Compliance, Safety, Accountability: Evaluating a New Safety Measurement System and Its Implications

December 2012

950 N. Glebe Road
Arlington, VA
(703) 836-1966
atri@trucking.org
www.atri-online.org

Prepared by the American Transportation Research Institute
Compliance, Safety, Accountability

Evaluating a New Safety Measurement System and Its Implications

December 2012

Micah D. Lueck
Research Associate
American Transportation Research Institute
St. Paul, MN

Rebecca M. Brewster
President and Chief Operating Officer
American Transportation Research Institute
Atlanta, GA

950 N. Glebe Road, Suite 210
Arlington, Virginia 22203
www.atri-online.org
<table>
<thead>
<tr>
<th>Name</th>
<th>Title and Company</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mr. Steve Williams</td>
<td>Chairman of the ATRI Board, Maverick USA, Inc.</td>
<td>Little Rock, AR</td>
</tr>
<tr>
<td>Mr. Michael S. Card</td>
<td>President, Combined Transport, Inc.</td>
<td>Central Point, OR</td>
</tr>
<tr>
<td>Mr. Edward Crowell</td>
<td>President &amp; CEO, Georgia Motor Trucking Association</td>
<td>Atlanta, GA</td>
</tr>
<tr>
<td>Mr. Rich Freeland</td>
<td>President – Engine Business, Cummins Inc.</td>
<td>Columbus, IN</td>
</tr>
<tr>
<td>Mr. Hugh H. Fugleberg</td>
<td>President &amp; COO, Great West Casualty Company</td>
<td>South Sioux City, NE</td>
</tr>
<tr>
<td>Mr. Jack Holmes</td>
<td>President, UPS Freight</td>
<td>Richmond, VA</td>
</tr>
<tr>
<td>Mr. Ludvik F. Koci</td>
<td>Director, Penske Transportation Components</td>
<td>Bloomfield Hills, MI</td>
</tr>
<tr>
<td>Mr. William J. Logue</td>
<td>President &amp; CEO, FedEx Freight</td>
<td>Memphis, TN</td>
</tr>
<tr>
<td>Ms. Judy McReynolds</td>
<td>President &amp; CEO, Arkansas Best Corporation</td>
<td>Fort Smith, AR</td>
</tr>
<tr>
<td>Mr. Jeffrey J. McCaig</td>
<td>President &amp; CEO, Trimac Transportation, Inc.</td>
<td>Houston, TX</td>
</tr>
<tr>
<td>Mr. Gregory L. Owen</td>
<td>Head Coach &amp; CEO, Ability/ Tri-Modal Transportation Services</td>
<td>Carson, CA</td>
</tr>
<tr>
<td>Mr. Douglas W. Stotlar</td>
<td>President &amp; CEO, Con-way Inc.</td>
<td>Ann Arbor, MI</td>
</tr>
<tr>
<td>Ms. Rebecca M. Brewster</td>
<td>President &amp; COO, American Transportation Research Institute</td>
<td>Atlanta, GA</td>
</tr>
<tr>
<td>Honorable Bill Graves</td>
<td>President &amp; CEO, American Trucking Associations</td>
<td>Arlington, VA</td>
</tr>
</tbody>
</table>
ATRI RESEARCH ADVISORY COMMITTEE

Mr. Philip L. Byrd, Sr., RAC Chairman
President & CEO
Bulldog Hiway Express

Ms. Kendra Adams
Executive Director
New York State Motor Truck Association

Dr. Teresa M. Adams
Director of CFIRE
University of Wisconsin

Ms. Susan Alt
VP, Industry Relations and Public Affairs
Volvo Group

Ms. Cheryl Bynum
Manager, SmartWay Transport Partnership
U.S. Environmental Protection Agency

Mr. LaMont Byrd
Director, Safety & Health Department
International Brotherhood of Teamsters

Mr. Terry Croslow
Chief Financial Officer
Bestway Express, Inc.

Mr. Ted Dahlburg
Manager, Office of Freight Planning
Delaware Valley Regional Planning Commission

Mr. Tom DiSalvi
Director of Loss Prevention
Schneider National, Inc.

Mr. Chad England
Chief Operating Officer
C.R. England, Inc.

Mr. John Flanagan
Manager, Quality, Safety & Fleet Services
Stevens Van Lines

Mr. Tom Flies
Senior Director,
Product Management
Qualcomm

Mr. Bryan Foe
Vice President, Transportation
C.H. Robinson Worldwide

Mr. David Foster
Vice President of Fleet Services
Southeastern Freight Lines

Ms. Patti Gillette
Safety Director
Colorado Motor Carriers Association

Mr. John Hancock
Director
Prime, Inc.

Mr. Steve A. Keppler
Executive Director
Commercial Vehicle Safety Alliance

Mr. Alan Korn
Chief Engineer Apps & Customer Support
Meritor Wabco

Ms. Jennifer Morrison
Vehicle Factors Engineer
National Transportation Safety Board

Mr. Dean Newell
Vice President, Safety
Maverick USA, Inc.

Mr. Steve L. Niswander
VP, Safety Policy & Regulatory Relations
Groendyke Transport, Inc.

Mr. Deane H. Sager
Director-Transportation Industry Practices
The Northland Group

Mr. Brett A. Sant
VP, Safety & Risk Management
Knight Transportation, Inc.

Mr. Jim Schultz
ITS Program Manager
Michigan Department of Transportation

Ms. Nanci Tellam
Group Director, Environmental Services & Sustainability
Ryder System, Inc.

Ms. Tom Weakley
Director of Operations
Owner-Operator Independent Drivers Association Foundation

Mr. Scott Wombold
Vice President, National Accounts & Wholesale Fuel
Pilot Travel Centers

Mr. Greer Woodruff
Senior Vice President of Corporate Safety & Security
J.B. Hunt Transport Services, Inc.
# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>TABLE OF CONTENTS</strong> ...................................................................</td>
<td>i</td>
</tr>
<tr>
<td></td>
<td><strong>LIST OF FIGURES</strong> ......................................................................</td>
<td>iii</td>
</tr>
<tr>
<td></td>
<td><strong>LIST OF TABLES</strong> .......................................................................</td>
<td>iv</td>
</tr>
<tr>
<td></td>
<td><strong>LIST OF ACRONYMS</strong> ....................................................................</td>
<td>v</td>
</tr>
<tr>
<td>1.0</td>
<td><strong>BACKGROUND</strong> ............................................................................</td>
<td>1</td>
</tr>
<tr>
<td>1.1</td>
<td>Introducing CSA ...........................................................................</td>
<td>1</td>
</tr>
<tr>
<td>1.2</td>
<td>ATRI Process: Research Advisory Committee ....................................</td>
<td>1</td>
</tr>
<tr>
<td>1.3</td>
<td>Trucking Industry Safety ................................................................</td>
<td>2</td>
</tr>
<tr>
<td>1.4</td>
<td>The Nature of SafeStat ..................................................................</td>
<td>3</td>
</tr>
<tr>
<td>1.5</td>
<td>Basis for Migrating to CSA ..........................................................</td>
<td>4</td>
</tr>
<tr>
<td>1.6</td>
<td>Design of CSA ...............................................................................</td>
<td>6</td>
</tr>
<tr>
<td>1.7</td>
<td>Summarizing Key Strategic Differences Between CSA and SafeStat .......</td>
<td>8</td>
</tr>
<tr>
<td>2.0</td>
<td><strong>METHODOLOGY</strong> ..........................................................................</td>
<td>10</td>
</tr>
<tr>
<td>2.1</td>
<td>Literature Review ..........................................................................</td>
<td>11</td>
</tr>
<tr>
<td>2.2</td>
<td>Survey Research ............................................................................</td>
<td>10</td>
</tr>
<tr>
<td>2.3</td>
<td>Quantitative Research ...................................................................</td>
<td>10</td>
</tr>
<tr>
<td>3.0</td>
<td><strong>DRIVER SURVEY FINDINGS</strong> ..........................................................</td>
<td>13</td>
</tr>
<tr>
<td>3.1</td>
<td>Driver Demographics ......................................................................</td>
<td>13</td>
</tr>
<tr>
<td>3.2</td>
<td>Driver Labor Impacts: Reality versus Perception ............................</td>
<td>14</td>
</tr>
<tr>
<td>3.3</td>
<td>CSA and Driver Wages .....................................................................</td>
<td>16</td>
</tr>
<tr>
<td>3.4</td>
<td>How Drivers are Using CSA ............................................................</td>
<td>17</td>
</tr>
<tr>
<td>3.5</td>
<td>Driver Knowledge, Education and Training .......................................</td>
<td>18</td>
</tr>
<tr>
<td>3.6</td>
<td>Key Driver Findings .......................................................................</td>
<td>23</td>
</tr>
<tr>
<td>4.0</td>
<td><strong>CARRIER SURVEY FINDINGS</strong> .......................................................</td>
<td>24</td>
</tr>
<tr>
<td>4.1</td>
<td>Carrier Demographics .....................................................................</td>
<td>24</td>
</tr>
<tr>
<td>4.2</td>
<td>Carrier Scrutiny Under CSA ..........................................................</td>
<td>25</td>
</tr>
<tr>
<td>4.3</td>
<td>How Carriers are Using CSA ............................................................</td>
<td>28</td>
</tr>
<tr>
<td>4.4</td>
<td>Carrier Issues and Opportunities ..................................................</td>
<td>30</td>
</tr>
<tr>
<td>4.5</td>
<td>Carrier Knowledge, Education and Training ......................................</td>
<td>34</td>
</tr>
<tr>
<td>4.6</td>
<td>Key Carrier Findings ......................................................................</td>
<td>37</td>
</tr>
<tr>
<td>5.0</td>
<td><strong>SHIPPER SURVEY FINDINGS</strong> .......................................................</td>
<td>40</td>
</tr>
<tr>
<td>5.1</td>
<td>Shipper Demographics .....................................................................</td>
<td>40</td>
</tr>
<tr>
<td>5.2</td>
<td>Shippers and Existing Customers ....................................................</td>
<td>43</td>
</tr>
<tr>
<td>5.3</td>
<td>Shippers and New Customers ...........................................................</td>
<td>43</td>
</tr>
<tr>
<td>5.4</td>
<td>Key Shipper Findings ......................................................................</td>
<td>43</td>
</tr>
<tr>
<td>6.0</td>
<td><strong>ENFORCEMENT SURVEY FINDINGS</strong> ..............................................</td>
<td>45</td>
</tr>
<tr>
<td>6.1</td>
<td>Enforcement Demographics ..............................................................</td>
<td>45</td>
</tr>
<tr>
<td>6.2</td>
<td>Enforcement Reactions to CSA ........................................................</td>
<td>45</td>
</tr>
<tr>
<td>6.3</td>
<td>Key Enforcement Findings ...............................................................</td>
<td>49</td>
</tr>
<tr>
<td>7.0</td>
<td><strong>LOOKING AHEAD: FUTURE EXPECTATIONS</strong> .....................................</td>
<td>50</td>
</tr>
<tr>
<td>7.1</td>
<td>CSA Impacts on Shipper/Carrier Relationships ...................................</td>
<td>50</td>
</tr>
<tr>
<td>7.2</td>
<td>CSA Impacts on Wages and Pricing ..................................................</td>
<td>51</td>
</tr>
<tr>
<td>7.3</td>
<td>Closing the Gap on Carrier/Driver Education and Training ................</td>
<td>53</td>
</tr>
<tr>
<td>7.4</td>
<td>CSA and the Changing Face of Enforcement .......................................</td>
<td>55</td>
</tr>
<tr>
<td>7.5</td>
<td>Speculating on CSA Trends and Changes ..........................................</td>
<td>57</td>
</tr>
</tbody>
</table>
8.0 CONCLUSIONS................................................................................................................. 60
8.1 Truck Drivers .................................................................................................................. 60
8.2 Motor Carriers .............................................................................................................. 61
8.3 Shippers ......................................................................................................................... 62
8.4 Enforcement .................................................................................................................. 63
8.5 Final Summary ............................................................................................................... 64
APPENDIX A .................................................................................................................... 65
LIST OF FIGURES

Figure 1. Fatalities per 100 Million Vehicle Miles, 1975-2007 ........................................ 2
Figure 2. Truck Driver Representativeness by Age .................................................. 13
Figure 3. What Percentage of Your Workforce Have You Fired Due to CSA? ... 15
Figure 4. Expected and Actual Impact of CSA on Driver Supply (2011 vs. 2012). 16
Figure 5. Percent of Truck Drivers Accessing PSP Data ........................................ 17
Figure 6. Have You Rejected Equipment or Loads? ............................................. 18
Figure 7. Have Deliberate HOS Violations Become Less Common? .................. 18
Figure 8. Driver-Reported Levels of CSA Training and Education ...................... 19
Figure 9. Driver-Reported Levels of CSA Training and Education by Fleet Size .. 19
Figure 10. Percent of Drivers Correctly Answering Each Item ............................ 20
Figure 11. Have You Accessed Your Carrier SMS Data from the CSA Website? . 25
Figure 12. Changes in Carrier-Reported Alerts Since 2011 ............................... 26
Figure 13. Percent of Workforce Fired by Number of BASICS Above Threshold. 27
Figure 14. Variability in Safety Event Groups by Fleet Size .................................. 28
Figure 15. Has CSA Made It More Difficult To Find Qualified New Drivers? ...... 28
Figure 16. Carrier Utilization of Safety-Related Financial Incentives .................... 30
Figure 17. Expected and Actual Impact of CSA on Trucking Companies ............ 31
Figure 18. How Concerned Are You That CSA Will Put You Out Of Business? ... 31
Figure 19. Carrier-Reported Changes in Enforcement ......................................... 32
Figure 20. Perceived Validity of Basing SFDs on Carrier SMS Scores .................. 33
Figure 21. Percent of Drivers and Carriers Correctly Answering Each Item ........... 34
Figure 22. DataQs Utilization by Fleet Size ....................................................... 38
Figure 23. Do You Access Carrier CSA Scores? .............................................. 41
Figure 24. Has CSA Increased Liability Concerns? ............................................ 41
Figure 25. Do You Access Carrier CSA Scores For Prospective Carriers? ........ 43
Figure 26. Overall Stakeholder Attitudes toward CSA ........................................ 45
Figure 27. Effectiveness of CSA to Reduce Truck Crashes Industry-Wide .......... 46
Figure 28. Effectiveness of Roadside Inspection Selection Process ..................... 46
Figure 29. Effectiveness of Fleet Intervention Selection Process ......................... 47
Figure 30. Effectiveness of Each Type of New Intervention ............................... 47
Figure 31. Levels of CSA Training and Education Received by Enforcement ...... 48
Figure 32. Has Your Level of Utilization Changed Due to CSA? ........................ 51
Figure 33. Has the Amount You Charge Changed Due to CSA? ........................ 53
Figure 34. Percent of Correct Responses Among Drivers and Carriers ............... 54
Figure 35. Self-Described Knowledge and Performance on ATRI’s CSA Test ... 55
LIST OF TABLES

Table 1. SafeStat Scoring Ranges ................................................................. 4
Table 2. CSA BASICs and Descriptions ....................................................... 6
Table 3. Driver-Reported Business Sectors ............................................... 14
Table 4. Driver-Reported Fleet Size ............................................................ 14
Table 5. Carrier-Reported Business Sectors ............................................... 24
Table 6. Carrier-Reported Fleet Size ............................................................ 24
Table 7. Percent of Carriers Investing in Technology Due to CSA ............ 33
Table 8. Company Revenue ........................................................................ 40
Table 9. Business Sectors Utilized ............................................................... 40
Table 10. CSA Topics Covered During Training ....................................... 48
Table 11. CSA BASICs and Alternative Compliance ............................... 56
Table 12. Empirically Determined Continuum of Safety Risk .................. 59
# List of Acronyms

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ATA</td>
<td>American Trucking Associations</td>
</tr>
<tr>
<td>ATRI</td>
<td>American Transportation Research Institute</td>
</tr>
<tr>
<td>BASIC</td>
<td>Behavior Analysis and Safety Improvement Category</td>
</tr>
<tr>
<td>BLS</td>
<td>Bureau of Labor Statistics</td>
</tr>
<tr>
<td>BMI</td>
<td>Body Mass Index</td>
</tr>
<tr>
<td>CDL</td>
<td>Commercial Driver’s License</td>
</tr>
<tr>
<td>CMV</td>
<td>Commercial Motor Vehicle</td>
</tr>
<tr>
<td>CSA</td>
<td>Compliance, Safety, Accountability</td>
</tr>
<tr>
<td>CVSA</td>
<td>Commercial Vehicle Safety Alliance</td>
</tr>
<tr>
<td>EOBRA</td>
<td>Electronic Onboard Recorder</td>
</tr>
<tr>
<td>ENS</td>
<td>Employment Notification System</td>
</tr>
<tr>
<td>ESC</td>
<td>Electronic Stability Control</td>
</tr>
<tr>
<td>FCWS</td>
<td>Forward Collision Warning System</td>
</tr>
<tr>
<td>FMCSA</td>
<td>Federal Motor Carrier Safety Administration</td>
</tr>
<tr>
<td>FMCSR</td>
<td>Federal Motor Carrier Safety Regulation</td>
</tr>
<tr>
<td>FMP</td>
<td>Fatigue Management Program</td>
</tr>
<tr>
<td>GAO</td>
<td>Government Accountability Office</td>
</tr>
<tr>
<td>HOS</td>
<td>Hours-of-Service</td>
</tr>
<tr>
<td>IC</td>
<td>Independent Contractor</td>
</tr>
<tr>
<td>ISS</td>
<td>Inspection Selection System</td>
</tr>
<tr>
<td>LDWS</td>
<td>Lane Departure Warning System</td>
</tr>
<tr>
<td>MATS</td>
<td>Mid-America Trucking Show</td>
</tr>
<tr>
<td>MCMIS</td>
<td>Motor Carrier Management Information System</td>
</tr>
<tr>
<td>MCSAP</td>
<td>Motor Carrier Safety Assistance Program</td>
</tr>
<tr>
<td>NITL</td>
<td>National Industrial Transportation League</td>
</tr>
<tr>
<td>NPRM</td>
<td>Notice of Proposed Rulemaking</td>
</tr>
<tr>
<td>O-O</td>
<td>Owner-Operator</td>
</tr>
<tr>
<td>OOIDA</td>
<td>Owner-Operator Independent Drivers Association</td>
</tr>
<tr>
<td>OOS</td>
<td>Out-of-Service</td>
</tr>
<tr>
<td>PAR</td>
<td>Police Accident Report</td>
</tr>
<tr>
<td>PSP</td>
<td>Pre-employment Screening Program</td>
</tr>
<tr>
<td>PU</td>
<td>Power Unit</td>
</tr>
<tr>
<td>RSC</td>
<td>Roll Stability Control</td>
</tr>
<tr>
<td>RI</td>
<td>Roadside Inspection</td>
</tr>
<tr>
<td>SafeStat</td>
<td>Motor Carrier Safety Status Measurement System</td>
</tr>
<tr>
<td>SEA</td>
<td>Safety Evaluation Area</td>
</tr>
<tr>
<td>SFD</td>
<td>Safety Fitness Determination</td>
</tr>
<tr>
<td>SMS</td>
<td>Safety Measurement System</td>
</tr>
<tr>
<td>TPMS</td>
<td>Tire Pressure Monitoring System</td>
</tr>
<tr>
<td>VMT</td>
<td>Vehicle Miles Traveled</td>
</tr>
</tbody>
</table>
1.0 BACKGROUND

1.1 Introducing CSA

In early 2003, the Federal Motor Carrier Safety Administration (FMCSA) began a multi-year process of developing a new safety measurement initiative titled Comprehensive Safety Analysis 2010, now known as Compliance, Safety, Accountability (CSA). The explicit purpose of CSA was to “improve large truck and bus safety to achieve a greater reduction in commercial motor vehicle (CMV) crashes, injuries and fatalities.”¹ While this has been FMCSA’s stated goal since the administration’s inception in 1999, CSA reflects a new era in measuring safety performance and prioritizing intervention opportunities for both CMV drivers and motor carriers.

As part of FMCSA’s process for evaluating the effectiveness of CSA, the agency initiated a field test of the program in February 2008. Participating states initially included Colorado, Georgia, Missouri and New Jersey, although that list expanded in 2009 to also include Delaware, Kansas, Maryland, Minnesota and Montana, for a total of nine pilot test states. By the close of 2010, FMCSA officially unveiled CSA and began applying its new safety monitoring, evaluation and intervention processes to the entire universe of motor carriers who fall subject to the Federal Motor Carrier Safety Regulations (FMCSRs).²³ Previously, motor carrier safety information had been monitored and enforced by FMCSA and its state partners using the Motor Carrier Safety Status Measurement System (SafeStat), which has now been completely phased out and replaced by CSA.

1.2 ATRI Process: Research Advisory Committee

Despite spending nearly a decade planning and developing CSA (i.e. from 2003 to 2010), FMCSA’s formal outreach fell short of informing all industry stakeholders exactly which aspects of operations CSA does and does not affect. Considering the magnitude of the change from SafeStat, many carriers and drivers did not adequately comprehend CSA even as the program became the standard by which they were measured.

As a result, in 2010, the American Transportation Research Institute’s (ATRI’s) Research Advisory Committee (RAC)⁴ identified CSA as a top priority for the Institute to investigate. ATRI therefore began a series of research studies relating to CSA, which delivered key findings, conclusions and recommendations on how CSA has affected

² The criteria for determining whether carriers are subject to FMCSRs can be found at [http://www.fmcsa.dot.gov/about/other/faq/faqqs.aspx#question30](http://www.fmcsa.dot.gov/about/other/faq/faqqs.aspx#question30)
³ It is important to note that CSA does not alter or add to any of FMCSA’s existing regulations; it simply affects the way that FMCSA enforces compliance with those regulations.
⁴ ATRI’s Research Advisory Committee (RAC) is comprised of industry stakeholders representing motor carriers, trucking industry suppliers, labor and driver groups, law enforcement, federal government and academia. The RAC is charged with annually recommending a research agenda for the Institute.
truck drivers and motor carriers.\textsuperscript{5,6} Subsequently, ATRI’s RAC expanded the CSA research charge to include evaluating CSA’s data and methodology issues. ATRI issued the additional report in October 2012,\textsuperscript{7} and subsequently discovered that CSA continues to be identified as a major industry concern.\textsuperscript{8} Findings from ATRI’s myriad CSA-relevant reports will be summarized and presented throughout this paper, following a thorough consideration of FMCSA’s rationale for supplanting SafeStat with CSA.

### 1.3 Trucking Industry Safety

It is generally accepted that federal government safety programs have augmented industry safety efforts in decreasing the number of fatal truck crashes. However, forward progress had visibly slowed in the years preceding FMCSA’s development and implementation of CSA (see Figure 1).\textsuperscript{9} That is, even though crash rates have continued a downward trend, consistently reaching or nearing record-low levels, dramatic decreases in fatalities are now elusive.

![Figure 1. Fatalities per 100 Million Vehicle Miles, 1975-2007](image)


\textsuperscript{9} Federal Motor Carrier Safety Administration. \textit{Why is CSA Needed?} Available Online: \url{http://csa.fmcsa.dot.gov/about/csa_why.aspx}
This is not surprising, since incremental safety improvements become more difficult as the absolute window for improvement decreases in size. For instance, Figure 1 clearly reveals the trucking industry’s success in lowering truck-involved crashes from their comparatively high levels of the 1970s. After reducing those fatality rates by roughly 67 percent, however, the collisions that remain are difficult to address, particularly considering that the majority of truck-involved collisions are due to passenger vehicle behaviors.\(^\text{10}\)

Nonetheless, the industry has been engaged in numerous efforts to further decrease crash involvement, including investments in technology and proven safety management practices.\(^\text{11}\) Meanwhile, FMCSA’s approach has included a reassessment of its SafeStat measurement program and a determination that the agency could improve its process for assessing and enforcing motor carrier and truck driver safety performance.

### 1.4 The Nature of SafeStat

SafeStat existed as an automated data-driven system that calculated the relative safety level of individual motor carriers on a monthly basis. Safety performance data that went into the calculation included a carrier’s most recent 30 months of crash data, out-of-service (OOS) roadside inspections (RI s), on-site compliance reviews and enforcement histories. Specifically, motor carriers were evaluated relative to their peers in four analytic Safety Evaluation Areas (SEAs): Accident; Driver; Vehicle; and Safety Management. These four SEA scores were also combined into an overall SafeStat score, which allowed FMCSA and its state partners to identify and focus enforcement resources on the carriers who posed the greatest potential safety risks. For instance, SafeStat scores helped FMCSA prioritize carriers for on-site compliance reviews as well as select drivers and vehicles for RI s using the Inspection Selection System (ISS). Additionally, SafeStat scores were publicly available online at \[www.ai.volpe.dot.gov\].

Once carrier SEA values were calculated, they were used for a number of investigative purposes. To prioritize motor carriers for an intervention, FMCSA identified carriers that had two or more SEA values in the bottom 25\(^{\text{th}}\) percentile (i.e. 76-100). These carriers were then issued an overall SafeStat value, which was the sum of their SEA values that crossed the 75-point threshold, with the Accident SEA receiving double its value and the Driver SEA receiving 1.5 times its value since those SEAs demonstrated the strongest associations with crash involvement.\(^\text{12}\)

Carriers that received a SafeStat score were then ranked and placed into one of three categories, labeled A through C, with category A reserved for the most safety deficient

---


Compliance, Safety and Accountability:
Evaluating a New Measurement System and Its Implications – December 2012
carriers (see Table 1). Those carriers placed in one of these three categories were then prioritized for comprehensive on-site CRs, where an audit of their operations earned them a safety fitness rating of “Satisfactory,” “Conditional” or “Unsatisfactory.” In addition, fines and/or OOS orders could be issued for egregious violations uncovered during the CR. In cases where a motor carrier was not ordered to cease operations, the safety rating that was issued during the compliance review remained in place for the carrier until another compliance review was performed.

Table 1. SafeStat Scoring Ranges

<table>
<thead>
<tr>
<th>Category</th>
<th>SafeStat Score</th>
<th>SEA Values of 75 or Higher</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>≥ 350 to ≤ 550</td>
<td>All 4 SEAs</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3 SEAs that result in a weighted score of 350 or more</td>
</tr>
<tr>
<td>B</td>
<td>≥ 225 to &lt; 350</td>
<td>3 SEAs that result in a weighted score of less than 350</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2 SEAs that result in a weighted score of 225 or more</td>
</tr>
<tr>
<td>C</td>
<td>≥ 150 to &lt; 225</td>
<td>3 SEAs that result in a weighted score of less than 225</td>
</tr>
</tbody>
</table>

1.5 Basis for Migrating to CSA

FMCSA identified numerous limitations of its SafeStat program and designed CSA to address those limitations and improve the agency’s safety monitoring, evaluation and intervention processes. Among the limitations to SafeStat noted by FMCSA were weaknesses related to carrier measurement and enforcement issues.

Measurement Problems

In relation to measurement issues, a major limitation of SafeStat was that it only took into account select traffic enforcement violations and those violations which resulted in driver or vehicle OOS orders. Consequently, SafeStat ignored the vast majority (i.e. more than 80%) of available violation data, much of which have demonstrated ties to carrier safety in the form of driver crash risk. Additionally, SafeStat did nothing to weight individual violations within each SEA according to their empirically determined crash-relatedness; that is, all violations impacted SEA scores equally. Finally, under SafeStat, FMCSA was only capable of making Safety Fitness Determination (SFD)


ratings after conducting comprehensive on-site CRs. Given the labor intensive nature of these CRs, FMCSA was not able to rate many carriers or keep those SFDs current.  

Similarly, SafeStat had been criticized for being more reactive than proactive in addressing safety concerns. For instance, while a 2007 Government Accountability Office (GAO) Report found that prioritizing motor carriers for compliance reviews using SafeStat was roughly 83 percent more accurate than selecting carriers randomly, the report also found a number of complaints concerning data quality and timeliness in identifying at-risk carriers.  

**Enforcement Problems**

A primary criticism of SafeStat concerning enforcement was that carriers with fewer than two deficient SEA scores were not truly evaluated (due to a lack of an overall score). As such, the number of compliance reviews being conducted was quite limited in terms of FMCSA’s reach, with only two percent of active interstate motor carriers being reviewed annually.  

Furthermore, since compliance reviews were initiated as a result of overall SafeStat scores, they did not identify the specific problem areas that needed attention. Consequently, for carriers who did receive compliance reviews, the comprehensive investigations were conducted in the same time-consuming manner regardless of which specific safety deficiencies existed for a particular carrier. That is, a thorough, three to four day investigation took place whenever a compliance review was warranted. With so much time devoted to each compliance review, FMCSA was unable to utilize its limited resources as efficiently as it desired.

When compliance reviews did occur, there were again complaints that the process was more reactive than proactive. In essence, the carriers receiving compliance reviews had already been involved in unsafe activities, and there was no mechanism in place to warn carriers of potential problems in advance of these full blown safety deficiencies. Finally, SafeStat exclusively focused on carrier safety performance, with no real measurement system for tracking problem drivers. Since research suggests driver behaviors play a principal role in truck crashes, it was determined that measuring carriers alone was not sufficient.

---


1.6 Design of CSA

Like SafeStat, CSA uses an algorithm to calculate motor carrier safety scores relative to other trucking companies with similar levels of on-road exposure. Those scores are then updated monthly based on crash involvement, RIs and closed enforcement cases. Unlike SafeStat, truck drivers are evaluated (in addition to motor carriers) based on their individual safety performance under CSA’s scoring system. For both carriers and drivers, scores are issued in seven specific Behavior Analysis and Safety Improvement Categories (BASICs): Unsafe Driving; Fatigued Driving; Driver Fitness; Controlled Substances/Alcohol; Vehicle Maintenance; Cargo-Related; and Crash Indicator (see Table 2 for FMCSA’s description of each BASIC). Currently, CSA scores for five of these seven BASICs (excluding Cargo-Related and Crash Indicator) are publicly available online at [www.ai.fmcsa.dot.gov/sms](http://www.ai.fmcsa.dot.gov/sms). Driver CSA scores, however, can only be viewed by enforcement personnel.

<table>
<thead>
<tr>
<th>BASIC</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unsafe Driving BASIC</td>
<td>Operation of CMVs in a dangerous or careless manner. Example violations: speeding, reckless driving, improper lane change, and inattention (FMCSR Parts 392 and 397)</td>
</tr>
<tr>
<td>Fatigued Driving (HOS) BASIC</td>
<td>Operation of CMVs by drivers who are ill, fatigued, or in non-compliance with the Hours-of-Service (HOS) regulations. Example violations: exceeding hours-of-service, maintaining an incomplete or inaccurate logbook, and operating a CMV while ill or fatigued (FMCSR Parts 392 and 395)</td>
</tr>
<tr>
<td>Driver Fitness BASIC</td>
<td>Operation of CMVs by drivers who are unfit to operate a CMV due to lack of training, experience, or medical qualifications. Example violations: failing to have a valid and appropriate commercial driver's license and being medically unqualified to operate a CMV (FMCSR Parts 383 and 391)</td>
</tr>
<tr>
<td>Controlled Substances and Alcohol BASIC</td>
<td>Operation of CMVs by drivers who are impaired due to alcohol, illegal drugs, and misuse of prescription or over-the-counter medications. Example violations: use or possession of controlled substances or alcohol (FMCSR Parts 382 and 392)</td>
</tr>
<tr>
<td>Vehicle Maintenance BASIC</td>
<td>Failure to properly maintain a CMV. Example violations: brakes, lights, and other mechanical defects, and failure to make required repairs (FMCSR Parts 393 and 396)</td>
</tr>
<tr>
<td>Cargo-Related BASIC*</td>
<td>Failure to properly prevent shifting loads, spilled or dropped cargo, and unsafe handling of hazardous materials on a CMV. Example violations: improper load securement, cargo retention, and hazardous material handling (FMCSR Parts 392, 393, 397 and applicable DOT HazMat regulations)</td>
</tr>
<tr>
<td>Crash Indicator*</td>
<td>SMS evaluates a motor carrier’s crash history. Crash history is not specifically a behavior. Rather, it is a consequence of a behavior and may indicate a problem with the carrier that warrants intervention. It is based on information from state-reported crash reports and identifies histories or patterns of high crash involvement, including frequency and severity</td>
</tr>
</tbody>
</table>

*Scores not publicly available as of the time of this publication


20 At the time of this writing, the Cargo-Related BASIC is planned to be eliminated, with all Cargo-Related violations being shifted to Vehicle Maintenance. A new Hazardous Materials (HazMat) BASIC is proposed to take its place as the seventh BASIC.

As part of CSA’s Safety Measurement System (SMS), 24 months of crash, RI and enforcement case data are gathered from the Motor Carrier Management Information System (MCMIS) and sorted into each of the seven BASICs. In addition to using all RI data results, RI violations are weighted according to their individual relationships to crash risk as well as according to how much time has elapsed since the event occurred, with more weight attributed to the most recent and severe safety-related events.\(^{22}\) Once these raw data are sorted, normative scores from 0-100 are assigned to carriers for each individual BASIC, with lower scores indicating better performance relative to other carriers with similar levels of exposure (i.e. the interpretation of CSA percentile scores is similar to SEA scores under SafeStat). Depending on the specific BASIC, exposure is accounted for in the SMS by using the number of power units (PUs), vehicle miles traveled (VMT), RIs and/or crashes.

Finally, FMCSA and its state partners use CSA scores for enforcement purposes. One application of this involves applying CSA data to the ISS in order to identify vehicles in need of RIs. More broadly, though, this information is used to identify potentially risky carriers and prioritize them for enforcement interventions. Under CSA, interventions can take multiple forms. The traditional on-site comprehensive investigation is still one option available to FMCSA; however, it is no longer the only option. Instead, the initial step toward intervention typically includes an early warning letter being issued to all carriers who have BASIC scores above FMCSA’s specified threshold level, in hopes that carriers will self-correct without requiring an external intervention. If corrective actions are not taken, however, FMCSA may respond by using an off-site investigation, in which carriers and safety investigators can work together over the phone or computer to identify carrier safety problems and potential solutions.

Alternatively, a focused on-site investigation may be warranted to target a narrow list of specific safety deficiencies, without disrupting a carrier’s operations for multiple days.\(^{23}\) Finally, a time and resource-intensive on-site comprehensive investigation may take place for those carriers who fail to improve their performance or have extensive safety problems in multiple BASICs.

Resulting actions from an intervention include carriers voluntarily adopting cooperative safety plans or, if severe deficiencies are found, FMCSA may issue a notice of violation, notice of claim, or order the business to shut down, as common practice previously dictated following compliance reviews under SafeStat. It is also during these interventions that FMCSA searches for the presence of problem drivers who are responsible for severe or frequent violations or crashes. Finally, although not yet in effect, FMCSA has issued a Notice of Proposed Rulemaking (NPRM) to alter the SFD


ratings that are issued as a result of compliance review findings. Rather than use the traditional ratings of “Satisfactory,” “Conditional” or “Unsatisfactory,” which can only be changed following a comprehensive on-site investigation, FMCSA is expected to propose that safety fitness ratings be based on CSA scores, being updated monthly as carrier safety performance changes. As part of the planned changes, SFD ratings would be listed as “Continue to Operate,” “Marginal” or “Unfit.”

1.7 Summarizing Key Strategic Differences Between CSA and SafeStat

Comparing CSA to its predecessor, SafeStat, reveals a number of intended improvements to FMCSA’s safety monitoring system. Whether or not these benefits will actually materialize can only be determined as time progresses; however, CSA does attempt to address each of SafeStat’s key limitations (see Section 1.4).

As a first step, CSA expands upon SafeStat by including all RI data, rather than just OOS violations. As a result, CSA is a more thorough indicator of on-road performance. CSA also improves upon SafeStat’s measurement system by weighting events according to their crash-relatedness, allowing scores to better capture the safety risk of carriers. Pending successful rulemaking, this system would seek to more accurately convey SFD information by adjusting safety ratings as month-to-month carrier safety performance improves or worsens. Therefore, CSA scores would provide a better snapshot of carrier safety fitness than the current SFD system, which relies solely on CRs. Since comprehensive compliance reviews are very time-consuming, very few carriers (approximately 2%) are currently rated. Furthermore, those that do have SFDs find them quickly outdated, since they are often many years old and no longer reflect the carrier’s present day operations.

CSA also purports to be more effective at maximizing FMCSA’s limited resources; instead of using a one-size-fits-all approach to enforcement (i.e. comprehensive CRs), CSA allows for a more expansive menu of response options to choose from as appropriate, each of which is less burdensome on both FMCSA and motor carrier personnel than a traditional CR. Starting with early warning letters, FMCSA puts the impetus on carriers to preemptively address developing safety problems prior to a formal intervention taking place. If a motor carrier fails to initiate safety improvements in response to a warning letter, FMCSA can progress to either an off-site or on-site targeted investigation, each of which are narrowly focused on the specific safety deficiencies experienced by a particular carrier. The overarching goal of all interventions is to identify solutions for correcting the identified problem(s) and, in doing so, investigators no longer focus just on the carrier but potentially on drivers as well.

In conclusion, CSA was designed to outperform SafeStat with regard to both the diagnosis and treatment of safety problems. The initiative utilizes extensive safety data to inform enforcement personnel, trucking companies, supply chain partners and the

---

general public of carrier safety levels. By presenting this information online and via early warning letters, CSA is more proactive than its predecessor safety system, alerting carriers to take action before it is too late. And with more time- and resource-sensitive tools at their disposal, FMCSA is prepared to intervene with more carriers and drivers than was possible using only traditional CRs. With the seven BASICs systematically pointing to the specific safety areas in need of improvement, CSA seeks to make it easier to recommend tailored solutions that will work for carriers presenting with unique safety concerns. Add to that the ability to identify and track problem drivers for the first time, and CSA is clearly designed with the intention of succeeding in the areas where SafeStat failed.
2.0 METHODOLOGY

2.1 Literature Review

This study undertook a multi-pronged approach to explore the expected and unexpected consequences of CSA’s implementation. First, ATRI conducted a thorough review of CSA-related literature to identify trends and themes surrounding CSA’s impact on industry operations. Formal publications, online databases and other industry resources were used to draw conclusions surrounding the effects felt as a direct or indirect consequence of CSA. Among the specific areas targeted were the impacts of CSA on the number of employable truck drivers, motor carrier operations, freight pricing and FMCSA’s regulatory efficiency. The following databases were used to conduct the reviews:

- **Transportation Research Information Database**: The largest online bibliographic database of transportation research, containing more than 900,000 records of published research.
- **Business Source Premier**: Features the full text for more than 2,200 journals. Full text is provided back to 1965 and searchable cited references back to 1998.
- **Lexis Nexis**: Provides access to a multitude of popular articles as well as several scholarly publications. There is also access to Congressional records, court decisions and government statistical reports.

These databases were searched using a variety of topic-related key words and phrases, often in combination to improve focus. Key words included: CSA, commercial motor vehicles, trucking, commercial motor carriers, commercial drivers, driver shortage, driver turnover, operational costs, freight rates, competition, safety, safety management, risk management, operations management, crash reduction, driver training and driver supervision. Key findings from the literature review are inserted throughout this report as appropriate.

2.2 Survey Research

In addition to the literature review, ATRI surveyed numerous stakeholder groups to assess the scope of CSA’s influence on the trucking industry. Truck drivers were surveyed by ATRI in the spring of 2011 and again in the spring of 2012 to gain perspective on how commercial drivers view CSA in terms of employability issues and carrier operations. The ATRI survey also evaluated drivers’ attitudes toward CSA and general understanding of the program’s key components, as well as how perceptions changed between CSA’s first and second full years of measuring motor carrier and commercial driver safety performance.\textsuperscript{25} Altogether, nearly 6,000 CMV drivers were surveyed as part of ATRI’s outreach.

\textsuperscript{25} Driver surveys (2011 and 2012) are available upon request.
After measuring truck driver attitudes, beliefs and impacts, ATRI commenced a similar data collection in the summer of 2011 to measure CSA's effects on the trucking industry from a motor carrier's perspective. This parallel version of the CSA survey was also repeated approximately one year later in 2012 to gauge changes in motor carrier CSA perceptions. In all, more than 1,000 motor carriers participated in ATRI's surveys.

Next, in early 2012, ATRI partnered with the National Industrial Transportation League (NITL) and the American Trucking Associations (ATA) to conduct a survey of shippers and analyze their perspectives on CSA relative to other members of the supply chain (i.e. motor carriers and drivers). Similar to ATRI's driver and carrier surveys, the topics centered on operational impacts attributed to CSA, how CSA data are being utilized, and attitudes related to the maturing regulatory program. Dozens of shippers representing tens of billions of dollars of freight movement contributed to the study.

Finally, ATRI collaborated with the Commercial Vehicle Safety Alliance (CVSA) to survey U.S. and Canadian enforcement personnel in early 2012. These roadside safety personnel were asked a variety of questions to determine how they viewed CSA’s progress toward the program's stated goals of reducing crashes and using safety data more effectively than SafeStat. Respondents also weighed in on myriad controversial issues, such as whether the enforcement community believes crash accountability needs to be incorporated into the SMS and whether CSA data should be used as the basis for SFDs.

Survey respondent demographics from all four stakeholder groups – commercial drivers, motor carriers, shippers and law enforcement – as well as survey responses are detailed in subsequent sections of this report.

2.3 Quantitative Research

Lastly, in 2012, ATRI evaluated whether FMCSA’s methodology for determining motor carrier BASIC scores has a demonstrable link to carrier safety performance. The purpose of that statistical analysis was to address conflicting reports for whether BASIC percentile rankings actually reflect relative crash involvement levels.

---

26 Carrier surveys (2011 and 2012) are available upon request.
27 Shipper survey (2012) is available upon request.
28 Enforcement survey (2012) is available upon request.
ATRI’s study cautioned against the statistical approach used by previous researchers, in which authors relied upon simple linear regression analyses to search for a relationship between BASIC scores and carrier crash rates. Although the scatter plots generated by those authors revealed little or no association between BASIC scores and crash rates, ATRI determined this was not due to a lack of a true relationship, but to a violation of statistical assumptions.\(^3\)

Additionally, ATRI asserted that the dependent variable of interest (i.e. crash data) should be treated as a “count” variable, since it reflects the number of crash occurrences a motor carrier experiences over a 24-month period. This was another argument against linear regression, which is not intended to model “count data.” On the other hand, negative binomial regression is a special case of regression that is capable of modeling crash counts and is not subject to the same statistical assumptions as linear regression. Therefore, ATRI utilized negative binomial regression to identify which BASICs measure crash risk and which do not.

As a next step, ATRI will continue exploring the nature of the relationship between BASIC scores and crash involvement. Currently, ATRI’s analysis is based on crash rates per 100 PUs and information from the five publicly accessible BASICs. Depending on the availability of data, ATRI can explore how the relationships change depending on carrier size, safety event group, region of country or other potentially confounding variables. In addition, ATRI can incorporate crash severity and VMT into the statistical model. If provided non-public data by FMCSA, ATRI will also explore the two non-public BASICs and even the individual violations that comprise each BASIC.

\(^3\) Plotting the error terms reveals marked overdispersion, non-normally distributed data (i.e. skewness and kurtosis) and heteroscedasticity (unequal error variance).
3.0 DRIVER SURVEY FINDINGS

3.1 Driver Demographics

Nearly 6,000 CMV drivers participated in ATRI’s 2011 and 2012 CSA surveys; this included 5,429 online respondents as well as a convenience sample of 470 drivers recruited at the 2011 Mid-America Trucking Shows (MATS), the 2012 MATS and the 2012 Georgia Truck Driving Championships.

Of drivers who provided demographic information, 89.9 percent were male and 10.1 percent were female, which is somewhat higher than the 4.6 percent industry-wide makeup of female drivers. The majority of drivers (67.9%) reported being between the ages of 45 to 64, with another 26.1 percent between 25 to 44, 1.1 percent under 25 and 4.9 percent over 65. Compared to industry averages obtained from the Bureau of Labor Statistics (BLS, see Figure 2 below), the ATRI sample of drivers was generally representative, with minor deviations in the 25 to 44 and 45 to 64 age groups.

![Figure 2. Truck Driver Representativeness by Age](image)

Drivers were asked to self-identify as employee drivers (63.3%), owner-operators (O-Os) with their own operating authority (25.1%) or O-Os / independent contractors (ICs) leased to a carrier (11.6%). Table 3 shows the sample breakdown for the drivers’ sectors of operations. From a motor carrier filing standpoint, large fleets appear to be over-represented in the sample (see Table 4). However, in terms of driver employment (both employee and contract drivers), this sample is highly representative.

---

Finally, 14.7 percent of drivers who participated in the study reported being a part of one of CSA’s nine pilot test states (Colorado, Delaware, Georgia, Kansas, Maryland, Minnesota, Missouri, Montana and New Jersey) prior to the program’s national rollout in December 2010.

3.2 Driver Labor Impacts: Reality versus Perception

In advance of the nationwide rollout of CSA in late 2010, there was widespread concern that CSA’s heightened safety measurement standards would have the adverse effect of disqualifying hundreds of thousands of drivers from remaining employed in the industry during a time of economic recovery and increased demand.  

All seven of CSA’s BASICs either directly or indirectly measure driver behavior and/or compliance with safety regulations (see Table 2). Even the two BASICs that are not directly focused on the driver (i.e. Vehicle Maintenance and Cargo-Related) are impacted by a driver’s propensity for conscientious performance. For example, deficiencies in these categories are least likely to be found among drivers who conduct thorough pre-trip and post-trip vehicle inspections and double check that loads are properly secured. As a result, it is in a motor carrier’s best interest to employ only the most safety-conscious drivers who have years of safety records that demonstrate both consistent compliance with the FMCSRs and a lack of crash involvement.

Recognizing that previous research found that roughly ten percent of drivers account for nearly half of all safety incidents, it was estimated that at least ten percent of truck drivers would become unemployed once CSA went into effect. Calculating the actual

Table 3. Driver-Reported Business Sectors

<table>
<thead>
<tr>
<th>Sector</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Truckload</td>
<td>48.6%</td>
</tr>
<tr>
<td>Less-than-Truckload</td>
<td>11.0%</td>
</tr>
<tr>
<td>Specialized, Flatbed</td>
<td>13.3%</td>
</tr>
<tr>
<td>Specialized, Tanker</td>
<td>11.0%</td>
</tr>
<tr>
<td>Private Fleet</td>
<td>7.0%</td>
</tr>
<tr>
<td>Other</td>
<td>9.2%</td>
</tr>
</tbody>
</table>

Table 4. Driver-Reported Fleet Size

<table>
<thead>
<tr>
<th>Number of PUs</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 5</td>
<td>28.2%</td>
</tr>
<tr>
<td>6 to 15</td>
<td>8.6%</td>
</tr>
<tr>
<td>16 to 50</td>
<td>11.5%</td>
</tr>
<tr>
<td>51 to 250</td>
<td>17.0%</td>
</tr>
<tr>
<td>251 to 500</td>
<td>5.9%</td>
</tr>
<tr>
<td>501 to 1,000</td>
<td>5.0%</td>
</tr>
<tr>
<td>More than 1,000</td>
<td>17.7%</td>
</tr>
<tr>
<td>Don't Know</td>
<td>5.9%</td>
</tr>
</tbody>
</table>

---

degree to which truck driver employment has changed since CSA’s national deployment in December 2010, however, requires balancing information concerning the termination of drivers currently in the workforce and the ease with which new drivers can enter the labor pool.

Concerning the former, two-thirds of current CMV drivers are somewhat (37.7%) or extremely (29.1%) concerned that CSA will lead to their removal from the industry. Notably, this level of fear among currently employed truck drivers did not change between ATRI’s 2011 and 2012 driver surveys. Despite the high level of concern, however, ATRI’s motor carrier surveys revealed that close to 90 percent of carriers have fired from zero to just five percent of their workforce – well short of the expectations the industry had that 10 to 20 percent of drivers would be ineligible to continue operating a truck due to CSA (see Figure 3).

Figure 3. What Percentage of Your Workforce Have You Fired Due to CSA?

As for new applicant drivers, CSA, and specifically the Pre-Employment Screening Program (PSP), has had a more dramatic impact. Technically, PSP is a tool that is wholly separate from CSA, although the two programs do utilize the same type of data stored in MCMIS.41 Still, PSP has been a major factor in screening out a high percentage of driver applicants who may have previously received less scrutiny by moving from company to company following serious safety incidents.42 Today, although employers do not inherit any of the historical safety infractions that were committed by new hires under another carrier’s authority, PSP records attempt to reveal what type of future safety performance can be expected from applicants. Based on an appraisal of

---

41 In 2010, Congress ordered FMCSA to develop a Pre-Employment Screening Program (PSP) to provide potential employers with the most recent five years of crash data and three years of inspection (and safety violation) data for all driver applicants who consent to having their PSP records pulled as a condition of employment.

these data, carriers are reluctant to hire those driver applicants they expect would harm the company’s future CSA scores.

Overall, the influence of CSA on the truck driver population has been discernable; however, effects have been much less than expected for currently employed drivers, but do present a meaningful obstacle for prospective drivers. Commercial drivers recognize that CSA has impacted the driver supply, but the extent of the impact has been less dramatic than predicted in the 2011 survey (see Figure 4).

**Figure 4. Expected and Actual Impact of CSA on Driver Supply (2011 vs. 2012)**

![Figure 4](image)

3.3 CSA and Driver Wages

With increased competition to hire and retain the CMV drivers with the best safety records, it stands to reason that driver wages could be expected to increase as a result of FMCSA’s new safety measurement tools. To that effect, midway through CSA’s first year (i.e. the summer of 2011), between 77 and 93 percent of carriers still believed that CSA’s elimination of unsafe drivers would result in increased wages for the remaining drivers, perhaps by as much as 10 percent or more in the coming year.43,44,45

However, for the drivers who have been able to remain in the industry, the expectations that wages would increase significantly due to CSA appear mostly unfounded. In fact, ATRI’s analysis of operational costs showed a nominal increase (approximately 3%) in driver wages following CSA’s national launch.46 Similarly, in ATRI’s 2012 motor carrier survey, just 8.2 percent of carriers reported raising driver wages as a direct result of

---


CSA and the vast majority (87.6%) refrained from altering direct wages due to CSA. The deviation from expected increases to base pay may partially be attributed to the fact that, after a full year of CSA measuring carrier and driver safety performance, the scenario of 10 to 20 percent of drivers becoming unemployable never materialized.

Still, there are some indications in ATRI’s surveys that driver pay has indirectly benefited from CSA through non-traditional means, such as new safety-related financial incentives (e.g. bonuses for “clean” RIs). Among company driver respondents, nearly 24 percent claim to have benefited from these types of CSA-related financial incentives.

### 3.4 How Drivers are Using CSA

Based on responses to ATRI’s surveys, truck drivers are wholly aware of the new safety and compliance data being used as part of CSA (and PSP). Despite this awareness, however, there seems to be a lasting reluctance to examining the data and/or scores. In 2011, fewer than half of drivers (43.8%) reported checking their respective employer’s BASIC scores and, a year later, in 2012, that percentage has remained virtually unchanged (44.7%).

Surprisingly, drivers revealed even lower interest in accessing their own MCMIS data available through PSP. Even with a marginal increase in the percentage of drivers requesting to see their personal PSP data since 2011 (see Figure 5), less than a third of drivers (30.8%) have taken the time to pull their records, although another 43.3 percent indicate an interest in eventually viewing the safety data that FMCSA and prospective employers look at when evaluating a driver’s safety performance.

![Figure 5. Percent of Truck Drivers Accessing PSP Data](image)

While not necessarily taking the expected step of viewing PSP records, other survey data collected by ATRI indicate drivers are extremely wary of the consequences that result from negative PSP information (e.g. RI violations). Nearly 30 percent of drivers report that they have refused to operate poorly maintained trucks and/or have rejected...
faulty equipment or unsafe loads. Respondents specifically stated these decisions were due to new concerns and would not have been made under SafeStat (see Figure 6).

**Figure 6. Have You Rejected Equipment or Loads?**

![Drivers Rejecting Equipment or Loads](image)

Additionally, 28 percent of drivers believe that hours-of-service (HOS) violations have decreased in frequency as a consequence of CSA’s greater scrutiny (see Figure 7), primarily as a result of drivers being less willing to break the rules. This echoes previous analytic research that found dramatic decreases in driver violation rates in recent years (including a more than 50% decrease in the occurrence of false or no log book violations among roadside inspected drivers).47

**Figure 7. Since CSA, Have Deliberate HOS Violations Become Less Common?**

![Driver Responses](image)

3.5 Driver Knowledge, Education and Training

Finally, to raise the level of CSA awareness among company drivers, and encourage greater safety performance and compliance, most motor carriers offer CSA training and

---

education. In fact, in 2011, 92 percent of carrier respondents were already claiming to offer such learning opportunities. However, truck drivers presented a vastly different message concerning training; only 59 percent of drivers reported receiving one or more training or education sessions in 2011, increasing slightly to 68 percent in the 2012 survey (see Figure 8).

Figure 8. Driver-Reported Levels of CSA Training and Education

The disparity between driver and carrier reports may be partially explained by respondents’ varied interpretations of what represents CSA training. Alternatively, it could be theorized that the large number of small fleets may not have the resources to offer specific CSA training opportunities. Indeed, there was a significant positive relationship between fleet size and the amount of CSA training received by drivers ($r = .26$, $p \leq .001$). Similarly, examining driver responses by fleet size reveals a higher percentage of drivers not receiving CSA training among smaller fleets (see Figure 9).

Figure 9. Driver-Reported Levels of CSA Training and Education by Fleet Size

The lack of driver training has a direct impact on driver understanding of CSA. Using a 14-question knowledge test (see Appendix A), ATRI established a baseline of CSA comprehension among truck drivers in 2011. Out of the 14 questions, CMV drivers
averaged only 5.71 correct responses ($SD = 1.87$), for less than 50 percent accuracy. One year later, in 2012, ATRI found driver knowledge to have improved by nearly one point to 6.55 ($SD = 2.48$), $t(5700) = 10.68$, $p \leq .01$. In any case, it can be concluded that drivers, despite possessing strong opinions on CSA, remain largely under-informed surrounding the true details of the program.

As seen in Figure 10, no single test item was correctly answered by more than 84.5 percent of drivers, while some items received correct responses from less than 10 percent of the driver sample (i.e. Question 3 and Question 10).

ATRI’s knowledge test was intended to test two areas of comprehension. First, half of the 14 items were designed to mirror the common myths that surrounded CSA’s December 2010 national launch. Among the 2012 findings:

- **84.5%** of drivers understood that a carrier cannot remove violations from their CSA record simply by firing the responsible driver
- **58.4%** of drivers acknowledged that CSA does not take driver Body Mass Index (BMI) information into account
- **56.9%** of drivers realized that FMCSA cannot revoke a Commercial Driver’s License (CDL) as a result of CSA
- **50.5%** of drivers acknowledged that CSA does not take a driver’s personal vehicle driving record into account
- Only **47.8%** of drivers understood that the FMCSRs have not changed as a result of CSA
- Only **37.1%** of drivers understood that a trucking company does not inherit past violations from new hires
- Only **21.9%** of drivers recognized that traffic tickets/convictions are not part of FMCSA’s SMS calculations
In addition to testing popular misconceptions, the other half of ATRI’s knowledge test included seven items to evaluate comprehension of the technical details of CSA. To answer correctly, many of these questions required respondents to select all of an item’s correct response options and none of the incorrect options. ATRI’s 2012 findings revealed that:

- **96.0%** of drivers did not know that FMCSA enforcement staff are the only group of people who can access official driver scores

![Who Can Access Official Driver CSA Scores?](chart1.png)

- **92.4%** of drivers could not correctly identify which 5 carrier BASIC scores are publicly available

![Which BASICs Are Publicly Accessible?](chart2.png)

- **68.5%** of drivers were unaware that the number of PUs, RIs and VMT are used to create safety event groups, depending on the specific BASIC in question
Compliance, Safety and Accountability: Evaluating a New Measurement System and Its Implications – December 2012

- **58.7%** of drivers failed to recognize that CSA scores exceeding FMCSA’s “alert” threshold are solely used to prioritize *potentially* at-risk carriers and should not be taken as an indication that a carrier is *necessarily* unsafe.

- **50.1%** of drivers were unaware that past violations and crashes are weighted by both time and severity.

- **18.5%** of drivers failed to realize that clean RIs actually improve driver and carrier CSA scores.

- **18.1%** of drivers failed to realize that all violations, and not just out-of-service violations, count against drivers and carriers under CSA.\(^48\)

\(^48\) Note: Despite varying reports on the standardization of this practice across states, as long as the violations are recorded on the inspection report, they should become a part of a carrier’s and/or driver’s CSA information.
3.6 Key Driver Findings

Prior to full deployment in December 2010, it was widely recognized that CSA would have an impact on commercial drivers, though it was uncertain at the time how dramatic the impacts would be on driver supply and driver wages. Nearly two years later, it appears that CSA’s impact on the driver supply is more marked among new entrant drivers than among the existing commercial driver population. That is, while there is little evidence that fleets are terminating large numbers of existing drivers as a result of CSA, new entrants are facing increased scrutiny with 83 percent of carriers reporting increased difficulties in finding qualified new drivers. Nonetheless, two-thirds of existing drivers continue to be somewhat or very concerned that they will lose their jobs as a result of CSA. And, while projections that driver wages would increase as a result of CSA have not borne out, nearly one-in-four drivers report that they have benefited from safety-related financial incentives tied to CSA.

Where the real CSA-related challenge exists for drivers is in fully understanding what CSA is and what it means in terms of their compliance with existing FMCSRs. Two years into CSA, large percentages of drivers still report receiving little to no training on CSA. Scores on ATRI’s 14-question knowledge test provide further evidence of this lack of training and education.

Drivers need to better understand what violations are used in CSA calculations, how those violations are used and who has access to driver data. Furthermore, drivers need to understand the process for addressing incorrect information in the CSA system. While not part of ATRI’s knowledge test, another area indicating lack of driver understanding of CSA is DataQs. Nearly one quarter (23.2%) of driver respondents have no knowledge that DataQs exists, and only 7.8 percent have used it to contest negative information believed to be in error.
4.0 CARRIER SURVEY FINDINGS

4.1 Carrier Demographics

ATRI collected more than 1,000 motor carrier responses through its 2011 and 2012 online surveys. Of the 1,028 respondents, Table 5 displays the sectors of operation represented in the data collection. Notably, the breakout of Truckload, Less-than-Truckload, Specialized and Private Fleets represented in the carrier surveys is proportionate to that from the driver surveys. However, the motor carrier sample consisted more heavily of small- and medium-sized fleets (see Table 6), which is representative of the trucking industry’s composition, but slightly dissimilar to the driver participant pool, which mostly included drivers from larger sized fleets. SPECIFICALLY, fleets with 250 or fewer PUs constituted 84.6 percent of the carrier sample, compared to just 65.4 percent of the driver sample.

Table 5. Carrier-Reported Business Sectors

<table>
<thead>
<tr>
<th>Sector</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Truckload</td>
<td>50.3%</td>
</tr>
<tr>
<td>Less-than-Truckload</td>
<td>8.2%</td>
</tr>
<tr>
<td>Specialized, Flatbed</td>
<td>12.1%</td>
</tr>
<tr>
<td>Specialized, Tanker</td>
<td>13.9%</td>
</tr>
<tr>
<td>Private Fleet</td>
<td>8.9%</td>
</tr>
<tr>
<td>Other</td>
<td>6.6%</td>
</tr>
</tbody>
</table>

Table 6. Carrier-Reported Fleet Size

<table>
<thead>
<tr>
<th>Number of PUs</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 5</td>
<td>7.2%</td>
</tr>
<tr>
<td>6 to 15</td>
<td>9.6%</td>
</tr>
<tr>
<td>16 to 50</td>
<td>22.6%</td>
</tr>
<tr>
<td>51 to 250</td>
<td>45.3%</td>
</tr>
<tr>
<td>251 to 500</td>
<td>6.9%</td>
</tr>
<tr>
<td>501 to 1,000</td>
<td>6.3%</td>
</tr>
<tr>
<td>More than 1,000</td>
<td>2.2%</td>
</tr>
</tbody>
</table>

To further assess fleet characteristics, carriers were also asked to describe their truck driver workforce. Roughly half of carriers (46.1%) reported primarily employing company drivers; 7.0 percent primarily contracted O-Os who possessed their own operating authority; 16.4 percent primarily employed O-Os/ICs who were leased to the carrier; and the remaining 30.6 percent used some combination of company drivers, O-Os and O-O/ICs.

Finally, 17.4 percent of carriers participating in the study reported being part of one of CSA’s nine pilot test states (Colorado, Delaware, Georgia, Kansas, Maryland, Minnesota, Missouri, Montana and New Jersey) prior to the program’s national rollout in December 2010.

---

4.2 Carrier Scrutiny Under CSA

Carriers are also using CSA data to examine their overall fleet safety performance. ATRI’s motor carrier surveys revealed that nearly all carrier respondents (96%) have accessed their respective company’s CSA scores, including 28.3% who access their CSA data on a daily basis (see Figure 11).

Figure 11. Have You Accessed Your Carrier SMS Data from the CSA Website?

As expected, the expanded number of safety categories measured by CSA present greater levels of scrutiny compared to SafeStat. In fact, comparing the percent of carriers who reported no BASICs above threshold (44.9%) to the percent who had no SEAs above threshold (71.0%) reveals that CSA identifies a much wider range of carriers with potential safety problems.\(^\text{50}\)

However, while fewer carriers are free of safety problems according to CSA, it continues to remain rare for carriers to have safety problems spreading into multiple categories. That is, the majority of identified carriers continue to present problems that are restricted to only one or two safety areas. Moreover, ATRI discovered a strong positive correlation between the number of deficient SEAs and BASICs ($r = .53$, $p \leq .001$) reported by carriers, meaning it is unlikely that carriers with superior safety profiles under SafeStat suddenly received subpar rankings under CSA. In general, the likelihood of carriers revealing zero problem areas decreased, the likelihood of finding one or two problem areas increased and the likelihood of more than two problem areas only expanded to incorporate the greater number of safety categories comprising CSA.

Nonetheless, there are clear indications that carriers are utilizing available safety data to improve BASIC scores over time. ATRI asked carriers to indicate how many of their BASIC scores were above threshold when CSA was first nationally launched in

\(^{50}\) The percent of carriers found in ATRI’s survey to have at least one BASIC above threshold (55.1%) was extremely similar to the percent reported by Vigillo LLC (56.1%) in the data analytic and software company’s 2011 analysis: Vigillo LLC. CSA State of the Union – CSA Statistics Published Oct. 1, 2011.
December 2010, and how many continue to be above threshold according to the company’s latest SMS report at the time of the survey (dated April 2012). On average, the number of BASICs above threshold has decreased since the initial rollout of CSA \((M_1 = 1.08, SD_1 = 1.36; M_2 = 0.94, SD_2 = 1.19)\), \(t(302) = 2.38, p \leq .05\). As evident in Figure 12, the percent of carriers with zero or one BASIC above threshold has increased since CSA’s 2010 rollout, whereas the percent of carriers with multiple BASICs above threshold has decreased, again implying carriers have been steadily improving in safety performance and compliance since first viewing initial CSA scores.

**Figure 12. Changes in Carrier-Reported Alerts Since 2011**

To evaluate the relationship between carrier size and degree of scrutiny under CSA, ATRI divided carriers into three groups: small (50 or fewer PUs); medium (between 50 and 500 PUs); and large (more than 500 PUs). Using these categories, it was determined that large carriers, on average, have a higher number of BASICs above threshold \((M = 1.47, SD = 1.37)\) than do small \((M = 0.98, SD = 1.27)\) or medium-sized \((M = 0.71, SD = 0.94)\) carriers, \(F = 8.33, p \leq .001\). Most likely, these findings are simply the result of large carriers having sufficient data to receive percentile scores in a greater number of BASICs.

Additionally, it is evident from the relationship between the number of BASICs above threshold and the percent of a carrier’s workforce terminated \((r = .26, p \leq .001)\) that the correct target set of problem drivers are being eliminated from the industry. That is, drivers are not being randomly fired due to CSA; instead, carriers are seemingly terminating drivers who generate negative safety data (see Figure 13).
However, even with the focus on improving BASIC scores, there are also valid concerns among motor carriers that BASIC scores reflect relative safety event group comparisons, rather than absolute levels of safety performance. Using CSA’s safety event groups, a carrier can experience high BASIC scores, and potentially be labeled by others in the supply chain as unsafe, not due to any true change in safety performance, but based solely on a change in reference groups. ATRI discovered that carriers experience a reasonable amount of mobility between safety event groups, with one-third shifting safety event groups at least once. When this occurs, a carrier’s affected BASIC score(s) may change dramatically despite no increase in the number of crashes or violations, making it difficult for carriers to manage percentile scores. From a carrier standpoint, it is problematic that non-safety-related events can exert such an influence on scores.

Interestingly, large carriers are much more likely to report not experiencing any safety event group changes, whereas small and medium carriers experience considerably more variability (see Figure 14). This adds to the reported difficulty of reliably scoring carriers with low levels of on-road exposure.  

4.3 How Carriers are Using CSA

The carrier data available from CSA and the driver data available as part of the PSP are being accessed and utilized by carriers more robustly than by drivers according to ATRI’s data collection.

Prospective employers have reported tremendous interest in obtaining all available driver data as part of the hiring process. Within PSP’s first year, 67.9 percent of carriers already reported incorporating the data into hiring practices, and this figure has grown to 73.8 percent of carriers in 2012. The resulting impact on the pool of qualified driver applicants is clear; in 2011, 72 percent of carriers were already reporting that CSA had made it somewhat or much more difficult to find new “qualified” drivers; and in 2012, the percentage of carriers reporting difficulties grew to 83 percent (see Figure 15).

Figure 15. Has CSA Made It More Difficult To Find Qualified New Drivers?
The relationship between PSP use in reviewing driver applicants and the ability to find qualified new drivers is further documented by the fact that carriers that reported not utilizing PSP were three times less likely to report increased hiring difficulties.

Small fleets may be at a disadvantage when it comes to utilizing important safety data, such as PSP. Intuitively, carriers may unknowingly hire suboptimal driver applicants if the data housed in PSP are not examined. And while 73.8 percent of all carriers in ATRI’s survey had incorporated PSP into hiring practices to one extent or another, there were meaningful differences when analyzed according to fleet size (see Figure 16).

Figure 16. Have You Incorporated PSP Into Your Hiring Practices?

More significant was the basis for this discrepancy; 39.7 percent of small carriers characterized their reason for not using PSP as being unfamiliar with the program; whereas only 10.5 percent of medium carriers used this explanation and 0.0 percent of large carriers were unfamiliar with PSP.

In contrast to the scrutiny of new driver applicants, there has been less action by motor carriers with respect to their existing driver workforce. Close to 90 percent of carriers reported that they have only removed between zero and five percent of their workforce as a direct result of CSA.

Similarly, there has been little action by carriers with respect to existing driver wages since CSA deployment. In 2012, just 8.2 percent of carriers reported raising driver wages as a direct result of CSA, while the vast majority (87.6%) refrained from altering wages due to CSA. However, carriers do recognize the value of incentivizing driver performance within CSA and have compensated drivers through non-traditional means, such as new safety-related financial incentives (e.g. bonuses for “clean” RIs). Close to
half of all responding carriers have begun offering these types of incentives, with more planning to in the future (see Figure 17).

Figure 17. Carrier Utilization of Safety-Related Financial Incentives

Finally, there are significant interrelationships between carrier attitudes toward CSA and the extent to which carriers voluntarily engage in CSA-related activities. For instance, both the frequency with which carriers access their CSA data (from not at all to daily) and the amount of CSA training carriers offer their drivers are positively related to CSA attitudes ($r = .32$, $p \leq .001$ and $r = .29$, $p \leq .001$, respectively). Although strictly correlational, this may suggest that carriers who disapprove of the program take a more passive approach to understanding how CSA functions; consequently, they may find themselves less prepared to adapt to the program’s implications.

4.4 Carrier Issues and Opportunities

It is worth noting that motor carrier responses from 2012 indicated a much better state of affairs than was reflected in carriers’ 2011 predictions, in which 87.1 percent of carriers expected CSA to reduce the number and size of the industry’s trucking companies (see Figure 18). Despite CSA’s impact not being as bad as expected, 44.0 percent of all responding carriers continue to fear their company will fail (i.e. go out of business) due to CSA.
When these findings are broken down according to carrier size (again with small being defined as 50 or fewer PUs; medium defined as between 51 to 500 PUs; and large defined as more than 500 PUs), it becomes evident that small carriers, more than any other group, believe CSA has made it challenging to remain in the industry (see Figure 19). Although not as strong of a relationship, there was also a correlation between a carrier’s level of concern and the number of carrier-reported BASICs above threshold ($r = .27, p \leq .001$).

Figure 19. How Concerned Are You That CSA Will Put You Out Of Business?

With CSA identifying safety problems among a wider range of carriers, it makes sense that carriers would report an increased frequency of RIs, which are a necessary component for assigning most BASIC scores. Predictably, ATRI found evidence that the number of RIs have, in fact, increased since CSA’s national implementation. In both 2011 and 2012, roughly 55 percent of carriers stated that their fleets have been pulled for RIs more often since CSA.
In turn, roughly one-third of carriers indicated that FMCSA interventions have also increased. Carriers whose CSA safety profiles indicate potential safety problems now face an expanded set of interventions, including warning letters, on-site and off-site targeted investigations and comprehensive on-site investigations. As a result, whereas only 31 percent of carriers reported receiving an intervention in the 3 years leading up to CSA, 41 percent have had (at least) one formal contact from FMCSA in CSA’s first two years (see Figure 20).

**Figure 20. Carrier-Reported Changes in Enforcement**

In line with CSA’s methodology, both the frequency of RIs and interventions were related to a carrier’s number of self-reported BASICs above threshold ($r = .33$, $p \leq .001$ and $r = .23$, $p \leq .001$, respectively). Moreover, increases in RIs were correlated with increases in interventions ($r = .22$, $p \leq .001$), meaning FMCSA is likely targeting the appropriate group of carriers in most instances.

Finally, whether CSA will ultimately be used, not only to prioritize carriers for interventions, but also to inform carrier SFDs, is an area of serious contention. Only 25.9 percent of carriers agreed that the CSA data are acceptable inputs to SFDs (see Figure 21).
Lastly, in ATRI's 2011 survey of motor carriers, CSA was largely found not to influence carrier decisions to utilize onboard technologies in their fleets. In fact, nearly all carriers at that time reported that they had chosen to implement or not implement their respective technologies prior to CSA. In ATRI's 2012 survey, however, more than half of carriers (52.3%) reported investing in at least one of the technologies listed in Table 7 to aid CSA scores.

Table 7. Percent of Carriers Investing in Technology Due to CSA

<table>
<thead>
<tr>
<th>Type of Onboard Technology</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Speed Limiters/Governors</td>
<td>33.6%</td>
</tr>
<tr>
<td>Electronic Onboard Recorders (EOBRs)</td>
<td>30.6%</td>
</tr>
<tr>
<td>Tire Pressure Monitoring Systems (TPMS)</td>
<td>13.2%</td>
</tr>
<tr>
<td>Roll Stability Control Systems (RSC)</td>
<td>10.2%</td>
</tr>
<tr>
<td>Electronic Stability Control Systems (ESC)</td>
<td>6.6%</td>
</tr>
<tr>
<td>Forward Collision Warning System (FCWS)</td>
<td>5.7%</td>
</tr>
<tr>
<td>Lane Departure Warning Systems (LDWS)</td>
<td>4.8%</td>
</tr>
</tbody>
</table>

Not surprisingly, large carriers were nearly twice as likely to invest in any type of onboard technology compared to small fleets (66.9% vs. 39.0%). Also intuitive was the finding that the three technologies most commonly deployed to improve CSA scores coincide with some of the most frequently cited violation types in the industry. That is, EOBRs, speed limiters and tire pressure monitoring systems (TPMS) map to log-

---

52 A potential confounding issue is that the survey did not ask whether EOBR usage was related to mandates from FMCSA compliance reviews. The data suggest, however, that EOBR utilization was more closely related to fleet size than CSA safety profiles.
related, speeding and tire violations, each found in the top 10 frequently occurring violations according to Vigillo.\textsuperscript{53,54}

### 4.5 Carrier Knowledge, Education and Training

ATRI administered the same 14-question knowledge test to motor carriers as to drivers, and like the driver survey, it was administered in 2011 and 2012. Results for ATRI’s 2011 sample of motor carriers indicated that carriers generally understood FMCSA’s new regulatory program. On the 14-item test, carriers averaged 10.28 correct responses ($SD = 2.31$). One year later, in 2012, ATRI found this baseline of performance virtually unchanged ($M = 10.21; SD = 2.63$), $t(868) = .379$, $p > .05$.

In 2012, ten of the fourteen questions were answered correctly by three-quarters of carriers or more (from 74.8% to 99.0%); three questions were answered correctly by approximately half of carriers (from 45.5% to 54.8%); and the question judged most difficult was answered correctly by only 24.5 percent of carriers (Question 10: “Who has access to official driver SMS scores?”). Interestingly, the pattern of correct responses closely corresponded with driver knowledge test performance, with carrier performance consistently exceeding that of drivers (see Figure 22).

**Figure 22.** Percent of Drivers and Carriers Correctly Answering Each Item

\begin{figure}
\centering
\includegraphics[width=\textwidth]{item_analysis}
\caption{Percent of Respondents Correctly Answering Each Item by Carrier and Driver.}
\end{figure}

\textsuperscript{53} Vigillo is a data analytic organization that develops software products to help motor carriers keep track of and understand their company safety data.

\textsuperscript{54} Vigillo LLC. CSA State of the Union – CSA Statistics Published Oct. 1, 2011.
Among the 2012 carrier findings:

- **99.0%** of carriers understood that a carrier cannot remove violations from their CSA record simply by firing the responsible driver
- **87.2%** of carriers acknowledged that CSA does not take driver BMI information into account
- **84.5%** of carriers realized that FMCSA cannot revoke a CDL as a result of CSA
- **83.4%** of carriers acknowledged that CSA does not take a driver's personal vehicle driving record into account
- **77.9%** of carriers understood that a trucking company does not inherit past violations from new hires
- **76.6%** of carriers understood that the FMCSRs have not changed as a result of CSA
- **50.7%** of carriers recognized that traffic tickets/convictions are not part of FMCSA’s SMS calculations

On those items that evaluate comprehensive of CSA technical details, motor carrier responses indicated that there are still areas where additional information and training is needed. ATRI’s 2012 findings revealed that:

- **75.5%** of carriers did not know that FMCSA enforcement staff are the only group of people who can access official driver scores

**Who Can Access Official Driver CSA Scores?**

- **88.3%** of carriers responded correctly
- **62.8%** of carriers identified drivers
- **43.1%** of carriers identified employers
- **17.9%** of carriers identified all carriers
- **19.3%** of carriers identified insurers
- **10.0%** of carriers identified 3PLs
- **17.9%** of carriers identified score card vendors

- **54.5%** of carriers could not correctly identify which 5 carrier BASIC scores are publicly available
- **45.2%** of carriers were unaware that the number of PUs, RIs and VMT are used to create safety event groups, depending on the specific BASIC in question.

- **25.2%** of carriers were unaware that past violations and crashes are weighted by both time and severity.

---

**Which BASICs Are Publicly Accessible?**

<table>
<thead>
<tr>
<th>BASIC</th>
<th>Percent of Carrier Respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vehicle</td>
<td>91.0% Correct</td>
</tr>
<tr>
<td>Unsafe</td>
<td>87.2% Correct</td>
</tr>
<tr>
<td>Fatigue</td>
<td>89.7% Correct</td>
</tr>
<tr>
<td>Fitness</td>
<td>83.4% Correct</td>
</tr>
<tr>
<td>Substances</td>
<td>71.4% Correct</td>
</tr>
<tr>
<td>Crash</td>
<td>23.4%</td>
</tr>
<tr>
<td>Cargo</td>
<td>35.9%</td>
</tr>
</tbody>
</table>

**What Can Influence Safety Event Group Comparisons?**

<table>
<thead>
<tr>
<th>Influence Factor</th>
<th>Percent of Carrier Respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of PUs</td>
<td>87.2% Correct</td>
</tr>
<tr>
<td>Number of VMT</td>
<td>75.2% Correct</td>
</tr>
<tr>
<td>Number of Inspections</td>
<td>73.8% Correct</td>
</tr>
</tbody>
</table>

**CSA Scores Are Weighted By:**

<table>
<thead>
<tr>
<th>Weighting Factor</th>
<th>Percent of Carrier Respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time</td>
<td>86.6% Correct</td>
</tr>
<tr>
<td>Severity</td>
<td>85.5% Correct</td>
</tr>
<tr>
<td>Nothing</td>
<td>3.1%</td>
</tr>
</tbody>
</table>
• **20.3%** of carriers failed to recognize that CSA scores exceeding FMCSA's “alert” threshold are solely used to prioritize *potentially* at-risk carriers and should not be taken as an indication that a carrier is *necessarily* unsafe

![What Purpose Do High CSA Scores Serve?](image)

- **10.0%** of carriers failed to realize that clean RIs actually improve driver and carrier CSA scores
- **7.2%** of carriers failed to realize that all violations, and not just out-of-service violations, count against drivers and carriers under CSA

### 4.6 Key Carrier Findings

Concerns that CSA would impact the supply chain were not limited to the truck driver population. Many also speculated that the program would be an unfair burden on motor carriers, whose failure to meet CSA’s standards could cost them business, lead to increased FMCSA interactions and consequently trigger numerous companies to cease operations. To that effect, 44 percent of carriers participating in ATRI’s carrier survey remain concerned over their ability to stay in business as a result of the increased scrutiny presented by CSA. However, despite these fears, two years into the program, 40.8 percent of carrier respondents believe there has been no impact from CSA on the number of motor carriers.

One area where there is a clear CSA impact on motor carriers is in the incorporation of the CSA data in evaluating commercial driver safety performance. Carriers are using the PSP data in their hiring of new entrants and as a result are reporting increased difficulty in finding qualified new drivers. There is less impact on the existing workforce, with a very small percentage of carriers (13%) using CSA as a reason for laying off major proportions (more than 5%) of their drivers. Similarly, carriers have not seen their

---

55 Note: Despite varying reports on the standardization of this practice across states, as long as the violations are recorded on the inspection report, they should become a part of a carrier’s and/or driver’s CSA information.
payroll increase significantly as a result of CSA, with the majority of fleets (87.6%) keeping wages constant and instead offering safety-related bonuses and incentives.

With an expanded number of safety areas being evaluated (BASICs), there is more focus on fleet safety performance under CSA than its predecessor, SafeStat. Motor carrier respondents in ATRI’s data collection who reported no SEAs above threshold under SafeStat (71%) greatly outnumbered those who reported no BASICs above threshold (44.9%) under CSA. Carriers have therefore had to refocus their safety practices, carefully reviewing internal operations in order to improve their BASIC scores. However, concerns continue to persist that non-safety-related events have an undue and unfair influence on CSA scores (e.g. safety event group shifts; region of country), an issue which carriers have little control over.

In general, motor carriers are more informed about CSA than drivers, as evidenced in their overall scores on ATRI’s knowledge test (average 10.21 for carriers and 6.55 for drivers). As was the case with the driver survey participants, though, carriers appear to also lack full understanding about the role of DataQs in addressing incorrect information in a carrier’s CSA. While 72.0 percent of all carriers in ATRI’s survey have used DataQs to challenge violations or crashes believed to be in error, there are meaningful differences when comparing among carriers of different fleet sizes (see Figure 23). For example, only a nominal proportion of medium and large carriers are unaware of DataQs, whereas 17.5 percent of small fleets have not heard of the system.

**Figure 23. DataQs Utilization by Fleet Size**

It should be noted however, that though they may be aware of DataQs, 82.2 percent of carriers were dissatisfied with the DataQs process in general, with carriers who used the system only reporting a 40.79 percent success rate in getting ostensibly incorrect
information removed. This level of dissatisfaction among system users will need to be addressed by FMCSA and its state partners if the program is to be embraced by the industry at large.

In fact, there is reasonable evidence that the industry has been vigilant concerning inaccurate data; FMCSA reported a 37 percent increase in the number of DataQs challenges in CSA’s first year. However, despite motor carriers filing an unprecedented number of challenges, there have been complaints from the industry concerning how the challenges are being handled. Carriers have reported a lack of consistency in things such as response time and willingness to consider the validity of challenges. To this point, the Owner-Operator Independent Drivers Association (OOIDA) recently filed a lawsuit against FMCSA alleging that the driver information database lacks “assurance of accuracy and a functioning process for dispute resolution.” In the lawsuit, OOIDA states that FMCSA refused to remove citation information for three carriers that were challenged in court and dismissed.


5.0 SHIPPER SURVEY FINDINGS

5.1 Shipper Demographics

In cooperation with NITL and ATA, ATRI collected responses from dozens of shippers representing tens of billions of dollars of freight movement (see Table 8). Shippers primarily contracted carriers to haul Truckload or Specialized loads (see Table 9), and 64.5 percent of shippers reporting they occasionally ship hazardous materials.

<table>
<thead>
<tr>
<th>Table 7. Company Revenue</th>
</tr>
</thead>
<tbody>
<tr>
<td>Annual Revenue</td>
</tr>
<tr>
<td>$10 to $100 million</td>
</tr>
<tr>
<td>$101 to $500 million</td>
</tr>
<tr>
<td>$501 million to $1 billion</td>
</tr>
<tr>
<td>More than $1 billion</td>
</tr>
<tr>
<td>Don’t Know</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Table 8. Business Sectors Utilized</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type of Shipments</td>
</tr>
<tr>
<td>Private</td>
</tr>
<tr>
<td>Truckload</td>
</tr>
<tr>
<td>Less-than-Truckload</td>
</tr>
<tr>
<td>Specialized</td>
</tr>
<tr>
<td>Other Modes (e.g. Rail)</td>
</tr>
</tbody>
</table>

5.2 Shippers and Existing Customers

CSA presents an abundance of new safety information to industry stakeholders including shippers, brokers, insurers, financial institutions and the general public, creating what has been referred to as a "ripple effect" through these business relationships. Even with FMCSA excluding two BASICs from public view and issuing clear disclaimers that BASIC scores do not currently constitute official safety ratings, there is still confusion regarding how much weight should be assigned to above threshold BASIC scores.

More recently, it has been reported that CSA now factors in as only one consideration in a shipper’s decision when selecting a carrier’s services. Other factors may include previous relationships or contracts with the carrier, the carrier’s historical performance and company profile, and whether an action plan is in place to address any existing safety liabilities. However, shippers continue to contend that CSA appears to unofficially label certain carriers as unsafe for shippers to contract with, despite FMCSA’s unwillingness to base actual SFDs on SMS scores.

Although FMCSA indicates that CSA is not presently an SFD tool, the agency does encourage shippers and brokers to consider CSA as a valuable tool when selecting carriers to move freight. How much consideration a shipper should assign to CSA,

---


Compliance, Safety and Accountability:
Evaluating a New Measurement System and Its Implications – December 2012

compared to other criteria, continues to be undefined and ambiguous. Since CSA scores are not outright safety ratings, many shippers feel it would be unwarranted to completely discontinue using carriers with substandard scores. In fact, despite 96.8 percent of shipper respondents indicating that they monitor the CSA scores of carriers they currently contract with (see Figure 24), only 27.6 percent of shippers have terminated an existing contract with a carrier based solely on information from CSA.

Figure 24. Do You Access Carrier CSA Scores?

![Check CSA Scores - Existing Contracts](image)

While shippers portrayed a reluctance to terminate existing contracts due solely to CSA, respondents did cite concerns related to vicarious liability. A charge of vicarious liability is feared in instances where a contracted carrier becomes involved in an accident and the court determines the shipper did not provide adequate consideration to the carrier’s CSA scores. Nearly two-thirds of shippers believe the threat of vicarious liability has increased due to CSA (see Figure 25).

Figure 25. Has CSA Increased Liability Concerns?

![Shipper Liability Concerns](image)

Based on these concerns, shippers expressed a desire to obtain all CSA information from carriers, including scores in the two non-public BASICs (Cargo-Related and Crash Indicator). In fact, 41.0 percent of carriers reported receiving these requests, although nearly a third refused to comply (see Figure 26). Supporting carriers’ claims,
approximately half of shippers admitted to asking for non-public CSA scores. Specifically, 27.6 percent of shippers claimed it is standard practice to always ask all carriers for those scores, while an additional 20.7 percent only occasionally requested the scores, depending on familiarity with the carrier and/or the presence of warning signs discovered from other public data.

**Figure 26. Are Shippers Requesting Non-Public Scores and Do You Comply?**

A large portion of shippers feel that, if decisions need to be based on CSA, all CSA data should be public. Ultimately, due to the complexity of CSA and the potential for shippers to be held vicariously liable, shippers must establish their own rules for determining how best to utilize CSA data while continuing to contract with safe and experienced carriers who may happen to have above average BASIC scores.

For carriers with whom shippers have already established relationships, it is much more common for CSA to be used to further define the nature of that relationship. Rather than terminate a contract outright, shippers will often require carriers with undesirable CSA scores to develop a Corrective Action Plan\(^{61}\) for improving those scores and resolving safety and/or compliance problems. Additionally, until carriers have lowered their scores, 44.8 percent of shippers reported that they may choose to utilize the carriers less often.

Based on progress toward the Corrective Action Plan and/or lowering above threshold CSA scores, shippers will periodically reevaluate whether carriers can be utilized regularly, whether further corrective steps need to be taken or whether the contract with the carrier needs to be terminated. Alternately, it is worth noting that CSA is also capable of leading to favorable circumstances for carriers with positive CSA information. That is, 20.7 percent of shippers utilized carriers with good CSA scores more often as a result of those scores.

\(^{61}\) A Corrective Action Plan is an informal agreement between motor carriers and shippers in order to align carrier practices with a shipper’s standards. This is distinct from a cooperative safety plan, which is a voluntary agreement between carriers and FMCSA as part of CSA.
5.3 Shippers and New Customers

Compared to the detailed process shippers traverse when evaluating CSA data concerning currently contracted carriers, it was reported that there is considerably less leeway given to prospective carriers. In these cases, when shippers are entering into new relationships, they rely much more on CSA to provide a glimpse into the carrier’s operations. Fully 100 percent of shippers either check or plan to check CSA scores before contracting a new carrier for the first time (see Figure 27), and 50 percent asserted that poor CSA scores alone were sufficient reason to avoid contracting with a prospective carrier. As a result of CSA, then, the majority of shippers (60.7%) believe it is now somewhat or much more difficult to find qualified motor carriers to carry freight.

![Figure 27. Do You Access Carrier CSA Scores For Prospective Carriers?](image)

5.4 Key Shipper Findings

Supply chain impacts from CSA extend beyond the motor carriers and commercial drivers whose safety performance is being evaluated in the data. Shippers are also making business decisions and adjusting business relationships on the basis of CSA scores. Even so, shippers, like motor carriers, have concerns with the efficacy of CSA scores to predict carrier safety performance.

Shippers are evaluating CSA scores more rigorously for prospective carriers than for those with whom they have an existing business relationship. This increased scrutiny has resulted in the majority of shippers (60.7%) indicating that it is more difficult to find qualified carriers to haul freight since CSA’s deployment, which is sure to present a problem as growing demand meets limited industry capacity.62

---

Existing shipper-carrier relationships are being impacted by CSA, but to a lesser degree. A majority of shipper respondents report that they monitor CSA scores of contracted carriers, yet only 27.6 percent of those shippers have used CSA scores as the sole basis for terminating a contract with an existing carrier. However, the potential for vicarious liability judgments against shippers for using carriers with poor CSA scores remains a concern, with 64.5 percent of shippers confirming increased liability expectations under CSA.
6.0 ENFORCEMENT SURVEY FINDINGS

6.1 Enforcement Demographics

In cooperation with CVSA, ATRI surveyed 39 members of the enforcement community. Out of the 39 respondents, 34 were state patrol officers, roadside inspectors and other enforcement personnel from the U.S., representing 25 of the 50 states. Additionally, although not governed by CSA, five Canadians officers weighed in to compare the measurement system to Canada’s.

6.2 Enforcement Reactions to CSA

Based on ATRI survey responses, the enforcement community maintains relatively strong support for CSA. Of all the stakeholders surveyed by ATRI, enforcement attitudes were generally the most positive overall – followed by shippers, carriers and drivers (see Figure 28).

Figure 28. Overall Stakeholder Attitudes toward CSA

Overall attitudes, which reflect the complexity and controversy associated with CSA, appear to change considerably based on issue and respondent type. Whereas motor carriers and drivers have been disappointed by CSA’s performance, 100 percent of enforcement personnel reported that CSA has been performing the same or better than they had anticipated. The enforcement community was also more likely to be satisfied with FMCSA’s responsiveness to industry concerns than drivers and carriers and among the most supportive groups to state CSA has been a positive influence for reducing truck-involved collisions (see Figure 29).
The introduction of CSA has clearly had an impact on the nexus between enforcement personnel and the motor carriers they monitor. As the number of safety categories being evaluated has expanded from four (SEAs) under SafeStat to seven (BASICs) under CSA, so have the odds of interacting with motor carriers and drivers in need of attention.

The overwhelming majority (70%) of enforcement officers contend that the ISS used to detect which trucks to pull for RIs has become increasingly effective as a result of incorporating the expanded CSA information (see Figure 30). While only 17.2 percent believe the sheer number of inspections has increased, the fact that the ISS is better targeting the right trucks is encouraging.

Likely explained by the increase in new CSA intervention tools, 76.1 percent of enforcement personnel believe that carrier interventions have been on the rise since CSA’s national launch in December 2010. Again, most enforcement personnel (84.4%) believe that the algorithms and targeting approaches of CSA are better able to detect
which carriers are in need of interventions than SafeStat (see Figure 31). The research indicates that the new CSA intervention tools (e.g. warning letters, on-site focused or comprehensive investigations and off-site investigations) are seen as more optimal for dealing with the specific safety problems presented by each carrier than the one-size-fits-all approach of SafeStat.

Figure 31. Effectiveness of Fleet Intervention Selection Process

![Figure 31](image)

Ultimately, in terms of interventions, enforcement personnel felt that CSA interventions have advanced safety but believe that there is still room for improvement. Respondents still questioned whether the four new types of interventions are operating at maximum effectiveness. Apart from warning letters, an almost equal number of respondents found the new interventions to be ineffective at resolving the underlying safety problems as those who rated them to be effective (see Figure 32). On the positive side, though, three-quarters of enforcement personnel believe that drivers are receiving adequate attention and that Driver SMS scores are being utilized effectively by enforcement officials during carrier investigations (2.9% disagreed and 20.6% were not sure).

Figure 32. Effectiveness of Each Type of New Intervention

![Figure 32](image)
A key objective of CSA is being met through increased interactions, as the greater quantity of CSA data is increasing the number of contacts between enforcement and CMV fleets. However, 57.1 percent of enforcement respondents to ATRI’s survey indicated there are currently not enough resources available to meet the new demands associated with CSA. Among proposed solutions, 85 percent agreed additional funding is necessary; 60 percent propose more Motor Carrier Safety Assistance Program (MCSAP) officers; 30 percent want technology to be better utilized; and 30 percent desire more training.

In fact, more than 10 percent of the enforcement personnel completing the survey had not received a single formal training or educational session on CSA, while one in five had experienced just one session (see Figure 33).

**Figure 33. Levels of CSA Training and Education Received by Enforcement Personnel**

Enforcement personnel who did receive CSA training were asked to describe the nature of the training, including the training topics discussed. Surprisingly, although 100 percent of respondents should have received training on how to conduct RIs under CSA, many still have not (see Table 10). For instance, while FMCSA’s “roadside uniformity effort” seeks to standardize the RI process and accurately document all RI and violation data, as many as 40 percent of respondents who felt they should have received this type of training so far have not.

**Table 10. CSA Topics Covered During Training**

<table>
<thead>
<tr>
<th>Topics Covered</th>
<th>Yes</th>
<th>No</th>
<th>N/A</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Roadside Inspections and Violations</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inspections versus screenings</td>
<td>60.0%</td>
<td>36.7%</td>
<td>3.3%</td>
</tr>
<tr>
<td>Standards for conducting roadside inspections (RIs)</td>
<td>70.0%</td>
<td>23.3%</td>
<td>6.7%</td>
</tr>
<tr>
<td>Standards for reporting RI violations</td>
<td>70.0%</td>
<td>26.7%</td>
<td>3.3%</td>
</tr>
<tr>
<td>Standards for accepting or rejecting DataQs challenges</td>
<td>80.0%</td>
<td>20.0%</td>
<td>0.0%</td>
</tr>
<tr>
<td><strong>Interventions and Investigations</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Warning letters</td>
<td>82.8%</td>
<td>10.3%</td>
<td>6.9%</td>
</tr>
<tr>
<td>On-site targeted investigations</td>
<td>72.4%</td>
<td>27.6%</td>
<td>0.0%</td>
</tr>
<tr>
<td>On-site comprehensive investigations</td>
<td>69.0%</td>
<td>27.6%</td>
<td>3.4%</td>
</tr>
<tr>
<td>Off-site investigations</td>
<td>55.2%</td>
<td>41.4%</td>
<td>3.4%</td>
</tr>
</tbody>
</table>
For these reasons, 73.5 percent of respondents suggested that more CSA training is needed. Specifically, respondents were most interested in receiving regular “refresher” courses on CSA; timely updates on general program or SMS methodology changes; additional information on how to properly document violations; and a fuller understanding of the implications that enforcement actions (such as “frivolous violations”) have on motor carriers.

Given the complexity of CSA, the lack of training among law enforcement officers, roadside inspectors and data management personnel is troubling and explains many of the inconsistencies that have plagued the program to date (e.g. regional discrepancies in enforcement). A signature example is the finding that not all roadside inspectors who completed the survey reported “always completed RI reports” when violations were not discovered (10.4% “almost always” did and 6.8% “never” did). Since clean inspections are a vital component of the SMS, and particularly for improving most BASIC scores, this situation must be corrected through increased training and standardization.

6.3 Key Enforcement Findings

Enforcement personnel are the most supportive of CSA and nearly 50 percent of respondents believe that it is delivering on its mission to reduce truck crash involvement. Most members of the enforcement community (84%) also believe that the ability of CSA to better target problem carriers is an improvement over SafeStat.

Though supportive of CSA, there is less support among enforcement officers for the effectiveness of the suite of carrier interventions now available under CSA. None of the four intervention types was deemed effective at improving safety by more than 34 percent of respondents.

Increased interactions with carriers and drivers necessitate additional resources for enforcement. Respondents indicated a need for additional funding, MCSAP officers, increased technology utilization and additional training, with nearly 75 percent of respondents calling for additional and ongoing training.
7.0 LOOKING AHEAD: FUTURE EXPECTATIONS

7.1 CSA Impacts on Shipper/Carrier Relationships

There continues to be lingering uncertainty among shippers when it comes to interfacing CSA information into existing carrier selection practices. At the center of the confusion is seemingly contradictory advice from FMCSA. For instance, FMCSA has provided online resources instructing shippers and other supply chain members on how to utilize CSA data while simultaneously issuing disclaimers that BASIC scores do not currently constitute official safety ratings concerning a carrier’s fitness to operate.

These dual messages eventually triggered a lawsuit by the Alliance for Safe, Efficient and Competitive Truck Transportation (ASECTT) and other plaintiffs alleging that FMCSA is shifting the burden of making fleet safety ratings to shippers.\textsuperscript{63} Shippers, therefore, must rely on a measurement system the agency itself is not comfortable basing SFDs on, as the SMS is still a work-in-progress. As a result, shippers fear being held vicariously liable for using carriers that are legally allowed to operate, yet have several BASIC scores above threshold.\textsuperscript{64} On the other hand, there is also concern that taking precautions against being held vicariously liable by refusing to contract with carriers that possess subpar CSA scores will disenfranchise thousands of safe carriers.\textsuperscript{65}

Based on findings from ATRI’s shipper survey, it appears that the current (but likely temporary) resolution in the shipper community is to give CSA less consideration when evaluating currently contracted carriers, while assigning relatively more weight to the scores when seeking out new carrier relationships. Other factors in the vetting process may include previous relationships or contracts with the carrier, the carrier’s historical performance and company profile, and whether an action plan is in place to address any existing safety liabilities.\textsuperscript{66}

Nonetheless, CSA’s influence on shipper-carrier relationships has been gradually intensifying as the program continues to mature. For example, the proportion of motor carriers claiming to have been adversely affected by CSA (via decreased shipper utilization) expanded modestly between ATRI’s 2011 and 2012 carrier surveys (see Figure 34). The percent of carriers claiming somewhat less or much less utilization due


\textsuperscript{64} Berman, J. CSA 2010 remains a major concern for trucking capacity and liability, says Transplace panel.\textit{Logistics Management}. May 25, 2011. Available Online: [http://www.logisticsmgmt.com/article/csa_2010_remains_a_major_concern_on_capacity_and_liability_says_transplace_p/](http://www.logisticsmgmt.com/article/csa_2010_remains_a_major_concern_on_capacity_and_liability_says_transplace_p/)

\textsuperscript{65} Watson, Rip. Agency safety scoring seen as unfair to fleets, brokers.\textit{Transport Topics}. January 9, 2012.

to CSA grew by more than double, from 14.7 percent in 2011 to 34.2 percent in 2012. Troublingly, an ANOVA revealed that small carriers (with fewer than 50 PUs) were somewhat more likely than medium (50 to 500 PUs) or large (500+ PUs) carriers to be utilized less ($F = 4.95, \ p \leq .01$).

Figure 34. Has Your Level of Utilization Changed Due to CSA?

Going forward, it is unlikely that the trend of supply chain members relying more on CSA data to make business decisions will disappear. This could easily shift the dynamics of carrier-shipper relationships as carriers with undesirable scores struggle to remain attractive. Most likely, lower-tier carriers will differentiate themselves by lowering prices, while higher-tier (i.e. premium) carriers may begin commanding greater profits.\(^{67}\)

7.2 CSA Impacts on Wages and Pricing

Aside from shifts in negotiating power deriving from good versus bad CSA scores, there are additional reasons to expect pricing to be influenced by CSA. For instance, to the extent that CSA exerts an influence on overall capacity (e.g. the number of carriers, drivers and trucks in the marketplace), surviving fleets will be in a position to command higher profit margins. Cutbacks necessitated by the Great Recession had already left most fleets with a smaller driver workforce and fewer PUs, and the industry as a whole entered 2010 with fewer motor carriers than at any point in the preceding decade.\(^{68}\) Therefore, further capacity crunch from CSA could exacerbate an already difficult situation for shippers.

Similarly, CSA-initiated increases to carrier operational costs (e.g. frequency of updating equipment, spending more to screen and attract quality drivers) can also be expected to

---


Compliance, Safety and Accountability:
Evaluating a New Measurement System and Its Implications – December 2012
be reflected in increased rates. Just as remaining carriers/capacity are prized commodities among shippers, truck drivers are likely to also use CSA as leverage to negotiate better compensation packages. ATRI’s survey suggested that this has largely occurred via safety incentives (e.g. monetary rewards for clean inspections), although base wages have remained mostly steady.\(^69,70\) Still, carriers are actively seeking to attract and retain the most qualified driver workforce, and these efforts can become expensive (e.g. using PSP, providing sign-on bonuses and safety incentives, offering new trucks equipped with technology).\(^71\) Over time, these recruitment and retention strategies can be expected to drive up shipping costs, since labor and equipment already constitute two of the top three operating expenses (the other being fuel/oil).\(^72\)

On the other hand, not all aspects of CSA threaten to push costs upward. If CSA delivers on its promise of reducing industry safety incidents, crash cost savings could be realized to offset the higher expenses associated with new equipment, quality drivers and new technologies. In fact, the direct and indirect costs of truck crashes are dramatic, and reducing preventable crashes has the potential of saving carriers millions of dollars.\(^73,74\) Arguably, then, if CSA is truly targeting the industry’s unsafe carriers and drivers,\(^75\) removing these bad actors will not hinder overall capacity in terms of delivering goods safely and on-time for the same price.

All things considered, to date there has been little movement in freight rates directly attributable to CSA (as opposed to the economy, for instance). Although initial expectations were that rates would rise between 5 and 12 percent in 2012,\(^76\) most pricing expectations were revised downward to just 2 percent or less once the economic recovery stalled and capacity expanded.\(^77,78,79\) ATRI’s 2012 motor carrier survey

---

\(^69\) According to ATRI’s Operational Costs data, pay-per-mile only increased 1.4 cents (3.1%) from 2010 to 2011, while driver benefits decreased 1.1 cents (-6.8%).


\(^74\) Research has demonstrated that it is a small fraction (10-15%) of the driver workforce that is responsible for 30 to 50 percent of all crashes: Federal Motor Carrier Safety Administration. (2004). *Individual Differences and the “High Risk” Commercial Driver*. Available Online: [http://www.fmcsa.dot.gov/facts-research/briefs/high-risk-commercial-driver.pdf](http://www.fmcsa.dot.gov/facts-research/briefs/high-risk-commercial-driver.pdf)


\(^78\) American Trucking Associations. *American Trucking Trends 2012*. 

---

Compliance, Safety and Accountability: Evaluating a New Measurement System and Its Implications – December 2012
confirmed that only a small fraction (11%) of carriers has admitted to raising prices specifically due to CSA (see Figure 35). However, in line with historical trends, rates can be expected to climb as the economy recovers and demand increases.

Figure 35. Has the Amount You Charge Changed Due to CSA?

In the short-term, it is safe to conclude that economic fluctuations have played a larger role in setting rates than CSA. Ultimately, however, CSA could become a crucial determinant of freight rates depending on the ratio of cost savings associated with reduced safety incidents to the numerous cost elements that fall under the umbrella of CSA management. Losing only those drivers and trucks that truly deserve to be taken off the road will not...

7.3 Closing the Gap on Carrier/Driver Education and Training

By constructing a standardized CSA knowledge test and administering it to thousands of truck drivers and motor carriers, ATRI learned that there are persistent gaps in how well the two groups understand CSA. Carriers scored an average of four points higher ($M_1 = 10.21, SD = 2.63$; $M_2 = 6.55, SD = 2.48$) on ATRI’s brief 14-item knowledge test, which consisted of True/False responses to seven CSA myths (e.g. “Under CSA, FMCSA will evaluate driver physical fitness and penalize drivers with high BMIs”) and seven technical questions surrounding the program (e.g. “Which carrier BASIC scores are publicly accessible?”). Figure 36 compares the distribution of scores for carriers and drivers, confirming that carrier scores are clustered toward higher performance whereas driver scores are clustered toward lower performance.
This gap in performance is likely a byproduct of inefficient information flow. CSA represents a marked shift in the way safety and compliance are measured, and requires a tremendous amount of information to be communicated from the agency in charge of implementing the program and initiating periodic changes. While the GAO has reported that FMCSA succeeded in conducting extensive outreach to carriers throughout CSA’s implementation, not enough has been done to keep other stakeholders informed.\footnote{Government Accountability Office. (2011). Motor Carrier Safety: More Assessment and Transparency Could Enhance Benefits of New Oversight Program. Available Online: \url{http://www.gao.gov/assets/590/585518.pdf}}

Adding to the difficulty, truck drivers are a notoriously difficult population to reach due to the decentralized nature of the job. FMCSA’s CSA website is a helpful and popular resource for educational materials\footnote{Federal Motor Carrier Safety Administration. CSA: Proposed Changes to Improve on a Solid Foundation Webinar Training. PowerPoint Presentation, June 26, 2012.}, however, long-haul drivers rarely have the same level of time or opportunity as others to access the web and view the agency’s toolkits.

Similarly, as discovered in ATRI’s research, drivers cannot rely exclusively on receiving up-to-date information from their employers, since driver and carrier reports of CSA training are at odds.

A more systematic and dynamic approach is therefore needed to target drivers, and it should come from multiple sources (e.g. FMCSA, motor carriers, trucking associations). This could include regular appearances on popular radio shows to discuss ongoing CSA misconceptions and to provide general information. Similarly, carriers could reevaluate the extent of CSA training offered to drivers. The most important consideration should be to aggressively target the drivers for training rather than waiting for drivers to seek
out the information, as two years have already passed with minimal increases in driver CSA comprehension.

One potentially helpful takeaway from this study is the finding that performance on ATRI’s CSA knowledge test demonstrates a moderate positive association with a respondent’s self-described level of CSA knowledge, $r = .52, p \leq .001$ (see Figure 37).\footnote{An ANOVA further demonstrated that drivers and carriers who purported to know little on the subject of CSA indeed performed significantly worse on the knowledge test than those claiming to have higher levels of familiarity with CSA, $F = 192.19, p \leq .001$.} In other words, individuals can accurately self-identify whether they need more training on CSA. Consequently, carriers (or others) could easily gauge the necessity for additional training by posing a single question to their workforce (“How knowledgeable do you feel you are concerning CSA?”).

**Figure 37. Self-Described Knowledge and Performance on ATRI’s CSA Test**

![Graph showing the relationship between self-described CSA knowledge and number of correct responses on the knowledge test.](image)

Whatever the method, it is critical that educational efforts increase in the short- and long-term. Levels of CSA awareness have measurable implications for a carrier’s operations. For instance, scores on ATRI’s knowledge test were indicative of the degree to which carriers advised drivers to request documentation for clean RI reports, whereas this activity was less common among carriers and drivers who did not understand the importance of clean inspections for improving CSA scores.

### 7.4 CSA and the Changing Face of Enforcement

Looking forward, CSA represents a significant opportunity to reevaluate traditional regulatory compliance. The program already modifies traditional compliance by expanding the set of enforcement interventions to include warning letters, on-site focused and off-site investigations. However, stakeholders in the industry continue to question whether current regulatory requirements, safety metrics and evaluation tools completely and accurately depict a carrier’s safety performance.
Notably, government research and private sector investments into alternative safety tools have increased over the last several years, predicated on the notion that non-traditional “Alternative Compliance” (AC) tools can help to reduce truck-involved crashes, injuries and fatalities. In fact, a combined ATRI/CVSA effort identified numerous alternative compliance opportunities that have proven to be highly effective. These AC safety tools, programs and strategies included EOBRs, Employer Notification System (ENS), fatigue management programs (FMPs), commercial driver drug testing using hair, simulator-based training, speed limiters/governors, forward collision warning systems (FCWS), lane departure warning systems (LDWS), roll stability control systems (RSCs) and tire pressure monitoring systems (TPMS).

After mapping these AC tools to existing compliance activities and demonstrating both their safety efficacies and Return-on-Investment (ROI) potentials, ATRI developed a framework for merging them with CSA. Essentially, the premise is that these AC strategies enhance safety and therefore carriers should be incentivized to incorporate these strategies into their operations. CSA offers an efficient mechanism for rewarding these proactive safety practices by assigning immediate SMS credits in each of a carrier’s BASICs that carrier addresses through AC.

For instance, Table 11 illustrates the AC activities that might correspond to each BASIC. If a carrier participated in this type of program, a conceptual ten point percentile deduction could be granted for each BASIC met. For instance, a carrier may only want to focus on the driver fitness category and elect ENS as a viable AC activity. This carrier would receive a ten point reduction on their Driver Fitness BASIC score.

### Table 11. CSA BASICs and Alternative Compliance

<table>
<thead>
<tr>
<th>BASICs</th>
<th>AC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unsafe Driving</td>
<td>Speed Limiters</td>
</tr>
<tr>
<td>Fatigued Driving</td>
<td>Fatigue Management Program</td>
</tr>
<tr>
<td>Driver Fitness</td>
<td>Employer Notification System</td>
</tr>
<tr>
<td>Controlled Substances</td>
<td>Hair Testing or Sliding Scale</td>
</tr>
<tr>
<td>Vehicle Maintenance</td>
<td>Tire Pressure Monitoring</td>
</tr>
<tr>
<td>Crash Indicator</td>
<td>Onboard Safety Systems</td>
</tr>
</tbody>
</table>

Since it is in every carrier’s best interest to have and maintain a low CSA score, the AC program would draw widespread appeal and provide all interstate (and intrastate hazardous material) carriers with the opportunity to become involved in the program.

---


84 Excluding the Cargo-Related BASIC, which is being incorporated into Vehicle Maintenance.
Moreover, since BASICs are scored individually, an AC scoring system would be easy to calculate, allowing carriers to take a more proactive role in making safety-based decisions. Given that a carrier will know which of their BASIC scores needs to be lowered to prevent an FMCSA intervention, the AC program could be strategically used to lower BASIC scores of concern, effectively reducing the likelihood that a score will pass FMCSA’s “alert” threshold and trigger an investigation.

Providing carriers the opportunity to resolve safety issues prior to an FMCSA intervention would be in line with CSA’s theme of self-governance (e.g. warning letters). By alerting carriers to areas in need of improvement, and identifying clear routes for making the necessary improvements, carriers are able to assume more responsibility for their own safety, reducing FMCSA’s administrative costs and burdens. Finally, as an added incentive for carriers, lowering BASIC scores by a set amount in exchange for participating in an AC program would potentially improve how that particular carrier is evaluated by shippers, brokers and insurance agencies.

By evaluating innovative compliance options such as ATRI’s proposed AC program, the enforcement and business communities can work together to continue advancing the industry’s safety record. As previously mentioned, safety incident rates have already reached record lows and further incremental improvements will take these types of bold and creative solutions, while building on the existing framework created by CSA.

7.5 Speculating on CSA Trends and Changes

While CSA has been a target of both praise and animosity, the program will continue to be a key component of how fleet safety is measured for the foreseeable future. One of the most anticipated controversies, however, is whether FMCSA will move forward on a proposed rulemaking to base carrier SFDs on CSA data. The expected rulemaking, which is years behind schedule, would alter the current safety rating system, under which FMCSA can only issue safety ratings to carriers following a compliance review, defined as an onsite investigation at a carrier's place of business.

FMCSA hopes to assign SFDs to a larger portion of the carrier population by allowing the ratings to incorporate CSA information in addition to (or instead of) compliance review information. In theory, an advantage of this approach is that safety ratings would receive automatic updates on a monthly basis, rather than reflecting months-old or year-old intervention results that no longer accurately describe a carrier’s operations.86

Before a new SFD methodology can be issued, a number of CSA-related issues will need to be addressed. First and foremost, FMCSA’s SMS methodology continues to be a work-in-progress, as several BASICs continue to be revised or replaced. For instance, FMCSA is transferring all of the violations in the Cargo-Related BASIC into the

---

85 9 CFR Part 385
Vehicle Maintenance BASIC and creating a new Hazardous Material BASIC in its place. Furthermore, a recent analysis by ATRI has confirmed what many in the industry have suspected – that several BASICs do not appear to measure actual crash risk at the carrier level of analysis.\textsuperscript{87}

These issues aside, other measurement issues also continue to evoke criticism. Perhaps the easiest to address is the current lack of a mechanism for determining crash accountability.\textsuperscript{88} Despite widespread belief that carriers should not be penalized for non-preventable accidents, the SMS does not distinguish between accidents that are a truck driver or carrier’s fault and those that are not. By the summer of 2013, FMCSA will reportedly determine whether the SMS better predicts future truck crashes when it takes this information into account. As a potential first step, the agency is evaluating the sufficiency, consistency and reliability of police accident reports (PARs) for determining crash responsibility.\textsuperscript{89}

While developing crash accountability determinations is the most likely change that can be expected in the near future, other necessary solutions are likely to prove more elusive. These include measurement disparities and differential impact among small, medium and large carriers,\textsuperscript{90,91} differences in state-to-state and regional enforcement;\textsuperscript{92} supply chain liability implications,\textsuperscript{93,94} difficulties in removing inaccurate or biased data and insufficient dispute resolution.\textsuperscript{95} Several of these issues have triggered lawsuits, and the U.S. DOT Inspector General has agreed to conduct an in-depth audit of the program based on a 2012 House Transportation Subcommittee meeting.\textsuperscript{96}

\begin{thebibliography}{99}
\bibitem{88} Miller, E. FMCSA to study crash accountability process, Ferro Says. \textit{Transport Topics}. May 1, 2012.
\bibitem{91} Truck transportation group, others sue FMCSA regarding SMS methodology. \textit{The Trucker}. July 17, 2012. Available Online: \url{http://www.thetrucker.com/News/Stories/2012/7/17/TrucktransportationgrouponotherssueFMCSAregardingSMSmethodology.aspx}
\bibitem{93} Watson, R. Agency safety scoring seen as unfair to fleets, brokers. \textit{Transport Topics}. January 9, 2012.
\bibitem{94} Berman, J. CSA 2010 remains a major concern for trucking capacity and liability, says Transplace panel. \textit{Logistics Management}. May 25, 2011. Available Online: \url{http://www.logisticsmgmt.com/article/csa_2010_remains_a_major_concern_on_capacity_and_liability_says_transplace_p/}
\bibitem{95} OOIDA sues FMCSA over alleged driver database inaccuracies. \textit{The Trucker}. July 17, 2012. Available Online: \url{http://www.thetrucker.com/News/Stories/2012/7/17/OOIDAsuesFMCSAoverallegeddriverdatabaseinaccuracies.aspx}
\bibitem{96} Miller, E. DOT Inspector General agrees to audit CSA after request from Congress. \textit{Transport Topics}. October 22, 2012.
\end{thebibliography}
Although it is unlikely that all of these issues will be sufficiently resolved to the industry’s full satisfaction, FMCSA has indicated a willingness to reexamine them. Until that point, the agency will have a difficult time justifying how the SMS can be used to make SFDs. In the meantime, many critics will continue to demand CSA scores be removed from public view and used exclusively for enforcement purposes. ATRI has even proposed a somewhat new approach, based on an extensive statistical analysis of CSA. Under this model, ATRI suggested that FMCSA remove individual BASIC scores from public display and present only that SMS information which can be demonstrably tied to safety (see Table 12).

Table 12. Empirically Determined Continuum of Safety Risk

<table>
<thead>
<tr>
<th>Classification Group</th>
<th>Description</th>
<th>Level of Safety Risk</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group A</td>
<td>Sufficient data in at least one BASIC, but no scores</td>
<td>![Low]</td>
</tr>
<tr>
<td>Group B</td>
<td>Scores in at least one BASIC, but no &quot;Alerts&quot;</td>
<td>![Low]</td>
</tr>
<tr>
<td>Group C-1</td>
<td>1 &quot;Alert&quot;</td>
<td>![Low]</td>
</tr>
<tr>
<td>Group C-2</td>
<td>2 &quot;Alerts&quot;</td>
<td>![Low]</td>
</tr>
<tr>
<td>Group C-3</td>
<td>3 &quot;Alerts&quot;</td>
<td>![Low]</td>
</tr>
<tr>
<td>Group C-4</td>
<td>4 &quot;Alerts&quot;</td>
<td>![Low]</td>
</tr>
<tr>
<td>Group C-5</td>
<td>5 &quot;Alerts&quot;</td>
<td>![Low]</td>
</tr>
</tbody>
</table>

8.0 CONCLUSIONS

There has been extensive debate concerning the real world effects of CSA on the trucking industry. This paper examines several of the program’s anticipated or experienced outcomes, and assesses the likely short- and long-term byproducts of CSA. Conclusions are based on the existing literature as well as stakeholder input collected through ATRI’s separate motor carrier, truck driver, shipper and enforcement data collection efforts. Together, these sources have provided insights into the nature of CSA’s impacts on the commercial driver labor pool, the operations of motor carriers, the shipper-carrier relationship, and the ability of FMCSA to more effectively regulate the industry.

8.1 Truck Drivers

Concerning the commercial driver pool, the availability of drivers has not tightened as broadly as expected (beyond existing demographic and economic trends). Specifically, only a small fraction of currently employed drivers have been put out of work explicitly due to CSA. This is a marked deviation from industry expectations; shortly after CSA was introduced, experts were predicting that ten to twenty percent of drivers would be terminated as a result of the program.

Nonetheless, CSA’s effect has primarily been felt by prospective truck drivers. Employers report less leeway when evaluating driver applicants’ driving records compared to current employees. This makes sense since employers have more extensive knowledge of current drivers than of applicants, including insights into personality traits, behavioral patterns and home lives; therefore, employment decisions can often factor in information beyond a driver’s MCMIS or MVR data (not to mention, employers may be privy to explanations behind safety infractions or FMCSR violations).

On the other hand, applicants are principally defined by their driving histories. And since 2010, PSP has been particularly impactful in screening out a high percentage of undesirable drivers. While this is a laudable practice that will likely keep the safety bar elevated, a consequence is that most employers now find it somewhat or extremely difficult to find and hire new qualified drivers. This figure grew from 72 percent of carriers increasingly incorporating PSP into hiring practices.

While the market for drivers has certainly become more competitive, most drivers have benefited from nontraditional mechanisms. That is, although ATRI’s surveys and literature review revealed little change to drivers’ levels of base pay, numerous drivers and carriers reported financial safety incentives that were tied to CSA. For instance, some carriers now offer bonuses for RIs that are free of violations while others issue rewards to drivers for extended periods of driving without any safety incidents. Drivers are therefore more incentivized than ever to comply with safety regulations, which will
not only improve their chances of remaining employed in the industry, but will also keep their employer’s CSA scores low.

In any case, since CSA has altered many facets of a truck driver’s daily life, it is critical that drivers be informed concerning what CSA is and is not. Unfortunately, ATRI found that most drivers are not actively seeking out information on CSA. Fewer than half of drivers responding to ATRI’s surveys reported checking their respective employer’s BASIC scores. Similarly, a relatively small number of respondents (31%) have taken steps to access their own MCMIS data available through PSP. Not surprisingly then, is ATRI’s finding that drivers score very poorly on a CSA knowledge test (Mean = 6.55 correct responses out of 14 questions).

A more targeted learning approach is necessary for drivers. CSA represents a marked shift in the way safety and compliance are measured, and requires a tremendous amount of information to be communicated from FMCSA, employers and even trucking associations. This could include regular appearances on popular radio shows to discuss ongoing CSA misconceptions and to provide general information and updates. Similarly, carriers could reevaluate the extent of CSA training offered to drivers, which drivers report is typically insufficient. The most important consideration should be for informed stakeholders to seek out uninformed drivers rather than waiting for drivers to seek out the information themselves. While drivers are motivated to understand CSA, the nature of a long-haul truck driving job precludes drivers from conveniently accessing the helpful CSA materials and resources other stakeholders rely upon.

8.2 Motor Carriers

Nearly all motor carriers responding to ATRI’s survey have taken an active approach to CSA. That is, 96 percent access their company’s CSA data at least monthly, and attempt to use the information to advance practices and policies. For instance, ATRI found that most carriers report offering CSA-specific training to their drivers; incorporate PSP into hiring practices; invest in technologies that can improve CSA performance; and terminate drivers in accordance with how severe CSA consequences are (i.e. the number of BASICs a carrier had above threshold corresponded with the percentage of that carrier’s workforce that was terminated for reasons pertaining to CSA).

Early on, carrier dissatisfaction with CSA was likely the result of greater carrier scrutiny compared to SafeStat. For instance, ATRI found that the percentage of respondents with no SafeStat areas above threshold was higher than 70, but less than 45 for CSA. Since then, carriers have been steadily improving BASIC scores, on average, and are learning to adapt to the new standards associated with CSA. As the program becomes the norm, dissatisfaction is now most likely to be the result of the industry’s perception that FMCSA is not incorporating the industry’s input (only 14% of carriers completing ATRI’s 2012 survey were satisfied with FMCSA’s responsiveness to their concerns).

In addition to issues like a lack of crash accountability determinations and safety event group fluctuations influencing scores (apart from true changes in performance), ATRI
found several indications that fleet size\textsuperscript{99} has a bearing on a carrier’s CSA standing. Small fleets tend to have less reliable BASIC scores (e.g. small carriers report significantly more safety event group fluctuations); more challenges to remaining in business; and fewer resources to invest in technology, training programs or PSP (each of which helps larger carriers improve CSA scores).

Yet overall, carrier concerns from ATRI’s 2011 survey (based on expectations) were far more negative than carriers’ 2012 perspectives (based on prolonged experience operating under CSA). That is, in 2011, 87 percent of carriers expected CSA to adversely impact the number of motor carriers able to remain in the industry, whereas only 59 percent held this belief in 2012. This suggests CSA has not presented as many obstacles as expected, however, the issue clearly remains a major concern.\textsuperscript{100}

As carriers continue learning to adapt to CSA, they are aided by adequate general knowledge of the program, particularly when compared to drivers.\textsuperscript{101} A win-win scenario may involve carriers transferring this knowledge to their drivers, which would likely have a measurable impact on future CSA performance. Drivers who misunderstand CSA are unlikely to take the correct actions that can improve scores. For instance, many drivers do not understand that clean inspections can help improve most BASIC scores and therefore do not make habits of requesting documentation for violation-free inspections (or challenging inaccuracies through DataQs). Ensuring that all members of a carrier’s operations have accurate and up-to-date knowledge on the methodology behind CSA is therefore a prudent step toward remaining in good standing.

8.3 Shippers

Like the evolving relationship between drivers and carriers, CSA has also impacted shipper-carrier relationships. A parallel discovered by ATRI is that, in both cases, established relationships are less likely to be affected by CSA than is the formation of new business relationships. In this case, ATRI found that shippers were less discerning when evaluating the CSA scores for currently contracted carriers as opposed to carriers seeking a new role in the shipper’s business.

Again, this makes intuitive sense since shippers have more information at their disposal concerning established carriers. Shippers may in fact be quite comfortable with a company’s safety record despite high BASIC scores if they have utilized the carrier in the past. For this reason, shippers reported through ATRI’s survey that CSA scores are not typically sufficient reason for terminating an existing contract. Instead, most shippers utilize what is called a Corrective Action Plan, asking carriers to submit plans for improving problematic BASIC scores.

\textsuperscript{99} Small is defined as 50 or fewer power units; Medium is defined as 51 to 500 power units; and Large is defined as more than 500 power units.


\textsuperscript{101} Carriers scored an average of roughly four points higher than drivers on ATRI’s 14-item CSA knowledge test.
On the other hand, prospective carriers are much less likely to be selected by shippers without having a strong CSA profile. Primarily, this is because shippers fear being held vicariously liable for selecting carriers without giving adequate consideration to available safety information. Still, only half of the shippers participating in ATRI’s survey claimed that poor CSA scores alone were sufficient reason to avoid contracting with a prospective carrier. The subsequent difficulty of finding “qualified” motor carriers to haul freight poses a challenge as growing demand from an improved economy meets with more limited industry capacity.

A key consideration in the shipper community is whether CSA scores fairly and accurately measure carrier performance. According to ATRI’s analytic research, several BASICs should not be interpreted as identifying higher-risk carriers, although the Unsafe Driving, Fatigued Driving and Vehicle Maintenance BASICs do appear to measure carrier crash risk. To the extent other BASICs are utilized, shippers may be identifying false positives (i.e. carriers that are safe in reality but unsafe according to CSA).

8.4 Enforcement

Of all stakeholders surveyed by ATRI, enforcement personnel held the most favorable perceptions of CSA. Even this group, however, felt that training and educational opportunities have not kept pace with the new and complex safety measurement program. That is, nearly three-quarters of respondents indicated that more CSA training is needed to help standardize enforcement processes.

Specifically, respondents were most interested in receiving regular “refresher” courses on CSA; timely updates on general program or SMS methodology changes; additional information on how to properly document violations; and a fuller understanding of the implications that enforcement actions (such as “frivolous violations”) have on motor carriers. Problematically, 57 percent of enforcement personnel believe there are insufficient resources available to enact the desired training procedures.

Despite these limitations, CSA has exceeded the expectations of the enforcement community, and most believe the program has already been a factor in reducing the number of truck crashes. Contributing to these beliefs, enforcement personnel contend that enforcement tools, such as the ISS and CSA’s four new types of interventions, represent significant improvements compared to the tools available under SafeStat. These improvements have allowed them to focus their limited resources on a more targeted group of at-risk carriers and drivers. Additionally, one apparent benefit of CSA is that drivers are now identified as part of the process for identifying unsafe practices and procedures.

Still, many in the enforcement community believe there is ample room for improvement to ensure enforcement activities are truly addressing and resolving underlying root factors. Prior to this becoming a reality, however, critical resources are needed in the form of additional funding, MCSAP officers, increased technology utilization and additional (and ongoing) training.

8.5 Final Summary

Clearly, CSA presents a host of both challenges and opportunities for the trucking industry. Supply chain members that are benefiting are realizing advantages by closely tracking safety and operational data; investing in the right human capital based on an evidence-based evaluation of which drivers will likely improve rather than harm CSA performance in the future; and utilizing innovative technologies that are capable of improving otherwise difficult-to-change safety dimensions.

After two years of CSA being fully operational, industry perceptions have adapted considerably to acknowledge that many of CSA’s impacts will be more long-term than initially expected. That is, the program did not immediately result in a mass exodus of drivers or dramatically exacerbate shipping and operational costs. Still, the program remains a work-in-progress and will continue to draw criticism until persistent flaws are addressed (e.g. BASIC scores that do not measure crash risk; the absence of a mechanism for incorporating crash accountability determinations; regional differences in enforcement). For the foreseeable future, however, the economy will exert a much greater influence on the dynamics of the supply chain, with CSA and new regulations (e.g. changes to the HOS rules) playing a secondary role.
APPENDIX A
ATRI’s 14-Item CSA Knowledge Test\textsuperscript{103}
Answer Key

1. When a trucking company hires a new driver, the company inherits that driver’s past violations.

- [ ] True
- [x] False

**Rationale:**
- Carriers do not inherit any of a newly hired driver’s past violations; only those inspections that a driver receives while driving under a carrier’s authority can be applied to a carrier’s SMS record.\textsuperscript{104}

2. A trucking company can remove a bad driver’s inspection and crash data from its Safety Measurement System (SMS) scores by terminating the driver.

- [ ] True
- [x] False

**Rationale:**
- All inspections and crashes that a CMV driver receives while under the authority of a carrier will remain part of the carrier’s SMS data for two years unless overturned through the DataQs system (https://dataqs.fmcsa.dot.gov), even if the carrier terminates the driver.\textsuperscript{105}

3. Which BASIC scores are publicly accessible? (check all that apply)

- [x] Fatigued Driving (HOS) scores
- [ ] Crash Indicator scores
- [x] Driver Fitness scores
- [x] Controlled Substances/Alcohol scores
- [ ] Cargo-Related scores
- [x] Vehicle Maintenance scores
- [x] Unsafe Driving scores

**Rationale:**
- The public can view any carrier’s BASIC percentile ranks for five of the seven BASICS: Unsafe Driving, Fatigued Driving (HOS), Controlled Substances/Alcohol, Driver Fitness and Vehicle Maintenance.\textsuperscript{106}

---

\textsuperscript{103} Administered as part of the truck driver and motor carrier surveys.


\textsuperscript{105} Ibid.

4. State issued convictions are part of the SMS formula for calculating BASIC scores.

☐ True
☒ False

Rationale:
- The data kept by a State (i.e. tickets, citations, written warnings, convictions) and the data that are kept in the SMS (i.e. violations from RI and crash reports) are separate.\(^{107}\)

5. CSA gives FMCSA the authority to revoke a driver’s CDL.

☐ True
☒ False

Rationale:
- CSA does not give FMCSA the authority to remove drivers from their jobs and cannot be used to rate drivers or to revoke a CDL; only State agencies responsible for issuing licenses, CDL or otherwise, have the authority to suspend them.\(^{108}\)

6. As part of CSA, FMCSA evaluates the physical fitness of drivers and penalizes drivers with high body mass indexes (BMIs).

☐ True
☒ False

Rationale:
- While research data indicate that a driver’s BMI is a risk factor for identifying drivers that may have sleep apnea, neither FMCSA nor the CSA program currently has any rules that restrict who can be a CMV driver based on BMI, weight or neck size.\(^{109}\)

7. The content of Federal Motor Carrier Safety Regulations (FMCSR) has changed as a result of CSA.

☐ True
☒ False

Rationale:
- CSA has not changed any of FMCSA’s regulations, although FMCSA is advocating for a future rule change to alter the carrier safety rating process for determining whether or not a carrier is unfit.\(^{110}\)

---


\(^{108}\) Ibid.

\(^{109}\) Ibid.

\(^{110}\) Ibid.
8. Under CSA, only out-of-service (OOS) violations are counted in the measurement system.

[ ] True
[ x] False

Rationale:
- All safety-based RI violations count, not just OOS violations.\(^\text{111}\)

9. Clean roadside inspections can actually improve a driver or carrier’s CSA scores.

[ x] True
[ ] False

Rationale:
- When the BASIC scores are being calculated, a clean inspection (i.e. an inspection with no violations for a particular BASIC) will lower scores on the corresponding measure.\(^\text{112}\)

10. Who has access to official driver CSA scores? (check all that apply)

[ ] All trucking companies
[ ] The company that currently employs the driver
[ ] The driver him/herself
[ x] FMCSA enforcement staff during motor carrier investigations
[ ] Insurance companies
[ ] Third party logistics companies
[ ] Third party vendors who market driver scorecards

Rationale:
- Currently, the Driver SMS results are being used strictly as an investigative tool for law enforcement and are not available to carriers, drivers or the public.\(^\text{113}\) While some third-party vendors are developing and marketing CSA driver scorecards, FMCSA does not provide these companies with access to driver violation histories and will not validate any vendors’ scorecards or data.\(^\text{114}\)


\(^\text{113}\) Ibid.

11. CSA scores are weighted by: (check all that apply)

- Time (older events are weighted less than recent ones)
- Severity (events closely linked with crash risk or crash severity are weighed more)
- Nothing

**Rationale:**
- Violations are classified into a BASIC and are then time weighted, severity weighted and normalized to form a quantifiable measure for each BASIC.\(^{115}\)

12. Which of the following does the FMCSA take into account in order to compare among carriers with different levels of exposure in various BASICs? (check all that apply)

- Number of power units
- Vehicle miles traveled (VMTs)
- Number of inspections

**Rationale:**
- The number of driver inspections normalizes driver-related BASICs (Fatigued Driving, Driver Fitness and Controlled Substances/Alcohol); the number of vehicle inspections normalizes vehicle-related BASICs (Vehicle Maintenance and Cargo-Related); and carrier size (i.e. a hybrid PU and VMT measure) normalizes BASICs whose violation behaviors typically prompt an inspection (Unsafe Driving and Crash Indicator).\(^{116}\)

13. CSA takes into consideration tickets and warnings drivers receive when operating their personal vehicles.

- False

**Rationale:**
- Tickets or warnings that CMV drivers receive while operating their personal vehicles do not count in the SMS.\(^{117}\)

---


\(^{116}\) Ibid.

14. Under CSA, BASIC scores higher than the specified threshold: (check all that apply)

- identify potentially at-risk carriers and help prioritize them for intervention
- indicate that a carrier is unsafe and should not be used
- accompany fines if the scores do not drop lower than the threshold in a pre-specified amount of time

**Rationale:**
- FMCSA's website for accessing SMS Results issues the following statement, labeled Use of SMS Data/Information:\(^{118}\)

The data in the Safety Measurement System (SMS) is performance data used by the Agency and Enforcement Community. A symbol, based on that data, indicates that FMCSA may prioritize a motor carrier for further monitoring. The symbol is not intended to imply any federal safety rating of the carrier pursuant to 49 USC 31144. Readers should not draw conclusions about a carrier's overall safety condition simply based on the data displayed in this system. Unless a motor carrier in the SMS has received an UNSATISFACTORY safety rating pursuant to 49 CFR Part 385, or has otherwise been ordered to discontinue operations by the FMCSA, it is authorized to operate on the nation's roadways.

\(^{118}\) Available Online: [http://ai.fmcsa.dot.gov/sms/](http://ai.fmcsa.dot.gov/sms/)
Compliance, Safety, Accountability:
Evaluating a New Safety Measurement System 
and its Implications

December 2012

950 N. Glebe Road
Arlington, VA
(703) 836-1966
atri@trucking.org
www.atri-online.org

Prepared by the American Transportation Research Institute