

Evaluation of California Crash Data Reported to MCMIS Crash File

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MCMIS Crash File Evaluation**

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16. Abstract <p>This document is part of a series of reports 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 significantly incomplete in other states. This report examines the sources of underreporting for the state of California.</p> <p>MCMIS Crash File records were matched to the California Police Accident Report (PAR) file to determine the nature and extent of underreporting. Overall, California submitted 52.6% of its reportable crash involvements to the MCMIS Crash File in 2003. Reporting rates varied by vehicle type, crash severity, and reporting agency. Reporting rates are 71.3% for fatal crashes, 53.2% for injury cases, and 51.9% for tow/disabled accidents. Where specific truck type could be determined, two-axle trucks are reported only 50% of the time, while three-axle trucks and truck tractors each have an 85% reporting rate. Buses are only reported 13.3% of the time. CHP agencies had a reporting rate of 72.0%, compared with 5.7% for police departments, and 6.7% for sheriff's offices.</p> <p>Since recognizing and accurately coding reportable cases is the responsibility of the officer at the scene of the crash, inadequate training may be an issue. It also appears that heavy caseloads may explain why a few jurisdictions in the densest population areas have lower overall reporting rates. Although California's data collection system is consistent with MCMIS reporting requirements, the use of more than one vehicle type variable and the lack of sufficient documentation may lead to incorrect identification of reportable vehicles.</p>					
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Evaluation of California Crash Data Reported to MCMIS Crash File

1. Introduction

Complete reporting of truck and bus involvements is essential in assessing the magnitude and characteristics of motor carrier crashes, so that effective safety measures can be designed. For this purpose, the Motor Carrier Management Information System (MCMIS) Crash file was developed by the Federal Motor Carrier Safety Administration (FMCSA) to serve as a census file of traffic crashes involving trucks and buses. Its utility is dependent upon individual states to transmit a standard set of data items on all trucks and buses involved in traffic crashes that meet a specific severity threshold. However, the MCMIS Crash file is known to be incomplete. Nationally, only about two-thirds of qualifying truck involvements are reported. The reporting rate for buses is even lower, at about 40%. [1] (See references at the end of the report.) Reporting is more complete for severe crashes, with about 90% of truck fatal involvements and 65% of bus fatal involvements appearing in the file, but rates are much lower for less severe crashes.

Since the states are responsible for reporting qualifying crashes, the solution for underreporting must ultimately lay with the individual states. This report is part of a series of evaluations of reporting from each state. Previous reports on Ohio, Missouri, Michigan, and Florida showed substantial underreporting due in large part to problems police officers experience in interpreting and applying the reporting criteria [2, 3, 4, 5]. The problems were more severe in large jurisdictions and police departments. Each state also had problems specific to the nature of its system. Both Missouri and Ohio also had substantial overreporting of cases, often due to technical problems with duplicate records.

In this report, we focus on MCMIS Crash file reporting by California. Given California's size and economic importance, each year California is among the two or three states with the greatest number of truck and bus fatal involvements. Accordingly, improving reporting from California to the MCMIS Crash file would contribute heavily to the goal of making that entire file complete and accurate.

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

1. The complete police accident report file (PAR file hereafter) from California was obtained for the most recent year available, 2003. This file was processed to identify all cases that qualified for reporting to the MCMIS Crash file.

2. All cases in the California 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 California.
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.

PAR data recorded in the 2003 Statewide Integrated Traffic Records System (SWITRS) as of November 24, 2004 were used in this analysis. The 2003 SWITRS file (subsequently referred to as the PAR file) contains the computerized records of 1,068,892 “parties” involved in 538,955 crashes that occurred in California during 2003. Parties include drivers, pedestrians, parked vehicles, bicyclists, and others. For this study, pedestrians and bicyclists were excluded, resulting in 1,041,096 vehicles.

Before undertaking the MCMIS study, 2003 California PAR data were evaluated to determine if the file contains all police reported crashes. One way to do this is to compare California with other states based on reported crashes as a percent of state population, as accidents should be roughly proportional to a state’s population. The total number of PAR crashes was obtained for states previously evaluated. Then crashes as a percentage of the total state population [7] was derived, to get an indication if all California cases were being submitted. The accident rate was low in California compared to the three least populated states, but comparable to Florida, the comparison state with the largest population.

Another test is to compare the total number of fatal and non-fatal crashes identified in the California PAR data, with estimates from another source. Data from NHTSA[6] were used to verify the total number of fatal crashes estimated for California in 2003. NHTSA FARS data showed 3,722 fatal accidents and the PAR data had a comparable 3,726. National estimates of non-fatal crashes by state are not readily available, but comparisons were made with Florida and Michigan data from previous MCMIS evaluations. Although the distributions of non-fatal involvements by the standard KABCO and no-injury categories showed some variation by state, California’s proportions were comparable, falling in the midrange between Florida and Michigan.

Finally, the PAR data for California were examined by county to determine if any specific counties had a particularly low number of reported crashes or involvements in 2003, based on their total population. For each county, the ratio of crashes (and involvements) to county population was calculated [8]. Rates were fairly consistent across counties, with no county showing a great deviation from the norm. The above analysis indicates that all California jurisdictions were consistently reporting crashes.

2. Data Preparation

The California PAR file and MCMIS Crash file each required some preparation before the California records in the MCMIS Crash file could be matched to the California PAR file. In the case of the MCMIS Crash file, the only processing necessary was to extract records reported from California and to eliminate duplicate records. The California PAR file required more extensive work, most of which centered around developing means of identifying cases that should have been reported to the MCMIS Crash file. This section discusses the methods used to prepare each file and some of the problems uncovered.

2.1 MCMIS Crash File

The MCMIS Crash file as of April 27, 2004 was used to identify records submitted from California. For calendar year 2003 there were 10,163 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). Only one pair of such duplicate records was found. It appeared that accident day was misrecorded in one of the cases. The record that did not appear in the PAR file was excluded. In addition, records were examined for identical values for accident date, time, crash city, officer badge number, vehicle license number, configuration, and driver's age. Two such duplicate pairs were found. In both cases virtually all of the variables were identical except for accident number, so the member of the pair not found in the PAR file was excluded from the MCMIS file. After excluding these three duplicate records, the resulting MCMIS file contained 10,160 records.

2.2 California PAR File

The California PAR file for 2003 (dated November 24, 2004) was obtained from the state of California. This file contains records for 538,955 crashes involving 1,041,096 vehicles. Data for the PAR file are coded from the California Traffic Collision Reports completed by police officers (a list of the code variables is shown in Appendix A). It should be noted that the PAR file does not contain all of the data elements found on the collision report.

The first step in data preparation is to identify duplicate records. When duplicates were defined as records with identical report numbers and vehicle numbers, no instances were found. In addition, inspection of report numbers verified that they were consistently recorded in the same format, so there was no reason to suspect duplicate records based on similar, but not identical, report numbers (such as 0641901 and 64-1901, for example.) However, cases were also examined to determine if there were any records that contained identical time, place, and vehicle/driver variables, even though their case numbers were perhaps different. One would not expect all of these variables to be identical between two cases. To investigate this possibility, records were examined for duplicate occurrences based on the variables accident month, day,

hour, minute, county/city location, party type, vehicle make, vehicle year, and party age. A total of 1,096 duplicate instances were found. Since some of these instances included more than two records, the number of records involved was 2,202. Several of these duplicate groups were examined more closely for any patterns that might explain why they were occurring.

One possible explanation for the apparent duplicates is that a vehicle could be involved in two accidents at the same place and virtually at the same time. According to California PAR instructions, “in a collision where a stabilized situation can be identified, subsequent injury or damage producing events are not considered a part of the original collision and should be documented as separate collisions.”¹ In such a case, the accident location and vehicle/driver characteristics would be identical, however one would expect that accident time would differ by a couple of minutes or longer. Indeed, there were 5,546 instances in the California PAR file where accident, vehicle, and driver variables were identical, but accident time varied.

However, the 2,202 records with identical accident time are most likely duplicate records. A correction may have been submitted and the original record not deleted, resulting in two records on the file. Based on this assumption, the member of the duplicate group with the latest processing date was kept, and the other records were excluded. Thus 1,096 of these records were left in the file, and $2,202 - 1,096 = 1,106$ records were excluded, resulting in 1,039,990 records in the PAR file.

The next step in data preparation is to identify records that qualified for reporting to the MCMIS Crash file. It was necessary to develop a set of criteria using the variables in the California PAR file to identify records that should have been reported. The purpose of the criteria 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 is shown in Table 1.

Table 1. 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.

¹ *California Highway Patrol Investigation Manual*, February 2003, p. 2-2.

Indeed, the California Highway Patrol Collision Investigation Manual [10] makes a specific reference to the Safetynet initiative stating “ [t]he National Governor’s Association (NGA), with concern toward traffic safety, has requested special information to be collected on a CHP555D when specific criteria has [sic] been met.”¹ The CHP555D is the Truck/Bus Collision Supplemental Report (Appendix B). The manual’s stated qualifying conditions agree with the MCMIS reporting criteria in Table 1.

Variables available in the California PAR data permit the MCMIS Crash file criteria to be applied reasonably well. Two variables on the truck/bus supplemental record, gross vehicle weight rating (GVWR) and vehicle configuration, were not available on the PAR file for identifying eligible trucks. However, the file includes a “CHP vehicle type” variable with seventy-one code levels. This variable was used to identify qualifying trucks, buses, and vehicles carrying hazardous material. Since there was no further explanation of the meanings of the vehicle codes, codes were interpreted for their typical meaning. In cases where CHP vehicle type was unrecorded, the “Statewide vehicle type” variable was used. Eligible vehicles were thus selected based on the codes in Table 2, excluding parked vehicles.

Table 2. California PAR (SWITRS File) Codes Used to Identify Eligible Vehicles

CHP veh type code	Description	CHP veh type code	Description
Truck			
21	2-axle tank truck	56	3-axle tow truck
24	3-axle tank truck	75,85	truck tractor – hazardous materials
25	truck tractor	76,86	2-axle truck – hazardous materials
26	2-axle truck	77,87	3+ axle truck – hazardous materials
27	3-axle truck	78,88	2-axle truck – hazardous materials
55	2-axle tow truck	79,89	3-axle truck – hazardous materials
If chp_vehicle_type was blank, then statewide_veh_type codes F (truck or truck tractor) and G (truck or truck tractor with trailer) were selected.			
Bus			
9	paratransit bus	17,18	contractual school bus
10	tour bus	19	general public paratransit vehicle
11	other commercial bus	20	public transit authority
12	non-commercial bus	63	youth bus
13,14	public school bus	64,65	school pupil activity bus
15,16	private school bus	66	school bus without pupil passengers
If chp_vehicle_type was blank, then statewide_veh_type codes H (school bus) and I (other bus) were selected.			
Vehicle displaying hazardous materials placard			
71,81	passenger car – hazmat only	73,83	pickups and campers – hazmat only
72,82	pickups and panels – hazmat only		

¹ California Highway Patrol Investigation Manual, February 2003, p. 8-2.

It is also possible that some other vehicles, such as vans, could qualify as buses, if they are used for transporting passengers and have seats for nine or more passengers. However, since number of seats and a description of vehicle use are not available, the decision was made not to include any other vehicles as qualifying buses. Appendix A includes a complete discussion of the variables used to identify qualifying vehicles.

In total, there were 41,822 vehicles meeting the vehicle criteria in the California PAR file (Table 3).

Table 3. Vehicles Meeting MCMIS Vehicle Criteria, California PAR File, 2003

Vehicle type	N	%
Trucks	35,224	84.2%
Buses	6,592	15.8%
Non-trucks with hazmat placard	6	<0.1%
Total	41,822	100.0%

Of these vehicles, those in a crash involving a fatality, an injury transported for medical treatment, or a vehicle towed due to disabling damage should have been reported to the MCMIS Crash file. Injuries can be readily identified in the California PAR file. At the accident level, the California PAR file includes the usual crash injury severity variable (identifying fatal, incapacitating, non-incapacitating but evident, and possible injuries). However, although the PAR form has a box for specifying an injured person was “transported by” and “taken to,” that information does not appear as a variable on the PAR file. Thus, it was not possible to directly identify injured persons who were transported for medical care. Therefore, an alternative method of distinguishing transported from non-transported injured persons was developed. The method will be discussed fully below.

The last MCMIS criterion specifies “vehicles towed due to disabling damage.” The California PAR file contains a towaway variable at the accident level, indicating if any vehicle in the accident was towed because it could not be driven. This variable was used to identify crashes with a least one vehicle towed due to disabling damage.

Since it is not known if an accident involved a transported injury, the decision was made to use A and B injuries as a surrogate for injured transported. This seems like a reasonable rule, since from the definitions of the injuries, immediate medical attention is warranted or likely. However, the reality of injury coding may not be so straightforward. In fact, experience with Ohio indicates that a substantial percentage of A and B injuries are not transported for treatment. Ohio uses the KABCO injury scale, which is similar to California’s injury categories, and also includes a variable that indicates whether the injured person was transported for treatment. In a recent year of crashes, only 76% of A injuries, 52% of B-injuries, and 28% of C injuries were also coded as transported.

Consequently, the practice of including all involvements in which the most severe injury was A or B, regardless of whether anyone was actually transported, can result in a different set of cases selected for the MCMIS Crash file and a different distribution of crash severity. Since the Ohio data includes all relevant variables, it is possible to estimate the distribution of cases that should have been submitted from California if the PAR data had included the transported variable.

The number of California reportable cases based on the Ohio experience was estimated by first determining the number of California PAR cases that would have qualified for the MCMIS Crash file based on vehicle type, and then classifying each by the most severe injury in the crash. Then the proportion of such involvements in Ohio in which an injured person was transported for treatment was applied to the number of California involvements to estimate the number of California cases for a given crash severity and tow status that would have been transported (Table 4). For example, in California there were 579 qualifying vehicles in which the most severe injury was an A injury, and at least one vehicle in the accident was towed due to disabling damage. In Ohio, 74.4% of these involvements had at least one transported injury. Applying that percentage to A-injury, towed cases in California, an estimated 431 A-injury crashes with a towed, disabled vehicle would have been transported. Similarly, Ohio proportions of transported injuries were applied to California numbers for A, B, and C injuries that were not towed. The results were summed to generate an estimated 4,080 injured, transported cases for California. The remaining non-transported, but towed figures were added to the number of California non-injured, but towed cases to arrive at an estimated number of towed, disabled vehicles, 12,511.

Table 4. Estimated Reportable California Cases Based on Ohio Proportions of Transported Injuries

Injury severity	California figures	Ohio% transported	California estimates	
			Injured, transp.	not transp, towed
Fatal injury	362			
A injury				
towed *	579	74.4	431	148
not towed	86	87.4	75	
B injury				
towed	2,783	52.6	1,464	1,319
not towed	650	49.0	319	
C injury				
towed	3,805	31.5	1,199	2,606
not towed	2,280	26.0	593	
No injury				
towed	8,437			8,437
not towed	22,699			
Total eligible vehicles	41,681 **			
Estimated injured, transported			4,080	
Estimated towed due to disabling damage				12,511

* Note: In this table 'towed' means 'towed due to disabling damage.'

** Excludes 141 cases where tow status is unknown.

Note: Shaded figures represent estimated reportable cases.

When this adjustment procedure is applied to each injury severity level in California, an estimated 16,953 cases should have been reported to the MCMIS Crash file. After the matching process (discussed below) cases that were actually reported to the MCMIS crash file could be determined (Table 5). As shown, the distribution of crash severity for reported cases is similar to that of estimated reportable cases.

Table 5. Reported and Estimated Reportable California Cases Based on Ohio Data

MCMIS severity class	Actually reported	%	Estimated reportable cases	%
Fatal	258	2.9	362	2.1
Injured, transported for treatment	2,185	24.8	4,080	24.1
Tow, disabled	6,354	72.2	12,511	73.8
Total	8,797	100.0	16,953	100.0

However, for the purposes of this evaluation, it is only possible to use the information that is in the California PAR file. Thus, the subset of PAR cases that can be identified as reportable to MCMIS included the trucks, buses, and vehicles with a hazardous materials placard defined above, in conjunction with one of the following conditions: fatal accident, all injury-only A and B severity accidents (based on maximum accident severity), and towaway accidents (based on whether the accident included a vehicle not drivable after the crash). Using this procedure (surrogate definition), 16,715 records in the California PAR file should have been reported to the MCMIS Crash file. Table 6 shows the distribution of cases identified in the California PAR file that met the reporting criteria thus defined, along with the distribution of records actually reported.

Table 6. Reportable Records in the California PAR File by Crash Severity, 2003

Crash severity	Reportable records in California PAR file	%	Actually reported	% Reported
Fatal	362	2.2	258	71.3
Injury, A or B	4,111	24.6	2,185	53.2
Tow, disabled	12,242	73.2	6,354	51.9
Total	16,715	100.0	8,797	52.6

Note that the distribution of reportable records by crash severity based on the surrogate definition (Table 6) is very similar to the distribution of estimated reportable cases based on Ohio proportions (Table 5). While there may be differences in identifying individual cases that should be reported, the two methods of determining reportable cases yield similar results at the aggregate level.

Appendix A provides details on the variables and code levels used to identify MCMIS-reportable cases for the interested reader.

3. Matching Process

After preparation, records from the California PAR file were matched to records from the MCMIS file. After removing duplicates, there were 10,160 California records from the MCMIS file available for matching, and 1,039,990 records from the California PAR file. All records from the California 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 should not have been reported.

Matching records in the two files requires finding common variables that match at the accident level as well as identifying specific vehicles within an accident. CaseID, which is the crash identifier used to uniquely specify a crash in the California PAR data, corresponds to Report Number in the MCMIS Crash file, and is an obvious first choice. CaseID in the California 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 (CA, in this case), followed by three zeros, then by seven digits that correspond to the police report number. Examination of PAR and corresponding MCMIS records showed that for most cases the PAR report number was among the digits of the MCMIS report number, allowing a value corresponding to the California CaseID to be extracted and used in the match. Other variables that were available for matching at the accident level included crash month, day, hour, minute, reporting officer number, and crash county/city code.

Variables in the MCMIS file that could distinguish one vehicle from another within the same accident included vehicle license plate number, driver license number, vehicle identification number (VIN), and driver last name. However, these variables were not present in the PAR file, and mostly unrecorded on the MCMIS file.

A variable that could possibly differentiate between vehicles within an accident was driver age, except in cases where age was identical for multiple drivers within the accident. In most cases, age appeared to be a reliable match variable. If there were multiple vehicles in the accident where drivers had the same age, these vehicle records were excluded in both the PAR and MCMIS files prior to doing the match. This procedure prevented erroneous matches. It is likely that a couple hundred valid matches were not made due to this situation, thus increasing the number of nonmatched reportable records. However, since this variable was consistently recorded, and in most cases was unique for vehicles within a given accident, it resulted in an acceptable match rate.

To remedy the problem of multiple vehicles in a crash with drivers of the same age, consideration was given to the possibility of using party number on the PAR file and sequence number on the MCMIS file. Both represent a number for a particular vehicle within the accident.

However the party number is assigned sequentially to all vehicles involved in the accident, while the MCMIS number is assigned sequentially only to the qualifying vehicles. California appears to be implementing the MCMIS instructions accurately, as the documentation specifies that the crash sequence number “is used to identify vehicles in a multiple vehicle crash. If only one vehicle was involved the value will be 1. For each additional vehicle involved it will be incremented by 1.”¹

So if the PAR file included three vehicles in the crash, party number would be assigned sequentially as follows: truck 1, passenger car 2, and another truck 3. In MCMIS, the first truck would be assigned 1 and the second truck would have a sequence number of 2. Thus, this variable could not *directly* be used to match vehicles across the two files. However, by first selecting qualifying vehicles from the PAR file, then assigning a sequential number to these vehicles within the accident, a file comparable to the MCMIS file would be produced. Such a file was used for the third match attempt. Cases that previously could not be matched due to multiple drivers in the accident with the same age, could potentially be matched by adding sequence number as a match variable, thus distinguishing one vehicle from another.

Three separate matches were performed. In each match step, records in either file with duplicate values on 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 month, day, hour, minute, reporting officer number, crash county/city code, and driver age. The subsequent match step eliminated reporting officer number. The third match step added sequence number, after assigning a sequential number to eligible vehicles within each accident in the PAR file. See Table 7 for the variables used in each match step along with the number of records matched at each step.

Table 7. Variables Used in MCMIS-California PAR File Match, 2003

Match step	Matching variables	Cases matched
Match 1	report number, crash month, day, hour, minute, officer number, crash county/city code, driver age	9,261
Match 2	report number, crash month, day, hour, minute, crash county/city code, driver age	85
Match 3	report number, crash month, day, hour, minute, crash county/city code, driver age, sequence number	225
Total cases matched		9,571

¹ Federal Motor Carrier Safety Administration (FMCSA) Crash File Documentation, March 2000, p.3.

Matched records were verified on other variables common to the MCMIS and PAR file as a final check to ensure the match was valid. The above procedure resulted in 9,571 matches, representing 94.2% of the 10,160 non-duplicate records reported to MCMIS.

Figure 1 shows the case flow during the match. There were 589 (5.8%) MCMIS records that could not be matched to the California PAR file. On the other hand, of the 16,715 reportable cases in the California PAR data, only 8,797 were actually reported, along with 774 cases that were not reportable, but nevertheless were reported (based on taking all A and B injuries as a surrogate for injured, transported cases.) Thus, the reporting rate for reportable cases was $8,797/16,715=52.6\%$. Approximately 53% of crash involvements that qualified for reporting to the MCMIS Crash file were actually reported in 2003.

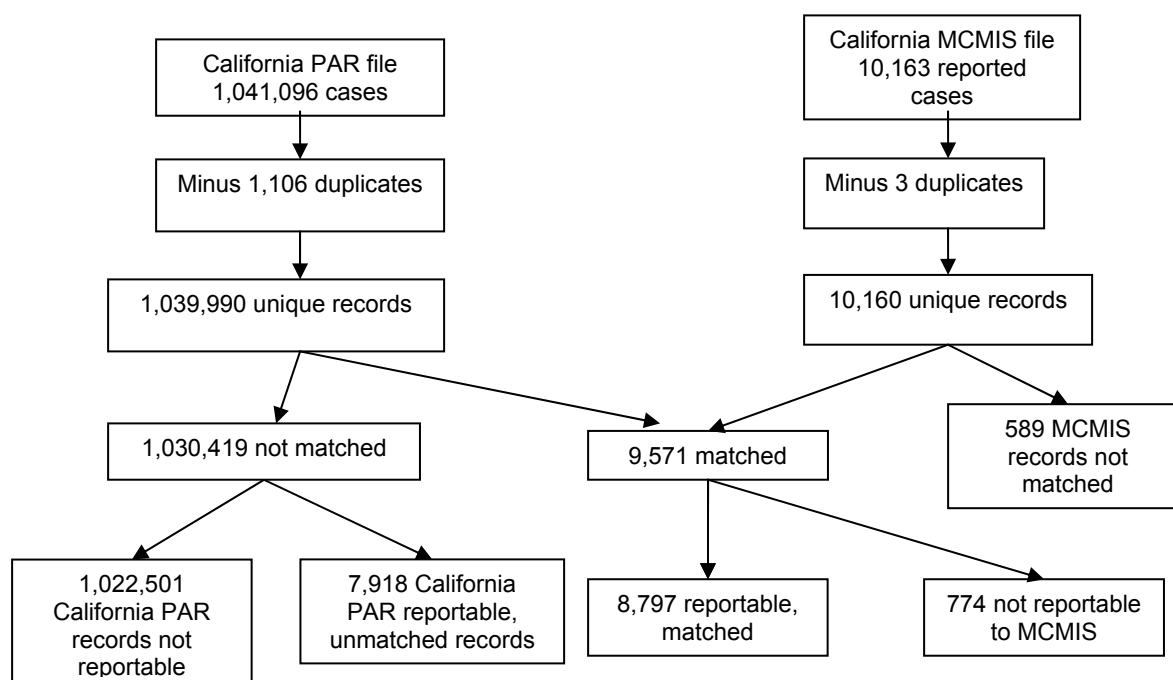


Figure 1. Results of MCMIS-California PAR File Match, 2003

In addition, 774, or 7.6%, of reported cases should not have been reported. They did not qualify as reportable because they did not involve either qualifying vehicles or qualifying severity. Table 8 shows why these cases did not meet the reporting criteria. The majority of cases, 540, were trucks or buses, but were not involved in a crash serious enough to meet the crash severity threshold, based on the method of identifying reportable cases (all were C-injuries).

Table 8. Distribution of Non-Reportable Cases in MCMIS by Reporting Criteria, California PAR File, 2003

Vehicle type	Crash severity				Total
	Fatal	Transported injury	Tow/disabled	Other crash severity	
Truck	0	0	0	473	473
Bus	0	0	0	67	67
Other vehicle (not transporting hazmat)	5	58	143	28	234
Total	5	58	143	568	774

An additional 206 (5+58+143) cases were involvements in which the crash met the severity test, but they were not trucks, buses, or a vehicle transporting hazmat. Finally, 28 cases were neither serious enough nor did they involve qualifying vehicles.

Omitting the 589 cases that could not be matched and the 774 MCMIS cases not considered reportable in the PAR file, 8,797 reportable MCMIS records were matched to the PAR file, or 52.6% of the 16,715 cases that should have been reported. The analysis that follows will investigate why the remaining 47.4% of cases were not reported.

4. Sources of Underreporting

This section explores the sources of underreporting to the MCMIS Crash file. The approach is to compare reported and unreported cases across several dimensions to search for patterns that might suggest why some cases were reported and others were not. All tables include only matched, reportable cases. Therefore, they exclude the 774 MCMIS cases not considered reportable in the PAR file and the 589 MCMIS cases that could not be matched to the PAR file. The reporting rate shown in the following tables is the number of reported cases per 100 reportable cases.

Determining if a case is submitted to the MCMIS Crash file is dependent upon two factors. First, the reporting officer must accurately record the vehicle and injury information required for determining if the accident involves a qualifying vehicle and meets the severity criteria. In California the officer is supposed to complete the Truck/Bus Collision Supplemental Report for qualifying vehicles and crashes. Failure to complete the supplemental form or submission of erroneous data may cause an eligible case not to be submitted. It appears that an officer filling out a supplemental form is a necessary event for a MCMIS case to ultimately be reported. However, since the data items on the supplemental report are not contained in the PAR file, it is not possible to directly determine if cases were not submitted to MCMIS due to the lack of supplemental data. However, data items from the first three pages of the PAR can be examined for differences among reported and unreported cases.

Secondly, the appropriate cases must be extracted from the PAR file and transmitted to the MCMIS Crash file. At this step, errors include delays in transmitting cases or errors in applying the reporting criteria, either as to vehicles or crash severities.

4.1 Case Processing

The time lag in extracting and submitting reports to the MCMIS Crash file might explain 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 end of the year. The MCMIS file used in this evaluation was dated April, 2004, so in theory all 2003 cases should have been reported. An examination of reporting by accident month (see Table 9) shows that 50.3% to 54.9% of reportable cases are submitted in any given month. Since reporting rates are very uniform across months, late case submission is clearly not the major cause of cases not being reported to MCMIS.

Table 9. Reporting to MCMIS Crash File by Accident Month, California PAR File, 2003

Crash month	Reportable cases	Reporting rate	Unreported	% of unreported cases
January	1,278	52.0	614	7.8
February	1,252	52.2	599	7.6
March	1,295	52.8	611	7.7
April	1,313	53.5	611	7.7
May	1,335	50.3	664	8.4
June	1,383	53.4	645	8.1
July	1,470	52.4	700	8.8
August	1,512	54.4	690	8.7
September	1,567	54.9	707	8.9
October	1,551	51.8	748	9.4
November	1,366	51.8	659	8.3
December	1,393	51.9	670	8.5
Total	16,715	52.6	7,918	100.0

4.2 Reporting Criteria

Crash severity may also be associated with underreporting, with less severe crash involvements less likely to be recognized as reportable by the officer. As shown in Table 10, more severe crashes are more likely to be reported. Only 51.9% of towaway involvements were reported, compared with 53.2% of injury cases and 71.3% of crashes involving a fatality. Even though the reporting rate for fatal accidents is reasonably high, 104 of these serious involvements were not submitted to the MCMIS Crash file. In addition, 1,926 injury cases and 5,888 cases involving a tow/disabled vehicle were not reported.

Table 10. Reporting to MCMIS Crash File by Crash Severity, California PAR File, 2003

Crash severity	Reportable cases	Reporting rate	Unreported cases	% of total unreported cases
Fatal	362	71.3	104	1.3
Injured	4,111	53.2	1,926	24.3
Towaway	12,242	51.9	5,888	74.4
Total	16,715	52.6	7,918	100.0

Reporting rates also vary by vehicle type. California's overall reporting rate for trucks is 57.6%. Consistent with previous studies, larger trucks are more likely to be reported than smaller trucks (Table 11). Where specific truck type could be determined, two-axle trucks are only reported 50% of the time, while three-axle trucks and truck tractors are reported at rates of 85.6% and 85.3%, respectively. Improving reporting rates for two-axle trucks would have a large impact on the total number of unreported cases. It should also be noted that buses have a very low reporting rate, averaging only 13.3%. School buses are reported more frequently than other bus types, but even then less than 25% are reported. This is unfortunate, given that the California PAR vehicle type variable includes many codes for specifying buses (Table 2).

Table 11. Reporting to MCMIS Crash File by Vehicle Type, California PAR File, 2003

Vehicle type	Reportable cases	Reporting rate	Unreported cases	% of total unreported cases
2-axle truck	3,052	50.0	1,527	19.3
3-axle truck	1,556	85.6	224	2.8
Truck tractor	6,407	85.3	943	11.9
Truck or truck tractor*	3,806	5.9	3,583	45.3
School bus	507	23.1	390	4.9
Other bus	1,385	9.7	1,250	15.8
Other vehicle (hazmat placard)	2	50.0	1	<0.1
Total	16,715	52.6	7,918	100.0

* Note: Cases assigned to this group could not be distinguished as a 2-axle truck, 3-axle truck, or truck tractor.

Reporting may also be related to misunderstanding that intrastate vehicles are to be included, not just those involved in interstate commerce. Unfortunately this factor cannot be assessed since there is no variable in the California PAR file that would indicate if the vehicle is interstate or intrastate.

4.3 Reporting Agency and Area

Beyond the application of the reporting criteria, there can be differences related to where the crash occurs or the type of agency that covered the crash. More densely populated areas with a large number of traffic accidents may not report as completely as areas with a lower work load. The level and frequency of training or the intensity of supervision can also vary. If there are such

differences, they may serve as a guide to focus resources in areas and at levels that will produce the greatest improvement. The next set of tables examines areas of the state to see if there are inconsistencies in reporting patterns.

Reporting rates for California's 58 counties ranged from 14.7% (San Francisco) to 100% of reportable cases (Modoc). Table 12 shows reporting rates for the ten largest California counties, based on the most unreported cases. Together, these ten counties account for 74.9% (5,930) of the total unreported cases in California for 2003, and the four neighboring counties of Los Angeles, San Bernardino, Orange, and Riverside represent 53.4% (4,227) of unreported cases. Because it is responsible for the most reportable cases, Los Angeles County also has by far the most unreported cases, 2,591, which represents almost one-third (32.7%) of the total number of unreported cases in the state.

Table 12. Reporting to MCMIS Crash File by County, California PAR File, 2003

County	Reportable cases	Reporting rate	Unreported cases	% of total unreported cases
Los Angeles	4,811	46.1	2,591	32.7
San Bernardino	1,529	58.9	629	7.9
Orange	961	41.6	561	7.1
Riverside	1,061	58.0	446	5.6
Alameda	799	47.4	420	5.3
San Diego	868	52.3	414	5.2
Sacramento	524	48.1	272	3.4
Santa Clara	410	42.2	237	3.0
San Francisco	211	14.7	180	2.3
San Joaquin	526	65.8	180	2.3
Total top ten	11,700	49.3	5,930	74.9
Total (all counties)	16,715	52.6	7,918	100.0

In other states, reporting rates have varied significantly by the level of reporting agency. The California PAR file identifies three types of reporting agencies: California Highway Patrol, county sheriff's offices, and local police departments.

In California the highway patrol is responsible for 70.7% of all reportable cases (Table 13). In 2003, California sheriff's offices and police departments covered only 29.3% of cases. The reporting rate for CHP offices was 72.0%, compared with only 6.7% for Sheriff's offices and 5.7% for police departments. Although police departments were responsible for less than 25% of reportable cases, they represented 47.9% of cases not reported to the MCMIS Crash File.

Table 13. Reporting to MCMIS Crash File by Reporting Agency, California PAR File, 2003

Reporting agency	Reportable cases	Reporting rate	Unreported cases	% of total unreported cases
California Highway Patrol	11,812	72.0	3,302	41.7
Sheriff's Offices	882	6.7	823	10.4
Police Departments	4,021	5.7	3,793	47.9
Total	16,715	52.6	7,918	100.0

The tables below explore reporting by the California Highway Patrol (CHP) in more detail.

Specific CHP area offices could be identified from the last three digits of the jurisdiction variable included in the PAR file. A total of 100 different CHP offices covered MCMIS-reportable crashes. Reporting rates ranged from 44.6% for the West Los Angeles office to 100% for two offices with fewer than 25 reportable cases each. Table 14 shows the top ten CHP offices with the most unreported cases. These offices accounted for 35.6% of all unreported cases covered by the highway patrol. The top six CHP offices with the most unreported cases are all in the vicinity of Los Angeles. As such, they cover the most traffic accidents. Four of the six have reporting rates similar to the rate for all CHPs, but because they cover such a large number of crashes, they also have a large number of unreported cases.

Table 14. Reporting Rates for Top Ten CHP Offices, California PAR File, 2003

CHP Office	Reportable cases	Reporting rate	Unreported cases	% of total unreported cases
Santa Fe Springs - near LA	673	70.9	196	5.9
Central Los Angeles	362	55.0	163	4.9
East Los Angeles	374	66.0	127	3.8
South Los Angeles	407	73.0	110	3.3
Riverside - west of LA	410	74.4	105	3.2
Rancho Cucamonga - west of LA	379	72.8	103	3.1
San Diego	273	63.0	101	3.1
West Valley	247	61.5	95	2.9
Stockton	332	73.2	89	2.7
Santa Ana	275	68.4	87	2.6
Total top ten CHP offices	3,732	68.5	1,176	35.6
Total all CHP offices	11,812	72.0	3,302	100.0

The following tables display reporting rates for each of the top ten CHP offices by accident quarter, crash severity, and vehicle type to determine if there are large differences between agencies. As shown in Table 15, most offices are fairly consistent in case reporting across quarters of the year, except for Rancho Cucamonga, West Valley, and Santa Ana, which appear to be late in submission of cases at the end of the year. The two offices with consistently low

reporting rates across all quarters are Central Los Angeles, ranging from 50.6% to 66.2%, and San Diego, ranging from 61.4% to 65.5%.

Table 15. Reporting Rates for Top Ten CHP Offices by Accident Quarter, California PAR File, 2003

CHP Area Office	Jan-Mar	Apr-Jun	Jul-Sep	Oct-Dec	Total
Santa Fe Springs - near LA	74.6	68.5	72.9	68.1	70.9
Central Los Angeles	50.9	66.2	56.3	50.6	55.0
East Los Angeles	62.5	60.0	69.9	70.7	66.0
South Los Angeles	75.2	72.9	76.1	68.6	73.0
Riverside - west of LA	76.5	75.0	69.1	77.6	74.4
Rancho Cucamonga - west of LA	78.2	78.5	73.3	63.1	72.8
San Diego	61.8	61.4	65.5	63.4	63.0
West Valley	69.5	69.6	53.7	49.1	61.5
Stockton	72.9	69.2	80.2	71.0	73.2
Santa Ana	68.4	68.9	75.0	61.1	68.4
Total top ten CHP offices	69.1	69.6	70.0	65.5	68.5
Total all CHP offices	72.3	73.2	74.2	68.7	72.0

When the top ten CHP offices with the most unreported cases are compared by crash severity, some differences are apparent (Table 16). Because of the low number of fatal crashes, that severity group was combined with injuries. Among fatal/injury crashes, reporting rates for these agencies range from 55.1% for Central Los Angeles to 78.1% for Santa Fe Springs. A similar pattern is seen for towaway crashes, where reporting rates range from 55.0% for Central Los Angeles to 74.1% for Riverside. West Valley and San Diego only report 60.6% and 63.2% of towaways, respectively. Although there are some differences in reporting rates by crash severity, it does not explain much of the underreporting among these agencies.

Table 16. Reporting Rates for Top Ten CHP Offices by Crash Severity, California PAR File, 2003

CHP Area Office	Fatal and Injured	Towaway	Total
Santa Fe Springs - near LA	78.1	69.2	70.9
Central Los Angeles	55.1	55.0	55.0
East Los Angeles	68.1	65.6	66.0
South Los Angeles	76.7	72.0	73.0
Riverside - west of LA	75.6	74.1	74.4
Rancho Cucamonga - west of LA	69.4	74.0	72.8
San Diego	62.5	63.2	63.0
West Valley	68.2	60.6	61.5
Stockton	77.0	71.8	73.2
Santa Ana	64.3	69.4	68.4
Total top ten CHP offices	70.7	67.9	68.5
Total all CHP offices	75.0	71.0	72.0

Across the top ten CHP agencies with the most unreported cases, three-axle trucks and truck tractors are reported at rates of 85.2% and 82.2%, respectively (Table 17). However, two-axle

trucks are only reported an average of 44.1% of the time, and buses have a low reporting rate that averages 25.9%. Reporting of trucks is fairly consistent across the ten CHP offices, however reporting rates for buses range from 7.9% in Central Los Angeles to 51.7% in West Valley. The Riverside, Stockton, and South Los Angeles offices have the best reporting rates. The East Los Angeles office has the widest variation in reporting across vehicle types, reporting 100% of three-axle trucks, 79% of truck tractors, 33.8% of two-axle trucks, and 20% of buses.

Table 17. Reporting Rates for Top Ten CHP Offices by Vehicle Type, California PAR File, 2003

CHP Area Office	2-axle truck	3-axle truck	Truck tractor	Bus	Total
Santa Fe Springs - near LA	46.4	82.9	83.2	15.6	70.9
Central Los Angeles	29.9	82.5	76.0	7.9	55.0
East Los Angeles	33.8	100.0	79.0	20.0	66.0
South Los Angeles	48.0	75.9	88.8	32.4	73.0
Riverside - west of LA	50.9	93.0	83.6	46.7	74.4
Rancho Cucamonga - west of LA	38.6	81.5	81.2	23.1	72.8
San Diego	47.9	88.6	77.6	15.4	63.0
West Valley	42.6	78.9	81.5	51.7	61.5
Stockton	46.4	82.4	82.5	26.3	73.2
Santa Ana	51.7	90.9	82.8	37.5	68.4
Total top ten CHP offices	44.1	85.2	82.2	25.9	68.5
Total all CHP offices	50.0	85.6	85.3	25.0	72.0

The section below will examine reporting by police departments in more detail.

The jurisdiction variable on the PAR file enables specific police departments to be identified, based on county and city codes. In 2003, there were 276 different California police agencies that covered MCMIS-reportable crashes. A good share of these offices were only responsible for a few cases. Reporting rates ranged from 0% for 218 offices to 100% for two agencies, each with one reportable case. Table 18 shows the top ten police agencies with the most unreported cases. They accounted for 37.4% of all unreported cases covered by the police. These offices were also among those responsible for the most reportable cases. Reporting rates for these top ten agencies taken together were very low, but comparable to the average for all police departments.

However, it appears that the police departments in Oakland, Long Beach, San Bernardino and Fresno are not reporting any of their reportable cases.

Table 18. Reporting Rates for Top Ten Police Agencies, California PAR File, 2003

Police agency	Reportable cases	Reporting rate	Unreported cases	% of total unreported cases
Los Angeles	605	7.8	558	14.7
San Francisco	160	1.9	157	4.1
Oakland	110	0.0	110	2.9
Sacramento	116	5.2	110	2.9
Long Beach	102	0.0	102	2.7
Ontario	103	1.0	102	2.7
San Diego	105	13.3	91	2.4
San Jose	78	2.6	76	2.0
San Bernardino	59	0.0	59	1.6
Fresno	54	0.0	54	1.4
Sum of top ten	1,492	4.9	1,419	37.4
Total (all PDs)	4,021	5.7	3,793	100.0

Because the top ten police agencies only reported 73 cases, the analysis below by accident severity and vehicle type is based on all police departments. Table 19 shows the typical pattern of more serious crashes reported at a higher rate than less serious ones. Even so, police departments are only reporting 18.8% of fatal crashes, and merely 7.3% and 4.7%, respectively, of injury and towaway crashes.

Table 19. Reporting Rates for All Police Agencies by Crash Severity, California PAR File, 2003

Crash severity	Reportable cases	Reporting rate	Unreported cases	% of total unreported cases
Fatal	69	18.8	56	1.5
Injured	1,143	7.3	1,059	27.9
Towaway	2,809	4.7	2,678	70.6
Total	4,021	5.7	3,793	100.0

The CHP vehicle type variable used to identify MCMIS-reportable vehicles was essentially unrecorded by police departments and sheriff's offices. Only 31 reportable police cases and five sheriff's cases had this detailed vehicle type variable recorded, whereas it was recorded for all 11,812 reportable CHP cases. This may be due to use of older version PAR forms (rev. 8/97), in which the vehicle type variable on page one of the form stated "CHP use only." Page two of that older form contained the statewide vehicle type variable, with less precise categories. With implementation of the 1/03 revision of page one, vehicle type no longer states "CHP use only," and the statewide vehicle type variable was removed from the back of the form (page 2, 7/03 revision). Since page one of the PAR form was revised early in 2003, many crashes for that year were probably recorded on older forms, resulting in the CHP vehicle type variable not being entered by most police and sheriff's departments.

Thus, for this evaluation, reportable cases with CHP vehicle type unrecorded (3,990 police cases and 877 sheriff's cases) were identified by using the statewide vehicle type variable, which

classifies vehicles into much broader categories. Table 20 reflects a mixture of codes from the two variables. The majority of police cases, 3,052, were coded as “truck or truck tractor” or “truck or truck tractor with trailer.” Despite the assortment of coding schemes, it appears that larger trucks are reported at a higher rate than smaller ones, although both types have extremely low reporting rates. Buses are reported by police departments only 4.1% of the time.

Table 20. Reporting Rates for All Police Agencies by Vehicle Type, California PAR File, 2003

Vehicle type	Reportable cases	Reporting rate	Unreported cases	% of total unreported cases
2-axle truck	8	25.0	6	0.2
3-axle truck	4	100.0	0	0.0
Truck tractor	13	84.6	2	0.1
Truck or truck tractor *	1,743	3.4	1,684	44.4
Truck or truck tractor with trailer *	1,309	8.6	1,196	31.5
Bus	944	4.1	905	23.9
Total	4,021	5.7	3,793	100.0

* Note: Cases assigned to this group could not be distinguished as a 2-axle truck, 3-axle truck, or truck tractor.

5. Data Quality Issues

In addition to examining the number of records reported to the MCMIS Crash file, it is important to evaluate completeness of data reported. Missing data rates are important in evaluating the utility of a data file, since records with missing data cannot contribute to an analysis. Table 21 shows the unrecorded rates for required variables. For most variables, if they are reported at all, the reporting rate is good. Missing data rates are high for driver date of birth, driver license number, crash events one through four, road access, road trafficway, vehicle license number, and VIN. The event variables may be difficult to record, contributing to their high numbers of unrecorded values. For vehicles displaying a hazardous materials placard, the three variables referring to the type of materials carried were unrecorded in 8.3% to 84% of the cases.

Table 21. Unrecorded Rates for Selected Variables, California MCMIS File, 2003

Variable	Percent unrecorded	Variable	Percent unrecorded
Accident year	0.0%	Event one	33.5
Accident month	0.0	Event two	71.7
Accident day	0.0	Event three	92.0
Accident hour	<0.1	Event four	97.1
Accident minute	<0.1	Number of vehicles	0.2
Body type	3.5	Officer badge number	<0.1
Configuration	3.4	Report number	0.0
County	0.0	Road access	99.7
DOT number	14.6*	Road surface	0.9
Driver date of birth	98.5	Road trafficway	99.7
Driver license number	99.0	Towaway	0.0
Driver license state	6.7	Truck or bus	0.0
Fatal injuries	0.0	Vehicle license number	99.8
Non-fatal Injuries	0.0	Vehicle license state	0.0
Interstate	0.0	VIN	99.8
Light	1.0	Weather	0.8
* Counting cases where the carrier is coded interstate.			

Hazardous materials variable	Percent unrecorded
Hazardous materials placard	0.3%
Percentages of placarded vehicles only:	
Hazardous cargo release	0.0%
Hazardous materials class (1-digit)	41.0%
Hazardous materials class (4-digit)	8.3%
Hazardous materials name	84.0%

The following set of tables compares the actual data values in the California PAR file with the values in the MCMIS Crash file to determine if the data are consistent between the two datasets. It is possible that errors of translation and formatting can occur when the data are prepared for submission to the MCMIS crash file.

For most variables, it appears that the data are accurately prepared for the MCMIS Crash file. Looking at the weather variable, there were 28 cases that differed between the two files. Of 28 clear cases in the PAR file, 27 were unrecorded in MCMIS and one was designated as snow. Number of fatalities in the crash were consistent between the two files except for five discrepancies that differed by one fatality. Regarding the injury variable, injuries totaling five or more exactly matched between the PAR and MCMIS files; however, there were twelve discrepancies among crashes with fewer than five injuries. Road surface condition was recorded the same in the two files except for 16 cases coded as dry in PAR and unrecorded in MCMIS. For the light variable, all discrepancies except one were due to missing data (see Table 22). There were 29 cases in PAR recorded as daylight, but unrecorded in MCMIS. Twelve cases recorded as dark-no street lights in PAR were also unrecorded in MCMIS.

Table 22. Light Condition Coding in California PAR Compared with MCMIS Crash File, 2003

California PAR Light variable	MCMIS light variable	N	%
Not stated	Unrecorded	42	0.5
Daylight	Unrecorded	29	0.3
	Daylight	6,305	71.7
Dusk-dawn	Unrecorded	1	0.0
	Dawn	244	2.8
	Dusk	97	1.1
Dark-street lights	Unrecorded	4	0.1
	Dark-lighted	735	8.4
Dark-no street lights	Unrecorded	12	0.1
	Daylight	1	0.0
	Dark-not lighted	1,324	15.1
Dark-street lights not func.	Other	3	0.0
Total		8,797	100.0

Table 23 displays the consistency between the vehicle type variable as recorded in the California PAR file and the coding of configuration in the MCMIS Crash file. There are many inconsistencies, probably due to the fact that the vehicle code levels do not map cleanly between the two files. For this comparison, we are limited to using the vehicle type variable on the PAR file, instead of the vehicle configuration variable on the Truck/Bus Supplemental Report, which maps directly into MCMIS configuration categories.

Table 23. Vehicle Type Coding in California PAR Compared with MCMIS Crash File, 2003

California PAR vehicle type variable	MCMIS configuration variable	N	%
School bus	Unrecorded	8	0.1
	Bus (seats 9-15,incl dr)	15	0.2
	Bus (seats >15,incl dr)	85	1.0
	SUT, 2-axle, 6-tire	7	0.1
	Truck trailer	1	0.0
	Tractor/triple	1	0.0
	Total	117	1.3
Other bus	Unrecorded	12	0.1
	Bus (seats 9-15,incl dr)	6	0.1
	Bus (seats >15,incl dr)	107	1.2
	SUT, 2-axle, 6-tire	6	0.1
	SUT, 3+ axles	2	0.0
	Tractor/double	1	0.0
	Tractor/triple	1	0.0
	Total	135	1.5
Pickup/panel truck	Unrecorded	1	0.0
Truck tractor	Unrecorded	89	1.0
	Pass.car (only HM plac)	2	0.0
	Bus (seats >15,incl dr)	2	0.0
	SUT, 2-axle, 6-tire	24	0.3
	SUT, 3+ axles	77	0.9
	Truck trailer	480	5.5

California PAR vehicle type variable	MCMIS configuration variable	N	%
	Truck tractor (bobtail)	66	0.8
	Tractor/semitrailer	3,969	45.1
	Tractor/double	744	8.5
	Tractor/triple	9	0.1
	Unk heavy truck	2	0.0
	Total	5,464	62.1
2-axle truck (includes tank truck)	Unrecorded	88	1.0
	Light trk (only HM plac)	1	0.0
	SUT, 2-axle, 6-tire	1,164	13.2
	SUT, 3+ axles	21	0.2
	Truck trailer	77	0.9
	Truck tractor (bobtail)	28	0.3
	Tractor/semitrailer	54	0.6
	Tractor/double	88	1.0
	Tractor/triple	1	0.0
	Unk heavy truck	3	0.0
	Total	1,525	17.3
3-axle truck (includes tank truck)	Unrecorded	31	0.4
	SUT, 2-axle, 6-tire	12	0.1
	SUT, 3+ axles	760	8.6
	Truck trailer	206	2.3
	Truck tractor (bobtail)	9	0.1
	Tractor/semitrailer	275	3.1
	Tractor/double	34	0.4
	Tractor/triple	1	0.0
	Unk heavy truck	4	0.0
	Total	1,332	15.1
Truck or truck tractor *	Unrecorded	14	0.2
	SUT, 2-axle, 6-tire	42	0.5
	SUT, 3+ axles	20	0.2
	Truck trailer	24	0.3
	Truck tractor (bobtail)	11	0.1
	Tractor/semitrailer	89	1.0
	Tractor/double	21	0.2
	Tractor/triple	1	0.0
	Unk heavy truck	1	0.0
	Total	223	2.5
Total		8,797	100.0

* Note: Cases assigned to this group could not be distinguished as a 2-axle truck, 3-axle truck, or truck tractor.

In 14.5% of cases, records coded as school bus in the PAR file are coded in MCMIS as trucks or are unrecorded. Similarly, other buses in the PAR file are coded inconsistently in the MCMIS file in 16.3% of cases. The truck tractor code in the PAR file has a counterpart truck tractor (bobtail) code in the MCMIS file, accounting for only 1.2% of the PAR truck tractor cases. Since the PAR file does not have specific codes for tractor semitrailers, doubles, and triples, 86.4% of the PAR truck tractors are coded in these MCMIS categories. Another 8.8% of PAR truck

tractors were coded as truck trailers in MCMIS, commonly designating a straight truck pulling a trailer.

The PAR designation of a two-axle truck appeared to be inconsistently recorded in the MCMIS Crash file 18.6% of the time, and three-axle trucks were inconsistent in 27.5% of cases.

Mapping of trucks from the PAR file to the MCMIS file is difficult due to the inconsistent terminology between the two datasets. The officer on the scene is responsible for recording both the vehicle type variable on page one of the PAR form as well as the configuration variable on the Truck/Bus Supplemental Report. This is undoubtedly a difficult task due to the lack of precise descriptions of the code levels of these variables. There is no instruction to the officers in the PAR manual on how to code vehicle type. It is likely that two different vehicle type coding schemes with inadequate definitions give the officers an opportunity to make mistakes.

As shown in the variables mentioned above, the number of unrecorded values in the MCMIS file is another reason for discrepancies. In the case of the vehicle type variable, there are 243 PAR cases with a valid vehicle type recorded that have an unrecorded value in MCMIS.

6. Summary and Discussion

The purpose of the present study was to evaluate the completeness of data reported from California to the MCMIS Crash file. To achieve that goal, the California PAR file for 2003 was obtained, and these data were compared with the data reported to the MCMIS Crash file.

The California PAR form includes all the data necessary to identify crashes reportable to MCMIS; however, not all of the variables are present on the PAR file, the data file used in this evaluation. For example, the Truck/Bus Collision Supplemental Report, which the officer on the scene is instructed to fill out for vehicles meeting MCMIS reporting criteria, contains a GVWR variable and a vehicle configuration variable, but this information is not included in the PAR file. Instead, the CHP vehicle type variable recorded on page one of the PAR form was used to identify eligible vehicles. It includes codes that map fairly well to the MCMIS GVWR criteria for trucks. In cases where this variable was not recorded, i.e. most reportable police and sheriff's cases, the less precise statewide vehicle type variable was used. In addition, buses can be identified, except that seating capacity is not available. Vehicles with hazmat placards could also be identified using the vehicle type variable.

The PAR file also includes a variable reflecting maximum injury severity in the crash. However, there is no indication that an injured party was transported for medical attention, although this information is collected on the PAR form. Thus, for this evaluation, A and B injuries were used as a reasonable surrogate for the injured and transported MCMIS reporting criteria. While this surrogate yields a reasonable estimate of the overall magnitude of reportable cases, it is not

necessarily accurate for individual cases, and consequently patterns of underreporting are harder to identify.

To address the towaway criteria, the PAR file contains a tow variable that records whether any vehicle in the accident was towed because it could not be driven. This variable precisely meets the MCMIS tow/disabled criteria.

The California PAR instruction manual states that the reporting officer is supposed to complete the Truck/Bus Collision Supplemental Report for qualifying collisions involving commercial motor vehicles. In addition, the MCMIS requirements are accurately stated. Failure to complete the supplemental report may result in a case not being submitted to MCMIS, although it is impossible to tell in the current evaluation, since the data items from the supplemental report are not included in the PAR file. However, even if the supplemental form is not completed, for most cases MCMIS eligibility could be determined from the information on other pages of the PAR form. A couple of caveats are that the vehicle type variables do not map directly into MCMIS GVWR categories, and that bus seating information is not available to precisely identify reportable buses. The configuration variable on the truck/bus supplemental form coincides with the MCMIS configuration categories; however, this variable and the GVWR variable are not included in the PAR file and hence could not be used for this analysis.

Thus, it appears that California has made its data collection consistent with MCMIS reporting requirements, although the PAR data file available for research purposes does not contain all of the collected variables. Further examination of the data file determined that there were some duplicate records, although the number was very small and accounted for only 0.1% of cases. In addition, several vehicle-level variables were essentially unrecorded in MCMIS, including vehicle license plate number, driver license number, driver date of birth, and VIN. The accident-level variables of road access and road trafficway were also mostly unrecorded in MCMIS.

Overall, California submits 52.6% of its reportable cases to the MCMIS Crash file. In comparison, a previous study of MCMIS reporting estimated that nationwide only 60% of qualifying vehicles were actually reported to the MCMIS Crash file [1]. In-depth studies on the states of Ohio, Missouri, Michigan, and Florida found reporting rates ranging from 24% to 73.7% [2, 3, 4, 5].

As with other states, California reports fatal crashes at a higher rate (71.3%) than injury cases (53.2%) and towaways (51.9%). Of 7,918 unreported cases, 5,888 (74.4%) are towaway cases. Improving the reporting of vehicles involved in these less serious crashes would greatly improve the overall reporting rate for California.

Responsibility for determining which cases should be submitted to MCMIS ultimately lies at the state level. There could be inconsistencies or errors in applying the reporting criteria or delays in transmitting cases. To assess the latter, an analysis of reporting rates by month showed that

although reporting rates are slightly lower during the last quarter of the year, late submission does not account for the majority of unreported cases.

Other variables were examined for their potential relationship to case underreporting. In applying the MCMIS criteria it is crucial to identify the eligible vehicles correctly; hence the vehicle type variable was compared between reported and unreported cases. Overall, trucks are reported 57.6% of the time. Previous state evaluations have shown that smaller trucks are less likely to be reported than larger trucks. In California the same pattern emerges. Where specific truck type could be determined, two-axle trucks are reported only 50% of the time, while three-axle trucks and truck tractors each have an 85% reporting rate. Buses are even less likely to be reported, averaging 13.3%. In California, it is not clear whether the identification of eligible vehicles lies with the reporting officer or is determined at the state level. However, it is the officer on the scene who is responsible for recording vehicle type accurately. In California it appears that this task is made more difficult by the inclusion of a vehicle type as well as a configuration variable that do not easily map into each other. In addition, the instruction manual for the PAR form does not provide definitions for the different vehicle types. This must complicate the officer's ability to consistently identify trucks and buses.

Results from other states have shown that reporting rates tend to be lower in more densely populated areas. The top ten counties in California with the most unreported cases were also counties with high numbers of reportable cases. The average reporting rate for these counties (49.3%) is only slightly different from the statewide rate of 52.6%. With the exception of San Francisco county, these ten counties had high numbers of unreported cases because they had large caseloads, not because of unusually low reporting rates.

Reporting rates for individual reporting agencies were also examined. In California, 70.7% of the MCMIS-reportable cases are the responsibility of the highway patrol (CHP). As a group the CHP reports an average of 72.0% of their cases, compared with the statewide average of 52.6%. Of 100 state CHP offices covering MCMIS crashes, reporting rates ranged from 44.6% for the West Los Angeles office to 100% for two agencies with a small number of cases. The top ten agencies with the most unreported cases account for 1,176 cases, representing 35.6% of all unreported cases in the state. Of these, the top six CHP agencies with the most unreported cases were all in the vicinity of Los Angeles, and thus had the heaviest caseloads. Among these jurisdictions Central Los Angeles and East Los Angeles had reporting rates of 55% and 66%, respectively, lower than the overall average for CHPs. Other agencies with a large number of reportable cases and low reporting rates were San Diego (63%) and West Valley (61.5%). The Central Los Angeles office reports less than 30% of eligible two-axle trucks and less than 8% of buses.

Although police departments are responsible for only 24.1% of reportable cases, they represented 47.9% of cases (3,793) not reported to the MCMIS Crash File. The overall reporting rate for police departments was 5.7%, compared to 72.0% for CHP agencies. Only 18.8% of fatal

crashes, 7.3% of injury cases, and 4.7% of towaway accidents were reported by police agencies. The top ten police departments with the most unreported cases were in densely populated areas, and thus responsible for a high volume of reportable cases.

In summary, California is reporting 52.6% of its eligible cases to the MCMIS Crash file. A variety of factors appear to contribute to the cases that are underreported. As in other states, less severe crashes are reported less often than more serious ones; indeed, in California, towaways represent almost 75% of unreported cases. Smaller trucks are reported at a lower rate than large trucks, and over 85% of eligible bus cases are ignored. There is a wide variation in reporting rates by agency, with police departments and sheriff's offices essentially not reporting eligible cases. Since recognizing and accurately coding reportable cases depends on the officers, inadequate training may be an issue. It also appears that heavy caseloads may explain why a few jurisdictions in the densest population areas have lower overall reporting rates.

Although California's data collection system is consistent with MCMIS reporting requirements, the use of more than one vehicle variable and the lack of sufficient documentation could be confusing for the officer, leading to incorrect vehicle classification. Updating the PAR manual to contain consistent vehicle type definitions may be an area for improvement.

References

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9. Federal Motor Carrier Safety Administration (FMCSA) Crash File Documentation, March 2000.
10. *California Highway Patrol Collision Investigation Manual*, February 2003.
11. California Traffic Collision Report Form, revision January 2003.

Appendix A: Variables Used for California PAR Data to Identify a MCMIS-Reportable Crash

MCMIS Reporting Criteria	Implementation in California PAR Data
<p>Truck with GVWR over 10,000 or GCWR over 10,000</p>	<p>According to the California PAR instruction manual effective Feb. 2003, qualifying trucks are defined as: any power unit with a GVWR of 10,001 lbs or more. On the supplemental. trk/bus form, there is a variable defining 3 GVWR categories. However, GVWR is not included on the PAR file.</p> <p>The PAR file includes a CHP vehicle type variable that is coded from page 1 of the PAR. The following code levels were used to identify qualifying trucks:</p> <p>chp_vehicle_type = 21 (2-axle tank truck) 75,85 (Haz. truck tractor) 24 (3-axle tank truck) 76,86 (Haz. 2-axle truck) 25 (Truck tractor) 77,87 (Haz. 3+ axle truck) 26 (2-axle truck) 78,88 (Haz. 2-axle truck) 27 (3-axle truck) 79,89 (Haz. 3-axle truck) 55 (2-axle tow truck) 56 (3-axle tow truck)</p> <p>If chp_vehicle_type was unrecorded, then statewide_vehicle_type codes F (truck or truck tractor) and G (truck or truck tractor with trailer) were selected.</p>
<p>or Bus with seating for at least nine, including the driver</p>	<p>The trk/bus form instructions define a qualifying bus as 'a bus with seating for more than 10 persons including the driver.'</p> <p>However the PAR CHP vehicle type variable does not specify seating capacity. The following codes were used to identify qualifying buses:</p> <p>chp_vehicle_type= 9 (Paratransit bus) 10 (Tour bus) 11 (Other commercial bus) 12 (Non-commercial bus) 13 (Schoolbus public I) 14 (Schoolbus public II) 15 (Schoolbus private I) 16 (Schoolbus private II) 17 (Schoolbus contractual I) 18 (Schoolbus contractual II) 19 (General public paratransit vehicle) 20 (Public transit authority) 63 (Youth bus) 64 (School pupil activity bus I) 65 (School pupil activity bus II)</p>

MCMIS Reporting Criteria	Implementation in California PAR Data
	<p>66 (School bus without pupil passengers)</p> <p>If chp_vehicle_type was unrecorded, then statewide_vehicle_type codes H (school bus) and I (other bus) were selected.</p>
or Vehicle displaying a hazardous materials placard	<p>The PAR vehicle type variable includes codes for vehicles transporting hazardous materials. The following codes were used:</p> <p>vehicle type= 71,81 (Passenger car – haz mat only) 72,82 (Pickups and panels – haz mat only) 73,83 (Pickups and campers – haz mat only)</p>
AND	
at least one fatality	<p>California has an injury severity variable on the accident level PAR file reflecting the most serious injury in the crash:</p> <p>crash_injury_severity = code 1 (fatal)</p>
or at least one person injured and transported to a medical facility for immediate medical attention	<p>Although page 3 of the PAR form has a box for injured persons indicating “transported by” and “taken to”, there is no variable on the PAR file related to transporting an injured person for medical attention.</p> <p>From the PAR file we can identify injury accidents: crash_injury_severity = code 2 (severe), code 3 (other visible), and code 4 complaint of pain)</p> <p>Since there is no way to determine if an injured patient was transported to a medical facility, we decided to define “injured, transported” as all A (severe) and B (other visible) injuries, since these more severe injuries would likely be transported.</p>
or at least one vehicle towed due to disabling damage	<p>The PAR file contains a towaway variable at the accident level, indicating if any vehicle in the accident was towed because it could not be driven. (probably from item 20 on page 1 of PAR form-see manual, p. 3-14).</p> <p>Towaway=Y (yes)</p>

Appendix B: California Police Accident Report Forms

STATE OF CALIFORNIA
TRAFFIC COLLISION REPORT
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SPECIAL CONDITIONS	NUMBER INJURED	HIT & RUN FELONY	CITY	JUDICIAL DISTRICT	LOCAL REPORT NUMBER
	NUMBER KILLED	HIT & RUN MISDEMEANOR	COUNTY	REPORTING DISTRICT	BEAT
COLLISION OCCURRED ON				MO. DAY YEAR	TIME (2400)
MILEPOST INFORMATION				DAY OF WEEK	TOW AWAY
FEET/MILES OF				S M T W T F S	<input type="checkbox"/> YES <input type="checkbox"/> NO
<input type="checkbox"/> AT INTERSECTION WITH				STATE HWY REL	
<input type="checkbox"/> OR: FEET/MILES OF				<input type="checkbox"/> YES <input type="checkbox"/> NO	
PARTY 1	DRIVER'S LICENSE NUMBER	STATE	CLASS	AIR BAG	SAFETY EQUIP.
<input type="checkbox"/>	DRIVER NAME (FIRST, MIDDLE, LAST)				
<input type="checkbox"/>	OWNER'S NAME <input type="checkbox"/> SAME AS DRIVER				
<input type="checkbox"/>	STREET ADDRESS				
<input type="checkbox"/>	OWNER'S ADDRESS <input type="checkbox"/> SAME AS DRIVER				
<input type="checkbox"/>	CITY/STATE/ZIP				
<input type="checkbox"/>	SEX	HAIR	EYES	HEIGHT	WEIGHT
<input type="checkbox"/>	Mo.	BIRTHDATE	Year	RACE	
<input type="checkbox"/>	HOME PHONE		BUSINESS PHONE		
<input type="checkbox"/>	VEHICLE IDENTIFICATION NUMBER:				
<input type="checkbox"/>	INSURANCE CARRIER	POLICY NUMBER			
<input type="checkbox"/>	DIR OF TRAVEL ON STREET OR HIGHWAY			SPEED LIMIT	
<input type="checkbox"/>	CA	DOT		SHADE IN DAMAGED AREA	
<input type="checkbox"/>	CAL-T	TCP/PSC	MC/MX		
PARTY 2	DRIVER'S LICENSE NUMBER	STATE	CLASS	AIR BAG	SAFETY EQUIP.
<input type="checkbox"/>	DRIVER NAME (FIRST, MIDDLE, LAST)				
<input type="checkbox"/>	OWNER'S NAME <input type="checkbox"/> SAME AS DRIVER				
<input type="checkbox"/>	STREET ADDRESS				
<input type="checkbox"/>	OWNER'S ADDRESS <input type="checkbox"/> SAME AS DRIVER				
<input type="checkbox"/>	CITY/STATE/ZIP				
<input type="checkbox"/>	SEX	HAIR	EYES	HEIGHT	WEIGHT
<input type="checkbox"/>	Mo.	BIRTHDATE	Year	RACE	
<input type="checkbox"/>	HOME PHONE		BUSINESS PHONE		
<input type="checkbox"/>	VEHICLE IDENTIFICATION NUMBER:				
<input type="checkbox"/>	INSURANCE CARRIER	POLICY NUMBER			
<input type="checkbox"/>	DIR OF TRAVEL ON STREET OR HIGHWAY			SPEED LIMIT	
<input type="checkbox"/>	CA	DOT		SHADE IN DAMAGED AREA	
<input type="checkbox"/>	CAL-T	TCP/PSC	MC/MX		
PARTY 3	DRIVER'S LICENSE NUMBER	STATE	CLASS	AIR BAG	SAFETY EQUIP.
<input type="checkbox"/>	DRIVER NAME (FIRST, MIDDLE, LAST)				
<input type="checkbox"/>	OWNER'S NAME <input type="checkbox"/> SAME AS DRIVER				
<input type="checkbox"/>	STREET ADDRESS				
<input type="checkbox"/>	OWNER'S ADDRESS <input type="checkbox"/> SAME AS DRIVER				
<input type="checkbox"/>	CITY/STATE/ZIP				
<input type="checkbox"/>	SEX	HAIR	EYES	HEIGHT	WEIGHT
<input type="checkbox"/>	Mo.	BIRTHDATE	Year	RACE	
<input type="checkbox"/>	HOME PHONE		BUSINESS PHONE		
<input type="checkbox"/>	VEHICLE IDENTIFICATION NUMBER:				
<input type="checkbox"/>	INSURANCE CARRIER	POLICY NUMBER			
<input type="checkbox"/>	DIR OF TRAVEL ON STREET OR HIGHWAY			SPEED LIMIT	
<input type="checkbox"/>	CA	DOT		SHADE IN DAMAGED AREA	
<input type="checkbox"/>	CAL-T	TCP/PSC	MC/MX		
PREPARER'S NAME			DISPATCH NOTIFIED		REVIEWER'S NAME
			<input type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> N/A		DATE REVIEWED

Traffic Collision Report, p.2

STATE OF CALIFORNIA
TRAFFIC COLLISION CODING
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Page of

DATE OF COLLISION (MO. DAY YEAR) TIME (2400) NCIC # OFFICER I.D. NUMBER
OWNER'S NAME OWNER'S ADDRESS NOTIFIED
PROPERTY DAMAGE DESCRIPTION OF DAMAGE YES NO

SEATING POSITION OCCUPANTS SAFETY EQUIPMENT INATTENTION CODES
1- DRIVER 2 TO 6 - PASSENGERS 7 - STATION WAGON REAR 8 - REAR OCC. TRK. OR VAN 9 - POSITION UNKNOWN 0 - OTHER
AIR BAG L - AIR BAG DEPLOYED M - AIR BAG NOT DEPLOYED N - OTHER P - NOT REQUIRED
CHILD RESTRAINT Q - IN VEHICLE USED R - IN VEHICLE NOT USED S - IN VEHICLE USE UNKNOWN T - IN VEHICLE IMPROPER USE U - NONE IN VEHICLE
M/C BICYCLE- HELMET DRIVER PASSENGER V - NO X - NO W - YES Y - YES
EJECTED FROM VEHICLE 0 - NOT EJECTED 1 - FULLY EJECTED 2 - PARTIALLY EJECTED 3 - UNKNOWN
P - CELLPHONE Q - ELECTRONIC EQUIPMENT R - RADIO / CD S - SMOKING T - EATING U - CHILDREN V - ANIMALS W - PERSONAL HYGIENE X - READING Y - OTHER

ITEMS MARKED BELOW FOLLOWED BY AN ASTERISK (*) SHOULD BE EXPLAINED IN THE NARRATIVE.
PRIMARY COLLISION FACTOR LIST NUMBER (#) OF PARTY AT FAULT
TRAFFIC CONTROL DEVICES 1 2 3 SPECIAL INFORMATION 1 2 3 MOVEMENT PRECEDING COLLISION
A CONTROLS FUNCTIONING B CONTROLS NOT FUNCTIONING* C CONTROLS OBSCURED D NO CONTROLS PRESENT / FACTOR*
E SCHOOL BUS RELATED F 75 FT MOTORTRUCK COMBO G 32 FT TRAILER COMBO H SLOWING / STOPPING I PASSING OTHER VEHICLE J CHANGING LANES K PARKING MANEUVER L ENTERING TRAFFIC M OTHER UNSAFE TURNING N XING INTO OPPOSING LANE O PARKED P MERGING Q TRAVELING WRONG WAY R OTHER *
WEATHER (MARK 1 TO 2 ITEMS) A CLEAR B CLOUDY C RAINING D SNOWING E FOG / VISIBILITY FT. F OTHER* G WIND
LIGHTING A DAYLIGHT B DUSK - DAWN C DARK - STREET LIGHTS D DARK - NO STREET LIGHTS E DARK - STREET LIGHTS NOT FUNCTIONING*
ROADWAY SURFACE A DRY B WET C SNOWY - ICY D SLIPPERY (MUDDY, OILY, ETC.)
ROADWAY CONDITION(S) (MARK 1 TO 2 ITEMS) A HOLES, DEEP RUT* B LOOSE MATERIAL ON ROADWAY* C OBSTRUCTION ON ROADWAY* D CONSTRUCTION - REPAIR ZONE E REDUCED ROADWAY WIDTH F FLOODED* G OTHER* H NO UNUSUAL CONDITIONS
PEDESTRIAN'S ACTIONS A NO PEDESTRIANS INVOLVED B CROSSING IN CROSSWALK AT INTERSECTION C CROSSING IN CROSSWALK - NOT AT INTERSECTION D CROSSING - NOT IN CROSSWALK E IN ROAD - INCLUDES SHOULDER F NOT IN ROAD G APPROACHING / LEAVING SCHOOL BUS
OTHER ASSOCIATED FACTOR(S) (MARK 1 TO 2 ITEMS) A VC SECTION VIOLATION: CITED YES NO B VC SECTION VIOLATION: CITED YES NO C VC SECTION VIOLATION: CITED YES NO D VISION OBSCUREMENT: F INATTENTION*: G STOP & GO TRAFFIC H ENTERING / LEAVING RAMP I PREVIOUS COLLISION J UNFAMILIAR WITH ROAD K DEFECTIVE VEH. EQUIP.: CITED YES NO L UNINVOLVED VEHICLE M OTHER*: N NONE APPARENT O RUNAWAY VEHICLE
SOBRIETY - DRUG PHYSICAL (MARK 1 TO 2 ITEMS) A HAD NOT BEEN DRINKING B HBD - UNDER INFLUENCE C HBD - NOT UNDER INFLUENCE* D HBD - IMPAIRMENT UNKNOWN* E UNDER DRUG INFLUENCE* F IMPAIRMENT - PHYSICAL* G IMPAIRMENT NOT KNOWN H NOT APPLICABLE I SLEEPY / FATIGUED*

SKETCH
INDICATE NORTH

MISCELLANEOUS

Traffic Collision Report, p. 3

STATE OF CALIFORNIA
INJURED / WITNESS / PASSENGERS
 CHP 555 Page 3 (Rev. 1-03) OPI 061

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DATE OF COLLISION (MO. DAY YEAR)				TIME (2400)	NCIC #	OFFICER I.D.					NUMBER								
WITNESS ONLY	PASSENGER ONLY	AGE	SEX	EXTENT OF INJURY ("X" ONE)				INJURED WAS ("X" ONE)					PARTY NUMBER	SEAT POS.	AIR BAG	SAFETY EQUIP.	EJECTED		
				FATAL INJURY	SEVERE INJURY	OTHER VISIBLE INJURY	COMPLAINT OF PAIN	DRIVER	PASS.	PED.	BICYCLIST	OTHER							
<input type="checkbox"/> #	<input type="checkbox"/>			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>							
NAME / D. O. B. / ADDRESS												TELEPHONE							
(INJURED ONLY) TRANSPORTED BY:												TAKEN TO:							
DESCRIBE INJURIES																			
<input type="checkbox"/> VICTIM OF VIOLENT CRIME NOTIFIED																			
<input type="checkbox"/> #	<input type="checkbox"/>			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>							
NAME / D. O. B. / ADDRESS												TELEPHONE							
(INJURED ONLY) TRANSPORTED BY:												TAKEN TO:							
DESCRIBE INJURIES																			
<input type="checkbox"/> VICTIM OF VIOLENT CRIME NOTIFIED																			
<input type="checkbox"/> #	<input type="checkbox"/>			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>							
NAME / D. O. B. / ADDRESS												TELEPHONE							
(INJURED ONLY) TRANSPORTED BY:												TAKEN TO:							
DESCRIBE INJURIES																			
<input type="checkbox"/> VICTIM OF VIOLENT CRIME NOTIFIED																			
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(INJURED ONLY) TRANSPORTED BY:												TAKEN TO:							
DESCRIBE INJURIES																			
<input type="checkbox"/> VICTIM OF VIOLENT CRIME NOTIFIED																			
<input type="checkbox"/> #	<input type="checkbox"/>			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>							
NAME / D. O. B. / ADDRESS												TELEPHONE							
(INJURED ONLY) TRANSPORTED BY:												TAKEN TO:							
DESCRIBE INJURIES																			
<input type="checkbox"/> VICTIM OF VIOLENT CRIME NOTIFIED																			
<input type="checkbox"/> #	<input type="checkbox"/>			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>							
NAME / D. O. B. / ADDRESS												TELEPHONE							
(INJURED ONLY) TRANSPORTED BY:												TAKEN TO:							
DESCRIBE INJURIES																			
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<input type="checkbox"/> #	<input type="checkbox"/>			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>							
NAME / D. O. B. / ADDRESS												TELEPHONE							
(INJURED ONLY) TRANSPORTED BY:												TAKEN TO:							
DESCRIBE INJURIES																			
<input type="checkbox"/> VICTIM OF VIOLENT CRIME NOTIFIED																			
PREPARER'S NAME				I.D. NUMBER				MO. DAY YEAR				REVIEWER'S NAME				MO. DAY YEAR			

Truck/Bus Collision Supplemental Report

STATE OF CALIFORNIA
DEPARTMENT OF CALIFORNIA HIGHWAY PATROL

TRUCK/BUS COLLISION SUPPLEMENTAL REPORT
CHP 555D (Rev. 5-99) OPI 061

PAGE

DATE OF COLLISION	TIME (2400)	NCIC NUMBER	OFFICER I.D.	NUMBER																
<p>DO NOT COMPLETE THIS FORM UNLESS:</p> <p>ONE OR MORE QUALIFIED VEHICLES WAS INVOLVED AND ONE OR MORE QUALIFIED INJURIES WAS SUSTAINED OR ONE OR MORE VEHICLES WAS TOWED FROM THE SCENE OR ONE OR MORE VEHICLES WAS PROVIDED ASSISTANCE</p> <p>QUALIFYING VEHICLE INFORMATION:</p> <ul style="list-style-type: none"> • ANY POWER UNIT WITH A GVWR OF 10,001 POUNDS OR MORE • ANY VEHICLE DISPLAYING HAZARDOUS MATERIAL PLACARD • BUSES DESIGNED TO CARRY MORE THAN 10, INCLUDING DRIVER 			<p>6. GROSS VEHICLE WEIGHT RATING OF POWER UNIT</p> <ol style="list-style-type: none"> 1. LESS THAN OR EQUAL TO 10,000 POUNDS 2. 10,001 - 26,000 3. MORE THAN 26,000 																	
<p>1. TOTAL NUMBER OF VEHICLES INVOLVED IN ACCIDENT</p> <p style="text-align: right;">[]</p>			<p>7. VEHICLE CONFIGURATION</p> <ol style="list-style-type: none"> 1. PASSENGER CAR 2. LIGHT TRUCK (VAN, MINI-VAN, PANEL, PICKUP, SUV) WITH ONLY FOUR TIRES 3. SINGLE-UNIT TRUCK (2-AXLE, 6-TIRE) 4. SINGLE-UNIT TRUCK (3-OR -MORE AXLES) 5. TRUCK/TRAILER 6. TRUCK TRACTOR (BOBTAIL) 7. TRACTOR / SEMI-TRAILER 8. TRACTOR / DOUBLES 9. TRACTOR / TRIPLES 10. UNKNOWN HEAVY TRUCK, CANNOT CLASSIFY 11. MOTOR HOME / RECREATIONAL VEHICLE 12. MOTORCYCLE 13. BUS (SEATS FOR MORE THAN 15 PEOPLE, INCLUDING DRIVER) 14. BUS (SEATS 9-15 PEOPLE, INCLUDING DRIVER) 15. OTHER 16. NOT REPORTED 17. UNKNOWN VEHICLE CONFIGURATION 																	
<p>2. TYPE OF ROADWAY</p> <ol style="list-style-type: none"> 1. TWO-WAY, NOT DIVIDED 2. TWO-WAY, DIVIDED, UNPROTECTED MEDIAN 3. TWO-WAY, DIVIDED, POSITIVE MEDIAN BARRIER 4. ONE-WAY, NOT DIVIDED 5. NOT REPORTED 6. UNKNOWN 			<p>8. CARGO BODY TYPE</p> <ol style="list-style-type: none"> 1. NOT APPLICABLE 2. BUS (SEATS FOR MORE THAN 15 PEOPLE, INCLUDING DRIVER) 3. BUS (SEATS FOR 9-15 PEOPLE, INCLUDING DRIVER) 4. VAN / ENCLOSED BOX 5. GRAIN / CHIPS / GRAVEL 6. POLE 7. CARGO TANK 8. FLATBED 9. DUMP 10. CONCRETE MIXER 11. AUTO TRANSPORTER 12. GARBAGE / REFUSE 13. OTHER 14. NOT REPORTED 15. UNKNOWN 																	
<p>3. ACCESS CONTROL</p> <ol style="list-style-type: none"> 1. FULL ACCESS CONTROL (RAMPS) 2. PARTIAL ACCESS CONTROL (COMBO) 3. NO ACCESS CONTROL (CROSS STREETS) 			<p>9. CARRIER INFORMATION</p> <p>CARRIER NAME _____</p> <p>STREET ADDRESS _____</p> <p>OTHER ADDRESS (P.O. BOX, SUITE, ETC.) _____</p> <p>CITY OR TOWN _____</p> <p>STATE (2-CHARACTER) _____ ZIP CODE _____</p> <p>CARRIER U.S. DOT NUMBER _____</p>																	
<p>4. SEQUENCE OF EVENTS (FOR THIS VEHICLE)</p> <table style="width: 100%; border: none;"> <tr> <td style="width: 50%;">1. RAN OFF ROAD</td> <td style="width: 50%;">9. PEDESTRIAN</td> </tr> <tr> <td>2. JACKKNIFED</td> <td>10. MOTOR VEHICLE IN TRANSPORT</td> </tr> <tr> <td>3. OVERTURNED OR ROLLOVER</td> <td>11. PARKED VEHICLE</td> </tr> <tr> <td>4. DOWNHILL RUNAWAY</td> <td>12. TRAIN</td> </tr> <tr> <td>5. CARGO LOSS OR SHIFT</td> <td>13. PEDAL CYCLE</td> </tr> <tr> <td>6. EXPLOSION OR FIRE</td> <td>14. ANIMAL</td> </tr> <tr> <td>7. SEPARATION OF UNITS</td> <td>15. FIXED OBJECT</td> </tr> <tr> <td>8. OTHER EVENT</td> <td>16. OTHER OBJECT</td> </tr> </table> <p>EVENT #1 [] EVENT #2 [] EVENT #3 [] EVENT #4 []</p>			1. RAN OFF ROAD	9. PEDESTRIAN	2. JACKKNIFED	10. MOTOR VEHICLE IN TRANSPORT	3. OVERTURNED OR ROLLOVER	11. PARKED VEHICLE	4. DOWNHILL RUNAWAY	12. TRAIN	5. CARGO LOSS OR SHIFT	13. PEDAL CYCLE	6. EXPLOSION OR FIRE	14. ANIMAL	7. SEPARATION OF UNITS	15. FIXED OBJECT	8. OTHER EVENT	16. OTHER OBJECT	<p>5. HAZARDOUS MATERIAL INVOLVEMENT (CARGO ONLY)</p> <p>DID VEHICLE HAVE A HAZARDOUS MATERIAL PLACARD?</p> <ol style="list-style-type: none"> 1. YES 3. NOT REPORTED 2. NO 4. UNKNOWN <p>IF "YES", RECORD FROM THE HAZARDOUS MATERIALS PLACARD:</p> <p>4-DIGIT PLACARD # [][][][]</p> <p style="text-align: center;">OR</p> <p>NAME TAKEN FROM THE MIDDLE OF THE DIAMOND OR FROM THE RECTANGULAR BOX: _____</p> <p style="text-align: center;">AND</p> <p>1-DIGIT PLACARD NUMBER FROM BOTTOM OF DIAMOND []</p> <p>WAS HAZARDOUS MATERIAL RELEASED FROM THIS VEHICLE'S CARGO?</p> <ol style="list-style-type: none"> 1. NOT APPLICABLE 4. NOT REPORTED 2. YES-HAZARDOUS MATERIALS WAS RELEASED 5. UNKNOWN 3. NO - HAZARDOUS MATERIALS NOT RELEASED 	
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