



## CRITICAL DUI SYSTEM REFORMS: TOXICOLOGY



Increase standardization in forensic testing in motor vehicle crashes and impaired driving investigations.

### Call to Action

### Challenge/ Background

There currently are no agreed upon national minimum guidelines for toxicological investigations in motor vehicle crashes and drug-impaired driving cases. Even within states, there is a lack of standardization and uniformity in testing protocols and procedures from one laboratory to another. The result is significant limitations in impaired driving data collection and analysis. Failure to identify the presence of drugs in chemical samples can also have implications for the sentencing, supervision, and treatment of impaired drivers. Greater consistency in testing among laboratories would allow for statewide and national drug-impaired driving comparisons and could facilitate better decision-making within the criminal justice system.

In recent years, the traffic safety community and criminal justice system have been forced to address the growing threat of drug and polysubstance-impaired driving. Multiple factors including concerns about increases in driving under the influence of cannabis in states that have legalized the substance for medicinal or recreational purposes, the proliferation of impairing prescription and over-the-counter medications, as well as the spread of the opioid and heroin epidemic have brought increased attention to this issue. Unfortunately, it is difficult to accurately assess the magnitude of the drug-impaired driving problem due to significant data limitations that result from inconsistencies in testing.

In crashes where there is a fatally-injured driver, blood testing typically is performed if there is reason to suspect that the individual was under the influence of alcohol and/or drugs at the time of the crash. While testing rates for alcohol are generally high, drug testing rates vary dramatically from one jurisdiction to another. Further, rates for drug testing are far lower. In fact, in some states, less than 10% of fatally-injured drivers are tested for drugs ([Hedlund, 2017](#)). Subsequently, the scope and characteristics of the drug-impaired driving problem are uncertain. It is also highly likely that a large percentage of alcohol-impaired drivers are polysubstance-impaired drivers who simply avoid identification. Unfortunately, low drug testing rates in fatal crashes are only one aspect of the problem.

As outlined in the **arrest phase** of the system, testing suspected impaired drivers for the presence of drugs requires additional steps and is not as straightforward as testing suspects for the presence of alcohol. Each state has its own testing requirements outlined in statute (both implied consent and testing statutes) that define which methods are available to law enforcement. In drug-impaired driving cases, the most frequently used testing method is blood, as this is considered the “gold standard.” A handful of jurisdictions still rely on urine testing although this is not a preferred method of testing in DUI investigations due to the long detection window (i.e., only inactive metabolites are detected in urine and presence is not necessarily reflective of recent use). Several states have included additional language in their statutes that allow for the testing of oral fluid/saliva or “other bodily substances;” however, even in these states, oral fluid testing occurs only rarely. To learn what testing methods are approved in each state, refer to the [Responsibility.org Map](#).





## Challenge/ Background

In impaired driving cases where drug impairment is suspected, the law enforcement officer obtains a forensic sample from the suspect (either voluntarily or once a warrant is secured) and submits it to a forensic laboratory for evidential chemical analysis. The laboratory analyzes the sample and determines whether it is positive or negative for the presence of a panel of substances. Unlike with alcohol, there is currently no impairment standard for drugs (i.e., there is no identified concentration level of various substances within the blood that definitively correlates with impairment). Despite a lack of scientific evidence in this area, some states have opted to replicate the alcohol-impaired driving approach by passing [per se or zero tolerance \(ZT\) laws for drugs](#). In these jurisdictions, not only is the detection of drug presence important, it is also necessary to quantify the nanogram level of substances within the blood. In states with per se or ZT laws, a person is guilty of DUID if he/she tests positive over the specified amount (which may be any amount above zero). As a result, it is imperative that law enforcement obtain toxicological samples as proximal to the time of driving as possible to preserve the chemical evidence **(to learn more about ways that states can facilitate timely collection of blood samples, refer to the law enforcement reforms)**. Most drugs metabolize rapidly within the body and the longer it takes for an officer to collect a chemical sample, the lower drug nanogram levels will likely be due to dissipation in the suspect's bodily fluids over time. In states that lack per se standards for drugs, identifying whether a sample is positive for the presence of a drug is often all that is needed to move forward with a case as that positive test will be paired with an officer's observations of signs and symptoms of impairment to adjudicate the person for impaired driving.

While the evidential testing process is complicated in and of itself, significant issues arise on account of the lack of consistency in the scope of laboratory testing and analytical capabilities. Differences in practice are to be expected from one state to another but what many individuals fail to realize is that these differences are pervasive **within** states, as well. Forensic testing in DUID cases lacks consistency on a number of fronts including:

- Nature and composition of the state laboratory system;
- Testing matrices used (i.e., blood, urine, oral fluid);
- Drug panels used for testing in DUI investigations (which includes the list of substances commonly tested for as well as multiple compounds of the same drug – i.e., parent drug vs. active and inactive metabolites);
- Cut-off levels for each drug included in the test panel; and,
- Drug testing procedures in DUI cases where alcohol is detected above certain concentrations.





## Challenge/ Background

First, there is variance in the structure of state crime laboratory systems. Some states have multiple government-run labs where a state agency assumes oversight and responsibility for testing whereas other states outsource analyses to privately run labs. Some states rely on a combination of government crime labs and private labs to handle analyses. In some cases, chemical samples are sent to private labs when the state labs are at capacity and there is significant backlog in processing and analysis. The backlog issue is particularly concerning as some jurisdictions may wait in excess of six months for blood results to be returned from the lab. The unfortunate consequence of these delays is that impaired driving charges may be dismissed due to lack of evidence or these cases proceed to trial without chemical evidence, thereby making it more difficult to effectively prosecute defendants. In drug-impaired driving cases the chemical sample is needed to prove one of the central elements of the offense (i.e., the defendant was under the influence of at least one drug as evidenced by a positive test result showing presence in the body) and absent compelling evidence such as a DRE drug evaluation, prosecutors frequently rely on the testimony of an officer who may or may not have specialized training to prove impairment in court.

In addition to differences in laboratory systems, individual labs vary in their analytical capabilities and procedures. As previously stated, the majority of laboratories rely on blood as the preferred testing matrix in DUI cases although a few states are bound by statute that still requires urine testing in misdemeanor impaired driving investigations (e.g., Florida, Oregon). Other jurisdictions have also begun to explore the feasibility of using evidential oral fluid testing as opposed to blood as its collection is easier, less invasive, and can be done proximal to the time of driving. At present, more states have explored the use of oral fluid testing in a screening as opposed to evidential capacity.

While testing matrices tend to be at least somewhat consistent, standard drug panels are often not mandated and the substances that are included for testing in DUI cases may vary significantly from one lab to another. Labs that have more resources at their disposal and more sophisticated instrumentation can test for a wider array of substances. On the other end of the spectrum, labs with less advanced sample preparation methods may be limited in their scope of testing. The end result is that more drug-positive samples are likely to be identified by labs that have the ability to widen the net by testing for a larger number of impairing substances.

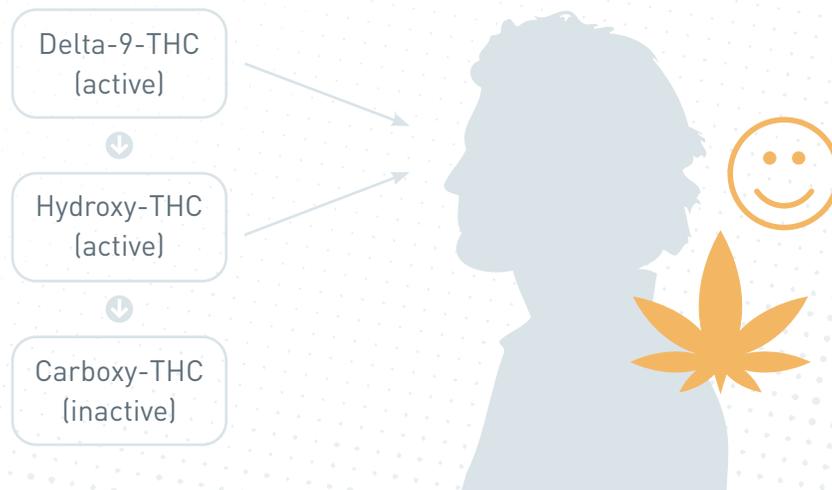
In the context of this discussion, it is also important to know whether a lab tests for the presence of multiple compounds of the same drug including active and inactive metabolites or if a positive result can only be derived if the parent drug is detected. Theoretically, two labs could analyze the same blood sample and arrive at different conclusions as to whether it is positive or negative for the presence of a specific drug based on whether metabolites are included in the test panel. Let's take cannabis as an example (refer to the below figure). One lab might test for the presence of the parent drug only which, in this case, is delta-9-tetrahydrocannabinol or 'active THC.' Another lab might test for additional compounds that appear in the blood as the active THC is broken down following ingestion (during metabolization, the body typically produces hydroxy-THC, an active metabolite, which is further metabolized into carboxy-THC, an inactive metabolite). Labs that test for metabolites are more likely to identify drug-positive samples because the detection window is longer for these compounds. Within the context of impaired driving, it may be important to identify metabolites to prove consumption. Moreover, some zero tolerance per se laws apply to both the parent drug and metabolites which means that in those jurisdictions, labs should absolutely be testing for additional compounds.





## Challenge/ Background

Figure: The metabolization of cannabis



In addition to determining what compounds of specific drugs should be tested for it is equally important to use a panel that reflects current and common drugs of abuse. Drug purveyors often develop new unscheduled drugs to avoid prosecution for trafficking and/or to “beat” drug tests. Differences in testing panels become particularly significant when new drugs are introduced into the “black market.” With the continuous development of novel and synthetic/designer drugs and the common practice of creating analogs of existing substances once a drug is scheduled as a controlled substance, labs must remain diligent in monitoring drug trends and adjust testing panels accordingly. Unfortunately, not all labs have the resources and funding to be able to make these modifications quickly and if the latest lab instrumentation has yet to be purchased, the detection of these new substances might not be possible. Again, labs that broaden the scope of testing are more likely to identify a higher number of drug-positive cases.

Another common difference among labs are the cut-off levels used to determine whether a sample is positive (limit of detection) and/or to quantify the drugs they identify (limit of quantification). With blood testing, the cut-off is expressed in nanograms (ng) per milliliter (mL) and only when a drug or its metabolite(s) is identified at a concentration that is either equal to or exceeds the laboratory’s cut-off will the sample be reported as positive. Therefore, a negative test result does not automatically mean that a person did not ingest a certain drug. Rather, a negative finding can result from the substance being excluded from the test panel or the concentration of that drug in the individual’s blood was below the administrative cut-off level. In selecting the appropriate cut-off level, labs must balance several factors. If cut-off levels are set too high, many impaired drivers might avoid detection (i.e., false negatives). Conversely, if the cut-off level is too low, the net might be widened such that individuals who used a substance days ago and were not under the influence at the time of driving might be prosecuted for the offense of DUI (i.e., false positive). The establishment and application of minimum guidelines for both drug panels and cut-off levels would lead to greater consistency and fairness.





## Strategies to Implement Solutions

To increase standardization, both Federal and state action is required. However, agencies should not wait for national leadership to address this issue as steps can be taken at the state level to begin to increase uniformity in practice. States that begin the process of increasing consistency in testing practices will ultimately be better positioned to either adopt or adapt to national guidelines if/when these are developed or supported by the National Highway Traffic Safety Administration (NHTSA). Before embarking on independent effort, state agencies should examine guidelines that are already available and assess whether these should be implemented so as not to re-invent the wheel or expend unnecessary resources.

**National level.** In recent years, NHTSA has convened experts in the field of toxicology to identify strategies to increase the level of drug testing of drivers involved in crashes. From a data perspective, increasing the level of consistency in testing practices can improve the quality of drug data within the Fatality Analysis Reporting System (FARS). At present, limitations in testing and subsequent reporting deficiencies are well known. The administration has [cautioned against the use](#) of FARS drug statistics for making comparisons among jurisdictions and identifying trends over time. Greater uniformity in testing and mandatory reporting would improve the overall quality and quantity of drug data and would increase the level of confidence in analyses performed using FARS. As such, NHTSA has supported efforts to facilitate standardization although the agency has stopped short of assuming a leadership role in this area. Aside from supporting existing efforts by other organizations, NHTSA has yet to pursue the development of testing guidelines or push for the mandatory adoption of these practices. It remains to be seen whether NHTSA will be tasked with this type of initiative as part of the next highway safety re-authorization. For more information about Federal recommendations and proposed FAST Act provisions, please refer to the Federal policy checklist.

The organization that has demonstrated significant leadership in establishing standardized testing guidelines is the [National Safety Council](#) (NSC). The Alcohol, Drugs, and Impairment Division of the organization first put forth recommendations in 2007. The methodology utilized for the development of these recommendations relied primarily on surveying a large number of labs in both Canada and the United States that reported conducting analysis in impaired driving cases. These labs were asked to provide information about their testing practices, common drugs detected in DUI cases, testing matrices, instrumentation, etc. A group of experts consisting primarily of forensic toxicologists reviewed available epidemiological research on drugs that adversely affect driving performance as well as lab and arrest data to identify the substances that should be included as part of any standard drug test panel. After achieving consensus regarding which analytes should be included, appropriate cutoff levels in blood and urine were identified.

Since the release of these recommendations in 2007, NSC has continued to survey labs and convene experts to determine whether updates are necessary. As mentioned previously, drug trends are constantly evolving and there is a large market for synthetic and designer drugs.





## Strategies to Implement Solutions

While it is not possible for labs to test for every possible analyte, new compounds that appear with a high degree of frequency in multiple regions should be considered for inclusion in standard test batteries. To assist labs in prioritizing testing, modified recommendations were issued in 2013. As part of this revision, NSC created two tiers of testing for labs to consider. Tier I is comprised of analytes that are most commonly detected in cases involving motor vehicle crashes or suspected impaired driving; these analytes can also be detected and confirmed using common instrumentation. Tier II is comprised of less common analytes which either appear infrequently in DUI cases or tend to be more regional in nature; these analytes might require more advanced/sophisticated instrumentation to detect and confirm in samples.

The NSC testing recommendations remain a guideline for labs to follow. Unfortunately, absent a mandate, labs are not required to adhere to these practices. During the last update process, surveys were once again administered to labs. In addition to collecting information about current testing procedures and drug trends, the respondents were also asked about whether they adhered to the 2013 recommendations. Only 17% of responding laboratories indicated that they were compliant with the 2013 recommendations. Perhaps more promising was the revelation that approximately 52% of the labs surveyed indicated partial compliance and reported motivation to work towards full compliance (Logan et al., 2017). [The most recent iteration of NSC's recommendations](#) are from 2017. Revisions were made to both Tier I and Tier II compounds with certain analytes transitioning from one category to the other based on new research findings and/or data. The expert group tasked with reviewing the recommendations also expanded the testing matrices to include oral fluid in recognition of the increased interest in the use of this method. At present, screening and confirmation cut-off levels are available for Tier I and II substances in blood, urine, and oral fluid as appropriate. Another update to the recommendations is planned in 2020.

**State level.** Within states, the feasibility of establishing minimum guidelines should be explored. To facilitate this process, leadership is needed, and one agency should assume responsibility for this initiative. This type of initiative should occur in stages which includes a review of existing state practices through the collection and synthesis of data, developing and reviewing proposed guidelines, identifying the level of appropriations needed to facilitate the adoption of minimum testing guidelines statewide, and working towards statewide adoption of the guidelines.

### Review of Existing State Practices:

- Educate relevant stakeholders about the importance of standardized testing. The benefits of this practice should be highlighted to attain buy-in and support for the undertaking. These include:
  - o Improved (i.e., more complete/accurate) fatality and serious-injury crash data which will allow states to better understand the magnitude and characteristics of the impaired driving problem and facilitate strategic policymaking and resource allocation;
  - o Improved arrest data which will allow states to track rates of alcohol, drug, and polysubstance-impaired driving with greater accuracy;
  - o Increased consistency in lab protocols which will likely lead to identification of more drug and polysubstance-impaired drivers who would otherwise be missed; and,





## Strategies to Implement Solutions

- o Informed decision-making within the criminal justice system as prosecutors, judges, probation officers, and treatment practitioners will have more information about the nature of substance use in each DUI case.
- Designate one agency with the authority or mandate to collect and synthesize data from state laboratories and convene a working group of key stakeholders to initiate discussions regarding the standardization of testing in motor vehicle crashes and DUI investigations.
- Identify every laboratory within the state that analyzes chemical samples in motor vehicle crash or DUI cases. To facilitate this process, the lead agency should begin its outreach with state crime labs and then branch out to private labs. Law enforcement agencies should be queried to determine where they send samples for screening and confirmation testing in impaired driving investigations. A list should be generated and reviewed by multiple parties to ensure that it is exhaustive.
- Contact each lab and request specific information regarding testing practices. An interview guide should be used to ensure consistent information is collected. Areas of inquiry should include, but are not limited to, the following:
  - o Process(es) commonly used to analyze samples in these cases including both screening and confirmation testing;
  - o Testing matrices used in these cases;
  - o Instrumentation commonly utilized as well as the lab's overall analytical capabilities;
  - o List of analytes that the lab typically screens for in these cases;
  - o Complete list of analytes that the lab has the capabilities to test;
  - o Cut-off levels for each analyte and corresponding testing matrices.
- Synthesize results and identify inconsistencies among state labs. Determine what the minimum analytical capabilities are based on the information provided.

### Develop and Review Proposed Minimum Testing Guidelines:

- Convene key stakeholders including representatives from each laboratory, the agency that has oversight/responsibility for certifying and/or overseeing laboratories, forensic toxicologists, law enforcement, prosecutors, the highway safety office or its equivalent, etc. to discuss whether the establishment of minimum state guidelines is feasible.
- Review available testing recommendations such as those advanced by the National Safety Council (NSC). Determine whether state laboratories could be compliant with these recommendations or, at a minimum, compliant with Tier I testing.





## Strategies to Implement Solutions

- Determine the scope of changes in testing processes and protocols that are needed to achieve compliance with the recommendations. Obtain an estimate from each laboratory about how long it would take to implement these changes.
- If the recommendations cannot be met, discuss the feasibility of establishing state-specific minimum guidelines. To facilitate this process, the stakeholder work group should review the work that has already been completed in the field and then determine if additional analytes should be added based on state drug trends.
- If the work group opts to start from scratch in developing standardized testing, the following should be taken into consideration:
  - o Findings from epidemiological research that identifies drugs that are known to have impairing effects, associated crash risk, and frequently appear in the systems of fatally-injured or arrested drivers.
  - o Data from law enforcement agencies about jurisdictional drug use trends and drug seizures.
  - o Information from community corrections officials about the drugs that are frequently identified in client drug screens, particularly DUI clients.
  - o Determine which compounds in addition to parent drugs should be included in the test panel. This decision may be influenced by state statute (i.e., if a state has per se statutes that include specific metabolites, it is necessary to test for these additional analytes).
- o This list should be reviewed and revised periodically to ensure that testing in DUI cases captures new and emerging drug use trends. If modifications are made, all labs must be able to adjust their respective testing procedures.
- o Identify appropriate cut-off levels for each of the analytes included in the proposed drug panel. These cut-offs should be based in scientific literature and take into consideration the analytical capabilities of each lab.
- Engage in a peer review process and obtain feedback from experts in the field, particularly forensic toxicologists, about the proposed guidelines. Revise as necessary.
- Re-convene the work group to review the guidelines for a final time to reach consensus.
- Each lab should conduct an audit of their existing practices and determine what changes to current processes and protocols are necessary and the resources required to complete audits, training, etc. This review will be instrumental in determining the level of funding required to comply with new guidelines.





## Strategies to Implement Solutions

### Appropriations:

Additional resources and funding will likely be needed for some labs to revise existing processes and protocols in motor vehicle crashes and impaired driving investigations. To adopt a new testing protocol in these cases, labs must develop and validate any new methods as well as the testing panel. Also, there may be instances where upgrades in instrumentation or staffing is required to facilitate this process (see the other suggested **toxicology reform** to learn more about these issues). As such, part of the planning for a standardized testing initiative must include an examination of the appropriations that will be required to complete necessary upgrades or changes. Once guidelines are developed, each lab within the state should be queried to determine the level of investment necessary to achieve compliance. As the guidelines are meant to serve as a minimum standard for testing, most labs should be able to adopt the proposed guidelines. More sophisticated labs may not require a high level of resources whereas other labs might need to implement significant changes or upgrade instrumentation which will be far more costly.

Any state that is considering the creation of minimum testing guidelines should determine the total level of funding required to facilitate implementation in every lab. The state legislature should be educated about the effort and strongly encouraged to make appropriations as part of the budget. The case can be made that investment in state labs will not only produce better data but will also lead to better case outcomes and processing of offenders through the justice system. Members of the work group who are able to advocate (the convening agency may not be able to make recommendations to legislators depending on state laws) should take the lead in meeting with policymakers.

Other potential funding mechanisms should also be identified. Some grant funding options may include the state highway safety office, department of justice, department of public safety, etc. It may be easier for state crime labs to obtain grant funding than private laboratories. The latter may be put in a position where investment is needed to maintain the same standards as state labs which could result in delays in transitioning to new testing guidelines.

### Implementation:

- Each lab that agrees to adopt the minimum testing guidelines should provide an estimated timeframe for implementation. Again, if either the NSC recommendations are adopted or a similar tiered approach is employed, labs should endeavor to achieve compliance with the priority tier.
- Each lab should provide an annual progress update and provide revised timelines regarding the adoption of the minimum testing guidelines. As part of this process, every lab should also indicate what level of resources/support is needed to achieve compliance.
- The expert work group should convene regularly to identify any issues or challenges and determine how to overcome these barriers to implementation.





## Strategies to Implement Solutions

- Once several labs have made sufficient progress in adopting the standardization guidelines, states should require the use of the drug panel to test all fatally-injured drivers for the presence of both alcohol and drugs and consistently report this data to NHTSA's Fatality Analysis Reporting System (FARS) to improve national impaired driving data. All surviving drivers in motor vehicle crashes should also be tested for both alcohol and drugs and states should work towards mandatory testing in these cases, as well.
- Ideally, chemical samples in all DUI cases would be tested for the presence of both alcohol and drugs using the agreed upon guidelines. However, in some states this is not feasible given existing resources. As states move forward with standardization, achieving this level of testing should be a future goal as it will greatly improve impaired driving data and will also be valuable to criminal justice practitioners who might otherwise fail to identify drug issues among impaired drivers.
- Each year, additional appropriations requests should be made to the legislature to expand the capabilities and capacity of labs.
- The work group should aim to update the minimum testing guidelines as necessary. This should occur within five years and the same sources of data should be referred to as part of this revision process (e.g., scientific literature, law enforcement agencies, etc.).

The development and implementation of standardized drug testing in impaired driving cases is a lengthy process and to achieve statewide compliance by all laboratories is a lofty goal that may never be actualized. However, working towards a greater degree of uniformity is important and each state should strongly consider initiating this process.

## Stakeholders

As noted, one state agency should take the lead role in organizing the standardization initiative. The agency that is responsible for the certification and oversight of all state laboratories may be best positioned to do the outreach required to develop standards. Other parties that should be involved in this effort are laboratory administrators and/or directors who are responsible for implementing lab protocols and processes, forensic toxicologists who perform the actual testing, other relevant lab personnel, representative from law enforcement agencies, state DRE coordinator, highway safety office officials, and representative from other state agencies as deemed necessary. Throughout the process, policymakers should be kept apprised of developments. Their involvement will be critical as appropriations will be needed to achieve the goal of establishing adherence to minimum guidelines throughout the state laboratory network.





## Legislative/ Policy changes

To adhere to any new minimum drug testing guidelines, labs will need to modify existing policies and protocols. Once an audit is complete, modifications can be prioritized. The implementation of new testing panels will require validation of laboratory methods which is likely to require additional resources and can take months to finish. This process will be different in each laboratory.

Legislative changes may not be required although the state impaired driving testing statute should be reviewed to ensure that all testing matrices contained with the proposed minimum guidelines are permitted. For some states this might require the broadening of the statute to include oral fluid or saliva testing. Alternatively, state might consider revising the statutory language to include encompassing terms like 'other bodily substances' as this could accommodate future technological/testing advancements.

The most significant legislative need to achieve this reform is the allocation of funds to increase the level of laboratory resources. Invariably, some labs will need to invest in upgrading instrumentation and testing capabilities which is a costly endeavor. By offsetting some of these costs through appropriations in the state budget, a larger number of labs might be able to implement the proposed testing guidelines.

## Barriers

Lack of resources and funding is the most significant barrier to the implementation of standardized drug testing in motor vehicle crashes and impaired driving cases. Strategies to address this challenge are explored in the previous sections. However, the widespread recognition of limited laboratory capacity presents another underlying challenge - resistance to increasing the rate of drug testing in these cases, especially if alcohol is present.

In an ideal scenario, every fatally-injured driver and every driver arrested for DUI would be tested for the presence of both alcohol and drugs. Unfortunately, due to resource limitations this practice is viewed as cost prohibitive. While it may be more feasible to test a greater percentage of fatally-injured drivers for drugs, increasing testing among arrested drivers remains a goal that is unlikely to be realized. As discussed in the arrest portion of the roadmap, impaired driving remains the only crime where the investigation stops after minimal evidence is obtained. In other words, if an individual provides a breath sample and his/her BAC is above the illegal limit, the investigation typically ends, and the person is arrested and prosecuted for per se DUI. It is only when alcohol is ruled out as the cause of impairment or if the impairment is not consistent with the driver's BAC level that the use of drugs is explored.

Laboratories in many states are already at capacity and experiencing backlog. An influx of blood samples in DUI cases could lead to even lengthier delays in analyses which might force prosecutors to dismiss charges or proceed to trial without chemical evidence which affects the strength of the case. But the time needed to perform analyses is not the only factor to consider. Most jurisdictions forego drug testing in DUI cases where people test above the illegal limit for alcohol because it is expensive. For example, in Colorado drug analysis in DUI cases costs a minimum of \$300. In other states, the costs can be even higher. In fact, some states simply cannot or are unwilling to assume the burden of drug testing costs and have instituted lab policies that prohibit testing chemical samples for the presence of drugs when a BAC is above .08 or .10 unless a request for additional testing is specifically made and is justified. In these instances, a decision to pursue drug testing is made by the lab on a case-by-case basis.





## Barriers

If drug testing in DUI cases where alcohol is identified creates system burden (from a time, resource, and cost perspective) is it ultimately worth pursuing? The answer is, “yes.” The failure to test people who test above the illegal limit for alcohol means that many polysubstance-impaired drivers escape detection and the magnitude of that problem is not accurately captured. More importantly, failure to identify drug use can hinder the identification of drug use disorders. Practitioners then miss an opportunity to make informed decisions downstream in the criminal justice process. It is of vital importance for practitioners, particularly in community corrections and treatment, to have as much information as possible to make the most appropriate supervision and treatment decisions. The failure to test impaired drivers for drugs misses an opportunity to identify and address an underlying cause of impaired driving behavior and could result in recidivism.

## Reform in Action

The [Orange County Crime Lab](#) has taken a comprehensive approach to testing in impaired driving cases which has led to the collection of county-wide data. The practices employed at the lab can serve as a model for other jurisdictions that are considering expanding drug testing in traffic-related cases. Using sophisticated instrumentation, the crime lab has implemented a protocol where every single blood sample in DUI cases is tested for the presence of drugs. This includes samples that have BAC levels above the illegal limit. When samples arrive at the lab analyses are performed to identify alcohol, inhalants, and seven different classifications of drugs. In total, the lab reports drug concentrations in blood for 72 different compounds. Through this expanded testing, the lab has been able to collect robust data on the magnitude and characteristics of both the drug and polysubstance-impaired driving problem in Orange County. The lab is one of only a handful that has pursued this level of testing and, as such, can inform scientific literature about the prevalence of different types of drugs among fatally injured drivers and suspects in DUI cases. In [Congressional testimony](#), Assistant Director Jennifer Harmon noted that the crime lab has found that in Orange County approximately 45% of impaired drivers test positive for the presence of at least one drug. Polysubstance-impaired driving is also a significant problem as 29% of drivers with a BAC above .08 test positive for at least one drug. Moreover, for DUI suspects that do not test positive for alcohol, approximately 40% are found to have three or more drugs in their system. Among fatally injured drivers, 56% test positive for at least one drug with the majority testing positive for alcohol or THC.

The success of the lab expands beyond merely testing as there is a heavy emphasis placed on cross-training with other practitioners including law enforcement, particularly drug recognition experts, and prosecutors. Forensic toxicologists learn from officers in the field and vice versa about observed impairments, drug concentrations, substance interaction, and emerging drug trends. Information-sharing among these entities ensures that practitioners maintain current knowledge about the nature of the impaired driving problem within the county. Further, training with prosecutors has led to improved testimony and outcomes in court. The Orange County District Attorney’s Office has a **vertical prosecution program** for DUID cases and a conviction rate of over 95%.





## Reform in Action

In Orange County, the crime lab has faced many of the challenges that are common to forensic testing entities. Namely, increases in the volume of samples without corresponding increases in the level of resources needed to handle this influx. In her testimony, Jennifer Harmon noted that over the previous eight years, the lab experienced a 60% increase in the number of examinations performed on toxicology samples and a 100% increase in the number of drug-impaired driving cases that were processed. During this timeframe, there was also a 25% reduction in the level of lab staffing. Despite these capacity issues, the county remains committed to conducting high quality and comprehensive testing in all cases which includes performing drug analyses in samples where alcohol is present. Today, the lab is in the process of expanding its testing protocol. Plans are underway to begin testing blood samples in every traffic-related case (including both deceased and surviving drivers) for the presence of more than 300 drugs. This includes a wide array of illicit drugs, synthetic and designer drugs, prescription medications, and over-the-counter medications with known impairing effects. This broad testing will serve to further enhance the quality of the county-wide data and allow for trend analyses. Other states should look to this example to inform practice.

## Resources

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[\*Recommendations for Toxicological Investigation of Drug-Impaired Driving and Motor Vehicle Fatalities \(Logan et al., 2013\)\*](#)

[\*Recommendations for Toxicological Investigation of Drug-Impaired Driving and Motor Vehicle Fatalities – 2017 Update \(Logan et al., 2018\)\*](#)

[\*Department of Transportation Drug and Alcohol Testing Resources\*](#)

[\*Society of Forensic Toxicologists\*](#)

[\*Congressional testimony submitted to the House Subcommittee on Digital Commerce and Consumer Protection by Jennifer Harmon of the Orange County Crime Lab \(2018\)\*](#)





## CRITICAL DUI SYSTEM REFORMS: TOXICOLOGY



Increase forensic laboratory funding to improve capacity and testing rates.

### Call to Action

### Challenge/ Background

Many state laboratories lack sufficient funding to keep up with current testing demands. With increases in drug and polysubstance-impaired driving, labs struggle to perform analyses in a timely fashion which leads to backlog, court continuances, and unfavorable case outcomes. Months-long delays in processing at state-run labs could lead to the outsourcing of DUI sample analyses to private labs at even greater cost to the state. To ensure that state labs continue to function in a manner that allows for the efficient and reliable identification of drug-impaired drivers, appropriations are needed to hire additional toxicologists to perform analytical tasks and testify in court, purchase sophisticated instrumentation to enhance existing analytical capabilities, and strengthen testing procedures and/or protocols. Failure to do so could lead to frustration on the part of law enforcement and prosecutors, unacceptably long sample processing times, DUI charge dismissal or acquittal, and failure to adhere to best practices and/or accreditation requirements.

At a time when drug-impaired driving has become a national traffic safety priority, many jurisdictions have failed to allocate sufficient funding to facilitate appropriate drug testing. As detailed in the discussion about **standardizing testing**, there is great variance in the way that labs are run and there is a general lack of uniformity among labs within a state let alone from one state to another.

The biggest issue in DUI cases is the turnaround time for analyses. In high volume labs, it could take months to process blood samples in DUI cases which has significant implications for adjudication. Most prosecutors would agree that the strongest piece of evidence that can be introduced at trial is breath/blood test results. Being able to prove that the defendant tested positive for alcohol and/or drugs is imperative for building the impaired driving case and proving guilt beyond a reasonable doubt. Also, failure to obtain chemical results at the pre-trial phase limits the ability of the judge to make informed decisions as it relates to release conditions. If a judge is unaware that the individual is a drug or polysubstance user, then he/she may fail to order drug testing as a monitoring condition. Further, clinicians addressing the defendant's substance use disorder(s) may only focus on known alcohol misuse. Moreover, if the impaired driving case is weak without the positive drug test, experienced defense counsel may request a **preliminary hearing** and require the prosecution to establish probable cause in court. If the prosecution is unable to convince the judge that there is ample evidence to advance the case, the impaired driving charges could be dismissed.

Labs that lack resources not only face the prospect of being unable to meet testing demands. Other chief concerns are not having enough toxicologists available to provide testimony in court or alternatively, having the bulk of toxicologist time spent on the witness stand instead of in the lab performing analyses. The prosecution typically calls a forensic toxicologist as an expert witness in drug-impaired driving cases. A forensic toxicologist is commonly classified as an expert on account of their scientific training, depth of knowledge, and experience in performing complex chemical tests.





## Challenge/ Background

A toxicologist can testify about a number of issues including the strengths and limitations of various testing matrices and analytical approaches, the proper procedures and methods for performing different chemical analyses, and the impairing effects of various substances or combinations of substances. While a toxicologist may not be able to definitively assert that a defendant was impaired, he/she can offer their interpretation of the chemical test results and discuss how various alcohol and/or drug concentrations would affect a person and impede their ability to safely operate a motor vehicle.

The confidence that a toxicologist has in the accuracy of testing likely depends on the methods used. Over the years, the preferred analytical approaches utilized in drug testing have changed. Labs perform initial screening on chemical samples and then rely on more sophisticated methods for confirmation testing. Rapid screening processes are relatively easy to automate which reduces the workload of laboratory personnel. [Immunoassays](#) are popular tools because they are generally inexpensive, relatively easy to use, and provide sensitive results specific to certain drug classes. Confirmation testing, however, is a far more complex process that relies on different analytical processes to not only identify the presence of different drugs but also quantify the amount present in the sample. More advanced instrumentation can identify a greater number of analytes as there is a higher degree of specificity and accuracy. Of course, newer and more advanced technology carries substantial costs as the instrumentation required to perform analyses can run hundreds of thousands of dollars.

While these enhanced techniques confer a number of advantages, labs must complete a significant amount of legwork before implementation is possible. For example, new protocols and procedures for chemical analysis must be developed, tested, and refined. Moreover, staff must be trained to use the new technology and become familiar with the updated protocols. These processes could take months to complete.

To ensure that labs operate as efficiently and effectively as possible, states should be able to allocate highway safety or other grant funding to address any of the aforementioned capacity issues. If labs need more toxicologists or personnel, better instrumentation, training, or new protocols and procedures, the funds should be given in such a way that affords the labs the ability to address the most pressing issues. The ultimate goal should be to increase both the level and quality of testing performed in DUI cases.

## Strategies to Implement Solutions

Each state should invest in building lab capacity which includes adequate staffing and instrumentation to handle potential influxes in DUI drug testing. To ensure a high level of confidence in the quality and accuracy of testing, labs should consider establishing standard protocols which could include **uniform drug testing in DUI investigations** (i.e., minimum guidelines for drug panels, cut-off levels, and testing in alcohol-positive cases). All labs should also adhere to state accreditation requirements and seek additional certification or complete internal procedural audits as appropriate.





## Strategies to Implement Solutions

To build state lab capacity, the following steps should be considered:

- If the state has an impaired driving task force, ensure that there is representation from state labs among its membership. Toxicologists play an integral role within the DUI system and the efficient and comprehensive analysis of chemical samples is imperative in building strong impaired driving cases, identifying offender treatment needs, and understanding the magnitude and characteristics of the impaired driving problem within the state. As such, barriers that hinder timely analyses or limitations in the scope of drug testing should be identified. Stakeholders should collaborate to develop possible solutions to each of these issues.
- Survey state labs to identify specific challenges and the level of resources needed to increase testing rates in motor vehicle crash and DUI investigations. There may be different needs depending on the laboratory, and each lab should consider whether upgrades are required in the following areas:
  - o Limited staffing – both laboratory support personnel and toxicologists;
  - o Basic instrumentation – the use of less sophisticated equipment limits the scope of analyses that can be performed;
  - o Limited testing matrices – some labs may not have the capability to analyze oral fluid samples and can only process blood or urine samples;
  - o Influx of chemical samples – unanticipated growth in the number of samples submitted for analyses can lead to backlog and delays in processing;
  - o Changes in testing protocols – whenever updates are made to processes, the labs should re-validate methods and train all staff to adhere to new protocols; this can take a significant amount of time depending on the extent of the changes.
- Convene representatives from each state-run lab and identify the most pressing need at each facility. Work collaboratively to develop a plan to address these concerns and allocate an appropriate level of funding/resources to accomplish the identified goals.
- Audit existing lab capabilities and determine whether existing techniques are sufficient or whether investment should be made in new techniques and instrumentation.
  - o If the analytical capabilities do need to be increased, how long will this take to implement?
  - o What protocols will need to be modified and approved before the lab can begin processing samples?
- Determine the average amount of time it takes each lab to analyze chemical samples and report the results in DUI cases. If the turnaround time is too long, assess the level of resources required to reduce this timeframe to an acceptable/agreed upon number of days.





## Strategies to Implement Solutions

- Analyze impaired driving arrest trends and determine whether the burden on labs is likely to increase. If the state is interested in expanding drug testing, projections regarding the potential impact on labs should be developed.
- Explore the possibility of establishing statewide minimum guidelines for drug testing in DUI investigations. If states develop these guidelines, request that labs provide an assessment of whether they can achieve compliance. If compliance is not feasible, labs should identify the resources required to facilitate adherence to the guidelines.
- Determine best practices and which testing techniques should be utilized in different scenarios.
  - o Can the lab use a combination of traditional and newer techniques?
  - o Under what circumstances is more advanced testing required?
- Determine how long it will take state labs to fully integrate and rely upon the most advanced testing methods.
- Identify the amount of funds needed to upgrade labs to handle increases in testing brought about by cannabis legalization. In states with legalized cannabis, convene policymakers to study the issue and determine whether a specified amount of cannabis tax revenue can be allocated each year to support lab operations, increases in testing, and other associated costs.
- Identify potential revenue streams to provide additional funding to laboratories. This could include traffic safety, criminal justice, and public health grants.
- For states that are considering the legalization of recreational cannabis, consideration should be given to the potential impact that legalization could have on the volume of chemical samples sent to labs for analyses in DUI cases. State legislatures frequently form work groups to examine the potential implications of legalization. One foreseeable outcome is an increase in drug-impaired driving. While states have begun to set aside funds for **more law enforcement training**, consideration should also be given to increasing lab capacity as more chemical samples may require analysis for drugs. Labs should identify the potential impact that cannabis legalization could have on the volume of chemical samples sent to them for analyses in DUI cases. An estimate of the magnitude of the increase in sample submissions along with associated increases in workload should be identified to determine the level of additional staff needed to prevent backlog and delays in processing. Allocation of a specified amount should be provided to state labs annually to increase personnel and reduce potential backlog that is likely to result from an increase in DUID cases.





## Stakeholders

In identifying strategies to build lab capacity and increase available resources, laboratory administrators/directors, forensic toxicologists, and personnel should be involved in discussions. The state highway safety office is one potential source of grant funding and should be kept apprised of laboratory needs. If there is significant backlog in analyses in DUI cases, there is potential for negative case outcomes which is strong justification for investing in staffing and instrumentation. Policymakers should also be informed about these challenges as appropriations can be made to laboratories within the state budget. If cannabis legalization is being considered, toxicologists should have an audience with the legislators assigned to legalization work groups.

## Barriers

An issue that has consistently made it difficult for states to purchase new lab equipment is the [Buy American Act](#) regulations that prevent Federal highway dollars from being spent on products/materials that are produced outside of the United States. Unfortunately, some desired lab equipment has components manufactured in foreign countries which disqualifies state highway safety offices from providing labs with grant funds to purchase the instrumentation. This problem has been highlighted in several jurisdictions including Washington State.

Another challenge that labs encounter, and toxicologists often have to deal with in court, is an increased level of scrutiny regarding the accuracy of testing. Due in large part to the 'CSI effect,' members of the public have come to have very high expectations about the capabilities of forensic techniques and expect test results to definitively prove that defendant guilt. In impaired driving cases, particularly when drug tests are involved, it is difficult if not impossible to prove impairment based on test results alone. To ensure that the chemical results are not called into question, all labs should be subject to state accreditation requirements and lab directors should consider identifying ways to continue to improve the quality of practice. Moreover, state highway safety offices should provide grant funding to cross-train toxicologists with law enforcement and prosecutors to prepare them for providing effective testimony in court which includes anticipating common defense tactics and strategies. To strengthen the impact of forensic testimony, toxicologists should become skilled in making compelling cases to juries. This involves being able to explain complex toxicology practices and results to jurors in a way that is easy to digest and establishes a link between drug presence, drug concentrations, and observed impairment.





### Caveats

One important consideration is ensuring that there is communication between public and private labs if states rely on both entities to perform analyses in DUI cases. A cautionary tale from Colorado is instructive in revealing what could happen if a state makes decisions without first consulting with the private laboratories they utilize. In 2019, the Colorado Bureau of Investigation (CBI) sought to improve data collection in impaired driving cases by encouraging law enforcement agencies to submit blood samples to the state lab for drug testing in cases where this analysis would typically be avoided due to costs (as previously mentioned, the average cost of drug testing performed by private labs in Colorado is in excess of \$300). CBI offered to conduct the drug testing for free to incentivize law enforcement to submit the samples. The unintended consequence of this decision was that CBI took a significant amount of business away from a private lab that was responsible for conducting chemical analyses in thousands of DUI cases annually. The lost revenue led to the private lab's closure which means that all of the processing performed at this lab must now be conducted elsewhere. The overarching concern is that CBI will be unable to handle this increase in the volume of samples and significant delays in testing will result (the current turnaround for drug testing in DUI case is 25 days but this is projected to increase to an average of 45-60 days) which could lead to the dismissal of charges or some cases proceeding to trial without chemical evidence. There are also concerns that the state lab will not have enough personnel available to provide expert testimony in court when it is needed.

### Innovation in Action

Washington State has consistently invested in building and expanding lab capacity for forensic testing. Following the passage of Initiative 502 which legalized recreational cannabis, there was recognition that likely increases in drug-impaired driving cases would require greater investment in state labs to reduce potential backlog in sample processing. As predicted, the Washington State Patrol (WSP) Toxicology Laboratory experienced a 63% increase in suspected impaired driving cases between 2012 and 2016. The percentage of these cases that tested positive for THC increased from 19% in 2012 to 33% in 2016 (Washington Traffic Safety Commission, 2018). To assist the lab, the Washington Traffic Safety Commission (WTSC) has continued to supply grant funding to increase the quality and efficiency of testing processes. This includes providing funds for additional personnel, lab instrumentation and equipment as well as data-analysis software that reduces the amount of time that lab personnel spend on casework and documentation. WTSC has supported the lab in an effort to reduce the wait times in processing samples in DUI cases and reporting the results. Additional resources have also been provided by WTSC to train toxicologists on how to deliver effective testimony in court. Lastly, funds have been made available to facilitate external drug testing in some impaired driving cases to decrease the financial strain on the lab's operational budget.





### Innovation in Action

Not only has WTSC provided funds to improve lab effectiveness and efficiency, it has also invested in research. Some of the most robust drug-impaired driving data, specifically marijuana-impaired driving data, has been released by the Washington Traffic Safety Commission. In a series of reports, retrospective analysis of blood samples in fatal crashes over multiple years has been analyzed for the presence of THC as well as active and inactive metabolites. These reports have provided information about the prevalence of marijuana-impaired driving both pre and post-legalization and have delineated between the presence of various cannabinoids in the body including the psychoactive components and inactive metabolites. Furthermore, some of these analyses have quantified the concentrations of THC in the blood revealing that many fatally injured drivers have nanogram levels below the 5ng per se limit. These analyses have also provided insight into the increasing prevalence of polysubstance-impaired driving as the most recent report identifies polysubstance impairment as the most common type of impairment found among drivers involved in fatal crashes in the state. In fact, among drivers in fatal crashes between 2008 and 2016 that tested positive for alcohol or drugs, 44% tested positive for two or more substances with alcohol and THC being the most common combination.

### Resources

[\*Driver Toxicology Testing and the Involvement of Marijuana in Fatal Crashes, 2010-2014: A Descriptive Report \(WTSC, 2016\)\*](#)

[\*Marijuana Use, Alcohol Use, and Driving in Washington State: Emerging Issues with Poly-Drug Use on Washington Roadways \(WTSC, 2018\)\*](#)

