UMTRI-2007-50 DECEMBER 2007

EVALUATION OF 2006 KENTUCKY CRASH DATA REPORTED TO MCMIS CRASH FILE

DANIEL BLOWER
ANNE MATTESON

UMTRI-2007-50

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Daniel Blower
Anne Matteson

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

December 2007

Technical Report Documentation Page

1. Report No.	2. Government Accession No.	3. Recipient's Catalog No.
UMTRI-2007-50		

4. Title and Subtitle	5. Report Date
Evaluation of 2006 Kentucky Crash Data Reported to the MCMIS Crash File	December 2007
	6. Performing Organization Code

7. Author(s)	8. Performing Organization Report No.
Blower, Daniel, and Matteson, Anne	UMTRI-2007-50

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 Kentucky.

MCMIS Crash File records were matched to records from the Kentucky Traffic Collision Report data to determine the nature and extent of underreporting. Overall, it appears that Kentucky is reporting 60.2 percent of crash involvements that should be reported to the MCMIS Crash file.

Reporting rates were related to crash severity, with 84.9 percent of fatal involvements reported, and injury/transported and tow/disabled crashes reported at 58.7 percent and 60.2 percent respectively. Reporting rates were much higher for trucks (64.3 percent) than buses (6.3 percent). The highest reporting rate was for tractor-semitrailers (88.0 percent) and the lowest rate was for school buses (3.5 percent). Reporting rates also varied by the type of investigation agency (state police, sheriff, or city police).

Missing data rates are exceptionally low for most variables reported to the MCMIS Crash file. There were no serious inconsistencies between data reported to the MCMIS file and recorded in the Kentucky crash data.

17. Key Words	18. Distribution Statement
MCMIS, Kentucky 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	34	

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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1. Introduction

The Federal Motor Carrier Safety Administration (FMCSA) developed the Motor Carrier Management Information System (MCMIS) Crash file 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. Assessing the magnitude and characteristics of motor carrier crashes is essential to design effective safety measures to prevent such crashes. Since the MCMIS Crash file is compiled from a standard set of data items reported by the states on appropriate cases, the usefulness of the MCMIS Crash file depends upon how completely and accurately the states are reporting the data.

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 "overreported" some cases, often due to technical problems with duplicate records. [See references 3 to 26.] The states are responsible for identifying and reporting qualifying crash involvements. Accordingly, improved completeness and accuracy must ultimately reside with individual states.

In this report, we focus on MCMIS Crash file reporting by Kentucky. In recent years, Kentucky has reported from 2,290 to 3,432 involvements annually to the MCMIS Crash file. According to the 2002 Vehicle Inventory and Use Survey (the last available), in 2002, Kentucky had over 101,000 trucks registered, ranking 22nd among the states and accounting for 1.9 percent of all truck registrations.[1] Kentucky is the 26th largest state by population and generally ranks 16th in terms of the number of annual truck and bus fatal involvements.

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

1. The complete police accident report file (PAR file hereafter) from Kentucky 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 Kentucky 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 Kentucky.

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 Kentucky's statewide files as of October 2007 were used in this analysis. The 2006 PAR file contains the computerized records of 278,562 units (vehicles and pedestrians) involved in 152,612 crashes that occurred in Kentucky. We are grateful to the state of Kentucky for providing this file.

2. Data Preparation

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

2.1 MCMIS Crash Data File

The MCMIS Crash file as of June 4, 2007, was used to identify records submitted from Kentucky. For calendar year 2006 there were 2,868 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, officer badge number, vehicle license number, and driver license number, even though their vehicle sequence numbers were different. One would not expect two records with identical values for driver and vehicle variables within the same crash. One duplicate pair was found. Only a few variables differed among the two records, including vehicle sequence number. A plausible explanation is that one record was intended as an update, but the original was not deleted, resulting in the addition of a second vehicle record for that accident. The record with the latest "Upload date" was kept, and the earlier one deleted. After deleting one record, the resulting MCMIS file contains 2,867 records.

2.2 Kentucky Police Accident Report File

The Kentucky PAR data for 2006 (as of October 2007) was obtained from the state of Kentucky. The data were stored as a text file, representing Accident, Vehicle, and Person records. The file contained records for 152,612 crashes involving 278,562 units (primarily vehicles and pedestrians). Data for the PAR file are coded from the Kentucky Uniform Police Traffic Collision Report (form KSP 74) 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 (for example, 73309973 and 733-9973). However, cases were also examined to identify any records that contained identical case number, time, place and vehicle/driver variables, even though their vehicle numbers were different. Two cases would not be expected to be identical on all variables. Records were

examined for duplicate occurrences based on the variables case number, accident date/time, crash city/county, road, investigating officer number, vehicle identification number (VIN), and driver date of birth.

Two duplicate records were found, representing one unique occurrence of the examined variables. Further examination of the pair showed that many of the vehicle-specific variables had different values, even though VIN and driver birth date were identical. Because it could not be positively determined that these were in fact duplicate cases, both were left in the file.

3. Matching Process

The next step involved matching records from the Kentucky PAR file to corresponding records from the MCMIS file. After removing the duplicate cases, there were 2,867 Kentucky records from the MCMIS file available for matching, and 278,562 records from the Kentucky PAR file. All records from the Kentucky 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 proceeds by finding combinations of variables common to the two files that have a high probability of uniquely identifying specific accidents and specific vehicles within the accidents. Master File Number, which is used to uniquely identify a crash in the Kentucky 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. Master File Number in the Kentucky 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 (KY, in this case), followed by ten digits. Since eight of these digits were consistent with the PAR Master File Number, the last eight digits of the MCMIS Report Number were extracted and used in the match.[1]

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 Crash City number was not coded according to the same numbering scheme in both the PAR and MCMIS files, this variable could not be used in the match.

Variables in the MCMIS file that can help 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 3.8 percent of the time in the PAR data and was unknown in only 0.3 percent of MCMIS cases. In the PAR file, Driver Date of Birth and Driver Age were each unrecorded in 12.4 percent of cases, and 1.1 percent of MCMIS cases.

[1] Thus, it appears that Kentucky is following the FMCSA definition for Crash Report Number, which is to use the police crash report number in the variable. Many states generate a new number which does not resemble the crash report number. Using the actual crash report number greatly facilitates matching records. This is reflected in the 99.5 percent match rate ultimately achieved.

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 case number, crash date (month, day), crash time (hour, minute), county, road name, officer ID, VIN, and driver date of birth. The second match step dropped VIN. The third match step matched on case number, crash date, crash hour, county, and driver date of birth, dropping minute, road, officer ID and VIN. After some experimentation, the fourth match included variables case number, date, hour, county, and VIN. Cases in the third and fourth matches were also hand-verified to ensure the match was valid. This process resulted in matching 99.5 percent of the MCMIS records to the PAR file.

Table 1 shows the variables used in each match step along with the number of records matched at each step.

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

Step	Matching variables	Cases matched
Match 1	Case number, crash date, crash time, county, road name, officer ID, VIN, and driver date of birth	2,559
Match 2	Case number, crash date, crash time, county, road name, officer ID, and driver date of birth	227
Match 3	Case number, crash date, crash hour, county, and driver date of birth	37
Match 4	Case number, crash date, crash hour, county, and VIN	30
Total cases matched		2,853

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 2,853 matches, representing 99.5 percent of the 2,867 non-duplicate records reported to MCMIS.

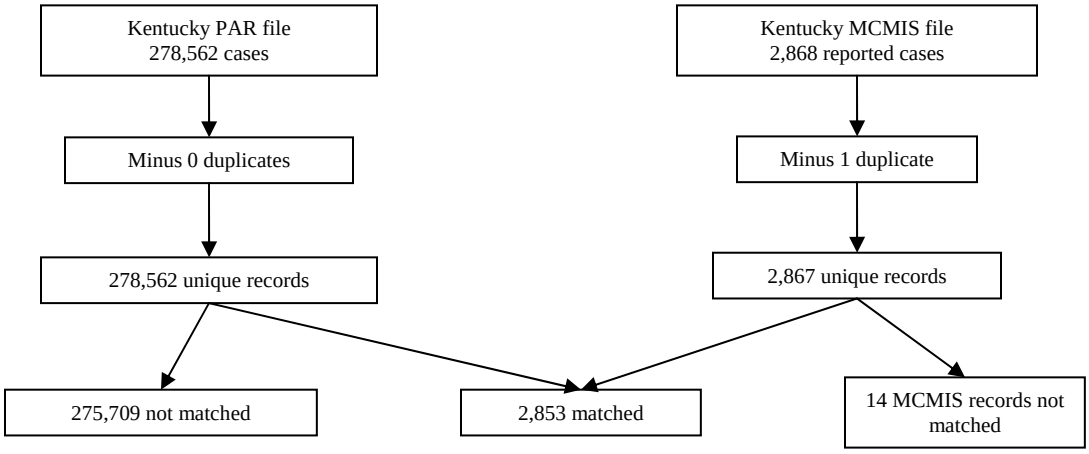

Figure 1 Case Flow in MCMIS/Kentucky Crash File Match

Of the 2,853 matched cases, 258 were determined to be "not reportable," i.e., did not meet the MCMIS Crash file requirements for reporting, and 2,595 were reportable. Table 2 sorts the 258 cases that did not qualify for reporting by vehicle type and crash severity. The levels of crash severity shown correspond to the MCMIS reporting criteria. Almost all the cases judged not reportable (242 out of 258) met the vehicle type criteria but did not meet the severity threshold. In most of the involvements, no person was injured and no vehicle was towed (the "other" row in the table below). Fifteen of the non-reportable cases meet the MCMIS crash severity criteria, but not the vehicle type. One was identified as an emergency vehicle on a emergency run, one was a pedestrian, and the other 13 were identified as "other" vehicle types. In the discussion on identifying cases that meet the MCMIS reporting criteria, it is noted that there some room for interpretation, so it is possible that, with perfect knowledge of each case, the number of reported cases that did not meet the threshold for reporting would be different. However, as we discuss below, the decision rules developed are conservative. Significant changes would result in a higher number of cases deemed reportable overall, which would affect the overall reporting rate.

Table 2 Cases Not Qualifying for Reporting

MCMIS Crash Severity	Truck	Bus	Other vehicle	Total
Injured/transported	0	0	6	6
Towed due to damage	0	0	9	9
Other	241	1	1	243
Total	241	1	16	258

The method of identifying cases reportable to the MCMIS Crash file is discussed in the next section.

4. Identifying Reportable Cases

Records that qualified for reporting to the MCMIS Crash are identified using the information available in the computerized crash files that were sent by Kentucky. To identify reportable records, we attempt to use the information that is completed by the officers for all vehicles. In other words, we attempt to independently assess whether a case meets the MCMIS Crash file criteria by reviewing the data coded by the reporting officer in the field. 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 the 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 3.

Table 3 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.

4.1 General considerations

The process of identifying reportable records, as set out in Table 3 above, is fairly straightforward in the Kentucky PAR file, because Kentucky crash data includes most of the variables and levels needed to identify reportable cases. Reportable trucks and buses can be identified with the Unit_Type variable from the crash report. The Kentucky crash report also records injured persons transported for treatment and whether vehicles were towed and the extent of damage. This information—at the vehicle and person level—can be used to select crashes that meet the MCMIS crash severity criteria.

Unlike some other states, Kentucky does not use a separate supplemental form to collect the data required for the MCMIS Crash file, but instead the data elements are integrated into the common collision report that is used for all traffic crashes. The form includes different color-coded areas that are used for specific crash conditions. The *Report Manual*[2] and the code cover sheet identify different colored areas to be filled out for fatal crashes (red), injury crashes (grey), and commercial vehicles (blue). The section of the report in blue is reproduced below. The data elements in the commercial vehicle (CMV) area primarily identify the carrier by name, address, and US DOT number, and some of the information on hazardous materials (hazmat), gross vehicle weight rating, and trailers.

Figure 2 Commercial Vehicle Area of the Kentucky Uniform Police Traffic Collision Report

The instructions to the officer are simply to complete the blue section of the crash report for all commercial vehicles. Thus the information should be available for all CMVs, regardless of whether they were in a crash meeting the crash severity threshold. The strength of this approach

[2] Page 13.

is that it relieves the reporting officer of the burden of determining whether a crash is MCMIS-reportable and filling out a supplemental form based on that. This removes one common source of error, and allows the officer to concentrate more attention on his primary duties.

The *Report Manual* defines a commercial vehicle as follows: "Typically, a commercial vehicle has at least two axles and six tires and is operated for the transportation of persons or property in furtherance of any commercial or industrial enterprise, for hire or not for hire."[3] The *Manual* then provides some examples of commercial vehicles. A vehicle with two axles and six tires is a reasonable approximation of the GVWR threshold for a single unit truck, but misses some combination vehicles that might qualify by gross combination weight rating (GCWR) but not GVWR. Buses are not defined directly, but rather by example, and the seating capacity threshold (see Table 3) is not mentioned. Moreover, the discussion states that "[a] city bus is not considered commercial…" and thus would not be identified as a CMV and, as we shall see, overlooked for reporting to the MCMIS Crash file. Finally, light vehicles carrying hazmat should be included but they would not meet the definition of a CMV in the *Manual* and so would be missed if the instructions were followed precisely. By and large, the definition is reasonable and identifies the most common categories of CMVs but, to meet the requirements of MCMIS, probably should be modified.

4.2 Identifying reportable vehicles

Vehicle type is recorded in two ways on the Kentucky crash form. There is a unit type field with 25 levels listed on the code cover sheet, and which the officer captures by filling in bubbles along the side of page three of the collision report (actually, the first page of form KSP 74A revised). This variable includes six vehicle types that appear to meet the MCMIS vehicle type criteria. They are "bus," "school bus," "truck & trailer," "truck—single unit," "truck tractor & semitrailer," and "truck—other combination." This data is captured in the unit_type variable in the data.

The second way vehicle type is captured is using a box into which the reporting officer enters a set of codes to identify particular vehicle types. The codes are not included on the code cover sheet but instead listed as an appendix to the *Report Manual*. This information is captured in the veh_NCIC_type variable in the Kentucky data.

The two variables that capture descriptive information about vehicles are largely consistent, but, after comparing the variables, it was decided to use unit_type exclusively to identify vehicles that meet the MCMIS definition of a reportable vehicle. Veh_NCIC_type had significantly more "wild" codes, i.e., codes for which there was no definition in the *Report Manual*. About 6.2 percent of the codes had no corresponding label. Strictly speaking, not all the undocumented codes are "wild," since the appendix indicates that if other codes are used, they should be described in the collision narrative. But since we did not have access to the narrative, we had no way of knowing the type of vehicle. The unit_type variable was missing in only 0.2 percent of cases. Given the strong consistency between the two variables and the lower rates of missing data for unit_type, it was decided to use unit_type to identify reportable vehicles.

[3] Page 54.

However, before making that determination, we examined certain NCIC codes to determine if they might include significant numbers of reportable vehicles. Medium vans and small buses, i.e., reportable buses that seat nine to fifteen occupants including the driver, are difficult to identify cleanly. They might be referred to as vans or utility vehicles, but the unit_type classification does not include any codes that might be used for such vehicles. The NCIC codes do include two codes, that might possibly include some small buses or medium vans. These are the codes for vans ("VN") and utility ("UT") vehicles. One hundred cases were randomly sampled from each of those categories and the vehicle identification numbers (VINs) were decoded to determine if the vehicle was of a type that might meet the MCMIS vehicle criteria. For each type, only two vehicles possibly qualified as a reportable vehicles. Since only about two percent of the categories possibly met the reporting criteria, they were not included.

As a result, vehicles identified as a bus, school bus, truck and trailer, truck—single unit, truck tractor and semitrailer, and truck—other combination were taken as meeting the MCMIS vehicle type definitions. In addition, any vehicle, including light vehicles, coded as transporting hazmat were also included. This procedure identified 14,547 eligible vehicles, representing 5.2 percent of the 278,576 vehicles[4] in the Kentucky PAR file.

4.3 Identifying reportable crash severity

The Kentucky crash data includes all the information needed to select crashes that meet the MCMIS severity threshold. Qualifying crashes include either a fatality, an injury transported for immediate medical attention, or a vehicle towed from the scene due to disabling damage. The data about involved persons includes the usual classification of injury severity on the KABC0 scale. In addition, for each person injured, it is recorded whether the person was transported for medical attention. The data also record whether a vehicle was towed and the extent of damage to the vehicle. The damage severity levels are defined in terms that include whether the vehicle was drivable, so in principle, it should be straight forward to identify vehicles towed due to disabling damage.

We determined the proportion transported for medical attention for each level of injury severity. Overall the result appeared reasonable and consistent with results from other states. Almost all who suffered A-injuries were transported; 78.3 percent of B-injuries, and 67.8 percent of C-injuries. The rate of missing data for the transport indicator was about 20 percent, but most of those were for people who were uninjured, or had only C-injuries, so it is likely the officer simply skipped entering the information. Thus it appears that injury severity level and the transported indicator are consistent, and at least on their face, can be used to identify reliably crashes in which an injured person was transported for medical treatment.

Identifying crashes in which a vehicle was towed due to disabling damage was somewhat less straightforward. On the Kentucky collision report, the officer can indicate whether a vehicle was towed. Missing data for the towed indicator was very low, at only 1.2 percent. In addition, the officer records the extent of damage using a severity scale ranging from very minor to very severe. The definitions of the damage severity levels are written to include the drivability of the vehicle. For example, minor/moderate damage "does not affect the continued safe operation of

[4] Actually, the unit_type variable includes codes for bicyclists (449), pedestrians (1,273), and riding animals (28).

the vehicle," while moderate/severe damage "refers to a vehicle which is unable to be moved by its own power."[5] One would expect that few minor/moderately damaged vehicles would be towed, and those that were for reasons other than disablement, while all moderate/severely damaged vehicles would be towed. However, the rate at which vehicles were towed were much lower than expected, even for severely damaged vehicles. For example, only 62.9 percent of moderate/severely damaged vehicles were towed and 38.0 percent not towed. Severe damage is defined as "a disabled vehicle which must be towed and is totally damaged," yet only 82.4 percent were coded as towed and 17.5 percent were coded as not towed. And the most severe damage category, "very severe," which is described as "damage to the entire vehicle and there is no possibility of repair," only 90.8 percent are coded as towed.

Since there was not an easy consistency between the coded level of damage and whether a vehicle was towed, it was necessary to develop a decision rule to determine which crashes included a vehicle that was towed due to disabling damage. One possible rule was to accept at face value the definitions of damage severity, and take as towed due to disabling damage those coded as moderate/severe damage (unable to be move by its own power) and above. But in many cases those vehicles were explicitly coded as not towed, and those would not meet the two-part test, that is, towed and disabled. Those vehicles were disabled but not towed. In the end, we decided to include as towed/disabled only those vehicles with moderate/severe to very severe damage and were towed. This excludes even vehicles described as totally destroyed if the vehicle was not also coded as towed.

This decision rule is quite conservative, in that it seems likely that many of the severely damaged vehicles were towed, even if they were recorded as not towed. But since the officer explicitly indicated that the vehicle was not towed, we did not feel that we could ignore that data. In the end, there appears to be an inconsistency to the damage level as defined and whether the vehicle was towed. One possibility is that the reporting officers are not applying the literal definitions of damage severity. But since we are unable to resolve the inconsistency we decided to use a conservative decision rule. The effect of the decision-rule may be to underestimate the number of cases that qualify as towed/disabled. If so, the true number of reportable cases would be higher than shown here.

Table 4 shows the number of cases identified reportable in the Kentucky crash file, totaling 4,309 vehicles that meet the MCMIS vehicle type criteria in crashes that meet the MCMIS crash severity criteria.

Table 4 Reportable Records in Kentucky Crash File, 2006

Crash type	Total	%
Fatal	119	2.8
Injury transported for treatment	1,823	42.3
Vehicle towed due to damage	2,367	54.9
Total	4,309	100.0

[5] *Report Manual*, page 53.

As Figure 1 above shows, there were 2,867 records reported to the MCMIS Crash file by Kentucky for 2006. Of these, 2,853 were matched to the Kentucky crash file, but 258 did not qualify for reporting under the method developed to identify reportable cases discussed above.

5. Factors Associated with Reporting

The process discussed in section 4 identified 4,309 crash involvements in the Kentucky crash report data from 2006 that qualified for reporting to the MCMIS Crash file. There were 2,867 records that actually were reported to the MCMIS Crash file, of which 2,853 were matched to the original record in the Kentucky crash file, and 14 could not be matched. Of the 2,853 matched, 2,595 actually qualified for reporting for an overall reporting rate of 60.2 percent. In other words, 60.2 percent of cases that could be identified as qualifying for reporting to the MCMIS Crash file, actually were reported.

In this section we discuss factors that are associated with the observed reporting rate. Recall that in Kentucky, the reporting officer is to fill out a blue-colored section for all vehicles that meet the definition (specified in the *Report Manual* and discussed above) of a commercial vehicle. Otherwise, the officer completes the report as he would for any other vehicle. There are no special instructions about the MCMIS Crash file criteria, either as to vehicles or crash severity, as there are in other states. The officer simply captures some extra information about the carrier and hazmat cargo, but otherwise, fills out the crash report as he would for any vehicle involved in a traffic crash. Thus, the primary effect the reporting officer can have on reporting rates to the MCMIS Crash file is through correctly and comprehensively identifying commercial vehicles. The identification of the crashes that meet the MCMIS severity threshold and the precise vehicles that meet the vehicle type criteria must occur at a later stage.

All but two of the cases reported to the MCMIS Crash file were recorded by the reporting officer as a CMV. (Table 5) Of the 1,358 reportable cases for which the CMV indicator was set to No, 1,356 were not reported, for a reporting rate of 0.1 percent. On the other hand, 87.9 percent of reportable cases that were identified as a CMV by the officer were correctly reported. Clearly, the CMV indicator is a necessary part of Kentucky's process in identifying cases to report—necessary, but not sufficient since 357 reportable cases with CMV indicator set to Yes were not reported. Overall, the cases with CMV indicator set to No account for 79.1 percent of all missing reportable cases.

Table 5 Reporting Rate by CMV Indicator, Kentucky 2006

CMV indicator	Reportable	Reporting Rate	Unreported	% of total unreported
No	1,358	0.1	1,356	79.1
Yes	2,950	87.9	357	20.8
Missing	1	0.0	1	0.1
Total	4,309	60.2	1,714	100.0

For practical purposes, then, it appears that cases uploaded through SafetyNet to the MCMIS Crash file are selected almost exclusively from among those which the reporting officer

identified as a commercial vehicle, by filling in the commercial vehicle indicator bubble on the crash form.

Table 6 shows reporting rates, the number of unreported cases, and the proportion of unreported cases for each level of the MCMIS crash severity criteria. Traffic crashes that resulted in a fatality were reported at the highest rate, at 84.9 percent of such crash involvements reported. However, the two less-severe levels of crash severity were reported at lower rates. Injury/transported involvements were reported at a 58.7 percent rate, while 60.2 percent of the towed due to damage involvements were reported. Clearly, fatal crash involvements are more likely to be reported than the less severe, and that difference is statistically significant. But reportable crashes that are not fatal are reported at about the same rate, whether an injury/transported crash or a towed/disable crash. Fatal crashes likely get more attention than less serious crashes.

Table 6 Reporting Rate by MCMIS Crash Severity, Kentucky 2006

MCMIS Crash Type	Reportable	Reporting rate	Unreported	% of total unreported
Fatal	119	84.9	18	1.1
Injury/transported	1,823	58.7	753	43.9
Towed due to damage	2,367	60.2	943	55.0
Total	4,309	60.2	1,714	100.0

In Table 7 crash severity is measured by the most severe injury in the crash, using the KABCO scale. In this scale, incapacitating injuries are deemed severe, injuries that are evident but not incapacitating are called moderate, and complaint of pain is the least severe injury. Note that crash involvements with a fatal injury are reported at the highest rate, but all other crashes are reported at about the same rate, except those for which injury severity is unknown. Those crashes are most likely minor and the officer did not bother to record that no one was injured. Fatal involvements might be subject to a different level of scrutiny. For the others, the level is all about the same.

Table 7 Reporting Rate by Most Serious Injury in Crash, Kentucky 2006

Police-reported Crash Severity	Reportable	Reporting rate	Unreported	% of total unreported
Fatal injury	119	84.9	18	1.1
Incapacitating injury	361	60.9	141	8.2
Non-incapacitating injury	800	62.1	303	17.7
Possible injury	848	54.8	383	22.3
No injury	2,166	60.4	857	50.0
Unknown	15	20.0	12	0.7
Total	4,309	60.2	1,714	100.0

Reporting rates also differed markedly by the type of vehicle. Table 8 provides detail about vehicle type from the unit type variable that is on the Kentucky Collision Report. Overall, the rates fall into three rough categories. Buses, whether a school bus or some other type of bus, are reported at the lowest rates. Only 3.5 percent of school buses involved in a reportable crash were actually reported. Only 11.5 percent of the reportable involvements for other bus types were reported. At the other end of the spectrum, the involvements of tractor-semitrailers were reported at a 88.0 percent rate. The identification of this truck type—readily identified as a "big truck"—as reportable is high and for practical purposes nearly complete. Falling in between the two extremes are straight trucks pulling trailers, straight trucks with no trailers, and "other combinations." These broad categories cover a wide range of truck sizes, and there is no detail to discriminate five-axle dump trucks from a package delivery vehicle operated by an overnight freight carrier. But it appears that large trucks are more likely to be recognized as reportable vehicles, while buses and medium trucks are less likely.

Table 8 Reporting Rate by Police-Reported Vehicle Configuration, Kentucky 2006

Vehicle configuration	Reportable	Reporting rate	Unreported	% of total unreported
Bus	104	11.5	92	5.4
School Bus	198	3.5	191	11.1
Truck & Trailer	932	45.4	509	29.7
Truck – Single Unit	1,215	47.8	634	37.0
Tractor & Semitrailer	1,723	88.0	207	12.1
Truck - Other Combination	137	40.9	81	4.7
Total	4,309	60.2	1,714	100.0

The state of registration of the vehicle is also an important factor in reporting rates. (Please see Table 9.) Vehicles registered in the state of Kentucky are less likely to be reported than vehicles registered in some other state. About 81 percent of the reportable involvements of trucks and buses registered out of state are reported to the MCMIS Crash file, compared to a reporting rate of 44.7 percent for in-state vehicles. Higher reporting rates for out-of-state vehicles has been observed in other states as well. One explanation might be that reporting officers more readily recognize out-of-state trucks as meeting the definition of a commercial vehicle. On the other hand, out-of-state trucks are more likely to be large trucks, especially tractor-semitrailers, which are reported at the highest rate of any vehicle configuration. Thus, the higher rate for out-of-state vehicles may just be a reflection of the higher rate of reporting for large trucks and tractor-semitrailers in particular.

Table 9 Reporting Rate by Vehicle State of Registration, Kentucky 2006

Vehicle state of registration	Reportable	Reporting rate	Unreported	% of total unreported
Kentucky	2,269	44.7	1,254	73.2
Out of state	1,935	80.9	370	21.6
Unknown	105	14.3	90	5.3
Total	4,309	60.2	1,714	100.0

To examine the dependency between reporting rates by vehicle type and by state of registration, we calculated reporting rates for vehicles grouped into tractor-semitrailers and all other vehicles and by whether the vehicle was registered in Kentucky or in some other state. If vehicle type is the main factor in reporting rates, it would be expected that the rates for the two groups would be the same, regardless of whether the vehicle was registered in-state or out-of-state. Table 10 shows the results. Reporting rates are high for tractor-semitrailers, regardless of state of registration. However, note that for the other vehicles, state of registration has a strong effect. Reportable vehicles other than tractor-semitrailers registered in Kentucky are reported only at a 34.0 percent rate, while 63.4 percent are reported if registered out of state. Tractor-semitrailers seem to be recognized as a CMV and the CMV section of the collision report is completed, almost regardless of state of registration. But for other reportable vehicles, vehicles from other states are almost twice as likely to be recognized as a CMV and the CMV section completed.

Table 10 Reporting Rate by Vehicle State of Registration and Truck Type, Kentucky 2006

Vehicle type	Vehicle state of registration	Reportable	Reporting Rate
Tractor-Semitrailer	Kentucky	446	88.8
Tractor-Semitrailer	Other state	1,224	91.0
Other reportable vehicle	Kentucky	1,823	34.0
Other reportable vehicle	Other state	711	63.4

Reporting rates vary to some extent by the type of investigating agency. There are three primary levels of investigating agencies that can be identified in the Kentucky crash file: Local police, county sheriff, and State police. Reportable involvements covered by State police troopers were reported at the highest rate, 70.8 percent. Almost 60 percent of reportable crash involvements filed by local police were actually reported, while sheriffs had a 51.4 percent reporting rate. All of these differences in rates are statistically significant. It is likely that the different types of law enforcement agencies have different sets of responsibilities and operations. These differences may be reflected in the variations in reporting rates observed in the crash data.

Table 11 Reporting Rate by Investigating Agency, Kentucky 2006

Investigating agency	Reportable	Reporting rate	Unreported	% of total unreported
Local Police	2,105	59.6	851	49.6
Sheriff	1,127	51.4	548	32.0
State Police	1,077	70.8	315	18.4
Total	4,309	60.2	1,714	100.0

A fire event may be reported for a vehicle in four different locations. There is a fire indicator variable that records any fire event; two harmful events can be recorded for each vehicle, including fire; and the CMV section includes a most harmful event field, which also includes fire. All four of the variables are exactly consistent. In all cases where fire is coded as an event, the fire indicator is set to yes, and in all cases where the fire indicator is set, fire is recorded as one of the events in the crash. There were only 35 cases in which fire was indicated out of the total of 4,309 reportable cases. For trucks, cases with fire were reported at a higher rate than cases without recorded fire. Over 82 percent of the 34 truck fires were reported, compared with 64.1 percent of other reportable trucks. Among the buses, only one fire case was identified, and it was not reported. However, only 6.3 of all reportable bus cases are reported, so this difference is not meaningful.

Table 12 Reporting Rate by Fire and Vehicle Type, Kentucky 2006

Fire indicator	Reportable	Reporting Rate	Unreported	% of total unreported
Truck				
Fire	34	82.4	6	0.4
Other	3,973	64.1	1,425	83.1
Bus				
Fire	1	0.0	1	0.1
Other	301	6.3	282	16.5
Total	4,309	60.2	1,714	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 Kentucky 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 13 shows missing data rates for selected, important variables in the MCMIS Crash file. Missing data rates are low for all variables. On most fundamental, structural variables, such as date, time, number of fatalities and number of injuries, missing data rates are zero. Missing data rates for some other variables are higher, but the data are as complete as can be reasonably expected. The rates of missing data for the second through fourth events are all high, but most crashes consist of only one event, so "high" missing data rates for subsequent events can be expected. (It should be noted that the Kentucky Collision Report form only has a place to enter the first two events in a crash. In the MCMIS Crash data a third event is entered for a handful of cases, so these must be entered from a source other than an extraction from the Kentucky crash report data.) DOT number is not recorded for 0.7 percent of interstate carriers. Overall, missing data rates are remarkably low in the MCMIS Crash file data reported from Kentucky for 2006.

Table 13 Missing Data Rates for Selected MCMIS Crash File Variables, Kentucky, 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	0.2
Accident hour	0.0	Event one	<0.1
Accident minute	0.0	Event two	75.6
County	0.0	Event three	99.8
Body type	0.0	Event four	100.0
Configuration	0.1	Number of vehicles	0.0
GVWR class	0.0	Road access	0.1
DOT number *	0.7	Road surface	0.2
Carrier state	0.0	Road trafficway	0.0
Citation issued	1.1	Towaway	0.0
Driver date of birth	1.1	Truck or bus	0.0
Driver license number	1.7	Vehicle license number	0.7
Driver license state	1.6	Vehicle license state	0.6
Driver license class	100.0	VIN	0.3

Variable	Percent unrecorded	Variable	Percent unrecorded
Driver license valid	1.1	Weather	0.2

* Based on cases where the carrier is coded interstate.

Hazardous materials variable	Percent unrecorded
Hazardous materials placard	1.3
Percentages of hazmat placarded vehicles only:	
Hazardous cargo release	1.1
Hazardous materials class (1-digit)	0.0
Hazardous materials class (4-digit)	0.0
Hazardous materials name	0.0

There were 90 vehicles for which it was recorded that they displayed a hazmat placard. The table above shows information about the recording of hazmat variables only for those vehicles coded with a hazmat placard. In only one case was it unrecorded whether there was a hazmat release. Both the 1-digit and 4-digit hazardous materials class variables were recorded for all of the placarded vehicles. The hazmat name was recorded in all cases. Once again, missing data rates are remarkably low.

We also compared the values of variables in the MCMIS Crash file with the values of comparable variables in the Kentucky 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. Kentucky has adopted in many instances the same code levels for certain variables as are used in the MCMIS Crash file, which facilitates this process. On the other hand, the categories used for other variables, such as vehicle configuration, differ substantially.

We compared the variables for light condition, road condition, weather, the number of fatalities in the crash, hazmat placard, hazmat release, hazmat number, vehicle license state, and the crash event variables. Coding for light condition, road surface, and weather was identical—no inconsistency—for all cases with valid values in both files. There were six cases with data missing on those variables in the MCMIS Crash file, but in all other cases, the information matched precisely.

There were a handful of cases with inconsistent data on some other variables. Three cases differed by one on the number of vehicles in the crash. There was one case coded with a hazmat placard in the Kentucky data, but coded without a hazmat placard in the MCMIS Crash data. One case has a hazmat number in the Kentucky data, but was missing that information in the MCMIS Crash file. And there were fourteen cases that differed on vehicle license state. But in each case, the difference seemed to be a nonstandard entry corrected to a standard entry in the MCMIS file, such as “GM” corrected to “GA.”

Differences in how vehicle configuration is captured between the two files make a detailed comparison impossible. For example, in the MCMIS data, buses are classified by the number of

seats for occupants (including the driver), split between those with seating for 9 to 15 and those with 16 or more seats. The unit type variable from the Kentucky collision report classifies buses as either a school bus or a bus. Comparing cases shows the vehicles are classified as buses in both files, but differences in the classification system preclude any more detailed comparison.

The same problem exists for trucks. The method of classification differs sufficiently that it is not possible to make detailed comparisons. In most cases, however, it appears that the cases are not inconsistent. For example, almost all cases identified in the MCMIS file as a single unit truck, whether two-axle or three or more, are classified as a "truck – single unit" in the Kentucky data.

There are some cases that may be regarded as inconsistent. The are four cases coded as combination vehicles in the Kentucky data (two tractor-semitrailers and two other truck combinations). These case may be regarded as inconsistent since the MCMIS coding implies no trailer, and the Kentucky coding indicates a trailer.

A more subtle inconsistency appears in the coding of truck and trailer. Conventionally, combinations described as truck and trailer consist of a straight truck pulling a full or other trailer (not a semitrailer). There are 397 cases coded as a truck and trailer in the Kentucky data, but as a tractor-semitrailer in the MCMIS Crash file. These cases should be regarded as inconsistent, because there are codes for tractor-semitrailer and truck and trailer in both files. However, it should be acknowledged that discriminating between the codes may not be obvious, particularly to officers who may not regularly cover truck crashes. The *Report Manual* does not provide any definitions for the different truck and bus types. While the meaning of the codes may appear to be obvious to the experienced, in practice they are not, particularly given the diversity of trucks and buses on the road.

It should be noted that the inconsistencies identified here does not mean that the data reported to the MCMIS Crash file is incorrect. It means only that the values for some cases differ. It cannot be determined from available information which is correct. The fact that there are some differences implies that the data for the MCMIS Crash file may be manually extracted and the additional data (size of bus, number of axles on a SUT, etc.) added at that point. Harmonization of code conventions could allow the process to be automated, with significant gains in speed and accuracy.

7. Summary and Discussion

It appears that about 60.2 percent of cases reportable to the MCMIS Crash file are actually extracted and reported. As in many other states, the primary sources of variation in the reporting rates are all associated with the factors that make up the selection criteria, chiefly crash severity and vehicle type.

Fatal crashes are reported at the highest rate, 84.9 percent, while both injury/transported and towed/disabled crash involvements are reported at similar lower rates, 58.7 percent and 60.2 percent respectively. This suggests, reasonably, that fatal crashes receive a higher level of scrutiny and thus are more likely to be identified as reportable to the MCMIS file.

Large vehicles that fit the classic definition of a large truck—tractor-semitrailers—are reported at the highest rate, at 88.0 percent, while smaller vehicles are not as readily identified as a vehicle

meeting the criteria. Only 47.8 percent of the reportable involvements of single unit trucks are reported, and only 45.4 percent of combinations identified as truck and trailer. Buses are generally not included. Only 11.5 percent of vehicles classified as a bus are reported, and only 3.5 percent of school buses.

The primary driver of the reporting rate appears to be whether the reporting officer identifies a vehicle as a CMV and completes the CMV section of the collision report. While not all reportable cases designated by the officer as a CMV were reported, almost none of those in which the CMV indicator was set to N were reported. Only two of the 1,358 reportable cases where CMV indicator was N were actually reported. So designation by the reporting officer as a CMV is the beginning point for significant improvement in the reporting rate from Kentucky. Table 14 shows that the two primary factors in missing CMVs is the vehicle type and state of registration. The table shows the percentage of reportable cases with CMV indicator set to Y based on vehicle type and the state of registration of the vehicle. Tractor-semitrailers were identified as a CMV in almost all cases, regardless of state of registration. But other vehicles were not. Almost 71 percent of other vehicles registered outside of Kentucky were identified as a CMV, but only 39.0 percent of other vehicles registered in Kentucky were so identified. The group of vehicles that are not a tractor-semitrailer but with a Kentucky plate accounted for 83.9 percent of the reportable vehicles that were missed.

Table 14 CMV Indicator Set by Vehicle State of Registration and Truck Type, Kentucky 2006

Vehicle type	Vehicle state of registration	Total cases	% CMV indicator Y	Frequency CMV indicator N	% of total missed
Tractor-semitrailer	Kentucky	446	99.1	4	0.3
Tractor-semitrailer	Other	1,224	99.8	2	0.2
Other reportable vehicle	Kentucky	1,823	39.0	1,112	83.9
Other reportable vehicle	Other	710	70.7	208	15.7

The Kentucky collision report data includes virtually all the information needed to identify reportable cases. So the extraction of cases for upload to the MCMIS Crash file could be accomplished by application of a selection algorithm to the computerized data, with minimal manual intervention. The injury data and the flag that identifies injuries transported for medical attention can easily be used to identify cases that meet that part of the MCMIS criteria. There is some ambiguity in selecting vehicles towed due to disabling damage, because of some apparent inconsistency between the definitions of how severely a vehicle was damaged and whether it was actually towed. But that ambiguity was addressed by developing a conservative decision rule, such that all cases selected certainly met the criteria, though a few may have been missed. And finally, the unit type variable, along with hazardous materials variable, can be used to identify qualifying vehicles. In these regards, the range of data Kentucky has chosen to capture correspond well to the MCMIS Crash file requirements.

The data as reported to the MCMIS Crash file were generally complete, with low rates of missing data. The data were also largely consistent with the data in the Kentucky file. There were

no detected errors in translating the data to the MCMIS format. It appears that there is a second stage in collecting the data—possibly additional information is added after cases have been extracted from the main file—because the variables that describe the vehicle configuration in the MCMIS Crash file have more information than is available in the coded Kentucky crash data. For example, the data reported to MCMIS classifies buses in terms of passenger seating, but this information is not contained in the coded crash data and is not collected on the Kentucky Collision Report. It is likely added by manual review of cases to meet the MCMIS requirement. This process could be streamlined if Kentucky chose to harmonize some of their variables, to allow code levels to be mapped directly.

In summary, then, the approach Kentucky has taken to collecting the crash data is generally consistent with the requirements of the MCMIS Crash file. Just in terms of the coded crash data, the state is in the position to report at a high rate. The actual reporting rate is primarily driven by reporting officers missing a substantial number of CMVs when they code the CMV indicator. Training and other tools might be used to increase reporting rates.

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Appendix A Selection Algorithm to Identify Reportable Records

Selection algorithm used in selecting vehicles that meet MCMIS vehicle type criteria:

Variable name	Definition
Unit_type	Unit type
Haz_cargo	Hazardous materials transported

```
Vehicle type (veh_type) definition

 1='truck'
 2='bus'
 3='hazmat'
 8='other';

if unit_type in(2,19) then veh_type=2;
else if 21<=unit_type<=24 then veh_type=1;
else if haz_cargo='Y' then veh_type=3;
else veh_type=4;
```

Selection algorithm used in selecting injured/transported cases:

Variable name	Definition
Injury_sev	Injury status code
Transported_ind	Transported indicator

```
Injured/transported (severity) definition

      1 = fatal
      2 = injured and transported for immediate medical attention
      3 = not injured or not transported

if injury_sev=1 then severity=1;
else if 2<=injury_sev<=4 and transported_ind='Y' then severity=2;
else severity=3;
```

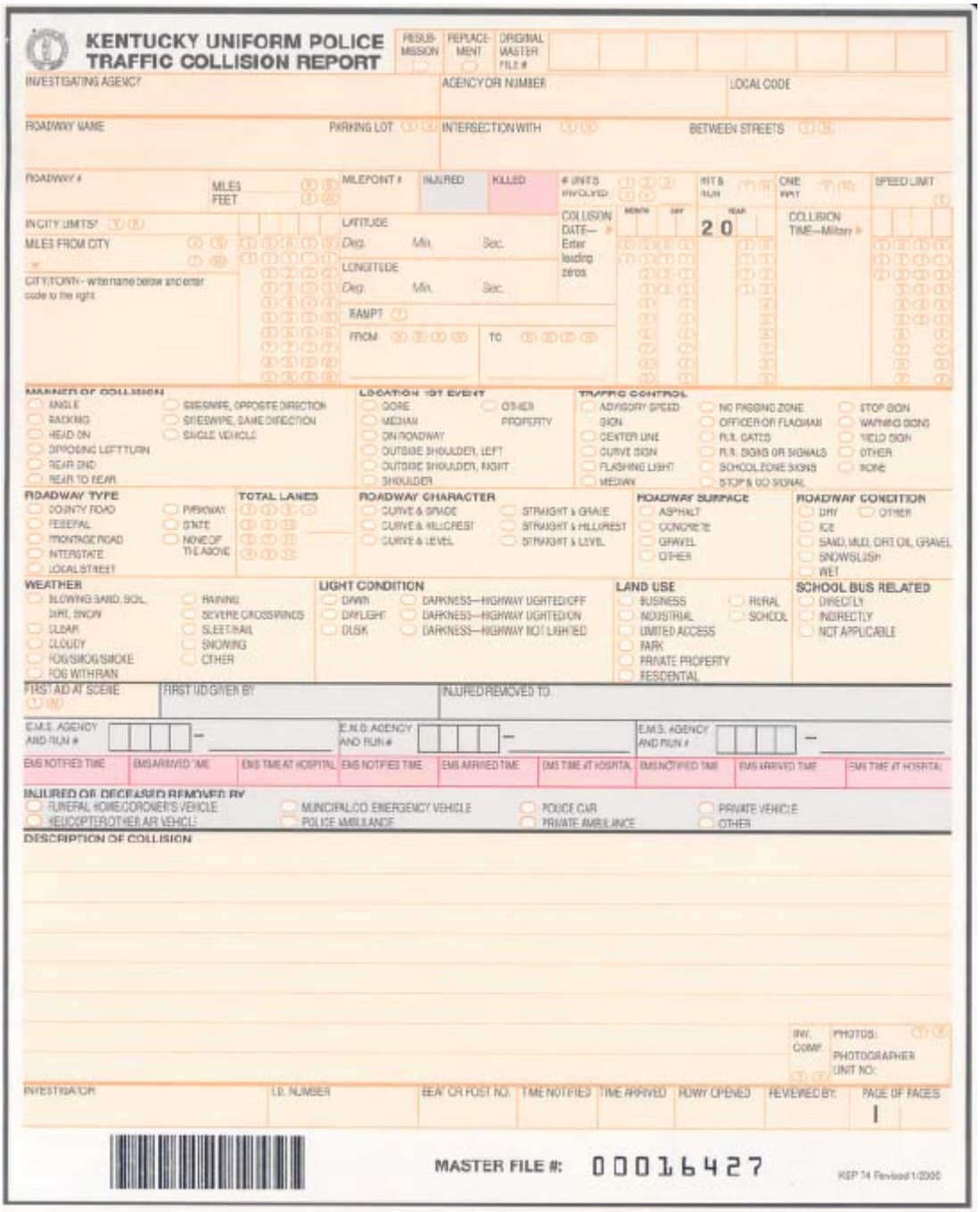
Selection algorithm used in selecting tow/disabled vehicles:

Variable name	Definition
Towed_ind	Vehicle towed indicator
damage_extent	Damage extent code

```
Towed with disabling damage (towed_flag) definition
      1 = towed with disabling damage
      0 = not towed/disabled

if towed_ind='Y' and 4<=damage_extent<=7 then towed_flag=1;
else towed_flag=0;
```

Appendix B Kentucky Uniform Police Traffic Collision Report



KENTUCKY UNIFORM POLICE TRAFFIC COLLISION REPORT

RESUB-MISSION | REPLACE-MENT | ORIGINAL MASTER FILE #

INVESTIGATING AGENCY | AGENCY OR NUMBER | LOCAL CODE

ROADWAY NAME | PARKING LOT | INTERSECTION WITH | BETWEEN STREETS

ROADWAY # | MILES FEET | MILEPOINT # | INJURED | KILLED | # UNITS INVOLVED | HIT & RUN | ONE WAY | SPEED LIMIT

IN CITY LIMITS? | MILES FROM CITY | CITY/TOWN - Write name below and enter code to the right

LATITUDE Deg. Min. Sec.

LONGITUDE Deg. Min. Sec.

RAMP? | FROM | TO

COLLISION DATE— Enter leading zeros | MONTH | DAY | YEAR 20

COLLISION TIME—Military

MANNER OF COLLISION
- ANGLE
- BACKING
- HEAD ON
- OPPOSING LEFT TURN
- REAR END
- REAR TO REAR
- SIDESWIPE, OPPOSITE DIRECTION
- SIDESWIPE, SAME DIRECTION
- SINGLE VEHICLE

LOCATION OF EVENT
- GORE
- MEDIAN
- ON ROADWAY
- OUTSIDE SHOULDER, LEFT
- OUTSIDE SHOULDER, RIGHT
- SHOULDER
- OTHER PROPERTY

TRAFFIC CONTROL
- ADVISORY SPEED SIGN
- CENTER LINE
- CURVE SIGN
- FLASHING LIGHT
- MEDIAN
- NO PASSING ZONE
- OFFICER OR FLAGMAN
- R.R. GATES
- R.R. SIGNS OR SIGNALS
- SCHOOL ZONE SIGNS
- STOP & GO SIGNAL
- STOP SIGN
- WARNING SIGNS
- YIELD SIGN
- OTHER
- NONE

ROADWAY TYPE
- COUNTY ROAD
- FEDERAL
- FRONTAGE ROAD
- INTERSTATE
- LOCAL STREET
- PARKWAY
- STATE
- NONE OF THE ABOVE

TOTAL LANES

ROADWAY CHARACTER
- CURVE & GRADE
- CURVE & HILLCREST
- CURVE & LEVEL
- STRAIGHT & GRADE
- STRAIGHT & HILLCREST
- STRAIGHT & LEVEL

ROADWAY SURFACE
- ASPHALT
- CONCRETE
- GRAVEL
- OTHER

ROADWAY CONDITION
- DRY
- ICE
- SAND, MUD, DIRT, OIL, GRAVEL
- SNOW/SLUSH
- WET
- OTHER

WEATHER
- BLOWING SAND, SOIL, DIRT, SNOW
- CLEAR
- CLOUDY
- FOG/SMOG/SMOKE
- FOG WITH RAIN
- RAINING
- SEVERE CROSSWINDS
- SLEET/HAIL
- SNOWING
- OTHER

LIGHT CONDITION
- DAWN
- DAYLIGHT
- DUSK
- DARKNESS—HIGHWAY LIGHTED/OFF
- DARKNESS—HIGHWAY LIGHTED/ON
- DARKNESS—HIGHWAY NOT LIGHTED

LAND USE
- BUSINESS
- INDUSTRIAL
- LIMITED ACCESS
- PARK
- PRIVATE PROPERTY
- RESIDENTIAL
- RURAL
- SCHOOL

SCHOOL BUS RELATED
- DIRECTLY
- INDIRECTLY
- NOT APPLICABLE

FIRST AID AT SCENE | FIRST AID GIVEN BY | INJURED REMOVED TO

E.M.S. AGENCY AND RUN # | E.M.S. AGENCY AND RUN # | E.M.S. AGENCY AND RUN #

EMS NOTIFIED TIME | EMS ARRIVED TIME | EMS TIME AT HOSPITAL | EMS NOTIFIED TIME | EMS ARRIVED TIME | EMS TIME AT HOSPITAL | EMS NOTIFIED TIME | EMS ARRIVED TIME | EMS TIME AT HOSPITAL

INJURED OR DECEASED REMOVED BY
- FUNERAL HOME/CORONER'S VEHICLE
- HELICOPTER/OTHER AIR VEHICLE
- MUNICIPAL/CO EMERGENCY VEHICLE
- POLICE AMBULANCE
- POLICE CAR
- PRIVATE AMBULANCE
- PRIVATE VEHICLE
- OTHER

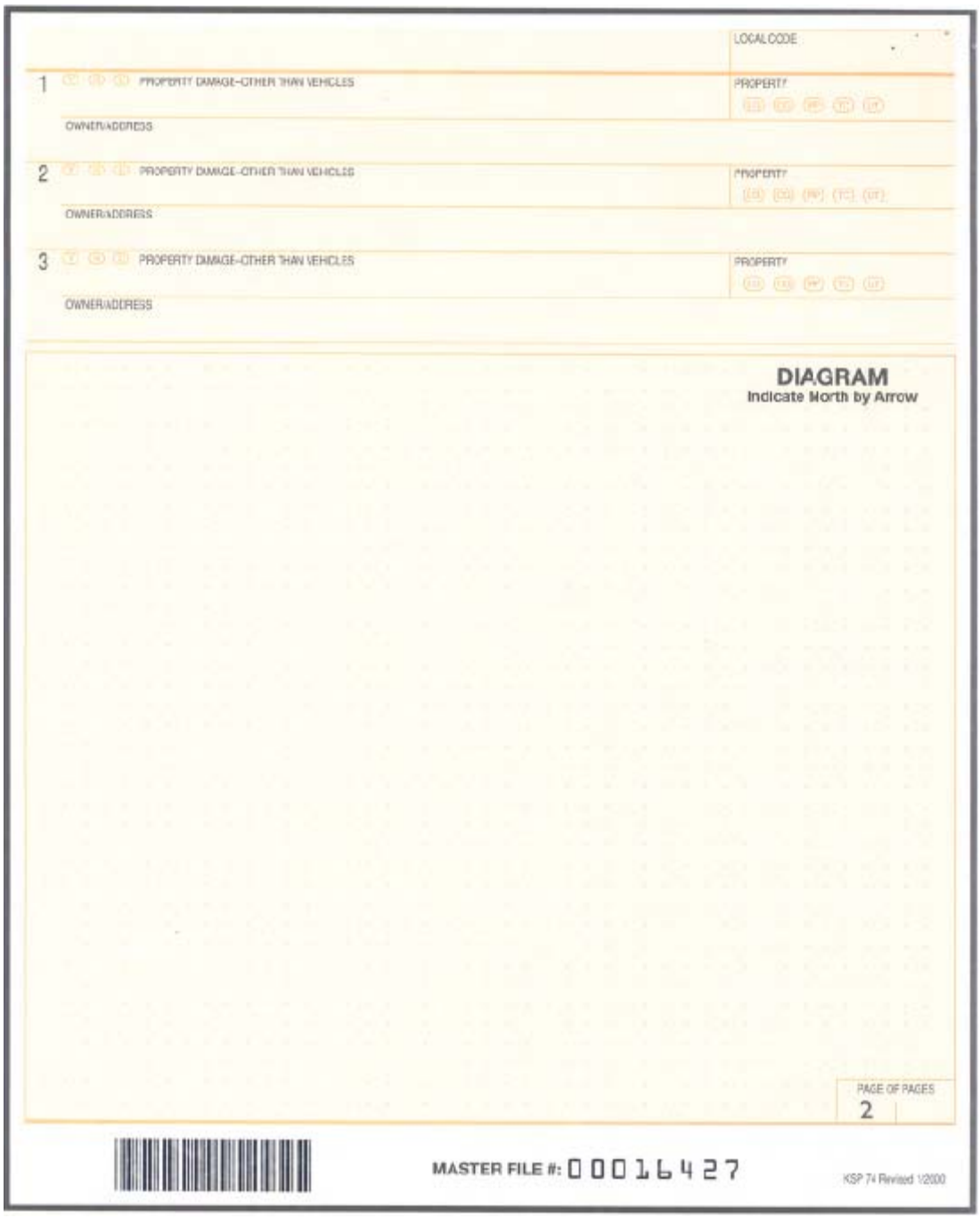
DESCRIPTION OF COLLISION

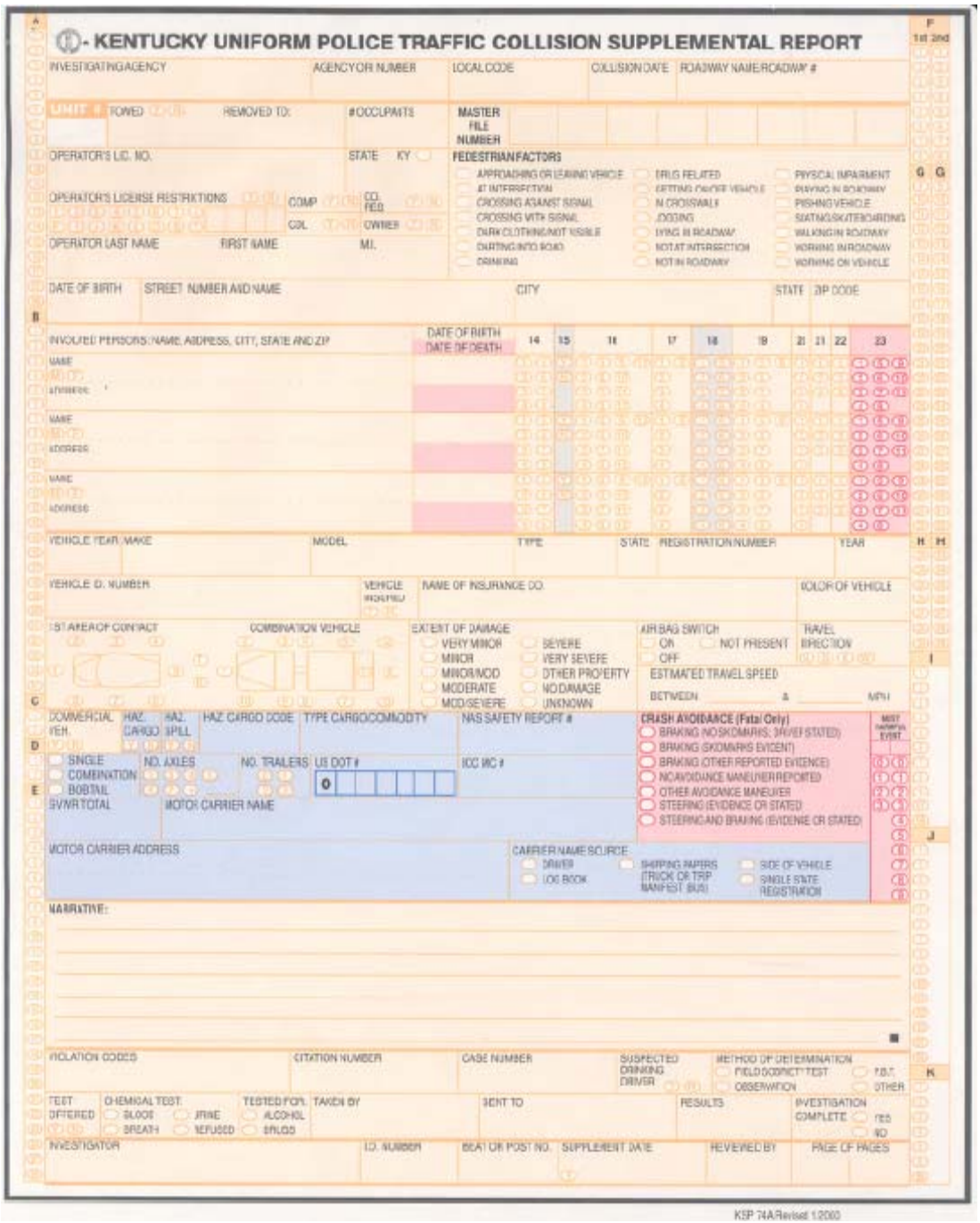
INV. COMP. | PHOTOS: | PHOTOGRAPHER UNIT NO:

INVESTIGATOR | I.D. NUMBER | BEAT OR POST NO. | TIME NOTIFIED | TIME ARRIVED | ROWY OPENED | REVIEWED BY: | PAGE OF PAGES 1

MASTER FILE #: 00016427

KSP 14 Revised 1/2000


LOCAL CODE
1 PROPERTY DAMAGE-OTHER THAN VEHICLES
PROPERTY
OWNER/ADDRESS
2 PROPERTY DAMAGE-OTHER THAN VEHICLES
PROPERTY
OWNER/ADDRESS
3 PROPERTY DAMAGE-OTHER THAN VEHICLES
PROPERTY
OWNER/ADDRESS
DIAGRAM
Indicate North by Arrow
PAGE OF PAGES
2
MASTER FILE #: 0 0 0 1 6 4 2 7
KSP 74 Revised 1/2000



KENTUCKY UNIFORM POLICE TRAFFIC COLLISION SUPPLEMENTAL REPORT

INVESTIGATING AGENCY | AGENCY OR NUMBER | LOCAL CODE | COLLISION DATE | ROADWAY NAME/ROADWAY #

UNIT # | TOWED | REMOVED TO: | # OCCUPANTS | MASTER FILE NUMBER

OPERATOR'S LIC. NO. | STATE KY

OPERATOR'S LICENSE RESTRICTIONS | COMP | CDL | CDL REQ | OWNER

OPERATOR LAST NAME | FIRST NAME | MI.

PEDESTRIAN FACTORS

- APPROACHING OR LEAVING VEHICLE
- AT INTERSECTION
- CROSSING AGAINST SIGNAL
- CROSSING WITH SIGNAL
- DARK CLOTHING/NOT VISIBLE
- DARTING INTO ROAD
- DRINKING
- DRUG RELATED
- GETTING ON/OFF VEHICLE
- IN CROSSWALK
- JOGGING
- LYING IN ROADWAY
- NOT AT INTERSECTION
- NOT IN ROADWAY
- PHYSICAL IMPAIRMENT
- PLAYING IN ROADWAY
- PUSHING VEHICLE
- SKATING/SKATEBOARDING
- WALKING IN ROADWAY
- WORKING IN ROADWAY
- WORKING ON VEHICLE

DATE OF BIRTH | STREET NUMBER AND NAME | CITY | STATE | ZIP CODE

INVOLVED PERSONS (NAME, ADDRESS, CITY, STATE AND ZIP) | DATE OF BIRTH / DATE OF DEATH | 14 | 15 | 16 | 17 | 18 | 19 | 21 | 22 | 23

NAME
ADDRESS

NAME
ADDRESS

NAME
ADDRESS

VEHICLE YEAR | MAKE | MODEL | TYPE | STATE | REGISTRATION NUMBER | YEAR

VEHICLE ID. NUMBER | VEHICLE TOWED | NAME OF INSURANCE CO. | COLOR OF VEHICLE

1ST AREA OF CONTACT | COMBINATION VEHICLE

EXTENT OF DAMAGE
- VERY MINOR
- MINOR
- MINOR/MOD
- MODERATE
- MOD/SEVERE
- SEVERE
- VERY SEVERE
- OTHER PROPERTY
- NO DAMAGE
- UNKNOWN

AIR BAG SWITCH
- ON
- OFF
- NOT PRESENT

TRAVEL DIRECTION

ESTIMATED TRAVEL SPEED
BETWEEN & MPH

COMMERCIAL VEH. | HAZ. CARGO | HAZ. SPILL | HAZ CARGO CODE | TYPE CARGO/COMMODITY | NAS SAFETY REPORT # | MOST HARMFUL EVENT

- SINGLE
- COMBINATION
- BOBTAIL

NO. AXLES | NO. TRAILERS | US DOT # | ICC MC #

SVWR TOTAL | MOTOR CARRIER NAME

MOTOR CARRIER ADDRESS

CRASH AVOIDANCE (Fatal Only)
- BRAKING (NO SKIDMARKS, DRIVER STATED)
- BRAKING (SKIDMARKS EVIDENT)
- BRAKING (OTHER REPORTED EVIDENCE)
- NO AVOIDANCE MANEUVER REPORTED
- OTHER AVOIDANCE MANEUVER
- STEERING (EVIDENCE OR STATED)
- STEERING AND BRAKING (EVIDENCE OR STATED)

CARRIER NAME SOURCE
- DRIVER
- LOG BOOK
- SHIPPING PAPERS (TRUCK OR TRIP MANIFEST BUS)
- SIDE OF VEHICLE
- SINGLE STATE REGISTRATION

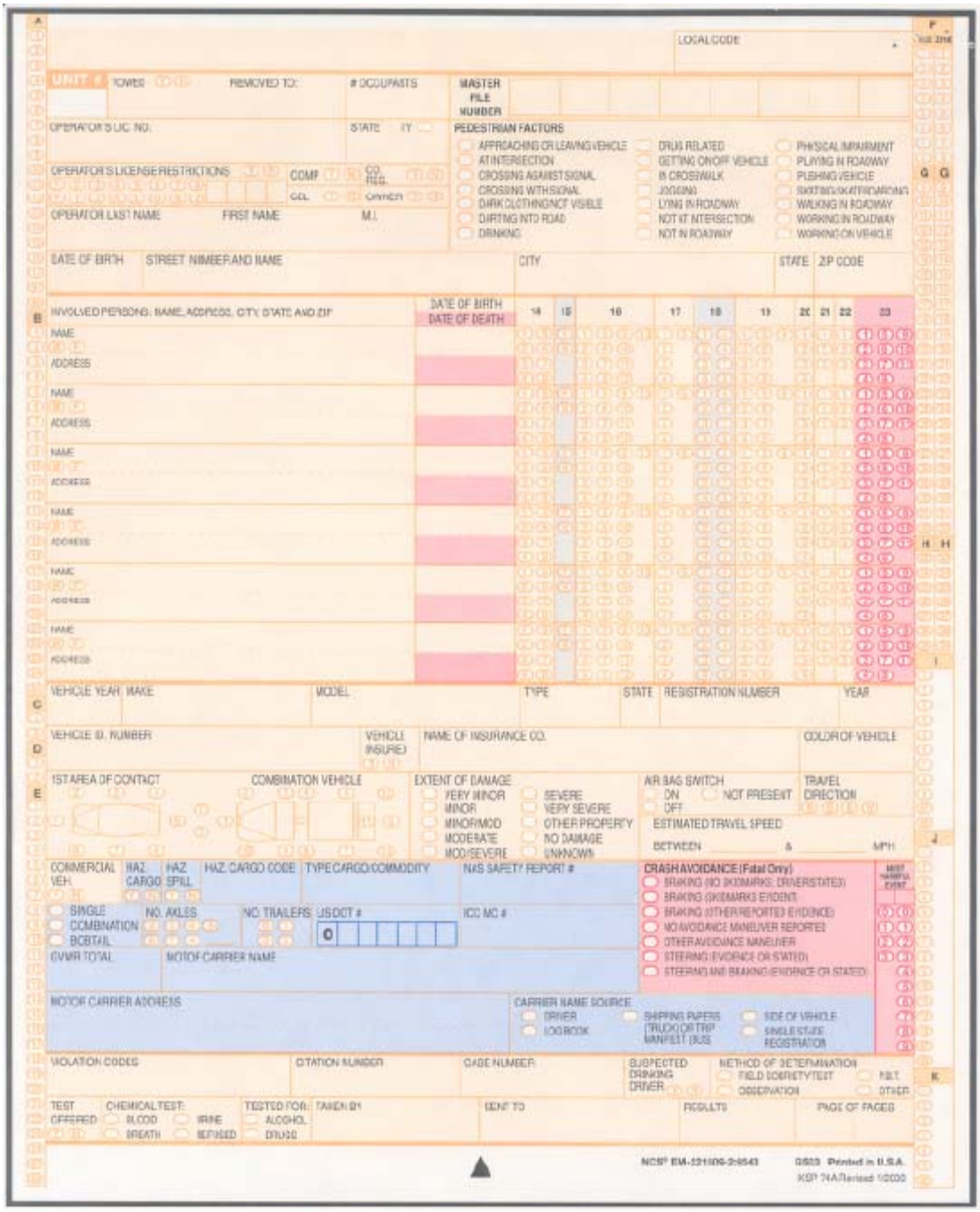
NARRATIVE:

VIOLATION CODES | CITATION NUMBER | CASE NUMBER | SUSPECTED DRINKING DRIVER | METHOD OF DETERMINATION: FIELD SOBRIETY TEST, OBSERVATION, PBT, OTHER

TEST OFFERED | CHEMICAL TEST: BLOOD, BREATH, URINE, REFUSED | TESTED FOR: ALCOHOL, DRUGS | TAKEN BY | SENT TO | RESULTS | INVESTIGATION COMPLETE: YES, NO

INVESTIGATOR | I.D. NUMBER | BEAT OR POST NO. | SUPPLEMENT DATE | REVIEWED BY | PAGE OF PAGES

KSP 74A Revised 1/2000


LOCAL CODE
UNIT #
TOWED
REMOVED TO:
OCCUPANTS
MASTER FILE NUMBER
OPERATOR'S LIC. NO.
STATE
PEDESTRIAN FACTORS
APPROACHING OR LEAVING VEHICLE
AT INTERSECTION
CROSSING AGAINST SIGNAL
CROSSING WITH SIGNAL
DARK CLOTHING/NOT VISIBLE
DARTING INTO ROAD
DRINKING
DRUG RELATED
GETTING ON/OFF VEHICLE
IN CROSSWALK
JOGGING
LYING IN ROADWAY
NOT AT INTERSECTION
NOT IN ROADWAY
PHYSICAL IMPAIRMENT
PLAYING IN ROADWAY
PUSHING VEHICLE
SKATING/SKATEBOARDING
WALKING IN ROADWAY
WORKING IN ROADWAY
WORKING ON VEHICLE
OPERATOR'S LICENSE RESTRICTIONS
COMM
CDL
CO. REG.
DRIVER
OPERATOR LAST NAME
FIRST NAME
M.I.
DATE OF BIRTH
STREET NUMBER AND NAME
CITY
STATE
ZIP CODE
INVOLVED PERSONS: NAME, ADDRESS, CITY, STATE AND ZIP
DATE OF BIRTH
DATE OF DEATH
NAME
ADDRESS
VEHICLE YEAR
MAKE
MODEL
TYPE
STATE
REGISTRATION NUMBER
YEAR
VEHICLE ID. NUMBER
VEHICLE INSURED
NAME OF INSURANCE CO.
COLOR OF VEHICLE
1ST AREA OF CONTACT
COMBINATION VEHICLE
EXTENT OF DAMAGE
VERY MINOR
MINOR
MINOR/MOD
MODERATE
MOD/SEVERE
SEVERE
VERY SEVERE
OTHER PROPERTY
NO DAMAGE
UNKNOWN
AIR BAG SWITCH
ON
OFF
NOT PRESENT
TRAVEL DIRECTION
ESTIMATED TRAVEL SPEED
BETWEEN
&
MPH
COMMERCIAL VEH.
HAZ CARGO
HAZ SPILL
HAZ CARGO CODE
TYPE CARGO/COMMODITY
NAS SAFETY REPORT #
SINGLE
COMBINATION
BOBTAIL
NO. AXLES
NO. TRAILERS
US DOT #
ICC MC #
GVWR TOTAL
MOTOR CARRIER NAME
MOTOR CARRIER ADDRESS
CRASH AVOIDANCE (Fatal Only)
BRAKING (NO SKIDMARKS: DRIVER STATED)
BRAKING (SKIDMARKS EVIDENT)
BRAKING (OTHER REPORTED EVIDENCE)
NO AVOIDANCE MANEUVER REPORTED
OTHER AVOIDANCE MANEUVER
STEERING (EVIDENCE OR STATED)
STEERING AND BRAKING (EVIDENCE OR STATED)
MOST HARMFUL EVENT
CARRIER NAME SOURCE
DRIVER
LOG BOOK
SHIPPING PAPERS (TRUCK OR TRIP MANIFEST BUS)
SIDE OF VEHICLE
SINGLE STATE REGISTRATION
VIOLATION CODES
CITATION NUMBER
CASE NUMBER
SUSPECTED DRINKING DRIVER
METHOD OF DETERMINATION
FIELD SOBRIETY TEST
OBSERVATION
PBT
OTHER
TEST OFFERED
CHEMICAL TEST:
BLOOD
BREATH
URINE
REFUSED
TESTED FOR:
ALCOHOL
DRUGS
TAKEN @
SENT TO
RESULTS
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NCSP EM-121006-2-0543
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