UMTRI-2008-13 MARCH 2008

EVALUATION OF 2006 WISCONSIN CRASH DATA REPORTED TO MCMIS CRASH FILE

PAUL E. GREEN
ANNE MATTESON

UMTRI-2008-13

Evaluation of 2006 Wisconsin Crash Data Reported to the MCMIS Crash File

Paul E. Green
Anne Matteson

The University of Michigan
Transportation Research Institute
Ann Arbor, MI 48109-2150
U.S.A.

March 2008

Technical Report Documentation Page

1. Report No.	2. Government Accession No.	3. Recipient's Catalog No.
UMTRI-2008-13		

4. Title and Subtitle	5. Report Date
Evaluation of 2006 Wisconsin Crash Data Reported to the MCMIS Crash File	March 2008
	6. Performing Organization Code
7. Author(s)	8. Performing Organization Report No.
Green, Paul E. and Matteson, Anne	UMTRI-2008-13
9. Performing Organization Name and Address	10. Work Unit no. (TRAIS)
The University of Michigan Transportation Research Institute 2901 Baxter Road Ann Arbor, Michigan 48109-2150 U.S.A.	052702
	11. Contract or Grant No. DTMC75-06-H-00003
12. Sponsoring Agency Name and Address	13. Type of Report and Period Covered
U.S. Department of Transportation Federal Motor Carrier Safety Administration 400 Seventh Street, SW Washington, D.C. 20590	Special report
	14. Sponsoring Agency Code

15. Supplementary Notes

16. Abstract

This report is part of a series evaluating the data reported to the Motor Carrier Management Information System (MCMIS) Crash File undertaken by the Center for National Truck and Bus Statistics at the University of Michigan Transportation Research Institute. The earlier studies showed that reporting to the MCMIS Crash File was incomplete. This report examines the factors that are associated with reporting rates for the state of Wisconsin.

MCMIS Crash File records were matched to the Wisconsin Crash file to determine the nature and extent of underreporting. Overall, it appears that Wisconsin is reporting 71.0 percent of crash involvements that should be reported to the MCMIS Crash file. All of the variables needed to identify vehicles that should be reported to the MCMIS Crash file are recorded in the Wisconsin PAR file. The vehicle type variable seems to be a derived variable since there is no space for recording levels of vehicle type on the crash report form. Vehicles coded as utility trucks are not included in this evaluation because it is estimated that only 8 percent have GVWR greater than 10,000 pounds.

The reporting rate for tractor combinations is close to 90 percent, but the rate for straight trucks is approximately 50 percent. Reporting rates also show a decreasing trend as crash severity decreases. The reporting rate for the towed due to disabling damage criterion is 67.6 percent. Based on agency type, the reporting rate for the state patrol is 81.5 percent.

Missing data percentages in the MCMIS Crash File are generally low, except as noted for certain variables. A comparison of the vehicle configuration variable between the Wisconsin and MCMIS Crash files shows some disagreement in the coding of this variable.

17. Key Words	18. Distribution Statement
MCMIS, Wisconsin Crash File, accident statistics, underreporting	Unlimited

19. Security Classification (of this report)	20. Security Classification (of this page)	21. No. of Pages	22. Price
Unclassified	Unclassified	38	

SI* (MODERN METRIC) CONVERSION FACTORS

APPROXIMATE CONVERSIONS TO SI UNITS

Symbol	When You Know	Multiply By	To Find	Symbol
		LENGTH		
in	inches	25.4	millimeters	mm
ft	feet	0.305	meters	m
yd	yards	0.914	meters	m
mi	miles	1.61	kilometers	km
		AREA		
in^2	square inches	645.2	square millimeters	mm^2
ft^2	square feet	0.093	square meters	m^2
yd^2	square yard	0.836	square meters	m^2
ac	acres	0.405	hectares	ha
mi^2	square miles	2.59	square kilometers	km^2
		VOLUME		
fl oz	fluid ounces	29.57	milliliters	mL
gal	gallons	3.785	liters	L
ft^3	cubic feet	0.028	cubic meters	m^3
yd^3	cubic yards	0.765	cubic meters	m^3
	NOTE: volumes greater than 1000 L shall be shown in m^3			
		MASS		
oz	ounces	28.35	grams	g
lb	pounds	0.454	kilograms	kg
T	short tons (2000 lb)	0.907	megagrams (or "metric ton")	Mg (or "t")
		TEMPERATURE (exact degrees)		
^oF	Fahrenheit	5 (F-32)/9 or (F-32)/1.8	Celsius	^oC
		ILLUMINATION		
fc	foot-candles	10.76	lux	lx
fl	foot-Lamberts	3.426	$candela/m^2$	cd/m^2
		FORCE and PRESSURE or STRESS		
lbf	poundforce	4.45	newtons	N
lbf/in^2	poundforce per square inch	6.89	kilopascals	kPa

APPROXIMATE CONVERSIONS FROM SI UNITS

Symbol	When You Know	Multiply By	To Find	Symbol
		LENGTH		
mm	millimeters	0.039	inches	in
m	meters	3.28	feet	ft
m	meters	1.09	yards	yd
km	kilometers	0.621	miles	mi
		AREA		
mm^2	square millimeters	0.0016	square inches	in^2
m^2	square meters	10.764	square feet	ft^2
m^2	square meters	1.195	square yards	yd^2
ha	hectares	2.47	acres	ac
km^2	square kilometers	0.386	square miles	mi^2
		VOLUME		
mL	milliliters	0.034	fluid ounces	fl oz
L	liters	0.264	gallons	gal
m^3	cubic meters	35.314	cubic feet	ft^3
m^3	cubic meters	1.307	cubic yards	yd^3
		MASS		
g	grams	0.035	ounces	oz
kg	kilograms	2.202	pounds	lb
Mg (or "t")	megagrams (or "metric ton")	1.103	short tons (2000 lb)	T
		TEMPERATURE (exact degrees)		
^oC	Celsius	1.8C+32	Fahrenheit	^oF
		ILLUMINATION		
lx	lux	0.0929	foot-candles	fc
cd/m^2	$candela/m^2$	0.2919	foot-Lamberts	fl
		FORCE and PRESSURE or STRESS		
N	newtons	0.225	poundforce	lbf
kPa	kilopascals	0.145	poundforce per square inch	lbf/in^2

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

Table of Contents

List of Tables

List of Figures

Evaluation of 2006 Wisconsin Crash Data Reported to the MCMIS Crash File

1. Introduction

The Motor Carrier Management Information System (MCMIS) Crash file has been developed by the Federal Motor Carrier Safety Administration (FMCSA) to serve as a census file of trucks and buses involved in traffic crashes meeting a specified selection criteria and crash severity threshold. FMCSA maintains the MCMIS file to support its mission to reduce crashes, injuries, and fatalities involving large trucks and buses. It is essential to assess the magnitude and characteristics of motor carrier crashes to design effective safety measures to prevent such crashes. The usefulness of the MCMIS Crash file depends upon individual states transmitting a standard set of data items on all trucks and buses involved in traffic crashes that meet a specific severity threshold.

The present report is part of a series evaluating the completeness and accuracy of the data in the MCMIS Crash file. Previous reports on a number of states showed underreporting due in large part to problems in interpreting and applying the reporting criteria. The problems were more severe in large jurisdictions and police departments. Each state also had problems specific to the nature of its system. Some states also had overreporting of cases, often due to technical problems with duplicate records [See references 1 to 26]. The states are responsible for identifying and reporting qualifying crash involvements. Accordingly, improved completeness and accuracy must ultimately reside with the individual states.

In this report, we focus on MCMIS Crash file reporting by Wisconsin. In recent years, Wisconsin has reported from 3,090 to 3,885 involvements annually to the MCMIS Crash file. According to the 2002 Vehicle Inventory and Use Survey (the last available), Wisconsin had over 113,000 trucks registered, ranking 19th among the states and accounting for 2.1 percent of all truck registrations [27]. Wisconsin is the 20th largest state by population [28] and generally ranks 23rd in terms of the number of annual truck and bus fatal involvements [29, 30].

The method employed in this study is similar to previous studies.

1. The complete police accident report file (PAR file hereafter) from Wisconsin was obtained for the most recent year available, 2006. This file was processed to identify all cases that qualified for reporting to the MCMIS Crash file.

2. All cases in the Wisconsin PAR file—those that qualified for reporting to the Crash file as well as those that did not—were matched to the cases actually reported to the MCMIS Crash file from Wisconsin.

3. Cases that should have been reported, but were not, were compared with those that were reported to identify the sources of underreporting.

4. Cases that did not qualify but which were reported were examined to identify the extent and nature of overreporting.

Police accident report (PAR) data recorded in Wisconsin's statewide files as of February 5, 2008 were used in this analysis. The 2006 PAR file contains the computerized records of 216,808 vehicles involved in 129,879 crashes that occurred in Wisconsin.

2. Data Preparation

The Wisconsin PAR file and MCMIS Crash file each required some preparation before the Wisconsin records in the MCMIS Crash file could be matched to the Wisconsin PAR file. In the case of the MCMIS Crash file, the only processing necessary was to extract records reported from Wisconsin and to eliminate duplicate records. The Wisconsin PAR file required more extensive work to create a comprehensive vehicle-level file from accident, vehicle, and occupant data. The following sections describe the methods used to prepare each file and some of the problems uncovered.

2.1 MCMIS Crash Data File

The 2006 MCMIS Crash file as of June 4, 2007 was used to identify records submitted from Wisconsin. For calendar year 2006 there were 2,941 cases. An analysis file was constructed using all variables in the file. The file was then examined for duplicate records (those involvements where more than one record was submitted for the same vehicle in the same crash; i.e., the report number and sequence number were identical). No such instances were found.

In addition, records were examined for identical values on accident number, accident date/time, county, city, street, vehicle license number, and driver license number, even though their vehicle sequence numbers were perhaps different. One would not expect two records for the same vehicle and driver within a given accident. No such duplicates were found.

2.2 Wisconsin Police Accident Report File

The Wisconsin PAR data for 2006 (as of February 5, 2008) was obtained from the state of Wisconsin. The data were stored in four comma-delimited text files, representing Accident, Vehicle, and Occupant records. The files contain records for 129,879 crashes involving 216,808 vehicles. Data for the PAR file are coded from the Wisconsin Motor Vehicle Accident Report (form MV4000) completed by police officers.

The PAR file was first examined for duplicate records. A search for records with identical case numbers and vehicle numbers found no such instances. In addition, inspection of case numbers verified that they were recorded in a consistent format, so there was no reason to suspect duplicate records based on similar, but not identical, case numbers (such as 60109294 and 6-109294, for example). However, cases were also examined to determine if there were any records that contained identical case number, time, place, investigating officer, and vehicle/driver variables, even though their vehicle numbers were perhaps different. Two cases would not be expected to be identical on all variables. To investigate this possibility, records were examined for duplicate occurrences based on the variables case number, accident date/time, crash county, city, investigating officer number, vehicle identification number (VIN), and driver date of birth. Based on the described algorithm, no duplicate records were identified.

3. Matching Process

The next step involved matching records from the Wisconsin PAR file to corresponding records from the MCMIS file. Since no duplicate cases were found, there were 2,941 Wisconsin records from the MCMIS file available for matching, and 216,808 records from the Wisconsin PAR file. All records from the Wisconsin PAR data file were used in the match, even those that were not reportable to the MCMIS Crash file. This allowed the identification of cases in the MCMIS Crash file that did not meet the MCMIS Crash file reporting criteria.

Matching records in the two files requires finding combinations of variables common to the two files that have a high probability of uniquely identifying accidents and specific vehicles within the accidents. Accident number, which is the identifier used to uniquely identify a crash in the Wisconsin PAR data, and report number in the MCMIS Crash file, are obvious first choices. However, a correspondence could not be found between the two numbers. Accident number in the Wisconsin PAR file is an eight-digit numeric value, while in the MCMIS Crash file report number is stored as a 12-character alphanumeric value, a combination of alphabetic characters and numbers. It appears that the report number in the MCMIS Crash file is constructed as follows: The first two columns contain the state abbreviation (WI, in this case), followed by ten numeric digits. Since the numbers did not correspond, they could not be used in the match.

Other variables typically available for matching at the crash level include crash date, crash time (stored in military time as hour/minute), crash county, crash city, crash street and reporting officer's identification number. The PAR file included two variables pertaining to road name, on street, and on highway. In many instances one was recorded, but not the other. So these variables were not used directly for the match, but were useful for verification purposes.

Variables in the MCMIS file that distinguish one vehicle from another within the same crash include vehicle license plate number, driver license number, vehicle identification number (VIN), driver date of birth, and driver last name. Only VIN, driver date of birth, and driver age were available in the PAR file. VIN was unrecorded 10.4% of the time in the PAR data and was unknown in 0.2% of MCMIS cases. In the PAR file, driver date of birth and driver age were each unrecorded in 12.3% of cases, compared to 2.7% of MCMIS cases.

Four separate matches were performed using the available variables. At each step, records in either file with duplicate values on all the match variables were excluded, along with records that were missing values on the match variables. The first match included the variables crash date (month, day), crash time (hour, minute), county, city, officer ID, VIN, and driver date of birth. The second match step dropped driver date of birth. The third match step matched on crash date, crash time, county, city, officer ID, and driver date of birth, dropping VIN. After some experimentation, the fourth match included variables date, time, county, city, and VIN, eliminating driver date of birth and officer ID. This process resulted in matching 99.2% of the MCMIS records to the PAR file.

Matched records were verified using other variables common to the MCMIS and PAR file as a final check to ensure the match was valid. Table 1 shows the variables used in each match step along with the number of records matched at each step. The above procedure resulted in 2,918 matches, representing 99.2% of the 2,941 non-duplicate records reported to MCMIS.

Table 1 Steps in MCMIS/Wisconsin PAR File Match, 2006

Step	Matching variables	Cases matched
Match 1	Crash date, crash time, county, city, officer ID, VIN, and driver date of birth	2,796
Match 2	Crash date, crash time, county, city, officer ID, and VIN	80
Match 3	Crash date, crash time, county, city, officer ID, and driver date of birth	10
Match 4	Crash date, crash time, county, city, and VIN	32
Total cases matched		2,918

Figure 1 shows the flow of cases in the matching process. Of the 2,918 matched cases, 170 are not reportable and 2,748 are reportable. The method of identifying cases reportable to the MCMIS Crash file is discussed in the next section.

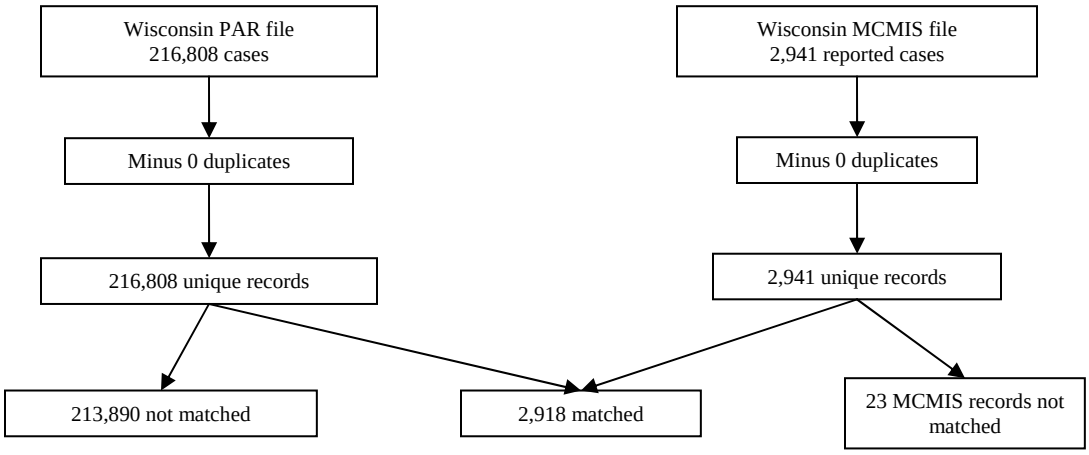


Figure 1 Case Flow in MCMIS/Wisconsin Crash File Match

4. Identifying Reportable Cases

The next step in data preparation is to identify records in the Wisconsin data that qualified for reporting to the MCMIS Crash file. Records are identified using the information available in the computerized crash files that were sent by Wisconsin. To identify reportable records, we use the information that is completed by the officers for all vehicles. That is, some police reports place certain data elements that are to be collected for the MCMIS file in a special section or supplemental form, with instructions to the officer to complete that section if the vehicle and crash meets the MCMIS reporting criteria. This is the case in Wisconsin. There is a truck and bus section on the last page of the accident report (Appendix B). But since our goal is to evaluate the completeness of reporting, we attempt to identify all reportable cases, even those an officer may

have overlooked. For this purpose, we use the data that is completed for all cases[1]. The goal of the selection process is to approximate as closely as possible the reporting threshold of the MCMIS file. The MCMIS criteria for a reportable crash involving a qualifying vehicle are shown in Table 2.

Table 2 Vehicle and Crash Severity Threshold for MCMIS Crash File

Vehicle	Truck with GVWR over 10,000 or GCWR over 10,000, or Bus with seating for at least nine, including the driver, or Vehicle displaying a hazardous materials placard.
Accident	Fatality, or Injury transported to a medical facility for immediate medical attention, or Vehicle towed due to disabling damage.

The process of identifying reportable records, as set out in Table 2 above, is fairly straightforward in the Wisconsin PAR file because Wisconsin crash data includes most of the variables and levels needed to identify reportable cases. A twenty-three level vehicle type variable was used to identify qualifying trucks and buses. This variable does not appear on the Wisconsin accident report form, so it is possible that this is a derived variable using other available information such as VIN, make, or model of the vehicle. Table 3 shows the relevant body styles of the vehicle type variable selected as qualifying vehicles.

In addition to the body styles shown, there is also a designation for utility trucks, but due to the large number of vehicles in this class, it appears that this definition applies to pickup trucks, sport utility vehicles, and vans. Previous MCMIS evaluations of other states suggest that the average number of MCMIS qualifying vehicles is approximately 4.5 percent of a state's vehicle file. The percentage of vehicles classified as utility trucks alone is 14.4 percent. As a further check, the VINs of 100 vehicles classified as utility trucks were randomly selected and decoded. Only eight of the vehicles were identified as having a GVWR greater than 10,000 pounds. Therefore, these vehicles were not included in this study as qualifying vehicles.

On the main accident report form there is a CMV check box and it appears to apply at the vehicle level, but in the data file there is a CMV flag variable that is recorded at the crash level. It indicates whether a commercial motor vehicle was involved in the crash. Therefore, it cannot be used to identify qualifying vehicles. There is also an operator license class variable that identifies drivers with commercial driver licenses, but the MCMIS criterion for a qualifying truck is 10,000 pounds. The license class variable appears useful for identifying trucks with GVWR over 26,000 pounds. In fact, about 25 percent of the trucks identified using the body styles of Table 3 (4-7) were recorded as operated by drivers without a commercial driver's license.

Hazmat placarded vehicles were identified by an endorsement variable. According to instructions in the Law Enforcement Officer's Instruction Manual for Completing the Wisconsin Motor

[1] When receiving the data from the Wisconsin Department of Transportation, it was indicated that the data from the truck and bus section of the crash form were not available.

Vehicle Accident Report Form [31], officers are instructed to mark the appropriate endorsement that represents the type of operation the operator was engaged in at the time of the accident.

Table 3 Relevant Vehicle Body Style Codes on Wisconsin Accident Report

4 - Straight truck
5 - Truck tractor bobtail
6 - Truck tractor-semitrailer
7 - Truck tractor-double
13 - School bus
14 - Pupil transp-school bus
15 - Passenger bus

In total, there were 9,752 vehicles identified as trucks, buses, or non-trucks with a hazardous materials endorsement in the Wisconsin PAR file. Table 4 shows the distribution of vehicle type. The great majority of qualifying vehicles are trucks, while about 11.3 percent are buses. As usual, non-trucks identified as transporting hazardous materials account for a small fraction of qualifying vehicles. The 9,752 eligible vehicles represent 4.5 percent of all 216,808 vehicles in the PAR file. This result is consistent with other MCMIS evaluations in which the percentage of eligible vehicles has ranged from 2.6 percent to 6.1 percent.

Table 4 Vehicles Meeting MCMIS Vehicle Criteria, Wisconsin PAR File, 2006

Vehicle type	N	%
Trucks	8,636	88.5
Buses	1,098	11.3
Non-trucks with hazmat placard	18	0.2
Total	9,752	100.0

Having identified qualifying vehicles, the next step is to identify crashes of sufficient severity to qualify for reporting to the MCMIS Crash file. Qualifying crashes include those involving a fatality, an injury transported for immediate medical attention, or a vehicle towed from the scene due to disabling damage. Fatal crashes are readily identified. Whether a crash included an injured person transported for medical attention can also be determined. The Wisconsin PAR file also has information for assessing the towed and disabled criterion.

In the Occupant File of the Wisconsin PAR data, there are two variables related to injury and the transport of victims for medical care. The injury severity variable follows the usual KABC scale. Persons with no apparent injury are coded with the letter ‘N’ on the crash report form. The medical transport variable indicates whether an injured person was transported to a medical facility. Following the strict sense of the definition, an injured and transported variable was created from the injury severity and the medical transport variables in the Occupant file. This variable was merged into the Vehicle file to create a crash-level injured and transported variable. Therefore, any crash involving an A, B, or C-injury, and a person transported for medical care satisfied the criterion.

Identifying crashes in which a vehicle was towed due to disabling damage was straightforward. On the Wisconsin crash report form there is space for the officer to indicate if a vehicle was towed due to damage. In the instruction manual, the instructions to officers state:

> Mark the "Y" bubble if the vehicle was towed DUE TO DAMAGE, the "N" bubble if it was not.

Note that the words *due to damage* are in capital letters. Analysis of the towed variable in the 2006 General Estimates System (GES) database [32] shows that approximately 27 percent of vehicles are towed due to damage. Other MCMIS evaluations tend to support an estimate of about 30 percent [20, 22]. Based on the towed due to damage variable recorded in the Wisconsin Vehicle file, the percentage is 29.8. Based on these considerations, a towed and disabled flag variable was created at the crash level to be used for estimating the number of qualifying vehicles satisfying this criterion.

Table 5 shows the numbers of qualifying vehicles that meet the threshold for a MCMIS reportable crash according to the MCMIS criteria. In total, it is estimated that 3,868 vehicles were reportable to the MCMIS Crash file. Of these, 95 were involved in fatal crashes and 1,258, or about 32.5 percent, were involved in crashes where at least one person was transported for medical treatment. Based on the towed due to damage variable described above, it is estimated that 2,515 or about 65.0 percent of reportable vehicles were involved in crashes where at least one vehicle was towed due to disabling damage.

Table 5 Reportable Records in Wisconsin Crash File, 2006

Crash type	N	%
Fatal	95	2.5
Injury transported for treatment	1,258	32.5
Vehicle towed due to damage	2,515	65.0
Total	3,868	100.0

5. Factors Associated with Reporting

The procedure described in the previous section identified 3,868 vehicles involved in crashes as reportable to the MCMIS Crash file. The match process described in Section 3 determined that 2,941 unique cases were reported to the MCMIS Crash file, of which 2,918 could be matched to the Wisconsin PAR data. Of the 2,918 cases that could be matched, 2,748 were determined to meet the MCMIS Crash file reporting criteria. Therefore, of the 3,868 reportable crashes in 2006, Wisconsin reported 2,748, for an overall reporting rate of 71.0 percent. In this section, some of the factors that affect the chance that a qualifying crash would be submitted through the SafetyNet system and appear in the MCMIS Crash file are identified. The results are presented in five subsections: overreporting, case processing, reporting criteria, reporting agency and area, and truck/bus fire and explosion occurrence. Analysis of overreporting attempts to identify why cases were submitted that do not meet the MCMIS reporting criteria as defined by Table 2. Case processing deals with timing issues related to reporting such as crash month and time lag between crash date and uploading date to the MCMIS Crash file. Reporting criteria includes factors such as vehicle type and crash severity. Reporting agency is associated with differences in reporting rates due to the agency, such as state police or local police, while area investigates

reporting by location, such as the county where the crash occurred. Truck/bus fire occurrence examines reportable cases of crashes involving fire or explosion.

5.1 Overreporting

MCMIS evaluations tend to focus on underreporting because sources of underreporting tend to be more prevalent than overreporting. However, almost all states overreport cases to some degree. Overreporting results when cases are submitted to the MCMIS Crash file that do not meet the criteria for a reportable crash. Since 2,918 MCMIS cases could be matched to the Wisconsin PAR data, and 2,748 were determined to meet the reporting criteria, the difference, or 170 cases, were not reportable, and should not have been reported.

Table 6 shows a two-way classification of vehicle type and crash severity, and provides some explanation as to why these vehicles should not have been reported to the MCMIS Crash file. Note that all 170 vehicles do not meet the crash severity threshold for a MCMIS reportable crash. In addition, 169 vehicles do not meet the vehicle criteria since they are not trucks, buses, or hazmat placarded vehicles.

An interesting note is that 121 of the 169 other vehicles (not transporting hazmat) are classified as utility trucks. As discussed in Section 4, it is estimated that 8 percent of vehicles classified as utility trucks in Wisconsin have GVWR greater than 10,000 pounds. Thus, it is likely that some proportion of these vehicles qualify based on the vehicle criteria. Even so, none of the vehicles meet the crash severity threshold for reporting to the MCMIS Crash file according to the definitions established in this report.

Table 6 Distribution of Non-reportable Vehicles in MCMIS Crash File, Wisconsin 2006

	Crash severity				
Vehicle type	Fatal	Transported injury	Towed/disabled	Other crash severity	Total
Truck	0	0	0	1	1
Bus	0	0	0	0	0
Other vehicle (not transporting hazmat)	0	0	0	169	169
Total	0	0	0	170	170

5.2 Case Processing

Delays in transmitting cases may partially account for the incompleteness of the MCMIS Crash file. The time lag in extracting and submitting reports to the MCMIS Crash file might explain some portion of the unreported cases. All reportable crash involvements for a calendar year are required to be transmitted to the MCMIS Crash file within 90 days of the date of the crash. The 2006 MCMIS Crash file as of June 4, 2007 was used to identify records submitted from Wisconsin, so all 2006 cases should have been reported by that date.

Table 7 shows reporting rates according to month of the crash. Except for December, there is not much variability among the reporting rates or the percentages of total unreported cases. December, along with April, has the lowest reporting rate. However, in December there are 380

reportable cases, which is the largest number among all months. In addition, the number of unreported cases in December is 130, resulting in 11.6 percent of the total unreported cases.

Table 7 Reporting Rate by Accident Month, Wisconsin 2006

Crash month	Reportable cases	Reporting rate	Unreported cases	% of total unreported cases
January	301	71.4	86	7.7
February	342	72.2	95	8.5
March	324	72.5	89	7.9
April	257	65.8	88	7.9
May	352	73.0	95	8.5
June	314	71.7	89	7.9
July	312	71.2	90	8.0
August	311	68.5	98	8.8
September	316	74.4	81	7.2
October	331	73.1	89	7.9
November	328	72.6	90	8.0
December	380	65.8	130	11.6
Total	3,868	71.0	1,120	100.0

Figure 2 shows the median latency in case submission by month, where latency is the number of days between crash date and the date the case was uploaded to the MCMIS Crash file, minus the 90-day grace period. Therefore, a positive number for a month gives the median number of days cases were submitted after the 90-day grace period. Negative numbers give the median number of days that cases were submitted within the 90-day grace period for a month. Figure 2 shows that Wisconsin tended to report cases well within the grace period. As shown by the horizontal line, over the entire twelve months, cases were submitted approximately 58 days (about two months) prior to the end of the grace period, or about one month after the date of the crash. Even in February, which represents the worst month, cases were submitted about 49 days prior to the end of the grace period.

The median latency is reported because the distributions for each month tend to be skewed to the right, meaning that there are a few reported cases with large latency values. These large values are influential and skew the mean (average value) to the right. The median is not influenced by these few large values. For example, over the twelve months the maximum latency (minus 90 days) is 323, while the minimum latency is -86. The plot is based on the 2,748 matched and reported Wisconsin cases. Therefore, the median for each month is calculated from approximately 230 vehicles.

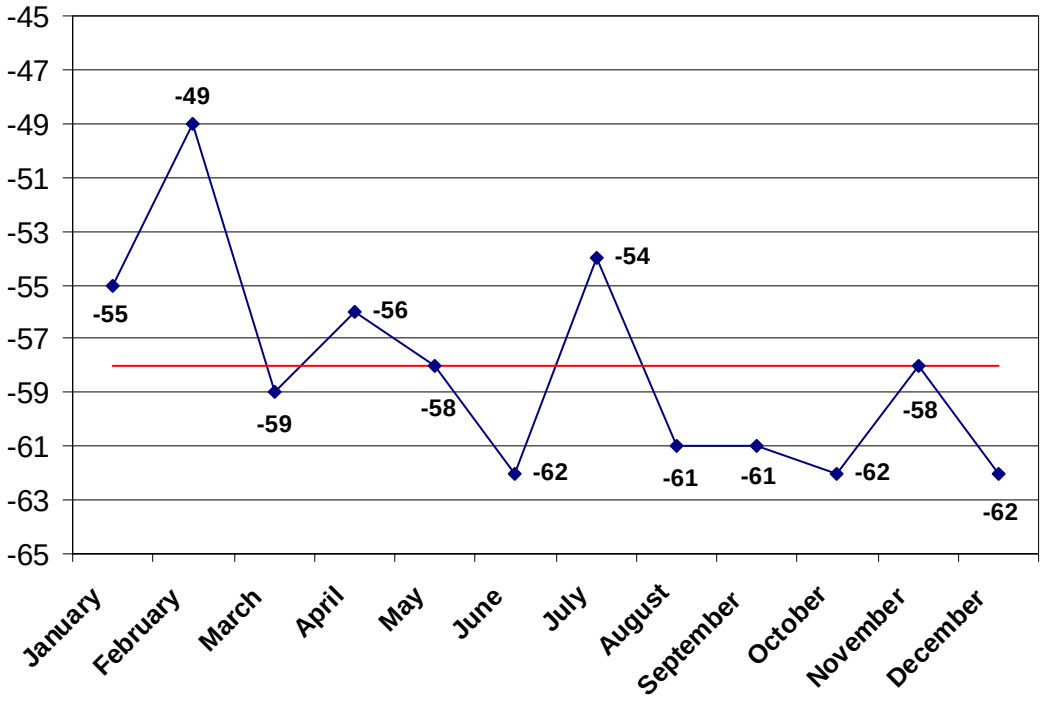


Figure 2 Median Latency (in Days, Minus 90) in Reporting to the MCMIS Crash File, Wisconsin Reported Cases, 2006

5.3 Reporting Criteria

In this subsection, reporting is investigated according to variables in the Wisconsin PAR file related to the reporting criteria for a MCMIS-reportable crash, as outlined in Table 2. Previous studies have consistently shown that trucks are more likely to be reported than buses and that fatal crashes are more likely to be reported than injury involvements. Since the criteria revolve around attributes associated with the vehicle type and crash severity, calculating reporting rates for these two variables is a logical starting point for assessing where improvements can be gained.

Table 8 shows reporting rates by vehicle type. The reporting rate for trucks is close to the overall rate since trucks represent the majority of reportable cases. In addition, trucks account for 91.9 percent of the total unreported cases. Unlike the experience encountered in previous MCMIS evaluations, the reporting rate is about 9 percent higher for buses than trucks. As shown in Table 4, there are eighteen non-trucks identified with a hazmat placard. However, only three of these vehicles are determined to be reportable based on the crash severity threshold established for a MCMIS reportable crash. Of those three vehicles, two were not reported.

Table 8 Reporting Rate by Vehicle Type, Wisconsin 2006

Vehicle type	Reportable cases	Reporting rate	Unreported cases	% of total unreported cases
Truck	3,438	70.1	1,029	91.9
Bus	427	79.2	89	7.9
Transporting hazardous materials	3	33.3	2	0.2
Total	3,868	71.0	1,120	100.0

Results from previous MCMIS evaluations suggest that certain trucks such as tractor semitrailers are more likely to be reported than single unit trucks. Table 9 shows reporting rates in finer detail than Table 8 based on the vehicle type variable in the PAR file. The largest numbers of reportable cases fall into the straight truck and tractor semitrailer categories. Between these two groups the number of reportable cases is about the same, but the reporting rate for straight trucks is 50.6 percent, while the rate for tractor semitrailers is 88.4 percent. Except for passenger cars and snow plows, where the combined number of reportable cases is three, straight trucks have the lowest reporting rate among all vehicle types. In addition, they account for 73.7 percent of total unreported cases. Straight trucks and tractor semitrailers combined account for over 91 percent of the unreported cases.

In comparison to the numbers of straight trucks and tractor semitrailers, the numbers of reportable buses are much smaller. However, the Wisconsin Par file distinguishes three types of buses. A school bus refers to a bus with only a driver or an empty bus. The pupil transportation school bus applies when students are on the bus as well as the driver. School buses with students on board are reported at 85.0 percent, while empty school buses or buses with only the driver on board are reported at 74.3 percent. The reporting rate for passenger buses is 76.1 percent.

Table 9 Reporting Rate by Detailed Vehicle Body Style, Wisconsin 2006

Vehicle body type	Reportable cases	Reporting rate	Unreported cases	% of total unreported cases
Passenger car	1	0.0	1	0.1
Straight truck	1,671	50.6	825	73.7
Truck tractor bobtail	19	89.5	2	0.2
Truck tractor semitrailer	1,734	88.4	201	17.9
Truck tractor double	14	92.9	1	0.1
School bus	101	74.3	26	2.3
Pupil trans school bus	167	85.0	25	2.2
Passenger bus	159	76.1	38	3.4
Snow plow	2	50.0	1	0.1
Total	3,868	71.0	1,120	100.0

Table 10 shows reporting rates by crash severity. Reporting rates tend to decrease as the severity of the crash decreases. The reporting rate for the injured/transported criterion is 5 percent lower than for the fatal rate, and the reporting rate for the towed/disabled criterion is 10 percent lower

than for the injured/transported criterion. Furthermore, 72.8 percent of the unreported cases fall into the towed/disabled category.

Table 10 Reporting Rate by Crash Severity, Wisconsin 2006

Crash severity	Reportable cases	Reporting rate	Unreported cases	% of total unreported cases
Fatal	95	82.1	17	1.5
Injured/Transported	1,258	77.1	288	25.7
Towed/Disabled	2,515	67.6	815	72.8
Total	3,868	71.0	1,120	100.0

Table 11 shows reporting rates to the MCMIS Crash file by maximum injury severity in the crash. The fatal involvement results are identical to those shown in Table 10. Note the declining trend in reporting rates as injury severity decreases. In addition, the percentage of total unreported cases increases as injury severity decreases. Crashes involving no evident injury account for 56.2 percent of the unreported cases.

Table 11 Reporting Rate by Detailed Injury Severity, Wisconsin 2006

Crash severity	Reportable cases	Reporting rate	Unreported cases	% of total unreported cases
Fatal	95	82.1	17	1.5
Incapacitating	307	79.2	64	5.7
Non-incapacitating	690	75.9	166	14.8
Possible	884	72.4	244	21.8
None evident	1,892	66.8	629	56.2
Total	3,868	71.0	1,120	100.0

5.4 Reporting Agency and Area

Beyond the application of the reporting criteria, there can be differences related to where the crash occurs or the type of agency that covered the crash. More densely populated areas with a large number of traffic accidents may not report as completely as areas with a lower work load. The level and frequency of training or the intensity of supervision can also vary. If there are such differences, they may serve as a guide to focus resources in areas and at levels that will produce the greatest improvement. The next set of tables examines areas of the state to see if there are inconsistencies in reporting patterns.

In the 72 counties of Wisconsin, the number of reportable cases ranges from 1 to 807. Therefore, numbers of reportable cases vary considerably based on population density, traffic density, and other geographic characteristics. Table 12 shows the top fifteen counties in Wisconsin, ordered in descending order by the number of reportable cases. The combined reporting rates for the top fifteen counties and the remaining 57 counties are also shown. Although there are some differences in individual rates, the two combined rates are both close to the overall reporting rate of 71 percent. However, the top three counties, in terms of reportable cases, have reporting rates less than the overall rate. Of the counties shown, Rock County and Sauk County have the highest

reporting rates, while Outagamie has the lowest rate. Milwaukee County accounts for 22.6 percent of the total unreported cases.

Table 12 Reporting Rate by County, Wisconsin 2006

County	Reportable cases	Reporting rate	Unreported cases	% of total unreported cases
Milwaukee	807	68.6	253	22.6
Dane	318	67.3	104	9.3
Waukesha	254	65.0	89	7.9
Racine	175	74.3	45	4.0
Brown	140	77.9	31	2.8
Winnebago	114	72.8	31	2.8
Rock	110	86.4	15	1.3
Kenosha	104	65.4	36	3.2
Marathon	99	73.7	26	2.3
Outagamie	86	61.6	33	2.9
Washington	76	76.3	18	1.6
Sauk	72	83.3	12	1.1
Eau Claire	63	74.6	16	1.4
Fond Du Lac	63	71.4	18	1.6
St. Croix	62	66.1	21	1.9
Top 15 counties	2,543	70.6	748	66.8
Other counties	1,325	71.9	372	33.2
Total	3,868	71.0	1,120	100.0

It is also possible that reporting rates are related to the level of reporting agency. Here, agency type may be taken as an indicator of the focus and training of the department. Table 13 shows reporting rates by the various agencies in Wisconsin. Most cases are handled by county sheriff and city police. The reporting rate for city police is about 6 percent less than the overall rate, and they also account for 44.9 percent of the total unreported cases. The reporting rate for county sheriff is slightly higher than the overall average and they account for 36.3 percent of all unreported cases. The state patrol has the highest reporting rate at 81.5 percent, but they handle considerably fewer cases than either the county sheriff or city police.

Table 13 Reporting Rate by Reporting Agency, Wisconsin 2006

Reporting agency	Reportable cases	Reporting rate	Unreported cases	% of total unreported cases
State patrol	465	81.5	86	7.7
County sheriff	1,577	74.3	406	36.3
City police	1,433	64.9	503	44.9
Village police	242	67.8	78	7.0
Town police	138	69.6	42	3.8
Other	13	61.5	5	0.4
Total	3,868	71.0	1,120	100.0

5.5 Truck/Bus Fire or Explosion

There are three variables recorded in the Wisconsin PAR file that relate to occurrence of fire or explosion: fireflag, accident type, and most harmful event. The fireflag variable is a yes/no variable that is recorded at the crash level and indicates whether the crash involved a fire. The accident type variable is also recorded at the crash level and is based on the first harmful event in the crash. The most harmful event is recorded at the vehicle level and describes the event causing the most damage to the vehicle. There are spaces on the accident report (Appendix B) for recording information related to fire/explosion.

Based on combinations of the three variables, Table 14 shows reporting rates for trucks and buses where fire/explosion information is recorded in the PAR data file. Rates are shown based on whether the fire/explosion occurred in the truck or bus, or outside the truck or bus. For trucks, the reporting rates are about 86 percent when fire/explosion is involved, regardless whether the incident occurred inside or outside the truck. However, these rates are quite higher than the approximate 70 percent rate in the absence of fire/explosion. For buses, the number of fire/explosion occurrences is too small to make any definite conclusions, but the two reportable cases were reported.

Table 14 Reporting Rate by Fire/explosion, Wisconsin 2006

Event	Reportable cases	Reporting rate	Unreported cases	% of total unreported cases
Truck				
Fire/explosion in truck	35	85.7	5	0.4
Fire/explosion in crash	22	86.4	3	0.3
Other	3,381	69.8	1,021	91.3
Bus				
Fire/explosion in bus	1	100.0	0	0.0
Fire/explosion in crash	1	100.0	0	0.0
Other	425	79.1	89	8.0
Total	3,865	71.1	1,118	100.0

6. Data Quality of Reported Cases

In this section, we consider the quality of data reported to the MCMIS crash file. Two aspects of data quality are examined. The first is the amount of missing data. Missing data rates are important to the usefulness of a data file because records with missing data cannot contribute to an analysis. The second aspect of data quality considered here is the consistency of coding between records as they appear in the Wisconsin Crash file and in the MCMIS Crash file. Inconsistencies can indicate errors in translating information recorded on the crash report to the values in the MCMIS Crash file.

Table 15 shows missing data rates for selected, important variables in the MCMIS Crash file. There are 2,941 non-duplicate records in this file (Figure 1). Missing data rates are generally quite low, with a handful of exceptions. On most fundamental, structural variables, such as date, time, number of fatalities and number of injuries, missing data rates are either zero or extremely

low. Missing data rates for some other variables are higher. For GVWR class, 28.4 percent is missing and for body type 14.2 percent is missing. For the configuration variable 6.7 percent of values are missing and for the event one variable 6.4 percent of the values are missing. The variables corresponding to events two, three, and four are missing 81.4, 93.4, and 98.5 percent of cases, though this is not necessarily an indication of a problem, since most crashes consist of a single impact. Missing data percentages for the remaining variables shown in Table 15 are less than 5 percent.

Table 15 Missing Data Rates for Selected MCMIS Crash File Variables, Wisconsin, 2006

Variable	Percent unrecorded	Variable	Percent unrecorded
Report number	0.0	Fatal injuries	0.0
Accident year	0.0	Non-fatal injuries	0.0
Accident month	0.0	Interstate	0.0
Accident day	0.0	Light	0.0
Accident hour	0.1	Event one	6.4
Accident minute	0.1	Event two	81.4
County	0.0	Event three	93.4
Body type	14.2	Event four	98.5
Configuration	6.7	Number of vehicles	0.0
GVWR class	28.4	Road access	0.4
DOT number *	4.5	Road surface	0.0
Carrier state	0.0	Road trafficway	3.4
Citation issued	0.0	Towaway	0.0
Driver date of birth	2.7	Truck or bus	0.0
Driver license number	2.9	Vehicle license number	2.1
Driver license state	2.9	Vehicle license state	0.3
Driver license class	2.9	VIN	0.2
Driver license valid	0.0	Weather	0.0

* Based on cases where the carrier is coded interstate.

Hazardous materials variable	Percent unrecorded
Hazardous materials placard	0.0
Percentages of hazmat placarded vehicles only:	
Hazardous cargo release	0.0
Hazardous materials class (1-digit)	98.4
Hazardous materials class (4-digit)	98.4
Hazardous materials name	98.4

The table above shows information about the recording of hazardous materials variables. Of the 2,941 cases in the MCMIS Crash file, 61 cases are coded as hazmat placarded and there are no missing values. However, of the 61 cases, 60 are missing values for the hazardous materials class (1-digit), hazardous materials (4-digit), and hazardous materials name variables.

The values of variables in the MCMIS Crash file were also compared with the values of similar variables in the Wisconsin Crash file. The purpose of this comparison is to identify any errors in translating variables from the values in the state crash file to the values required for Safetynet. Table 16 shows the coding of vehicle configuration in the MCMIS Crash file and the record as it appears in the Wisconsin PAR file for the 2,918 cases that were matched between the two files (Figure 1).

The length of Table 16 is a general indication of some disagreement between the two files. Seemingly large discrepancies are highlighted. There are 76 straight trucks and 76 tractor semitrailers in the Wisconsin Par file with missing values in the MCMIS file. In addition, 35 tractor semitrailers are coded as SUTs with 2 axles and 6 tires, and 128 are coded as SUTs with 3 or more axles. There are 81 vehicles coded as tractor semitrailers in the Wisconsin PAR file that are coded as tractor bobtails in the MCMIS file.

Table 17 shows a comparison of the number of fatalities in the crash between the MCMIS Crash file and the Wisconsin PAR file. There is generally good agreement with respect to this variable between the two files. Of the 2,918 matched cases, a total of seven cases do not agree with respect to number of fatalities in the crash.

Table 16 Vehicle Configuration in Wisconsin and MCMIS Crash Files, 2006

Vehicle configuration			
MCMIS Crash file	Wisconsin Crash File	N	%
Missing	Passenger car	1	0.0
	Utility truck	23	0.8
	Straight truck	76	2.6
	Truck tractor (bobtail)	2	0.1
	Truck tractor semitrailer	76	2.6
	Truck tractor double	1	0.0
	Motorcycle	1	0.0
	School bus	2	0.1
	Pupil trans school bus	2	0.1
	Passenger bus	3	0.1
	Snow plow	7	0.2
Bus (seats>15, incl dr)	Passenger car	1	0.0
	Utility truck	1	0.0
	Truck tractor semitrailer	2	0.1
	School bus	73	2.5
	Pupil trans school bus	139	4.8
	Passenger bus	118	4.0
SUT, 2-axle, 6-tire	Passenger car	3	0.1
	Utility truck	63	2.2
	Straight truck	410	14.1
	Truck tractor semitrailer	35	1.2
	Motor home	1	0.0
	Fire truck	2	0.1
	Pupil trans school bus	1	0.0
	Snow plow	14	0.5
SUT, 3+ axles	Passenger car	1	0.0
	Utility truck	3	0.1
	Straight truck	215	7.4
	Truck tractor (bobtail)	4	0.1
	Truck tractor semitrailer	128	4.4
	Truck tractor double	1	0.0
	Motor home	1	0.0
	Snow plow	5	0.2
Truck trailer	Utility truck	9	0.3
	Straight truck	30	1.0
	Truck tractor semitrailer	13	0.4
Truck tractor (bobtail)	Utility truck	7	0.2
	Straight truck	19	0.7
	Truck tractor (bobtail)	10	0.3
	Truck tractor semitrailer	81	2.8
	Truck tractor double	1	0.0
	Snow plow	1	0.0
Tractor/semitrailer	Passenger car	9	0.3
	Utility truck	6	0.2
	Straight truck	25	0.9
	Truck tractor (bobtail)	1	0.0
	Truck tractor semitrailer	1,169	40.1

Vehicle configuration			
MCMIS Crash file	Wisconsin Crash File	N	%
	Truck tractor double	2	0.1
	Snow plow	1	0.0
Tractor/double	Straight truck	1	0.0
	Truck tractor semitrailer	20	0.7
	Truck tractor double	8	0.3
Tractor/triple	Truck tractor semitrailer	1	0.0
Unk heavy truck>10,000	Utility truck	9	0.3
	Straight truck	70	2.4
	Truck tractor semitrailer	9	0.3
	Snow plow	1	0.0
Total		2,918	100.0

Table 17 Comparison of Fatals in Crash in MCMIS and Wisconsin Crash Files, 2006

Number of fatals in crash			
MCMIS Crash file	Wisconsin Crash file	N	%
0	0	2,832	97.1
0	1	3	0.1
1	0	4	0.1
1	1	74	2.5
2	2	4	0.1
3	3	1	0.0
Total		2,918	100.0

7. Summary and Discussion

This report is an evaluation of reporting to the MCMIS Crash file by the state of Wisconsin in 2006. Records were matched between the Wisconsin PAR file and the MCMIS Crash file using variables common to both files with low percentages of missing data. Since no duplicate records were found in either the Wisconsin or MCMIS Crash files, 216,808 unique records were available for matching from the PAR file and 2,941 unique records were available for matching from the MCMIS file. In total, 2,918, or 99.2 percent of the MCMIS records were matched (Figure 1).

The next step in the evaluation process focused on identifying reportable cases using the Wisconsin PAR file according to established vehicle and crash severity criteria. Overall, 9,752 vehicles were identified as qualifying trucks, buses, or non-trucks displaying a hazmat placard. Of qualifying vehicles, 88.5 percent are trucks, 11.3 percent are buses, and 18, or about 0.2 percent, are non-trucks displaying a hazmat placard (Table 4). One of the categories of the vehicle type variable is coded as utility trucks. The vehicle identification numbers (VINs) of 100 of these vehicles were randomly selected and decoded. It was found that approximately 8 percent of these vehicles have GVWR greater than 10,000 pounds. Due to the relatively low percent, these vehicles were not included for consideration as qualifying vehicles.

After identifying qualifying vehicles, it is necessary to determine which of these vehicles meet the crash severity criteria for reporting to MCMIS. There are two variables in the Wisconsin Occupant file that can be used to determine injury severity and whether an injured person was transported for medical care. The injury severity variable follows the usual KABC scale, with an additional 'N' category that denotes no apparent injury. Based on these two variables, an injured and transported variable was created following the strict sense of the definition outlined in the MCMIS criteria. This variable was merged into the Vehicle file to create a crash-level injured and transported variable. Therefore, any crash in which a person sustained an A, B, or C-injury and was transported for medical care satisfied the criterion.

With respect to the towed and disabled criterion, there is space on the Wisconsin crash report form for officers to indicate if a vehicle was towed due to damage. Instructions to officers in the instruction manual [31] are very specific:

> Mark the "Y" bubble if the vehicle was towed DUE TO DAMAGE, the "N" bubble if it was not.

The words *due to damage* are in capital letters. Therefore, the single towed due to damage variable in the Wisconsin PAR file was used to assess this criterion. The percentage of vehicles coded as towed due to damage in the PAR file is 29.8 percent. This percentage is consistent with MCMIS evaluations performed for other states, as well as the estimate calculated from the towed variable in the 2006 General Estimates System (GES) database.

Using the procedure described above resulted in identification of 3,868 vehicles involved in crashes that were reportable to the MCMIS Crash file. Of these, 95 were involved in fatal crashes, 1,258 were involved in injury crashes where at least one person was transported for medical attention, and 2,515 were involved in crashes where at least one vehicle was towed due to disabling damage. Of the 2,918 records that were matched between the Wisconsin PAR file and the MCMIS Crash file, 2,748 were determined to meet the MCMIS Crash file reporting criteria. Therefore, the overall reporting rate in Wisconsin in 2006 is estimated at 2,748/3,868 = 71.0 percent. The difference between 2,918 and 2,748 suggests that 170 cases were overreported to the MCMIS Crash file. According to this analysis, 121 of these vehicles were coded as utility trucks. However, all 170 cases did not meet the crash severity threshold for reporting to MCMIS (Table 6).

Since the overall reporting rate is estimated at 71.0 percent, specific variables were examined to identify sources of underreporting. Reporting rates were calculated and presented in four groups. The four groups are case processing, reporting criteria, reporting agency and area, and fire/explosion. Case processing considers timing issues, reporting criteria deals with vehicle and crash severity issues, agency and area are related to the reporting agency and the county of the crash, and fire/explosion considers fire or explosions in reportable vehicles.

Except for December, reporting rates did not vary much by crash month. The lowest reporting rate is in December in which 65.8 percent of reportable cases were reported. In addition, the number of unreported cases in December is 130, which is about 4 percent higher than in other months (Table 7). The median lag time between the date of a crash and the date the case was uploaded to the MCMIS Crash file was also evaluated. The median is used because distributions of lag time for each month tend to be skewed with a few large outliers. Cases tended to be

uploaded well within the 90-day grace period for all months. Overall, cases were uploaded approximately 58 days (about 2 months) prior to the end of the grace period, or about one month after the date of the crash. Even in February, which represents the worst month, cases were submitted about 49 days prior to the end of the grace period (Figure 2).

Results from previous MCMIS evaluations indicate that overall, trucks are more likely to be reported than buses. However, the reporting rate for all trucks is 70.1 percent, while the rate for buses is 79.2 percent. A closer inspection of the vehicle type variable shows that the lower rate for trucks is in large part due to the low reporting rate for straight trucks (Table 9). While reporting rates for tractors are close to 90 percent, the reporting rate for straight trucks is 50.6 percent. Only about half of the reportable straight trucks are being reported. In addition, straight trucks account for 73.7 percent of all unreported cases, and have influence on the reporting rate. The Wisconsin PAR file distinguishes school buses with and without students on board. The reporting rate for school buses with students is 85.0 percent, while the rate for school buses without students is 74.3 percent. Combined, school buses account for 4.5 percent of unreported cases.

A clear declining trend in reporting rates is evident as crash severity decreases. The reporting rate for fatal crashes is 82.1 percent, decreases to 77.1 percent for crashes meeting the injured and transported criterion, and decreases to 67.6 percent for crashes satisfying the towed due to disabling damage criterion. The towed due to disabling damage criterion accounts for 72.8 percent of the total unreported cases. Similar trends are evident when examining the crash severity based on the KABCO injury scale.

Previous MCMIS evaluations have consistently shown that reporting rates in larger jurisdictions tend to be lower than those in smaller ones. Wisconsin has 72 counties, but according to numbers of reportable cases, the reporting rates for the top 15 counties and the remaining counties are essentially the same. However, some of the larger counties in terms of reportable cases have lower than average reporting rates. The reporting rate for Milwaukee County is 68.6 percent, the rate for Dane County is 67.3 percent, and the reporting rate for Waukesha County is 65.0 percent. Milwaukee County accounts for 22.6 percent of the unreported cases.

With respect to reporting agency, the Wisconsin PAR file identifies state patrol, county sheriff, city police, village police, and town police. The state patrol has the highest rate at 81.5 percent, but accounts for only 7.7 percent of the unreported cases. The reporting rate for county sheriff is 74.3 percent, but accounts for 36.3 percent of the total unreported cases. The reporting rate for city police is 64.9 percent, which is lowest among the five agencies. Furthermore, city police account for 44.9 percent of the total unreported cases. Village police and town police handle relatively fewer cases than the other agencies.

There are three variables recorded in the Wisconsin PAR file that relate to occurrence of fire or explosion. Based on combinations of these three variables, reporting rates are calculated for trucks and buses where fire/explosion information is recorded. For trucks, there were a total of 57 reportable cases and the reporting rate is about 86 percent when fire/explosion is involved in the crash. For buses, there were only two reportable cases and both were reported.

Missing data rates in the MCMIS Crash file were also examined for key variables. Except for a few variables such as GVWR class, body type, and vehicle configuration, percentages of missing

data are less than 5 percent. This does not include the event variables for which missing data percentages are typically high. Of the 2,941 cases in the MCMIS Crash file, 61 are coded as hazmat placarded and there are no missing values for this variable. However, of the 61 cases, 60 are missing values for the hazardous materials class (1-digit), hazardous materials (4-digit), and hazardous materials name variables.

Certain variables in the Wisconsin PAR file and the MCMIS Crash file were also compared for the 2,918 records that were matched between the two files. The vehicle configuration variables are coded differently and could be a source of variation between the two files. Some number of straight trucks and tractor configurations are coded as missing or as other vehicle types in the MCMIS Crash file (Table 16). A comparison of the number of fatals in the crash agrees well between the two files.

8. References

1 Blower, D., and Matteson, A., Evaluation of the Motor Carrier Management Information System Crash File, Phase One. University of Michigan Transportation Research Institute, Ann Arbor, Michigan. March 2003. Sponsor: Federal Motor Carrier Safety Administration, U.S. D.O.T.

2 Blower, D., and Matteson, A., Patterns of MCMIS Crash File Underreporting in Ohio. University of Michigan Transportation Research Institute, Ann Arbor, Michigan. August 2003. Sponsor: Federal Motor Carrier Safety Administration, U.S. D.O.T.

3 Blower, D., and Matteson, A., Evaluation of Missouri Crash Data Reported to MCMIS Crash File. University of Michigan Transportation Research Institute, Ann Arbor, Michigan. January 2004. Sponsor: Federal Motor Carrier Safety Administration, U.S. D.O.T.

4 Blower, D., and Matteson, A., Evaluation of Michigan Crash Data Reported to MCMIS Crash File. University of Michigan Transportation Research Institute, Ann Arbor, Michigan. September 2004. Sponsor: Federal Motor Carrier Safety Administration, U.S. D.O.T.

5 Blower, D., and Matteson, A., Evaluation of Florida Crash Data Reported to MCMIS Crash File. University of Michigan Transportation Research Institute, Ann Arbor, Michigan. December 2004. Sponsor: Federal Motor Carrier Safety Administration, U.S. D.O.T.

6 Matteson, A., and Blower, D., Evaluation of California Crash Data Reported to MCMIS Crash File. University of Michigan Transportation Research Institute, Ann Arbor, Michigan. February 2005. Sponsor: Federal Motor Carrier Safety Administration, U.S. D.O.T.

7 Green, P.E., and Blower, D., Evaluation of New Jersey Crash Data Reported to MCMIS Crash File. University of Michigan Transportation Research Institute, Ann Arbor, Michigan. February 2005. Sponsor: Federal Motor Carrier Safety Administration, U.S. D.O.T.

8 Green, P.E., and Blower, D., Evaluation of New Mexico Crash Data Reported to MCMIS Crash File. University of Michigan Transportation Research Institute, Ann Arbor, Michigan. July 2005. Sponsor: Federal Motor Carrier Safety Administration, U.S. D.O.T.

9 Matteson, A., and Blower, D., Evaluation of North Carolina Crash Data Reported to MCMIS Crash File. University of Michigan Transportation Research Institute, Ann Arbor, Michigan. May 2005. Sponsor: Federal Motor Carrier Safety Administration, U.S. D.O.T.

10 Matteson, A., and Blower, D., Evaluation of Illinois Crash Data Reported to MCMIS Crash File. University of Michigan Transportation Research Institute, Ann Arbor, Michigan. July 2005. Sponsor: Federal Motor Carrier Safety Administration, U.S. D.O.T.

11 Blower, D., and Matteson, A., Evaluation of Washington Crash Data Reported to MCMIS Crash File. University of Michigan Transportation Research Institute, Ann Arbor, Michigan. June 2006. Sponsor: Federal Motor Carrier Safety Administration, U.S. D.O.T.

12 Blower, D., and Matteson, A., Evaluation of Iowa Crash Data Reported to MCMIS Crash File. University of Michigan Transportation Research Institute, Ann Arbor, Michigan. August 2006. Sponsor: Federal Motor Carrier Safety Administration, U.S. D.O.T.

13 Blower, D., and Matteson, A., Evaluation of 2005 Missouri Crash Data Reported to MCMIS Crash File. University of Michigan Transportation Research Institute, Ann Arbor, Michigan. September 2006. Sponsor: Federal Motor Carrier Safety Administration, U.S. D.O.T.

14 Green, P.E., and Matteson, A., Evaluation of Maryland Crash Data Reported to MCMIS Crash File. University of Michigan Transportation Research Institute, Ann Arbor, Michigan. July 2006. Sponsor: Federal Motor Carrier Safety Administration, U.S. D.O.T.

15 Green, P.E., and Matteson, A., Evaluation of 2005 Ohio Crash Data Reported to MCMIS Crash File. University of Michigan Transportation Research Institute, Ann Arbor, Michigan. December 2006. Sponsor: Federal Motor Carrier Safety Administration, U.S. D.O.T.

16 Blower, D., and Matteson, A., Evaluation of 2005 Louisiana Crash Data Reported to MCMIS Crash File. University of Michigan Transportation Research Institute, Ann Arbor, Michigan. December 2006. Sponsor: Federal Motor Carrier Safety Administration, U.S. D.O.T.

17 Blower, D., and Matteson, A., Evaluation of 2005 Nebraska Crash Data Reported to MCMIS Crash File. University of Michigan Transportation Research Institute, Ann Arbor, Michigan. February 2007. Sponsor: Federal Motor Carrier Safety Administration, U.S. D.O.T.

18 Blower, D., and Matteson, A., Evaluation of 2005 South Dakota Crash Data Reported to MCMIS Crash File. University of Michigan Transportation Research Institute, Ann Arbor, Michigan. March 2007. Sponsor: Federal Motor Carrier Safety Administration, U.S. D.O.T.

19 Blower, D., and Matteson, A., Evaluation of 2004 Tennessee Crash Data Reported to MCMIS Crash File. University of Michigan Transportation Research Institute, Ann Arbor, Michigan. May 2007. Sponsor: Federal Motor Carrier Safety Administration, U.S. D.O.T.

20 Green, P.E., and Matteson, A., Evaluation of 2005 Arizona Crash Data Reported to MCMIS Crash File. University of Michigan Transportation Research Institute, Ann Arbor, Michigan. June 2007. Sponsor: Federal Motor Carrier Safety Administration, U.S. D.O.T.

21 Blower, D., and Matteson, A., Evaluation of 2005 Pennsylvania Crash Data Reported to MCMIS Crash File. University of Michigan Transportation Research Institute, Ann Arbor, Michigan. September 2007. Sponsor: Federal Motor Carrier Safety Administration, U.S. D.O.T.

22 Green, P.E., and Matteson, A., Evaluation of 2005 Indiana Crash Data Reported to MCMIS Crash File. University of Michigan Transportation Research Institute, Ann Arbor, Michigan. September 2007. Sponsor: Federal Motor Carrier Safety Administration, U.S. D.O.T.

23 Blower, D., and Matteson, A., Evaluation of 2005 Connecticut Crash Data Reported to MCMIS Crash File. University of Michigan Transportation Research Institute, Ann Arbor, Michigan. October 2007. Sponsor: Federal Motor Carrier Safety Administration, U.S. D.O.T.

24 Green, P.E., and Matteson, A., Evaluation of 2005 Alabama Crash Data Reported to MCMIS Crash File. University of Michigan Transportation Research Institute, Ann Arbor, Michigan. October 2007. Sponsor: Federal Motor Carrier Safety Administration, U.S. D.O.T.

25 Green, P.E., and Matteson, A., Evaluation of 2006 Georgia Crash Data Reported to MCMIS Crash File. University of Michigan Transportation Research Institute, Ann Arbor, Michigan. November 2007. Sponsor: Federal Motor Carrier Safety Administration, U.S. D.O.T.

26 Green, P.E., and Matteson, A., Evaluation of 2006 Idaho Crash Data Reported to MCMIS Crash File. University of Michigan Transportation Research Institute, Ann Arbor, Michigan. December 2007. Sponsor: Federal Motor Carrier Safety Administration, U.S. D.O.T.

27 U.S. Bureau of Census, 2002 Economic Census, Vehicle Inventory and Use Survey.

28 United States Census Bureau, Population Division, Estimates 2000-2005.

29 Trucks Involved in Fatal Accidents (TIFA) 1999-2003, Center for National Truck and Bus Statistics, The University of Michigan Transportation Research Institute.

30 Buses Involved in Fatal Accidents (BIFA) 1999-2003, Center for National Truck and Bus Statistics, The University of Michigan Transportation Research Institute.

31 Law Enforcement Officer’s Instruction Manual for Completing the Wisconsin Motor Vehicle Accident Report Form (MV4000), Division of Motor Vehicles, Wisconsin Department of Transportation.

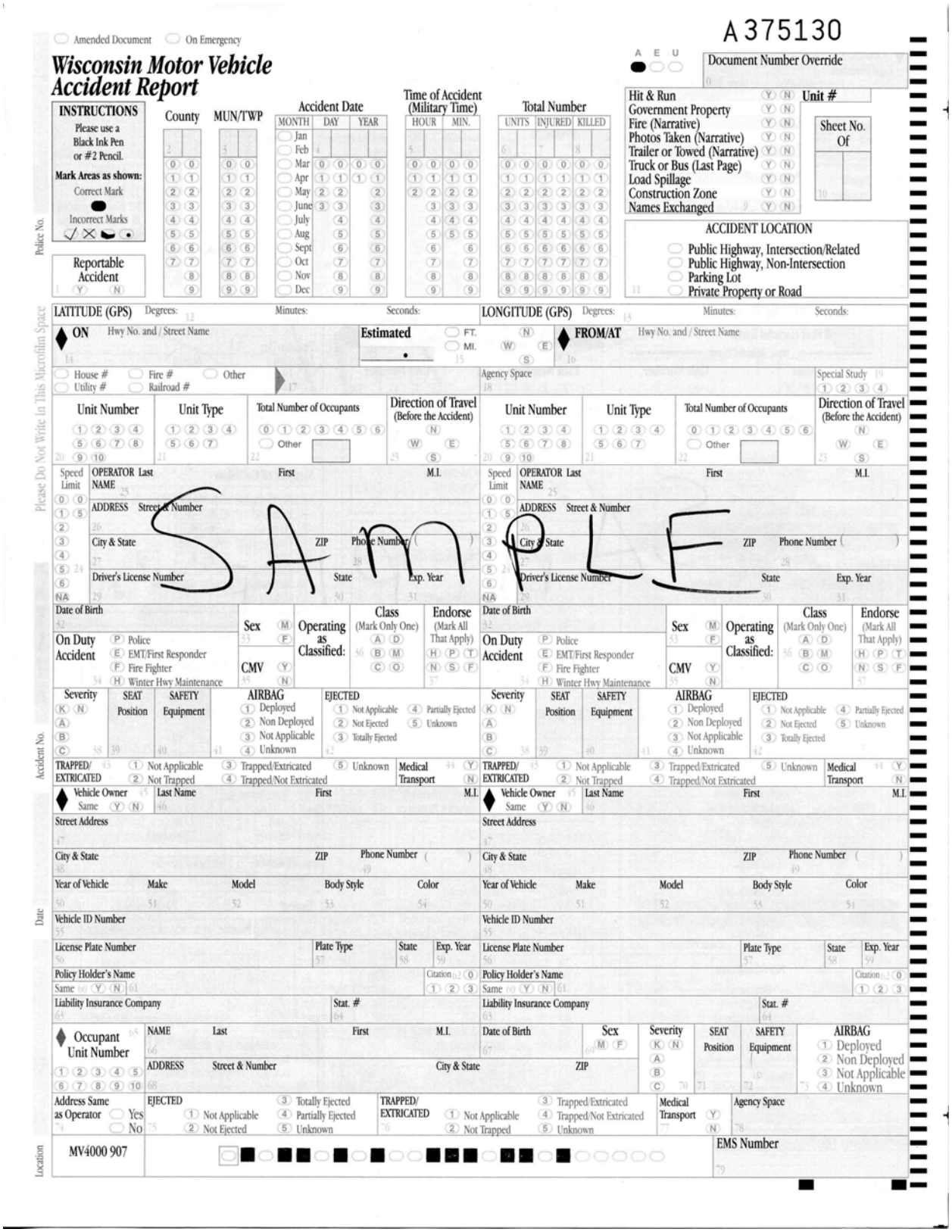
32 National Automotive Sampling System (NASS) General Estimates System (GES) 2006, National Center for Statistics and Analysis, NHTSA.

Appendix A Selection Algorithm to Identify Reportable Records

MCMIS Reporting Criteria	Implementation in Wisconsin PAR Data
Truck with GVWR over 10,000 or GCWR over 10,000	The vehicle type variable in the Wisconsin PAR file was used to identify medium/heavy trucks with GVWR 10,000 lbs or greater. 4 – Single unit truck 5 – Truck tractor – not att 6 – Truck tractor-semi att 7 – Truck tractor - double
***or* Bus with seating for at least nine, including the driver**	The following Vehicle types were used to identify eligible buses: 13 – School bus 14 – Pupil transp – sch bus 15 – Passenger bus
***or* Vehicle displaying a hazardous materials placard**	These vehicles were identified using the hazardous materials endorsement variable. Officers are instructed to identify these vehicles if the operator was engaged in hazmat operations at the time of the crash
AND	
at least one fatality	The Wisconsin PAR file uses the usual KABC injury scale to define injury. N is used to define no injury K - Dead A – Incapacitating B – Non-incapacitating C - Possible N – None evident

MCMIS Reporting Criteria	Implementation in Wisconsin PAR Data
***or* at least one person injured and transported to a medical facility for immediate medical attention**	Using the injury variable described above and the medical transport variable, an injured/transported variable was created. The medical transport variable is coded yes/no for inured persons. The injured/transported criterion was met by the following condition: Injured/transported = injury severity in (A or B or C) and medical transport = yes This variable is created at the person level, and merged into the vehicle file as a crash-level variable.
***or* at least one vehicle towed due to disabling damage**	A towed due to damage variable was used. This variable is coded yes/no.

Appendix B Wisconsin Traffic Accident Reports



Amended Document On Emergency

A 375130

Wisconsin Motor Vehicle Accident Report

A E U

Document Number Override

INSTRUCTIONS
Please use a Black Ink Pen or #2 Pencil.
Mark Areas as shown:
Correct Mark
Incorrect Marks

County | MUN/TWP | Accident Date (MONTH DAY YEAR) | Time of Accident (Military Time) (HOUR MIN.) | Total Number (UNITS INJURED KILLED)

Hit & Run (Y N) Unit #
Government Property (Y N)
Fire (Narrative) (Y N)
Photos Taken (Narrative) (Y N)
Trailer or Towed (Narrative) (Y N)
Truck or Bus (Last Page) (Y N)
Load Spillage (Y N)
Construction Zone (Y N)
Names Exchanged (Y N)

Sheet No. Of

Police No.

Reportable Accident (Y N)

ACCIDENT LOCATION
Public Highway, Intersection/Related
Public Highway, Non-Intersection
Parking Lot
Private Property or Road

LATITUDE (GPS) Degrees: Minutes: Seconds:
LONGITUDE (GPS) Degrees: Minutes: Seconds:

ON Hwy No. and / Street Name
Estimated FT. MI. (N W E S)
FROM/AT Hwy No. and / Street Name

House # Fire # Other
Utility # Railroad #
Agency Space
Special Study (1 2 3 4)

Unit Number | Unit Type | Total Number of Occupants | Direction of Travel (Before the Accident)

Please Do Not Write In This Microfilm Space

Speed Limit | OPERATOR NAME Last First M.I.
ADDRESS Street & Number
City & State ZIP Phone Number
Driver's License Number State Exp. Year

SAMPLE

Date of Birth | Sex (M F) | Operating as Classified: | Class (Mark Only One) (A D B M C O) | Endorse (Mark All That Apply) (H P T N S F)
On Duty Accident (P Police, E EMT/First Responder, F Fire Fighter, H Winter Hwy Maintenance)
CMV (Y N)

Severity (K N A B C) | SEAT Position | SAFETY Equipment | AIRBAG (1 Deployed, 2 Non Deployed, 3 Not Applicable, 4 Unknown) | EJECTED (1 Not Applicable, 2 Not Ejected, 3 Totally Ejected, 4 Partially Ejected, 5 Unknown)
TRAPPED/EXTRICATED (1 Not Applicable, 2 Not Trapped, 3 Trapped/Extricated, 4 Trapped/Not Extricated, 5 Unknown) | Medical Transport (Y N)

Accident No.

Vehicle Owner Same (Y N) | Last Name First M.I.
Street Address
City & State ZIP Phone Number
Year of Vehicle | Make | Model | Body Style | Color
Vehicle ID Number
License Plate Number | Plate Type | State | Exp. Year
Policy Holder's Name Same (Y N) | Citation (1 2 3)
Liability Insurance Company | Stat. #

Date

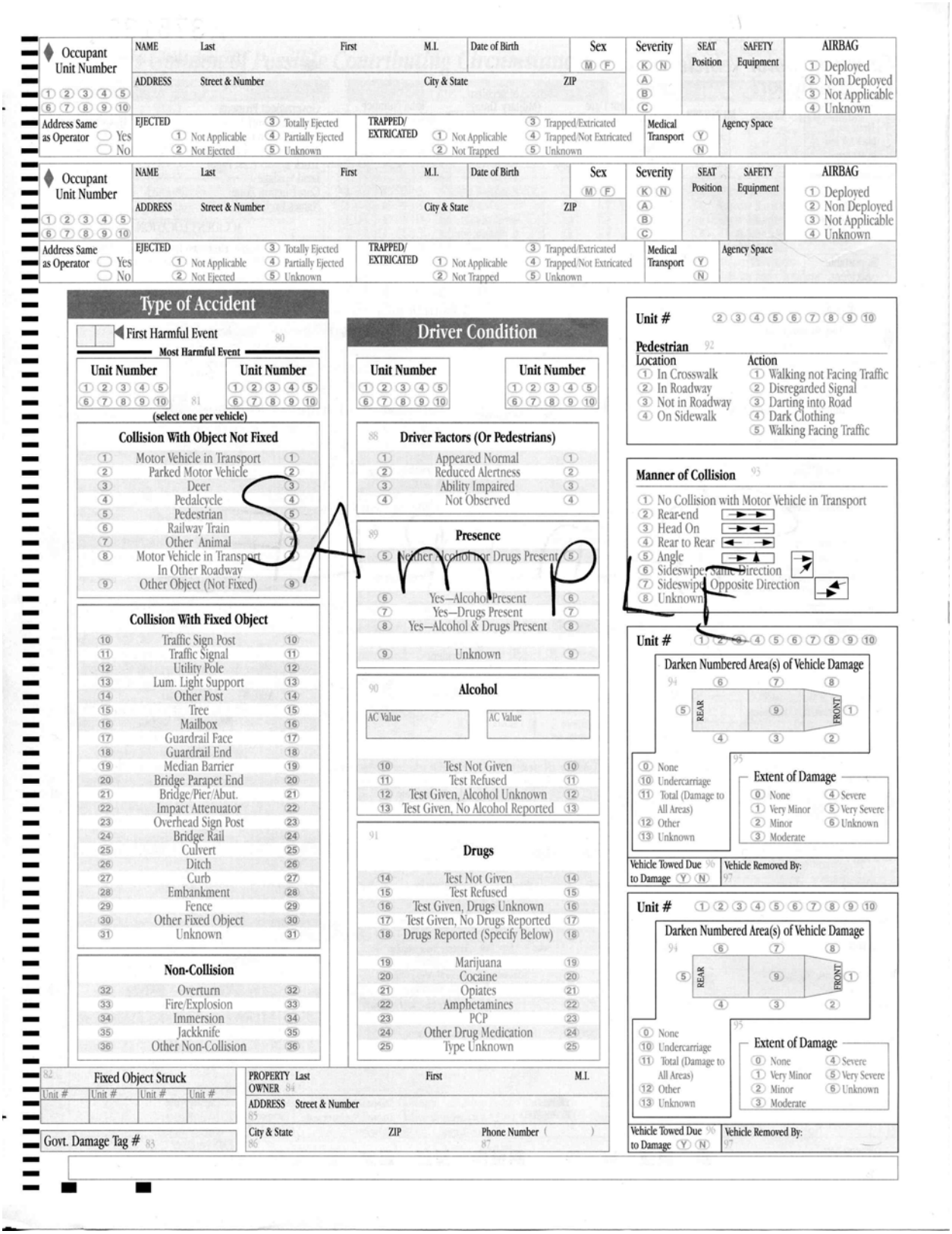
Occupant Unit Number (1 2 3 4 5 6 7 8 9 10)
NAME Last First M.I. | Date of Birth | Sex (M F) | Severity (K N A B C) | SEAT Position | SAFETY Equipment | AIRBAG (1 Deployed, 2 Non Deployed, 3 Not Applicable, 4 Unknown)
ADDRESS Street & Number City & State ZIP

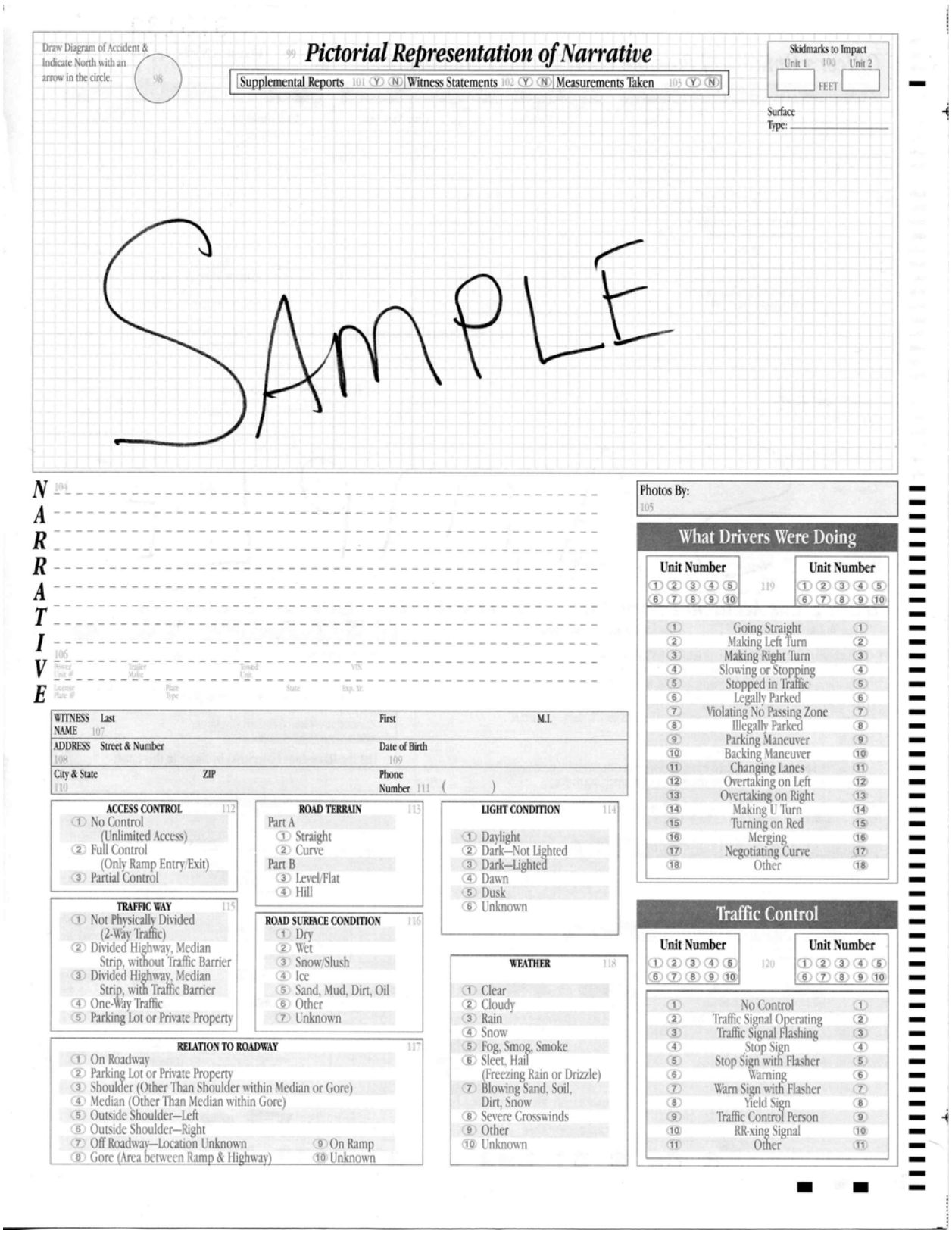
Address Same as Operator (Yes No)
EJECTED (1 Not Applicable, 2 Not Ejected, 3 Totally Ejected, 4 Partially Ejected, 5 Unknown)
TRAPPED/EXTRICATED (1 Not Applicable, 2 Not Trapped, 3 Trapped/Extricated, 4 Trapped/Not Extricated, 5 Unknown)
Medical Transport (Y N) | Agency Space

Location

MV4000 907

EMS Number


Occupant Unit Number
NAME Last First M.I. Date of Birth Sex (M) (F)
Severity (K) (N) (A) (B) (C)
SEAT Position
SAFETY Equipment
AIRBAG (1) Deployed (2) Non Deployed (3) Not Applicable (4) Unknown
ADDRESS Street & Number City & State ZIP
Address Same as Operator (Y) Yes (N) No
EJECTED (1) Not Applicable (2) Not Ejected (3) Totally Ejected (4) Partially Ejected (5) Unknown
TRAPPED/ EXTRICATED (1) Not Applicable (2) Not Trapped (3) Trapped/Extricated (4) Trapped/Not Extricated (5) Unknown
Medical Transport (Y) (N)
Agency Space
Type of Accident
First Harmful Event 80
Most Harmful Event
Unit Number 81
(select one per vehicle)
Collision With Object Not Fixed
(1) Motor Vehicle in Transport
(2) Parked Motor Vehicle
(3) Deer
(4) Pedalcycle
(5) Pedestrian
(6) Railway Train
(7) Other Animal
(8) Motor Vehicle in Transport In Other Roadway
(9) Other Object (Not Fixed)
Collision With Fixed Object
(10) Traffic Sign Post
(11) Traffic Signal
(12) Utility Pole
(13) Lum. Light Support
(14) Other Post
(15) Tree
(16) Mailbox
(17) Guardrail Face
(18) Guardrail End
(19) Median Barrier
(20) Bridge Parapet End
(21) Bridge/Pier/Abut.
(22) Impact Attenuator
(23) Overhead Sign Post
(24) Bridge Rail
(25) Culvert
(26) Ditch
(27) Curb
(28) Embankment
(29) Fence
(30) Other Fixed Object
(31) Unknown
Non-Collision
(32) Overturn
(33) Fire/Explosion
(34) Immersion
(35) Jackknife
(36) Other Non-Collision
Driver Condition
Driver Factors (Or Pedestrians) 88
(1) Appeared Normal
(2) Reduced Alertness
(3) Ability Impaired
(4) Not Observed
Presence 89
(5) Neither Alcohol nor Drugs Present
(6) Yes—Alcohol Present
(7) Yes—Drugs Present
(8) Yes—Alcohol & Drugs Present
(9) Unknown
Alcohol 90
AC Value
(10) Test Not Given
(11) Test Refused
(12) Test Given, Alcohol Unknown
(13) Test Given, No Alcohol Reported
Drugs 91
(14) Test Not Given
(15) Test Refused
(16) Test Given, Drugs Unknown
(17) Test Given, No Drugs Reported
(18) Drugs Reported (Specify Below)
(19) Marijuana
(20) Cocaine
(21) Opiates
(22) Amphetamines
(23) PCP
(24) Other Drug Medication
(25) Type Unknown
Unit #
Pedestrian 92
Location (1) In Crosswalk (2) In Roadway (3) Not in Roadway (4) On Sidewalk
Action (1) Walking not Facing Traffic (2) Disregarded Signal (3) Darting into Road (4) Dark Clothing (5) Walking Facing Traffic
Manner of Collision 93
(1) No Collision with Motor Vehicle in Transport
(2) Rear-end
(3) Head On
(4) Rear to Rear
(5) Angle
(6) Sideswipe, Same Direction
(7) Sideswipe, Opposite Direction
(8) Unknown
Darken Numbered Area(s) of Vehicle Damage 94
REAR FRONT
(0) None (10) Undercarriage (11) Total (Damage to All Areas) (12) Other (13) Unknown
Extent of Damage 95
(0) None (1) Very Minor (2) Minor (3) Moderate (4) Severe (5) Very Severe (6) Unknown
Vehicle Towed Due to Damage 96 (Y) (N)
Vehicle Removed By: 97
Fixed Object Struck 82
Unit # Unit # Unit # Unit #
Govt. Damage Tag # 83
PROPERTY OWNER Last First M.I. 84
ADDRESS Street & Number 85
City & State 86 ZIP Phone Number ( ) 87
SAMPLE



Draw Diagram of Accident & Indicate North with an arrow in the circle. 98

99 **Pictorial Representation of Narrative**

Supplemental Reports 101 (Y) (N) | Witness Statements 102 (Y) (N) | Measurements Taken 103 (Y) (N)

Skidmarks to Impact
Unit 1 | 100 | Unit 2
FEET

Surface Type:

SAMPLE

NARRATIVE 104

106 Power Unit # | Trailer Make | Towed Unit | VIN
License Plate # | Plate Type | State | Exp. Yr.

Photos By: 105

What Drivers Were Doing

Unit Number		Unit Number
1 2 3 4 5 6 7 8 9 10	119	1 2 3 4 5 6 7 8 9 10
1 Going Straight		1
2 Making Left Turn		2
3 Making Right Turn		3
4 Slowing or Stopping		4
5 Stopped in Traffic		5
6 Legally Parked		6
7 Violating No Passing Zone		7
8 Illegally Parked		8
9 Parking Maneuver		9
10 Backing Maneuver		10
11 Changing Lanes		11
12 Overtaking on Left		12
13 Overtaking on Right		13
14 Making U Turn		14
15 Turning on Red		15
16 Merging		16
17 Negotiating Curve		17
18 Other		18

Traffic Control

Unit Number		Unit Number
1 2 3 4 5 6 7 8 9 10	120	1 2 3 4 5 6 7 8 9 10
1 No Control		1
2 Traffic Signal Operating		2
3 Traffic Signal Flashing		3
4 Stop Sign		4
5 Stop Sign with Flasher		5
6 Warning		6
7 Warn Sign with Flasher		7
8 Yield Sign		8
9 Traffic Control Person		9
10 RR-xing Signal		10
11 Other		11

WITNESS NAME 107	Last	First	M.I.
ADDRESS 108	Street & Number	Date of Birth 109	
City & State 110	ZIP	Phone Number 111 ( )	

ACCESS CONTROL 112
1 No Control (Unlimited Access)
2 Full Control (Only Ramp Entry/Exit)
3 Partial Control

ROAD TERRAIN 113
Part A
1 Straight
2 Curve
Part B
3 Level/Flat
4 Hill

LIGHT CONDITION 114
1 Daylight
2 Dark–Not Lighted
3 Dark–Lighted
4 Dawn
5 Dusk
6 Unknown

TRAFFIC WAY 115
1 Not Physically Divided (2-Way Traffic)
2 Divided Highway, Median Strip, without Traffic Barrier
3 Divided Highway, Median Strip, with Traffic Barrier
4 One-Way Traffic
5 Parking Lot or Private Property

ROAD SURFACE CONDITION 116
1 Dry
2 Wet
3 Snow/Slush
4 Ice
5 Sand, Mud, Dirt, Oil
6 Other
7 Unknown

WEATHER 118
1 Clear
2 Cloudy
3 Rain
4 Snow
5 Fog, Smog, Smoke
6 Sleet, Hail (Freezing Rain or Drizzle)
7 Blowing Sand, Soil, Dirt, Snow
8 Severe Crosswinds
9 Other
10 Unknown

RELATION TO ROADWAY 117
1 On Roadway
2 Parking Lot or Private Property
3 Shoulder (Other Than Shoulder within Median or Gore)
4 Median (Other Than Median within Gore)
5 Outside Shoulder–Left
6 Outside Shoulder–Right
7 Off Roadway–Location Unknown
8 Gore (Area between Ramp & Highway)
9 On Ramp
10 Unknown

A375130

Officer's Opinion of Possible Contributing Circumstances

A E U

Document Number Override 121

Driver Factors

Unit Number	Unit Number
1 2 3 4 5 / 6 7 8 9 10 122	1 2 3 4 5 / 6 7 8 9 10
N/A	N/A

1	Exceeding Speed Limit	1
2	Speed Too Fast/Condition	2
3	Fail to Yield Right of Way	3
4	Inattentive Driving	4
5	Following Too Close	5
6	Improper Turn	6
7	Left of Center	7
8	Disregarded Traffic Control	8
9	Improper Overtaking	9
10	Unsafe Backing	10
11	Failure to Have Control	11
12	Driver Condition	12
13	Physically Disabled	13
14	Other	14

Vehicle Factors

Unit Number	Unit Number
1 2 3 4 5 / 6 7 8 9 10 123	1 2 3 4 5 / 6 7 8 9 10
N/A	N/A

1	Brake System	1
2	Tires	2
3	Steering System	3
4	Turn Signals	4
5	Head Lamps	5
6	Stop Lamps	6
7	Tail Lamps	7
8	Disabled in Prior Accident	8
9	Other Disabled	9
10	Mirrors	10
11	Suspension System	11
12	Other	12

Highway Factors

Unit Number	Unit Number
1 2 3 4 5 / 6 7 8 9 10 124	1 2 3 4 5 / 6 7 8 9 10
N/A	N/A

1	Snow, Ice or Wet	1
2	Narrow Shoulder	2
3	Low Shoulder	3
4	Soft Shoulder	4
5	Loose Gravel	5
6	Rough Pavement	6
7	Debris From Prior Accident	7
8	Other Debris	8
9	Sign Obscured or Missing	9
10	Narrow Bridge	10
11	Construction Zone	11
12	Visibility Obscured	12
13	Other	13

OFFICER INFORMATION

Last 125 | First | M.I.

Law Enforcement Agency Address 126

City & State 127 | ZIP

Phone Number ( ) 128

Agency # 129 | Enforcement Agency 130 | Officer ID # 131

Date Notified			Time Notified (Military Time)		Time Arrived (Military Time)		Date of Report		
MONTH	DAY	YEAR	HOUR	MIN.	HOUR	MIN.	MONTH	DAY	YEAR
Jan							Jan		
Feb	132		134		135		Feb	133	
Mar	0 0	0 0	0 0	0 0	0 0	0 0	Mar	0 0	0 0
Apr	1 1	1 1	1 1	1 1	1 1	1 1	Apr	1 1	1 1
May	2 2	2 2	2 2	2 2	2 2	2 2	May	2 2	2 2
June	3 3	3 3			3 3	3 3	June		3 3
July	4 4	4 4			4 4	4 4	July	4 4	4 4
Aug	5 5	5 5			5 5	5 5	Aug	5 5	5 5
Sept	6 6	6 6			6 6	6 6	Sept	6 6	6 6
Oct	7 7	7 7			7 7	7 7	Oct	7 7	7 7
Nov	8 8	8 8	8 8	8 8	8 8	8 8	Nov	8 8	8 8
Dec	9 9	9 9	9 9	9 9	9 9	9 9	Dec	9 9	9 9

Truck & Bus Accident Information

(This Section Must Be Completed for Each Truck or Bus Involved in this Accident.).

When To Use This Section: *Did the accident involve:. . .* 136

Part A
- A truck or truck combination > 10,000 lbs GVWR/GCWR? (Y) (N)
- Any vehicle displaying a hazardous materials placard? (Y) (N)
- A vehicle designed to carry 9 or more people, including the driver? (Y) (N)

STOP! *If all the responses to Part A are "NO" do not complete this Truck & Bus Accident Information Section. If there are any "YES" answers, continue to Part B.*

Part B
- Any person who was fatally injured? (Y) (N)
- Any injured person who required transport for immediate medical treatment? (Y) (N)
- One or more vehicles towed from the scene due to disabling damage? (Y) (N)

STOP! *If all the responses to Part B are "NO" do not continue. If there are any "YES" answers, please complete this Truck & Bus Accident Information Section . . .*

Hazardous Material Information

137

- Hazardous Material Class Numbers (1-2digit):
- Hazardous Material "UN" Numbers (4 digit):
- Hazardous Material Placard Displayed? (Y) (N)
- Hazardous Cargo was Released? (Y) (N)

List the Hazardous Material(s) by Name in this Load:

List the Name(s) of Released Hazardous Material(s):

Carrier Information

- Interstate Carrier? (Y) (N) 138

Carrier Name 139

Carrier Identification Numbers

US DOT 140	LC
ICC MC	IC

Carrier Address 142

Source: 141
- Vehicle Side
- Shipping Papers
- Trip Manifest
- Driver
- Log Book

Vehicle Information

Gross Vehicle Weight Rating 143 LBS | Total # of Axles 144

Vehicle Configuration 145

1 Bus; 2 Single Unit Vehicle; 3 Single unit truck + 3 axles; 4 Truck/Trailer; 5 Truck/Tractor; 6 Tractor/Semi-Trailer; 7 Tractor/Doubles; 8 Tractor/Triples; 9 Unknown Heavy Truck; 10 Log Truck

SEQUENCE OF EVENTS FOR THIS VEHICLE 146 *(Mark a total of one to four events in the order that they occurred.)*

1 2 3 4 Ran off Road	1 2 3 4 Collision Involving Motor Vehicle in Transp.
1 2 3 4 Jackknife	1 2 3 4 Collision Involving Parked Motor Vehicle
1 2 3 4 Overturn (Rollover)	1 2 3 4 Collision Involving Train
1 2 3 4 Downhill Runaway	1 2 3 4 Collision Involving Pedalcycle
1 2 3 4 Cargo Loss or Shift	1 2 3 4 Collision Involving Animal
1 2 3 4 Explosion or Fire	1 2 3 4 Collision Involving Fixed Object
1 2 3 4 Separation of Units	1 2 3 4 Collision Involving Other Object
1 2 3 4 Collision Involving Pedestrian	1 2 3 4 Other

Cargo Body Type 147

1 Bus; 2 Van/Enclosed box; 3 Cargo Tank; 4 Flatbed; 5 Dump; 6 Concrete Mixer; 7 Auto Transporter; 8 Garbage/Refuse; 9 Other; 10 Log Truck