



3.27.2012

March 2012

Safety Measurement System Changes

The Compliance, Safety, Accountability (CSA) program's Safety Measurement System (SMS) quantifies the on-road safety performance of motor carriers to prioritize enforcement resources, determine the safety problems that a motor carrier may exhibit, and monitor whether a motor carrier's safety problems are improving or worsening. The Federal Motor Carrier Safety Administration (FMCSA) designed the SMS with the intention that it would be improved over time as better technology, new data, and additional analysis became available. FMCSA made a number of enhancements to the SMS following the CSA Operational Model Test based on feedback from FMCSA staff, State Partners, industry, and safety advocates. This release is the first in a series of improvements to SMS that will take place up to twice a year. FMCSA will provide a preview period for enforcement personnel and motor carriers up to two times per year prior to implementation of SMS changes.

FMCSA is giving motor carriers the opportunity to preview the first package of SMS enhancements in late March 2012. These enhancements are the agency's response to findings from its ongoing analyses of data and input from enforcement, industry, and other safety stakeholders. Following the preview period, FMCSA may make final refinements to the methodology before implementing it and releasing the revised SMS results to the public. The first package of SMS enhancements will include:

1. Strengthening the Vehicle Maintenance Behavior Analysis and Safety Improvement Category (BASIC) by incorporating cargo/load securement violations from today's Cargo-Related BASIC.
2. Changing the Cargo-Related BASIC to the Hazardous Materials (HM) BASIC to better identify HM-related safety problems.
3. Better aligning the SMS with Intermodal Equipment Provider (IEP) regulations.
4. Aligning violations that are included in the SMS with Commercial Vehicle Safety Alliance (CVSA) inspection levels by eliminating vehicle violations derived from driver-only inspections and driver violations from vehicle-only inspections.
5. More accurately identifying carriers involved in transporting HM.
6. More accurately identifying carriers involved in transporting passengers.
7. Modifying the SMS display to:
 - Change current terminology, "inconclusive" and "insufficient data," to fact-based descriptions.
 - Separate crashes with injuries and crashes with fatalities.





The content below provides detailed information about each enhancement. The entire SMS methodology can be found in the methodology document (<http://csa.fmcsa.dot.gov/Documents/SMSMethodology.pdf>).

1. *Strengthening the Vehicle Maintenance BASIC by incorporating cargo/load securement violations from today's Cargo-Related BASIC.*

Overview: Industry and enforcement stakeholders have pointed out that carriers that predominantly haul open trailers (e.g., flatbeds) have excessively high Cargo-Related BASIC percentiles, as load securement issues for these types of carriers are more apparent. Because of this potential bias, FMCSA has not made the Cargo-Related BASIC available to the public. After analyzing the issue carefully, FMCSA developed a way to address it that both strengthens the SMS's ability to identify carriers for safety interventions and reduces the potential bias.

Analysis: While cargo/load securement violations comprise 82% of violations in the Cargo-Related BASIC, they comprise just 4% of violations when included in the Vehicle Maintenance BASIC. FMCSA compared the "flatbed bias" of the current Cargo-Related BASIC with that of a modified Vehicle Maintenance BASIC. The analysis determined that while the Cargo-Related BASIC identified 66% of flatbed carriers (as identified by industry and FMCSA field staff) as above the Intervention Threshold in that BASIC, the modified Vehicle Maintenance BASIC identified 21% of these carriers as above the Intervention Threshold. FMCSA also examined the carriers identified above the Intervention Threshold (i.e., those in the 80th percentile) in the current Cargo-Related and Vehicle Maintenance BASICs and compared them to carriers identified under the proposed new Vehicle Maintenance BASIC. Carriers identified under the new Vehicle Maintenance BASIC had over a 20% higher crash rate. As part of incorporating cargo/load securement violations into the Vehicle Maintenance BASIC, FMCSA recalibrated the severity weights of the securement violations with respect to the severity weights of violations currently residing in the Vehicle Maintenance BASIC. In summary, the analysis showed that this approach (1) identifies carriers with a higher crash risk for CSA interventions and (2) effectively addresses the bias associated with carriers that haul open trailers while still holding all carriers accountable for all cargo securement violations.

Solution: FMCSA will move the cargo/load securement violations from today's Cargo-Related BASIC to the Vehicle Maintenance BASIC.



2. *Changing the Cargo-Related BASIC to the HM BASIC to better identify HM-related safety problems.*

Overview: HM can greatly exacerbate the consequences of crashes and cargo spills. Over the past year, stakeholders have asked FMCSA to review the SMS methodology to ensure HM safety problems are adequately identified and addressed. The specific concern is that because the Cargo-Related BASIC currently includes HM violations and load securement violations, some HM safety issues could be masked.

Analysis: FMCSA consulted subject matter experts to identify and apply severity weightings to the 239 HM violations contained in the Cargo-Related BASIC and 112 additional HM safety-based violations attributable to the motor carrier. The agency then conducted effectiveness testing to compare the Cargo-Related BASIC with a new BASIC containing only the HM violations to determine which better identified carriers with a high risk of HM safety problems. The analysis found that the new BASIC identified carriers with more future violations and with higher violation rates than the current Cargo-Related BASIC.

Solution: FMCSA will remove the cargo/load securement violations from today's Cargo-Related BASIC and place them into the Vehicle Maintenance BASIC (see explanation above). The agency will create a new HM BASIC based on vehicle inspections (i.e., Level 1, 2, 5 and 6) and HM violations where the vehicle was transporting placardable quantities of HM. This BASIC will allow the agency to better identify HM-related safety issues for CSA interventions. FMCSA plans to make the HM BASIC public; however, a final decision will be made at the end of the preview period.

3. *Better aligning the SMS with IEP regulations.*

Overview: The SMS does not currently include any roadside violations associated with an IEP trailer distinct from the motor carrier. Some of these violations, however, should be attributed to the motor carrier. For example, when a motor carrier's driver agrees to haul equipment from an IEP, the driver is required under Federal Motor Carrier Safety Regulations Part 390.40 to conduct a pre-trip inspection to determine if the IEP trailer is in safe condition. Violations that should be found during the pre-trip inspection are the motor carrier's responsibility and thus should be applied in the SMS.

Analysis: FMCSA worked collaboratively with law enforcement officials and industry to identify the violations that can be found during a pre-trip inspection of an IEP trailer. These violations are now applied to the motor carrier when there is evidence that the driver performed a pre-trip inspection.



Solution: In cases where (1) the driver conducted a pre-trip inspection, and (2) the violation is considered pre-trip detectable, the violation is attributed to the motor carrier. FMCSA applied this rule to the past 24 months of roadside inspections, resulting in an increase of approximately 22,000 violations included in the SMS Vehicle Maintenance BASIC.

4. *Aligning violations that are included in SMS with CVSA inspection levels by eliminating vehicle violations derived from driver-only inspections and driver violations from vehicle-only inspections.*

Overview: Currently, the SMS includes Level 3 (driver-only) inspections in the Vehicle Maintenance BASIC only when vehicle violations are noted on the inspection. Industry and enforcement are concerned that many vehicle violations fall outside the scope of the inspection and could bias the Vehicle Maintenance BASIC data.

Analysis: FMCSA evaluated the extent to which inspectors are citing vehicle violations during driver-only inspections to confirm that this problem merits the attention that stakeholders have requested. Approximately 139,000 violations, or 2.6% of all vehicle violations used in the SMS, are vehicle violations cited during a driver-only inspection. While very few driver violations are ever documented in vehicle-only inspections, this change will also be made to ensure that only violations within the scope of a particular type of inspection are included in the SMS.

Solution: FMCSA will remove vehicle violations found during driver-only inspections and driver violations found during vehicle-only inspections to align the SMS with existing CVSA policies regarding inspection levels.

5. *More accurately identifying carriers involved in transporting HM.*

Overview: When FMCSA introduced CSA, the agency changed the way it identified carriers involved in transporting HM. The methodology applies a more stringent Intervention Threshold for these carriers. In August 2011, the criteria for identifying carriers subject to the more stringent HM thresholds were changed to any carrier with HM activity (i.e., a placarded HM inspection, review, or permit) in the past two years from the prior criteria based strictly on the HM commodities hauled information, which motor carriers provide in the MCS-150 registration form. It was noted that some carriers identified under these new criteria rarely transported placardable quantities of HM, or were mistakenly identified as hauling placardable quantities of HM in the inspection form.



Analysis: FMCSA conducted analysis to determine new criteria for excluding carriers that haul HM as a minimal part of their businesses. These criteria took two forms: (1) requiring HM activity within the last 12 months, excluding carriers that stopped hauling HM, and (2) requiring that HM inspections constitute a sizable proportion of the carrier's total inspections. This change would exclude approximately 11,500 of the 24,000 carriers currently subject to HM thresholds, while still covering 94% of the placardable HM inspections recorded in the past 24 months.

Solution: FMCSA will tighten HM placardable inspection criteria, while keeping the HM review and permit criteria, to focus intervention resources on carriers involved in the majority of placardable HM transport. For a carrier to be subject to the HM threshold due to HM inspection activity, that carrier must have:

- At least two HM placardable inspections within the past 24 months, with one inspection occurring within the past 12 months, and
- At least 5% of total inspections that are HM placardable inspections.

6. *More accurately identifying carriers involved in transporting passengers.*

Overview: Motor carriers subject to the passenger carrier threshold in the SMS are held to a significantly higher standard than non-passenger carriers. Enforcement stakeholders support updating this definition within the SMS to better focus FMCSA resources on carriers involved in passenger transportation.

Analysis: FMCSA conducted analysis to determine how many carriers would be subject to the passenger carrier Intervention Threshold under a new definition in the SMS. This change would remove 4,200 carriers, of which 26 no longer have any BASICs above the Intervention Threshold while adding 5,700 carriers, of which 75 now will have one or more BASICs above the Intervention Threshold.

Solution: FMCSA will update the definition of passenger carrier within the SMS as follows:

- Add all for-hire carriers with 9-15 passenger capacity vehicles and private carriers with 16-plus passenger capacity vehicles, as these carriers/entities are under FMCSA's authority.
- Remove all carriers with only 1-8 capacity vehicles and private carriers with 1-15 passenger capacity vehicles (effectively removing many limousines, vans, taxis, etc.), as these carriers/entities are generally outside most of FMCSA's authority.



- Remove carriers where less than 2% of their respective fleets are passenger vehicles to exclude carriers that do not transport passengers as a significant part of their businesses.

7. Modify the SMS display to:

- **Change current terminology, “inconclusive” and “insufficient data,” to fact-based descriptions.**

Overview: In the BASIC summary on SMS Website (<http://ai.fmcsa.dot.gov/sms>), FMCSA uses the term “inconclusive” to describe carriers that have enough inspections but too few violations to warrant being considered for FMCSA interventions, and the term “insufficient data” to describe carriers that do not have enough inspections to produce a measure robust enough to even be assessed. Stakeholders have asked FMCSA to offer more specific fact-based descriptions as the terms “inconclusive” and “insufficient data” are perceived to be difficult to understand.

Analysis: FMCSA developed alternative terminology and a new display to clarify “inconclusive” and “insufficient data” based on a stakeholder preference for more detailed information.

Solution: FMCSA will give motor carriers a preview of the new terminology and will encourage carriers to provide feedback on the terms before they are released publicly in summer 2012.

- **Separate crashes with injuries and crashes with fatalities.**

Overview: In the “Summary of Activities” section of a carrier’s information on SMS Website, FMCSA displays a count of reportable crashes broken into two categories: “fatal/injury” and “tow away.” Stakeholders have asked FMCSA to separate the combined “fatality/injury” category.

Solution: FMCSA developed a method to display injury crashes and fatality crashes separately.



Implementation Approach

The above changes will be available for motor carriers and enforcement personnel to preview before the enhancements are implemented and made available to the public in summer 2012. During the SMS Preview, motor carriers have the opportunity to review the accuracy of SMS data, provide feedback, and if necessary, take action to improve their safety compliance.

Recommended Motor Carrier Actions during the SMS Preview

During the March 2012 SMS Preview, motor carriers should:

- View their operational information to determine if they are now subject to placardable HM or passenger carrier Intervention Thresholds.
- View the new HM BASIC to review applicable inspections and HM violations.
- View the Vehicle Maintenance BASIC to determine how cargo/load securement violations previously recorded in the Cargo-Related BASIC impact their Vehicle Maintenance percentiles, and to see which IEP-related violations have been recorded.
- Verify that vehicle violations found during driver-only inspections and driver violations found during vehicle-only inspections have been removed from their Vehicle Maintenance BASIC data.
- Review alternative terminology for “inconclusive” and “insufficient data” in the BASIC summary.
- View the “Summary of Activities” section of SMS Website to see the new breakout between injury crashes and fatal crashes.

FMCSA will collect, assess, and address feedback during the SMS Preview, and may further refine the enhancements prior to implementation and public release in summer 2012.