Patterns of MCMIS Crash File Underreporting in Ohio

Prepared for
Federal Motor Carrier Safety Administration

DTMC75-02-R-00090

Task D
MCMIS Crash File Evaluation

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August 2003

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Introduction

In an earlier study, we showed that reporting to the Motor Carrier Management Information System (MCMIS) Crash file is significantly incomplete. Between 62% and 67% of reportable truck crashes are actually reported to the file, while only about 40% of bus crashes are reported each year. While rates of reporting have improved since the start of the MCMIS file, it appears that reporting has stabilized at a low rate in recent years. Reporting rates are higher for more severe crashes. About 90% of trucks involved in a fatal crash are reported, and about 65% of bus fatal involvements. Reporting rates are lower for less severe crashes.

The MCMIS Crash file is fundamentally a compilation of crash data from the states. Accordingly, the sources of underreporting will be found at the state level. In this paper, we will examine one state to explore the sources of the underreporting to the MCMIS file. Ohio has been selected for this purpose. Ohio is a major industrial state that sits on a major east-west truck route, Interstate 80. In recent years, according to UMTRI's Trucks Involved in Fatal Accidents (TIFA) file, Ohio had the fifth greatest number of fatal truck involvements of all the states, and accounted for about 3.8% of all trucks involved in a fatal crash. Accordingly, Ohio ought to have a large number of crash-involved trucks to report to the MCMIS file.

The level and source of underreporting truck and bus crash involvements to the MCMIS file can be determined through a comparison with all police-reported crash data from Ohio. UMTRI has acquired the computerized record of all traffic crashes in Ohio (called the Ohio PAR (police accident report) file hereafter) for the year 2000. This file contains the police-reported data on all 386,122 crashes involving 695,775 vehicles that occurred in Ohio in 2000. It is the file from which the data are extracted for the MCMIS Crash file. By analyzing the full file of all crashes that occurred in Ohio, we can identify records that should have been reported to MCMIS and compare them with the records that were reported. It is only through this level of analysis that reasonable inferences can be drawn about the nature and extent of underreporting.

It appears that there are at least four sources of under- or incorrectly reported crashes. The first likely stems from difficulties in applying the crash severity threshold that identifies a case as reportable to the MCMIS Crash file. A crash reportable to MCMIS must have at least one of the following events:

1. A fatal injury to at least one person; or,

2. At least one person transported for immediate medical attention; or,

3. At least one vehicle towed due to disabling damage.

While clear and apparently easy to apply, on paper, a significant number of cases are reported to MCMIS that do not qualify with either a fatality, injury transported for treatment, or vehicle towed due to damage. Almost 20% of cases reported from Ohio do not qualify under a strict

interpretation of severity criteria. It appears that the crash severity threshold used in practice is considerably more relaxed.

Secondly, a significant proportion of unreported cases likely are for vehicles operated by intrastate carriers or by private carriers. It seems likely that police officers continue to believe that the MCMIS file is only for trucks operated by carriers that cross state lines.

Third, smaller trucks are significantly less likely to be reported than larger trucks. Trucks with two axles and six tires—the minimum criterion for inclusion—are overlooked more often than 18-wheelers.

Finally, underreporting varies by the type of police jurisdiction. Crashes covered by state police are more likely to be reported to the MCMIS crash file, while crashes worked by police departments are less likely to be reported. Similarly, crashes in the most heavily populated counties, where the workload on officers is likely very high, are less likely to be reported, while smaller jurisdictions, with fewer crashes, are more likely to report.

It should be emphasized, however, that while we have found patterns of underreporting that indicate a misunderstanding of the rules for identifying cases for the file, there is still a substantial amount of underreporting. Even if cases were reported at the rate for the most severe crashes, i.e., fatality crashes, still about half of reportable cases would be missed. Failure to report at this level indicates that many police officers are simply ignoring their obligation to collect the data for the MCMIS file.

Matching the MCMIS Crash file with the Ohio PAR file

The MCMIS Crash file, as of June 30, 2002, contained 4,893 records for 2000 from Ohio. The first problem is to match the MCMIS Crash file records reported from Ohio with the corresponding records in the Ohio PAR file. Both files contain the police report number, which uniquely identifies a crash. Since the MCMIS Crash file contains records of vehicles, to match with the Ohio PAR file, it is necessary to use variables that identify particular vehicles. For this purpose, we used the driver's license number, the vehicle's license plate, and the driver's date of birth. Driver and vehicle license number uniquely identify a specific individual or vehicle. Driver's date of birth is not quite so specific, since more than one driver can be born on the same day, but the combination of police report number and driver's date of birth should provide a fairly strong match. Three separate matches were performed, using police report number in combination with one of the vehicle or driver identifiers. Records that matched on both police report number and one of the other three match variables were accepted as a valid match.

The procedure described above resulted in 4,733 matches, or 96.7% of the records reported to MCMIS. One-hundred and sixty MCMIS records could not be matched to the Ohio PAR file. Fifty-seven of the non-matches occurred because of missing data on the match variables. Another 13 matched on police report number but no record for the appropriate vehicle or driver could be found in the Ohio PAR file. The final 90 cases were not found at all in the Ohio PAR file. Ideally, one would like to match all the cases to the Ohio file, but under the circumstances this result is reasonable and does not indicate any fundamental problem.

The next problem is to identify in the Ohio PAR file the records that should have been reported to MCMIS but were not. Overall, there are 33,709 vehicles identified as trucks, buses, or vehicles with a hazardous materials placard in the Ohio PAR file. Vehicles involved in a crash that included a fatality, injury transported for treatment, or a vehicle towed due to disabling damage should have been reported to the MCMIS Crash file. The Ohio PAR file has enough information to identify records meeting a strict interpretation of both the vehicle and the crash severity criteria for inclusion in the MCMIS file.

There were 9,468 records in the Ohio PAR file that, based on vehicle type and crash severity, should have been reported to the MCMIS Crash file. Neglecting the cases that could not be matched, the 4,733 records actually reported to the Crash file implies that almost exactly half of the reportable cases were not, in fact, reported.

But that result overstates the level of reporting. Table 1 shows that only some of the cases that were reported to the MCMIS Crash file actually met the strict interpretation of the reporting criteria. Only 3,670 of the MCMIS cases matched to Ohio PAR cases that should have been reported. This is only 38.8% of the reportable Ohio cases by a strict interpretation of the MCMIS reporting criteria. Thus, 1,063 of the cases reported to MCMIS from Ohio, which is 22.5% of the cases that could be matched, apparently did not meet the reporting criteria. Of these "over-reported" cases, 184 were not recorded in the Ohio PAR file as trucks, buses, or placarded vehicles, and the other 879 did not meet the crash severity threshold.

Table 1 Reportable Records in the Ohio PAR file and Records Actually Reported to the MCMIS Crash file, 2000

Crash severity	Records in Ohio PAR file	Matched to MCMIS	% Matched
Fatal	211	107	50.7%
Injury, transported	3,084	1,796	58.2%
Towed, disabling damage	6,173	1,767	28.6%
Total	9,468	3,670	38.8%

The high rate of "misreported" cases indicates that many reporting officers are having trouble applying the crash severity criteria. Clearly the effective criteria for many officers is a fatality, an injury (rather than an injury transported for treatment), or a vehicle towed (rather than towed due to disabling damage). Only one of the cases reported to MCMIS from Ohio in 2000 did not meet that standard.

This raises the question of what should be considered a "reportable" case when considering the sources of underreporting. On the one hand, using the strict criteria seems reasonable, since the Ohio PAR file includes enough information to identify qualifying cases. But there is no way, using the MCMIS data alone, to identify cases that should not have been reported because they did not meet the crash criteria. Any user of the MCMIS data has to use the data as it is, not as it would be had all the cases been reported correctly.

Thus in considering the sources of underreporting to the MCMIS file, it is not unreasonable to identify unreported cases using the criteria that was effectively used for the reported cases. While

a different decision could have been reasonably made, in trying to determine why unreported cases were not reported, we have identified unreported cases as those involving a truck, bus, or placarded vehicle involved in a crash with either a fatality, injury, or towed vehicle. When we compare distributions for reported and unreported cases to search for systematic differences, we will compare all the matched cases from the MCMIS Crash file with Ohio PAR file records that meet those criteria. As we said earlier, a different decision could have been made, but it is unlikely that it would have altered the conclusions significantly.

The sources of underreporting

Using the effective crash severity threshold that reporting officers applied, there were 13,397 records that could have been reported to the MCMIS Crash file. Of these, 4,733 were reported to MCMIS and 8,664 were not. In this section, we will discuss the differences identified between the two sets of records that suggest an explanation for why some crash involvements are reported and others are not.

The sources of underreporting are probably related to the criteria for reporting cases. The formal criteria relate to vehicle type and crash severity. Both will be considered next. In addition, two other possibilities will be considered: underreporting of crashes involving intrastate carriers and differential reporting rates by police jurisdiction.

Table 1 showed that towaway crashes are less likely to be reported than more serious crashes, relative to the strict criteria. While only about half of involvements in a fatal crash are reported, and only 58.2% of involvements with a transported injury are reported, cases involving a vehicle towed due to disabling damage are even less likely to be reported, with only 28.6% of cases reportable under the strict criteria included in the MCMIS Crash file. Table 2 compares the proportion of reportable, using the relaxed criteria, Ohio cases actually reported to the MCMIS Crash file. As in the case of strict criteria cases, towaway crashes are the least likely to be reported to the MCMIS file. Crashes involving a fatality are the most likely to be reported, though still only at a 50.7% rate; and only about 41.9% of injury crash involvements are reported.

Table 2 Reportable Records in the Ohio PAR file (not strict criteria) and Records Actually Reported to the MCMIS Crash file, 2000

Crash severity	Records in Ohio PAR file	Matched to MCMIS	% Matched
Fatal	211	107	50.7%
Injury, regardless of transport	7,117	2,979	41.9%
Towed, for any reason	5,884	1,462	24.8%
Not a reportable MCMIS vehicle or lower crash severity		185*	
Total	13,397**	4,733	35.8%

* 184 of reported MCMIS records were not coded as a truck, bus, or hazmat vehicle in the Ohio PAR file; one MCMIS truck record was not coded as either a fatal, injury, or towaway in the Ohio PAR file.
**Includes 184 vehicles identified as a truck or bus in MCMIS, but as a light vehicle in the Ohio PAR file, and one vehicle that did not meet the crash severity criteria.

Smaller trucks are less likely to be reported than larger trucks. The truck size criterion for a reportable MCMIS crash (at least two axles and six tires) seems quite clear and easily applied. Yet data from the Ohio PAR file show that trucks that just meet the size threshold are much less likely to be reported than vehicles that are clearly "big trucks." Only 15.8% of two-axle, six-tire single-unit trucks (SUT) are reported to the MCMIS Crash file (Table 3), while 48.1% of tractor-semitrailers, 54.1% of doubles combinations, and 44.4% of triples combinations are reported. Note that 44.1% of three-axle SUTs involved in reportable crashes are reported. Underreporting of the two-axle SUTs is consequential because they account for a large percentage of all crash-involved trucks. If even half of the two-axle, six tire SUTs were reported, which is about the rate for larger trucks, that would increase the overall reporting rate from 35.8% to 44.3%.

Table 3 Differences in Reporting Rates to MCMIS Crash file by Unit Type, Ohio PAR file, 2000

	Reported cases		Unreported cases		Total reportable cases	
Unit type	No.	% Reported	No.	% Not Reported	No.	%
Compact (hazmat placard)	0	0.0	1	100.0	1	100.0
Mid-size (hazmat placard)	4	100.0	0	0.0	4	100.0
Panel/van (hazmat placard)	0	0.0	1	100.0	1	100.0
SUT:2 axles, 6 tires	555	15.8	2,953	84.2	3,508	100.0
SUT:3 or more axles	437	44.1	553	55.9	990	100.0
Truck/Trailer	243	20.9	920	79.1	1,163	100.0
Truck tractor (bobtail)	85	30.2	196	69.8	281	100.0
Tractor/semitrailer	2,799	48.1	3,021	51.9	5,820	100.0
Tractor/double-short	91	55.5	73	44.5	164	100.0
Tractor/double-long	14	46.7	16	53.3	30	100.0
Fifth wheel or converter dolly	2	28.6	5	71.4	7	100.0
Tractor/triples	4	44.4	5	55.6	9	100.0
School bus	174	26.1	492	73.9	666	100.0
Church bus	3	17.6	14	82.4	17	100.0
Public bus	112	24.3	349	75.7	461	100.0
Other bus	25	28.7	62	71.3	87	100.0
All Others	1	33.3	2	66.7	3	100.0
Unknown	0	0.0	1	100.0	1	100.0
Not a truck in Ohio PAR	184				184	
Total	4,733	35.8	8,664	65.6	13,397*	100.0

Note: The tractor/semitrailer group contains one reported case that does not meet the lenient severity criteria.
*Includes 184 vehicles identified as a truck or bus in MCMIS, but as a light vehicle in the Ohio PAR file.

Trucks and buses operated by intrastate carriers (carriers based and operated entirely within the state) are also much less likely to be reported to the MCMIS Crash file than those operated by interstate carriers. Carriers operating in interstate commerce, as well as those carrying hazardous materials, are required to register with the Federal Motor Carrier Safety Administration. They are issued a Department of Transportation number, and their name and DOT number must be displayed on the side of their trucks. Prior to the sunsetting of the Interstate Commerce Commission, interstate carriers were issued an ICC number. Both DOT and ICC numbers serve

to identify trucks and buses that operate in interstate commerce and that fall under the regulatory jurisdiction of the Federal government.

Table 4 shows that trucks and buses with either a DOT or ICC number are significantly more likely to be reported to the MCMIS Crash file than vehicles which otherwise meet the MCMIS criteria but do not have a DOT or ICC number recorded. In fact, the table shows that the type of number does not make any difference. About three quarters of trucks or buses with a DOT or ICC number are reported to the MCMIS Crash file, while only 23.9% of vehicles that do not have such an identifier, but which clearly qualify, are reported.

Table 4 Differences in Reporting Rates by ICC and DOT number and License State, Ohio PAR file, 2000

	Reported cases		Unreported cases		Total
	N	% reported	N	% not reported	N
ICC & DOT number recorded	416	73.5	150	26.5	566
Only ICC recorded	377	74.5	129	25.5	506
Only DOT recorded	1,467	74.1	512	25.9	1,979
Neither ICC nor DOT recorded	2,473	23.9	7,873	76.1	10,346
Total	4,733	35.3	8,664	64.7	13,397
Reporting by license state					
	Reported cases		Unreported cases		Total
	N	% reported	N	% not reported	N
Ohio license plate	2,623	30.1	6,090	69.9	8,713
Other state license plate	2,110	45.0	2,574	55.0	4,684
Total	4,733	35.3	8,664	64.7	13,397

The lower section of the table shows reporting by the vehicle's license state. Only around 30% of reportable vehicles with an Ohio plate are reported to the MCMIS Crash file, compared with 45.0% of trucks or buses with out-of-state plates. The results are consistent with the finding for DOT and ICC numbers.

It is likely that some reporting police officers do not think it is necessary to report the crashes of in-state trucks and buses. Despite the fact that the criteria for reporting cases nowhere mentions anything to do with the type of carrier, some officers clearly are ignoring some trucks and buses simply because they are not interstate vehicles. It is also possible that the officers do not realize that crashes involving trucks and buses operated by private carriers should be included.

Underreporting of crashes involving private and intrastate carriers because of a lack of understanding of what vehicles the MCMIS Crash file applies to is a powerful reminder that complete reporting begins at the officer level. If reporting officers do not complete the forms correctly, no amount of computer processing can fill in the gaps. To an outsider, the criteria for including cases in the MCMIS Crash file seem simple and clear. But analysis of reported and unreported cases makes equally clear that cases are being missed in the field. Officers are working a crash that qualifies for the MCMIS file and failing to fill out the PAR correctly.

Since it seems very likely that underreporting begins at the start of the data collection process, a comparison of the unreported and reported cases can reveal the agencies and locations that are missing the cases. The Ohio PAR file includes a field that identifies the reporting agency. Three types of agencies are identified: the State Highway Patrol, county sheriff's departments, and local police departments. The State Highway Patrol has the highest reporting rate (Table 5). Almost 50% of the records that should be reported from crashes worked by the SHP are actually reported to the MCMIS Crash file. Note also from the table that the SHP worked 5,102 of the 13,212 vehicles that should be in the MCMIS file. The fraction of reportable cases actually reported from county sheriff's department is significantly lower at 35.4%. Unfortunately, the agency type that polices the highest number of relevant crashes also has the lowest reporting rate. Local police departments covered 50.4% of the relevant vehicles but reports on only 22.5% were actually submitted to the MCMIS Crash file. Thus, local police departments account for about 60% of the missing MCMIS Crash file cases. None of the three types of law enforcement agencies had a good record, but local police departments clearly did the worst job. (The appendix includes a table listing the top 100 jurisdictions by the number of reportable cases, along with counts of cases actually reported.)

Table 5 MCMIS Crash file Reporting by Reporting Agency, Ohio PAR file, 2000

	Reportable Cases		Reported Cases		% Reported	Unreported	
Agency type	N	%	N	%	%	N	%
Sheriff's Department	1,442	10.9	510	11.2	35.4	932	10.8
Police Department	6,661	50.4	1,496	32.9	22.5	5,165	59.6
State Highway Patrol	5,102	38.6	2,541	55.9	49.8	2,561	29.6
Other	7	0.1	1	0.0	14.3	6	0.1
Total	13,212*	100.0	4,548*	100.0	34.4	8,664	100.0

*Excludes 184 vehicles identified as a truck or bus in MCMIS, but as a light vehicle in the Ohio PAR file.

The top 100 police departments with the most unreported cases account for 3,920 cases, 75.9% of the cases police departments failed to report. At the top of the list are the big-city police departments of Columbus, Cleveland, Cincinnati, Toledo, and Dayton, accounting for 2,087 (40.4%) of the total unreported cases across all police departments. See Table 6. The top ten police departments represented in Table 6 account for 2,379 (46.1%) of the unreported cases. Securing better coverage by these departments would result in a significant increase in the number of cases reported to MCMIS.

Table 6 Reporting Rates for the Top Ten Police Departments Ohio PAR file, 2000

	Unreported	% Reported
Columbus P.D.	842	16.4
Cleveland P.D.	495	9.5
Cincinnati P.D.	321	23.0
Toledo P.D.	260	25.7
Dayton P.D.	169	22.5
Akron P.D.	77	31.3
Youngstown P.D.	74	20.4
Canton P.D.	54	20.6
Sharonville P.D.	49	25.8
Mentor P.D.	38	19.1

A closer look at the 842 unreported cases from Columbus revealed that the explanation for the failure to submit a cases was not that the crash occurred at the end of the year and therefore the data had not yet been submitted. The distribution of unreported cases was fairly even across the months of the year. Instead, it appears that the cases simply were not identified by the officer and the appropriate data were not collected. Ninety-five percent of the unreported cases did not have a DOT number recorded, compared to 58% unrecorded DOT numbers for reported cases. The MCMIS variables on the PAR were not recorded for more than 90% of unreported cases, though for reported cases, missing data on the MCMIS variables ranged from 3% to 12%.

Of Ohio reportable cases taken by Sheriff's departments, only 35.4% are uploaded to MCMIS. Ten counties accounted for 447 cases (48.0%) of the unreported Sheriff's cases. County sheriffs cover only about 10% of reportable truck/bus crash involvements, so the big gains in MCMIS reporting are to be found elsewhere. Even so, the bulk of the unreported cases occurred in just a few counties. Efforts to improve reporting rates can be focused on targets with the biggest expected gain from improvements, and our work shows that the number of high-value targets is relatively small.

Table 7 Reporting Rates from Sheriff's Departments with the Most Unreported Cases, Ohio PAR file, 2000

County sheriff department	Unreported	% Reported
Hamilton (Cincinnati)	123	25.5
Franklin (Columbus)	65	40.9
Pickaway (S. of Columbus)	45	2.2
Butler (N. of Cincinnati)	39	30.4
Stark (Canton)	34	46.0
Summit County	31	34.0
Coshocton County	29	23.7
Fairfield County	28	9.7
Fayette County	27	34.1
Montgomery County	26	29.7

State Highway Patrol officers work about 40% of reportable MCMIS crashes (see Table 5). The SHP also has the highest rate of reporting, with 49.8% of reportable cases finding their way into

the MCMIS Crash file. On the other hand, the volume of reportable crashes the SHP works means that, even with the highest rate of reporting, unreported SHP cases still account for almost 30% of all the unreported cases, amounting to over 2,500 cases (Table 5, again).

The ten SHP posts with the highest number of unreported cases are listed in Table 8. These posts account for 808 (31.6 %) of unreported SHP cases.

Table 8 SHP Posts with the Most Unreported Cases, Ohio PAR file, 2000

SHP post	Unreported	% Reported
Delaware	110	43.9
Medina	94	48.1
Wooster	87	50.0
Lebanon	85	39.7
Granville	80	36.5
Massillon	72	33.9
Warren	72	45.5
Castalia	71	57.7
Ravenna	69	44.4
Canfield	68	45.2

Summary

Underreporting to the MCMIS Crash file is a serious problem that undermines its usefulness in traffic safety research and monitoring motor carriers. Previous work had estimated that between 62% and 67% of reportable truck crashes are actually reported each year. The situation is substantially worse for buses. Only about 40% of buses involved in reportable crashes are reported to the MCMIS Crash file.

Comparison of records in the Crash file with records in a state PAR file provides an opportunity to explore why so many cases are going unreported, and possibly to suggest solutions. Ohio was selected for study, because it suffers from substantial underreporting, because it is a large industrial state that sees a lot of truck traffic, and because the Ohio PAR file is readily available for comparison. In addition, the Ohio data includes several data elements that provide a detailed view of the crash records from which cases are extracted for submission to the MCMIS Crash file. This detail on the types of vehicles and the disposition of the injured affords the opportunity to determine if reporting rates vary with those characteristics, or if there is some other, systemic problem.

MCMIS Crash file records were matched to Ohio PAR file records using police report number, driver license number, vehicle license plate number, and driver date of birth. Of the 4,893 records in the MCMIS Crash file, 4,733 (96.7%) were matched to the corresponding record in the Ohio PAR file. Applying the strict version of the MCMIS Crash file reporting criteria—a fatality, injury transported for immediate medical attention, or a vehicle towed due to disabling damage—almost 9,500 cases should have been reported to the Crash file, for a reporting rate of about 50%.

Interestingly, about 20% of the cases that were reported should not have been, because, though there was an injury or a towed vehicle, the injured person was not transported for immediate medical attention or the towed vehicle had not suffered disabling damage. In other words, though the total number of cases reported was only half the number that should have been, about 20% of the cases did not qualify, so the actual reporting rate of cases that should have been reported was under 40%. This finding proved to be characteristic.

In the event, underreporting to the MCMIS Crash file in Ohio appears to relate fundamentally to problems in applying the MCMIS reporting criteria. Both the vehicle and the crash severity criteria are consistently misapplied. While there appear to be many cases that were not reported simply because an officer did not fill out the crash report, officers were less likely to report smaller trucks than larger trucks, and less likely to report less severe crashes than more serious ones.

It seems fairly clear that many officers are failing to notice the details of the injury and towaway criteria. About 20% of all reported crash involvements in Ohio in the year studied had an injury or a towed vehicle, but no injured person was transported and no vehicle was disabled. Effectively, the reporting threshold is a fatality, an injury, or a towed vehicle. It was this standard that was used to identify “reportable” cases for comparison with the reported ones. It may be argued that the correct group is that which is selected by a strict application of the rules. But instead we chose the set of cases from which the reported cases were actually drawn. It should be kept in mind that, without comparison to the Ohio PAR file, the over-reported cases could never be identified, and so any analysis of the MCMIS Crash file would be based on an incorrect understanding of the universe of cases it actually comprehends.

Underreporting is clearly related to problems in applying the reporting rules. Less severe crashes are less likely to be reported. While about half of trucks and buses involved in fatality crashes are reported, 41.9% of injury, and only 24.8% of towaway crashes make it into the file. Smaller trucks are less likely to be reported than larger trucks. Only 15.8% of SUT trucks are reported, but add an axle and 44.1% of three-axle trucks are reported. Other truck combinations that are readily identified as large trucks are reported at rates much higher than the overall rate: 48.1% for singles, 54.1% for doubles, and 44.4% for triples. All types of buses are underreported at about the same rate.

Comparison of reported and unreported cases in Ohio also confirms what has long been suspected: Trucks and buses operated by intrastate and private carriers are much more often overlooked. Despite the fact that the rules for reporting do not touch at all on carrier operations, many officers clearly are under the impression that trucks without a DOT or ICC number do not have to be reported. About 75% of the trucks and buses with a DOT or ICC number are reported to the Crash file, while only a quarter of the vehicles without such an identifier make it into the file.

Local police departments account for the lion’s share of the underreporting, as they do for the reportable cases. Unfortunately it is the case that local police departments are responsible for most crash reporting. Local PDs report only 22.5% of the reportable cases they police. Sheriff’s departments and the State Highway Patrol do somewhat better, with 35.4% and 49.8% respectively. Any effort to increase reporting rates will have to focus most heavily on police

departments. But it is clear that all levels of enforcement are failing to provide adequate reporting.

The bulk of the underreporting can be traced to a relatively few jurisdictions. This is partly due to the fact that truck and bus crashes are not evenly spread over all police jurisdictions but tend to concentrate in the locations where operations are heavy. But we have identified a number of police departments, sheriff's departments, and SHP posts that account for the majority of the underreporting problem. Ten police departments account for almost half the underreporting by PDs. Ten sheriff's departments account for almost half of the underreporting at that level, and ten SHP posts account for about one-third of SHP underreporting. These are the obvious initial targets in any effort to improve the situation.

What this analysis shows is that the requirements for the MCMIS Crash file are still not well-understood. It would have been nice if the issue were simply a technical one, a software problem that could be easily fixed. Instead, it is clear that officers are simply failing to collect the data that are required. Reporting for the most obvious cases—fatality crashes involving a tractor-semitrailer—is only at about the 50% level.

It is equally clear that officers are failing to apply the reporting rules correctly. About 20% of the reported crash involvements do not qualify under a strict interpretation of the reporting rules. Only 15% of two-axle trucks involved in crashes are reported. Trucks operated by intrastate and private carriers are widely ignored. The message here is that reporting requirements must be made as simple as possible, the requirements must be widely and repeatedly disseminated, and the jurisdictions must be held accountable for their performance. The reporting failures start with the officer at the crash scene, and the solutions will have to start there as well.

Appendix

Top 100 Agencies in Ohio by MCMIS Crash File Cases
Ohio PAR file, 2000

Ohio agency	Reportable	Reported		Unreported		% of unreported
	N	N	%	N	%	
Columbus P.D.	1007	165	16.4	842	83.6	9.7
Cleveland P.D.	547	52	9.5	495	90.5	5.7
Cincinnati P.D.	417	96	23.0	321	77.0	3.7
Toledo P.D.	350	90	25.7	260	74.3	3.0
Dayton P.D.	218	49	22.5	169	77.5	2.0
Hamilton Cnty Sheriff	165	42	25.5	123	74.5	1.4
SHP - Delaware	196	86	43.9	110	56.1	1.3
SHP - Medina	181	87	48.1	94	51.9	1.1
SHP - Wooster	174	87	50.0	87	50.0	1.0
SHP - Lebanon	141	56	39.7	85	60.3	1.0
SHP - Granville	126	46	36.5	80	63.5	0.9
Akron P.D.	112	35	31.3	77	68.8	0.9
Youngstown P.D.	93	19	20.4	74	79.6	0.9
SHP - Massillon	109	37	33.9	72	66.1	0.8
SHP - Warren	132	60	45.5	72	54.5	0.8
SHP - Castalia	168	97	57.7	71	42.3	0.8
SHP - Ravenna	124	55	44.4	69	55.6	0.8
SHP - Canfield	124	56	45.2	68	54.8	0.8
Franklin Cnty Sheriff	110	45	40.9	65	59.1	0.8
SHP - Springfield	118	53	44.9	65	55.1	0.8
SHP - Walbridge	134	69	51.5	65	48.5	0.8
SHP - Dayton	118	57	48.3	61	51.7	0.7
SHP - Toledo	142	83	58.5	59	41.5	0.7
SHP - Elyria	99	42	42.4	57	57.6	0.7
Canton P.D.	68	14	20.6	54	79.4	0.6
SHP - Mt. Gilead	98	44	44.9	54	55.1	0.6
SHP - Chardon	93	40	43.0	53	57.0	0.6
SHP - Hiram	107	55	51.4	52	48.6	0.6
SHP - Piqua	95	43	45.3	52	54.7	0.6
SHP - Lima	87	36	41.4	51	58.6	0.6
Sharonville P.D.	66	17	25.8	49	74.2	0.6
SHP - Mansfield	93	45	48.4	48	51.6	0.6
SHP - St. Clairsville	78	30	38.5	48	61.5	0.6
SHP - Ashtabula	102	55	53.9	47	46.1	0.5
SHP - Fremont	105	58	55.2	47	44.8	0.5
SHP - Ashland	107	61	57.0	46	43.0	0.5
Pickaway Cnty Sheriff	46	1	2.2	45	97.8	0.5
SHP - New Philadelphia	95	50	52.6	45	47.4	0.5
SHP - Defiance	93	49	52.7	44	47.3	0.5
SHP - Governor's Residen	80	37	46.3	43	53.8	0.5
SHP - Batavia	97	55	56.7	42	43.3	0.5
SHP - Lisbon	70	30	42.9	40	57.1	0.5
Butler Cnty Sheriff	56	17	30.4	39	69.6	0.5

Ohio agency	Reportable	Reported		Unreported		% of unreported
	N	N	%	N	%	
SHP - Eaton	57	18	31.6	39	68.4	0.5
SHP - West Jefferson	81	42	51.9	39	48.1	0.5
Mentor P.D.	47	9	19.1	38	80.9	0.4
SHP - Portsmouth	88	50	56.8	38	43.2	0.4
Newark P.D.	40	3	7.5	37	92.5	0.4
SHP - Sandusky	96	60	62.5	36	37.5	0.4
SHP - Wilmington	76	41	53.9	35	46.1	0.4
Mansfield P.D.	46	12	26.1	34	73.9	0.4
SHP - Findlay	79	45	57.0	34	43.0	0.4
Springfield P.D.	41	7	17.1	34	82.9	0.4
Stark Cnty Sheriff	63	29	46.0	34	54.0	0.4
Hamilton P.D.	43	10	23.3	33	76.7	0.4
SHP - St. Marys	72	40	55.6	32	44.4	0.4
SHP - Zanesville	57	25	43.9	32	56.1	0.4
Beavercreek Township P.D	39	8	20.5	31	79.5	0.4
Summit Cnty Sheriff	47	16	34.0	31	66.0	0.4
Middletown P.D.	42	12	28.6	30	71.4	0.3
SHP - Athens	49	19	38.8	30	61.2	0.3
SHP - Cambridge	78	48	61.5	30	38.5	0.3
SHP - Lancaster	61	31	50.8	30	49.2	0.3
SHP - Norwalk	89	59	66.3	30	33.7	0.3
SHP - Swanton	74	44	59.5	30	40.5	0.3
Coshocton Cnty Sheriff	38	9	23.7	29	76.3	0.3
Strongsville P.D.	33	4	12.1	29	87.9	0.3
Union Township P.D.	37	8	21.6	29	78.4	0.3
Fairfield Cnty Sheriff	31	3	9.7	28	90.3	0.3
Euclid P.D.	37	10	27.0	27	73.0	0.3
Fayette Cnty Sheriff	41	14	34.1	27	65.9	0.3
SHP - Xenia	55	28	50.9	27	49.1	0.3
Elyria P.D.	33	7	21.2	26	78.8	0.3
Montgomery Cnty Sheriff	37	11	29.7	26	70.3	0.3
SHP - Chillicothe	68	42	61.8	26	38.2	0.3
SHP - Circleville	52	26	50.0	26	50.0	0.3
Wood Cnty Sheriff	36	10	27.8	26	72.2	0.3
Huber Heights P.D.	44	19	43.2	25	56.8	0.3
SHP - Akron	44	19	43.2	25	56.8	0.3
Zanesville P.D.	32	7	21.9	25	78.1	0.3
SHP - Hamilton	46	22	47.8	24	52.2	0.3
SHP - Marion	50	26	52.0	24	48.0	0.3
SHP - Van Wert	48	24	50.0	24	50.0	0.3
SHP - Gallipolis	49	26	53.1	23	46.9	0.3
Springfield Township P.D.	30	7	23.3	23	76.7	0.3
Wooster P.D.	29	6	20.7	23	79.3	0.3
Springdale P.D.	32	10	31.3	22	68.8	0.3
Sylvania Township P.D.	30	8	26.7	22	73.3	0.3
Bedford Heights P.D.	28	7	25.0	21	75.0	0.2
Darke Cnty Sheriff	38	17	44.7	21	55.3	0.2
Delaware P.D.	29	8	27.6	21	72.4	0.2
Findlay P.D.	23	2	8.7	21	91.3	0.2

Ohio agency	Reportable	Reported		Unreported		% of unreported
	N	N	%	N	%	
Montgomery P.D.	30	9	30.0	21	70.0	0.2
SHP - Jackson	49	28	57.1	21	42.9	0.2
East Cleveland P.D.	23	3	13.0	20	87.0	0.2
Fairfield P.D.	29	9	31.0	20	69.0	0.2
Macedonia P.D.	31	11	35.5	20	64.5	0.2
SHP - Georgetown	47	27	57.4	20	42.6	0.2
SHP - Ironton	42	22	52.4	20	47.6	0.2
Shaker Heights P.D.	21	1	4.8	20	95.2	0.2
Top 100 agencies	9428	3419	36.3	6009	63.7	69.4%