U.S. Department of Transportation
National Highway Traffic Safety Administration

TRAFFIC SAFETY FACTS
Research Note

NHTSA
www.nhtsa.gov

DOT HS 812 072 | Behavioral Safety Research | November 2014

Understanding the Limitations of Drug Test Information, Reporting, and Testing Practices in Fatal Crashes

Amy Berning & Dereece D. Smither

Since 1975, the National Highway Traffic Safety Administration (NHTSA) has collected data from all 50 States, the District of Columbia, and Puerto Rico on all police-reported fatal crashes on public roadways. NHTSA's National Center for Statistics and Analysis (NCSA) includes data from these fatal crashes in the Fatality Analysis Reporting System (FARS). This dataset provides a wealth of information on fatal crashes, the roadways, vehicles, and drivers involved.

"Impaired driving" includes use of alcohol, or drugs, or both. Blood alcohol concentration (BAC) results are not known for all drivers in fatal crashes. For crashes with missing alcohol data, NHTSA uses a statistical model called "multiple imputation" to estimate the BAC of a driver at the time of the crash. In contrast, the variables regarding drug test information in crashes is evolving. It does not include estimates for missing data or impairment levels and therefore needs further interpretation. This paper summarizes some of the complexities related to drug-involved driving, notes limitations of drug data collected in FARS, and presents challenges in interpreting, reporting, and analyzing the data.

Drug Presence Versus Drug Impairment

An important distinction to make when evaluating impaired driving data is the mere presence of a drug in a person's system, as compared to the person being impaired by a drug in his/her system. FARS drug data provides information about drug presence, rather than whether the driver was impaired by a drug at the time of a crash. Data identifying a driver as "drug positive" indicates only that a drug was in his/her system at the time of the crash. It does not indicate that a person was impaired by the drug (Compton & Berning, 2009). The presence of some drugs in the body can be detected long after any impairment. For example, traces of cannabinoids (marijuana) can be detected in blood samples weeks after use. Thus, knowing that a driver tested positive for cannabinoids does not necessarily indicate that the person was impaired by the drug at the time of the crash.

In addition, while the impairing effects of alcohol are well-understood, there is limited research and data on the crash risk of specific drugs, impairment, and how drugs affect driving-related skills. Current knowledge about the effects of drugs other than alcohol on driving performance is insufficient to make judgments about connections between drug use, driving performance, and crash risk (Compton, Vegega, & Smither, 2009).

Every State has enacted a law defining drivers who are at or above .08 grams per deciliter BAC as "legally impaired," but there are no similar, commonly accepted impairment levels for other drugs. Some State laws have established levels for some drugs at which it is illegal to operate a motor vehicle (Lacey, Brainard, & Snitow, 2010; Walsh, 2009). The alcohol laws are based on evidence concerning the decreased ability of drivers across the population to function safely at these BACs. Such evidence is not currently available for concentrations of other drugs. Additionally, not all drugs reported in FARS are illegal. Over-the-counter and prescription medications are also reported. The legal status of a drug is not a factor in determining a drug's potential for decreasing driving performance or increasing crash risk.

Differences in Drug Testing Procedures

There is no consistent policy or set of procedures between, or sometimes even within, States for drug testing. Considerable variation exists regarding who is tested; which drug is tested for; type of test, cut-off levels, and equipment; and which biological specimen (blood, urine, or oral fluid) is used. Some jurisdictions test only fatally injured drivers; others test all drivers involved in fatal crashes. Some jurisdictions test no one at all. As such, a jurisdiction that tests more drivers is likely to have a higher percentage of drivers who are known to be drug-positive.

Similarly, there is no consistency regarding the types and number of drugs for which drivers are tested. Lab tests are costly. A driver is more likely to be tested for drugs if there is infor-

mation from the crash indicating that drugs may have been a factor. If alcohol is present, the driver usually is not tested for other drugs, particularly because most State statutes often do not distinguish between alcohol and drug impairment. If a driver is tested for a greater number of drugs, there is higher potential for a result that is drug positive.

Jurisdictions (or labs within a jurisdiction) may vary also regarding the sensitivity of their tests and their "cut-off" levels for indicating the presence of a drug. Testing for drugs involves performing screening tests (which are less expensive and less sensitive), and confirmatory tests. Some laboratories do not consistently perform both types of tests, even when they are appropriate.

Caution should be exercised in assuming that drug presence implies driver impairment. Drug tests do not necessarily indicate current impairment. Also, in some cases, drug presence can be detected for a period of days or weeks after ingestion.

Data Collection and Coding

The procedures for reporting drug test results to FARS may be less well known than those for alcohol reporting, so there may be unequal reporting to FARS from labs across jurisdictions. Many labs may be unaware that the FARS analyst in their States need drug test results. Similarly, the FARS analysts are not always aware that drug tests have been conducted. The manner in which States collect and report data to FARS varies, and information about drug presence may be unclear. Testing may be delayed, sometimes by months. States may not be able to submit results from all lab tests to FARS in the final data files.

FARS analysts across all States use the same coding protocol when entering data on crashes and drivers. However, the database has limited capacity for listing individual drug results. If a toxicological report notes the presence of more than the three drugs that the database allows, only a portion of those reported will be accounted for in FARS. Similarly, test results reporting a driver positive for drug metabolites may not be captured within FARS.

While drug reporting in FARS is currently incomplete, the available information is presented with appropriate sub-categories. When interpreting this data, it is important to keep in mind the inconsistencies in types of drugs tested and test protocols mentioned previously. It is also critical that the denominator be carefully considered with respect to key distinctions such as proportion of drivers tested, proportion with known results, and proportion known positive for a drug.

The first two columns of Table 1 provide a summary, by year, of the total number of drivers—driver fatalities and surviving drivers—involved in fatal crashes from 2008-2012. The *Drug Test Status* columns provide data over those years about those *Not Tested, Tested,* and *Unknown if Tested* for drugs. The *Drug Test Results* columns data are further subdivided (under the heading *Tested for Drugs*) into *Drug Positive, Drug Negative,* and *Results Unknown* data. At first viewing, it might appear that the percentage of drugged drivers increased over time (26% in 2008 versus 32% in 2012). However, consider several factors when reviewing these data:

- The majority of drivers were *not* tested for drugs (only 41% and 40% of drivers were tested in 2008 and 2012, respectively);
- There are typically higher testing rates of drivers who died in crashes (65% in 2008 and 61% in 2012) compared to surviving drivers (20% in 2008 and 21% in 2012) (not shown in Table 1);
- A driver who tests positive for a drug is not necessarily impaired by the drug;
- There is no consistent set of policies or procedures for drug testing across States; and
- Decreases in the cost of drug testing may have led to an increase in the number of people tested, as well as the range of drug types tested.

These facts, plus the information presented above, demonstrate that we cannot infer whether drugged driving has increased; similarly we cannot know the extent to which drugged driving differs across States.

Table 1
Drivers Involved in Fatal Motor Vehicle Traffic Crashes by Crash Year, Drug Test Status, and Drug Test Results, 2008-2012

		Drug Test Status						Drug Tests Results					
		Not Tested for Drugs		Tested for Drugs		Unknown if Tested		Tested, Drug Positive		Tested, Drug Negative		Tested, Results Unknown	
Crash Year	Total Drivers	Number	Percent of Total Drivers	Number	Percent of Total Drivers	Number	Percent of Total Drivers	Number	Percent of Total Tested	Number	Percent of Total Tested	Number	Percent of Total Tested
2008	50,416	26,883	53%	20,875	41%	2,658	5%	5,433	26%	13,088	63%	2,354	11%
2009	45,337	23,617	52%	18,357	40%	3,363	7%	5,518	30%	10,863	59%	1,976	11%
2010	44,599	23,058	52%	19,319	43%	2,222	5%	5,946	31%	11,758	61%	1,615	8%
2011	43,840	22,224	51%	18,648	43%	2,968	7%	6,096	33%	11,189	60%	1,363	7%
2012	45,337	23,389	52%	18,120	40%	3,828	8%	5,765	32%	10,112	56%	2,243	12%

Source: NHTSA, 2014

Summary

The drugged driving issue is complex and drug testing and reporting across States and jurisdictions is not uniform. Users of FARS data must keep the limitations in mind when interpreting the data. Currently, the data in FARS is insufficient to allow comparisons of drug use across years, or across States. In addition, in light of the limitations detailed above, it is also not possible to make inferences about impairment, crash causation, or comparisons to alcohol from this limited data. As more complete data becomes available, FARS data on drug-involved driving will be strengthened.

References

Compton, R., & Berning, A. (2009). *Results of the 2007 National Roadside Survey of Alcohol and Drug Use by Drivers* (DOT HS 811 175). Washington, DC: National Highway Traffic Safety Administration. Retrieved from www.nhtsa.gov/DOT/NHTSA/Traffic%20Injury%20Control/Articles/Associated%20Files/811175.pdf.

Compton, R., Vegega, M., & Smither, D. (2009). *Drug-impaired driving: Understanding the problem and ways to reduce it* (DOT HS 811 268). Washington, DC: National Highway Traffic Safety Administration. Retrieved from www.nhtsa.gov/staticfiles/nti/pdf/811268.pdf

Lacey, J., Brainard, K., & Snitow, S. (2010). *Drug per se laws: A review of their use in States* (DOT HS 811 317). Washington, DC: National Highway Traffic Safety Administration. Retrieved from www.nhtsa.gov/staticfiles/nti/impaired_driving/pdf/811317.pdf.

National Highway Traffic Safety Administration. (2014). *Drivers involved in fatal motor vehicle traffic crashes by crash year and drug test results. Fatality Analysis Reporting System (FARS) 1993-2011 Final and 2012 ARF* [Data file]. Washington, DC: Author.

Walsh, J. M. (2009). *A State-by-State analysis of laws dealing with driving under the influence of drugs* (DOT HS 812 236). Washington, DC: National Highway Traffic Safety Administration. Retrieved from nhtsa.gov/staticfiles/nti/pdf/811236.pdf.

Suggested APA Format Citation for this Document:

Berning, A., & Smither, D. D. (2014). Understanding the limitations of drug test information, reporting, and testing practices in fatal crashes. (Traffic Safety Facts Research Note. DOT HS 812 072). Washington, DC: National Highway Traffic Safety Administration.

U.S. Department of Transportation

National Highway Traffic Safety Administration

This research note and other general information on highway traffic safety may be accessed by Internet users at: www.nhtsa.gov