such models can be useful for developing general work-rest schedules, current models do not account for individual differences in response to factors that lead to fatigue. A National Academies of Sciences, Engineering, and Medicine report on fatigue among truck drivers recommends caution in using biomathematical models to deal with irregular work schedules.[20] Also, given the diversity of driver groups, the use of such models and other approaches to address fatigue is inconsistent. Drivers employed by carriers with large fleets of trucks may have more flexibility in scheduling and may also have company-sponsored health and wellness programs. Drivers for small firms and independent owner-operators may not have such resources.[21]

---

[17] Jenni M. Wise, Karen Heaton, Patricia Patrician, "Fatigue in Long-Haul Truck Drivers: A Concept Analysis," *Workplace Health & Safety*, vol. 67, no. 2, pp. 68-77.

[18] Ibid.

[19] See, for example, Paula C. Morrow and Michael R. Crum, "Antecedents of Fatigue, Close Calls, and Crashes Among Commercial Motor-Vehicle Drivers," *Journal of Safety Research*, vol. 35, no. 1, 2004, pp. 59-69.

[20] National Academies of Sciences, Engineering, and Medicine, Panel on Research Methodologies and Statistical Approaches to Understanding Driver Fatigue Factors in Motor Carrier Safety and Driver Health, *Commercial Motor Vehicle Driver Fatigue, Long-Term Health, And Highway Safety: Research Needs*, 2016, p. 40, https://www.nap.edu/catalog/21921/commercial-motor-vehicle-driver-fatigue-long-term-health-and-highway-safety.,pp. 158-159.

[21] National Academies of Sciences, Engineering, and Medicine, Panel on Research Methodologies and Statistical Approaches to Understanding Driver Fatigue Factors in Motor Carrier Safety and Driver Health, *Commercial Motor Vehicle Driver Fatigue, Long-Term Health, And Highway Safety: Research Needs*, 2016, p. 40, https://www.nap.edu/catalog/21921/commercial-motor-vehicle-driver-fatigue-long-term-health-and-highway-safety.

Lacking a conveniently measurable marker for fatigue, it is difficult for drivers or managers to know in advance the probability that a driver will experience an episode of fatigue. For this reason, attempts to manage fatigue among drivers have focused on limiting the number of hours they can work. Such "hours of service" regulations have been in place for many decades, and have changed over time. The regulations typically limit the length of daily and weekly work periods, and include minimum required periods off-duty during which workers may rest.

The Legal Background of the Hours of Service (HOS) Rule

Congress directed that hours of service regulations be established for the interstate trucking industry in the 1935 law that first subjected interstate trucking to federal safety and economic regulation.[22] The HOS regulation is one facet of the safety standards Congress has established for commercial motor vehicle safety. These standards also address vehicle maintenance and operation, requiring that the tasks imposed on drivers do not impair their ability to drive safely, that their physical condition is adequate for them to drive safely, that the operation of their vehicle does not impair their health, and that they not be coerced by others to operate in violation of safety federal standards.[23]

Commercial long-haul truck and over-the-road bus drivers work face challenging conditions for maintaining health, including long work hours, variable work schedules, long periods of sitting still, and difficulties in getting adequate sound sleep. It is accepted now in the medical community that lack of exercise and insufficient sleep over a period of time has harmful effects on a person's health, including increasing the risk for obesity, diabetes, high blood pressure, and premature death.[24] The International Agency for Research on Cancer has classified night shift work as "probably carcinogenic to humans" due to its disruption of circadian rhythms.[25]

Studies indicate that many commercial drivers sleep less than seven hours per night during a normal work week; in one survey the median was just under seven hours, with a significant number reporting average sleep of less than six hours.[26] That is an improvement from the past. Prior to changes to the HOS rule in 2003, studies had found drivers getting an average of just over five hours of sleep a night. The 2003 changes included an increase in the minimum off-duty time from 8 to 10 consecutive hours. Studies suggest that drivers were getting more sleep after the 2003 HOS changes, an average of 6.28 hours in one study.[27] However, this is still less than the seven to eight hours recommended by experts in the relationship of sleep and health.

[22] In the Motor Carrier Act of 1935, P.L. 74-255.

[23] 49 USC §31136(a).

[24] Namni Goel, Mathias Basner, Hengyi Rao, and David F. Dinges, "Circadian Rhythms, Sleep Deprivation, and Human Performance," *Progress in Molecular Biology and Translational Science*, vol. 119, 2013, pps. 155-190, https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3963479/.

[25] ESMO, Oncology News, "Night Shift Work Classified as Probably Carcinogenic to Humans: IARC update evaluation of carcinogenicity of night shift work," July 10, 2019, https://www.esmo.org/oncology-news/Night-Shift-Work-Classified-as-Probably-Carcinogenic-to-Humans.

[26] See, for example, Adam Hege, Michael Perko, Amber Johnson, Chong Ho Yu, Sevil Sonmez, and Yorghos Apostolopoulos, "Surveying the Impact of Work Hours and Schedules on Commercial Motor Vehicle Driver Sleep," *Safety and Health at Work*, vol. 6, 2015, pp. 104-113.

[27] See, for example, Richard J. Hanowski, Jeffery Hickman, Maria C. Fumero, Rebecca L. Olson, Thomas A. Dingus, "The Sleep of Commercial Vehicle Drivers Under the 2003 Hours-of-Service Regulations," *Accident Analysis &*

HOS Rule and Enforcement

Although these studies suggest that drivers may be getting more sleep as a result of the 2003 HOS changes, fatigue continues to be a significant safety and health issue for drivers. Fatal crashes involving large trucks and buses, after a drop related to reduced activity during the Great Recession of 2008-2009, rose 40% between 2009 and 2017, the most recent year for which statistics are available.[28]

The HOS rule was most recently revised in 2011. It applies to drivers in both passenger and freight operations, though the rule for drivers carrying passengers is slightly different from that for drivers carrying freight (see **Table 1**).[29]

Table 1. Summary of Commercial Driver Hours of Service Regulation

Property-Carrying Drivers	Passenger-Carrying Drivers
11-Hour Driving Limit: may drive a maximum of 11 hours after 10 consecutive hours off duty.	10-Hour Driving Limit: may drive a maximum of 10 hours after 8 consecutive hours off duty.
Adverse Weather Exception: may drive up to 2 more hours (13 total) in adverse conditions, which are defined in 49 C.F.R. §395.2 as "snow, sleet, fog, other adverse weather conditions, a highway covered with snow or ice, or unusual road and traffic conditions, none of which were apparent on the basis of information known to the person dispatching the run at the time it was begun." The 14-hour total driving window (see below) is not extended by this exception.	
14-Hour Limit: may not drive beyond the 14th consecutive hour after coming on duty, following 10 consecutive hours off duty. Off-duty time during the 14-hour period does not extend the 14-hour period.	15-Hour Limit: may not drive after having been on duty for 15 hours, following 8 consecutive hours off duty. Off-duty time is not included in the 15-hour period.
Rest Breaks: may drive only if 8 hours or less have passed since end of driver's last off-duty or sleeper-berth period of at least 30 minutes. Does not apply to drivers using either of the short-haul exceptions in 49 C.F.R. §1(e).	
Sleeper Berth Provision: drivers using the sleeper berth provision must take at least eight consecutive hours in the truck's sleeper berth, plus a separate two consecutive hours either in the sleeper berth, off duty, or any combination of the two.	Sleeper Berth Provision: drivers using a sleeper berth must take at least eight hours in the sleeper berth, and may split the sleeper berth time into two periods provided neither is less than two hours.
60/70-Hour Limit: may not drive after 60/70 hours on duty in 7/8 consecutive days. A driver may restart a 7/8-consecutive-day period after taking 34 or more consecutive hours off duty.	60/70 Hour Limit: May not drive after 60/70 hours on duty in 7/8 consecutive days.

Source: Adapted by CRS from Federal Motor Carrier Safety Administration, Summary of Hours of Service Regulations, https://cms8.fmcsa.dot.gov/regulations/hours-service/summary-hours-service-regulations.

Prevention, vol. 39, no. 6, November 2007, pp. 1140-1145.

[28] FMCA Analysis Division, Large Truck and Bus Crash Facts 2017, FMCSA-RRA-18-018, May 2019, https://www.fmcsa.dot.gov/sites/fmcsa.dot.gov/files/docs/safety/data-and-statistics/461861/ltcbf-2017-final-5-6-2019.pdf.

[29] The HOS rule for truck (i.e., freight-carriage) drivers is slightly different from that for bus (i.e., passenger carriage) drivers: passenger-carrying drivers can drive one hour less per day, but can be on-duty one hour longer, and their on-duty time can be extended by off-duty intervals that are less than eight hours long.

The extent to which drivers are affected by the rule depends greatly on the nature of their work. The 700,000 registered trucking carriers range from independent owner-operators to corporations with thousands of vehicles and employee-drivers. Drivers' work ranges from carrying passengers to carrying diverse types of freight, including specialized cargoes and hazardous materials that require certification beyond a commercial driver's license. Some drivers are at the wheel all day, while others drive a few hours each day and wait in between routes. Local delivery drivers can sleep in their own beds each night, whereas over-the-road truckers may be away from home for weeks at a time. School bus drivers typically work a few hours in the morning and a few hours in the afternoon with a break in between, and are little affected by the HOS rule, while drivers of transit buses may have their schedules determined as much by collective bargaining agreements as by the HOS rule.

The HOS rule is most consequential for long-haul drivers, who may transport several loads during an extended period away from home, during which they may be driving at any hour of the day or night. These drivers represent roughly half of the drivers who are subject to the HOS limits.[30] They are perhaps the most subject to fatigue among the different types of commercial drivers, due to the nature of their work.

Because long-haul truck drivers are typically paid by the mile or by the load, and most roads have a maximum speed limit, the simplest way for a driver to increase income is to drive more hours. This is also the simplest way to deal with unexpected delays a driver may encounter. Thus, many drivers have an incentive to violate the HOS rule. In the period prior to the ELD mandate, violations were frequent.[31] For many decades enforcement was based on review of a paper log-book in which each driver recorded hours of service by hand; due to the ease with which the driver could enter false information, the log-book was sometimes derisively referred to as a "comic book." Surveys of commercial drivers found that 40% to 75% admitted to violating the hours of service regulations, depending on the definition of "violation" used in the survey.[32]

Penalties for violating the HOS rule can be imposed by federal, state, and local officials. A driver found to have violated the HOS limits in a roadside inspection can be forbidden to drive (placed "out of service") until enough off-duty time has passed to bring the driver back into compliance. Federal, state, and local officials can impose civil and criminal penalties for HOS violations. Additionally, both the driver and the employer's safety scores can be affected.[33]A driver with a

[30] Roughly 3.5 million drivers are subject to the rule, of which 1.8 million are classified as long-haul drivers. Katsuhide Takashima, "The U.S. Long-Haul Trucking Industry in Need of Transformation to Address Driver Shortage," *Mitsui & Company Global Strategic Studies Institute Monthly Report,* June 2018, pp. 4-5, https://www.mitsui.com/mgssi/en/report/detail/__icsFiles/afieldfile/2019/08/01/1906o_takashima_e.pdf.

[31] In its Regulatory Impact Analysis accompanying the 2011 Hours of Service rule changes, FMCSA reported that 5% of drivers subject to roadside inspections were found to be violating the hours of service rule sufficiently to be placed out-of-service during the period 2004-2007 and around 4% in 2008 and 2009. FMCSA notes that "it is likely that roadside inspections identify noncompliance less than perfectly." FMCSA, "2010-2011 Hours of Service Rule Regulatory Impact Analysis," RIN 2126-AB26, December 2011, pp. 1-6–1-7, https://cms8.fmcsa.dot.gov/sites/fmcsa.dot.gov/files/docs/2011_HOS_Final_Rule_RIA.pdf. In surveys of driver behavior, a significant percentage of drivers have admitted to violating the HOS rule at least occasionally; for example, in a 2010 survey 10% of drivers admitted violating the HOS rule regularly and another 27% admitted violating it sometimes. In that survey, 24% of drivers admitted at least one near-miss crash in the previous seven days. "National Institute of Occupational Health and Safety (NIOSH) National Survey of Long-Haul Truck Drivers: Injury and Safety," *Accident Analysis and Prevention,* vol. 85, December 2015, pp. 66-72.

[32] Federal Motor Carrier Safety Administration, "Hours of Service for Drivers; Driver Rest and Sleep for Safe Operations; Proposed Rule," 65 *Federal Register* 25570, May 2, 2000, https://www.gpo.gov/fdsys/pkg/FR-2000-05-02/pdf/00-10703.pdf.

[33] In an effort to make more efficient use of limited enforcement resources, FMCSA analyzes the data from inspections,

poor safety score may experience greater difficulty finding work, and a carrier with a poor safety score may be less attractive to prospective drivers and customers and may be subject to closer attention from the Federal Motor Carrier Safety Administration (FMCSA).

Since the HOS rule limits the productivity and flexibility of the industry and the potential income of drivers, changes to the rule are often contentious. For example, one 2011 revision affected the so-called 34-hour restart rule. That provision formerly allowed drivers to resume work within the same week after hitting the 60-hour weekly limit by taking 34 consecutive hours off. [34] The revision required that the 34-hour period would have to encompass two consecutive 1 a.m. to 5 a.m. periods in order to better align the rest period with drivers' circadian rhythms to improve the chances that the drivers got sufficient rest to prevent cumulative fatigue. Practically, it meant that the minimum 34-hour rest period could extend longer, depending on the time of day at which the driver began it.

Portions of the industry and some drivers protested that this change limited the flexibility of the timing of the 34-hour rest period. Congress suspended enforcement of that change in 2014, with a provision that the suspension of enforcement would continue unless a new study by FMCSA found that the change provided "statistically significant improvement in all outcomes related to safety, operator fatigue, driver health and longevity, and work schedules."[35] The study, submitted to Congress in March 2017, found that the change did not meet all four of the required areas of improvement.[36] As a result, the previous restart rule is once again in force.

Fatigue Risk Management Plans and Systems

Fatigue management programs contain policies and procedures for managing and reducing fatigue among employees, and often include goals of promoting both operational safety and employee health. Such programs can be divided into two broad categories: fatigue risk management plans and fatigue risk management systems. Fatigue risk management plans typically include fatigue awareness training for employees as well as a process for reporting instances of fatigued driving (in the commercial motor vehicle industry). FMCSA, in concert with Transport Canada, trucking industry trade associations, and other associations, developed the North American Fatigue Management Program, an online education program for commercial drivers, their employers, and others involved in commercial trucking. It is intended to inform these groups about the causes of driver fatigue, the impact of driver fatigue on increasing the risk of crashes, the long-term consequences of fatigue for driver health, and measures that can be taken to manage driver fatigue.

Fatigue risk management systems include the elements of a fatigue risk management plan, plus a means for continuously monitoring and measuring individual workers' schedules using both subjective and objective data. A recent report from the National Academies of Sciences Engineering, and Medicine noted that the effectiveness of the program has not been properly assessed, and as for the impact of fatigue management programs in general,

violations, and other encounters with drivers and carriers to create scores (the Compliance, Safety and Accountability System). These scores are intended to indicate which drivers and carriers are more likely to be involved in crashes and thus priority targets for enforcement attention.

[34] This restart option is limited to drivers transporting freight, not to those carrying passengers.

[35] P.L. 114-113, Division L, Section 133.

[36] Federal Motor Carrie Safety Administration, *Commercial Motor Vehicle Driver Restart Study*, https://www.fmcsa.dot.gov/safety/research-and-analysis/commercial-motor-vehicle-driver-restart-study.

> A few large truck carriers have derived positive results from their almost 10 years of experience in integrating health and wellness and fatigue management programs, and they have shared those experiences, including the return on their investment in such initiatives. However, most studies of these programs have not sufficiently and reliably validated their efficacy for achieving the goal of reducing crash risk or their scalability. Also, little is known about the use of health and wellness programs by independent owner-operators.[37]

The report called for evaluation of the North American Fatigue Management Program. FMCSA is collaborating with the National Institute for Occupational Safety and Health on an evaluation of the effectiveness of the program.[38] The results are not expected until 2022 or later.[39]

The Electronic Logging Device (ELD) Rule

The purpose of the congressionally mandated ELD requirement is to promote highway safety by improving compliance with the commercial motor vehicle hours of service rule. An ELD is a piece of hardware that is connected to a vehicle's engine control module, often through the diagnostic port that mechanics use to investigate the engine's condition. The device must automatically record driving time, retain the data for at least seven days, and transmit it so that the driver's compliance with the HOS rule can be determined during a roadside inspection. It is generally regarded as more reliable than paper log books in recording drivers' start and stop times.

Potential Benefits of the ELD Rule

Safety Benefits

In issuing its rule implementing the ELD mandate, FMCSA stated that the rule was expected to result in greater adherence to the HOS rule, and thus reduce the amount of driving while fatigued. The end result is expected to be fewer crashes caused by fatigued drivers. Several studies prior to the mandate found that ELDs installed voluntarily by fleet owners had this effect.[40] FMCSA estimated 1,844 crashes would be avoided annually as a result of the mandate, thus avoiding injuries to 562 persons and 26 fatalities.[41] FMCSA estimated that the financial benefit of the reduced number of crashes would be $575 million annually.[42]

---

[37] National Academies of Sciences, Engineering, and Medicine, Panel on Research Methodologies and Statistical Approaches to Understanding Driver Fatigue Factors in Motor Carrier Safety and Driver Health, *Commercial Motor Vehicle Driver Fatigue, Long-Term Health, And Highway Safety: Research Needs*, 2016, p. 7, https://www.nap.edu/catalog/21921/commercial-motor-vehicle-driver-fatigue-long-term-health-and-highway-safety.

[38] Centers for Disease Control and Prevention, 84 *Federal Register* 59383, November 4, 2019, https://www.federalregister.gov/documents/2019/11/04/2019-24002/proposed-data-collection-submitted-for-public-comment-and-recommendations.

[39] https://cms8.fmcsa.dot.gov/research-and-analysis/research/evaluation-effectiveness-north-american-fatigue-management-program.

[40] For example, Jeffrey S. Hickman, Feng Guo, Matthew C. Camden, Naomi J. Dunn, and Richard J. Hanowski, "An Observational Study of the Safety Benefits of Electronic Logging Devices Using Carrier-collected Data, *Traffic Injury Prevention*, vol. 18, No. 3, 2017, pp. 312-317.

[41] Federal Motor Carrier Safety Administration, "Electronic Logging Devices and Hours of Service Supporting Documents; Final Rule, Table 2—Estimated Reductions in Crashes," 80 *Federal Register* 78294, December 16, 2015, https://www.gpo.gov/fdsys/pkg/FR-2015-12-16/pdf/2015-31336.pdf.

[42] Ibid., "Table 1—Summary of Annualized Costs and Benefits." FMCSA gave two estimates for annualized cost and benefits for Option 2, the option selected in the final rule, one based on a 3% discount rate and one based on a 7%

Although data are available on the number of truck crashes in 2017 (before the mandate took effect) and 2018 (after the mandate took effect), real-world truck crash numbers are affected by many variables, including weather and changes in demand for freight carriage by truck. Sufficient time has not yet passed, and sufficient data are not yet available, to assess whether ELDs have reduced the number of crashes as FMCSA had anticipated.

A study that looked at roadside inspection reports and crash data from the first nine months of 2018 found that HOS violations had gone down, particularly for owner-operators and very small fleets. (HOS violations by drivers for carriers with larger fleets were already low, in part because many of these carriers had already installed ELDs on their trucks.)[43] The study also found that the average number of crashes per week had gone up slightly after the HOS mandate went into effect compared to 2017. For larger fleets the crash rate went down slightly. The study used freight shipment data and truck registration data to attempt to control for changes in vehicle miles traveled to see whether the increase in crashes was due to increased travel, and concluded that changes in freight shipment activity did not explain the increase in crashes.

The study also found that the number of unsafe driving violations by individual owner-operators and drivers for very small fleets (two to six trucks) went up significantly after the ELD mandate went into effect, while such violations did not increase among drivers for larger carriers (who were more likely to have been operating with ELDs prior to the mandate).The authors hypothesized that in the period immediately after implementation of ELDs, independent owner-operators and drivers for small fleets had reduced the amount of time they spent driving and on duty, but were driving faster in order to travel the same number of miles and thus avoid a reduction in their incomes. If the results of this study are supported by other studies over time, it may suggest that differences between the drivers employed by large fleets and those who are self-employed or employed by very small fleets—or between the circumstances facing drivers in those two industry groups—lead to a higher propensity for risky behavior among drivers in the latter group. Such a difference would have implications for public safety and enforcement activity.[44]

Operational Benefits

FMCSA estimated that the savings from reduced paperwork would be $2.4 billion annually.[45] This benefit accrues partially to drivers and partially to their employers. For drivers, who are customarily paid by the mile rather than by the hour, the savings come from reducing the amount of time spent filling out paper logs rather than driving. For carriers, the savings come from automating the process of compiling driver records for recordkeeping and reporting. With total costs estimated at $1.8 billion, the estimated administrative benefits ($2.4 billion) combined with the safety benefits ($575 million) provide an estimated net benefit of $1.2 billion annually, according to FMCSA.

discount rate. $575 million is in between the two estimates ($579 million and $572 million).

[43] Scott, Alex, Balthrop, Andrew, and Miller, Jason W., "Did the Electronic Logging Device Mandate Reduce Accidents?" January 2019, Social Science Research Network, https://ssrn.com/abstract=3314308.

[44] For example, David E. Cantor, Heidi Celebi, Thomas M. Corsi, and Curtis M. Grimm, "Do Owner-Operators Pose a Safety Risk on the Nation's Highways?" *Transportation Research Part E: Logistics and Transportation Review*, Vol. 59, November 2013, pp. 34-47.

[45] Federal Motor Carrier Safety Administration, "Electronic Logging Devices and Hours of Service Supporting Documents; Final Rule, Table 2—Estimated Reductions in Crashes," 80 *Federal Register* 78294, December 16, 2015, https://www.gpo.gov/fdsys/pkg/FR-2015-12-16/pdf/2015-31336.pdf.

These are estimates, and critics of the mandate, such as the Owner-Operator Independent Drivers Association (OOIDA), have contended that FMCSA has underestimated the costs and overestimated the benefits.[46] OOIDA represents operators who own their trucks and are responsible for the cost of the ELD; many of its members view the ELD as an intrusion into their work life. Conversely, the American Trucking Associations, representing larger carriers, some of which had installed electronic logging devices or similar technology in their fleets years before the mandate to better track their operations, contend that ELDs offer many benefits beyond the ones that FMCSA included in its estimate.[47]

Some carriers have responded to stricter enforcement of the HOS rule by using driver relays, in which one driver drives as far as the hours of service limit will allow, then is met by another driver who takes the trailer and continues the delivery. The first driver rests as required, then receives another load from a dispatcher.[48] This method can also offer health and lifestyle benefits to drivers by enabling them to drive outbound one day and back toward their home on the following day, potentially making driving a more appealing job.[49]

Potential Policy/Regulatory Benefits

The Government Accountability Office has noted that the ability of FMCSA and others to evaluate the impact of the commercial motor vehicle HOS regulation and proposed changes to it is limited due to the limited availability of data about driver schedules.[50] The Federal Aviation Administration and the Federal Railroad Administration collect representative schedule data to evaluate the impact of hours of service rules in the aviation and railroad sectors, respectively, but FMCSA does not collect representative data that could be generalized to the trucking industry as a whole for purposes of better analyzing the impacts of the HOS rule. The widespread use of paper records by drivers made the task of collecting such data in representative amounts difficult.

The ELD regulation, which requires carriers to collect and store such data in electronic form, aims to simplify the task of collecting representative data on drivers' schedules, and thus could provide the opportunity for FMCSA and other analysts to better evaluate the impact of the HOS rule and proposed changes to the rule. However, there are several obstacles to this use of such data, including a statute limiting DOT's use of this data to enforcement of motor carrier safety, as well as privacy and cost concerns. Given the potential value of the ELD data for regulatory analysis, Congress may examine how these data could be made available for this purpose.

---

[46] For example, the Owner-Operator Independent Drivers Association Foundation, *White Paper: Review of FMCSA's Regulatory Evaluation of Electronic Logging Devices*, January 19, 2016, pp. 8-10, https://www.ooida.com/OOIDA%20Foundation/RecentResearch/ELD/Review-of-FMCSA-Regulatory-Evaluation-of-ELDs-FINAL.pdf.

[47] For example, Cristina Commendatore, "ELD Mandate: A Business Burden or Technology Upgrade?," *Fleet Owner*, May 24, 2017, http://www.fleetowner.com/technology/eld-mandate-business-burden-or-technology-upgrade.

[48] IEEE Spectrum, "U.S. Truckers Race to Deploy Electronic Logging Devices," October 2019, p. 6, https://ieeexplore.ieee.org/stamp/stamp.jsp?tp=&arnumber=8847576&tag=1.

[49] Kunal P. Somani and Neela Ravindra Rajhans, "Relay Trucking in Logistics," paper presented at the International Conference on manufacturing Excellence, February 2019, https://www.researchgate.net/publication/331248339_RELAY_TRUCKING_IN_LOGISTICS.

[50] Governmental Accountability Office, *Motor Carrier Safety: Additional Research Standards and Truck Drivers' Schedule Data Could Allow More Accurate Assessments of the Hours of Service Rule*, GAO-15-641, July 2015, http://www.gao.gov/assets/680/671716.pdf. The value of more detailed data for improving safety in the area of driver fatigue is echoed in the National Academies of Sciences panel report.

Potential Costs of the ELD Rule

The primary direct costs of the ELD mandate are the purchase and maintenance of ELDs. FMCSA estimated this cost at $1 billion annually,[51] an average of around $495 per truck or bus. While prices vary according to features and other factors, there are ELDs now available for less than FMCSA's estimated average cost, potentially reducing the economic impact of the mandate.[52]

Issues

The Impact of Pay by the Mile on Safety

One reason many truck drivers raised concerns about stricter enforcement of the HOS rule is that most interstate truck drivers are paid by the mile. Limiting the number of hours they can drive in a day and a week automatically imposes a ceiling on their earnings. That ceiling also amplifies the economic impact of any delays they may encounter during their workday, such as traffic congestion or time spent waiting for their cargo to be loaded or unloaded.

Numerous studies have found a connection between drivers being paid by the mile, limits on driving time, and driver propensity to speed and work longer hours. Speeding is dangerous in two ways: it increases the risk of crashes by reducing a driver's time to react to events, and it increases the severity of crashes. Working longer hours is associated with fatigued driving and a resulting increased crash risk.

The HOS regulation give drivers some flexibility to deal with delays, as they may have up to 14 duty hours each day, of which up to 11 hours may be spent driving. But that flexibility may not always feel beneficial, as it can allow a driver paid by the mile to be on duty without being paid for up to three hours a day.

In 2015, prior to enactment of the Fixing America's Surface Transportation Act (P.L. 114-94), which reauthorized surface transportation programs, including the activities of FMCSA, the Obama Administration proposed to require that commercial drivers subject to the HOS regulations who are paid by the mile be paid for time they spend on duty but not driving. Studies suggest that arrangement leads to drivers reducing their work hours, and thus reduces the risk of fatigued driving.[53] The proposal was not enacted.

Detention Time

The use of ELDs may help to quantify a challenge faced by drivers: inroads into their driving time caused by delays in loading and unloading their cargo by shippers and receivers. By one estimate, unpaid "driver detention time" costs drivers who are paid by the mile $1.1 billion to

[51] Federal Motor Carrier Safety Administration, "Electronic Logging Devices and Hours of Service Supporting Documents; Final Rule, Table 1—Summary of Annualized Costs and Benefits," 80 *Federal Register* 78294, December 16, 2015, https://www.gpo.gov/fdsys/pkg/FR-2015-12-16/pdf/2015-31336.pdf.

[52] Todd Dills, "ELD Buyer's Guide: Many Choices, Some at Low Cost, For Meeting Mandate," *Overdrive Online*, 2019, https://www.overdriveonline.com/a-guide-to-elds-many-choices-some-at-low-cost-for-meeting-mandate/.

[53] Takahiko Kudo, Michael H. Belzer, "Safe Rates and Unpaid Labour: Non-driving Pay and Truck Driver Work Hours," *Economic and Labour Relations Review*, vol. 30, no. 4, December 2019, pp. 532-548.

$1.3 billion a year (an average of $1,300 to $1,500 per driver).[54] This detention time is also estimated to increase the risk of crashes, as it uses up a driver's available duty time, pushing their driving time later into their duty period when they are more likely to feel tired, and may lead them to speed to make up for the detention time.[55] This and other studies have found that drivers working for smaller carriers experience longer average detention times than drivers for larger motor carriers.[56]

Shortage of Parking Spots for Truck Drivers

When a truck driver reaches the HOS driving time limit, the driver must stop and rest. It is not always easy to find parking for a large truck. A variety of factors, including weather and traffic, can make it difficult for a truck driver to know in advance the location at which it will become necessary to stop driving and park the vehicle, and a truck parking facility may be full when a driver reaches it. A shortage of truck parking facilities can pose two public safety hazards: a tired driver may continue driving in search of a place to park and thus increase the risk of a crash, and a driver may park in a place that is unsafe for himself or other drivers, such as on the shoulder of a busy road.

In 2005 Congress directed DOT to create a pilot program to address the shortage of truck parking on the National Highway System.[57] Following a 2009 incident in which a driver who had stopped to rest at an abandoned gas station often used by truck drivers in need of parking was robbed and murdered in South Carolina, Congress passed Jason's Law,[58] which made safe parking for truck drivers a national priority, required DOT to periodically survey the extent of truck parking facilities, and explicitly made construction of truck parking facilities eligible for federal funding.

State transportation agencies and private truck stop operators both supply parking spaces for truck drivers.[59] The most recent survey of parking facilities found that the demand for truck parking exceeded the supply in most parts of the country, with an extreme shortage in the Mid-Atlantic region. A number of factors contribute to this situation, including the disinclination of truck drivers to pay for parking, a prohibition on commercial facilities at Interstate Highway rest areas, the interests of truck stop operators who oppose the provision of free public truck parking, and the relatively high cost of land at Interstate Highway access points.

[54] Office of the Inspector General, United States Department of Transportation, *Estimates Show Commercial Driver Detention Increases Crash Risks and Costs, but Current Data Limit Further Analysis*, Report No. ST2018019, January 31, 2018, p. 10, https://www.oig.dot.gov/sites/default/files/FMCSA%20Driver%20Detention%20Final%20Report.pdf.

[55] Ibid.

[56] Ibid., pp. 8-9.

[57] §1305(c) of P.L. 109-59. DOT awarded grants to two projects, one in California and one to a seven-state group on the East Coast (the I-95 Coalition); for information about the projects see https://ops.fhwa.dot.gov/freight/policy/rpt_congress/s13005_041509/index.htm.

[58] §1401 of P.L. 112-141, named for Jason Rivenberg.

[59] A commercial database of truck parking spaces cited by DOT in its 2015 survey reported around 309,000 total parking spaces, with 12% at public rest areas and 88% at private truck stops. U.S. Department of Transportation, Federal Highway Administration, *Jason's Law Truck Parking Survey Results and Comparative Analysis*, "Parking Space Data," p. 11, August 2015, at https://ops.fhwa.dot.gov/freight/infrastructure/truck_parking/jasons_law/truckparkingsurvey/jasons_law.pdf.

Lack of Data Regarding Bus Drivers and Crashes

There are relatively few studies of the causes and effects of fatigue to bus drivers, compared to those examining truck drivers.[60] In part this may be due to the relatively safer bus experience; as noted above, the number of people killed in bus crashes each year is a small fraction of the number killed in truck crashes. However, the comparatively low number of fatal bus crashes means that developing a nationally representative sample of bus crashes for analysis would require significant resources over many years.[61]

The shortage of information on whether fatigue among bus drivers has different causes and effects than among truck drivers makes it tempting to extrapolate truck driver fatigue research to bus drivers. However, this may not be justified, as the population of bus drivers differ in certain respects from the population of long-distance truck drivers. For example, females represent a larger portion of bus drivers than of long-distance truckers.[62]

Proposed Changes to the HOS Rule

Adjustments Within the General Framework ("Increased Flexibility")

On August 22, 2018, FMCSA published an Advance Notice of Proposed Rulemaking (ANPRM) seeking information and public comment about several potential changes in the Hours of Service rule for commercial drivers.[63] The changes were described as providing more flexibility for drivers and carriers.

The changes FMCSA is considering would mainly address complaints about the enforcement of the HOS rule through electronic logging from sectors of the trucking industry in which drivers' typical work schedules involve short periods of driving and long periods of being on duty but not driving, such as utility services and oilfield operations.

The changes being considered are the following:

- **Short haul operations.** Drivers who operate within a 100 air-mile radius of their normal work reporting location, and whose on-duty time does not exceed 12 hours, are not required to record their driving time and thus are not required to use an ELD. These drivers are assumed to be returning to their homes when off duty. FMCSA is considering expanding this exemption to short-haul drivers who spend up to 14 hours on duty, matching the on-duty period for other truck drivers, but permitting drivers claiming this exemption to continue to operate without recording their driving time. There would thus be no way to enforce the HOS rule with respect to short-haul driver.

[60] FMCSA, *Evidence Report: Fatigue and Motorcoach/Bus Driver Safety*, December 2012, https://www.fmcsa.dot.gov/sites/fmcsa.dot.gov/files/docs/Fatigue%20Evidence%20Report%2012-17-12_revised(1-30).pdf.

[61] FMCSA, *The Bus Crash Causation Study Report to Congress*, November 2009, https://cms8.fmcsa.dot.gov/sites/fmcsa.dot.gov/files/docs/Bus-Crash-Causation-Study-Report-to-Congress.pdf.

[62] FMCSA, *Evidence Report: Fatigue and Motorcoach/Bus Driver Safety*, December 2012, https://www.fmcsa.dot.gov/sites/fmcsa.dot.gov/files/docs/Fatigue%20Evidence%20Report%2012-17-12_revised(1-30).pdf, p. 9.

[63] 84 *Federal Register* 44190, https://www.federalregister.gov/documents/2019/08/22/2019-17810/hours-of-service-of-drivers.

- **Adverse driving conditions.** Drivers are allowed two extra hours of driving time under adverse conditions, which are defined as "snow, sleet, fog, other adverse weather conditions, a highway covered with snow or ice, or unusual road and traffic conditions, none of which were apparent on the basis of information known to the person dispatching the run at the time it was begun."[64] This exception allows a driver up to 13 hours of driving time, but does not extend the 14-hour on-duty limit. FMCSA is considering adding 2 hours to the 14-hour on-duty period for adverse conditions, thus allowing a maximum of 16 consecutive hours on duty.
- **30-minute break.** FMCSA is seeking information on alternatives to, and the impact of eliminating, the required minimum 30-minute rest break after no more than 8 hours have passed since the driver either (a) came on duty or (b) spent a period of at least 30 minutes in the sleeper berth of a truck. FMCSA added the 30-minute break requirement to the HOS rule in 2011[65] based on evidence from several studies that for a period after taking a break from driving a driver is less likely to be involved in a crash.[66]
- **Split sleeper berth time.** A driver in a truck with a sleeper berth can divide the minimum 10 off-duty hours into 2 separate periods totaling at least 10 hours; one of those periods must include at least 8 hours spent in the sleeper berth.

  FMCSA initially planned to conduct a pilot program giving drivers more flexibility in the length of the sleeper berth periods, in order to collect data regarding the impact of providing such flexibility on driver rest and alertness.[67] In October 2018, FMCSA announced that it was cancelling the proposed pilot program, saying it already had enough data and research on the topic and wanted to fast-track its proposed changes to the HOS rule.[68]

The public comment period on the potential changes closed in October 2019. FMCSA has not indicated when proposed regulations may be published.

ELD Exemption for Livestock Haulers

One of the industry segments that has objected most strenuously to being subjected to more stringent compliance with the HOS rule due to the ELD mandate is livestock hauling. These drivers transport living creatures that require food and water and that are subjected to increased stress and risk of injury by the process of being loaded onto and unloaded from a vehicle as well as by the experience of transport. Also, federal law provides that livestock being transported across state lines can be confined in a vehicle for a maximum of 28 consecutive hours, after

[64] 49 C.F.R. §395.2.

[65] Federal Motor Carrier Safety Administration, "Hours of Service of Drivers: Final Rule," 76 *Federal Register* 81134, December 27, 2011, https://www.govinfo.gov/content/pkg/FR-2011-12-27/pdf/FR-2011-12-27.pdf.

[66] Ibid., 81154.

[67] Federal Motor Carrier Safety Administration, "Notice and Request for Comments: Flexible Sleeper Berth Pilot Program," 82 *Federal Register* 49924, October 27, 2017, https://www.govinfo.gov/content/pkg/FR-2017-10-27/pdf/2017-23350.pdf.

[68] James Jaillet, "Split-sleeper Berth Study Cancelled Due to FMCSA's Push for Quick HOS Proposal," CCJ, December 21, 2018, https://www.ccjdigital.com/split-sleeper-berth-study-cancelled-due-to-fmcsas-push-for-quick-hos-proposal/.

which they must be unloaded for feeding, watering, and rest.[69] The law, however, is apparently frequently ignored and not rigorously enforced by the U.S. Department of Agriculture. [70]

The livestock hauling industry already had several HOS exemptions prior to the ELD mandate:

- The private transportation of agricultural commodities (including livestock, bees, and horses) to or from a farm or ranch by the owner or operator of the farm or ranch, family members, or employees is exempt from the HOS rule.[71]
- During agricultural planting and harvesting seasons (as determined by each state), haulers of agricultural commodities, including livestock, bees, and horses, who operate within a 150 air-mile radius of the source of the commodities, are exempted from the HOS rule.[72] This area within which this exemption can be claimed was expanded from a radius of 100 air miles to 150 air miles in 2012, more than doubling the exempted area.[73]
- HOS regulations do not apply to drivers transporting agricultural commodities (including livestock) who operate completely within a 150 air-mile radius of the source of the commodities.
- When a driver who is using one of those exemptions drives beyond the 150 air-mile radius, the HOS regulations start to apply and the driver must record driving time and on-duty time. The time spent working and driving within the 150 air-mile radius does not count toward the HOS limits, so a driver could have been driving for several hours before officially recording the first hour of driving time.

Over the past few decades the declining cost of transportation and other factors have led the livestock industry, particularly the cattle sector, to adopt a business model that emphasizes hauling livestock from around the lower 48 states to feedlots and slaughterhouses concentrated in the center of the country.[74] By making it harder for drivers to evade the HOS limits without detection, the ELD mandate effectively reduces the distance that livestock can be transported

[69] 49 U.S.C. §80502. The law provides exceptions; a transporter can request an additional 8 hours, to 36 hours, and the limit does not apply when the livestock is in a vehicle that provides food, water, space, and an opportunity for rest.

[70] In preparing a petition regarding the law, animal welfare groups found no reported U.S. Department of Agriculture (USDA) administrative decisions involving the Twenty-Eight Hour Law from 1997 to 2005, and no reported federal enforcement of the law between 1960 and 2005 (see Humane Society of the United States, et al., Petition for Rulemaking Before the United States Department of Agriculture, October 4, 2005, cited in *Animal Welfare Institute, Legal Protections for Farm Animals During Transport,* August, 2010). In a 2011 directive, USDA instructed slaughterhouse inspectors to ask plant management whether the driver stopped within the preceding 28 hours to provide the animals rest, food, and water if the animals on an incoming truck appear exhausted or dehydrated. USDA, Food Safety and Inspection Service, "Directive: Humane Handling and Slaughter of Livestock," August 15, 2011. One study found that enforcement is limited to animals arriving at slaughterhouses, not feedlots or other locations, and is based on the driver's response, given with the knowledge that if the driver has violated the law he or she will be liable for a violation, and without a requirement for checking the accuracy of the driver's response. Kate Brindle, "Farmed Animals in Transport: an Analysis of the Twenty-Eight Hour Law and Recommendations for Greater Animal Welfare," Michigan State University College of Law, Spring 2016, pp. 7-8, https://www.law.msu.edu/king/2015-2016/Brindle.pdf.

[71] 49 C.F.R. §395.1(s).

[72] 49 C.F.R. §395.1(k).

[73] Moving Ahead for Progress in the 21et Century Act (MAP-21), P.L. 112-141, §32101(d).

[74] Anastasia Thayer, Charley Martinez, Justin Benavidez, and David Anderson, "The end of ghost cattle drives: exploring the effect of electronic logging devices on cattle transportation," paper prepared for presentation at the Southern Agricultural Economics Association Annual Meeting, Birmingham, AL, February 2-5, 2019.

within the 28-hour limit set in law before they must be unloaded and fed, watered, and given a chance to rest.

The livestock hauling industry contends that abiding by the HOS limits may force drivers who reach the driving time limit of 11 hours to either unload the livestock for the period of the off-duty rest time and then reload them, putting them under additional stress and risk of injury, or else leave the livestock on the vehicle during the off-duty period.

Data are lacking on whether stricter compliance with the HOS rule increases the cost of shipping livestock and to what extent it reduces the number of crashes involving livestock haulers. Congress has barred FMCSA from using any of its funding to enforce the ELD mandate on livestock haulers through September 30, 2020.[75]

Author Contact Information

David Randall Peterman
Analyst in Transportation Policy
#redacted#@crs.loc.gov, 7-....

[75] The prohibition has been included in DOT's annual appropriations bill for each of FY2018, FY2019, and FY2020.