

FMCSA Investigation Cost Survey



U.S. Department of Transportation
Federal Motor Carrier Safety Administration

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FOREWORD

In 2011, the Federal Motor Carrier Safety Administration (FMCSA) produced estimates of the cost of conducting onsite comprehensive investigations, based on field data collected from safety investigators, as part of the Operation Model Test for FMCSA's Compliance, Safety, Accountability 2010 (CSA2010) initiative. In 2016, the Government Accountability Office (GAO) recommended that the Agency update its original estimate for the cost of conducting an onsite comprehensive investigation and produce additional cost estimates specific to newer intervention types. In response to this request, the Agency designed and implemented a study to measure these costs in the spring of 2018. For this effort, FMCSA division offices were instructed to report cost information on all federally conducted onsite comprehensive and onsite focused investigations performed between May 1 and July 31, 2018, and all offsite investigations performed during the same period by division offices whose staff had completed the Agency's offsite investigation training. This report documents the study methodology, data analysis, and findings. Results are presented at both the national and regional levels.

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SI* (MODERN METRIC) CONVERSION FACTORS

Approximate Conversions to SI Units				
Symbol	When You Know	Multiply By	To Find	Symbol
Length				
in	inches	25.4	millimeters	mm
ft	feet	0.305	meters	m
yd	yards	0.914	meters	m
mi	miles	1.61	kilometers	km
Area				
in ²	square inches	645.2	square millimeters	mm ²
ft ²	square feet	0.093	square meters	m ²
yd ²	square yards	0.836	square meters	m ²
ac	Acres	0.405	hectares	ha
mi ²	square miles	2.59	square kilometers	km ²
Volume (volumes greater than 1,000L shall be shown in m³)				
fl oz	fluid ounces	29.57	milliliters	mL
gal	gallons	3.785	liters	L
ft ³	cubic feet	0.028	cubic meters	m ³
yd ³	cubic yards	0.765	cubic meters	m ³
Mass				
oz	ounces	28.35	grams	g
lb	pounds	0.454	kilograms	kg
T	short tons (2,000 lb)	0.907	megagrams (or "metric ton")	Mg (or "t")
Temperature (exact degrees)				
°F	Fahrenheit	5(F-32)/9 or (F-32)/1.8	Celsius	°C
Illumination				
fc	foot-candles	10.76	lux	lx
fl	foot-Lamberts	3.426	candela/m ²	cd/m ²
Force and Pressure or Stress				
lbf	poundforce	4.45	newtons	N
lbf/in ²	poundforce per square inch	6.89	kilopascals	kPa
Approximate Conversions from SI Units				
Symbol	When You Know	Multiply By	To Find	Symbol
Length				
mm	millimeters	0.039	inches	in
m	meters	3.28	feet	ft
m	meters	1.09	yards	yd
km	kilometers	0.621	miles	mi
Area				
mm ²	square millimeters	0.0016	square inches	in ²
m ²	square meters	10.764	square feet	ft ²
m ²	square meters	1.195	square yards	yd ²
Ha	hectares	2.47	acres	ac
km ²	square kilometers	0.386	square miles	mi ²
Volume				
mL	milliliters	0.034	fluid ounces	fl oz
L	liters	0.264	gallons	gal
m ³	cubic meters	35.314	cubic feet	ft ³
m ³	cubic meters	1.307	cubic yards	yd ³
Mass				
g	grams	0.035	ounces	oz
kg	kilograms	2.202	pounds	lb
Mg (or "t")	megagrams (or "metric ton")	1.103	short tons (2,000 lb)	T
Temperature (exact degrees)				
°C	Celsius	1.8c+32	Fahrenheit	°F
Illumination				
lx	lux	0.0929	foot-candles	fc
cd/m ²	candela/m ²	0.2919	foot-Lamberts	fl
Force and Pressure or Stress				
N	newtons	0.225	poundforce	lbf
kPa	kilopascals	0.145	poundforce per square inch	lbf/in ²

* SI is the symbol for the International System of Units. Appropriate rounding should be made to comply with Section 4 of ASTM E380. (Revised March 2003, Section 508-accessible version September 2009.)

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LIST OF ACRONYMS, ABBREVIATIONS, AND SYMBOLS

Acronym	Definition
CI	confidence interval
CSA	Compliance, Safety, Accountability
FMCSA	Federal Motor Carrier Safety Administration
GAO	Government Accountability Office
GS	General Schedule
MCMIS	Motor Carrier Management Information System
PA	program analyst
POV	privately owned vehicle
SI	safety investigator
UPS	United Parcel Service

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EXECUTIVE SUMMARY

This report documents the results of the Federal Motor Carrier Safety Administration's (FMCSA's) Investigation Cost Survey, conducted from May to July of 2018. The survey collected data related to costs incurred by FMCSA safety investigators (SIs) and program analysts (PAs) when preparing for, conducting, and documenting results from onsite comprehensive, onsite focused, and offsite investigations on motor carriers throughout the United States.¹

BACKGROUND

In 2011, FMCSA produced estimates of the cost of conducting onsite investigations, based on field data collected from SIs, as part of the Operation Model Test for FMCSA's Compliance, Safety, Accountability (CSA) 2010 initiative. This initiative tested FMCSA's new CSA enforcement program on a subset of the motor carrier industry. Specifically, carriers from nine States were both monitored and subject to Agency interventions, based on the protocols of this program. In addition, the Operation Model Test provided training on the CSA program to both State and Federal field staff. In 2016, the Government Accountability Office (GAO) issued a report recommending that the Agency update its original estimates for the cost of conducting onsite investigations and produce additional cost estimates specific to newer intervention types introduced by the Agency subsequent to 2011.²

The Agency designed and implemented a study to measure these costs in the spring of 2018. For this effort, FMCSA division offices were instructed to report cost information on all federally conducted onsite comprehensive and onsite focused investigations performed between May 1 and July 31, 2018, and all offsite investigations performed during the same period by division offices whose staff had completed the Agency's offsite investigation training.³

STUDY METHODOLOGY

Division office staff entered the requested cost data into a SharePoint website, upon completing their investigation reports. These costs include those related to preparing for the investigation, all travel costs associated with the investigation (including any vehicle costs and labor costs incurred while en route), labor costs related to conducting the investigation, and labor costs related to documenting and uploading the findings of the investigation to the Agency's Motor Carrier Management Information System (MCMIS).⁴

1 Only limited data were collected for offsite investigations, because, at the time of this study, Agency division offices in only 10 States had provided official training to SIs and PAs for this intervention type.

2 GAO report, GAO-17-49, states: "**GAO-17-49 (2)**: To understand the efficiency of CSA interventions the Secretary of Transportation should direct the FMCSA Administrator to update FMCSA's cost estimates to determine the resources currently used to conduct individual intervention types and ensure FMCSA has cost information that is representative of all states."

3 Division offices in the following States had completed offsite investigation training at the time of this study: AK, CO, GA, KS, MD, MN, MO, MT, NJ, and DE.

4 Costs captured included those incurred by SIs and PAs up to and included the filling out of Section C of the Agency's Investigation Report. Subsequent costs related to enforcement actions taken by the Agency, as a result of the initial investigation, were not captured.

Converting total hours worked to dollar amounts requires making assumptions about employee wage rates. For this study, all SIs were assigned a pay grade level of General Schedule (GS)-12, Step 5, and all PAs were assigned a pay grade level of GS-9, Step 5, which were considered reasonable average values for SI and PA pay grades.

As shown in Table 4, data from 1,435 investigations were included in this effort. Cost data for onsite comprehensive investigations were received from all 50 States. Cost data for onsite focused investigations were received from 49 States (all except Rhode Island). In addition, cost data for offsite investigations were received from 9 of the 10 States where SIs had received Agency training on conducting such reviews.

Table 1. Total number of investigations for which cost information was received, by investigation type.

Investigation Type*	Frequency	Percent
Offsite	37	2.58
Onsite Comprehensive	468	32.61
Onsite Focused	930	64.81
Total	1,435	100.00

The raw survey data were subjected to a series of edit checks (described in Section 2.2) to ensure the validity and internal consistency of the information provided. Upon completion of the edit checks, a total of 1,315 usable investigations remained available for calculating survey estimates, as shown in Table 2.

Table 2. Total number of usable investigations available for data analysis, by investigation type.

Investigation Type*	Frequency	Percent
Offsite	36	2.74
Onsite Comprehensive	410	31.18
Onsite Focused	869	66.08
Total	1,315	100.00

The total cost associated with each investigation was estimated by summing official voucher costs, Government-owned vehicle costs, labor costs associated with travel hours, non-travel-related SI labor costs, PA labors costs, and other costs (e.g., tolls, postage).

FINDINGS

Table 6 provides estimates of average and median costs associated with conducting onsite comprehensive, onsite focused, and offsite investigations. The half-width statistics in the table allow one to calculate the 95-percent confidence interval (CI) for the estimated average cost. Thus, for example, a 95-percent CI for the estimated total cost of conducting an onsite comprehensive investigation is \$2,540.24, plus or minus \$150.08 (or, plus or minus 6 percent).⁵

⁵ Based on statistical theory, if the study were to be replicated multiple times, one would expect 95 percent of the replicated estimates for average total cost to fall within this range.

The table data indicate that, *based on those carriers slated by the Agency for each type of investigation*, onsite comprehensive investigations are the most expensive to conduct, followed by onsite focused investigations, and then offsite investigations. Offsite investigations have the lowest associated cost, although it should be noted that only 36 offsite investigations were available to analyze in this study (this small sample size explains, in large part, why the 95-percent CI half-width for the estimated average cost is so large relative to the estimate itself for this intervention type). As shown in the table, the median cost estimates for each intervention type are 11–12 percent lower for each of the intervention types, suggesting that the estimated average costs have been impacted, to some extent, by outlier values with unusually high costs.

Table 3. Average and median costs associated with individual intervention types (in U.S. dollars).

Investigation Type	Cases	Average Cost	Half-width for 95% CI	Median Cost
Offsite	36	\$1,145.29	236.72 (+/- 21%)	\$1,018.55
Onsite Comprehensive	410	\$2,540.24	150.08 (+/- 6%)	\$2,231.28
Onsite Focused	869	\$2,032.50	83.09 (+/- 4%)	\$1,817.75

The results shown in Table 6 should not necessarily be construed to mean that one type of investigation is *inherently* more expensive to conduct than another (although this very well may be the case). Carriers having the most problematic safety profiles (in terms of crashes or number and severity of violations of the Federal Motor Carrier Safety Regulations) tend to be slated for onsite comprehensive investigations, while carriers whose safety performance is less problematic are more likely to be slated for onsite focused and offsite investigations. Hence, the populations receiving these three different types of investigations are not the same, and such differences will have an impact on the estimated cost for each investigation type.

Various factors were assessed to determine their impact upon the cost of an investigation, including the carrier’s domicile, whether the State division office uses an SI from another State to perform the investigation, and whether the carrier’s lack of compliance with FMCSA regulations is severe enough to warrant a recommendation for enforcement action. Concerning the carrier location, the average investigation costs are higher when the carrier is domiciled in a State reporting to either the Western or Eastern Service Centers, and lower when the carrier is domiciled in a State reporting to either the Southern or Midwestern Service Centers. The average cost per investigation is lowest when the carrier is domiciled in a State associated with the Southern Service Center (30 percent lower for onsite comprehensive investigations, and 26 percent lower for onsite focused investigations—in comparison to similar investigations associated with the Western Service Center, where average costs are highest).

Investigations conducted by SIs from a division office outside of the State of domicile of the motor carrier are costlier than those conducted by SIs from the FMCSA division office within that State. Such investigations, referred to as “borderless investigations,” were found to have a 30 percent higher average cost for onsite comprehensive investigations and a 41 percent higher average cost for onsite focused investigations (the survey data did not capture a sufficient number of borderless offsite investigations to allow for a separate analysis for this category).

Investigations slating the motor carrier for future enforcement action increase the average cost of the investigation by approximately 18 percent in the case of onsite comprehensive investigations

(\$2,866 with enforcement slated versus \$2,424 without future enforcement slated), and by approximately 14 percent in the case of onsite focused investigations (\$2,236 when slated for enforcement versus \$1,965 when not slated for enforcement).

1. INTRODUCTION

This report documents the results of the Federal Motor Carrier Safety Administration's (FMCSA's) Investigation Cost Survey, conducted during the spring of 2018, between May and July. The survey collected data related to costs incurred by FMCSA safety investigators (SIs) and program analysts (PAs) when preparing for, conducting, and documenting results from onsite comprehensive, onsite focused, and offsite investigations on motor carriers throughout the United States.⁶ Results from the survey are presented at both the national and regional levels.

1.1 BACKGROUND

In 2011, FMCSA produced estimates of the cost of conducting onsite comprehensive investigations, based on field data collected from SIs, as part of the Operation Model Test for FMCSA's Compliance, Safety, Accountability (CSA) 2010 initiative. This initiative tested FMCSA's new CSA enforcement program on a subset of the motor carrier industry. Specifically, carriers from nine States were both monitored and subject to Agency interventions, based on the protocols of this program. In addition, the Operation Model Test provided training on the CSA program to both State and Federal field staff. In 2016, as part of its review of the agency's CSA program, the Government Accountability Office (GAO) issued a report, GAO-17-49, titled "Motor Carriers: Better Information Needed to Assess Effectiveness and Efficiency of Safety Interventions." Recommendation 2 of the GAO report stated that the Agency should update its original estimate for the cost of conducting an onsite comprehensive investigation, obtained from its 2011 CSA Operational Model Test, and further recommended that the Agency produce additional cost estimates specific to new intervention types, introduced by the Agency subsequent to 2011.⁷

In response to this request, the Agency designed and implemented a study to measure these costs in the spring of 2018. For this effort, FMCSA division offices were instructed to report cost information on all federally conducted onsite comprehensive and onsite focused investigations performed between May 1 and July 31, 2018, and all offsite investigations performed during the same period by division offices whose staff had completed the Agency's offsite investigation training.⁸

⁶ In the case of offsite investigations, however, only limited data were collected, since, at the time of this study, Agency division offices in only 10 States had provided official training to SIs and PAs for this intervention type.

⁷ GAO report, GAO-17-49, states: "***GAO-17-49 (2)***: To understand the efficiency of CSA interventions the Secretary of Transportation should direct the FMCSA Administrator to update FMCSA's cost estimates to determine the resources currently used to conduct individual intervention types and ensure FMCSA has cost information that is representative of all states."

⁸ Division offices in the following States had completed offsite investigation training at the time of this study: AK, CO, GA, KS, MD, MN, MO, MT, NJ, and DE.

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2. METHODOLOGY

Division office staff entered the requested cost data into a SharePoint website, upon completing their investigation reports. These costs include those related to preparing for the investigation, all travel costs associated with the investigation (including any vehicle costs and labor costs incurred while en route), labor costs related to conducting the investigation, and labor costs related to documenting and uploading the findings of the investigation to the Agency's Motor Carrier Management Information System (MCMIS).⁹ Appendix A provides the investigative cost information requested by FMCSA from its division offices, after SIs had completed an in-scope¹⁰ investigation during the study period.

2.1 ASSUMPTIONS ABOUT WAGE RATES

Converting total hours worked to dollar amounts requires making assumptions about employee wage rates. Although the Agency is privy to the wage rates of all its employees, it was neither practicable or reasonable to expect SIs and PAs participating in the study to upload such sensitive information to the survey database. Hence, based on discussions with Agency field staff, all SIs were assigned a pay grade level of General Schedule (GS)-12, Step 5, and all PAs were assigned a pay grade level of GS-9, Step 5, which were considered reasonable average values for SI and PA pay grades. Wage rates, by locality, for these two pay grades/steps are provided in Appendix B. Wage rates values were then extracted from the table shown in Appendix B, based on the State associated with the investigator's FMCSA division office.

2.2 DATA COLLECTION AND CLEANING

As shown in Table 4, data from 1,435 investigations, representing onsite comprehensive, onsite focused, and offsite investigations, were included in this effort. Cost data for onsite comprehensive investigations were received from all 50 States. Cost data for onsite focused investigations were received from 49 States (all except Rhode Island). In addition, cost data for offsite investigations were received from 9 of the 10 States where SIs had received Agency training on conducting such reviews.

Table 4. Total number of investigations for which cost information was received, by investigation type.

Investigation Type*	Frequency	Percent
Offsite	37	2.58
Onsite Comprehensive	468	32.61
Onsite Focused	930	64.81
Total	1,435	100.00

⁹ Costs captured included those incurred by SIs and PAs up to and included the filling out of Section C of the Agency's Investigation Report. Subsequent costs related to enforcement actions taken by the Agency, as a result of the initial investigation, were not captured.

¹⁰ All onsite comprehensive, onsite focused investigations, and offsite investigations conducted by division offices having received training prior to the data collection period.

The raw survey data were then subjected to a series of edit checks to ensure the validity and internal consistency of the information provided. Cases were flagged that met any of the following conditions:

- **No Hours Recorded for the SI.** This cost study assumes that no investigation can be performed without some investment of time by the SI.
- **Inconsistency Between Travel Hours Recorded and Miles Recorded for a Government Vehicle.** If miles logged on a Government vehicle were greater than or equal to 60, then the uploaded data were required to have some number of recorded hours for travel time. In addition, when the Government vehicle miles were 60 or greater, then the travel time could not exceed $2.5 \times (\text{Government vehicle miles}/50)$.
- **Significant Government Vehicles Miles Recorded but no Voucher Expenses Recorded.** If miles logged on a Government vehicle were greater than or equal to 600, or travel time in a Government or personal vehicle exceeded 10 hours, then total voucher expenses had to be greater than zero (voucher expenses include lodging costs; this edit check assumes that a vehicle trip involving a total of either 600 miles or 10 hours of travel time would require lodging). This edit check assumes that investigations involving significant travel time (equal to or more than 300 miles, or 5 hours, one-way) should have an associated lodging cost.

In addition to the edit checks listed above, investigations having an excessively high total cost (total cost of the investigation estimated to be greater than or equal to \$10,000, based on the survey data uploaded) were identified for review by the division offices. After submitting all flagged investigations to the division offices for resolution, 120 investigations remained unresolved and were removed from the survey data file, leaving a total of 1,315 usable investigations available for calculating survey estimates. Table 5 presents the total number of usable investigations for purposes of cost estimation, by investigation type.

Table 5. Total number of usable investigations available for data analysis, by investigation type.

Investigation Type*	Frequency	Percent
Offsite	36	2.74
Onsite Comprehensive	410	31.18
Onsite Focused	869	66.08
Total	1,315	100.00

2.3 ESTIMATE OF TOTAL COST FOR EACH INVESTIGATION CONDUCTED

The total cost associated with each investigation included in the study was estimated by summing the following individual costs—obtained or calculated—directly from the collected survey data:

- **Official Voucher Costs.** These are reimbursable costs incurred by the investigator, including, but not limited to lodging costs, travel costs such as airfare and/or rental car costs, and “per diem” costs.

- **Government-owned Vehicle Costs.** For the majority of investigations, investigators use Government-owned vehicles. The cost associated with operating these vehicles was estimated by multiplying the total mileage accrued by the 2018 General Services Administration (GSA) reimbursement rate of 0.174 dollars per mile.
- **Labor Costs Associated with Travel Hours.** Total SI travel hours associated with the investigation were multiplied by each SI's assumed wage rate, based on the State-by-State wage rate data shown in Appendix B.
- **Non-travel-related SI Labor Costs.** These costs include all SI labor costs associated with preparing for, conducting, and processing the results of the investigation.
- **PA Labor Costs.** These costs include all PA labor costs associated with preparing for and processing the results of the investigation.
- **All Other Costs.** These costs include any other expenses directly related to the investigation not captured elsewhere, such as tolls not included in a travel voucher, postage, United Parcel Service (UPS) fees, etc.

2.4 SURVEY ESTIMATES OF TOTAL COST ASSOCIATED WITH SPECIFIC INTERVENTION TYPES

Using the total calculated cost associated with each intervention in the study database, average cost and median cost values per investigation were calculated for the various intervention types. Median costs represent the midpoint value across all motor carrier interventions used in the analysis (that is, 50 percent of the carriers had a lower cost, and 50 percent had a higher cost). The median cost value, if significantly different from average cost, may indicate that the calculated average cost was heavily impacted by one or two investigations with unusually high (or low) costs.¹¹

In addition, this study provides cost estimates for the various intervention types, broken down by geographical region (based on FMCSA's four regional Service Centers, and the States reporting to each of those Service Centers). In addition, cost estimates for interventions conducted by SIs from other States (i.e., from FMCSA division offices located outside the State of domicile of the motor carrier being investigated), and for interventions requiring subsequent enforcement action, were calculated and compared to results obtained from interventions not having such characteristics.

¹¹ Thus, for example, if 9 interventions each had a total cost of \$1,000, and 1 intervention had a total cost of \$1,000,000, the average cost, based on these 10 observations would be \$100,900. The median cost, however, would be \$1,000.

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3. RESULTS

Table 6 provides estimates of average and median costs associated with conducting onsite comprehensive, onsite focused, and offsite investigations. The half-width statistics in the table allow one to calculate the 95-percent confidence interval (CI) for the estimated average cost. Thus, for example, a 95-percent confidence interval for the estimated total cost of conducting an onsite comprehensive investigation is \$2,540.24, plus or minus \$150.08 (or, plus or minus 6 percent).¹²

The table data indicate that, *based on those carriers slated by the Agency for each type of investigation*, onsite comprehensive investigations are the most expensive to conduct for the Agency, followed by onsite focused investigations, and then by offsite investigations. Offsite investigations have the lowest associated cost, although one should note that only 36 offsite investigations were available to analyze in this study (this small sample size explains, in large part, why the 95-percent CI half-width for the estimated average cost is so large relative to the estimate itself for this intervention type). As shown in the table, the median cost estimates for each intervention type are 11–12 percent lower for each of the intervention types, suggesting that the estimated average costs have been impacted, to some extent, by outlier values with unusually high costs.

The results shown in Table 6 should not necessarily be construed to mean that one type of investigation is *inherently* more expensive to conduct than another (although this very well may be the case). Carriers having the most problematic safety profiles (in terms of crashes or number and severity of violations of the Federal Motor Carrier Safety Regulations) tend to be slated for onsite comprehensive investigations, while carriers whose safety performance is less problematic are more likely to be slated for onsite focused and offsite investigations. Hence, the populations receiving these three different types of investigations are not the same, and such differences will have an impact on the estimated cost for each investigation type.

Table 6. Average and median costs associated with individual intervention types (in U.S. dollars).

Investigation Type	Cases	Average Cost	Half-width for 95% CI	Median Cost
Offsite	36	\$1,145.29	236.72 (+/- 21%)	\$1,018.55
Onsite Comprehensive	410	\$2,540.24	150.08 (+/- 6%)	\$2,231.28
Onsite Focused	869	\$2,032.50	83.09 (+/- 4%)	\$1,817.75

3.1 COST ESTIMATES BY FMCSA REGION

Table 7, Table 8, Table 9, and Table 10 present data on the cost of conducting interventions in each of the four FMCSA regions, by intervention type (offsite interventions are not included in tables due to an insufficient number of cases available for producing estimates at this level of detail). Consistent with the national data (see Table 6), estimated costs incurred per investigation (excluding post-investigation enforcement actions)¹³ are lower for onsite focused investigations

¹² Based on statistical theory, if the study were to be replicated multiple times, one would expect 95 percent of the replicated estimates for average total cost to fall within this range.

¹³ These actions involve fine assessments and other punitive actions against the motor carrier, taken by the Agency as a result of the SIs' findings from the investigations. Costs associated with taking enforcement action against a motor carrier are not included in this cost analysis.

in all geographic regions, when compared to onsite comprehensive investigations—although the accuracy of the regional estimates (as indicated by the CI half-width statistics for average cost) is generally lower, due to the smaller sample sizes.

Tables 7–10 also indicate that the average costs for both onsite comprehensive and onsite focused investigations are highest for those cases associated with FMCSA’s Western Service Center, followed by investigations associated with the Eastern Service Center (6 percent lower average cost for both onsite comprehensive and onsite focused investigations, in comparison to similar investigations conducted by the Western Service Center), followed by investigations associated with the Midwestern Service Center (18 percent lower average cost for onsite comprehensive investigations, and 9 percent lower for onsite focused investigations, in comparison to those conducted by the Western Service Center). Investigations associated with the Southern Service Center had the lowest cost (30 percent lower for onsite comprehensive investigations and 26 percent lower for onsite focused investigations, in comparison to those conducted by the Western Service Center).

Table 7. Average and median costs associated with individual intervention types, for States reporting to the Eastern Service Center¹⁴ (in U.S. dollars).*

Investigation Type	Cases	Average Cost	Half-width for 95%CI	Median Cost
Onsite Comprehensive	118	\$2,656.26	277.61 (+/- 10.4%)	\$2,275.83
Onsite Focused	231	\$2,083.87	154.55 (+/- 7.4%)	\$1,842.26

*Offsite inspections not included due to extremely low sample size.

Table 8. Average and median costs associated with individual intervention types, for States reporting to the Southern Service Center¹⁵ (in U.S. dollars).*

Investigation Type	Cases	Average Cost	Half-width for 95% CI	Median Cost
Onsite Comprehensive	80	\$1,976.74	293.80 (+/- 14.9%)	\$1,591.25
Onsite Focused	171	\$1,638.37	166.50 (+/- 10.2%)	\$1,476.62

*Offsite inspections not included due to extremely low sample size.

Table 9. Average and median costs associated with individual intervention types, for States reporting to the Midwestern Service Center¹⁶ (in U.S. dollars).*

Investigation Type	Cases	Average Cost	Half-width for 95% CI	Median Cost
Onsite Comprehensive	53	\$2,302.45	297.94 (+/- 12.9%)	\$2,119.74
Onsite Focused	160	\$2,015.31	240.21 (+/- 11.9%)	\$1,617.05

*Offsite inspections not included due to extremely low sample size.

¹⁴ These States are CT, DC, DE, MA, MD, ME, NH, NJ, NY, PA, RI, VA, WI, VT, and WV.

¹⁵ These States are AL, AR, FL, GA, KY, LA, MS, NC, OK, SC, and TN.

¹⁶ These States are IA, IL, IN, KS, MI, MN, MO, NE, OH, and WI.

Table 10. Average and median costs associated with individual intervention types, for States reporting to the Western Service Center¹⁷ (in U.S. dollars).*

Investigation Type	Cases	Average Cost	Half-width for 95% CI	Median Cost
Onsite Comprehensive	159	\$2,816.82	301.32 (+/- 10.7%)	\$2,536.29
Onsite Focused	307	\$2,222.17	127.13 (+/- 5.7%)	\$1,968.42

*Offsite inspections not included due to extremely low sample size.

Both onsite comprehensive and onsite focused investigations associated with FMCSA’s Eastern Service Center have an average cost which is approximately 6 percent lower than similar investigations associated with the Western Service Center.

3.2 BORDERLESS VERSUS NON-BORDERLESS INVESTIGATIONS

A division office may at times use SIs from other States to perform investigations in its own State, when it is short-staffed, or when it is more convenient for the SI in the other State to reach the location of the motor carrier. This helps to ensure that high risk carriers being monitored by the division get investigated in a timely manner. Such investigations are referred to as “borderless,” denoting that the SI conducting the investigation is leaving the jurisdiction of his or her division office to perform the task. Borderless investigations may increase the travel costs associated with the investigation, particularly in the case of air travel.

Table 11 presents national cost data for onsite comprehensive and onsite focused investigations, broken out by whether they were borderless or non-borderless.¹⁸ The survey data suggest that onsite comprehensive investigations are 30 percent more costly when they are “borderless,” and onsite focused investigations are approximately 40 percent more costly. It should be noted, however, that only about 5 percent of all onsite comprehensive and onsite focused investigations captured in the survey were “borderless.” Hence, sample sizes available for estimating average costs associated with borderless onsite comprehensive and borderless onsite focused investigations are small, resulting in a relatively low level of precision for these estimates.

Whether or not the investigation is borderless, however, does not appear to change the general cost relationship between onsite comprehensive and onsite focused investigations. That is, borderless onsite comprehensive investigations are more costly than borderless onsite focused investigations (14 percent higher average cost indicated by Table 11), and non-borderless onsite comprehensive investigations are more costly than non-borderless onsite focused investigations (21 percent higher average cost indicated by Table 11).

Table 11. Comparison of cost of borderless versus non-borderless investigations, for onsite comprehensive and onsite focused investigations.

Investigation Type	Borderless?	Cases	Average Cost	Half-width for 95% CI	Median Cost
Onsite Comprehensive	No	392	\$2,507.13	245.55 (+/- 9.8%)	\$2,176.57
Onsite Comprehensive	Yes	18	\$3,261.29	654.44* (+/- 20.1%)	\$2,830.06

¹⁷ These States are AK, AZ, CA, CO, HI, ID, MT, ND, NM, NV, OR, SD, TX, UT, WA, and WY.

¹⁸ Offsite investigations are not included in this table due to a sample size insufficient for producing estimates at this level of detail. Only two offsite investigations were “borderless.”

Investigation Type	Borderless?	Cases	Average Cost	Half-width for 95% CI	Median Cost
Onsite Focused	No	825	\$1,991.53	81.85 (+/- 4.1%)	\$1,787.64
Onsite Focused	Yes	44	\$2,800.71	538.36* (+/- 19.2%)	\$2,268.78

*Half-width value indicates relatively low precision in estimate.

3.3 COST OF INVESTIGATIONS BY LEVEL OF ENFORCEMENT ACTIVITY

Although the costs considered in this study do not include those associated with taking enforcement action against the carrier subsequent to the SI's investigation, the survey data still allow one to determine whether those investigations slating the carrier for future enforcement action are costlier than those that do not. This assessment is presented in Table 12. One notes from the table that both onsite comprehensive and onsite focused investigations slated the carrier for enforcement action with the same frequency, roughly 25 percent of the time. In the case of offsite investigations, only 36 cases were available to evaluate, and 5 of them (14 percent) slated the carrier for such action.

Since carriers slated by the SI for future enforcement action tend to be those that are more out of compliance with FMCSA regulations, such investigations may take longer to perform, as the SI may have more violations to document and would need to further document and justify the nature of the enforcement action recommended. This would, in turn, increase the labor costs for the investigation. Table 12 bears out this phenomenon. For all types of investigations, the average cost of an investigation increases significantly when the carrier is slated for enforcement action (18 percent higher for onsite comprehensive investigations, 14 percent higher for onsite focused investigations, and 37 percent higher for offsite investigations).¹⁹

Table 12. Comparison of cost of investigations with and without future enforcement slated, for comprehensive and onsite focused investigations.

Investigation Type	Enforcement?	Cases	Average Cost	Half-width for 95% CI	Median Cost
Offsite	No	31	\$1,088.83	248.94 (+/- 22.9%)	\$980.81
Offsite	Yes	5	\$1,495.30*	715.50 (+/- 49.8%)	\$1,216.28
Onsite Comprehensive	No	302	\$2,423.74	165.35 (+/- 6.8%)	\$2,190.54
Onsite Comprehensive	Yes	108	\$2,866.00	389.35 (+/- 13.6%)	\$2,301.50
Onsite Focused	No	652	\$1,964.71	98.25 (+/- 5.0%)	\$1,727.76
Onsite Focused	Yes	217	\$2,236.18	150.68 (+/- 6.7%)	\$2,061.60

**Half-width value indicates relatively low precision in estimate.

The relationships previously found in Table 6 and Table 11, concerning the relative costs of the three major types of investigations are also apparent in Table 12: based on those carriers slated for each type of investigation, onsite comprehensive investigations are the costliest, followed by onsite focused, and offsite investigations. In addition, those onsite comprehensive investigations *not* recommending enforcement action have a 23 percent higher average cost than onsite focused investigations *not* recommending enforcement action, and an 8 percent higher average cost than those onsite focused investigations that *do* recommend enforcement action. This suggests that the

¹⁹ Note, however, that the table estimates of average cost for offsite investigations have a rather low precision, as evidenced by the half-width values.

high cost of the onsite comprehensive investigation may have an inherent component, which is independent of the number or magnitude of the violations found, or the safety profile of the carriers selected to receive them.

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4. CONCLUSION

The field data collected in this survey effort indicate that onsite comprehensive investigations are the costliest to conduct, with an estimated average cost of \$2,540, followed by onsite focused investigations, with an estimated average cost of \$2,033. Offsite investigations appear to be the least costly to conduct (\$1,145), although there is lower level of precision for this estimate, due to the small number of cases available (SIs in only 10 States had the requisite training for conducting such investigations at the time of this study). While several factors, discussed below, affect the cost of any given investigation, these factors do not change the general cost relationship, mentioned above, for these three types of investigations.

Various factors were assessed to determine their impact upon the cost of an investigation, including what part of the United States the carrier is located in, whether the State division office uses an SI from another State to perform the investigation, and whether the carrier's lack of compliance with FMCSA regulations is severe enough to warrant a recommendation for enforcement action. Concerning the carrier location, the average investigation costs are higher when the carrier is domiciled in a State reporting to either the Western or Eastern Service Centers, and lower when the carrier is domiciled in a State reporting to either the Southern or Midwestern Service Centers. The average cost per investigation is lowest when the carrier is domiciled in a State associated with the Southern Service Center (30 percent lower for onsite comprehensive investigations, and 26 percent lower for onsite focused investigations—in comparison to similar investigations associated with the Western Service Center, where average costs are highest).

Investigations conducted by SIs from a division office outside of the State of domicile of the motor carrier are costlier than those conducted by SIs from the FMCSA division office within that State. Such investigations, referred to as “borderless investigations,” were found to have a 30 percent higher average cost, in the case of onsite comprehensive investigations, and a 41 percent higher average cost, in the case of onsite focused investigations (the survey data did not capture a sufficient number of borderless offsite investigations to allow for a separate analysis for this category).

Investigations slating the motor carrier for future enforcement action increase the average cost of the investigation by approximately 18 percent in the case of onsite comprehensive investigations (\$2,866 with enforcement slated versus \$2,424 without future enforcement slated), and by approximately 14 percent in the case of onsite focused investigations (\$2,236 when slated for enforcement versus \$1,965 when not slated for enforcement).

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APPENDIX A: COST INFORMATION COLLECTED FROM INVESTIGATIONS CONDUCTED BY FMCSA STAFF

1. #SIs involved – number of SIs that were involved in the investigation. When greater than one, the contribution of those SIs should be totaled and entered into the time and cost fields below.
2. SI investigation labor hours (to the nearest ½ hr.) – this includes time spent in preparatory work prior to contacting the carrier, time spent with the carrier representative(s) and reviewing carrier records while conducting the investigation, and time spent completing the investigation documentation, including Part C, up to the time the report is uploaded.²⁰
3. PA labor hours (to the nearest ½ hr.) – this includes time spent in support of the investigation from pre-investigation through report upload. For example, preparatory work and the collection and review of carrier records and documentation.²¹
4. Travel time (to the nearest ¼ hr.) – this includes travel time to and from the carrier’s facility for onsite investigations,²² air travel time (if any), travel to and from airport to lodging (if any).
5. Borderless investigation – select “Yes” if the SI is performing this investigation in a different State than the State of the SI’s division office. “No,” otherwise.
6. Government miles – this includes mileage, if any, when a Government vehicle is used for travel in connection with an onsite investigation.²³
7. Voucher expenses – this includes travel voucher expenses for such things as airfare, privately owned vehicle (POV) use, lodging, etc., in connection with any onsite investigation.
8. Other expenses – this includes any other expenses directly related to the investigation, such as tolls not included in a travel voucher, postage, UPS fees, etc.

²⁰ Does not include any hours related to enforcement activity after the investigation report is uploaded.

²¹ Does not include any hours related to enforcement activity after the investigation report is uploaded.

²² If there are multiple trips to/from a carrier for an onsite investigation, includes the total travel time for all trips.

²³ If there are multiple trips to/from a carrier for an onsite investigation, includes total government miles traveled for all trips.

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APPENDIX B: WAGE RATES ASSUMED FOR SAFETY INVESTIGATORS AND PROGRAM ANALYSTS

(BASED ON PUBLISHED 2018 FEDERAL WAGE RATE DATA FROM THE OFFICE OF PERSONNEL MANAGEMENT, BY LOCALITY)

Table 13. Wage rates assumed for safety investigators and program analysts.

State	Category	Grade	Basic Hourly Rate	Adjusted Rate*	Category	Grade	Basic Hourly Rate	Adjusted Rate*
AL	SI	GS-12, Step 5	\$34.54	\$52.71	PA	GS-9, Step 1	\$21.01	\$32.06
AK	SI	GS-12, Step 5	\$44.22	\$67.48	PA	GS-9, Step 1	\$26.90	\$41.05
AZ	SI	GS-12, Step 5	\$41.13	\$62.76	PA	GS-9, Step 1	\$25.03	\$38.20
AR	SI	GS-12, Step 5	\$34.54	\$52.71	PA	GS-9, Step 1	\$21.01	\$32.06
CA	SI	GS-12, Step 5	\$43.12	\$65.80	PA	GS-9, Step 1	\$26.24	\$40.04
CO	SI	GS-12, Step 5	\$43.33	\$66.12	PA	GS-9, Step 1	\$26.37	\$40.24
CT	SI	GS-12, Step 5	\$44.28	\$67.57	PA	GS-9, Step 1	\$26.94	\$41.11
DE	SI	GS-12, Step 5	\$34.54	\$52.71	PA	GS-9, Step 1	\$21.01	\$32.06
DC	SI	GS-12, Step 5	\$44.28	\$67.57	PA	GS-9, Step 1	\$26.94	\$41.11
FL	SI	GS-12, Step 5	\$34.54	\$52.71	PA	GS-9, Step 1	\$21.01	\$32.06
GA	SI	GS-12, Step 5	\$41.85	\$63.86	PA	GS-9, Step 1	\$25.46	\$38.85
HI	SI	GS-12, Step 5	\$40.90	\$62.41	PA	GS-9, Step 1	\$24.89	\$37.98
ID	SI	GS-12, Step 5	\$34.54	\$52.71	PA	GS-9, Step 1	\$21.01	\$32.06
IL	SI	GS-12, Step 5	\$34.54	\$52.71	PA	GS-9, Step 1	\$21.01	\$32.06
IN	SI	GS-12, Step 5	\$40.14	\$61.25	PA	GS-9, Step 1	\$24.43	\$37.28
IA	SI	GS-12, Step 5	\$34.54	\$52.71	PA	GS-9, Step 1	\$21.01	\$32.06
KS	SI	GS-12, Step 5	\$34.54	\$52.71	PA	GS-9, Step 1	\$21.01	\$32.06
KY	SI	GS-12, Step 5	\$34.54	\$52.71	PA	GS-9, Step 1	\$21.01	\$32.06
LA	SI	GS-12, Step 5	\$34.54	\$52.71	PA	GS-9, Step 1	\$21.01	\$32.06
ME	SI	GS-12, Step 5	\$34.54	\$52.71	PA	GS-9, Step 1	\$21.01	\$32.06
MD	SI	GS-12, Step 5	\$44.28	\$67.57	PA	GS-9, Step 1	\$26.94	\$41.11
MA	SI	GS-12, Step 5	\$44.03	\$67.19	PA	GS-9, Step 1	\$26.79	\$40.88
MI	SI	GS-12, Step 5	\$34.54	\$52.71	PA	GS-9, Step 1	\$21.01	\$32.06
MN	SI	GS-12, Step 5	\$42.61	\$65.02	PA	GS-9, Step 1	\$25.93	\$39.57
MS	SI	GS-12, Step 5	\$34.54	\$52.71	PA	GS-9, Step 1	\$21.01	\$32.06
MO	SI	GS-12, Step 5	\$34.54	\$52.71	PA	GS-9, Step 1	\$21.01	\$32.06
MT	SI	GS-12, Step 5	\$34.54	\$52.71	PA	GS-9, Step 1	\$21.01	\$32.06
NE	SI	GS-12, Step 5	\$34.54	\$52.71	PA	GS-9, Step 1	\$21.01	\$32.06
NV	SI	GS-12, Step 5	\$34.54	\$52.71	PA	GS-9, Step 1	\$21.01	\$32.06

State	Category	Grade	Basic Hourly Rate	Adjusted Rate*	Category	Grade	Basic Hourly Rate	Adjusted Rate*
NH	SI	GS-12, Step 5	\$34.54	\$52.71	PA	GS-9, Step 1	\$21.01	\$32.06
NJ	SI	GS-12, Step 5	\$34.54	\$52.71	PA	GS-9, Step 1	\$21.01	\$32.06
NM	SI	GS-12, Step 5	\$39.98	\$61.01	PA	GS-9, Step 1	\$24.33	\$37.13
NY	SI	GS-12, Step 5	\$40.24	\$61.41	PA	GS-9, Step 1	\$24.48	\$37.36
NC	SI	GS-12, Step 5	\$41.28	\$62.99	PA	GS-9, Step 1	\$25.12	\$38.33
ND	SI	GS-12, Step 5	\$34.54	\$52.71	PA	GS-9, Step 1	\$21.01	\$32.06
OH	SI	GS-12, Step 5	\$41.09	\$62.70	PA	GS-9, Step 1	\$25.00	\$38.15
OK	SI	GS-12, Step 5	\$34.54	\$52.71	PA	GS-9, Step 1	\$21.01	\$32.06
OR	SI	GS-12, Step 5	\$42.32	\$64.58	PA	GS-9, Step 1	\$25.75	\$39.29
PA	SI	GS-12, Step 5	\$40.12	\$61.22	PA	GS-9, Step 1	\$24.41	\$37.25
RI	SI	GS-12, Step 5	\$44.03	\$67.19	PA	GS-9, Step 1	\$26.79	\$40.88
SC	SI	GS-12, Step 5	\$34.54	\$52.71	PA	GS-9, Step 1	\$21.01	\$32.06
SD	SI	GS-12, Step 5	\$34.54	\$52.71	PA	GS-9, Step 1	\$21.01	\$32.06
TN	SI	GS-12, Step 5	\$34.54	\$52.71	PA	GS-9, Step 1	\$21.01	\$32.06
TX	SI	GS-12, Step 5	\$40.31	\$61.51	PA	GS-9, Step 1	\$24.53	\$37.43
UT	SI	GS-12, Step 5	\$34.54	\$52.71	PA	GS-9, Step 1	\$21.01	\$32.06
VT	SI	GS-12, Step 5	\$34.54	\$52.71	PA	GS-9, Step 1	\$21.01	\$32.06
VA	SI	GS-12, Step 5	\$41.03	\$62.61	PA	GS-9, Step 1	\$24.96	\$38.09
WA	SI	GS-12, Step 5	\$34.54	\$52.71	PA	GS-9, Step 1	\$21.01	\$32.06
WV	SI	GS-12, Step 5	\$34.54	\$52.71	PA	GS-9, Step 1	\$21.01	\$32.06
WI	SI	GS-12, Step 5	\$34.54	\$52.71	PA	GS-9, Step 1	\$21.01	\$32.06
WY	SI	GS-12, Step 5	\$34.54	\$52.71	PA	GS-9, Step 1	\$21.01	\$31.26

*Includes overhead and fringe benefits.