



## **Motor Carrier Safety Performance Profile**

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Prepared for:  
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Federal Motor Carrier Safety Administration

February 2004





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## **Executive Summary**

This report provides a summary of the safety performance of carriers across all the individual segments in the industry. It includes summaries for both for-hire and private carriers in each segment and is drawn from measures that are collected as part of FMCSA's SafeStat algorithm. The discussion is divided into five sections and gives results for the for-hire and private firms, separately, across all the segments. The initial section compares the industry's segments (for-hire and private firms separately) based on the overall Compliance Review (CR) data for a carrier's most recent review, regardless of when it occurred. The second section focuses on driver performance based on CR results and roadside inspections across the industry's segments. Section three is devoted to vehicle performance, again based on CR results and roadside inspections. Within section two, there is a discussion devoted to an analysis of the performance of the various industry segments with respect to hours-of-service compliance by drivers. Section four assesses the performance of for-hire and private motor carriers across all industry segments in the area of safety management practices. Section five compares the segments in terms of fatality and total crash rate measures that are based on State-reported crashes as well as on crash rate information collected during CRs.

In meeting its objective to reduce truck crashes and the associated injuries and fatalities, FMCSA has a range of enforcement tools. With limited resources, however, the FMCSA benefits from databases that enable it to more effectively target those resources toward specific problem areas. In monitoring the safety performance of all for-hire and private carriers, it is important to recognize that the motor carrier industry has distinct operating segments with significantly different environments and safety performance records. The assessment of the safety performance of for-hire and private carriers in each of the industry's major operating segments is a key decision tool that will facilitate more effective use of FMCSA resources.

The figures in this report demonstrate that there are fundamental performance differences across the industry segments and between for-hire and private carriers. Segments such as the for-hire less-than-truckload (LTL) carriers and tank operators excel in safety performance across an entire range of indicators, from driver out-of-service measures to crash rates. Also notable for their excellent safety performance are for-hire passenger carriers—in particular, for their Vehicle Safety Evaluation Area (SEA) scores—and private tank operators—in particular, for their Driver SEA scores.

Regardless of the specifics of performance for individual segments, the information in this report provides a continuing source for use in tracking longitudinal performance of the carrier segments. Indeed, any drastic year-to-year change in performance by an individual for-hire or private carrier segment will provide FMCSA with an opportunity to focus resources on the problem to determine its cause and suggest remedial actions. The ability to very quickly compare the safety performance of both for-hire and private carriers across an array of segments will be an important asset in assisting the FMCSA in accomplishing its objective of improving safety performance.

## Introduction

This report is the result of a contract between the Federal Motor Carrier Safety Administration and the Supply Chain Management Center of the Robert H. Smith School of Business entitled “Measuring Exposure in the Diverse Motor Carrier Industry.” The report constitutes a profile of the safety performance of the motor carrier industry and its significant operating segments. The measurement of carrier safety performance relies on the motor carrier safety status (SafeStat) analysis methodology developed to support an improved process in FMCSA for motor carrier safety fitness determination.<sup>1</sup>

The SafeStat methodology provides a number of safety performance indicators based on the results of a carrier’s roadside inspections, Compliance Reviews (CRs), enforcement cases, and crashes. This study evaluates the performance of motor carriers grouped into individual segments based both on type of operation (for-hire and private) and on major commodity handled. Each segment is compared across a series of individual performance measurements. The report compares performance of both for-hire and private carriers in the various industry segments.

The study draws on three cross-sectional profiles of the SafeStat data compiled in September 2000, September 2001, and September 2002. Each profile compiles available safety performance data on the carriers included in the Motor Carrier Census file. In total, more than 400,000 individual carriers are reviewed in conjunction with each profile. The results reported here include a subset of all carriers with sufficient safety data to enable the SafeStat methodology to evaluate performance in at least one of four major evaluation categories: driver, vehicle, safety management, or crash/accident. Throughout the study, there is a reporting of the number of observations that form the basis of the safety performance summary measures. There is wide variation across the segments and across the measures in the number of observations available for analysis. As a result, there are instances in which the reported results are not robust due to an inadequate number of observations.

The report provides a systematic review of motor carrier safety performance across a wide variety of specific dimensions in all the major motor carrier segments. There is specific emphasis on the differences in safety performance between for-hire and private carriers as well as an emphasis on differences across commodity-based segments. It is anticipated that the identification of good safety performance will constitute a basis for further examination of the specific policies and procedures of each segment’s safety leaders. Establishing the reference points of safety leaders will assist in efforts by other carriers in each segment to enhance their safety performance.

While the report is based on three cross-sectional profiles of the SafeStat data, it is important to note that some specific performance indicators (e.g., specific inspections, crash rates) can contribute to a carrier’s SafeStat score in more than one profile. For example, the September 2001 SafeStat score for a particular carrier relies on a carrier’s performance during the past 18 months for CRs and 30 months for crash in inspection data prior to the date of data collection.

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<sup>1</sup> Volpe National Transportation Systems Center, Economic Analysis Division, **SafeStat: Motor Carrier Safety Status Measurement System**, Methodology: Version 8.5, Cambridge, Mass., January 2003, Prepared for Federal Motor Carrier Safety Administration.

Thus, some carrier safety performance actions (e.g., a specific safety inspection prior to the September 2000 data collection) influence a carrier's overall SafeStat score in both September 2000 and September 2001. However, all indicators within SafeStat are time-weighted. As such, if an inspection impacts a carrier's SafeStat score in September 2000 and in September 2001, its impact on the September 2001 score will be less than its impact on the September 2000 score, since the event happened closer in time to the September 2000 SafeStat data collection than to the September 2001 SafeStat data collection. Time weighting the impact of events minimizes the problem of a single event having an impact on a carrier's SafeStat score in successive time periods. It is necessary, however, to time weight events since safety performance evaluation requires observations of a carrier's behavior over time to establish a sufficiently robust safety record to make an assessment of a carrier's overall safety performance record.

This study evaluates the safety performance of both for-hire and private carriers in 10 industry segments. In addition to these 20 segment categories, the general freight for-hire segment is split into two segments: one includes the for hire LTL (less-than-truckload) carriers and one includes the for-hire TL (truckload) carriers. As a result, there are 21 segments in total: 11 are for-hire segments and 10 are private carrier segments. One segment has a different designation for private sector haulers. The segment is labeled "household goods" for the for-hire carriers and "furniture manufacturers" for the private haulers. Finally, the farm-combined segment is an aggregation of the following individual segments: farm supplies, logging, produce, grain feed, produce, and livestock. Throughout the report, references are made to the 21 industry segments evaluated.

There are important reasons to compare the various industry segments across a wide range of safety performance indicators. First, FMCSA has many tools in its safety enforcement arsenal, ranging from CRs to roadside safety inspections. Many of the safety performance indicators are associated with particular enforcement programs. Thus, the driver out-of-service rate is directly associated with the roadside inspection program. By having longitudinal data across individual segments, FMCSA can target resources to particular segments whose noncompliance rates exceed threshold levels. At the same time, special considerations might be in order for segments whose performance is significantly better than the norm. Second, information about cross-segment differences in performance can lead to more detailed investigations about the operating policies and procedures of either the best performing segments or the worst performing segments. Third, having cross-sectional trend data can provide early warning signals to FMCSA if performance in any one segment changes drastically from one time period to the next. Monitoring trends can provide the basis for early intervention and for a short term reversal of the observed negative trend. Overall, there is great merit in summarizing performance data by industry segment over time.

## **Report Outline**

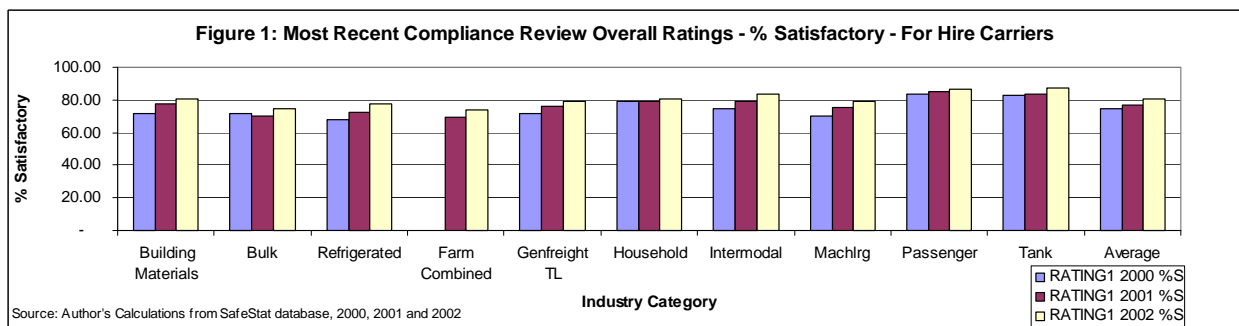
This report provides a summary of the safety performance of carriers across all the individual segments in the industry. It includes summaries for both for-hire and private carriers in each segment and is drawn from measures that are collected as part of the SafeStat algorithm. The discussion is divided into five sections and gives results for the for-hire and private firms, separately, across all the segments. The initial section compares the industry's segments (for-hire

and private firms separately) based on the overall CR data for a carrier's most recent review, regardless of when it occurred. There is a separate comparison across the industry's segments for only those CRs conducted in the 18 months prior to the development of the database (September 2001). The second section focuses on driver performance based on CR results and roadside inspections across the industry's segments. Section three is devoted to vehicle performance, again based on CR results and roadside inspections. Within section two, there is a discussion devoted to an analysis of the performance of the various industry segments with respect to hours-of-service compliance by drivers. Section four assesses the performance of for-hire and private motor carriers across all industry segments in the area of safety management practices. Section five compares the segments on fatality and total crash rate measures that are based on State-reported crashes as well as on crash rate information collected during CRs.

### Overall Compliance Review Summary Results

Figures 1 and 2 summarize the results of the most recent CRs (regardless of when they occurred) overall and in each of the industry's segments for for-hire and private carriers, respectively, based on the three Safestat profiles in 2000, 2001, and 2002. As shown in Figures 1 and 2, the average percentage of firms in a segment with a satisfactory rating from a CR increased steadily between 2000 and 2002. The average percentage of for-hire carriers in a segment receiving a satisfactory rating increased by 18.4 percent between 2000 and 2002, from 68.85 percent rated satisfactory in 2000 to 81.53 percent rated satisfactory on average in 2002. Similarly, the average percentage of private carriers in a segment receiving a satisfactory rating increased by 26.4 percent between 2000 and 2002, from 55.98 percent rated satisfactory in 2000 to 70.75 percent rated satisfactory in 2002. The for-hire carriers have, on average, a slightly (13.2 percent) higher share of carriers in a segment with a satisfactory rating than do the private carriers.

With respect to unsatisfactory ratings, Figures 1 and 2 show significant declines in the percentage of firms with an overall unsatisfactory rating. The average percentage of for-hire carriers in a segment with an unsatisfactory rating decreased by 61.2 percent during the period, from 4.12 percent in 2000 to 1.6 percent in 2002. Similarly, the average percentage of private carriers in a segment with an unsatisfactory rating decreased by 58.3 percent during the period, from 9.03 percent in 2000 to 3.77 percent in 2002. The percentage of private carriers with an unsatisfactory rating in a segment on average is 135 percent higher than the percentage of for-hire carriers with an unsatisfactory rating.





As shown in Figure 1, the following for-hire industry segments all had an average of at least 80 percent of the firms achieving a satisfactory rating on their most recent CR (regardless of when the CR occurred) based on data in the SafeStat 2002 database: building materials, LTL, intermodal, household goods, passenger carriers, and tank operators. The for-hire segments with the highest percentage of firms with an unsatisfactory rating were (with unsatisfactory percentages in parentheses): bulk (3.03 percent) and farm-combined (3.46 percent).

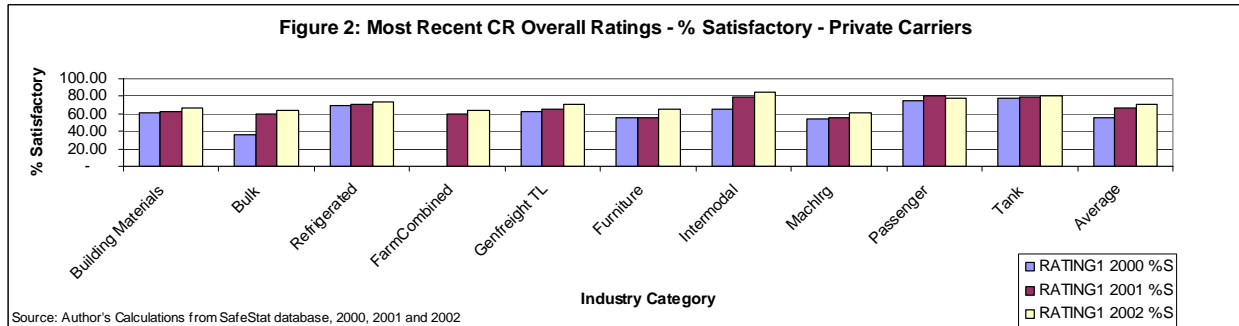
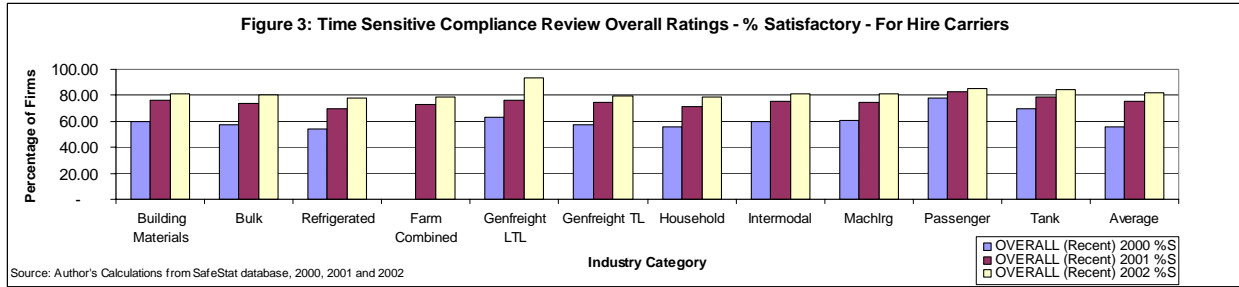


Figure 2 shows the following private segments in which at least 70 percent of the firms on average achieved a satisfactory rating on their most recent CR (regardless of when the CR occurred): refrigerated, general freight TL, intermodal, passenger, and tank. The private carrier segments with the highest percentage of firms with an unsatisfactory rating were: large machinery (6.5 percent); building materials (5.34 percent), and bulk (5.15 percent).

Figures 3 and 4 summarize results from only those CRs conducted in the 18 months prior to the development of each of the three databases. The pattern of these results closely parallels the results based on the carriers' most recent CR, regardless of whether it occurred within the 18 months prior to the development of the database (i.e., results shown in Figures 1 and 2). Thus, among for-hire carriers, the average percentage of carriers with satisfactory ratings across all individual segments increased from 55.96 based on CRs conducted prior to the 2000 database development to an average of 81.96 based on CRs conducted prior to the 2002 database development—an increase in the percent of carriers with a satisfactory rating of 46.5 percent. Among private carriers, the average percentage of carriers with satisfactory ratings across all individual segments increased from 53.11 based on CRs conducted prior to the 2000 database development to an average of 78.61 based on CRs conducted prior to the 2002 database development—an increase in the percent of carriers with a satisfactory rating of 32.4 percent. Based on CRs conducted prior to the 2002 database development, on average across all industry segments, less than 1 percent of the carriers received an unsatisfactory rating. Clearly, the trend is for a significant increase in the percent of carriers with a satisfactory rating from a CR and a significant decrease in the percent of carriers with an unsatisfactory rating.



As shown in Figure 3, the following for-hire industry segments all had an average of at least 80 percent of the firms achieving a satisfactory rating from CRs conducted in the 18 months prior to the development of the SafeStat 2002 database: building materials, bulk, LTL, intermodal, large machinery, passenger carriers, and tank operators. The only for-hire carrier group meeting the 80 percent threshold on the basis of the most recent CR conducted (regardless of when the CR occurred) but not meeting the threshold on the basis of CRs conducted only during the 18 months prior to the development of the SafeStat 2002 database is the household goods segment. However, 78 percent of the household goods carriers with CRs conducted during the eighteen months prior to the SafeStat 2002 database development did achieve a satisfactory rating.

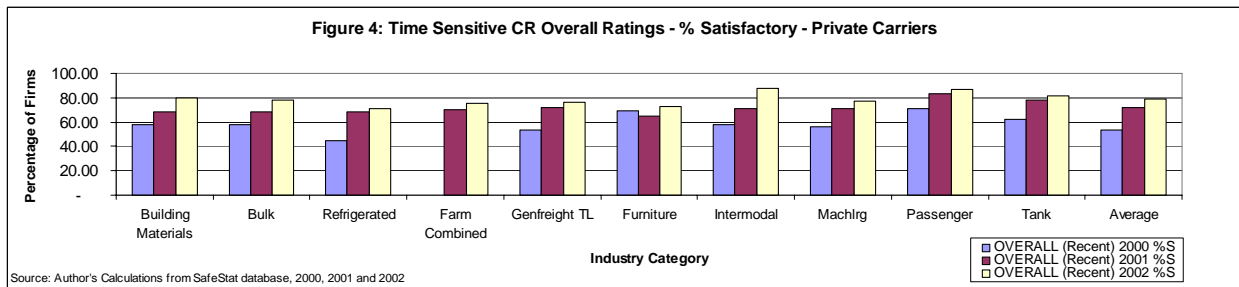


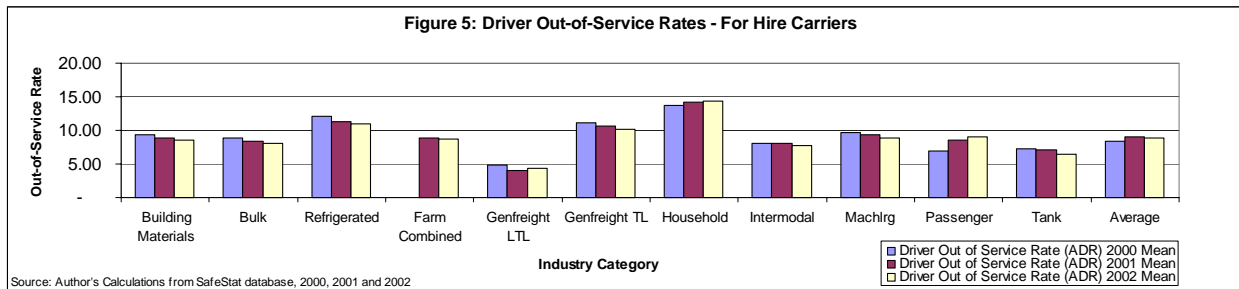
Figure 4 shows the following private segments in which at least 70 percent of the firms on average achieve a satisfactory rating on CRs conducted in the 18 months prior to the development of the SafeStat 2002 database: building materials, bulk, refrigerated, farm combined, general freight TL, furniture manufacturers, intermodal, large machinery, passenger, and tank. Private carriers in building materials, bulk, farm combined, large machinery and furniture manufacturers met the threshold on the basis of CRs conducted in the 18 months prior to the 2002 SafeStat database development but did not meet the threshold on the basis of the most recent CR conducted (regardless of the timing of the CR).

## Driver Performance Results

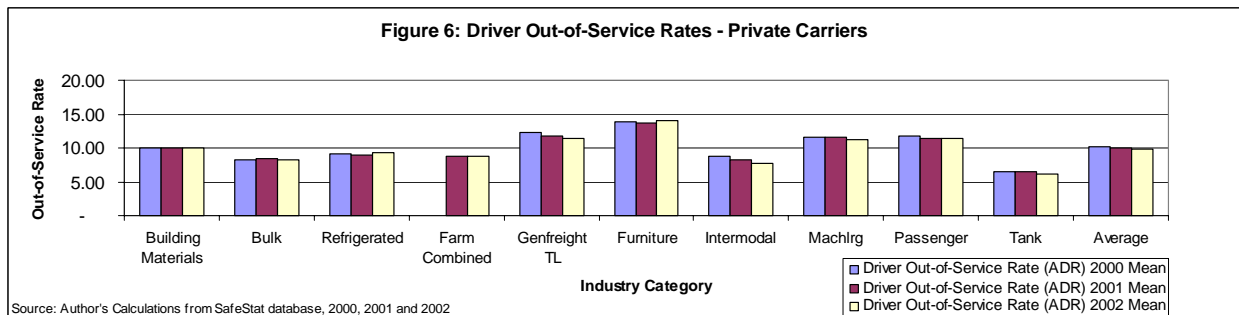
This section reviews the performance of carriers overall and in each of the major segments in the area of driver safety behavior. The SafeStat database includes three specific measures of driver behavior that allow comparisons to be made across the major segments of the industry. The first measures for each carrier the percentage of its roadside inspections in which the vehicle's driver had at least one driver out-of-service violation. This driver out-of-service rate is summarized across all carriers for each of the three SafeStat databases (2000, 2001, and 2002) and compared across the individual segments. The second measure looks at a specific type of driver violation

uncovered in a roadside inspection—i.e., hours-of-service violations. There is a calculation for each carrier of the number of hours-of-service, out-of-service violations divided by the number of inspections. This hours-of-service, out-of-service rate is summarized across all carriers for each of the three years (2000, 2001, and 2002) and compared across the individual segments. The third measure is the Driver Safety Evaluation Area (SEA) score. The Driver SEA combines data from the roadside inspections with data from CRs occurring in the 18 months prior to the compilation of each database (2000, 2001, and 2002). In addition, the Driver SEA includes a moving violation measure (based on moving violation citations issued to a carrier’s drivers), where available. The Driver SEA is converted to a percentile with 100 representing the highest or worst performance. The Driver SEA is based entirely on inspection data if the carrier had no CR in the period 18 months prior to the database construction.

Figures 5 and 6 display the driver out-of-service rates overall and in each of the industry’s segments for for-hire and private carriers, respectively, based on the three SafeStat profiles in 2000, 2001, and 2002. As shown in Figures 5 and 6, there has been little change in the driver out-of-service rate during the 3-year period. The average driver out-of-service rate across all segments for the for-hire carriers stood at 8.8 percent in 2002, up from an average of 8.4 percent in 2000. The average driver out-of-service rate across all private carrier segments equaled 9.8 percent in 2002, only 1 percentage point higher than the average for for-hire carriers. The 2002 rate for private carriers is less than 1 percentage point higher than the average rate in 2000 (9.2 percent).

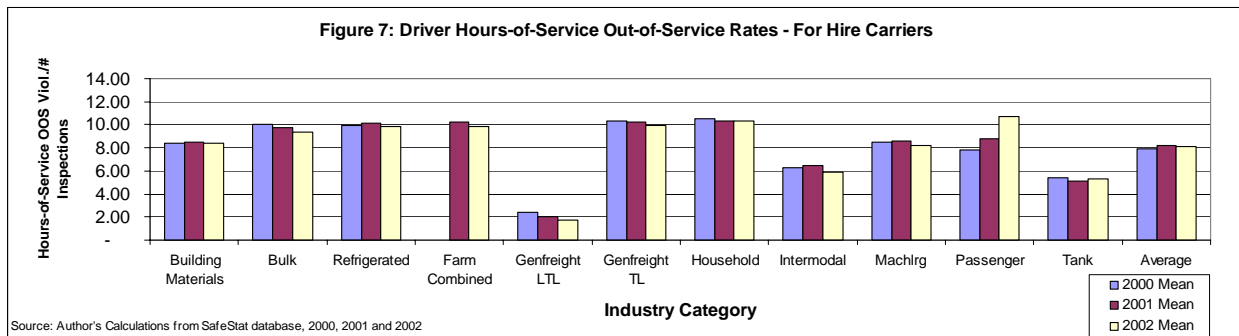


Focusing on the results from the individual for-hire segments shown in Figure 5, it is clear that the LTL carriers, with a 4.3 percent out-of-service rate, and the tank operators, with a 6.5 percent rate, are the for-hire segment leaders. At the opposite end of the spectrum, the worst performers are the household goods carriers, with an average out-of-service rate of 14.3 percent; the general freight TL carriers, with an average rate of 10.2 percent; and the refrigerated carriers, with an average rate of 10.9 percent.

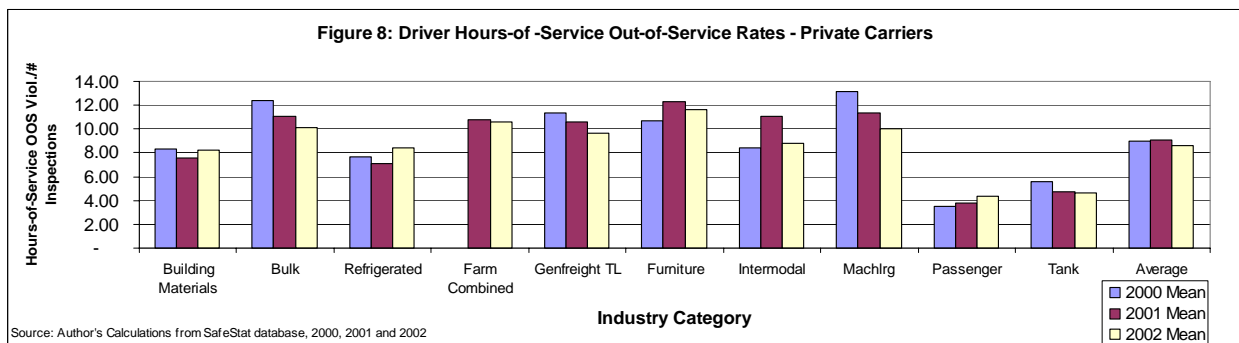


Examining the private carrier segments shown in Figure 6, tank operators (with an average out-of-service rate of 6.2 percent) and intermodal carriers (with an average out-of-service rate of 7.8 percent) are the private carrier segment leaders. The worst performing private carrier segments are the following (with the average out-of-service rates in parentheses): passenger (11.4 percent); large machinery (11.2 percent); general freight TL (11.3); and furniture (14.1 percent). The margin of error for driver out-of-service rates is higher for the private carriers ADR rates, because the sample size was too small.

Figures 7 and 8 report on a particular type of out-of-service violation uncovered in a roadside inspection—i.e., hours-of-service violations. While new hours-of-service regulations are set for implementation in January 2004, Figures 7 and 8 measure the number of hours-of-service, out-of-service violations as a percentage of a carrier’s roadside inspections. It should be noted that it is possible to have more than one hours-of-service, out-of-service violation per inspection. Data are reported in Figures 7 and 8 for all carriers and for each of the industry segments (both for-hire and private) based on the SafeStat 2000, 2001, and 2002 data profiles. The measure is stable across the three time periods for both for-hire and private carriers. In 2002, the average rate of hours-of-service, out-of-service violations as a percentage of total inspections across all segments stood at 8.2 percent for for-hire carriers and 8.6 percent for private carriers.

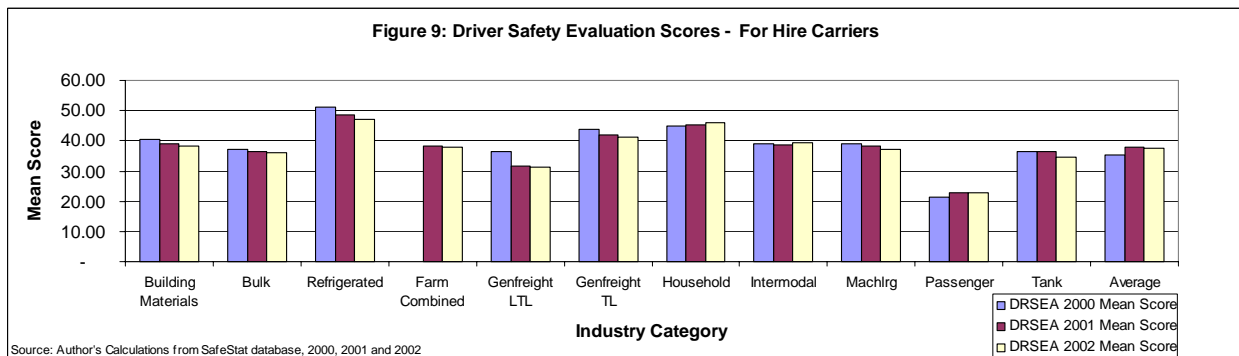


Among for-hire carriers, the industry segments with the lowest hours-of-service, out-of-service rates are the LTL carriers (1.8 percent), tank operators (5.3 percent), and intermodal carriers (5.9 percent). Both the LTL and tank segments are also leaders in the overall driver out-service-rate. At the other end, the worst performing for-hire segments are the following (with the hours-of-service, out-of-service rates in parentheses): passenger (10.7 percent); household goods (10.3 percent); and general freight TL (10.0 percent). Both the household goods and general freight TL segments had the highest overall driver out-of-service rates among for-hire carriers.

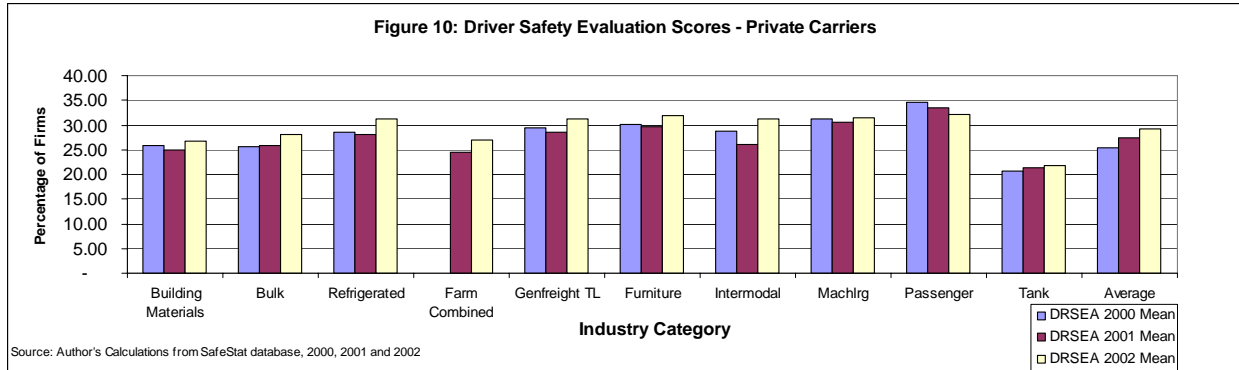


Among the private carriers, the segments with the lowest hours-of-service, out-of-service rates are the passenger carriers (4.3 percent) and tank operators (4.7 percent). The private tank carriers had the lowest average overall driver out-of-service rates. It is interesting to observe, however, that the private passenger carriers scored high on the overall driver out-of-service rate, but achieved the lowest average hours-of-service violation rate. Obviously, the private passenger carriers had driver problems in areas other than hours-of-service violations. The worst performing private segments in the hours-of-service violation category are the following segments (with the hours-of-service, out-of-service violation rates in parentheses): large machinery (10.0 percent); bulk (10.1 percent); farm-combined (10.6 percent); and furniture (11.6 percent). Two of these segments, furniture and large machinery, had the highest rates for overall driver out-of-service performance as well. These conclusions could be affected by the relatively small sample size.

Figures 9 and 10 address the Driver SEA, which is treated as an overall driver performance measure. As noted, within the SafeStat methodology, carrier performance on various driver measures (roadside inspections, CR evaluations, moving violations, etc.) is combined, and carrier scores are converted to percentile rankings, with higher scores equated with poorer performance. While the performance of for-hire carriers and private carriers is nearly equal on both driver measures already examined (driver out-of-service rates and hours-of-service violation rates), private carriers on average have an advantage over for-hire carriers on the Driver SEA measures. Thus, while the average Driver SEA score across all private carrier segments is 29.3 percent, the average scores across all for-hire carrier segments is 37.41 percent. These Driver SEA scores are based on the SafeStat 2002 database. The results based on the SafeStat 2001 and the SafeStat 2000 databases are closely parallel, with the advantage going to the private carriers each year.



As shown in Figure 9, there were three for-hire segments in which the average Driver SEA score exceeded 40 percent. They are (with the Driver SEA scores in parentheses): refrigerated (47.1 percent); household goods (45.9 percent); and general freight TL (41.3 percent). There were only two for-hire segments with low average DRSEA scores: passenger carriers (22.9 percent) and LTL carriers (31.1 percent).

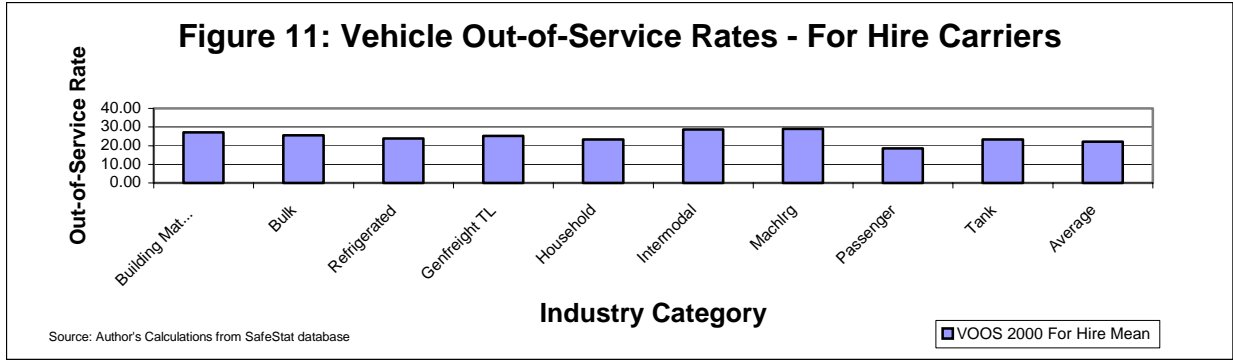


As shown in Figure 10, the private carrier segments with the lowest average Driver SEA scores in the SafeStat 2002 database are the following (with Driver SEA scores in parentheses): tank operators (21.8 percent); farm-combined (26.9 percent); building materials (26.8 percent); and bulk (28.1 percent). No private carrier segment had an average Driver SEA score greater than 32 percent in the SafeStat 2002 database.

## Vehicle Performance Results

This section reviews the performance of carriers overall and in each of the major segments in the area of vehicle performance. The SafeStat database includes two specific measures of vehicle performance that allow comparisons to be made across the major segments of the industry. The first measures, for each carrier, the percentage of its roadside inspections in which the vehicle had at least one vehicle-related out-of-service violation. This vehicle out-of-service rate is summarized across all carriers for the SafeStat 2000 database and compared across the individual segments. Information on vehicle out-of-service rates based on the SafeStat 2001 and SafeStat 2002 databases is not included due to some database issues with this variable in the 2001 and 2002 databases. After initial results were compiled, carrier performance on this variable in each of the segments was totally inconsistent with the Vehicle SEA measure and totally inconsistent with the performance of the variable in the SafeStat 2000 database. The second measure used is the Vehicle Safety Evaluation Area (SEA) score. The Vehicle SEA combines data from the roadside inspections with data from CRs occurring in the 18 months prior to the compilation of each database (2000, 2001, and 2002). The Vehicle SEA is converted to a percentile, with 100 representing the worst performance. The Vehicle SEA is based entirely on inspection data if the carrier had no CR in the period 18 months prior to the database construction.

Figures 11 and 12 include information on the overall average vehicle out-of-service rates across all industry segments for for-hire and private carriers based on the SafeStat 2000 database. The figures show that both the for-hire carriers and the private operators performed at approximately the same level on this measure. Thus, across all segments, the average vehicle out-of-service rate for for-hire carriers is 22.2 percent, while the comparable figure among private carriers is 22.4 percent.



Based on Figure 11, the for-hire segment with by far the lowest average vehicle out-of-service rate was passenger (18.5 percent). At the other end of the spectrum, there are two segments with somewhat high vehicle out-of-service rates: intermodal (28.6 percent) and large machinery (29.0 percent).

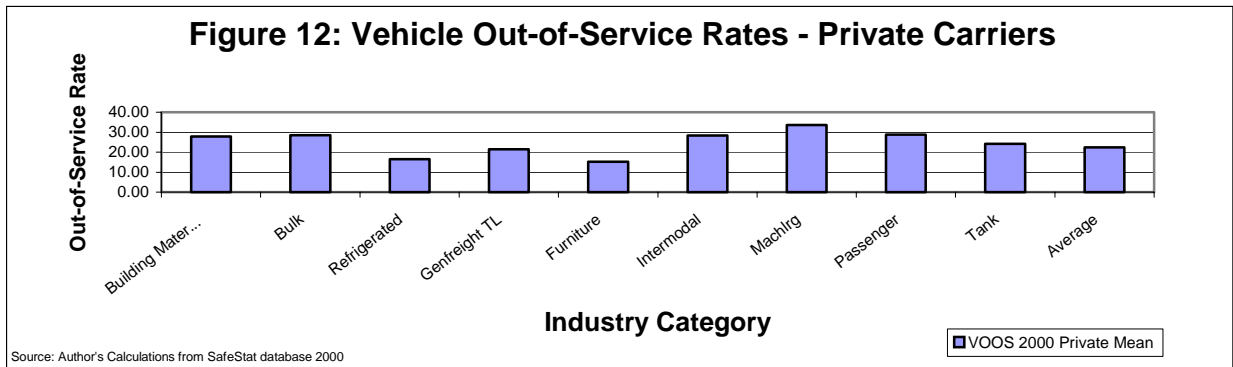


Figure 12 looks at the private carriers and shows that the furniture carriers have the lowest average vehicle out-of-service rate among the private carriers with 15.2 percent average vehicle out-of-service rate, while the refrigerated carriers have the second lowest rate with an average of 16.4 percent. Among the private carriers, the following segments have the highest average vehicle out-of-service rates: large machinery (33.7 percent); passenger (28.8 percent); bulk (28.6 percent) and intermodal (28.3 percent).

Figures 13 and 14 include information on the overall average vehicle out-of-service scores across all industry segments for for-hire and private carriers based on the SafeStat 2000, 2001, and 2002 databases. There is no particular trend in these data over the 3-year cycle in the analysis. Based on the SafeStat 2002 database, the overall average Vehicle SEA score for private carriers is 42.7 percent, and it is only marginally higher for the for-hire carriers, at 44.1 percent.



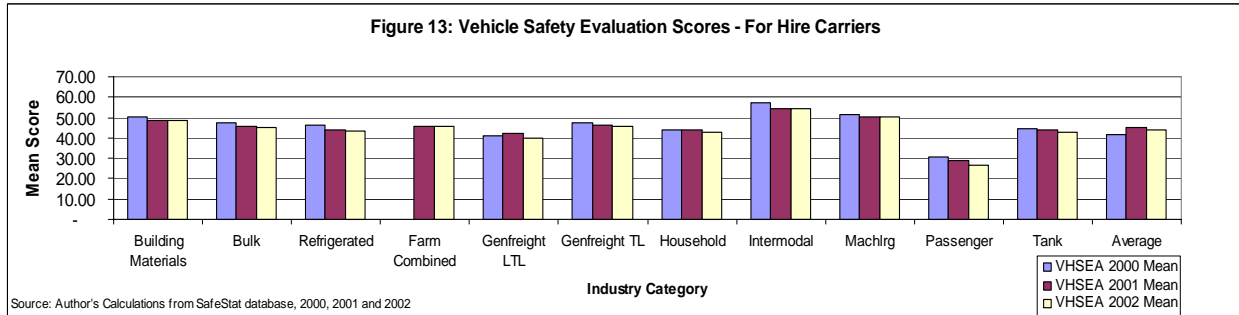


Figure 13 shows that the two for-hire segments with the lowest Vehicle SEA scores are the passenger carriers (26.7 percent) and the LTL carriers (40.0 percent). Both of these segments were also the for-hire carrier segments with the lowest average vehicle out-of-service rates. At the opposite end, the segments with the highest Vehicle SEA scores are intermodal (54.3 percent), large machinery (50.3 percent) and building materials (48.4 percent). Both the intermodal and large machinery segments were identified as the for-hire segments with the highest vehicle out-of-service rates.

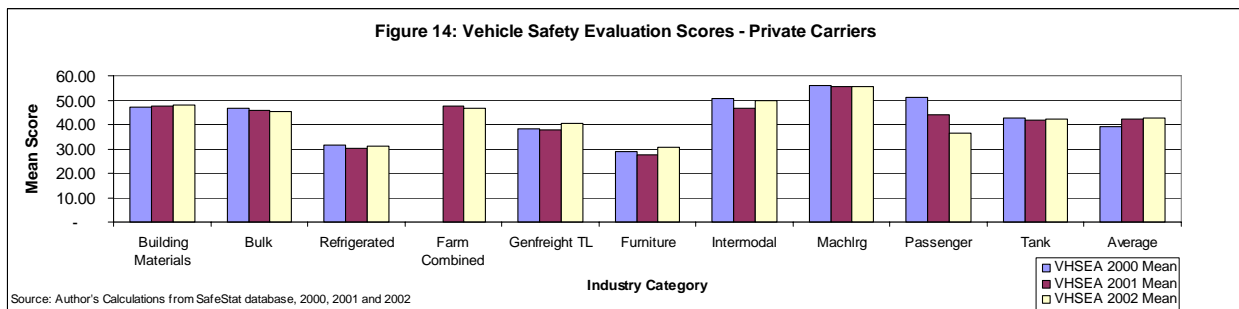


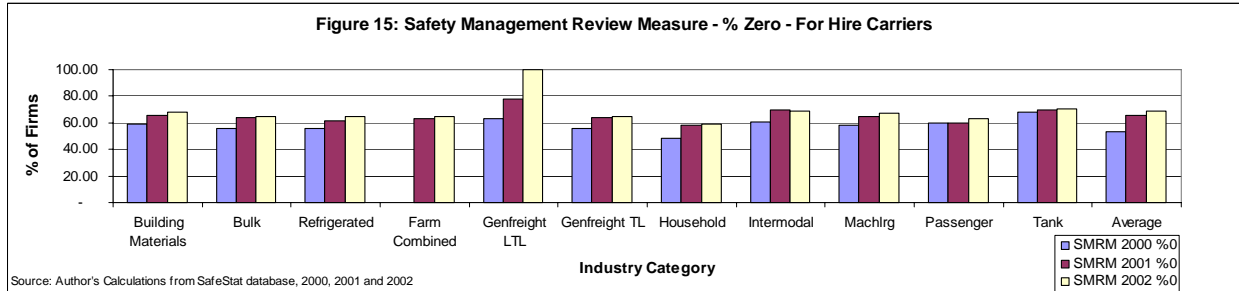
Figure 14 focuses on the differences in Vehicle SEA scores across the private carrier segments. The segments with the lowest scores are the following: furniture manufacturers (30.9 percent); refrigerated (31.2 percent); passenger (36.5 percent); and general freight TL (36.5 percent). Both the refrigerated and the furniture manufacturer segments were also identified as the private carrier segments with the lowest vehicle out-of-service rates. At the high end, three segments are notable: large machinery (55.4 percent), intermodal (50.0 percent) and building materials (48.1 percent). Two of these segments, intermodal and large machinery were also identified as having the highest average vehicle out-of-service rates.

## Safety Management Performance Results

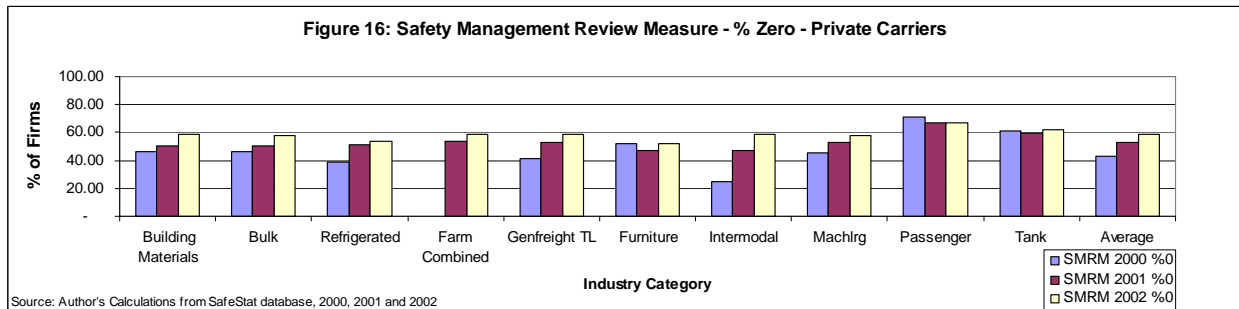
This section discusses the overall safety management practices of the motor carriers. The CR examines various aspects of a carrier's knowledge of and compliance with regulations dealing with drivers, vehicles, insurance regulations, etc. Within the SafeStat methodology, a Safety Management Review Measure (SMRM) is computed based on the results of the CR. Specifically, the SMRM is based on the safety management-related acute and critical violations of regulations discovered during a CR. The measure attaches a severity weight of 1 or 2 to critical violations (depending on whether they are compliance/paperwork or performance oriented, respectively) and a value of 3 for all acute violations. The measure combines the



severity weight and frequency of occurrence, while controlling for the number of records checked. Figures 15 and 16 report on the average percentage of carriers (for-hire and private, respectively) overall and in each industry segment having zero safety management violations uncovered during a CR. Figures 17 and 18 present information on the average SMRM scores of carriers (for-hire and private, respectively) overall and in each of the industry segments.

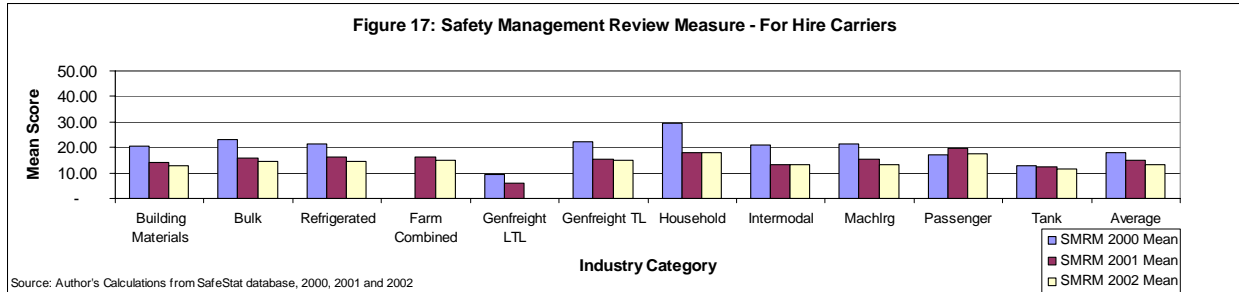


As shown in Figure 15, the average percent across all segments of for-hire carriers with no safety management violations uncovered during a CR increased by 29.6 percent between 2000 and 2002, from 53.1 percent to 68.8 percent.

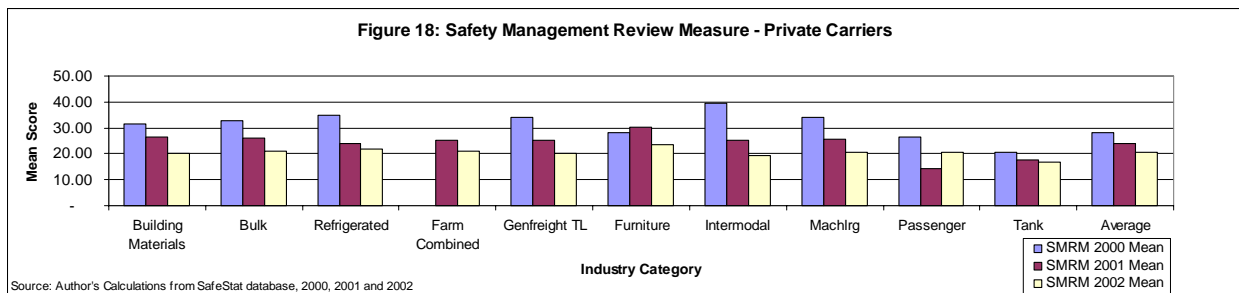


Similarly, Figure 16 shows that the average percent across all segments of private carriers with no safety management violations uncovered during a CR increased by 36.3 percent between 2000 and 2002, from 42.8 percent to 58.4 percent. Thus, in 2002, the average percent of carriers across all segments with no violations is higher for the for-hire carriers than it is for the private carriers. Indeed, it seems that a somewhat higher percentage of the for-hire carriers have knowledge of and are in compliance with general safety management requirements and regulations.

Figures 17 and 18 report on the average SMRM scores across all industry segments for for-hire carriers and private carriers, respectively.



As shown in Figure 17, the average score among for-hire carriers decreased from 18.0 in 2000 to 13.2 in 2002, a decrease of 26.6 percent.



Among the private carriers (Figure 18), the average SMRM score across all industry segments decreased from 28.2 to 20.1, a decrease of 28.9 percent. Once again, the overall average SMRM score for the private carriers, at 20.1, was substantially higher than the average score of 13.2 for the for-hire carriers.

Among for-hire carriers, while most segments are concentrated about the average percentage of for-hire firms with no SMRM violations, of particular note are the performances of LTL carriers, none of whom had any SMRM violations and, at the other spectrum, the household goods carriers, with only 59.3 percent having no SMRM violations uncovered during CR investigations. Among private carriers, while most segments are concentrated about the average percentage of private firms with no violations, of particular note are the performances of the passenger carriers, with a 66.7 percent no violation rate, and at the other end of the spectrum the manufactured furniture carriers, with only 51.9 percent having no SMRM violations.

## Crash Rate Performance Results

This section focuses on the crash rate performance of all carriers combined as well as across each of the industry's major segments. There are several major sources of crash information that are incorporated into the SafeStat methodology. The first is based on information collected during a CR. For each carrier a crash rate is calculated based on the number of crashes and the reported annual vehicle miles of the carrier. This crash rate is available in the SafeStat methodology only for carriers who have a CR in the 18-month period prior to the construction of the SafeStat database. Thus, this measure is restrictive and limited to a small portion of the carrier base. In Figures 19 and 20, there is a compilation of the average percentage of firms (for hire and private carriers, respectively) overall and in each of the segments with no crashes. Figures 21 through

24, however, report on crash rates that are not based on data collected from CRs in the time immediately prior to the database construction. The crash rates reported in Figures 21 through 24 are based on State-reported crashes and fatalities and have a broad coverage of carriers. Figures 21 and 22 report on the fatal crash rates for for-hire and private carriers, respectively. Figures 23 and 24 are based on total crash rates for for-hire and private carriers, respectively.

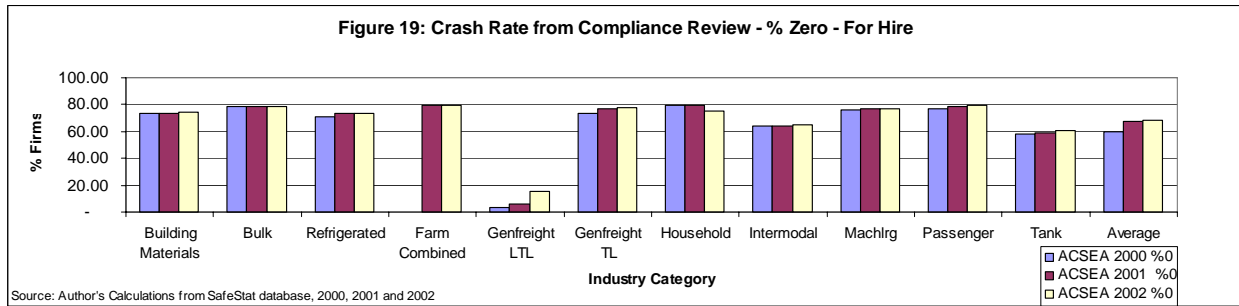


Figure 19 shows that across all for-hire industry segments, the average percentage of firms with no crashes reported on the CRs increased from 47 percent in 2000, to 65.8 percent in 2001, but went back down to 58.9 percent in 2002. Thus, in 2002, the average percentage of firms across all segments with no reported crashes is 25 percent higher than it was in 2000.

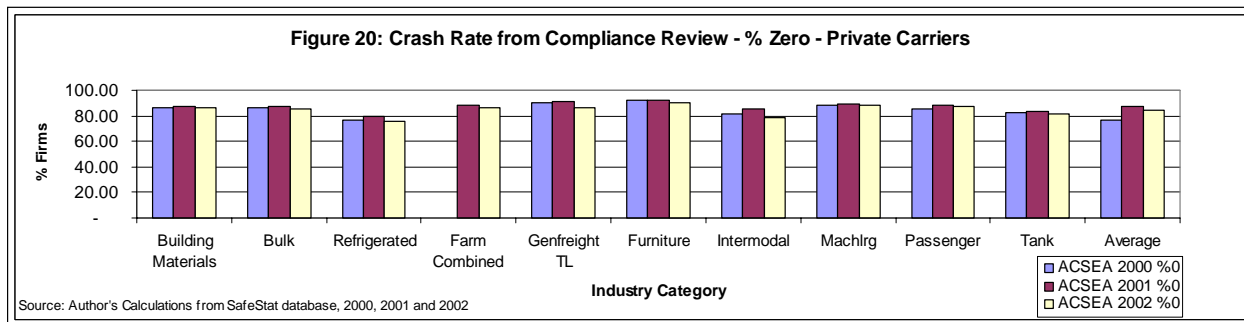
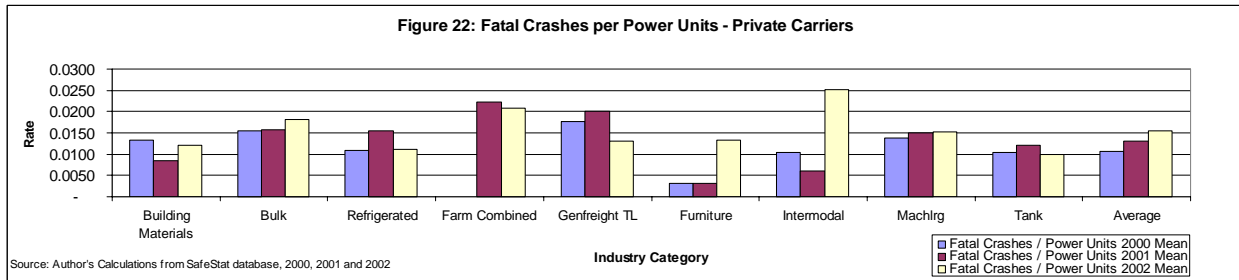
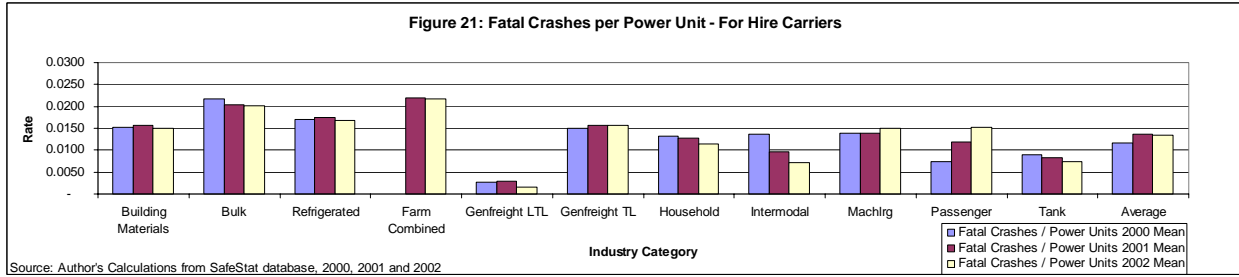
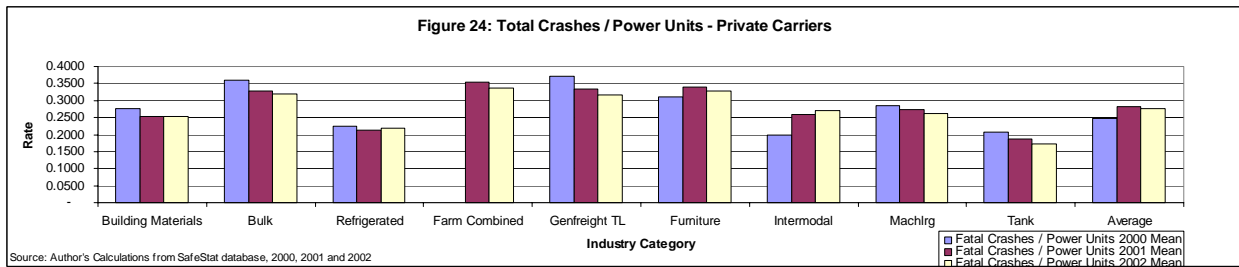
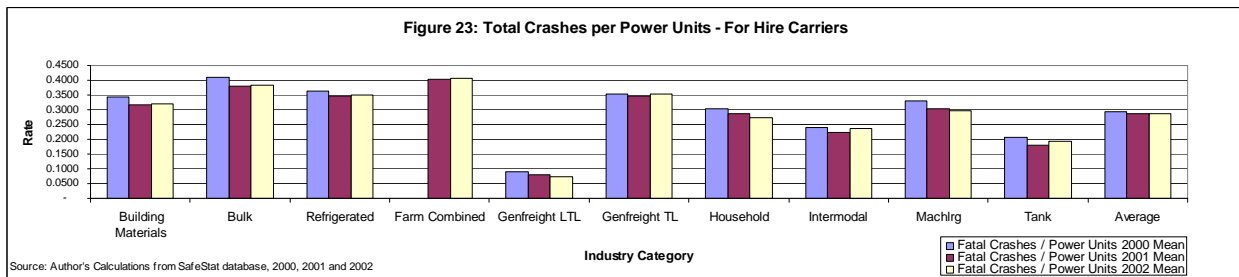


Figure 20 shows that among private carriers the average percentage of firms with no reported crashes during a CR increased from 64.0 percent in 2000 to 75.5 in 2001 and 75.6 percent in 2002. Thus, the overall increase in average percentage with no crashes reported in the CR equaled 18.1 percent between 2000 and 2002. The private carriers had a clear advantage in that the average percentage with no crashes (based on the CR) was higher than the average percentage across all for-hire segments. Of particular note is that the passenger carriers (72.2 percent) and the LTL carriers (70.0 percent) had average percentages with no crashes that were higher than the average for for-hire carriers. Also, of note is the poorer than average performance of the intermodal for-hire carriers. With respect to private carriers, the leading segments (with percentage of firms with no crashes reported in a CR in parentheses) are passenger (100.0 percent); intermodal (90.5 percent); and furniture manufacturers (80.0 percent). The trailing segments for private carriers are the farm-combined group (67.9 percent) and the refrigerated group (57.0 percent).



Figures 21 through 24 focus on crash measures derived from state-reported crash information and are applicable to all carriers, not just carriers who have had CRs in the time immediately prior to the construction of each SafeStat database. On both measures, fatal crashes per power unit and total crashes per power unit, for-hire carriers have average crash rates that are similar to the rates for private carriers. For example, the average fatal crash rate per power unit across all industry segments for private carriers is 0.015 (2002 SafeStat data), as compared with 0.013 for for-hire industry carriers.



In addition, Figures 23 and 24 show that the average total crash rate per power unit across all industry segments for private carriers is 0.275, while the average rate for for-hire carriers is 0.285.

Of particular note in terms of the lowest total crash rates are both the for-hire and private tank carriers, with average crash rates of 0.19 and 0.17, respectively. The individual industry segment with the lowest average total crash rate is the for-hire LTL carriers, with an overall crash rate of 0.0743 crashes per power unit. At the worst end of the spectrum is the farm-combined segment, with average crash rates of 0.405 for for-hire carriers and 0.3389 for private carriers. Two other for-hire segments with high total crash rates per power unit are the general freight TL carriers (0.3524) and the bulk carriers (0.3821).

## Summary

In meeting its objective to reduce truck crashes and the associated injuries and fatalities, FMCSA has a range of enforcement tools. With limited resources, however, FMCSA benefits from databases that enable it to more effectively target those resources toward specific problem areas. In monitoring the safety performance of all for-hire and private carriers, it is important to recognize that the motor carrier industry has distinct operating segments with significantly different environments and safety performance records. Assessment of the safety performance of for-hire and private carriers in each of the industry's major operating segments is a key decision tool that will facilitate more effective use of FMCSA resources.

The figures in this report demonstrate that there are fundamental performance differences across the industry segments and between for-hire and private carriers. Segments such as the for-hire LTL carriers and tank operators excel in safety performance across an entire range of indicators, from driver out-of-service measures to crash rates. Also notable for their excellent safety performance are for-hire passenger carriers—in particular, for their Vehicle SEA scores—and private tank operators—in particular, for their Driver SEA scores.

Regardless of the specifics of performance for individual segments, the information in this report provides a continuing source for use in tracking longitudinal performance of the carrier segments. Indeed, any drastic year-to-year change in performance by an individual for-hire or private carrier segment will provide FMCSA with an opportunity to focus resources on the problem to determine its cause and suggest remedial actions. The ability to very quickly compare the safety performance of both for-hire and private carriers across an array of segments will be an important asset in assisting the FMCSA in accomplishing its objective of improving safety performance.





FMCSA-RI-04-025