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EVALUATION OF 2005 ALABAMA CRASH DATA REPORTED TO MCMIS CRASH FILE

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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. 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 Alabama.

MCMIS Crash File records were matched to the Alabama Crash file to determine the nature and extent of underreporting. Overall, it appears that Alabama is reporting 76.0 percent of crash involvements that should be reported to the MCMIS Crash file.

Based on crash severity, the reporting rate is 91.4 percent for fatal crashes, 76.4 percent for injured/transported crashes, and 75.0 percent for towed/disabled crashes. It appears that Alabama uses definitions for injury severity that differ from the conventional KABCOU scale. The reporting rate for large trucks appears greater than the rate for medium trucks. Among reporting agencies, state troopers had higher reporting rates than either police departments or sheriff's offices.

Except for a few variables as noted, missing data rates are generally low. Some inconsistencies are noted between the body style variables in the Alabama PAR file and the MCMIS Crash file.

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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)

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Evaluation of 2005 Alabama 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 22.] 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 Alabama. In recent years, Alabama has reported from 3,550 to 4,500 involvements annually to the MCMIS Crash file. According to the 2002 Vehicle Inventory and Use Survey, Alabama had over 99,000 trucks registered, ranking 23rd among the states and accounting for 1.8 percent of all truck registrations [23]. Alabama is the 23rd largest state by population [24] and generally ranks 13th in terms of the number of annual truck fatal involvements [25].

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

1. The complete police accident report file (PAR file hereafter) from Alabama was obtained for the most recent year available, 2005. This file was processed to identify all cases that qualified for reporting to the MCMIS Crash file.

2. All cases in the Alabama 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 Alabama.

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 Alabama's statewide files as of June 2007 were used in this analysis. The 2005 PAR file contains the computerized records of 264,973 vehicles involved in 144,437 crashes that occurred in Alabama.

2. Data Preparation

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

2.1 MCMIS Crash Data File

The 2005 MCMIS Crash file as of August 21, 2006 was used to identify records submitted from Alabama. For calendar year 2005 there were 3,841 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 for accident number, accident date, and driver license number, even though their vehicle sequence numbers were perhaps different. One would not expect two records for the same driver within a given accident. No duplicates of this type were found. Thus, all 3,841 MCMIS cases were considered unique.

2.2 Alabama Police Accident Report File

The Alabama PAR data for 2005 (as of June 2007) was obtained from the state of Alabama. The data were stored on a 3490 18-track tape cartridge in one raw text file, representing Accident, Vehicle, Driver/Pedestrian, and Injured Occupant records. Extracting the data file from the cartridge required locating the correct equipment to read the cartridge. The data were written on the tape in formats called EBCDIC and packed hexadecimal. It was necessary to convert the data to ASCII formats in order to use the data with the PC-based database and statistical software we use. In addition, processing was necessary to construct accident and unit level files that could be linked together. Some difficulties were encountered during the conversion process, but the data elements required for conducting a MCMIS evaluation were eventually extracted successfully.

The large file was then split into separate accident, vehicle, and person-level data files. The files contain records for 144,437 crashes involving 264,973 vehicles. Data for the PAR file are coded from the Alabama Uniform Police Accident Report (form AST-27) 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 5090980 and 5-90980, for example). However, cases were also examined to determine if there were any records

that contained identical case number, time, place and vehicle/driver variables, even though their vehicle sequence numbers were 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, vehicle identification number (VIN), and driver age. Since driver license number was not available in the Alabama data, we were limited to using age. It is possible, but unlikely, that two drivers in the same accident would have the same age.

Based on the above algorithm, a total of ten duplicate records were found, representing five unique occurrences of the examined variables. Further examination of the pairs revealed that one pair may not be a duplicate, since vehicle make, model, and other vehicle-specific variables differed, even though VIN and age were identical. These records were not considered duplicates. The other four cases appeared to be duplicates, since all but a couple of variables were identical. In these instances, one record may have been intended to replace the original case, and resulted in the additional case when the original was not deleted. Thus, one record of each pair was deleted, resulting in 264,969 unique vehicle records in the PAR file.

3. Matching Process

The next step involved matching records from the Alabama PAR file to corresponding records from the MCMIS file. After removing the duplicate cases, there were 3,841 Alabama records from the MCMIS file available for matching, and 264,969 records from the Alabama PAR file. All records from the Alabama 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 Alabama PAR data, and Report Number in the MCMIS Crash file, are obvious first choices. Indeed, there is a correspondence between the two numbers, and case number was never unrecorded in either file. Accident Number in the Alabama PAR file is a seven-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 (AL, in this case), followed by nine numeric characters, and one alphabetic character. Since seven of the digits were consistent with the PAR Accident Number, the last seven digits of the MCMIS Report Number were extracted, and 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 Road and Reporting Officer's Identification number. Since Officer ID was not present in the PAR data, it could not be used. City was unrecorded in 23.7 percent of PAR cases, and was unknown in 59.6 percent of MCMIS cases.

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. Of these, only VIN was present in the PAR file.

It was unrecorded 2.9 percent of the time in the PAR data and was unknown in 2.1 percent of MCMIS cases. In addition to VIN, the Driver Age variable was used in the match, since it was the only other plausible PAR variable that could possibly distinguish one vehicle from another within the same crash.

Since many of the common match variables were not available in the Alabama PAR data, we were limited to using those mentioned above. Since it is possible that two drivers in the same accident have the same age, no matches were allowed using only this vehicle-level variable.

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 with missing values on the match variables. The first match included the variables case number, crash date (month, day), crash time (hour, minute), county, city, road system, road code, VIN, and driver age. The second match step dropped city but retained the other variables. The third match step matched on case number, crash date, hour, county, road system, road code, and VIN, dropping city, minute, and driver age. After some experimentation, the fourth match included variables case number, date, and VIN. Cases in the fourth match were also hand-verified to ensure the match was valid. This process resulted in matching 97.1 percent of the MCMIS records to the PAR file.

See Table 1 for the variables used in each match step along with the number of records matched at each step. Matched records were verified using other variables common to the MCMIS and PAR file as a final check to ensure the match was valid. The above procedure resulted in 3,728 matches, representing 97.1 percent of the 3,841 non-duplicate records reported to MCMIS.

Table 1 Steps in MCMIS/Alabama PAR File Match, 2005

Step	Matching variables	Cases matched
Match 1	Case number, crash date, crash time, county, city, road system, road code, VIN, and driver age	1,203
Match 2	Case number, crash date, crash time, county, road system, road code, VIN, and driver age	1,958
Match 3	Case number, crash date, crash hour, county, road system, road code, and VIN	512
Match 4	Case number, crash date, and VIN	55
Total cases matched		3,728

Figure 1 shows the flow of cases in the matching process. Of the 3,728 matched cases, 298 are not reportable and 3,430 are reportable. The method of identifying cases reportable to the MCMIS Crash file is discussed in the next section.

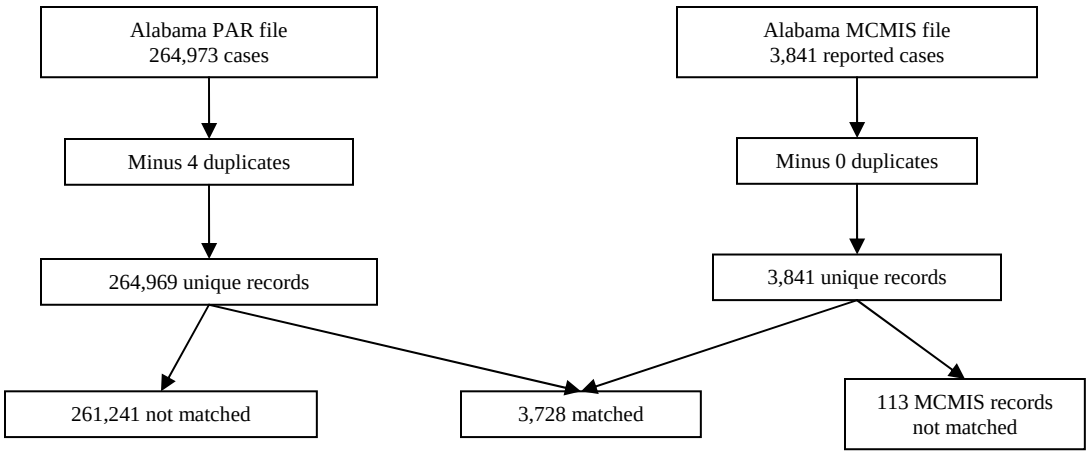

Figure 1 Case Flow in MCMIS/Alabama Crash File Match

4. Identifying Reportable Cases

The next step in data preparation is to identify records in the Alabama 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 Alabama. 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 the instruction to the officer to complete that section if the vehicle and crash meets the MCMIS reporting criteria. 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. 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.

Except for identifying qualifying trucks, the process of identifying reportable records, as set out in Table 2 above, is fairly straightforward in the Alabama PAR file, because Alabama crash data includes most of the variables and levels needed to identify reportable cases. Alabama, like many other states, utilizes a Truck/Bus Supplemental Sheet (Appendix B) that officers must complete if any of the involved vehicles meet a specified set of criteria. The instructions on that form match the MCMIS vehicle and crash severity threshold shown in Table 2 fairly closely, except

for a few differences. For example, the current MCMIS criterion for a qualifying bus requires seating for at least 9, including the driver. However, the supplemental form describes the seating criterion for at least 16, including the driver. This is most likely due to the revision date of January 1991 on the supplemental form which describes the old criterion. In addition, the supplemental form makes no reference to GVWR, but describes a qualifying truck as one with six or more tires.

The main PAR form (Appendix B) has a twenty-level "type" variable for identifying vehicle body style, but only two levels refer to trucks. The two levels are "Truck tractor" and "Other truck." Therefore, the codes are not consistent with the usual distinctions made in the vehicle configuration variable in the MCMIS Crash file that identify single unit trucks (SUTs) by number of axles, or tractors by numbers of trailers. It will be shown in Section 6 that the "Other truck" category is generally consistent with SUTs in the MCMIS Crash file. There is an "attachment" variable on the PAR form (Appendix B) and in the PAR file that is similar to a trailering variable that can be used in conjunction with the body style variable to identify bobtails (no attachments) and semitrailers. Buses can be identified by three categories of the "type" variable. Table 3 shows the categories used to identify qualifying vehicles.

Table 3 Relevant Vehicle Body Style Codes on Alabama Accident Report

Truck tractor
Other truck
Commercial bus
School bus
Other bus

In total, there were 11,244 vehicles identified as trucks, buses, or non-trucks displaying a hazardous materials placard in the Alabama PAR file. Table 4 shows the distribution of vehicle type. The great majority of qualifying vehicles are trucks, while about 6.5 percent are buses. As usual, non-trucks displaying a hazmat placard account for a small fraction of qualifying vehicles. The 11,244 eligible vehicles represent 4.2 percent of all 264,969 vehicles in the PAR file. This result is also 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, Alabama PAR File, 2005

Vehicle type	N	%
Trucks	10,471	93.1
Buses	732	6.5
Non-trucks with hazmat placard	41	0.4
Total	11,244	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 Alabama PAR file also has information for assessing the towed and disabled criterion.

The Alabama PAR form (Appendix B) has spaces for recording victim's injury type. Only fatalities (K) and injuries (A, B, C) are recorded. There are no codes for property damage only (O) or unknown (U) injury status. Note that for MCMIS evaluation, this is sufficient information. There is also space to write in the name of the facility taken to and the name of the transporting agency. This provided enough information to determine if a crash involved an injured and transported person. Following the strict sense of the definition, an injured and transported variable was created from the injury severity and transported variables in the Injury 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 transported person satisfied the criterion.

The Alabama crash data includes two sources of information to identify crashes in which a vehicle was towed due to disabling damage. On the police report (Appendix B), the officer circles "Yes" or "No" to indicate if a vehicle was towed away. The second source of information is a damage severity variable with three levels: None visible, Not disabled, and Disabled. It should be noted that these two sources of information are very consistent. That is, 95 percent of the towed vehicles were disabled. 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 4,511 vehicles were reportable to the MCMIS Crash file. Of these, 128 were involved in fatal crashes and 1,850 or about 41 percent were involved in crashes where at least one person was transported for medical attention. Based on the towed and disabled variable described above, it is estimated that 2,533 or about 56 percent of reportable vehicles were involved in crashes where at least one vehicle was towed due to disabling damage.

Table 5 Reportable Records in Alabama Crash File, 2005

Crash type	N	%
Fatal	128	2.8
Injury transported for treatment	1,850	41.0
Vehicle towed due to damage	2,533	56.2
Total	4,511	100.0

5. Factors Associated with Reporting

The procedure described in the previous section identified 4,511 vehicles involved in crashes as reportable to the MCMIS Crash file. The match process described in Section 3 determined that 3,841 unique cases were reported to the MCMIS Crash file, of which 3,728 could be matched to the Alabama PAR data. Of the 3,728 cases that could be matched, 3,430 were determined to meet the MCMIS Crash file reporting criteria. Therefore, of the 4,511 reportable crashes in 2005, Alabama reported 3,430, for an overall reporting rate of 76.0 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 in 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 3,728 MCMIS cases could be matched to the Alabama PAR data, and 3,430 were determined to meet the reporting criteria, the difference, or 298 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 298 vehicles do not meet the crash severity threshold for a MCMIS reportable crash. In addition, 132 vehicles do not meet the vehicle criteria since they are not trucks, buses, or hazmat placarded vehicles. The 157 trucks and 9 buses are qualifying vehicles, but they were involved in crashes in which there were no fatalities, no persons were injured and transported for medical attention, and no vehicles were towed due to disabling damage.

Table 6 Distribution of Non-reportable Vehicles in MCMIS Crash File, Alabama 2005

Vehicle type	Crash severity				
	Fatal	Transported injury	Towed/disabled	Other crash severity	Total
Truck	0	0	0	157	157
Bus	0	0	0	9	9
Other vehicle (not transporting hazmat)	0	0	0	132	132
Total	0	0	0	298	298

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 2005 MCMIS Crash file as of August 21, 2006 was used to identify records submitted from Alabama, so all 2005 cases should have been reported by that date.

Table 7 shows reporting rates according to month of the crash. There appears to be issues related to underreporting in the summer months. In June, July, and August, the rates tend to be lower than average. In July and August, the rates are about 10 percent less than the overall rate. In addition, in June, July, and August, the percentages of total unreported cases are greater than 10 percent. Note that numbers of reportable cases are fairly evenly distributed over the twelve months.

Table 7 Reporting Rate by Accident Month, Alabama 2005

Crash month	Reportable cases	Reporting rate	Unreported cases	% of total unreported cases
January	321	73.5	85	7.9
February	362	83.1	61	5.6
March	367	79.3	76	7.0
April	393	79.9	79	7.3
May	389	81.0	74	6.8
June	393	70.5	116	10.7
July	348	65.5	120	11.1
August	365	65.8	125	11.6
September	360	80.0	72	6.7
October	428	76.2	102	9.4
November	391	77.2	89	8.2
December	394	79.2	82	7.6
Total	4,511	76.0	1,081	100.0

Figure 2 shows the average 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 average number of days that cases were submitted after the 90-day grace period. Negative numbers indicate that on average, cases were submitted within the 90-day grace period for a month. Since all numbers in Figure 2 are negative, the plot shows that on average, Alabama cases were uploaded to the MCMIS Crash file within the 90-day grace period. Even in December, which represents the month in which cases were uploaded the latest, the average latency was -26 days, suggesting that on average, cases were uploaded about a month prior to the end of the grace period.

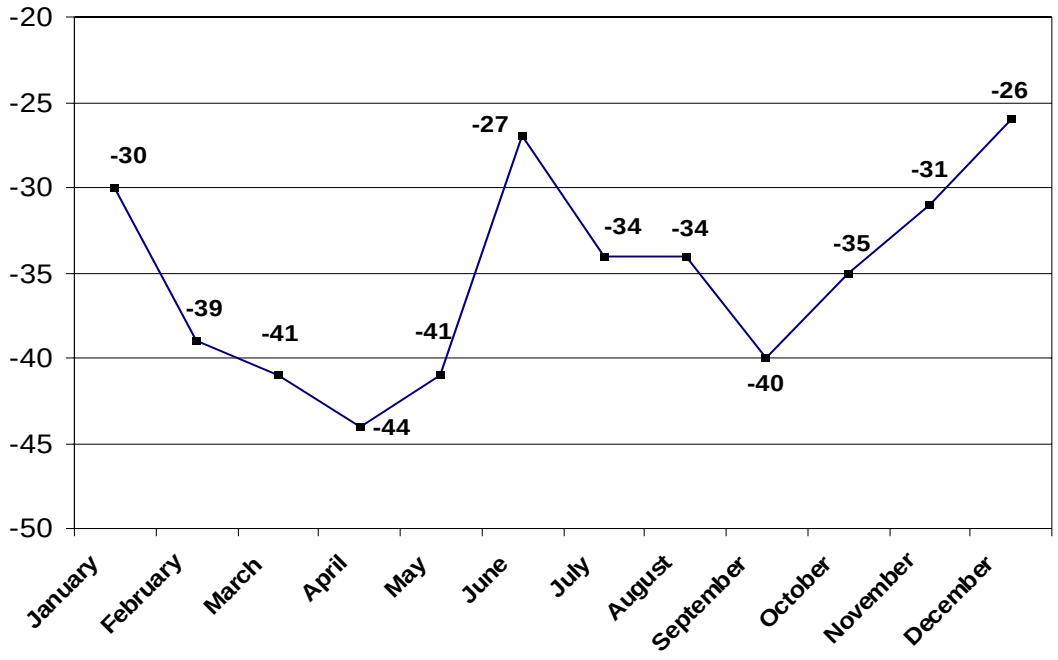

Figure 2 Average Latency (in Days, Minus 90) in Reporting to the MCMIS Crash File, Alabama Reported Cases, 2005

5.3 Reporting Criteria

In this section, reporting is investigated according to variables in the Alabama 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. It is clear that trucks represent the great majority of reportable vehicles. Although 181 reportable buses is small compared to 4,310 trucks, the reporting rates for the two vehicle types are very similar. The overall reporting rate is greatly influenced by the rate for trucks, since most reportable vehicles are trucks. Moreover, trucks represent 94.4 percent of the unreported cases. Note that 20 of the reportable vehicles identified in the Alabama PAR file are neither trucks nor buses. None of these 20 vehicles were reported to the MCMIS Crash file.

Table 8 Reporting Rate by Vehicle Type, Alabama 2005

Vehicle type	Reportable cases	Reporting rate	Unreported cases	% of total unreported cases
Truck	4,310	76.3	1,020	94.4
Bus	181	77.3	41	3.8
Transporting hazardous materials	20	0.0	20	1.9
Total	4,511	76.0	1,081	100.0

Table 9 shows reporting rates in greater detail according to vehicle body type. The body type variable in the Alabama PAR file has only two categories for identifying medium and heavy trucks. There are no categories for single unit trucks (SUTs) with two axles and six tires or for SUTs with three or more axles. When discussing data quality in Section 6, some evidence will be provided that SUTs are likely coded in the "Other truck" category. The rate for truck tractors is 84.2 percent, which is considerably higher than the 61.5 percent rate for other trucks. These two configurations account for 94.4 percent of unreported cases, coinciding with results in Table 8. School buses are reported at 88.3 percent, while the rate for commercial buses is 74.5 percent and the rate for other buses is 52.8 percent. Buses represent a small fraction of reportable cases. The 20 reportable hazmat placarded vehicles consist of autos, pickups, vans, farm machines, and trains. Hazmat placarded trains most likely do not qualify as reportable to the MCMIS Crash file under the definition provided in Table 2, but there were only five such cases, and Alabama codes trains in this variable. As shown in Tables 8 and 9, none of the hazmat placarded vehicles were reported.

Table 9 Reporting Rate by Detailed Vehicle Body Style, Alabama 2005

Vehicle body type	Reportable cases	Reporting rate	Unreported cases	% of total unreported cases
Auto	4	0.0	4	0.4
Pickup	3	0.0	3	0.3
Van	3	0.0	3	0.3
Truck tractor	2,812	84.2	444	41.1
Other truck	1,498	61.5	576	53.3
Commercial bus	51	74.5	13	1.2
School bus	94	88.3	11	1.0
Other bus	36	52.8	17	1.6
Farm machine	4	0.0	4	0.4
Train	5	0.0	5	0.5
Other	1	0.0	1	0.1
Total	4,511	76.0	1,081	100.0

The Alabama PAR file has an "attachments" variable which describes trailers, making it possible to identify tractor semitrailers, tractor doubles, and bobtails (no attachment). Table 10 shows reporting rates for truck combinations and trucks with no trailers for trucks that could be identified using the body type variable in combination with the attachments variable. Tractors pulling one or two trailers have the highest rates, followed by bobtails, and then other trucks.

These findings are consistent with those obtained from previous MCMIS studies showing that large trucks are more likely to be reported. Note that other trucks have the lowest reporting rate at 61.1 percent, and also the highest percentage of unreported cases at 57.7 percent.

Table 10 Reporting Rate by Body Style and Trailer, Alabama 2005

Vehicle body type	Reportable cases	Reporting rate	Unreported cases	% of total unreported cases
Tractor/no trailer (bobtail)	124	73.4	33	3.6
Tractor/semi-trailer	2,275	85.0	342	37.7
Tractor/double	55	83.6	9	1.0
Other truck/no trailer	1,346	61.1	523	57.7
Total	3,800	76.1	907	100.0

Along with vehicle type, crash severity is another characteristic of a crash that can be considered when determining if a crash meets the threshold for reporting to the MCMIS Crash file. Previous MCMIS evaluations have shown that serious injury crashes tend to be reported at a higher rate than those involving less injury. Table 11 shows reporting rates by crash severity criteria. Even though fatal crashes represent a small fraction of reportable cases, the reporting rate is 91.4 percent. The reporting rate for the injured/transported criterion is 76.4 percent, and the rate for the towed/disabled criterion is 75.0 percent. Therefore, the rates for these two criteria do not differ greatly. However, as shown in Table 11, the total percentage of unreported cases is 58.6 percent for the towed/disabled criterion, and due to the large numbers of reportable and unreported cases, it largely influences the overall rate of 76.0 percent.

Table 11 Reporting Rate by Crash Severity, Alabama 2005

Crash severity	Reportable cases	Reporting rate	Unreported cases	% of total unreported cases
Fatal	128	91.4	11	1.0
Injured/Transported	1,850	76.4	437	40.4
Towed/Disabled	2,533	75.0	633	58.6
Total	4,511	76.0	1,081	100.0

Table 12 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 11. Alabama's definitions of A, B, and C-injuries, as shown, differ from the usual KABCO definitions and may result in the large number of reportable A-injuries. However, the reporting rate for A-injury involvements is about 10 percent higher than the rates for B or C-injuries.

Table 12 Reporting Rate by Detailed Injury Severity, Alabama 2005

Crash severity	Reportable cases	Reporting rate	Unreported cases	% of total unreported cases
Killed (K)	128	91.4	11	1.0
Visible or carried from scene (A)	1,360	79.3	282	26.1
Bruise/abrasion swelling (B)	187	68.4	59	5.5
Not visible-has pain/faint (C)	473	69.1	146	13.5
Other	2,363	75.3	583	53.9
Total	4,511	76.0	1,081	100.0

5.4 Reporting Agency and Area

Reporting rates may vary by geographic location because of differing work loads of police agencies and for other reasons. Previous studies have sometimes shown that heavily populated areas with high work loads tend to have lower reporting rates. Table 13 shows reporting rates for the top twelve counties in Alabama, ranked in terms of the number of reportable cases. There is some association between the rank order in the number of reportable cases and the reporting rate. Jefferson County, which includes Birmingham, had almost 70 percent more reportable cases than the next highest, but also one of the lower reporting rates at 64.2 percent. The top twelve counties accounted for 54.2 percent of all reportable cases, but 62.4 percent of the unreported cases. The remaining 55 counties accounted for 45.8 percent of the reportable cases, but only 37.6 percent of unreported cases.

Table 13 Reporting Rate by County, Alabama 2005

County	Reportable cases	Reporting rate	Unreported cases	% of total unreported cases
Jefferson	547	64.2	196	18.1
Mobile	328	72.0	92	8.5
Tuscaloosa	240	77.1	55	5.1
Montgomery	239	69.9	72	6.7
Madison	197	72.1	55	5.1
Shelby	159	76.1	38	3.5
Baldwin	144	68.1	46	4.3
Cullman	136	80.1	27	2.5
St. Clair	129	79.1	27	2.5
Talladega	112	82.1	20	1.9
Walker	110	81.8	20	1.9
Morgan	105	74.3	27	2.5
Top 12 counties	2,446	72.4	675	62.4
Other counties	2,065	80.3	406	37.6
Total	4,511	76.0	1,081	100.0

Previous studies have also shown that reporting rates tend to vary by the type of reporting agency. Different agencies have different policing responsibilities, training, and experience. Table 14 shows reporting rates for local police, county sheriffs, and state troopers. State troopers

covered the greatest number of reportable cases (2,459, 54.5 percent) and also had the highest reporting rate, at 83.0 percent. Local police covered 44.1 percent, 68.5 percent of which were actually reported to the MCMIS Crash file. County sheriffs covered the fewest, only 61, and 39.3 percent were reported to MCMIS. It is likely that the few cases covered by county sheriffs is related to the low reporting rate. With only 61 cases, county sheriffs averaged fewer than one reportable case per county. Comparing the rates for local police and state troopers, differences in training and the focus of enforcement might explain the difference in reporting rates.

Table 14 Reporting Rate by Reporting Agency, Alabama 2005

Reporting agency	Reportable cases	Reporting rate	Unreported cases	% of total unreported cases
Police	1,990	68.5	626	57.9
Sheriff	61	39.3	37	3.4
Trooper	2,459	83.0	418	38.7
Other	1	100.0	0	0.0
Total	4,511	76.0	1,081	100.0

5.5 Truck/Bus Fire or Explosion

Fire/explosion is coded at the crash level on the crash report as one of the first harmful events in a crash. Table 15 shows the reporting rate according to fire or explosion for trucks and buses. There were 28 fires in reportable cases for trucks, of which all but six were reported, for a reporting rate of 78.6 percent. This is essentially identical to the overall rate for trucks of 76.3 percent. Among buses, there were no fires among reportable cases, so no comparison was appropriate.

Table 15 Reporting Rate by Fire/explosion, Alabama 2005

First harmful event	Reportable cases	Reporting rate	Unreported cases	% of total unreported cases
Truck				
Fire/explosion	28	78.6	6	0.4
Other	4,282	76.3	1,014	72.3
Bus				
Fire/explosion	0	NA	0	0.0
Other	181	77.3	41	2.9
Total	4,491	76.4	1,061	75.6

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 Alabama Crash file and in the MCMIS Crash file.

Inconsistencies may indicate errors in translating information recorded on the crash report to the values in the MCMIS Crash file.

Table 16 shows missing data rates for selected, important variables in the MCMIS Crash file. 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. Driver license class is missing for 99.9 percent of cases, even though it is collected on the Alabama Uniform Traffic Accident Report. GVWR class is missing for 20.8 percent of the cases. Driver date of birth and license number, and vehicle license number and state are not recorded in from 4.4 percent to 5.2 percent of the cases. Three of the four event variables are missing for 70.2 to 97.6 percent of cases, though this is not necessarily an indication of a problem, since most crashes consist of a single impact.

Table 16 Missing Data Rates for Selected MCMIS Crash File Variables, Alabama, 2005

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	0.1
Accident hour	0.0	Event one	<0.1
Accident minute	0.0	Event two	70.2
County	0.0	Event three	89.9
Body type	0.2	Event four	97.6
Configuration	0.3	Number of vehicles	0.0
GVWR class	20.8	Road access	0.0
DOT number *	1.8	Road surface	0.1
Carrier state	0.0	Road trafficway	0.0
Citation issued	0.0	Towaway	0.0
Driver date of birth	4.4	Truck or bus	0.0
Driver license number	5.2	Vehicle license number	4.7
Driver license state	5.1	Vehicle license state	4.7
Driver license class	99.9	VIN	2.1

Variable	Percent unrecorded	Variable	Percent unrecorded
Driver license valid	0.0	Weather	0.1

* Based on cases where the carrier is coded interstate.

Hazardous materials variable	Percent unrecorded
Hazardous materials placard	3.3
Percentages of hazmat placarded vehicles only:	
Hazardous cargo release	0.0
Hazardous materials class (1-digit)	8.5
Hazardous materials class (4-digit)	16.9
Hazardous materials name	83.1

There were 71 vehicles coded as displaying a hazmat placard. The table above shows information about the recording of hazmat variables only for those vehicles coded with a hazmat placard. The 1-digit hazmat class variable was missing in only 8.5 percent, but the 4-digit class variables was unrecorded in 16.9 percent, and the hazmat name was not recorded in 83.1 percent of hazmat records.

We also compared the values of variables in the MCMIS Crash file with the values of comparable variables in the Alabama 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 17 shows the coding of vehicles in the MCMIS Crash file and the record as it appears in the Alabama Crash file. As noted above, the vehicle type variable in the Alabama crash file only distinguishes truck tractors and other trucks. It appears that truck tractors is used for all tractor combinations, including bobtails (no trailer) and the “other truck” code is used for all straight truck configurations. But Alabama also has a Truck/Bus Supplemental Sheet, to capture data for crashes that qualify for reporting to MCMIS. Data from that supplemental form was not supplied for evaluation, so the comparison here is between vehicle type as recorded on the main Alabama accident report and as reported to the MCMIS Crash data. With that qualification, vehicle type is generally consistent between the two files, though it is difficult to be sure because the code levels for vehicle configuration are not compatible. But some cases are clearly inconsistent. There was one case in which a vehicle was reported to the MCMIS Crash file as a bus, but identified as a truck tractor in the Alabama data. There were also 15 and 16 cases coded as truck tractors in the Alabama data, but as two-axle SUTs and three-plus axle SUTs respectively in the MCMIS Crash data. There were also 29 cases in which a vehicle was reported to MCMIS as a tractor-semitrailer but recorded as an “other truck” in the Alabama data. Overall, counting only cases that are clearly inconsistent, 3.0 percent of the records are inconsistent on vehicle type.

Table 17 Vehicle Configuration in Alabama and MCMIS Crash Files, 2005

Vehicle configuration			
MCMIS Crash file	Alabama Crash File	N	%
Bus (seats>15,incl dr)	Auto, pickup, van	6	0.2
	Truck tractor	1	0.0
	Bus (Comm, school, other bus)	142	3.8
SUT, 2-axle, 6 tire	Auto, pickup, van	42	1.1
	Truck tractor	15	0.4
	Other truck	449	12.0
	Other	4	0.1
SUT, 3+ axles	Auto, pickup, van	11	0.3
	Truck tractor	16	0.4
	Other truck	396	10.6
	School bus	1	0.0
Truck trailer	Pickup	35	0.9
	Truck tractor	7	0.2
	Other truck	53	1.4
	Road equipment	1	0.0
Truck tractor (bobtail)	Auto, pickup	2	0.1
	Truck tractor	70	1.9
	Other truck	2	0.1
Tractor/semi-trailer	Auto, pickup, van	30	0.8
	Truck tractor	2,328	62.4
	Other truck	29	0.8
	Bus (Comm, school)	3	0.1
Tractor/double	Van	1	0.0
	Truck tractor	49	1.3
	Other truck	1	0.0
Tractor/triple	Other truck	1	0.0
	School bus	1	0.0
Unk heavy truck>10,000	Truck tractor	3	0.1
	Other truck	18	0.5
Unknown	Other	11	0.3
Total		3,728	100.0

There was also one case in which the number of fatal injuries in the crash differed between the two files. Table 18 shows that of the 3,728 matched cases, there was only one case in which the number of fatalities differed. In that case, the Alabama crash file recorded one fatality, while the MCMIS Crash file record indicated that no person was killed. This may be a case where the record was changed in the state crash file, but the change was not reflected in the MCMIS file.

Table 18 Comparison of Fatals in Crash in MCMIS and Alabama Crash Files, 2005

Number of fatals in crash			
MCMIS Crash file	Alabama Crash file	N	%
0	0	3,600	96.6
0	1	1	0.0
1	1	113	3.0
2	2	11	0.3
3	3	3	0.1
Total		3,728	100.0

7. Summary and Discussion

This report is an evaluation of reporting to the MCMIS Crash file by the state of Alabama in 2005. Records were matched between the Alabama PAR file and the MCMIS Crash file using variables common to both files with low percentages of missing data. The MCMIS file appears to contain no duplicate records. After removing four duplicate records from the PAR file, 264,969 unique records remained for matching to 3,841 records from the MCMIS file. In total, 3,728, or 97.1 percent of the MCMIS records were matched (Figure 1).

The next step in the evaluation process focused on identifying reportable cases using the Alabama PAR file according to established vehicle and crash severity criteria. Overall, 11,244 vehicles were identified as qualifying trucks, buses, or non-trucks displaying a hazmat placard. Of qualifying vehicles, 93.1 percent are trucks, 6.5 percent are buses, and 41, or 0.4 percent, are non-trucks displaying a hazmat placard (Table 4).

After identifying qualifying vehicles, it is necessary to determine which of these vehicles meet the crash severity criteria for reporting to MCMIS. The Alabama Injury file has an injury variable and a transported variable. These two variables were used to create an injured and transported variable at the crash level. The definitions that Alabama uses for describing injury severity differ from the usual KABCOU definitions, but fatal involvements and crashes involving A, B, and C-injuries could be identified. All fatal involvements qualify for reporting. In conjunction with the injury variable, the transported variable made it possible to identify MCMIS-reportable crashes in the strict sense of the definition. In summary, the injured and transported criterion was satisfied if at least one person in the crash had injury severity equal to A or B or C, and the transported variable indicated that the person was transported for medical treatment.

With respect to the towed and disabled criterion, the Alabama PAR file has sufficient information contained in two separate variables. A ‘removed’ variable indicates if a vehicle was towed away. A damage severity variable indicates if damage was disabling or not.. It should be noted that these two sources of information are very consistent. That is, 95 percent of the towed vehicles were disabled. 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.

Using the procedure described above resulted in identification of 4,511 vehicles involved in crashes that were reportable to the MCMIS Crash file. Of these, 128 were involved in fatal crashes, 1,850 were involved in injury crashes where at least one person was transported for medical attention, and 2,533 were involved in crashes where at least one vehicle was towed due to disabling damage. Of the 3,728 records that were matched between the Alabama PAR file and the MCMIS Crash file, 3,430 were determined to meet the MCMIS Crash file reporting criteria. Therefore, the overall reporting rate in Alabama in 2005 is estimated at 3,430/4,511 = 76.0 percent. The difference between 3,728 and 3,430 suggests that 298 cases were overreported to the MCMIS Crash file. According to this analysis, all 298 cases did not meet the crash severity threshold for reporting to MCMIS (Table 6).

Since the overall reporting rate is estimated at 76.0 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.

Reporting rates tended to be lower in the summer months of June, July and August. The rates in July and August are about 10 percent less than the overall total of 76.0 percent. Other than the summer months, the rates do not vary greatly by month. In addition, June, July, and August are months where the percentage of total unreported cases exceeds 10 percent. The lag time between crash date and the date crashes were uploaded to the MCMIS Crash file were within the 90-day grace period for all twelve months in Alabama. Even in December, which represents the month in which cases were generally uploaded the latest, cases were uploaded about one month prior to the end of the grace period. In April, which represents the month with the shortest lag time, cases were uploaded about 44 days before the end of the grace period.

The body style variable in the Alabama PAR file has only two categories for identifying medium and heavy truck. The variable classifies truck tractors and other trucks. Many SUTs seem to belong to the other truck category, whether the truck has 2 axles or 3 or more axles. The reporting rate for truck tractors is 84.2 percent, while the rate for other trucks is 61.5 percent. An attachment variable describes vehicle trailering. Used in conjunction with the body style variable, it can be used to identify tractor semi-trailers, tractor doubles, bobtails, and other trucks without trailers. The reporting rates for tractor semi-trailers and tractor doubles are about 85 percent while the rate for bobtails is 73.4 percent. The reporting rate for other trucks with no trailer is 61.1 percent. Compared to trucks, buses represent a smaller fraction of reportable cases, but the reporting rate is 88.3 percent for school buses, 74.5 percent for commercial buses, and 52.8 percent for other buses. Other trucks account for more than 50 percent of all unreported cases.

Coding levels of the injury variable in the Alabama Injury file do not follow the general definitions of the KABCOU scale. Even so, fatal outcomes are readily identified, as are injuries. Based on crash severity, the reporting rate is 91.4 percent for fatal crashes, 76.4 percent for injured/transported crashes, and 75.0 percent for towed/disabled crashes. The maximum injury severity in the crash was calculated from the injury variable. The definitions used for injury severity in Alabama may result in a large number of A-injuries (Table 12). It can be seen that the

reporting rate is 79.3 percent for A-injuries. Reporting rates for crashes involving B and C-injuries are lower at 68.4 percent and 69.1 percent, respectively.

There are 67 counties in Alabama. By the number of reportable cases, the top 12 counties have a reporting rate of 72.4 percent, while the remaining counties have a rate of 80.3 percent. This suggests that counties that are more densely populated tend to have lower reporting rates. The reporting rate in Jefferson County, in which Birmingham is located, is 64.2 percent. This is the lowest rate among the top 12 counties (Table 13). In addition, this county accounts for 18.1 percent of the unreported cases. The top 12 counties account for 62.4 percent of the unreported cases, while the remaining 55 counties account for 37.6 percent.

With respect to reporting agency, the Alabama PAR file distinguishes three agencies: police departments, sheriff's offices, and state troopers. State troopers have the highest reporting rate at 83.0 percent and they also handle the most reportable cases (Table 14). The reporting rate for police departments is 68.5 percent and they account for 57.9 percent of the unreported cases. Sheriff's offices handle a small proportion of the reportable cases. The reporting rate for sheriff's offices is 39.3 percent.

There were 28 fires in reportable cases for trucks, of which all but six were reported, for a reporting rate of 78.6 percent. This is essentially identical to the overall rate for trucks of 76.3 percent. Among buses, there were no fires among reportable cases, so no comparison was appropriate.

Missing data rates in the MCMIS Crash file were also examined. Except for the GVWR class variable, the driver license class variable, and events variables, missing percentages are less than 5 percent. It is common for event variables after the first event to have high percentages of missing data. There is general agreement between comparison of the vehicle configuration variable in the PAR file and the MCMIS file, but some differences exist. For example, 31 truck tractors in the Alabama PAR file are classified as SUTs in the MCMIS Crash file. Furthermore, 53 vehicles classified as autos, pickups, or vans, are classified as SUTs in the MCMIS file. The comparison is between the 3,728 vehicles that were matched between the two files (Table 17).

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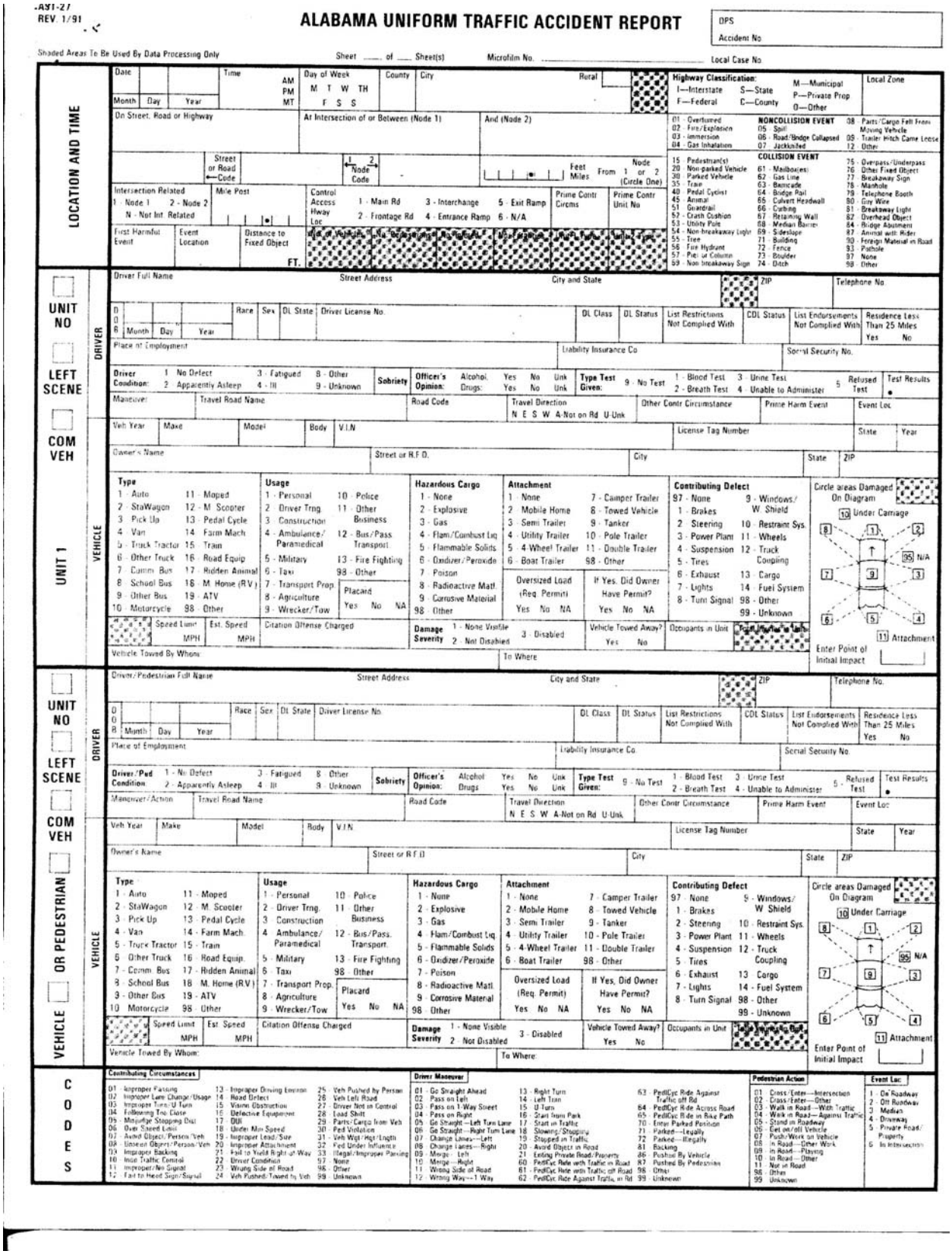
Appendix A Selection Algorithm to Identify Reportable Records

MCMIS Reporting Criteria	Implementation in Alabama PAR Data
Truck with GVWR over 10,000 or GCWR over 10,000	The type variable in the Alabama PAR file was used to identify medium/heavy trucks with GVWR 10,000 lbs or greater. The other truck category is believed to be comprised of single unit trucks (SUTs). unit type = 5 – Truck Tractor 6 – Other Truck
***or* Bus with seating for at least nine, including the driver**	The following codes were used to identify eligible buses: unit type = 7 – Commercial Bus 8 – School Bus 9 – Other Bus
***or* Vehicle displaying a hazardous materials placard**	These vehicles were identified using the hazardous placard variable. In total, 270 vehicles were identified. Of these, 41 are non-trucks.
AND	
at least one fatality	The Alabama Injury file contains an injury variable coded according to the usual KABC scale (injuries only). It is a character variable with codes Injury = K – Fatal A – Visible or carried from scene B – Bruise/abrasion/swell C – Not visible, has pain

MCMIS Reporting Criteria	Implementation in Alabama PAR Data
***or* at least one person injured and transported to a medical facility for immediate medical attention**	It can be determined from the Alabama PAR file whether a person was transported for medical attention. Using the injury variable described above along with the transported information, an injured and transported variable was created. The injured/transported criterion was met by the following condition: Injured/transported = (maximum injury severity in (A or B or C) and (transported =yes)
***or* at least one vehicle towed due to disabling damage**	A removal (towed) variable was used in conjunction with a damage severity variable. This criterion was met if at least one vehicle in the crash was removed (towed) and damage severity was disabled. The damage severity variable has levels 1 – None visible 2 – Not disabled 3 - Disabled

Appendix B Alabama Traffic Accident Reports



-ASI-27
REV. 1/91

ALABAMA UNIFORM TRAFFIC ACCIDENT REPORT

DPS
Accident No.

Shaded Areas To Be Used By Data Processing Only — Sheet ____ of ____ Sheet(s) — Microfilm No. ____ — Local Case No.

LOCATION AND TIME

Date (Month / Day / Year) — Time (AM / PM / MT) — Day of Week (M T W TH F S S) — County — City — Rural

Highway Classification: I—Interstate, F—Federal, S—State, C—County, M—Municipal, P—Private Prop, O—Other — Local Zone

On Street, Road or Highway — At Intersection of or Between (Node 1) — And (Node 2)

Street or Road Code — Node Code — Feet Miles From Node 1 or 2 (Circle One)

Intersection Related (1 - Node 1, 2 - Node 2, N - Not Int Related) — Mile Post — Control Access Hway Loc (1 - Main Rd, 2 - Frontage Rd, 3 - Interchange, 4 - Entrance Ramp, 5 - Exit Ramp, 6 - N/A) — Prime Contr Circms — Prime Contr Unit No

First Harmful Event — Event Location — Distance to Fixed Object FT. — Num of Vehicles — Num Occupants — Num Killed — Num Injured — Num Pedestrians

NONCOLLISION EVENT: 01 - Overturned; 02 - Fire/Explosion; 03 - Immersion; 04 - Gas Inhalation; 05 - Spill; 06 - Road/Bridge Collapsed; 07 - Jackknifed; 08 - Parts/Cargo Fell From Moving Vehicle; 09 - Trailer Hitch Came Loose; 12 - Other

COLLISION EVENT: 15 - Pedestrian(s); 20 - Non-parked Vehicle; 30 - Parked Vehicle; 35 - Train; 40 - Pedal Cyclist; 45 - Animal; 51 - Guardrail; 52 - Crash Cushion; 53 - Utility Pole; 54 - Non-breakaway Light; 55 - Tree; 56 - Fire Hydrant; 57 - Pier or Column; 59 - Non-breakaway Sign; 61 - Mailboxes; 62 - Gas Line; 63 - Barricade; 64 - Bridge Rail; 65 - Culvert Headwall; 66 - Curbing; 67 - Retaining Wall; 68 - Median Barrier; 69 - Sideslope; 71 - Building; 72 - Fence; 73 - Boulder; 74 - Ditch; 75 - Overpass/Underpass; 76 - Other Fixed Object; 77 - Breakaway Sign; 78 - Manhole; 79 - Telephone Booth; 80 - Guy Wire; 81 - Breakaway Light; 82 - Overhead Object; 84 - Bridge Abutment; 87 - Animal with Rider; 90 - Foreign Material in Road; 93 - Pothole; 97 - None; 98 - Other

UNIT NO — LEFT SCENE — COM VEH — UNIT 1

DRIVER

Driver Full Name — Street Address — City and State — ZIP — Telephone No.

DOB (Month / Day / Year) — Race — Sex — DL State — Driver License No. — DL Class — DL Status — List Restrictions Not Complied With — CDL Status — List Endorsements Not Complied With — Residence Less Than 25 Miles (Yes / No)

Place of Employment — Liability Insurance Co. — Social Security No.

Driver Condition: 1 - No Defect, 2 - Apparently Asleep, 3 - Fatigued, 4 - Ill, 8 - Other, 9 - Unknown — Sobriety — Officer's Opinion: Alcohol (Yes / No / Unk), Drugs (Yes / No / Unk) — Type Test Given: 9 - No Test, 1 - Blood Test, 2 - Breath Test, 3 - Urine Test, 4 - Unable to Administer, 5 - Refused Test — Test Results

Maneuver — Travel Road Name — Road Code — Travel Direction (N E S W A-Not on Rd U-Unk) — Other Contr Circumstance — Prime Harm Event — Event Loc.

VEHICLE

Veh Year — Make — Model — Body — V.I.N — License Tag Number — State — Year

Owner's Name — Street or R.F.D. — City — State — ZIP

Type: 1 - Auto, 2 - StaWagon, 3 - Pick Up, 4 - Van, 5 - Truck Tractor, 6 - Other Truck, 7 - Comm. Bus, 8 - School Bus, 9 - Other Bus, 10 - Motorcycle, 11 - Moped, 12 - M. Scooter, 13 - Pedal Cycle, 14 - Farm Mach., 15 - Train, 16 - Road Equip., 17 - Ridden Animal, 18 - M. Home (R.V.), 19 - ATV, 98 - Other

Usage: 1 - Personal, 2 - Driver Trng., 3 - Construction, 4 - Ambulance/Paramedical, 5 - Military, 6 - Taxi, 7 - Transport Prop., 8 - Agriculture, 9 - Wrecker/Tow, 10 - Police, 11 - Other Business, 12 - Bus/Pass. Transport, 13 - Fire Fighting, 98 - Other — Placard (Yes / No / NA)

Hazardous Cargo: 1 - None, 2 - Explosive, 3 - Gas, 4 - Flam/Combust Liq, 5 - Flammable Solids, 6 - Oxidizer/Peroxide, 7 - Poison, 8 - Radioactive Matl, 9 - Corrosive Material, 98 - Other

Attachment: 1 - None, 2 - Mobile Home, 3 - Semi Trailer, 4 - Utility Trailer, 5 - 4-Wheel Trailer, 6 - Boat Trailer, 7 - Camper Trailer, 8 - Towed Vehicle, 9 - Tanker, 10 - Pole Trailer, 11 - Double Trailer, 98 - Other

Oversized Load (Req. Permit) (Yes / No / NA) — If Yes, Did Owner Have Permit? (Yes / No / NA)

Contributing Defect: 97 - None, 1 - Brakes, 2 - Steering, 3 - Power Plant, 4 - Suspension, 5 - Tires, 6 - Exhaust, 7 - Lights, 8 - Turn Signal, 9 - Windows/W. Shield, 10 - Restraint Sys., 11 - Wheels, 12 - Truck Coupling, 13 - Cargo, 14 - Fuel System, 98 - Other, 99 - Unknown

Circle areas Damaged On Diagram — 10 Under Carriage — 95 N/A — 11 Attachment — Enter Point of Initial Impact

Speed Limit MPH — Est. Speed MPH — Citation Offense Charged

Damage Severity: 1 - None Visible, 2 - Not Disabled, 3 - Disabled

Vehicle Towed Away? (Yes / No) — Occupants in Unit — Fatalities — Injuries

Vehicle Towed By Whom: — To Where:

UNIT NO — LEFT SCENE — COM VEH — OR PEDESTRIAN — VEHICLE

DRIVER

Driver/Pedestrian Full Name — Street Address — City and State — ZIP — Telephone No.

DOB (Month / Day / Year) — Race — Sex — DL State — Driver License No. — DL Class — DL Status — List Restrictions Not Complied With — CDL Status — List Endorsements Not Complied With — Residence Less Than 25 Miles (Yes / No)

Place of Employment — Liability Insurance Co. — Social Security No.

Driver/Ped Condition: 1 - No Defect, 2 - Apparently Asleep, 3 - Fatigued, 4 - Ill, 8 - Other, 9 - Unknown — Sobriety — Officer's Opinion: Alcohol (Yes / No / Unk), Drugs (Yes / No / Unk) — Type Test Given: 9 - No Test, 1 - Blood Test, 2 - Breath Test, 3 - Urine Test, 4 - Unable to Administer, 5 - Refused Test — Test Results

Maneuver/Action — Travel Road Name — Road Code — Travel Direction (N E S W A-Not on Rd U-Unk) — Other Contr Circumstance — Prime Harm Event — Event Loc.

VEHICLE

Veh Year — Make — Model — Body — V.I.N — License Tag Number — State — Year

Owner's Name — Street or R.F.D. — City — State — ZIP

Type: 1 - Auto, 2 - StaWagon, 3 - Pick Up, 4 - Van, 5 - Truck Tractor, 6 - Other Truck, 7 - Comm. Bus, 8 - School Bus, 9 - Other Bus, 10 - Motorcycle, 11 - Moped, 12 - M. Scooter, 13 - Pedal Cycle, 14 - Farm Mach., 15 - Train, 16 - Road Equip., 17 - Ridden Animal, 18 - M. Home (R.V.), 19 - ATV, 98 - Other

Usage: 1 - Personal, 2 - Driver Trng., 3 - Construction, 4 - Ambulance/Paramedical, 5 - Military, 6 - Taxi, 7 - Transport Prop., 8 - Agriculture, 9 - Wrecker/Tow, 10 - Police, 11 - Other Business, 12 - Bus/Pass. Transport, 13 - Fire Fighting, 98 - Other — Placard (Yes / No / NA)

Hazardous Cargo: 1 - None, 2 - Explosive, 3 - Gas, 4 - Flam/Combust Liq, 5 - Flammable Solids, 6 - Oxidizer/Peroxide, 7 - Poison, 8 - Radioactive Matl, 9 - Corrosive Material, 98 - Other

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Oversized Load (Req. Permit) (Yes / No / NA) — If Yes, Did Owner Have Permit? (Yes / No / NA)

Contributing Defect: 97 - None, 1 - Brakes, 2 - Steering, 3 - Power Plant, 4 - Suspension, 5 - Tires, 6 - Exhaust, 7 - Lights, 8 - Turn Signal, 9 - Windows/W. Shield, 10 - Restraint Sys., 11 - Wheels, 12 - Truck Coupling, 13 - Cargo, 14 - Fuel System, 98 - Other, 99 - Unknown

Circle areas Damaged On Diagram — 10 Under Carriage — 95 N/A — 11 Attachment — Enter Point of Initial Impact

Speed Limit MPH — Est. Speed MPH — Citation Offense Charged

Damage Severity: 1 - None Visible, 2 - Not Disabled, 3 - Disabled

Vehicle Towed Away? (Yes / No) — Occupants in Unit — Fatalities — Injuries

Vehicle Towed By Whom: — To Where:

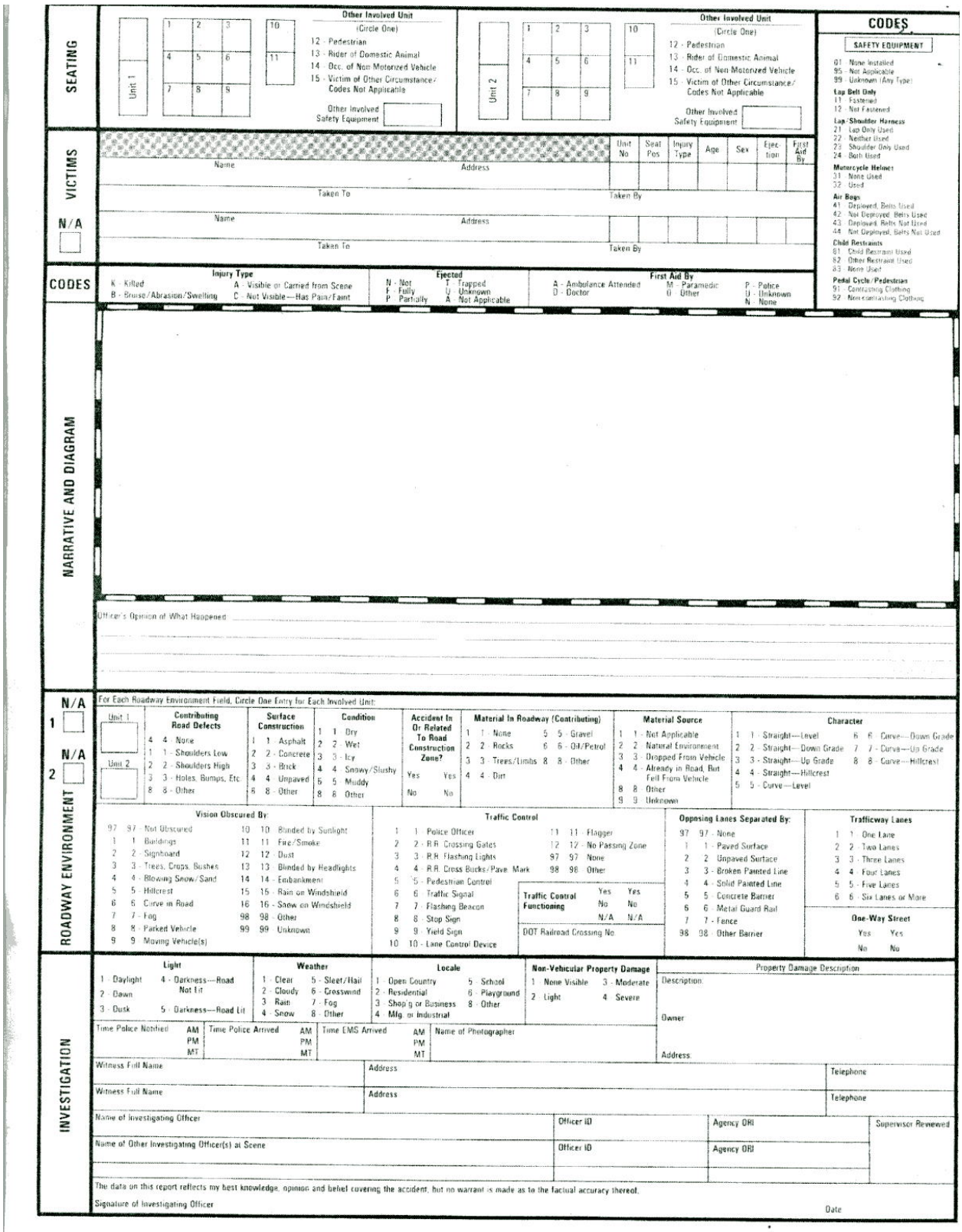
CODES

Contributing Circumstances: 01 - Improper Passing; 02 - Improper Lane Change/Usage; 03 - Improper Turn/U Turn; 04 - Following Too Close; 05 - Improper Stopping Dist; 06 - Over Speed Limit; 07 - Avoid Object/Person/Veh; 08 - Unseen Object/Person/Veh; 09 - Improper Backing; 10 - Init Traffic Control; 11 - Improper/No Signal; 12 - Fail to Heed Sign/Signal; 13 - Improper Driving Environ; 14 - Road Defect; 15 - Vision Obstruction; 16 - Defective Equipment; 17 - DUI; 18 - Under Min Speed; 19 - Improper Load/Size; 20 - Improper Attachment; 21 - Fail to Yield Right-of-Way; 22 - Driver Condition; 23 - Wrong Side of Road; 24 - Veh Pushed/Towed by Veh; 25 - Veh Pushed by Person; 26 - Veh Left Road; 27 - Driver Not in Control; 28 - Load Shift; 29 - Parts/Cargo from Veh; 30 - Ped Violation; 31 - Veh Wgt /Hgt /Lngth; 32 - Fed Under Influence; 33 - Illegal/Improper Parking; 97 - None; 98 - Other; 99 - Unknown

Driver Maneuver: 01 - Go Straight Ahead; 02 - Pass on Left; 03 - Pass on 1-Way Street; 04 - Pass on Right; 05 - Go Straight—Left Turn Lane; 06 - Go Straight—Right Turn Lane; 07 - Change Lanes—Left; 08 - Change Lanes—Right; 09 - Merge—Left; 10 - Merge—Right; 11 - Wrong Side of Road; 12 - Wrong Way—1 Way; 13 - Right Turn; 14 - Left Turn; 15 - U-Turn; 16 - Start from Park; 17 - Start in Traffic; 18 - Slowing/Stopping; 19 - Stopped in Traffic; 20 - Avoid Object in Road; 21 - Exiting Private Road/Property; 60 - Ped/Cyc Ride with Traffic in Road; 61 - Ped/Cyc Ride with Traffic off Road; 62 - Ped/Cyc Ride Against Traffic in Rd; 63 - Ped/Cyc Ride Against Traffic off Rd; 64 - Ped/Cyc Ride Across Road; 65 - Ped/Cyc Ride in Bike Path; 70 - Enter Parked Position; 71 - Parked—Legally; 72 - Parked—Illegally; 81 - Backing; 86 - Pushed By Vehicle; 87 - Pushed By Pedestrian; 98 - Other; 99 - Unknown

Pedestrian Action: 01 - Cross/Enter—Intersection; 02 - Cross/Enter—Other; 03 - Walk in Road—With Traffic; 04 - Walk in Road—Against Traffic; 05 - Stand in Roadway; 06 - Get on/off Vehicle; 07 - Push/Work on Vehicle; 08 - In Road—Other Work; 09 - In Road—Playing; 10 - In Road—Other; 11 - Not in Road; 98 - Other; 99 - Unknown

Event Loc: 1 - On Roadway; 2 - Off Roadway; 3 - Median; 4 - Driveway; 5 - Private Road/Property; 6 - In Intersection



SEATING

Unit 1 / Unit 2

Other Involved Unit (Circle One)
12 - Pedestrian
13 - Rider of Domestic Animal
14 - Occ. of Non Motorized Vehicle
15 - Victim of Other Circumstance/ Codes Not Applicable

Other Involved Safety Equipment

VICTIMS

N/A

Name | Address | Unit No | Seat Pos | Injury Type | Age | Sex | Ejection | First Aid By

Taken To | Taken By

CODES

Injury Type: K - Killed; B - Bruise/Abrasion/Swelling; A - Visible or Carried from Scene; C - Not Visible—Has Pain/Faint

Ejected: N - Not; F - Fully; P - Partially; T - Trapped; U - Unknown; A - Not Applicable

First Aid By: A - Ambulance Attended; D - Doctor; M - Paramedic; O - Other; P - Police; U - Unknown; N - None

CODES

SAFETY EQUIPMENT
01 None Installed
95 Not Applicable
99 Unknown (Any Type)
Lap Belt Only: 11 Fastened; 12 Not Fastened
Lap/Shoulder Harness: 21 Lap Only Used; 22 Neither Used; 23 Shoulder Only Used; 24 Both Used
Motorcycle Helmet: 31 None Used; 32 Used
Air Bags: 41 Deployed, Belts Used; 42 Not Deployed, Belts Used; 43 Deployed, Belts Not Used; 44 Not Deployed, Belts Not Used
Child Restraints: 81 Child Restraint Used; 82 Other Restraint Used; 83 None Used
Pedal Cycle/Pedestrian: 91 Contrasting Clothing; 92 Non-contrasting Clothing

NARRATIVE AND DIAGRAM

Officer's Opinion of What Happened:

ROADWAY ENVIRONMENT

N/A 1 ☐ Unit 1
N/A 2 ☐ Unit 2

For Each Roadway Environment Field, Circle One Entry for Each Involved Unit:

Contributing Road Defects: 4 None; 1 Shoulders Low; 2 Shoulders High; 3 Holes, Bumps, Etc; 8 Other

Surface Construction: 1 Asphalt; 2 Concrete; 3 Brick; 4 Unpaved; 8 Other

Condition: 1 Dry; 2 Wet; 3 Icy; 4 Snowy/Slushy; 5 Muddy; 8 Other

Accident In Or Related To Road Construction Zone? Yes / No

Material In Roadway (Contributing): 1 None; 2 Rocks; 3 Trees/Limbs; 4 Dirt; 5 Gravel; 6 Oil/Petrol; 8 Other

Material Source: 1 Not Applicable; 2 Natural Environment; 3 Dropped From Vehicle; 4 Already in Road, But Fell From Vehicle; 8 Other; 9 Unknown

Character: 1 Straight—Level; 2 Straight—Down Grade; 3 Straight—Up Grade; 4 Straight—Hillcrest; 5 Curve—Level; 6 Curve—Down Grade; 7 Curve—Up Grade; 8 Curve—Hillcrest

Vision Obscured By: 97 Not Obscured; 1 Buildings; 2 Signboard; 3 Trees, Crops, Bushes; 4 Blowing Snow/Sand; 5 Hillcrest; 6 Curve in Road; 7 Fog; 8 Parked Vehicle; 9 Moving Vehicle(s); 10 Blinded by Sunlight; 11 Fire/Smoke; 12 Dust; 13 Blinded by Headlights; 14 Embankment; 15 Rain on Windshield; 16 Snow on Windshield; 98 Other; 99 Unknown

Traffic Control: 1 Police Officer; 2 R.R. Crossing Gates; 3 R.R. Flashing Lights; 4 R.R. Cross Bucks/Pave. Mark; 5 Pedestrian Control; 6 Traffic Signal; 7 Flashing Beacon; 8 Stop Sign; 9 Yield Sign; 10 Lane Control Device; 11 Flagger; 12 No Passing Zone; 97 None; 98 Other

Traffic Control Functioning: Yes / No / N/A

DOT Railroad Crossing No

Opposing Lanes Separated By: 97 None; 1 Paved Surface; 2 Unpaved Surface; 3 Broken Painted Line; 4 Solid Painted Line; 5 Concrete Barrier; 6 Metal Guard Rail; 7 Fence; 98 Other Barrier

Trafficway Lanes: 1 One Lane; 2 Two Lanes; 3 Three Lanes; 4 Four Lanes; 5 Five Lanes; 6 Six Lanes or More

One-Way Street: Yes / No

INVESTIGATION

Light: 1 Daylight; 2 Dawn; 3 Dusk; 4 Darkness—Road Not Lit; 5 Darkness—Road Lit

Weather: 1 Clear; 2 Cloudy; 3 Rain; 4 Snow; 5 Sleet/Hail; 6 Crosswind; 7 Fog; 8 Other

Locale: 1 Open Country; 2 Residential; 3 Shopping or Business; 4 Mfg. or Industrial; 5 School; 6 Playground; 8 Other

Non-Vehicular Property Damage: 1 None Visible; 2 Light; 3 Moderate; 4 Severe

Property Damage Description: Description; Owner; Address

Time Police Notified (AM/PM/MT) | Time Police Arrived (AM/PM/MT) | Time EMS Arrived (AM/PM/MT) | Name of Photographer

Witness Full Name | Address | Telephone

Witness Full Name | Address | Telephone

Name of Investigating Officer | Officer ID | Agency ORI | Supervisor Reviewed

Name of Other Investigating Officer(s) at Scene | Officer ID | Agency ORI

The data on this report reflects my best knowledge, opinion and belief covering the accident, but no warranty is made as to the factual accuracy thereof.

Signature of Investigating Officer | Date

ALABAMA
UNIFORM TRAFFIC ACCIDENT REPORT

LOCAL CASE NO. _____

SHEET OF SHEET(S)

AST No. 34 Rev. 4/86

SUPPLEMENTAL SHEET

ADDITIONAL ACCIDENT VICTIMS

	Name / Address	Taken to / Taken by	Unit No.	Seat Pos.	Injury Type	Age	Sex	Ejection	First Aid By
3	Name / Address	Taken to / Taken by							
4	Name / Address	Taken to / Taken by							
5	Name / Address	Taken to / Taken by							
6	Name / Address	Taken to / Taken by							
7	Name / Address	Taken to / Taken by							
8	Name / Address	Taken to / Taken by							
9	Name / Address	Taken to / Taken by							
10	Name / Address	Taken to / Taken by							
11	Name / Address	Taken to / Taken by							
12	Name / Address	Taken to / Taken by							

ADDITIONAL NARRATIVE SPACE

DESCRIBE WHAT HAPPENED (Refer to vehicles by number)

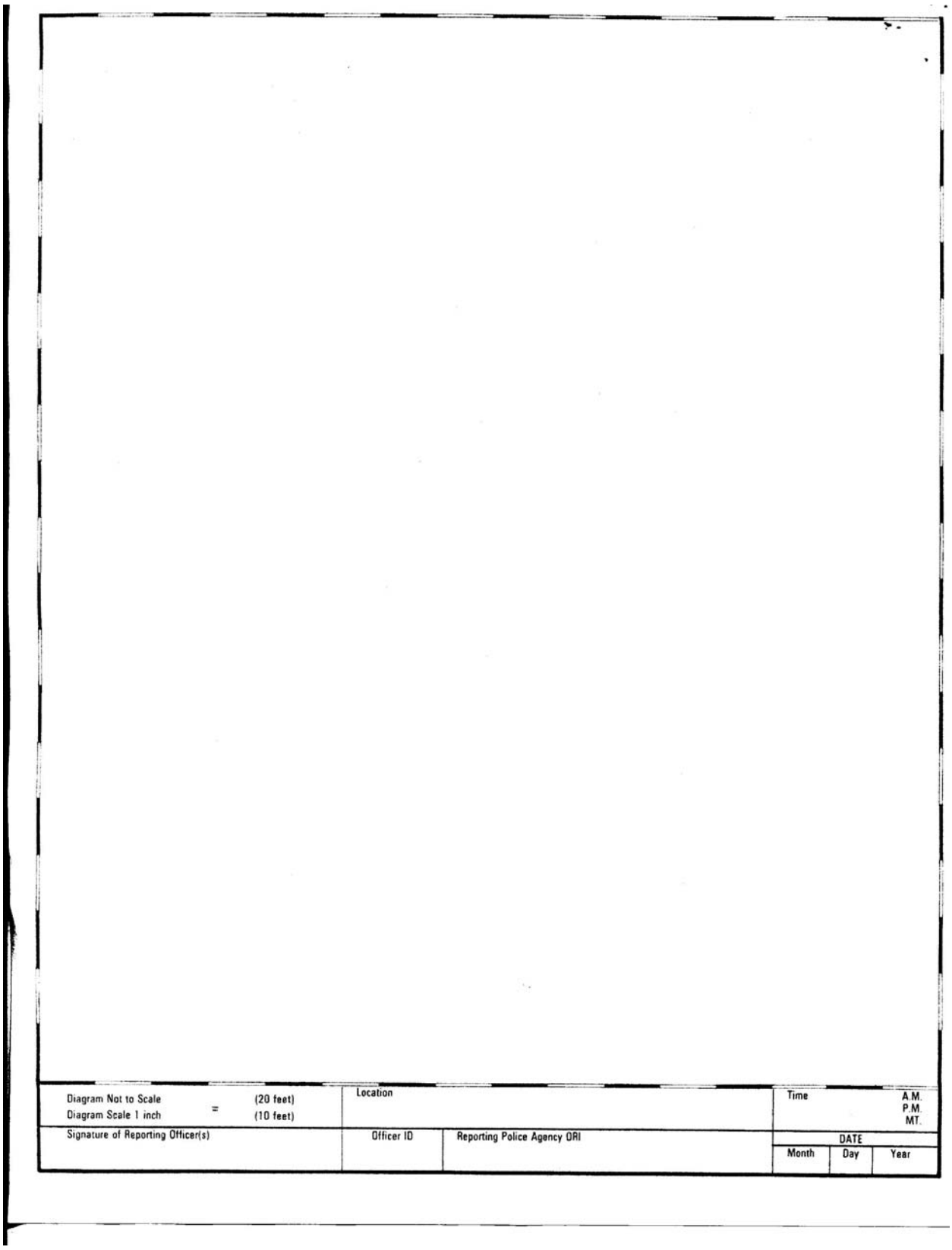


Diagram Not to Scale Diagram Scale 1 inch = (20 feet) (10 feet)	Location		Time		A.M. P.M. MT.
Signature of Reporting Officer(s)	Officer ID	Reporting Police Agency ORI	DATE		
			Month	Day	Year

Unit No. _____
(same as on main report)

Alabama Uniform Traffic Accident Report
Truck/Bus Supplemental Sheet

AST-34T
1/94

Sheet _____ of _____ Sheets

General Instructions

*Complete this form for each qualifying vehicle **ONLY** if the accident meets **BOTH** of the following criteria:*

1. The accident involved a qualifying vehicle (truck with 6 or more tires or Haz/Mat placard, or a bus designed to carry 16 or more, including driver) and;
2. The accident resulted in at least one of the following: **A.** one or more fatalities **B.** one or more persons injured and taken from the scene for immediate medical attention, or **C.** one or more involved vehicles had to be towed from the scene as a result of disabling damage or had to receive assistance to leave.

Screening Information

Number of Qualifying Vehicles:

Trucks with 6 or more tires or Haz/Mat placard _____
Buses designed to carry 16 or more (including driver) _____

Number of Persons:

Sustaining fatal injuries _____
Transported for **Immediate** medical treatment _____

Number of vehicles towed from scene due to damage or provided assistance _____

Vehicle Information

Gross Vehicle Weight Rating (GVWR)

A. Truck, tractor or bus _____
B. Trailer or trailers (total) _____
Total GVWR for unit (A+B) _____

Total number of axles _____

Hazardous Material Involvement

Did vehicle have a Haz/Mat placard ____ Yes ____ No
If Yes, include following information from placard
A. Name or 4-digit number from diamond or box _____
B. The 1-digit number from bottom of diamond _____
Was hazardous material released from THIS vehicle's cargo? ____Yes ____ No

Vehicle Configuration (circle one number)

1. Bus **2.** Single unit truck (2 axles/ 6 or more tires) **3.** Single unit truck (3 or more axles)
4. Truck with trailer **5.** Truck tractor only (bobtail) **6.** Tractor with semi-trailer **7.** Tractor with double trailers
8. Tractor with triple trailers **9.** Unknown class heavy truck **0.** Any other 4-tired vehicle

Cargo Body Type (circle one number)

1. Bus **2.** Van/enclosed box **3.** Cargo tank **4.** Flatbed **5.** Dump
6. Concrete mixer **7.** Auto transporter **8.** Garbage/ refuse **9.** Other _____

Motor Carrier Information

NOTE: If NOT a motor carrier, enter NONE under Carrier Name, 0 for None under Carrier Identification Numbers, and go to Sequence Of Events Section

Carrier Name _____

Source (circle one number) **1.** Vehicle side **2.** Shipping papers **3.** Driver **4.** Other

Carrier mailing address (Street or P.O. Box) _____

City, State, Zip _____

Carrier Identification Numbers (_____ None = 0)

US DOT _____ ICC MC _____ STATE NO. _____ STATE _____

Sequence of Events

Note: for THIS vehicle – list up to four Event #1 _____ Event #2 _____ Event #3 _____ Event #4 _____

EVENT CODES

Non-Collision **1.** Ran off road **2.** Jackknife **3.** Overturned (rollover) **4.** Downhill runaway
5. Cargo loss or shift **6.** Explosion or fire **7.** Separation of units **8.** Other non-collision

Collision With **9.** Pedestrian **10.** Non-parked vehicle **11.** Parked vehicle **12.** Train
13. Pedalcycle **14.** Animal **15.** Fixed object **16.** Other object

Signature of Reporting Officer	Officer ID	Reporting Police Agency ORI	Date	Time AM PM MT

Definitions

Truck

A motor vehicle designed, used or maintained primarily for the transportation of property. For the purpose of this form the vehicle must also meet one of the following criteria:
- Have at least 6 tires on the ground, **or**
- Carry a Hazardous Material Placard.

Bus

A motor vehicle providing seats for 16 or more persons including the driver and used primarily for the transportation of persons.

Trailer

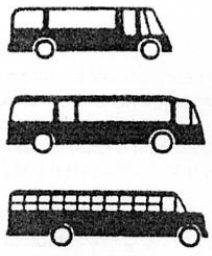
A non-power vehicle towed by a motor vehicle.

Reportable Accident

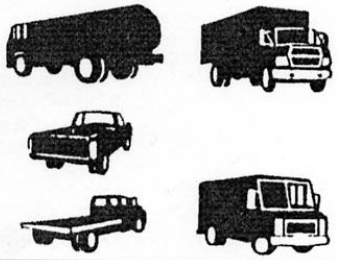
A highway related incident normally investigated by a police officer and reported on a standard accident report form involving one or more trucks or buses (as defined here) which results in:
- One or more fatalities, **or**
- One or more non-fatal injuries requiring transportation for the purpose of obtaining immediate medical treatment, **or**
- One or more of the vehicles being removed from the scene as a result of disabling damage, **or**
- One or more vehicles requiring intervening assistance before proceeding under its own power.

Typical Vehicle Silhouettes

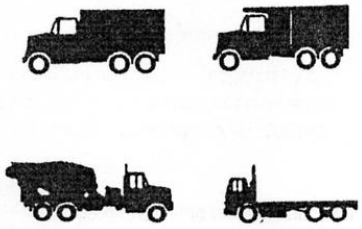
1. Bus



2. Single unit truck - 2 axles / 6 tires



3. Single unit truck - 3 axles



4. Truck with trailer

5. Truck tractor (bobtail)

6. Tractor with semi-trailer

7. Tractor with double trailers

8. Tractor with triple trailers

Typical Hazardous Material Placards