



February 2015

DRUG-IMPAIRED DRIVING

Additional Support Needed for Public Awareness Initiatives

Accessible Version

GAO Highlights

Highlights of [GAO-15-293](#), a report to congressional committees

Why GAO Did This Study

The issue of alcohol-impaired driving has received broad attention over the years, but drug-impaired driving also contributes to fatalities and injuries from traffic crashes. However, knowledge about the drug-impaired-driving problem is less advanced than for alcohol-impaired driving.

Through Senate Report No. 113-45 (2013), Congress required GAO to report on the strategies NHTSA, ONDCP, and states have taken to address drug-impaired driving and challenges they face in detecting and reducing such driving. This report discusses (1) what is known about the extent of drug-impaired driving in the United States; (2) challenges that exist for federal, state, and local agencies in addressing drug-impaired driving; and (3) actions federal and state agencies have taken to address drug-impaired driving and what gaps exist in the federal response. GAO reviewed literature to identify sources of data on drug-impaired driving; reviewed documentation and interviewed officials from NHTSA, ONDCP, and HHS; and interviewed officials from relevant advocacy and professional organizations and seven selected states. States were selected based on: legal status of marijuana, proximity to states with legalized marijuana, and drugged-driving laws.

What GAO Recommends

GAO recommends that NHTSA take additional actions to support states in emphasizing to the public the dangers of drug-impaired driving. DOT agreed with GAO's recommendation.

View [GAO-15-293](#). For more information, contact Susan Fleming, at (202) 512-2834 or flemings@gao.gov

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What GAO Found

Various state and national-level data sources—including surveys, arrest data, drug-testing results, and crash data—provide limited information on the extent of drugged and drug-impaired driving in the United States. For example, based on preliminary results from a representative sample of weekend-nighttime and Friday daytime drivers, the National Highway Traffic Safety Administration's (NHTSA) *2013-2014 National Roadside Survey of Alcohol and Drug Use by Drivers (NRS)* estimated that 20 percent of drivers would have tested positive for at least one drug, with marijuana being the most common drug. However, the survey does not capture the extent to which drivers were impaired by drugs. Arrest data and drug-testing results provide some information on drug-impaired driving, but these data are limited. For example, data for drug impairment may not be separated from that for alcohol impairment and drug testing is not standardized. According to NHTSA officials, currently available data on drug involvement in crashes are generally unreliable due to variances in reporting and testing.

The lack of a clear link between impairment and drug concentrations in the body makes it difficult to define drug impairment, which, in turn, exacerbates challenges related to enforcement and public awareness. Compared to alcohol, defining and identifying impairment due to drugs is more complicated due to the large number of available drugs and their unpredictable effects. For example, the *NRS* includes tests for 75 illegal prescriptions, and over-the-counter (OTC) drugs identified as potentially impairing. Additionally, law enforcement processes for obtaining samples for drug testing can be time consuming and result in a loss of evidence. For example, there is no validated device for roadside drug testing, and obtaining a search warrant to collect a blood sample to confirm the presence of drugs in a driver's system could take several hours, during which time the concentration of the drug in the driver's system could dissipate. Further, state officials identified limited public awareness about the dangers of drugged driving as a challenge. As a result, members of the public may drive while impaired without knowing the risks, potentially leading to collisions, injuries, and fatalities.

Federal and state agencies—including NHTSA, the White House Office of National Drug Control Policy (ONDCP), and the Department of Health and Human Services (HHS)—are taking actions to address drug-impaired driving, including improvements in the areas of research and data, education for police officers, evidence gathering, and legal changes. For example, NHTSA is currently conducting research to assess the crash risk associated with drug use (including illegal, prescription, and OTC drugs) by collecting samples from more than 10,000 drivers. However, public awareness of the dangers of drug-impaired driving is an area in which state officials told us that NHTSA could do more to support their efforts. As part of its mission to support state safety efforts, NHTSA has provided media and other materials to states for impaired-driving awareness programs, but these materials are focused on alcohol-impaired driving. While NHTSA plans to improve public awareness through initiatives to conduct surveys on drug-impaired-driving behaviors and attitudes as well as training for medical professionals, these plans could take several years to implement. Additional efforts, such as general messaging reminding the public about the impairing effects of drugs, could help improve public awareness in the near term.

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Abbreviations

ARIDE	Advanced Roadside Impaired Driving Enforcement
BAC	blood-alcohol concentration
CDC	Centers for Disease Control and Prevention
DOJ	Department of Justice
DRE	Drug Recognition Expert
DUI	driving under the influence of alcohol and/or drugs
DUID	driving under the influence of drugs
FARS	Fatality Analysis Reporting System
FDA	Food and Drug Administration
GHSA	Governors Highway Safety Association
HHS	Department of Health and Human Services
IACP	International Association of Chiefs of Police
JOL	Judicial Outreach Liaison
MADD	Mothers Against Drunk Driving
MAP-21	Moving Ahead for Progress in the 21st Century Act
NCSL	National Conference of State Legislatures
NHTSA	National Highway Traffic Safety Administration
NIDA	National Institute on Drug Abuse
NIH	National Institutes of Health
<i>NRS</i>	<i>National Roadside Survey of Alcohol and Drug Use by Drivers</i>
NSDUH	National Survey on Drug Use and Health
NTSB	National Transportation Safety Board
ONDCP	Office of National Drug Control Policy
OTC	over-the-counter
PIRE	Pacific Institute for Research and Evaluation
SAMHSA	Substance Abuse and Mental Health Services Administration
SOFT	Society of Forensic Toxicologists, Inc.
THC	tetrahydrocannabinol
TSRP	Traffic Safety Resource Prosecutor

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February 24, 2015

The Honorable Susan Collins
Chairman
The Honorable Jack Reed
Ranking Member
Subcommittee on Transportation, Housing and Urban Development, and
Related Agencies
Committee on Appropriations
United States Senate

The Honorable Mario Diaz-Balart
Chairman
The Honorable David Price
Ranking Member
Subcommittee on Transportation, Housing and Urban Development, and
Related Agencies
Committee on Appropriations
House of Representatives

While the issue of alcohol-impaired driving has received broad attention over the years, drug-impaired driving also contributes to fatalities and injuries from traffic crashes. However, knowledge about the nature of the drug-impaired driving problem is significantly less advanced than for alcohol-impaired driving. Based on preliminary results from a nationally representative sample in 2013-2014, an estimated 20 percent of nighttime weekend drivers would have tested positive for illegal, prescription, or over-the-counter (OTC) drugs that have been identified as potentially impairing.¹ The White House's Office of National Drug Control Policy (ONDCP) has identified "drugged driving" as a policy priority, and established a goal in the agency's 2011 National Drug Control Strategy to

¹A. Berning, R. Compton, and K. Wochinger, *Results of the 2013-2014 National Roadside Survey of alcohol and drug use by drivers* (Traffic Safety Facts Research Note. Report No. DOT HS 812 118, U.S. Dept. of Transportation, National Highway Traffic Safety Administration, Washington, D.C.: 2015). These results are an estimate of the prevalence of drivers with detectable amounts of drugs in their systems and do not imply impairment. The *National Roadside Survey* is a survey sponsored by the National Highway Traffic Safety Administration that indicates the extent to which people drive with drugs present in their system, and is representative of the United States. This survey was conducted in 2013-2014, with full results expected in 2015.

reduce drugged driving 10 percent by 2015.² The National Highway Traffic Safety Administration (NHTSA) assists states in implementing programs to address impaired driving—including those aimed at reducing drug-impaired driving—and has funded research examining the extent and nature of drug-impaired driving as well as the effectiveness of countermeasures.

The Senate Report accompanying the Transportation and Housing and Urban Development, and Related Agencies Appropriations Bill, 2014 required GAO to report on the strategies that NHTSA, ONDCP, and states have taken to address drug impairment and the challenges faced in detecting and reducing drug-impaired driving.³ This report discusses (1) what is known about the extent of drug-impaired driving in the United States; (2) challenges that exist for federal, state, and local agencies in addressing drug-impaired driving; and (3) actions federal and state agencies have taken to address drug-impaired driving and gaps that exist in the federal response to drug-impaired driving.

This report uses the term “drug-impaired driving” to refer to driving while impaired by illegal drugs or prescription and OTC (legal) medications. For this work, we conducted a literature search to identify sources of data and studies on the issue and extent of drug-impaired driving, reviewed these data and studies, and determined their limitations. Additionally, we reviewed documentation and interviewed officials from seven federal agencies: NHTSA; ONDCP; National Transportation Safety Board (NTSB); Department of Health and Human Services (HHS) and component agencies including the Substance Abuse and Mental Health Services Administration (SAMHSA), Centers for Disease Control and Prevention (CDC), Food and Drug Administration (FDA), and National Institutes of Health (NIH).⁴ We also reviewed documentation obtained

²For the purposes of this report, the term “drugged driving” refers to driving with any detectable amount of drugs in one’s system, as opposed to “drug-impaired driving,” which refers to driving while impaired to some degree from using drugs. ONDCP’s goal is to reduce the prevalence of drugged driving by 10 percent as compared to a 2009 baseline, established by the Department of Health and Human Services’ Substance Abuse and Mental Health Services Administration’s 2009 National Survey on Drug Use and Health.

³S. Rep. No. 113-45 (2013).

⁴Within NIH, the National Institute on Drug Abuse (NIDA) is the primary institute involved in this topic. NIDA is one of the 27 institutes and centers within the National Institutes of Health.

from and interviewed officials with responsibilities related to drug-impaired driving, such as traffic safety, toxicology lab, and law enforcement officials, in seven states (Arizona, California, Colorado, Kansas, Ohio, Vermont, and Washington). We selected these states based on recommendations from federal officials and representatives from advocacy and professional organizations and to represent a variety of laws, programs, and other factors. Our selection included:

- states with legalized recreational marijuana,
- states that geographically border states in which recreational marijuana use is legal,
- states with legalized medical marijuana,
- states representing a variety of drug-impaired driving laws, and
- states identified as having robust programs dealing with driving under the influence of drugs.

We also reviewed documentation and interviewed representatives from advocacy and professional organizations, including the Governors Highway Safety Association (GHSA), National District Attorneys Association, Society of Forensic Toxicologists, Inc. (SOFT), Mothers Against Drunk Driving (MADD), International Association of Chiefs of Police (IACP), Insurance Institute for Highway Safety, and National Conference of State Legislatures (NCSL). See additional information on our scope and methodology in appendix I.

We conducted this performance audit from April 2014 through February 2015 in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

Background

Similar to drunk driving, drug-impaired driving can result in crashes leading to death or injury of vehicle occupants and pedestrians, along with other safety and traffic issues for individuals and society. Taking into consideration these possible harms, Congress has authorized grant funding to states to combat impaired driving through transportation legislation—most recently the Moving Ahead for Progress in the 21st

Century Act (MAP-21).⁵ These grant programs are designed to encourage states to adopt and implement effective programs to reduce driving under the influence of alcohol, drugs, or the combination of alcohol and drugs. Historically, these programs have been focused on reducing alcohol-impaired driving. For example, in the late 1990s, Congress made grant funds available to states to encourage them to lower the illegal per se driving blood-alcohol concentration (BAC) limit to 0.08.⁶ In other words, with respect to a BAC limit of 0.08, anyone whose blood contains 8/100th of 1 percent of alcohol (or higher) would be deemed to be driving while intoxicated. All 50 states and the District of Columbia have 0.08 laws as well as laws making it illegal to drive while impaired by drugs.

NHTSA administers grant programs for safety initiatives to assist states in their efforts to reduce traffic-related fatalities, including fatalities involving drug- and alcohol-impaired driving. NHTSA also provides guidance and technical assistance to states, and conducts research on drivers' behavior and traffic safety. As part of such research, NHTSA works with traffic safety organizations, such as GHSA and MADD, and other federal agencies, such as ONDCP. In addition to NHTSA, other federal agencies conduct research and implement programs that, in whole or in part, seek to increase knowledge about the problem of drug-impaired driving and to identify and implement policies and programs to reduce drug-impaired driving. These agencies include ONDCP; HHS's SAMHSA, NIH, FDA, and CDC; Department of Justice (DOJ); and NTSB.

Drug-impaired driving may be caused by use of illegal drugs, legally prescribed or OTC drugs that are misused, and some legally prescribed

⁵Under MAP-21, 52.5 percent of the total amount of National Priority Safety Program funds are available for impaired-driving countermeasures, with up to 15 percent of those funds available for incentive grants for ignition interlocks—devices that prevent drivers from starting their cars if they have been drinking alcohol. Any of the remaining funding is available for other impaired-driving countermeasures, funding that is allocated to states for eligible impaired-driving activities, including countermeasures for alcohol- and drug-impaired driving. Pub. L. No. 112-141, § 31105(a), 126 Stat. 405, 748 (2012). MAP-21 expired September 30, 2014. Programs and budget authority authorized under MAP-21 were extended until May 31, 2015 by Pub. L. No. 113-159, 128 Stat. 1839 (2014). The National Priority Safety Programs were authorized \$181,084,932 for the period between October 1, 2014, and May 31, 2015.

⁶“Per se BAC laws” establish the BAC level at which it is illegal per se (in itself) for a driver to operate a vehicle, regardless of the driver's apparent condition or actions.

or OTC drugs even when used as intended.⁷ While 23 states and the District of Columbia have legalized the use of marijuana for medical purposes, according to the NCSL, and two states—Colorado and Washington—allow the use of marijuana for recreational purposes, the federal government continues to consider marijuana as an illegal drug, with no medical use.⁸ Throughout the report, we have noted instances in which data may include marijuana as either a legal or illegal drug. According to the FDA, some prescription and OTC drugs can impair driving ability, while others have no effect or can even enable patients to drive more safely.

For the purposes of this report, we have used the following terminology:

- **Drugged driving:** driving with the presence of drugs in one's system regardless of impairment.
- **Drug-impaired driving:** driving with a diminished ability to operate a vehicle due to drug use.
- **Drug test:** the toxicological analysis of a biological specimen—blood, urine, or oral fluid (saliva)—to determine the presence or absence of specific drugs or their metabolites.
- **DUI:** driving under the influence of alcohol and/or drugs.
- **DUID:** driving under the influence of drugs.
- **Impairment:** a diminished ability to perform specific functions.
- **Metabolites:** the products of drug metabolism found in bodily fluids, which indicate prior drug use.
- **Tetrahydrocannabinol (THC):** the main psychoactive compound found in the cannabis (marijuana) plant.

⁷Over-the-counter drugs are those that can be purchased without a doctor's prescription, including some pain-relievers, cold and cough medicines, and others.

⁸In November 2014, ballot initiatives legalizing recreational marijuana passed in Alaska, Oregon, and the District of Columbia; these initiatives have not taken effect as of the beginning of February 2015.

-
- **Toxicology:** the study of the effects of drugs—whether illegal, prescription, or over-the-counter—on humans.

Drugs may be categorized in several ways including by the chemical type or by the way the drug is used. For example, this report uses the following terms to classify drugs, among others:

- **Antidepressants:** drugs used to treat depression and other conditions, including anxiety disorders.
- **Cannabinoids:** compounds contained in marijuana.
- **Narcotics:** drugs including opium and those derived from it, such as heroin and codeine.
- **Depressants:** drugs that inhibit the activity of the brain and may result in muscle relaxation, lowered blood pressure and heart rate, and slowed breathing; includes anxiety and seizure medications.
- **Stimulants:** drugs that may result in increased alertness and elevated heart rate and respiration; includes cocaine and amphetamines.
- **Synthetics:** synthetic drugs, as opposed to natural drugs such as marijuana, are chemically produced in a laboratory to mimic the effects of other drugs. Synthetic drugs may be developed in order to circumvent existing drug laws. Examples include synthetic cannabinoids and cathinones.

Limited Data Exists on the Extent of Drug-Impaired Driving in the U.S.

There is no national source of data on the extent of drug-impaired driving in the United States, but various state and national sources of data on drugged driving can provide limited information on the extent to which drivers in the United States have drugs in their systems. For example, national and state roadside surveys provide information on the prevalence of drugged driving in respective survey areas. Other sources of data provide some information on drugged and drug-impaired driving, such as surveys on self-reported drugged-driving behavior, impaired-driving arrests and toxicology results, and crash data.⁹ However,

⁹Toxicology results are the result of laboratory testing of biological samples of bodily fluid for the presence of various substances.

limitations to the currently available data include underreporting and a lack of centralization or standardization in reporting.

Survey Data on Prevalence of Drugged Driving

National and state roadside surveys provide data on the prevalence of drugged driving in statistically representative samples of drivers. For example, NHTSA's 2007 *National Roadside Survey of Alcohol and Drug Use by Drivers (NRS)* provides information on drivers testing positive for illegal, prescription, and OTC drugs in a nationally representative sample of weekend-nighttime and Friday daytime drivers.¹⁰ Based on the 2007 survey, NHTSA estimated that 16.3 percent of nighttime drivers nationwide would have tested positive for at least one drug, with marijuana being the most common drug found in test results (see table 1). While *NRS* survey data provides useful information on the estimated prevalence of drugged driving, these results do not measure the extent to which drivers are impaired by the drugs in their systems as the presence of drugs or drug metabolites does not necessarily indicate impairment. For example, marijuana metabolites can be detected in blood samples several weeks after daily users' last use. Nonetheless, the 2007 *NRS* provided the first objective data on drug use among drivers in the United States and, according to officials at the National Institute on Drug Abuse (NIDA) and SOFT, served as a wake-up call regarding the extent of drugged-driving in the United States. According to NHTSA, the survey was repeated in 2013-2014 following the same general methodology as the 2007 survey and results will be available in 2015. Preliminary results from that survey estimated that 20 percent of nighttime weekend drivers would have tested positive for illegal, prescription, or OTC drugs that have been identified as potentially impairing.¹¹ An assessment of trends in drugged driving in the United States may be feasible as future results beyond the 2013-2014 *NRS* become available. Table 1 shows additional drug test results from this survey.

¹⁰Lacey et al. The *NRS* methodology involves randomly stopping drivers at locations across the United States to conduct voluntary surveys and collect biological samples after obtaining consent. Drivers who participated were tested for illegal, prescription, and OTC drugs through analyses of oral fluid, blood, and breath specimens taken during key periods during which impaired driving most often occurs. Drugs tested were chosen in part due to their potential to impair driving performance.

¹¹A. Berning, R. Compton, and K. Wochinger, *Results of the 2013-2014 National Roadside Survey*.

Table 1: Most Common Drugs Found in Test Results for Drivers, 2007 and 2012

	2007 National Roadside Survey^a	2012 California Roadside Survey^b
Marijuana	6.8%	5.5%
Stimulants	3.2%	3.2%
Poly-Use (more than one class of drug)	2.8%	3%
Narcotic-Analgesics	1.6%	1.1%
Sedatives	0.8%	0.7%
Antidepressants	0.7%	0.2%
Other	0.3%	0.3%
Total	16.3%	14%

Sources: National Highway Traffic Safety Administration's (NHTSA) *2007 National Roadside Survey of Alcohol and Drug Use by Drivers: Drug Results (NRS)* and Results of the 2012 California Roadside Survey of Nighttime Weekend Drivers' Alcohol and Drug Use. | GAO-15-293

^aDuring daytime Friday times, drivers were tested for the presence of drugs using oral fluid. During nighttime weekend times, drivers were tested for the presence of drugs using oral fluid and blood. A positive test for either oral fluid or blood is a positive drug test.

^bDuring nighttime weekend times, drivers were tested for the presence of drugs using oral fluid. A positive oral fluid test is a positive drug test.

California's Office of Traffic Safety found results similar to the 2007 *NRS* during its 2012 *California Roadside Survey of Nighttime Weekend Drivers' Alcohol and Drug Use* (see table 1).¹² Specifically, 14 percent of nighttime weekend drivers tested positive for at least one drug, with marijuana being the most frequent drug identified. Additionally, the Washington Traffic Safety Commission has commissioned the first of two roadside surveys, using what NHTSA describes as comparable methodology to the 2007 *NRS*, meant to measure drug and alcohol use among drivers before and after implementation of the 2012 state law legalizing recreational marijuana use. Results from the survey are expected in 2015.

¹²Lacey, John H; Kelley-Baker, Tara, et. Al, *2012 California Roadside Survey of Nighttime Weekend Drivers' Alcohol and Drug Use* (Pacific Institute for Research and Evaluation, Calverton, MD: 2012).

Surveys on Drug Use Behavior

The *NRS* and California surveys also collected self-reported data on drug use among drivers who participated in the survey.¹³ For instance, during the *California Survey*, approximately 14 percent of all drivers who reported having used marijuana in the past reported having used it within 2 hours of driving in the past year. In the *NRS*, all drivers who provided an oral fluid sample were asked to report if they had used a drug before driving and, if so, what type. For the subset of Friday and nighttime weekend drivers who tested positive for at least one drug based on the oral fluid sample, the drivers' answers regarding prior drug use were compared to positive oral fluid-analysis results to determine agreement between self-reported behavior and the oral fluid test. Results of this comparison include:

- an estimated 7.5 percent of nighttime weekend drivers testing positive for cocaine reported they had used cocaine in the past 24 hours,
- an estimated 25.7 percent of nighttime weekend drivers testing positive for marijuana reported they had used marijuana in the past 24 hours,
- an estimated 59.9 percent of nighttime weekend drivers testing positive for pain medication reported they had used pain medication in the past 24 hours, and
- an estimated 66.4 percent of nighttime weekend drivers testing positive for antidepressants reported they had used antidepressants in the past 24 hours.

Agreement between reported drug use in the past 24 hours and positive oral-fluid-analysis results for the nighttime-driving samples was greatest among users of antidepressants, cough suppressants, and pain medications and lowest for amphetamines and barbiturates.¹⁴ While self-reported data may be useful in tracking trends in reported drug use and attitudes about drugged driving, the *NRS* methodology noted that it may

¹³NRS respondents completed a paper-and-pencil, drug-use-disorder screening instrument. In the 2013 NRS, in addition to an oral fluid test, the driver was asked additional questions about prescription drug use. For the California survey, respondents were asked questions covering drug use.

¹⁴These findings may be in part due to the fact that some drugs, such as marijuana, remain detectable in human fluids for days or weeks after they have been ingested

under-report actual activity and therefore be insufficient for estimating the extent of drugged driving.

Additional studies compile self-reported data on attitudes and behaviors regarding drug use and driving, which may be helpful in tracking trends in behavior. SAMHSA's National Survey on Drug Use and Health (NSDUH) is an annual survey of a nationally representative sample of the United States population.¹⁵ The NSDUH includes questions specific to driving while under the influence of illegal drugs. According to this survey, driving under the influence of illegal drugs is most common in respondents aged 18–25 (an estimated 10.6 percent in 2013, the latest survey results available). Overall, the percentage of respondents aged 12 or older who report driving under the influence of illegal drugs in the past year has been around 4 percent from 2008 through 2012.¹⁶ NIH's NIDA also supports various studies on drug use including the College Life Study on health-related behaviors of college students, and Monitoring the Future, which measures attitudes of adolescents related to drug and alcohol use.¹⁷ According to the 2012 Monitoring the Future Survey, an estimated 10.6 percent of high school seniors drove a car, truck, or motorcycle in the prior 2 weeks after having smoked marijuana.¹⁸

¹⁵Substance Abuse and Mental Health Services Administration, *Results from the 2012 National Survey on Drug Use and Health: Summary of National Findings*, NSDUH Series H-46, HHS Publication No. (SMA) 13-4795 (Rockville, MD: 2013).

¹⁶From 2008 to 2012, the percentage of respondents reporting driving under the influence of drug varied from 3.7 to 4.2 percent, but due to sampling error the actual differences from year to year may be insignificant. Respondents to the survey are age 12 and older.

¹⁷NIDA's College Life Study is a longitudinal study of 1,253 college students at a large, public, mid-Atlantic university aimed at discovering the impact of health-related behaviors during the college experience.

¹⁸Bachman, J. G., Johnston, L. D., and O'Malley, P. M., *Monitoring the Future: Questionnaire responses from the nation's high school seniors, 2012* (Institute for Social Research, Ann Arbor, MI: 2014). The 2012 *Monitoring the Future* survey provides estimates for a nationally representative sample of high school seniors on an annual basis. The survey does not include in its target population those who drop out of high school before the last few months of their senior year, and so excludes a relatively small proportion of each age cohort, but may disproportionately exclude those who have a tendency toward certain behaviors such as illegal drug use. The overall student response rate for 2012 was reported to be 83 percent.

Data on Impaired-Driving Arrests and Toxicology Results

Data on drug-impaired driving arrests and toxicology results in our seven selected states provide some information on drug-impaired driving, but are limited by a lack of separation of data from driving under the influence (DUI) arrests, underreported instances of drug-impaired driving, decentralized reporting, and a lack of standardization in drug testing. For example, officials in six of the seven selected states told us that state arrest data does not currently separate data on drug-impaired driving and alcohol-impaired driving cases across law enforcement agencies. Officials from California stated that although the state recently revised its vehicle code to delineate DUI into three separate reportable sections, it could be several years until any data generated from the new system can be considered complete and accurate.¹⁹ Arizona's Governor's Office of Highway Safety tracks arrests for driving under the influence of alcohol and drugs separately, and data show an increase in drug-impaired driving arrests in the past 5 years, but this rise does not necessarily indicate an increase in drug-impaired driving. For example, Arizona data show a 966 percent increase in drug-impaired driving arrests from 2005 through 2013. However, the increase in arrests may be due to the 659 percent increase in the number of officers participating in impaired-driving enforcement activities, the 1,604 percent increase in the number of traffic stops, and better reporting of those traffic stops, rather than an increase in drug-impaired driving. The rates of contacts resulting in DUID arrests do not show an increasing trend. See table 2.

¹⁹The California vehicle code is now composed of separate reportable sections on DUI alcohol, DUI Drugs, and DUI Combination alcohol and drugs.

Table 2: Impaired-Driving Enforcement in Arizona, 2005–2013

	2005	2006	2007	2008	2009	2010	2011	2012	2013
Contacts (All traffic stops)	49,230	72,057	112,555	96,243	148,063	228,146	702,921	877,617	838,979
DUI alcohol arrests	6,501	6,847	10,133	10,409	14,154	19,482	31,561	32,174	31,891
DUI drug arrests	424	541	538	694	1,153	1,679	3,579	4,511	4,519
Officers working on DUI enforcement activities ^a	6,081	6,522	11,483	10,225	15,809	34,300	47,927	51,654	46,139
Contacts that result in DUI drug arrests	.86%	.75%	.47%	.72%	.78%	.74%	.51%	.51%	.54%

Source: GAO analysis of Arizona Governor's Office of Highway Safety data. | GAO-15-293

^aOfficers working on DUI enforcement activities is a cumulative figure: these numbers do not necessarily represent unique officers.

Note: Driving under the influence of alcohol or drugs is referred to as DUI. This data does not include impaired driving enforcement conducted by a small number (about 2 percent) of agencies that do not submit data.

In addition, drug-impaired driving may be underreported as drivers impaired by both alcohol and drugs will likely be tested and prosecuted only for alcohol impairment because, according to officials from NHTSA and six of the seven selected states, evidence collection and prosecution are much easier for alcohol-impaired driving. Officials from NHTSA and six states said that in general, if a person suspected of impaired driving has a BAC over 0.08, the individual is not tested further for the presence of drugs, regardless of whether drug impairment is also suspected. As a result, drivers impaired by both drugs and alcohol may not be reported accurately in arrest data, contributing to a lack of knowledge about the number of drivers impaired by both drugs and alcohol.

Further, based on our review of information from the seven selected states on arrests and toxicology results for DUID cases, we found that state data on impaired driving are often not centralized or complete. Among the selected states, data on DUID arrests are generally collected by local law enforcement agencies, and one of the seven selected states collects statewide data on DUIDs in a centralized database. While Arizona collects arrest data from a majority of its local law enforcement agencies in a central database, a small number of local agencies do not participate. One official estimated about 2 percent of agencies do not submit data. Similarly, statewide toxicology/drug-testing data may not be easily available because it is decentralized. In five of the seven selected states, toxicology data are maintained by individual state and local law enforcement agencies and toxicology labs (including private and public labs), with no centralized database. For example in California, DUID testing varies by jurisdiction and can be completed by one of 22 private

labs or 6 public labs at the local or state level. In contrast, Vermont and Washington have centralized results of all DUID drug tests, which are conducted by a single laboratory for each state. While Vermont toxicology data do not show any clear trends, a study using Washington state toxicology data indicates that the prevalence of marijuana in suspected impaired-driving cases increased after marijuana was legalized, from an average of 19.1 percent of cases positive for tetrahydrocannabinol (THC) from 2009 through 2012 to 24.9 percent in 2013 (post legalization).²⁰ However, according to one of the authors, it is unclear whether this increase is due to factors other than an increase in marijuana-impaired driving, such as an increased focus on marijuana impairment in the state. Over the same period, the prevalence of alcohol and drugs other than marijuana in the population of suspected impaired drivers remained relatively stable in Washington.

Further, drug test results may not be comparable among laboratories. Officials from three of the seven selected states, as well as representatives from SOFT, stated that a lack of standardization among labs means that test results from different labs cannot necessarily be compared. For example, labs do not have uniform reporting-level cutoffs for drugs (the level at which a drug is reported as present). Therefore, for the same sample, one lab may report the sample as positive for the presence of a drug while another lab may report the sample as negative because the amount present is below the reporting level cutoff for the second lab. According to officials from HHS, while there are federal standards for forensic toxicology testing for federal agencies and states may establish standards for forensic testing, there are currently no federal

²⁰Couper, Fiona; Peterson, Briana, "The Prevalence of Marijuana in Suspected Impaired Driving Cases in Washington State," *Journal of Analytical Toxicology*, 18-Mar (2014). Tetrahydrocannabinol (THC) is the main psychoactive compound found in the cannabis (marijuana) plant.

laboratory certification requirements for forensic laboratories conducting toxicology testing for state and local law-enforcement agencies.²¹

Despite these limitations, drug testing results for DUID cases can provide information on the types and amounts of drugs present in drivers' systems. A 2004–2005 survey of labs in the United States conducted by SOFT, in conjunction with the National Safety Council and the American Academy of Forensic Sciences, shows that the most common drug encountered in DUID cases is cannabis (marijuana), followed by benzodiazepines (anti-anxiety medications with sedative properties), then narcotics (including cocaine, hydrocodone, and morphine/codeine).²² The most common drugs, and how drugs are categorized, differ from region to region, as indicated by toxicological results we gathered from seven state toxicology labs. Four of the selected states do not separate out DUID toxicological testing from other toxicological testing. For the three selected states that have separate toxicology data for DUID cases, the most common drug found for the most recent data available was marijuana; the second most common drug or drug category found was methamphetamine for two states and benzodiazepines in one state.

Federal and State Crash Data

NHTSA and states collect information on drug involvement in fatal crashes, but these data are not complete or consistent, according to NHTSA officials. States collect data on drug involvement in fatal crashes as determined through drug testing of involved drivers, data that then may be reported to NHTSA and aggregated in NHTSA's Fatality Analysis Reporting System (FARS).²³ However, according to NHTSA officials, comparing FARS results from one state to another is problematic

²¹For instance, under the Drug Free Workplace Program (established in accordance with Exec. Order No. 12564, 51 Fed. Reg. 32889 (Sept. 15, 1986) a supplemental appropriations act for fiscal year 1987, Pub. L. No. 100 -71, 191 Stat. 468 (1987) and the *Mandatory Guidelines for Federal Workplace Drug Testing Programs*, 73 Fed. Reg. 71858 (Nov. 25, 2008)), the SAMHSA National Laboratory Certification Program establishes standards for federal workplace drug testing. The National Commission on Forensic Science, a partnership between the Department of Justice and the Department of Commerce's National Institute of Standards and Technology, is currently working to develop guidance regarding universal accreditation for forensic-science service providers.

²²Laurel J. Farrell, Sarah Kerrigan, and Barry K. Logan, "Recommendations for Toxicological Investigation of Drug Impaired Driving," *Journal of Forensic Sciences*, vol. 52 no. 5 (2007).

²³FARS is a nationwide census providing NHTSA, Congress, and the American public yearly data regarding fatal injuries suffered in motor vehicle traffic crashes.

because of the limitations and variations in data collection, testing, and reporting noted above, among other things.

Difficulty of Defining Drug Impairment Exacerbates Challenges Related to Enforcement and Public Awareness

In addition to limited data on the extent of drugged and drug-impaired driving, federal and state officials we spoke with cited difficulty in defining drug impairment as a significant challenge to addressing drug-impaired driving. Compared to alcohol, which is chemically simple and has relatively predictable effects, defining and identifying impairment due to drugs is much more complicated due to the large number of available drugs and their unpredictable side effects. The lack of a definition of drug impairment, in turn, exacerbates challenges in enforcing drug-impaired driving laws and informing the public about the dangers of driving under the influence of drugs.

Defining Drug Impairment Is Complex

No Clear Link between Drug Concentration and Impairment

Toxicologists in three of seven selected states, officials from NIDA, SAMSHA, and representatives from SOFT stated that identifying a link between impairment and drug concentrations in the body, similar to the 0.08 BAC threshold established for alcohol, is complex and, according to officials from SOFT, possibly infeasible. Alcohol is a chemically simple molecule that is absorbed and metabolized at a relatively consistent and predictable rate. In contrast, most drugs are chemically complex molecules; various drugs are absorbed and eliminated from an individual's system at different rates. As a result, impairment does not necessarily correspond to a specific concentration level in the blood, and detectable amounts of certain drugs may remain even after impairing effects wear off. For example, as noted earlier, marijuana can be detected in a daily marijuana user's system up to 30 days after using the drug. Toxicologists in four states and representatives from SOFT stated that, as a result, a positive drug test does not necessarily indicate impairment.

Additionally, drugs can have varying and unpredictable effects on individuals. For example, individuals with prescriptions for central nervous system depressants, such as a prescription sleep aid, can develop a tolerance which can reduce some of the impairing effects. During the first few days of taking a prescribed central-nervous-system depressant, a person can feel sleepy and uncoordinated, but as the body becomes accustomed to the effects of the drug and tolerance develops, these side

Analyzing Samples for the Large Number of Available Legal and Illegal Drugs Is Time Consuming and Expensive

effects begin to disappear. As a result, drug concentrations that would be impairing for one individual may not be impairing to another. Further, drivers may combine more than one drug or mix drugs with alcohol, which can have unpredictable results and cause impairment more quickly than the same amounts of each substance taken alone. According to literature we reviewed, when combined, multiple drugs or drugs and alcohol can have a synergistic effect, rather than a simple additive effect, so each substance may increase the impairing effects of the others.

Drug testing is more time consuming and expensive than testing for alcohol because rather than the single blood or breath test needed to determine blood alcohol level, separate tests must be conducted for each suspected drug class (e.g., pain relievers, antidepressants), and the required instrumentation is sophisticated and costly.²⁴ According to toxicologists from two states and representatives from SOFT, it is more expensive to test for drugs than alcohol. For instance, one toxicologist stated that standard equipment for alcohol analysis costs between \$100,000 and \$120,000; but equipment needed to test for certain types of drugs can cost up to \$500,000. Additionally, the number of potentially impairing legal and illegal drugs is large. For example, the NRS tested drivers for 75 illegal, prescription, and OTC drugs identified as potentially impairing, and while some medications do not affect or can even improve driving ability, the FDA has identified eight common classes of prescription and OTC medications as potentially impairing.²⁵ In addition, in 2013, the National Safety Council's Alcohol, Drugs and Impairment Division reviewed and recommended a list of 33 drugs that should be included in the scope of drug testing.²⁶

²⁴Blood and breath tests are two different methods for measuring an individual's blood alcohol level.

²⁵FDA, *Some Medications and Driving Don't Mix*, updated October 14, 2014. <http://www.fda.gov/ForConsumers/ConsumerUpdates/ucm107894.htm>.

²⁶B.K. Logan, K. J Lowrie, J. L. Turri, J. K. Yeakel, J. F. Limoges, A. K. Miles, C. E. Scarneo, S. Kerrigan, and L. J. Farrell, "Recommendations for Toxicological Investigation of Drug-Impaired Driving and Motor Vehicle Fatalities," *Journal of Analytical Toxicology*, vol. 37 (2013).

Further, new drugs are continually being developed for both legal and illegal markets, especially synthetics.²⁷ For instance, the United Nations Office on Drugs and Crime reported that in the United States, 51 synthetic cannabinoids (developed to reproduce the effects of THC/marijuana) and 31 synthetic cathinones (mimicking the effects of amphetamines) were identified in 2012.²⁸ According to toxicologists in two states, to pursue detection of new drugs, even if the molecular structure is only slightly different from other known drugs, labs need to develop a new testing methodology and then validate that methodology through extensive testing on each individual instrument. For example, according to one toxicologist, developing and validating testing methods for a new drug recently cost about \$31,000. Validation of new methodologies is a complicated task and requires qualified personnel, time, and money. Additionally, one toxicologist stated that, to run tests on synthetic cannabinoids and other synthetics, a standard sample against which to test must be purchased from either a chemical company or another source. The entire process is lengthy and expensive.

Enforcement of Drug-Impaired-Driving Laws Is Challenging

Lack of Knowledge among Law Enforcement about Drug Impairment in Drivers

State prosecutors and highway safety office officials in three of the seven selected states said that there is a lack of knowledge among law enforcement about drug impairment in drivers. Furthermore, according to officials from NHTSA, GHSA, and IACP, basic training for officers on impaired driving enforcement is insufficient for identifying drivers that may be impaired by drugs. For example, officers may be trained to administer the Standardized Field Sobriety Test, which focuses on detecting alcohol impairment in drivers; however, officers may not be trained to recognize drug impairment. One prosecutor stated that there is a misperception among some officers who have not received training to identify drug impairment that a drug-impaired driver should exhibit similar symptoms as

²⁷Synthetic drugs are chemically produced in a laboratory and may be developed to circumvent current drug laws and testing. The chemical structure for synthetics can be either identical to or different from naturally occurring drugs, and their effects may be designed to mimic or even increase the effects of natural drugs.

²⁸United Nations Office on Drugs and Crime. *World Drug Report 2013* (May 2013).

a drunken one; including slurred speech and difficulty maintaining balance. As a result, officers who are not trained to detect drug impairment may mistakenly think that a driver is not impaired. See table 3 for a comparison of some of the possible symptoms of alcohol and drug impairment, which vary depending on the type of drug used.

Table 3: Comparison of Examples of Possible Alcohol and Drug-Impairment Symptoms

Alcohol impairment	Depressant impairment	Cocaine impairment	Marijuana impairment
<ul style="list-style-type: none"> • slurred speech • problems with balance • odor of alcohol on breath 	<ul style="list-style-type: none"> • slurred speech • poor performance on field sobriety tests • drowsiness • disorientation • drunken behavior without the odor of alcohol 	<ul style="list-style-type: none"> • excessive activity • increased alertness • talkativeness • irritability • argumentativeness • nervousness • body tremors • anxiety • redness in nasal area and runny nose 	<ul style="list-style-type: none"> • poor performance on field sobriety tests • odor of marijuana in car or on breath • bloodshot eyes • body and eyelid tremors • incomplete thought processes

Source: National Highway Traffic Safety Administration. | GAO-15-293

Note: This table provides examples of drug impairment symptoms, but does not represent the universe of possible symptoms. Symptoms of drug impairment vary depending on the type of drug used.

Processes for Obtaining Samples for Drug Testing Can Be Time Consuming and Result in Loss of Evidence

The time between arrest and collection of a sample for drug testing can affect the quality of biological evidence, such as blood samples, because the concentration of drugs in the body is constantly changing. Specifically, logistical challenges and legal requirements pertaining to evidence collection can increase the time between arrest and sample collection, reducing evidence quality. Currently, there is no validated roadside drug-testing device, such as the evidential breath-testing device for alcohol, which would facilitate faster sample collection.²⁹ Drug testing can be conducted from a blood, oral fluid, or urine sample. According to toxicologists from two states, representatives from SOFT, and literature we reviewed, blood sample analysis is currently the most accurate method of detecting recent drug use. Officials in two of the states that we selected said that it can be time consuming to obtain a search warrant for a blood sample, because it requires approval by a judge. For example,

²⁹While some oral fluid and breath testing devices have been developed to detect drug use, they have not yet been validated for use in the field.

officials from a state highway-safety office stated that a DUID arrest can take 3 to 4 hours if blood is being collected, because arresting officers must wait for a warrant signed by a judge to conduct the blood test. Moreover, depending on local requirements and resources, potential offenders may need to be transported by law enforcement to a hospital or other location for a phlebotomist or nurse to collect a blood sample, leading to further delays.³⁰ As the arresting officer waits to collect the sample, the drug content in the suspect's blood can decrease significantly, resulting in a less accurate measure of the drug content in the blood at the time of the actual traffic stop.

Lab Backlogs Can Lead to Difficulties in Enforcement and Prosecution

According to toxicologists in four states, the lack of qualified lab personnel and testing equipment can contribute to a backlog of samples that need to be tested for drugs, which can result in long waits for toxicology results. In five of the states that we selected, officials told us that current lab backlogs ranged from no backlog to about 2,000 cases (the oldest case being 2 years old). As a result of a lab backlog, officials in two of the states that we selected said that a prosecutor may have to move forward with a drug-impaired driving case without toxicology results due to legal time constraints for prosecution. Additionally, toxicologists from two states said that some drug compounds continue to degrade once blood samples have been collected and may not be detectable in the sample three to six months after collection, making the evidence less useful or of no use to prosecutors.

Public Awareness about Dangers of Drugged Driving Is Limited

State prosecutors, toxicologists, law enforcement and highway-safety office officials from all of the selected states, as well as NIDA, told us that they believe that there is a lack of public awareness about the dangers of driving after using prescription medications and marijuana. According to prosecutors whom we spoke to in three states, alcohol-impaired driving is easy for people to understand, because the public has been educated about the dangers of drunk driving through various campaigns. However, they noted that people believe there is less danger associated with prescription medications and, in some cases, marijuana. As a result, jurors may have a more difficult time understanding the dangers associated with driving under the influence of prescription medication, for

³⁰A phlebotomist is an individual trained to draw blood for tests, transfusions, research, or blood donations.

example, based on their personal experience of taking similar medications without perceiving they are impaired or having a driving incident. Additionally, according to state prosecutors, toxicologists and law-enforcement and highway-safety office officials from all of the selected states as well as NIDA, the public perceives that driving after using marijuana is not dangerous. Moreover, officials from two state highway safety offices and NIDA stated that in their view, the public is generally unaware of the unpredictable effects of combining multiple drugs. As a result of this perceived lack of awareness, members of the public may risk unknowingly driving while impaired, potentially leading to vehicle collisions, injuries, and fatalities.

Officials in four states said that there is a lack of focus on drug impairment in highway-safety public-education campaigns. For example, the traffic-safety-marketing communications resources available on NHTSA’s website for states, partner organizations, and highway safety professionals who are related to impaired driving are generally focused on reducing drunk driving: “Drive Sober or Get Pulled Over” and “Buzzed Driving is Drunk Driving.” See figure 1. Additionally, campaigns in the states we selected generally use language that may suggest a focus on impairment due to alcohol, rather than drugs, for example, “Drive Hammered, Get Nailed.”

Figure 1: NHTSA’s “Drive Sober or Get Pulled Over” and “Buzzed Driving is Drunk Driving” Campaigns



Source: National Highway Traffic Safety Administration. | GAO-15-293

Federal and State Agencies Are Working to Address Drug-Impaired Driving, but NHTSA's Efforts to Improve Public Awareness Have Been Limited

Federal and selected state agencies are taking actions to address drug-impaired driving, including the challenges previously cited. These actions include improvements in the areas of research and data, education of law enforcement and court personnel, evidence quality, legal remedies, and public awareness. Furthermore, NHTSA, ONDCP, and states have coordinated their efforts to address drug-impaired driving challenges. However, NHTSA's current public awareness initiatives do not clearly include drug-impaired driving and state officials we spoke with stated that NHTSA could do more to increase public awareness about the dangers of drugged driving.

Research and Data on Drug-Impaired Driving

Research on Drug Impairment: Federal agencies have completed and are conducting research to increase knowledge about the relationship between drugs, impairment, and crash risk. For example, NHTSA is currently researching the crash risk of drug and alcohol use (including illegal, prescription, and OTC drugs) by collecting samples from more than 10,000 crash- and non crash-involved drivers in one city for 20 months. The results of this study are expected in 2015. Additionally, components of HHS, including NIDA, have researched the impairing effects of various drugs, including the effects of habitual marijuana use. For example, NIDA has conducted research on the length of time marijuana can be detected in blood after use (up to about 30 days in daily users). Regarding prescription and OTC drugs, the FDA uses information from studies conducted by drug manufacturers to assess new medications for adverse effects, including drowsiness, and requires that those effects are appropriately discussed in labeling, including package inserts.³¹

Data Availability, Consistency, and Timeliness: To increase the availability of data on drug-impaired driving, NHTSA has recommended that states distinguish among alcohol or drugs, or both for impaired driving cases. Some states, including Colorado and Arizona, are implementing systems to track whether impaired-driving arrests involved

³¹According to HHS, although the carton or container of a prescription drug supplied by the manufacturer may include information concerning adverse effects, such as drowsiness, state boards of pharmacies regulate the label of the repackaged container that is dispensed to patients.

drugs or alcohol, or both. NHTSA officials stated that such state efforts may also help improve federal data sources, such as FARS. Additionally, California, Hawaii, and New York have separated driving under the influence of alcohol, drugs, or the combined influence of drugs and alcohol in their impaired driving statutes, a move that may result in more detailed data on the extent of drug-impaired and alcohol-impaired driving.

In 2013, the National Safety Council's Alcohol, Drugs and Impairment Division reviewed and updated a set of minimum recommendations to toxicologists for drug testing in suspected impaired-driving cases and fatal crashes, including recommendations to improve the consistency of data on the frequency with which specific drugs are linked with impaired driving.³² Specifically, the recommendations included standards for the type of sample tested (blood, oral fluid, or urine), the scope of drugs for which to test, and cutoff values for reporting the presence of a drug. The NTSB has recommended that NHTSA develop and disseminate similar standards to state officials. According to NHTSA officials, they have discussed these types of standards with officials from SAMHSA, NTSB, and ONDCP. SAMHSA has recently developed oral fluid drug-testing standards for federal workplaces. These standards are currently under review and have not yet been released for public comment. NHTSA officials stated that they plan to wait until these workplace standards are further along in the approval process in order to develop guidance for states that are generally consistent with SAMHSA's workplace standards.

Further, some states have initiated or implemented plans to increase the capability of toxicology labs to improve the timeliness and availability of data. For example, Kansas has made recent efforts to increase the capacity of its forensic lab, housed in the Kansas Bureau of Investigation, through increased funding to retain specialized technicians, increased toxicology staffing, and building a new facility. According to an official from the lab, the improvements should help the state decrease its backlog of 2,000 toxicology cases (as of August 2014). Additionally, according to a lab official, the Ohio Crime Lab received federal grant funding in 2013 to purchase needed instrumentation and coordinates with the Indiana

³²The National Safety Council is a nonprofit advocacy organization focused on preventing injuries and fatalities through research, education, and advocacy. B.K. Logan, K. J. Lowrie, J. L. Turri, J. K. Yeakel, J. F. Limoges, A. K. Miles, C. E. Scarneo, S. Kerrigan, and L. J. Farrell, "Recommendations for Toxicological Investigation of Drug-Impaired Driving and Motor Vehicle Fatalities," *Journal of Analytical Toxicology*, vol. 37, no. 8 (2013).

Department of Toxicology and the Kentucky State Police Toxicology Laboratories to share information and validation techniques for new drug-testing methodologies.

Education for Law Enforcement Officers and Legal Professionals

Drug Recognition Expert Program: One strategy for increasing knowledge about drug impairment among law enforcement mentioned by officials in all seven selected states is the Drug Recognition Expert (DRE) program, which provides training to law enforcement officers and others to identify drivers under the influence of drugs. For this program, IACP and NHTSA coordinated to leverage training originally developed in California.³³ The training includes 72 hours of classroom training and between 40 and 60 hours of field training. Law enforcement officers who complete this training are certified by states as Drug Recognition Experts (DRE) and qualified to perform a 12-step evaluation protocol to assess subjects for drug impairment, which includes psychophysical tests and physical examinations.

According to IACP's 2013 annual report on the DRE program, as of December 2013, about 6,750 DREs have been certified in all 50 states and the District of Columbia.³⁴ While officials in all of the selected states said that the DRE program was effective, some also discussed challenges related to the program, including:

- Training is time-consuming and expensive: Beyond the cost for training, which is often covered through state and federal grants, departments may need to pay for travel and lodging costs as well as overtime pay and additional coverage while officers attend training.
- Retention of certified officers: Officials from three selected states as well as IACP told us that high attrition among DREs makes it difficult to maintain enough certified officers. Reasons cited for this attrition include:
 - DRE-certified officers tend to be high-performing officers and are quickly promoted out of traffic units.

³³DREs are trained through the Drug Evaluation and Classification Program, coordinated by the IACP with support from NHTSA.

³⁴International Association of Chiefs of Police, *The 2013 Annual Report of the IACP Drug Recognition Section* (Alexandria, VA: Oct. 20, 2014).

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- DRE re-certification requirements are time-consuming and expensive and may be difficult for small departments to fulfill.
 - NHTSA's database of DRE reports is difficult to use: NHTSA maintains a database of DRE reports (submitted voluntarily by DRE officers) as a source of data on the program and drug-impaired driving. However, according to law enforcement officials from four of seven selected states, the DRE database is difficult to use, and the data are not currently available in a format that allows tracking of evaluations conducted by individual officers or departments. For example, officers from two states said that they have trouble accessing the system. They noted that, as such, some officers do not report evaluations, making the database incomplete. According to NHTSA officials, they periodically provide system improvements to make the database easier and more effective for officers to use; for example, they are currently determining what identifying information may be added to the system to make tracking easier, without compromising privacy or security. Additionally, NHTSA has plans to improve the system interface and software.

We were not able to identify any comprehensive study on the effectiveness of the program through our literature review, but NHTSA is currently conducting a study of a sample of DRE reports to examine the predictive validity of each of the components of the DRE evaluation; the results are expected in early 2015.

Advanced Roadside Impaired Driving Enforcement Program: In addition to the DRE program, law enforcement agencies in all seven of the states we selected have implemented Advanced Roadside Impaired Driving Enforcement (ARIDE) training, which is meant to bridge the gap between the basic training on impaired driving provided in most police academies and the more intensive DRE program. The 16-hour ARIDE training program, developed through coordination between NHTSA, IACP, and the Virginia Association of Chiefs of Police, trains officers to identify and assess drivers suspected of being under the influence of drugs. Additionally, ONDCP, NHTSA, and IACP have coordinated to create an online version of the ARIDE class, which could improve access to drug impairment evaluation training to law enforcement agencies with more limited resources. However, officials from five of the seven states said that they do not allow their officers to take the online version of the ARIDE class because, in their view, it is not a good substitute for the classroom training. NHTSA is currently conducting an evaluation of the ARIDE

program, including a comparison of the original training with the online version, with an expected reporting date of early 2016.

Education for legal professionals: To increase the chances of successful prosecution of drug-impaired drivers, NHTSA grant funding may be used for state and regional level Traffic Safety Resource Prosecutor (TSRP) and Judicial Outreach Liaison (JOL) positions to provide training, education, and technical assistance to state prosecutors, judges, law enforcement officials, and toxicologists. For example, TSRPs in Arizona and California train toxicologists on providing effective testimony during trials. TSRPs also provide technical support to state and local prosecutors both generally and on a case-by-case basis to increase local ability to convict impaired drivers.

Guidance: Federal Agencies including NHTSA and DOJ have provided states with guidance regarding the enforcement of drug-impaired driving laws. For instance, DOJ's Community Oriented Policing Services component issued guidance on drug-impaired driving as part of its Problem-Specific Guides series. The guide includes a general description of drug-impaired driving and its causes as well as strategies to address enforcement challenges (many described above) and considerations for implementing the strategies described. Similarly, NHTSA published Saturation Patrols and Sobriety Checkpoints Guide: A How-to Guide for Planning and Publicizing Impaired Driving Enforcement Efforts, which guides state and local law enforcement agencies in planning and conducting high visibility enforcement campaigns (discussed below).

Actions to Preserve Evidence Quality

To improve the likelihood that drug testing results will accurately reflect drug concentrations at the time of a traffic stop or crash, some states have taken actions to reduce the time between initial contact with law enforcement and collection of evidence.

- **Roadside testing:** Development of an accurate roadside drug-testing device, comparable to breath sensors for alcohol detection could increase law enforcement officers' ability to identify drivers who have used drugs. Oral-fluid testing devices that are currently available test for a limited scope of drugs; representatives from SOFT stated that the scope includes the most common drugs found in drivers. NIH has conducted studies to validate the results of oral fluid and breath testing devices for certain drugs in controlled settings. Further, NHTSA is currently conducting research on the feasibility of incorporating available roadside oral fluid-testing devices in criminal justice processes, with results expected by early 2016. Additionally, a

pilot program using various roadside oral fluid-testing devices has been conducted in Miami, with varying results depending on the device and type of drug. For example, one device was more accurate than the other overall, and accuracy for certain drugs was higher than for others.

- **Electronic warrant systems:** Washington and Arizona have established or are in the process of establishing electronic warrant systems, through which applications for warrants to collect biological samples are submitted, reviewed, and either granted or denied via electronic means (telephone, fax, or e-mail). According to law enforcement officials in those states, these systems can decrease the time between arrest and collection of samples for drug testing, in an effort to preserve evidence quality
- **Increased access to phlebotomy services:** For the past 8 to 9 years, Arizona has been training law enforcement officers as phlebotomists to reduce the time between arrest and collection of samples for drug testing, thus preserving evidence quality.

Legal Remedies

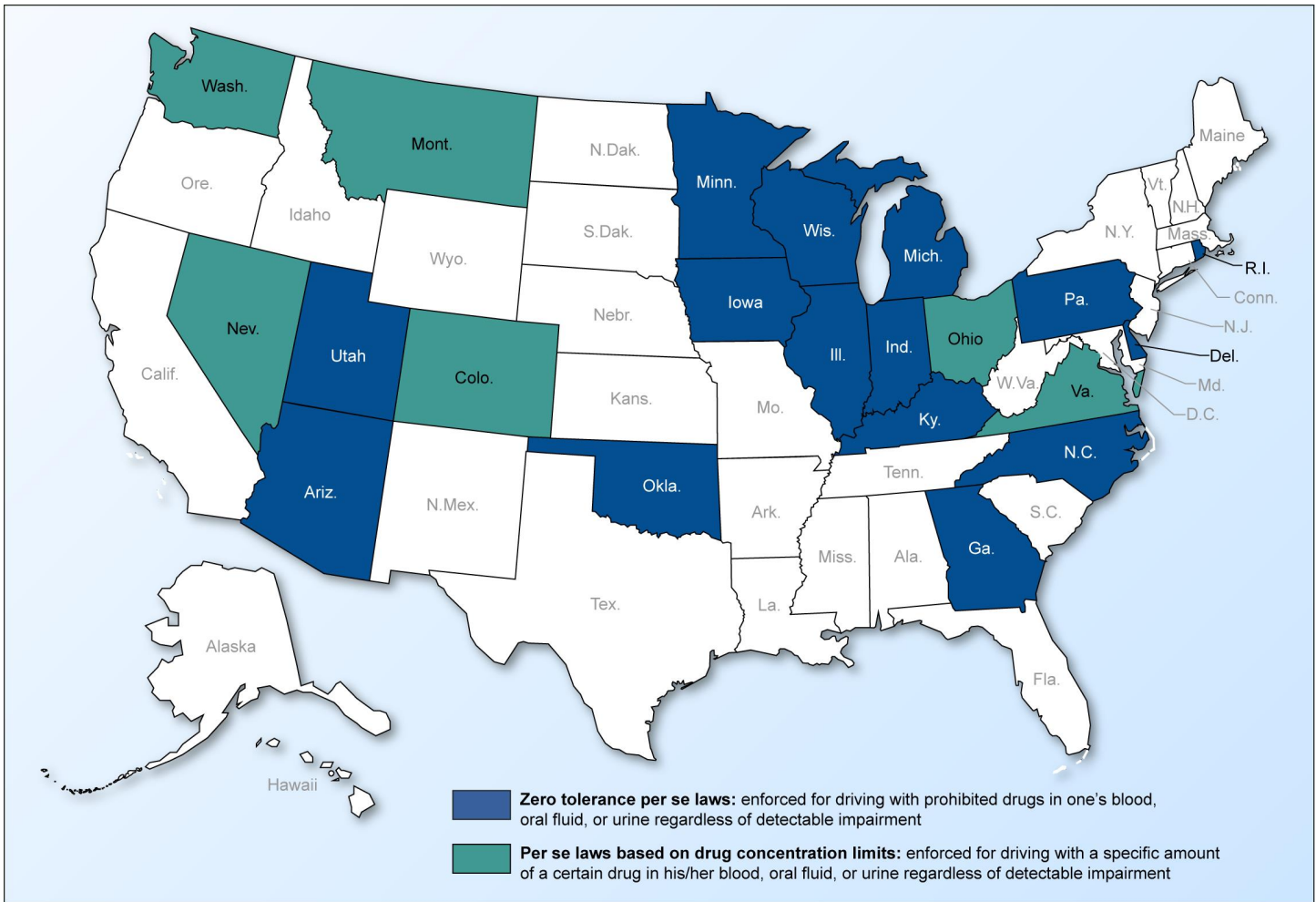
Sentencing policies: Officials from state agencies in four of seven states said that sentencing strategies such as the use of impaired-driving courts reduce recidivism through programs that use a model of post-conviction supervision and treatment, combined with punishment such as fines, in order to change behavior. We have previously reported that participants that received such additional supervision and treatment through adult drug courts, including designated impaired driving courts, were generally less likely to be re-arrested than comparison group members drawn from the criminal court system.³⁵

Zero-tolerance per se laws: ONDCP, GHSA, and others have recommended that states establish “zero tolerance” laws, which make it illegal per se (in itself) to drive with a detectable amount of a prohibited drug (defined by state law) in one’s system, regardless of whether there is evidence of impairment. According to a 2010 NHTSA report on the effectiveness of such laws, the compelling argument for zero tolerance laws is that, in their absence, a driver under the influence of an illegal

³⁵GAO, *Adult Drug Courts: Studies Show Courts Reduce Recidivism, but DOJ Could Enhance Future Performance Measure Revision Efforts*, [GAO-12-53](#) (Washington, D.C.: Dec. 9, 2011).

substance was less likely to be prosecuted for impaired driving than a driver under the influence of alcohol. This problem existed because a maximum threshold linked to impairment has been established for alcohol, but there is no practical way to establish such a level for drugs. This study found some anecdotal support that zero tolerance laws increased prosecution rates, but a lack of reliable data prevented NHTSA from conclusively determining the effectiveness of such laws. Further, officials from NTSB stated there is no evidence that zero tolerance laws reduce impaired driving (since a driver need not be impaired to be prosecuted under the law). As of December 2014, 15 states have enacted laws that prohibit driving with a detectable prohibited substance in the driver's body, without any other evidence of impairment. For example, Illinois prohibits drivers from having a detectable amount of any illegal substance or other prohibited substances listed in the statute in his or her system, which would include certain medications such as hyoscyamine, which is used to control symptoms associated with gastrointestinal disorders. See figure 2.

Figure 2: Map of States with Zero-Tolerance Per Se Laws and Per Se Laws Based on Drug Concentration Limits, as of December 2014



Sources: GAO analysis of state laws and Map Resources. | GAO-15-293

Notes: This map does not include state laws specifically applicable to individuals under 21. This map is based on GAO analysis of state laws as of December 3, 2014.

Per se laws/drug concentration limits: Some officials recommend establishing “per se” limits, or thresholds, for certain drugs, similar to the 0.08 BAC limit established for alcohol. These laws make it illegal per se (in itself) for a driver to have a specific amount of a certain drug in his/her blood, oral fluid, or urine regardless of detectable impairment. As of December 2014, six states have enacted per se laws based on drug concentration limits for one or more drugs (see fig. 2). For instance,

Washington has established a limit of 5 nanograms of THC per milliliter of blood for drivers.³⁶ Colorado has implemented a similar law establishing 5 nanograms of THC per milliliter of blood as a “permissible inference,” which, according to a state official, means jurors may infer that the defendant was impaired but are not required to do so.³⁷ Additionally, Nevada and Ohio have developed per se thresholds for certain controlled substances including illegal drugs such as cocaine and heroin as well as legal drugs such as amphetamines, which can be used to treat conditions such as attention deficit disorder and narcolepsy.³⁸

Per se laws based on drug concentration limits may increase prosecutions for drivers who are over the established limits, but the effectiveness of these laws is unknown and may have unintended consequences. Officials from Colorado, Ohio, and SOFT stated that per se limits make prosecution of drivers who are over the limits more likely. However, others, including officials from California and Washington, stated that it may also make prosecution of drivers who were observed to be impaired but whose drug test results were under the established limit more difficult: once thresholds are established, drivers and jurors may develop the false assumption that driving below the established limit is legal, even if there is observable impairment. Some toxicologists, including representatives from SOFT, stated that per se laws based on thresholds may serve a particular policy goal of increasing prosecutions, but that a link between the established thresholds and impairment levels cannot be supported scientifically. A representative from SOFT also stated that, because illegal drugs generally have no medical purpose, there is a significant difference between establishing per se threshold levels for illegal drugs versus per se threshold levels for prescription and OTC medications. According to the representative, setting per se limits for prescription and OTC medications may cause problems for those who are taking medications as prescribed and may not be impaired.

³⁶Wash. Rev. Code Ann. § 46.61.502(1)(a)-(b). A nanogram is equal to one billionth of one gram.

³⁷Colo. Rev. Stat. Ann. § 42-4-1301(1)(a)-(c).

³⁸Nev. Rev. Stat. Ann. § 484C.120, Ohio Rev. Code § 4511.19.

Efforts to Increase Public Awareness about DUID

Some federal and selected state agencies have implemented drug-impaired driving awareness campaigns to increase public knowledge about the dangers of drugged driving. For instance, ONDCP developed the *Teen Drugged Driving: Parent, Coalition, and Community Group Activity Guide*, which provides coalitions, prevention groups, and parent organizations with facts on the dangers and extent of teen and young adult drugged driving, parent and community activities for effective prevention, and resources to further assist in prevention activities. At the state level, Colorado, Washington, and Ohio have conducted public awareness campaigns focused on drug-impaired driving. For example, Colorado has aired a series of public service announcements focusing on the dangers of driving after using marijuana and emphasizing that driving impaired remains illegal, even as marijuana has been legalized at the state level.

While NHTSA has also established impaired-driving public awareness programs, materials associated with these programs do not explicitly include information on the dangers of drug-impaired driving. NHTSA's public awareness programs include high-visibility enforcement campaigns such as the "Drive Sober or Get Pulled Over" and "Buzzed Driving is Drunk Driving" campaigns (see fig. 1, presented previously), which according to NHTSA officials, include drug-impaired driving. For these campaigns, NHTSA provides media, such as television and radio advertisements, to states to help inform the public about the dangers of impaired driving and provides grant funding for state and local police to perform highly visible checkpoints and patrols to reinforce the concept that impaired drivers are at a high risk of being caught and prosecuted. However, using the terms "sober" and "drunk" in the campaign slogans may indicate that the campaigns are about the dangers of driving after consuming alcohol as opposed to drugs.

NHTSA's mission is to support state traffic safety efforts. However, officials from six of seven selected states as well as representatives from GHSA stated that public education more explicitly focused on the dangers of drugged driving is needed, particularly on impairment due to prescription and OTC medications and marijuana. Officials from some states recommended actions such as increased education and requirements for medical professionals regarding prescription drug use and drug-impaired driving, but also recommended that NHTSA expand the current messaging on impairment to include the dangers of marijuana and prescription drugs, which are not explicitly addressed through NHTSA's impaired driving advertising campaigns.

According to NHTSA officials, the current lack of data on impairment thresholds and the broad range of drug effects make it more difficult to concisely communicate the dangers of drug-impaired driving compared to alcohol-impaired driving and has prevented them from including drugs more explicitly in current messaging. However, the messaging for current alcohol-impaired driving campaigns—such as Drive Sober or Get Pulled Over—does not specifically allude to the .08 BAC limit. Increased focus on information about the potential dangers of driving after using drugs could provide an important reminder to drivers that alcohol is not the only substance that may impair driving ability. Adding more explicit messaging about drug-impaired driving could be relatively simple, and could potentially reduce crashes and associated injuries and fatalities.

NHTSA officials also said they have other plans to improve public awareness about the dangers of drug-impaired driving. For example, NHTSA officials plan to conduct a recurring survey of driver attitudes and behaviors regarding drugged and drug-impaired driving. Data from this survey could help NHTSA more fully understand any gaps in public awareness about the dangers of drug-impaired driving and develop appropriate public awareness campaigns to address those gaps. NHTSA officials also plan to provide training for physicians and other medical professionals on how to inform patients about the dangers of driving after taking some prescription and OTC medications. These efforts to improve public awareness are in the initial planning stages and could take several years to implement.

Coordination among Federal and State Agencies

To leverage the expertise of various stakeholders to address drug-impaired driving, federal agencies—including NHTSA, ONDCP, HHS, NTSB, and states—have coordinated to identify strategies to address drug-impaired driving. For instance, ONDCP and NHTSA convened a roundtable of drug testing and criminal justice experts to examine new drug testing technology in 2012, and have since coordinated to initiate the additional research and testing of roadside oral-fluid-testing devices previously discussed. Additionally, Colorado and Washington have established impaired-driving working groups to develop and implement strategies for addressing drug- and alcohol-impaired driving. These working groups include state and local law-enforcement, traffic-safety, public-health, and motor-vehicle agencies as well as representatives from the court system, professional organizations, the marijuana industry, and others.

Conclusions

The lack of complete and reliable data on the extent and nature of drug-impaired driving presents federal, state, and local agencies with challenges to developing and implementing effective countermeasures. Ongoing and planned activities by NHTSA, ONDCP, and others are intended to increase available information on drug-impaired driving and strategies to address the problem, and coordination across the various federal, state, and local stakeholders is essential to fully implement any strategy. For example, development and validation of a roadside oral-fluid-testing device may improve evidence collection processes for local and state law enforcement, but continued efforts to standardize lab procedures, collect and maintain data, educate law enforcement to recognize potential drug impairment, and educate prosecutors are also important to realize the benefits of faster evidence collection.

Despite limited data and the challenge of defining impairment, federal and state agencies have identified and implemented promising activities—such as the DRE Program, initiatives to reduce the time to collect and analyze evidence, and public awareness—to combat drug-impaired driving and associated crashes, fatalities, and injuries. For example, the DRE Program and high-visibility enforcement campaigns have already been implemented in many jurisdictions. NHTSA and other federal agencies have initiated, supported, and continue to improve these activities. However, state officials consistently noted that their public awareness efforts would benefit from additional support from NHTSA to help increase public knowledge of the potential dangers of drug-impaired driving, including impairment due to some prescription medications and marijuana. While NHTSA’s plans to improve public awareness of drug-impaired driving through a survey on public behaviors and attitudes and training for medical professionals are promising, these initiatives will take time to implement. Additional efforts, such as general messaging reminding the public about the impairing effects of some drugs and the dangers of driving after using drugs, could help improve public awareness in the near term.

Recommendation

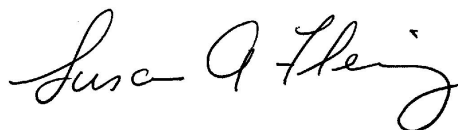
We recommend that the Secretary of Transportation direct the Administrator of NHTSA to identify actions—in addition to the agency’s currently planned efforts—to support state efforts to increase public awareness of the dangers of drug-impaired driving. This effort should be undertaken in consultation with ONDCP, HHS, state highway-safety offices, and other interested parties as needed.

Agency Comments

We provided a draft of this report to DOT, ONDCP, and HHS for review and comment. In written comments (reproduced in appendix II), DOT agreed with our findings and recommendation. ONDCP had no comments. HHS provided technical comments, which we incorporated as appropriate.

We are sending copies of this report to the Secretary of Transportation, the Director of the White House's Office of National Drug Control Policy, the Secretary of Health and Human Services, interested congressional committees, and other interested parties. The report also is available at no charge on GAO's Web site at <http://www.gao.gov>.

If you or your staff have any questions concerning this report, please contact me at (202) 512-2834 or FlemingS@gao.gov. Contact points for our Offices of Congressional Relations and Public Affairs may be found on the last page of this report. GAO staff who made key contributions to this report are listed in appendix III.



Susan A. Fleming
Director, Physical Infrastructure Issues

Appendix I: Objectives, Scope, and Methodology

The Senate Report accompanying the Transportation and Housing and Urban Development, and Related Agencies Appropriations Bill, 2014¹ requires us to conduct a study on the strategies that NHTSA, ONDCP, and states have taken to address drug impairment and assess the challenges they face in detecting and reducing drug-impaired driving. Pursuant to that mandate, we reviewed the actions of relevant federal agencies and selected states as well as relevant literature to identify actions taken to address drug-impaired driving and associated challenges. Specifically, we analyzed (1) what is known about the extent of drug-impaired driving in the United States; (2) what challenges, if any, exist for federal, state, and local agencies in addressing drug-impaired driving; and (3) what actions federal and state agencies have taken to address drug-impaired driving and what gaps exist, if any, in the federal response to drug-impaired driving. This review defines drug-impaired driving as driving while impaired by illegal drugs or prescription and over-the-counter (legal) medications. This review does not include impaired driving among commercial motor carriers, for which different laws and regulations apply than for members of the general public.

To describe what is known about the extent of drug-impaired driving in the United States, to identify challenges to addressing drug-impaired driving, and to identify actions federal and state agencies have taken to mitigate those challenges, we conducted a literature search to identify sources of data on the extent of drugged and drug-impaired driving in the United States and studies on the issue of drug-impaired driving, including challenges and strategies for addressing the problem. We identified existing studies from peer-reviewed journals, government reports, and conference papers based on searches of various databases, such as ProQuest and Transportation Research International Documentation. Search parameters included international studies, studies across the U.S. and in specific states, and research on drug-impaired-driving challenges and countermeasures. These parameters resulted in 394 abstracts, which we narrowed to 225 by eliminating, for example, studies addressing only the extent of drugged or drug-impaired driving in countries other than the United States or studies on the broader topic of drug abuse. We further divided the literature into studies on the extent of drugged or drug-impaired driving in the United States and studies on drug-impaired driving challenges and countermeasures. Studies including data on the extent of

¹S. Rep. No. 113-45 (2013).

drugged or drug-impaired driving in the United States were reviewed to identify the source of the data and limitations. We reviewed these studies and determined that they were sufficiently reliable for the purposes of this report. Studies on countermeasures to address drug-impaired driving and challenges were used to provide additional context and information when needed. We also reviewed state laws to develop information regarding state zero-tolerance per se laws and state per se laws based on drug concentration limits.

Additionally, we reviewed documentation, such as research studies and plans and agency guidance, and interviewed officials from relevant governmental and non-governmental organizations to identify (1) sources of data and their limitations, (2) challenges to addressing drug-impaired driving, and (3) actions taken by federal and state agencies to address drug-impaired driving as well as gaps in the federal response. Federal agencies, advocacy organizations, and professional organizations were chosen based on having a mission relevant to the issue of drug-impaired driving and recommendations from relevant stakeholders. We interviewed officials at relevant federal agencies including the National Highway Traffic Safety Administration (NHTSA); the White House's Office of National Drug Control Policy (ONDCP); National Transportation Safety Board (NTSB); and Department of Health and Human Services' (HHS) components including the Substance Abuse and Mental Health Services Administration (SAMHSA), Centers for Disease Control and Prevention (CDC), Food and Drug Administration (FDA), and National Institutes of Health (NIH).² Additionally, we reviewed documentation obtained from and interviewed officials in seven states: Arizona, California, Colorado, Kansas, Ohio, Vermont, and Washington. We reviewed documentation and interviewed officials at state agencies responsible for highway-safety and drug-impairment programs, advocacy organizations, and professional organizations based on recommendations from the state highway-safety office. For example, we interviewed officials from state highway-safety offices, departments of public health and motor vehicles, state law-enforcement agencies, Drug Recognition Expert (DRE) program coordinators, state Traffic Safety Resource Prosecutors (TSRP), associations of police chiefs and district attorneys, state and local toxicologists, and local interest groups. We selected these states based

²Within NIH, the National Institute on Drug Abuse (NIDA) is the primary institute involved in this topic. NIDA is one of the 27 institutes and centers within the National Institutes of Health.

on recommendations from federal officials and representatives from advocacy and professional organizations and to represent a variety of laws, programs, and other factors. Our selection included:

- states with legalized recreational marijuana,
- states that geographically border states in which recreational marijuana use has been legalized,
- states with legalized medical marijuana,
- states representing a variety of drug-impaired driving laws, and
- states identified as having robust programs dealing with driving under the influence of drugs.

We also reviewed documentation and interviewed representatives from advocacy and professional organizations including the Governors Highway Safety Association (GHSA), National District Attorneys Association, Society of Forensic Toxicologists, Inc. (SOFT), Mothers Against Drunk Driving (MADD), International Association of Chiefs of Police (IACP), Insurance Institute for Highway Safety, and National Council of State Legislatures (NCSL).

We conducted this performance audit from April 2014 through February 2015 in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

Appendix II: Comments from the Department of Transportation



U.S. Department
of Transportation
Office of the Secretary
of Transportation

Assistant Secretary
for Administration

1200 New Jersey Avenue, SE
Washington, DC 20590

FEB 11 2015

Susan Fleming
Director, Physical Infrastructure Issues
U.S. Government Accountability Office
441 G Street NW
Washington, DC 20548

The National Highway Traffic Safety Administration (NHTSA) continues to gain a deeper understanding of the magnitude and severity of drug-impaired driving. NHTSA has worked with the Office of National Drug Control Policy (ONDCP), the Centers for Disease Control and Prevention (CDC), various institutes of the National Institutes of Health (NIH), law enforcement organizations, and State highway safety offices to learn about the physiology of drug-impaired driving, the prevalence of drug-impaired driving, and the impact of drugs, both legal and illegal, on impairment. NHTSA has also developed training classes and tools to help law enforcement officials identify drug-impaired drivers. For example, NHTSA:

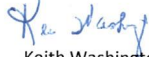
- Completed the fifth National Roadside Survey (NRS) of alcohol and drug use while driving, the nation's only statistically representative survey of the use of alcohol and drugs among drivers. This survey is the only information available to policymakers on both the number of drugged drivers and trends in drug use among drivers.
- Completed the crash risk study, a sophisticated case-control study of the crash risk associated with drug and alcohol use. This report is the first such study conducted in the U.S. and the most carefully controlled study of its type internationally.
- Developed and promoted both the Advanced Roadside Impaired Driving Enforcement (ARIDE) and Drug Recognition Expert (DRE) programs to provide law enforcement officers with the skills necessary to identify impairment. Over eight thousand law enforcement officers have received DRE training, and thousands more have taken the ARIDE course.
- Coordinated with ONDCP, NIH, and others to convene a roundtable of experts to discuss the current status of drug testing technology and the need for testing devices in the criminal justice community. This work is crucial to understanding the link between drug use and impairment, and to facilitate an efficient and effective criminal justice response.

Upon preliminary review of the recommendation, NHTSA agrees that the Department should work with Federal, State, and other stakeholders to identify actions to support State efforts to increase awareness of the dangers of drug-impaired driving. The Department will provide a detailed response to the recommendation within 60 days of the GAO report issuance.

**Appendix II: Comments from the Department
of Transportation**

We appreciate the opportunity to offer our comments on the GAO draft report. Please contact Patrick D. Nemons, Deputy Director of Audit Relations, at (202) 366-4986 with any questions or if you would like any additional information about these comments.

Sincerely,



Keith Washington
Acting Assistant Secretary for Administration

Appendix III: GAO Contact and Staff Acknowledgments

GAO Contact

Susan A. Fleming, (202) 512-2834 or FlemingS@gao.gov

Acknowledgments

In addition to the contact above, Sara Vermillion (Assistant Director), Ria Bailey-Galvis, Melissa Bodeau, D. Kyle Fowler, Katie Hamer, Sara Ann Moessbauer, Cheryl Peterson, and Maria C. Staunton made key contributions to this report.

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