



# Effectiveness of Onsite Focused Investigations

## INTRODUCTION

This analysis assesses the effectiveness of onsite focused investigations of motor carriers, relative to onsite comprehensive investigations, conducted during calendar years 2011 and 2012. Effectiveness was measured by examining trends in motor carrier Behavior Analysis and Safety Improvement Category (BASIC) scores subsequent to each type of investigation. Table 1 presents a summary of focused and onsite comprehensive investigations conducted during calendar years 2011–12.

**Table 1. Focused and onsite comprehensive investigations conducted during 2011-12.**

Investigation Type	Number of Carriers
All onsite focused investigations during calendar years 2011–12	12,762
• Investigation was onsite focused and a subsequent comprehensive investigation was not conducted in the next 24 months	12,346
• Investigation was onsite focused and a comprehensive investigation was also conducted in the next 24 months	416
Onsite comprehensive investigation (not associated with an onsite focused investigation in previous 24 months)	8,169

## BACKGROUND

The Federal Motor Carrier Safety Administration (FMCSA) uses the following seven BASICs to assess the safety performance of motor carriers and to determine whether a motor carrier needs to be investigated by the Agency:

1. Vehicle Maintenance.
2. Unsafe Driving.
3. Crash Indicator.
4. Hours of Service.
5. Controlled Substances.
6. Driver Fitness.
7. Hazardous Materials (HM) Compliance.

Each BASIC score represents a relative percentile ranking and measures the extent to which the motor carrier has either accrued violations or the extent to

which it has been involved in crashes during the last 24 months. This percentile ranking scores the motor carrier relative to its peers, where each motor carrier peer group (called Safety Event Groups) is defined in terms of various metrics correlated with motor carrier size (such as the number of inspections or crashes associated with the carrier in the last 24 months). A higher percentile indicates more violations of the Federal Motor Carrier Safety Regulations (or a higher crash rate) relative to other carriers in the same peer group.

One or more of a motor carrier's BASICs may be in "alert" status, if its percentile is higher than the "intervention threshold" percentile set for that BASIC by the Agency. These threshold percentiles vary by BASIC type. Currently, for non-passenger and non-HM carriers, they are set at 65 percent for the Unsafe Driving, Crash Indicator, and Hours-of-Service BASICs, and at 80 percent for the remaining BASICs. A motor carrier BASIC score that is higher than the intervention threshold value for a given category may trigger an Agency investigation.

When intervening with a motor carrier, the Agency can use a variety of investigation tools. An onsite comprehensive investigation considers all aspects of the carrier's operation and compliance with the Agency's regulations, regardless of which BASIC scores are in "alert" status at the time of the investigation. Comprehensive investigations are generally only conducted when a carrier has multiple BASICs in alert status, and they usually result in the issuance of a safety rating to the carrier.

An onsite focused investigation is another type of intervention procedure. During an onsite focused investigation, the safety investigator (SI) generally focuses on BASICs in alert status, although deficiencies in other areas may be investigated, if it is deemed necessary.

This analysis evaluates the effectiveness of onsite focused investigations relative to comprehensive investigations, by assessing the extent to which an investigated carrier's BASIC percentiles fall below their intervention threshold values after each type of

investigation, using evaluation periods of 12, 18, and 24 months subsequent to the investigation date.

## RESULTS

Results of the analysis are presented in Table 2, which shows the percentage of carriers with a BASIC in alert status (i.e., over the intervention threshold value) at various time periods subsequent to the investigation. In the table, 12-, 18-, and 24-month assessments are shown for the following:

- BASICs exceeding the intervention threshold at the time of the investigation.
- All BASICS, regardless of their status at the time of the investigation (last three columns of the table).

The table rows also separate the onsite focused investigations into the following categories:

- Those where an additional comprehensive investigation was conducted and those where it was not.
- Those where the investigator only considered aspects of the carrier's operations pertaining to the BASIC percentile score(s) in alert status at the time of the investigation, and those where the investigator considered more aspects of the carrier's operations than those pertaining to the BASIC percentile score(s) on alert status at the time of investigation.

For the carriers that received onsite focused investigations during calendar years 2011 and 2012, only 3 percent (416 out of 12,762) subsequently had their investigations expand to comprehensive investigations (see Table 2). And for the remaining 97 percent of carriers whose onsite focused investigation did not expand to a comprehensive investigation, the percentage of carriers with BASICs still on alert status after 12, 18, and 24 months was approximately 7–10 percentage points lower (depending on the evaluation period) than what was found for carriers receiving comprehensive investigations. The relationship held both when only BASICs in alert status at the time of investigation were considered, and when any BASICs, regardless of their alert status at the time of investigation, were considered.

When considering all BASICs regardless of alert status at the time of the investigation (see the last

three columns of Table 2), 47 percent of carriers whose onsite focused investigations were not subsequently expanded to comprehensive investigations had at least one BASIC score exceeding the intervention threshold 24 months after the investigation. In comparison, for carriers that received onsite comprehensive investigations, 54 percent had at least one BASIC score exceeding the intervention threshold 24 months after the investigation.

For those onsite focused investigations that did not expand and where the SI considered more aspects of the carrier's operations than just those pertaining to the BASIC percentile score(s) on alert status at the time of investigation, the percentage of carriers with any BASIC exceeding the intervention threshold after 12, 18, and 24 months was slightly higher than the percentage found when the investigator focused only on aspects of the carrier's operations pertaining to the BASIC score(s) on alert status at the time of the investigation (see Table 2, rows 2 and 3). However, these percentages are still several points lower than the percentage of carriers with at least one BASIC percentile score exceeding the threshold after receiving a comprehensive investigation.

For the small number of carriers whose onsite focused investigations were expanded to a higher level investigation, the percentage with at least one BASIC in alert status after 24 months (regardless of its alert status at the time of the investigation) was 80 percent, which is considerably higher than the percentage found for carriers whose onsite focused investigations did not expand, and also higher than the percentage for carriers receiving onsite comprehensive investigations from the outset. These results are consistent with the notion that a comprehensive investigation is conducted when a carrier has widespread issues of non-compliance. Thus, for those cases where the onsite focused investigation expanded, the motor carrier's safety performance (as measured by the BASIC scores) was not improving, and presumably this is what triggered the expanded investigation. Perhaps more noteworthy than these findings, however, is the fact that 97 percent of the motor carriers receiving onsite focused investigations did not need to have their investigations expanded to comprehensive investigations during this 2-year period, based on their post-investigation safety performance.

These results align with expectations. If an investigator tends to expand the original scope of an



investigation in situations where he or she notices problems with the carrier that were not evident until visiting the establishment, one might reasonably expect more BASICS to be on alert after the investigation and, hence, more to be on alert after 12, 18, and 24 months, as well. At the same time, the overall safety profile of such carriers may be better, generally speaking, than the safety profile of carriers receiving comprehensive investigations. This may explain why the percentage of carriers with BASICS in alert status after 12, 18, and 24 months for this group of carriers is still lower than the percentage in alert status for those receiving comprehensive investigations from the outset.

This analysis corroborates the hypothesis that for the population of carriers targeted to receive them, onsite focused investigations are at least as effective as comprehensive investigations in getting motor carriers to take steps to improve their BASIC scores so that they fall below the “intervention threshold” level. Since these scores measure safety-related problems associated with the motor carrier, it is reasonable to assume that performing onsite focused investigations on those carriers that are currently targeted by the Agency to receive them is an effective and efficient way to improve overall motor carrier safety.

**Table 2. Comparison of BASICS status for onsite focused investigations and comprehensive investigations, for those conducted in 2011 and 2012.**

Investigation Type	Number of Carriers	For BASICS on Alert Status at Time of Investigation			For Any BASIC Regardless of Alert Status at Time of Investigation		
		Percent carriers with at least 1 of these BASICS still on alert after 12 months	Percent carriers with at least 1 of these BASICS still on alert after 18 months	Percent carriers with at least 1 of these BASICS still on alert after 24 months	Percent carriers with at least 1 BASIC on alert after 12 months	Percent carriers with at least 1 BASIC on alert after 18 months	Percent carriers with at least 1 BASIC on alert after 24 months
<b>All Onsite Focused</b>	<b>12,762</b>	<b>66</b>	<b>50</b>	<b>39</b>	<b>77</b>	<b>57</b>	<b>48</b>
1. Investigation was onsite focused and did not expand to “comprehensive” in next 24 months	12,346	65	49	38	77	56	47
– SI only considered BASICS on alert at time of investigation	8,920	64	48	37	75	55	46
– SI considered more or other BASICS than those on alert at time of investigation	3,426	68	52	40	79	60	51
2. Investigation was onsite focused and then expanded to “comprehensive” in next 24 months	416	82	76	69	91	84	80
– SI only considered BASICS on alert at time of onsite focused investigation	277	81	76	69	89	84	82
– SI considered more or other BASICS than those on alert at time of onsite focused investigation.	139	84	76	67	95	85	78
3. Onsite comprehensive investigation*	8,169	75	57	46	86	63	54

\*Not associated with an onsite investigation in previous 24 months.