**MCSAC Task 12-03: Evaluation of and Recommendations on the Compliance, Safety, Accountability (CSA) Program**

**CSA Subcommittee Meeting, December 5, 2012**

**CSA Data Panel Discussion**

1. **Data quality: Are we asking the right questions? Collecting the right data? Addressing the right audience to collect the data? How is the data being measured?**
   1. James Gimpel, Professor, University of Maryland
      1. The data is “censored” by not including many zero scores, i.e., clean inspections are often not uploaded to the Safety Management System (SMS) in the field.
2. **Data integrity: How useful are the data and what else needs to be collected?** 
   1. The SMS is attempting to account for high-exposure carriers (i.e., those that drive a lot more miles).
      1. The system used to take account only power units of operation.
   2. Approximately 325,000 carriers do not have enough data to be scored in the system but account for only 8 percent of crashes.
      1. David Madsen, Volpe Center, U.S. Department of Transportation (U.S. DOT) hypothesizes that these are companies with very limited operation. Given limited resources, he believes the agency should focus on carriers involved in crashes (those with sufficient negative information to have a percentile assigned – 83% of crashes).
   3. Safety organizations (Owings, Road Safe America): Given FMCSA’s limited resources, SMS is working because it is showing negative percentiles for carriers that are involved in 83% of reportable crashes.
   4. Anthony P. Gallo, CFA, Managing Director – Equity Research, Transportation and Logistics Research, Wells Fargo Securities, LLC:
      1. Small carriers have disproportionate inspection rates (per power unit or per million miles).
      2. Because a majority of inspections result in some violations and more recent violations are weighted heavily this can result in a negative feedback loop for small carriers because they will be followed up with more inspections.
3. **How are drug and alcohol violations data used and analyzed? What do the data tell FMCSA about drivers? Are there better ways to collect drug and alcohol data?**
   1. Rebecca M. Brewster, President and Chief Operating Officer, American Transportation Research Institute (ATRI): ATRI concluded that the SMS methodology for determining percentile scores is not calibrated correctly for the Controlled Substances and Alcohol or Driver Fitness BASICs (Behavior Analysis & Safety Improvement Categories).
      1. ATRI concluded that it is likely that FMCSA’s severity weighting methodology places too much weight on safety-irrelevant violations and too little weight on safety-critical violations in these two BASICs.
4. **How are the data relevant to crashes? What conclusions can be made in terms of crashes? Does the data tell the right story about crashes and carriers?** 
   1. David Madsen, Volpe Center: Driver Fitness BASIC is negatively correlated with crash risk.
      1. This may occur due to the lack of specificity in certain violations within the Driver Fitness BASIC. For example:
         1. Missing medical card (most common violation in this BASIC)
            1. Could be misplaced – not safety related.
            2. Could be expired – may be safety related.
            3. Driver could be medically unqualified to drive – is safety related.
         2. Operating while suspended (no reason specified for this violation)
            1. Sometimes CDL suspension occurs because of non-safety-related reasons such as unpaid child support.
      2. SMS should be able to emphasize violations for safety-related reasons but because those reasons are not specified the SMS model assigns a lower weight to that violation within the BASIC.
   2. Carriers (Spencer, Owner-Operator Independent Drivers Association (OOIDA); Petrancosta, Con-way Freight): Preventability of crashes is an important part of data quality. Being involved in crashes is different than causing them. Starting from all reported crashes is inappropriate because many of them may not be related.
   3. Daniel Blower, Associate Research Scientist, University of Michigan Transportation Research Institute (UMTRI):
      1. There are relatively few crashes and they have much variability (in terms of cause).
      2. Crashes are an imperfect relation to safety (e.g., carriers with no crashes are not necessarily 100 percent safe).
      3. The Fatality Analysis Reporting System (FARS) data includes causation: In at least 50 percent or more crashes, the primary contribution was the light vehicle driver.
      4. When UMTRI compared the coding of driver errors on crash reports to the geometry of crashes, it found that certain geometric configurations (e.g., rear-end) correlate more closely with a particular finding of fault.
      5. Police reports do not necessarily report fault but they do include geometry of crash and some narrative.
      6. In response to a question regarding how many jurisdictions find fault in collisions in crash reporting, Blower stated that only some crash reports have an indication of fault.
         1. Other jurisdictions provide information that might give some indictor of fault (e.g., Michigan reports note when there was a “hazardous action”).
         2. Blower does not know the specific number of jurisdictions whose crash reports indicate fault.
      7. If you exclude not-at-fault crashes, the relationship between the BASICs and crash risk would sharpen, likely increasing the slope of the line correlating crash rate to BASIC score.
   4. One subcommittee member commented that the variance in crash reporting differentially impacts small carriers because one misassigned crash could strongly effect the Crash Indicator BASIC results for a carrier, whereas it would not make as much of a difference for a large carrier.
      1. Daniel Blower, UMTRI: Police reports are not the only source of crash data – they are only one source. If they have imperfect data, that would be a part of measurement error.
   5. James Gimpel, Professor, University of Maryland: The relationships of CSA scores do not reflect true crash risk.
      1. Crash risk is impacted by many other variables not accounted for in CSA scores, e.g., road conditions, traffic conditions, weather conditions, etc.
      2. Because these other conditions are omitted from the model regression, the results are biased to inappropriately emphasize certain BASICS.
      3. Different relationships between BASIC scores and crash risk are shown across firm size.
         1. Less of a relationship between crash risk and BASIC score is shown for small carriers. Thus, the CSA system is biased toward large carriers.
   6. Anthony P. Gallo, Wells Fargo Securities: Looking at individual carriers (without aggregation) shows less correlation with accidents per million miles and BASIC scores.
      1. Lack of “responsibility” assigned to accidents in crash data is problematic.
      2. Fifty seven percent of crashes involve carriers with no score above any BASIC threshold.
         1. But this population of carriers that have a BASIC score that is not above threshold is approximately 400,000.
         2. Forty five % of crashes involve 10% of the carrier population.
   7. ATRI found that the best indicator of crashes was how many “Alerts”[[1]](#footnote-1) a carrier has: Carriers with an “Alert” in all five public BASICs have a crash rate roughly 5.1 times higher than a carrier with “Sufficient Data But No Score.”
      1. ATRI recommended an Alternative Scoring Mechanism (ASM) based on number of Alerts per carrier. It stated that this Alternative Scoring Mechanism would present more valid fleet safety profiles to the public (than the current CSA scoring system).
      2. One subcommittee member stated that the ATRI recommended ASM is good because it removes the precision of percentile ranks, which may give the impression of more precise differentiation than is actually possible based on the data.
   8. Safety Groups: Focus on fixing BASICs that are not reflective of crash risk.
      1. There is value in looking at all crashes regardless of fault.
      2. Police reports are subjective and imperfect. Asking someone to determine fault by looking at that information would be even more subjective.
   9. Shippers/Brokers: Focus on fixing how people use the CSA system.
      1. Use only crashes where fault is determined.
      2. Focus on training and technology systems that are proven to improve safety.
5. **How should the data collected by CSA be released to the public (in a manner that is clear and relevant to safety)? Should compliance data be shared with the public now or when more carrier data are collected?**
   1. Carriers (Spencer, OOIDA; Petrancosta, Con-way Freight): When FMCSA makes the scores public, the Agency leaves the consumer/public to make a decision that is not necessarily rational. If the customer makes a decision not to work with a carrier based on one negative rating in one BASIC (which they can see) but that carrier has a low crash rate (which the public cannot see) the customer might have made a different decision if it had complete information about the carrier.
      1. The consumer may alternatively select a carrier that is not rated because they are operating under the radar.
   2. Anthony P. Gallo, Wells Fargo Securities:
      1. Because 2 out of 5 BASICs do not correlate with crash risk, the Agency should not make those BASICs public, although FMCSA can continue to use those BASI Cs for resource allocation purposes (i.e., inspection targeting).
      2. If there is some problem with state resources and it impacts the data or CSA scores, do not make it public.
   3. One subcommittee member (Davison, SIRVA, Inc.) stated that crash data should be available to the public.
   4. ATRI: Since many stakeholders (e.g., shippers, insurers, litigants) assume CSA profiles reflect safety status, steps should be taken to provide the public only information that can be reliably tied to safety.
6. **Has anyone measured the impact of geographical differences? For example, the impact of one State conducting more inspections than another or how crashes are reported. How much would these regional disparities impact the data collected?** 
   1. Daniel Blower, UMTRI:
      1. UMTRI studied original crash files from the States, analyze them, and compare them to the crash results in the Motor Carrier Management Information System (MCMIS) file.
      2. UMTRI found that State reporting varied greatly. UMTRI found definite under-reporting, and that such under-reporting varies by State.
      3. States typically reported crashes at higher rates when there were fatalities or serious injuries.
      4. States tend to report interstate carrier crashes more than intrastate carrier crashes.
      5. The effect is to have missing data in MCMIS. This makes it more difficult to identify safety problem and relationships between safety variables, but does not totally obscure the relationships.
      6. State evaluations are on UMTRI website.
      7. The problems with reporting are resolvable if States fill out police reports and use a computer algorithm to find which cases are reportable crashes (UMTRI uses a computer algorithm to sort through cases).
   2. From a motor carrier’s perspective, they should ask whether the system is identifying carriers with highest crash risk for purposes of intervention.
      1. Carriers compete with carriers in States that have less reporting and crashes may not get reported as well.
   3. James Gimpel, Professor, University of Maryland: Plotting the data by geography shows peaked incidents of violations that were not correlated to traffic conditions, weather, etc. It could only be accounted for by different enforcement techniques.
   4. Anthony P. Gallo, Wells Fargo Securities:
      1. Discrepancy in enforcement (given violations) across states can impact scores.
      2. FMCSA should encourage States to conduct more uniform crash reporting.
   5. Question from subcommittee: Can data variances over geographic areas be adjusted or somehow normalized?
      1. David Madsen, Volpe Center: You do not want to discount data where a geographic area is finding too many violations. If they are not citing violations in accordance with the Commercial Vehicle Safety Alliance (CVSA) guidelines, that is a problem.
7. **Would data look different if the collective commercial motorcoach data were analyzed separately?**
   1. No one has examined passenger carrier violation/crash data alone.
   2. There is not as much data on passenger carriers (not as many inspections).
      1. There are unlikely to be many Driver Fitness, Driver Qualification, and Unsafe Driving violations because motorcoaches generally do not get pulled over full of passengers.
   3. There are also fewer passenger carrier companies, so the data that exists may not be sufficient to provide a relevant rank.
   4. Supina (DATTCO Inc.): Many states do not require inspections. SMS studies should look at motorcoaches.
8. **What dynamic do the data produce on the outliers (i.e., carriers with data that does not follow the trend or national average)? Why do outliers exist and what effect do the data have on the outliers with regard to their scores?**
   1. Outliers (i.e., carriers with a low crash rate, but that are deficient in one BASIC): How many of those outliers are out there? (Question asked by subcommittee member)
      1. Madsen was unable to answer this question, but did explain that SMS tries to screen out carriers reporting a very large fleet, but no violations (assume those fleets are not operating very much).
      2. SMS also screens out leasing companies (e.g., Penske).
   2. Daniel Blower, UMTRI: It is worthwhile to look at outliers, but outliers should not drive the CSA program.
      1. Outliers problem also go both ways – some carriers are involved in unsafe driving and yet do not have crashes. This results from the variability and random component of crashes.
   3. An outlier carrier that has high violations but no crashes might be very good at hiring good drivers.
   4. Spencer, OOIDA: “Outliers” are the small operators. They get violations because of more likely small carriers to get inspections, but they do not have reportable crashes.
      1. Small carriers make up the vast majority of the industry.
9. **Has research been conducted on alternative weightings for violations within each BASIC?**
   1. ATRI: If FMCSA made the Agency’s severity weighting methodology public, ATRI could assess the accuracy of the severity weights applied by the SMS.
10. **Are there additional data that should be captured? For example, equipment type, regional data, urban versus rural, day time/night time. Are these data collected and what story do they tell? Are moving violation data being collected and is there an impact on crashes?**
    1. Geography may also make a difference: Crash risk for a carrier driving in lower Manhattan 15 times a day is much greater than a carrier operating in a rural area.
    2. The panel experts have not analyzed the BASIC score relationship to crash risk broken out for these data variables.
    3. The panel experts indicated that doing so would be worthwhile.
    4. Spencer, OOIDA: There are differences in routes on which carriers operate (e.g., Boston to Baltimore routes, vs. Chicago to Denver route). If you only operate on east coast I-95 corridor, you are going to have more crashes.
       1. Blower categorizes this problem as “measurement error,” which obscures the relationship but it does not make the relationships go away.
       2. The relationships are consistent. These issues make it more difficult.
       3. Data is imperfect: States control crash reporting; reporting from big cities not as good as other jurisdictions; crash reporting by State police is better than reporting from county/local jurisdictions.
       4. But the idea is that such data degradation does not prevent from seeing trends – it makes identifying the relationships more difficult but you still see them.
11. **Data regarding equipment for straight trucks and how they are compared to combination trucks. Are they being interpreted correctly? Are there alternative ways to group different segments of the industry?** 
    1. This topic was not addressed by the panel.
12. **Given the scores, are the threshold percentiles appropriate? Can the thresholds for groups be more descriptive? What was the basis behind creating the thresholds and what are the goals for each threshold?**
    1. This topic was not addressed by the panel.
13. **How is hazmat grouped and what is the relationship is between hazmat data and crashes?**
    1. This topic was not addressed by the panel.
14. **Does data suggest that those carriers with technology on their trucks are safer?** 
    1. This topic was not addressed by the panel.
15. **Is the collected crash data differentiated between fatality/injury crashes and tow-away crashes?** 
    1. States are required to report both types of crashes but the two types of crashes are not differentiated in the Crash Indicator BASIC.
    2. Daniel Blower, UMTRI: Fatal accidents seem more likely to be reported than serious injury and tow-away accidents. However this trend is not uniform for each State.
    3. Subcommittee question: Would there be an advantage to changing the definition to exclude tow-away accidents from reportable crashes?
       1. Daniel Blower, UMTRI:
          1. This would result in using fewer accidents, which would shrink the dataset. This would decrease your ability to capture crash data on unsafe behavior. You would not be able to measure much.
       2. Petrancosta, Con-way Freight: But the data you would be using would be much better correlated to fault.
    4. Spencer, OOIDA: Single vehicle “crashes” are reportable if the vehicle gets towed, which might skew the data (e.g., vehicle catching fire – no crash, two vehicle crash where light vehicle driver requested a tow that might not be necessary).

1. An “Alert” in a BASIC is received as a result of possessing a percentile score above FMCSA’s cutoff and/or a Severe Violation in that BASIC. [↑](#footnote-ref-1)