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MOTOR CARRIERS

Establishing System for Self-Reporting Equipment Problems Appears Feasible, but Safety Benefits Questionable and Costs Unknown

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Why GAO Did This Study

In 2015, more than 4,000 people were killed in crashes involving large trucks. To identify carriers with the highest crash risk, FMCSA uses information from roadside inspections and crashes to rank each carrier's safety performance relative to other carriers in seven categories, including one on vehicle maintenance. Some stakeholders have proposed a system for carriers or their drivers to self-report en route vehicle equipment problems to FMCSA. Reported equipment problems that were repaired within a certain time period would not affect the carrier's relative ranking, potentially incentivizing carriers to make repairs more quickly.

The Fixing America's Surface Transportation Act included a provision for GAO to examine the cost and feasibility of establishing a system for carriers or drivers to self-report vehicle equipment problems to FMCSA. This report examines (1) the potential safety impacts of a self-reporting system and (2) factors that could affect its feasibility and cost.

GAO reviewed relevant regulations, information on other existing DOT self-reporting systems, and prior related GAO work. GAO also interviewed a non-generalizable sample of representatives from six industry and safety associations, six carriers, and six drivers about this potential system for self-reporting equipment problems. GAO selected carriers to include those with diverse fleet sizes and average distances traveled, and drivers from six additional carriers.

DOT provided technical comments, which were incorporated as appropriate.

What GAO Found

Establishing a system that would provide incentives for trucking companies to self-report equipment problems may not necessarily yield safety benefits. Most stakeholders GAO interviewed—including selected carriers and drivers—thought a self-reporting system would be unlikely to produce safety benefits, stating that it would not incentivize quicker repairs. If repairs are not made more quickly, there would be no positive impact on safety. Three drivers, however, thought a self-reporting system could yield some safety benefits if it incentivized drivers to do more thorough inspections of their vehicles. Officials from industry groups and the Federal Motor Carrier Safety Administration (FMCSA) noted that a self-reporting system could negatively impact safety, such as by encouraging distracted driving if drivers report equipment problems on their cell phones while driving. Moreover, estimating the potential safety impacts of such a system requires information that is not currently available, such as how equipment problems that would be permitted to be self-reported are related to crashes.

Example of a Driver Receiving a Violation for a Previously Identified Equipment Problem under Current System and under a Self-Reporting One
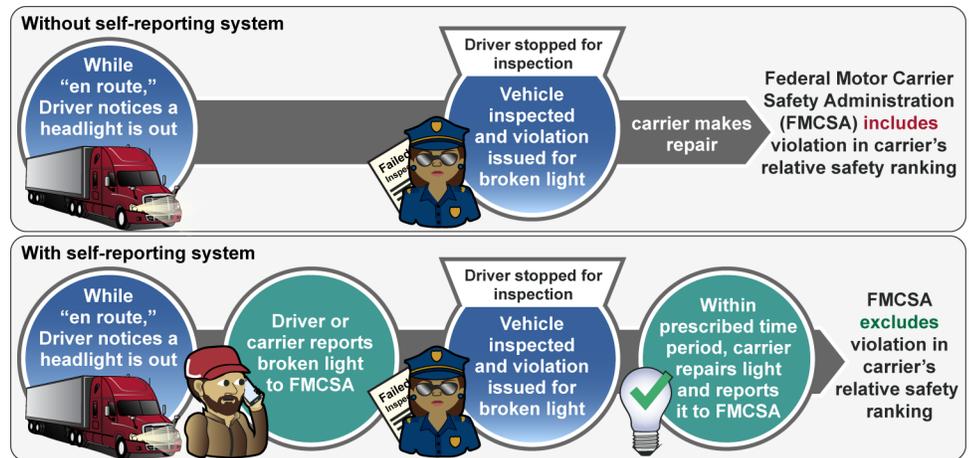
Source: GAO analysis of FMCSA information. | GAO-17-132

FMCSA has the statutory and regulatory authority to establish a system for self-reporting equipment problems, and technology exists to create it, but its costs are unknown. Also, establishing such a system could pose challenges for FMCSA, carriers, and drivers. For example, developing a new system could delay efforts FMCSA has under way to improve its information technology, and carriers or drivers may have difficulty selecting their specific equipment problem from the more than 300 potential vehicle maintenance violations. Further, without information on key design features of a self-reporting system, such as whether reporting would be through a telephone hotline or a web-application, it is not possible to estimate costs with any reasonable degree of confidence. FMCSA developed a rough estimate that a self-reporting system would cost between $5 and $10 million to establish and operate for the first year.

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U.S. GOVERNMENT ACCOUNTABILITY OFFICE

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The Honorable John Thune
Chairman
The Honorable Bill Nelson
Ranking Member
Committee on Commerce, Science, &Transportation
United States Senate

The Honorable Bill Shuster
Chairman
The Honorable Peter DeFazio
Ranking Member
Committee on Transportation & Infrastructure
House of Representatives

Large trucks and buses transport billions of tons of freight and travel hundreds of billions of miles every year on our nation's highways.[1] Because these commercial motor vehicles travel alongside citizens in passenger vehicles, safety is an important concern. In 2015, more than 4,000 people were killed in crashes involving large trucks, the majority of whom were either in another vehicle or were pedestrians or bicyclists. Crashes involving commercial motor vehicles can be caused by a variety of factors, including driver error or equipment problems such as faulty brakes or flat tires. The Federal Motor Carrier Safety Administration (FMCSA) sets requirements in regulations for the operating condition of vehicles operated by commercial motor carriers ("carriers").[2] These include requirements for the maintenance of commercial motor vehicle parts and accessories such as lights, reflectors, brakes, fuel systems, and tires. Carriers and commercial motor vehicle drivers are responsible for ensuring their vehicles meet those requirements at all times. If a driver identifies some aspect of his or her vehicle's equipment that is out of compliance with these regulations—for instance brakes that do not adequately stop and hold the vehicle—the carrier (or its agent, e.g., the

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[1]A large truck is defined as a truck weighing greater than 10,000 pounds. 49 C.F.R. § 350.105.

[2]FMCSA establishes safety requirements through regulations for all interstate motor carriers and intrastate hazardous material carriers. 49 C.F.R. §§ 300-399.

driver or a repair facility) is responsible for repairing the problem before the vehicle is on the road.

To enforce compliance with FMCSA regulations, FMCSA partners with states' law enforcement agencies and others to perform roadside inspections of commercial motor vehicles. Inspectors compare the vehicle's condition to requirements listed in FMCSA's regulations, and review the driver's credentials. If an inspector determines that a vehicle is out of compliance with those regulations, the carrier is issued a violation, which is reported to FMCSA. In 2015, federal and state inspectors conducted approximately 3.4 million roadside inspections, including 2.3 million vehicle inspections that resulted in 3.8 million vehicle maintenance violations, ranging from less severe (e.g., one of several marker lights out) to more severe (e.g., a problem with brakes that could lead to a crash). With inspection and crash information, FMCSA uses its Safety Measurement System (SMS) to generate a percentile ranking of a carrier's safety performance relative to other carriers in several different categories. Each category is referred to as a Behavior Analysis and Safety Improvement Category (BASIC), and includes vehicle maintenance, among other things.[3]

Some industry stakeholders have raised the possibility of instituting a system for carriers and their drivers to self-report equipment problems that they identify to FMCSA. These stakeholders have suggested that if an inspector identified a self-reported equipment problem during an inspection, it should not count against the carrier's vehicle maintenance BASIC percentile if repaired within a specified time frame.

The Fixing America's Surface Transportation Act (FAST Act) included a provision for us to examine the cost and feasibility of establishing a system for self-reporting en route equipment problems for commercial motor carriers, and report by December 4, 2016.[4] The provision described some parameters of a potential system for self-reporting equipment problems, including that it would apply only to equipment problems identified en route,[5] which we defined as those identified after a driver

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[3]Carriers can receive a BASIC percentile in up to 7 categories—Vehicle Maintenance, Unsafe Driving, Hazardous Materials, Hours-of-Service Compliance, Driver Fitness, Controlled Substances and Alcohol, and Crash Indicator.

[4]Pub. L. No. 114-94, § 5303, 129 Stat. 1312, 1542.

[5]Pub. L. No. 114-94, § 5303, 129 Stat. 1312, 1543-44 (2015).

conducted his required pre-trip inspection at the beginning of each work day and before a driver conducted his required inspection report at the end of each work day. In addition, carriers or drivers that self-reported an equipment problem and subsequently received an inspection and violation for that problem would have to self-report that the problem had been repaired for FMCSA to exclude the violation from the carrier's vehicle maintenance BASIC percentile.[6]

This report examines (1) potential safety impacts of establishing a system for self-reporting equipment problems and repairs for commercial motor carriers and their drivers, and (2) factors that could affect the feasibility and cost of establishing a system for self-reporting equipment problems and repairs.

To perform this work, we reviewed relevant regulations, information on other existing systems for self-reporting safety-related information, (FMCSA's National Consumer Complaint Database and the Federal Aviation Administration's (FAA) Aviation Safety Action Program), and our past work on FMCSA's Compliance, Safety, Accountability (CSA) program.[7] We also interviewed FMCSA officials and selected stakeholders—representatives from six associations (industry and safety groups), representatives of six commercial motor carriers, and six commercial motor vehicle drivers. The six carriers included two large, two medium, and two owner-operators, who are individuals who own and operate their own trucks as an independent company. The six drivers were from six additional carriers and included four drivers for large carriers and two drivers for medium-sized carriers. Associations were selected for their work in the motor carrier and highway safety arenas. Carriers were selected for diversity in fleet size and haul distance. Additional carriers provided a list of drivers from which we selected

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[6]Pub. L. No. 114-94, § 5303 (b)(1)(B) and (C), 129 Stat. 1312, 1543-44.

[7]FMCSA's Safety Measurement System BASIC percentiles discussed in this report are a key component of its CSA program, the subject of our 2014 report. See GAO-14-114.

drivers for diversity in haul distance.[8] Views we gathered from these stakeholders are not generalizable to all industry and safety groups, motor carriers, or drivers.

Because the self-reporting system is hypothetical at this point, we made three broad assumptions about the system, based on its description in the FAST Act and our review of relevant regulations.

- First, only equipment problems that do not render a commercial motor vehicle "out-of-service" under FMCSA regulations would be reportable under a self-reporting system.[9]

- Second, the term "en route" refers to equipment problems that were identified while the driver was on his daily trip—that is, after a driver conducted his required pre-trip inspection at the beginning of each work day, and before a driver conducted his required inspection report at the end of each work day.[10]

- Finally, any equipment problems identified and reported would have to be repaired before the driver's next day on duty.[11]

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[8]In this report we describe the views of carriers and drivers together. There is overlap between the two groups as owner operators are individuals who own one truck and operate it as a carrier, and because either a carrier or a driver could potentially send a report to FMCSA under a system for self-reporting equipment problems. We were not able to interview any drivers for small carriers—carriers operating between two and five trucks—because the drivers we attempted to reach were on duty each time we had an interview scheduled with them. Therefore, we relied on our interview with the National Association of Small Trucking Companies to capture the views of small carriers and their drivers.

[9]We make this assumption because current regulations prohibit carriers from operating such vehicles because they have equipment problems severe enough that the vehicle's continued operation could to lead to a crash. See 49 C.F.R. §§ 386.72, 392.5, 395.13, 396.9. Consequently, we assumed that any potential self-reporting system would not allow carriers or drivers to report equipment problems of this severity and continue driving until repairing the vehicle at a later time.

[10]Note we do not define "en route," as a multiple day trip from a starting point to a destination. For example, if a driver was on a 4-day trip between Atlanta and San Diego, an "en route" equipment problem would be one that occurred after any daily "pre-trip" inspection and before the end of the day, each day.

[11]FMCSA regulations require any problems identified during a driver's pre-trip inspection to be repaired before the trip begins. "…prior to requiring or permitting a driver to operate a vehicle, every motor carrier or its agent shall repair any defect or deficiency listed on the driver vehicle inspection report which would be likely to affect the safety of operation of the vehicle." 49 C.F.R. § 396.11(a)(3).

When interviewing stakeholders, we asked for their views on how, if at all, they or others (in the case of associations) might use such a system, and an estimation of its potential safety impacts. We did not systematically try to identify any unintended consequences of establishing a self-reporting system, such as whether carriers or drivers would "game the system" by, for example, using it to report equipment problems during a trip that should have been identified in a pre-trip inspection and repaired before the trip began.

To examine the potential safety impacts of this hypothetical self-reporting system, we identified existing guidance (Office of Management and Budget and Department of Transportation) on estimating the benefits of a new government program. We then determined if there was sufficient information available to apply such guidance and estimate the benefits of a self-reporting system. To identify published data on the relationship between non-out-of-service equipment problems and safety outcomes, we used a literature review conducted for a 2014 GAO report on FMCSA as a starting point, and consulted with GAO experts and FMCSA to identify any data published since 2014.

We conducted this performance audit from March 2016 to December 2016 in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on the audit objectives.

Background

The commercial motor-carrier industry is a vital part of the U.S. economy. As of December 2015, FMCSA estimated that there were 551,150 active carriers and approximately 6 million commercial drivers operating in the United States.[12] The domestic commercial motor-carrier industry includes a range of businesses, including private and for-hire freight transportation, passenger carriers, and specialized transporters of hazardous materials.[13] These carriers also range from small carriers with only one

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[12]According to FMCSA officials, this estimate of drivers includes intrastate non-hazardous materials carriers, but the number of carriers does not.

[13]Private carriers run an internal trucking operation to support a primary business in another industry, such as a retail store chain, while for-hire carriers sell their trucking services on the open market.

vehicle that is owned and operated by a single individual, to large corporations that own tens of thousands of vehicles.

FMCSA is responsible for overseeing this large and diverse industry. In fiscal year 2016, FMCSA had a budget of approximately $580 million and more than 1,000 staff members located at its Washington, D.C., headquarters, four regional service centers, and 52 division offices.[14]

FMCSA establishes regulations for all interstate motor carriers in addition to intrastate hazardous-material carriers.[15] FMCSA regulations set requirements, among others, for the motor vehicle parts and accessories—"equipment"—required for safe operation.[16] For example, FMCSA's regulations require vehicles to have certain lights, tire tread depth, and parking brakes.[17]

Other FMCSA regulations require carriers and their drivers to systematically inspect, repair, and maintain their vehicles.[18] Before beginning their trip each day, commercial motor vehicle drivers must conduct a pre-trip inspection to ensure that their vehicles are in safe operating condition, meaning that they meet the maintenance requirements set forth in FMCSA regulations.[19] Commercial driver's license tests require drivers to show they can inspect the engine components, brakes, steering, and other equipment.[20] If during the pre-trip inspection the driver identifies an equipment problem that would affect the safe operation of the vehicle, the driver must ensure it is repaired before starting a trip. At the end of each day, drivers are also required to prepare a daily vehicle inspection report (DVIR), which lists any equipment problems identified that day.[21] Drivers submit the DVIRs to

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[14]FMCSA officials reported that they also have staff at more than 27 border offices.

[15]49 C.F.R. §§ 300-399.

[16]FMCSA regulations also set requirements for commercial driver qualifications (e.g. drivers must be at least 21 years old). 49 C.F.R. § 391.11(b)(1).

[17]49 C.F.R. § 393.

[18]49 C.F.R. § 396.

[19]49 C.F.R. § 396.13.

[20]49 C.F.R. § 383.

[21]The driver of a passenger-carrying commercial motor vehicle must prepare and submit a report even if no defect is identified; drivers of all other commercial motor vehicles are only required to submit a report if a defect is identified. 49 C.F.R. § 396.11.

their carrier, which must repair any issues before sending the vehicle on another trip. Regulations also require carriers to conduct comprehensive inspections of their vehicles annually.[22] FMCSA regulations set the minimum requirements for commercial motor vehicles, but individual carriers may have their own additional requirements regarding when and how their vehicles are inspected and repaired.

To oversee the safety performance of the commercial motor carrier industry, FMCSA and state agencies such as highway patrols perform roadside inspections of carriers' vehicles. These roadside inspections are intended to provide a snapshot of commercial motor vehicles' maintenance and assess the effectiveness of carriers' maintenance programs.

Specially trained and certified personnel serve as inspectors and select commercial motor vehicles for inspection as they pass through a roadside inspection location such as a weigh station. The inspector compares the vehicle's condition to requirements listed in FMCSA's regulations and issues a violation if there are discrepancies.[23] If the inspector determines that the violation could likely cause an accident or breakdown (for example, if more than 20 percent of the vehicle's brakes are defective) the vehicle is placed out-of-service until it is repaired.[24] FMCSA regulations prohibit carriers from operating a vehicle that has been deemed "out-of-service" by an inspector. The Commercial Vehicle Safety Alliance, an association comprised of federal and state commercial-vehicle safety officials and private industry representatives, provides guidance on the criteria that render a vehicle out-of-service. Even if violations are found, if the vehicle is not deemed out-of-service, the driver is allowed to continue driving, though FMCSA regulations require carriers to repair all violations before the vehicle starts another trip.[25] In addition, within 15 days of receiving the violation, carriers must certify they have made repairs by signing a copy of the inspection report and sending it to

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[22]49 C.F.R. § 396.17(c).

[23]Violations of FMCSA regulations differ from citations, which inspectors would issue if the driver were violating state laws, such as the speed limit. Violations affect the carriers' BASIC percentile, while citations affect the driver's commercial driver's license (CDL) record.

[24]49 C.F.R. §§ 386.72, 392.5, 395.13, 396.9.

[25]49 C.F.R. § 396.11(a)(3).

the state department of transportation.[26] See figure 1 for four examples of vehicle maintenance violations—the top two depict improper load securement and the bottom two depict missing wheel fasteners. In both rows, the violation on the right is an out-of-service violation.

Figure 1: Examples of Non-Out-of-Service versus Out-of-Service Vehicle Maintenance Violations
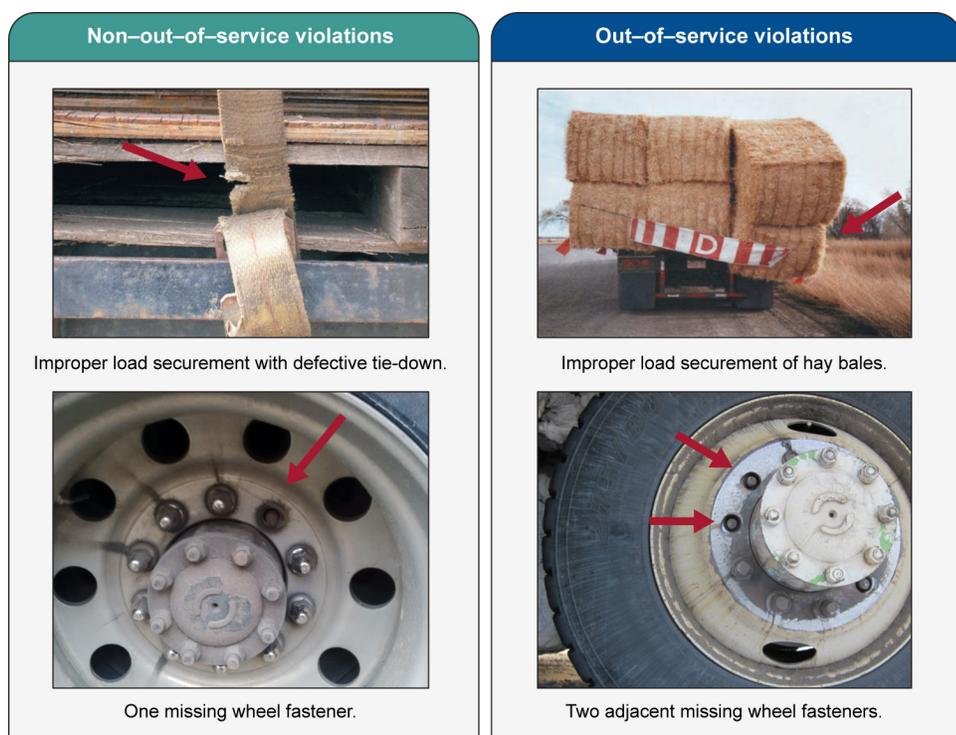
Source: Commercial Vehicle Safety Alliance. | GAO-17-132

FMCSA uses the data on violations submitted by inspectors to rank carriers' relative safety performance in seven categories and assign carriers to a percentile in each.[27] One of the categories, the vehicle maintenance Behavior Analysis and Safety Improvement Category (BASIC), takes into account violations related to failing to properly maintain a commercial motor vehicle and failing to secure loads. FMCSA

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[26]49 C.F.R. § 396.9(d)(3).

[27]Inspectors submit violation information to FMCSA after conducting an inspection.

uses these BASIC percentiles to identify and target "high-risk" carriers for interventions, such as warning letters and on-site investigations.

In 2014, we reported on the effectiveness of SMS and found that FMCSA faces challenges in reliably assessing safety risks for the majority of carriers.[28] We recommended that FMCSA revise the SMS methodology to better account for limitations in drawing comparisons of safety performance information across carriers.[29] As of November 2016, FMCSA has not implemented our recommendation. The FAST Act directed FMCSA to address the issues raised in our report and required that FMCSA remove the BASIC percentiles from public view on its website until then, which it has done.[30]

While Potential Safety Impact of a Self-Reporting System Is Difficult to Determine, FMCSA and Selected Stakeholders Suggested Safety Benefits Are Unlikely

Identifying Potential Safety Impact of a System for Self-Reporting Equipment Problems Is Challenging

One of the challenges in assessing the safety impact of a potential system for self-reporting equipment problems is its hypothetical nature. As described above, based on one of the provisions in the FAST Act and discussions with FMCSA and stakeholders, we made a number of

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[28]GAO-14-114.

[29]FMCSA did not concur with our recommendation, but stated that it would analyze the recommendation as the agency continued to improve the effectiveness of the Safety Measurement System.

[30]The FAST act states that the relative percentile for each BASIC may not be made available to the public until "the Administrator of the Federal Motor Carrier Safety Administration has fully implemented or satisfactorily addressed the issues raised in the report." Pub. L. No. 114-94, § 5223, 129 Stat. 1312,1541.

assumptions about such a system. We assumed that a self-reporting system would:

- apply only to problems identified during a driver's day, that is between the pre-trip inspection and the end of the day when the driver vehicle inspection report is completed;

- not apply to equipment problems that would result in out-of-service violations;

- require drivers to report equipment problems and repairs through a telephone hotline or Internet website or other electronic platform;

- require repairs to be made before the beginning of the next day on duty (e.g., within a day of when the problem was reported, if the driver ended his trip that evening and planned another trip the following day);

- still result in a carrier receiving a violation for the equipment problem if pulled over for a roadside inspection, but once a self-reported equipment problem was repaired within the requisite time frame and FMCSA was so notified, FMCSA would exclude the violation from the carrier's relative safety ranking (i.e., BASIC percentile for vehicle maintenance); and

- not prompt FMCSA to take action if a carrier or driver self-reported an equipment problem, but never received a violation for that equipment problem.

Figure 2 below illustrates some of the key differences between the current process for identifying and repairing equipment problems and the process under a potential self-reporting system with the features assumed above.

Figure 2: Example of a Driver Receiving a Violation for a Previously Identified Equipment Problem, Currently and with a System for Self-Reporting Equipment Problems
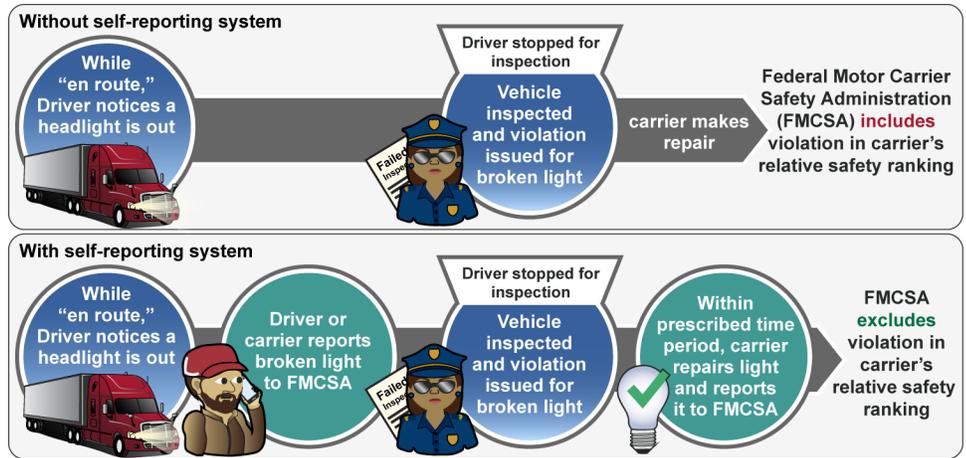
Source: GAO analysis of FMCSA information. | GAO-17-132

The Office of Management and (OMB) and the Department of Transportation (DOT) provide guidance on estimating a program's societal impact, such as its health and safety benefits, through a benefit-cost analysis. For example, DOT's Economic Analysis Primer states that a benefit-cost analysis requires the identification of a base case—usually the status quo—so that the benefits and costs associated with implementing the new program can be compared against this base.[31] For a new program designed to affect safety, identifying the base case and the potential benefits of the new program generally requires data on past events related to the type of bad outcomes (i.e., injuries and deaths) that the new program is expected to reduce.

Even after putting some parameters on a hypothetical system for self-reporting equipment problems (i.e., our assumptions), estimating its overall safety impact is challenging for two key reasons:

1. We did not identify any conclusive data on the "base case" or status quo for a self-reporting system—that is, data on how non-out-of-service equipment problems are related to safety outcomes. FMCSA and the National Highway Traffic Safety Administration estimated that

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[31]Department of Transportation Federal Highway Administration Office of Asset Management, *Economic Analysis Primer* (August 2003).

equipment problems such as braking capacity, tire or wheel failure, or shifting cargo were the critical reason for a crash in about 10 percent of the crashes for which a critical reason was assigned to a truck, as reported in the Large Truck Crash Causation Study.[32] However, this study was issued 11 years ago and did not separately present data for or otherwise discuss the extent to which non-out-of-service equipment problems were related to crashes. Further, our review of literature and interviews with FMCSA did not identify any additional data. Consequently, there is no baseline against which to evaluate the extent to which safety may be improved with the implementation of such a system.

2. Even if such data were available, we determined that an assessment of potential safety impacts would also require information on the extent to which a self-reporting system would change the frequency or speed with which drivers make equipment repairs. This would require information on both the frequency and speed with which carriers currently make repairs, and how a self-reporting system would change that behavior. Both, however, are unknown and difficult to determine because they would require predicting behavior under hypothetical conditions.

Most Selected Stakeholders Told Us Their Use of a Self-Reporting System Would Be Affected by Factors Such as Ease of Use

For a self-reporting system to impact safety, carriers and drivers would have to use it, but the majority of carriers and drivers we interviewed said their use of a potential self-reporting system would depend on various factors. The most frequently cited factor was ease of use. For example, some said they preferred a telephone hotline to a web-based application; others said the opposite. One carrier and one driver said they would use a self-reporting system if they thought they were traveling a route where an inspection was likely. Another carrier said it might use a self-reporting system if it afforded them increased flexibility to wait to repair low risk equipment problems at a less expensive repair facility, such as the carrier's own maintenance facility.

Representatives from five of six industry and safety associations we interviewed said they would be unlikely to support a self-reporting system

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[32]In the study, trucks were assigned a "critical reason" in 55 percent of the crashes. FMCSA and NHTSA conducted a multiyear, nationwide study of factors that contribute to truck crashes. A nationally representative sample of large truck fatal and injury crashes was investigated from 2001 through 2003 at 24 sites in 17 states. See U.S. Department of Transportation, Federal Motor Carrier Safety Administration, *Report to Congress on the Large Truck Crash Causation Study*, MC-R/MC-RIA (November 2005).

as outlined above. Industry and safety representatives cited reasons such as an administrative burden for drivers and carriers, and potentially negative safety impacts, as described below. Representatives from one industry association noted that a self-reporting system should allow drivers to simply record an equipment problem in their driver vehicle inspection report (DVIR) when they notice the problem. If by chance a driver was pulled over subsequent to recording in the DVIR, the driver could show the record to the inspector and not receive a violation for that equipment problem. However, as discussed above, for FMCSA to ensure that self-reported equipment problems were repaired, FMCSA would first have to receive a record of a violation. Then, after receiving certification of the accompanying repair, FMCSA would ensure that the violation was not included in the calculation of the carrier's vehicle maintenance BASIC percentile. Thus, noting the equipment problem on a DVIR would not be sufficient.

Most Carriers and Drivers Anticipated No Significant Safety Benefits of a Self-Reporting System, and FMCSA and Other Stakeholders Said It May Negatively Impact Safety

To impact safety, a self-reporting system would also have to prompt drivers and carriers to change the way they identify and repair equipment problems, yet the majority of carriers and drivers we interviewed said the system would not change, for example, how quickly they made repairs. As described above, FMCSA regulations require drivers to conduct a pre-trip and end-of-day inspection of their vehicle and to ensure that any identified issues are repaired before driving.[33] Carriers and drivers we interviewed said that if they identify an equipment problem en route, that is, after their pre-trip inspection, they work with their carrier to determine when and where to repair the problem. Many carriers and drivers we interviewed said they would continue to identify and repair equipment problems the same way and with the same speed under a system for self-reporting equipment problems.

More generally, the majority of carriers and drivers we interviewed stated that any safety impacts of a self-reporting system—positive or negative—would be minimal. For example, three drivers thought a self-reporting system could potentially yield some safety benefits if it incentivized drivers to do more thorough pre-trip or en route inspections. This could lead to better identification and quicker repair of equipment problems. On the other hand, three carriers and two other drivers we interviewed thought a self-reporting system could potentially yield some negative

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[33]49 C.F.R. §§ 396.11, 396.13.

safety impacts if it incentivized some drivers to delay or avoid making repairs for problems they had self-reported.

Further, FMCSA officials and safety association representatives we interviewed stated that they believed a self-reporting system could lead to negative safety outcomes. FMCSA officials said that a self-reporting system could result in carriers trying to "game the system," for example by using it to report equipment problems during a trip that should have been identified in a pre-trip inspection and repaired before the trip began. FMCSA officials said that this type of delayed repair could lead to a more serious maintenance condition occurring. Representatives from safety associations said that carriers and drivers might delay making repairs until the end of any permitted time period or might engage in distracted driving while typing or calling in an en route equipment problem on their cell phones.

FMCSA Has the Statutory and Regulatory Capability to Establish a Self-Reporting System, but FMCSA and System Users May Face Challenges, and Costs are Unknown

We Did Not Identify Any Statutory or Regulatory Barriers to Establishing a System for Self-Reporting Equipment Problems

Neither we nor FMCSA identified any statutory or regulatory barriers to establishing a system for self-reporting equipment problems. When Congress established FMCSA in 1999, it granted the agency authority to develop and enforce commercial motor-vehicle safety regulations and practices to promote a safe and efficient transportation system.[34] With this authority, FMCSA created regulations setting requirements for vehicles' operating condition and roadside inspections. Under this authority, FMCSA could create a system for self-reporting equipment problems.

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[34]Pub. L. No. 106-159, 113 Stat. 1748. (1999).

Similarly, we did not identify any barrier in existing regulations to establishing a self-reporting system. FMCSA officials stated that if a self-reporting system were in place, vehicles would still be required to meet the minimum vehicle condition requirements and inspectors would continue to inspect vehicles to ensure compliance with these regulations and issue violations. Rather than altering existing regulations, FMCSA officials said a potential self-reporting system would require FMCSA to change its internal policy document that outlines how FMCSA calculates carriers' vehicle maintenance BASIC percentiles.[35]

FMCSA and Users Could Face Challenges Implementing a Self-Reporting System

While the technology exists for FMCSA to establish a system for self-reporting equipment problems, the agency may face challenges implementing such a system. FMCSA officials stated they could design a self-reporting system to be compatible with the agency's existing IT systems. FMCSA currently uses its Motor Carrier Management Information System (MCMIS) to manage motor carrier and driver performance data, including inspection and investigation results.[36] FMCSA officials said they could potentially use MCMIS to manage self-reported equipment problem information, but there might be challenges matching self-reported vehicle maintenance issues with violations issued by inspectors in the MCMIS database. For example, to exclude equipment problem violations that were self-reported and repaired from BASIC percentile calculations, FMCSA would have to match the self-reported equipment problem and repair to a corresponding report of a violation issued by an inspector for that same equipment problem. This could be difficult if, for example, the driver and inspector coded the equipment problem differently (e.g., driver recorded "inoperative required lamps" and inspector recorded "inoperative head lamps"). Safety advocacy groups believed more oversight would be necessary to ensure carriers actually made repairs, but FMCSA and multiple carriers believed showing proof of repairs for every report (e.g., receipts or written repair orders) as opposed to simply self-certifying a repair, would be too time-consuming.

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[35]Carrier Safety Measurement System Methodology 3.0.3, Federal Motor Carrier Safety Administration, 2014.

[36]MCMIS also includes data on enforcement actions, such as inspection and compliance reviews, and state-reported crashes involving commercial motor carriers.

In addition, we found in October 2016 that FMCSA has faced long-standing delays with software development.[37] Creating a self-reporting system could place new demands on FMCSA's information technology resources. FMCSA has put a hold on rolling out new enforcement strategies, such as offsite investigations (investigations conducted remotely using documents submitted by carriers, such as toll receipts, border crossing records, or drug testing records), until the agency has finished creating an improved software system to manage these enforcement activities. Developing a self-reporting system could further delay these software improvements. FMCSA officials estimated it could take between 3 and 5 years to develop a self-reporting system. FMCSA officials, one safety advocacy group, and an industry group we interviewed echoed this concern, suggesting that a self-reporting system could divert FMCSA resources from other IT priorities. For example, one industry group thought FMCSA should focus on improving its DataQ system, which allows carriers to challenge, and correct as appropriate, violations appearing on their records.

Finally, FMCSA officials told us that building, implementing, and maintaining a self-reporting system would require significant resources. For example, FMCSA would need to comply with the Paperwork Reduction Act of 1995 (PRA), a process that FMCSA officials said has been time consuming in the past. The PRA requires agencies to minimize the paperwork burden of their information collections (e.g., driver's license and Vehicle Identification Number (VIN) information in the case of a self-reporting system) and evaluate whether a proposed information collection is necessary for the proper performance of agency functions.[38] To do so, the agency must complete an "information collection request," which includes a report on why certain information is being collected and an estimate of the cost to the public.

Carriers and drivers could also face challenges using a potential system for self-reporting equipment problems. For example, both a web application and telephone hotline would require drivers to have cell service—which is not always the case for drivers in remote areas of the country. It could be possible, therefore, for a driver to be stopped for an

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[37]GAO, *Motor Carriers: Better Information Needed to Assess Effectiveness and Efficiency of Safety Interventions*, GAO-17-49 (Washington, D.C.: Oct. 27, 2016).

[38]Paperwork Reduction Act of 1995, Pub. L. No. 104-13, 109 Stat. 163 (codified as amended at 44 U.S.C. §§ 3501-3520).

inspection before he was able to report an equipment problem. If the system were a web application, drivers would need smartphones to report an equipment problem, but some drivers may not have one. If the system were a telephone hotline, two carriers and one driver worried the hotline could become inundated with calls with long wait times, though as noted above, it is not clear how many carriers would utilize such a system.

Carriers or drivers could also face challenges accurately entering required information. For example, FMCSA could require drivers to enter their 17-digit VIN along with their Commercial Driver's License number when reporting an equipment problem or repair, but entering this many digits could yield errors. Additionally, drivers would need to identify the violation that most closely matched their equipment problem, out of more than 300 potential vehicle maintenance violations. In some instances, that may be difficult to do; for example, there are 17 different violations related to reflective sheeting (e.g., not having reflectors on mud flaps). As discussed above, the way a driver or carrier self-reported a problem could differ from the way an inspector reported the violation. Similarly, identifying whether an equipment problem could render a vehicle out of service could be challenging. Equipment problems may or may not place a vehicle out-of-service depending on their severity. For example, regulations require a vehicle's front tire treads to be at least 4/32 of an inch deep.[39] Drivers will receive a violation if the tread is less than that requirement, but will only be placed out of service if the tread is less than 2/32 of an inch deep. Thus, it is possible that a driver could self-report a "tire tread depth" problem into a self-reporting system, but be operating with an out-of-service tread depth.

Without Details of System's Design, Total Costs Cannot Be Quantified

According to our cost-estimating guidance, creating an accurate cost estimate for any program requires a description of the system and its technical and performance characteristics—characteristics that are not currently known for this self-reporting system.[40] For example, we do not know whether the system would be a web-based application or a staffed hotline, nor do we know the extent to which FMCSA would need to review reports submitted in the system. Design options such as these would affect the number of FMCSA staff needed to operate and maintain the system and would require different amounts of IT investment. Therefore,

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[39]49 C.F.R. § 393.75.

[40]GAO, *GAO Cost Estimating and Assessment Guide*, GAO-09-3SP (Washington, D.C.: March 2009).

without knowing these design characteristics, we cannot estimate the initial cost of developing a potential self-reporting system or the continued costs of maintaining it with any degree of confidence.

However, two existing DOT self-reporting systems can provide a benchmark for potential costs of a self-reporting system, though these systems differ from an equipment problem self-reporting system in substantive ways. FMCSA maintains the National Consumer Complaint Database (NCDDB), which allows drivers and the general public to submit complaints ranging from moving companies damaging household goods to drivers being forced to operate unsafe equipment. According to FMCSA officials, this database received approximately 20,000 reports in 2015, and cost approximately $1 million to operate in that year. While the NCCDB seems similar to a system for self-reporting equipment problems in that it allows drivers to self-report information through both a website and hotline, it differs in that NCCDB complaints do not feed into another FMCSA IT system, as self-reported equipment problems would need to. FMCSA officials thought that linking the self-reported equipment problems and MCMIS data systems would be the most costly part of developing a system for self-reporting equipment problems.

FAA maintains the Aviation Safety Action Program (ASAP), which allows pilots, flight attendants, and maintenance employees to voluntarily report safety incidents to help FAA identify potential precursors to accidents. FAA officials reported that in 2015 ASAP received 98,000 reports and cost approximately $23 million in personnel costs only. This amount did not include the cost to establish ASAP or costs for operating the system itself. ASAP is similar to a motor carrier system for self-reporting equipment problems in that by self-reporting, users can avoid violations, but differs in a number of key ways. For example, ASAP does not include reporting for equipment problems, its focus is on identifying potential precursors to accidents, and it devotes significant resources to assembling committees to review each ASAP report and identify a corresponding corrective action, something which a motor carrier self-reporting system likely would not.

While we cannot estimate costs for the type of self-reporting system described in this report with any degree of confidence, FMCSA broadly estimated that a self-reporting system would cost between $5 and $10 million to establish and operate for the first year. FMCSA officials said this estimate did not use other DOT self-reporting systems as a benchmark nor did it explicitly include training, testing, or data storage—some of the factors that GAO's cost-estimating guide identifies as key to establishing

and maintaining a new electronic system. Therefore, this estimate may not cover the full cost of establishing a system for self-reporting equipment problems.

Agency Comments

We provided a draft of this report to DOT for review and comment. DOT provided technical comments, which we incorporated as appropriate.

We are sending copies of this report to relevant congressional committees, the Secretary of Transportation, and the Administrator of FMCSA. In addition, the report is available at no charge on GAO's website at http://www.gao.gov.

If you or your staff have any questions about this report, please contact me at (202) 512-2834 or flemings@gao.gov. Contact points for our Offices of Congressional Relations and Public Affairs may be found on the last page of this report. GAO staff who made major contributions to this report are listed in appendix I.
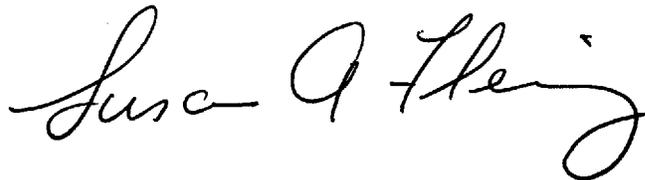
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Appendix I: GAO Contact and Staff Acknowledgments

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Staff Acknowledgments

In addition to the individual named above, H. Brandon Haller (Assistant Director), Sarah Farkas (Analyst-in-Charge), Amy Abramowitz, Russell Burnett, David Hooper, Catrin Jones, Delwen Jones, and Malika Rice made key contributions to this report.