1. Report No. **FHWA/LA.0x/xxx**	2. Government Accession No.	3. Recipient's Catalog No.

4. Title and Subtitle Drugged Driving in Louisiana: Quantification of its Impact on Public Health and Implications for Legislation, Enforcement and Prosecution	5. Report Date July 20, 2015
	6. Performing Organization Code LTRC Project Number: 4-1SA State Project Number: 300-0-1390

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9. Performing Organization Name and Address Highway Safety Research Group Department of Information and Decision Sciences Louisiana State University 3535 Nicholson Ext. Baton Rouge, LA 70803	10. Work Unit No.
	11. Contract or Grant No.

12. Sponsoring Agency Name and Address Louisiana Department of Transportation and Development P.O. Box 94245 Baton Rouge, LA 70804-9245 & National Center for Intermodal Transportation for Economic Competitiveness Mississippi State University, MS 39762	13. Type of Report and Period Covered Final Report , July, 2013-September, 2015
	14. Sponsoring Agency Code

15. Supplementary Notes

Conducted in Cooperation with the U.S. Department of Transportation, Federal Highway Administration

16. Abstract

Drugged driving, i.e., driving under the influence of drugs, is considered a rising public health issue in the US and the rest of the world, yet due to underreporting and limitations of existing data, not much is known about the frequency of drugged driving and how it affects public safety is not yet clear. While the federal government has encouraged states to enact zero-tolerance drugged driving laws, the lack of clarity surrounding the effects of drugs on driving abilities as well a lack of empirical evidence about the efficacy of such laws indicate more research is necessary. Using Louisiana as a case study, this report provides important insight into the state of knowledge about drugged driving, the limitations to current data collection practices and how to proceed from here. There are two main goals: first, evaluate laws and policies about drugged driving and through a series of interviews with prosecutors, defense attorneys, police, and the public, identify obstacles to zero-tolerance legislation in Louisiana; and second, analyze the frequency of drugged driving in Louisiana and other states where data is publically available to identify ways to improve data collection. Analysis of data from the Louisiana State Crime Lab as well as other available sources provide a preliminary baseline estimate about the frequency and nature of drug-impaired driving in Louisiana. Findings indicate substantial disparities exist among parishes in terms of the number of drug-impaired driving arrests and the quality of evidence submitted for testing, which reflects a lack of standardized procedures and an uneven distribution of resources. This study compares the prior DWI arrests, speeding violations and crashes of drivers who tested positive for various drugs to all other drivers. While there are substantial limitations to the analysis, particularly in sample size and selection, the findings suggest the drivers arrested for drugged driving have higher rates of prior unsafe driving incidents than all other drivers. Survey interviews with the target populations reveal an overall lack of training, resources, and testing capacities in Louisiana, as well as a wide range of concerns about per se laws. This study contributes a clearer understanding of existing data limitations and challenges with which states must contend, and presents a series of recommendations for developing a comprehensive approach to dealing with drug-impaired driving in Louisiana and other states moving forward.

17. Key Words Drugged driving, DWI, DUI	18. Distribution Statement **Unrestricted. This document is available through the National Technical Information Service, Springfield, VA 21161.**

19. Security Classif. (of this report)	20. Security Classif. (of this page)	21. No. of Pages 137	22. Price

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LTRC appreciates the dedication of the following Project Review Committee Members in guiding this research study to fruition.

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Drugged Driving in Louisiana: Quantification of its Impact on Public Health and Implications for Legislation, Enforcement and Prosecution

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State Project No. 300-0-1390

conducted for

Louisiana Department of Transportation and Development
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July 2015

ABSTRACT

Drugged driving, i.e., driving under the influence of drugs, is considered a rising public health issue in the US and the rest of the world, yet due to underreporting and limitations of existing data, not much is known about the frequency of drugged driving and how it affects public safety is not yet clear. While the federal government has encouraged states to enact zero-tolerance drugged driving laws, the lack of clarity surrounding the effects of drugs on driving abilities as well a lack of empirical evidence about the efficacy of such laws indicate more research is necessary. Using Louisiana as a case study, this report provides important insight into the state of knowledge about drugged driving, the limitations to current data collection practices and how to proceed from here. There are two main goals: first, evaluate laws and policies about drugged driving and through a series of interviews with prosecutors, defense attorneys, police, and the public, identify obstacles to zero-tolerance legislation in Louisiana; and second, analyze the frequency of drugged driving in Louisiana and other states where data is publically available to identify ways to improve data collection. Analysis of data from the Louisiana State Crime Lab as well as other available sources provide a preliminary baseline estimate about the frequency and nature of drug-impaired driving in Louisiana. Findings indicate substantial disparities exist among parishes in terms of the number of drug-impaired driving arrests and the quality of evidence submitted for testing, which reflects a lack of standardized procedures and an uneven distribution of resources. This study compares the prior DWI arrests, speeding violations and crashes of drivers who tested positive for various drugs to all other drivers. While there are substantial limitations to the analysis, particularly in sample size and selection, the findings suggest the drivers arrested for drugged driving have higher rates of prior unsafe driving incidents than all other drivers. Survey interviews with the target populations reveal an overall lack of training, resources, and testing capacities in Louisiana, as well as a wide range of concerns about per se laws. This study contributes a clearer understanding of existing data limitations and challenges with which states must contend, and presents a series of recommendations for developing a comprehensive approach to dealing with drug-impaired driving in Louisiana and other states moving forward.

ACKNOWLEDGMENTS

IMPLEMENTATION STATEMENT

The implementation of the findings of this research consists of several components.

(1)   Utilize laboratory instrumentation that can test for and quantify levels of drugs that lead to impairment. The LA crime lab is in the process of purchasing new instrumentation which will be capable of quantifying levels of drugs. Training of forensic toxicologists that can serve as expert witnesses for prosecutors is also essential.

(2)   The Louisiana Highway Safety Commission and LA DOTD should work with the LA Coroner Association to have blood samples in fatal crashes submitted to the LA crime lab. Funding for conducting this service should be explored.

(3)   The training of additional DREs in Louisiana will improve the identification of drug-impaired drivers, provide testing and other documentation as well as promote effective prosecution of offenders. Thus more officers should be trained in drug recognition.

(4)   A best practices manual should be developed that includes policies that increase the testing of drivers arrested for impaired driving using blood. This best practices manual should be used throughout Louisiana to work toward a consistent application of existing impaired driving laws.

(5)   The researchers will work with the Louisiana Highway Safety Committee, the LA DOTD and the appropriate Safety Coalitions to develop policies and programs to increase awareness and understanding of drugged driving.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

INTRODUCTION

Drug-impaired driving, also referred to as "drugged driving" or driving under the influence of drugs (DUID), has been characterized as a growing public health issue in the US and abroad. Wide-scale research studies such as the Driving under the Influence of Drugs, Alcohol and Medicines (DRUID) project in Europe and the National Highway Traffic Safety Administration's (NHTSA) National Roadside Survey (NRS) of Alcohol and Drug Use by Drivers in the US, have been conducted in recent years to examine the prevalence of drug use among drivers [1]. In 2007, the percentage of nighttime weekend drivers testing positive for at least one drug (i.e., illicit, prescription or over-the-counter drugs with potential for impairment) was 16.3%. In 2013/2014, the NRS estimates the percentage of drivers testing positive for at least one drug increased to 20%. Other possible emerging trends suggest drugs other than alcohol are increasingly detected in the blood of fatally injured drivers [2]. Also, the prevalence of drugs in drivers stopped for impaired driving is generally higher than drug prevalence in the general population [3].

One reaction to these trends is to pass zero tolerance (ZT) drug-impaired driving laws that make it illegal for individuals to operate a motor vehicle with positive levels of drugs in their system. Even though driving while impaired by drugs is already considered a crime in all 50 states, the Office of National Drug Control Policy (ONDCP) has urged all states to pass additional per se laws as part of their National Drug Control Strategy. Globally, Australia and European countries such as Belgium, Sweden, and France have passed such laws. And as of May 2015, 21 states have passed some form of a per se law. Anecdotal evidence suggests the per se laws make a difference however, the degree to which per se laws are instrumental in reducing drugged driving or improving public health is not yet clear [4], [5]. Others claim the value of ZT per se laws is in increasing drugged driving convictions, but there has not been any data collection to empirically examine this either.

It is important to understand the nature of the problem ZT/ per se laws are purported to address in order to evaluate their efficacy. Compared to alcohol's relatively universal effects on driving, the relationship between consumption of any given drug and driver impairment is very complicated. Empirical research testing the effects of common drugs on individuals' driving skills is generally inconclusive due to a number of mediating and moderating factors. Drugs affect individuals differently. Moreover, the "contribution of drugs to motor vehicle crashes, injuries, and deaths continues to be a subject of considerable interest and debate"

[6]. Studies comparing crash risk associated with alcohol and drug use generally indicate alcohol (alone or in combination with other drugs) tends to be associated with greater crash risk than drugs alone.

The enforcement of DUID laws requires appropriate testing equipment and the implementation of procedures requires training for officers, prosecutors, judges, lab technicians—anyone involved with the process of identifying, investigating and adjudicating drivers charged with DUID. Therefore, it is important to examine the procedures and practices associated with data collection, investigation, and prosecution of drug-impaired driving. Also, before new legislation is introduced it is important to assess and quantify the impact of drugged driving on public health. Specifically, the goals of this research are (1) to use Louisiana as a case study in evaluating laws and policies about drugged driving, to identify obstacles to a per se, or ZT, law for drugged driving and (2) to collect data on drugged driving and analyze its frequency in Louisiana and other states where data is publically available and to identify ways to improve data collection in Louisiana.

OBJECTIVE

The primary objective for this research study is to: 1) Evaluate laws and policies about drugged driving in Louisiana and other states and identify obstacles to a per se law for drugged driving; and 2) Collect data on drugged driving and analyze its frequency in Louisiana and other states where data is publically available to develop specific recommendations for improved data collection on drugged driving.

SCOPE

The purpose of this project is to: Evaluate per se laws for drugged driving in other states; Present an overview of the literature; Provide highway safety stakeholders, law enforcement and prosecutors with information to guide strategies to reduce drug impaired-driving through detection, enforcement actions, and more successful prosecution; Identify training and other resource needs for law enforcement and prosecutors; Provide initial baseline information of drug-impaired driving in Louisiana to inform public health community, enforcement community and other stakeholders that make strategic decisions regarding resource allocation; Identify opportunities to collect data needed for adequate characterization of drug impaired driving; and Develop recommendations for data collection in the future.

METHODOLOGY

The literature review is laid out as follows: Section 1 presents a general overview of drug-impaired driving research and briefly discusses the methodological limitations of existing research. Section 2 continues the discussion by exploring the most commonly detected drugs and discussing their effects on individuals. Section 3 examines the prevalence of commonly detected drugs in the general population, discusses the drug-testing process and how estimates are reached, and addresses the implications for conclusions on drug-impaired driving. Section 4 presents research examining the extent to which drug use is associated with higher crash risk and discusses the conditions under which higher crash risk is most likely to occur. Section 5 provides an overview of impaired driving and per se laws in the US followed by a discussion of the arguments for and against the use of per se laws as a primary strategy to control, reduce, and/or prevent drugged driving and presents a summary of conclusions from the literature review on which the methodologies used to complete the objectives of this study are based. Finally, Section 6 describes the data collection process and the methodologies employed to assess and quantify the impact of drugged driving on public health and identify issues associated with per se ZT DUID laws.

Overview of DUID Research

Before it is possible to evaluate the laws and policies about drugged driving, it is important to understand the complexity of the issue. A considerable amount of research has been published on the subject drug-impaired driving. A search on Google Scholar, which is not limited to articles published in peer reviewed journals, returns a list of about 1,200 articles containing the keywords 'drugged driving' as of this writing; over 629 of these articles have been published since 2011 [7]. Despite the substantial number of studies published on drugged driving, there is no clear evidence on the impact of drugs—illicit or prescription and over-the-counter medications—on driving abilities or crash risk. This poses a challenge to approach the potential danger from public health standpoint, where increased crash risk is ultimately a key indicator.

In order to demonstrate scientific proof of a drug's contribution to crash risk, Shinar states the following three conditions must be met: (1) There is experimental verification causally linking the drug to impairment and that the magnitude of impairment is related to the dose and the concentration of the drug in critical parts of the brain; (2) There are reliable

measurements of the drug in both the general and crash populations; (3) And the drug is verifiably associated with crash involvement, that is, that the prevalence of a drug is higher in crash-involved drivers than in the general population, or that the drug's prevalence is higher in culpable drivers than non-culpable drivers in crashes [3]. Multiple research methods are needed to establish the relationship. The only way to legitimately establish a verifiable causal link from the drug dose/concentration to impaired behavior or brain activity is by conducting controlled experiments. The second and third conditions are similarly related and are satisfied by conducting observational studies. To ensure reliability and validity, studies must be replicated and the accumulation of findings must withstand scrutiny of the scientific community and the peer-review process. This is an ongoing process that is dependent on the existence of quality data.

Evaluating Research Studies

All research studies are not designed equally. Research examining the impact of drugs on traffic safety tends to fall into one of two categories: epidemiological observational studies and controlled experiments. The latter tends to primarily focus on measuring effects of various drugs on a number of factors relevant to driving, whereas the former considers a wider range of implications such as drug use among the driving population, drug involvement in crashes, and crash risk.

All research methodologies have limitations that must be taken into consideration when evaluating findings. In general, epidemiological studies are hampered by the lack of consistent drug testing data in fatal and injury crashes. Incomplete or unavailable data is a particularly significant limitation in drugged driving research. Because of the nature of illicit drugs (illegal to use) controlled experiments also have several unique limitations, such as the sampling technique employed and selection bias for recruitment, as well as unnatural environmental testing conditions that limit the degree to which findings may be generalized to the general population. Street drugs (e.g., cocaine, methamphetamine, etc.) are hardly consistent in quality or potency in "real life." Pharmaceutical drugs may have consistent quality but are available in different formulations that may or may not produce the same effects.

There are a range of known and unknown confounding factors that can mediate or moderate the effect of a given drug on individuals and influence the strength of relationship on the

outcome variable of interest. This has clear implications for external validity. Though researchers may control for many factors, this obviously depends on the nature of the study, the source of data, and the manner in which data are collected.

Commonly Used Drugs and Their Effects on Driving

The term "drugs" generally refers to any chemical substance that has some physiological effect upon entrance to the body. In the context of traffic safety, 'drugs' refers to any chemical that acts upon the central nervous system and the brain, which controls necessary functions like coordination, performance and reaction time, to name a few. Many drugs, regardless of whether or not they are medications or street drugs, have the potential to impair functions necessary for safe driving. Of known impairing substances, alcohol and cannabis are the most frequently used in the population and thus are the most commonly detected substances among drivers in roadside surveys. Other drugs that are commonly detected include prescription and over-the-counter (OTC) medications and illicit drugs such as cocaine.

With the exception of alcohol, many of the drugs detected in roadside surveys have legitimate recognized medical uses and have been prescribed by doctors to treat acute and chronic conditions. The Centers for Disease Control (CDC) estimates that in 2010, about 48% of the population took at least one prescription drug in the past month [8]. Even though not all prescription or OTC drugs have potential for impairment, many do. OTC drugs like antihistamines for allergy symptoms, sleep-aids, and cold and flu medications are used commonly in the US. And then there are illicit or illegal drugs, which also include the use of prescription drugs without a lawful prescription. As far as the potential for impairment is concerned, there is very little difference between illegal drugs and medications. There are, however, very important differences in the state of knowledge about how each "kind" of drug affects people, for various reasons. Before discussing these differences further, a brief overview on how drugs are classified at the federal level and how drugs are categorized according to their effects as controlled substances.

Drug Classification
A drug's status as "licit" or "illicit" is determined by the federal government's drug control policy. The Controlled Substances Act of 1970 established the five drug schedules under

which all drugs with a potential for abuse are classified. Even though alcohol and tobacco are associated with high rates of abuse, they are excluded from the drug schedules. Schedule I drugs are those that are deemed to have no medicinal value. In order for a drug to fall under Schedule I, the following criteria must be met:

- The drug or other substance has a high potential for abuse
- The drug or other substance has no currently accepted medical use in treatment in the United States.
- There is a lack of accepted safety for use of the drug or other substance under medical supervision.

Examples of Schedule I drugs are heroin, LSD, natural hallucinogens like mescaline and psilocybin, MDMA (i.e., Ecstacy), and marijuana. Efforts to have marijuana rescheduled to a Schedule II or III drug have been unsuccessful, despite evidence supporting marijuana's medicinal value. Marijuana policy in many states is at odds with the Schedule I classification. As of June 2015, 23 states as well as the District of Columbia have legalized marijuana for medicinal purposes (and/or recreational use) and it is expected that more states will follow [9]. Louisiana's legislature recently passed a bill to provide access for a limited set of terminally ill conditions. In states with medical marijuana laws, cannabis is prescribed just like doctors prescribe other legal controlled substances such as opioids, amphetamines, and central nervous system depressants (e.g., anti-anxiety medications) to treat a range of physical and mental health conditions. There are "illegal" drugs that fall lower down on the drug schedules, such as Schedule II drugs cocaine and methamphetamine, because they are deemed to have medicinal value. Cocaine is sometimes used as a topical anesthetic (not unlike lidocaine). Methamphetamine is sometimes prescribed as a treatment for obesity or Attention Deficit Hyperactivity Disorder (ADHD) under the name Desoxyn. A synthesized form of delta-9-tetrahydrocannabinol (THC), the primary psychoactive component in cannabis is a Schedule III drug for AIDS patients or people suffering from anorexia under the name Marinol.

The use of any controlled substance recreationally and/or without a valid prescription is illegal. In law enforcement, it is more useful to classify drugs by their effects. Table 1 summarizes the US Drug Enforcement Agency's (DEA) seven drug classes [10]. The drug classes combine prescription and illicit drugs because they share similar chemical profiles and effects. For example, opioid pain relievers, which are the most commonly abused

prescription drugs, are classified along with heroin as narcotics [11]. Besides having similar molecular properties and effects, both are highly addicting substances. Despite whatever similarities exist between the two drugs, heroin clearly has no recognized medicinal value.

Table 1
DEA drug classes

DEA Drug Classes	Drugs Included
Narcotics	heroin, oxycodone, codeine
Stimulants	cocaine, amphetamines, methamphetamine
Depressants	benzodiazepines, barbiturates, valium
Hallucinogens	MDMA, LSD, psilocybin
Marijuana/Cannabis	marijuana, hashish
Steroids	testosterone, nandrolone
Inhalants	invisible volatile compounds, e.g., butane

Determining when and how much certain drugs have the potential to impair a person's driving ability is not a straightforward process. Some drugs, such as prescription amphetamine for treatment of ADHD or narcolepsy, may actually help improve a person's driving and thus increase public safety [12]. Other drugs like hydrocodone, a narcotic opioid pain reliever, may be deemed medically necessary to manage chronic severe pain. The pain symptoms alone may cause an individual to experience cognitive or psychomotor impairment [13]. Depending on a patient's condition, it may be unbearable for them to work a full-time job or manage daily life tasks without the aid of a prescription pain reliever. Research has tended to find that long-term opioid use at stable doses does not cause impairment [13].

When used responsibly in accordance to the direction of a licensed physician, drugs may present minimal threats to public safety. Prescription drugs and OTC medications typically provide benefits to a person that outweigh potential harms. The same drugs can easily become problematic when abused, and even dangerous when combined with alcohol and/ or other drugs. Ideally, patients are counseled on potential interactions with other substances they should avoid when taking their prescriptions. In general, when prescription drugs are misused or abused, they are often obtained unlawfully, that is, without a prescription in their name. They are also typically consumed in amounts that clearly exceed therapeutic doses as determined by clinical trials. For example, researchers in Sweden examined the concentration of commonly used prescription drugs in the blood of drivers suspected of driving under the influence of drugs and found the concentrations of certain sedatives and hypnotics (primarily

benzodiazepines and opioids) were in excess of acceptable therapeutic limits [14]. Therapeutic limits are determined by the level at which toxicity occurs and adverse reactions are experienced divided by the smallest effective amount to produce the desired effect and avoid unintended side effects. Another term for therapeutic limits is a "safety window." In general, an effective dose is the minimum amount necessary to receive therapeutic benefits within this window. Due to the illicit status of some drugs, there is less known about the safety window.

Clinical trials for prescription drugs are double-blind randomized experiments. Participants for these studies are patients that may benefit the prescription drug usage and they are randomly assigned to a treatment group (receives test drug) or the control group. Neither the doctor nor the patient know if they received the drug or a placebo. This is an optimal design to test the true effects of a drug on numerous outcomes of interest, but this design is difficult if not impossible to replicate with illicit drugs for several reasons. First, volunteers are usually recruited for such experiments and cannot be considered representative of the population. Second, prescription drugs are manufactured under tightly controlled conditions so that they do not vary in chemical composition or quality. There is no quality control for illicit drugs, particularly street drugs, which vary in potency, consistency, and quality/purity per milligram and may be laced or cut with other substances. So, while internal validity may be high in the controlled experiment, external validity, or the degree to which drawn conclusions may be extrapolated to the "real world," is not. And third, measuring drug impairment with objective tools is a very difficult task [15]. To begin, the pharmacokinetics and pharmacodynamics of psychoactive drugs are "poorly understood" [16]. The large number of unique drugs in existence with potentially psychoactive components is only one part of the problem; drugs do not affect people uniformly. Individual differences in absorption and metabolism rates plus other mediating and moderating factors unique to human beings (e.g., psychological and physiological factors, dose-response, tolerance/experience, acute vs. chronic usage, etc.) make it impossible to determine the point at which most people may reach impairment.

Researchers did not have difficulty establishing the causal link of alcohol consumption to driver impairment. Alcohol is a relatively "simple" drug that spreads evenly and quickly throughout a person's body [3]. The relationship of alcohol consumption to blood alcohol concentration (BAC) to impairment across individuals is fairly straight forward and reliable [3], [17]. As alcohol consumption rises, BAC commensurately rises, and the level of

impairment also rises. The "effects of alcohol on behavior and driving performance are relatively well understood" [16]. The signs of alcohol impairment are generally evident and easily recognizable. Researchers have been able to successfully predict behavioral impairments based on measures of BAC. A great deal of experimental research is necessary to determine the level at which most people would be impaired by various drugs, with illicit drugs, again, being the most difficult to assess. Despite the variability in individuals, experimental research has generally demonstrated larger doses of certain drugs are more likely to cause impairment than smaller doses, and less-familiar driving tasks are more likely to be affected than familiar ones [16].

Another finding consistent in the research has to do with effects of alcohol consumption in combination with drugs. Many people use drugs and alcohol together [3]. Drivers with positive BACs > .00 are more likely to also have drugs in their system than drivers without positive BACs [18]. Combining drugs with other drugs and/or alcohol usually exacerbates impairment effects on driving performance. Controlled experiments examining drug and alcohol combinations generally find support for this. Kunsman, et al. studied the effects of temazepam, a benzodiazepine used to treat short-term insomnia, and ethanol on computer-based performance tasks and found that the combination of temazepam and ethanol was associated with impairment on the tasks where impairment may not occur with the single drug [19]. Brookhuis, et al. examined the effects of MDMA (3,4-methylenedioxy-N-methylamphetamine, also known as Ecstasy) alone and in combination with other drugs on simulated driving performance before and after subjects attended an electronic dance music event [20]. The researchers concluded that MDMA alone had minimal effects on lateral and longitudinal vehicle control but not after consuming MDMA along with other drugs. Ramaekers, et al. studied the effects of THC and alcohol on actual driving performance and found moderate impairment associated with low doses of THC but severe impairment on driving performance when combined with a low dose of alcohol (BAC < .05) [21]. There were no interaction effects between cannabis and alcohol, indicating that the effects are additive rather than synergistic [21].

Controlled experimental research on the effects of cannabis use alone on driving performance is also inconclusive [22]. Impairment effects, which are difficult to generalize across individuals, of acute cannabis use is sometimes—but not always—shown to impair drivers. Driving and simulator studies have found that cannabis increases reaction time and affects decision making at higher doses, however, not necessarily in experienced users, who are

likely to develop tolerance to the effects on psychomotor or cognitive performance [23], [24], [22], [25], [26], [27]. A common finding in experimental studies is that cannabis users are typically conscious of their impairment and take compensatory measures, such as lowering their speed and increasing distance between their car and the vehicle in front of them.

Cannabis may be most likely to cause impairment among inexperienced or occasional users. Ramaekers and colleagues conducted a double-blind, placebo controlled, two-way mixed model experimental design where occasional and heavy users of cannabis were provided a high dose of THC (500 μg/kg THC) before completing a variety of performance tasks [27]. In occasional users, THC impaired performance at low and high concentrations on a number of the tasks. Heavy users appeared to be affected only at high concentrations by increasing stop reaction time. The researchers conclude that a person's cannabis use background "strongly determines the behavioural [sic] response to single doses of THC" [27]. THC levels will actually vary according to the frequency of use—for the occasional or novice user, smoking one joint is more likely to lead to acute intoxication and higher levels of THC than the same dose would for daily or regular users [28]. For less experienced users, effects are usually more pronounced with highly automatic driving tasks than they are with complex functions requiring conscious attention and control, "which is the opposite pattern from that seen with alcohol" [23]. In contrast, experienced cannabis users demonstrate little to no functional impairment under the influence of marijuana, unless they are also consuming alcohol [23].

Other researchers have studied the regular use of prescription drugs on driving performance. A structured evidence-based review of research on patients being treated with opioids for a medical condition suggests patients may drive safely while taking the prescription drugs [29]. Wilhelmi and Cohen reviewed 23 epidemiological studies on opioid use and abuse, 3 studies on acute psychomotor effects and 32 on chronic psychomotor effects and note the consistency in the findings that chronic users develop tolerance to opioids that does not present as impairment [13]. Lenné and colleagues examined the effects of new (LAAM and buprenorphine) and existing (methadone) opioid pharmacotherapies for treating heroin addiction on simulated driving performance [30]. They compared a treatment group to a non-drug using group, with and without a BAC of about .05. They found no difference between non-drug users and the treatment group receiving either of the pharmacotherapies; however, they found alcohol impaired all measures of driving across all of the groups.

In 2014, Gobbo and Louza conducted a systematic review of 15 randomized control trials testing the influence of stimulant and non-stimulant drugs on driving performance for individuals with ADHD [31]. Driving performance was measured in actual cars and driving simulators across a range of outcomes. In general, there was no evidence of psychostimulant drugs having a negative affect on individual performance. In most of the studies, findings indicate significantly improved driving performance with stimulant drugs in ADHD patients.

Illicit stimulants have also been studied among recreational users. Silber et al. studied the effect of *d,l-* methamphetamine on simulated driving performance using a repeated-measures, counterbalanced, double-blind, placebo-controlled experimental design [32]. Unlike stimulant drugs that are most commonly prescribed for ADHD, methamphetamine is most often used illicitly. The procedure was separated by a two-week period. Subjects consented not to use any other illicit drugs seven days before each session and to refrain from alcohol for 24 hours before testing. Though this was a driving simulator study, the design was very carefully controlled. The results indicate no statistically significant differences in driving ability between those who received the placebo or a "single, acute, therapeutic dose" of methamphetamine.

Prevalence of Drugs Detected in Driving Population

The unsettled findings linking drug use to driver impairment is not the only area of uncertainty in research. "Perhaps the biggest controversy surrounding drugs and driving is not one about their effects, but about their actual prevalence in the driving population" [3]. Estimates regarding the prevalence of drug-impaired driving vary considerably. On the higher end, driver roadside surveys such as the 2007 NRS probably over-estimate the prevalence, whereas the arrest rates of DUID relative to the number of alcohol impaired driving arrests likely under-estimate the prevalence [3]. Under-estimates are primarily due to incomplete data and/or inconsistent drug screening of DUID suspects. Roadside surveys base prevalence estimates on both self-reports and chemical tests which depend on volunteer participation. Self-reported information, while insightful, cannot be reliably verified, and chemical tests, while indicative of recent drug use, cannot demonstrate impairment.

The 2007 NRS prevalence estimates increased concerns about drug-impaired driving. A summary of the findings from the 2013/2014 NRS were released to media early February

2015 [33]. The full report is not yet available, but the summary statistics suggest total drug-positive estimates for nighttime weekend drivers increased from 16.3 percent in 2007 to 20 percent in 2013/2014. Detection of THC increased from 8.6 percent in 2007 to 12.6 percent in 2013/2014. Because THC also had the greatest increase in use, the overall increase in drug-positive drivers is probably a reflection of this. The changing policies in states regarding marijuana including increased provisions for medical use, legalization and decriminalization may also have something to do with the increase.

Second to alcohol, the most easily detected drug is cannabis, primarily because of how cannabinoids are distributed and absorbed in the human body. Cannabinoids are fat soluble and accumulate in the fatty tissues. Due to the "sequestration in fat, the tissue elimination half-life of THC is about seven days, and complete elimination of a single dose may take up to 30 days" [34], [35]. Carboxy THC (THC-COOH) is detectible in the urine for as long as it remains in the body. So, unlike alcohol and other drugs, the detection period for THC and cannabis metabolites is much longer. Also, THC does not distribute evenly throughout the body and rates of absorption and elimination differs between experienced and inexperienced users [3]. Due to this extended and highly unpredictable detection window, it is difficult to determine correlation of detection to impairment for cannabis. THC has the longest detection window, but other drugs may be detected days after use as well. Table 2 below displays estimated detection windows for commonly used drugs [36].

Table 2
Estimates of drug detection windows

Alcohol – 1 oz. for 1.5 hours
Amphetamines – 48 hours
Barbiturates – 2-10 days
Benzodiazepines – 2-3 weeks
Cocaine – 2-10 days
Heroin Metabolite – less than 1 day
Morphine – 2-3 days
LSD – 8 hours
Marijuana – casual use, 3-4 days; chronic use, several weeks to 1 month
Methamphetamine – 2-3 days
Methadone – 2-3 days
Phencyclidine (PCP) – 1 week

There are several critical factors related to drug testing procedures that complicate data interpretation, reporting and analysis [37]. Beyond the obvious problems extrapolating impairment from drug presence, the manner in which data are collected and reported differs considerably from state to state and even within states. The lack of consistent policy and procedures over who is tested, what fluids (i.e., blood, urine, or saliva), what drugs are tested for, type of tests, cut-off levels and testing equipment all impact the quality of data available for analysis and interpretation [37].

Drug testing data is typically not consistently collected by law enforcement agencies. Often, alcohol positive drivers aren't tested further unless there is reason to suspect drug involvement. Drug testing for fluids like urine, blood, plasma, etc., must be sent out to a forensic lab for analysis. For officers in the field, there are relatively few on-site, simplified testing equipment options with high reliability. Due to advancements in technology, this appears to be changing. There are now several on-site screening devices that can detect the presence of drugs using oral fluids. Wille, et al. conducted an evaluation of the reliability for three on-site screening devices: Mavand RapidSTAT®, Securetec Drugwipe-5+® and Dräger DrugTest 5000® [38]. The researchers compared the results of the on-site oral fluid testing with a confirmatory plasma analysis. All three devices demonstrated a sensitivity of 93%, 100%, and 92% (respectively) for amphetamine and MDMA, 75%, 78%, and 67% (respectively) for cocaine and all three devices were able to detect cannabis about 70% on-site.

The researchers note that a newer version of the Dräger model, a test cassette that uses the newest generation of oral fluid testing at lowered cut-off points, has a sensitivity of 93%. Accuracy rates for each of the testing devices varies slightly from the sensitivity percentages but are generally around the same percentage for each device. None of the oral fluid testing devices examined can insure against false positives or false negatives, therefore these devices are more suitable for screening rather than providing evidence to be used in court. However, these oral fluid testing devices may be more efficient for law enforcement in the screening process, due to portability and ease of use. The oral fluid testing detection window depends on the drug, but ranges from several hours up to 1-2 days [38], [39]. Compared to urine analysis, oral fluids are less invasive and provide a better indication of recent use. Also, oral fluids tend to better correlate serum concentrations and observed indications of impairment [38], [40].

Drug tests—regardless of type—are useful to determine whether or not a person has used drugs recently, but they are still not able to tell when the person last took the drug(s) or exactly how much of the drug they consumed. They also cannot "prove" impairment as there is no empirically validated objective level of impairment. There is no way to determine from chemical tests alone whether or not someone is impaired; the only exception being Breathalyzer tests for alcohol. The cut-off levels used in testing are relatively arbitrary, driven primarily by the minimum levels (or sensitivity) for a device or chemical test to pick up the presence of drug or any of its inactive metabolites. Furthermore, the amount of time a drug may be detectible in a person's system since last use varies person to person, drug to drug, and dosage to dosage. The lack of clearly defined standardized procedures presents major obstacles for analyzing prevalence of drug-impaired driving or crash causation.

Drugs and Crash Risk

The crash risk associated with drug use and driving is not as clear as the crash risk associated with alcohol use. There is a long-established positive relationship between driver BAC and crash risk. Several research studies have demonstrated that crash risk rises rapidly with driver BAC, however, there is no standard relationship between blood levels of a drug (or drug metabolites) and impairment in drugged driving [41], [42], [43], [44], [45], [46]. To understand the relationship of drugs to crash risk, research typically compares the number of crashes where drugs were detected in the driver's system to crashes where drugs were not detected. This approach has limitations. Since a true cause and effect relationship can only be discovered through randomized controlled studies, this approach does not establish the causal factors. At a minimum, culpability and exposure need to be considered when analyzing crash data [3].

Several recent studies have considered the risk of fatal crash involvement associated with drugs and/or alcohol [47], [48] [49], [50]. One such study, a case-control analysis using drug testing data from FARS and the 2007 NRS, suggests an increased crash risk associated with drugs and alcohol individually, and higher when drugs and alcohol are combined [51]. While these two databases represent very different populations, this study suggests that the use of any drug doubles the risk of fatal crash involvement, however, the heightened risk varies according to the type of drug used. Of the drugs examined, the estimated odds of crash risk was highest for depressants (4.8) and stimulants (3.6), followed by poly drug use, i.e., 2 or more drugs (3.4) and narcotics (3.0), and lowest for marijuana (1.8). Alcohol alone was

associated with a heightened fatal crash risk of 13.6 and substantially increased risk of fatal crash when combined with drugs, a 23.2 increase in estimated odds [48]. Although these studies indicate increasing odds in crash risk with use of drugs, it should be kept in mind that the FARS data are incomplete with respect to drug testing and the population is different from the population in the 2007 NRS survey. Although, the researchers tried to match some of the characteristics in the two databases, this is not comparable to results that could be obtained through a randomized design.

A 2015 study by NHTSA, "the largest and most carefully controlled of its kind to date," examined the crash risk associated with alcohol and drugs among drivers using case-control methodology [52]. The study was conducted in Virginia Beach, VA and data were collected over the course of 20 months. There were over 3,000 crash-involved drivers included as cases in this study. For every crash-involved case, researchers randomly selected two other drivers from traffic by returning to the same location, day of week, time of day, and from the same direction as the crash-involved case subject. The primary findings were clear in respect to alcohol—that drivers with .08 BrAC to .15 BrAC had (respectively) 4-12 times the crash risk than sober drivers; BrACs in excess of .20 was associated with over 23 times the crash risk—which were statistically significant before and after adjusting for demographic factors. The researchers tested drivers for various classes and types of drugs. Crash-involved drivers were more likely to test positive for THC and sedatives than non-crash involved drivers, as well as illegal drugs and/or poly drug use. Unadjusted odds ratios indicate a statistically significant increase in risk by about 1.25 times for THC, 1.21 for illegal drugs, however, once other factors such as age, sex, and race/ethnicity were controlled for, adjusted odds ratios were not statistically significant. In other words, the demographic factors "may have co-varied with drug use and accounted for most of the increased crash risk" [52].

Romano and colleagues [47] calculated the relative crash risk associated with drugged driving in states where drug testing is reported in at least 80% of crashes with fatally injured drivers. Similar to Li, et al.'s [48] findings, the researchers found drugs other than alcohol do contribute to fatal crash risk, however, alcohol's contribution to crash risk was substantially higher than drugs [47]. Testing positive for any drugs significantly increased fatal crash risk, but odds vary by drug type and this was only true for drugs other than marijuana. Controlling for the effects of the presence of alcohol and demographics, marijuana was not a statistically significant contributor to fatal crash risk [47]. Asbridge, Hayden, and Cartwright conducted a meta-analysis of observational epidemiology studies examining acute consumption of

cannabis with crash risk and concluded that cannabis is associated with a nearly double severe or fatal crash risk [35]. Placed in context, however, the risk is "less robust" than the relative risk observed with alcohol at the illegal limit (0.08g/dL) threshold [28].

Aside from having a significantly higher crash risk, the drugs-and-alcohol combination appears to be more common among drivers than those just using one drug. Using the 2007 NRS data, Voas, et al. calculated the percentage of weekend nighttime drivers also using drugs. They determined 29.4% of drivers with BACs > .08 were also using illegal drugs [18]. The percentage of drivers with positive BACs <.08 also testing positive for illegal drugs was 26%. Only 10.4% of non-drinking drivers tested positive for illegal drugs. These data suggest that drivers drinking alcohol are more likely to also use drugs than drivers who are not drinking alcohol at all and so increasing the testing rate among alcohol-positive BACs < .08 could increase the rate of drugged driving convictions [18].

Cannabis' primary psychoactive component, THC, as well as its metabolite THC-COOH are increasingly detected in the blood and/or urine of fatally injured drivers but this could be due to an increase in cannabis use rather than cannabis playing a causal role in these crashes [22], [2]. Shinar examined four separate case control studies comparing the odds ratios of crash risk between drivers with positive cannabis detection and drivers with no drugs in their systems and concluded, "THC, to the extent that it is associated with increased crash risk, is probably not the cause of crashes, but a correlate of other risk-taking factors that go hand in hand with smoking marijuana" [3], [51], [53], [54], [55].

Cannabis use alone has not been shown to be associated with fault in culpability studies [49]. Epidemiological studies, for example, often find a correlation between cannabis detection and a significantly elevated crash risk but the significance of the correlation tends to be contingent on the extent to which other confounding factors are taken into consideration [56]. For example, in a meta-analysis, Penning, et al. found the relationship between cannabis use and crash involvement tends to be non-significant whenever the positive presence of alcohol was factored into analysis [49]. In studies examining the relative crash risk of cannabis compared to other drugs or drug-combos, cannabis is often not associated with a statistically significant crash risk [55].

Anderson, Hanson, and Rees examined the effects of medical marijuana laws (MMLs) in 19 states and the District of Columbia and found support that marijuana and alcohol are likely substitutes [9]. MMLs are associated with a decrease in the probability of consuming alcohol and binge drinking as well as an 8-11% decrease in roadway fatalities. This effect is larger on fatalities involving alcohol than those not involving alcohol. They concluded that "alcohol is the likely mechanism through which the legalization of marijuana reduces traffic fatalities" [9]. Since marijuana is typically used at home or in other private locations, "marijuana users are less likely to drive while impaired" [9].

Impaired Driving and Per Se/ ZT Laws

All 50 states and the District of Columbia have impaired driving laws that make it illegal to operate a motor vehicle while impaired by alcohol and/or drugs. While these laws vary in language, they all make impaired driving regardless of substance a crime and they all stipulate that a BAC of .08 or greater is alcohol impairment per se. A driver is generally suspected of being "under the influence" if they are observably exhibiting classic signs of impairment (e.g., running red lights, swerving, etc.). Existing impaired driving laws are built on behavioral evidence obtained by law enforcement via standardized field sobriety tests (SFSTs) or other means, e.g., video documentation. States are able to use these existing laws to prosecute drivers in cases where a BAC is not available (e.g., no BAC test performed, refusals, etc.) or the BAC is below the .08 per se limit. Likewise, states may also prosecute a driver of DUID if it can be shown, beyond a reasonable doubt, that the driver was observably impaired, that the drug was in the driver's system and that there is a connection between the drug(s) detected and the observed impairment.

Supporters of per se laws for drugs argue the state's burden of demonstrating the causal link between the detected drug and impairment is a "technically complicated and difficult task," and that such a "complex approach" to enforcement prevents the identification and prosecution of drugged drivers [57], [58]. Another claim is that per se laws for drugs make enforcing impaired driving laws more effective because they make prosecution easier [58], [59]. Like the per se alcohol laws for drivers under the age of 21, or the per se illegal limit law for drivers with BACs above .08, per se drugged driving laws make it illegal for individuals to operate a motor vehicle while having positive levels of impairing drugs or metabolites in the driver's system.

As discussed throughout the literature review, there is no level at which most people are impaired by drugs. To get around this technicality, proponents of per se laws contend a zero-tolerance (ZT) approach is needed to control the problem [59], [60], [61] [62]. In a recent commentary, Voas, et al. argue that setting "thresholds for prosecution would send the nonsensical message that it is acceptable for a person to drive with certain amounts of illegal drugs in a person's system" [60]. A majority of the states with per se drugged driving laws are of the ZT type. Under the more common ZT per se law, positive detection of any drug(s) or drug metabolites in a driver's system—irrespective of actual impairment—is sufficient for conviction. Convictions under the ZT per se laws "are based entirely on chemical test results and do not require evidence of driver impairment" [58]. By relieving the state of proving a causal relationship, ZT per se laws "dramatically simplify the proof of a violation" [60]. Despite this assumption, there is no published research that provides evidence that ZT per se laws dramatically increase convictions.

In states with per se laws for drugs, a person may be prosecuted for criminal DUID without the state having to provide evidence of acute drug use or demonstrating proof of causality. The primary difference between the per se limit laws and the ZT variety is how trace amounts of active or inactive metabolites are effectively an admission of guilt. In states with cut-off points to establish limits, trace amounts would not meet the per se DUID standard. Some drugs and drug metabolites, particularly cannabis are detectible in a person's system long after acute effects have worn off [3], [22], [63], [64]. In heavy users, some inactive metabolites such as Carboxy THC can remain present in the body for days or weeks after last use [64]. Even under the limits version of the per se law (such as e.g., Pennsylvania,) as little as 1ng/dL of cannabinoids detected in the blood could potentially result in a drugged driving conviction regardless of proof of impairment. Given the length of time drugs like cannabis may be detected in a person's system following use and the variability of elimination time across individuals, these laws may "inadvertently criminalize behavior that poses no threat to public safety" [65].

Despite proponents' strong support for the ZT per se laws, there have been no empirical studies to date demonstrating their effectiveness, therefore these laws cannot be considered "evidence based" [58]. The lack of reliable longitudinal data on drugs and driving is a major impediment to evaluating drugged driving laws [66]. Ample research provides evidence supporting the efficacy of the 0.08 g/dL illegal alcohol limit, the ZT alcohol law, and the minimum legal drinking age law [67]. Very little is known about the efficacy of per se

drugged driving laws. Recent research finds no difference in fatality rates between states with per se drugged driving laws and states without per se laws [5]. There is also a lack of scientific evidence that the laws effectively increase arrest and prosecution rates relative to states without them [4]. Furthermore, the per se laws may not deter heavy drug users, who are more likely to pose the greatest threat to roadway safety. Heavy users may be more likely to be convicted of impaired driving in the first place, with or without per se drugged driving laws [5].

Compounding the lack solid scientific evidence regarding the efficacy of per se laws is the lack of uniformity in the legal language and enforcement practices across states. To date, 21 states have passed some form of a per se law. Thirteen of these states (Arizona, Delaware, Georgia, Illinois, Indiana, Iowa, Michigan, Minnesota, North Carolina, Oklahoma, Rhode Island, Utah, and Wisconsin) have ZT per se laws. North Carolina and South Dakota have ZT per se laws for drivers under 21. The remaining seven states (i.e., Colorado, Montana, Nevada, Ohio, Pennsylvania, Virginia, and Washington) impose quantitative limits on the amount of drugs that can be in the system before the driver is considered legally DUID. Some of them include metabolites, while others do not. A few of them (e.g., Minnesota) exclude cannabis, a number of them exclude cannabis metabolites but in most states with per se laws, even the metabolites in trace amounts would result in a no-contest criminal charge.

Table 3 (below) displays a basic comparison of states with per se laws. As Table 3 illustrates, states have different versions of drugged driving laws. The language used to describe prohibited drugs varies considerably. Additional aspects about these laws (e.g., penalties, affirmative defenses, etc.) are presented in Appendix A but are referred to here. Across states with per se laws, the punishments associated with a first time drugged driving conviction range from the inconvenience of a license suspension and/or a fairly nominal $150-$300 fine (e.g., Wisconsin) to a life-changing mandatory prison sentence and fines up to $5,000 (e.g., Pennsylvania). In at least 11 states with per se laws, holding a prescription does not entitle one to an affirmative defense against the per se charge. Arizona and Delaware, two states with medical marijuana laws, allow prescriptions as an affirmative defense but not for prescribed marijuana. Even in states without per se laws, there are provisions in impaired driving laws that state having a prescription does not count as a defense to the DUID charge. In some states, e.g., Oklahoma, it is a per se DUID charge with any "intoxicating substance other than alcohol" [68].

Table 3
States with per se laws

State	Effective	Type of Law	Specifics
Arizona	Jun-90	ZT	Any controlled substances or their metabolites
Delaware	Jul-07	ZT	Illegal controlled substances and cannabis metabolites detectible within four hours of driving
Georgia	Jul-01	ZT	Any controlled substances including metabolites
Illinois	Aug-97	ZT	Intoxicating compounds, cannabis, any controlled substances and their metabolites
Indiana	Jul-01	ZT	Any controlled substances or their metabolites
Iowa	Jul-98	ZT	Any controlled substances (excluding metabolites except for Carboxy THC metabolites in urine above 50 ng/ml)
Michigan	Sep-03	ZT	Any schedule I controlled substances (excluding metabolites)
Minnesota	Aug-06	ZT	Any Schedule I & II controlled substance or their metabolites (excluding marijuana and tetrahydrocannabinols)
Oklahoma	Oct-13	ZT	Any intoxicating substance other than alcohol including THC and/or its inactive metabolites
Rhode Island	Jul-06	ZT	Any scheduled controlled substance (excluding THC metabolites in blood or urine)
Utah	May-94	ZT	Any amount of controlled substances or their metabolites
Wisconsin	Dec-03	ZT	Any detectable amount of a restricted controlled substance in the person's blood (cannabis metabolites are excluded)
North Carolina	Dec-05	ZT/ ZT*	Any Schedule I controlled substances and their metabolites, not including cannabis (schedule VI) / For those under 21, any controlled substance or metabolites
South Dakota	2010	ZT*	Any detectible cannabis, cannabis metabolites, and other controlled substances for persons under age 21
Virginia	Jul-05	Per se limits	Any illegal substance (not including marijuana or metabolites) Limits for cocaine, methamphetamine, phencyclidine, & MDMA
Washington	Dec-12	Per se limits	THC in blood 5 ng/ml
Montana	Oct-13	Limits THC	THC in blood 5 ng/ml
Nevada	Sep-03	Per se limits	THC limits 10ng/ml in urine, 2ng/ml in blood; THC metabolites 15ng/ml in urine, 5ng/ml in blood
Ohio	Aug-06	Per se limits	THC limits 10 ng/ml in urine, 2 ng/ml in blood; THC metabolites 35 ng/ml in urine, 50 ng/ml in blood; THC metabolites in combination with alcohol or another drug 15 ng/ml in urine, 5 ng/ml in blood
Pennsylvania	Feb-04	Per se limits	Any Schedule I drug, THC limit is 1 ng/ml (metabolites only require proof of impairment)
Colorado	Jul-13	Limits THC	THC in blood 5ng/ml
*ZT for drivers under 21 years of age			

Summary of Conclusions Drawn from Literature

At this point, extensive inconsistent findings and a relative lack of clarity regarding the effects of various drugs on driving abilities and crash risk across individuals in the population are a major limitation for setting sound policy about drug-impaired driving. More research is needed to fully understand the extent of the drugged driving problem in terms of its prevalence and crash risk. More research examining the role of drugs in fatal crashes as well as the impact drugs have on crash risk, particularly when alcohol is also a factor, is necessary to fully understand the magnitude and extent to which drug-impaired driving should be treated as a special case of impaired driving.

Data Collection

In this section, we briefly describe the data collection sources, processes, and methodologies used in analysis for this project. One of the objectives of this study is to assess the availability of data from drug tests from various sources of data such as the Louisiana State Police crime lab and the trauma centers, and to develop a strategy for improving data collection of drugged drivers. Another objective is to study impediments to a ZT/per se law in Louisiana, which we would identify by conducting interviews with prosecutors, law enforcement, defense attorneys and the general public. The first section focuses on methods tied to the former, the second explains methods for the latter.

Due to underreporting of drugs involvement in existing data, there is very little known about the frequency of drugged driving and how it affects public safety. The majority of the data collected for this study consisted of secondary sources, however, we also collected primary data via interviews using survey research methods. First, we discuss the secondary sources of data and describe the data sets we analyzed. Second, we discuss the survey research methods and describe the sampling procedures and questionnaire construction for the target populations.

Secondary Data Analysis

In general, drugged driving data are not systematically collected, which presents clear limitations to analysis. The ordering of additional drug tests is not standard protocol in most jurisdictions, particularly when alcohol is detected, therefore there are no sources of complete data. We collected a variety of secondary sources of data for analysis to

examine the frequency and risk associated with drug-impaired driving. The sources of data and the potential insight they may provide are briefly described:

FARS. The Fatality Analysis Reporting System (FARS) collects information about all crashes on US public roads resulting in one or more fatalities within 30 days of the crash. While a high proportion of fatally injured drivers are tested for alcohol as required by state law, drug tests are administered much less frequently, resulting in underreporting of drug involvement in fatal crashes [58]. Currently there are ten states in FARS that report that a drug test was performed on 80% or more of their fatally injured drivers [69]. An analysis of these data will be used to develop a model to estimate the current drugged driving level in the US. The data we used for this analysis includes the years 2001 to 2013.

Louisiana State Crime Lab. The Louisiana State Crime Lab data consists of two years (2013-2014) of blood and urine samples taken in some DWI arrests, crashes or fatality crashes in Louisiana. The crime lab does not currently quantify the levels of drugs in drivers' systems. Toxicology screens (usually on urine) are primarily confirmatory tests for determining the presence of any substance or its metabolites. Thus, there is no way to determine when the driver took the drug from a toxicology screen.

COBRA. The Louisiana Computerized Online BReath Archiving system (COBRA) data monitors Intoxilyzers out in the field. Data are gathered from the instruments throughout the state of Louisiana and downloaded into a central archive. The Louisiana COBRA data provide information on drivers that failed the SFST and were subsequently arrested and tested for alcohol using the Intoxilyzers. The instruments report the BAC at increments of 0.001. Since about 14% of the drivers who failed a SFST and were subsequently arrested test BAC=0, these drivers may have used drugs instead of alcohol. Initial inspection of the frequency distribution of zero BAC by age shows a bathtub curve indicating that youths and seniors have a higher frequency of zero tests. Different frequencies of this occurrence for age and gender and region will be used to develop profiles for drugged drivers due to drugs detected. The COBRA data will also be matched with conviction records on the driver license file to assess conviction frequencies of impaired drivers with zero BAC, low BAC or BAC above the legal limit.

Louisiana Crash Data. The crash data are a census of all crashes occurring in Louisiana. The data used for this study span over the time period 1990 to 2014. The data are collected by the Highway Safety Research Group (HSRG) at LSU.

Interim LSU Level 1 Trauma Center Data. The hospital data from the Interim LSU Level 1 Trauma Center Data consists of 3,615 drug tests performed on individuals in motor vehicle crashes that were treated at the LSU Trauma Center between 2005 and 2014.

My Student Body. LSU requires each year's entering class and transfer students to complete an online health education course called *MyStudentBody Essentials*. The course is structured around a self-assessment survey. MyStudentBody is a nationwide subscription-based program for college students that was developed with tested with over $9.7 million in grant funding from the National Institutes of Health. The MyStudentBody website describes the *Essentials* course as "a prevention education course intended for incoming students… [covering] the three most significant behavioral risks new college students face: alcohol, illicit and prescription drugs, and sexual violence." One module of the survey includes drug use of freshmen. The data analyzed here include surveys from 2010-2014.

Survey Analysis

Another objective of this study is to identify obstacles to a ZT/per se law for drugged driving in Louisiana, we developed series of survey instruments based on the literature to gain insight into the perspectives of district attorneys, defense attorneys, law enforcement personnel and the general public. The self-administered questionnaires were programmed using Qualtrics data collection software and featured a combination of open and closed-ended items about legal and implementation issues that were uniquely tailored to the target populations. All of the survey instruments were approved by LSU's institutional review board in advance of data collection (see Appendix B for details). The data collection period lasted from late December 2014 until mid-March 2015.

Sampling Procedures and Data Collection

There were a number of factors that affected sampling procedures in this study. First, while it would have been ideal to obtain representative samples of all the target populations, it was not realistic. Random sampling was not a viable option for the target populations in this

study. This was especially true for reaching the prosecutors, defense attorneys, or law enforcement personnel, where it was not possible to obtain an up-to-date contact list of all practicing attorneys or law enforcement officers with experience dealing with drug-impaired driving cases. Thus, the population parameters for the target populations are unknown and findings cannot be generalized. Second, even though it is possible to estimate the population parameters of the general public, attaining a fully representative sample for the online survey was not feasible given available resources in relation to the study objectives. All sampling procedures and distribution techniques for each of the target groups are explained in further detail below.

District Attorneys. The Louisiana District Attorney Association (LDAA) agreed to distribute the link to the online questionnaire to its members. The sample consists of prosecutors and assistant prosecutors.

Defense Attorneys. There are no lists or distribution options readily available through which we could reach defense attorneys. With the assistance of a graduate student, we employed a multi-step process to construct a contact list using publicly available information. Justia.com offers a "lawyer directory" where attorneys are provided free profiles so that they may be looked up by practice area and by parish or city location. The most applicable practice area was "DWI." From there, all of the attorneys who specialize in DWI law appeared for the state. The contact information in the profiles did not contain email addresses, however, they did contain full address and telephone information. Also, we could not assume all information on Justia was up-to-date or accurate. It was necessary to confirm this information with the Louisiana State Bar Association (LSBA). In accordance with Louisiana Supreme Court Rule XIX, the LSBA maintains an online membership directory containing current contact information for active members of the Louisiana State Bar Association and e-mail addresses for many of the attorneys listed in Justia's lawyer directory. The attorney contact information was confirmed to ensure it matched the LSBA record and the data entered into an Excel spreadsheet. As a matter of professional courtesy, printed letters were mailed to each attorney to notify them in advance that we would be emailing them a link to the study.

Police. The HSRG maintains a listserv email contact list for individuals in law enforcement agencies throughout Louisiana using LACRASH electronic motor vehicle crash

reporting software. The listserv contains email addresses for officers of all ranks as well as administrative personnel including information technology staff in roughly 190 different agencies. We included in our email a request to all non-officer personnel to please forward the survey to officers in their agency.

       General Public. We obtained a sample of the general public through Qualtrics Panels. Due to the opt-in nature of Internet survey panels, it is not possible to obtain a truly random, representative sample. Even though Qualtrics made an attempt to obtain a sample as representative as possible, their ability to do so is limited to those who have opted-in to participate. Thus, individuals were self-selected. There was no financial or material incentive offered in exchange for participating in this study.

Questionnaire Construction

In the early stages of questionnaire construction, we developed a set of criteria we needed each questionnaire to address. For attorneys, this primarily consisted of gathering insight into their experience with existing laws, their perceptions of drugged driving case frequency today, relative to their past experience. We needed to obtain insight into their beliefs and opinions about per se laws and the efficacy of per se laws across a number of outcomes they are presumed to affect. We also needed to have an understanding of the obstacles they currently face in defending and prosecuting drugged driving cases under existing laws, and their beliefs about how a per se law might impact case outcomes. Because the prosecution and defense represent opposing positions in and of themselves, we asked a series of agree/disagree Likert scale items to compare and contrast responses. For police, we were expressly interested in understanding how often they encounter drivers they suspect might be driving under the influence of alcohol and/or drugs, how often they make impaired driving arrests and the percentage of those where the driver has a BAC above the .08 per se level, when and under what conditions they are most likely to seek chemical testing for drugs other than alcohol, and what issues they experience in investigating drugged driving cases.

There were a couple of factors we had to contend with when creating the questionnaire for general public. First, unlike attorneys and police, we could not assume the public has any knowledge about per se drugged driving laws, or even Louisiana's existing impaired driving law. It has been well established in the social sciences and public opinion research that the average citizen tends to be relatively uninformed about government and political affairs.

Second, we had to address the reality that respondents may not put forth sufficient cognitive effort to consider the complexity of the issue. While the latter is a concern in any survey research study, it is especially a concern when it is difficult to simplify the topic without introducing bias. People typically respond to survey items with "top of the head" responses based on whatever relevant criteria most salient to them at the time [70]. We needed to avoid using overly simplified and loaded language that could bias these responses. It was also critical to avoid framing the issue of drugged driving in any particular way in the question wording or ordering to minimize response error.

We examined public perceptions of drugged driving by measuring "top of the head" responses about "drugged driving" and impaired driving in Louisiana (in general). Since it is possible individuals taking the survey lack familiarity with existing laws, we had an item that provided the text of Louisiana's existing impaired driving law (RS 14:98) followed by a true/false question (It is currently illegal to operate a motor vehicle while impaired by drugs in the state of Louisiana). They had to answer correctly to move on in the survey, thus this item served as validation measure to help ensure data quality. The last portion of the survey collected responses to a set of Likert scale statements about drugged driving (e.g., laws, perceptions of problem, etc.).

Throughout the survey, we included a number of items that might explain the basis their judgements. Some we included at the beginning of the survey before we started to get into the topic of drugged driving laws. We asked about their prior crash experience, their overall concern about impaired driving and the degree of the problem relative to other dangerous driving behavior like texting or falling asleep and whether or not they have seen any reports on drugged driving in the media. We asked about their level of familiarity with the effects of commonly used drug types and whether or not they were currently taking a drug with the potential to affect driving abilities. At the end of the questionnaire, we asked about their political perspectives, level of education, age, race/ethnicity, income level, sex and zip code. Please see Appendix B for copies of all questionnaires used in this study.

DISCUSSION OF RESULTS

In this section, we present the results from the secondary data analysis followed by the results from the survey interviews. The findings are discussed throughout this section.

Data Analysis

The scope of this data analysis includes the prevalence of drugged driving in Louisiana, and where data permit (e.g., FARS), other states. The study relies on observational data including drug tests from crashes, crime lab results, lab test results from a hospital and self-report surveys, of which there are many limitations. Consequently, there are considerable limitations to this study. First, it is not possible to obtain an unbiased estimate of prevalence of drugged driving without designing a randomized roadside survey and testing all drivers selected. A roadside survey is beyond the scope of this research and the resources available. Second, this research uses available data to gain insight into risks associated with drugged driving, however, it must be noted from the outset this portion of analysis is not generalizable to the broader population. There are many limitations. The data are observational and selection biases must be taken into consideration. We discuss each dataset in detail and address selection biases. Many of the subsections contain embedded hyperlinks to interactive dashboards which may provide additional context for the analyses presented here.

Fatality Analysis Reporting System (FARS)

The Fatality Analysis Reporting System (FARS) is a census of all fatal motor vehicle crashes on public roads in the United States, collected by NHTSA. The information collected through FARS includes several variables pertaining to drug involvement in fatal crashes which include: drugs reported by law enforcement, whether driver(s) were tested for drugs (i.e., test status), and drug test results. FARS data are not suitable for estimating the prevalence of drugged driving or risk assessment of drugged driving due to inherent selection bias. Only drivers involved in fatal crashes are included in the reporting system. Additionally, there are substantial limitations to interpreting FARS data, due to the lack of consistent uniform reporting and drug testing by states and jurisdictions [37]. Accordingly, this analysis concentrates on evaluating drug involvement and testing reported in the crash report.

Drug Involvement Reported by Law Enforcement. The data element (Drugs) is a person-level element; according to the 2011 FARS manual, "this data element reflects only the judgment of the law enforcement as to whether drugs were involved or not for this person." The dashboard, which is accessible through the hyperlink in this subsection's header, shows the percentage of drugs reported for each state from 2001 to 2013 for all drivers that died on the scene or en-route to the hospital. Several trends are observed. First, while officer-reported drug-involvement in the United States (as a whole) has increased from 2001 to 2013, the increase is not consistent. The reported drug-involvement in Louisiana reached a high of 6.36% in 2010 but dropped down to 2.86% in 2013. Louisiana ranked 37th lowest in the nation with respect to reported drug involvement among fatally injured drivers in 2013. Louisiana fatality records (FARS) show that from 2008 to 2013 the reported drug involvement declined from 81 to 34.

FARS reports up to three sets of variables describing a drug test and the result: test status, test type and test result. Test status identifies whether a test was given, refused or not given, not reported, or unknown. The type of test is either blood, urine, unknown, other, not reported, or unknown if tested. The test results are coded using a three digit number. The drugs and their respective codes appear below in the following table:

Table 4
FARS drug codes

Code Range	Drug Category
100-295	Narcotic
300-395	Depressant
400-495	Stimulant
500-595	Hallucinogen
600-695	Cannabinoid
700-795	Phencyclidine (PCP)
800-895	Anabolic Steroid
900-995	Inhalant
996	Other Drug
997	Tested for Drugs, Results Unknown
998	Tested for Drugs, Drugs Found, Type Unknown/Positive
095	Not Reported
999	Unknown If Tested

Tested for Drugs. States generally report a high rate of testing for drugs in FARS e.g., Louisiana reported a 60% rate of testing for drugs in 2013. But this high rate of reported drug testing is not supported by the drug test results variable. Very few of the reported drug tests are based on blood or urine evidence and thus not many actual drugs are reported. Thus using the 'tested for drugs' field in FARS is not a reliable indicator of actual drug tests and studies using this field may lead to considerable bias in the estimates of drug use.

Drug Test Results. Despite the generally high reporting rate of drug tests being conducted, the evidence type varies considerably across states. In 2013, Louisiana reported 60% of drivers that died at the scene or en-route to the hospital had a drug test performed, but only 1% of the cases had a blood or urine test as evidential material. Colorado, for example, reported drug tests for 88% of drivers that died at the scene or en-route in 2013 and had 63.5% blood or urine test reported. Of the 19 reported cannabis users among drivers that died at the scene or en-route in Louisiana in 2013, only one had a blood or urine test associated with it. Part of the reason for the inconsistent data about the tests conducted has to do with the manner in which tests are conducted and reported to FARS. First, data may not be submitted. Many labs may be unaware that the FARS analysts in their state need drug test results [37]. Second, data may not be submitted in a timely fashion. There are often delays in testing that prevent data from being submitted. Third, FARS analysts are limited to reporting no more than three individual drugs per case in the database. Figure 1 below displays the percentage of drug tests results by state. As illustrated, the percentage of results varies considerably across states.

Drug tests (blood or urine) and Per Se law states. A comparison of states with and without a per se law for drugs indicates differences in testing rates. Specifically, states with per se laws test (on average) 10.09% of fatalities dying at the scene or en-route. This rate is 3.18% lower than the testing percentage in states without per se laws, which test about 13.27% of fatalities (on average). Within the per se law states, the testing percentage varies a great deal between states, ranging from 53.7% in Nevada to below 1% in Virginia. Colorado, which has a per se limit for THC only, has a testing percentage of 63.5%, the highest testing percentage of fatalities using blood or urine evidence among all 50 states.
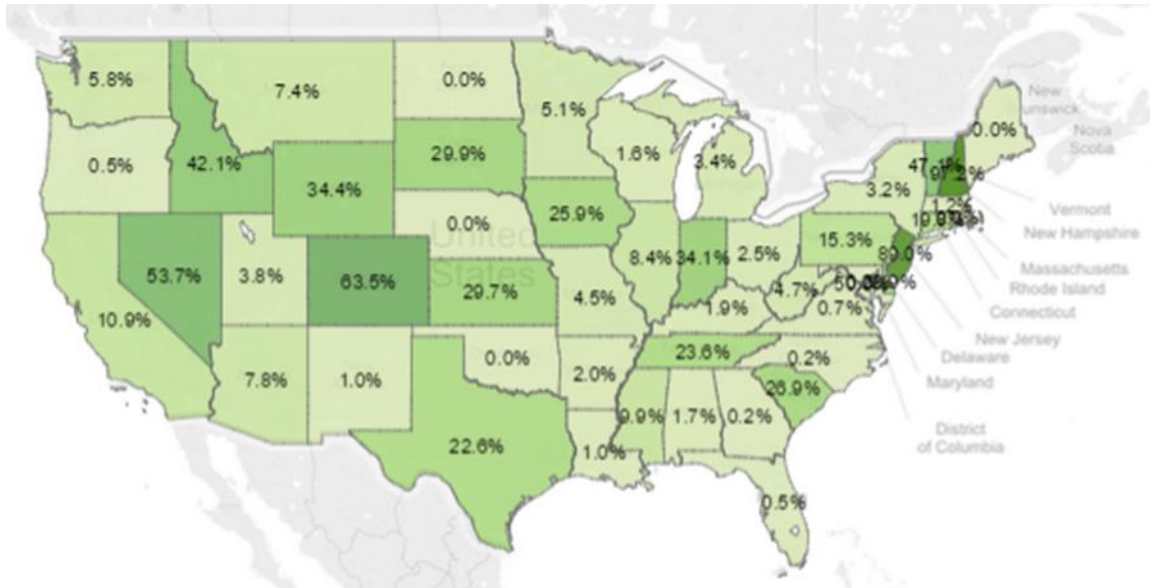
Figure 1
Drug test results by state 2013

The limitations associated with FARS data make any additional interpretation at the present time problematic. Specifically, the low percentage of actual drug test based on blood or urine evidence provides little insight and it is not clear what evidence is used in these other tests. Louisiana's drug test results were 1% for drivers that died at the scene or en-route in 2013. It is not possible to make any inferences from the FARS data with respect to drug usage among drivers in fatal crashes because of the lack of blood or urine evidence. The data issues prevent any meaningful interpretation of results over time. It is not possible to make any inferences about the prevalence of drug-involved fatalities in Louisiana or elsewhere. Studies examining states with high reported testing rates may result in biased estimates because of the difference between reported testing and actual test results.

Louisiana State Crime Lab
The Louisiana Crime Lab analyzes blood and urine samples provided and requested by law enforcement. The crime lab data consists of two years (2013-2014) of blood, urine, and other fluid samples collected in selected DWI arrests and crashes. Since the data are limited to only those samples submitted to the crime lab for further investigation, it is not possible to make any inferences as to the prevalence of drugged driving. As a result, no risk assessment of drugged driving can be provided either. The data do provide a snapshot of the drugs detected in drivers *where drug test results are available* and the differences between parishes, gender and age of drivers testing positive for drugs are reported as descriptive, not inferential,

statistics. It is important to note that there are other crime labs in the state where fluid samples are submitted for testing that are not included in this study.

The crime lab dataset included 2,540 drug test cases for 2,468 distinct drivers (with known license numbers) and 6,565 different drug observations. The vast majority of these cases are associated with DWI arrests. This does not include alcohol results or cases with negative drug test results or insufficient samples. Two dashboards were created to summarize the data: Dashboard 1 provides an overview of parish, age, gender, and drug categories. Dashboard 2 displays this information along with a map of Louisiana. Figure 2 (below) shows the percent of drivers testing positive for drugs by drug category. Note that drivers may have tested positive for more than one drug category.
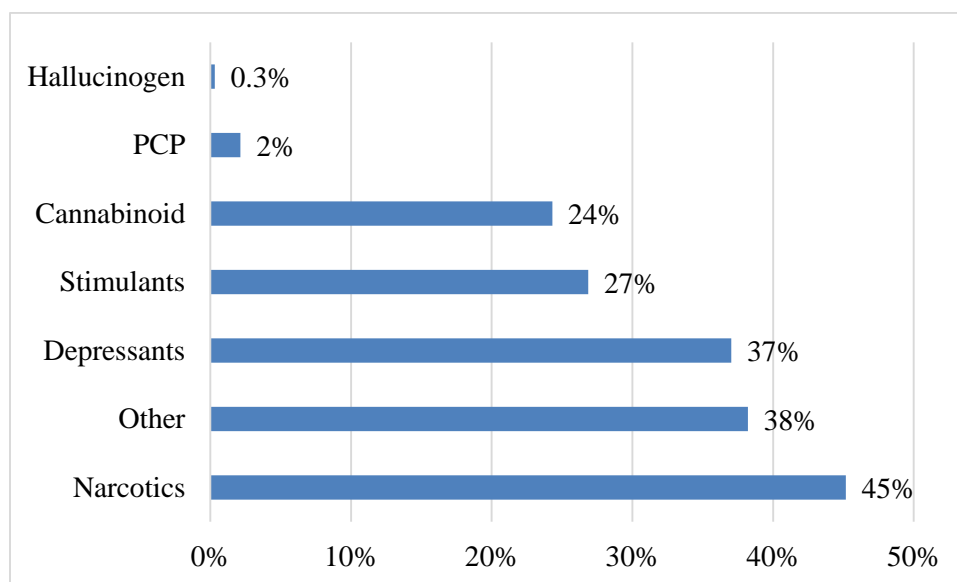
Figure 2
Percent of drivers testing positive for drugs by drug category

The crime lab data show that narcotics (45%) were the most frequently detected category of drugs among drivers in 2013-2014, followed by "other" drugs, which include specific OTC medications/ prescription drugs known to have potential for impairment (38%), and depressants (37%). Stimulants were detected in 27% of drivers and 24% tested positive for cannabinoids. A small percentage of drivers tested positive for PCP (2%) and hallucinogens

(0.3%). The percentages add up to more than one hundred percent due to drivers testing positive for multiple drugs (about 67% had two or more drugs in their system). These percentages are based on distinct drivers, so drivers arrested multiple times are only counted once. Also, drivers may have had multiple different drugs from within a single category in their system.

It is important to note that most of the categories (i.e., narcotics, depressants, stimulants, and other) include a mix of illicit drugs and medications. Based on the specific drugs in the database, only 23.6% are illicit/ street drugs (non-pharmaceutical) which include cannabinoids, about 70% of the stimulants detected, and a relatively small portion of narcotics and other drugs detected. The remaining 76.4% of drugs are medications and prescription drugs (e.g., analgesics, antidepressants, antihistamines, etc.) used to treat a wide variety of conditions. All of the depressants detected among drivers are pharmaceutical drugs. Drivers may or may not have a lawful prescription for one or more of the drugs detected. Also, the crime lab does not test specific quantities, hence the data do not indicate how much of the drug was detected in the drivers or whether or not the drug levels exceeded therapeutic doses. Therefore, the degree to which any given drug contributed to impairment cannot be determined. Alcohol may have been consumed as well. Table 5 (below) displays the median age and percent male for all of the positive tests within each drug category.

Table 5
Crime lab drug detection descriptive demographics

Drug Category	Median Age	% Male
Cannabinoids	27.4	76.8%
Depressants	39.2	57%
Hallucinogens	47.5	87.5%
Narcotics	35.3	65.3%
Other	38.5	61.2%
PCP	33	79.2%
Stimulants	33	66.2%

There are median age differences in the types of drugs detected. Across all drug categories, males make up a higher percentage of drivers testing positive. This could be a reflection of the fact that 70% of the total number of drivers tested for drugs are male and are thus

significantly overrepresented in the drug test data. Of drivers testing positive for drugs in each category, males make up anywhere between 57%-87.5% of positive test results.

Parishes varied considerably in the number of drivers tested. Parishes with more tests conducted had more drivers testing positive. Jefferson Parish had the highest number (290 drivers) followed by St. Tammany (233 drivers). Orleans Parish, which is next to Jefferson Parish, had only 22 drivers testing positive for drugs over the two year period 2013-2014. Given the geographic proximity, this disparity in numbers may be a reflection of enforcement. It is also possible that Orleans Parish utilizes another lab than the LA Crime Lab for their chemical tests. Unfortunately, tests results from labs other than the LA Crime Lab are not available. Most of the drugs found in tested drivers in Jefferson Parish were narcotics and depressants. PCP was primarily detected in Quachita Parish (29 drivers).

Relatively few agencies submitted blood samples for testing and most rely on urine evidence. The primary exception is in Jefferson Parish, where 242 of 290 drug-positive drivers were based on blood. In neighboring St. Tammany Parish, only 43 of the 233 drug-positive drivers were determined using blood samples. Blood evidence is especially important for detecting the recent use of cannabinoids, since THC is detectible in urine up to several weeks after use. For comparison, in St. Tammany Parish only seven out of 59 tests positive for cannabinoids were based on blood samples. In Orleans Parish, two out of seven cannabinoid-positive tests were on blood. In Jefferson Parish, 49 out of 56 cannabinoid-positive tests were based on blood samples.

As mentioned earlier, it is impossible to draw any conclusions about prevalence of drug impaired driving in Louisiana from these data. There are a handful of parishes representing a significant portion of drug-positive drivers. Relative to the rest of the state, these parishes also test more drivers, making drivers from these parishes significantly overrepresented in the data. It is not possible to determine whether or not a driver was impaired by one or more of the drugs detected. All analysis is limited to drivers included in this sample. For instance, the fact that about two out of three drivers tested were male may indicate that drugged driving is more prevalent among males or that there is a selection bias due to the way the sample is selected. Therefore no inferences to the general population can be drawn regarding the prevalence of drugged driving in Louisiana or impaired driving.

One thing we can reasonably assume about the drivers in the crime lab data is the investigating officer submitted their fluid samples for testing on suspicion of impairment based on the driver's performance on SFST. The drivers may have had a zero or low BAC or presented signs of impairment not typical of alcohol. In the next part of analysis, we combined multiple sources of data for analysis to gain insight into these drivers' prior DWI arrests in the COBRA system, their frequency of prior crashes and prior speeding violations which we compared to all other drivers (in the state) who were not tested for drugs. We define "other" drivers as all drivers who were not among the drivers testing positive for one or more drugs in the crime lab data. These other drivers may not be comparable to the drivers in the crime lab sample for a variety of confounding factors. We cannot make any assumptions about the other drivers, who may or may not have also had drugs in their system. However, the comparison may provide some insight into the risk behavior of the drivers for which we have drug test results.

We merged the following data files together: the driver's license file from the Office of Motor Vehicles (OMV), the DWI arrest file from the COBRA system, the violation file from the OMV, and the Louisiana crash data file with the Crime Lab drug test results. The driver's license file includes all drivers with a valid driver's license in 2013 and 2014. Thus, the results are limited to those drivers for which a drug test was requested by a police officer in a DWI arrest or crash and the test was performed by the LA Crime Lab in 2013 and 2014.

The drug-tested drivers are only 0.08% of the total number of licensed drivers, which is a very small subset. The analysis allows us to adjust for known factors such as gender, race and age provided the sample size is large enough. Still, there could be any number of unknown confounding factors that we cannot adjust for. In looking at the relationships between drug-tested drivers and prior risky driving behavior, the presence of unknown confounders will result in biased estimates. For instance, a person's propensity to engage in risk behavior in general could account for drug use, speeding, being arrested for DWI, and crash involvement. In other words, the driver, not the drugs, could be the main factor accounting for the priors. We cannot assume drug use was involved in any of the prior factors just as we cannot assume the other drivers were all drug-free. These limitations should be kept in mind throughout the analysis.

The question the data allows us to answer is, given a driver was drug tested, what is the frequency of prior crashes, prior DWI arrests logged in the COBRA system, or prior speeding violations compared to all other drivers who were not tested? Dashboards were created for each of the drug categories examined, which include: cannabis, narcotics, stimulants, depressants, and other medications. All results are presented in descriptive statistics. For each of the drug categories, we examined prior DWIs with three different BAC conditions (including the frequency for each), as well as the number of speeding violations, and the number of crashes to compare drivers in the crime lab data to "other" drivers. Table 6 (below) displays the recorded frequency (in percentages) of prior DWI arrests, speeding violations and crashes for each of the two groups (i.e., drug-tested, other), which is calculated for each drug category only. All differences are statistically significant at the .05 level, however, sample sizes must be taken into consideration when interpreting results. The percentages reported represent the proportion of drivers within the respective groups (Yes= drug-tested, positive for drug, No=other drivers not tested for drugs). There are 3,279,776 drivers with no positive drug test results and a total of 2,468 drug-positive tested drivers. With a larger sample of drug-positive drivers (ideally determined with a blood test) the differences may vary from these here. Also, the number of drug-positive drivers varies for each of the drug categories. Drivers testing positive in more than one category appear more than once, thus this analysis does not account for poly-drug use or alcohol used in combination with one or more drugs.

Table 6
Frequency of prior DWI Arrests, speeding violations, and crashes of drug-positive drivers compared to all other drivers

	Drug Tested & Positive	Cannabinoids (600)	Narcotics (1,115)	Stimulants (663)	Depressants (914)	Other/ Rx (943)
BAC=0	No	0.7%	0.7%	0.7%	0.7%	0.7%
	Yes	11.3%	22.9%	14.3%	22.5%	15.4%
BAC=.01-.79	No	0.5%	0.5%	0.5%	0.5%	0.5%
	Yes	6.3%	10.1%	8.9%	3.3%	5.6%
BAC>0.079	No	2.5%	2.5%	2.5%	2.5%	2.5%
	Yes	9.4%	11.7%	13.7%	6.6%	10.8%
Speeding	No	23.7%	23.7%	23.7%	23.7%	23.7%
	Yes	43.8%	53.7%	60.1%	47.0%	43.6%
Crash	No	30.4%	30.4%	30.4%	30.4%	30.4%
	Yes	61.7%	78.2%	72.0%	82.1%	76.4%

In general, drug-positive drivers had a higher proportion of prior risky driving incidents than all other drivers across all prior driving incidents and all categories of drugs. Drug-positive drivers had a much higher rate of prior DWI arrests with BAC=0 than all other drivers. There is also indication that the drivers who tested positive for any drug have a higher prior DWI arrest rate with BAC between 0.01 and 0.079 than all other drivers. The difference was highest for narcotics and stimulants and lowest for depressants. The prior DWI arrest rate with BAC at or above 0.08 is about 4 to 11 percentage points higher for drug-positive drivers than all others. The difference is highest for drivers testing positive for narcotics and stimulants.

Drivers that tested positive for drugs had, on average, a higher occurrence of prior speeding violations than other drivers. The difference was highest for stimulants (36.4 percentage points) and lowest for other drugs and cannabinoids (20 percentage points). Drivers that tested positive for drugs had higher frequency of being in a prior crash than other drivers. The difference was highest for drivers testing positive for depressants (51.7 percentage points) and lowest for cannabinoids (31.3 percentage points). Drug-positive drivers had a higher rate of four or more prior crashes compared to other drivers. The difference is greatest for drivers testing positive for narcotics (14.36%), other impairing medications (13.85%) and depressants (11.92%).

There are some differences between drugs detected with respect to the prior incidents experienced. For example, drivers testing positive for depressants or narcotics had the highest rates of prior DWI arrests with BAC=0. Cannabinoid-positive drivers had the lowest rate of BAC=0 arrests, but higher rates of DWI arrests with BAC between 0.01 and 0.79 than drivers who tested positive for depressants. Drivers testing positive for narcotics or stimulants had the highest rate of prior DWI arrests with BAC between 0.01 and 0.79. Drivers who tested positive for cannabinoids also had generally lower percentages of prior speeding violations and prior crashes then drivers who tested positive for narcotics or stimulants. However, some of the differences may be explained by the differences in drivers' age or sex (e.g., cannabinoids were most common among younger male adults).

Drivers testing positive for multiple drugs and alcohol appear to have a higher frequency of prior DWI arrests, speeding and crashes, but the sample size for drug combinations is too small to draw any conclusions. As more data become available more reliable conclusions

may be drawn. As for circumstances where impairment is suspected but BAC is negative or relatively low, drug-positive drivers generally have higher arrest rates than other drivers. The findings suggest that drivers failing a SFST with a negative BAC and arrested for DWI have a high likelihood of being under the influence of drug(s). The findings also suggest that drivers arrested for DWI at age 21 and older but testing below 0.08 for alcohol in a breathalyzer test have a high likelihood of being under the influence of drug(s).

The sample is based on only two years of data and the sample size is too small to determine if the differences are statistically significant. There are also some possible biases in the estimates that maybe be due to other factors. These biases cannot be eliminated by a larger sample size. General risk behavior of drivers arrested for drugged driving may be a confounding factor that affects both drug use and speeding and crash involvement. It is difficult to assess risk behavior because other unknown factors (besides gender, age or race) may account for the propensity to engage in unsafe driving. Based on the data, comparisons should be stratified by the known demographic factors (particularly for drivers testing positive for narcotics and cannabinoids). There is indication that there are differences between drugged drivers with respect to prior DWI, speeding violations and crashes even after accounting for age, gender and race, however, the sample is not large enough to provide stratified results with any degree of reliability. As more data become available, statistical tests can be performed and stratifications applied.

There is a large difference in drug testing and evidence type between parishes. The LA Crime Lab data show several parishes have very high test rates relative to the testing for the rest of the state, which not only biases the results but also suggests differing levels of enforcement, procedures, and possibly resources. Some of the disparity may also be due to the utilization of other laboratory testing sites within the state, which we cannot verify or account for. With respect to the current analysis, these differences are best illustrated by disparities between parishes with close proximity (e.g., Orleans Parish to Jefferson). Jefferson has the highest number of tests in the state and the largest proportion of tests using blood as evidence, while Orleans Parish is among the lowest number of tests. Most parishes use only urine as evidence, which in many cases, might not be sufficient to establish that the driver is impaired. Urine tests have a higher rate of false positives and are more likely to reflect the presence of inactive metabolites. Blood tests are more accurate and will provide the clearest indication of acute use.

These findings suggest more needs to be done to establish statewide guidelines for best practices in drug testing. To that end, the quantification of drug levels in the blood should be determined to provide the most accurate evidence. Levels should be quantified even though there are no levels at which all individuals are impaired by any given drug for several reasons. First, quantified amounts are suitable for qualitative analysis as they establish evidence of *recent* use. Moreover, blood tests confirm the presence of a drug and are thus more reliable and valid. Looking at the Parish differences, Quachita Parish had the highest number of drivers testing positive for cannabinoids (84) followed by St. Tammany Parish (59) and Jefferson Parish (56), however, most of the cannabinoids detected in Quachita and St. Tammany were based on urine tests. Looking at narcotics, Jefferson Parish had the most drivers testing positive for narcotics (154) and compared to the rest of the state, results are based almost exclusively on blood. Thus, some of the observed differences between drug types detected could be due to differences in evidence type.

Overall, one of the biggest limitations to these findings is the small sample size of drug tested drivers. While there are estimates available on rates of drug use (licit and illicit) within the state that could be used to estimate the percentage of *technically* drug-positive people who also drive in the state, it is reasonable to suggest the percentage probably exceeds the number of drivers for which we have drug test results. The extent to which drugs cause impairment in and of themselves is not clear in the research as drugs do not affect individuals uniformly. There are many factors that can mediate or moderate impairment by a given drug. The use of drug tests is highly important to establish the presence of a drug but are generally not sufficient to prove impairment without additional evidence such as video evidence and strong police testimony based on carefully written and thoroughly documented reports.

Hospital Data

The hospital data from the Interim LSU Level 1 Trauma Center Data consists of 3,817 drug tests performed on individuals (i.e., drivers, passengers, or pedestrians aged 17-92) involved in motor vehicle crashes that were treated in the Trauma Center between 2005 and 2014. Of these 3,817 individuals, 42% (1,579) had a positive test results for drugs with about 28.4% of the tests showing marijuana, 29.5% showing opiates, 21.3% showing benzodiazepines, 13.8% showing cocaine, 5.2% showing amphetamine and 1.7% showing barbiturates and 0.2% showing PCP. Figure 3 below displays the frequency of substances detected. Because many individuals tested positive for multiple drugs, the number of positive detections is

significantly higher than the number of people testing positive. The total number of drugs detected was 2,545. The hospital data dashboard shows frequency of drug combinations, age and gender distribution.
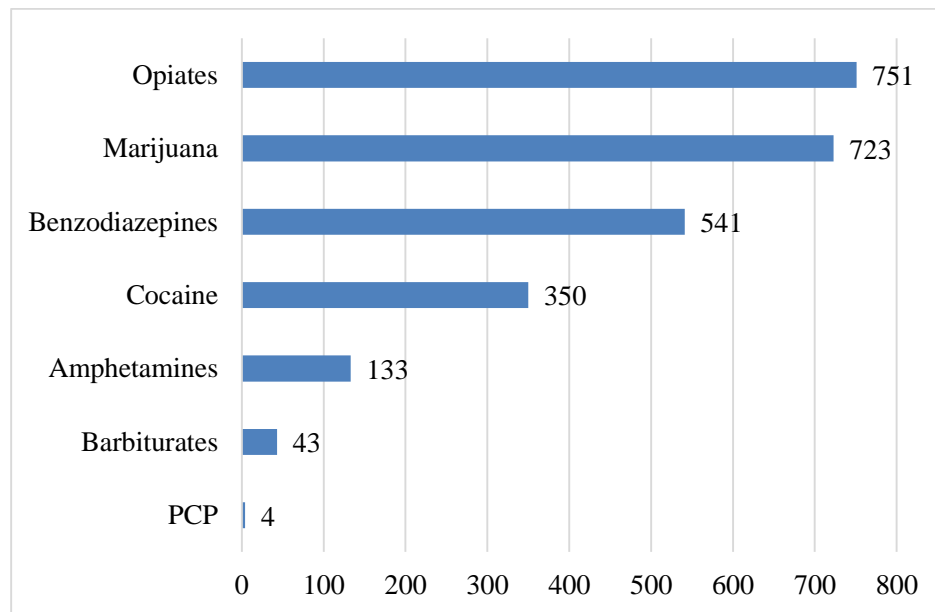
Figure 3
Frequency of drugs detected in hospital data

Marijuana users were, on average, younger than users of opiates and benzodiazepines. About 71% of those who tested positive for at least one drug were male. The following figure from the dashboard shows the combination of three drug measurements for individuals. For instance, 297 individuals tested positive for just marijuana (i.e., Marijuana, None2, None3). Ninety-nine tested positive for marijuana and opiates. Marijuana, opiates and benzodiazepines were the most common drugs found. The marijuana and opiate combination was most frequently (99) detected, followed by benzodiazepines in combination with opiates (91). Figure 4 below displays these results.
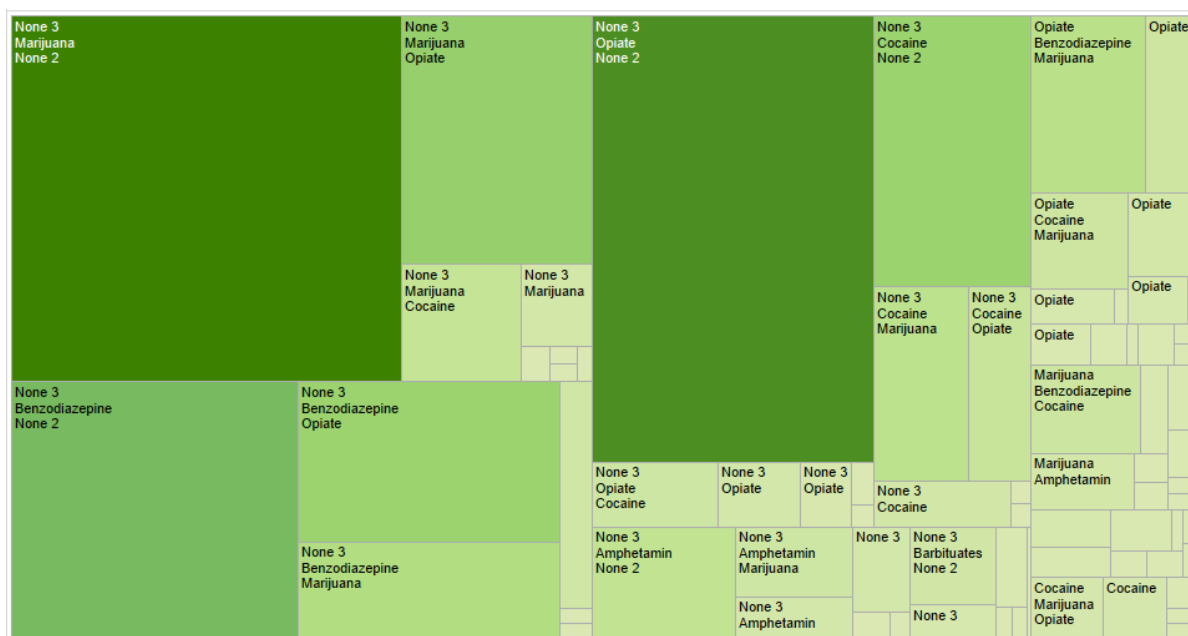
Figure 4
Frequency of drug combinations detected in hospital data

Since the data are only from one hospital in one region, results cannot be generalized across the state. These data include individuals involved in a motor vehicle crash, either as a driver, a passenger, or a pedestrian, that sustained injuries requiring admission to the hospital. The data are consistent with some of the findings from the crime lab, namely that marijuana users are younger in age than users of other drugs and that over two out of three are male. Marijuana tends to be more prevalent in the hospital data than in the crime lab data, however, this could be due to the fact that the hospital data includes also passengers and pedestrians. The hospital data suggest that the low number of drug test results for Orleans Parish observed in the LA crime lab data are likely due to a lower number of DWI arrests where blood or urine was submitted to the crime lab for testing.

My Student Body

LSU requires all first-year and transfer students to participate in an online comprehensive health education program that involves a self-assessment survey about risk behavior in college. One module of the survey includes drug use of freshmen. The data analyzed here include surveys from 2010-2014.

Table 7 below displays the frequency (measured on a Likert scale) of self-reported drug use, in six categories.

Table 7
Self-reported drug use among LSU students

Use/Type	Marijuana	Opiates	Cocaine	Hallucinogens	Methamphetamine	Designer Drugs
Never	77.1%	91.8%	97.9%	95.7%	98.6%	96.4%
Rarely	14.8%	8.4%	1.9%	3.9%	0.9%	3.3%
Monthly	6.3%	2.5%	0.6%	1.3%	0.6%	1.1%
Weekly	5.0%	0.7%	0.4%	0.4%	0.4%	0.4%
Daily	3.7%	0.5%	0.1%	0.3%	0.1%	0.1%

Marijuana has the highest self-reported frequencies with 3.7% of freshmen in the survey stating that they used marijuana daily, 5.0% reported using weekly and 6.3% reported using it monthly. Other self-reported drug use is low compared to marijuana. Hallucinogens and designer drugs are more common than opiates, cocaine and methamphetamine. This is in line with the findings from the crime lab data and the hospital data which indicate marijuana is used most frequently by younger people while opiates (i.e., narcotics) and cocaine are more common among adults ages 30 and older.

About 5% reported that they had driven a car, boat, motorcycle, etc. after using drugs or prescription medications (non-medically) within the past month and about 6% reported that they had ridden with someone driving a car, boat, motorcycle, etc., who had been using drugs or prescription medications (non-medically). Twelve percent reported using illicit drugs with alcohol within the past year.

Alcohol use among freshmen is much more common than reported drug use. This is not surprising given the ubiquity of alcohol relative to illicit drugs. Table 8 below displays respondents' self-reported alcohol use on Saturdays. While 31% report not having any drinks on Saturdays, 41% report that they have at least three or more.

Table 8
Self-reported number of alcoholic drinks on Saturdays among LSU freshmen

Drinks	%
0	31%
1 & 2	28%
3 & 4	21%
5 & 6	11%
7 & 8	4%
9 and more	5%

These findings suggest incoming first-year students tend not to use drugs to the extent that they do alcohol. Marijuana is the most frequently used drug, but with only about 8% using marijuana weekly or daily, the reported use is relatively low compared to self-reported alcohol consumption. The reported percentages of driving or riding with someone after drug use in the past month suggest there are opportunities for enhancing heath education about the dangers and consequences of drug-impaired driving, either as a standalone topic or in conjunction with drunk driving education.

Summary of Data Analysis

The FARS data should be used with caution because the percentage of tests based on oral fluid, urine or blood varies a great deal between states and is much lower than indicated by the percentage of tests performed. Comparing FARS data with the national roadside survey data may thus lead to severe biases in estimates. While New Hampshire, Colorado and Nevada had the highest percentage of blood and urine evidence for drug use, there is no indication that states with a per se law for drugs have higher testing of drivers in fatal crashes than states without per se laws.

The lack of drug testing data in FARS generally suggests a need for national testing and reporting standards and procedures. Louisiana also needs to develop standardized best practices with respect to drug testing procedures and laboratory analysis to improve drug test data quality. With the exception of Jefferson Parish, most parishes rely on urine tests. The number of arrests for DUID vary considerably among parishes even when adjusting for the size of the driving population. For instance, Orleans Parish has one of the lowest drug arrests in the state per licensed drivers. The rate at which a few parishes test for drugs far outpaces the rest of the state. It is possible these parishes may have greater resources available or more

convenient access to testing facilities. Additionally, it is possible that evidence collected in other DUID arrests were sent to laboratory sites besides the LA Crime Lab for chemical testing. Drawing any conclusions as to why this is the case at this point is purely speculative but warrants further inquiry.

About 20% of the DWI arrest cases that are logged in the COBRA system have BAC levels below 0.08. Even though alcohol impairment is possible at lower BACs, it cannot occur with BAC=0. In these cases especially, the driver may be impaired by drugs or in the case of a low BAC, a combination of alcohol and drugs. When signs of impairment are clear but cause of impairment is not, or the driver has not consumed any alcohol, the data suggest the driver should be tested for drugs. A saliva test like those used in roadside surveys could be used to screen for drug-impairment to determine whether or not confirmatory testing is warranted.

Finally, the data show that a higher percentage of drivers testing positive for drugs have a history of DWI arrests, speeding tickets and crashes at a higher frequency compared to the general driving population. The analysis is conditioned on being arrested and tested for drugs in 2013-2014. Based on this information only, drug-positive drivers have higher risk of DWI arrests, speeding and crashes based on prior documented unsafe driving incidents than all other drivers. Many of the drivers tested positive for two or more drugs and/or combined drugs with alcohol. The data do not imply drug use in and of itself generally poses a higher risk to traffic safety, but that high risk behavior is associated with both drug abuse and unsafe driving. Drivers who tested positive for cannabinoids (only) had fewer DWI arrests than those who tested positive for narcotics and stimulants, had the lowest percentage of prior crashes and about the same percentage of speeding violations as depressants and other medications.

Survey Results

The results from each survey are presented in the following order: District attorneys, defense attorneys, comparison of attorney responses to same items) police, and lastly, the general public. We did not use forced-response question formatting, so in many instances, the number of responses received for each survey item varies slightly from the total number of

submitted questionnaires across all four target populations. All percentages reported are calculated based on the actual responses received relative to the total number of responses received per item.

District Attorneys (DAs)

We received a total of 33 submitted questionnaires from DAs and Assistant DAs throughout the state. In general, DAs report varying degrees of experience prosecuting drug-only impaired driving cases. Reported length of experience as a prosecutor ranged from a minimum of three months to 32.4 years (M=9.1). To gain an idea of the proportion of impaired driving cases involving drugs only, we first asked about how frequently they prosecute impaired driving cases involving alcohol and/or drugs. The next question asked about what percentage of impaired driving cases involve drugs only. Table 9 (below) displays the cross tabulation of reported frequency of drugs-only cases relative to the reported frequency of impaired driving cases.

Table 9
Relative frequency of drugs-only impaired driving cases for prosecutors

	Percent Drugs Only		
	30% or less	31% to 70%	71% or more
Once a month or less	1	3	0
1-4 times a month	10	6	2
More than 2 per week	7	1	0

For the prosecutors in this sample, the average percentage of drug-only impaired driving cases is about 34% (Min=15%, Max=90%). Five prosecutors reported percentages of 50% and higher. Compared to previous years, a majority of prosecutors reported that the number of drugged driving cases in their parish has increased (14) or somewhat increased (5). When asked to tell how frequently they have cases where alcohol was either not a factor or the BAC was below the illegal limit, most prosecutors in this survey, about 63%, reported a frequency of less than once a month (16) or hardly ever/never (3). About 23% (7) reported a frequency of 1-4 times a month and about 13% (4) prosecutors reported having more than 2 per week (one reported daily).

       Obstacles. About 73% (22) of prosecutors in the sample reported experiencing some degree of difficulty obtaining convictions in drug-only cases. The degree of difficulty ranged

from "somewhat difficult" (13) to "very difficult" (4). In a follow-up question, we asked them to explain some of the greatest obstacles they face in prosecuting drug-impaired driving cases. About two-thirds of the sample provided information about the obstacles they face. Table 10 (below) presents a summary of their responses. Unsurprisingly, proving impairment was the most frequently occurring response. Some elaborated to include that they have difficulty proving the drug caused impairment at the time of the arrest where others suggested an overall lack of chemical evidence (presumably for a variety of reasons) is the primary reason. As a whole, the responses expressed frustration—with police (e.g., lack of training, lack of quality evidence, insufficient testimony), with judges (e.g., "uninformed"), with toxicologists (e.g., lack of quantified amounts of drug), and the DWI statute itself. Several responses mentioned the defendant's right to refuse to submit to chemical tests presents their greatest obstacle.

Table 10
Obstacles to prosecution of drug-only cases

proving impairment (8)
lack of chemical test results due to suspect refusal (3)
lack of quantified chemical test results
issues coordinating with lab/toxicology
lack of quantitative and qualitative chemical results and video evidence
issues with state troopers' protocol and capabilities
issues with police drug recognition training
identifying the drug(s) involved for the judge (2)
the DWI statute and uninformed judges/jurors
uninformed judges

Prosecution Issues. We asked prosecutors whether the drug-only cases seem more likely to be contested than alcohol cases, about 39% (12) reported "Yes" and about 13% (4) reported "No." About 48% (15) reported "Sometimes, it depends on other factors involved as well." The "other factors" could be just about any potentially mitigating circumstance or indisputable evidence that can affect the outcome of a case in either direction. For example, if the defendant confesses to having ingested a narcotic while they are under investigation at the scene, the most likely outcome is the case will be resolved with a "guilty" plea without contest.

If the prosecution cannot meet its burden of proof—for whatever reason—cases may be dismissed. When asked if, in their experience, drugged driving cases seemed more likely to be dismissed than alcohol cases, 41% (12) reported "No," 31% (9) reported "Yes" and about 28% (8) said "Sometimes, it depends on other factors involved as well." If the DA answered "Yes" or "Sometimes…" we asked a follow-up question to understand under what condition(s) a drugged driving case is typically more likely to be dismissed. Table 11 (below) contains their responses that have only been revised for spelling and punctuation errors. In general, conditions most likely to result in case dismissal have to do with a lack of proof (both qualitative and quantitative), reasonable doubt as to the defendant's impairment at the time of arrest, as well as the probable cause for the stop.

Table 11
Open-ended responses about typical conditions where cases are dismissed

Yes
When the driver performs well on the field sobriety test (SFST), but refuses a chemical (blood) test
When defendant has prescription for the medication involved; when the LSP lab toxicology screen does not indicate presence of drug because it wasn't within the parameters of the screen
When I can't get quantification of drugs in system from a lab
When there is no testing and indicators of impairment are minimal
If the driver is not in possession of any CDS and the officer does not adequately investigate the drug impairment
No urinalysis; no accident
When the drug would remain in their system longer than 24 hours
If the defendant is taking the recommended dosage of prescription medications
Reasonable doubt for other factors - injury, tiredness
Sometimes
Field sobriety issues, probable cause issues
Cannot prove impairment at the time of the offense
There is usually an accident involved and the defendant likely hit his head, causing the HGN to be not as reliable. Also there is almost never a quantitative analysis regarding the amount of drugs in the defendant's system. The quantitative analysis is expensive, as well
Lack of physical evidence. Lack of video/dash camera evidence
If we are unable to prove the impairment
Trooper not adequately testifying to his results to SFST and answering questions to reinforce his results thus forcing me to lose a motion to suppress and calling his credibility into question. I cannot prove at time of crash he was under influence because of lack of the SFST. Lack of a DRE.
Head injury

We asked all DAs if it is easier to obtain a conviction when the case involves a crash. Out of 31 responses, a majority (21), about 68%, reported "Yes," however, about 83% of DAs clarified that, in their experience, most drugged driving cases do not involve crashes. Five DAs reported otherwise.

Finally, we asked about cases where the driver has consumed drugs but also has a BAC at or above 0.08. Out of the 28 responses to this question, a sizable minority (11) reported that they will still pursue a drug case when the defendant has a BAC at or above 0.08, however, about 61% of DAs (17) reported that they do not. We asked a follow up question to learn why or why not. From their open-ended responses, it is clear that this isn't a straightforward issue, as a majority tempered their previous responses with conditionals or exceptions to some degree. Table 12 displays their responses, which have been modified for clarity and concision. Responses that were substantially similar have been collapsed into one statement, with the number of mentions in parentheses.

Table 12
Reasons for not following up on drug cases when BAC>0.08

Yes
The state is [already] afforded the presumption of intoxication when the BAC is a 0.08 or higher
It helps to strengthen the evidence against the defendant.
Yes (If)
… They are in possession of a CDS.
Because it's a crime, provided there is enough evidence to prove it.
… I have a lab report. If Possession of drugs, I pursue it if evidence supports the case.
… The offender is also in possession [as] consumption alone is insufficient to "prosecute" as possession
… Driver possessed drugs, a drug case would be pursued along with the DWI.
No (Unless)
… The defendant had drugs in his possession as well (2)
… They admit recent usage
Depends on type of drug and whether drugs in possession as well as in system
No
A BAC of .08 or higher is sufficient to prosecute the driver for [DWI] (2)
Because Louisiana's statute is flawed regarding alcohol combined with controlled substances
LSP lab does not process blood sample for drugs after initial ETOH screen shows .08 or higher. Also, if Intoxilizer shows .08, then officers do not proceed to get search warrant for blood.
If the BAC is .08 or higher, the DWI statute provides a legal presumption of intoxication so I don't have to prove impairment (2)
Too difficult/ Alcohol is easier to prove (4)
Proof issues (2)

Laws. Almost half (14) of DAs reported Louisiana's current existing impaired driving laws are adequate to prosecute drugged driving cases "Most of the Time." Of the remaining responses, 23% (7) reported "Sometimes," another 23% reported "Rarely." One said "Never" and one said "Always." We asked DAs whether they find it challenging to establish causation under Louisiana's current impaired driving laws. Most (16) said "Sometimes." The distribution reflects a normal bell curve (see Figure 5 below).
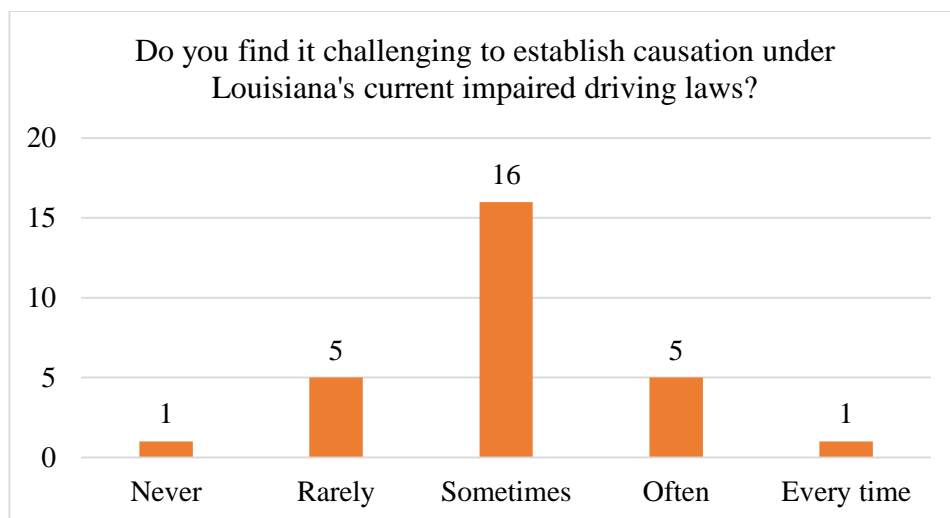
Figure 5
Perceived difficulty establishing causation

Next, we asked DAs their opinions on the efficacy of per se laws in increasing conviction rates and whether or not they think a per se law would probably make it easier for them to obtain a conviction. On a 7-point scale ranging from "very ineffective" to "very effective," most responses fell somewhere within the moderate range with 24% (7) reporting "Neither effective nor ineffective" (7). Ten DAs reported they believe they are "Somewhat effective" while six reported "Somewhat ineffective." With the exception of one DA reporting "Ineffective." the remaining felt they were "Effective" (2) or "Very effective" (3). In terms of how they think a per se drugged driving law might affect their own conviction rate by making it easier for them, just under half, 47% (14) said "Maybe." Three said "Probably not" and seven said "Probably yes." Six DAs, about 20%, reported "Definitely yes"

We also asked their opinions on the efficacy of per se laws in improving public safety and to what extent do they believe per se laws would keep drugged drivers off the road. Though it is not clear what criteria DAs were considering when they considered the efficacy of per se laws in improving public safety, about 43% (12) reported the opinion they are "Somewhat effective." Five DAs said they were "Effective" (2) or "Very effective" (3), while about the same reported "Somewhat Ineffective" (3) or "Ineffective" (3). About 18% (5) were of the opinion they don't really have an affect either way. DAs were generally less inclined to believe that the laws will keep drugged drivers off the road. Figure 6 (below) displays the response distribution.
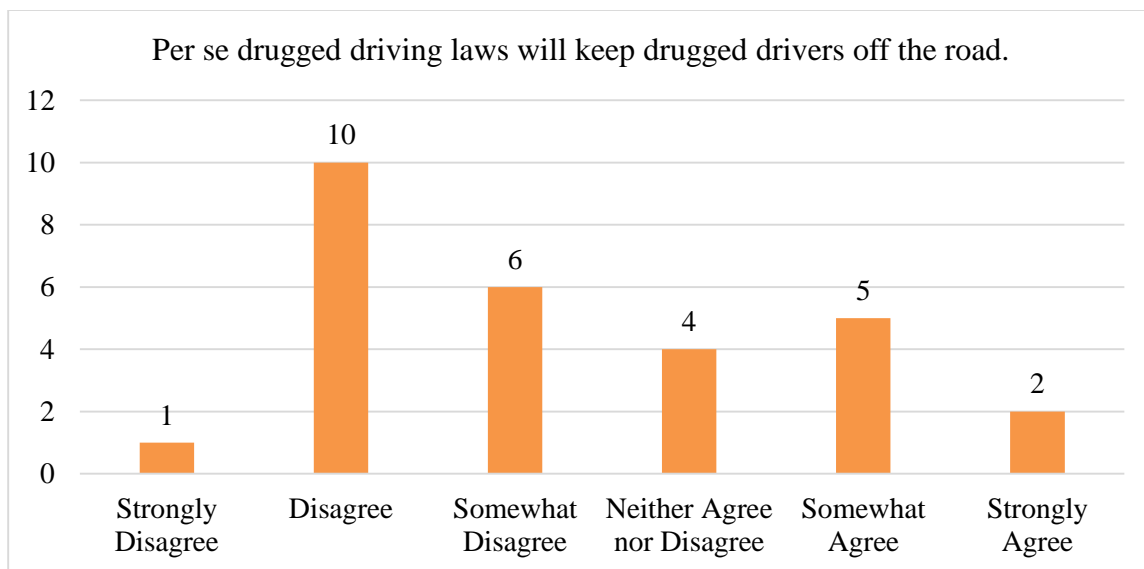
Figure 6
DA opinion on per se law efficacy

The remaining items, a series of ten Likert scale statements, were also asked of defense attorneys for the purposes of comparing and contrasting. Responses to these items will be presented along with the responses from defense attorneys, following the general results of the defense attorney survey.

Defense Attorneys

We received a total of 34 submitted questionnaires from defense attorneys throughout the state of Louisiana. Four records were mostly incomplete and were excluded from analysis,

which resulted in a sample of 30 in total. There were four submissions that did not complete the last third of the survey but provided meaningful responses up to that point. Also, compared to the DA sample, there are more instances of skipped items throughout the survey but across a majority of respondents; therefore total responses rarely include all N=30. Due to qualitative analysis and the fact that this is a convenience sample that cannot be construed as representative of all defense attorneys in Louisiana, including these incomplete records does not substantially affect conclusions. Therefore, these records are included in the analysis.

Defense attorneys' experience practicing in Louisiana ranged from a minimum of 2.2 years to 39.4 years (M=21.9). Like the DA survey, we asked how frequently they defend impaired driving cases involving alcohol and/or drugs, and what percentage of impaired driving cases do they estimate involve drugs only. Table 13 (below) displays the cross tabulation of reported frequency of drugs-only cases relative to the frequency of impaired driving cases.

Table 13
Relative frequency of DUID cases for defense attorneys

	Percent Drugs Only		
	15% or less	16% to 30%	30% or more
Once a month or less	5	2	0
1-4 times a month	3	8	2
More than 2 per week	3	0	1*

*Note: percent of drugs-only cases is 95%

Only four attorneys reported defending two or more impaired driving cases (in general) a week (12%). Another 12% reported about one impaired driving case a week while the remaining 76% tend to defend impaired driving cases on an irregular basis. One of the defense attorneys in this sample almost exclusively defends DUID cases (95%) which is an extreme outlier relative to the rest of the sample (M=14.8%, Min=1%, Max=95%, n=21).

Just under 12% of defense attorneys reported that the number of drugged driving cases they've taken have decreased (3) or somewhat decreased (1) in recent years. About 35% reported their number of drugged driving cases has stayed about the same (12). Another 35% reported that drugged driving cases have somewhat increased (12). About 12% reported an

increase (4). Two said they were not sure. When asked to tell how frequently they have cases where alcohol was either not a factor or the BAC was below the illegal limit, most report a relatively low number of drugged driving cases where alcohol is not a factor or the driver had a BAC lower than 0.08. About 35% (9) report "Never or hardly ever," 50% (13) report "More than a few cases per year, but less than once a month." About 12% (3) reported "Once a month" and one attorney reported "Once a week."

We asked defense attorneys how frequently they defend drivers charged with having various types of commonly used drugs in their system. Table 14 below displays their responses. While it not appropriate to extrapolate beyond this sample, it is noteworthy that "prescription drugs" and "multiple drugs" are more frequently detected in their clients' systems, whereas "THC" and "other illicit drugs" tend to be rarer.

Table 14
Frequency of drugs detected

	Rarely	Occasionally	Frequently	Not Sure	N
Cannabis/ THC	13	10	5		28
Other Illicit Drugs	16	6	4		26
Prescription Drugs	7	13	10		30
Multiple Drugs	9	10	7	2	28

We asked how many of their DUID cases tend to result in their client accepting a plea bargain. About 35% reported "None" (3), "Very few" (3) or "some" (3). About 39% (10) reported "Most" and 27% (7) reported "Nearly all or all." In a follow-up question, attorneys were asked to provide open-ended answers to this question. Based on their open-ended responses, there is clearly a range of circumstances that can impact whether or not they would accept a plea bargain for their client. Some of the more straightforward circumstances pertain to incontrovertible proof in the form of video evidence and/or possession of drugs in vehicle and positive test results. Other answers suggest that they typically will do whatever is in the best interest of the client, which is not at all surprising or unexpected. Table 15 (below) presents the attorneys' responses, which have been minimally edited to correct spelling errors, capitalization, etc., and all personally identifying information has been removed.

Table 15
Reasons for plea bargain

Positive test results
Video evidence and/or drugs found in vehicle
Weight of the evidence against my client; Is it a 1st, 2nd or 3rd plus DWI?; Details of the plea bargain
Video evidence of impaired driving
Consensual drug screen, additional possession charge
The evidence supports probable conviction
It depends on how client looks on video tape. Also most of the officers have no idea what they are doing in these types of cases. They are arresting people who are on prescription medications and several of these meds are not the cause of what he or she believes to be impairment. Most of the police officers in this state have a difficult enough time dealing with alcohol cases much less something as technical as a drug case
Usually it is a combination of alcohol and drugs; plus blood test reveal presence of several substances
Depends on the offer
Favorable sentence
For the most part, the traffic stops are generally 'good,' and usually my clients have unfortunately taken drugs to the extent he or she is too impaired to drive
Scientific results indicate that the client was under the influence
Admission of consumption by the defendant; if an accident involving injury or death occurs there is normally a blood test administered
When the video or other evidence shows impairment
Plead to lesser charge
Client performed very, very poorly on field sobriety test and admitted in interview that they were impaired
Highly and unfairly prosecutorial judiciary caused by lack of jury trials for misdemeanor DWI cases, as is available in 45 states
Strong law enforcement testimony concerning impairment-more than one (1) officer
If the client was indeed driving while under the influence of drugs and is the client 894 eligible
Positive drug screen, poor performance on field sobriety test, other visible signs of impairment (e.g. slurred speech)
Mostly in cases where my client took the field test and performed objectively poorly and the officer conducted the test pursuant to the NHTSA rules and the BAC is under .08 or my client didn't blow in the Intoxilizer 5000 machine
Best interest of client

We next asked defense attorneys to identify some of the primary reasons the state fails to meet its burden against their client. It is important to remember that the state has the burden of proof because the presumption of innocence [until proven guilty] is granted to the defendant, which is guaranteed by the due process clauses of the US constitution. Responses to this question collectively indicate that one of the primary reasons the state fails to meet is burden is because the defendant was not impaired in the first place or evidence does not prove beyond a reasonable doubt that the defendant was clearly impaired to justify

conviction. Police mistakes, unlawful stops, poorly documented or collected evidence, a lack of clear, convincing evidence in general, and no video evidence documenting the defendant's driving or performance on the SFST are frequently identified. Table 16 displays responses, which have been minimally edited.

Table 16
Reasons state fails to meet burden

No SAR
Bad police work or no video evidence or unlawful stop
How do you define successful -- quite often plea bargains are successful cases. If the State cannot meet its burden of proof then that means that the client was not impaired
Can't establish when drugs were in the clients system or that the drugs were in his system at all
Defendant-favorable video, no possession and no dirty screen
No objective proof of under influence -- no valid test results
Samples are not properly collected; the drugs do not cause impairment; the officer is clueless; the ADA is not up to date on drug testing; client was clearly not impaired; urine test is useless
No test
There is no constitutional method of testing unless there is serious bodily injury or death
The video does not support the field sobriety test results
The state cannot prove that the defendant was under the influence
You can be successful short of a trial which is the only way in which the state would fail to meet its burden; if there is a trial the primary reasons would be no confession and no blood test
All of my drug related cases ended up in plea due to confessions of positive testing
[Officer] made a bad arrest, improper stop, poor management of field sobriety tests
Poor field sobriety test, no admission of impairment during interview and no Intoxilizer test
The state never has to meet its burden. In Louisiana, you must prove beyond a shadow of doubt that your client in innocent
Lack of subjective testimony proving impairment; weak probable cause for the stop
Poor police work, crowded dockets
Client was not guilty
Do not have sufficient evidence of impairment
Because the state can't defend the stop on a suppression motion; the cop performed the field test instructions improperly on video; the client performed the field test with success with no BAC; the state can't prove the client was "operating" the vehicle while being impaired or couldn't prove the client was impaired while proving client was driving
Baton Rouge City Court is generally unprepared to present its cases

Much of the advocacy for per se laws suggests that prosecutors have a disadvantage in DUID cases under existing law. Defense attorneys tended to disagree: 56% reported the state "Never" (12) or "Rarely" (2) has a disadvantage. Another 32% reported "Sometimes" (8). Only 12% reported "Often" (2) or "All the time" (1). Again, we followed up this question

with an open-ended "why or why not?" Like the previous open-ended items, their responses appear below, minimally edited, in Table 17. Responses are ordered based on their responses to the preceding question.

Table 17
Answers to open ended question regarding prosecutor's disadvantage

Never
The State has all of the advantage if the officer does his job. Most Judges are easy to convict regardless of how little evidence the State presents. They feel threatened and coerced by organizations like MADD and are not very sympathetic to the DWI offender. I personally feel Zero tolerance laws are not needed. Zero tolerance will only increase the number of drug arrests of people who are not impaired. Isn't the objective to get the impaired driver off the highways, or is the purpose to make more arrest of innocent people? Alcohol laws are not zero tolerance, and neither should [the laws be for] drugs
The state never has a disadvantage in a criminal case
Please read previous responses. This survey shows that its authors know nothing about reality in Louisiana
The law doesn't require them to show an amount of drugs in their system
The state never has a disadvantage prosecuting any case -- including DWI. If there is a disadvantage then that means the client was not impaired
They have the resources of the police, DA, FBI, Crime labs, at their disposal
The State almost always has an edge regardless of the burden of proof that is supposed to apply. People tend to believe that someone who has been accused is guilty
The state has all the resources including very conservative, pro-police, and even Tea-Party type judges who side with the state in spite of the evidence or lack thereof presented at a hearing/trial
Rarely
The State always has the advantage, professional witnesses and judicial bias, over-zealous prosecutors
The prosecutor is in a better position to accept cases that can be won.
Sometimes
Difficulty with objectively prove under influence due to drugs
A warrant is needed for blood or a urinalysis, if a client is smart enough to refuse to consent, they can't meet their burden of proof
Total prohibition is unreasonable
A positive drug screen does not prove impairment. A blood alcohol level in excess of .08 determined by breath test or blood test proves impairment
State always has the advantage in a criminal case
When the evidence of impairment is lacking
Unless there's an injury causing or fatal accident, there's no blood test. May not matter as much if it's an alcohol and drug case
No way to prove impairment
State always has the advantage in a criminal case
Often
[The state] cannot prove defendant is under the influence of a proscribed drug
Police "lose" video if defendant favorable
All the time
They don't have to show a certain level of impairment

Next, we asked defense attorneys to provide their opinions of per se DUID laws. First, we asked if they had any reservations about a per se drugged driving law in Louisiana. Most, 76% (19) expressed "Yes" i.e., they have reservations. Their open-ended responses appear below in Table 18. In general, concerns involve various aspects related to due process and the potential to convict citizens of drugged driving when they were not impaired.

Table 18
Defense attorneys' concerns about per se laws

Yes
Each case needs to be decided individually. Per se laws lower the bar for prosecutors which creates false convictions
Absolutes promote disrespect for the Law generally with the public
Some prescription medications, like Adderall, makes for better drivers, not worse. If someone with ADHD is driving, I want them on their meds. But zero tolerance for benzos and opiates is a great idea. SFST too subjective. Should be mandatory urine test, not breathalyzer, or lose license. Abandon SFST. If you have a bad knee, hip or ankle you can't pass the SFST anyway
If the ADA is too clueless to do his job, then spend the time and effort training them. The same can be said of the police officer. Per se law are not good for anyone that is why the overwhelming majority of the States in this country do not have them. PERIOD
Drug half-life
Because prohibition has shown to be ineffective
Drugged driving occurs every day by millions of Americans. Anyone with a valid prescription can drive an automobile unless the prescription bottle indicates otherwise. To deny citizens the right to drive after taking their prescribed medication would result in a health crisis in this country
The burden of proof will be a problem as to what is considered impairment
The current system and statutes are enough
It is going to depend on the criteria and factors which are set which will be used to prove the impairment
Because drugs stay in your system far longer than they have a toxic effect
Passing more laws, even per se laws, will have little or no impact on the problem. The only thing that works on a consistent basis is education, leading to a change in the culture. It simply needs to become socially unacceptable to drink, and drive, or use drugs, and drive
It is possible to test positive for a drug but not be under the influence of the drug at the time of driving
I'm concerned it will give the state more opportunity to violate citizens' constitutional privacy rights by forcing citizens to take a drug test with no right to refuse, an important constitutional right!
No
Lack of effectiveness
It is already illegal to drive under the influence of drugs in Louisiana under the same statute making it illegal to drive under the influence of alcohol. Whether the wording of the statute could be improved is subject to debate

The remainder of the defense attorney survey consisted of the same set of Likert scale items that were asked of DAs, which are reported below.

Compare/Contrast Defense & Prosecutor Responses. Defense attorneys and prosecutors were each asked a series of questions about their beliefs and opinions on per se drugged driving laws, as well as the extent to which they believe drugged driving is a problem in Louisiana. One of the first items we asked was their opinions on the efficacy of per se drugged driving laws in improving public safety. Figure 7 (below) displays the responses for both defense attorneys and prosecutors. As illustrated, prosecutors and defense attorneys differ in their opinions, with prosecutors tending to express the laws are relatively effective in improving public safety; defense attorneys tend to voice doubt in that the laws are not effective means toward that end.
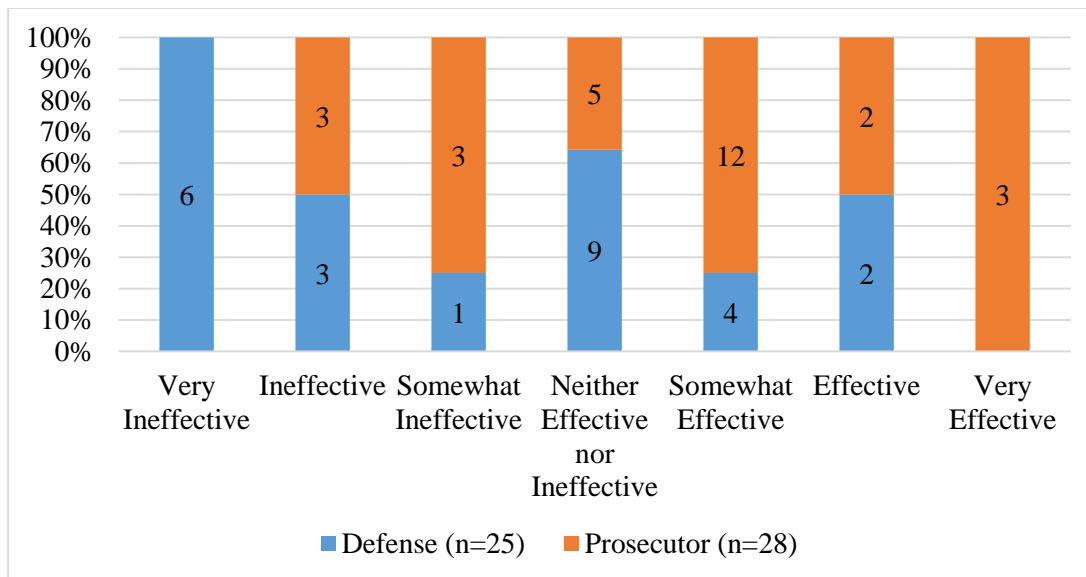
Figure 7
Efficacy of per se laws in improving public safety

All attorneys were asked to tell their level of agreement with a series of (randomly presented) statements about drugged driving and per se laws on a Likert scale ranging from "Strongly Disagree" (1) and "Strongly Agree" (5) for each item. The statements are:

1. Drugged driving is a major problem in Louisiana.
2. Drugged driving poses a serious threat to public safety.
3. Drugged driving poses a threat to public safety on par with drunk driving.
4. Prescription drugs pose as much threat to public safety as illegal drugs.
5. Per se drugged driving laws should not differentiate between illegal or prescription drugs.
6. Per se drugged driving laws should apply to illegal drugs only.
7. Prescription drugs should be excluded under per se drugged driving laws.
8. A per se drugged driving law will improve public safety in Louisiana.
9. Per se laws are not necessary to obtain convictions, provided the driver's behavior is observably impaired.
10. There is no guarantee that per se drugged driving laws will improve public safety.

Results (i.e., mean comparisons) are presented visually in Figure 8 (below), which displays the degree to which the attorney samples tend to agree/ disagree on each item, with the blue bars indicating the mean score for defense attorneys and the orange bars for prosecutors. Both defense attorneys and prosecutors tended to express similar opinions about that drugged driving poses a threat to public safety (P_{mean}=4.41, P_{SD}=.78; D_{mean}=3.92, D_{SD}=.78) however they tended to disagree that drugged driving is a "major problem" in Louisiana (P_{mean}=4.04, P_{SD}=.64; D_{mean}=2.96, D_{SD}=1.21) and that drugged driving poses a threat to public safety on par with drunk driving (P_{mean}=4.14, P_{SD}=.80; D_{mean}=3.16, D_{SD}=1.21). There is greater variance in responses among defense attorneys than there is among prosecutors.

We included several nuanced statements about prescription drugs pertaining to their perceived threat to public safety (relative to illegal drugs) and to what degree they should be excluded from hypothetical per se drugged driving laws. According to the laws already in existence in other states, there is no standard way to deal with prescription drug use. Some states allow defendants with lawful prescriptions to claim an affirmative defense, but many states (e.g., Illinois, Oklahoma) do not. There is a fine line between illegal use of prescription drugs and misuse of personal medication, especially when driver impairment is obvious. It is reasonable to presume that prescription drugs (regardless of whether or not the user has a lawful prescription) do not necessarily cause impairment, though the potential for impairment usually exists. The potential for impairment depends on a host of factors that vary across individuals and circumstances.
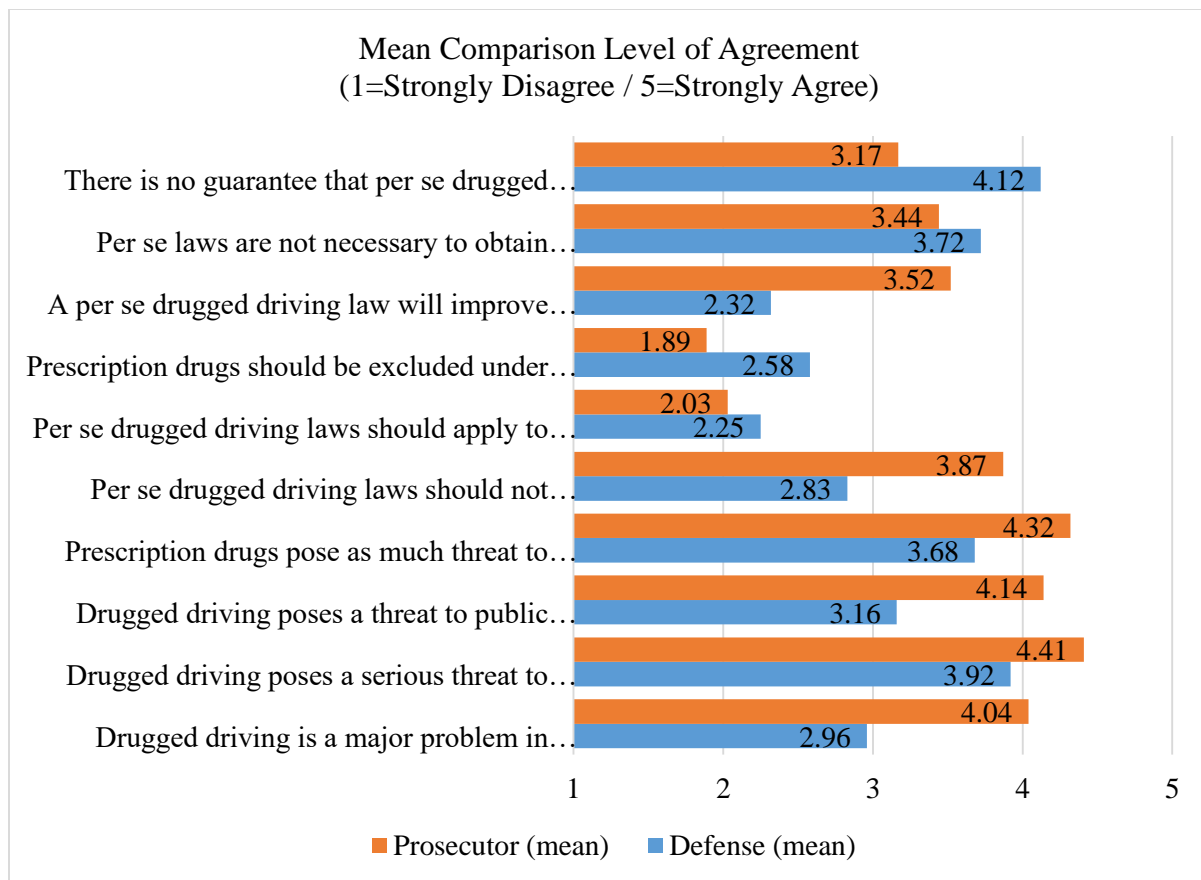
Figure 8
Mean comparison of attorney responses

Defense attorneys and prosecutors slightly disagreed on the degree to which prescription drugs (in and of themselves) pose as much of a threat to public safety as illegal drugs (P_{mean}=4.32, P_{SD}=.77; D_{mean}=3.68, D_{SD}=1.31). They both tended to somewhat disagree with the statement that per se drugged driving laws should apply to illegal drugs only (P_{mean}=2.03, P_{SD}=1.05; D_{mean}=2.25, D_{SD}=1.11) as well as the statement that prescription drugs should be excluded under per se drugged driving laws (P_{mean}=1.89, P_{SD}=.99; D_{mean}=2.58, D_{SD}=1.25). The attorneys tended to have different opinions on their level of agreement with the statement "per se drugged driving laws should not differentiate between illegal or prescription drugs." Prosecutors were more likely to express agreement with that statement (P_{mean}=3.87, P_{SD}=1.04) where defense attorneys were split in their opinions, with about half tending to agree and the other half tending to disagree (D_{mean}=2.83, D_{SD}=1.49). When the statements about per se laws are framed around public safety, defense attorneys tend to express greater skepticism than prosecutors. Defense attorneys generally tend to disagree that a per se drugged driving law will improve public safety in Louisiana (D_{mean}=2.32, D_{SD}=.99).

Prosecutors are relatively split, with about half of the sample expressing agreement and nearly half neither agree nor disagree (P_{mean}=3.52, P_{SD}=.802). There is a similar response among prosecutors to the statement that there is no guarantee that a per se drugged driving law will improve public safety, however, about two thirds of defense attorneys agree (P_{mean}=3.17, P_{SD}=.85; D_{mean}=4.12, D_{SD}=.88).

Interestingly, defense attorneys and prosecutors responded very similarly to the statement that per se laws are not necessary to obtain convictions provided the driver is clearly impaired. Over 50% of each of the samples expressed agreement (P_{mean}=3.44, P_{SD}=.75; D_{mean}=3.72, D_{SD}=1.14). Slightly over 10% in each sample disagreed. The results from the attorney surveys will be discussed again later in the report.

Police Survey Results

The police sample was screened through the question: Is it part of your daily work routine to make traffic stops? Only those reporting "Yes" and "Sometimes" were retained in the sample (N=52). Seventy-three percent of the sample consists of officers from city/municipal agencies (38) and the remaining 27% are from parish agencies. Tables 19 and 20 (below) display the agency jurisdictions for the officers in this sample.

Table 19
Agency jurisdiction: parish

Parish (N=14)			
	Frequency	Percent	Valid Percent
Allen	1	1.9	7.1
Calcasieu	1	1.9	7.1
Iberia	1	1.9	7.1
Lafayette	1	1.9	7.1
Lincoln	1	1.9	7.1
Madison	1	1.9	7.1
Morehouse	1	1.9	7.1
St. James	3	5.8	21.4
St. Tammany	2	3.8	14.3
Union	1	1.9	7.1
Vermilion	1	1.9	7.1
Total	14	26.9	100

Table 20
Agency jurisdiction: city/ municipal

City/ Municipal (N=38)					
	Freq	%		Freq	%
Abbeville	1	2.6	New Orleans	1	2.6
Anacoco	1	2.6	Opelousas	1	2.6
Baker	1	2.6	Pineville	1	2.6
Bossier City	1	2.6	Ponchatoula	1	2.6
Broussard	1	2.6	Ruston	2	5.3
Crowley	1	2.6	Scott	1	2.6
Gonzales	3	7.9	Slidell	1	2.6
Jennings	7	18.4	Town of Baldwin	1	2.6
Kenner	1	2.6	Town of Coushatta	1	2.6
Kinder	1	2.6	Town of Killian	1	2.6
Lafayette	1	2.6	Village of Dixie Inn	1	2.6
Lake Charles	1	2.6	Village of Tickfaw	1	2.6
Marksville	1	2.6	West Monroe	1	2.6
Natchitoches	1	2.6	Zachary	2	5.3

We asked officers how many years of experience they have in their current position. The mean for the sample is 8.57 years (SD=7.01, Min=1, Max=33), the median is 7 years and the mode is 1 year. We did not ask officers how long they have been in law enforcement. Many of those reporting less than two years in their current position also reported a rank/classification above the level of "Patrolman." There were only two Patrolmen reporting less than two years in their current position.

Frequency of Traffic Stops. About 65% (34) reported that it was part of their daily work routine to make traffic stops. The remaining 35% (18) reported that traffic stops are "sometimes" part of their daily routine. Almost all, 96%, reported that it is fairly common to make traffic stops after observing a driver committing a crime or a traffic violation while in control of their vehicle. Only 4% (2) said "sometimes." When asked to tell how often they make a traffic stop because they have reason to suspect a driver is under the influence of alcohol and/or drugs, very few (3) reported "rarely." About 44% (23) reported "occasionally," 25% (13) reported "sometimes," and 25% (13) reported "often."

The next question asked how often the officer typically performs a SFST if there's a chance the driver has consumed drugs or alcohol. Almost 70% (36) reported "always." About 15% (8) said "most of the time," 6% (3) reported "sometimes," followed by 10% reporting

"rarely" (2) or "never" (3). Similar to the previous question, about 71% (36) reported they are "very likely" to further investigate through chemical testing if the driver fails the SFST. About 18% (9) reported "likely." There were 2 officers undecided, one officer that reported "unlikely" and about 6% (3) reporting "Very unlikely." (One officer, a Captain, did not answer this question).

Impaired Driving Arrests. About 46% (24) of officers in this sample report making impaired driving arrests very infrequently (less than one a month) and another 13% (7) report making about one impaired driving arrest a month. Nearly 30% report making about two or three a month. The remaining six officers make impaired driving arrests more frequently: three reported about 1-3 times a week, two reported 4-6 times a week while one officer reported making daily arrests. While encountering multiple offenders isn't uncommon, only 10% (5) reported this occurs "Most of the time," while the majority, 70% (35) reported "Sometimes." About 20% (10) reported "Not typically."

We asked officers to estimate what percentage of the time the driver has a BAC of 0.08 or higher by clicking and dragging a slider from one side of the screen towards the other, stopping on the percentage that best approximated their experience. On average, about 69% of the time, drivers have a BAC at or above the per se limit (SD=30.29, Min=4%, Max=100%). The mode is 100% and the median is 80.5%. Officers responded to several follow-up questions about circumstances where they are most likely to test for drug(s) other than alcohol. The first contained a list of six circumstances (see Table 21 below) and officers were asked to check all that apply.

Table 21
Circumstances most likely to lead to test for drugs

	N	Percent
If the driver is clearly impaired at the scene but does not appear to be drunk	43	82.7%
If there is drug paraphernalia in the driver's vehicle or on his or her person	21	40.4%
If the driver was involved in a crash	22	42.3%
If the driver fails to cooperate	11	21.2%
If the driver has had at least one prior impaired driving offense in the past	11	21.2%
If the driver's BAC is below 0.05	25	48.1%

On average, officers selected between two and three circumstances (M=2.56, SD=1.70, Min=0, Max=6). As Table 21 shows, 83% of officers in the sample are most likely to continue testing when the driver appears to be clearly impaired at the scene but does not appear drunk (43). If a driver has a BAC at or above 0.08, most officers reported they would not be very likely to continue testing. About 20% (10) reported they would be "undecided," whereas about 18% (9) officers expressed some degree of likelihood to continue testing for drugs. Figure 9 displays the response distribution below.
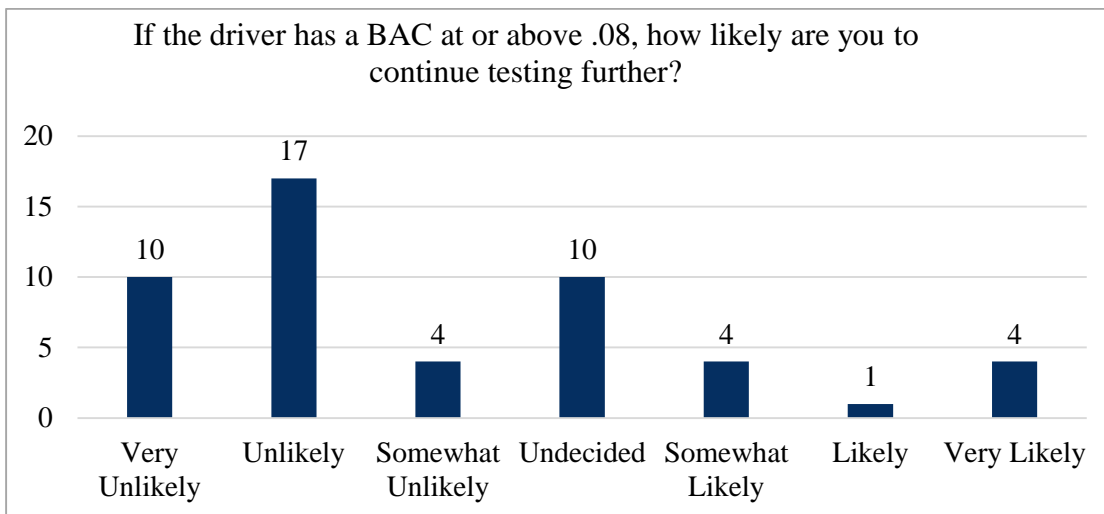
Figure 9
Test likelihood with BAC at or above .08

We next asked specifically about what they typically do when they have driver below the age of 21 fails the SFST with a BAC of 0.00. Most officers reported that when a driver under the age of 21 fails the SFST but has a BAC of 0.00, they follow up with drug testing in some capacity. About 24% reported they usually test blood (12), 26% reported testing urine (13), and 26% reported testing both blood and urine for drugs (13). Only 6% (3) said they would let them go. About 18% (9) reported "other," but only six provided a follow-up response to explain: Ask for consent; Call for a driver; Contact the department DRE; Continue investigation for possible impairment from drugs; and Use 14.99 (i.e. reckless operation of a vehicle). If the driver above the age of 21 fails the SFST but upon chemical testing blows a BAC of 0.05, 62% (31) would continue some form of testing the driver for drugs. Among those reporting "Other" were the following: Ask for consent; Book then for DWI and

continue testing blood and urine for drugs; Call a ride; Cite them and release; Contact the dept. DRE for an investigation; Impairment can still be proven at 0.05 depending on the license; Investigate for possible impairment from drug(s); and Use 14.99.
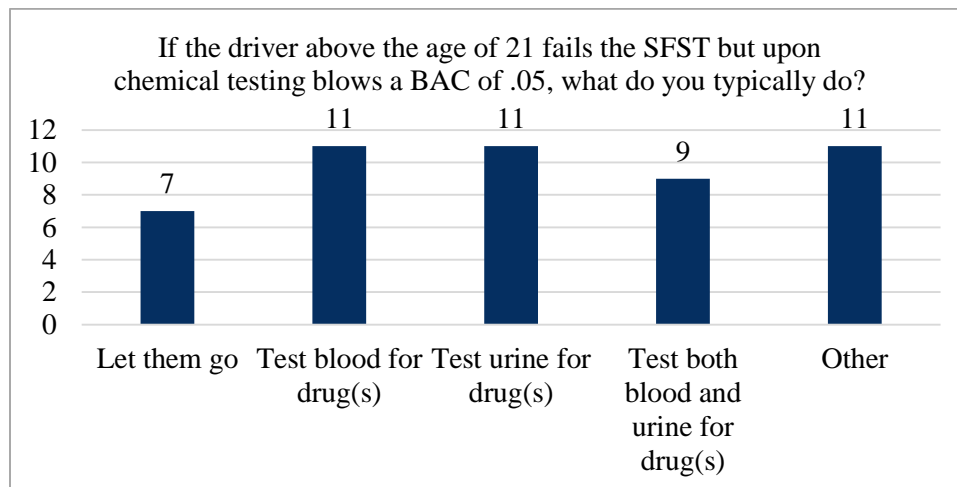
Figure 10
Test likelihood with failed SFST and BAC=.05

Drugged Driving Cases. The last two questions on the survey ask officers about their experience specifically with drugged driving cases. First, we asked officers about the relative frequency of drugged driving to drunk driving in their jurisdiction. About 35% (18) reported the problem was about the same as drunk driving. About 17% (9) reported drugged driving was somewhat more prevalent and about 17% reported that it was somewhat less prevalent. There were relatively few reporting drugged driving was more (3) or much more (2). About 15% reported the problem was less prevalent (6) or much less (2). The last question on the survey asked officers to describe some of the issues they experience when investigating drugged driving cases. Their responses to this question appear minimally edited below in Table 22. Despite the fact this is a non-representative sample of police officers in Louisiana, it is particularly noteworthy that there are many similarities among their responses. Where responses were practically identical, we combined lines and noted the frequency in parentheses. There are nuanced differences in many responses that otherwise could be collapsed into general categories but were left intact so that the range of issues they experience are reported.

Table 22
Issues experienced investigating drugged driving cases

What are some of the issues you experience investigating drugged driving cases?
As a DRE I frequently perform drug evaluation on impaired drivers. Our major issue is testing for synthetics
Availability of drug dog and experienced drug detectives
Availability of blood kits
Cooperation from the violator and paperwork involved
Drivers are more uncooperative and then it is time consuming due to the blood draws at different locations due to travel with the suspect
Drivers exhibit the same symptoms when impaired on drugs as when impaired on alcohol (except the alcoholic beverage odor)
Failure of courts to prosecute
Getting test done
Have to take urine to Baton Rouge 180 miles
I am an SFST instructor that has received a lot of training in DWI. However, prior to recent training, there has not been enough training on drug impaired driving. A lot of officers still have not received training on drug impairment
I have found that most that are impaired by drugs will tell you they are because they don't think they can get a DWI from drugged driving
Identifying what narcotic, if any, is in the system
Lack of a readily available established process [through] which to test
Lack of cooperation from suspect
Lack of DREs to conduct a thorough investigation. Lack of training on drugged driving investigation
Lack of prosecution by DA's office, suspect will refuse drug testing after submitting to alcohol test
Long wait times for results to return from lab (3)
Most DAs expect a hard number along the line of 0.08 and the concept doesn't always apply to drugged driving cases
No video of behavior to prove results of intoxication with a BAC of 0.00%
Not being certified to do the whole call by myself. I want SFST & Intoxilizer training ASAP!!!
Not understanding the signs
Often it is prescription drugs that they are abusing
Our prosecutor does not recognize DRE and it's very hard to get the suspect to cooperate with the investigation
People think its ok to drive while taking the meds because the meds had been issued by their doctors
Slow testing
Subjects refusing chemical test (2)
The District Attorney's Office is scared to prosecute cases on drugged driving
Issues with obtaining other [fluid] samples. Process needs to be more clearly defined and mapped out
The time it takes to get a hospital to do a blood draw for testing.
Time (2)
Time of consumption, the amount of time it takes to get to the point of testing for drugs
Too much time wasted on trying to get the person to admit if he has consumed other than liquor
Traffic crashes
Training officers to recognize drug impairment
We need some classes to identify impaired drivers under the influence of narcotics, the crime lab in our area will not accept urine to test.

It is important to point out that many of the officers' responses express "lack." A handful expressed a lack of training (as well as a desire for it) and many reported a lack of time and/or lack of resources (e.g., time, established protocol, testing kits, DRE, etc.). It is not surprising that a lack of cooperation from the driver is a common issue for officers.

Summary of Attorney and Police Surveys

Before presenting the results from the public survey, it is important to consider some of the issues identified by the officers in relation to the information we received from prosecutors and defense attorneys. While these samples are very small and cannot be considered representative, officers clearly expressed they lack the resources to adequately investigate drugged driving cases. Both groups of attorneys clearly expressed issues with the quality of evidence or the lack thereof. There is no doubt that the quality and clarity of evidence depends on the officers' ability to efficiently, accurately, and completely investigate drugged driving cases. Thus, one of the greatest obstacles existing in drugged driving cases is the apparent lack of resources and time for the police to properly investigate the case and collect evidence. Some of the DAs place a lot of emphasis on chemical results, however, despite implied consent laws, the driver under suspicion has a constitutional right to refuse chemical tests. This would be true even under a per se law. Defense attorneys frequently mentioned video evidence of the defendant's driving prior to the stop to establish probable cause and/or video evidence of the SFST being conducted as two factors affecting the case outcome. There are other means of proof available, provided police have the equipment and abilities necessary to collect evidence. A lack of resources essentially amounts to a lack of evidence and this is something that will take time and state resources to resolve. That officers lack adequate training is another issue that places incredible strain on the quality of officer testimony and evidence collected.

Public Survey Results

The sample consists of 840 Louisiana residents aged 18 years and older. Data were collected in an online survey using Qualtrics Panels. The data collection period began on February 11, 2015 and was complete by February 15, 2015. The completion rate is 100%. Due to the opt-in nature of Internet panels, it is not possible to obtain a truly random, representative sample, therefore it is not possible to extrapolate these findings to the general population.

Demographic Characteristics. Females (587) are highly overrepresented, making up about 70% of the sample, with males (248) making up 30% of the sample. Five people preferred not to say. The sample is about 75% White (629), 25% non-white (209). Two people did not provide information about their race/ethnicity. Of the total sample, about 16% are Black (137). Louisiana's population is about 33% Black, 60% White (non-Hispanic), and about 7% other minorities. Blacks in this sample are highly underrepresented. Whites are overrepresented.

The age range for the sample is 69 years (Min=18, Max=87). The median age is 47 (M=46.41, SD=15.51) and the mode is 54 years. Age was recorded in years and recoded into age categories for analysis. One person did not supply their age. Table 23 below displays age frequencies by category. Younger people are substantially underrepresented and make up only 7.9% of the sample. The average residence in Louisiana is about 35 years (M=35.37, SD=20.23). Length of residence ranges from 1 month to 87 years.

Table 23
Age categories of respondents in public survey

Age Categories		
	Freq.	Percent
18-24	66	7.87%
25-34	177	21.10%
35-44	147	17.52%
45-54	154	18.36%
55-64	180	21.45%
65 and older	115	13.71%

About 91% of the sample (765) provided information about their annual household income. Originally, income was recorded in 11 categories, ranging from "Below $25,000" to "Above $100,000." The lowest income category also contained the largest number of respondents (182). For analysis purposes, the 11 categories were collapsed into five (see Table 24 below). Of the 765 who provided information about income, 34% (285) reported incomes below $35,000 and another 11% (96) reported incomes between $35,000 and $45,000. About 50% of the sample reported incomes in the two lowest income categories. The remainder of the sample was evenly distributed among the three higher income categories.

Table 24
Annual household income (5-category)

	Freq.	Percent	Valid Percent
Below $35,000	285	33.9	37.3
$35,000- $45,000	96	11.4	12.5
$45,000-$60,000	128	15.2	16.7
$60,000-$85,000	127	15.1	16.6
Above $85,000	129	15.4	16.9
Total	765	91.1	100

In general, about 43% of the sample (359) have attained a college degree or higher; 11% of the sample have advanced graduate degrees (92), and about 32% have attained at least a two-year or four-year college degree (267). About 3% did not complete high school (24). One person did not provide information about their educational attainment.

Table 25
Highest level of education completed

	Frequency	Percent
Did not finish high school	24	2.9
High school graduate (diploma awarded)	216	25.7
Some college	240	28.6
College graduate (Associate's or Bachelor's degree awarded)	239	28.5
Some graduate school	28	3.3
Graduate (e.g., MA, MS, MBA) or professional degree (J.D., M.D.)	83	9.9
Doctorate	9	1.1

Driving Experience. Slightly above 91% are licensed to drive in the state of Louisiana. About 6% (51) reported they were not and 2.6% (22) reported they are not licensed to drive in the United States.

Respondents were asked to tell if they have ever been involved in a motor vehicle crash. A substantial majority (575) reported that they have. About 31% (264) said they have not. One person did not say. For those who reported prior crash involvement, we asked if, to the best of their knowledge, drugs and/or alcohol were suspected factors. Of the 575 respondents who received this question, 17% reported yes (99) and 77% said "No" (441). Six percent reported that they did not know (35).

Perceptions of Impaired Driving. We asked several questions to establish a sense of respondents' existing levels of concern about and perceptions of impaired driving. When asked how concerned they were about impaired driving, less than 3% (20) of the 839 responses to this item reported "not at all," about 10% (84) reported "slightly," and about 24% (201) reported "moderately." About 33% (274) of respondents reported "very" and 31% (260) reported they were "extremely" concerned. Thus, well over half of the sample express having heightened concern about impaired driving in general.

Respondents were then asked to tell about how often they tend to personally encounter other drivers on Louisiana roads that appear to be possibly driving under the influence of alcohol or drugs. This question is measuring their perception of the frequency of alcohol or drug impaired driving, which is essentially a conjecture. We received 838 responses to this item. As illustrated in Figure 11 (below) about 14% of respondents said "did not know" how frequently they encountered drivers they presume to be potentially impaired.
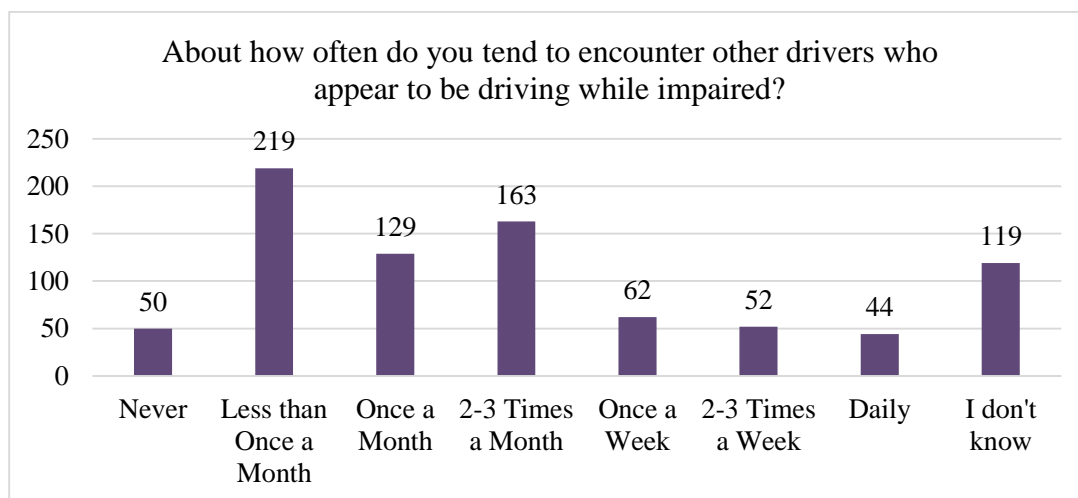
Figure 11
Perceived frequency encountering drivers potentially impaired

When asked to compare impaired driving to other common forms of dangerous or distracted driving (such as falling asleep behind the wheel, texting, etc.), 39% (323) of 838 respondents said the problems were about the same (323). Relatively few respondents said impaired

driving is "less" (56) or "much less" (14) of a problem. Forty-seven percent reported impaired driving is "more" (217) or "much more" (172) of a problem, 7% reported they did not know.

Exposure to Media Reports. At the time we were developing and finalizing the questionnaire in early 2015, there had not been any major reports in the media about drugged driving in Louisiana specifically, but there were a number of reports in local publications. A LexisNexis search indicates 20 news reports with the terms "drugged driving" contained somewhere within the text were published on the Web between Jan 1, 2015 and Feb 15, 2015. At least two were published by the Times-Picayune and one by the Houston Chronicle. A number of reports were published by national sources (e.g., Huffington Post, Forbes, Washington Times, etc.). Given the recent legalization of marijuana in Colorado and Washington, there may have been television news or opinion segments that discussed drug use and driving as well, particularly on cable news networks. The results of the 2013-2014 National Roadside Survey were released to the public in early February, so by the time we began data collection, there was a greater possibility that respondents had encountered media reports about drugged driving than there was at the time we finalized the questionnaire.

Respondents were asked to recall if they have heard or seen any recent reports in the media about drug-impaired driving, sometimes referred to as "drugged driving." While 18% reported they weren't sure (154), about 42% reported "Yes" (350) and 40% reported "No" (335). One person did not supply an answer.

Meaning of "Drugged Driving." We followed up the media question by asking respondents an open-ended question about their thoughts and impressions about the term "drugged driving," which does not have a single, legal definition. The purpose of this item is to gain insight into the connotation the term has among the general public. Respondents were encouraged to tell what thoughts, ideas, or images come to mind.

We received a very wide range of responses to this question that were generally literal or generally descriptive. Many of the literal responses consisted of restatements or attempts to define the term. Some were vague, e.g., "driving on drugs," "driving under the influence of drugs," "driving while high/drunk" others elaborated e.g., "people using drugs the same way

they drink and getting on the road attempting to drive." There were many vague responses such as "not in control," "unable to drive well," "foggy brain," "someone driving on drugs," "high driving," "unconscious," or "not in the right state of mind." Some respondents didn't invest much effort and responded with terms like e.g., "drugs," "drunk," "high," "impaired," "DUI" or "DWI." Others responded with specific substances like "heroin," "weed," "medication," "pills" "meth," "cough medicine," "crack," etc. or multiple seemingly random substances e.g., "pot, meth, alcohol, coke." There were many responses that referred to alcohol, either by itself or with drugs (generally and/or specific substances). Other generally literal responses referred to additional forms of unsafe or inattentive driving behavior like texting, being sleepy, speeding, swerving/ weaving, racing, "slow driving" either alone or in combination, e.g., "sleepy texting while driving." There were more than a few that thought about people being drugged literally, such as "date rape" or "being drugged by someone."

Descriptive responses often contained value judgements about the 'kind' of people who do drugs: "dope heads," "pillpoppers," "drugheads," "impaired drooling idiot," "druggies" and "being a habitual druggy or alcoholic." Some simply expressed their disproval using terms to describe the act such as "bad," "irresponsible," "unacceptable" and "careless." Others expressed fear: e.g., "my kids being in that accident," "scary to drive or take my children out of the house," "worried for my kids" and "scares me to death." A handful described scenes of carnage: "head-on crashes," "wrecks" and "lots of car accidents and people getting killed."

Some of the descriptive responses were scene-like: "smoke rolling out the windows, obnoxious music, weaving in and out of the lane," "smoking a blunt driving around with friends as a teenager," "tripping on acid or other hallucinogens," "someone really stoned laughing and jamming to music or really doped up and falling asleep at the wheel," and "someone released from a hospital too medicated; 'what holiday is today?'" Others described someone on a rampage "weaving in and out of lanes, speeding, cutting people off, running lights and stop signs," "loaded up on drugs," "swerving all over the road." Other descriptive responses tended to focus on recreational drug use e.g., "people smoking crack, snorting cocaine, hard drug use, etc. and then them getting behind the wheel to drive" or "people driving home from a party in which they had taken drugs or ingested alcohol and getting into accidents."

The range of responses suggest the term "drugged driving" is open to interpretation by the general public but generally understood as some kind of impairment. Associations with alcohol were very common. There were only a handful of responses that described drugged driving as a technical offense (i.e., driving with drugs in your system) with no reference to impairment or being under the influence.

Validity Check. In the questionnaire construction phase, we had to contend with the challenges of asking the public to provide their opinions about a complicated policy issue that they most likely have never considered before and may or may not comprehend. The online format presented additional challenges in terms of question ordering, wording, and placement. We wanted to minimize satisficing and response bias to the extent possible, which required a great deal of attention to the degree of effort we could reasonably expect the respondent to exert.

We expected that many would lack familiarity with the Louisiana's existing impaired driving laws and thus may not know that driving while impaired by drugs is illegal. About mid-way through the survey before addressing ZT per se laws, we asked respondents a simple comprehension question about Louisiana's existing impaired driving law. This served multiple purposes. First, it provided the opportunity to expose respondents to the text of the current law, Section A of RS 14:98, that identifies the conditions under which a person operating a motor vehicle is legally considered driving while intoxicated. Because people tend to read more quickly and with less focus on a screen, the text was formatted to optimize comprehension and minimize task difficulty. Second, even though there is no way to ensure the respondent read the text, this item allowed us to draw their attention to the portion of the law that explicitly addresses drugs. We presented a simple true/false statement: *It is currently illegal to operate a motor vehicle while under the influence of drugs*. Third, this item served as a validity check to "catch" the attention of those less inclined to read questions carefully or randomly select responses. Respondents had to answer "true" to continue in the survey.

ZT Law Concerns. Next, we asked respondents to consider the technical definition of drugged driving (i.e., the act of operating a motor vehicle with any detectable levels of drugs in one's system regardless of driver impairment) which serves as the basis for the ZT drugged driving laws in other states, followed by the following description of the crime: Under a per se law, a driver is automatically guilty of driving under the influence of drugs

(DUID) if they have any levels (including trace amounts) of drug(s) and/or drug metabolites in his or her system, regardless of whether or not the driver is actually impaired. In many of these states, having a prescription for the drug is not a valid legal defense.

Respondents were asked to tell what, if any, concerns they would have with Louisiana passing a zero-tolerance per se drugged driving law, in open-end format. We received a surprising number of open-ended responses (835) of varying length, which were coded according to the degree of concern expressed (i.e., no concern/pro-ZT statements; some concern; concern; and critical concerns). After discarding the responses that could not be categorized because they expressed uncertainty, lacked relevance, were confusing, or otherwise uninterpretable, we were left with 787 responses, which ranged in length from one or two words to a paragraph. In general, the shortest answers in length were those that expressed having no concerns (most common were "none" and "no concern"). The longest answers tended to express concerns or critical concerns. The categories and summary of the types of concerns expressed appear in Table 26 below:

Table 26
Summary of public concerns about ZT/per se law

	N	% total	Summary characteristics of responses
No concern	383	49%	literally expresses "no concerns" and/or expresses approval for law or explains why they like it
Some concern	95	12%	somewhat concerned about how it will affect others, whether or not it will be effective, whether or not it is necessary, and/or poses questions, hypothetical situations where concerns may arise, uncertain level of approval
Concern(s)	201	26%	clearly expresses concerns about ZT standard in relation to medications and the implications of positive tests, technicalities of the offense, justice/fairness, doubts efficacy and/or necessity, outright disapproval
Critical concern(s)	108	14%	expresses critical concerns with ZT standard in terms of, constitutionality (e.g., overbroad, vague, arbitrary), justification/ state motives and potential for abuse of power, justice/fairness, unintended consequences (general and specific), legal technicalities, questions necessity and/or efficacy, expresses strong disapproval and supplies at least one reason
	787	100%	

Medication Use and Familiarity with Common Drug Types. Respondents were asked to tell if they are currently taking any prescription medication(s) or over-the-counter drugs to treat or control a mental health or medical condition that could potentially impact their ability to operate a motor vehicle. The number of respondents reporting "Yes" to this question was just under 19% (157). About 81% reported "No" (682).

Respondents were then asked about their personal level of familiarity with the effects of various commonly used drugs on people (in general) on a 7-point scale ranging from 1= very unfamiliar to 7= very familiar. The specific drugs included in the survey were primarily medications that are commonly used to treat a range of physical and psychological conditions. The only illicit drug "types" included in the survey were marijuana, due to its widespread use, and the so-called "party drugs" like Ecstasy (also called MDMA or Molly) which are known for their euphoric stimulant-like effects. To be sure, illicit drugs fall under the same generic classes like stimulants or narcotics, but the examples provided for these categories were mainly Rx or OTC medications. The survey asked about the familiarity with the effects of the following drug types:

- Marijuana/ Cannabis (THC)
- Narcotics (e.g., opium, codeine)
- Antidepressants (e.g., Zoloft, Paxil)
- Stimulants (e.g., Adderall or Ritalin)
- "Party drugs" (e.g., MDMA, Molly)
- Benzodiazepines (e.g., Xanax, Diazepam)
- OTC allergy, sinus, or cold medications (e.g., Benedryl, Sudafed)
- Rx or OTC sleep-aids (e.g., Ambien, ZzzQuil)

Respondents were not asked to disclose their personal experience with the drug types, only the degree to which they are familiar with the effects. We make no presumption as to how they acquired familiarity, however, a relative lack of familiarity suggests a lack of personal experience as well as a lack of exposure to information or others who use the drug(s). Table 27 (below) displays the descriptive statistics for each of the drug types. Higher numbers indicate higher familiarity. Given the higher age skew in the sample, it is not surprising that the least familiar type among the sample are the "Party drugs" (M=2.54, SD=2.01) which tend to be more popular among younger people. It is also not surprising that the drug category with the highest level of familiarity include OTC allergy, cold and sinus medications (M=5.54, SD=1.84), as they are commonly used among the general population.

Table 27
Familiarity with effects of commonly-used drugs

	N	Mean	SD	Median	Mode	Variance
Marijuana	835	4.3	2.26	4	7	5.12
Narcotics	832	4.47	2.10	5	7	4.39
Antidepressants	830	3.92	2.28	4	1	5.21
Stimulants	834	3.67	2.24	4	1	5.01
Party drugs	834	2.54	2.01	1	1	4.05
Benzodiazepines	829	3.87	2.27	4	1	5.13
OTC allergy/ cold & sinus	832	5.54	1.84	6	7	3.40
Rx or OTC sleep-aids	831	4.46	2.16	5	7	4.68

There is considerable variance in the familiarity for nearly all of the drug categories, which is indicative of a non-normal distribution. Figures 12 and 13 (below) display the response distribution for each of the drug types. While some drugs are skewed toward one side or the other (e.g., OTC allergy medications skew right, party drugs skew left, see Figure 13) most have high numbers at the extremities, lowest numbers in the more moderate ranges with a slight bump in the middle.
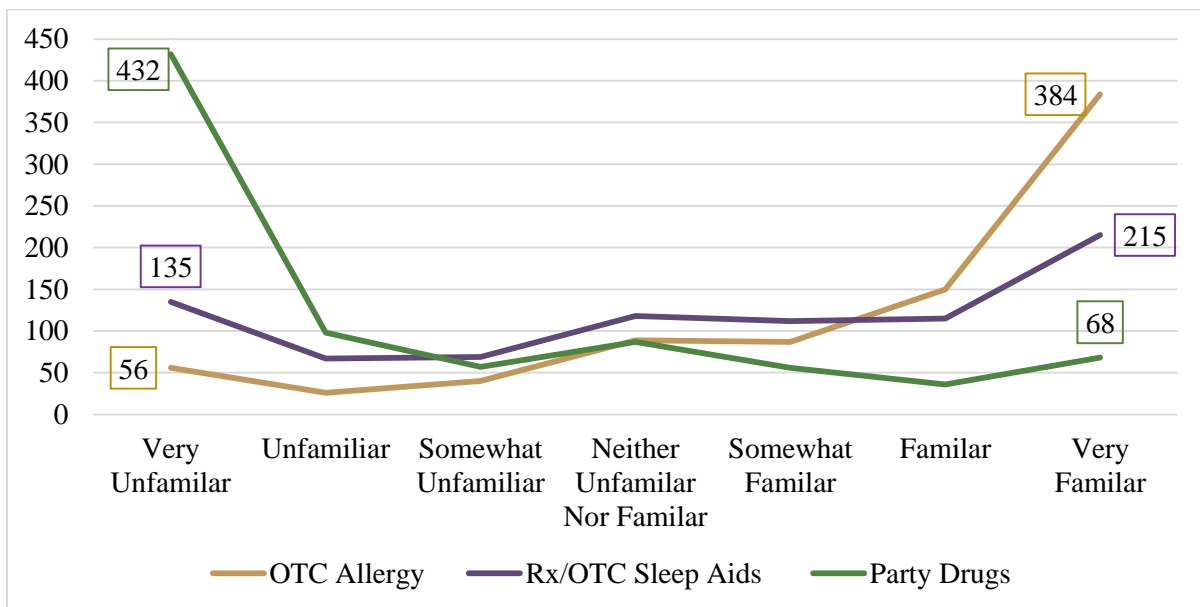
Figure 12
Familiarity with allergy, sleep-aids, and party drugs
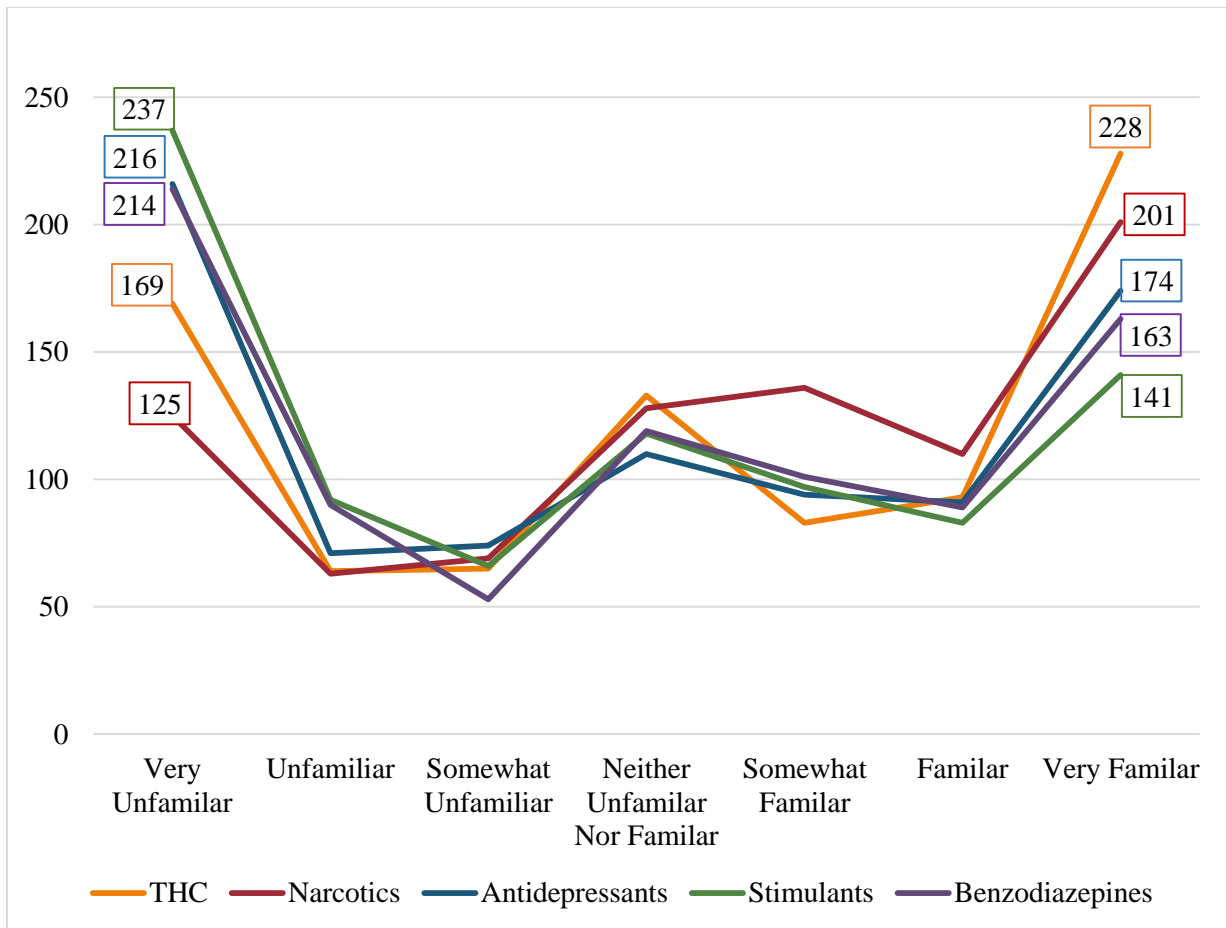
Figure 13
Familiarity with THC and common Rx drug categories

In general, there is a substantial "familiarity gap" for many drugs that are commonly used in society. That there is a small subset reporting high familiarity for each of the common drug types suggests that the sample, as a whole, lacks a sufficient degree of knowledge about drugs and their potential effects. The current sample is very polarized in terms of their familiarity with the effects of drugs and the variance is a function of an unknown number underlying individual differences. To the extent possible, we examined how different groups responded to the drug familiarity questions using dichotomous categorical independent variables: sex (male, female); age (35 and under, 36 and older); race (non-white, white), education (less than a college degree, college degree or more); and current medication use (no, yes). The dichotomous age variable was created to reflect generational differences, with the younger age group (35 and under) belonging to the age cohort commonly referred to as millennials. We conducted a series of non-parametric statistical tests (i.e., Mann-Whitney U, Wilcoxon W), the results of which are presented in standardized Z-scores in Table 28 below.

Table 28
Group differences in familiarity with effects of common drugs

		Drug Types							
		THC	Narcotics	Anti-Depress	Stims	Party Drugs	Benzos	OTC Allergy	Sleep Aids
Sex	z value	-1.397	1.458	3.709	0.952	-0.597	1.285	3.402	3.109
	p value	0.163	0.145	.000**	0.341	0.55	0.199	.001**	.002**
	mean rank women	408.09 (n=584)	421.76 (n=581)	432.61 (n=581)	420.06 (n=583)	412.03 (n=585)	419.34 (n=578)	431.32 (n=582)	430.05 (n=580)
	mean rank men	433.08 (n=246)	395.66 (n=246)	366.31 (n=244)	403.02 (n=246)	422.12 (n=244)	396.43 (n=246)	372.85 (n=245	374.48 (n=246)
Race	z value	-2.559	0.871	2.317	0.483	-3.62	1.266	0.55	0.404
	p value	.010**	0.384	.021*	0.629	.000**	0.205	0.582	0.686
	mean rank minority	453.54 (n=206)	403.10 (n=207)	381.50 (n=205)	409.60 (n=206)	465.15 (n=206)	395.92 (n=204)	407.94 (n=205)	409.23 (n=205)
	mean rank white	404.99 (n=627)	419.62 (n=623)	425.36 (n=623)	418.77 (n=627)	400.49 (n=626)	419.92 (n=623)	417.98 (n=625)	416.89 (n=624)
Age	z value	4.184	0.911	2.719	5.054	8.148	2.391	-0.322	2.305
	p value	.000**	0.362	.007**	.000**	.000**	.017*	0.748	.021*
	mean rank ≤ 35	470.01 (n=253)	427.79 (n=254)	449.28 (n=251)	480.26 (n=253)	512.58 (n=254)	444.60 (n=252)	412.66 (n=252)	444.64 (n=252)
	mean rank 36 +	395.39 (n=582)	411.54 (n=578)	400.85 (n=579)	390.17 (n=581)	375.86 (n=580)	402.07 (n=577)	418.17 (n=580)	403.53 (n=579)
College Education	z value	0.306	0.073	1.78	2.72	2.352	0.905	2.176	0.625
	p value	0.76	0.942	.075^	.007**	.019*	0.365	.030*	0.532
	mean rank no degree	415.83 (n=477)	415.98 (n=475)	402.82 (n=472)	398.17 (n=476)	401.75 (n=476)	408.56 (n=472)	401.69 (n=476)	411.55 (n=474)
	mean rank degree +	420.89 (n=358)	417.19 (n=357)	432.22 (n=358)	443.20 (n=358)	438.45 (n=358)	423.51 (n=357)	436.31 (n=356)	421.90 (n=357)
Medications	z value	2.913	6.753	7.72	2.576	0.432	6.187	2.621	4.947
	p value	.004**	.000**	.000**	.010**	0.666	.000**	.009**	.000**
	mean rank not taking	406.26 (n=678)	389.36 (n=675)	384.73 (n=674)	406.21 (n=678)	415.40 (n=677)	390.22 (n=673)	406.08 (n=675)	396.00 (n=674)
	mean rank taking	467.24 (n=156)	531.26 (n=156)	546.64 (n=155)	461.13 (n=155)	423.94 (n=156)	519.91 (n=155)	458.90 (n=156)	499.74 (n=156)

note: reject the null if **p<.01, *p<.05; approaching significance ^p<.10;
the test item response options ranged from 1=very unfamiliar to 7=very familiar

There are several noteworthy findings. First, there are statistically significant differences in the degree of familiarity with the various drug types across men and women (i.e., antidepressants, OTC allergy and sleep aids); non-whites and whites (THC, antidepressants, and party drugs); millennials and non-millennials (i.e., THC, antidepressants, stimulants, party drugs, benzodiazepines, and sleep aids); those with less than a college degree and those with a college degree or more (i.e., stimulants, party drugs, and OTC allergy); those currently taking medications and those who are not (i.e., THC, narcotics, antidepressants, stimulants, benzodiazepines, OTC allergy, and sleep aids). These differences might reflect personal experience, interpersonal relationships, the socio-cultural context in which individuals are socialized, or any combination thereof.

Opinion Statements. Similar to the attorney surveys, the last portion of the questionnaire asks respondents to tell their level of agreement on a 5-point Likert scale (where '1' indicates strong disagreement) with ten (randomly presented) statements about drugged driving, per se laws and drugs in general. The statements are as follows:

1. Drivers who take drugs are a threat to public safety.
2. Prescription drugs pose as much threat to public safety as illegal drugs.
3. Some drugs might improve a person's driving abilities rather than impair them.
4. Drivers should not be charged with driving under the influence of drugs unless they are clearly impaired.
5. Making it a crime to drive with drugs in one's system will make the roads safer by keeping drug using drivers off the road.
6. Drugged driving is a major problem in Louisiana.
7. Drugged driving is as big a problem as drunk driving in Louisiana.
8. Louisiana adopts a "zero tolerance" drugged driving law, the law will be enforced fairly across the population regardless of race, gender, age, etc.
9. There is no need to pass a new law targeting drugged driving when Louisiana's existing impaired driving law already makes driving while under the influence of drugs a crime.
10. Zero-tolerance per se drugged driving laws are fair.

The table below displays the descriptive statistics for each of the items. All items have the same range, minimum and maximum values (R=4, Min=1, Max=5). The response distributions for each of the items are displayed in a series of bar charts over the next several pages (Figures 14-23, below).

Table 29
Descriptive statistics for Likert scale statements about drugged driving

	N	Mean	SD	Median	Mode	Variance
Drivers who take drugs are a threat to public safety.	838	3.82	0.987	4	4	0.974
Prescription drugs pose as much threat to public safety as illegal drugs.	837	3.61	1.076	4	4	1.157
Some drugs might improve a person's driving abilities rather than impair them.	839	2.84	1.117	3	3	1.248
Drivers should not be charged with driving under the influence of drugs unless they are clearly impaired.	835	3.37	1.244	4	4	1.547
Making it a crime to drive with drugs in one's system will make the roads safer by keeping drug using drivers off the road.	838	3.32	1.214	3	4	1.474
Drugged driving is a major problem in Louisiana.	837	3.52	0.948	4	4	0.898
Drugged driving is as big a problem as drunk driving in Louisiana.	836	3.52	1.064	4	4	1.131
If Louisiana adopts a "zero tolerance" drugged driving law, the law will be enforced fairly across the population regardless of race, gender, age, etc.	836	3.22	1.332	3	4	1.775
There is no need to pass a new law targeting drugged driving when Louisiana's existing impaired driving law already makes driving while under the influence of drugs a crime.	839	3.31	1.186	4	4	1.407
Zero-tolerance per se drugged driving laws are fair.	838	3.09	1.305	3	3	1.703

The measures of central tendency displayed in Table 29 are only partially informative. Respondents in this sample are (on average) older, female and white and cannot be considered representative of Louisiana's population. Given the sample characteristics, and the non-normal distributions for items throughout the survey, there is reason to believe there are systematic differences among different groups of respondents. We ran a series nonparametric Mann-Whitney U tests to examine differences across the following characteristics: sex (men, women), race (white, non-white), age (millennials, non-millennials), education (no college degree, college degree or more), medications (not taking, currently taking), concern about impaired driving (less concern, very/extremely concerned), and exposure to media report(s) about drugged driving (no/can't recall, yes). Table 30 displays the results for all of these tests (see Appendix C). Statistically significant differences are reported in text in standardized z-scores and corresponding p-values.

Drugged Driving. As Figure 14 illustrates, slightly over 50% of the sample expressed some level of agreement with the statement "Drugged driving is a major problem in Louisiana." Only 12% disagreed. Nonparametric tests indicated statistically significant mean rank differences across several groups: women expressed stronger agreement than men ($z = 3.057$, $p = 0.002$); respondents who are very or extremely concerned about impaired driving expressed stronger agreement than those who are relatively less concerned ($z = 10.063$, $p = 0.00$); and those who reported seeing a media report about drugged driving expressed stronger agreement than those who did not ($z = 5.858$, $p = 0.00$).
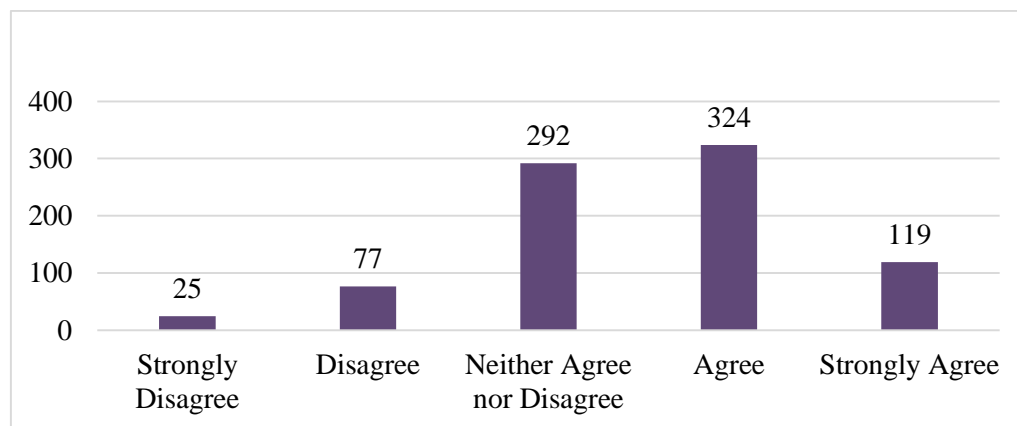
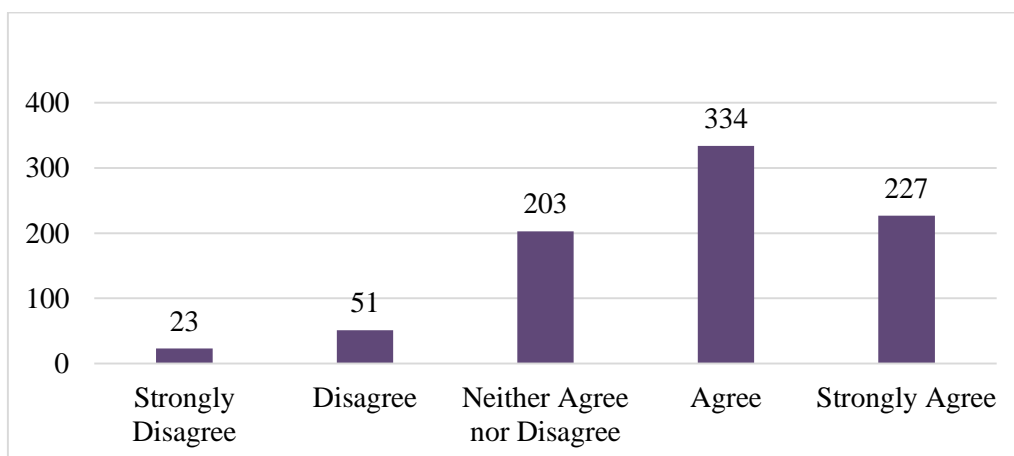**Figure 14**
Drugged driving is a major problem in Louisiana

Figure 15 (below) displays the response distribution for the statement: "Drugged driving is as big a problem as drunk driving in Louisiana." Though about 56% of the sample expressed agreement, about 18% expressed disagreement. Similar to the previous item, nonparametric tests indicated statistically significant mean rank differences across: sex, with women expressing stronger agreement than men ($z = 3.331$, $p = 0.001$); those with higher educational attainment expressed less agreement than those with less education ($z = -2.228$, $p = 0.026$); respondents who are very or extremely concerned about impaired driving expressed stronger agreement than those who are relatively less concerned ($z = 8.403$, $p = 0.00$); and those who reported seeing a media report about drugged driving expressed stronger agreement than those who did not ($z = 4.963$, $p = 0.00$).
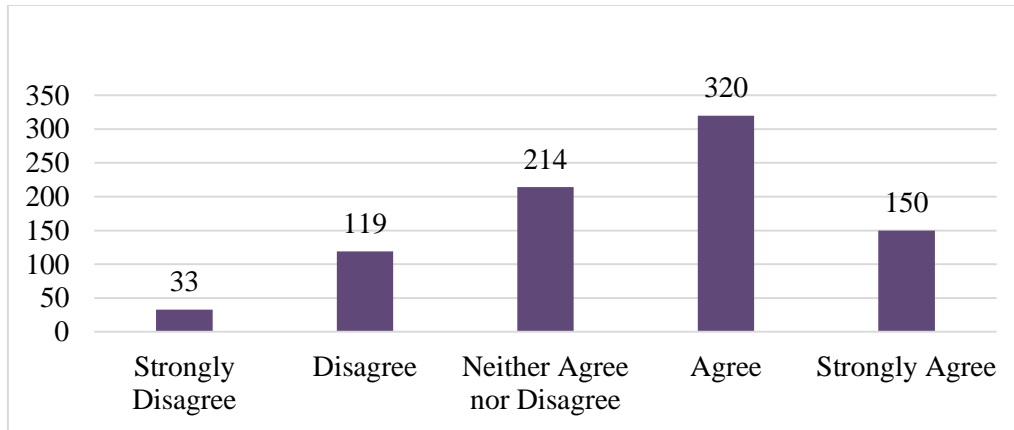
Figure 15
**Drugged driving is as big a problem as drunk driving**

Drugs and Drivers. As illustrated by Figure 16, relatively few respondents (9%) disagreed that that drivers who take drugs are a threat to public safety. About 67% expressed some level of agreement. Those taking medications expressed less agreement than those who are not ($z = -3.927$, $p = 0.00$); respondents reporting relatively high concern about impaired driving expressed more agreement than those relatively less concerned ($z = 4.577$, $p = 0.00$); and those who reported seeing a media report about drugged driving expressed higher agreement ($z = 3.558$, $p = 0.00$).

Figure 16
Drivers who take drugs are a threat to public safety

Figure 17 shows the response distribution for the statement "Prescription drugs pose as much threat to public safety as illegal drugs." Similar to the previously reported item, respondents generally agreed with this statement. About 60% expressed some degree of agreement, 16% expressed disagreement. There were two groups where there were statistically significant differences between agreement: race, with whites expressing less agreement than minority races (z=-2.178, p= 0.029); and respondents reporting relatively high concern about impaired driving expressed stronger agreement than those relatively less concerned (z = 3.147, p = 0.002). Differences approaching statistical significance (i.e., p< 0.10) exist between those taking medications (z= -1.711, p= 0.087) who expressed less agreement and those who reported seeing media about drugged driving (z= 1.826, p = 0.068) who expressed slightly stronger agreement.
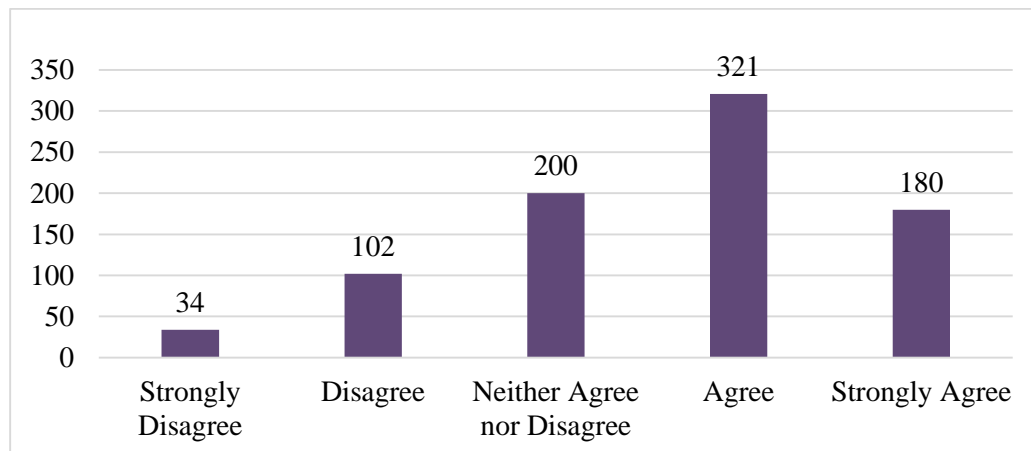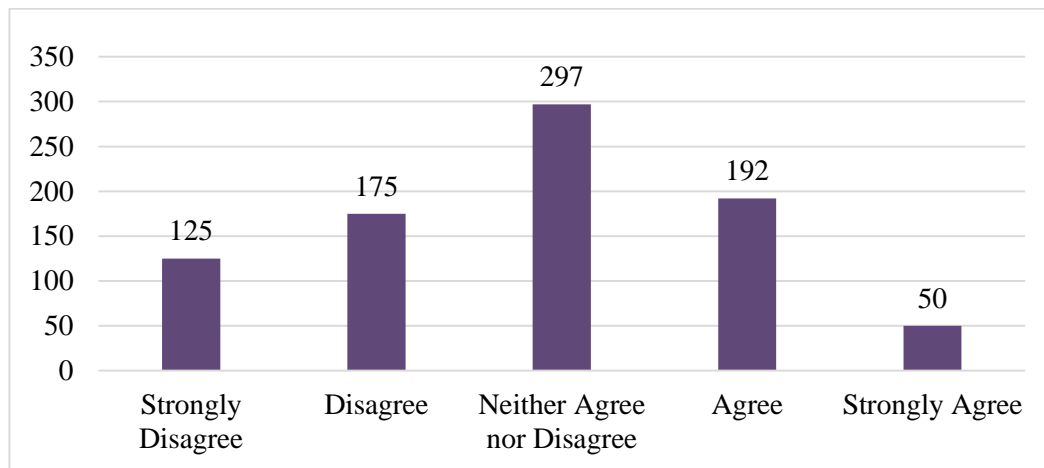

Figure 17
Prescription drugs pose as much threat to public safety as illegal drugs

Figure 18 (below) displays the response distribution for the statement: "Some drugs might improve a person's driving abilities rather than impair them." There was less agreement on this item than the previous items (M=2.84, SD=1.11). About 36% expressed disagreement. About 35% neither agreed nor disagreed. There were statistically significant differences in agreement between several groups. Respondents currently taking medications express stronger agreement than those who are not currently on such medications (z= 2.877, p= 0.004). Those with relatively less concern about impaired driving expressed stronger agreement than those than those with high concern (z= -4.084, p= 0.00). Also expressing stronger agreement are those who did not recall seeing any media reports on drugged driving

(z= -2.872, p= 0.004) and respondents with higher educational attainment (z= 2.122, p= 0.034). Age differences between younger and older respondents were approaching statistical significance (z= 1.885, p= 0.059) with millennials expressing stronger agreement than older adults.

Figure 18
Some drugs might improve a person's driving abilities

As Figure 19 (below) illustrates, about 50 percent of respondents agreed or strongly agreed with the statement: "Making it a crime to drive with drugs in one's system will make the roads safer by keeping them off the road," however, there were statistically significant differences in how various groups responded. Perhaps expectedly, respondents who are very or extremely concerned about impaired driving expressed significantly stronger agreement (z= 3.813, p= 0.00); respondents currently taking medications expressed significantly stronger disagreement (z= -4.582, p= 0.00). Older respondents expressed slightly less agreement than younger respondents which is statistically significant (z= 2.136, p= 0.033); as were white respondents relative to non-whites (z= -2.373, p= 0.018).
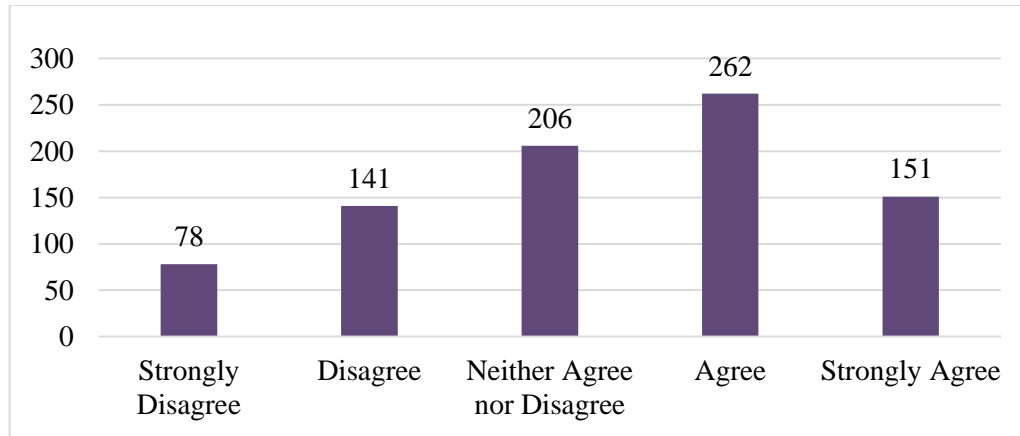
Figure 19
Making it a Crime… will make roads safer by keeping drug users off the road

Figure 20 (below) displays the response distribution for the statement: "Drivers should not be charged with DUID unless they are clearly impaired." Slightly over 50% agreed or strongly agreed. There were statistically significant differences in agreement between several groups: those taking medications express stronger agreement than those who are not (z= 3.681, p= 0.00); also expressing stronger agreement are those with relatively less concern about impaired driving (z= -2.293, p= 0.022); those who did not recall seeing any media reports on drugged driving (z= -2.617, p= 0.009); and those with less educational attainment (z= -2.769, p= 0.006).
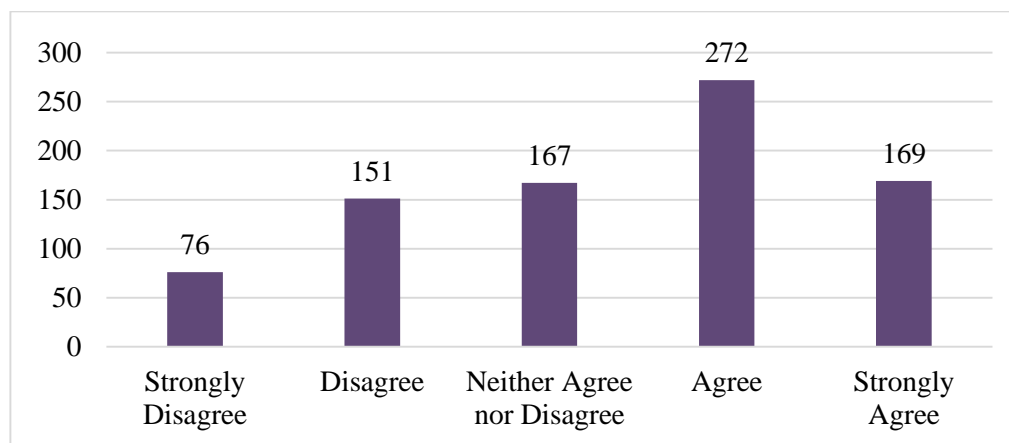
Figure 20
Drivers should not be charged with "DUID" unless they are clearly impaired

Drugged Driving Laws. Just under 25% of the sample expressed disagreement with the statement: "There is no need to pass a new law targeting drugged driving because it is already a crime under existing law." There were statistically significant differences among men and women, with men expressing stronger levels of agreement than women (z= -2.221, p= .026). Those taking medications were expressed stronger agreement than those who are not (z= 2.911, p= 0.004). Those who claimed to see a media report about drugged driving expressed significantly less agreement (z= -2.764, p= .006) as well as those who are very or extremely concerned about impaired driving (z= -3.164, p= 0.002).
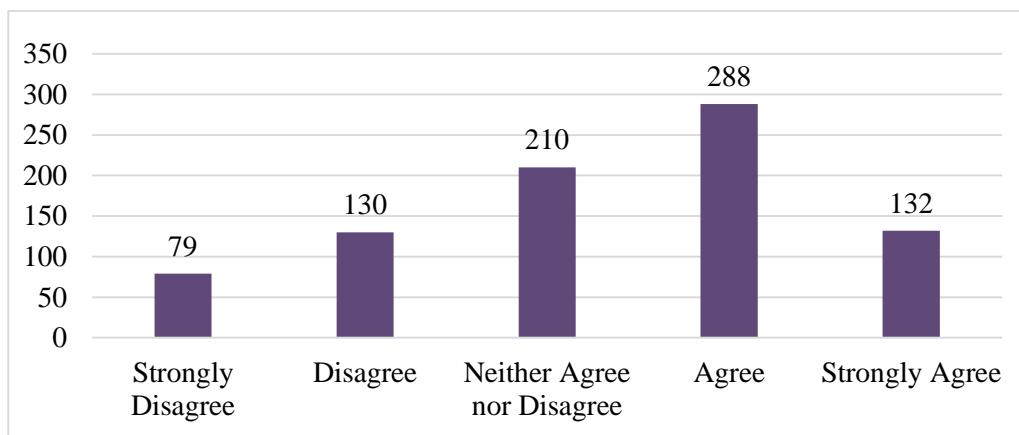
Figure 21
There is no need to pass a new law targeting drugged driving

The last two statements ask about ZT laws. The response distributions appear in Figures 22 and 23 (below). In reference to Figure 22, about 47% of the sample expressed some degree of agreement with the statement: "If Louisiana adopts a ZT drugged driving law, the law will be enforced fairly across the population regardless of race, gender, age, etc." Non-white respondents expressed slightly less agreement than whites however this difference was not statistically significant. There were statistically significant differences between women and men, with men expressing significantly less agreement than women (z= 2.286, p= .022). Respondents currently taking medications expressed less agreement with that statement than those who aren't taking medications (z= -2.574, p= 0.01). Those who are very/extremely concerned about impaired driving were of stronger agreement than those than those with relatively less concern (z= 4.068, p= 0.00). Respondents with higher educational attainment expressed less agreement than those with lower education (z= -2.528, p= 0.011).
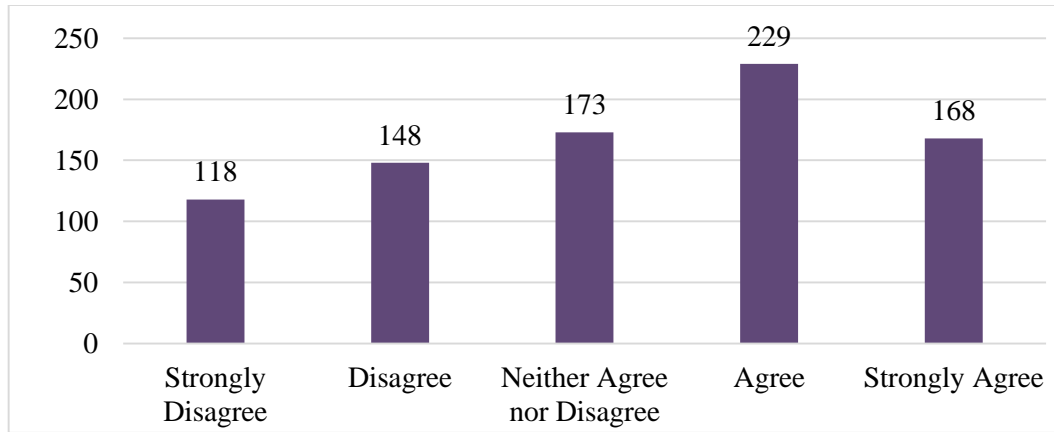
Figure 22
If LA adopts a ZT DUID law it will be enforced fairly across the population

As Figure 23 illustrates, about 41% of the sample agreed or strongly agreed with the statement: "ZT per se drugged driving laws are fair." Those taking medications expressed significantly less agreement than those who are not ($z= -3.78$, $p= 0.00$). Non-white respondents had slightly more agreement than whites ($z= -1.997$, $p= .046$). Respondents stating they had seen a media report about drugged driving expressed stronger agreement than those who had not ($z= 2.297$, $p= .022$) as well as those who are very or extremely concerned about impaired driving ($z= 3.355$, $p= 0.001$). Respondents with higher education expressed slightly less agreement than those with lower educational attainment, which approaches significance ($z= -1.716$, $p= .086$).
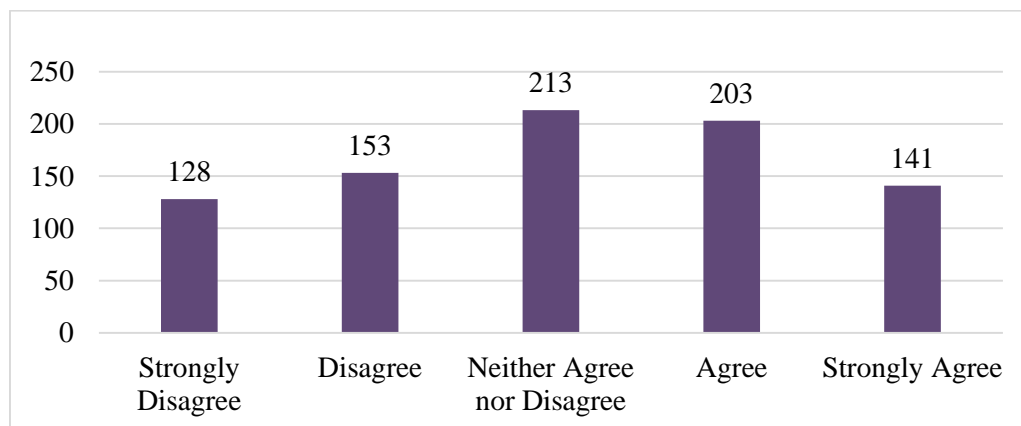
Figure 23
Zero-tolerance per se drugged driving laws are fair

Summary

The general public in this sample express a range of opinions about drugged driving and per se laws. Since this is a nonprobability sample that is considerably under-representative across demographics, the findings cannot be extrapolated to the Louisiana population. Specifically, the sample over-represents the opinions of middle-age, white, women, who report a particularly heightened concerned about impaired driving. The nonparametric tests provide some insight into group differences across most of the opinion items, suggesting the public is quite divided. The differences, rather than the level of agreement with the statements, provide greater insight into socio-cultural factions that would likely be more pronounced with a representative sample. Additionally, there are important differences in how the public responded to the familiarity with the effects of commonly used drugs. The statistically significant differences in age (i.e., millennials, older non-millennials) suggests generational differences. Across all of the drug categories but narcotics and allergy medication, younger people have higher levels of familiarity.

CONCLUSIONS

Despite the inherent limitations to studying "drugged driving," this report provides important insight into the state of knowledge surrounding the issue and identifies specific areas most warranting attention. There are two primary areas of focus: the frequency of (and risk associated with) drugged driving in Louisiana and elsewhere, and the efficacy of per se laws for drugged driving as well as the obstacles to such laws. The conclusions we present are very general and revolve around consistencies in the analysis that can help inform future data collection and approaches to managing this issue.

Prevalence and Risk

We have discussed throughout the results that this study cannot draw any firm conclusions about the prevalence of drug-impaired driving or the crash risk associated with drug use. Only a randomized experiment would make it possible to obtain an unbiased estimate. Even if the resources to do this were made available, there are inherent limitations to doing so. While observational data such as the National Roadside Survey allow some conclusion about prevalence of drug use among drivers, roadside surveys do not provide for inferences regarding crash risk or whether or not a driver was impaired by the drugs in their system. Unlike alcohol, the effects of drugs on people and their driving abilities are not universal and depend heavily on individual factors that vary.

Despite data limitations, this study provides an initial baseline of the relative frequency of drug-impaired driving in Louisiana. The limitations, in and of themselves, provide important insight into how the state should proceed from here. These include the lack of data available on drug use, specifically in the context of drug-impaired driving for the nation as well as Louisiana. In 2013, only five states had testing rates (i.e., blood or urine) of more than 50% for fatalities who died on-scene or en-route to the hospital. Louisiana had one of the lowest at 1%. The analysis of the FARS and crime lab data suggests that best practices should be developed for the consistent use of drug testing throughout the state and the nation.

The analysis of the Crime Lab data, as well as the interviews, helped to point out areas of attention for law enforcement and prosecutors. The analysis indicates disparities across the state in both the frequency and quality of drug tests, which also reflect a lack of standardized

procedures and resources. Moreover, a few parishes represented a disproportionate number of DUID arrests. This prevents drawing conclusions from the data about prevalence of drug-impaired driving for the whole state. While it is possible there are parts of the state where drug-abuse and DUID may be more prevalent, this cannot be determined based on the parish data.

With the exception of Jefferson Parish, most parishes rely on urine tests. There is a large difference in drug testing and evidence type between parishes and an over-reliance on urine tests, which are generally not sufficient to establish that the driver is impaired. There is a greater risk of false positives and the elimination time of many drugs means they will show up in the drug screens days or weeks after use. Only blood tests can indicate recent use. This finding suggests that more needs to be done to establish statewide guidelines for best practices in drug testing.

There are some general observations that can be made about drivers which could serve as hypotheses for future studies as more data becomes available. First, the analysis of the Crime Lab data suggests the drivers being *arrested* for drug-impaired driving are generally drivers that pose a higher safety risk. These drivers have higher prior arrests for DWIs than other drivers as well as higher incidence of prior speeding and crash involvement. In general, a high percentage of drivers that tested positive for drugs also had prior DWI arrests with BAC=0. There is also indication that the drivers who tested positive for any drug have a higher prior DWI arrest rate with BAC between 0.01 and 0.079 than all other drivers. These associations suggest that when drivers fail the SFST and present clear signs of impairment without a BAC (or below the per se limit), the driver should be tested for drugs. The prior DWI arrest rate with BAC above the legal limit is about 4 to 11 percentage points higher for the drivers that tested positive for drugs than other drivers. The difference is highest for drivers testing positive for narcotics and stimulants. Drivers who tested positive for cannabinoids had a lower frequency of prior crashes and about the same frequency of prior speeding tickets as users of "other" prescription drugs.

Zero-Tolerance Laws

The evaluation of ZT/per se laws for drugged driving cannot be separated from analysis about prevalence and risk associated with drug use among drivers. One of the greatest

hindrances to evaluating the prevalence and crash risk associated with drugged driving is the lack of complete and reliable data. It is difficult to verify that drug-impaired driving is on the rise without longitudinal analysis. FARS data should be used with caution because the percentage of tests based on oral fluid, urine or blood varies a great deal between states and is much lower than indicated by the percentage of tests performed. Comparing FARS data with the National Roadside Survey data may thus lead to severe biases in estimates. While New Hampshire, Colorado and Nevada had the highest percentage of blood and urine evidence for drug use, there is no indication that states with a per se law for drugs have higher testing of drivers in fatal crashes than states without per se law. We do not know about convictions in these states, but there are fewer tests in fatal crashes being conducted.

To date, the literature does not provide any evidence that ZT/per se drugged driving laws are effective at reducing drug-impaired driving or improving public safety. For one, there is a serious lack of reliable longitudinal data. This factor alone presents a substantial impediment to evaluating laws and policies targeting drugged driving. Thus as a matter of traffic safety or public health policy, ZT/per se laws for drugged driving cannot be considered "evidence-based." Necessarily, the primary purpose behind per se DUID laws may be to make convictions easier for the state to obtain, however, there is no data collected on case factors and outcomes/ dispositions to verify or test the hypothesis. While prosecutors in this study tended to favor them, they did not find them necessary for obtaining convictions. Interestingly, both defense attorneys and prosecutors tended to express low confidence in the per se law's efficacy in improving public safety.

From a practical standpoint, the overall lack of training, resources, and testing capacities in Louisiana (and other states) does not provide the infrastructure necessary to enforce a per se law for drugs. First, police do not have sufficient resources. Second, there are no objective levels at which all people are impaired by drugs. Because drugs affect individuals differently, it is not possible to objectively measure impairment with chemical tests. Drugs prescribed by a physician to treat/manage chronic conditions such as ADHD, pain, anxiety, etc. may even improve a person's driving. The challenges associated with determining when and how drugs impair driving abilities makes shifting the burden of proof solely to chemical results problematic.

Characterizing Drugged Driving

The analysis of the crime lab data suggests that the problem of drugged driving should be addressed as a behavioral drug abuse issue rather than a general drug-use issue. Drivers arrested for DUID exhibit a history of unsafe driving behavior at higher rates than all others in the driving population. Characterizing drugged driving as a technical offense (i.e., per se drugged driving) may result in unintended consequences like wrongful conviction of drug-positive drivers that are not actually impaired. The findings suggest that high risk drivers should be the focus of characterizing the problem of drugged driving, rather than drug use and prevalence among the population.

Next, we provide a series of recommendations to improve data collection and assist decision-makers in allocating resources by addressing areas where attention should be directed.

RECOMMENDATIONS

There are many steps that can be taken to improve the quality and collection of data, and ultimately, the adjudication of drugged driving cases. The recommendations are presented as follows:

- Increase testing of drivers in zero or low BAC in DWI arrests: With limited resources, a logical place to start would be to test drivers failing SFST with low or negative BACs for drugs collected from breathalyzers. A high percentage of drivers arrested for drugs had prior DWI arrests with low or zero BAC. Testing these drivers for drugs may reveal a high percentage of drug use. Handheld equipment for drug screening could be beneficial for deciding when to collect further blood evidence.

- Improvement in the collection of blood evidence: Law enforcement is the primary link in collecting quality data on impaired drivers. The use of urine in testing should be replaced with blood wherever resources allow and tests should quantify the amount of substances in the blood. A urine test showing traces of cannabinoids that may have been taken weeks ago is not the same as a blood test showing, for instance, 10ng/dl of cannabinoids as a direct result of recent use. Even though there are no levels in existence to determine impairment, quantified levels have probative value that will assist in the adjudication of drugged driving cases. One way to assist officers with this task is to provide on-site screening devices that can detect the presence of drugs using oral fluids. While these devices cannot be used to prove impairment, they are useful in aiding the officer in determining whether or not a drug test should be conducted.

- Improvement in the collection of supporting evidence for impairment: The interviews indicate the reliability of officer testimony and documentation of other evidence is critical to determining when conviction is warranted. Video recordings of the SFST being performed and whenever possible, recordings of the suspect's driving are important sources of evidence that provide third party evaluation. To establish reliable testimony, officers should prepare clearly written, thoroughly documented reports of the investigation. Quality reports and supporting evidence (including—but not relying—on drug test results alone) are the foundation of a DUID case that enable prosecutors to better evaluate evidence to determine the appropriate course of action. The importance of the police report and documentation of evidence cannot be overstated, particularly in situations where the defendant refuses to submit to

chemical tests or if testing is not possible for whatever reason. Even with test results, the outcome of a case hinges on the investigation as a whole. Efforts to improve drug testing should be part of efforts to improve collection of evidence overall.

- Improvement of training: More training is needed to prepare law enforcement in recognizing signs of drug impairment. In the interviews, officers expressed a desire for appropriate training. Time is a critical issue in impaired driving cases if drug testing is deemed an appropriate follow up. Officers trained to investigate drug use among drivers will collect better evidence to establish a DUID case, whether it be physical, behavioral or chemical. If DREs are more readily available, it follows that the type of drug can be identified and confirmatory tests can be conducted. Confirmatory tests are more probative than toxicology screens and can better assist the state in meeting the burden of proof. In the absence of a DRE, officers could use portable saliva screens to help determine what drugs should be confirmed in the test, but these devices should supplement, not supplant, officer training. Refresher courses on performing the SFST for both drugs and alcohol should be regularly offered to ensure these tests are performed correctly.

- Enhance training and use of forensic toxicologists: In addition to improving the quality of evidence and quantifying the levels of drugs in the blood, the state should increase the use of expert forensic toxicologist testimony in DUID cases. Qualified expert forensic toxicologists provide interpretation of the toxicology results, which can better assist prosecutors and the adjudication process. To be qualified as an expert, forensic toxicologists need additional training in pharmacokinetics, pharmacodynamics, and pharmacology as it relates drug-impaired driving. For example, a toxicologist with qualified expertise in these areas can provide testimony about the type and amount of drug(s) detected in the defendant, such as whether or not the type and amount would be capable of causing the degree of impairment observed by the police, or they can interpret whether the toxicology results are consistent with therapeutic drug use or drug abuse. Prosecutors would benefit from working with forensic toxicologists to better understand the technical aspects of drug testing in DUID cases. Prosecutors may also benefit from working with DREs and police investigators to better understand how the signs and symptoms observed at the scene correlate to toxicology.

- Development of best practices: There is a need for statewide guidelines establishing best practices for type of evidence collection regarding drug testing. Toxicology tests

should include the amount of substances detected to improve both the quality of evidence and data quality in general. Developing policies at the state-level will improve the consistency of evidence collected and the quality of data on drugged driving. Establishing standards for equipment and cut-off thresholds for specific drugs and turnaround time for results would be highly beneficial. Standardizing the manner in which drug test results are recorded and stored in a database is useful for ongoing analysis and monitoring. Current methods and practices of data management should be critically evaluated to determine areas most in need of improvement or optimization.

- Focus on drug abuse: While a higher percentage of drivers arrested for drugged driving had prior histories of unsafe driving (DWI, speeding, crashes) compared to the general driving population, there is a large percentage of these drivers who did not have a record indicating a higher safety risk. Therefore, distinguishing between drivers abusing drugs and those who use drugs as directed by their physician is critical to increase traffic safety without threatening law abiding drivers. Quantifying drug levels through blood evidence, when combined with other observational evidence, will aid in identification and prosecution of drug-impaired drivers.

- Increase public awareness of the risks of drug impairment: The use of prescription drugs is a reality that does not appear to be changing. Efforts to educate the public can reduce unintentional drugged driving by emphasizing prevention and personal responsibility, rather than focusing on punishment and increasing fear of punishment. For example, providing information to help patients self-assess how medications affect them and their family members may prevent drugged driving before it happens. Also, increasing awareness of the impairment effect of using alcohol in combination with drugs is important. The public also may not be aware that it is illegal to drive while under the influence of drugs. This information could be added to drunk driving communications to increase awareness. Thus, the state should work with public health practitioners to determine the best course of action for addressing the information needs of communities and individuals.

ACRONYMS, ABBREVIATIONS, AND SYMBOLS

BAC	Blood alcohol concentration
BrAC	Breath alcohol concentration
CDC	Centers for Disease Control
COBRA	Louisiana Computerized Online BReath Archiving system
DEA	US Drug Enforcement Agency
DRUID	DRiving Under the Influence of Drugs, alcohol and medicines
DUID	Driving under the Influence of Drugs
DWI	Driving while Intoxicated
FARS	Fatality Analysis Reporting System
HSRG	Highway Safety Research Group
NHTSA	National Highway Traffic Safety Administration
NRS	National Roadside Survey
ONDCP	Office of National Drug Control Policy
OTC	Over-the-Counter
LADOTD	Louisiana Department of Transportation and Development
LSBA	Louisiana State Bar Association
LSU	Louisiana State University
LTRC	Louisiana Transportation Research Center
SFST	Standardized Field Sobriety Test
THC	Delta-9-tetrahydrocannabinol
ZT	Zero-Tolerance

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APPENDIX A

Overview of per se drugged driving laws in the US

State	Implied Consent	Penalty for Refusal	Affirmative Defense	Penalty for First Offense
Arizona	blood, breath, urine, any bodily substance	Right to counsel prior to submission; Refusal may result in driver's license suspension or denial for 12 months; Refusal is admissible in court	Yes, prescription (but not for marijuana)	10 to 180 days in jail; Alcohol and/or drug treatment; fine approx. $1,800 (plus jail costs); License suspension for 90 days; Probation for up to 5 years; Community service
Delaware	blood, breath, and/or urine	If informed of penalty for refusal, then driver's license may be revoked for at least 1 year for alleged DUI, however, officer may opt not to inform person of penalty for refusal and may proceed with tests without the person's consent; Refusal admissible in court	Yes, prescription (but not for marijuana)	60 days to 3 months in prison; fine $575-$2,300 (plus surcharges); Driver's license revoked for 12 months
Georgia	blood, breath, urine, any bodily substance	suspension of driving privileges (but driver may request hearing); Refusal admissible in court	Prescription holders charged with the "less safe" type of DUI, state must prove drug made driving "less safe" for conviction	Incarceration for 10 days to 12 months; Mandatory minimum of 40 hours community service; Probation for 12 months; Mandatory participation in 20-hour risk reduction program (additional $175 plus $75 fee for assessment)
Illinois	blood, breath, or urine	Driver's license revoked and suspended; Refusal admissible in court	No	Possible imprisonment up to 1 year; fine up to $2,500; loss of license for 1 year; DUI victim impact panel required
Indiana	"chemical tests" at officer discretion within 3 hours of driving	immediate revoke of license and suspension of driving privileges (but driver entitled to a hearing); Refusal admissible in court	Yes, prescription	Minimum of 5 days up to 60 days in jail; Up to 180 hours of community service; fine up to $500; License suspension up to 2 years, Court fees at least $300; Up to 2 years probation
Iowa	blood, breath, or urine	Right to counsel prior to submission; First withdraw of consent makes person ineligible for a temporary restricted license for a minimum of 90 days, second refusal the driver's license will be revoked for 2 years	Yes	Minimum imprisonment of 48 hours up to 1 year (sentence may accommodate defendant's work schedule); Up to $1,250 fine; License revoked for 180 days up to 1 year
Michigan	blood, breath, or urine	Allowed a phone call to consult attorney; No stated penalty for refusal, officer may seek a court order in the event of a refusal	No	Community service up to 360; and/or imprisonment up to 93 days; and/or fine up to $300

Overview of per se drugged driving laws in the US (cont'd)

Minnesota	blood, breath, or urine	Right to counsel prior to submission; refusal is considered a crime and results in immediate suspension of license; if convicted, the refusal results in additional license restrictions	No	Up to 90 days in prison; Up to $1000 fine; up to 180 days suspension of license (180 days is the mandatory minimum if defendant refused chemical tests)
Oklahoma	blood, saliva, or urine	no stated penalty, however, the Commissioner of Public Safety shall revoke the license to drive and any nonresident operating privilege	No	must participate in a drug/alcohol assessment; at least 10 days but no more than 1 year in jail; fine no more than $1000
Rhode Island	breath, blood, and/or urine	for first refusal, penalty consists of: a fine of $200 to $500, 10 to 60 hours of public community restitution, and license suspension for 6 months to 1 year (penalties increase with multiple offenses); even if person refuses, an officer may obtain a search warrant to authorize test of blood or breath without person's consent; evidence of refusal is not admissible in court unless defendant testifies	No	First offense with a controlled substance in the blood: fine of $100 to $300; 10 to 60 hours of public community restitution, possible imprisonment up to 1 year; may be required to attend a special course on driving while intoxicated or under the influence of a controlled substance; license suspension for 30 to 180 days.
Utah	blood, breath, urine, or oral fluids	no right to counsel prior to submission; refusal may result in revocation of the driver's license or requirement of an ignition interlock device	Yes: if substance/ metabolite was involuntarily ingested, a prescription, or legal ingestion	at least 48 consecutive hours in jail, 48 hours of community service, or electronically monitored home confinement; participation in educational course; fine of at least $700; possible probation or substance abuse treatment; if over age 21-license suspension for at least 120 days; if under 21-license suspension until person turns 21 or 120 days, whichever is longer
Wisconsin	breath, blood, or urine	license suspension for 1 year beginning at the time of refusal (appeal must be made within 10 days); ordered assessment and driver safety plan; individuals may also be ordered to participate in drug substance abuse assessment or treatment	Yes	fine of $150 to $300

Overview of per se drugged driving laws in the US (cont'd)

North Carolina	"chemical tests"	license revoked for a year or longer, officer may compel person to be tested under other laws	Under 21- Yes, if lawfully obtained and at "therapeutically appropriate amounts"	fine up to $4000; imprisonment of 30 days (minimum) to 24 months (maximum); may be ordered to complete substance abuse assessment
South Dakota	blood, breath, any bodily substance	No right to counsel; license suspension; refusal admissible in court	No	one year imprisonment; fine of $2,000; driving privileges revoked for 30 days to 1 year.
Virginia	blood, breath, or urine	first refusal to submit to testing is a civil offense and subsequent violations are criminal offenses; suspension of driving privilege for 1 year, no guaranteed right to counsel	No	fine of $250; loss of driving privileges for 1 year (ignition interlock device may be required upon restoration)
Washington	breath or blood	license, permit, or privilege to drive revoked for 1 year; refusal may be used in criminal trial; there is a limited window where person may contact attorney but extended delays may be considered a refusal	No	imprisonment of 1 day to 1 year (mandatory minimum 24 consecutive hours imprisonment or 15 days electronic home monitoring); fine of $350 to $5000; license suspended for 90 days (possible requirement of an ignition interlock device on vehicle)
Montana	test or tests, does not specify fluids	for 1st refusal, license suspension of 6 months with no provision for a restricted probationary license. Refusal is admissible in court	No	Mandatory minimum of 24 hours up to 6 months in prison; fine of $300 to $1000; if passenger(s) are under 16, the penalty doubles
Nevada	blood, breath, urine or any bodily substance	no stated penalty, however, by this law the officer has reasonable grounds to believe the person was under the influence; refusal is admissible in court; officer may exert reasonable force to obtain samples following refusal	Yes	Imprisonment of 2 days to 6 months; OR 48-96 hours of community service; fine of $400 to $1,000; required to complete a course on the abuse of alcohol and other controlled substances
Ohio	whole blood, blood serum or plasma, breath, or urine	License suspension for 1 year for the first refusal, 2 years for the second refusal, and three for the third refusal. Refusing to submit until first speaking with an attorney is essentially a refusal	Yes, prescription taken in accordance with a licensed health professional's directions (note: medical marijuana is not legal in Ohio)	mandatory minimum of 3 consecutive days imprisonment up to a maximum of 6 months; OR required attendance in a driver's intervention program for 3 days; fine between $375 to $1075; license suspension for 6 months to 3 years.

Overview of per se drugged driving laws in the US (cont'd)

Pennsylvania	breath, blood, or urine	Operating privilege suspended by department for 6 to 18 months; evidence of refusal is admissible in court as well as testimony concerning the circumstances of refusal	No	mandatory minimum of 72 consecutive hours imprisonment up to a maximum of 6 months; fine of $1000 up to $5000; required attendance at alcohol highway safety school; license suspension for at least 18 months; may be required to complete 150 hours of community service; may be required to attend a victim impact panel
Colorado	breath, blood	No right to counsel prior to submission; Driver's license revoked 1 year for first refusal, 2 years for second refusal, and 3 for the third; Refusal is admissible evidence at trial	No	mandatory minimum of 5 days to 1 year in jail; fine $200-$500, 24-48 hours of "useful public service"; Probation for up to 2 years

APPENDIX B

All questionnaires used in this study

Prosecutor survey on drugged driving
LSU IRB Approval # E8934
Approval Date 9/19/2014

How long have you been a prosecutor in Louisiana?
_____ Years
_____ Months

What is your current affiliation?

How frequently do you prosecute impaired driving cases, either involving alcohol, other drugs, or both?
❍ Never or hardly ever
❍ More than a few cases per year, but less than once a month
❍ Once a Month
❍ 2-3 Times a Month
❍ Once a Week
❍ 2-3 Times a Week
❍ 4-6 Times a Week
❍ Daily

About what percentage of impaired driving cases would you say are cases involving drugs only?
_____ %

Compared to previous years, has the number of drugged driving cases in your parish increased, decreased, or stayed about the same?
❍ Decreased
❍ Somewhat decreased
❍ About the same
❍ Somewhat increased
❍ Increased
❍ Unsure

How frequently do you prosecute drug-impaired driving cases when alcohol is not a factor or the driver's BAC is below the illegal limit?

❍ Never or hardly ever

❍ More than a few cases per year, but less than once a month

❍ Once a Month

❍ 2-3 Times a Month

❍ Once a Week

❍ 2-3 Times a Week

❍ 4-6 Times a Week

❍ Daily

In your experience, about how difficult is it to obtain a conviction in these particular cases?

❍ Very Difficult

❍ Difficult

❍ Somewhat Difficult

❍ Neutral

❍ Somewhat Easy

❍ Easy

❍ Very Easy

Answer If In your experience, about how difficult is it to obtain a conviction in these particular cases? Very Difficult Is Selected Or In your experience, about how difficult is it to obtain a conviction in these particular cases? Difficult Is Selected Or In your experience, about how difficult is it to obtain a conviction in these particular cases? Somewhat Difficult Is Selected

What are the greatest obstacles you face in prosecuting drug impaired driving cases?

When the driver has consumed drugs and also has a BAC of .08 or higher, do you pursue a drug case?

❍ Yes

❍ No

Why or why not?

In your personal experience, do drugged driving cases seem to be more likely to be contested than alcohol cases?

❍ Yes

❍ Sometimes, it depends on other factors involved as well

❍ No

In your personal experience, do drugged driving cases seem more likely to be dismissed than alcohol cases?

❍ Yes

❍ Sometimes, it depends on other factors involved as well

❍ No

Answer If In your personal experience, do drugged driving cases seem more likely to be dismissed than alcohol cases? Yes Is Selected Or In your personal experience, do drugged driving cases seem more likely to be dismissed than alcohol cases? Sometimes, it depends on other factors involved as well Is Selected

Under what condition(s) is a drugged driving case typically more likely to be dismissed?

Is it easier to obtain a drugged driving conviction when the case involves a crash?

❍ Yes

❍ No

In your experience, do most drugged driving cases involve crashes?

❍ Yes

❍ No

Do you believe the current impaired driving laws in Louisiana are adequate to prosecute drugged driving cases?

❍ Never

❍ Rarely

❍ Sometimes

❍ Most of the Time

❍ Always

Do you find it challenging to establish causation under Louisiana's current impaired driving laws?

❍ Never

❍ Rarely

❍ Sometimes

❍ Often

❍ Every time

What is your opinion on the efficacy of per se drugged driving laws in increasing conviction rates?
- ○ Very Ineffective
- ○ Ineffective
- ○ Somewhat Ineffective
- ○ Neither Effective nor Ineffective
- ○ Somewhat Effective
- ○ Effective
- ○ Very Effective

What is your opinion on the efficacy of per se drugged driving laws in improving public safety?
- ○ Very Ineffective
- ○ Ineffective
- ○ Somewhat Ineffective
- ○ Neither Effective nor Ineffective
- ○ Somewhat Effective
- ○ Effective
- ○ Very Effective

Do you think that a per se drugged driving law would make it easier for you to obtain a conviction?
- ○ Definitely not
- ○ Probably not
- ○ Maybe
- ○ Probably yes
- ○ Definitely yes

Please tell how much you agree or disagree with the following statements. Click the button below to continue.

Drugged driving is a major problem in Louisiana.
- ○ Strongly Disagree
- ○ Disagree
- ○ Neither Agree nor Disagree
- ○ Agree
- ○ Strongly Agree

Drugged driving poses a serious threat to public safety.
- ○ Strongly Disagree
- ○ Disagree
- ○ Neither Agree nor Disagree
- ○ Agree
- ○ Strongly Agree

Drugged driving poses a threat to public safety on par with drunk driving.
- ○ Strongly Disagree
- ○ Disagree
- ○ Neither Agree nor Disagree
- ○ Agree
- ○ Strongly Agree

Prescription drugs pose as much threat to public safety as illegal drugs.
- ○ Strongly Disagree
- ○ Disagree
- ○ Neither Agree nor Disagree
- ○ Agree
- ○ Strongly Agree

Per se drugged driving laws should not differentiate between illegal or prescription drugs.
- ○ Strongly Disagree
- ○ Disagree
- ○ Neither Agree nor Disagree
- ○ Agree
- ○ Strongly Agree

Per se drugged driving laws should apply to illegal drugs only.
- ○ Strongly Disagree
- ○ Disagree
- ○ Neither Agree nor Disagree
- ○ Agree
- ○ Strongly Agree

Prescription drugs should be excluded under per se drugged driving laws.
○ Strongly Disagree
○ Disagree
○ Neither Agree nor Disagree
○ Agree
○ Strongly Agree

A per se drugged driving law will improve public safety in Louisiana.
○ Strongly Disagree
○ Disagree
○ Neither Agree nor Disagree
○ Agree
○ Strongly Agree

Per se laws are not necessary to obtain convictions, provided the driver's behavior is observably impaired.
○ Strongly Disagree
○ Disagree
○ Neither Agree nor Disagree
○ Agree
○ Strongly Agree

There is no guarantee that per se drugged driving laws will improve public safety.
○ Strongly Disagree
○ Disagree
○ Neither Agree nor Disagree
○ Agree
○ Strongly Agree

Per se drugged driving laws will keep drugged drivers off the road.
○ Strongly Disagree
○ Disagree
○ Somewhat Disagree
○ Neither Agree nor Disagree
○ Somewhat Agree
○ Agree
○ Strongly Agree

Please leave any additional comments for the researchers (optional)

Defense attorney survey on drugged driving

LSU IRB Approval # # E8933
Approval Date 9/19/2014

How long have you been a criminal defense lawyer in Louisiana?
_____ Years
_____ Months

Please select the parish in which you most frequently practice law.
(Table Truncated to 63 Columns)

Do you practice in other parishes as well? If so, please type the parish name(s) in the text box.
❍ Yes_____
❍ No

In general, about how often do you defend impaired driving cases, either involving alcohol, other drugs, or both?
❍ Never or hardly ever
❍ More than a few cases per year, but less than once a month
❍ Once a Month
❍ 2-3 Times a Month
❍ Once a Week
❍ 2-3 Times a Week
❍ 4-6 Times a Week
❍ Daily

About what percentage of your impaired driving cases would you say are cases involving drugs only?
_____ %

In recent years, has the number of drugged driving cases you've taken increased, decreased, or stayed about the same?
❍ Decreased
❍ Somewhat decreased
❍ About the same
❍ Somewhat increased
❍ Increased
❍ Unsure/ can't say

How frequently do you defend drivers charged with having the following drugs detected in their systems?

	Rarely	Occasionally	Frequently	Not sure
cannabis/ THC	○	○	○	○
other illicit drugs	○	○	○	○
prescription drugs	○	○	○	○
multiple drugs	○	○	○	○

About how often do you defend drug-impaired driving cases when alcohol is either not a factor or the driver's BAC is below the illegal limit?
○ Never or hardly ever
○ More than a few cases per year, but less than once a month
○ Once a Month
○ 2-3 Times a Month
○ Once a Week
○ 2-3 Times a Week
○ 4-6 Times a Week
○ Daily

For these cases where alcohol is not a factor, please indicate the percentage of cases that reach a resolution (e.g., settled, dismissed, etc) at the following stages:
_____ arraignment
_____ pre-trial conference
_____ trial assignment
_____ jury or bench trial
_____ Other (please specify)

How many drugged driving cases tend to result in your client accepting a plea bargain?
○ None
○ Very few
○ Some
○ Most
○ Nearly All (or All)

What are some of the primary reasons/ circumstances under which you would be more likely accept a plea for drugged driving cases?

When your client's case is successful, what are some of the primary reasons the state fails to meet its burden?

Do you believe the state has a disadvantage when prosecuting drugged driving cases under existing law?
○ Never
○ Rarely
○ Sometimes
○ Often
○ All of the Time

Why or why not?

What is your opinion on the efficacy of per se drugged driving laws in improving public safety?
○ Very Ineffective
○ Ineffective
○ Somewhat Ineffective
○ Neither Effective nor Ineffective
○ Somewhat Effective
○ Effective
○ Very Effective

Do you have any reservations about Louisiana passing a per se drugged driving law?
○ Yes
○ No

Why or why not?

Drugged driving is a major problem in Louisiana.
○ Strongly Disagree
○ Disagree
○ Neither Agree nor Disagree
○ Agree
○ Strongly Agree

Drugged driving poses a threat to public safety.
○ Strongly Disagree
○ Disagree
○ Neither Agree nor Disagree
○ Agree
○ Strongly Agree

Drugged driving poses a threat to public safety on par with drunk driving.
- ○ Strongly Disagree
- ○ Disagree
- ○ Neither Agree nor Disagree
- ○ Agree
- ○ Strongly Agree

Prescription drugs pose as much threat to public safety as illegal drugs.
- ○ Strongly Disagree
- ○ Disagree
- ○ Neither Agree nor Disagree
- ○ Agree
- ○ Strongly Agree

Per se drugged driving laws should apply to illegal drugs only.
- ○ Strongly Disagree
- ○ Disagree
- ○ Neither Agree nor Disagree
- ○ Agree
- ○ Strongly Agree

Per se drugged driving laws should not differentiate between illegal or prescription drugs.
- ○ Strongly Disagree
- ○ Disagree
- ○ Neither Agree nor Disagree
- ○ Agree
- ○ Strongly Agree

Prescription drugs should be excluded under per se drugged driving laws.
- ○ Strongly Disagree
- ○ Disagree
- ○ Neither Agree nor Disagree
- ○ Agree
- ○ Strongly Agree

A per se drugged driving law will improve public safety in Louisiana.
- ◯ Strongly Disagree
- ◯ Disagree
- ◯ Neither Agree nor Disagree
- ◯ Agree
- ◯ Strongly Agree

Per se laws are not necessary to obtain convictions, provided the driver's behavior is observably impaired.
- ◯ Strongly Disagree
- ◯ Disagree
- ◯ Neither Agree nor Disagree
- ◯ Agree
- ◯ Strongly Agree

There is no guarantee that per se drugged driving laws will improve public safety.
- ◯ Strongly Disagree
- ◯ Disagree
- ◯ Neither Agree nor Disagree
- ◯ Agree
- ◯ Strongly Agree

Police survey on drugged driving
LSU IRB Approval # E8929
Approval Date 9/15/2014

What type of law enforcement best describes your agency?
- ☐　　State (1)
- ☐　　Parish (2)
- ☐　　City / Municipal (3)
- ☐　　College / University (4)
- ☐　　Other (please specify) _____

Answer If What type of law enforcement best describes your agency? State Is Selected
What is your Troop/ jurisdiction?
- ☐　　Troop A (Baton Rouge)
- ☐　　Troop B (Kenner)
- ☐　　Troop C (Houma)
- ☐　　Troop D (Lake Charles)
- ☐　　Troop E (Alexandria)
- ☐　　Troop F (Monroe)
- ☐　　Troop G (Bossier City)
- ☐　　Troop I (Lafayette)
- ☐　　Troop L (Covington)

Answer If What type of law enforcement best describes your agency? Parish Is Selected
What is your agency's Parish/ jurisdiction?

Answer If What type of law enforcement best describes your agency? City / Municipal Is Selected
What is your City / Municipal jurisdiction?

Answer If What type of law enforcement best describes your agency? College / University Is Selected
What college or university is your agency's jurisdiction?

Answer If What type of law enforcement best describes your agency? Other (please specify) Is Selected
What is your agency's jurisdiction?

What is your rank and classification?
Rank / Title
Classification

How long have you been in your current position?
_____ Years
_____ Months

124

Is it part of your daily work routine to make traffic stops?
- ☐   No
- ☐   Sometimes
- ☐   Yes

In general, is it fairly common for you to make traffic stops because you observed the driver committing a crime or a traffic violation while in control of their vehicle?
- ☐   No
- ☐   Sometimes
- ☐   Yes

How often do you make a traffic stop because you have reason to suspect a driver is under the influence of alcohol and/or drugs?
- ☐   Never
- ☐   Rarely
- ☐   Occasionally
- ☐   Sometimes
- ☐   Often

Do you typically perform a SFST if there's a chance the driver has consumed drugs or alcohol?
- ☐   Never
- ☐   Rarely
- ☐   Sometimes
- ☐   Most of the Time
- ☐   Always

If the driver fails the SFST, how likely are you further investigate through chemical testing?
- ☐   Very Unlikely
- ☐   Unlikely
- ☐   Undecided
- ☐   Likely
- ☐   Very Likely

About how often do you make impaired driving arrests?
- ☐   Never
- ☐   Less than One a Month
- ☐   One a Month
- ☐   2-3 Times a Month
- ☐   Once a Week
- ☐   2-3 Times a Week
- ☐   4-6 Times a Week
- ☐   Daily

Of these, what percentage of the time does the driver have a BAC at or above .08?
_____ %

Under what circumstances are you most likely to test for drug(s) other than alcohol? Check all that apply.

- ☐   If the driver is clearly impaired at the scene but does not appear to be drunk
- ☐   If there is drug paraphernalia in the driver's vehicle or on his or her person
- ☐   If the driver was involved in a crash
- ☐   If the driver fails to cooperate
- ☐   If the driver has had at least one prior impaired driving offense in the past
- ☐   If the driver's BAC is below .05
- ☐   Other _____

If the driver has a BAC at or above .08, how likely are you to continue testing further?

- ☐   Very Unlikely
- ☐   Unlikely
- ☐   Somewhat Unlikely
- ☐   Undecided
- ☐   Somewhat Likely
- ☐   Likely
- ☐   Very Likely

If the driver below the age of 21 fails the SFST but upon chemical testing blows a BAC of .00, what do you typically do?

- ☐   Let them go
- ☐   Test blood for drug(s)
- ☐   Test urine for drug(s)
- ☐   Test both blood and urine for drug(s)
- ☐   Other _____

If the driver above the age of 21 fails the SFST but upon chemical testing blows a BAC of .05, what do you typically do?

- ☐   Let them go
- ☐   Test blood for drug(s)
- ☐   Test urine for drug(s)
- ☐   Test both blood and urine for drug(s)
- ☐   Other _____

In your jurisdiction, do you typically encounter multiple offenders in impaired driving cases?

- ☐   Not typically
- ☐   Sometimes
- ☐   Most of the Time

Relative to drunk driving, how prevalent is drugged driving in your jurisdiction?

- ☐   Much Less
- ☐   Less
- ☐   Somewhat Less

☐ The Same
☐ Somewhat More
☐ More
☐ Much More

What are some of the issues you experience investigating drugged driving cases?

Public survey on drugged driving

Are you licensed to drive in the state of Louisiana?
○ Yes
○ No
○ I am not licensed to drive in the United States.

How long have you lived in Louisiana?
    Years
    Months

Have you ever been involved in a motor vehicle crash?
○ Yes
○ No

Answer If Have you ever been involved in a motor vehicle crash? Yes Is Selected
To the best of your knowledge, have you ever been involved in a crash where drugs and/or alcohol were suspected factors?
○ Yes
○ No

In general, how concerned are you about impaired driving in Louisiana?
○ Not at all
○ Slightly
○ Moderately
○ Very
○ Extremely

When traveling on Louisiana roads, about how often do you tend to encounter other drivers who appear to be possibly driving under the influence of alcohol or drugs?
○ Never
○ Less than Once a Month
○ Once a Month
○ 2-3 Times a Month
○ Once a Week
○ 2-3 Times a Week
○ Daily
○ I don't know

Compared to other forms of dangerous or distracted driving (such as falling asleep behind the wheel, texting, etc.), how much of a problem would you say impaired driving is in

128

Louisiana?
- ❍ Much Less
- ❍ Less
- ❍ About the Same
- ❍ More
- ❍ Much More
- ❍ Not Sure/ Don't know

In recent memory, have you heard or seen any reports in the media about drug-impaired driving, sometimes referred to as "drugged driving"?
- ❍ Yes
- ❍ No
- ❍ Not sure

The term "drugged driving" does not have a single legal definition. We are interested in learning the connotation the term has among the general public. Whether or not you've ever heard the term used in media, when you think of the meaning of "drugged driving," what thoughts, ideas, or images come to mind?

>   *Text entry*

Validation Question Below you will see the text of Louisiana's existing DWI law, Louisiana Revised Statute 14:98, which states the crime for operating a vehicle while intoxicated. Section A of RS 14:98 identifies the conditions under which a person operating a motor vehicle is legally considered driving while intoxicated:

 LOUISIANA RS 14:98
§98. Operating a vehicle while intoxicated

A.(1) The crime of operating a vehicle while intoxicated is the operating of any motor vehicle, aircraft, watercraft, vessel, or other means of conveyance when any of the following conditions exist:

>   (a) The operator is under the influence of alcoholic beverages.

>   (b) The operator's blood alcohol concentration is 0.08 percent or more by weight based on grams of alcohol per one hundred cubic centimeters of blood.

>   (c) The operator is under the influence of any controlled dangerous substance listed in Schedule I, II, III, IV, or V as set forth in R.S. 40:964.

>   (d)(i) The operator is under the influence of a combination of alcohol and one or more drugs that are not controlled dangerous substances and that are legally obtainable with or without a prescription.
>   (ii) It shall be an affirmative defense to any charge under this Subparagraph that the label on the container of the prescription drug or the manufacturer's package of the

drug does not contain a warning against combining the medication with alcohol.

(e)(i) The operator is under the influence of one or more drugs that are not controlled dangerous substances and that are legally obtainable with or without a prescription. (ii) It shall be an affirmative defense to any charge under this Subparagraph that the operator did not knowingly consume quantities of the drug or drugs that substantially exceed the dosage prescribed by the physician or the dosage recommended by the manufacturer of the drug.

(2) A valid driver's license shall not be an element of the offense, and the lack thereof shall not be a defense to a prosecution for operating a vehicle while intoxicated.

It is currently illegal to operate a motor vehicle while impaired by drugs in the state of Louisiana.
○ True
○ False

To some, the term "drugged driving" refers to the act of operating a motor vehicle with any detectable levels of drugs in one's system, regardless of driver impairment. A number of states have passed zero-tolerance drugged driving per se laws based on this meaning. Under a per se law, a driver is automatically guilty of driving under the influence of drugs (DUID) if they have any levels (including trace amounts) of drug(s) and/or drug metabolites in his or her system, regardless of whether or not the driver is actually impaired. In many of these states, having a prescription for the drug is not a valid legal defense.

What, if any, concerns would you have with Louisiana passing a zero-tolerance per se drugged driving law?
Text entry

Are you currently taking any prescription medication(s) or over-the-counter drugs to treat or control a mental health or medical condition that could potentially impact your ability to operate a motor vehicle?
○ Yes
○ No

There are a large number of known drugs in existence. The next set of questions asks you to tell your level of familiarity with some commonly taken drugs. How would you describe your level of familiarity with the effects of various drugs on people? For each of the drugs listed below, please click on the point of the scale that most accurately reflects your level of familiarity.

Marijuana/ Cannabis (THC)

	1 (1)	2 (2)	3 (3)	4 (4)	5 (5)	6 (6)	7 (7)
Very Unfamiliar: Very Familiar (1)	○	○	○	○	○	○	○

Narcotics/ prescription pain relievers (such as opium or codeine)

	1 (1)	2 (2)	3 (3)	4 (4)	5 (5)	6 (6)	7 (7)
Very Unfamiliar: Very Familiar (1)	○	○	○	○	○	○	○

Antidepressants like Zoloft or Paxil

	1 (1)	2 (2)	3 (3)	4 (4)	5 (5)	6 (6)	7 (7)
Very Unfamiliar: Very Familiar (1)	○	○	○	○	○	○	○

Stimulants like Adderall or Ritalin

	1 (1)	2 (2)	3 (3)	4 (4)	5 (5)	6 (6)	7 (7)
Very Unfamiliar: Very Familiar (1)	○	○	○	○	○	○	○

Party drugs like MDMA or Molly

	1 (1)	2 (2)	3 (3)	4 (4)	5 (5)	6 (6)	7 (7)
Very Unfamiliar: Very Familiar (1)	○	○	○	○	○	○	○

Benzodiazepines like Xanax or Diazepam

	1 (1)	2 (2)	3 (3)	4 (4)	5 (5)	6 (6)	7 (7)
Very Unfamiliar: Very Familiar (1)	○	○	○	○	○	○	○

OTC allergy, sinus or cold medications like Benedryl or Sudfed

	1 (1)	2 (2)	3 (3)	4 (4)	5 (5)	6 (6)	7 (7)
Very Unfamiliar: Very Familiar (1)	○	○	○	○	○	○	○

Prescription or OTC sleep-aids like Ambien or ZzzQuil

	1 (1)	2 (2)	3 (3)	4 (4)	5 (5)	6 (6)	7 (7)
Very Unfamiliar: Very Familiar (1)	○	○	○	○	○	○	○

Drivers who take drugs are a threat to public safety.
- ○ Strongly Disagree
- ○ Disagree
- ○ Neither Agree nor Disagree
- ○ Agree
- ○ Strongly Agree

Prescription drugs pose as much threat to public safety as illegal drugs.
○ Strongly Disagree
○ Disagree
○ Neither Agree nor Disagree
○ Agree
○ Strongly Agree

Some drugs might improve a person's driving abilities rather than impair them.
○ Strongly Disagree
○ Disagree
○ Neither Agree nor Disagree
○ Agree
○ Strongly Agree

Drivers should not be charged with driving under the influence of drugs unless they are clearly impaired.
○ Strongly Disagree
○ Disagree
○ Neither Agree nor Disagree
○ Agree
○ Strongly Agree

Making it a crime to drive with drugs in one's system will make the roads safer by keeping drug using drivers off the road.
○ Strongly Disagree
○ Disagree
○ Neither Agree nor Disagree
○ Agree
○ Strongly Agree

Drugged driving is a major problem in Louisiana.
○ Strongly Disagree
○ Disagree
○ Neither Agree nor Disagree
○ Agree
○ Strongly Agree

Drugged driving is as big a problem as drunk driving in Louisiana.
○ Strongly Disagree
○ Disagree
○ Neither Agree nor Disagree
○ Agree
○ Strongly Agree

If Louisiana adopts a "zero tolerance" drugged driving law, the law will be enforced fairly across the population regardless of race, gender, age, etc.
○ Strongly Disagree
○ Disagree
○ Neither Agree nor Disagree
○ Agree
○ Strongly Agree

There is no need to pass a new law targeting drugged driving when Louisiana's existing impaired driving law already makes driving while under the influence of drugs a crime.
○ Strongly Disagree
○ Disagree
○ Neither Agree nor Disagree
○ Agree
○ Strongly Agree

Zero-tolerance per se drugged driving laws are fair.
○ Strongly Disagree
○ Disagree
○ Neither Agree nor Disagree
○ Agree
○ Strongly Agree

In terms of social issues and policy, how would you describe your political viewpoints?
○ Very liberal
○ Liberal
○ Moderate (neither liberal nor conservative)
○ Conservative
○ Very conservative
○ Some other viewpoint (please specify) _____
○ None of these/ Don't know
○ Prefer not to say

Do you identify with a political party?
- ⭕ Republican
- ⭕ Democrat
- ⭕ Libertarian
- ⭕ Independent
- ⭕ Other (please specify) _____
- ⭕ None of these/ Don't know
- ⭕ Prefer not to say

What is your age?

What is your annual household income?
- ⭕ Below $25,000
- ⭕ $25,001 - $35,000
- ⭕ $35,001 - $40,000
- ⭕ $40,001- $45,000
- ⭕ $45,000 - $50,000
- ⭕ $50,001 - $60,000
- ⭕ $60,001 - $65,000
- ⭕ $65,001 - $75,000
- ⭕ $75,001 - $85,000
- ⭕ $85,000 - $100,000
- ⭕ Above $100,000
- ⭕ Prefer not to say / Don't know

How do you describe your race/ ethnicity?
- ⭕ White--not Hispanic
- ⭕ Black--not Hispanic
- ⭕ Hispanic or Latino
- ⭕ Asian
- ⭕ Native American
- ⭕ Other _____
- ⭕ Prefer not to say/ Don't know

What is your sex?
- ⭕ Male
- ⭕ Female
- ⭕ Prefer not to say

What is the highest level of education you have completed?
- ⭕ Did not finish high school
- ⭕ High school graduate (diploma awarded)
- ⭕ Some college
- ⭕ College graduate (Associate's or Bachelor's degree awarded)
- ⭕ Some graduate school
- ⭕ Graduate (e.g, MA, MS, MBA) or professional degree (e.g, J.D., M.D.)
- ⭕ Doctorate

What is your zip-code?

 If you have any additional comments about the topic of drugged driving or impaired driving laws in Louisiana that you would like to leave for the researchers, please type them below. submit To submit your responses please click on the continue button below.

Table 30
Group differences in responses to per se law statements

		Drivers who take drugs are a threat to public safety.	Rx drugs pose as much threat …	Some drugs might improve a person's driving abilities …	Drivers should not be charged with DUID unless clearly impaired.	Making it a crime to drive with drugs will make the roads safer …	Drugged driving is a major problem in LA.	Drugged driving is as big a problem as drunk driving …	If LA adopts a ZT DUID law, [it] will be enforced fairly ...	There is no need to pass a new law targeting drugged driving …	ZT per se drugged driving laws are fair.
Sex	z value	0.595	1.255	1.382	-0.414	1.568	3.057	3.331	2.286	-2.221	1.526
	p value	0.552	0.209	0.167	0.679	0.117	.002**	.001**	.022*	.026*	0.127
	mean rank women	420.06 (n=586)	423.01 (n=585)	424.74 (n=586)	413.33 (n=584)	425.27 (n=585)	432.16 (n=585)	433.73 (n=586)	428.52 (n=587)	405.85 (n=586)	425.10 (n=585)
	mean rank men	409.74 (n=247)	401.08 (n=247)	400.40 (n=248)	420.65 (n=246)	397.50 (n=248)	379.41 (n=247)	375.46 (n=246)	387.70 (n=245)	445.03 (n=248)	397.90 (n=248)
Race	z value	-1.026	-2.178	0.67	0.229	-2.373	0.25	-0.542	1	0.743	-1.997
	p value	0.305	.029*	0.503	0.819	.018*	0.802	0.588	0.317	0.457	.046*
	mean rank minority	432.70 (n=207)	448.35 (n=207)	409.63 (n=209)	413.78 (n=208)	451.95 (n=208)	414.57 (n=208)	425.01 (n=208)	403.36 (n=208)	408.55 (n=208)	446.82 (n=208)
	mean rank white	413.83 (n=629)	408.00 (n=628)	422.12 (n=628)	418.07 (n=625)	407.42 (n=628)	419.14 (n=627)	415.00 (n=626)	422.20 (n=626)	422.45 (n=629)	409.12 (n=628)
Age	z value	-0.972	-9.79	1.885	-0.753	2.136	0.017	-0.563	-1.148	-1.211	0.352
	p value	0.331	0.327	.059^	0.451	.033*	0.986	0.574	0.251	0.226	0.725
	mean rank ≤ 35	407.93 (n=255)	407.12 (n=254)	443.02 (n=255)	408.74 (n=253)	445.72 (n=255)	419.21 (n=255)	411.70 (n=255)	404.32 (n=254)	405.17 (n=255)	423.87 (n=254)
	mean rank 36 +	424.61 (n=583)	424.18 (n=583)	409.95 (n=584)	422.02 (n=582)	408.03 (n=583)	418.91 (n=582)	421.48 (n=581)	424.69 (n=582)	426.48 (n=584)	417.60 (n=584)

note: reject the null if **p<.01, *p<.05; approaching significance ^p<.10; the test item response options ranged from 1=strongly disagree to 5=strongly agree

Table 30
Group differences in responses to per se law statements (cont'd)

		Drivers who take drugs are a threat to public safety.	Rx drugs pose as much threat …	Some drugs might improve a person's driving …	Drivers should not be charged with DUID unless clearly .	Making it a crime to drive with drugs will make the roads …	Drugged driving is a major problem in LA.	Drugged driving is as big a problem as drunk …	If LA adopts a ZT DUID law, [it] will be enforced ...	There is no need to pass a new law targeting drugged …	ZT per se drugged driving laws are fair.
Education	z value	-0.016	0.035	2.122	-2.769	-1.334	0.461	-2.228	-2.528	-0.256	-1.716
	p value	0.987	0.972	.034*	.006**	0.182	-0.737	.026*	.011*	0.798	.086^
	mean rank no degree	419.11 (n=478)	418.26 (n=479)	404.68 (n=479)	436.80 (n=479)	428.38 (n=478)	423.54 (n=478)	433.40 (n=478)	435.81 (n=478)	421.30 (n=479)	431.09 (n=480)
	mean rank degree +	418.85 (n=359)	418.82 (n=357)	439.27 (n=359)	391.45 (n=355)	406.51 (n=359)	411.77 (n=358)	397.38 (n=357)	394.15 (n=357)	417.10 (n=359)	402.75 (n=357)
Medications	z value	-3.927	-1.711	2.877	3.681	-4.582	1.027	0.477	-2.574	2.911	-3.78
	p value	.000**	.087^	.004**	.000**	.000**	0.304	0.633	.010**	.004**	.000**
	mean rank not taking	433.92 (n=681)	425.08 (n=679)	408.20 (n=682)	403.14 (n=677)	436.87 (n=680)	414.61 (n=680)	416.16 (n=678)	428.10 (n=678)	408.20 (n=681)	433.83 (n=680)
	mean rank taking	353.86 (n=156)	390.02 (n=157)	468.05 (n=156)	479.40 (n=157)	341.61 (n=157)	435.45 (n=156)	425.93 (n=157)	374.39 (n=157)	468.54 (n=157)	354.76 (n=157)
Concern	z value	4.577	3.147	-4.084	-2.293	3.813	10.063	8.403	4.068	-3.164	3.355
	p value	.000**	.002**	.000**	.022*	.000**	.000**	.000**	.000**	.002**	.001**
	mean rank less	371.01 (n=305)	385.261 (n=305)	463.061 (n=305)	442.141 (n=302)	378.131 (n=305)	313.53 1 (n=305)	329.151 (n=304)	374.171 (n=304)	453.321 (n=305)	382.821 (n=305)
	mean rank high	446.511 (n=532)	437.591 (n=531)	394.57 1 (n=533)	403.511 (n=532)	442.431 (n=532)	478.791 (n=531)	468.871 (n=531)	443.091 (n=531)	400.141 (n=533)	439.741 (n=532)
Media Report	z value	3.558	1.826	-2.872	-2.617	1.548	5.858	4.963	0.672	-2.764	2.297
	p value	.000**	.068^	.004**	.009**	0.122	.000**	.000**	0.501	.006**	.022*
	mean rank no/ unsure	395.57 (n=488)	406.66 (n=489)	439.61 (n=489)	435.88 (n=488)	408.86 (n=488)	379.91 (n=489)	384.96 (n=488)	413.87 (n=488)	438.92 (n=489)	403.64 (n=489)
	mean rank yes	452.87 (n=350)	436.34 (n=348)	392.60 (n=350)	392.86 (n=347)	434.34 (n=350)	473.93 (n=348)	465.54 (n=348)	424.99 (n=348)	393.57 (n=350)	441.72 (n=350)