

# Oral Fluid Drug Testing and Traffic Safety

Virginia Crime Commission  
Thursday, October 22, 2026

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Senior Director of Traffic Safety Research and Innovation



**RESPONSIBILITY.ORG**

# National Alliance to Stop Impaired Driving



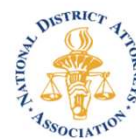
A coalition established and led by Responsibility.org to eliminate all forms of impaired driving, especially multiple substance impaired driving. [www.nasid.org](http://www.nasid.org)

## Our Members



## Allied Members

Allied Members are unable to lobby and do not advocate for legislation at the state or federal level



# Alcohol, Other Drug, and Multiple Drug Use Among Drivers

December 13, 2022      Safety Research Report SRR-22-01

## Alcohol, Other Drug, and Multiple Drug Use Among Drivers

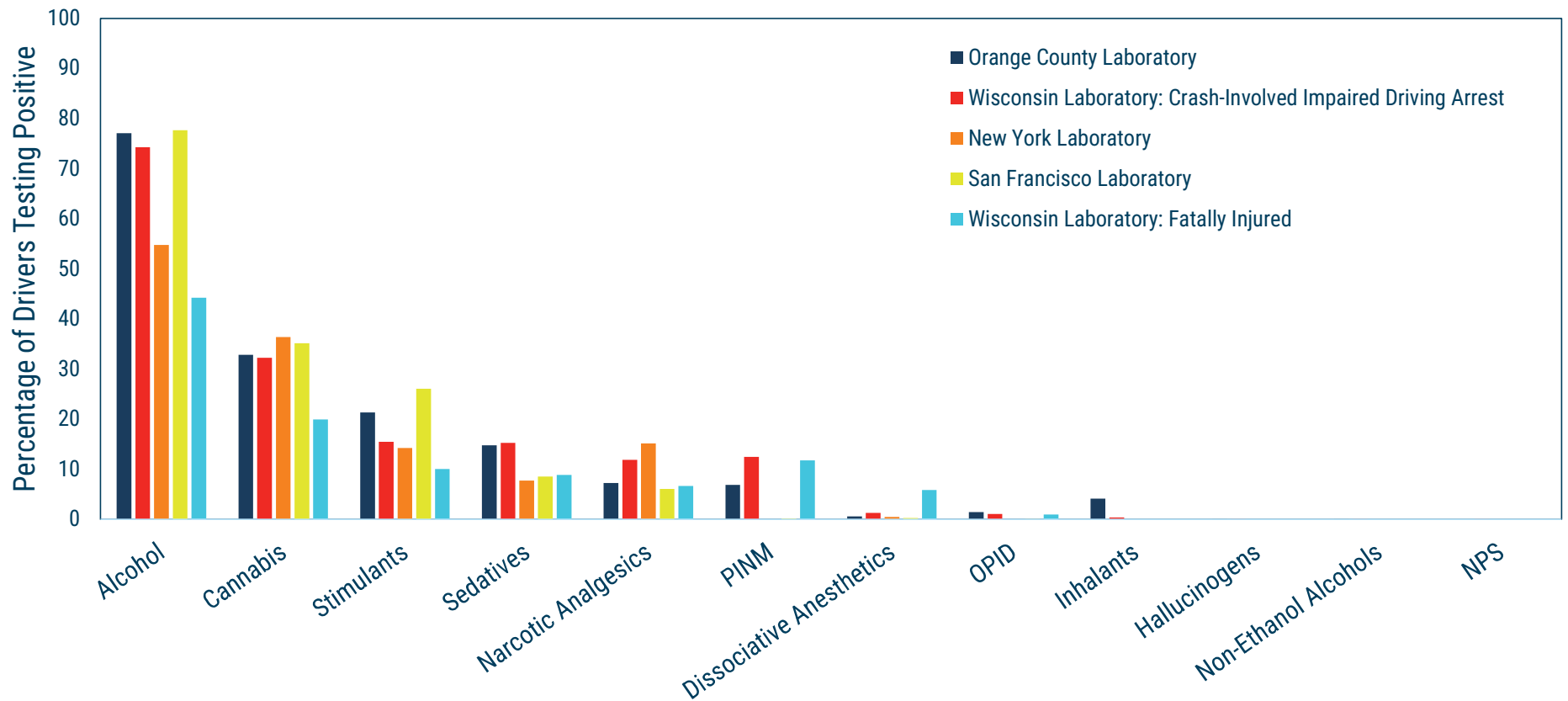
**Abstract:** This safety research report examines the crash risk associated with different drugs, including alcohol, and the prevalence of their use among drivers; it also discusses countermeasures to reduce impairment-related crashes. To do this, the National Transportation Safety Board (NTSB) conducted a literature review of impaired driving research, examined drug reporting in the National Highway Traffic Safety Administration's Fatality Analysis Reporting System, and performed an independent analysis of the presence of potentially impairing drugs in driver specimens submitted to four US laboratories that met strict standards for collecting high-quality toxicology data.

The NTSB identified the following safety issues: (1) the need to implement proven countermeasures for alcohol-impaired driving; (2) the need to address the growing problems of cannabis-, other drug-, and multiple-drug-impaired driving; (3) the need to improve drug-impaired driving laws and enforcement; (4) the need to ensure that drug safety is considered in the evaluation of prescription and over-the-counter drugs; and (5) the need to enhance systems for documenting and tracking the incidence of drug use and driving.

As a result of this safety research, the NTSB makes new recommendations to the National Highway Traffic Safety Administration; the US Food and Drug Administration; and the 50 states, the District of Columbia, and the Commonwealth of Puerto Rico. The NTSB also classified two previous recommendations.



## Percentage of Drivers Positive by Each Drug Category



# NHTSA: High Rates of Drug Prevalence

**TRAFFIC TECH**  
Technology Transfer Series

DOT HS 813 400

## Alcohol and Drug Prevalence Among Seriously and Fatally Injured Road Users

By Amy Berning

**Background**  
NHTSA is interested in learning about the prevalence of drug and alcohol positivity among road users in the United States. This study collected blood samples across several Level-I trauma centers and morgues from those admitted after motor vehicle crashes. The results of this research increase our knowledge of substance use and traffic safety. The National Roadside Surveys were designed to provide information on the prevalence of alcohol and drugs in drivers, at the time of driving. NHTSA's "Virginia Beach study" on crash risk examined the prevalence of alcohol and drugs in crash-involved drivers and control (non-crash) drivers. That study increased our knowledge considerably regarding crash risk associated with alcohol and drug use; however, most crashes resulted in property damage only or minor injuries, limiting information on serious crashes. In this current study, NHTSA advanced the research on two significant fronts. First, the focus was on the most serious of crashes – those that involved someone either admitted to a Level-I trauma center, or who had died at the scene of the crash and been transported to a medical examiner's office. Second, the study obtained data across types of road users besides drivers, such as pedestrians and bicyclists.

NHTSA released interim results of this study in October 2020 (DOT HS 813 013) that included an analysis of alcohol and other drug prevalence before and during the COVID-19 public health emergency from the data collection in our initial five sites. Additional interim data were included in the Office of Behavioral Safety Research series, *Research Notes on COVID and Traffic Safety* (DOT HS 813 011, DOT HS 813 069, DOT HS 813 135). Since then, data were obtained from two more sites, and thousands more road users.

**Research Objective**  
This study examined prevalence of alcohol and over-the-counter, prescription, and illegal drugs in the blood of a large sample of seriously or fatally injured drivers and other road user crash victims.

**Methods**  
**Participants**  
Drivers, including motorcyclists  
Passengers  
Bicyclists  
Pedestrians  
Other  
Unknown

The study included seven Level-I trauma centers and four morgues. Due to staggered data collection in the per-

Jacksonville, FL: September 10, 2019, to July 31, 2021  
Charlotte, NC: September 16, 2019, to July 31, 2021  
Miami, FL: October 17, 2019, to July 31, 2021  
Baltimore, MD: December 11, 2019, to July 31, 2021

Level-I trauma centers routinely admit all patients from each of these sites. Blood samples were collected to test for other drugs. Blood samples were tested for alcohol and drugs in a forensic toxicology lab for screen-  
ses. Samples were tested for a variety of potentially impairing effects on a variety of drugs included "parent" drugs and

**Results**  
Table 1 provides summary information in the study. See the full report for prevalence across road user types and drug categories.

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

1200 New Jersey Ave

**Table 1. Drug Category Prevalence by Case Source for All Road Users**

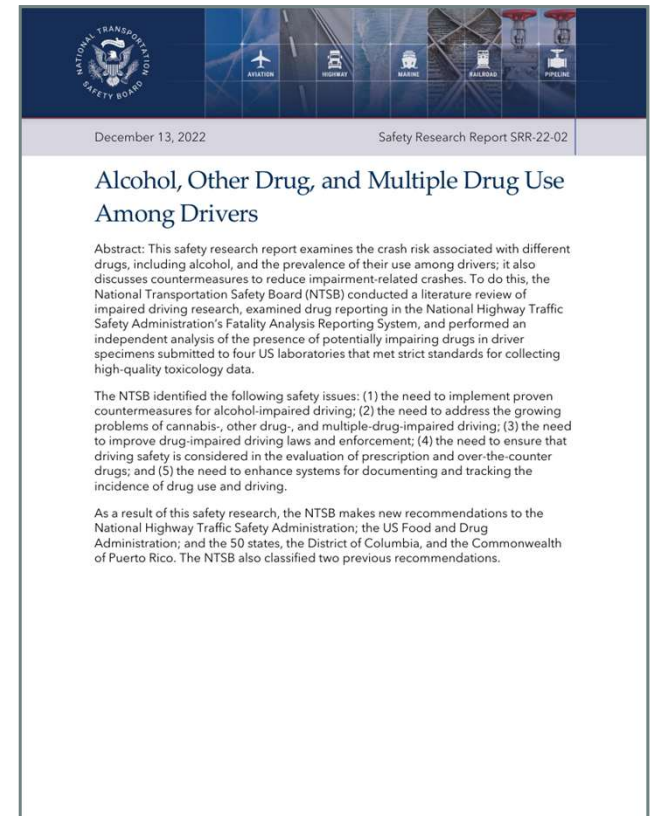
| Drug Category                                 | Trauma Center<br>(n=6,382) |             |                     | Medical Examiner<br>(n=897) |             |                     | Total<br>(N=7,279) |             |                     |
|-----------------------------------------------|----------------------------|-------------|---------------------|-----------------------------|-------------|---------------------|--------------------|-------------|---------------------|
|                                               | n                          | %           | 95% CI              | n                           | %           | 95% CI              | N                  | %           | 95% CI              |
| Alcohol                                       | 1,364                      | 21.4        | [20.4, 22.4]        | 321                         | 35.8        | [32.7, 39.0]        | 1,685              | 23.1        | [22.2, 24.1]        |
| Cannabinoids <sup>A</sup>                     | 1,579                      | 24.7        | [23.7, 25.8]        | 251                         | 28.0        | [25.1, 31.0]        | 1,830              | 25.1        | [24.2, 26.1]        |
| Stimulants                                    | 675                        | 10.6        | [9.8, 11.3]         | 112                         | 12.5        | [10.4, 14.8]        | 787                | 10.8        | [10.1, 11.5]        |
| Sedatives                                     | 475                        | 7.4         | [6.8, 8.1]          | 73                          | 8.1         | [6.5, 10.1]         | 548                | 7.5         | [6.9, 8.2]          |
| Opioids                                       | 541                        | 8.5         | [7.8, 9.2]          | 137                         | 15.3        | [13.0, 17.7]        | 678                | 9.3         | [8.7, 10.0]         |
| Antidepressants                               | 64                         | 1.0         | [0.8, 1.3]          | 10                          | 1.1         | [0.6, 2.0]          | 74                 | 1.0         | [0.8, 1.3]          |
| Over-the-Counter                              | 106                        | 1.7         | [1.4, 2.0]          | 39                          | 4.3         | [3.2, 5.8]          | 145                | 2.0         | [1.7, 2.3]          |
| Other Drugs                                   | 97                         | 1.5         | [1.2, 1.8]          | 36                          | 4.0         | [2.9, 5.4]          | 133                | 1.8         | [1.5, 2.2]          |
| <b>Positive for Any Drug</b>                  | <b>3,456</b>               | <b>54.2</b> | <b>[52.9, 55.4]</b> | <b>607</b>                  | <b>67.7</b> | <b>[64.6, 70.7]</b> | <b>4,063</b>       | <b>55.8</b> | <b>[54.7, 57.0]</b> |
| <b>Drug Negative</b>                          | <b>2,926</b>               | <b>45.8</b> | <b>[44.6, 47.1]</b> | <b>290</b>                  | <b>32.3</b> | <b>[29.3, 35.4]</b> | <b>3,216</b>       | <b>44.2</b> | <b>[43.0, 45.3]</b> |
| <b>Positive for 2 or More Drug Categories</b> | <b>1,163</b>               | <b>18.2</b> | <b>[17.3, 19.2]</b> | <b>286</b>                  | <b>31.9</b> | <b>[28.9, 35.0]</b> | <b>1,449</b>       | <b>19.9</b> | <b>[19.0, 20.8]</b> |

<sup>A</sup>Active THC (Δ-9-THC or 11-OH-THC).

Notes: "Drug" refers to alcohol and all other drugs included on this study's toxicology panel. This table combines data from all road users (drivers, pedestrians, bicyclists) included in the study.

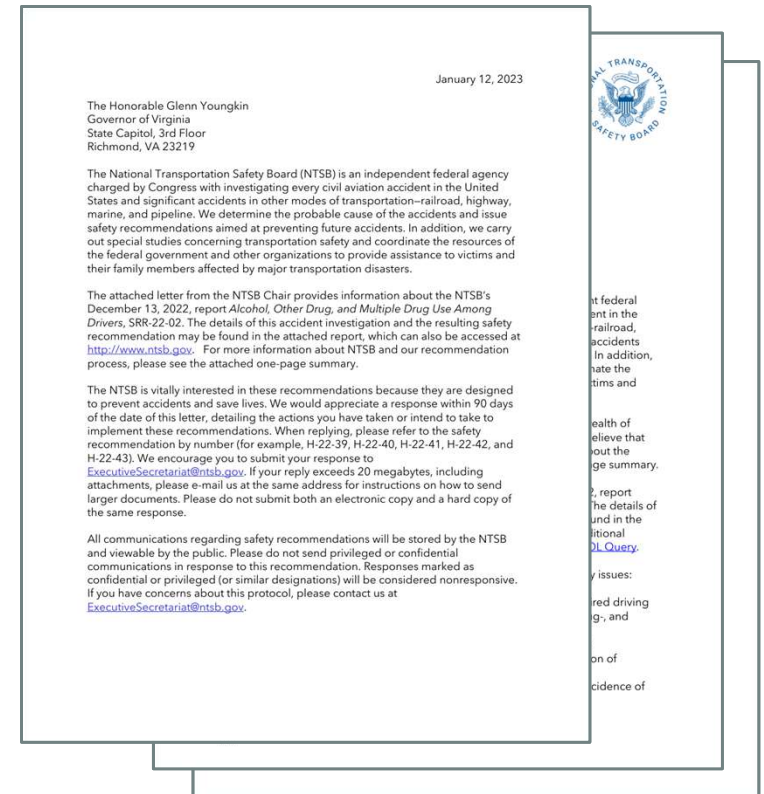
# Rapidly shifting technology and legal landscape

- Move from a “silver bullet” to an “all tools in the toolkit” approach.
- Allow laws to keep pace with the science.
- “Oral fluid is a valuable but underutilized biological specimen for the detection of drug use by drivers and can support the enforcement of impaired driving laws (NTSB 2022).”



# Formal NTSB Recommendations to Virginia

To the Commonwealth of Virginia: *Modify your impaired driving laws to allow for oral fluid collection, screening, and testing for the detection of drug use by drivers (H-22-41).*



# WHAT IS ORAL FLUID?

- ORAL FLUID IS COMPOSED OF THE FOLLOWING

- Saliva
- Bacteria
- Blood
- Gingival fluid
- Epithelial cells
- Food debris

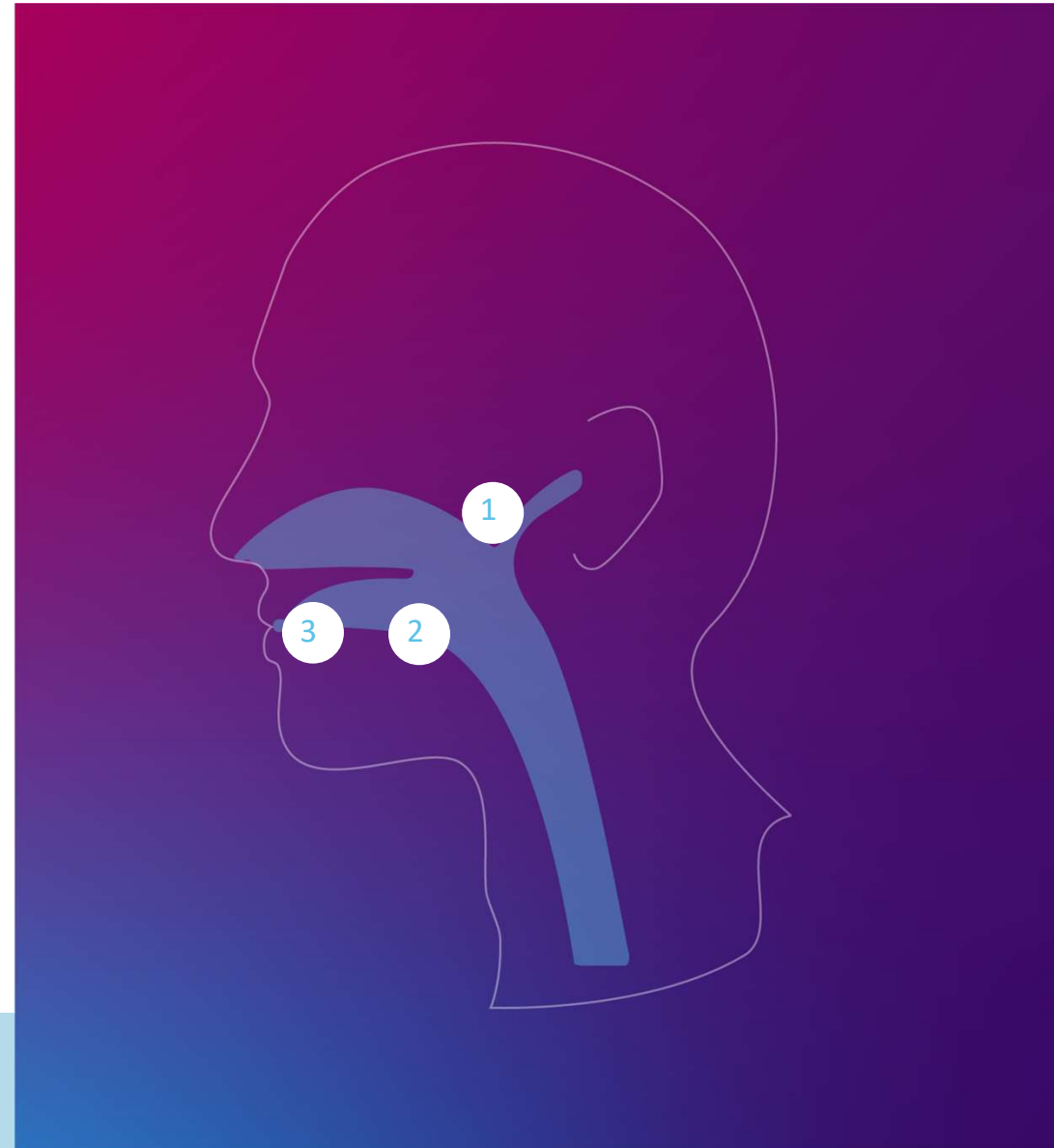
Saliva itself is a clear, odorless, and viscous fluid formed in the salivary gland.

- SALIVA IS PRINCIPALLY PRODUCED BY THE 3 MAIN SALIVARY GLANDS

1. Glandular parotis (parotid gland)
2. Glandular submandibularis (submandibular gland)
3. Glandular sublingualis (sublingual gland)

- BETWEEN 0.5 L–1.5 L OF SALIVA IS PRODUCED PER DAY

Variations due to smoking, drug use, climate and hydration



# Oral fluid testing: two complementary uses

Rapid screening supports the investigation. Laboratory testing provides confirmed drug findings.

|                                |  <b>Roadside screening</b> |  <b>Laboratory confirmation</b> |
|--------------------------------|-------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------|
| <b>Primary purpose</b>         | Preliminary information about possible drug presence                                                        | Confirms the identity of specific drugs                                                                            |
| <b>Collection and analysis</b> | Collected and tested at roadside                                                                            | Can be collected at roadside; analyzed in a laboratory                                                             |
| <b>Time to results</b>         | Typically minutes                                                                                           | Turnaround varies by laboratory                                                                                    |
| <b>Drugs detected</b>          | Selected drugs or drug classes; device dependent                                                            | Potentially broader coverage; laboratory dependent                                                                 |
| <b>Multiple drugs</b>          | Can detect multiple drugs covered by the device                                                             | Can identify multiple drugs covered by laboratory methods                                                          |
| <b>What results report</b>     | Positive or negative screening results relative to device cutoffs                                           | Specific drugs and, with quantitative methods, their concentrations                                                |
| <b>Role in the case</b>        | Supports investigative decisions                                                                            | Can provide toxicological evidence, subject to applicable requirements                                             |

**Drug detection supports the investigation.  
Neither test independently establishes impairment.**

# Oral Fluid Screening is a Tool

- Oral Fluid Screening is a tool to determine recent drug use
- SFSTs first, followed by the oral fluid field screen
  - Result can be used to support the officer's opinion about which drug(s) is/are responsible for the observed impairment
- Oral fluid drug screening is a tool that assists with the impaired driving investigations,
  - Providing real-time chemical test information
  - Can assist officer in questioning subject about drug use

| Drug Group         | Detection Window |
|--------------------|------------------|
| Amphetamine        | Up to 1–2 days   |
| Benzodiazepines    | Up to 24 hours   |
| Buprenorphine      | Up to 1–2 days   |
| Cannabinoids (THC) | Up to 24 hours   |
| Cocaine            | Up to 24 hours   |
| Codeine            | Up to 1–2 days   |
| Ketamine           | Up to 1–2 days   |
| Methadone          | Up to 1–2 days   |
| Methamphetamines   | Up to 24 hours   |
| Morphine           | Up to 24 hours   |
| Fentanyl           | Up to 2 days     |
| Opiates (general)  | Up to 1–2 days   |

# GLOSSARY OF TERMS & WINDOW OF DETECTION

## CUTOFF

This is the decision point that differentiates a test result as being either positive or negative.

For drug screening tests, a cutoff is chosen that will maximize the number of accurate positive results.

## WINDOW OF DETECTION DEPENDENT ON

- Amount of drug and frequency that the drug is taken
- Oral fluid provides the shortest window of detection

| Drug Group      | Target Compound     | Cutoff (ng/mL) | Detection Window | Common Drugs & Street Names                                                                                                                                              |
|-----------------|---------------------|----------------|------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Amphetamine     | (S) Amphetamine     | 50             | Up to 1–2 days   | MDA, MDMA, Adderall XR, ProCentra Vyvanse, Phentermine, Methamphetamine (S) & (R), Ecstasy, Molly                                                                        |
| Benzodiazepine  | Temazepam           | 20             | Up to 24 hours   | Alprazolam (Xanax), Diazepam (Valium), Clonazepam (Klonopin), Lorazepam (Ativan), Nordiazepam, Etizolam, Some street altered benzodiazepines: Flualprazolam & Bromazolam |
| Cannabis        | $\Delta^9$ -THC     | 25             | Up to 24 hours   | $\Delta^9$ -THC, $\Delta^8$ -THC (50ng/ml)                                                                                                                               |
| Cocaine         | Benzoyllecgonine    | 30             | Up to 24 hours   | Cocaine, Cocaethylene, Benzoyllecgonine, Crack, Coke                                                                                                                     |
| Methamphetamine | (S) Methamphetamine | 50             | Up to 24 hours   | ADD/ADHD Medications, Methamphetamine (S) & (R), Meth, Glass, Crystal                                                                                                    |
| Opiates         | Morphine            | 40             | Up to 1–2 days   | Heroin, Morphine, Codeine, Dihydrocodeine HCl, EDDP, Oxycodone                                                                                                           |

## The Steps to DUI Detection + Enforcement + Oral Fluid Roadside Screening Technology



STEP 1

### VEHICLE IN MOTION

Officer observes a traffic violation, initiates a stop, always observing the vehicle, driver, and passenger(s).



STEP 2

### PERSONAL CONTACT

Officer engages driver and assesses for signs of impairment: slurred speech, bloodshot watery eyes, or other eye signs, confusion, hyperactivity, responses to questions, odors, container, and other observations.



STEP 3

### PRE-ARREST SCREENING

Standardized Field Sobriety Testing (SFST):  
HGN (Horizontal Gaze Nystagmus, Walk & Turn, One Leg Stand)

**ARIDE Officers should apply additional tests**

- Modified Rhomberg
- Lack of Convergence
- Finger to Nose



STEP 4

### ADDITIONAL ROADSIDE SCREENING

- Preliminary Breath Test PBT
- Oral Fluid Roadside Screening

Post Detection Enforcement



### ARREST AND TESTING

Subject is arrested based on probable cause, and brought in for DRE evaluation (if available) and evidential chemical testing (Breath, Blood, Oral Fluid, or Urine).

# Oral fluid screening technology





# Advantages of roadside Oral Fluid drug testing

- ❖ A reflection of free drug circulating in the blood
- ❖ Sample taken proximate to traffic stop
- ❖ No medical personnel required for collection
- ❖ Parent drug detection shows recency of use
- ❖ Aid the investigative process – help establish probable cause
- ❖ Enhances public safety
- ❖ Creates general deterrence



# Advantages of roadside Oral Fluid drug testing

- ❖ Results can be utilized in DMV Administrative Hearings.
- ❖ Reduces Recidivism:
  - ❖ Stop Limit Testing protocols prevent judges, prosecutors and treatment providers from knowing a complete picture of the offender.
- ❖ Improved data collection:
  - ❖ The scope of the drugged driving problem in your state
  - ❖ Was the impairment from alcohol, drugs or a combination?
  - ❖ Improve the accuracy and completeness of drugged driving data in state and federal databases (ie. FARS)
  - ❖ Detection of emerging drug trends

# Newly Released NHTSA Research



DOT HS 813 865



October 2026 (Revised)

## Oral Fluid Testing Program Case Studies

### Report Highlights

This report reviews oral fluid drug testing operations across five U.S. States, detailing the programs, training, benefits, challenges, and lessons learned to help agencies implement successful roadside and evidentiary collections. Each case study explores the validation processes, legislative hurdles, and device selections needed to build a defensible program. Stakeholder collaboration among police, toxicologists, defense attorneys, and prosecutors; policies; and gaining judicial and public trust are all discussed. Inside the text you'll also find various methods for training and managing the costs associated with testing equipment derived from real-world applications. Ultimately, these case studies offer guidance for agencies looking to modernize their impaired driving enforcement strategies by adding oral fluid drug testing programs to their impairment detection process.

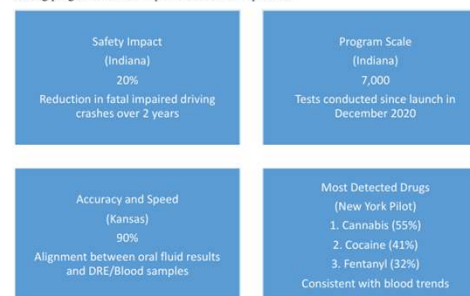


Figure 1. Oral Fluid Drug Testing Program Impressions

**2024 MINNESOTA ORAL FLUID PILOT** - *"The study found that 62% of drivers had more than one drug in their system at the time of testing, and 90% of those who tested positive for alcohol also had one or more drugs in their system. Additionally, the pilot program confirmed that both the 'SoToxa™' and the 'Dräger DrugTest 5000' met the required standards for reliability, accuracy, and practicality."*



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## Legislative Report

Minnesota oral fluid roadside testing report to the legislature

February 21, 2025

# Resolutions

*National Sheriffs Association  
(NSA)*

*International Association of  
Chiefs of Police (IACP) in  
process*



2025-01

**THE NATIONAL SHERIFFS' ASSOCIATION  
SUPPORTS ROADSIDE PRELIMINARY ORAL FLUID TESTING BY PEACE  
OFFICERS TO DETECT THE RECENT USE OF DRUGS AND TO ESTABLISH  
PROBABLE CAUSE FOR ARREST**

**WHEREAS**, the National Sheriffs' Association (NSA) is dedicated to promoting and protecting the safety and security of the communities we serve; and

**WHEREAS**, roadway and public safety is adversely impacted by drivers operating motor vehicles on the nation's roadways while impaired by drugs; and

**WHEREAS**, an analysis of impaired driving laws indicates there is a lack of uniformity or consistency in how jurisdictions/political subdivisions deal with drugged drivers<sup>1</sup>; and

**WHEREAS**, there is a need for national leadership in the U.S. to encourage jurisdictions to modify their laws to be more effective when dealing with impairing substances and/or drugs; and

**WHEREAS**, incidents of impaired driving involving impairing drugs combined with alcohol are up to 200 times and more likely to cause a crash,<sup>2</sup> and should therefore, result in additional sanctions; and

**WHEREAS**, an alarming number of drivers report driving under the influence of drugs, alcohol, or a combination thereof (over 30 million in the 2018 National Survey on Drug Use and Health); and

**WHEREAS**, drugged driving and drug-related crashes, deaths, and injuries continue to occur at an alarming rate; and

<sup>1</sup> National Highway Traffic Safety Administration. (2024, April). Drug-impaired driving data collection: Report to Congress (Report No. DOT HS 813 574 <https://rosap.nhtl.bts.gov/view/dot/74245>)

<sup>2</sup> Lacey, J. H., Kelley-Baker, T., Berning, A., Romano, E., Ramirez, A., Yao, J., & Compton, R. (2016, December). Drug and alcohol crash risk: A case-control study (Report No. DOT HS 812 355). Washington, DC: National Highway Traffic Safety Administration. [https://www.nhtsa.gov/sites/nhtsa.gov/files/documents/812355\\_drugalcoholcrashrisk.pdf](https://www.nhtsa.gov/sites/nhtsa.gov/files/documents/812355_drugalcoholcrashrisk.pdf)

## NASID ORAL FLUID WORKING GROUP



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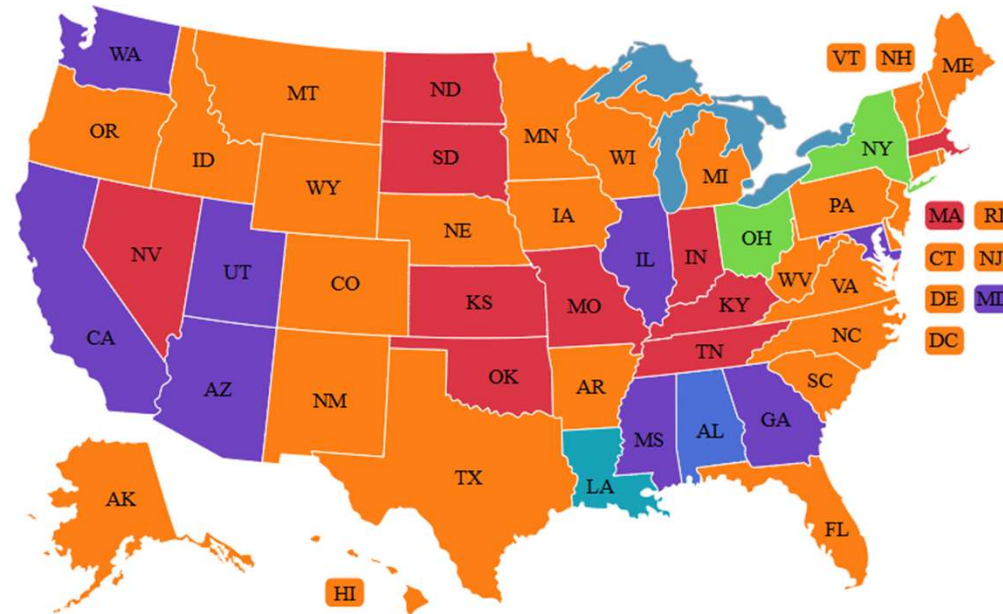
Responsibility.org



**Brian Swift**

NASID Spokesperson

# Oral Fluid Use by State



- Currently administering a statewide roadside oral fluid testing program
- Currently administering a jurisdictional roadside oral fluid testing program
- Currently administering a statewide evidential oral fluid testing program
- Currently administering statewide roadside and statewide evidential oral fluid testing programs
- Currently administering jurisdictional roadside and statewide evidential oral fluid testing programs
- No roadside or evidential testing program implemented
- No information provided

## RESOURCES:

## SCIENTIFIC LITERATURE:

- Society of Forensic Toxicologists (SOFT) Research and Studies
- AAA Toolkit
- NSA and Abbott Labs Oral Fluid Webinars
- NTSB Safety Research Report
- State Pilot Reports, Studies, and Program Resources
- Police Chief Magazine Oral Fluid Article
- MI and WI Oral Fluid Pilot Reports
- Resources from NTLC and NCSL



# NASID WORKGROUP:

## ORAL FLUID IMPLEMENTATION CHECKLIST

- -Program Planning
- -Statutory Authorization
- -Stakeholder Engagement
- -Program Model and Funding
- -Device Selection
- -Program Structure
- -Operator Training
- -Storage and SOP's
- -Data Collection Best Practices

Oral fluid screening is a popular method for detecting the presence of drugs and their metabolites from recent drug use due to the speed of sample collection and ease of use. This is especially true when testing in challenging environments such as the roadside, where collecting traditional specimens for preliminary screening is impractical.

Oral fluid samples are harder to adulterate as collections are easily observable, and there is no requirement for special facilities to collect the sample. This makes it a suitable specimen type for anyone collecting oral fluid, including, law enforcement agencies. In the context of an impaired driving investigation, oral fluid screening results can help establish probable cause for arrest for driving under the influence of drugs (DUID).

The use of OFFS is common in many countries, and its use continues to increase throughout the United States. To assist agencies that are interested in implementing a roadside oral fluid screening program, the National Alliance to Stop Impaired Driving (NASID) Oral Fluid Working Group has developed the following checklist to provide guidance on how to navigate this process. Best practices and lessons learned from states that have successfully implemented and expanded programs are incorporated.

## NASID WORKGROUP: ORAL FLUID DATA COLLECTION CHECKLIST

To assist agencies that are interested in implementing roadside oral fluid screening programs, the [National Alliance to Stop Impaired Driving \(NASID\)](#) Oral Fluid Workgroup developed an **implementation checklist** that provides guidance on how to navigate this process. Part of that checklist focuses on developing a plan for data collection and program evaluation. The following supplemental checklist provides stakeholders with a comprehensive list of data points that can be collected as part of that plan. Data collection and analysis should be done consistently to measure year-to-year progress and trends. To aid stakeholders in planning, the data points are categorized by type and the individual/agency most likely to be responsible for collecting and submitting the data is identified.

For states that have multi-agency programs, the following data can be examined at the agency level in addition to being compiled to produce statewide totals. The program authority (State OFFS Coordinator) can utilize the data to evaluate outcomes for the program as a whole while agencies can assess their respective OFFS practices.

| Type of data              | Data source                                                                                                                                                                                                                                                                                                  | Data points to collect                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|---------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| General OFFS program data | <p>Program authority (OFFS Coordinator) and law enforcement <a href="#">agencies</a></p> <p>*During the program planning phase, one agency/individual should be designated as the entity that is responsible for receiving OFFS data from participating law enforcement agencies, analyzing results, and</p> | <ul style="list-style-type: none"> <li><input type="checkbox"/> Date of OFFS program launch</li> <li><input type="checkbox"/> Number of participating law enforcement agencies</li> <li><input type="checkbox"/> Number of officers trained to administer OFFS (statewide and per agency)</li> <li><input type="checkbox"/> Number of OFFS devices in the field (can also breakdown by agency for multi-agency programs)</li> <li><input type="checkbox"/> Number of OFFS trainings offered per <u>year</u></li> <li><input type="checkbox"/> Number of new officers who receive OFFS training per <u>year</u></li> <li><input type="checkbox"/> Annual program funding <ul style="list-style-type: none"> <li>○ Consider identifying costs for the following</li> </ul> </li> </ul> |

# Thank you

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