LIMITATIONS AND USES OF SAFETY MEASUREMENT SYSTEM DATA FOR ASSESSING MOTOR CARRIER SAFETY

Pursuant to the Explanatory Statement accompanying "The Consolidated and Further Continuing Appropriations Act, 2015" (Public Law 113-235) and
House Report 113-464 accompanying House Bill 4745

October 2015

House Report 113-464 requested the Federal Motor Carrier Safety Administration (FMCSA) to conduct a formal analysis that specifically identifies the limitations in data used to calculate Safety Measurement System (SMS) scores as well as limitations in resulting SMS scores. The report further directs that such analysis shall identify, for each purpose for which SMS scores are used, what data sufficiency standard is necessary to ensure the SMS is reliable enough to serve that purpose. The report also directs FMCSA to demonstrate that any use of data, including the SMS, to determine a carrier's fitness to operate has adequately accounted for data limitations.

HISTORY OF SMS

The Agency's safety performance data has been available to the public for nearly 15 years and previously was available through the Agency's Safestat system. SMS, which has been in operation since December 2010, provides industry and the public with comprehensive, informative, and regularly updated safety performance data.

In developing SMS as an enforcement intervention prioritization tool, FMCSA analyzed groups of violations committed by motor carriers and then looked at the crashes in which they were involved. The purpose of this analysis was not to predict the future crash rates of individual motor carriers, but instead to identify the non-compliance patterns of motor carriers involved in crashes and calculate the crash rates for these populations. This is known as correlated crash risk. While some carriers that engage in these non-compliance patterns may not have crashes, these carriers are—as a group—more likely to have crashes (high crash risk). Further analysis of the Agency's processes has shown that when the Agency initiates an enforcement intervention with a motor carrier, whether it is through a warning letter, investigation, or some other action, the carriers have fewer crashes.[1]

Since its implementation more than 4 years ago, SMS has been revised several times to make improvements to the methodology to better target non-compliant motor carriers and to improve the display of data so that it is easier for users to understand. Many of the changes to the system were the result of recommendations from law enforcement, industry, safety advocates, and other stakeholders.

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[1] http://ntl.bts.gov/lib/54000/54400/54484/RRA-14-011-CIEM_Summary_Report-FINAL-508C.pdf

A number of independent reports have confirmed the effectiveness of SMS, including reports by the University of Michigan Transportation Research Institute,[2] the American Transportation Research Institute,[3] and FMCSA's own analysis of SMS.[4] Most importantly, since the Agency's implementation of SMS in December 2010, overall violation rates from roadside inspections have decreased by 14 percent and driver violation rates have decreased by 17 percent, the most dramatic decreases observed in over a decade.

GOVERNMENT ACCOUNTABILITY OFFICE REPORT

On February 3, 2014, the Government Accountability Office (GAO) released "Modifying the Compliance, Safety, Accountability Program Would Improve the Ability to Identify High Risk Carriers," GAO-14-114. GAO recommends that FMCSA revise the SMS methodology to better account for limitations in drawing comparisons of safety performance information across carriers. The U.S. Department of Transportation (DOT) continues to have significant concerns regarding GAO's findings and analysis metrics. Most notably, the data sufficiency level that GAO used as an illustrative alternative methodology would limit the use of safety performance data to assessing risk only for carriers that undergo 20 or more roadside inspections within a set period {or have an average of 20 vehicles, depending on the Behavior Analysis and Safety Improvement Category (BASIC)}. This would reduce significantly the number of small carriers that are prioritized for an enforcement intervention, as small carriers would rarely meet GAO's alternative 20-inspection threshold, and by definition they do not have 20 vehicles. In fact, 90 percent of the trucking industry would not meet this data sufficiency standard. FMCSA's prioritization tool would then be skewed towards the largest motor carriers, i.e., those that undergo 20 or more roadside inspections within a given period and those with 20 or more vehicles. While larger companies have more crashes due to their exposure, as a group, they have lower crash rates (crash risk) than smaller motor carriers. Ignoring the readily apparent lapses in smaller carriers' safety management controls, while focusing only on larger carriers, limits the Agency's ability to reduce crash risk on our highways.

GAO's alternative approach focuses on those carriers that have already had a crash. FMCSA, however, believes that motor carriers that commit patterns of violations that have been shown to have a strong correlation to crash risk should be identified and appropriately prioritized for intervention before a crash. FMCSA uses SMS to prioritize its enforcement resources and proactively intervene—early and quickly—to identify unsafe compliance patterns before crashes occur. The assumption that a motor carrier that has no crashes during a limited observation period also has no crash risk, irrespective of demonstrated poor on-road performance and safety non-compliance across multiple inspections, is incorrect and irresponsible.

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[2] University of Michigan Transportation Research Institute (UMTRI), *Evaluation of the CSA 2010 Operational Model Test,* August 2011
[3] ATRI, *Compliance, Safety, Accountability: Analyzing the Relationship of Scores to Crash Risk*, October 2012, http://atri-online.org
[4] The Carrier Safety Measurement System (CSMS) Effectiveness Test by Behavior Analysis and Safety Improvement Categories (BASICs), January 2014

Applying the methodology illustrated by GAO presents other concerns for the Agency. The actual consequences of the GAO approach include the following outcomes:

- Because of the data sufficiency requirements recommended by GAO, FMCSA would focus its efforts only on approximately10 percent of motor carriers (the largest companies), leaving 90 percent of motor carriers out of the Agency's enforcement priorities solely because they had fewer than 20 roadside inspections in the previous 24-months or fewer than 20 vehicles.
- The Agency would become reactive rather than proactive. For example, a carrier cited in 8 out of 10 inspections for its drivers texting while operating commercial motor vehicles would not be addressed by the Agency until the carrier received 20 inspections, which might not occur within the given time period. However, a carrier with a few speeding violations in 20 inspections would be prioritized.

Carriers identified as high-risk by SMS have crash rates of double the national average.

STAKEHOLDER INVOLVEMENT

FMCSA designed, developed, piloted, and field-tested the Compliance, Safety, Accountabilty (CSA) program over a 6-year period before rolling it out nationwide in 2010. During that time, the Agency held multiple listening sessions with industry, law enforcement, safety advocates, and other stakeholders, including two via webcast in December 2009. FMCSA used the results of these sessions to further refine SMS before national rollout. Most importantly, FMCSA provided an extended data review/preview period for motor carriers and law enforcement (April 2010 through December 2010) before launching SMS nationwide. During that time, FMCSA made many improvements to SMS based on input from the trucking industry and other stakeholders.

It is also important to note that FMCSA invested in a strong outreach effort for the CSA program (which includes SMS) that includes a two-way communication component. The CSA Outreach Website,[5] launched in August 2008, has more than 20,000 subscribers and reaches many more via a Rich Site Summary (RSS) feed.

Because SMS is designed to be a system that is continuously improved, responsive to new technology, field experience, and new data, FMCSA provides a preview to industry of any major SMS changes offering the industry and other stakeholders a chance to understand the changes and provide feedback before the Agency implements them or they are made public.

The Agency has been engaged in, and remains committed, to a collaborative, transparent, data-driven, and research-based process for improving SMS. To address concerns about the appropriate uses of SMS, for instance, FMCSA introduced a new SMS website[6] display in August 2014, which it announced in the Federal Register and developed through a public comment process. These changes incorporate comments received from a wide variety of

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[5] http://csa.fmcsa.dot.gov/rss.aspx
[6] https://ai.fmcsa.dot.gov/sms/

industry and other stakeholders, including the Agency's Motor Carrier Safety Advisory Committee.

The August 2014 display changes were widely recognized by industry groups as important improvements to the system. For example, the American Bus Association expressed a strong appreciation for the changes and indicated the importance of providing "good, timely and detailed information ….to the public."[7] The American Trucking Associations also supported the changes that focused less on the relative nature of SMS and the inclusion of additional data added to the website.

The new SMS display helps stakeholders better understand and address safety issues and clarifies SMS' role as a prioritization tool for FMCSA interventions. SMS has raised awareness of the importance of safety and has caused motor carriers to devote more attention and resources to safety initiatives than ever before. This is largely due to the accountability that comes with having the carrier data publicly displayed.

In addition, on June 29, 2014, FMCSA published a Federal Register notice requesting public comments on proposed enhancements to the SMS methodology.[8] Consistent with its prior announcements, the Agency proposed changes to SMS that are the direct result of feedback from stakeholders and the Agency's ongoing continuous improvement efforts. Comments on the proposal were due by July 29, 2015.

TRANSPARENCY

Demand for access to the information provided by SMS is on the rise, as evidenced by the nearly 70 million user sessions on the website each year. Open and transparent reporting of safety data encourages a culture of commercial motor vehicle safety and creates incentives for motor carriers to improve their safety performance. Transparency also allows members of the public to make informed business decisions based on all available sources of FMCSA data, including FMCSA safety ratings, licensing and insurance information, and SMS data.

MOTOR CARRIER SAFETY DATA USED TO CALCULATE SMS SCORES

SMS is populated with carrier-specific information from inspections, investigations, crash reports, safety ratings, and insurance filings. Only the inspections, investigations, and crash information are used in the calculation of the motor carrier's percentiles in SMS.

In addition, motor carrier census data are first collected when a carrier obtains a USDOT number. SMS uses census data for identification and normalization of safety-related data. Examples of census data include USDOT number, carrier name, number and type of Power Units (PU), annualized vehicle miles traveled (VMT), physical location, current status, and types of cargo hauled. The census data are primarily collected from Form MCS-150 filled out by the carrier and Form MCS-151, filled out by law enforcement as part of an investigation. Carriers are required to update their MCS-150 information biennially.

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[7] www.regulations.gov, Docket No. FMCSA–2013–0392
[8] http://www.gpo.gov/fdsys/pkg/FR-2015-06-29/pdf/2015-15907.pdf

Inspections

FMCSA is charged by Congress to oversee approximately 525,000 active motor carriers. Annually, FMCSA and its State partners conduct nearly 3.5 million inspections at weigh stations, at the roadside, at ports of entry, and during audits and investigations. So, in the 24-month assessment period used by the Agency's SMS, nearly 7 million inspections are used to identify patterns of non-compliance. In 2014, in 61 percent of inspections, violations of Federal regulations were identified. This robust set of inspection and violation data populates SMS along with crash reports, safety ratings, operating authority status, and insurance status.

SMS currently requires a minimum of three or five inspections with violations, depending on the BASIC, before a motor carrier can receive a percentile rank. The SMS display shows an alert when certain thresholds are met or exceeded.

In the 24-month assessment periods used by SMS to evaluate and prioritize motor carriers for interventions, of the approximately 525,000 active motor carriers, 200,000 motor carriers have three or more inspections. These same 200,000 carriers are involved in approximately 90 percent of the crashes. If the number of inspections required for prioritization were increased to 20 or more, only about 52,000 carriers (10 percent) could be identified for proactive interventions.

Table 1 below shows the crash rates based on differing numbers of inspections. The crash rates, regardless of threshold, are similar. Therefore, waiting for more inspections does not target a population with a higher level of crash risk.

**Table 1: Motor Carrier Crash Rates (crashes per 100 PUs) based
on varying Data Sufficiency Standards**

Number of Inspections	Crash Rate of Carriers Identified for Interventions
3 or 5+ (SMS methodology)	4.75
10+	4.80
20+	4.76

Source: Effectiveness Test Model Results[9] using all BASICs but Crash Indicator. Crash rate based on 18 months of crashes per 100 PU. National average crash rate from Effectiveness Testing is 3.43 crashes per 100 PUs.

In addition, Table 2 demonstrates the number of motor carriers that would receive interventions at the various data sufficiency levels. The number of motor carriers identified for interventions drops significantly at greater data sufficiency levels. Requiring more inspections would potentially prevent FMCSA from engaging 27,798 motor carriers before crashes occur.

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[9] "The Carrier Safety Measurement System (CSMS) Effectiveness Test by Behavior Analysis and Safety Improvement Categories", Volpe National Transportation Systems Center., Jan. 2014 (BASICs), http://csa.fmcsa.dot.gov/Documents/CSMS_Effectiveness_Test_Final_Report.pdf.

Table 2: Motor Carriers with Inspections in SMS in 24 months

Number of Inspections	Number of Carriers Identified for Interventions
3 or 5+ (SMS methodology)	40,669
10+	22,149
20+	12,871

Source: Effectiveness Test Model Results[10] using all BASICs but Crash Indicator. Crash rate based on 18 months of crashes per 100 PU. National average crash rate from Effectiveness Testing is 3.43 crashes per 100 PUs.

Not only are the existing data sufficiency standards appropriate for the purpose of identifying motor carriers for interventions, FMCSA believes that any carrier with three or more related violations in a 24-month period should receive attention, even if it is a simple warning letter. This is especially important for small carriers that are not inspected as often. If they show disregard for compliance when rarely inspected, this is a problem that should be quickly addressed.

Investigations

A motor carrier's "BASIC Overall Status" includes an alert symbol if data indicates that they are prioritized for further monitoring because of either on-road safety data or investigation results. If a Serious Violation was discovered, the violation and the date it was cited are listed. The "Serious Violation Found" icon is displayed in the carrier's Investigation Results for the BASIC for 12 months following the date of the investigation.

FMCSA includes non-compliance findings from investigations completed by FMCSA or State partners when assessing BASIC performance. Serious violations include:

- Violations where non-compliance is so severe that they require immediate corrective action by a motor carrier, regardless of its overall safety posture (e.g., failing to implement an alcohol and/or controlled substance testing program), or violations that relate directly to the carrier's management and/or operational controls and are indicative of breakdowns in a carrier's management controls (e.g. pattern of violations/false reports of records of duty status).

It is important to note that investigation findings do not impact the motor carrier's percentile in SMS.

Crashes

FMCSA receives crash reports from the States when a crash is recordable. A recordable crash is defined in 49 CFR 390.5 as an occurrence involving a commercial motor vehicle operating on a highway in interstate or intrastate commerce that results in: (i) a fatality; (ii) bodily injury to a

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[10] Ibid.

person who, as a result of the injury, immediately receives medical treatment away from the scene of the crash; or (iii) one or more motor vehicles incurring disabling damage that requires the motor vehicle to be transported away from the scene by a tow truck or other motor vehicle.

The Agency receives over 100,000 crash reports each year, which are recorded in SMS regardless of preventability. Agency analysis shows that motor carriers that have been involved in a high number of crashes are more likely than other carriers to be involved in future crashes. The FMCSA analysis indicates that past crashes are a good predictor of future crashes, regardless of the role of the carrier in the crash. Therefore, FMCSA uses all crashes in SMS to identify motor carriers for intervention.

However, FMCSA does not display the SMS Crash Indicator BASIC score on the public website because the crashes do not reflect preventability. In addition, the crash information on the SMS website clearly advises that "Crashes listed represent a motor carrier's involvement in reportable crashes, regardless of the carrier's or driver's role in the crash."

Additionally, FMCSA fully considers crash preventability before issuing a safety rating to ensure the carrier does not receive an adverse safety fitness rating because of a crash that was non-preventable. Using all crashes for prioritization but only preventable crashes for safety fitness determinations balances the concerns of the industry with FMCSA's mission to protect the motoring public by using the most comprehensive performance data currently available.

In considering the use of crashes for prioritizing motor carriers, the Agency analyzed crash data by a carrier's inspection frequency. The data in Table 3 below confirms that companies with fewer inspections have a significant number of crashes. Therefore, it is appropriate and important for FMCSA to conduct safety interventions with those carriers. This is particularly true given that 90 percent of all motor carriers have fewer than 20 inspections.

Table 3: Motor Carriers by the Number of Inspections, Power Units, and Crashes (over 24 months)

Number of Inspections	# of Carriers with 0 Crashes	# of Carriers with 1 Crash	# of Carriers with 2+ Crashes	Total # of Crashes	Total # of Carriers	Total # of Power Units
0-2	303,451	10,727	968	13,041	315,146	860,036
3-19	126,862	21,943	5,711	36,125	154,516	919,641
20+	16,668	9,800	15,985	135,781	42,453	2,492,203
Total	**446,981**	**42,470**	**22,664**	**184,947**	**512,115**	**4,271,880**

Source: February 2015 Motor Carrier Management Information System (MCMIS)

DATA LIMITATIONS

The data limitations of SMS are consistent with any large scale predictive model with significant variances in events and exposures. As the system must evaluate motor carriers with one truck along with motor carriers with thousands of vehicles, the formula and comparisons must be normalized so that the focus is balanced. While more data certainly could be useful to improve

the model, the Agency's programs target carriers with poor performance to focus the efforts of its Federal staff and State partners.

Additionally, the system contains sufficient data on approximately 200,000 of the 525,000 active motor carriers. It is important to note, however, that this group of carriers is involved in over 90 percent of the crashes. Therefore, the system is identifying an appropriate group of carriers for interventions. The other carriers have very little exposure, which means they do not get enough inspections to meet the SMS data sufficiency standards. However, these carriers generally have a lower crash risk. SMS is not FMCSA's sole means of identifying non-compliance. As noted in this report, other programs including strike forces and complaint investigations are also used to identify needed enforcement.

One concern that has been raised about SMS is that the data and the scores do not predict the future crash rate of individual motor carriers. However, that is not the goal of the system. The goal is to identify carriers that engage in patterns of behavior that are similar to carriers that are involved in crashes, which is standard risk management practice. The crash rates of the groups of carriers identified is more than twice the national average. SMS data is sufficiently reliable for FMCSA to identify groups of high-risk carriers for intervention.

HOW SMS ACCOUNTS FOR DATA LIMITATIONS

SMS accounts for data limitations by setting sufficiency standards and by normalizing the data using utilization factors and safety event groups.

Data Sufficiency Standards

For a motor carrier to be assessed in a given SMS BASIC, it must have a minimum number of inspections with violations in that BASIC. In addition, there is a secondary standard in each BASIC. The SMS data sufficiency standards are shown in Table 4.

Table 4: SMS Data Sufficiency Standard by BASIC

BASIC	Data Sufficiency Standard	
	Number Inspections with Violations	Additional Standard
Unsafe Driving	3	No percentile assigned if no inspections with a violation in the BASIC in the last year.
Controlled Substances/Alcohol	1	Same as Unsafe Driving.
Fatigued Driving (HOS)	3	No percentile assigned if: No inspections with a violation in that BASIC within the past year; AND Most recent relevant inspection does not have a violation of that BASIC.
Driver Fitness	5	Same as Fatigued Driving.
Vehicle Maintenance	5	Same as Fatigued Driving.
Cargo-Related	5	Same as Fatigued Driving.
Crash	2 Crashes	No percentile assigned if no crashes in last year

Source: "Carrier Safety Measurement System (CSMS) Methodology, Version 3.0.3", Volpe National Transportation Systems Center, Sept. 2014. http://csa.fmcsa.dot.gov/Documents/SMSMethodology.pdf

Safety Event Groups

SMS groups carriers with others that have a similar number of safety events (e.g., crashes, inspections, or violations). SMS then ranks the carriers, within their assigned safety event group, in each BASIC and assigns them a percentile from 0 to 100 (the higher the percentile, the worse the safety performance).

Not aggregating carriers by the number of safety events to which a motor carrier is exposed as recommended by the GAO would disproportionately affect those carriers with fewer safety events—typically smaller carriers.

Utilization Factor

For the Unsafe Driving BASIC, a utilization factor is calculated by first determining if the carrier's segment is "combination" or "straight truck" based on the types of vehicles the carrier operates. Second, the VMT per average power unit is calculated by taking the most recent positive VMT data and dividing it by the average power units. This provides the ability for the Agency to normalize the data of these carriers to ensure accurate comparison with other carriers.

EFFECTIVENESS OF SMS IN IDENTIFYING THE RIGHT CARRIERS FOR INTERVENTION

FMCSA analysis shows that SMS is effective in identifying motor carriers with patterns of non-compliance that have been historically linked with crashes.

Table 5 shows the number and proportion of carriers with recent activity, carriers with insufficient data to be assessed by SMS, carriers with sufficient data, and carriers with a BASIC above the intervention threshold or a Serious Violation, and the percentage of crashes and crash rate for these carriers a month after the data snapshot.

Table 5: Crash Involvement of Carriers Assessed by SMS

Carrier Group	Number as of Sept. 26, 2014	Percent of Carriers as of Sept. 26, 2014	Percent of Truck and Bus Crashes for the month of October 2014	Crash Rate per 1,000 Trucks and Buses for the month of October 2014
All carriers with recent activity [11]	539,000	100%	100%	2.09
Carriers with *insufficient data* to be assessed in SMS	338,000	21%	9%	0.93
Carriers with *sufficient data* to be assessed in SMS	201,000	79%	91%	2.38
Carriers with an SMS percentile *above the Intervention Threshold*	52,000	29%	43%	3.03

Source: According to MCMIS as of February 2015, crash rate based on the number of reportable crashes that occurred in October 2014, divided by the number of vehicles owned or operated by motor carriers in October 2014.

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[11] Carriers have one of the following activities in the last 3 years: inspection, crash, investigation, safety audit, Unified Carrier Registration payment, registration, or insurance update.

Table 5 shows the national average crash rate for the month of October 2014 is 2.09 crashes per 100 PUs. Motor carriers with sufficient data as shown in Table 5 accounted for 91 percent of the crashes and had a crash rate more than twice that of carriers without sufficient data (0.93 vs. 2.38). Moreover, carriers with an SMS percentile above the intervention threshold had a crash rate 1.3 times higher than all carriers with sufficient data (2.38 vs. 3.03) and 1.5 times higher than all carriers with recent activity (2.09 vs. 3.03). This shows that SMS is assessing the population of carriers with the greatest crash involvement.

FMCSA has conducted SMS effectiveness testing to assess how effective SMS is at identifying patterns of non-compliance and the correlated crash risk. This test uses historical data to compare carriers' non-compliance for a period of time in the past and then observes the carriers' subsequent crash involvement. The Effectiveness Test (ET) then quantifies the extent to which there are associations between particular patterns of non-compliance, as reflected in SMS results, and crash rates. FMCSA most recently completed the ET in 2014. This analysis has consistently demonstrated the strength of the system.

Table 6, which is organized by motor carrier size, shows the SMS ET results for carriers identified for an intervention in a BASIC (carriers above the intervention threshold or with a serious violation) and compares their actual crash rates with similar-sized carriers not identified with an alert in a BASIC.

Table 6: ET Results for Carriers Identified with an Alert in at least one BASIC

Number of Power Units (PUs)	Number of Carriers	% of Size-Stratified ET Carrier Population Identified[12]	Total Power Units	Total Crashes	Crash Rate (per 100 PUs)	% Increase in Crash Rate Compared to Other Carriers
5 or Fewer PUs	24,647	12%	56,731	4,336	7.64	137%
5 < PUs <= 15	10,253	24%	92,965	6,173	6.64	149%
15 < PUs <= 50	5,514	30%	145,894	8,693	5.96	117%
50 < PUs <= 500	2,359	35%	308,120	15,110	4.90	84%
More than 500 PUs	269	49%	469,384	17,451	3.72	60%
All Carriers	43,042	15%	1,073,093	51,763	4.82	79%

Source: Effectiveness Test Model Results.[13] Crash rate based on 18 months of crashes per 100 PU. National average crash rate from ET is 3.43 crashes per 100 PUs.

Regardless of the size group, carriers that were identified with an alert in a BASIC had a crash rate that was higher than that of similar-sized carriers that were not identified with an alert in a BASIC. In particular, carriers with five or fewer PUs that had an alert had an actual crash rate that was 137 percent higher than carriers of similar size that did not have an alert. For carriers with fewer than 15 PUs, the correlated crash rate was 149 percent higher. As applied in SMS, the smaller carriers generally have a higher crash risk and are most likely to be positively impacted by Agency action.

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[12] The denominator for this calculation is the carrier count in the second column of the preceding table.

[13] http://csa.fmcsa.dot.gov/Documents/CSMS_Effectiveness_Test_Final_Report.pdf, pg. 7.

In addition, Table 6 shows that SMS identifies a smaller percentage of small carriers, while still being effective in finding those with high future crashes rates. As shown in the third column, smaller percentages of small-sized carriers are identified for interventions; for example, 12 percent of carriers with five or fewer PUs are identified for interventions, compared with 49 percent for carriers with more than 500 PUs.

CONSIDERATION OF DIFFERENT DATA SUFFICIENCY STANDARDS

In conducting the formal analysis requested to better understand the data sufficiency standards, the Agency considered several levels of data sufficiency including 1) the current SMS standards, 2) carriers with 10 inspections or below, 3) carriers with 11-20 inspections, and 4) carriers with more than 20 inspections.

Table 7: Crash Rates by Data Sufficiency Level

Carriers Identified for Interventions	All Carriers. Current SMS Standards		10 or fewer Inspections		11 to 20 Inspections		> 20 Inspections	
By BASIC	Crash Rate	# of Carriers	Crash Rate	# of Carriers	Crash Rate	# of Carriers	Crash Rate	# of Carriers
Unsafe Driving	6.62	9,594	6.98	7,203	8.22	1,331	6.28	1,060
Hours of Service Compliance	6.26	22,558	4.68	7,774	5.81	5,930	6.41	8,854
Driver Fitness	3.11	5,067	2.22	1,193	3.32	913	3.13	2,961
Drug and Alcohol	4.61	2,914	2.19	1,322	4.79	574	5.03	1,018
Vehicle Maintenance	5.65	15,734	4.38	7,803	5.44	3,772	5.98	4,159
Hazardous Materials	4.49	746	2.99	214	5.27	183	4.48	349
+ 1 BASIC	4.75	40,669	4.24	18,520	5.20	9,278	4.76	12,871
High Risk Group	7.33	5,654	7.96	694	9.16	1330	7.25	3,630

Source: Effectiveness Test Model Results using all BASICs but Crash Indicator. Crash rate based on 18 months of crashes per 100 PUs. National average crash rate from ET is 3.43 crashes per 100 PUs.

As shown in Table 7, when considering crash rates, the correlation for carriers with greater than 20 inspections is similar to that of carriers utilizing the current SMS data sufficiency standards. Most importantly, high-risk carriers with 11-20 inspections have a crash rate significantly higher than those with 20 or more inspections. In other cases, the crash rates are comparable, but in no case do carriers with greater than 20 inspections present a much higher crash risk. As stated previously, the GAO analysis considers these carriers higher risk simply because they have had a crash, regardless of their crash rate.

Most importantly, as reflected in Table 8, intervening using the existing SMS data sufficiency standards gives the Agency the ability to prevent some of the more than 7,200 additional crashes.

Table 8: Number of crashes by carriers meeting varying data sufficiency standards

Number of Inspections	Number of Crashes of Carriers Identified for Interventions
3 or 5+ (SMS methodology)	44,912
10+	41,456
20+	37,674

Source: Effectiveness Test Model Results using all BASICs but Crash Indicator.
Crash rate based on 18 months of crashes per 100 PU. National average crash rate
from ET is 3.43 crashes per 100 Pus.

SUMMARY

FMCSA regulates a larger and more diverse constituency than any other mode within the Department of Transportation. We must continue to balance our programs across this diversity. The Agency takes its responsibility to correct safety problems extremely seriously and will continue to adjust regulations, programs, and systems to make the greatest possible impacts. We cannot sit back and wait for more violations before taking action on motor carriers. It is our responsibility to identify non-compliance and take appropriate actions.

SMS ensures that there is oversight on the largest population possible—including both small and large carriers. Since introducing the use of the system, violation rates have dropped by 14 percent. Motor carriers are paying attention to their safety data more than ever before, which improves safety on the roadways. Motor carriers can avoid high percentiles in SMS by not violating the regulations. While much of the dialogue has been about methodology and statistics, without significant patterns of violations, there is no impact.

SMS improves the transparency of FMCSA data by consolidating access at one website. The site had over 70 million hits last year. This is vital information that is desired and used by the industry and the public.