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MOTOR CARRIER SAFETY

Improvements to Data-Driven Oversight Could Better Target High Risk Carriers

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Physical Infrastructure Issues

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GAO Highlights

Highlights of GAO-15-433T, a testimony before the Subcommittee on Surface Transportation and Merchant Marine Infrastructure, Safety and Security, Committee on Commerce, Science, and Transportation, U.S. Senate

Why GAO Did This Study

FMCSA's primary mission of reducing crashes, injuries, and fatalities involving large trucks and buses is critical to the safety of our nation's highways. However, with more than 500,000 active motor carriers operating on U.S. roadways, FMCSA must screen, identify, and target its resources toward those carriers presenting the greatest risk for crashing in the future.

FMCSA has recently taken some steps in this direction by, among other actions:

- Establishing its oversight program—the CSA program—based on a data-driven approach for identifying motor carriers at risk of presenting a safety hazard or causing a crash, and
- Establishing a vetting program designed to detect potential "chameleon" carriers—those carriers that have deliberately disguised their identity to evade enforcement actions issued against them.

This testimony provides information on both of these programs, based on two recent GAO reports on the oversight challenges FMCSA faces in identifying high risk motor carriers for intervention (GAO-14-114), and chameleon carriers (GAO-12-364), respectively.

View GAO-15-433T. For more information, contact Susan A. Fleming at (202) 512-2834 or flemings@gao.gov.

What GAO Found

The Federal Motor Carrier Safety Administration (FMCSA) has taken steps toward better oversight of motor carriers by establishing the Compliance, Safety, Accountability (CSA) and chameleon carrier vetting programs; however, FMCSA could improve its oversight to better target high risk carriers. The CSA program oversees carriers' safety performance through roadside inspections and crash investigations, and issues violations when instances of noncompliance with safety regulations are found. CSA provides FMCSA, state safety authorities, and the industry with valuable information regarding carriers' performance on the road.

A key component of CSA—the Safety Measurement System (SMS)—uses carrier performance data collected from inspections and investigations to calculate safety scores for carriers and identify those at high risk of causing a crash. The program then uses these scores to target high risk carriers for enforcement actions, such as warning letters, additional investigations, or fines. However, GAO's 2014 report identified two major challenges that limit the precision of the SMS scores and confidence that these scores are effectively comparing safety performance across carriers.

First, SMS uses violations of safety-related regulations to calculate a score, but GAO found that most of these regulations were violated too infrequently to determine whether they were accurate predictors of crash risk. Second, most carriers lacked sufficient data from inspections and violations to ensure that a carrier's SMS score could be reliably compared with scores for other carriers. GAO concluded that these challenges raise questions about whether FMCSA is able to identify and target the carriers at highest risk for crashing in the future. To address these challenges, GAO recommended, among other things, that FMCSA revise the SMS methodology to better account for limitations in available information when drawing comparisons of safety performance across carriers. FMCSA did not concur with GAO's recommendation to revise the SMS methodology because it believed that SMS sufficiently prioritized carriers for intervention. Therefore, FMCSA has not taken any actions.

GAO continues to believe that a data-driven, risk-based approach holds promise, and efforts to improve FMCSA's oversight could allow it to more effectively target its resources toward the highest risk carriers, and better meet its mission of reducing the overall crashes, injuries, and fatalities involving motor carriers.

GAO's 2012 report found that FMCSA examined only passenger and household goods carriers as part of its chameleon carrier vetting program for new applicants. GAO found that by modifying FMCSA's vetting program, FMCSA could expand its examinations of newly registered carriers to include all types of carriers, including freight carriers, using few additional staff resources. GAO recommended that FMCSA develop, implement, and evaluate the effectiveness of a data-driven, risk-based vetting methodology to target carriers with chameleon attributes. FMCSA concurred with GAO's recommendation and has taken actions to address these recommendations.

Chairwoman Fischer, Ranking Member Booker, and Members of the Subcommittee:

I am pleased to be here today to discuss oversight of the U.S. Department of Transportation's (USDOT) Federal Motor Carrier Safety Administration (FMCSA). The commercial motor carrier industry is large and diverse, with more than 500,000 active motor carriers operating on U.S. roadways. FMCSA's primary mission of reducing crashes, injuries, and fatalities involving large trucks and buses is critical to the safety of our nation's highways. To accomplish this mission, FMCSA engages in a range of activities designed to screen, identify, and target its resources toward the motor carriers that demonstrate characteristics or behaviors that increase the risk of crashing. Among these activities are new entrant safety audits and identification, or vetting, of "chameleon" carriers—motor carriers that have registered and been operating illegally in interstate commerce by using a new identity in an effort to disguise their former identity and evade enforcement actions issued against them by FMCSA.

FMCSA's oversight program—the Compliance, Safety, Accountability (CSA) program—is based on the Safety Measurement System (SMS), a data-driven approach for identifying motor carriers at risk of presenting a safety hazard or causing a crash.[1] SMS uses information collected during federal and state roadside inspections and from reported crashes to calculate scores across seven categories that quantify a carrier's safety performance relative to other carriers.[2] The precision and accuracy of these scores is vital because FMCSA investigators and their state partners use SMS results to focus their resources on higher risk carriers and, through interventions, help reduce the number of motor carrier crashes, injuries, and fatalities. FMCSA currently posts most of the scores

[1]FMCSA was required under section 4138 of the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU) to "ensure that compliance reviews are completed on motor carriers that have demonstrated through performance data that they pose the highest safety risk." Pub. L. No.109-59, § 4138, 119 Stat. 1144, 1745 (2005).

[2]Safety data obtained primarily from roadside inspections as well as from crash reports are sorted into six Behavior Analysis and Safety Improvement Categories (BASIC)—Unsafe Driving, Hours-of-Service Compliance, Driver Fitness, Controlled Substances and Alcohol, Vehicle Maintenance, and Hazardous Materials—associated with unsafe performance. In addition to the six BASICs, SMS also incorporates data based on a carrier's crash involvement.

publicly on its website for use by industry stakeholders and the public.[3] FMCSA has indicated that a future rulemaking will include some of the information used to calculate SMS scores to help determine a carrier's overall fitness to operate motor vehicles.

My statement today presents highlights from our two recent reports on the oversight challenges FMCSA faces in identifying high risk motor carriers.[4] Each of these reports contains detailed information on our objectives, scope, and methodology for performing this work. The work on which this statement is based was performed 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 our audit objectives.

In summary, our recent work on FMCSA oversight found that the establishment of the CSA program and chameleon carrier vetting program are steps toward better oversight of motor carriers. Through the CSA program, FMCSA can provide the agency, state safety authorities, and the industry with valuable information regarding carriers' performance on the road and reach more carriers through interventions. However, while we continue to believe that a data-driven, risk-based approach holds promise, our work identified several major challenges that limit the precision of SMS scores and confidence that these scores are effectively comparing safety performance across carriers. These serious challenges raise questions about whether CSA is able to identify and target the carriers at highest risk for crashing in the future. In addition, our recent work on FMCSA's chameleon carrier vetting program found that using data analysis for targeting new applicants would allow FMCSA to expand its examinations of newly registered carriers to include new applicants of all types rather than just passenger and household goods carriers, using few or no additional staff resources. FMCSA has taken actions to address our recommendations related to the vetting of chameleon carriers;

[3]See http://ai.fmcsa.dot.gov/sms/

[4]GAO, *Federal Motor Carrier Safety: Modifying the Compliance, Safety, Accountability Program Would Improve the Ability to Identify High Risk Carriers,* GAO-14-114 (Washington, D.C.: Feb 3, 2014); GAO, *Motor Carrier Safety: New Applicant Reviews Should Expand to Identify Freight Carriers Evading Detection,* GAO-12-364 (Washington, D.C.: Mar 22, 2012).

however, it has not taken action to address our recommendations to better account for limitations in the CSA program.

FMCSA's Method Does Not Effectively Identify High Risk Carriers

As we reported in our February 2014 report, since CSA was implemented nationwide in 2010, it has been successful in raising the profile of safety in the motor carrier industry and providing FMCSA with more tools to increase interventions with carriers. We found that following the implementation of CSA, FMCSA was potentially able to reach a larger number of carriers, primarily by sending them warning letters. Law enforcement officials and industry stakeholders we interviewed generally supported the structure of the CSA program, in part because CSA provides data about the safety record of individual carriers, such as data on inspections, violations, crashes, and investigations, that help guide the work of state inspectors during inspections. However, despite these advantages, our report also uncovered major challenges in reliably assessing safety risk and targeting the riskiest carriers.

First, according to FMCSA, SMS was designed to use all safety-related violations of FMCSA regulations recorded during roadside inspections. For SMS to be effective in identifying carriers at risk of crashing, the violation information that is used to calculate SMS scores should have a relationship with crash risk. However, we found that the relationship between the violation of most of these regulations and crash risk is unclear, potentially limiting the effectiveness of SMS in identifying carriers that are likely to crash. Our analysis found that most of the safety regulations used in SMS were violated too infrequently over a 2-year period to reliably assess whether they were accurate predictors of an individual carrier's likelihood to crash.[5] Specifically, we found that 593 of the 754 regulations we examined were violated by less than one percent of carriers.[6] Of the remaining regulations with sufficient violation data, we found 13 regulations for which violations consistently had some association with crash risk in at least half the tests we performed, and only two regulations had sufficient data to consistently establish a

[5]FMCSA uses inspection and crash data for a carrier over a 2-year period to calculate a SMS score.

[6]While SMS includes approximately 800 of FMCSA's regulations, our analysis looked at the 754 regulations available for the time frame of our analysis in order to limit violations to those that had sufficient violation data to examine over time. To conduct our analysis, a regulation needed to be present both during our analysis observation period, December 2007 to December 2009, and our evaluation period, December 2009 to June 2011.

substantial and statistically reliable relationship with crash risk across all of our tests.

Second, most carriers lack sufficient safety performance data, such as information from inspections, to ensure that FMCSA can reliably compare them with other carriers. SMS scores are based on violation rates that are calculated by dividing a carrier's violations by either the number of inspections or vehicles associated with a carrier. The precision and reliability of these rates varies greatly depending on the number of inspections or vehicles a carrier has. Violation rates calculated for carriers with more inspections or vehicles will have more precision and confidence than those with only a few inspections or vehicles.[7] This statistical reality is critical to SMS, because for the majority of the industry, the number of inspections or vehicles for an individual carrier is very low. About two-thirds of carriers we evaluated operated fewer than four vehicles and more than 93 percent operated fewer than 20 vehicles.[8] Moreover, many of these carriers' vehicles were inspected infrequently. Carriers with few inspections or vehicles will potentially have estimated violation rates that are artificially high or low and thus not sufficiently precise for comparison across carriers. This creates the likelihood that many SMS scores do not accurately or precisely assess safety for a specific carrier. FMCSA acknowledged that violation rates for carriers with few inspections or vehicles can be less precise, but the methods FMCSA uses to address this limitation are not effective. For example, FMCSA requires a minimum level of data (i.e., inspections or violations) for a carrier to receive an SMS score. However, we found that level of data is not sufficient to ensure reliable results.

[7]Rate estimates become more precise with each additional observation. Estimates based on 10 to 20 observations are more precise than those based on 1 to 5 observations. However, the amount of data required in practice depends on the degree of imprecision the user is willing to accept for a given purpose. This trade-off, in turn, depends on how the user considers the consequences of inaccuracy.

[8]Our analysis included nearly 315,000 U.S.-based carriers that were under FMCSA's jurisdiction and, with reasonable certainty, were active during the period from December 2007 through June 2011. We considered a carrier active during this period if it received a state or federal inspection, was involved in a crash, or reported the number of vehicles it operates to FMCSA. Information on inspections, violations, and crashes from December 2007 through December 2009, our observation period, was used to calculate SMS scores. We used crash information from the remaining 18 month period—from December 2009 through June 2011—referred to as our evaluation period, to determine these carriers' subsequent crash rates and involvement in crashes.

Our analysis of the effectiveness of FMCSA's existing CSA methodology found that the majority of the carriers that SMS identified as having the highest risk for crashing in the future did not actually crash. Moreover, smaller carriers and carriers with few inspections or vehicles tended to be disproportionately targeted for intervention. As a result, FMCSA may devote intervention resources to carriers that do not necessarily pose as great a safety risk as other carriers. In our 2014 report, we illustrated that when SMS only considered carriers with more safety information, such as inspections, it was better able to identify carriers that later crashed and allowed for better targeting of resources. An approach like this would involve trade-offs; fewer carriers would receive SMS scores, but these scores would generally be more reliable for targeting FMCSA's intervention resources. FMCSA could still use the safety information available to oversee the remaining carriers the same way it currently oversees the approximately 72 percent of carriers that do not receive SMS scores using its existing approach.

Given the limitations of safety performance information, we concluded that it is important that FMCSA consider how reliable and precise SMS scores need to be for the purposes for which they are used. FMCSA reports these scores publicly and is considering using a carrier's performance information to determine its fitness to operate. FMCSA includes a disclaimer with the publicly released SMS scores, which states that the data are intended for agency and law enforcement purposes, and that readers should draw conclusions about a carrier's safety condition based on the carrier's official safety rating rather than its SMS score. At the same time, FMCSA has also stated that SMS provides stakeholders with valuable safety information, which can "empower motor carriers and other stakeholders…to make safety-based business decisions."[9] As a result, some stakeholders we spoke to, such as industry and law enforcement groups, have said that there is a lot of confusion in the industry about what the SMS scores mean and that the public, unlike law enforcement, may not understand the limitations of the system.

Based on the concerns listed above, in our 2014 report we recommended that FMCSA revise the SMS methodology to better account for limitations in available information when drawing comparisons of safety performance across carriers. We further recommended that FMCSA's determination of

[9]CSA, CSMS Methodology, Version 3.0.1 Motor Carrier Preview, Revised August 2013.

a carrier's fitness to operate should account for limitations we identified regarding safety performance information. FMCSA did not concur with our recommendation to revise the SMS methodology because, according to FMCSA officials, SMS in its current state sufficiently prioritizes carriers for intervention purposes. However, FMCSA agreed with our recommendation on the determination of a carrier's fitness to operate, but has not yet taken any actions. As I will discuss later in my statement, we continue to believe that FMCSA should improve its SMS methodology.

FMCSA Cannot Readily Determine the Number of Chameleon Carriers

As we reported in our March 2012 report, FMCSA also faces significant challenges in determining the prevalence of chameleon carriers, in part, because there are approximately 75,000 new applicants each year. As mentioned earlier, chameleon carriers are motor carriers disguising their former identity to evade enforcement actions. FMCSA has established a vetting program to review each new application for operating authority submitted by passenger carriers (intercity and charter or tour bus operators) and household goods carriers (hired by consumers to move personal property). According to FMCSA officials, FMCSA vetted all applicants in these groups for two reasons: (1) these two groups pose higher safety and consumer protection concerns than other carrier groups and (2) it does not have the resources to vet all new carriers. While FMCSA's exclusive focus on passenger and household goods carriers limits the vetting program to a manageable number, it does not account for the risk presented by chameleon carriers in the other groups, such as for-hire freight carriers,[10] that made up 98 percent of new applicants in 2010.

We found that using data analysis to target new applicants would allow FMCSA to expand its examinations of newly registered carriers to include new applicants of all types using few or no additional staff resources. Our analysis of FMCSA data found that 1,136 new motor carrier applicants in

[10]FMCSA oversees two main groups of interstate motor carriers: (1) private carriers, who run an internal trucking operation to support a primary business in another industry, such as a retail store chain, and (2) for-hire carriers that sell their trucking services on the open market. Private and for-hire motor carriers seeking to operate in interstate commerce must register with FMCSA. For-hire carriers are also required to obtain operating authority from FMCSA, which dictates the type of operation the carrier may run and the cargo it may carry.

2010 had chameleon attributes, of which 1,082 were freight carriers.[11] Even with the large number of new applicant carriers and constraints on its resources, we concluded in 2012 that FMCSA could target the carriers that present the highest risk of becoming chameleon carriers by using a data-driven, risk-based approach.

As a result of these findings, we recommended that FMCSA use a data-driven, risk-based approach to target carriers at high risk for becoming chameleon carriers. This would allow expansion of the vetting program to all carriers with chameleon attributes, including freight carriers. FMCSA agreed with our recommendations. In June 2013, to help better identify chameleon carriers, FMCSA developed and began testing a risk-based methodology that implemented a framework that closely follows the methodology we discussed in our report. FMCSA's preliminary analysis of this methodology indicates that it is generally successful in providing a risk-based screening of new applicants, which it plans to use as a front-end screening methodology for all carrier types seeking operating authority. By developing this risk-based methodology and analyzing the initial results, FMCSA has developed an approach that may help keep unsafe carriers off the road.

To further help Congress with its oversight of FMCSA and motor carrier safety, we also have on-going work on FMCSA's hours-of-service regulations, DOD's Transportation Protective Services program,[12] and commercial driver's licenses.[13] This work is in various stages, and we expect to issue the final reports later this year.

Conclusion

In conclusion, the commercial motor carrier industry is large and dynamic, and FMCSA plays an important role in identifying and removing unsafe carriers from the roadways. With over 500,000 active motor carriers, it is

[11]For the purposes of our analysis, we defined chameleon attributes as those that met two criteria: (1) They submitted registration information that matched information for a previously registered carrier; (2) The previously registered carrier had a motive for evading detection, such having as a history of safety violations or having filed for bankruptcy.

[12]DOD's Transportation Protective Services program uses commercial motor carriers to transport hazardous and sensitive materials such as arms, ammunition, and explosives, and certain classified shipments.

[13]FMCSA conducts ongoing verification of State CDL program compliance and catalogs the results.

essential to examine ways to better target FMCSA's resources to motor carriers presenting the greatest risk. To effectively do this, FMCSA must use a number of strategies to identify and intervene with high risk carriers. We continue to believe that a data-driven, risk-based approach for identifying high risk carriers holds promise. FMCSA's preliminary steps to implement a risk-based screening methodology have the potential to identify more high risk chameleon carriers. However, without efforts to revise its SMS methodology, FMCSA will not be able to effectively target its intervention resources toward the highest risk carriers and will be challenged to meet its mission of reducing the overall crashes, injuries, and fatalities involving large trucks and buses.

Chairwoman Fischer, Ranking Member Booker, and Members of the Subcommittee, this concludes my prepared remarks. I would be pleased to answer any questions you or other Members may have at this time.

GAO Contact and Staff Acknowledgements

For further information regarding this statement, please contact Susan Fleming at (202) 512-2834 or Flemings@gao.gov about this statement. Contact points for our Offices of Congressional Relations and Public Relations can be found on the last page of this statement. Matt Cook, Jen DuBord, Sarah Farkas, Brandon Haller, Matt LaTour, and Amy Rosewarne made key contributions to this statement.