



**U.S. Department  
of Transportation**

**Federal Motor Carrier  
Safety Administration**

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# **An Initial Evaluation of the FMCSA Crash Data Training and Technical Assistance Project**

A Report Pursuant to the  
Report on Significant Improvements in  
Motor Carrier Safety Program Since 1999 Act,  
but Loopholes for Repeat Violators need Closing  
(OIG Report No. MH-2006-046)



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## EXECUTIVE SUMMARY

In April 2006, the Office of the Inspector General (OIG) presented the results of its audit<sup>1</sup> of the Federal Motor Carrier Safety Administration's (FMCSA) implementation of the Motor Carrier Safety Improvement Act of 1999 (MCSIA). These results included recommendations to improve data collection and analysis. Specifically, Recommendation 3 reads, *Establish a system to track attendance for the crash data training course and visits to the crash data website, and compare the results to changes in crash data reporting by States to assess whether training efforts are successful.*

This report is the first in a series evaluating the impact of crash data collection training for law enforcement and technical assistance to the States for commercial motor vehicle (CMV) traffic accident data. This multi-year project is sponsored by the FMCSA, and is designed to improve the quality of data collected on State accident reports and submitted to the Motor Carrier Management Information System (MCMIS).

Evaluating the direct relationship between training law enforcement personnel and improved State CMV crash data quality in MCMIS is complex. The evaluation methodology was designed to analyze separately the impact of the training and technical assistance provided by this project from other events such as the implementation of new or revised crash report forms by the States or revisions to the States' data extraction/translation programs.

This report includes an evaluation of 12 of the 22 State partners in this project. These States are California, Iowa, Kansas, Louisiana, Michigan, Minnesota, Nebraska, New Hampshire, North Carolina, Ohio, Oklahoma and Virginia. They were chosen based upon training or technical assistance that occurred from 2004 to 2007, to allow time for any impact to be demonstrated.

One key measure of improvement analyzed was whether the States reported increased levels of truck and bus crashes after the specific project activity period. Trends in "missing" data were analyzed for the key variables in MCMIS that relate to the training lessons or technical assistance provided. Also, analyses were performed of the coded attributes for each key variable in MCMIS for changes reflecting improvement or no improvement.

All currently available data sources were used to analyze trends in the MCMIS data for States where the training was provided between 2004 and 2007 or technical assistance was provided to alter the extraction of CMV crashes into MCMIS. The results of the ongoing evaluation of State crash report forms and electronic systems performed by this project since 2004 were also used during the analyses. The findings of this preliminary evaluation are provided in detail in this report.

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<sup>1</sup> Significant Improvements in Motor Carrier Safety Program Since 1999 Act But Loopholes For Repeat Violators Need Closing. 2006. OIG Report No. MH-2006-046 (available online at <http://www.oig.dot.gov/StreamFile?file=/data/pdfdocs/mh2006046.pdf>).





# INTRODUCTION

The Federal Motor Carrier Safety Administration's (FMCSA) primary mission is to reduce the number and severity of crashes involving large trucks and buses. The crash data collected and reported by law enforcement personnel are vital for evaluating the Agency's success in carrying out this safety mandate. FMCSA relies on safety performance data to target carriers that pose a high crash risk. Good quality data have always been a priority for FMCSA. With data FMCSA can measure the effectiveness of its programs, identify which motor carriers to target for enforcement actions, know which new programs to implement, and what safety areas to address in the strategic planning process.

The definition of a reportable crash from the States to FMCSA is:

- any truck that has a gross vehicle weight rating (GVWR) of more than 10,000 pounds or a gross combination weight rating (GCWR) over 10,000 pounds while operating on a roadway customarily open to the public; or
- any motor vehicle with seating to transport nine or more people, including the driver's seat; or
- any vehicle displaying a hazardous materials placard (regardless of weight),

AND the crash must involve:

- a fatality: any person(s) killed in or outside of *any* vehicle (truck, bus, car, etc.) involved in the crash or who dies within 30 days of the crash as a result of an injury sustained in the crash; or
- an injury: any person(s) injured as a result of the crash who immediately receives medical treatment away from the crash scene;
- or a tow-away: any motor vehicle (i.e., truck, bus, car, etc.) disabled as a result of the crash and transported away from the scene by a tow truck or other vehicle.

In September 2003, FMCSA began a multiple-year effort to improve the quality of commercial motor vehicle (CMV) crash data collected by State and local law enforcement agencies. This training project included the development of a one-day, train-the-trainer course for law enforcement and State crash record systems developers on essential data quality topics and data fields to report CMV traffic accidents.

The training course included these five lessons:

- What is a CMV Crash Reported to States and FMCSA?
- Motor Carrier Identification and Commercial Driver Licenses
- Vehicle Configuration, Cargo Body Type, and GVWR
- Hazardous Materials
- Crash Events

To make the lessons beneficial to law enforcement officers who investigate CMV crashes, each lesson was tailored to their respective State’s crash report form and instructional manual. All of the training topics and case exercises used each State’s crash report fields for CMVs.

All of the PowerPoint training lessons were provided to each law enforcement agency training instructor who attended the class for use in future State training. Also, the training lessons are posted on the FMCSA A&I Data Quality website (<http://ai.fmcsa.dot.gov/>), and several States have used the training lessons on their own websites and electronic data collection help screens. In addition, some States have used many of the coding guidelines and graphics from training lesson material to revise their crash report instruction manuals, which are currently used in some State police training academies.

As part of this training program, a series of five “visor cards” were created for law enforcement officers. The cards summarize FMCSA’s selection criteria for completing the CMV section of a State’s crash report, how to identify the correct motor carrier, vehicle configuration and cargo body type, hazardous materials, and commercial driver license (CDL) coding. Hundreds of thousands of these cards have been distributed throughout the Nation to law enforcement agencies, and the cards are included as handouts for the training class.

### Tracking Law Enforcement Officers

As part of every training course, an attendee roster captured name, address, telephone numbers, email address, police agency, position, and training status. Also, attendees evaluated each training lesson. A database recorded all of the rosters and evaluations. After each training class FMCSA tracked, with the assistance of the State’s training instructors, the number of other State and local police officers trained with the instruction materials provided by the training program. This tracking system provided the available training counts and evaluation statistics for this initial evaluation.

Some State training instructors may legally provide detailed attendee information; others are constrained to give only class size information. The training program database records all available information.

Figure 1 presents a sample of the data maintained in the tracking database.

State	Date of Train	Name	Agency	State/Local/DC	Position	Address	City	Zip	Phone	E-mail	Instructor?	Sent CD?
Michigan	7 /10/2006	Ted Ko	Oak Park Df	Local Police	Sergean	13600 O	Oak Parl	48237-	(248) 69	tkozlc	<input checked="" type="checkbox"/>	7 /24/2006
Michigan	7 /10/2006	Frank Z	Grosse Poin	Local Police	Traffic D	90 Kerby	Grosse F	48236-	(313) 88	fzielin	<input checked="" type="checkbox"/>	7 /24/2006
Michigan	7 /10/2006	Kami P	Grandville	Local Police	Police C	3181 W	Grandvill	49418-	(616) 53	paterl	<input checked="" type="checkbox"/>	7 /24/2006
Michigan	7 /10/2006	Timothy	Novi Police	Local Police	Patrol O	45125 W	Novi	48375-	(248) 34	tharpe	<input checked="" type="checkbox"/>	7 /24/2006

**Figure 1. Sample of Data Maintained**

It should be noted that States may be asked to provide information on the number of officers trained by the States only after the train-the-trainer classes. Many States have cooperated in tracking the State-conducted training sessions. Some States have either not conducted any post-training program classes or have not provided the tracking information.

Between 2004 and 2008, 22 States invited the program to conduct one or more train-the-trainer course. Table 1 provides some basic information on the classes and the attendees. All attendees had the opportunity to evaluate the class on a 5-point scale (5 being the highest score), for an overall score of 4.44 for all classes conducted to date.

**Table 1. Information on Train-the-Trainer Courses Conducted 2004–2008**

States Trained	# of Classes	Training Year(s)	# Trained by FMCSA	# Trained by State*	Attending Agencies	Course Overall Rating**
California	1	2007	17	1,171	State, Local, and Other	N/A
Colorado	2	2006	47	14	State, Local, DOT, and Other	3.61
Hawaii	2	2008	68	N/A	Local and DOT	4.80
Indiana	1	2008	23	N/A	Local, State, and Other	4.65
Iowa	3	2004	93	131	Local, State, DOT, and Other	4.22
Kansas	1	2005	15	500	Local and State	4.53
Kentucky	***	2006***	0	82	Local	N/A
Louisiana	2	2004	66	142	Local, State, and Other	4.61
Maine	1	2007	21	N/A	Local and State	4.50
Michigan	6	2005, 2006, 2007	166	1,597	Local, State, DOT, and Other	4.36
Minnesota	1	2004	16	N/A	Local, State, and Other	4.14
Nebraska	3	2004	50	303	Local, State, and Other	4.62
New Hampshire	3	2005, 2007	36	N/A	Local, State, and Other	4.60
New Mexico	1	2008	23	N/A	Local, State, and Other	4.92
North Carolina	2	2006	50	116	Local, DOT, and Other	4.29
Ohio	4	2004, 2006	101	N/A	Local, State, and Other	4.37
Oklahoma	1	2006	43	3,700	Local, State, and Other	4.40
Rhode Island	2	2006	88	N/A	Local, State, and Other	4.30
Tennessee	1	2007	30	71	Local, State, DOT, and Other	4.74
Virginia	2	2007	26	368	Local, State, DOT, and Other	4.33
West Virginia	1	2007	42	113	Local, State, and Other	4.45
Wisconsin	1	2005	18	562	Local, State, and Other	4.42
<b>Total Trained</b>	<b>41</b>		<b>1,039</b>	<b>8,870</b>		

\*Post-FMCSA training performed by State trainers. The # trained by the State only reflects actual rosters received from the State. This may not reflect the total number trained.

\*\*Course rating by attendees of all classes taught by FMCSA (1 – Poor to 5 – Very Good)

\*\*\*FMCSA provided training materials to Kentucky, which developed and conducted an electronic data system course.

As of the date of this report being drafted (September 2008), this training project has trained at a minimum, 9,909 State and local law enforcement and other State personnel.

### **Expanding the Role to Include Technical Assistance to States**

The goal of this training initiative is to improve the quality of CMV crash data at the source during the data collection phase. This is a very worthy goal; however, it takes time for the benefits to be realized. It was determined early in this project that providing other forms of technical assistance to the States could generate some additional immediate benefits to improve

Motor Carrier Management Information System (MCMIS) data quality. Other technical assistance to the States included:

- evaluate existing State crash report and police instruction manuals for the variables collected by SAFETYNET for CMV crashes;
- provide detailed recommendations to States that request assistance in revising or redesigning their Statewide crash report form and police instruction manuals;
- analyze the extraction and translation logic for States that import SAFETYNET data directly from their States' accident record systems for CMV accidents;
- provide detailed recommendations to States that request assistance in revising their extraction/translation software;
- develop methods to obtain "missing" crash data such as vehicle identification number (VIN) translation software to obtain gross vehicle weight rating (GVWR) and connections to other data systems such as Commercial Driver License Information System (CDLIS) to obtain license class;
- analyze the data from MCMIS to provide guidance to the States in problem areas and trends.

### **Evaluation Methodology**

Evaluating the direct relationship between training law enforcement personnel and improved State CMV crash data quality in MCMIS is complex. The evaluation methodology must consider the combined impact of form changes, training, and other related activities, such as revisions to data extraction/translation programs.

This report is the first part of an on-going evaluation of the law enforcement training program and other technical assistance provided to the States. Only 12 of the 22 States listed in Table 1 will be evaluated herein. These States were chosen based upon training/assistance that occurred from 2004 to 2005, to allow time for any impact to be demonstrated. The next report will include the States where the training/activities took place between 2006 and 2008.

### **Evaluation Measures**

For States that are considered to be under-reporting the number of trucks and buses, a measure of improvement would be increased reporting levels during the specific project activity period. This analysis is performed easily with existing MCMIS data.

An initial analysis of the impact of the training program for law enforcement personnel and other technical activities provided to each State examined trends in "missing" data for the key variables in MCMIS that relate to the training lessons or technical improvement. The next step is an analysis of the coded attributes for each key variable to identify changes and/or trends. This was done through an examination of the frequency distributions for the MCMIS variables.

## Data Sources for the Evaluation

All available data sources were used to analyze trends in the MCMIS data for States where police training or technical assistance was provided to alter the extraction of CMV crashes into MCMIS. The results of the ongoing evaluation of State crash report forms and electronic systems performed by this project since 2004 were also used during the analyses. The actual MCMIS data sources used to provide both baseline and training/activity period data include:

- FMCSA A&I Online—data quality (Data Source: Fatality Analysis Reporting System [FARS] & MCMIS crash records)
  - Crash Accuracy Measure
  - Crash Record Completeness Measure
    - Driver ID completeness evaluation
    - Vehicle ID completeness evaluation
  - Non-fatal Crash Completeness Measure
    - Reported/Predicted
  - Fatal Crash Completeness Measure
    - Reported/Predicted
  - Crash Consistency Indicator
- FMCSA A&I Online—crash statistics (Sources: FARS and MCMIS)
  - Vehicle Configuration
  - Cargo Body Type
  - GVWR
  - CMV Crash Summary
  - Carrier: Intrastate vs. Interstate
- Tables, charts and frequency distributions developed by the project for the evaluation



## SUMMARY OF FINDINGS

A number of significant accomplishments during the past five years of this project have improved the quality of the MCMIS data. Some are directly related to the training of law enforcement personnel; others resulted from this project’s recommendations that were implemented for crash report redesigns and modification to computer extraction logic and techniques. Many positive changes in the State data are associated with efforts made by the individual States to improve their data.

The findings will be presented first on a national level followed by each of the 12 individual States evaluated.

### National Trends

An initial analysis was performed on MCMIS data to show national trends in the number of vehicles and several key variables—Vehicle Configuration, Cargo Body Type, and GVWR—during the project activities. The results were compared with similar results from the 12 States evaluated in this report.

Table 2 shows that the number of trucks and buses in MCMIS increased by 15 percent from 2003 (before this training began in 2004) to 2007. Buses represent the largest increase: 4,599 vehicles or 54 percent. Not surprisingly, the smaller 9- to 15-person buses increased more than the larger 16+ person buses as many States added the code for the small bus in Cargo Body Type to their crash reports.

**Table 2. National Trend in Number of Trucks and Buses**

<b>CASES</b>	<b>2003</b>	<b>2007</b>	<b>2003–2007 Change</b>	<b>2003–2007 % Change</b>
Trucks	127,679	143,404	15,725	+12%
Buses	8,449	13,048	4,599	+54%
<b>Total</b>	<b>136,128</b>	<b>156,452</b>	<b>20,324</b>	<b>+15%</b>

As a sign of significant improvement, the number of “blank” and “unknown” entries in Vehicle Configuration dropped substantially (68 percent and 30 percent, respectively) from 2003 to 2007 (Table 3). Also, the percentage of “blanks” in Cargo Body Type and GVWR dropped by large margins (28 percent and 46 percent, respectively) (Table 4 and Table 5). For Cargo Body Type, some of the “unknowns” may have shifted to “other.”

**Table 3. National Trend in Configuration Blanks and Unknowns**

<b>CONFIG</b>	<b>2003</b>	<b>2007</b>	<b>2003–2007 Change</b>	<b>2003–2007 % Change</b>
Blank	7,182	2,331	-4,851	-68%
Unknown	6,215	4,343	-1,872	-30%

**Table 4. National Trend in Cargo Body Type Blanks and Other**

<b>CARGO</b>	<b>2003</b>	<b>2007</b>	<b>2003–2007 Change</b>	<b>2003–2007 % Change</b>
Blank	15,184	10,985	-4,199	-28%
Other	25,395	29,167	3,772	+15%

**Table 5. National Trend in GVWR Blanks**

<b>GVWR</b>	<b>2003</b>	<b>2007</b>	<b>2003–2007 Change</b>	<b>2003–2007 % Change</b>
Blank	31,300	16,750	-14,550	-46%

A brief summary of the trends and improvements for each of the 12 States analyzed for this report are listed below in this Executive Summary. For more detailed findings, each State's results are included separately in this report.

### *California*

The three-year cooperative effort of the training program with the California Highway Patrol (CHP) resulted in improvements in police instruction, crash report revisions, and data collection for SAFETYNET. The first success was the revision of the CMV Crash Report Supplement to correct the selection criteria and add needed data fields for License Class, Bus Use, and Interstate/Intrastate. Also, a method to obtain VINs from a separate data file was implemented. These data collection improvements resulted in the State data quality status improving from "Poor" to "Fair" then "Good" in 2008. Their work to correct driver and vehicle data pre-dates what later became the new standard for record completeness. Had these problems not been identified in 2006 and then implemented early in 2007, the State would have had a "Poor" rating in 2008 since the measure looks back 12 months to calculate its rate. The FMCSA training program prepared a new supplemental form for CMV data collection and the police instruction manual at the State's request.

A train-the-trainer program resulted in the training of CHP officers and 1,170 local police officers in nine police districts in the State in 2007 by the CHP trainers. FMCSA provided customized student workbooks to the CHP for all of the classes, and hopes that this CHP training program will continue to affect additional State and local officers in the State.

California has maintained a consistently low level of missing values during this project period for Vehicle Configuration and Cargo Body Type. The missing value rate for GVWR dropped from 21 percent in 2005 to less than 1 percent in 2007.

### *Iowa*

The only clear trend in the number of trucks and buses that Iowa entered into SAFETYNET from 2004 to 2007 is a 152 percent increase in buses. An examination of Vehicle Configuration



revealed a steady increase in the numbers of small and large buses after the training classes in 2004.

The rate of blanks for the key variables VIN, Configuration, Cargo Body Type, GVWR, and License Class declined to a low level (under 10 percent) in 2007. However, Cargo Body Type and GVWR were very high (above 30 percent) for the three previous years.

### ***Kansas***

The FMCSA training class was conducted in 2005 for 15 Kansas Highway Patrol trainers. As a result, Kansas trained all Highway Patrol Officers and supervisors (500) using the materials provided by the FMCSA training program. In 2008, 120 additional local law enforcement agency trainers were trained by the FMCSA program. This is the kind of success a train-the-trainer program is hoping to achieve.

Kansas generally shows high performance measures over the last few years, tempered by questions of whether they collect all the qualifying truck and bus records based upon current FMCSA selection criteria. The State continues to seek improvements by a significant revision to their crash report form and instruction manual utilizing guidance and materials from the training class.

### ***Louisiana***

Louisiana was the first State to work closely with the training project. The project helped the State to develop a new crash report form and police instruction manual. The training materials were pilot-tested in 2003 and the training courses were conducted in 2004.

MCMIS crash records from 2005 reflect a significant increase in trucks and buses as a result of the implementation of their new crash report form, training, and some later revisions to their extraction logic to pull records from the State accident record system. From 2004 to 2007, the number of buses increased 75 percent. Louisiana is currently at 100 percent of the predicted crash record collection rate as reflected in the FMCSA Data Quality Non-Fatal Crash Completeness Measure.

The impact of a new crash report form and training is reflected also in the reduced “blank” rates for Configuration, Cargo Body Type, and GVWR as at or below the national average for 2007.

### ***Michigan***

Michigan was the only State to request training classes each year from 2005 to 2007. As a result, 166 State and local trainers attended six classes during those three years. Subsequently, Michigan trained 1,597 police officers, a successful measurement of the train-the-trainer concept.

Analysis of the State’s crash report indicates that although the report was good for most of the CMV data provided to FMCSA, the key element of Vehicle Configuration included the highest level of “unknown” entries in the country. Michigan was unable to make changes to the overall form, but did implement proposed changes to the State’s “overlay key,” an essential guidance to all police officers in the State, which was then used in the six training classes from 2005 to 2007.

The result is that the level of “unknowns” dropped steadily from 52 percent to 9 percent, improving the quality of the data for the State and the national MCMIS data for this key variable.

### ***Minnesota***

No positive data trends could be attributed to the train-the-trainer program in Minnesota. The “blank” rates for VIN, Cargo Body Type, and GVWR reduced significantly from 2004 to 2007, but most of the changes occurred in 2007.

It should be noted, however, that the State created an Internet-based training module for other Minnesota law enforcement officer using the training materials provided by the FMCSA training program.

### ***Nebraska***

Only one positive data trend could be the result of training in Nebraska. The rate of “unknown” in Vehicle Configuration declined from 10 percent in 2004 to 2 percent in 2007. The “blank” rates for Driver License Class and GVWR dropped significantly in 2007. During 2008, all “blank” rates lowered further. However, these changes cannot be viewed as the result of training without further support.

The State’s Crash Accuracy Measure improved from “Fair” to “Good” in the latter part of 2006 and has been maintained at the 97 percent rating through 2008. The impact of the training on improved accuracy is unknown.

### ***New Hampshire***

Very little change is seen in the number of trucks or buses in the time period of 2004–2008, but some changes in New Hampshire’s data quality are apparent. Some “blank” rates rose from 2004 to 2006, but then declined in 2007 after the training and were extremely low in 2008. Two training classes did not help to improve New Hampshire’s accuracy measure, which declined in 2007 and 2008, although the crash completeness measure on driver and vehicle data has steadily improved since the second training session.

### ***North Carolina***

No trends indicate improved key data elements in MCMIS as a result of the training program in North Carolina. The percentage of missing values for GVWR dropped steadily after the training for a year; however the “blank” rate increased in the months that followed. The number of “blanks” for Vehicle Configuration and Cargo Body Type were steady at a low percentage before and after the training.

Significant improvement in achieving the proper number of trucks and buses from the State to SAFETYNET was accomplished beginning in 2006 as a result of FMCSA technical assistance implemented by the State. After data entry omissions were identified, North Carolina began a manual review process and entered missing case data. This increased the number of trucks and buses to 104 percent of their predicted number by FMCSA. The number of large buses increased by 559 percent from 2004 to 2007.

## *Ohio*

Two positive trends were found in the analysis for Vehicle Configuration. An examination revealed a steady increase in the numbers of large buses starting in 2006. This could be the result of FMCSA identifying the fact that they had no code in either Vehicle Configuration or Cargo Body type for buses with 16 or more seats. Guidance given during the class instructed officers to code large buses as “Other” in Cargo Body Type and to note in the narrative that the bus had 16 or more seats, including the driver. Also, the “Unknown” code has been as high as 10 percent in 2005 but has steadily declined to 3 percent for 2007 and 2 percent for 2008.

Some negative trends were also found. The “blank” rates for VIN, Driver License Class, Cargo Body Type, GVWR, and Carrier Type are increasing.

## *Oklahoma*

The training program helped Oklahoma to redesign their crash report and develop extraction logic to pass data to SAFETYNET. After implementation of the new crash report form in 2007, issues arose with the redesign of the State’s accident records system that caused their 2007 data to be lacking. Those issues have been resolved and Oklahoma’s data have been improving.

After the implementation of the redesigned crash report form in 2007, data collection rates improved significantly, only needing the system issues to be addressed. VIN data have taken longer to improve, but in 2008 was high enough to allow the crash completeness measure to change from “Poor” to “Fair” to “Good.”

An accomplishment in Oklahoma was the training of 43 State trainers on truck and bus data collection who subsequently helped to disseminate training on the updated crash report form to approximately 3,700 more State and local officers.

## *Virginia*

The training program participated in a two-year cooperative effort with Virginia, which included an extensive redesign of the crash report form, an increase of 150 percent of federally reportable cases uploaded to MCMIS (including a 1,213 percent increase in reportable buses), and the development of a training course for State and local police instructors based on the new Virginia crash report form.

As a result of the two-year effort, Virginia has significantly altered their collection and data system processes to improve their data quality, but not without some short-term compromise to data quality measurements. The uploading of missing, qualifying cases did not contain any carrier information, which changed their crash accuracy from “Good” to “Fair.” New extraction logic in 2008 stopped uploads, which changed their timeliness from “Good” to “Poor.” On the other hand, uploads immediately changed two measures to “Good” status: the Non-fatal Completeness Measure and the Fatal Crash Completeness Measure. For 2006 and 2007, the State met or exceeded the number of records expected for non-fatal and fatal crashes, and continues to upload to MCMIS all the crash data elements and qualifying records sooner and more accurately.



# CONCLUSIONS

## CMV Crash Data Collection Training

Between 2004 and 2008, FMCSA and, subsequently, State instructors trained almost 10,000 police officers. Many States have held multiple training classes over multiple years, and continue the training on their own. These States have included the content from the training lessons in their police instruction manuals, electronic help screens for computerized crash data entry, and police training academies. As a result of FMCSA evaluations and recommendations, many States have revised their crash report forms and electronic data entry systems to include new and updated crash report fields. Twenty-two States have participated in one or more of the training or technical assistance services provided by this project. All of these events in combination can only be viewed as success to date.

A majority of the 12 States analyzed in this report display positive trends in their data, as indicated by declining percentages of missing or unknown values for the key variables studied during the same four-year period as the training project. However, only a few of the State results could be directly linked only to the training. Michigan displayed a significant, steady decline (52 percent to 9 percent) in “unknowns” for Vehicle Configuration. This was the direct result of revisions of the training to law enforcement and the six training classes provided over three years, followed each year by the training of the State trainers. A total of 1,763 State and local officers were trained during this period.

Oklahoma and Louisiana had substantial declines in “blanks” for Vehicle Configuration, Cargo Body Type and GVWR after the training was conducted with the release of their States’ new crash report forms. Although the role of the training cannot be isolated from the impact of the new crash reports in these two States, the combination did produce positive results in their data. It should be noted that the training project assisted both States in creating their new forms.

It was known at the outset of this project that there was a general underreporting of trucks and buses by the States to SAFETYNET. This was especially true for both large and small buses. The FMCSA selection criteria were emphasized, supported by the training project, to focus on non-commercial buses (including government) and small, 9- to 15-person buses that States should report to FMCSA. National statistics show an increase in the number of trucks and buses by 20,324 (15 percent) and a dramatic increase in buses 4,599 (54 percent) from immediately before this project to the end of the 2007 MCMIS file. The 12 States studied in this initial evaluation included an increase in trucks of 6,970 (18 percent) and buses of 3,187 (198 percent). These 12 States represented 34 percent of the trucks and 69 percent of the bus increases in the Nation. Concerning buses, two States showed little change or a decrease, while four States showed bus increases up to 100 percent. Four States showed bus increases up to 500 percent and two States showed bus increases at 1,000 percent or more.

## Technical Assistance

As part of the project’s role to assist States in identifying missing truck and bus cases in MCMIS, three States—Louisiana, North Carolina, and Virginia—improved dramatically in recording the proper number of vehicles to SAFETYNET. North Carolina was able to increase the number of

trucks and buses in MCMIS from an average of approximately 4,500 vehicles in 2002 to 2005 to over 6,300 vehicles in 2006 and 2007. Also, the number of large buses increased by almost 500 percent. However, it has to be stated that the State's MCMIS data for the key elements studied did not show any additional positive trends in missing values relating to the two FMCSA Train-the-Trainer classes conducted in the State. This was due somewhat to the fact that these variables were already at a low rate of missing values.

Louisiana increased the number of trucks and buses reported to MCMIS from approximately 2,600 vehicles in 2003 to just over 4,000 vehicles in 2007. The number of buses increased by 90 percent. The State reflected significant reductions in their "blank" rates for vehicle configuration, cargo body type and GVWR. FMCSA also reviewed and made recommendations to improve the State's extraction logic, which pulls records from their State accident records system. Because the extraction logic was not pulling all the records, nor some of the fields, it is difficult to determine the impact of the training on collecting additional qualifying records. In either case, the State improved both the field collection and data system transfer of records.

As a result of a three-year cooperative effort the State of Virginia increased the number of trucks and buses from approximately 2,500 annually to 5,659 in 2006 and 2,000 to 5,336 in 2007. Compared to 2004, the number of buses added increased by 1,000 percent.

The crash data collection training, which covers five important topics, provided the States with proper procedures in order to improve data quality provided to the FMCSA. When measuring the success of the training, the main challenge is that some results will occur up to a year or more later and that either prior, during or after this time, the training program often provided technical assistance on the revision of crash report forms or modifications to extraction logic. Usually, these other forms of assistance are closely related to the training topics in some manner and therefore this makes the evaluation of results difficult to interpret, as to which discrete part of the effort was directly responsible for the outcome. An important finding was that the law enforcement officers taking the training class rated the overall class 4.44 on a 5-point scale. Taken as a whole, the training and technical assistance provided to the States is a broad and complimentary data quality improvement effort. This effort has resulted in success for States which have had only the training class, as well as more significant results when the training or assistance has occurred multiple times or spanned multiple years.

## **APPENDIX A: CALIFORNIA**

### **BACKGROUND**

Assisting a State the size of California to move toward improving the data reported to FMCSA takes time and persistence. The California Highway Patrol (CHP) alone is comprised of thousands of officers; hundreds more local law enforcement agencies work throughout the State. A change in a State's crash report requires changes to its electronic systems of collection and storage, as well as any paper documents used in the field. Consequently, approval of changes to State documents and procedures are understandably cumbersome in California. When change is achieved, the task becomes reaching California's many law enforcement officers with the message. As a result, FMCSA's successes in California occurred over a period of three years. They began with an initial meeting at CHP headquarters in Sacramento in January, 2004 and continued with guidance and training support throughout 2007. During this time FMCSA provided guidance to California for revisions to their Truck and Bus Supplement (CHP 555D) and Collision Investigation Manual (CIM) instruction manual. Additionally, two State training initiatives were conducted utilizing FMCSA course materials and support. Consequently, with so many variables, documentation of impacts directly related to only the training is difficult.

The first successes in 2004 and early 2005 involved CHP's acceptance and inclusion of customized FMCSA training materials in their update training. CHP had changed their primary crash report form (CHP 555) and the 555D with FMCSA input to better align the supplement's data elements and collection instruction with FMCSA reporting and collection criteria. In support of those changes, the second half of a full-day update training class focused on data collection using the 555D. This training began in mid-November of 2004 and was the first CHP training specifically on the 555D supplement intended to be delivered Statewide. This training was conducted at each of the CHP division offices and by February 9, 2005, the class had been conducted six times, and had reached 137 officers.

To reach uniformed officers in the field, class materials—PowerPoint presentations and FMCSA quick reference visor cards—were distributed at each division training session to each Area Office Supervisor or Review Officer in attendance. Every quarter, the Area Offices are required by CHP Headquarters to conduct officer training classes for their uniformed officers. The collection of Truck and Bus information on the 555D in conjunction with the updating of elements, attributes, and guidance had been identified at CHP headquarters as a critical area. By the end of February, 2005, that training had reached 150 uniformed officers.

A meeting at CHP headquarters in October 2006 opened the door for additional corrections to the 555D and Collision Investigation Manual, and more importantly, a train-the-trainer class. Following staff changes in the CHP chain of command, the momentum of the original training initiative slowed. The reach had not been as intended and voluntary attendance produced rapidly declining attendance and results. FMCSA established new contacts within CHP and a new plan called for a 555D dedicated train-the-trainer class to be conducted throughout the State to reach both CHP and local agencies.

At that October 2006 meeting, the model truck and bus data collection fields and a condensed version of the full-day training class were reviewed. Following the meeting, FMCSA agreed to provide California with a new supplement to replace the old 555D, to provide the content for the instruction manual for use with this supplement, and to create a two-hour class customized to California and the new 555D blending the five separate lessons of the full-day course. Following this meeting, FMCSA was scheduled to come to CHP headquarters in January, 2006 to train one trainer from each CHP division office and two back-up trainers.

## **LAW ENFORCEMENT TRAINING**

In January 2007 the FMCSA crash data collection lessons for 10 CHP trainers used a customized two-hour class, new report form, and new instruction manual sections. Although some focused training occurred as early as 2004 and more training occurred in 2005, these were a part of the early effort concerning modifications to the crash report form and supplement. The 2007 training covered the more dramatic changes to the supplement and included the full crash data collection class. On-going training support guidance and training materials were provided to the CHP trainers throughout 2007. A summary of the train-the-trainer class is shown in Table 6 including ongoing training results from those trained in January 2007.

**Table 6. Training Class Attendance and Evaluation—California**

<b>Total Number of Classes</b>	1 (Train-the-Trainer)
<b>Training Dates (month/year)</b>	1/2007
<b>Attending Agencies</b>	State (CHP)
<b>Number trained</b>	10
<b>Course Rating by attendees (1 – poor to 5 – very good)</b>	None Available
<b>State Follow up Training (post-training)</b>	1,171

### **State Crash Report Evaluation**

Evaluation of the California Truck and Bus Supplemental (CHP 555D) in June 2005 identified that the supplement was not aligned with FMCSA’s selection criteria definitions and lacked the means to identify vehicles towed due to disabling damage. Following the acceptance of the new supplement prepared by FMCSA in January 2007, re-evaluation in March 2007 acknowledged that the revised 555D possessed all of the guidance and fields necessary provide the requested data.

### **Analysis of the SAFETYNET Key Data Fields Related to Training**

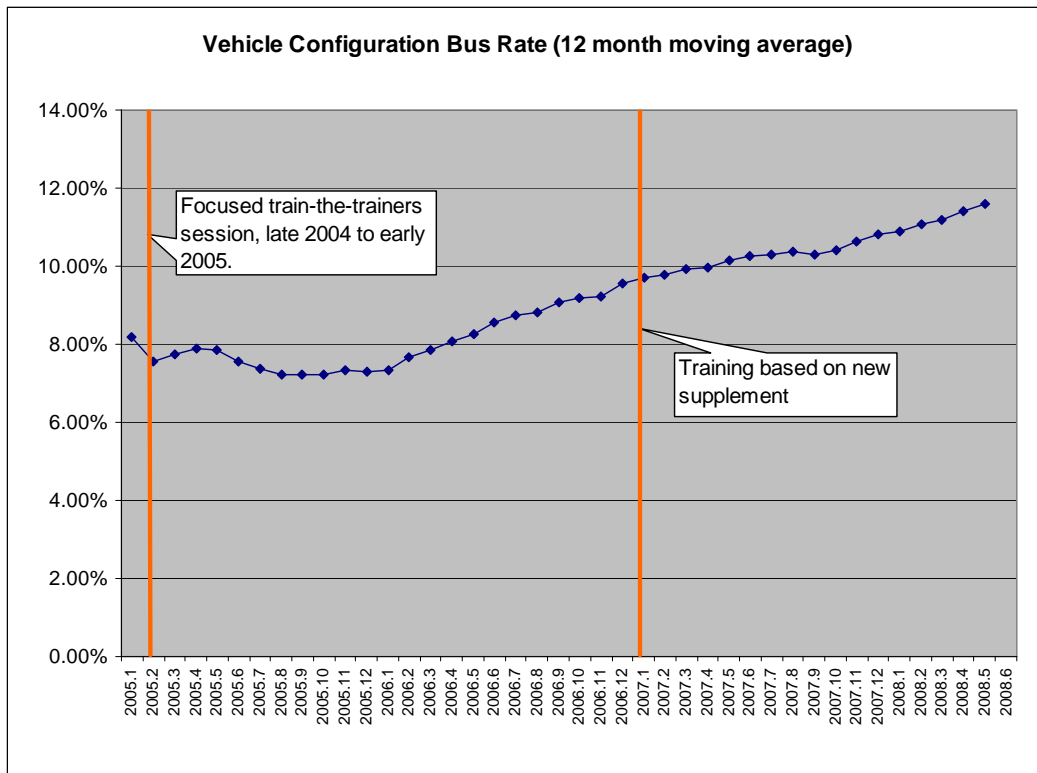
Due to modifications to the crash report form and supplement, and the subsequent training on those changes in early 2005, the number of large buses with 15 or more passengers including the driver increased significantly. In 2004, California reported just over 300 large buses and by 2005



just over 900 and by 2007 just over 1,200 records to MCMIS. The increase in collecting large bus data accounts for a 210 percent increase from 2004 to 2007 (see Table 7 and Figure 2).

**Table 7. Annual Crash Case Trends by Truck and Bus—California**

Vehicle Type	2004	2005	2006	2007	2004–2007 Change	2004–2007 % Change
Bus	428	1,105	1,356	1,327	899	210%
Truck	11,294	14,126	12,875	11,029	-265	-2%
	<b>11,722</b>	<b>15,231</b>	<b>14,231</b>	<b>12,356</b>	<b>634</b>	<b>5%</b>



**Figure 2. Vehicle Configuration Bus Rate (12 month moving average)—California**

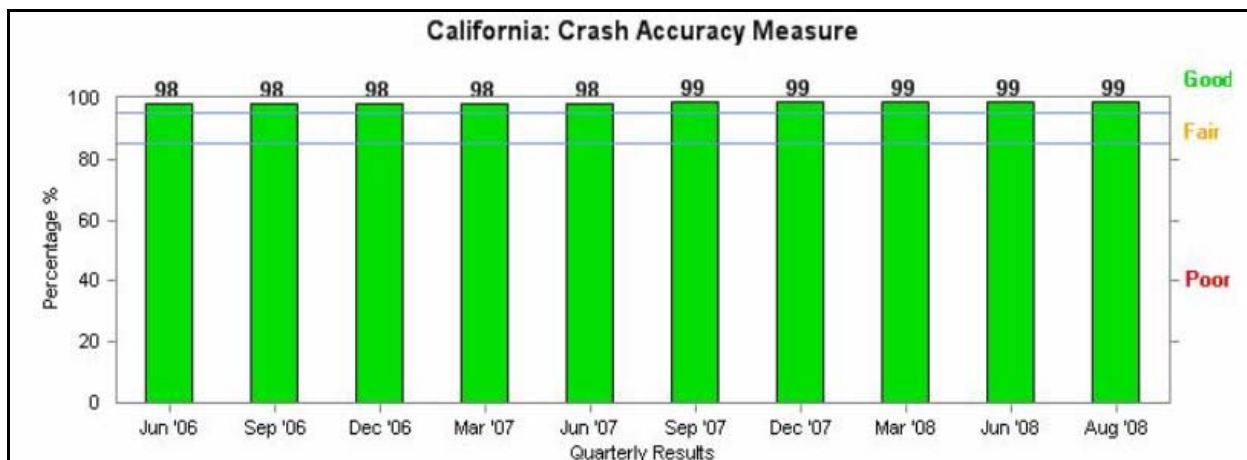
In 2004, the “blank” rates for vehicle identification number and driver license class were 46 percent and 23 percent, respectively (see Table 8). Those rates remained steady until early 2007 when both rates began to decline when the new supplement was implemented. See also the Other Key Elements section, below.

**Table 8. Annual Trends for “Blank” Values—California**

Blank Counts	2005–2006 Nat'l %	2004 Blank s	2004 %	2005 Blank s	2005 %	2006 Blank s	2006 %	2007 Count	2007 %	2007 Nat'l %
VIN	18%	5,379	46%	6,643	44%	8,350	59%	2,280	18%	18%
CDL	44%	2,752	23%	3,514	23%	2,775	19%	1,592	13%	26%
Configuration	3%	198	2%	175	1%	20	0%	11	0%	2%
Cargo Body Type	8%	298	3%	2,153	14%	22	0%	12	0%	8%
GVWR	24%	306	3%	3,160	21%	27	0%	18	0%	12%

**Motor Carrier Identification**

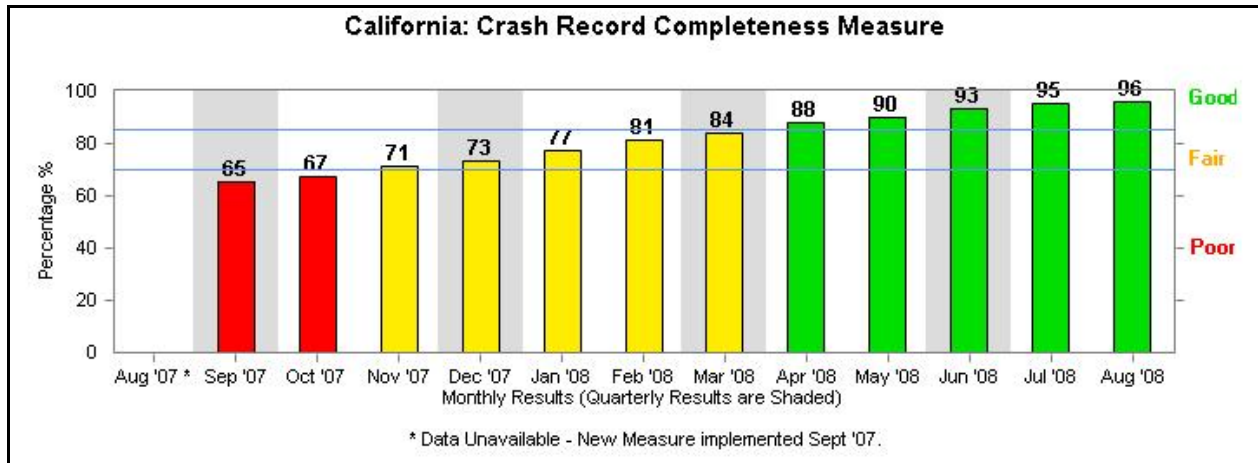
The only measurement currently available to identify the States’ motor carrier identification accuracy is the Crash Accuracy Measure at the FMCSA A&I Online, Data Quality section. The crash accuracy measure looks back 12 months for the event date, starting three months prior to the snapshot. The last two years shows California’s measurement as consistently “good” at 96 percent or better accuracy (see Figure 3).



**Figure 3. Crash Accuracy Measure—California**

**Other Key Elements**

The crash completeness measure looks back 12 months for the event date, starting three months prior to the snapshot. Because California began to correct driver and vehicle data in early 2007, when the new supplement was implemented, it attained “Good” status by 2008. These efforts pre-date the measure by almost a year and were not a motive to correct the data, but part of the three-year cooperative effort with FMCSA to improve their data quality (see Figure 4).



**Figure 4. Crash Record Completeness Measure—California**

## EXTRACTION AND TRANSLATION LOGIC EVALUATION

FMCSA informed California that VIN data were not being provided. The State ultimately acquired this data from their State accident records system.

## SUMMARY OF FINDINGS

The three-year cooperative effort of this data quality training program with the CHP resulted in improved police instruction, crash report revisions, and data collection for SAFETYNET. The first success was the revision of the CMV Crash Report Supplement (555D) to correct selection criteria and add needed data fields for License Class, Bus Use, and Interstate/Intrastate. Also, it identified a method to obtain VINs from a separate data file, since they were not being sent to SAFETYNET. These improvements in data collection resulted in the State improving from “Poor” status to “Fair” then “Good” in 2008. Their work to correct driver and vehicle data pre-dates what later became the new measure for record completeness. Had these problems not been identified in 2006 and then implemented early in 2007, the State would have had a “Poor” rating in 2008 since the measure looks 12 months back to calculate its rate. FMCSA prepared the new supplemental form for CMV data collection and the police instruction manual at the State’s request.

The train-the-trainer program for CHP resulted in instructors reaching CHP officers and 1,170 local police officers in nine police districts in the State in 2007. FMCSA customized student workbooks for all CHP classes. This CHP training program should continue.

California has maintained a consistently low level of missing values during this project period for Vehicle Configuration and Cargo Body Type. The missing value rate for GVWR dropped from 21 percent in 2005 to less than 1 percent in 2007.



## APPENDIX B: IOWA

### LAW ENFORCEMENT TRAINING

In July 2004, three FMCSA classes on “Crash Data Collection for Commercial Motor Vehicles” used Iowa’s existing crash report form. A summary of the training class attendance and officers’ evaluations provided to the State are shown below in Table 9.

**Table 9. Training Class Attendance and Evaluation—Iowa**

<b>Total Number of Classes</b>	3
<b>Training Dates (month/year)</b>	7/2004
<b>Attending Agencies</b>	Local and State and other DOT
<b>Number trained</b>	93
<b>Course Rating by attendees (1 – poor to 5 – very good)</b>	4.22
<b>State Follow up Training (post-training)</b>	131

FMCSA tailored course materials for State trainers providing follow-up training to local police officers. Over the last four years, an additional 131 local officers and local trainers attended follow-up training.

### State Crash Report Evaluation

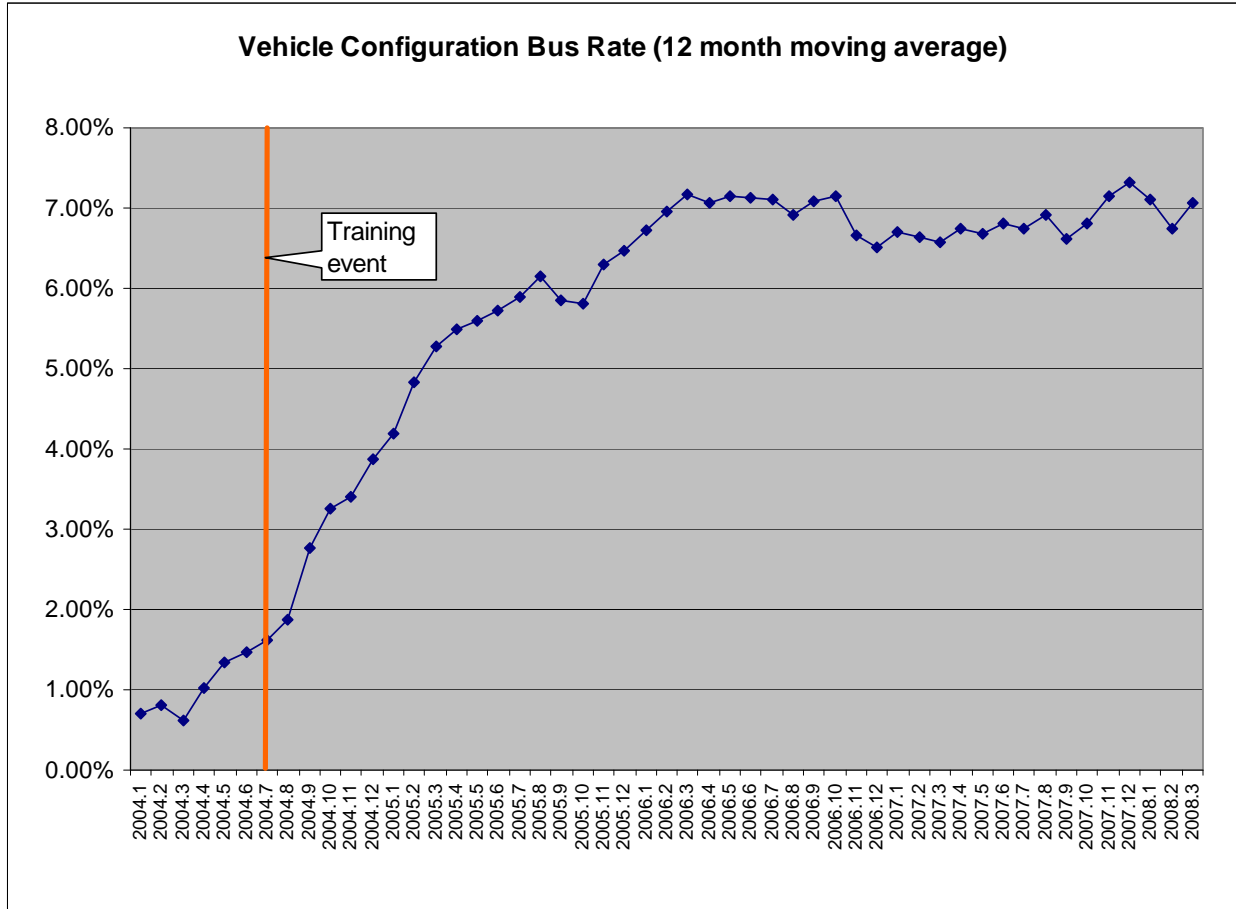
The State’s 2001 crash report form was evaluated in 2005. Although Iowa has not revised its crash report form since 2001, it has developed electronic crash collection software called TraCS. The most significant evaluation finding was that the crash report form instructs police officers to not include government vehicles. Also, FMCSA selection criterion is not defined correctly. Other findings included hazardous material placard indications are missing, and the GVWR field is a weight fill-in box (this has consistently shown to be a problem to States that use this method to collect GVWR instead of using weight range boxes), and the omission of any carrier type. Also, SAFETYNET recently added “Bus Use” and “Cargo Body Type” codes, which are not on their crash report form. The TraCS software has not been evaluated to determine whether Iowa has resolved some of the issues listed above.

### Analysis of the SAFETYNET Key Data Fields Related to Training

The only clear trend in the number of trucks and buses entered into SAFETYNET from 2004 to 2007 is the 152 percent increase in buses (see Table 10 and Figure 5). A significant increase of 477 records entered to SAFETYNET occurred from 2004 to 2005, followed by a decline of 398 records in 2006—back to 2004 levels—and an increase again in 2007 of 416 records (see Table 10). The drop in 2006 cannot be related to any pattern in the data.

**Table 10. Annual Crash Case Trends by Truck and Bus—Iowa**

Vehicle Type	2004	2005	2006	2007	2004–2007 Change	2004–2007 % Change
Bus	64	137	108	161	97	152%
Truck	1,557	1,961	1,592	1,955	398	26%
	<b>1,621</b>	<b>2,098</b>	<b>1,700</b>	<b>2,116</b>	<b>495</b>	<b>31%</b>



**Figure 5. Vehicle Configuration Bus Rate (12 month moving average)—Iowa**

The rate of blanks for the key variables VIN, Configuration, Cargo Body Type, GVWR, and License Class declined to less than 10 percent in 2007. However, Cargo Body Type and GVWR were more than 30 percent for the three previous years (see Table 11).

**Table 11. Annual Trends for “Blank” Values—Iowa**

<b>Blank Counts</b>	<b>2005– 2006 Nat'l %</b>	<b>2004 Blanks</b>	<b>2004 %</b>	<b>2005 Blanks</b>	<b>2005 %</b>	<b>2006 Blanks</b>	<b>2006 %</b>	<b>2007 Count</b>	<b>2007 %</b>	<b>2007 Nat'l %</b>
VIN	18%	6	0%	10	0%	12	1%	9	0%	18%
CDL	44%	218	13%	247	12%	130	8%	81	4%	26%
Configuration	3%	0	0%	0	0%	0	0%	0	0%	2%
Cargo Body Type	8%	552	34%	653	31%	468	28%	101	5%	8%
GVWR	24%	395	24%	676	32%	654	38%	166	8%	12%

An examination of Vehicle Configuration revealed a steady increase in the numbers of small and large buses after the training classes in 2004 (see Table 12 and Table 10).

**Table 12. Vehicle Configuration Trend—Iowa**

<b>Configuration</b>	<b>2002</b>	<b>2003</b>	<b>2004</b>	<b>2005</b>	<b>2006</b>	<b>2007</b>	<b>2008</b>
Blank	24	1					
Bus (Seats For > 15)	2	10	59	114	96	140	58
Bus (Seats For 9–15)	4		5	23	12	21	10
Single-Unit Truck (2-Axle)	12	254	264	320	245	318	133
Single-Unit Truck (3+ Axles)	8	161	174	255	267	287	149
Tractor/Double	30	33	21	17	13	27	18
Tractor/Semi-Trailer	853	982	887	1,256	976	1,207	561
Tractor/Triples			1	1		1	1
Truck Tractor (Bobtail)	20	21	23	26	23	23	14
Truck/Trailer	491	214	150	78	66	89	48
Unknown Heavy Truck	2	59	37	8	2	3	4
<b>Total</b>	<b>1,446</b>	<b>1,735</b>	<b>1,621</b>	<b>2,098</b>	<b>1,700</b>	<b>2,116</b>	<b>996</b>

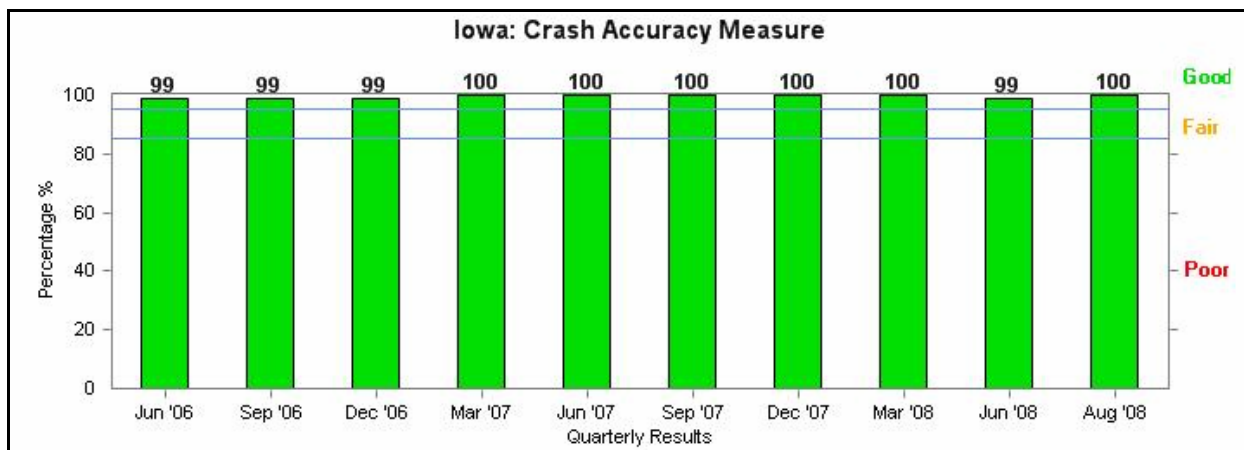
Although significant effort must have been applied to achieve these reductions of missing values for License Class and GVWR, it is unclear how the reductions in Cargo Body Type were obtained. None of these reductions can be readily linked to the training program for law enforcement (see Table 13).

**Table 13. 2007 Crash Data (Cargo Body Type)—Iowa**

Cargo Body Type	Dec 2007 snapshot Count	Dec 2007 snapshot %	Mar 2008 snapshot Count	Mar 2008 snapshot %	Jun 2008 snapshot Count	Jun 2008 snapshot %
Blank	455	23.64%	450	21.27%	101	4.77%
Auto Transporter	12	0.62%	12	0.57%	12	0.57%
Bus (9-15 passengers)	17	0.88%	21	0.99%	21	0.99%
Bus (> 15 passengers)	134	6.96%	141	6.66%	140	6.62%
Cargo Tank	79	4.10%	92	4.35%	95	4.49%
Concrete Mixer	25	1.30%	26	1.23%	26	1.23%
Dump	223	11.58%	243	11.48%	253	11.96%
Flatbed	140	7.27%	151	7.14%	211	9.97%
Garbage/Refuse	34	1.77%	37	1.75%	37	1.75%
Grain, Chips, Gravel	0	0.00%	1	0.05%	25	1.18%
Intermodal	0	0.00%	0	0.00%	0	0.00%
Logging	0	0.00%	0	0.00%	0	0.00%
Not Applicable	0	0.00%	8	0.38%	97	4.58%
Other	140	7.27%	156	7.37%	111	5.25%
Pole	0	0.00%	0	0.00%	0	0.00%
Van/Enclosed Box	666	34.60%	763	36.06%	963	45.51%
Vehicle Towing Another	0	0.00%	15	0.71%	24	1.13%
	<b>1,925</b>		<b>2,116</b>		<b>2,116</b>	

**Motor Carrier Identification**

The only measurement currently available to identify the States’ motor carrier identification accuracy is the Crash Accuracy Measure at the FMCSA A&I Online, Data Quality section. The crash accuracy measure looks back 12 months for the event date, starting three months prior to the snapshot. The last two years shows Iowa’s measurement as consistently “good” at 99 percent or better accuracy (see Figure 6).



**Figure 6. Crash Accuracy Measure—Iowa**



## **SUMMARY OF FINDINGS**

The only clear trend in the number of trucks and buses entered into SAFETYNET from 2004 to 2007 is a 152 percent increase in buses. An examination of Vehicle Configuration revealed a steady increase in the numbers of small and large buses after the training classes in 2004.

The rate of “blank” entries for VIN, Configuration, Cargo Body Type, GVWR, and License Class declined to a low level (under 10 percent) in 2007. However, Cargo Body Type and GVWR were very high (above 30 percent) for the three previous years.



## APPENDIX C: KANSAS

### LAW ENFORCEMENT TRAINING

In May 2005 and in October 2008, the FMCSA class on “Crash Data Collection for Commercial Motor Vehicles” used Kansas’ existing crash report form. A summary of the training classes attendance and officers’ evaluations are shown in Table 14.

**Table 14. Training Class Attendance and Evaluation—Kansas**

<b>Total number of classes</b>	4
<b>Training Dates (month/year)</b>	5/2005, 10/2008
<b>Attending Agencies</b>	Local and State
<b>Number trained</b>	15 / 120
<b>Course Rating by attendees (1 – poor to 5 – very good)</b>	4.53
<b>State Follow-up Training (post-training)</b>	500

The FMCSA training class was conducted in 2005 for fifteen Kansas Highway Patrol trainers. As a result, Kansas trained all Highway Patrol Officers and supervisors (500) using the materials provided by the FMCSA training program.

During 2008, FMCSA assisted the State with revisions to a new crash report form and police instruction manual. FMCSA conducted three commercial vehicle training classes to a total of 120 officers in conjunction with the State’s training on an entirely new crash report form, which is to be implemented statewide in 2009.

### State Crash Report Evaluation

Kansas’ 2003 crash report form was evaluated in June 2005. As a result of the evaluation and training, the State decided to revise its crash report form. FMCSA provided training materials to assist with revising the form and instruction manual. A significant revision to their new 2009 crash report form and supplement was including key data elements and codes that were not on the old form (i.e. carrier type, license class, sequence of events, vehicle configuration, cargo body type, etc.) to match to the SAFETYNET codes. Kansas also revised its selection criteria definition to match to the federally reportable definition.

### Analysis of the SAFETYNET Key Data Fields Related to Training

Generally, the State’s number of trucks and buses involved in crashes is relatively stable for 2004 to 2007, with a slight increase in 2007 (see Table 15). It should be noted, according to the Non-Fatal Crash Completeness Measure for 2007, Kansas was at 70 percent of the predicted number of trucks and buses (approximately 2,400 crash records). It will be necessary to re-evaluate any changes in the number of crash records after the implementation of the new crash report form in 2009, since the selection criterion was revised.

**Table 15. Annual Crash Case Trends by Truck and Bus—Kansas**

Vehicle Type	2004	2005	2006	2007	2004–2007 Change	2004–2007 % Change
Bus	86	107	93	100	14	16%
Truck	1,481	1,571	1,476	1,643	162	11%
	<b>1,567</b>	<b>1,678</b>	<b>1,569</b>	<b>1,743</b>	<b>176</b>	<b>11%</b>

The “blank” rates for vehicle identification number, vehicle configuration, cargo body type, and GVWR are extremely low, as low as 1 percent or less starting in 2005 (see Table 16). Driver License Class was not included in records until 2007 and resulted in 20 percent “blank” responses. During 2008, the Driver License Class “blank” rate has steadily improved to 14 percent (see Table 17).

**Table 16. Annual Trends for “Blank” Values—Kansas**

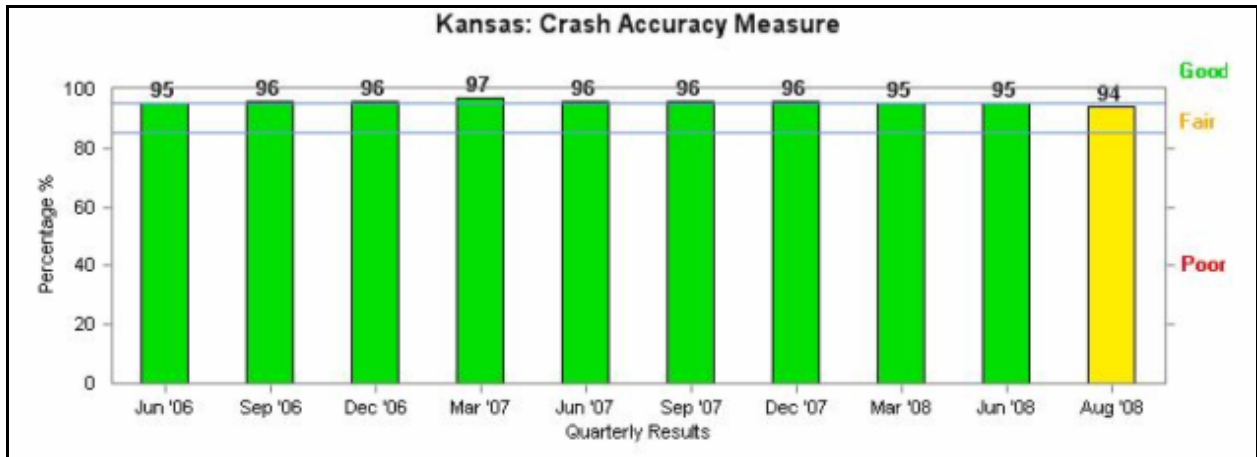
Blank Counts	2005– 2006 Nat'l %	2004 Blanks	2004 %	2005 Blanks	2005 %	2006 Blanks	2006 %	2007 Count	2007 %	2007 Nat'l %
VIN	18%	8	1%	13	1%	15	1%	10	1%	18%
CDL	44%	1,571	100%	1,680	100%	1,566	100%	341	20%	26%
Configuration	3%	13	1%	8	0%	6	0%	2	0%	2%
Cargo Body Type	8%	54	3%	15	1%	10	1%	20	1%	8%
GVWR	24%	6	0%	9	1%	13	1%	5	0%	12%

**Table 17. License Class Distribution—Kansas**

License Class	2005-2006 Nat'l %	2006 Count	2006 %	2007 Count	2007 %	2008 Count	2008 %
Blank	45%	1,566	100%	341	20%	85	13%
Class A	39%	2	0%	1,217	70%	519	77%
Class B	7%	1	0%	171	10%	71	10%
Class C	6%	0	0%	14	1%	1	0%
Class D	2%	0	0%	0	0%	1	0%
Class M	0%	0	0%	0	0%	0	0%
		1,569		1,743		677	

### Motor Carrier Identification

The only measurement currently available to identify the States’ motor carrier identification accuracy is the Crash Accuracy Measure at the FMCSA A&I Online, Data Quality section. Kansas has remained fairly steady near the 95 percent threshold for “Good” status, as shown in Figure 7.



**Figure 7. Crash Accuracy Measure—Kansas**

**SUMMARY OF FINDINGS**

Kansas generally shows high performance measures over the last few years, despite questions of whether it is collecting all the qualifying truck and bus records based upon the current FMCSA selection criteria. The State continues to seek improvements by a significant revision to its crash report form and instruction manual, and additional training.



## APPENDIX D: LOUISIANA

### LAW ENFORCEMENT TRAINING

The State of Louisiana began modifying its crash report form during 2004 and implemented a new version in January 2005. FMCSA helped Louisiana to redesign the crash report form and develop a new instruction manual. In June 2003, FMCSA pilot tested the crash data collection lessons using Louisiana’s old crash report form. The first full FMCSA “Crash Data Collection for Commercial Motor Vehicles” class in November 2004 used the new crash report form. A summary of the training class attendance and officers’ evaluations are shown in Table 18.

**Table 18. Training Class Attendance and Evaluation—Louisiana**

<b>Total number of classes</b>	2
<b>Training Dates (month/year)</b>	11/2004
<b>Attending Agencies</b>	Local, State, and Other
<b>Number trained</b>	66
<b>Course Rating by attendees (1 – poor to 5 – very good)</b>	4.61
<b>State Follow-up Training (post-training)</b>	142

### State Crash Report Evaluation

Louisiana’s 2005 crash report form was evaluated as “good” for all FMCSA elements based on the data collected by FMCSA in 2005. Since 2005, FMCSA has added additional data elements. At the time of this report, Louisiana is considering further revisions to the current crash report form. One issue brought to their attention was the instructions for qualifying vehicles may cause some non-commercial vehicles to be omitted from SAFETYNET submissions. Figure 8 below shows the commercial vehicle section where the instruction emphasizes “Commercial/Business” vehicles.

The image shows a form titled 'VEHICLE CLASSIFICATION' with three radio button options: 'COMMERCIAL/BUSINESS VEHICLE', 'GOVERNMENT VEHICLE', and 'PERSONAL VEHICLE'. Below this is a blue instruction box: 'COMPLETE INFORMATION BELOW IF THIS VEHICLE IS BEING USED FOR COMMERCE/BUSINESS, & HAS A GVWR/GCWR IN EXCESS OF 10,000 LBS., OR HAS A HAZMAT PLACARD, OR IS A BUS WITH SEATING FOR NINE OR MORE INCLUDING THE DRIVER.' The form contains several text input fields: 'CARRIER NAME', 'STREET ADDRESS', 'CITY', 'STATE', and 'ZIP'. There are also fields for 'US DOT #', 'MC/MX ("ICC") #', 'CLASS', and 'ID#'. At the bottom, there are four checkboxes: 'INTERSTATE CARRIER Y/N', 'TRANSPORTING HAZARDOUS MATERIAL Y/N', 'PLACARDS DISPLAYED Y/N', and 'HAZ MAT RELEASED Y/N'.

**Figure 8. Commercial Vehicle Section of SAFETYNET Reporting Form—Louisiana**

### Analysis of the SAFETYNET Key Data Fields Related to Training

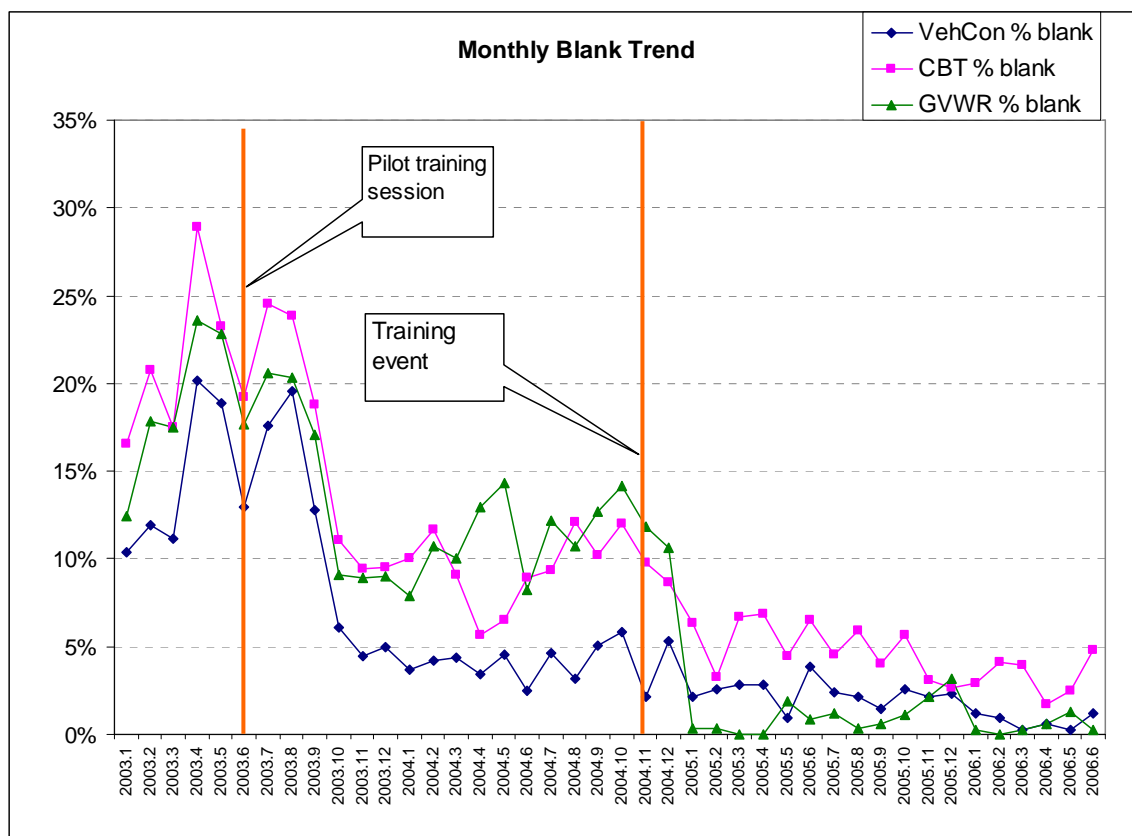
From 2004 to 2005, the total MCMIS crash records reflect a significant increase in trucks and buses as a result of the implementation of their new 2005 crash report form, training, and some later revisions to their extraction logic that acquires data from the State accident record system (see Table 19 for the annual crash case trend). From 2004 to 2007, buses increased 75 percent.

This increase corrects underreporting of trucks and buses prior to 2005. The State is currently at 100 percent of the predicted crash record collection rate as reflected in the FMCSA Data Quality Non-Fatal Crash Completeness Measure.

**Table 19. Annual Crash Case Trends by Truck and Bus—Louisiana**

Vehicle Type	2004	2005	2006	2007	2004–2007 Change	2004–2007 % Change
Bus	139	295	230	243	104	75%
Truck	2641	3995	3882	3789	1148	43%
	<b>2,780</b>	<b>4,290</b>	<b>4,112</b>	<b>4,032</b>	<b>1252</b>	<b>45%</b>

The impact of a new crash report form and training is reflected in the reduced blank rates for Configuration, Cargo Body Type, and GVWR as at or below the national average for 2007 (see Figure 9 and Table 20).



**Figure 9. Monthly “Blank” Entry Trends—Louisiana**

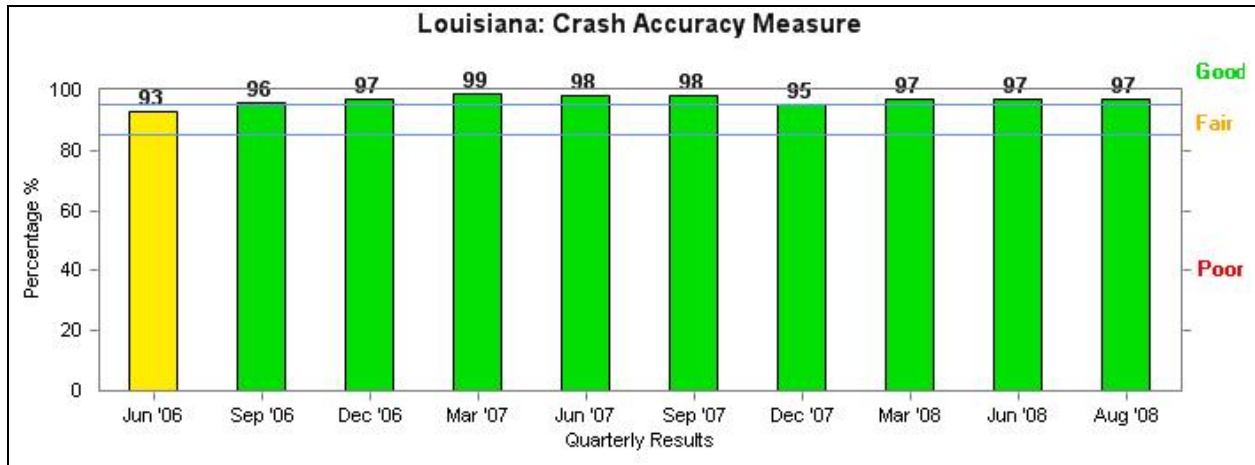


**Table 20. Annual Trends for “Blank” Values—Louisiana**

Blank Counts	2005–2006 Nat'l %	2004 Blanks	2004 %	2005 Blanks	2005 %	2006 Blanks	2006 %	2007 Count	2007 %	2007 Nat'l %
VIN	18%	22	1%	459	11%	430	10%	308	8%	18%
CDL	44%	550	20%	867	20%	799	19%	782	19%	26%
Configuration	3%	113	4%	101	2%	27	1%	66	2%	2%
Cargo Body Type	8%	264	9%	214	5%	123	3%	113	3%	8%
GVWR	24%	318	11%	45	1%	22	1%	111	3%	12%

### Motor Carrier Identification

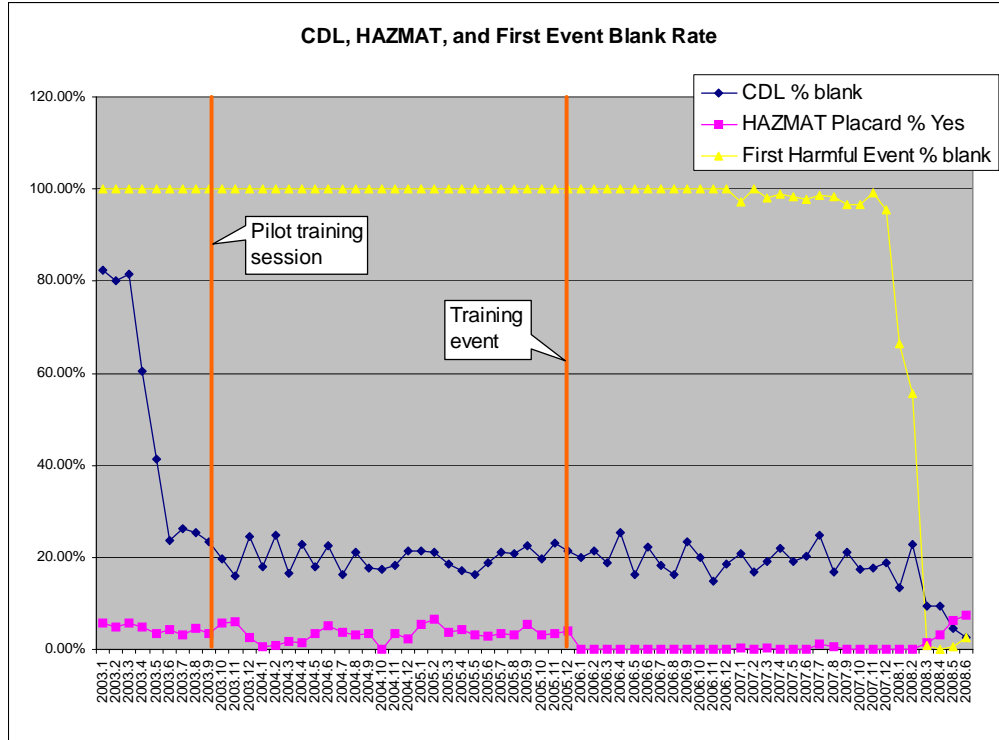
The only measurement currently available to identify the States’ motor carrier identification accuracy is the Crash Accuracy Measure at the FMCSA A&I Online, Data Quality section. The crash accuracy measure looks back 12 months for the event date, starting three months prior to the snapshot. From June 2004 to November 2005, Louisiana’s crash accuracy was “Poor” (below 85 percent). From December 2005 to July 2006 the measure was “Fair” (above 85 percent but below 95 percent). Since August 2006, Louisiana’s measurement status was consistently “Good” at 96 percent or better accuracy (see Figure 10).



**Figure 10. Crash Accuracy Measure—Louisiana**

### Other Key Elements

Although Louisiana’s 2005 crash report form evaluation reflects the collection of “Sequence of Events,” this data element was not included in data extracted for SAFETYNET through 2007. In 2008, it appears this data element is now provided to SAFETYNET (see Figure 11).



**Figure 11. CDL, HAZMAT, and First Event Blank Rate—Louisiana**

**EXTRACTION AND TRANSLATION LOGIC EVALUATION**

In April 2007, Louisiana’s extraction logic was evaluated. Some revisions were suggested that resulted in identifying additional qualifying trucks and buses. The impact of changes to the extraction logic was discussed earlier in the report.

**SUMMARY OF FINDINGS**

Louisiana was the first State FMCSA worked closely with as part of this training project. FMCSA assisted the State with reworking their new crash report form and police instruction manual. A pilot test of the training materials was conducted in 2003 and training courses were conducted in 2004.

From 2004 to 2005, the total MCMIS crash records reflect a significant increase in trucks and buses as a result of the implementation of their new 2005 crash report form, training, and some later revisions to their extraction logic that acquires data from the State accident record system. From 2004 to 2007, buses increased 75 percent. This increase corrects underreporting of trucks and buses prior to 2005. The State is currently at 100 percent of the predicted crash record collection rate as reflected in the FMCSA Data Quality Non-Fatal Crash Completeness Measure.

The impact of a new crash report form and training is reflected also in the reduced “blank” rates for Configuration, Cargo Body Type, and GVWR as at or below the national average for 2007.

## APPENDIX E: MICHIGAN

### LAW ENFORCEMENT TRAINING

In May 2005, the Michigan State Police requested the FMCSA class on “Crash Data Collection for Commercial Motor Vehicles.” A summary of the training class attendance and officers’ evaluations are shown in Table 21.

**Table 21. Training Class Attendance and Evaluation—Michigan**

<b>Total number of classes</b>	6
<b>Training Dates (month/year)</b>	7/2005, 7/2006, 9/2007
<b>Attending Agencies</b>	Local, State, DOT and Other
<b>Number trained</b>	166
<b>Course Rating by attendees (1– poor to 5 – very good)</b>	4.36
<b>State Follow-up Training (post-training)</b>	1,597

### State Crash Report Evaluation

The first step in the process was to evaluate the Michigan crash report for CMV data elements. This is done prior to conducting each State class, because the FMCSA lessons are tailored to the States’ crash report to have the maximum training impact for law enforcement. Michigan’s Crash Report was determined to be very good, with the exception of the selection process for buses and the fields used to translate Vehicle Configuration into SAFETYNET. The latter important variable identifies the type of truck or bus involved in crashes. It distinguishes tractor trailers from medium and heavy single-unit trucks, as well as full-size and small buses. It is one of the key variables identified by the National Governor’s Association in the early 1990s crash research.

The second step was to analyze available SAFETYNET crash data for Michigan in 2004 to determine the quality of the data provided for Vehicle Configuration and the other important variables covered in the training lessons.

Table 22 presents the frequency distribution for Vehicle Configuration for Michigan. This table is for a partial year of approximately nine months of 2004 at the time this “Unknown” problem was found.

**Table 22. Large Trucks Involved in Crashes by Vehicle Configuration  
(Year 2004\*)—Michigan**

<b>ID</b>	<b>Description</b>	<b>Count</b>	<b>Percent</b>
5	Single-Unit Truck (2-axle, 6 tire)	0	0.00%
6	Single-Unit Truck (3 or more axles)	0	0.00%
7	Truck/Trailer	0	0.00%
8	Truck Tractor (Bobtail)	0	0.00%
9	Tractor/Semi-Trailer	1,390	39.11%
10	Tractor/Double	151	4.25%
11	Tractor/Triples	4	0.11%
99	Unknown Heavy Truck, Cannot Classify	2,009	56.53%
	<b>Total</b>	<b>3,554</b>	

\* Approximately nine months of 2004 SafetyNet crash data

Of the 3,554 trucks in SAFETYNET from Michigan in the nine-month snapshot, none were identified as single-unit trucks and bobtails (codes 5 to 8). More than 56 percent of the trucks could not be classified properly. With the assistance of the Michigan State Police, it was determined that the lack of data for single-unit trucks with or without trailers and truck tractors with no trailers was due to both the complexity of the fields and instructions on the crash report, as well as the extraction/conversion computer software from the State system into SAFETYNET. The State Police supported the immediate revision of instructions to the officers for completing the fields on the form and development of revised computer selection and conversion programs.

### **Conducting the Training Class for Law Enforcement and State Data Developers**

FMCSA developed training visuals and student workbooks for six classes for 162 State and local law enforcement officers, trainers, and Michigan Department of Transportation staff. The materials included revised instructions to identify the proper vehicle type.

Training Lesson 1 (What is a Commercial Motor Vehicle Crash?) included revised definitions for trucks and buses to match the reporting criteria from States into the SAFETYNET crash module. Figure 12 presents the revised reporting criteria for Michigan. Also, the Michigan State Police reprinted their crash report overlay key for all officers Statewide with these criteria, which were used in the training classes and distributed throughout the State.

## Michigan Reporting Criteria

### Truck or Bus Definition

The truck/bus information box located on the back of the form must be completed for each of these vehicles.

1. A truck or truck/trailer having a Gross Vehicle Weight Rating (GVWR) of more than 10,000 pounds for the power unit or any other vehicle displaying a hazardous materials placard.
2. Any vehicle that displays a hazardous material placard, including automobiles and vans.
3. Any bus or school bus designed or used to transport 8 or more passengers including the driver. (Note: this includes limousines or courtesy vans)

(Do not report motor homes or implements of husbandry.)

REVISED

- 1 Van (enclosed box)
- 2 Cargo tank
- 3 Flatbed/platform
- 4 Dump
- 5 Concrete mixer
- 6 Auto transport

1. A truck or truck/trailer having a Gross Vehicle Weight Rating (GVWR) of more than 10,000 pounds.
2. Any vehicle that displays a hazardous materials placard including automobiles and vans.
3. Any bus or school bus designed or used to transport more than 8 passengers including the driver. (This includes courtesy vans and limousines)

Figure 12. Michigan Reporting Criteria (1 of 3)

Figure 13 and Figure 14 present additional training guidance provided both in class and incorporated by the State Police on the revised overlay key for all officers in the State.

## Michigan Reporting Criteria

### Truck or Bus Definition

The truck/bus information box located on the back of the form must be completed for each of these vehicles.

1. A truck or truck/trailer having a Gross Vehicle Weight Rating (GVWR) of more than 10,000 pounds for the power unit or any other vehicle displaying a hazardous materials placard.
2. Any vehicle that displays a hazardous material placard, including automobiles and vans.
3. Any bus or school bus designed or used to transport 8 or more passengers including the driver. (Note: this includes limousines or courtesy vans)

(Do not report motor homes or implements of husbandry.)

Cargo Body Type

- 1 Van (enclosed box)
- 2 Cargo tank
- 3 Flatbed/platform
- 4 Dump
- 5 Concrete mixer
- 6 Auto transport
- 7 Garbage/refuse
- 8 Other/unknown

REVISED

SAFETYNET = GVWR or GCWR of more than 10,000 lbs.

**Note:** A medium sized truck (non-CDL over 10,000 lbs. GVWR) with or without a trailer should be reported by marking "Truck/Bus" for the Vehicle Type in the Unit section and by marking "Other" as the Vehicle Type in the Truck/Bus section.

48

Figure 13. Michigan Reporting Criteria (2 of 3)

## Michigan Type and Axles Per Unit

**REVISÉ**

### Type and Axles Per Unit

Enter the total number of axles for the truck or bus in the first box. Always include the steering axle. There will always be at least two axles. Include all axles whether they are on the ground or raised. Place the letter "T" before the number of axles if the truck is a truck tractor (equipped with a fifth wheel for towing semi-trailers and there is no cargo body mounted on the truck.)

Next, enter the total number of axles for each trailer. List one trailer per box. Include all axles whether they are on the ground or raised. Place an "S" before the number of axles if the trailer is a semi-trailer (designed so that a portion of the load is supported by the towing unit).

Enter the total number of axles for the truck or bus in the first box. Include the steering axle. There will always be at least two axles. Include axles whether they are on the ground or raised. Place the letter "T" before the number of axles if the truck is a truck tractor (equipped with a fifth wheel for towing semi-trailer and there is no cargo body mounted on the truck.)

Next, enter the total number of axles for each trailer by entering one trailer per box. Place an "S" before the number of axles if the trailer is a semi-trailer which is designated when a portion of the load is supported by the towing unit.

**NOTE:** a Bus (commercial or school) is now designated by the number of seats in the vehicle (including the driver's) and will not list the number of axles. Use the following rules:  
 Mark Truck /Bus in Vehicle Type in the Unit section and mark appropriate vehicle type in the Truck/Bus section.  
 For Type and Axles:  
 Enter B1 in the first box if a bus has seating of 9 to 15 including driver  
 Enter B2 in the first box if a bus has seating of 16+

T2

S1

2

S1

B2

**Figure 14. Michigan Reporting Criteria (3 of 3)**

### Analysis of the SAFETYNET Key Data Fields

Table 23 shows that although the number of trucks and buses overall has decreased, the bus count has risen significantly.

**Table 23. Annual Crash Case Trends by Truck and Bus—Michigan**

Vehicle Type	2004	2005	2006	2007	2004–2007 Change	2004–2007% Change
Bus	223	177	174	439	216	97%
Truck	5,529	5,436	4,736	4,629	-900	-16%
	<b>5,752</b>	<b>5,613</b>	<b>4,910</b>	<b>5,068</b>	<b>-684</b>	<b>-12%</b>

Table 24 shows that the “blank” rates for VIN and Driver License Class have gone down slightly while the entries for Configuration, Cargo Body Type and GVWR have been extremely low historically.

**Table 24. Annual Trends for “Blank” Values—Michigan**

Blank Counts	2005–2006 Nat'l %	2004 Blanks	2004 %	2005 Blanks	2005 %	2006 Blanks	2006 %	2007 Blanks	2007 %	2007 Nat'l %
VIN	<b>18%</b>	1,848	32%	957	17%	827	17%	903	18%	<b>18%</b>
CDL	<b>44%</b>	2,466	43%	1,448	26%	1,301	26%	1,019	20%	<b>26%</b>
Configuration	<b>3%</b>	0	0%	0	0%	0	0%	0	0%	<b>2%</b>
Cargo Body Type	<b>8%</b>	0	0%	3	0%	22	0%	29	1%	<b>8%</b>
GVWR	<b>24%</b>	4	0%	4	0%	20	0%	97	2%	<b>12%</b>

## Motor Carrier Identification

The only measurement currently available to identify the States' motor carrier identification accuracy is the Crash Accuracy Measure at the FMCSA A&I Online, Data Quality section. During the period from June 2006 to August 2008 Michigan's measurement was consistently "Good" at 99 percent accuracy, as shown in Figure 15 below.

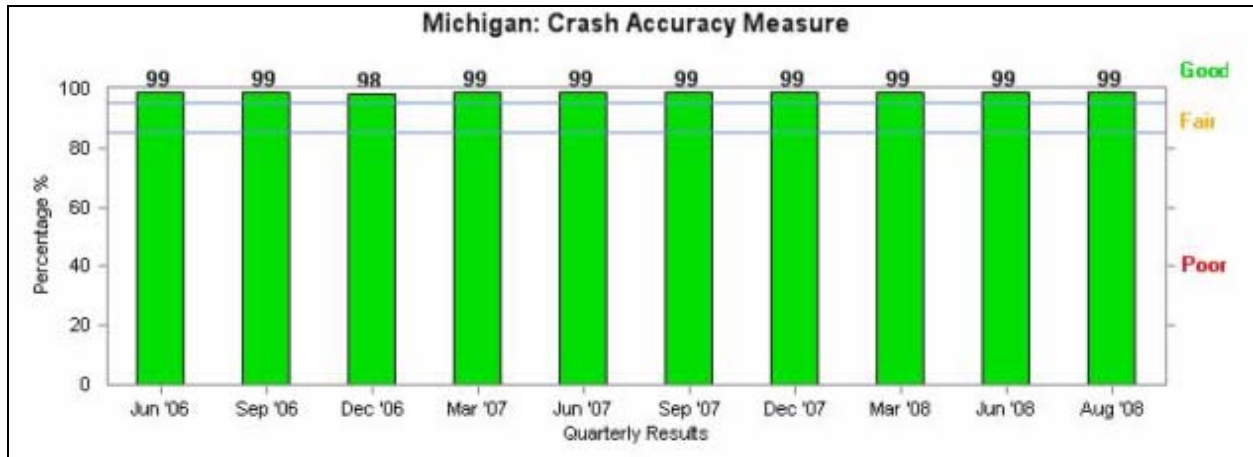


Figure 15. Crash Accuracy Measure—Michigan

## EXTRACTION AND TRANSLATION LOGIC EVALUATION

The third step in the process was the creation of computer extraction software in September 2005, translating Michigan's vehicle type fields ("Vehicle Type" and "Type and Axles per Unit") into Vehicle Configuration in SAFETYNET. This worked successfully in conjunction with the training program and revised police instruction overlay key for the Michigan Crash Report.

Table 25 shows that in 2005, Single-Unit Trucks, Trucks with Trailers, and Truck Tractor (Bobtails) are now recorded properly in Michigan. The percentage of trucks which cannot be classified (Code 99—Unknown Heavy Truck, Cannot Classify) dropped from 52 percent in 2004 to 37 percent in 2005. The 2,993 "unknowns" for 2004 represented 46 percent of all States reporting unknown values for that year. For 2006 and 2007, Vehicle Configuration "unknown" entries dropped to 20 percent and 9 percent, respectively.

Table 25. Large Trucks and Buses Involved in Crashes by Vehicle Configuration (for Years 2004–2007)—Michigan

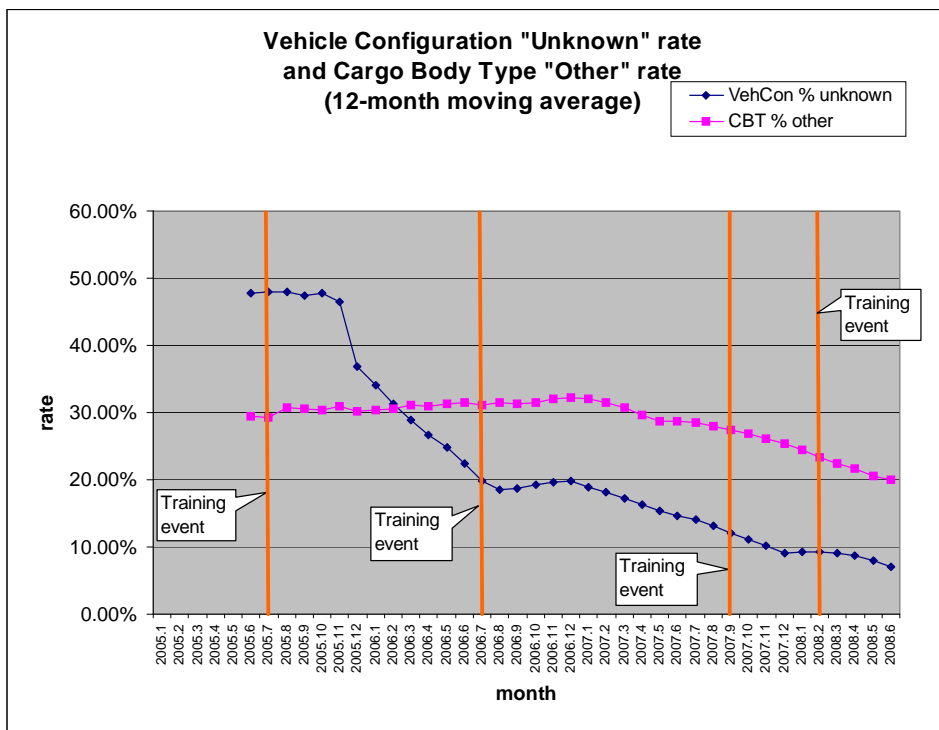
Vehicle Configuration	2004	%	2005	%	2006	%	2007	%
Bus (9-15 passengers)	51	1%	37	1%	21	0%	14	0%
Bus (> 15 passengers)	172	3%	140	3%	153	3%	425	8%
Light Truck	1	0%	0	0%	0	0%	0	0%
Single-Unit Truck (2 axles)	6	0%	457	8%	856	18%	810	16%
Single-Unit Truck (3+ axles)	3	0%	159	3%	332	7%	313	6%

Vehicle Configuration	2004	%	2005	%	2006	%	2007	%
Tractor/Semi-Trailer	227	4%	234	4%	184	4%	155	3%
Tractor/Double	2,293	40%	2,336	42%	2,081	43%	2,449	48%
Tractor/Triples	1	0%	0	0%	0	0%	0	0%
Truck Tractor (Bobtail)	1	0%	124	2%	288	6%	206	4%
Truck/Trailer	4	0%	39	1%	27	1%	249	5%
Unknown Heavy Truck	2,993	52%	2,087	37%	968	20%	447	9%
	<b>5,752</b>		<b>5,613</b>		<b>4,910</b>		<b>5,065</b>	

Source: MCMIS June 2008 snapshot

The combination of the revision of Michigan’s extraction/translation software, along with the instructions to law enforcement through three successive years of training sessions, produced a significant, steady reduction in the “unknown” rate for Vehicle Configuration and the “Other” category for Cargo Body Type (see

Figure 16). Also, the revision to the crash report instructions and overlay produced a 174 percent increase in the large buses (>15 seats; see Figure 17).



**Figure 16. Vehicle Configuration “Unknown” Rate and Cargo Body Type “Other” Rate (12-month moving average)—Michigan**



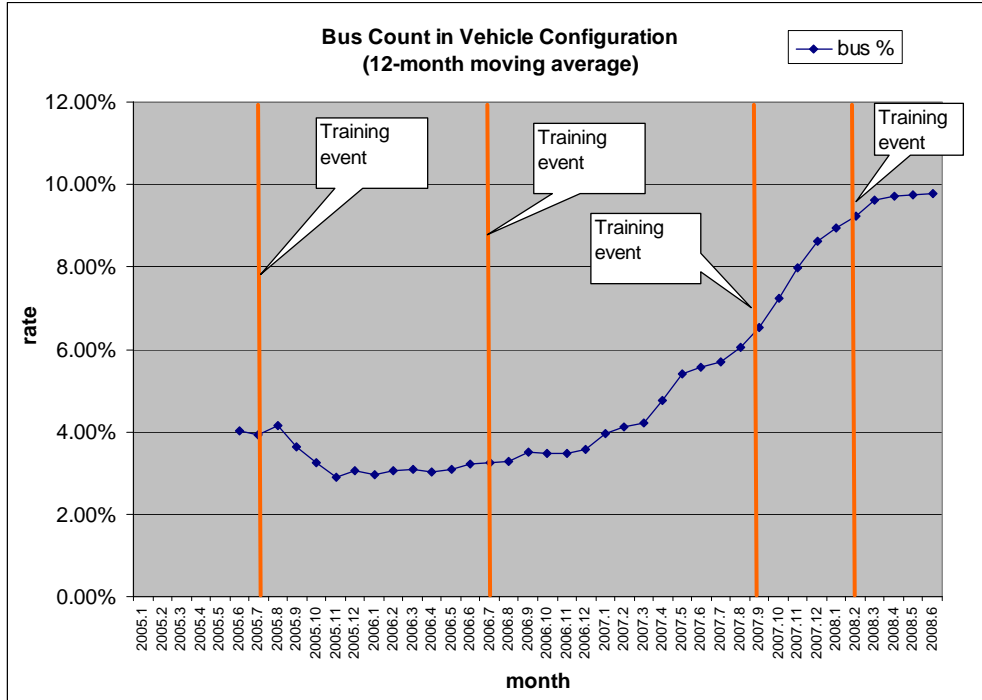


Figure 17. Bus Count in Vehicle Configuration (12-month moving average)—Michigan

## SUMMARY OF FINDINGS

Michigan was the only State to request FMCSA training classes in each year from 2005 to 2007. The result was 166 State and local trainers attended six classes during those three years. Michigan has subsequently trained 1,597 police officers. This may be seen as a successful measurement of the train-the-trainer concept.

Through an analysis of the State’s crash report, FMCSA identified that although the report was good for most of the CMV data provided to FMCSA, the key element Vehicle Configuration resulted in the highest level of “unknown” entries in the country. Michigan was unable to make changes to the overall form, but did allow FMCSA to propose and implement changes to the State’s “overlay key,” an essential guidance to all police officers in the State. This tool was used in the six training classes. As a result, the level of “unknowns” dropped steadily from 52 percent to 9 percent, improving the quality of the data for the State and the country.



## APPENDIX F: MINNESOTA

### LAW ENFORCEMENT TRAINING

In October 2004, the FMCSA class on “Crash Data Collection for Commercial Motor Vehicles” used Minnesota’s existing crash report form, dated 2003. This form continues to be used without revision. A summary of the training class attendance and officers’ evaluations are shown below in Table 26.

**Table 26. Training Class Attendance and Evaluation—Minnesota**

<b>Total number of classes</b>	1
<b>Training Dates (month/year)</b>	10/2004
<b>Attending Agencies</b>	Local, State, and Other
<b>Number trained</b>	16
<b>Course Rating by attendees (1 – poor to 5 – very good)</b>	4.14
<b>State Follow up Training (post-training)</b>	Information not available

FMCSA provided instructional materials that the State used to create a web-based training module.

### State Crash Report Evaluation

In 2003 the Minnesota crash report form was evaluated. Their selection criteria for a qualifying CMV for crash reporting purposes was different from the FMCSA’s guideline for inclusion into MCMIS. Their instruction manual used a greater than 26,000 lbs threshold rather than the FMCSA’s criterion of 10,001 lbs for trucks. Their selection criterion for buses only included buses with 16 or more passengers as opposed the FMCSA’s criterion of 9 or more seats, including the driver. The damage severity field does not contain a “disabled” code. The carrier section does not have a field to collect the carrier identification number(s), the carrier address, the carrier type, or hazardous material number or class. The vehicle configuration and the cargo body type fields are missing codes, and the form does not have a field to record the GVWR. The State created a web-based training module using FMCSA training materials to correct some of the problems in the crash report form and correct the selection criteria to align with FMCSA standards.

### Analysis of the SAFETYNET Key Data Fields Related to Training

The number of trucks and buses involved in crashes in Minnesota dropped 19 percent from 2004 to 2007, with a 9 percent decline in buses and a 21 percent decline in trucks (See Table 27). It should be noted, that there was a rise in both between 2006 and 2007.

**Table 27. Annual Crash Case Trends by Truck and Bus—Minnesota**

Vehicle Type	2004	2005	2006	2007	2004–2007 Change	2004–2007 % Change
Bus	328	336	246	298	-30	-9%
Truck	2,975	2,633	2,298	2,365	-610	-21%
	<b>3,303</b>	<b>2,969</b>	<b>2,544</b>	<b>2,663</b>	<b>-640</b>	<b>-19%</b>

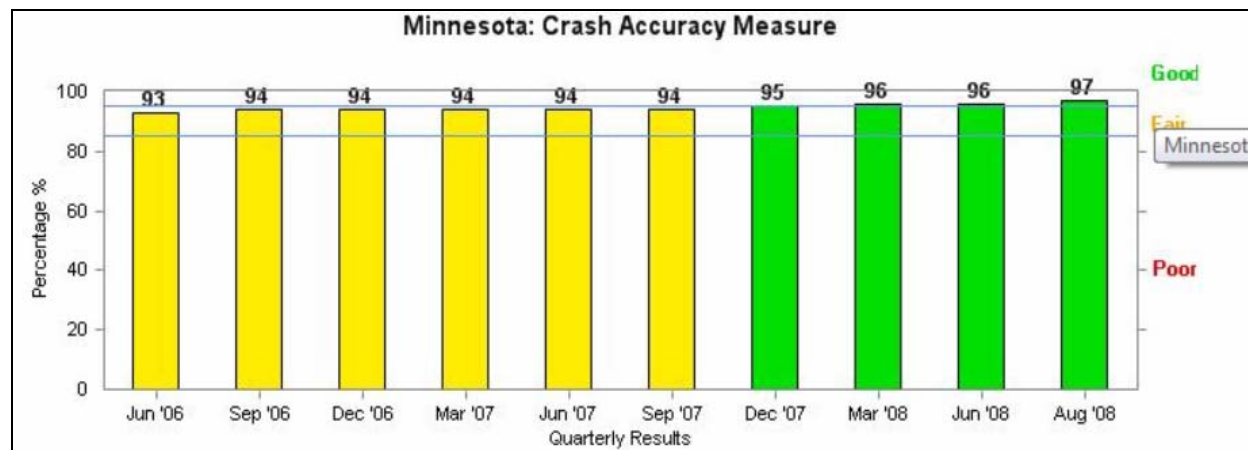
The “blank” rates for VIN, Cargo Body Type, and GVWR have dropped significantly from 2004 to 2007 (see Table 28).

**Table 28. Annual Trends for “Blank” Values—Minnesota**

Blank Counts	2005–2006 Nat'l %	2004 Blanks	2004 %	2005 Blanks	2005 %	2006 Blanks	2006 %	2007 Count	2007 %	2007 Nat'l %
VIN	18%	1,664	50%	1,822	61%	781	31%	13	0%	18%
CDL	44%	471	14%	242	8%	186	7%	223	8%	26%
Configuration	3%	1	0%	0	0%	0	0%	1	0%	2%
Cargo Body Type	8%	1,014	31%	756	25%	582	23%	154	6%	8%
GVWR	24%	2,257	68%	1,915	64%	1,250	49%	354	13%	12%

### Motor Carrier Identification

The only measurement currently available to identify the States’ motor carrier identification accuracy is the Crash Accuracy Measure at the FMCSA A&I Online, Data Quality section. Minnesota has slowly improved its carrier matching rate, progressing from “Fair” in 2006 to “Good” in 2007 and onward. (See Figure 18)



**Figure 18. Crash Accuracy Measure—Minnesota**

## **SUMMARY OF FINDINGS**

There were no positive trends in the data that could be attributed to the training program. The “blank” rates for VIN, Cargo Body Type, and GVWR dropped significantly from 2004 to 2007, but most change occurred in 2007.



## APPENDIX G: NEBRASKA

### LAW ENFORCEMENT TRAINING

In September 2004, two FMCSA classes on “Crash Data Collection for Commercial Motor Vehicles” used Nebraska’s existing crash report form, dated 2002. This form is still in use without revision. A third class was taught in November 2004. A summary of the training class attendance and officers’ evaluations are shown below in Table 29.

**Table 29. Training Class Attendance and Evaluation—Nebraska**

<b>Total number of classes</b>	3
<b>Training Dates (month/year)</b>	9/2004, 11/2004
<b>Attending Agencies</b>	Local, State, and Other
<b>Number trained</b>	50
<b>Course Rating by attendees (1 – poor to 5 – very good)</b>	4.62
<b>State Follow-up Training (post-training)</b>	303

### State Crash Report Evaluation

FMCSA evaluated the Nebraska’s crash report form, which does not have fields to collect Driver License Class or hazardous material number. Because the form has not been revised since 2002, it lacks a few of the more recent codes added by SAFETYNET (i.e., Carrier Type, Cargo Body Type, and Bus Use).

### Analysis of the SAFETYNET Key Data Fields Related to Training

The number of trucks and buses involved in crashes in Nebraska has risen 4 percent from 2004 to 2007, although buses decreased 14 percent and trucks decreased 6 percent. (See Table 30).

**Table 30. Annual Crash Case Trends by Truck and Bus—Nebraska**

<b>Vehicle Type</b>	<b>2004</b>	<b>2005</b>	<b>2006</b>	<b>2007</b>	<b>2004–2007 Change</b>	<b>2004–2007 % Change</b>
Bus	72	80	76	62	-10	-14%
Truck	1,062	1,055	999	1,121	59	6%
	<b>1,134</b>	<b>1,135</b>	<b>1,075</b>	<b>1,183</b>	<b>49</b>	<b>4%</b>

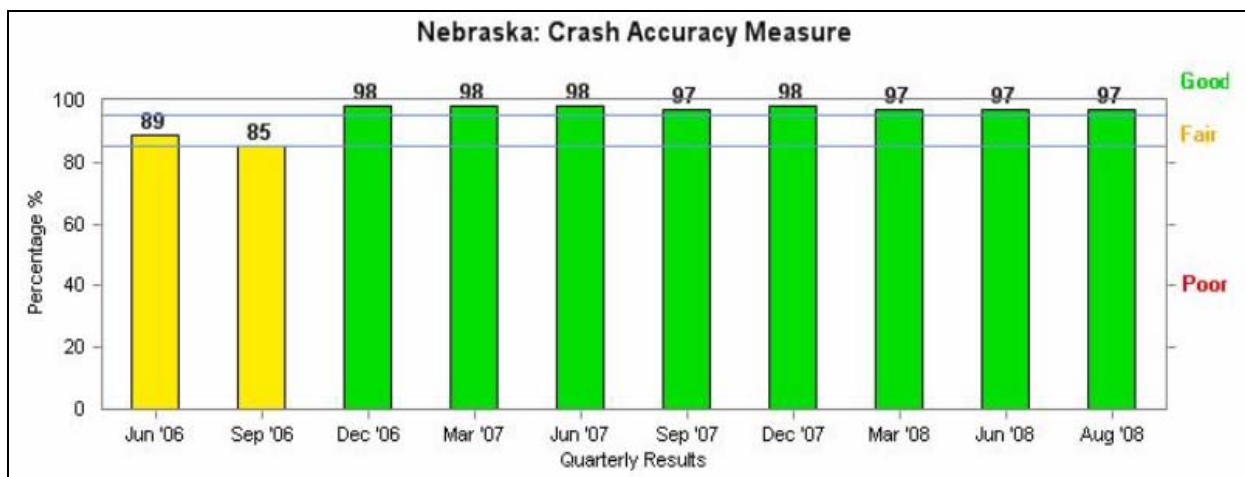
The blank rates for Driver License Class and GVWR have reduced significantly from 2004 to 2007 (see Table 31).

**Table 31. Annual Trends for “Blank” Values—Nebraska**

Blank Counts	2005–2006 Nat'l %	2004 Blanks	2004 %	2005 Blanks	2005 %	2006 Blanks	2006 %	2007 Count	2007 %	2007 Nat'l %
VIN	18%	16	1%	14	1%	10	1%	17	1%	18%
CDL	44%	1,076	100%	1,135	100%	1,074	100%	738	62%	26%
Configuration	3%	0	0%	0	0%	0	0%	0	0%	2%
Cargo Body Type	8%	38	4%	54	5%	35	3%	44	4%	8%
GVWR	24%	1,076	100%	1,134	100%	916	85%	129	11%	12%

**Motor Carrier Identification**

The only measurement currently available to identify the States’ motor carrier identification accuracy is the Crash Accuracy Measure at the FMCSA A&I Online, Data Quality section. Since June 2006, Nebraska has improved its carrier matching rate from “Fair” to “Good” (see Figure 19).



**Figure 19. Crash Accuracy Measure—Nebraska**

**SUMMARY OF FINDINGS**

Only one positive trend in the data could be attributed as the result of the FMCSA training. The rate of “unknown” entries in Vehicle Configuration declined from 10 percent in 2004 to 2 percent in 2007.

The “blank” rates for Driver License Class and GVWR dropped significantly in 2007. In 2008, all the blank rates continued to drop. However, these changes cannot be viewed as the result of training without further support.

The State’s Crash Accuracy Measure improved from “Fair” to “Good” in the latter part of 2006 and has been maintained at the 97 percent rating through 2008. The role of the training on Motor Carrier Identification to the improvement in the accuracy measure is unknown.



## APPENDIX H: NEW HAMPSHIRE

### LAW ENFORCEMENT TRAINING

In May 2005 and August 2007, FMCSA’s class on “Crash Data Collection for Commercial Motor Vehicles” used New Hampshire’s existing crash report form. A summary of the training class attendance and officers’ evaluations are shown in Table 32.

**Table 32. Training Class Attendance and Evaluation—New Hampshire**

<b>Total number of classes</b>	2
<b>Training Dates (month/year)</b>	5/2005, 8/2007
<b>Attending Agencies</b>	Local and State, and Others
<b>Number trained</b>	36
<b>Course Rating by attendees (1 – poor to 5—very good)</b>	4.60
<b>State Follow up Training (post- training)</b>	Not Available

### State Crash Report Evaluation

Evaluation of the New Hampshire’s crash report form revealed problems in their selection criteria for both trucks and small buses. In addition, no fields indicated disabled vehicles and injured transported for medical treatment, there was no Carrier Type field, and Vehicle Configuration and Cargo Body Type were missing some codes.

New Hampshire adopted the FMCSA Crash Report Form Model Supplement in 2005, and revised the supplement in 2007 to capture newer SAFETYNET codes. These changes positively contributed to improvements in some driver and vehicle data elements for the crash record completeness measure (see Figure 22).

### Analysis of the SAFETYNET Key Data Fields Related to Training

The number of trucks and buses involved in crashes in New Hampshire is essentially unchanged from 2004 to 2007 (see Table 33).

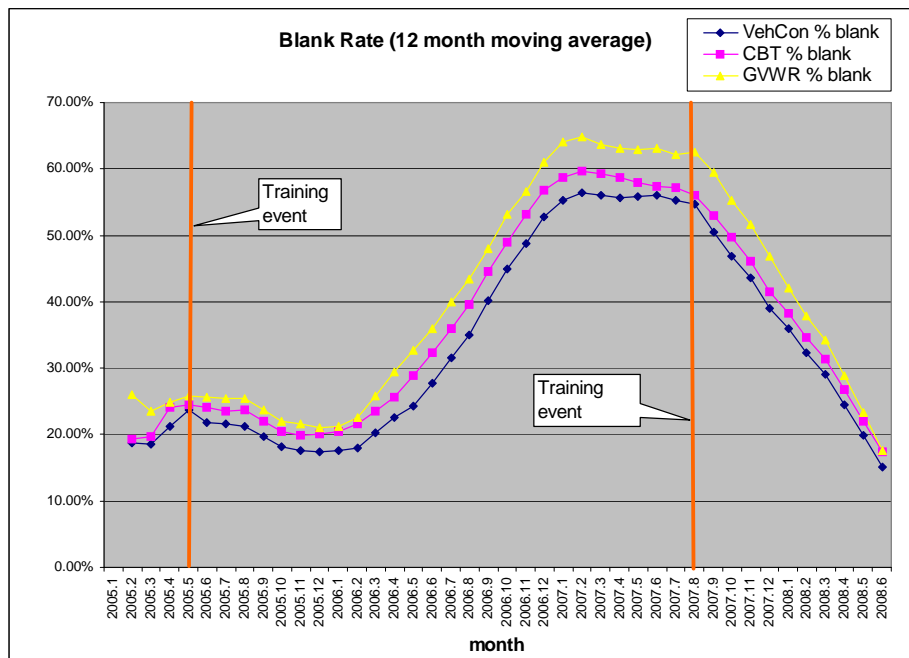
**Table 33. Annual Crash Case Trends by Truck and Bus—New Hampshire**

Vehicle Type	2004	2005	2006	2007	2004–2007 Change	2004–2007 % Change
Bus	46	38	33	53	7	15%
Truck	524	473	453	526	2	0%
	<b>570</b>	<b>511</b>	<b>486</b>	<b>579</b>	<b>9</b>	<b>2%</b>

The blank rates for VIN, Vehicle Configuration, Cargo body Type, and GVWR were low in 2004. During 2005 and 2006 the rates rose, and then began to drop in 2007 (see Table 34 and Figure 20). The data for the first half of 2008 reflects all the rates as extremely low (data not shown).

**Table 34. Annual Trends for “Blank” Values—New Hampshire**

Blank Counts	2005–2006 Nat'l %	2004 Blanks	2004 %	2005 Blanks	2005 %	2006 Blanks	2006 %	2007 Blanks	2007 %	2007 Nat'l %
VIN	18%	17	3%	23	5%	20	4%	14	2%	18%
CDL	44%	158	31%	201	39%	223	46%	199	34%	26%
Configuration	3%	18	3%	78	15%	247	51%	216	37%	2%
Cargo Body Type	8%	49	9%	92	18%	267	55%	227	39%	8%
GVWR	24%	45	9%	101	20%	286	59%	259	45%	12%



**Figure 20. Blank Rate (12 month moving average)—New Hampshire**

### Motor Carrier Identification

The only measurement currently available to identify the States’ motor carrier identification accuracy is the Crash Accuracy Measure at the FMCSA A&I Online, Data Quality section. The crash accuracy measure looks back 12 months for the event date, starting three months prior to the snapshot. New Hampshire’s data accuracy has dropped from 2006 to 2008, causing a rating decline from “Fair” to “Poor,” as shown in Figure 21, below.

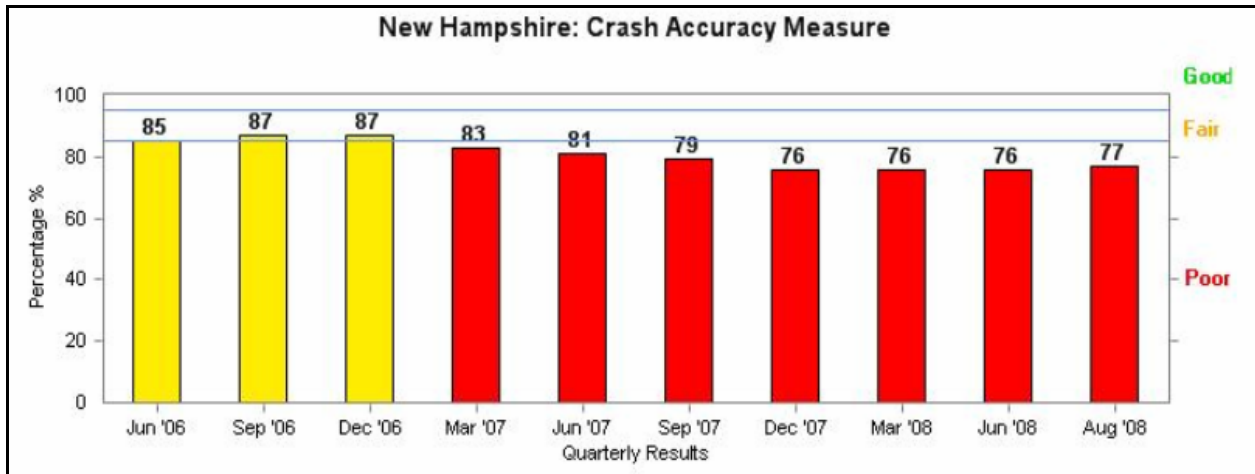


Figure 21. Crash Accuracy Measure—New Hampshire

### Other Key Elements

Another key element, the Crash Record Completeness Measure, rose steadily from 44 percent in September 2007 to 78 percent in August 2008, resulting in a rating improvement from “Poor” to “Fair,” as shown in Figure 22.

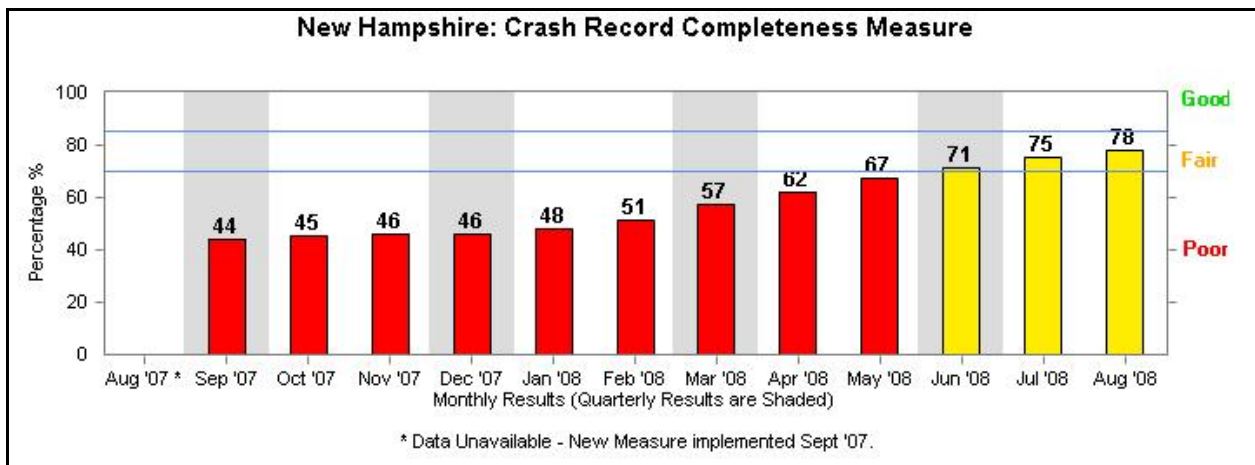


Figure 22. Crash Record Completeness Measure—New Hampshire

### SUMMARY OF FINDINGS

Analysis has shown very little change in the number of either trucks or buses over the last four years, but some changes in data quality are apparent. A few “blank” rates rose from 2004 to 2006, but then declined in 2007 after the training and are extremely low in 2008. The impact of the training classes appear not to have helped the State improve their accuracy measure as this has declined over the last two years, although the crash completeness measure on driver and vehicle data has steadily improved, as indicated by the lowering “blank” rates since the second training.



# APPENDIX I: NORTH CAROLINA

## BACKGROUND

In April 2006, FMCSA worked closely with the North Carolina Department of Transportation to identify CMVs that were not included in MCMIS. It is estimated that this State should have approximately 6,000 qualifying truck and bus crash records in MCMIS. During an onsite visit, FMCSA noted that the State’s data entry screen for CMV crashes was only available for data entry if the reporting police officer had checked the “Commercial Vehicle” box (see Figure 23). Although it was logical to speed up data entry, this process prevented the commercial vehicle section from the crash report to be entered into the State’s accident record system (see Figure 24). A review of the State’s accident system for 2005 data revealed that up to 3,000 vehicles that appeared to meet the FMCSA selection criteria were not entered into MCMIS because the police checked the “Vehicle” or “Hit-and-Run” boxes. FMCSA recommended revising the programming to the State data entry system along with undertaking manual analysis of the crash reports on microfilm to identify whether the reporting police officer completed the commercial vehicle section of the crash report.

The form is titled "UNIT #". At the top right, there are four checkboxes: "VEHICLE", "PEDESTRIAN", "HIT & RUN", and "COMMERCIAL VEHICLE". The "COMMERCIAL VEHICLE" checkbox is highlighted with a grey background. Below these are fields for "Driver" (First, Middle, Last), "Address", "City", "State", and "Zip". There are also fields for "D.L. #", "DOB", "CDL License", "34 Vision Obstruction", "35 Physical Condition", "36 D.L. Restrictions", "37 Alcohol/Drugs Suspected", "38 Alcohol/Drugs Test", "39 Results (if known)", and "40 Vehicle Seizure (DWI)".

Figure 23. North Carolina’s Reporting Officer’s Form with “Commercial Vehicle” Checkbox

This section is titled "20 COMMERCIAL VEHICLE: Cargo, Carrier Name, Address, Source". It includes a checkbox for "Same Address as Owner?". Below this are fields for "45 Cargo Body Type", "Source" (with checkboxes for "Truck", "Shipping papers", "Driver"), "Carrier Identification Numbers, GVWR, Axles" (with fields for "US DOT#", "State", "State#", "FE#", "Fleet#", "ICC#", "IFTA#", "Gross Vehicle Weight Rating", and "Axles on Vehicle including Trailers").

Figure 24. State of North Carolina’s Accident Report Form Commercial Vehicle Section

In November 2006, North Carolina Department of Transportation hired a full-time analyst to identify, review, and code all trucks and buses involved in crashes that met FMCSA’s selection criteria. This was performed based on an informal agreement with the State Police to improve the data collection process, even though the responsibility and system for the SAFETYNET Crash Module had not been transferred from the State Police to the Department of Transportation.

## IMPROVEMENTS THROUGH TECHNICAL ASSISTANCE

Through the State’s additional effort beginning in 2006, the number of trucks and buses reported to MCMIS increased to 6,396 and 6,305 respectively for 2006 and 2007 (see Table 35). This represents a significant increase of approximately 30 percent compared to the annual average of approximately 4,500 vehicles for 2002–2005. The current FMCSA A&I Data Quality non-fatal crash completeness measure predicts 6,144 records for the State of North Carolina. As a result of increased records collection, North Carolina is now collecting 104 percent of the non-fatal records predicted and all qualifying fatal records.

**Table 35. Increase of Reported Trucks and Buses to MCMIS in 2006 and 2007**

Crash Year	Total	Truck	%	Bus	%	Fatals
2004	4,567	4,437	97%	130	3%	136
2005	3,754	3,342	89%	412	11%	193
2006	6,396	5,742	90%	654	10%	153
2007	6,305	5,514	87%	791	13%	174

As previously noted, an initial review of the State’s record accident system for 2005 records showed as many as 3,000 qualifying records were never sent to MCMIS. The State’s manual review process was performed on 2006 data and was able to identify nearly 2,000 additional qualifying records based upon the commercial section of the crash report being filled out but not marked as a “commercial vehicle.”

The most significant finding is that the increased number of qualifying vehicles in 2006 and 2007 (when compared to 2004) included a high number of large trucks in excess of 26,000 lbs., and large buses, most likely requiring a commercial driver’s license. Table 36 shows the MCMIS vehicle configuration distribution for 2004–2007.

**Table 36. MCMIS Vehicle Configuration Distribution for 2004–2007—North Carolina**

Vehicle Configuration	2004	%	2005	%	2006	%	2007	%
Blank	98	2%	90	2%	183	3%	132	2%
Bus (> 15 Seats)	119	3%	398	11%	649	10%	784	12%
Bus (9–15 Seats)	11	0%	14	0%	5	0%	7	0%
Light Truck	0	0%	0	0%	0	0%	1	0%
Single-Unit Truck (2A)	414	9%	373	10%	1,247	19%	1,102	17%
Single-Unit Truck (3+A)	579	13%	439	12%	844	13%	829	13%
Tractor/Double	61	1%	35	1%	67	1%	54	1%
Tractor/Semi-Trailer	2,457	54%	1,869	50%	2,539	40%	2,518	40%
Truck Tractor (Bobtail)	108	2%	78	2%	112	2%	128	2%
Truck/Trailer	680	15%	434	12%	640	10%	626	10%
Unknown Heavy Truck	40	1%	24	1%	110	2%	124	2%
	<b>4,567</b>		<b>3,754</b>		<b>6,396</b>		<b>6,305</b>	

The increased records in 2007 reveal an additional 331 large trucks are now collected (single-unit trucks with three axles or more, tractor/semi-trailers, and bobtails) and an additional 665 large buses. Together, 996 vehicles easily qualify based on size (see Table 37).

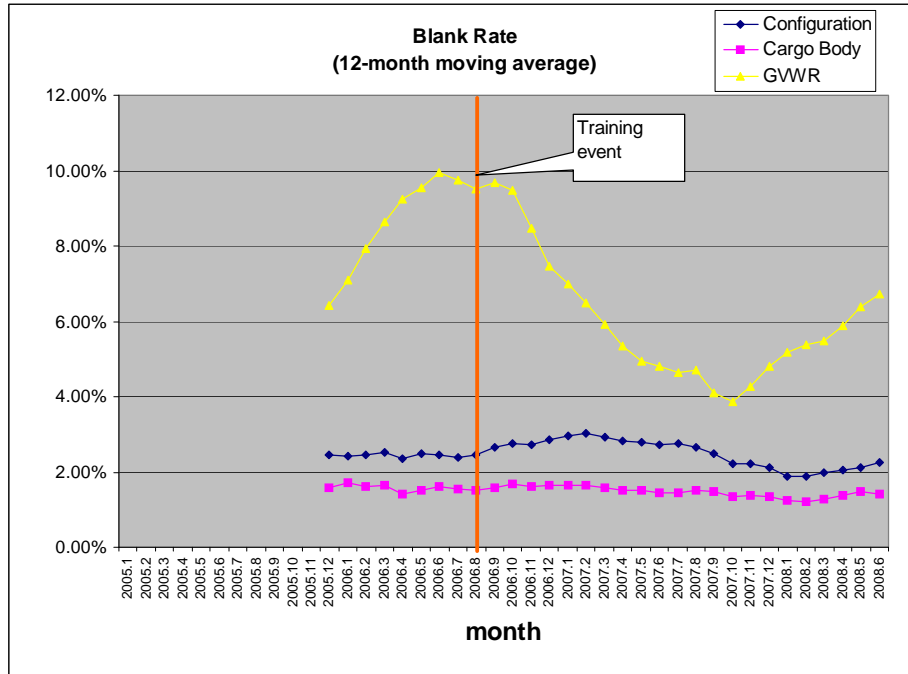
**Table 37. Additional Large Trucks and Large Busses Collected—North Carolina**

<b>Vehicle Configuration</b>	<b>2004-2007 Increase</b>	<b>2004-2007 % Increase</b>
Blank	34	35%
Bus (>15 seats)	665	559%
Bus (9–15 seats)	-4	-36%
Light Truck	1	0%
Single-Unit Truck (2A)	688	166%
Single-Unit Truck (3+A)	250	43%
Tractor/Double	-7	-11%
Tractor/Semi-Trailer	61	2%
Truck Tractor (Bobtail)	20	19%
Truck/Trailer	-54	-8%
Unknown Heavy Truck	84	210%
	<b>1,738</b>	

## **LAW ENFORCEMENT TRAINING**

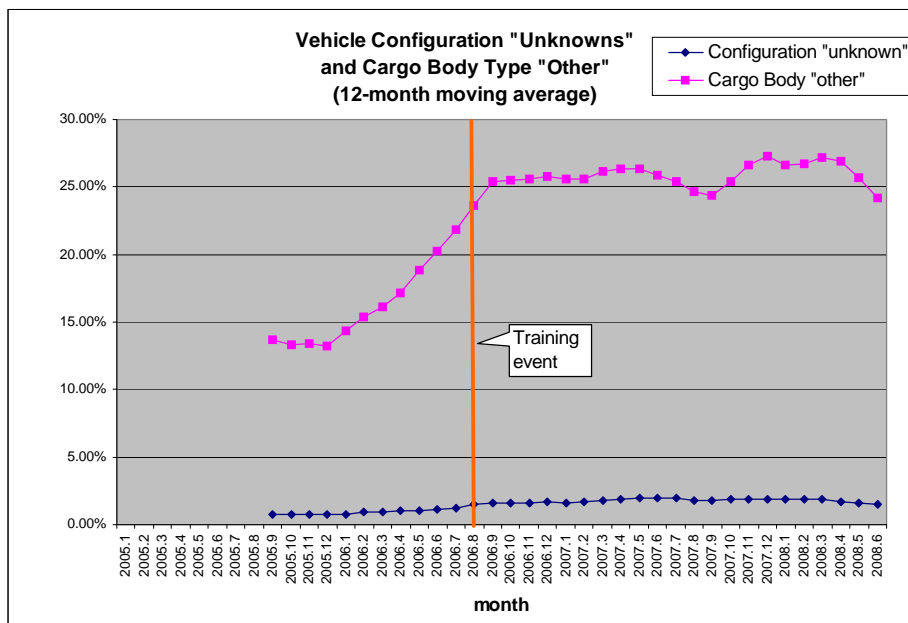
In June 2006, FMCSA tailored North Carolina’s Crash Report and Instruction Manual to agree with the CMV Crash Data Collection Training materials and conducted two classes in Raleigh for law enforcement.

Post-training analysis has not revealed any significant data trends to date. The “blank” entry rates (see Figure 25) for Vehicle Configuration and Cargo Body Type were already low, while the GVWR “blank” rate decreased from 10 percent to 4 percent, but increased in 2008 to about 7 percent.



**Figure 25. Blank Rate (12-month moving average)—North Carolina**

One trend that appears to have increased in a negative manner is the Cargo Body Type “Other” coding. This trend begins at the start of 2006, which corresponds to the first increase in records based upon their manual review. Therefore, the increase in Cargo Body Type “blank” rate is most likely due to the additional qualifying records. Blank entries for Cargo Body Type are a common issue for carrier data elements among all States (See Figure 26).



**Figure 26. Vehicle Configuration “Unknowns” and Cargo Body Type “Other” (12-month average)—North Carolina**



## **SUMMARY OF FINDINGS**

Analyses have shown no trends indicating improvement in the key data elements in MCMIS as a result of the training program for law enforcement. The percentage of missing values for GVWR dropped steadily for a year after the 2006 training; however, blank entries began increasing for the months that followed. The number of blanks for Vehicle Configuration and Cargo Body Type were steady at a low percentage before and after the training.

North Carolina achieved significant improvement in reporting the proper number of trucks and buses to SAFETYNET beginning in 2006 as a result of the technical assistance provided to the State by FMCSA and the State's efforts to implement the recommendations. FMCSA identified the data entry omission and the State began a manual review process and entered the data for all of the missing cases. This increased the number of trucks and buses to 104 percent of their predicted number by FMCSA. The number of large buses increased by 559 percent from 2004 to 2007.



## APPENDIX J: OHIO

### LAW ENFORCEMENT TRAINING

In October 2004, three FMCSA classes on “Crash Data Collection for Commercial Motor Vehicles” used Ohio’s existing crash report form, last revised in 1999. A fourth training was conducted in March 2006. A summary of the training class attendance and officers’ evaluations are shown in Table 38.

**Table 38. Training Class Attendance and Evaluation—Ohio**

<b>Total number of classes</b>	4
<b>Training Dates (month/year)</b>	10/2004, 3/2006
<b>Attending Agencies</b>	Local, State and other DOT
<b>Number trained</b>	101
<b>Course Rating by attendees (1 – poor to 5 – very good)</b>	4.37
<b>State Follow up Training (post- training)</b>	Information Not Available

### State Crash Report Evaluation

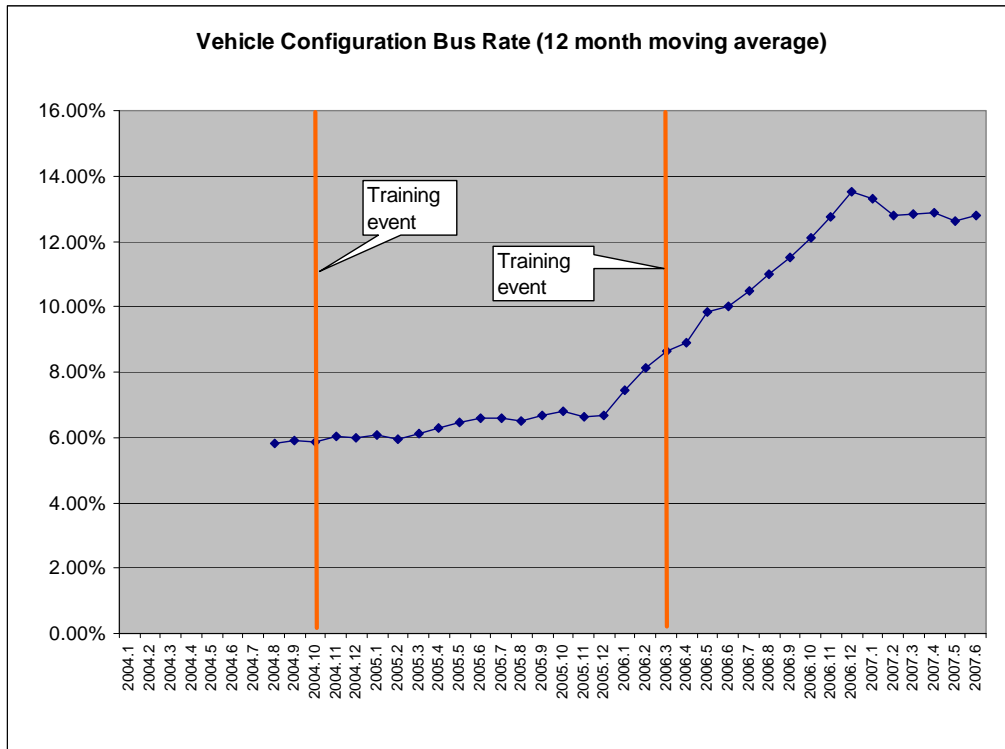
FMCSA evaluated Ohio’s crash report form in 2007. The form had a number of problems in the selection criteria definition, which gave guidance only on collecting data on a truck with a GVWR of 10,000 lbs. or more, but did not include the gross combination weight rating (GCWR) for combination vehicles, which could cause some smaller single-unit trucks pulling trailers to be missed. For buses, officers were instructed to collect data on buses carrying at least eight persons, instead of nine or more. This might cause smaller bus configurations to be included erroneously. FMCSA’s training class guidance instructed the officers in the proper coding of these vehicles. One of FMCSA’s selection criteria is to include the case if a vehicle was towed due to disabling damage. The State’s criterion also includes those vehicles that receive “intervening assistance,” but can then be driven away. If none of the other crash severity criteria are met, some cases may be included when they should be excluded. The form is missing the following fields: Carrier Type, VIN, Bus Use, and the newer Cargo Body Type codes (Log, Intermodal Chassis, and Vehicle Towing Another Motor Vehicle). The State also has no large bus code in either Vehicle Configuration or Cargo Body Type; however as part of FMCSA’s training class guidance, officers were instructed to capture buses with 16 or more seats, including the driver, by using their Cargo Body Type code “Other” and noting in the narrative that the bus had 16+ seats.

### Analysis of the SAFETYNET Key Data Fields Related to Training

There is a very small (1 percent) increase in crash records from 2004 to 2006. While the truck records declined for each of the years from 2004 to 2008 (-7 percent overall), the bus records have increased more than 117 percent over the same period (see Table 39 and Figure 27).

**Table 39. Annual Crash Case Trends by Truck and Bus—Ohio**

Vehicle Type	2004	2005	2006	2007	2004–2007 Change	2004–2007 % Change
Bus	311	335	715	675	364	117%
Truck	4,875	4,684	4,558	4,541	-334	-7%
	<b>5,186</b>	<b>5,019</b>	<b>5,273</b>	<b>5,216</b>	<b>30</b>	<b>1%</b>



**Figure 27. Vehicle Configuration Bus Rate (12 month moving average)—Ohio**

The rate of “blank” entries for VIN, Driver License Class, Cargo Body Type, and GVWR has risen since 2004 (see Table 40).

**Table 40. Annual Trends for “Blank” Values—Ohio**

Blank Counts	2005-2006 Nat'l %	2004 Blanks	2004 %	2005 Blanks	2005 %	2006 Blanks	2006 %	2007 Count	2007 %	2007 Nat'l %
VIN	18%	3,025	58%	3,032	60%	3,964	75%	4,397	84%	18%
CDL	44%	608	12%	675	13%	1,556	30%	1,647	32%	26%
Configuration	3%	2	0%	0	0%	0	0%	1	0%	2%
Cargo Body Type	8%	244	5%	280	6%	104	2%	651	12%	8%
GVWR	24%	354	7%	426	8%	1,300	25%	1,380	26%	12%

An examination of Vehicle Configuration revealed a steady increase in the numbers of small and large buses starting in 2006. The “Unknown” code was 10 percent in 2005 but has steadily declined to 2 percent for 2008 (see Table 41).

**Table 41. Vehicle Configuration “Unknown” Entries—Ohio**

Configuration	2004	2005	2006	2007	2008
Unknown Heavy Truck	186	525	381	141	24
TOTAL RECORDS	5,186	5,019	5,273	5,216	1,327
<b>Percent Unknown</b>	<b>4%</b>	<b>10%</b>	<b>7%</b>	<b>3%</b>	<b>2%</b>

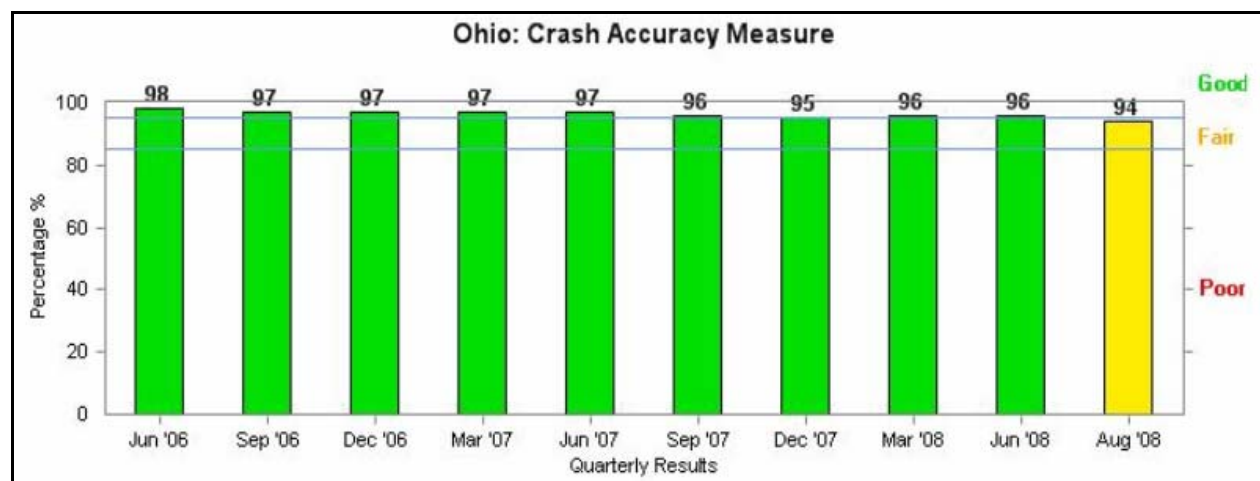
An examination of Cargo Body Type for “blanks,” “Not Applicable,” and “Other” revealed increases in 2006 and 2007 and a decline in 2008 (see Table 42).

**Table 42. Cargo Body Type “N/A and Other” Entries—Ohio**

Cargo Body	2004	2005	2006	2007	2008
Blank	243	280	104	651	147
Not Applicable	205	199	145	341	121
Other	308	278	949	368	0
<b>Subtotal</b>	<b>756</b>	<b>757</b>	<b>1198</b>	<b>1360</b>	<b>268</b>
TOTAL RECORDS	5,186	5,019	5,273	5,216	1,327
<b>Percent</b>	<b>15%</b>	<b>15%</b>	<b>23%</b>	<b>26%</b>	<b>20%</b>

### Motor Carrier Identification

The only measurement currently available to identify the States’ motor carrier identification accuracy is the Crash Accuracy Measure at the FMCSA A&I Online, Data Quality section. The crash accuracy measure looks back 12 months for the event date, starting three months prior to the snapshot. The last two years shows the Ohio’s measurement as consistently “Good” at 95 percent or better accuracy, through June 2008 (see Figure 28).



**Figure 28. Crash Accuracy Measure—Ohio**

## **SUMMARY OF FINDINGS**

Two positive trends were found in the analysis for Vehicle Configuration. An examination revealed a steady increase in the numbers of large buses starting in 2006. This could be the result of the Train-the Trainer Class identifying the fact that they had no code in either Vehicle Configuration or Cargo Body Type for buses with 16 or more seats. The guidance given during the class instructed the officers to code large buses as “Other” in Cargo Body Type and noting in the narrative that the bus had 16 or more seats, including the driver. Also, the “Unknown” code was 10 percent in 2005, but has steadily declined to 3 percent for 2007 and 2 percent for 2008.

Some negative trends were also found. The “blank” rates for VIN, Driver License Class, Cargo Body Type, GVWR, and Carrier Type are increasing.

## APPENDIX K: OKLAHOMA

### BACKGROUND

In 2005, the State of Oklahoma began updating its crash report and crash record database, with a goal of releasing a new crash report form in January 2007. Prior to the training conducted in Oklahoma, FMCSA worked with the crash report revision team in Oklahoma in an iterative revision process. The State recognized that successful collection of FMCSA data depends on collecting correct data, getting data out of the State system, and uploading data to MCMIS. FMCSA's work on the crash report form and training law enforcement personnel addressed data collection, and work to develop extraction logic addressed passing the data to MCMIS. After implementation of the new crash report form in 2007, issues arose with the redesign of the State's accident records system that caused their 2007 data to be lacking. Those issues have been resolved and Oklahoma's data has been improving.

### LAW ENFORCEMENT TRAINING

In September 2006, the FMCSA crash data collection lessons for State and local police officers used Oklahoma's new crash report form in a full day of a two-day train-the-trainer course. Attendees received training materials to conduct training in their respective locations throughout the State. On the first day, the State trainers attended an eight-hour course that contained all five lessons of the Crash Data Collection for Commercial Motor Vehicle course. The trainers also received and reviewed and materials to conduct a two-hour course on truck and bus data collection fields on the new crash report form. This two-hour portion was included in the training on the full crash report. Oklahoma's goal was to have this training disseminated throughout the State in preparation for the release of the new crash report form in 2007. A summary of the training class attendance and officers' evaluations are shown below in Table 43.

**Table 43. Training Class Attendance and Evaluation—Oklahoma**

<b>Total number of classes</b>	1
<b>Training Dates (month/year)</b>	9/2006
<b>Attending Agencies</b>	Local, State, and Other
<b>Number trained</b>	43
<b>Course Rating by attendees (1 – poor to 5 – very good)</b>	4.4
<b>State Follow up Training (post-training)</b>	3,700 (OKC PD, Tulsa, OHP)

## State Crash Report Evaluation

Oklahoma’s Crash Report Evaluation was used as a communication tool to chart problems and suggest changes through the iterations of the crash report revision process. The report revision team sent FMCSA a copy of the report after their meeting and FMCSA would make suggestions and adjust the evaluation. The group in Oklahoma would review the chart and suggestions at their next meeting and incorporate the items into the report. FMCSA provided content for relevant fields in their instruction manual to align the fields, instruction, and training. This cooperative revision process resulted in a final report that, at the time, was the best report reviewed for the data required to successfully identify, extract, and pass a qualifying case to MCMIS.

## Analysis of the SAFETYNET Key Data Fields Related to Training

From 2004 to 2007, Oklahoma shows a small but steady increase in cases (see Table 44). Although the number of buses has increased significantly, the collection rate for buses may still be lower than expected.

**Table 44. Annual Crash Case Trends by Truck and Bus—Oklahoma**

Vehicle Type	2004	2005	2006	2007	2004–2007 Change	2004–2007 % Change
Bus	4	3	0	29	25	625%
Truck	1,605	1,814	1,759	1,913	308	19%
	<b>1,609</b>	<b>1,817</b>	<b>1,759</b>	<b>1,942</b>	<b>333</b>	<b>21%</b>

After the implementation of the redesigned crash report form in 2007, data collection rates improved significantly (see Table 45 and Figure 29).

**Table 45. Annual Trends for “Blank” Values—Oklahoma**

Blank Counts	2005–2006 Nat'l %	2004 Blanks	2004 %	2005 Blanks	2005 %	2006 Blanks	2006 %	2007 Count	2007 %	2007 Nat'l %
VIN	18%	1,568	98%	1,737	96%	1,759	100%	920	47%	18%
CDL	44%	1,559	97%	1,737	96%	1,759	100%	21	1%	26%
Configuration	3%	426	26%	1,812	100%	1,759	100%	21	1%	2%
Cargo Body Type	8%	206	13%	296	16%	64	4%	17	1%	8%
GVWR	24%	694	43%	1,789	98%	1,759	100%	2	0%	12%



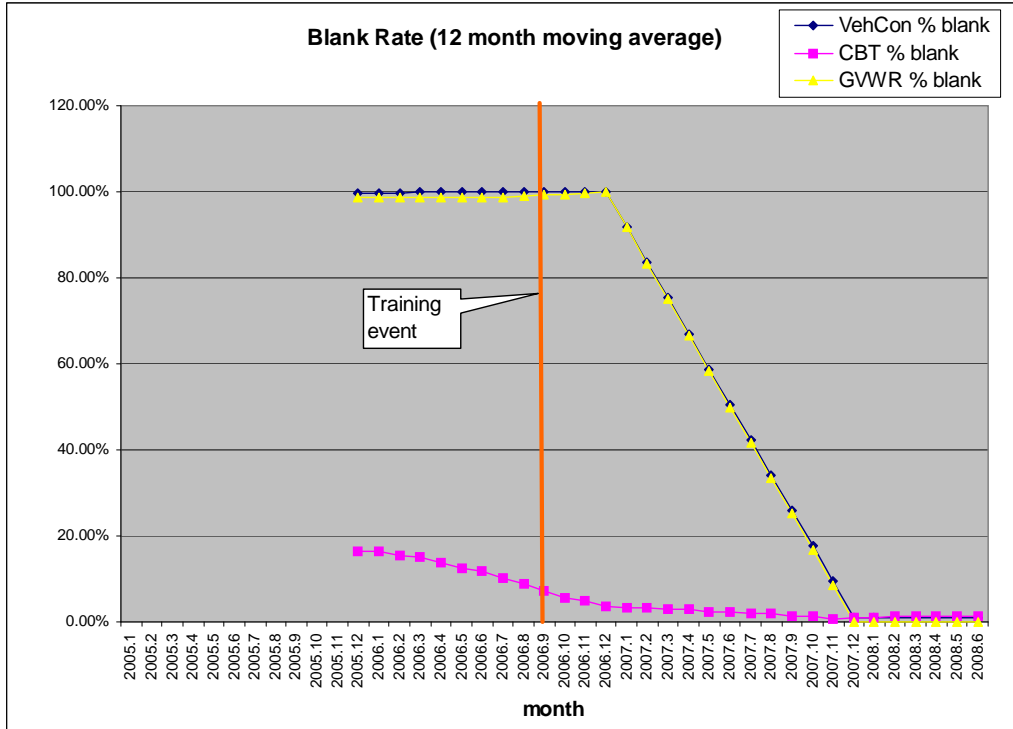


Figure 29. Blank Rate (12 month moving average)—Oklahoma

### Motor Carrier Identification

The only measurement currently available to identify the States’ motor carrier identification accuracy is the Crash Accuracy Measure at the FMCSA A&I Online, Data Quality section. The crash accuracy measure looks back 12 months for the event date, starting three months prior to the snapshot. Oklahoma’s Crash Accuracy Measure is shown in Figure 30.

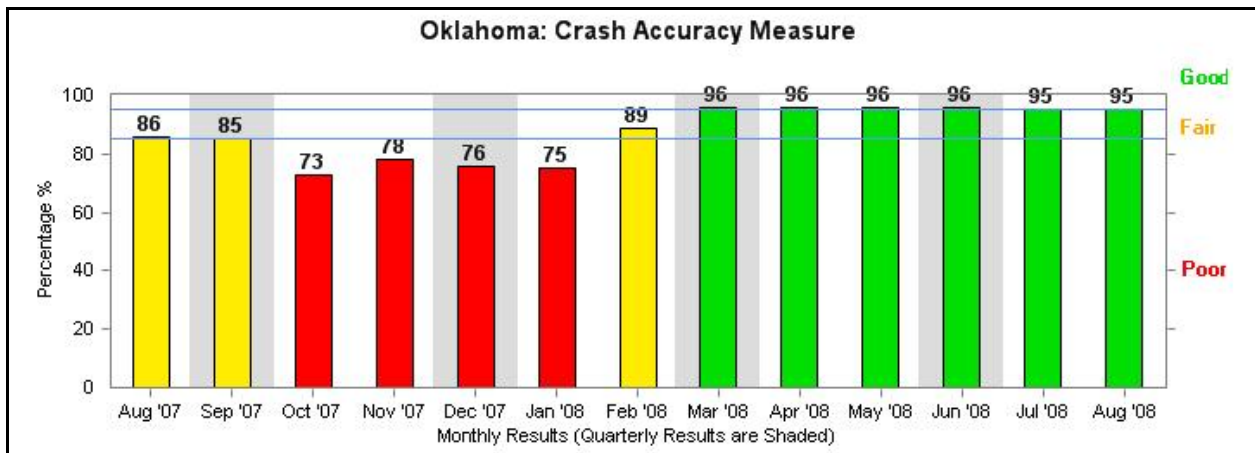


Figure 30. Crash Accuracy Measure—Oklahoma

## Other Key Elements

VIN data has taken longer to improve but, as of 2008, it was at a high enough collection rate to allow the Crash Record Completeness Measure to change from “Poor” to “Fair” to “Good” (see Figure 31).

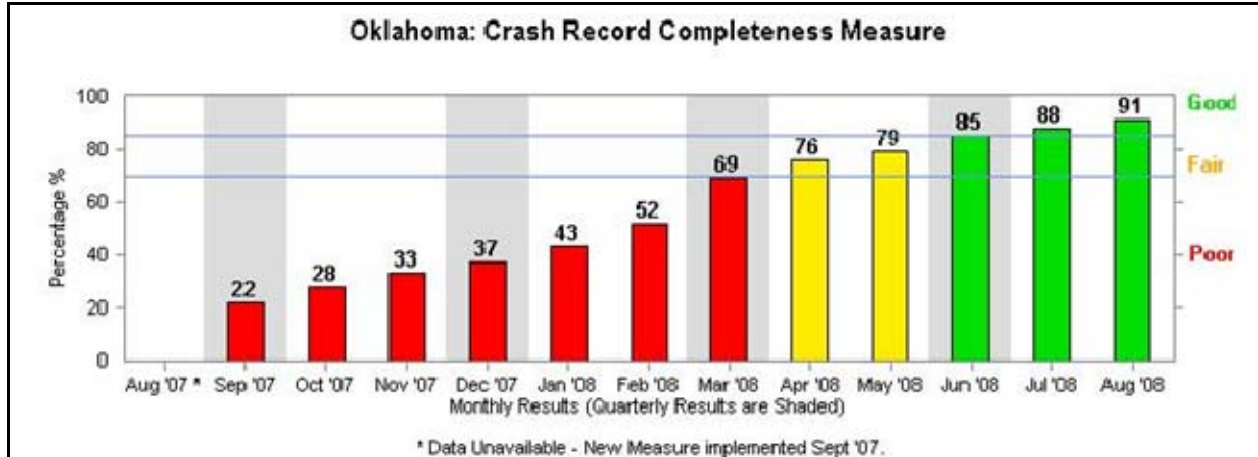


Figure 31. Crash Record Completeness Measure—Oklahoma

## EXTRACTION AND TRANSLATION LOGIC EVALUATION

After helping to redesign Oklahoma’s crash report form and instruction manual, and conducting training, FMCSA turned to improving the State’s data extraction by developing the computer logic based on the new crash report form to extract cases to be passed to MCMIS. FMCSA also provided the Oklahoma Department of Public Safety with a mapping document that indicated the translated selections from the crash report field values to the corresponding SAFETYNET values.

Through the revisions to the crash report, Oklahoma possessed every field necessary to identify and extract the cases from the State’s database and pass those cases to SAFETYNET. However, the fields on the report form are only part of the equation to execute this process successfully. The crash report redesign also required a redesign of the State’s database and report entry process. Shortly after bringing the new crash report online in January 2007, problems emerged with the State’s database and crash report entry process. These issues affected the data provided to SAFETYNET and, consequently, the quality of their MCMIS data. FMCSA continued to make recommendations and provide assistance as needed and the State data quality has improved again.

## SUMMARY OF FINDINGS

FMCSA helped Oklahoma to redesign their crash report and develop extraction logic to pass data to SAFETYNET. After implementation of the new crash report form in 2007, issues arose with the redesign of the State’s accident records system that caused their 2007 data to be lacking. Those issues have been resolved and Oklahoma’s data have been improving. VIN data has taken

longer to improve but, as of 2008, it was at high enough collection rates to allow the Crash Record Completeness Measure to change from “Poor” to “Fair” to “Good.” The cooperative training program trained of 43 State trainers on truck and bus data collection who subsequently helped to disseminate training on the updated crash report form to approximately 3,700 more State and local officers.



## APPENDIX L: VIRGINIA

### BACKGROUND

For several years, Virginia used a crash report form supplement that was developed by and only used by the State police. Local police personnel submitted no supplemental reports, therefore no CMV information was sent to the State accident report system or to the State SAFETYNET system for upload to MCMIS. To correct the underreporting of federally reportable crashes to FMCSA, the Virginia Department of Motor Vehicles led a cross-agency team to address both data collection and data system issues, and invited FMCSA to participate in the review and implementation phases. FMCSA participated in a two-year cooperative effort. The scope of this work included a review of the Virginia crash report form, a review of data system extraction to capture federally reportable crashes from the State database for FMCSA, and development of a training course for State and local police trainers based upon the Virginia crash report form. In order to gain maximum effect from training, it was decided that training would occur after the crash report form had been completely revised.

### LAW ENFORCEMENT TRAINING

In October 2007, two FMCSA classes on “Crash Data Collection for Commercial Motor Vehicles” used a newly revised crash report form for both State and local police. A summary of the training class attendance and officers’ evaluations are shown in Table 46.

**Table 46. Training Class Attendance and Evaluation—Virginia**

<b>Total number of classes</b>	2
<b>Training Dates (month/year)</b>	10/2007
<b>Attending Agencies</b>	Local, State and other DOT
<b>Number trained</b>	26
<b>Course Rating by attendees (1 – poor to 5 – very good)</b>	4.33
<b>State Follow-up Training (post-training)</b>	368

The first training class was provided to State police trainers and the second to local police trainers in October 2007. FMCSA also trained 150 State and local personnel in September 2008 at the Virginia’s Traffic Records Forum.

### State Crash Report Evaluation

FMCSA reviewed Virginia’s 2003 crash report form and found that it included the selection criteria wording from the Federal definition in Section 390.5 of the Federal Motor Carrier Safety Regulations, instead of the FMCSA crash selection criteria. The crash report form also omitted information to qualify vehicles based upon a qualifying tow, had an incomplete carrier section

and configuration codes, no cargo body codes, no sequence of events codes, no license class codes, and no carrier type elements, which resulted in the State’s data quality rating of “Poor.”

FMCSA assisted in an extensive effort to redesign the crash report form to ensure proper collection of the FMCSA elements, as well as provided guidance to update the instruction manual. The new crash report form now collects all FMCSA elements.

### Analysis of the SAFETYNET Key Data Fields Related to Training

Virginia provided State Police crash reports to the FMCSA prior to 2006 only. FMCSA identified and uploaded missing qualifying records for 2006 and 2007, which resulted in a four-year 95 percent increase of records, of which buses increased 1,213 percent (see Table 47).

**Table 47. Annual Crash Case Trends by Truck and Bus—Virginia**

Vehicle Type	2004	2005	2006	2007	2004–2007 Change	2004–2007 % Change
Bus	47	57	592	617	570	1,213%
Truck	2,688	2,455	5,067	4,719	2,031	76%
	<b>2,735</b>	<b>2,512</b>	<b>5,659</b>	<b>5,336</b>	<b>2,601</b>	<b>95%</b>

For 2005, the rate of “blank” entries for VIN, Vehicle Configuration, Cargo Body Type, and GVWR were extremely low, but this represented only State Police-supplied crash records. In 2006 and 2007, when additional qualifying records from local police were added, carrier information was missing; as a result, the “blank” rates for most of these elements were considerably higher. As previously mentioned, the Driver License Class was not on the crash report form so the “blank” entry rate was 100 percent (see Table 48).

**Table 48. Annual Trends for “Blank” Values—Virginia**

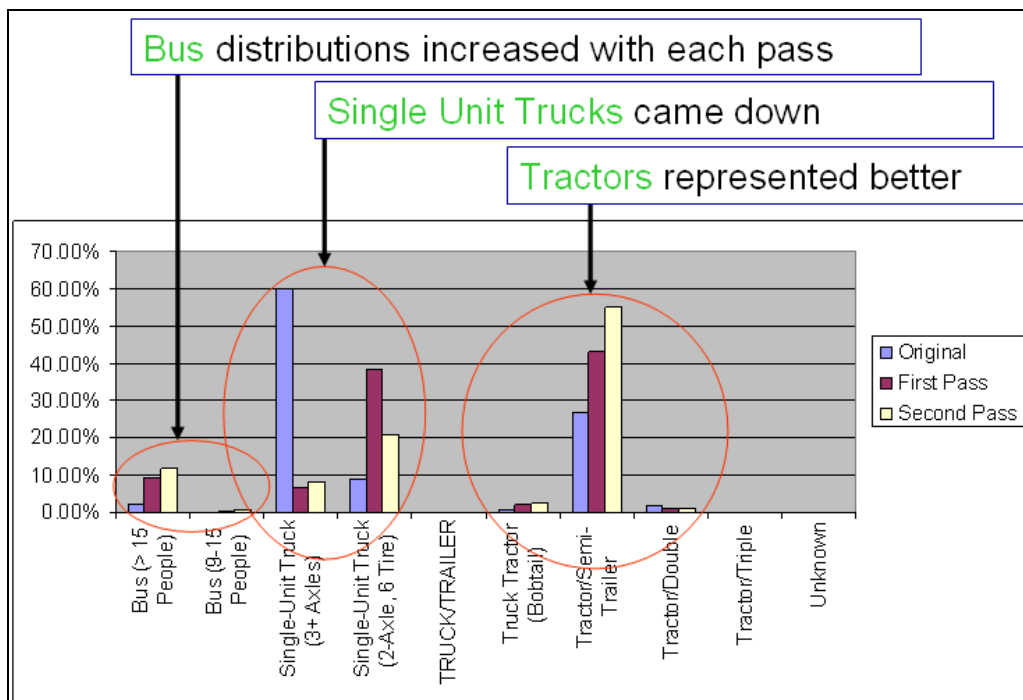
Blank Counts	2005–2006 Nat'l %	2004 Blanks	2004 %	2005 Blanks	2005 %	2006 Blanks	2006 %	2007 Count	2007 %	2007 Nat'l %
VIN	18%	1,609	59%	8	0%	768	14%	2,271	43%	18%
CDL	44%	2,737	100%	2,512	100%	5,658	100%	5,335	100%	26%
Configuration	3%	11	0%	3	0%	3	0%	4	0%	2%
Cargo Body Type	8%	103	4%	113	4%	3,426	61%	3,341	63%	8%
GVWR	24%	12	0%	4	0%	1,935	34%	1,875	35%	12%

The Vehicle Configuration distribution reveals a number of changes attributed to additional qualifying records uploaded for 2006 and 2007. Most significant is the increase in buses from 2 percent in 2005 to 11 percent in 2007 (see Table 49). As part of an iterative review process, FMCSA processed VINs for single unit trucks with two axles to ensure inclusion of smaller trucks weighing less than 10,001 lbs. As a result, two passes were made on the extracted records from the State accident record system and more than 600 single-unit trucks were ultimately disqualified. This was due to either having a GVWR less than 10,001 lbs or missing both VIN and GVWR information from the record, which rendered them impossible to identify as qualifying. The results of this second pass created the final distribution as seen in Table 49 for

2006 and 2007 and reflect a better proportion of single-unit trucks, tractors, and buses relative to each other (see Figure 32).

**Table 49. Virginia Vehicle Configuration Trend—Virginia**

Vehicle Configuration	2005 Count	2005 %	2006 Count	2006 %	2007 Count	2007 %
Blank	3	0%	3	0%	4	0%
Passenger Car	0	0%	0	0%	0	0%
Light Truck	0	0%	0	0%	0	0%
Bus (9-15 Seats)	4	0%	49	1%	47	1%
Bus (> 15 Seats)	53	2%	543	10%	570	11%
Single-Unit Truck (2A)	219	9%	1,625	29%	1,463	27%
Single-Unit Truck (3+A)	1,508	60%	2,265	40%	1,983	37%
Truck/Trailer	4	0%	5	0%	1	0%
Truck Tractor (Bobtail)	13	1%	91	2%	89	2%
Tractor/Semi-Trailer	665	26%	1,000	18%	1,085	20%
Tractor/Double	42	2%	57	1%	70	1%
Tractor/Triples	0	0%	21	0%	23	0%
Unknown Heavy Truck	1	0%	0	0%	1	0%
	<b>2,512</b>		<b>5,659</b>		<b>5,336</b>	



**Figure 32. Vehicle Configuration Distribution Changes—Virginia**

## Motor Carrier Identification

The only measurement currently available to identify the States' motor carrier identification accuracy is the Crash Accuracy Measure at the FMCSA A&I Online, Data Quality section. Virginia had remained fairly steady above the "Good" threshold prior to additional qualifying uploaded records for 2006 and 2007. Since the additional records lacked carrier information, the accuracy measure declined from "Good" to "Fair" (see Figure 33).

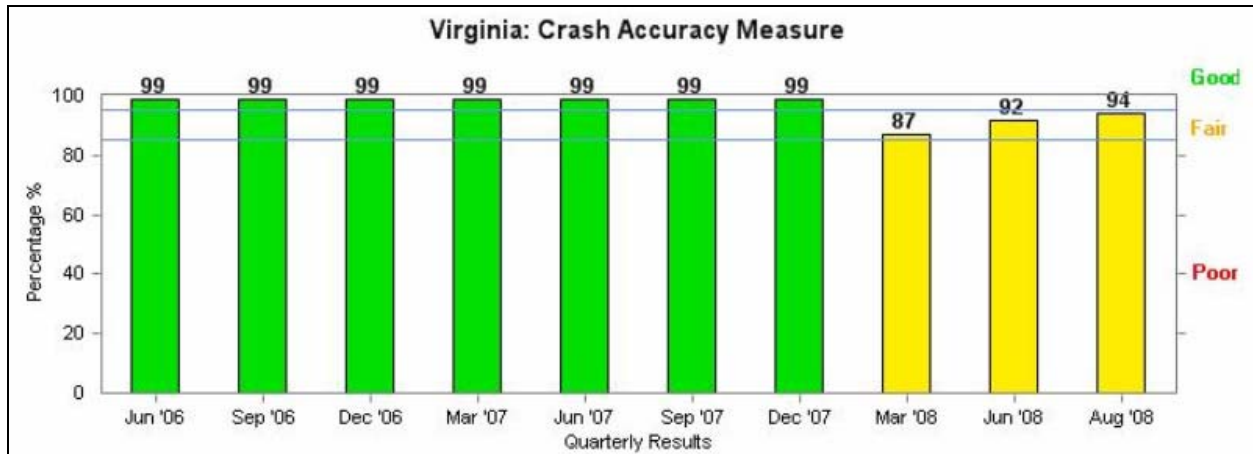


Figure 33. Crash Accuracy Measure—Virginia

## EXTRACTION AND TRANSLATION LOGIC EVALUATION

FMCSA investigated the crash records in Virginia's accident records system to determine what should be reported. FMCSA also advised on necessary changes to ensure extraction logic contained the qualifying crashes. FMCSA reviewed the results of the extraction file in an iterative process that included importing the files to a SAFETYNET system and then performed an iterative review and data quality checks on the records, which resulted in recommendations back to Virginia for proper records selection.

## RESULTS OF RECORDS UPLOADED FOR 2006 AND 2007

FMCSA performed a preliminary review of Virginia's 2005 accident records system data to develop an iterative review process to determine the level of underreporting of federally reportable accidents. This study revealed that as many as 2,700 qualifying records were missing from the MCMIS database. Because the total crash counts from 2004 to 2007 were in a steady decline (-24 percent decline at the time of the records review), the review process focused on 2006 and 2007 data. More than 6,600 additional federally reportable records were found for the combined years and were uploaded to MCMIS, which represented a 150 percent increase. As well, more than 90 additional fatal crashes were added and provided the State with 100 percent of their federally reportable fatal crashes to the FMCSA (Figure 34 and Figure 35.)



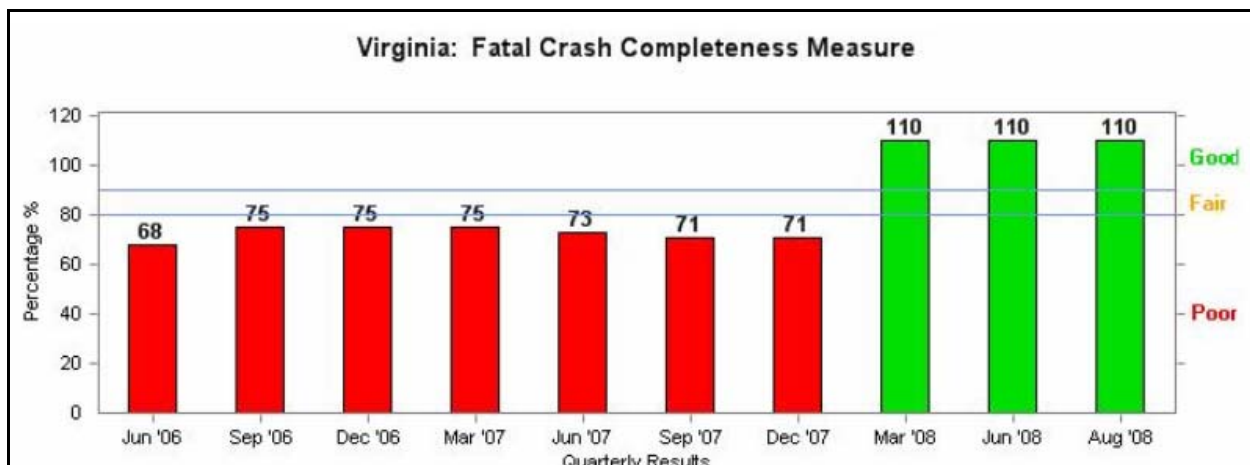


Figure 34. Fatal Crash Completeness Measure—Virginia

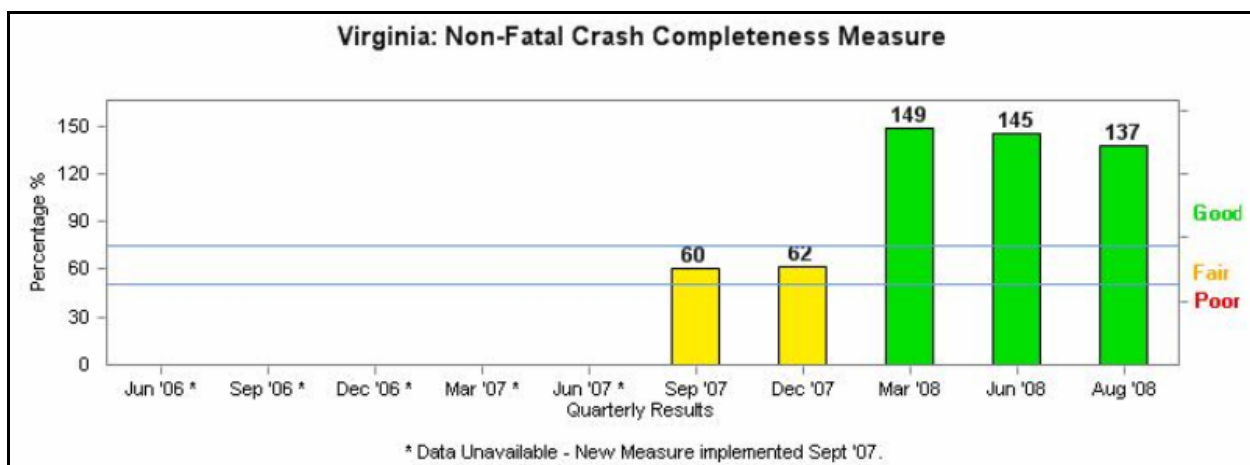


Figure 35. Non-Fatal Crash Completeness Measure—Virginia

## SUMMARY OF FINDINGS

FMCSA participated in a two-year cooperative effort that included extensive redesign of Virginia’s crash record form, an increase of 150 percent of federally reportable cases uploaded to MCMIS, a 1,213 percent increase in reportable buses, and development of a training course for State and local police trainers based upon the new Virginia crash report form.

As a result, Virginia has significantly altered its collection and data system processes to improve data quality, but not without some short-term compromise to data quality measurements. The uploading of missing, qualifying cases did not contain carrier information, which changed their crash accuracy from “Good” to “Fair.” New extraction logic in 2008 stopped uploads, changing their timeliness from “Good” to “Poor.” The good news is that the uploads resulted immediately in changing two measures to “Good”—the Non-fatal Completeness Measure and the Fatal Crash Completeness Measure. For 2006 and 2007, Virginia met or exceeded the expected levels for non-fatal and fatal records, and will continue to upload all the crash data elements and qualifying records to MCMIS more timely and accurately.