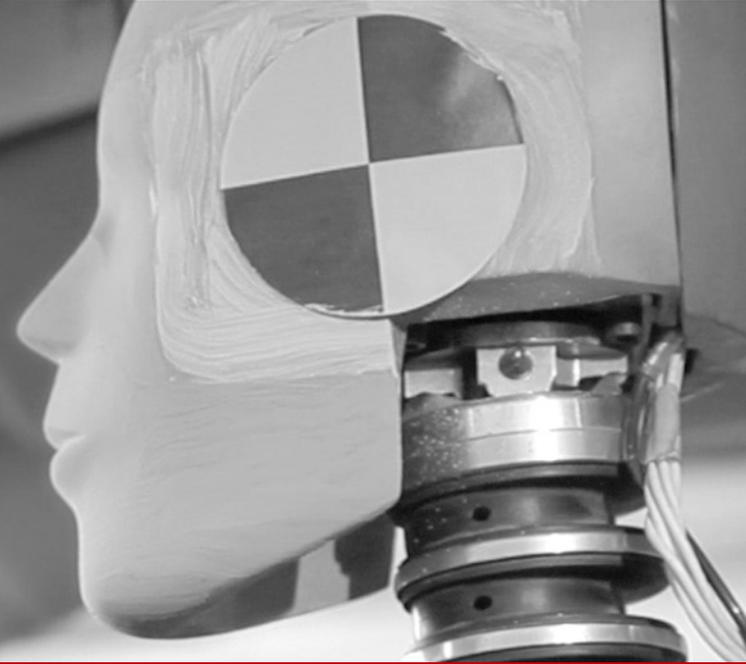


Overview of NHTSA's Current Drugged Driving Research



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Office of Behavioral Safety Research

NHTSA Office of Behavioral Safety Research

- studies behaviors and attitudes in highway safety, focusing on drivers, passengers, pedestrians, and motorcyclists.
- identify and measure behaviors involved in crashes or associated with injuries
- develop and refine countermeasures to deter unsafe behaviors and promote safe alternatives

OBSR Research Solicitation Methods

- Open and limited competition contracts for research services
 - Full-and-Open Competitions
 - GSA
 - Indefinite delivery/Indefinite quantity (IDIQ)-Task Orders
 - Small Business & 8A
 - Small Business Innovative Research Program
 - Through NHTSA and other Agency's contract vehicles
- National Cooperative Research & Evaluation Program (NCREP)—NHTSA, GHSA, & Volpe
- To a limited extent—Unsolicited Contract Services

OBSR Research Approaches

- OBSR employs a variety of research and observational methods and designs al
 - Laboratory Studies (e.g., simulator studies)
 - Field Studies (e.g., roadside data collection)
 - Case Study
 - Focus groups
 - Naturalistic Observation (e.g., seatbelt observations, instrumented vehicles)
 - Physiological Observation (e.g., blood, oral fluid, breath)
 - Surveys (e.g., telephone-based, computer-based)
 - Evaluation Studies
 - Literature Reviews/Meta-analyses

NHTSA's Role



- Research Projects
- Demonstration Programs
- Support for Law Enforcement & Adjudication Efforts

Federal Partners

- NIDA
- NIAAA
- SAMHSA
- CDC
- ONDCP
- NTSB
- FDA
- DOJ

A Little Background

- **A complex problem**

- Effects of alcohol on driving performance fairly well-known
- 30+ years of research and programmatic efforts on drugs

	Alcohol	Other Drugs
Size of Effort	One type of drug	Many (illegal, OTCs, prescription)
Research Efforts	Well-studied	Many, disparate
Metabolism	Processes understood	Variable; many possibilities
Effect on Driving behavior	Strong correlation to poor performance	Uncertain Correlation
Effect of High Doses	Greater decrements in performance	Unpredictable

- specific drug concentration levels **cannot** be reliably equated with effects on driver performance

National-Level Drug Data Sources— Examples

Data Source	Agency	Description
NSDUH (National Survey on Drug Use and Health)	SAMHSA	<ul style="list-style-type: none"> • Self-report • Adults • Use of alcohol, illicit drugs +driving
Youth Risk Behavioral Risk Factor Surveillance System (YRBSS)	CDC	<ul style="list-style-type: none"> • Self-report • 9-12th Grade Students • Drug use
MTF (Monitoring The Future)	University of Michigan (NIDA)	<ul style="list-style-type: none"> • Self-report • High School—Young Adults • Attitudes • Drug use+driving
Drug Recognition Expert (DRE) Database	NHTSA	<ul style="list-style-type: none"> • Law enforcement evaluation reports • DUID Suspects
National Roadside Survey	NHTSA	<ul style="list-style-type: none"> • Biological specimens (breath, oral, & fluid) • Nationally representative • Presence of drugs in drivers
FARS (Fatality Analysis Reporting System)	NHTSA	<ul style="list-style-type: none"> • Fatal injuries from MVCs • Alcohol-impaired driving data • Drugged driving Data

FARS Drug Data: A Cautionary Note

- Many people are seeking answers about drugged driving
- Many look to NHTSA's FARS data to help answer some of their questions
- However, NHTSA's FARS data has many limitations when it comes to drugged driving

The image shows the cover of a research note from the National Highway Traffic Safety Administration (NHTSA). The title is "Understanding the Limitations of Drug Test Information, Reporting, and Testing Practices in Fatal Crashes" by Amy Berning & Dereece D. Smither. The cover includes the NHTSA logo, the text "TRAFFIC SAFETY FACTS Research Note", and the document ID "DOT HS 812 072". It also mentions "Behavioral Safety Research" and the date "November 2014".

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

TRAFFIC SAFETY FACTS
Research Note

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.

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, & Snihow, 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.

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.

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-

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A Few of Many Questions

- How many drivers are alcohol and/or drug positive?
- Which drugs are related to increased crash risk?
- What is the effect of certain drugs on driving performance?
- What is the impact of training on an officer's ability to detect drugged driving?
- Can a field sobriety test be feasibly developed?
- How can law enforcement data be used to enhance detection of drugged drivers?
- How effective and accurate are portable drug testing devices?

How many drivers are alcohol and/or drug positive?

National Roadside Survey of Alcohol & Drugged Driving (2013-14)

- *Obtain data on this the prevalence of alcohol- and drug-positive drivers on the road.*
- *Drivers voluntarily provide breath, oral fluid, and blood samples and answer questions on alcohol & other drug use*
- *Research Note published on NHTSA website*
http://www.nhtsa.gov/staticfiles/nti/pdf/812118-Roadside_Survey_2014.pdf

Questions? Contact Amy.berning@dot.gov

How many drivers are alcohol and/or drug positive?

National Roadside Survey General Results			
Alcohol Results	Alcohol Positive	$\geq .08$ g/dL	Drug Positive
1973	36.0%	7.5%	--
2007	12.4%	2.2%	16.3%
2013-14	8.3%	1.5%	22.5%
Drug Results	2007	2013-14	
THC	8.6%	12.6%	
Any Illegal Drug	12.4%	15.1%	
Only Medications	3.9%	4.9%	

- Of night-time drivers with BAC .01-.079 g/dL, **29.3%** also tested positive for drugs (2007)
- Of night-time drivers with a BAC $\geq .08$ g/dL, **31.8%** also tested positive for drugs (2007)

How Many Drivers are Alcohol and/or Drug Positive?

Washington Roadside Survey of Alcohol & Drugs

Obtain data on this the prevalence of alcohol- and drug-positive drivers on the road. Emphasis on change in prevalence of THC-positive drivers before and after the change in WA's law allowing the sale and use of marijuana for recreational use.

Questions? Contact Amy.berning@dot.gov

Which Drugs Are Associated with Increased Crash Risk?

Alcohol & Drug Crash Risk: A Case-Control Study

Estimate the risk of crash involvement due to alcohol and drug use by collecting biological samples from crash- and noncrash-involved drivers

Research Note published on NHTSA website

http://www.nhtsa.gov/staticfiles/nti/pdf/812117-Drug_and_Alcohol_Crash_Risk.pdf

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Which Drugs Are Associated with Increased Crash Risk?

Contribution of Alcohol and Drugs to Crash Risk

Drug and Alcohol Use	Adjusted Odds Ratio	95% CI*	P Value
No Alcohol / No Drug	1.00		
No Alcohol / Positive Drug	1.02	0.88 – 1.17	0.83
Positive Alcohol (< 0.05) / No Drug	0.84	0.55 – 1.29	0.43
Positive Alcohol (< 0.05) / Positive Drug	1.03	0.55 – 1.94	0.93
Positive Alcohol (\geq 0.05) / No Drug	6.75	4.20 – 10.84	<0.0001
Positive Alcohol (\geq 0.05) / Positive Drug	5.34	2.75 – 10.37	<0.0001

Shading indicates statistical significance. Reference for all conditions was no drug and no alcohol. *CI = Confidence Interval

What Is the Effect of Certain Drugs on Driving Performance?

Examine the Effects of Inhaled Cannabis on Driving Performance

A study of the effects of low and high doses of inhaled cannabis, combined with low or placebo doses of alcohol, on driving performance in the National Advanced Driving Simulator (NADS)

Questions? Contact dereece.smither@dot.gov

Training For Law Enforcement Personnel

Course	Course Hours	Prerequisite
Standard Field Sobriety Test (SFST) Training (Drugs That Impair Driving unit)	24 Hours (8 hours)	none
Advanced Roadside Impaired Driving Enforcement (ARIDE) Program	16 hours	SFST
Drug Evaluation and Classification (DEC) Program Training	9 days	SFST; DRE Pre-School (1 st 2 of 9 days); ARIDE (optional)

How Can Law Enforcement Data Be Used to Enhance Detection of Drugged Drivers?

Explore the Predictive Validity of Drug Evaluation and Classification (DEC) Program Tests

Collect large sample of DRE (Drug Recognition Expert) reports and perform statistical analyses to determine which combination(s) of elements in the data provide the most efficient and effective means to predict the toxicology-confirmed results

Questions? Contact dereece.smither@dot.gov

What Is the Impact of Training on an Officer's Ability to Detect Drugged Driving?

Evaluation of the Advanced Roadside Impaired Driving Evaluation (ARIDE) Curriculum

Assess Course Implementation and Learner Performance of participants in the In-Class and Online versions of the course

Questions? Contact dereece.smither@dot.gov

How effective and accurate are portable drug testing devices for widespread use?

Evaluation of Drug Testing Devices

Collect oral fluid data from arrestees using 2 commercially available rapid drug testing devices

Questions? Contact Amy.berning@dot.gov

Can a field sobriety test be feasibly developed?

Developing a Field Test for Detecting Drivers Impaired by Cannabis

Gather, evaluate, and interpret literature, on tests of impairment from marijuana or other drug use (e.g., test of cognitive ability, behavioral tests, driving skills tests) and provide suggestions for a promising test and/or combinations of tests that could be validated in a laboratory study and (later) in field studies

Questions? Contact dereece.smither@dot.gov

Where can you find our RFPs?

Solicitation method	Locate NHTSA's Requests for Proposals Here:
Full & Open Competition	www.fbo.gov
GSA Schedules	http://www.gsa.gov/portal/category/100611
IDIQ	Competition limited to firms selected
Small Business & 8A	Competition limited to registered firms
Cooperative Agreements & Grants	www.grants.gov
Small Business Innovation Research (SBIR) Program	www.sbir.gov/agencies/department-of-transportation
NCREP	Via Volpe's own solicitation methods (e.g., FBO, GSA, SBIR, IDIQ)

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