Drug Recognition Experts (DREs) and Case Outcomes:

A Case Study Examination of the Role of DRE Evaluations and Involvement in Spokane, Washington

Report Prepared by:

Brittany Solensten
Dale W. Willits

Department of Criminal Justice and Criminology
Washington State University

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Dale W. Willits

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14. ABSTRACT
The current report explores the impact DRE evaluations and officers have on DUI case outcomes. Case outcome data from the Washington State Administrative Office of the Courts was merged with three years of DUI case data from the Spokane Police Department. Due to a small number of complete DRE evaluations, cases with heavy DRE involvement were also analyzed. Results show that DRE evaluations and involvement have minimal to no impact on DUI case outcomes. However, this could be due to multiple factors, including higher complexity of cases that DREs are more likely to be involved in, and data limitations.

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DREs and Case Outcomes: A Case Study Examination of the Role of DRE Evaluations and Involvement in Spokane, WA

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Report prepared by:

Brittany Solensten*
Dale W. Willits

*Corresponding author: Brittany.solensten@wsu.edu
Department of Criminal Justice and Criminology
Washington State University

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Abstract

Drug recognition experts (DREs) are a relatively widely used tool in law enforcement for identifying impaired drivers. While previous literature regarding DREs has mainly focused on the accuracy of DRE opinions as compared to toxicology results, the current overall research attempts to identify perceptions and adjudication effects of DRE officers. The first report of this research explored how attorneys and DRE officers view the DRE program. The current report explores the impact DRE evaluations and officers have on DUI case outcomes. Case outcome data from the Washington State Administrative Office of the Courts was merged with three years of DUI case data from the Spokane Police Department. Due to a small number of complete DRE evaluations, cases with heavy DRE involvement were also analyzed. Results show that DRE evaluations and involvement have minimal to no impact on DUI case outcomes. However, this could be due to multiple factors, including higher complexity of cases that DREs are more likely to be involved in, and data limitations. Although DRE involvement may have little impact on DUI case adjudication outcomes, the first portion of our research summarizes their benefits outside of DUI cases.

1. INTRODUCTION

The first part of this research (available here: https://bit.ly/3wMOOeR) focused on perceptions of the DRE program, its effectiveness, and its limitations. For the second part of this project, we focus on quantifying the effects of DRE evaluations and DRE officer involvement on DUI case adjudication outcomes. Using DUI arrest data between 2015 and 2017 provided by the Spokane Police Department in Spokane, Washington, we explore the effects of DRE evaluations and DRE officer involvement on DUI case outcomes. Throughout this section, the dangers of driving impaired are highlighted, in addition to previous research regarding DREs. The second section of this report explains the data, coding, and statistical methods used. The third section explores the descriptive analyses of DUI cases, while sections 4 and 5 dive into statistical models of DRE evaluations and involvement on case outcomes. A summary and conclusion are provided in section 6.

Prevalence and Dangers of Intoxicated Driving

Due to the complexity and high level of attention required for driving, driving while intoxicated or impaired can have deadly and costly consequences. Each year in the United States, over 10,000 people are killed by crashes involving impaired drivers, costing over $44 billion per year (National Center for Statistics and Analysis, 2019; Blincoe et al., 2015). Several substances can impair driving ability regardless of legal status. Alcohol is a long-standing legal and accessible drug that severely impairs driving ability. A large-scale study in Virginia found that drivers at a .08 BAC level were four times more likely to be involved in a crash than those with a zero BAC level (Lacey et al., 2016). In addition, drivers at a .15 BAC were twelve times more likely than sober drivers (Lacey et al., 2016). Besides alcohol, over-the-counter and prescription medication can be impairing due to side effects, including drowsiness, rigidity, and confusion (Leroy et al., 2008). Illicit substances have also been found to impair driving ability. A meta-analysis by Chihuri and Li (2017) found that prescription opioids more than double the risk of a motor vehicle crash.

A recently legalized drug, cannabis, has shown mixed results on its effect on crash risk. Research related to crash risk often employs self-reported use of marijuana and collision measures, which can only make weak conclusions about marijuana consumption directly causing the crash (Asbridge et al., 2005). A driving simulation study by Hartman et al. (2016) found that drivers under the influence of marijuana had decreased speed and higher following distance compared to control drivers, suggesting a compensatory mindset, especially compared to alcohol intoxication (Sewell et al., 2009). Given the trend toward legalization, it is likely that more drivers will operate their vehicles under the influence of cannabis, thereby making this an important issue that requires attention. Given the high costs of DUIs and the likely increase in drugged driving, it is imperative to study the DRE program, which attempts to both identify impaired drivers and provide evidence in court.

The DRE Program and Evaluation

Throughout the United States and other countries, police agencies employ the Drug Recognition Expert (DRE) program to combat drugged driving. Put briefly, the DRE program provides a set of advanced impairment detection tools to assist in identifying drivers intoxicated by substances other than or in addition to alcohol. Law enforcement officers undergo specialized training, using standards established by the International Association of Chiefs of Police, to become certified as a "DRE" and therefore qualified to conduct a 12-step drug influence evaluation. A synopsis of the DRE program history, evaluation steps, and research about the perceptions of the DRE program are provided in the first report (Solensten and Willits, 2020).

Perceptions of the DRE Program

In the first report of this research, there were three primary findings. First, was there was an overall absence of DRE testimony in DUI trials for several reasons. One was the lack of trial opportunities. The second reason for the lack of DRE testimony was the reliance and prevalence of toxicology reports instead of officer observations. Increased training on impaired driving programs such as ARIDE were also noted as possibly decreasing DRE callouts overall. The lack of DRE involvement in trials suggests that DREs may not have a major impact on case outcomes.

The second finding from our first report was perceived shortcomings of the DRE program. Notably, there was a weak line of communication between DRE officers and prosecutors. However, this also revealed that DREs want to be involved in the adjudication process, and prosecutors appreciate feedback from DREs on traffic cases. An overall shortage of DRE officers was also noted, especially given the amount they are needed throughout the state. A third shortcoming was a miscommunication between attorneys and DREs in the usefulness and validity of incomplete DRE evaluations. Specifically, although a DRE officer cannot testify to the ultimate opinion of impairment of the driver in these incomplete cases, they can still testify regarding their observations as a highly trained officer with extensive training in DUIs. The last shortcoming was the perceived lack of scientific and legal rigor of DRE evaluations by defense attorneys and jurors alike.

The last finding from the prior report was the indirect benefits of the DRE program. For example, the selective and specific recruitment of officers for the DRE program draws in highly qualified candidates who have a passion for road safety, with a piqued interest in arresting intoxicated drivers. DRE officers also extend their expertise to others by instructing ARIDE and SFST training. A second indirect benefit was an overall enhancement in daily and testimonial efficiency. As a DRE is trained to observe driver behavior and write high-quality reports, these qualities translate to all aspects of their policing career. The third indirect benefit was their availability to the community as a resource. Since DREs are experts in a relatively common misdemeanor, prosecutors use them as resources for difficult impaired driving cases. DREs also serve the community by instructing other professions such as doctors or teachers on signs of drug impairment. An executive summary of this report is available here: https://bit.ly/3vPxNje.

Determinants for DUI Conviction

Research specific to DUI case outcomes and law enforcement interventions is minute compared to other DUI-related research. Several studies focus on what causes people to drive under the influence. For example, Beaver and Barns (2012) employed a twin-based research design to identify the impact of environmental factors on the likelihood of having a DUI conviction. DUI-related research also focuses on the impacts of DUI/DWI courts (Myer & Makarios, 2017), ignition interlock requirements (Beck et al., 2020), and intense supervision (Barta et al., 2017). The current study focuses less on the etiology of DUI behavior and instead on the likelihood for conviction of DUI based on case-related circumstances.

Addressing the gap

Research on DREs and the DRE program is surprisingly sparse. The existing, albeit limited, literature tends to focus on the accuracy of DRE assessments. The evidence on this point is mixed, though more recent research indicates that DRE assessments are a useful tool for documenting impairment (Beirness et al., 2007; Vaillancourt et al., 2021). Importantly, research suggests that several of the steps employed as part of the DRE process are particularly useful for identifying cannabis-impaired drivers

(Declues et al., 2018; Hartman et al., 2016). These results take on increased importance as more jurisdictions adopt recreational cannabis laws.

While our previous research focused on the perceptions of DREs by prosecutors, defense attorneys, and DREs themselves, this report focuses on quantifying the effects DREs have on DUI case outcomes. There is a clear gap in the literature regarding how DRE evaluations and officers impact DUI case outcomes. To address this gap in the literature, we aim to answer two research questions:

> Research question 1: What effect does DRE involvement have on the final disposition of DUIs cases?
>
> Research question 2: How and when are DRE evaluators and evaluations used in DUI cases?

2. DATA AND METHODS

Sample

This study provides secondary data analysis of DUI incidents in Spokane, WA, between January 1st, 2015, and December 31st, 2017. Data provided by the Spokane Police Department were merged with case outcome data from the Washington State Administrative Office of the Courts (AOC). Case outcome dates ranged between February 2015 and July 2020. The final data for this project included 382 DUI cases, including 21 incidents involving a full DRE evaluation and 158 cases in which a DRE officer was heavily involved in the case.

Sampling Method

Phase One.

A total of 17,067 electronic documents related to DUI cases sent from the SPD were sorted into case-labeled folders. Each file was then opened and renamed to have a more consistent, descriptive, and shorter title. These case files did not provide case outcome data which are stored by the AOC, and unfortunately, SPD and AOC cases are not stored using the same identifier. As a result, case documents were individually opened to identify the incident date, case number, the arrestee's first and last name, and date of birth. These data were sent to AOC staff who employed a fuzzy matching algorithm to match this information collected from case files to case outcome data housed at the AOC. Outcome data from the AOC were essential to this project as they documented the outcome of a given DUI case. 1,065 cases were sent to the AOC, and outcomes for 835 or 78.6% of cases were returned (see Figure 2.1).

All 835 cases were coded for officer involvement using case documents provided by the SPD. The officer who wrote a DUI arrest report, blood warrant, or DRE evaluation were recorded. If a known DRE officer's name was reported in one of these three documents, the case was coded to have high DRE officer involvement. Further details and justification for this decision are provided in future paragraphs. In total, 172 out of the 835 returned cases had high DRE involvement. A random sample of 240 low or non-DRE involved cases from the 835 returned cases were selected using a random number generator (see Figure 2.1).

Phase Two.

In order to increase the number of DRE evaluation cases for analysis, further efforts were used to identify cases with DRE evaluations and find respective case outcomes. Using additional data from the SPD that included case and rolling log numbers for two of the DREs in Spokane, we specifically requested case files if they were not provided during initial data collection. 32 case files were requested from the SPD using the same information provided to the AOC in phase one. 22 case files were returned for analysis, and 10 were not provided for various reasons, such as being handled out of district or a domestic violence incident.

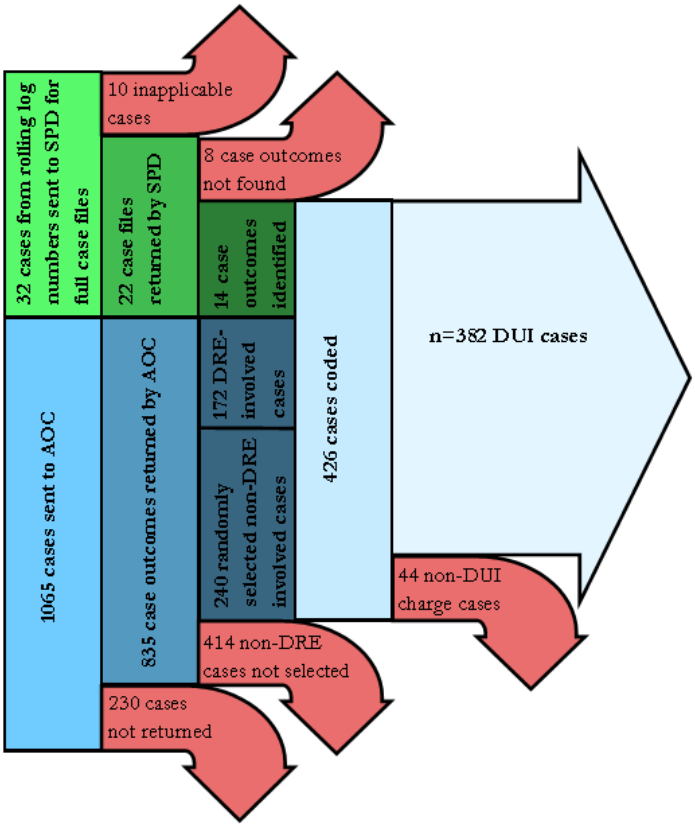
Since these cases were identified after the initial data request to the AOC, a different method was used to identify charges and case outcomes for these additional 22 cases. Each driver's name and date of birth were queried using the Spokane Municipal, District, and Superior Court databases. Offenses associated with the driver were compared to the date of the evaluation. All publicly available offenses and outcomes were aggregated to the AOC data. 14 outcomes were identified out of the 22 cases from the second round of data collection.

Phases Three and Four.

Phase three was the aggregation and coding of all cases between phase one and phase two, totaling to 426 cases and outcomes. All 426 cases were coded using the same criteria and variables (Table 2.1). The final sampling phase, phase four, segregated individuals with and without a DUI charge (Figure 2.1). 382 charges of the 426 cases included case outcomes for DUIs, and 44 had no DUI-related charges.

Figure 2.1

Sankey Diagram of Sampling Method for Final Sample of 382 DUI Cases



Coding Methods

Coding Incident-Related Variables

The SPD provided DUI incident data in an electronic format. Specifically, the SPD transferred electronic files containing a wide range of case-related information, typically including police incident reports, DUI arrest reports, collision reports, criminal and infraction charges, and toxicology reports. Other documents were provided for some cases (i.e., photologs, arrest information sheet). However, this documentation was only provided for a small subset of cases and therefore not coded.

These reports were manually coded to use as actionable data. The coding process sought to extract a wide range of information about each incident, including information on the alleged offender, the number of complainants, witnesses, and victims. Information about the surrounding circumstances of the arrest, including location, time of day, and weather conditions were also coded. In collision-

involved cases, the number of units involved and the amount of damage caused to each unit were recorded. Each file within each case folder was opened and systematically examined for information as shown in Table 2.1. The variable codebook is provided in Appendix A. Additional information regarding the coding process can be provided by the first author.

Table 2.1

Types of Electronic Documents and Variables Coded

Document	Variables Coded
Criminal and Infraction Charges	• Specific charges • License expiration date • Driver date of birth, age, sex (coded as female or not female), and race (coded as White or non-White) • Incident date, time, and location • Vehicle type and year • Type and presence of injury • Weather, road, lighting, and traffic conditions
DUI Arrest Reports	• PBT refusal • First and second PBT readings multiplied by 100 (to facilitate interpretation in the regression context, the multiplication has no other bearing on the results) • If an attorney was requested • Employment status • Driver's physical characteristics such as attitude, coordination, and breath odor • Officer opinion of impairment (None, slight, obvious, or extreme) • Native language of the driver (English or non-English)
Collision Reports	• Road type • Applicable aggravating factors such as if a fire resulted, a stolen vehicle, a hit and run, or if an object was struck • Damage threshold for all units involved and airbag deployment • Type of unit involved in the collision (Pedestrian, vehicle, or property)
Incident Reports	• If the arrested driver provided an oral or written statement • If the arrested driver was armed
Both Collision and Incident Reports	• If there was at least one witness • If there was at least one victim • Total and individual totals of witnesses, complainants, victims, and passengers* ○ Victims were also coded as witnesses if they were present at the scene of the incident. For example, for collisions involving property, the victim was not counted as a witness if they were not on the property at the time of the incident *At times, witnesses or victims would be listed in the collision report but not in any incident reports or vice versa

Toxicology Report	• If a toxicology report was present • Toxicology report date completed • If ethanol, THC, carboxy-THC, synthetic cannabinoids, CNS depressants, CNS stimulants, hallucinogens, dissociative narcotics, or inhalants were present (Present or not present) • Ethanol, THC, and Carboxy-THC levels

Coding DRE-Related Variables

DRE Evaluation Variables.

DRE form presence was coded as binary. If a Driving Under the Influence/DRE – Request for Analysis form with a space for the name of the DRE evaluator was filled, the variable was coded as 1. A blank example of this form can be found here. Additionally, documents titled Drug Influence Evaluation Narrative or Washington State Drug Influence Evaluation were coded as 1. A blank example of this form can be found here.

The name of the DRE who conducted the DRE Evaluation was also coded using a separate categorical variable. If only the Driving Under the Influence/DRE – Request for Analysis form was present, we coded by the case history box with four options, a) No DRE available, b) Subject refused DRE, c) Subject injured, and d) DRE not requested. If the Drug Influence Evaluation Narrative or Washington State Drug Influence Evaluation was present, we coded for which DRE completed the evaluation.

DRE Presence Variable.

The first part of this research indicated that DRE officers are well-trained and often passionate about DUI cases. Some qualitative evidence suggests that DREs may positively impact how DUI cases proceed even in the absence of a full DRE assessment. Therefore, we assess the cases with complete DRE evaluations in addition to cases involving DRE officers.

Coding for DRE influence was treated with care. While the preliminary approach to answer the given research questions was to compare DUI cases with DRE evaluations to those without, a low sample of evaluations restricted analyses. To increase the ability to assess the effects DRE officers have on overall adjudication outcomes, we needed to increase our sample size of DRE-involved cases. As a result, we created a binary Yes/No DRE involvement variable, indicating that a DRE was present during the incident. However, we wanted to ensure that the DRE was a key player in the driver's arrest.

Typically, several officers are involved in a DUI arrest with several different roles that range from high involvement during the case (i.e., witnessing the vehicle in motion, conducting an SFST), to no contact with the arrestee (i.e., transporting blood vials). To eliminate low officer involvement in an arrest, we used two documents related to high officer involvement and contact with the arrestee. This was determined by 1) who wrote the DUI arrest report and 2) who wrote a blood warrant, if applicable. Each document helped determine which officers were significant contributors to the incident and narrative of the arrestee for several reasons:

- Only one individual officer can be listed as writing a DUI arrest report or blood warrant
- Blood warrants and DUI arrest report include information related to the officer's observations of the driver, as referred to in Table 2.1

- Blood warrants include arrestee observations ranging from the vehicle in motion, pre-arrest observations, and standard field sobriety tests in order to demonstrate probable cause for a judge to grant a warrant for a blood draw (see Table 2.1)

Case Outcome Data Returned by the AOC

Data returned by the AOC contained several variables related to the charges and outcomes of arrested drivers. These variables included the court level of the charge, and file and adjudication date. Most importantly, they contained all charges filed for each incident, including the law description and outcome of each charge.

While these data included the outcome for all charges, the specification of each outcome was difficult to interpret. The codes for disposition outcomes included, "AMD," "CHV," "CON," "DEF", "DIS", and "FIL." Table 2.2 includes the codebook we used to interpret our charge outcome data. For example, if a charge outcome was coded as "AMD," this indicated the charge was amended or dropped. However, this outcome could have various interpretations, such as a charge changing severity (i.e., DUI to reckless driving), or that the prosecutor did not pursue the charge, possibly to pursue different or other charges during the incident. These various outcomes can have different meanings between the arrestee, defense attorney, and the prosecutor.

While the convicted variable was straightforward, the deferred, dismissed, and filed codes each require expansion. A deferred charge means that if the defendant complies with specific conditions assigned to them, the charge may be dismissed or amended in the future. Similar to an amended/dropped charge, this could be seen as a benefit to the defense or to the prosecutor. A dismissed charge may include a deferred charge or the court is no longer pursuing the charge. Finally, if a charge is filed, the court has received notice of the incident and arrest.

Table 2.2

AOC Disposition Code Definitions

Charge Code	Definition
AMD	Amended/Dropped Charge
CHV	Change of Venue Transferred
CON	Convicted/Guilty/Committed
DEF	Deferred
DIS	Dismissed
FIL	Filed

3. DESCRIPTIVE STATISTICS

All Returned AOC Data

Given the focus of this study, we limit our analyses to DUI cases. Out of the 835 cases matched by the AOC, 766 (80.7%) included DUI, gross misdemeanor DUI, or felony DUI charges (Table 3.1). For 148 or 19.3% of these returned DUI cases, a DRE either conducted a DRE evaluation, wrote the DUI arrest report, or blood report. The average number of charges for all drivers in our dataset was 1.43, with a standard deviation of 0.68 charges. The median number of charges was 1, and the maximum number of unique charges was 4.

Table 3.1

DUI Case Outcomes by DRE Presence

DUI Case Outcome	DRE Absent	DRE Present
Amended/ Dropped Charge	332 (53.7%)	74 (50%)
Amended of DUI felony then convicted of DUI gross misdemeanor	0 (0%)	1 (0.7%)
Convicted/ Guilty/ Committed	223 (36.1%)	54 (36.5%)
Convicted of DUI, dismissed of DUI gross misdemeanor	1 (1.6%)	2 (1.4%)
Deferred	24 (3.9%)	2 (1.4%)
Deferred of DUI, dismissed of DUI gross misdemeanor	1 (1.6%)	0 (0%)
Dismissed	24 (3.9%)	11 (7.4%)
Dismissed of DUI gross misdemeanor, convicted of DUI	1 (1.6%)	0 (0%)
Dismissed of DUI, convicted of DUI	1 (1.6%)	0 (0%)
Dismissed of DUI, DUI felony filed	1 (1.6%)	0 (0%)
Filed	10 (1.6%)	4 (2.7%)
Total	618 (80.7%)	148 (19.3%)

Main and Secondary Charges and Outcomes

Although we narrow our focus to DUI charges, it is interesting to note case outcomes of the various charges coded. Charges were sorted into several categories. As previously noted, DUI, DUI gross misdemeanor, and DUI felony were grouped as DUI. Physical control charges did not require categorizing. Vehicular assault charges included vehicular assault and vehicular homicide. Hit and run charges included hit and run of an unattended or attended vehicle or property. DWLS included first, second, and third-degree Driving While License Suspended. Reckless endangerment includes reckless endangerment and negligent driving in the first degree. License issues included driving without a valid operator's permit, and ignition-interlock violations included ignition-interlock charges. Uncooperative charges include false reporting/statements, attempting to elude a police officer, and obstructing or assaulting a police officer. The majority of charges were DUIs, and a smaller portion were physical control and vehicular assault or homicide cases. The frequencies of main and supplemental charges out of the 426 coded cases are listed in Figure 3.1.

Figure 3.1

Charge Type Frequency of 426 Coded Cases

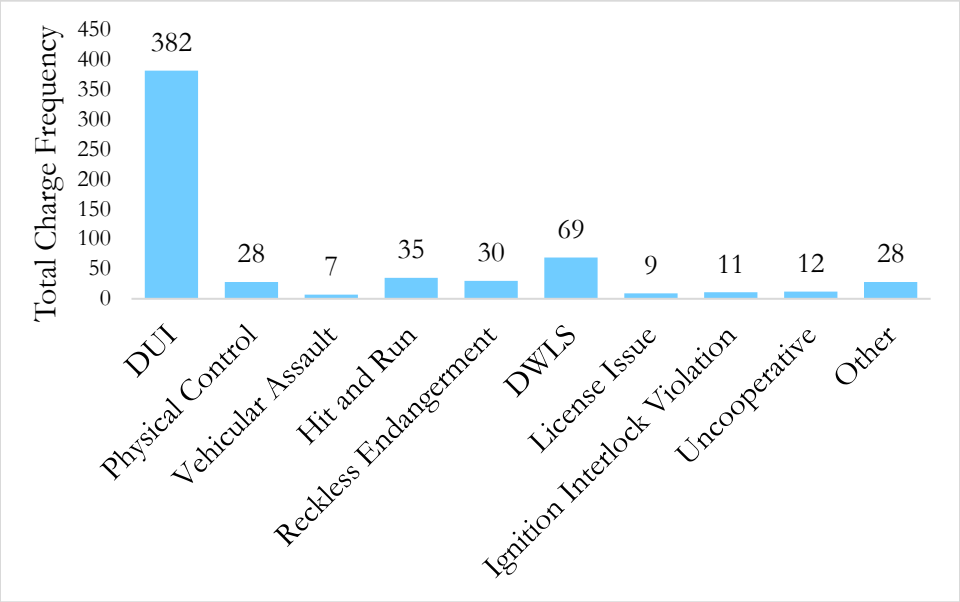
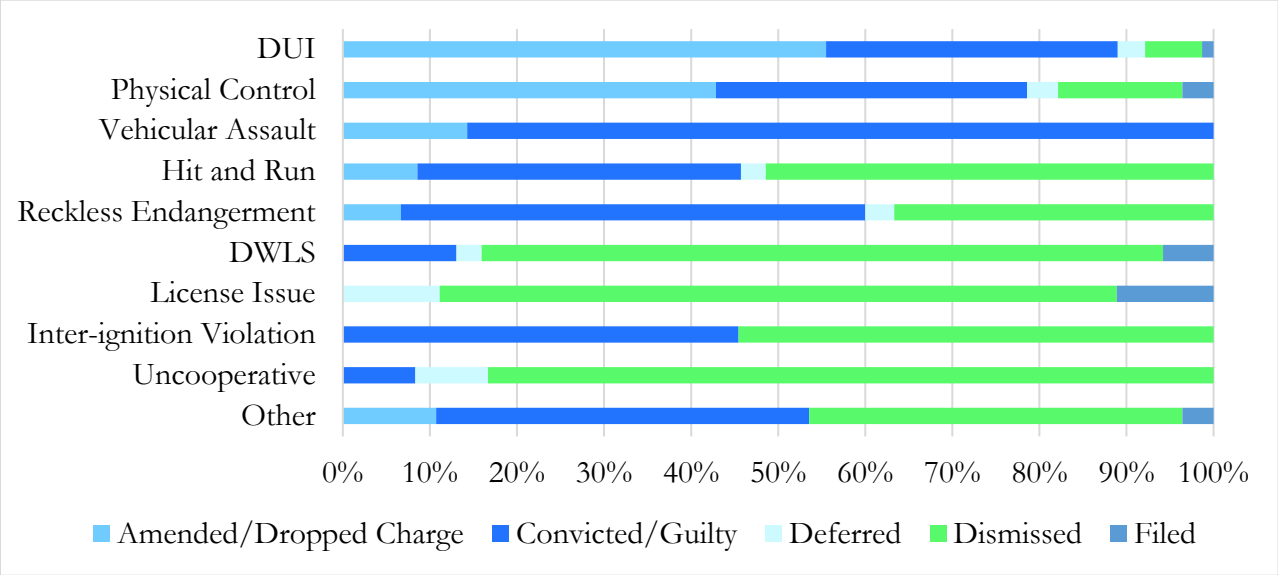


Figure 3.2 shows the types of charges and if the charge was amended/dropped, convicted, deferred, dismissed, or filed. The driver's charges related to non-cooperation and license problems were largely dismissed (83.3% and 77.8%, respectively) while other charges, such as vehicular assault or homicide, were largely convicted (85.7%).

Figure 3.2

Charge Types and Outcomes



Driving with License Suspension Charge

One of the variables that may influence case outcomes are poor driving history because prosecutors in the first part of our previous report noted that they heavily consider driving history. One prosecutor stated, "I don't ever offer a reduction if they've ever had a DUI, so it's like you had a DUI from 1999, well I don't really care."

To tap into previous poor driving history, we assessed if the person charged with a DUI was also initially charged with Driving While License Suspended (DWLS). Though this is an imperfect proxy for prior driving problems, it indicates that the driver, at a minimum, failed to maintain an active license at the time of the incident. Descriptive analyses supported these findings. Although approximately 78.3% of DWLS charges were dismissed and only 13% were convicted (Figure 3.2), a DWLS charge may impact the outcome of the driver's DUI charge. Table 3.2 demonstrates DUI charge outcome based on if the defendant was also charged (but not necessarily convicted of) DWLS in the first, second, or third degree. As shown, 61.3% of cases in which the driver did not have a DWLS charge had their DUI charge dropped/amended. However, only 26.6% of drivers with a DWLS charge had their DUI charge dropped. Relatedly, 28.3% of drivers without a DWLS charge were convicted of DUI, while 59.4% with a DWLS charge were convicted of DUI. These descriptive statistics support our previous finding that prosecutors heavily consider bad driving history in determining charges or reductions even if they dismiss the additional charge.

Table 3.2

DUI Charge Outcome by if the Driver was also Charged with DWLS

DUI Charge Outcome	No DWLS Charge	DWLS Charge
Amended/Dropped Charge	195 (61.3%)	17 (26.6%)
Convicted/Guilty/Committed	90 (28.3%)	38 (59.4%)
Deferred	11 (3.4%)	1 (1.6%)
Dismissed	20 (6.2%)	5 (7.8%)
Filed	2 (0.6%)	3 (4.7%)
Total	318 (83.2%)	64 (16.8%)

Coded DUI Case Outcomes

We limit our study to DUI cases to ensure a large sample and control for different charges, even if they involve DRE evaluations. Although there are 31 total DRE evaluations in our study, 32.3% of the evaluations are for different charges, as shown in Table 3.3. These charges are more severe and range from vehicular assault to vehicular homicide. This coincides with our prior report in which prosecutors and DREs noted that DREs were more likely to participate in more serious cases (Solensten and Willits, 2020).

Table 3.3

Coded Charge Types by DRE Presence and Evaluations

Charge Type	DRE Absent	DRE Present	No DRE Evaluation	DRE Evaluation completed
Non-DUI Charge	16 (6.7%)	28 (15.1%)	34 (8.6%)	10 (32.3%)
DUI Charge	224 (93.3%)	158 (84.9%)	361 (91.4%)	21 (67.7%)
Total	240 (100%)	186 (100%)	395 (100%)	31 (100%)

To gain a basic understanding of the data, we investigated case outcomes for when there is an evaluation and when a DRE is present for DUI charges. In Table 3.4, we see that a majority of DUI cases had amended or dropped charges. When comparing DUI outcomes between DRE presence or absence cases, 49.4% of cases with a DRE present ended with a dropped/amended charge, and 39.2% ended with a conviction. When a DRE was not present during the case, 59.8% of offenders charged with DUI were dropped, and 29.5% were convicted. On the surface, this is evidence that DRE involvement may increase conviction rates of the initial DUI charge.

Table 3.4

DUI Charge Outcomes by DRE Involvement and Evaluation Completion

DUI Charge Outcome	DRE Absent	DRE Present	No DRE Evaluation	DRE Evaluation Completed
Amended/ Dropped Charge	134 (59.8%)	78 (49.4%)	201 (55.7%)	11 (52.4%)
Convicted/ Guilty/ Committed	66 (29.5%)	62 (39.2%)	120 (33.2%)	8 (38.1%)
Deferred	9 (4%)	3 (1.9%)	12 (3.3%)	0 (0%)
Dismissed	13 (5.8%)	12 (7.6%)	23 (6.4%)	2 (9.5%)
Filed	2 (0.9%)	3 (1.9%)	5 (1.4%)	0 (0%)
Total	224 (100%)	154 (100%)	361 (100%)	21 (100%)

There were fewer cases in which a DRE completed an evaluation. However, the case outcomes appear similar to when a DRE is present. 55.7% of DUI charges without a DRE evaluation were dropped/amended, compared to 52.4% of DUI charges with a DRE evaluation (Table 3.4). The conviction rate with an evaluation is also higher at 38.1% compared to 33.2% without an evaluation (Table 3.4). However, it is important to note the small sample size of cases with a DRE evaluation, as this may exaggerate certain results. While multiple factors are involved in the case outcome process, these results may tie in with the previous qualitative report in suggesting that while DREs may not complete a significant number of evaluations, they may still be significant players in case outcomes without carrying out an evaluation.

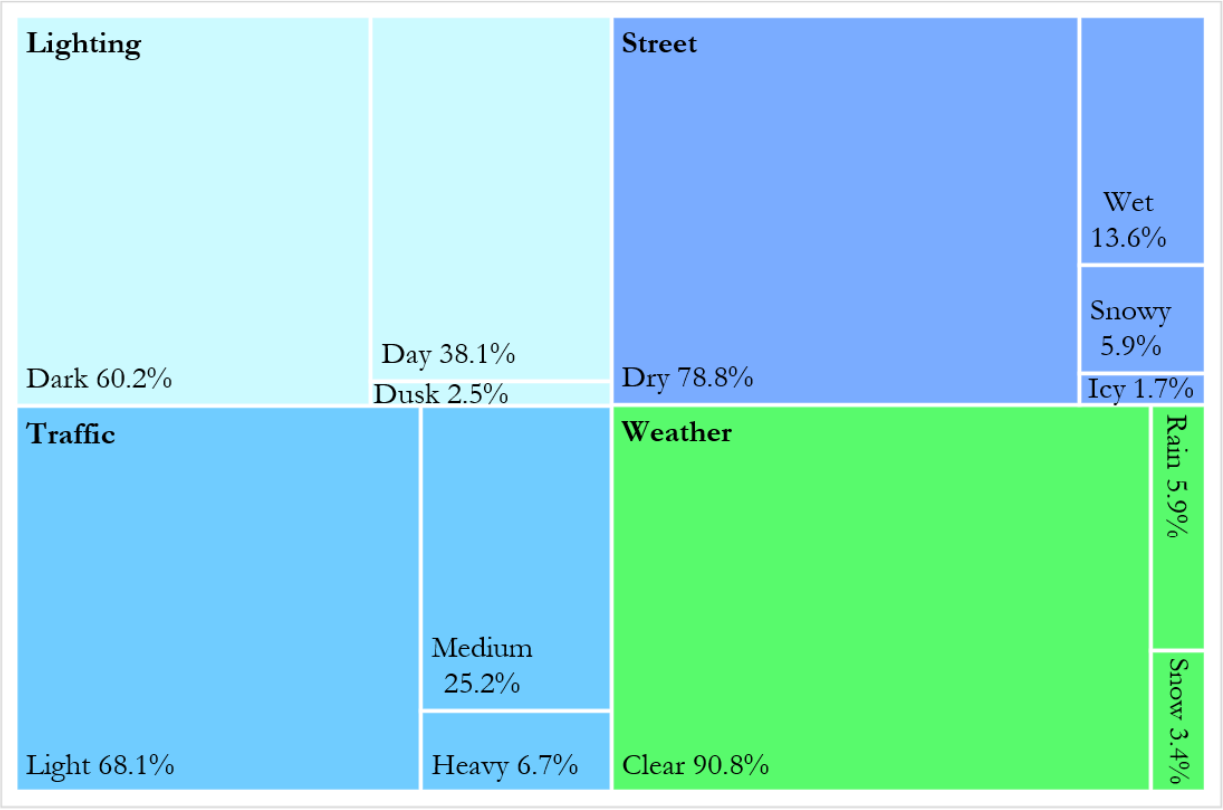
Non-Charge Related Descriptives

Incident Conditions

External conditions surrounding the charge were also coded from the criminal charge file. Arrests largely occurred when traffic was light, the weather was clear, and the street was dry (Figure 3.3). Although traffic tends to be lighter at night, 60.2% of arrests occurred during darker hours (National Household Travel Survey, 2004). This speaks to the need for DRE availability at night. Specifically, one DRE from Spokane noted an increase in DUIs on Friday and Saturday nights.

Figure 3.3

Incident Traffic, Weather, Lighting, and Street Conditions



Injury types and Collisions

Our previous report also found that prosecutors believed that DREs were helpful for cases involving collisions and injuries. As one prosecutor noted, "A lot of times too, I know that if they're dealing with a case involving in injuries, they [DREs] are called off to assist on those cases versus a standard DUI where the taillight is out, you know." Using the criminal charge file from each case, we coded five injury types, 1) None, 2) Possible injury, 3) Non-incapacitating injury, 4) Incapacitating injury, and 5) Fatality. When a criminal charge document was not provided, collision reports and officer narratives were read for possible injuries. 72.6% of cases with a DRE present did not involve an injury, however, this increased to 85.4% of non-DRE cases (Figure 3.4). Figure 3.5 illustrates that DREs were more likely to be present at an incident with any type of injury. While 60.3% of non-injury cases did not have a DRE, 61.3% of injurious cases had a DRE present. This illustrates how involved and utilized DREs are for cases involving injuries.

Further, 41.9% of cases in which a DRE was present involved a collision, compared to 33.8% of non-DRE cases. This aligns with our previous research, in which one prosecutor noted that during collisions,

> [DREs] take over the investigation. So the responding officer might start the investigation, you know, say, for example, a collision, they might arrive first and talk to the witnesses and the victims of the other vehicles to kind of see what happened to kind of a big picture idea of what happened. And if they approached a driver involved in the collision and they think there's impairment there, then usually the DRE comes, so I would use them at trial.

Figure 3.4

Injury Type by DRE Presence

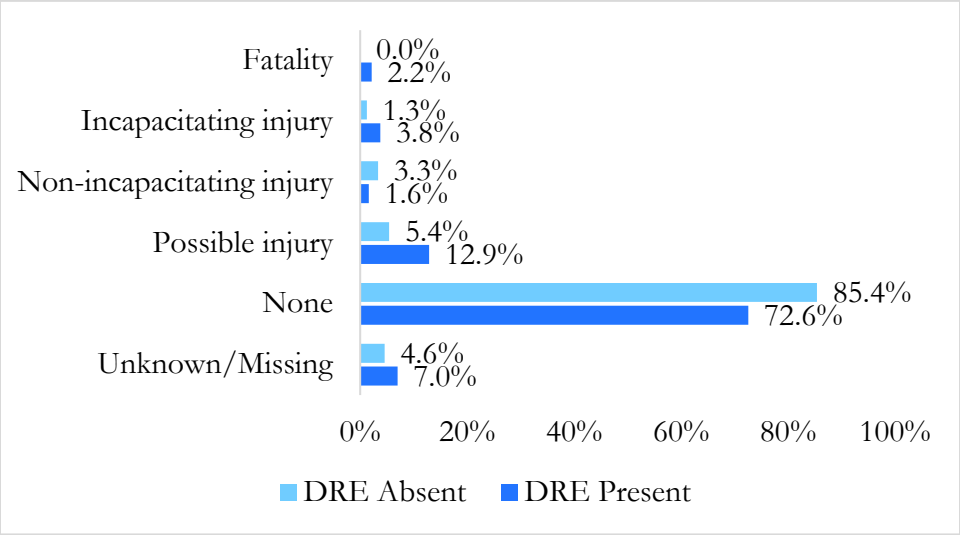
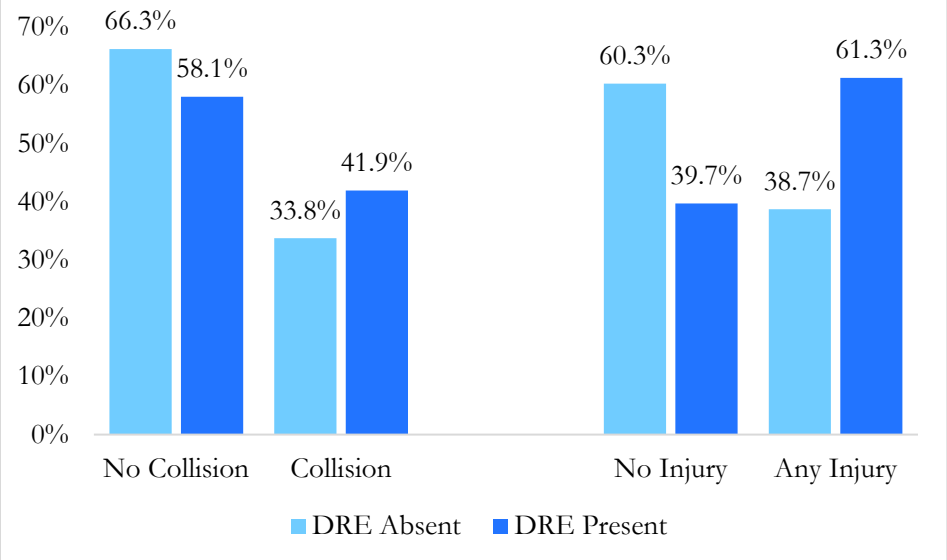


Figure 3.5

Collision and Injury Prevalence by DRE Presence



Zero BAC Results

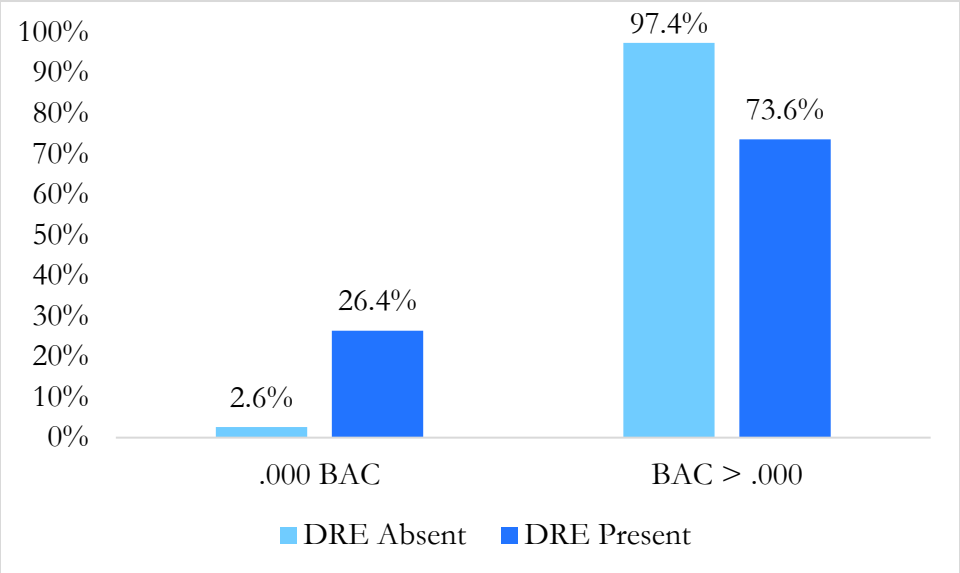
Preliminary analysis of average BAC results between DRE and non-DRE cases revealed a possible significant difference. The average BAC result for DRE-involved cases was .124, while the average was .176 for non-DRE involved cases. Previous interviews with officers and prosecutors revealed that DREs are likely called when there are low BAC results, and officers believe the driver is impaired by a drug other than alcohol. One defense attorney we interviewed in our previous report noted,

> Historically, when I've seen a DRE called in, it's been typically an arresting officer who did the traffic stop and the arrest that SFST in the arrest, who either did a Portable Breath Test (PBT), the roadside that was extremely low or zero, meaning that that officer's observations of impairment weren't consistent with the PBT results, leading to you know…questions about maybe about what else could be impairing them, the subject. That could lead to the DRE being involved.

In addition, since DREs may be called to incidents involving collisions out of precaution and department policy, this may also increase the rate of .000 BAC results. Upon further investigation, it was revealed that DREs were more likely to be involved in cases with .000 BAC results. 26.4% of cases involving DREs had .000 BAC results, while only 2.6% of non-DRE cases had .000 BAC results (Figure 3.6). When only positive BAC results were averaged between DREs and non-DREs, they were essentially equal (.180 for non-DREs and .172 for DRE-involved cases).

Figure 3.6

.000 BAC Result Prevalence by DRE Presence

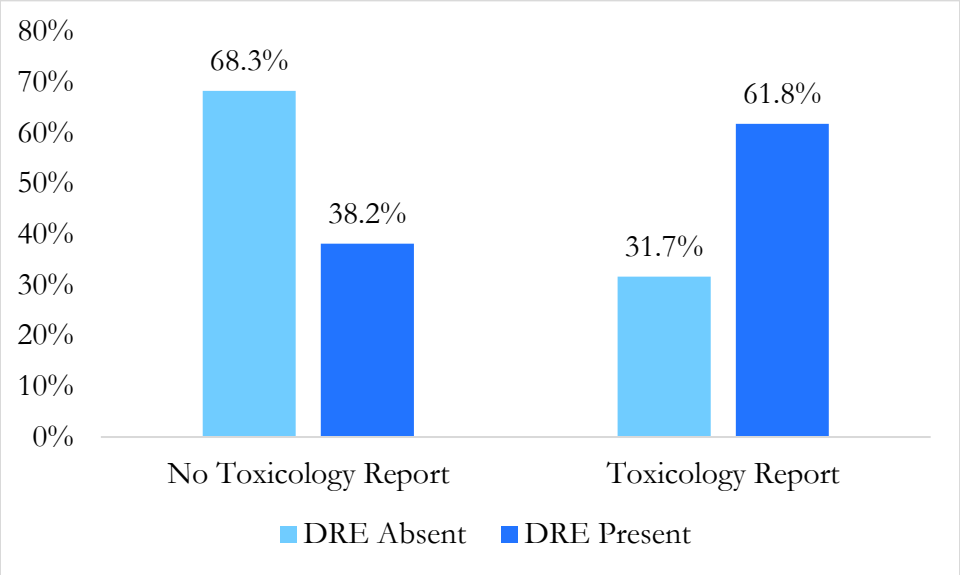


Toxicology reports

Cases were also investigated for frequency of toxicology reports for cases involving DREs compared to cases absent of DREs. As shown in Figure 3.7, 61.8% of cases involving DREs included a toxicology report, compared to only 31.7% of non-DRE cases. Previous research can help illuminate these results. DREs are more likely to be called to cases when alcohol intoxication is ruled out as an impairing factor. In these cases, a DRE is more likely to require a toxicology report to uphold suspicion for intoxication of substances other than alcohol.

Figure 3.7

Toxicology Report Prevalence by DRE Presence



Summary

Although descriptive statistics do not demonstrate statistical significance, they can offer a glimpse into the context that DUIs occur and how DRE officers are used. In terms of the types of cases they attend, DREs were present at several vehicular assault or homicide cases, which follows SPD protocol to callout for a DRE even if intoxication is unknown. An additional charge, DWLS, was also found to be a possible indicator for a DUI conviction. In addition, recorded external conditions of the incident show that a majority of these impairment charges occur at night during clear and dry weather. Nearly half of cases involving a DRE involved a collision, and more than half included a possible or severe injury. Additional complexities in DUI cases are low BAC results. While a PBT can quickly detect alcohol intoxication, technology to detect other impairing drugs requires more time and effort. Nearly all cases with .000 BAC results involved a DRE, indicating their importance for detecting impairment by drugs other than alcohol for DUI cases. The complexity of these factors on adjudication outcomes may be difficult to parse out to identify direct effects of DRE involvement and evaluations.

4. OUTCOMES FOR CASES HEAVILY INVOLVING DRE OFFICERS

The initial analytic strategy was to compare case outcomes for incidents involving complete DRE evaluations to other cases (for example, those involving only toxicology results). These descriptive results are presented in the prior section. While these descriptive results indicate that DREs may be associated with more convictions, these are bivariate results and should be viewed with a healthy dose of caution as other factors might explain the DRE/Conviction relationship. To explore the possibility of spuriousness, we also assessed the importance of DREs from a multivariate perspective.

In total, there were 31 cases with full DRE evaluations available for comparative analysis, though only the 21 cases with DUI charges are considered in this section. Though this relatively low number was not entirely surprising given the statewide decline in DRE callouts noted in the prior report (Solensten and Willits, 2021), it did necessitate a change in analytic approach. In addition to comparing these 21 cases to other incidents, we also broadened our analysis to compare cases involving a DRE at all to those not involving a DRE. Information generated as part of the first part of this report indicates that DREs are thought to benefit the criminal justice system even in instances in which a full evaluation was not completed. Indeed, DRE training may prove useful for detecting and apprehending impaired drivers even absent a full evaluation.

Therefore, this report adopts a two-pronged approach toward using multivariate methods to assess DRE effects on case outcomes. First, cases with DRE's involved are compared to those without using multivariate logistic regression. Logistic regression is a member of the generalized linear model family that is appropriate for binary outcome variables (Faraway, 2016). In this case, the primary outcome variable is binary, that is, it is whether a given case resulted in a conviction or not. Given that many cases are amended to lower charges, we also examine an overall "guilty" variable that is a 1 if the result is a conviction or amended charges. Additional details and results for this prong of the research are provided in the next chapter of this report.

The second prong of the multivariate analysis focuses only on those cases involving full DRE evaluations. Given the relative dearth of full DRE evaluations and the larger pool of cases without full evaluations, this portion of the analysis makes use of propensity score matching. These results are presented in the next chapter. Here, we focus on the logistic regression results based on DRE-involvement (and not full DRE evaluations). The results of these models are presented in Table 4.1, with statistically significant results indicated with one or two asterisks and bolding and results approaching statistical significance denoted with italicized font and plus sign. The results presented in Table 4.1 include both unstandardized coefficients and odds ratios. The unstandardized coefficients are the outcome of the logistic regression model and can be employed to develop the formal logistic regression equation. These coefficients, however, are difficult to interpret (technically, they indicate the change in the logarithm of odds given a 1-unit change in a given independent variable).

The odds ratios, conversely, are provided for interpretive purposes. The odds ratio represents the predicted multiplicative change in the odds that a given outcome occurred (in this case, conviction), given a one-unit increase or change in a given independent variable. For example, an odds ratio of 1.50 for a given independent would indicate that the odds of conviction increase by 50% as that independent variable increases by 1 unit (or, in the case of a categorical independent variable, as compared to a pre-determined reference category).

Table 4.1

Logistic Regression Model Using DRE Involvement to Predict Conviction

Variable	Conviction		Any Guilty Outcome	
	Coefficient / Standard Error	Odds Ratio	Coefficient / Standard Error	Odds Ratio
DRE Involvement	.338	1.403	-.009	.991
	(.248)		(.341)	
Toxicology Positive Report	.612	1.844	.145	1.156
	(.388)		(.485)	
At least 1 witness	**.724****	**2.063**	**1.195***	**3.303**
	(.253)		**(.471)**	
At least 1 victim	-.080	.923	**-1.955****	**.142**
	(.176)		**(.580)**	
BAC	**.037***	**1.038**	.033	1.033
	(.018)		(.025)	
Driving with Suspended License	**1.381****	**3.978**	-.363	.696
	(.304)		(.422)	
Hit and Run	**.886***	**2.426**	1.123	3.073
	(.451)		(.835)	
Age	*.019+*	*1.019*	-.003	.997
	(.011)		(.016)	
White	-.413	.662	.229	1.257
	(.295)		(.419)	
Female	-.327	.721	-.491	.612
	(.274)		(.365)	
Intercept	-2.378**	.093	1.623*	5.066
	(.562)		(.736)	
Pseudo R-Squared	.172		.095	
AUC	.703		.690	

** p < .01, * p < .05, + p < .10.

Most of the variables in the conviction model, including DRE Involvement, were not statistically significant (significance is denoted with *'s and bolding). Indeed, the overall model would be described as relatively weak (given the low Pseudo R-squared and AUC values). This implies that there is no evidence, from the 382 cases analyzed, that most of these factors are associated with increased *or* decreased odds of a conviction being obtained. The only statistically significant predictors of conviction are "At Least 1 Witness", "BAC," "Driving with a Suspected License," and "Hit and Run." The Odds Ratio column of Table 4.1 can be used to interpret these results. For example, the variable "At Least 1 Witness" has an odds ratio value of 2.063 indicates that the odds of a conviction are multiplied by 2.063 if at least one witness was noted as present – or, in other words, that the odds of conviction are 106.3% greater in these cases, controlling for other factors in the model. Similarly, the odds of conviction are greater in incidents described as a hit and run, in cases with higher BACs, and cases in which the offending driver was driving with a suspended license.

In addition to these variables, age approached statistical significance (denoted with a + and italics). Though we urge caution in over-interpreting these results, they are worthy of at least a brief mention: cases involving older drivers may be more likely to result in convictions. This could be a result of older drivers having more time to acquire previous DUIs, which can increase the odds of conviction or escalation of charges. For example, a DUI charge is escalated to a felony if it is the third DUI within ten years (see RCW 46.61.5055). A driver who is 21 years old has less time to acquire several DUIs over the span of ten years than a 35-year-old.

As a general rule, we do not recommend interpreting non-statistically significant results. From a purely technical perspective, these indicate that the coefficients are not significantly different from zero – therefore, interpreting these values dismisses the inferential aspects of a given analysis. In this case, however, it is important to point out that the coefficient for DRE involvement is positive (though again, not statistically significant). This positive coefficient matches the descriptive trends previously reported, though these models indicate that once other factors are accounted for, DRE involvement is not of large importance in determining the conviction status of a given case.

The results of the "any guilty" outcome model differ considerably from the pure conviction model. This model's only statistically significant variables are "at least 1 witness" and "at least 1 victim." As before, the presence of at least 1 witness increases the likelihood of a guilty outcome, controlling for other factors. Curiously, the presence of at least 1 victim *greatly* decreases the likelihood of any guilty outcome. We suspect that this does not imply that cases involving victims are actually less likely to result in guilty outcomes. Instead, these cases are far less likely to be amended to lower charges, which would produce the statistical artifact described herein.

At a surface level, therefore, the involvement of a DRE is *not* predictive of case outcomes. However, it is important to explore this point further as it is possible that cases involving DREs are substantively different from other cases. For example, it may be that cases involving DREs are more likely to have witnesses present and potentially to have toxicology reports, and/or to involve hit and runs. Indeed, DREs may be most likely to be called in for less clear-cut cases where blood warrants are desired and in more serious cases, like the aforementioned hit and runs. Our previous report and descriptive statistics reported earlier each indicated that DREs are more often used for extreme or unusual cases, such as low BAC results or injury-involved collisions.

An additional trio of logistic regression models to explore this possibility was estimated using DRE involvement to predict the presence of a toxicology report, witness presence, and hit and run. As per the logistic regression models presented above, both unstandardized coefficients and odds ratios are presented, with significant variables indicated using the same formatting as before. It is important to note that these results should not be viewed as suggesting that DRE involvement might *cause* these outcomes, but instead, that these are descriptive regression results that document the patterns of DRE involvement by the three outcome variables. These results are presented in Table 4.2.

Focusing on DRE involvement, these results indicate that toxicology results are more likely to exist if a DRE is involved in an incident, while a DRE is less likely to be involved in cases involving witnesses. There appears to be no statistically significant relationship between DRE involvement and whether the case involved a hit and run. These results are suggestive of the types of calls in which a DRE is likely to be called out.

Table 4.2

Logistic Regression Model Using DRE Involvement to Predict Toxicology Report

	Toxicology Positive Report		At Least 1 Witness Present		Hit and Run	
Variable	Coefficient / Standard Error	Odds Ratio	Coefficient / Standard Error	Odds Ratio	Coefficient / Standard Error	Odds Ratio
DRE Involvement	**1.046** **(.406)**	**2.846**	**-.694** **(.261)**	**.500**	-.169 (.499)	.844
Toxicology Positive Report	-	**-**	**1.382** **(.406)**	**1.416**	-.096 (.681)	.844
At least 1 witness	**1.115*** **(.452)**	**3.049**	-	-	.157 (.659)	1.170
At least 1 victim	.442 (.835)	1.555	**3.884** **(.765)**	**48.597**	**3.028** **(.645)**	**20.650**
BAC	**-.386** **(.047)**	**.680**	.018 (.019)	1.018	-.006 (.033)	.033
Driving with a Suspected License	-.806 (.501)	.447	-.124 (.324)	.883	.818 (.596)	2.266
Hit and Run	-.107 (.956)	.898	.348 (.638)	1.416	-	-
Age	-.004 (.018)	.996	.018 (.012)	1.018	-.012 (.022)	.988
White	-.778 (.512)	.459	.344 (.313)	1.410	-.460 (.569)	.631
Female	*.913+* *(.469)*	*2.490*	.432 (.269)	1.541	**-1.492 *** **(.679)**	**.225**
Intercept	1.279 (.801)	3.593	-2.110** (.579)	.121	-2.599* (1.046)	.074
Pseudo R-Squared	.787		.333		.309	
AUC	.956		.776		.817	

Though not the primary focus of this research, several other variables are statistically significant in these models. For example, cases with a positive toxicology report are more likely to involve at least one witness, controlling for other factors. Cases involving at least one victim are likely to have one witness, though this is certainly due to the way witnesses and victims are coded in our analysis.

Similarly, cases involving at least one victim are more likely to be hit and runs, though again, this result is entirely expected. Incidents with higher BAC levels are less likely to involve toxicology results, likely because toxicology analyses are less needed in these cases. As noted in section 3, DREs are more likely to be present and called in for cases with .000 BAC results. Finally, cases in which the alleged offending driver are female are less likely to be hit and runs, suggesting that male drivers are more likely to engage in this form of risky behavior.

Summary

The overall effect of DRE involvement on conviction is clear from these analyses: while cases involving DREs are more likely to result in conviction descriptively, this relationship does not hold after accounting for other factors. Put simply, there is no evidence in these data that DRE involvement is a major factor leading to convictions. There is, however, evidence that DREs are more likely to be used in cases involving toxicology reports and in cases involving at least one witness. These results suggest that while DREs may not increase conviction rates independently, they are being summoned to more complicated calls (as indicated in our prior report).

5. OUTCOMES FOR DUI CASES INVOLVING FULL DRE EVALUATIONS

Given the small sample of cases in which a full DRE evaluation was completed for DUI cases, a different methodological approach was required to examine the effects of DRE evaluations on case outcomes (both conviction and the overall guilt measure). To address this small sample size, cases involving full DRE evaluations were statistically matched to other cases on the following criteria:

- Age of the (allegedly) impaired driver
- Whether the incident occurred when it was dark outside
- Whether the driver was driving with a suspended license
- Whether the incident involved a hit and run
- Whether the driver admitted fault
- Whether the driver refused a breathalyzer test
- Whether the driver requested an attorney during the initial contact
- Whether there was at least one witness present
- Whether there was at least one victim involved
- Whether a toxicology report exists for the incident

Propensity score matching is used to compare the treatment (DRE evaluation) and control (no DRE evaluation) groups. Put briefly, propensity score matching involves estimating the propensity that a given observation received treatment (classically, this is done by estimating a logistic regression on the dependent condition). This propensity score is then compared across the treatment and control groups, with cases "close in propensity" matched.

This analysis typically begins with a comparison of covariates across the treatment and control conditions. Table 5.1 displays the means and t-test results of each comparison.

Table 5.1

Numeric Variable Comparisons for Incidents Involving Full DRE Evaluations to those Not Involving Full DRE Evaluations

Variable	Evaluation Completed	Evaluation Not Completed	t-value
Age	34.429	33.817	-0.248
Dark	**.048**	**.183**	**2.611**
Driving with a Suspended License	.238	.163	-0.768
Hit and Run	**.000**	**.072**	**5.286**
Admit Guilt	.143	.161	0.221
Refuse Test	.095	.233	1.983
Attorney	**.000**	**.227**	**10.286**
Witnesses	.476	.427	-0.481
Victims	.047	.133	1.678
Toxicology Report Positive	**.810**	**.391**	**-3.293**

As indicated in Table 5.1, there are some statistically significant differences between the cases involving DREs and those not involving DREs. Most prominently, cases involving full DRE

evaluations did not involve hit and runs, nor did they ever include suspects requesting attorneys. Unfortunately, given that these events happened zero times, these are *not* candidate variables for matching. The other statistically significant difference between cases involving full DREs and those not involving DREs exists for whether the incident occurred at night or not (with DRE cases less likely to have occurred at night) and the presence of a positive toxicology report.

Table 5.2 displays cross-tabulations of DRE involvement by categorical variables. Again, these results demonstrate no statistically significant differences between cases involving full DRE evaluations and those which do not. More specifically, cases involving a full DRE evaluation had expected distributions by sex, race, and injury.

Table 5.2

Suspect Sex, Race, and Injury by DRE Evaluation

Variable		DRE Completed		χ^2	p-value
		No	Yes		
Sex	Male	261	13	1.057	.304
	Female	100	8		
Race	Non-White	71	5	0.214	.644
	White	290	16		
Injury	No Injury	311	19	0.316	.574
	Possible Injury	50	2		

The lack of statistically significant differences makes the analysis of full DRE models complicated. Given the relatively small number of cases with full DRE evaluations, a direct comparison of 21 incidents to 361 cases not involving DREs is likely inappropriate. Indeed, in this instance, the sample size difference results in a standard error that is 5.5 times larger for the DRE cases than for the non-DRE cases. However, given that only "dark" and "toxicology" are significantly different across groups, any given matching scheme is unlikely to produce large changes in covariate imbalance statistics. Still, for the sake of producing the safest and most conservative estimates, one-to-five matching propensity score matching was conducted where a full DRE assessment is considered the treatment and non-DRE cases are the control group. This matching approach made use of the candidate variables, including: "Age," "Dark," "Driving with a Suspended License," "Admit Guilt," "Refuse Test," "Witnesses," "Victims," "Positive Toxicology Report," "Sex," "Race," and "Injury." The inclusion of variables that did not reach the level of statistically significant differences between the treatment and control groups is done as a matter of caution, given the small sample sizes at hand. Matching on these characteristics can only increase the balance between treatment and control groups. As displayed in Table 5.1, there are some mean differences between the groups that could prove problematic under larger sampling conditions.

Table 5.3

Pre- and Post-Matching Comparisons of Covariates

Variable	Pre-Matching		Post-Matching	
	DRE Evaluation	No DRE Evaluation	DRE Evaluation	No DRE Evaluation
Age	34.429	33.817	34.429	34.143
Dark	.048	.183	.048	.060
Driving with a Suspended License	.238	.163	.238	.179
Admit Guilt	.143	.161	.143	.143
Refuse Test	.095	.233	.095	.048
At Least 1 Witness	.476	.421	.476	.464
At Least 1 Victim	.048	.133	.048	.107
Positive Toxicology Result	.714	.371	.714	.679
Female	.381	.277	.381	.393
White	.762	.803	.762	.810
Any Injury	.095	.139	.095	.179

As demonstrated in Table 5.3, the matching procedure produced a sample of observations with means that were generally much closer than they were pre-matching, though not universally. Importantly, all 21 treatment cases were able to be matched with a sample of 105 control cases.

Finally, a comparison of matched cases to conviction and any guilty outcome was conducted using standard t-tests (Table 5.4 and 5.5). In addition, t-tests on the overall sample (without matching) are also included in these tables. The results indicate that cases involving full DRE evaluations are statistically no different than those not involving DRE evaluations, regardless of whether the cases are matched or not.

Table 5.4

Conviction Means by DRE Evaluation

	Conviction Mean for DRE Sample	Conviction Mean for non-DRE Sample	t-value
Matched Sample	.286	.353	.599
Total Sample	.286	.330	.422

Table 5.5

Any Guilty Outcome Means by DRE Evaluation

	Any Guilty Outcome Mean for DRE Sample	Any Guilty Outcome Mean for non-DRE Sample	t-value
Matched Sample	.810	.876	.713
Total Sample	.810	.886	.860

Lastly, additional analysis was conducted comparing cases with DRE evaluations to those with toxicology reports (but no DRE evaluation) and to those with no DRE evaluation nor toxicology report (Table 5.6). One-way ANOVA confirms that these differences are not statistically significant (*F = .712, p = .491)*. Importantly, however, these results show that cases involving positive toxicology results are the most likely to have convictions, though again, that finding is also not statistically significant. This pattern does not hold for the "overall guilty" (that is, conviction or amended) outcome.

Table 5.6

Convicted or Guilty Outcomes by DRE Presence, Toxicology Report, or Neither

Charge Outcome	DRE	Toxicology (No DRE)	Neither Toxicology nor DRE
Convicted % Overall	29%	37%	31%
Convicted % Matched	29%	31%	42%
Guilty % Overall	81%	86%	90%
Guilty % Matched	81%	82%	97%

6. CONCLUSION

After analyzing 382 DUI incidents from Spokane, Washington, our general conclusion is that there is no strong evidence that either DRE involvement in a case or a full DRE evaluation increases the probability of a conviction result or a general guilty outcome (convicted or amended). It is important to note that these results are robust and that these models were estimated using a variety of specifications, techniques, and samples that were not presented here: there were no models in which DRE involvement positively and statistically significantly predicted conviction or guilt outcomes.

Interestingly, descriptive analysis did show that cases involving DREs did result in convictions at a greater rate than those that did not. However, this result was no longer statistically significant when controlling for other factors (as per the logistic regression and propensity score matching). This suggests that whatever difference in frequencies of convictions or amendments was noted, it was not large enough to be considered a significant factor for conviction, at least not after considering other factors.

The results from chapters 4 and 5 also elucidate this finding further. For example, the coefficient for DRE involvement in the logistic regression is positive. While not statistically significant, that does support the descriptive finding that cases involving DREs are more likely to result in a conviction. The matching analysis in Chapter 5 suggests that this is likely an artifact. When parsed out into different groups (DRE evaluation only, positive toxicology results only, and neither), cases involving toxicology resulted in a greater proportion of convictions. Given the link between DREs and toxicology results, the descriptive findings regarding cases involving DREs as more likely to result in convictions is likely a byproduct of the toxicology result.

Equally important, however, is that there is no solid evidence that toxicology results increase the likelihood of conviction. This was true in both the logistic regressions and the matched comparison of case outcomes. Our results suggest that other forms of evidence, like witnesses, and other objective factors (like driving with a suspended license), are much more likely to result in a conviction than the toxicology results. The lack of impact toxicology reports has on case outcomes is a peculiar result, as it runs contrary to both everyday expectations and the qualitative results produced in part 1 of this study.

The looming threat to all of these results, however, is the inability to fully parse out the dropped/amended result present in the Administrative Office of the Courts data. After discussing this with AOC staff, this variable can indicate either that DUI chargers were dropped from other, likely more serious, offenses or that charge was pled down to a lesser charge (for example, a shift from DUI to reckless driving). While both represent a decrease in punishment for an offender *for the DUI offense*, they mean very different things. That is – a charge can be dropped because there are more serious charges pending, and that may say nothing about the quality of evidence. Similarly, a case can be amended, which could be considered a win for either the prosecution or the defense. Ultimately, it is possible that DRE involvement *and* toxicology results are more likely to produce these amended charges and successful pleas and that the focus on pure convictions masks their effects. Unfortunately, being unable to separate dropped from amended, this type of analysis cannot address this possibility. Importantly, however, this can be addressed in future research. By obtaining the actual court records, it should be possible to parse out amended charges from dropped charges. This is likely to be a time-intensive endeavor, but certainly achievable and one worth pursuing.

In addition to this limitation, three additional key issues must be considered when evaluating this report. First, this analysis considers a relatively small number of full DRE evaluations. While we obtained all data possible from the Spokane Police Department and the Administrative Office of the Courts, it is unlikely we secured all data involving full DRE evaluations. For example, the inability to match these data with AOC records, the lack of a robust data tracking system for DREs, or missing cases or documents all present obstacles to data collection. As a result, the matching analysis, though it did an excellent job of identifying a comparison set of non-DRE cases, must be viewed as tentative. It is risky to conclude that DREs do not matter based on an analysis of 21 full DRE evaluations. Of course, this same limitation does not apply to DRE involvement. However, this alone does not alleviate this limitation. While we are confident in concluding that cases involving DREs are not more likely to result in convictions, this does not necessarily mean that cases involving full DRE evaluations will have the same result.

A second and related limitation to this research is that this analysis was based on a single location. Though we have no a priori reason to suspect that the adjudication process for DUIs is different in Spokane than in other areas in Washington, we also are unable to rule out this possibility. Expanding this research to other areas of the state would increase the generalizability of these results and likely address the sample size issue noted in the prior paragraph.

The third issue is that these results might be picking up on the fact that cases involving DREs are simply more complicated and difficult to prosecute. In that regard, it is entirely possible that DRE involvement and DRE evaluations might show no positive relationship to convictions or guilty outcomes, given these selection bias pressures. While we attempted to account for this possibility using control variables and matching, other unconsidered factors – including those related to prosecutorial decision-making - may be related to both DREs and case outcomes that this research cannot capture.

Given these limitations, we cannot definitively conclude that the DRE program has no effect on convictions or adjudication outcomes more broadly in the State of Washington. We can, with confidence, state that there is no evidence in our data that DREs increase the odds of conviction. With that in mind, we offer the following recommendations:

1. Improve data tracking for the DRE program. Identifying DRE incidents was a substantial challenge for this research, and this would be amplified in a statewide analysis. In an ideal world, a single dataset would exist that identifies each DRE callout, the characteristics of that incident, the results of the DRE evaluation, and ultimately, the outcome of each case. These data issues call into question all efforts to fully evaluate the DRE program.
2. Conduct a statewide analysis of the DRE program and its potential effects on case outcomes in the State of Washington. As noted above, this research is limited in the small number of full DRE evaluations considered *and* in terms of its generalizability. A larger scale study would address both of these issues. Such a study would take time and more resources than the current project. Fortunately, however, the current study has generated a number of lessons that could be passed onto researchers who might pursue such a future study.
3. Disaggregate the "Amended/Dropped" category in the courts data for Washington. In this study, we counted both "conviction" and "dropped/amended" as indicators of a guilty outcome, but this imprecise at best. The dropped charges, in particular, are problematic. While

the prosecution might drop the DUI offense to focus on more serious charges, this does not necessarily mean that a guilty outcome was attained for these more serious charges (unlike the amended charges, which do appear to be successful plea bargains).

4. Ensure that police investigatory efforts do not overemphasize toxicology or DRE evidence at the expense of other forms of evidence. Again, while we cannot conclude that DRE or toxicology is unrelated to case outcomes, we *can* conclude that witnesses are a strong, positive predictor of guilty case outcomes. In this regard, witnesses should be viewed as highly important in terms of the types of evidence that are valuable for DUI cases. We suspect that the Spokane Police Department already does an excellent job of attempting to track down witnesses when possible, but we want to reassert that this is an important task for achieving prosecutorial success.

Overall, we could not identify a significant impact DRE involvement or evaluations have on DUI case adjudication outcomes. However, we can still assert from the first portion of our research that the DRE program has several benefits outside DUI cases and adjudication outcomes. The DRE program is beneficial for educating and protecting the community from impaired drivers.

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Appendix A

Variable	Description
Decoded case number	Decoded case number
Middle initial of arrestee	Used to verify that the correct cases were analyzed in the correct row
DUI Charge Type	This indicates if the driver was charged with DUI, DUI gross misdemeanor, or DUI felony, and the charge outcome
DWLS Charge	This indicates if the driver was charged with DWLS in the first, second, or third degree, and the charge outcome
Hit and Run Charge	This indicates if the driver was charged with a hit and run of attended or unattended property, or pedestrians, and the charge outcome
Physical Control Charge	This indicates if the driver was charged with physical control, and the charge outcome.
Vehicular Assault	This indicates if the driver was charged with vehicular assault or vehicular homicide, and the charge outcome
Uncooperative Charge	This indicates if the driver was charged with charges such as resisting arrest, making false statements, or obstructing a police officer, and the charge outcome
License Problem Charge	This indicates if the driver was charged with license issue related charges such as not driving with a license on their person, and the charge outcome
Ignition Interlock Charge	This indicates if the driver was charged with an interlock-ignition charge, and the charge outcome
Reckless/Negligent Endangerment	This indicates if the driver was charged with negligent or reckless driving or endangerment, and the charge outcome
Other	This indicates the highest charge outcome for any other related charges that occurred during the main incident. These include firearm possession, taking a vehicle without permission, or malicious mischief, and the charge outcome
License Expiration Date	License Expiration Date at the time of the incident
Home	Does the person provide a residential address?
Date of birth	Driver's date of birth
Race	Driver's race
Sex	Driver's sex
Location Stop	The location of the stop/collision
Offense date	Date of the incident
Offense time	Time of the incident; if not listed, use time of arrest
Vehicle year	Year of the driver's vehicle
Vehicle make	Make of the vehicle
Injury	Type of injury incurred by anyone during the incident
Traffic Conditions	Type of traffic conditions during the incident
Weather Conditions	Type of weather during the incident
Street Busy-ness	The busy-ness of the road at the time of the incident
Light Conditions	Indicates the amount of daylight at the time of the incident
Refuse Test	This indicates if the driver refused to submit a breath test. This does not include blood warrants

First BAC Results	The first BAC results in thousandths format
Second BAC Reading	The second BAC results in thousandths format
Attorney request	Indicates if the driver requested an attorney
Employment	Indicates if the driver was employed at the time of the incident (includes self-employed)
Attitude	Indicates attitude of the driver as described by the DUI arresting officer
Coordination	Indicates coordination of the driver as described by the DUI arresting officer
Clothing	Indicates cleanliness of the clothes on the driver as described by the DUI arresting officer
Eyes	Eyes of the driver as described by the DUI arresting officer
Facial Color	Facial color of the driver as described by the DUI arresting officer
Breath odor	Indicates the strength of the smell of intoxicants coming from the driver as described by the DUI arresting officer
Speech	Indicates speech coordination/ability of the driver as described by the DUI arresting officer
Opinion	Indicates the level of impairment as described by the DUI arresting officer
Language	Is the driver's native language English?
Toxicology Report return date	Indicates the toxicology report date
Ethanol presence	Indicates if alcohol was detected
THC presence	Indicates if THC was detected
Carboxy-THC presence	Indicates if carboxy-THC was detected
Synthetic THC presence	Indicates if synthetic THC was detected
CNS Depressant presence	Indicates if CNS depressants were detected
CNS Stimulant presence	Indicates if CNS stimulants were detected
Hallucinogen presence	Indicates if hallucinogens were detected
Dissociative Anesthetic presence	Indicates if dissociative anesthetics were detected
Narcotic Analgesic presence	Indicates if narcotic analgesics were detected
Inhalant presence	Indicates if inhalants were detected
Ethanol level	Indicates ethanol level
THC level	Indicates THC level in ng/mL
Carboxy level	Indicates carboxy-THC level in ng/mL
Road type	Indicates type of road the collision occurred on
Aggravating factors	Indicates any aggregating factors during the collision
Unit 1 Type	Indicates the type of the first unit involved in the collision, typically the arrestee's vehicle
Unit 1 Damage	Indicates if the damage threshold was met for Unit 1
Unit 1 Airbag	Indicates if any airbags were deployed for Unit 1
Unit 2 Type	Indicates the type of the second unit involved in the collision

Unit 2 Damage	Indicates if the damage threshold was met for Unit 2
Unit 2 Airbag	Indicates if any airbags were deployed for Unit 2
Unit 3 Type	Indicates the type of the third unit involved in the collision, if applicable
Unit 3 Damage	Indicates if the damage threshold was met for Unit 3
Unit 3 Airbag	Indicates if any airbags were deployed for Unit 3
Unit 4 Type	Indicates the type of the third unit involved in the collision, if applicable
Unit 4 Damage	Indicates if the damage threshold was met for Unit 4
Unit 4 Airbag	Indicates if any airbags were deployed for Unit 4
Units	Total number of units involved in the collision, including the arrestee's vehicle
Statement	Indicates if the arrestee gave an oral or written statement
Admit	Indicates if the arrestee admitted to or denied the charge
Armed	Indicates if a weapon was found on the arrestee or in their vehicle
Total witnesses, victims, and passengers	Total witnesses, victims, and passengers involved in the collision and/or incident. This includes complainants
Witness 1	Indicates if there was a witness
Witness 2	Indicates if there was a second witness
Witness 3	Indicates if there was a third witness
Victim 1	Indicates if there was a victim
Victim 2	Indicates if there was a second victim
Passenger 1	Indicates if there was a passenger in either the arrestee or in a collision-related vehicle
Passenger 2	Indicates if there was a second passenger in either the arrestee or in a collision-related vehicle
Passenger 3	Indicates if there was a third passenger in either the arrestee or in a collision-related vehicle
Vehicle 2	Indicates if there was as a second vehicle involved during the incident
Vehicle 3	Indicates if there was as a third vehicle involved during the incident
DRE Presence	Indicates if a DRE officer wrote either the DUI arrest report or a DUI blood warrant
DRE Form	Indicates if there was a DRE form
DRE Form Name	Indicates the name of the DRE who did the DRE and other non-DRE related answers
Criminal Charge Officer	Last name of officer listed on the Criminal Charge document
DUI Arrest Report Officer	Last name of officer listed on the DUI arrest report
Blood Warrant Officer	Last name of officer who wrote the blood warrant
Incident Report other officers	Last names of other officers listed during the incident
WSP Mentioned	Indicates if Washington State Patrol was mentioned during the DUI
WSP Trooper Name	Indicates the name of the WSP Trooper if applicable
Disposition Code	Indicates the charge outcome

Case ID	Lists the ID of the case
Court level	The court level of the charge
File date	Date the case was filed
Law Description	Description of law the arrestee is charged with
Law severity	Law severity level
Adjudication date	Adjudication date of the charge
Court Code	Court code of the charge