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Effects of Marijuana Legalization on Law Enforcement and Crime: Final Report

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ABSTRACT
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In 2012 the citizens of Washington State, via Initiative 502, legalized possession of a small amount of cannabis by adults. On July 1, 2014 licensed retail outlets in Washington opened with a regulated and monitored product. The effects that this legalization would have on crime and law enforcement in the state were open questions. In this National Institute of Justice-funded study we employed a mix of quantitative and qualitative approaches geared toward addressing these questions. Research partners and participants included municipal, county, state and tribal law enforcement agencies representing 14 state, urban, suburban, rural, and tribal organizations in Washington the neighboring state of Idaho, as well as law enforcement professionals from 25 additional agencies and organizations. Focus group, joint, and individual interviews involved 153 justice system officials that included sworn officers from three multi-agency drug task forces and one gang task force. In addition, face-to-face interviews included prosecutorial representatives, officers from the Washington State Department of Fish and Wildlife, and instructors from the National Association of State Boating Law Administrators.

We constructed case study profiles and assessed qualitative (focus groups, interviews) and quantitative (Uniform Crime Reporting Program or UCR, calls for service records, and body/dash camera footage) data regarding how police practices and strategies, and crime itself, have been affected by legalization in Washington, and how that watershed decision in Washington has changed policing in adjacent border areas. We engaged a number of doctoral students and more than a dozen undergraduate students in the work of analyzing the data collected from the field and archival records sources. We found that marijuana legalization has not had an overall consistently positive or negative effect on matters of public safety. Instead, legalization has resulted in a varied

set of outcomes, including: concern about youth access to marijuana and increased drugged driving, a belief that there is increased cross border transference of legal marijuana to states that have not legalized, reports that training and funding for cannabis-related law enforcement activities have been deficient given the complex and enlarged role the police have been given, and the persistence of the complex black market. On the "positive" front, legalization appears to have coincided with an increase in crime clearance rates in several areas of offending and an overall null effect on rates of serious crime. Importantly, the legalization of marijuana has reduced the number of persons brought into the criminal justice system by non-violent marijuana possession offenses. The police were also greatly concerned about how to best handle the detection and documentation of marijuana-related impairment in both commercial vehicle operations and traffic incidents. The state has adopted the Target Zero goal of no traffic fatalities by 2030 and the legalization of marijuana and the privatization of liquor sales have combined to make accomplishment of this worthy goal extremely difficult.

Our research methodology necessarily included a number of limitations that would prevent the wholesale generalization of the results. For instance, most of the data was collected from one state (Washington) which was one of the two "pioneer" states involved in legalization in this country. Furthermore, the calls for service data were obtained from a limited number of agencies and are likely not generalizable to the entire state, much less the country. The crime data is extracted from the UCR database (as not all of Washington was National Incident Based Reporting System [NIBRS] compliant for all years under study) is known to suffer from a number of limitations, including: undercounting of some crimes, a lack of contextual information about criminal activity, and missing incidents not reported to the police. While the calls for service data address some limitations of the UCR database (for instance, calls for service data are better suited

for the analysis of minor crimes), these data still do not address the limitation that only incidents reported to the police are analyzed. Put simply, if legalization resulted in a shift in criminal behavior that was not reported to the police, our quantitative analyses would be incapable of detecting it. Similarly, the body-worn camera (BWC) analysis was exploratory in nature and the data represent two agencies that are geographically and organizationally disparate. As an exploratory component, these results are not generalizable.

The qualitative findings of this study offer insight into the lived experiences of officers, deputies, troopers, trainers, supervisors, administrators, and prosecutors, and are not without their limitations. Our qualitative data are limited by issues of generalizability (they may not represent the opinions of law enforcement professionals more broadly) and potentially be issues of selection bias (it is possible that those with the strongest opinions were perhaps most likely to volunteer to participate in focus groups and interviews). As with any research design employing purposive sampling, these results are not generalizable. They do not represent the lived experiences of all law enforcement officers or justice system representatives, nor adequately capture the totality of the lived experiences of this study's participants. While we were able to obtain a large, and diverse sample of participants, we unfortunately were unable to engage officers from all municipalities in Washington, and across all law enforcement domains. These results emphasized and sought to document experiences pre- and post-legalization. While we made every effort to restrain our analysis to issues involving cannabis legalization effects on law enforcement and crime, our participants, as reflected in our findings, often gravitated towards broader frustrations involving police resourcing, training, and prosecutorial practices. Lastly, while our qualitative data is well-suited for capturing the perceptions of police officers, they are also limited in this regard. Police perceptions of legalization may be skewed and not reflective of the broader process of legalization.

Effects of Marijuana Legalization on Law Enforcement and Crime: Final Report[1]

INTRODUCTION

The people of Washington in 2012 voted on and passed an initiative (I-502) permitting the state-regulated and heavily taxed production, processing, sale, possession and use of marijuana for recreational purposes under specified conditions and providing for the careful documentation of the consequences of legalization to determine the social benefits and costs of marijuana law reform (Hanley, 2013; Washington Secretary of State or WSS, 2012). Washington, along with Colorado, were the first two states to legalize the recreational use of cannabis in the United States, and to establish a regime for state regulation of the marijuana industry created by legalization and administrative rulemaking.

Proponents and Opponents of I-502

I-502 was created through a citizen-sponsored Initiative process that would "license and regulate marijuana production, distribution, and possession for persons over twenty-one; remove state-law criminal and civil penalties for activities that it authorizes; tax marijuana sales; and earmark marijuana-related revenues" (Ellison, 2012, p. 1). Proponents claimed that legalization would: 1. increase tax revenues; 2. reduce crime and correctional populations (particularly of minorities); 3. focus limited law enforcement resources on serious crimes; 4. enhance respect for law enforcement; and, 5. provide legal protection for medical marijuana use (Ellison, 2012; Walker, 2011). Opponents, on the other hand, argued that legalization would: 1. increase marijuana use by minors; 2. increase the incidence of drug-impaired driving; 3. would not yield the benefits in state revenue and commerce and employment predicted; and, 4. would not occasion the crime

[1] The executive summary for this research project is available at https://www.ncjrs.gov/pdffiles1/nij/grants/255061.pdf.

reductions suggested by proponents (Ellison, 2012). The research on the "Effects of Marijuana Legalization on Law Enforcement and Crime" provided some level of support for some aspects of both sets of claims, and identified other areas of positive and negative effects which were not anticipated by either proponents of marijuana law reform or opponents to change away from prohibition.

Upon passage of I-502, possession of one ounce of marijuana became legal for persons 21 years and older. The implementation of this law in terms of production, processing and retail sales and enforcement of regulations was left to the Washington State Liquor and Cannabis Board (WSLCB) and the Washington State Patrol (WSP). In 2013, the WSLCB held eight public forums, developed implementation teams, and conducted research and training of licensing units to set up the administrative infrastructure for state-licensed sales (WSLCB, 2013, p. 2). Since then the WSLCB has further refined their licensing and enforcement processes, hired more enforcement agents, and has created an office of research to better inform its work (WSLCB, 2019).

The non-partisan Washington State Institute for Public Policy (WSIPP), with a 40-year record of accomplishment of conducting objective policy analyses for the Washington State legislature, is responsible for carrying out a benefit/cost analysis of the law out until 2032. However, WSIPP's benefit/cost analysis does *not* examine the link between legalization and law enforcement practice in Washington, nor is the agency tasked with the study of how cannabis legalization alters police practices or influences crime patterns in external jurisdictions affected by developments in neighboring Washington.

NIJ Funded Research

Our research was designed to address various gaps in our knowledge; little was known at the time of our proposal about how state and local law enforcement agencies would have to modify

their practices. Likewise, the "learning through experimentation" taking place in the state needed to be documented for the benefit of the several other states (11 as of the time of this writing) which have legalized recreational use and several countries (e.g., Canada, Israel and Uruguay) which have already, or are seriously contemplating enacting recreational marijuana legalization/ commercialization legislation in some form. We believe that this research provides federal, state, tribal, and local jurisdictions with precisely the kind of timely insight needed.

We employed a multi-site and multi-method research design to answer these two related research questions:

1. How are law enforcement agencies handling crime and offenders, particularly involving marijuana, before and after legalization?
2. What are the effects of marijuana legalization on crime, crime clearance, and other policing activities statewide, as well as in urban, rural, tribal, and border areas?

These two questions get to the heart of the implementation of I-502, a public policy that generated a groundswell of support, though implementation plans for I-502 were not well articulated before citizens voted the initiative into law. These research questions fit the *NIJ Research and Evaluation on Drugs and Crime FY 2016* solicitation calling for the examination of "the effects of drug legalization and decriminalization on law enforcement, applicable to State, tribal and local jurisdictions" with a preferred focus on "drug intelligence and community surveillance" and with one of the priority drugs being "marijuana and cannabis products." As Washington was one of the first two states to implement a recreational marijuana law, the research team from Washington State University was well situated to document the lessons learned from legalization by Washington's state, county, municipal, and tribal law enforcement agencies and their respective officers.

We documented how law enforcement agency policies and officer behavior have changed as a result of the law, and we determined how changes in crime levels reflect both those changes in policing practices and the 2012 drug law reform. To that end, we examined police officer and police administrator perceptions and experiences, captured evidence of actual police behavior and drug-relevant incidents via camera footage analysis, and carried out longitudinal analyses of crime, drug arrests, calls for service, and clearance rates at the state and local agency levels of analysis. Our design included case study analyses of agencies both within Washington and from border communities in neighboring Idaho. We also analyzed aggregate crime data for Washington. This aggregate-level analysis compared Washington communities to similar areas in states without legalization (where marijuana possession is illegal) in an effort to examine any potential *spillover effects*. As of June 2015, 10 (of 39) Washington counties had opted out of the system by not permitting either the growing or retail sales of cannabis, though some individual cities within their borders have opted in with respect to either/or grow and processing operations and retail sales establishments (Darnell, 2015, p. 16). Both the border city comparisons and those between cannabis-permitted and non-permitted areas within Washington provided a relatively rare and highly valuable "natural experiment" for analytical exploration.

Fourteen law enforcement agencies, covering a variety of local jurisdictions located in Washington and Idaho, agreed to participate directly in this research, in so doing noting the timeliness and importance of this study for informing policing practice (See Appendix A for a descriptive analysis of participating agencies). Given the triangulation (e.g. the use of official data, focus groups and interviews) built into our design and the breadth of support we have received from our participating state and local law enforcement agencies, this mixed-methods study allowed

us to document key lessons for states and countries considering the legalization of recreational marijuana.

Our findings derived from our multi-sourced data thus far indicate that some of the predictions made by both the opponents and the proponents of marijuana legalization were supported, while others were not. In addition, implementation of legalization at the local law enforcement level yielded some unanticipated outcomes. For example, we heard repeatedly in our officer interviews and focus group sessions that the impact of legalization was much more apparent in the nature of calls for service received than in the incidence of crime. The patterns of complaint calls and welfare check requests (i.e. to determine the wellbeing of someone) were noted as unanticipated outcomes, with frequent follow-up and multi-service agency involvement being associated with many such calls.

LITERATURE REVIEW

Policy Implementation

The policy implementation process in policing involves both the development of formal policies and procedures and the differential use of discretion by officers who function as *street-level bureaucrats* (SLBs) (Lipsky, 1980). SLBs are public sector workers who have too many clients and demands on their time, too few resources to address all demands, and who are entrusted with much personal professional discretion about how to carry out their work. Their practices are *key* to the implementation of many types of public policy, inasmuch as SLBs translate formal policy into practice in real world interactions with the public. There is good reason to suspect that there are substantial implementation challenges present in the case of marijuana law reform, and that wide latitude exists in the hands of officers where past practices may or may not be consistent

with the I-502 strictures on how marijuana possession is to be dealt with in a variety of field settings.

There is broad evidence that police had frequently used the presence of marijuana as a tool for investigative purposes. When cannabis was illegal, the presence of marijuana in cases of arrest provided probable cause for the search of a vehicle and/or person suspected of wrongdoing. In addition to this, there is a substantial history of police using the threat of drug charges to turn implicated persons into police informants (Miller, 2011). Research on the implementation of criminal justice policies and practices (such as prison reform, D.A.R.E., Boot Camp and COMPSTAT programs) indicates a range of unintended consequences in the form of net widening, crime displacement, and hidden (at times even illegal) accommodations by various system actors (Jang, Hoover, & Joo, 2010; Parent, 2003; Rothman, 1980, West & O'Neal, 2004).

Prior research notes that marijuana has often served as a convenient justification for police stops (Geller & Fagan, 2010). Three practices which law enforcement personnel typically use in ferreting out crime, especially in the context of drug enforcement, are temporary detentions for a Terry stop (or when the police can briefly stop someone that they have a reasonable suspicion was involved in criminal activity), pretext stops, and searches incident to arrest (*Arizona v. Gant*, 556 U.S. 332 [2009]); Del Carmen & Hemmens, 2019). The first two of these practices are particularly salient to this research and will likely be affected by legalization (Geller & Fagan, 2010; Gizzi & Curtis, 2016; *Terry v. Ohio* [392 U.S. 1 {1968}]; *Whren v. United States* [517 U.S. 806 {1996}]).

Prior research also suggests that police discretion involving marijuana crimes is an essential part of urban policing activities, as low-level users and small volume dealers are often used as confidential informants for carrying out larger drug dealing investigations (Goldstein, 1960; Miller, 2011). With marijuana legalized, it may be more difficult for police to locate and

work with such confidential informants. Prior research, however, suggests that attempts to limit officer discretion when working with informants often results in police use of deceptive tactics (Turcotte, 2008), though research has not yet examined whether this occurs in the context of the decriminalization of a controlled substance.

I-502 was intended to increase the amount of time and resources dedicated to policing violent and property crimes. One manifestation of this is through an increased clearance rate. That is, if police devote more time and focus more attention on serious crimes, legalization should increase the crime clearance rate. Prior research on clearance rates, however, is largely silent on the role of large-scale policy change implementation and the attendant resource reallocation resulting from that change. Much of the research done on clearance rates focuses on crime characteristics (Roberts, 2008), technological innovations (Chan, 2001; Garicano & Heaton, 2010), organizational factors (Moore & Braga, 2003; Nicholson-Crotty & O'Toole, 2004), or specific police strategies (Rosenfeld, Fornango, & Baumer, 2005). The limited prior research that focuses on police reallocation primarily concerns resource redistribution – both financial and human (see Kennedy, Caplan, & Piza, 2010) or simulations of potential resource reallocations on hypothesized changes (Zaki, Cheng, & Parker, 1997; Zhang & Brown, 2013). Therefore, another central issue in the examination of marijuana legalization was whether and how law enforcement agencies have chosen to redirect their resources (in staffing and financial commitments) so that the promise of the law to redirect resources to serious and violent offenses and driving under the influence (DUIs) might be met.

The paucity of research on resource reallocation is arguably because few pivotal policy changes, such as the legalization of recreational marijuana, require a complete about-face on practice. Except for the end of alcohol prohibition, via the 21st Amendment, there are few

analogous pivotal policy changes directly affecting day-to-day tasking in state and local police agencies. One possible example is abatement of the "Stop-and-Frisk" practice by the New York City Police Department (Goldstein, 2013; White & Fradella, 2016). In the context of this policy change, research focused principally on the deterrent effect of the practice (see Weisburd, Wooditch, Weisburd, & Yang, 2015). As with the current situation concerning marijuana legalization, prior research has largely failed to consider the broader consequences to police practice. Mosher, Miethe, and Hart (2010) argue that the failure to examine systematically the effect of a given change in practice produces inaccurate observations, a weakness in prior research which could make it more difficult to evaluate the consequences of I-502 as fully as needed.

A goal of the research presented here is to carry out such a much-needed systematic examination as related to two broad research questions:

1. How are law enforcement agencies handling crime and offenders, particularly involving marijuana, before and after legalization?
2. What are the effects of marijuana legalization on crime, crime clearance, and other policing activities statewide, as well as in urban, rural, tribal, and border areas?

Below, we briefly summarize prior research as related to these two central research questions. First, we explore marijuana-related crimes (possession and sales) and incidents in the pre-legalization era, including their prevalence and how these cannabis-related cases were handled by law enforcement officers. Next, we summarize some of the relevant literature on how legalization has affected serious (Part 1) crime patterns, arrest and investigation work, youth and public education/outreach and other customary policing activities.

Addressing Marijuana Cases

Though two of the largest cities in Washington had previously de-prioritized marijuana, a considerable amount of time had been spent historically (prior to I-502) on marijuana-related cases in Washington State. Marijuana accounted for nearly half (47%) of all drug abuse cases processes in calendar year 2012, a number which dropped dramatically to constitute about 12% of all drug abuse cases handled by the police by 2016 (WASPC 2013, 2018).

In addition, there is broad evidence that police had frequently used the presence of marijuana as a tool for investigative purposes. When cannabis was illegal, the presence of marijuana in cases of arrest provided probable cause for the search of a vehicle and/or person suspected of wrongdoing (Del Carmen & Hemmens, 2016; McInnis, 2009). Also, there is a substantial history of police using the threat of drug charges to turn implicated persons into police informants (Miller, 2011).

Effects of Marijuana Legalization on Crime and Policing Outcomes

As Washington and Colorado were the first states to legalize marijuana for recreational purposes, there is a paucity of research examining the effects of legalization on crime and other policing-related activities. There is, however, some prior research on medical marijuana laws which is relevant, as these laws legalized marijuana use for certain segments of the population. Research on medical marijuana laws generally suggests that increased marijuana availability does not lead to an increase in any Part 1 crime and in fact might decrease levels of violent crime (including homicide) (Morris et al. 2014; Shepard & Blackley, 2016).

In terms of recreational legalization, many of the early results reported in the research literature are based on single-agency studies or the analysis of state-level records. Such studies often were carried out without the inclusion of appropriate pre- and post-trend controls. While

these results are less than ideal in design and only provide tentative insight, they do provide some useful information regarding early crime trends following the legalization of marijuana. With respect to crime rates, both state governments in Colorado and Alaska have reported some modest crime increases in some areas of offending since legalization (Shedlock, 2017; Mitchell, 2017). Within the Washington context, however, the results of official government-initiated analyses were mixed and were based largely on single-site descriptive reports, as aggregated by the Northwest High Intensity Drug Trafficking Area (NW HIDTA) reports. The 2016 NW HIDTA report, for example, indicates that the Spokane Police Department (a research partner) noted that drug possession and theft crimes had increased since commercialization (or when the city's state-licensed dispensaries opened in July 2014), while the Seattle Police Department indicated that marijuana-related incidents decreased for both adults and juveniles since legalization (NW HIDTA, 2016).

Peer-reviewed research on recreational legalization and crime is quite sparse to date. Hughes and colleagues (2019) have published one of the few studies carried out in this important and timely area. They examined the potential link between marijuana dispensaries being present and neighborhood crime around those establishments in Denver, Colorado. Hughes et al. report evidence of a positive relationship between recreational dispensaries and violent crime (including robbery and aggravated assault), as well as a link between dispensaries and disorder crimes. Importantly, a host of prior research projects have reported the opposite for earlier research done on the connection between the presence of medical marijuana dispensaries and neighborhood crime (Chang & Jacobson, 2017; Kepple & Freistheler, 2012), leaving this issue unsettled. Though this is an important area of work that deserves additional research attention, it is important to note that a neighborhood-level link between dispensaries and crime, whether positive or negative,

significant or not significant, does not in and of itself suggest that legalization will increase or decrease crime overall.

Put simply, there is mixed evidence linking cannabis to a wide variety of crimes, including violent and property offenses. We anticipate that legalization should have a dramatic and immediate negative effect on marijuana possession offenses at the point of legalization. Given that possession was immediately legal within the state at that point, arrests for possession should drop precipitously (though not to zero, as possession remained illegal in certain contexts). To the extent that legalization inspired people to obtain cannabis after December 2012, it is possible that legalization might have other immediate effects on crime and public safety. For example, this could manifest in terms of increased calls for service related to nuisance issues or could manifest as downstream market effects, as drug dealers and cartels make the necessary shifts to prepare for legalization. The largest impacts, however, are expected to occur after the start of retail sales in July 2014. At this point in time, legalization could decrease illicit marijuana sales as potential buyers can purchase from licensed retail stores and not risk dealing with illicit drug deals. Similarly, the start of sales is when the marijuana availability increased dramatically. Therefore, if marijuana legalization were to have any effects through its potential pharmacological pathways, they seem more likely to start after the start of sales than at the point legalization.

The evidence regarding the link between legalization and heightened drug trafficking was more uniformly positive vis-à-vis reduced incidence. Preliminary findings indicated that seizures of contraband marijuana in traffic stops decreased between 2012 and 2014 by almost 62% (NW HIDTA, 2016, p. 93). Three years of statewide National Incident-Based Reporting System (NIBRS) data compiled by the Washington Association of Sheriffs and Police Chiefs (WASPC), a research partner agency and active supporter of this WSU research team, for the period 2012 to

2014 indicated that "marijuana offenses" decreased by 38% (from 6,196 incidents in 2012 to 2,364 in 2018) (WASPC, 2012, 2018).

There has also been concern regarding marijuana legalization and traffic safety. Inasmuch as marijuana-impaired driving remains illegal these concerns are also well worth noting. The Washington State Patrol (WSP) has reported that the incidence of both carboxy-THC (a THC metabolite which has no psychoactive effects) and active THC in the blood of drivers involved in serious injury crashes had increased since legalization. In a similar vein, the Pacific Institute for Research and Evaluation's 2014 roadside survey for the National Highway Traffic Safety Administration revealed that a majority (61.9%) of Washington drivers who admit they use marijuana believe that marijuana does not adversely affect their driving. In fact, the percentage of drivers who are involved in fatal automobile accidents with THC had increased over 120% since implementation; sadly, young persons were disproportionally present among these drivers (NW HIDTA, 2016, p. 82).

Early research in Colorado, however, led researchers there to conclude that the increase in traffic offenses tied to cannabis may simply be an artifact of more testing for the substance since legalization (Koski & Kammerzell, 2016). In research more pertinent to Washington State, Woo and his colleagues (2020) examined traffic fatalities from 2008 to 2017. Their research documented an increase in fatality-involved THC-positive drivers after the enactment of I-502 in Washington, but no further increase after cannabis retail shops opened in July 2014. Woo and his associates also found that although THC alone was not a statistically significant predictor of driver error, when found in combination with alcohol drivers involved in fatalities were more likely to engage in risky behaviors.

Interestingly, while marijuana seizure incidents are down within Washington, the amount of Washington State marijuana found in other states where prohibition remains in place by 2016 had increased by 20% since legalization (NW HIDTA, 2016, p. 95), suggesting a sizeable potential spillover effect of legalization. Both Washington and Colorado have taken note of this diversion from state requirements that the marijuana purchased in either state much be consumed in those states; the state of Nebraska and the state of Oklahoma in fact sued (unsuccessfully) the state of Colorado over this very issue in federal court.

METHODS

In order to address the effects of legalization on how law enforcement agencies handle marijuana-involved cases, and to explore its effects on patterns of crime and policing-related activities, we employed a mixed-methods, multi-site data collection effort. This three-year study of the effects of I-502 on law enforcement and crime was carried out with the active support of a variety of state and local government research partners and collaborators. The research effort undertaken included municipal, county, state, and tribal law enforcement partners in 14 urban, suburban, rural and tribal settings in Washington and Idaho, as well as sworn law enforcement professionals from 25 additional agencies. Focus groups, and joint and individual interviews involved 153 justice system officials that included sworn officers from three multi-agency regional drug task forces and one gang task force. In addition, interviews included prosecutorial representatives, enforcement agents from the Washington State Liquor and Cannabis Board, officers from the Washington State Department of Fish and Wildlife, and instructors from the National Association of State Boating Law Administrators.

We constructed case study profiles and assessed qualitative (focus groups, interviews) and quantitative (UCR, calls for service, body worn and dash mounted camera footage) data regarding

how police practices and strategies, and crime itself, have been affected by marijuana legalization in Washington, and how that the passage of I-502 has changed policing in adjacent border areas. Though our primary focus was on Washington, we also examined trends for some crime-related variables in Colorado as well in order to enhance the external validity of our research.

Our research plan allowed for the cross-validation of findings at the individual, organizational and jurisdictional levels, providing the opportunity for consistent themes to emerge. The qualitative aspects of our research were grounded principally in the process of the interpretative phenomenological analysis of individual-level data, while our quantitative analyses made use of several different analytical and statistical techniques, including those of descriptive analysis, data visualizations, interrupted time-series modeling, use of multi-level models, and the application of systematic social event modeling (SSEM) to the study of body worn camera footage for select incidents. Our study design allowed us to tease out key lessons for those U.S. states and those foreign countries which are interested in the legalization and effective regulation of recreational marijuana.

Case Studies

Fifteen police organizations signed *Memorandums of Understanding* (MOUs) with the Washington State University Department of Criminal Justice and Criminology to participate in the research. Data was requested for purposes of conducting agency case studies from 14 of the 15 agencies for the year 2016, with repeated reminders being sent for the 2016 data. Despite those requests, some agencies chose to report 2017 data as it was the most recent data available. Since there is little reason to suspect large changes occurred in the agencies between 2016 and 2017, we believe the data is likely still comparable. Hence, 14 of the 15 police organizations with MOU provided 2016 and 2017 agency demographic data. However, some agencies declined to provide

data for some of the categories of information requested. Moreover, one of the 15 MOU organizations was a multi-agency regional task force and was therefore not included in the demographic data obtained as the multi-agency entity did not fit the parameters for evaluating individual agencies through case study analysis.

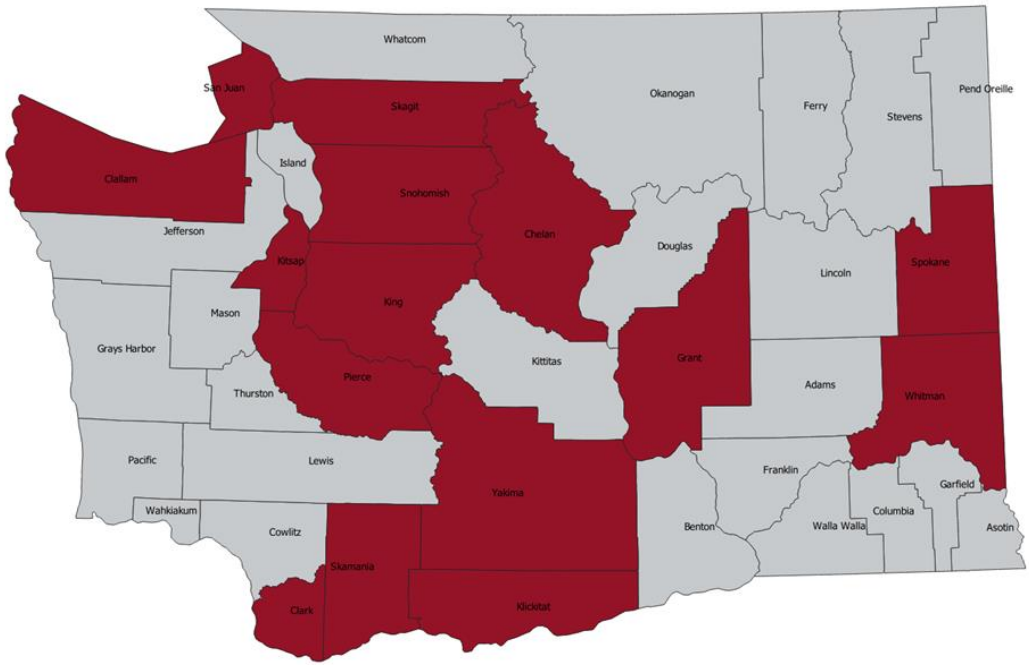
Agency Representation

Ten of the 14 MOU police organizations represented municipal *police departments* that included two sovereign *tribal* agencies. Nine of the 10 local *police departments* were from Washington jurisdictions and one was located in the state of Idaho. Three of the 14 MOU signatory organizations were *county sheriff's departments*, including two such agencies from Washington state and one from Idaho. There was also one MOU *state* agency represented from Washington state (see Table 1 under Findings). We provide a visual representation of our MOU signatory coverage in Washington in Figure 1 (below), though we would note that the quantitative data we employed for some analyses covered the entire state. Furthermore, given that some of our MOU-signing partner-agencies have statewide jurisdiction (i.e., the Washington State Patrol), our qualitative data also covers the entire state as well.

Service Area Populations

Four police departments represented rural areas of under 50,000 population, including two sovereign tribal areas. Two police departments (one rural and the other suburban) worked for populations of up to 100,000, and three local municipal police departments serviced metro areas of more than 200,000. Two county sheriff's departments represented county populations of more than 150,000, while one represented over 500,000, respectively. The state agency in question represented service to Washington State's entire population of more than 7.5 million people (see Table 5 in Findings section).

Figure 1: MOU Coverage (in Crimson) Across Washington State



Qualitative Data

As part of this research, we conducted 11 focus group sessions involving 57 sworn officers. Individual interviews were conducted with 86 law enforcement representatives (patrol officers, sheriff's deputies, state troopers, police supervisors, and law enforcement trainers) and two local prosecutors. In addition, there were three joint interviews conducted with two sworn officers participating in each interview, and one joint interview with a local prosecutor and his chief of staff. In sum, 92 interviews (individual and joint) were completed that involved 96 justice system representatives.

Recruitment Process. To minimize the potential for participant coercion, careful consideration was given to the recruitment process. First, each participating agency identified an agency liaison, with whom the focus group or interview coordinator would communicate in order to establish potential dates and times for the data collection sessions held. Second, requests for

participation were routed through the designated liaison with opt-in instructions for participants. These instructions included a rather detailed overview of the project, identified the conditions for participation (agreement to be recorded), and included a consent form that would need to be signed prior to participation. This protocol was reviewed and approved by the Institutional Review Board at Washington State University.

Given the large number of agencies and participants, and given the existence of specific limitations (i.e., technical capacity and pertinent agency policy), it was not possible to contact officers directly for participation in all cases. Rather, the agency liaison person distributed the request to all eligible officers, and all communication concerning participation in the focus group occurred between the focus group coordinator and participant. The interviews were also initially set-up via an agency liaison, but when it came to determining the particulars of time and place for the interview, the research coordinator and the potential interviewee were in direct contact. Importantly, agency liaisons did not receive notification of who ultimately participated in the data collection sessions for either the focus group sessions or the personal interviews: although in the latter case it is likely that they were aware of agency employee participation. The participants in the study were all volunteers and received no compensation for their participation in either the focus group sessions or the interviews.

Question Development via Appreciative Inquiry. Given the nature of the inquiry and owing to the emphasis on the lived and shared experiences of officers prior to and after legalization, question development for the interviews and focus group sessions incorporated appreciative inquiry (AI) into the development process. Briefly, AI is a participatory methodology (Whitney and Trosten-Bloom, 2003). AI moves analysis away from using research "subjects" toward engaging people as enrolled participants, transitioning the nature of the inquiry away from

documenting experiences towards an emphasis on gaining understanding and insight; the goal of the researcher is that of *engaging* the respondent in dialogue around their past experiences, and understanding how they plan to move forward to manage change in the work they do. By its very nature, then, AI is an inclusive methodology, one wherein each respondent becomes empowered to engage the researcher, to even pose questions to the researcher as opposed to only providing answers to questions provided by the researcher (Aldred, 2008). Depending on the immediate and long-term purposes of the research, AI can be a very useful methodology for developing and implementing policy change by understanding the lived experiences of key actors within a specific system – that is, within an agency, within a geographic region, within a state, or even within an entire nation (Cooperrider, Whitney, & Stavros, 2003). When properly recruited, engaged and empowered by skilled researchers and facilitators, study participants can contribute to insightful and impactful policy recommendations which, most importantly, take into direct consideration practical restraints operating within the system which often are not evident to administrative leaders or political decision-makers (Coghlan, Preskill, & Tzavaras, 2003). Because this research concerned understanding officer experiences, pre- and post- marijuana legalization, *and* entailed deriving recommendations for improving implementation in other U.S. states and foreign countries, AI served as an important framing methodology.

Specific to the individual questions used by facilitators to explore lived experiences, AI involves a process with the following distinct conceptual steps: *inquire* (framing of context), *imagine* (introspection), *innovate* (exploration of action options), and *implement* (observed results). Given the fact that this research explores law enforcement experiences pre- and post-legalization, with a clear outlook towards the future, it was decided to incorporate AI within a three-phase format for the focus groups. As described by Then, Rankin, and Ali (2014), this format

includes the phases of group and individual *engagement*, collective *exploration*, and *exit* after sharing and mutual learning.

The use of these phases in turn allowed for the development of the formal focus group script, the guide for conducting the documented account of the session. This script includes the semi-structured questions, and the follow-up prompts, used for engaging police officers to articulate their experience pre-legalization, exploring their experiences post-legalization, and providing a platform for the development of well-informed policy recommendations. Appendix B includes the focus group script used for this study.

Transcriptions. Undergraduate students with a cumulative GPA of 3.5+ (on a 4-point scale) were recruited to transcribe the focus group sessions and the field interviews. Transcribers were given college research credit for their participation in the research. They were required to complete the university-designated human subjects research training instructional module (CITI), and then participated in required training conducted by a member of the research team. That person served as their supervisor and trained the undergraduate students on the need for confidentiality of responses, the need for accuracy in the preparation of transcriptions, and the requirement to cross-check the transcription for validity. Initial draft transcriptions were cross- checked for accuracy by two other trained transcribers. The supervisor of the transcribers then spot-checked all transcriptions as a further check for accuracy. Agency name, participant names and any references to subject matter that would reveal the identity of the study participants were redacted from the cross-checked transcripts to ensure that the confidentiality promised to study volunteers was maintained.

Data Collection. As a best practice, two researchers participated in each focus group session, with one facilitating and the other operating the recording devices and taking detailed

notes. Generally, one researcher handled each personal interview, though in some instances a second member of the research team sat in to observe and take notes. All researchers were trained in AI, with emphasis on managing focus groups to prevent any one group participant from dominating the session. Two recording devices were nearly always used, placed centrally to the facilitator and in an optimal location permitting the capture of all speech from focus group participants. When the researchers verified that all consent forms had been signed, the facilitator proceeded to explicate either the focus group or interview process, including assigning numbers to participants (for the focus groups) which would then be referred to instead of names henceforth. The facilitator explained the purpose of the recording, established ground rules for the session (e.g., comments and observations remain privileged, one person speaks at a time, all persons would be invited to comments on all questions posed to the group, etc.) and answered any questions before making use of the focus group or interview script (see Appendix C for the Interview Script).

Prior to initiating the recording in the focus group sessions study volunteer participants were asked to provide a brief personal and professional overview, which was detailed in the notes as a means of contextualizing the session. On average, focus group sessions lasted approximately one hour and featured between four eight participants (usually 4 to 6 persons). Interview sessions lasted approximately one hour as well. Each session and interview was then transcribed, and then "reverse transcribed" in a process wherein one transcriber converted the audio recordings into written form, and *another* transcriber would then read the transcription and simultaneously listen to the tape recording, thereby ensuring accuracy when corrections were called for. Differences in perceptions were then flagged for review, with emphasis being placed on any substantive word differences. As a further means of assuring fidelity and reliability, a random sample of transcriptions were collected and reviewed for accuracy. Across the interviews and focus groups,

respondents provided thousands of unique comments, primarily grouping around several key domains.

Qualitative Analysis. Analysis of the focus group sessions involved a two-step process. First, four research team members separately reviewed the focus group transcripts and prepared a derivative list of themes and accompanying illustrative quotes. The themes were assessed for accuracy on multiple occasions. Potential discrepancies were examined by multiple project staff and graduate students who met as a group frequently to discuss transcription processes and issues requiring resolution. Another team member then synthesized these discussions into a list of themes identified. For both the focus group sessions data and the interview data we used a keyword-in-context (KiC) approach (Onwuegbuzie, Leech, & Collins, 2012) to identify conceptual domains, and after that step it was possible to build sets of keywords around each of the specific domains. Subsequently, this approach produces the most dominant themes associated with each of the three phases of the focus group (i.e., engagement, exploration, and exit). Importantly, for the purposes of this study, our intention is not to compare the different agencies with respect to these keywords and domains. As our research sites are not evenly represented, and they varied in active engagement across the domains, a comparative keyword analysis (CKA) was not advisable at this stage of our work (Seale & Charteris-Black, 2010). The results of each step of the process and final transcription products for the focus groups and interviews were validated by students working under the project Principal Investigator, Dr. Mary Stohr.

When analyzing the interview transcripts, we used the NVivo software. A total of 13 dominant themes emerged, with five of these being the most prevalent throughout. The themes were coded into relative sentiment; namely positive and negative in valence, and then subsequently divided into very positive and moderately positive, and very negative and moderately negative

sentiments. Out of the 6,000 unique comments transcribed, more than 4,500 were coded as being negative in overall sentiment. The analysis of the data revealed five super-ordinate themes, each with a multitude of organizing themes beneath them. It is important to note that all the following themes reflect both positive and negative sentiment, demonstrating the pleotropic nature of officer perceptions of marijuana legalization. The five super-ordinate themes relate directly to the officer's perceptions of law enforcement's ongoing interactions with marijuana-related issues. When possible, the results of the analysis are illustrated through direct quotations from the transcriptions.

Quantitative Data

On the quantitative front, we made extensive use of Uniform Crime Reporting Program (UCR) database, calls for service data provided by select partner agencies, and body-worn camera data provided by two agencies.

UCR Data. We derived crime rates, crime clearance rates, and arrest rates for marijuana-related crimes from publicly available UCR files. Though our primary focus was on Washington, we also gathered data on other states for the purposes of comparison. We gathered crime, arrest, and crime clearance data from the period 2006 to 2016. While these data are also available in the National Incident-Based Reporting System (NIBRS) data files, many agencies in Washington and our control states were not compliant for all years covered in our research (indeed, some larger agencies in Washington have only recently started reporting NIBRS data). Similar data coverage issues exist for other states. As such, we caution readers heavily against over-interpreting NIBRS-generated results related to marijuana legalization. Indeed, NIBRS data for Washington from 2009 onward only includes one of the largest 10 cities in the state, thereby greatly limiting the utility of NIBRS for understanding legalization trends and effects in Washington.

We initially gathered all data at the agency-level, though we preserved county and state-level identifiers so that the data could be aggregated to higher levels as needed. Monthly crime and arrest totals were obtained from the UCR offenses known for each municipal agency in the state of Washington and 21 control states for the period 1999 through 2016, as we wanted to examine the period ranging from before Seattle's deprioritization through the period after the start of retail sales. Preliminary analyses indicated that the Seattle shift was not significant at the state level, so we focus our attention on legalization and the start of retail sales in the analyses below. We also obtained UCR arrest data from 2006 to 2016 to explore these patterns, though we did not examine deprioritization in Seattle for these data. Agencies were included in the final datasets only if they reported to the UCR for all 12 months of each of the years in question. While a full analysis of the agencies that did not report data is beyond the scope of this report, supplementary analyses on agencies omitted in Washington State indicate that these agencies are smaller, on average, than the agencies in included in the final analysis. In Washington, agencies included in the analysis had an average of 87.3 full-time sworn officers with a median of 32, while agencies not included had an average of 10.75 full-time sworn officers with a median of 8. While the median values indicate that the average is skewed by larger agencies, the median also indicates that the analytic sample includes a number of smaller agencies. Still, smaller agencies in smaller counties were less likely to provide full data to the UCR and therefore, our results may not be representative for smaller municipal departments. Still, these data capture 61% of the total municipal agencies in Washington (based on the Census of State and Local Law Enforcement Agencies from 2008), all of the major metropolitan areas in the state, and 58-61% of the state's total population (depending on the year in question). Arrest analyses were also conducted using data from local agencies for the period 2009 through 2016. Demographic information for each agency's jurisdiction was collected from

the personnel tables in the United States Census Bureau. Each of the data sets was preserved at the agency level, and then aggregated up to the state level.

Calls for Service Data. In addition to UCR data, we also examine calls for service data from three of our partnering MOU agencies. Calls for service data are typically generated in one of two ways: police-initiated contact, in which an officer notifies dispatch of a traffic stop or other citizen encounter, or through a 911 emergency system or non-emergency call in which the police are dispatched in regards to a citizen complaint or request. As detailed in the Findings section of this report, officers indicated that they were experiencing shifts in their workload as a result of cannabis legalization that they suggested would not be detected in the analysis of crime and arrest rates. Calls for service data allow for a more complete picture of police activities in that they include the serious incidents captured in the UCR as well as less serious incidents (including those not resulting in arrest) also worthy of note. Three agencies, including two border agencies and one large urban agency, agreed to share calls for service data for our detailed analysis.

Our focus is on whether the trends in calls for service changed following the intervention of I-502 in one border town in Washington state (Bordertown WA) where recreational marijuana is legal, compared to another border town in Idaho (Bordertown ID) where recreational marijuana has remained illegal. We specifically examined the total officer and dispatch-initiated calls for service for each town for the period 2005 through 2016. The data were obtained in yearly files with each call disaggregated by their exact occurrence. Monthly totals of each call type were summed and aggregated into one dataset, with each of the years included. The total calls for each month, and then any call type with at least 50 occurrences throughout the 13-years, were included in the analyses. Bordertown ID was chosen as a control group because it is similar to the border town in Washington in that it houses a university campus (as does Bordertown WA) and has a

similar population make-up to Bordertown WA. Idaho has no legislation legalizing the use of marijuana for medical or recreational purposes. As such, we would expect few differences, if any, between the calls for service numbers in Bordertown ID after Washington legalized recreational marijuana.

Body Worn Camera Data. To gain a better understanding of what occurs in traffic incidents involving alcohol, marijuana, or other substances, we analyzed unredacted body-worn camera footage obtained from two police agencies. Analyzing body-worn camera (BWC) footage allows us to capture objective measures for whether certain events occur, and furthermore document the time points at which they occurred. Measures captured in a coding process included incident characteristics, driver characteristics and behaviors, and police officer behaviors. A copy of the specific codebook used for annotating the footage was provided with the data deposit for this NIJ grant to the Inter-university Consortium for Political and Social Research (ICPSR). A discussion of the specific methodology used, and each measure, are as follows.

Systematic social observation (SSO) procedures were implemented to characterize events that occurred in the BWC footage. SSO is a method that implements systematic and replicable procedures for analyzing social phenomena (Reiss, 1971). SSO is an especially useful technique in capturing detailed information of observations occurring in their natural setting. Furthermore, as this method requires the establishment of explicit definitions of what is to be observed prior to the initiation of observation, it allows for efficient and replicable data collection (Reiss, 1971). Within the framework of SSO procedures, we base our specific annotating process on event modeling. Event modeling encompasses capturing if, when, duration, and changes associated with events in BWC footage. Due to the complexity of applying event modeling to BWC footage,

annotation software was developed to facilitate efficient data collection and to minimize the error associated with the video footing annotating process.

The annotation software is structured in three tiers. Tier one captures whether the event occurs and, if so, at what time point it occurs in the footage in minutes and seconds. Tier two captures the duration of and other information associated with those events. In addition to capturing additional information, tier two also encompasses a different annotator verifying information that is presented in tier one. Lastly, tier three captures information associated with the end of those events occurring in the footage. As in tier two, tier three also encompasses a different annotator verifying information presented in both tier one and two. Collectively, these three tiers provide a temporal sequence of events that is verified at multiple stages of the annotating process. For example, tier one would mark that the driver resisted an officer's command at a time stamp of 10:30. Tier two would verify that the driver resisted at 10:30. If the driver resisted at 10:30, tier two would then indicate that it ended at 12:15 and it was defensive type of resistance (e.g., runs away from the officer after being told to stand still). Tier three would then verify information presented in tier one and two. Lastly, at tier three the annotator would go to 12:15 in the video and indicate whether there were any additional types of driver resistance after that time stamp. The inclusion of tier three allows us to capture additional instances of our measures and note whether they change throughout the interaction.

Our measures are categorized into three distinct groups: incident characteristics, driver characteristics and behaviors, and officer behaviors. All the footage analyzed for our sample are traffic incidents involving alcohol, marijuana, marijuana and alcohol, or other types of impairing substances. For this footage, we capture the year and time of the incident, and which agency was involved in the incident. We also include a measure for the length of the interaction. The length of

interaction is the duration of time between when the officer contacted the driver and when the officer is no longer in contact with the driver. Additionally, we capture the number of officers involved, whether there are bystanders present, and whether the bystanders interact with the officer(s). Lastly, we capture the intensity of the incident. A normal interaction is one that does not evoke an emotional response. On the other hand, an incident with a medium- or high-level of intensity evokes some type of emotional reaction to what is occurring in the interaction. Operationalizing our emotional measures uses the process described by Makin and colleagues (2019).

We also capture the gender, race, and ethnicity of the driver involved in the incident. For measures of specific driver behaviors, we capture whether they used profanity, whether they attempted to deceive the officer (i.e., lied), and lastly, whether they resisted an officer's command. For our purposes, deception constitutes statements made to the officer which were later proven inaccurate during the interaction. For example, a driver stating they were not under the influence of a substance, who later recanted by stating they used a substance. Driver resistance was defined as when the driver does not follow a specific officer's lawful command. For example, tier one coding would mark resistance as occurring if the officer tells the driver to put their hands behind their back and the driver does not follow this command and instead says no.

Concerning officer measures, officer characteristics were not available in the current study. However, multiple measures of officer behavior were captured. First, we capture whether the officer provided a reason for stopping or contacting the driver, and additionally whether the officer asked for their input on the reason (e.g., why do you think I pulled you over?). We also capture whether the officer makes an inquiry into the driver's well-being (e.g., you don't look well, are you feeling okay?), and if the officer explains the next steps regarding what will happen to the

driver (e.g., you will receive paperwork in the mail with a court date regarding the citation I am issuing to you). Additionally, we capture whether the officer empathized with the driver, if they used any type of de-escalation technique, and whether profanity was used in their interactions with the driver. Empathy was defined as any attempt to understand the driver's point of view or perspective (e.g., I understand your frustration, I've been in your position before). On the other hand, de-escalation was defined as efforts intended to decrease agitation, with the goal of increasing driver compliance and cooperation (e.g., If you choose to calm down and comply, I can take the handcuffs off). We also capture whether the following occurred: the officer reminded the driver of their rights, a search was conducted, if a statement was made to the driver that they were being audio- and video-recorded, if force was applied, and lastly, if an arrest, detainment, or citation occurred. A discussion of descriptive statistics for incident, driver, and officer measures will follow.

Quantitative Analyses

Our analysis makes extensive use of descriptive statistics (including basic data visualizations) and regression modeling. Our primary regression approach is multi-group interrupted time-series analysis. When true randomized experiments are not feasible, interrupted time-series experiments have been regarded as one of the strongest quasi-experimental designs available to examine police interventions (Bernal, Cummins, & Gasparrini, 2017; Campbell, 1969; Cook, Campbell, & Shadish, 2002). Interrupted time-series analyses are used to examine changes in trends over time to determine if those changes are a result of an intervention (the interruption). In each of the analyses we present below, we use Washington or agencies from Washington as the treatment group, where treatment is conceptualized as either marijuana legalization or the start of marijuana retail sales. For our large-scale crime and crime clearance results, we compare

Washington to a set of 21 states which, during the time period covered by our data, had no marijuana (medical or recreational) laws. For our calls for service analysis, we compare the Washington agency to its corresponding border agency in Idaho.

Linden (2015) defines the multiple-group interrupted time-series analysis regression series model as:

$$Y_t=\beta_0+\beta_1 T_t+\beta_2 X_t+\beta_3 X_t T_t+\beta_4 Z+\beta_5 ZT_t+\beta_6 ZX_t+\beta_7 ZX_t T_t$$

where Y_t is the outcome variable at each time point, the first four terms (β_0 through $\beta_3 X_t T_t$) represent the control group, and the last four terms (β_4 through $\beta_7 ZX_t T_t$) represent the interaction of the treatment group. β_0 is the starting point, or intercept, of the outcome variable for the control group, whereas $\beta_4 Z$ represents the difference in starting points between the control group and the treatment group. T_t is the variable for how many time units (in this case months) have passed since the initial measurement. X_t is a dummy variable used to indicate the intervention, where any time at or after the time of intervention is 1 and everything before the intervention is 0. $X_t T_t$ is an interaction term between the time measurement and the intervention. Z is a dummy variable to indicate the treatment group (1) and the control group (0). The final three terms in the model are the interaction of the treatment group with the regression terms previously described. β_5 through β_7 indicate the difference between the control group and the treatment group outcome variable slopes prior to the intervention, immediately following the implementation of the intervention, and over time post-intervention. For some of the analyses, we make use of multiple interruption time periods (both legalization and the start of sales), while for others we only examine legalization. All models are estimated on rates (to account for population changes) and include monthly dummy variables to control for seasonal variation, as well as appropriate standard errors to account for autocorrelation.

FINDINGS

While our research had significant depth and breadth to it, we limit our reporting of results to the primary research questions identified in our initial grant applications. Additional details on our analytic procedures, supplementary analyses, and additional research activities can be viewed in the several peer-reviewed works which will be emerging from this research.

RESEARCH QUESTION 1: How are law enforcement handling crime and offenders, particularly involving marijuana, before and after legalization?

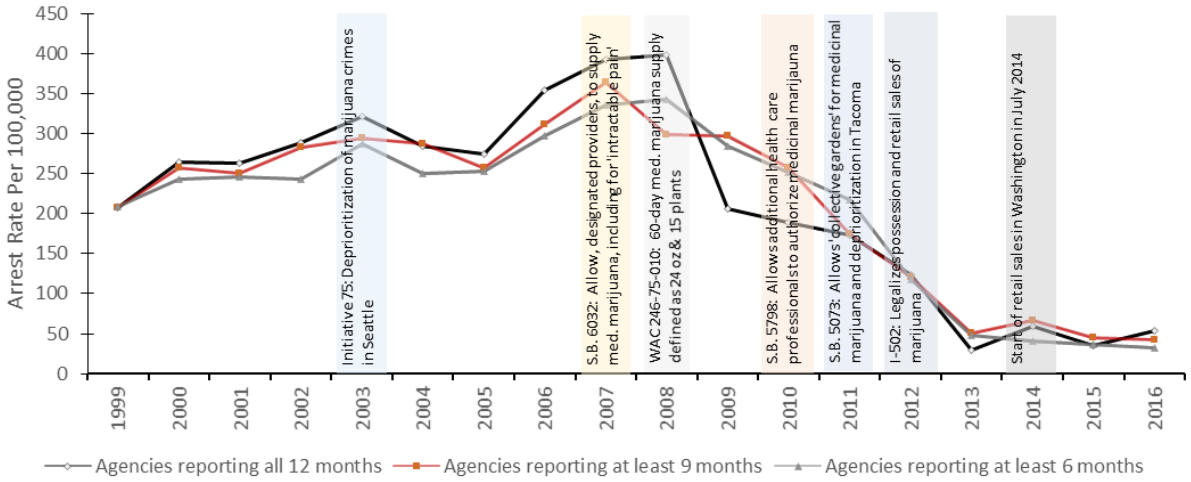
We explore this question quantitatively and qualitatively. In terms of our quantitative analysis, we present descriptive statistics documenting trends in marijuana offenses overall, as well as trends disaggregated by race and age. In addition, we present qualitative data from our interviews and focus group sessions documenting how officers described changes in their handling of crime and offenders involving marijuana before and after legalization. Lastly, we provide a concrete example of officer interactions with marijuana-related offenders by comparing two unredacted BWC footage segments of DUI stops for marijuana to DUI stops for alcohol.

General Trends in Marijuana-Related Arrests

Quantitatively, our results suggest that the legalization of marijuana has dramatically shifted officer attention away from issues relating to possession and personal use. Put simply, legalization resulted in a predictable and substantial decrease in the rate at which individuals were arrested for marijuana-related offenses. Figure 2 displays marijuana possession arrests from 1999 to 2016 using data extracted from Kaplan's "Concatenated UCR" files accessible at ICPSR (Kaplan, 2020). Three separate descriptive line plots were constructed, including one for agencies which reported all 12 months, one for agencies reporting 9 or more months, and one for agencies reporting 6 or more months. Though we accessed the direct UCR files for the remainder of our

analyses, these files were useful for quick descriptive analysis. Importantly, the trends are similar, regardless of inclusion criteria.

Figure 2: Marijuana possession arrests and legislative changes, 1999-2016.



While overall trends were already downward for marijuana possession arrests (from about 2007 to 2008 and onward), the decline jumped substantially in magnitude in 2012. This result is exactly what we would expect from the legalization of recreational marijuana. Importantly, however, research suggests that this decline did not happen uniformly for all types of individuals in the state. Figures 3 and 4 display the marijuana possession and sales arrest rates for Whites and African Americans in Washington State. These racial breakdown figures show that while arrest rates declined significantly for both Whites and African Americans, the declines were substantially greater for Whites; this was the case especially in terms of arrests. As of 2015, the arrest rate for African Americans was 7 times greater than for Whites. The declines for African American arrests for possession were even greater, but still, as of 2015 African Americans were arrested at a rate that was 2.3 times greater than Whites for possession. Though important, these results cannot definitively document the extent to which legalization has reduced (or not) racial disparities in the criminal justice system, as further research on adjudication is required to fully understand the

implications of legalization. Still, these results present an interesting starting point for future research, as our quantitative work cannot determine why these racial disparities persist.

Figures 3: Marijuana Sales Arrest Rates in Washington
Previously published in Lu, et al. (2019).

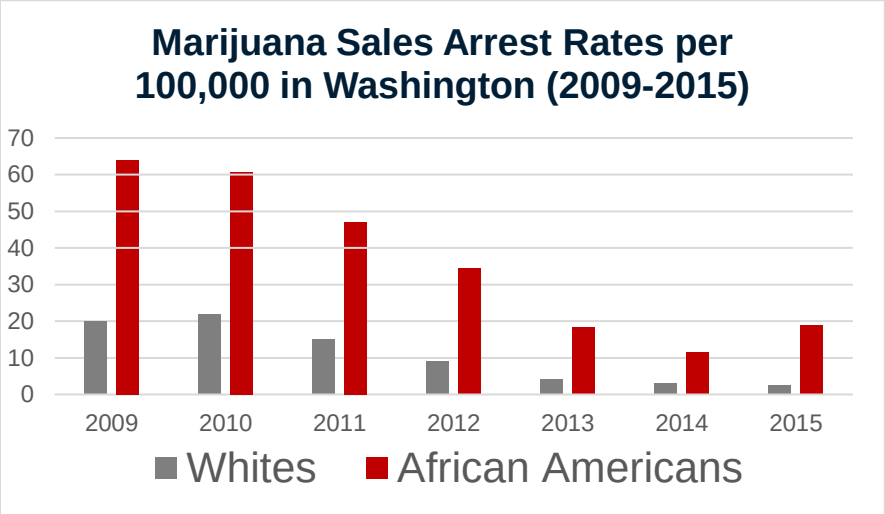
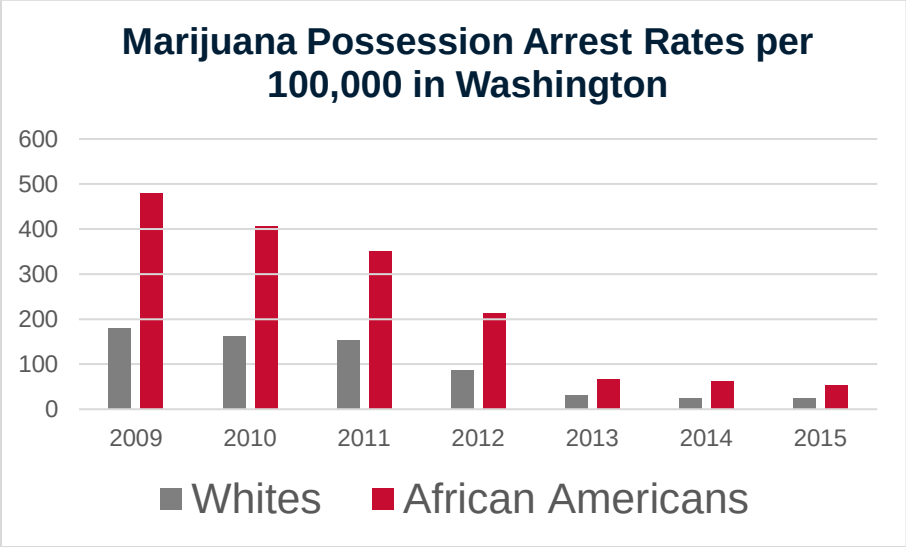
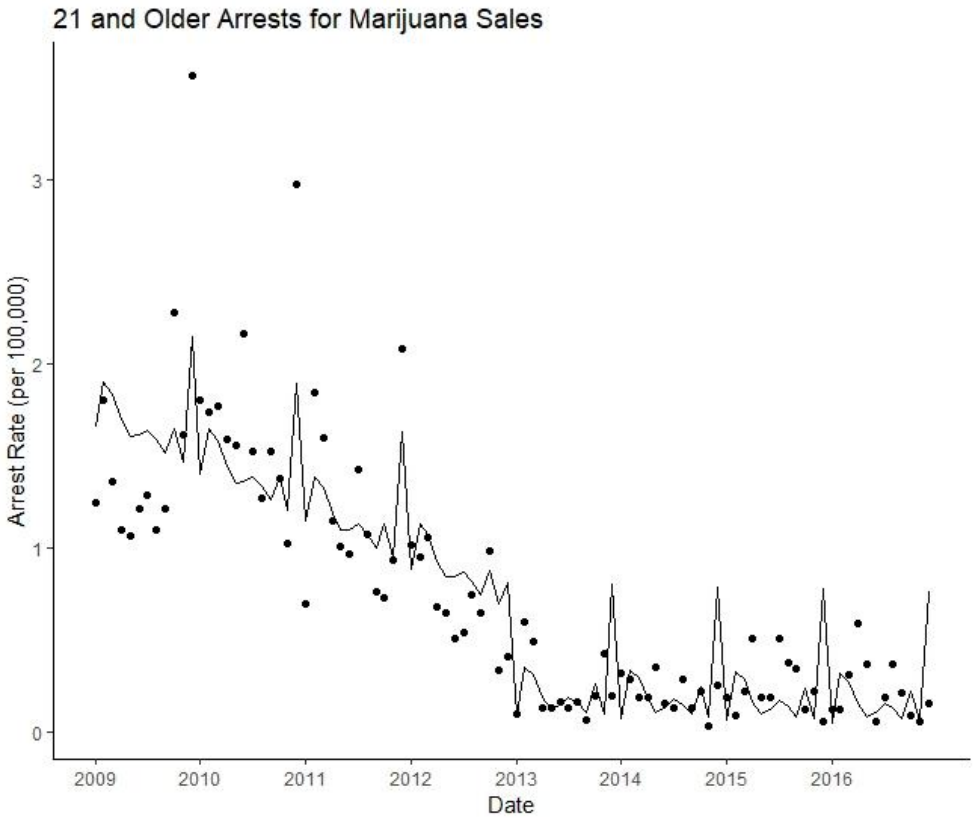


Figure 4: Marijuana Possession Arrest Rates in Washington



In addition, we present general arrest-trends by age below. These figures display observed and predicted arrest rates (from interrupted time-series models) as dots and lines, respectively. Figures 5 through 8 show the trends in possession and sales for those over 21 and under 21, respectively in Washington.

Figure 5: Arrests of Individuals 21 and Older for Marijuana Sales in Washington



Figures 6: Arrests of Individuals 21 and Older for Marijuana Possession in Washington

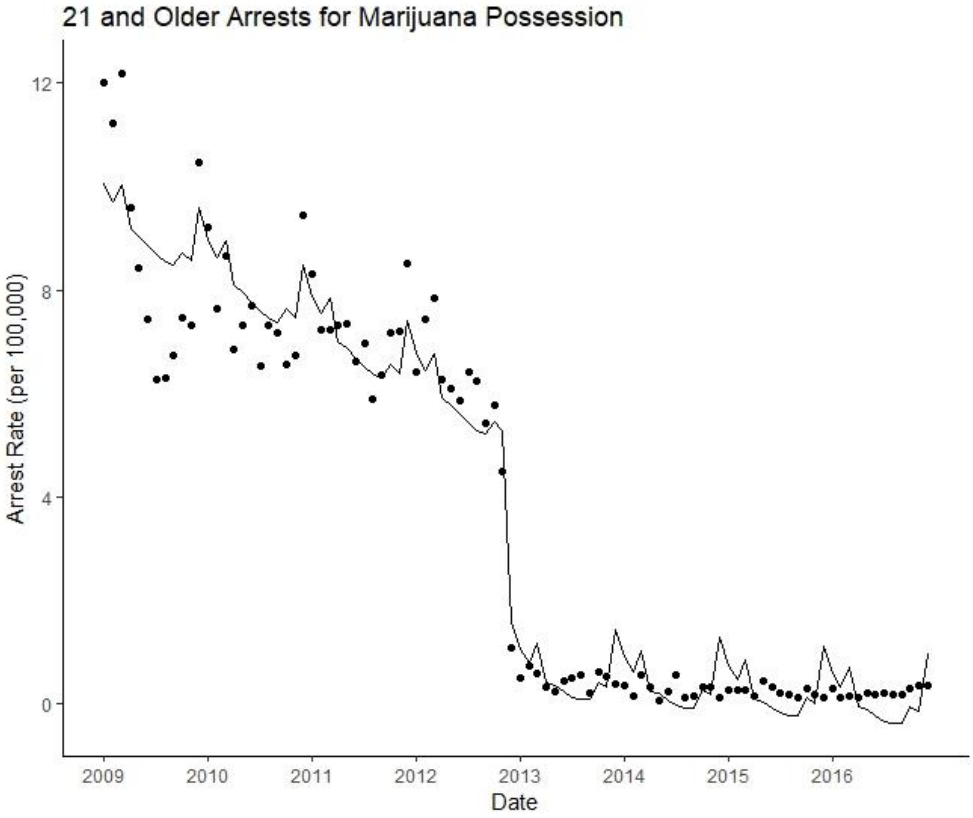


Figure 7: Arrests of Individuals Under 21 for Marijuana Sales in Washington

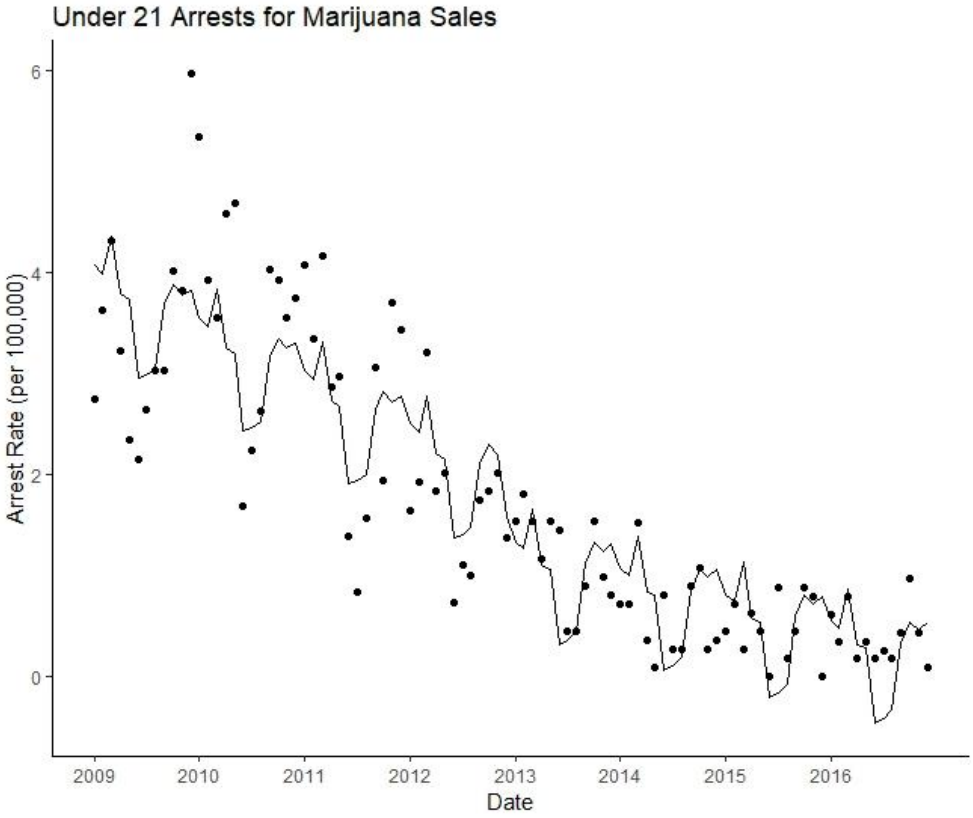
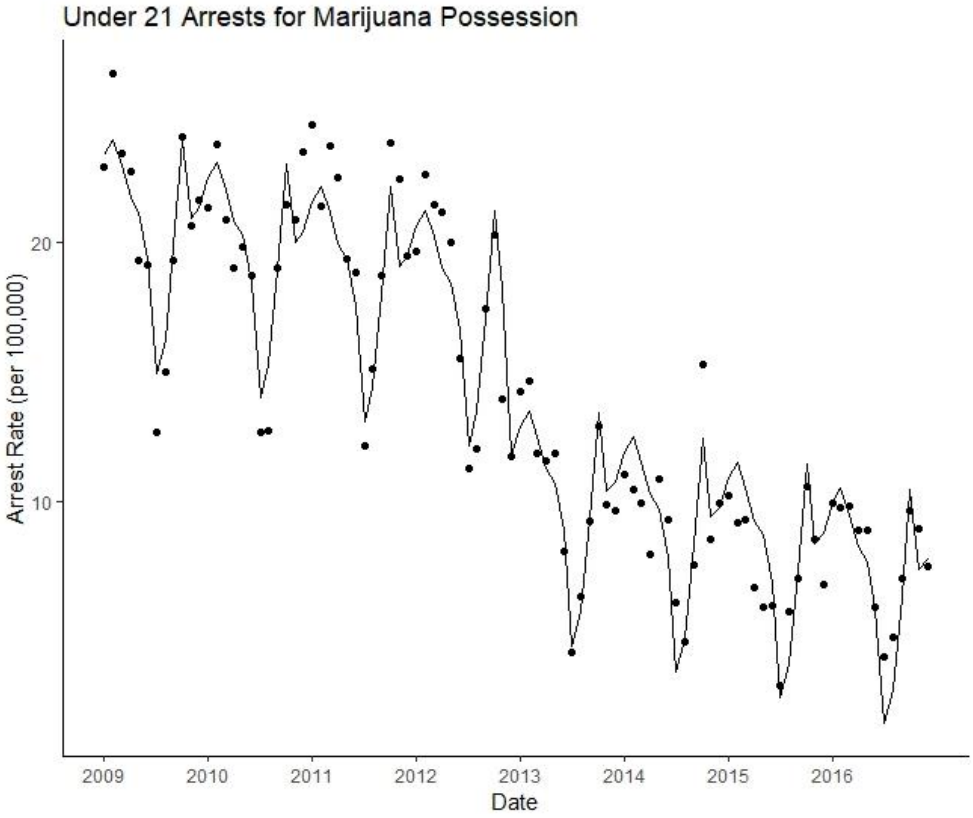


Figure 8: Arrests of Individuals Under 21 for Marijuana Possession in Washington



These results demonstrate that legalization dramatically decreased possession arrests for adults, with rates dropping to close to 0 for adults. Interestingly, there was a precipitous decline for those under 21 as well. This result is interesting, as it suggests that legalization may have reduced the policing of marijuana possession for minors as well as adults. Some officers in our interviews indicated that policing cannabis consumption by youth had become less of a priority since legalization. It is important to note, however, that the drop for minors was not nearly as substantial as that for adults. In addition to the above charts, which examine trends in Washington overall, we also present the results for Tacoma disaggregated below, as the city had previously publicly deprioritized cannabis prior to legalization. Seattle did this as well, but unfortunately, they did not report their monthly arrests for each month over the study period (instead, they report them

at the end of the year, though they do report monthly crime reports). These data reveal that while Tacoma deprioritized earlier than most of the state, there was still a sharp decline (especially for possession for both adults and juveniles) leading up to the point of legalization, at which point rates for these offenses approached zero.

Figure 9: Arrests for Individuals 21 and Older for Marijuana Sales in Tacoma

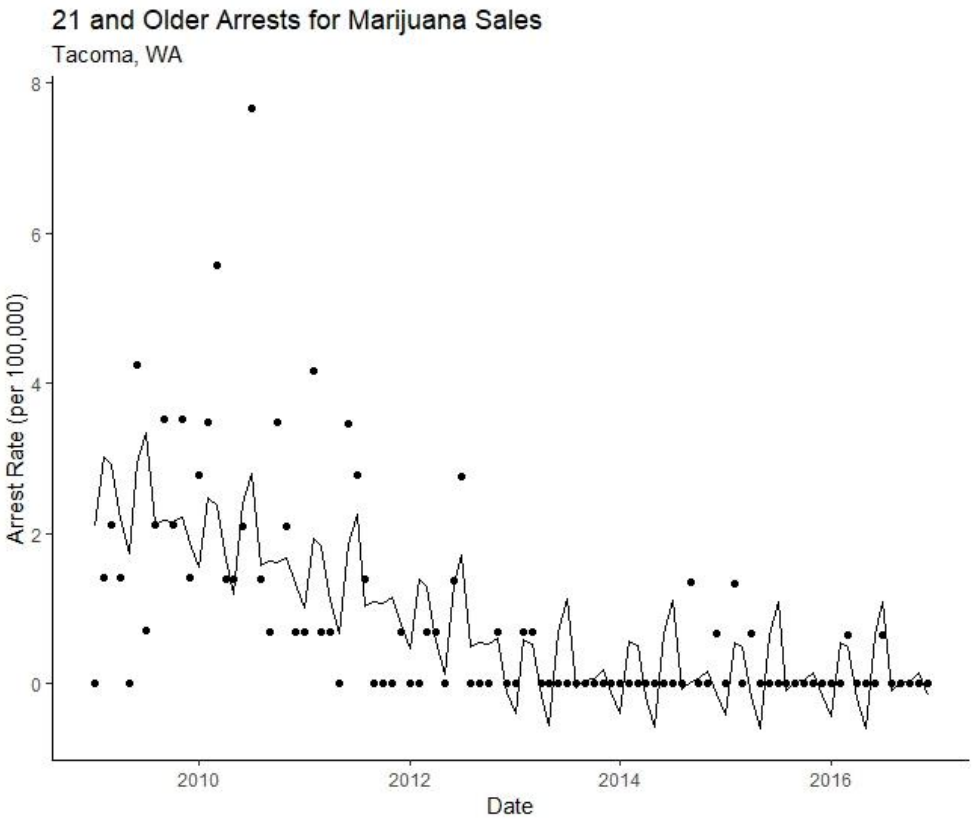


Figure 10: Arrests for Individuals 21 and Older for Marijuana Possession in Tacoma

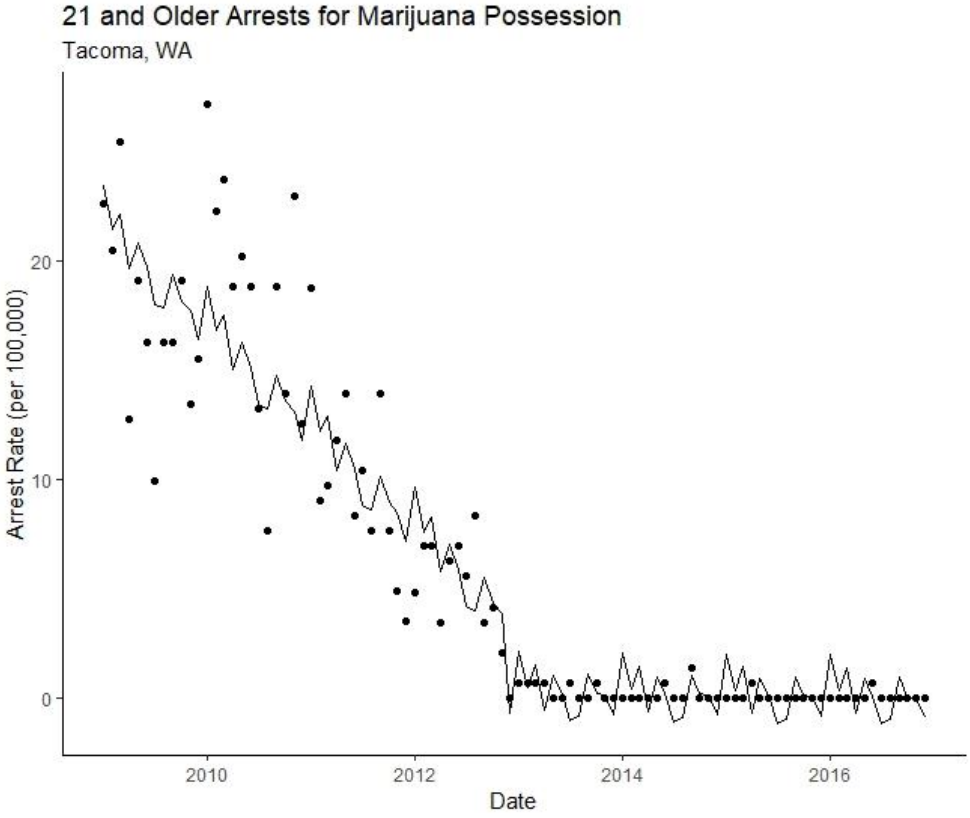


Figure 11: Arrests for Individuals Under 21 for Marijuana Sales in Tacoma

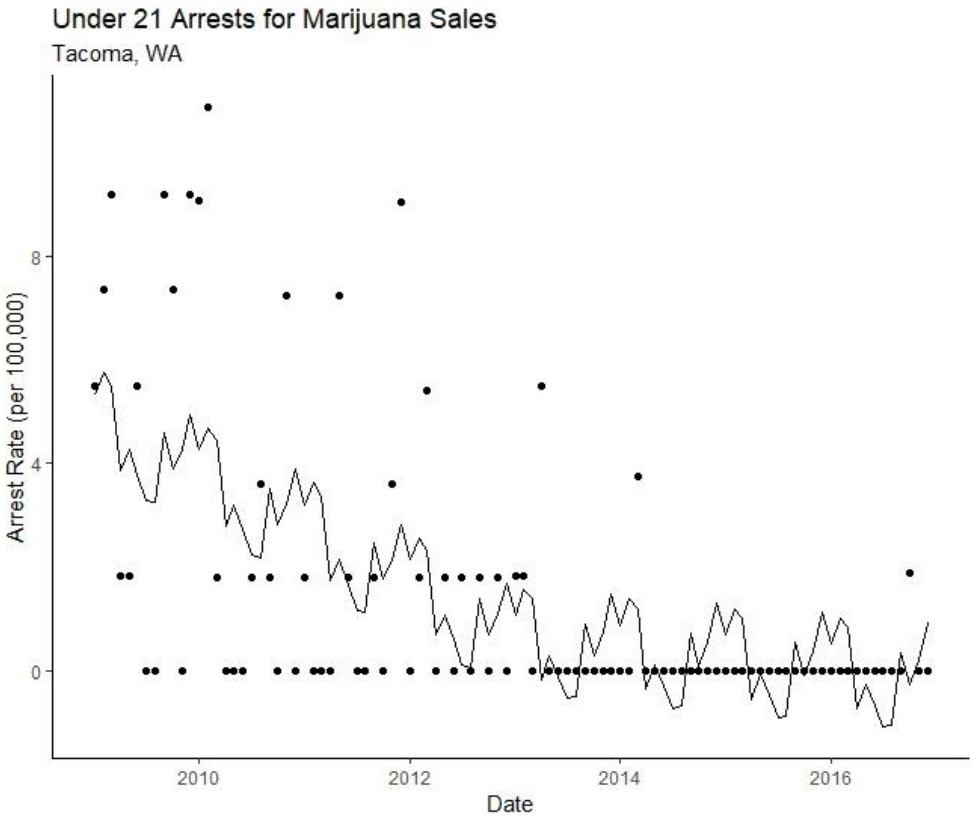
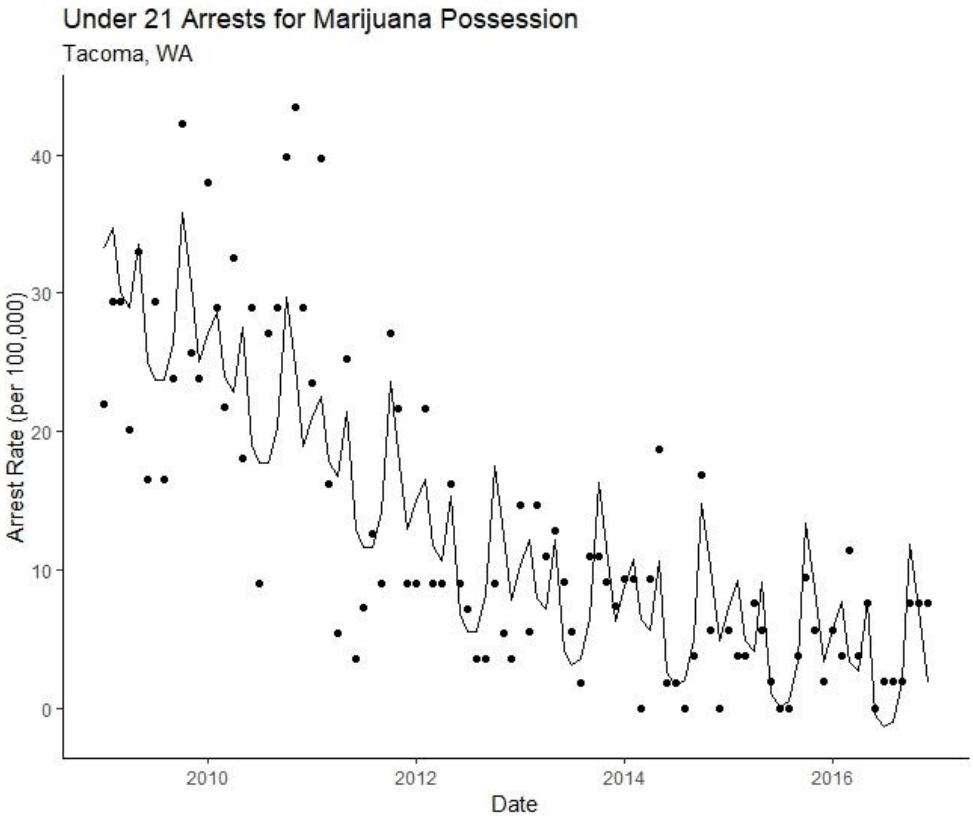


Figure 12: Arrests for Individuals Under 21 for Marijuana Possession in Tacoma



Officer Discussions of Marijuana-Related Offenses: Focus Groups

Less Focus on Cannabis Crimes. Qualitatively, our data also supported the notion that law enforcement was less focused on marijuana-related offenses. This is understandable given that possession by a person over 21 of one ounce of marijuana, bought through licensed retail outlets by an adult 21 and over was legal. However, what of possession of cannabis that exceeded the legal limit, or that was obtained illegally or in the possession of someone younger than 21? Some focus group participants indicated that cannabis, other than very large quantities obtained illegally was a low priority for policing. As voiced by a participant, about its priority even before legalization:

> *…. marijuana was not high on the list of priorities, as far patrol goes. In fact, I would say that for most of my partners, I was told it was more of a nuisance than anything else. It's a misdemeanor so it doesn't give ya a felony hit [as far as other drugs]… unless there*

was an additional charge on top of it, a lot of times that didn't even get charged in the end.

Some participants in the focus group sessions, working in cities that had passed mandates to deprioritize simple cannabis possession years before passage of I-502, reported that there was little change in policing relative to marijuana. This is best expressed in the following statement from a study participant, one who primarily worked on narcotic investigations, "*there's a fallacy that it would free up more time to focus on harder drugs and to focus on other things because task forces, in my experience, were already doing that probably 5+ years ahead of I-5O2*."

Whether policing cannabis remained a priority depended to some extent on jurisdiction. As highlighted in the following exchange, some minor crimes often are no longer prosecuted as they had been before legalization. One focus group participant noted in this very regard, "…. our prosecutor's… they're like, well, you're going to start getting a lot of dismissals….." In those jurisdictions where cannabis crimes had been deprioritized by the police prior to legalization (e.g., Seattle and Tacoma) or in urban counties or larger cities, there was little interest by the police or prosecutors in pursuing minor cannabis crimes before legalization; that interest has virtual disappeared entirely in the post-legalization period. In contrast, focus group participants from smaller jurisdictions in more rural areas of Washington indicate that there was still keen interest in strict enforcement and prosecution when cannabis use or sale behavior constituted a definable crime that would be viewed as too minor in more urbanized population centers.

Effect on Youth. As a superordinate theme, participants expressed a common concern that legalization may have harmful effects on the youth. Though some officers noted general concerns that cannabis serves as a gateway drug, others expressed concern over the myriad of ways juveniles have access to a growing range of cannabis-related products of increasing potency, and the extent to which they may not see this as a harmful "drug" – thinking it is "only weed." Focus group

participants raised concerns over the variability in products (smoking flower, vaping concentrates, consuming edibles, etc.), and the diversion of legal product to juveniles – a theme often overlapping with the linkage between legalization and crime. This concern was widely, but not universally, shared among study participants. One officer expressed this well in the following observation:

> *I think marijuana is a significant… a gateway because the legalization, in my experience, is the legalization has made it to where you go to these parties and the same way that kids obtained alcohol for parties in the past is the same way that they're obtaining marijuana. They pay their friend who is 21 to go to the store in Spokane and buy a bunch of gummy bears or a lot of times it's not the smoke a bowl, smoke a joint, have the wax or the dabs or whatever you want to call it. It's just not as offensive to them, they'll have the gummy bears or the edibles or something like that and you're getting them younger and they're getting exposure in different ways that they don't recognize it as a drug.*

What is particularly important about this exchange are concerns around the normalization of use, increased opportunities for access, and the range of potential exposure in an environment where risk of harm is seen to be minimal. These concerns are amplified when framed with the perception of a lack of public education about the dangers of use for juveniles – specifically around a lack of understanding of potency. For example, consider this perspective of a respondent:

> *...what you're seeing is the higher percentage of THC in marijuana products that are coming out of Washington. People are refining it … and the amount of calls for medical assist through overdose or having a psychological episode due to the higher-grade marijuana. Some 14-year-old kid who thinks he's getting, you know, Cheech and Chong rag weed is actually getting an almost pharmaceutical THC and they lost their mind.*

As expressed by respondents, this lack of education was particularly troubling as it concerned lack of understanding of potency and dosing phenomena. As shared by a participant, "*When I was growing up… we had THC levels of 5 and that was coming from Maui, the old Maui Wowi weed, that's how old I am. But, now THC levels, and I'm the DRE, THC levels are 80, 90% and that's just- I can't even think of what that must do to a person."*

As highlighted by a few participants, to some extent there has been a serious delay in developing proper educational programs and effectively translating them to juveniles (and arguably to adults) as the state has vastly expanded the cannabis industry and reaped enormous tax revenue rewards in the process. As one participant framed the issue, a portion of the responsibility for the delay belongs to the Department of Licensing.

> *I don't think the education piece has [been] gotten to…. because the Department of Licensing is the one that approves the criteria that we teach the kids in Washington State. So, but I don't think they've gotten to that point to where they added the piece that -- okay this is the nanogram level, but we can't give you an example because we don't know what it is yet.*

Cannabis Impairment. One issue discussed by many focus group participants was the challenge that legalization placed for traffic safety and traffic law enforcement more broadly. While Washington adopted a *per se* law making it illegal to operate a motor vehicle if more than 5 ng/ml of THC were present in the blood, officers struggled with how to handle potential cannabis DUI cases. First, several officers noted that they were experiencing more of these incidents than they had in the past. In addition to this, officers indicated that these cannabis-involved DUI incidents took up a considerable amount of their time. As the smell of cannabis and the visual identification of cannabis product are no longer illegal, officers noted that they were forced to rely more on the use of DREs and blood tests to secure probable cause for an arrest. Yet, officers indicated that requesting a DRE or a blood draw, especially in more rural areas, was a time consuming endeavor. One participant summarized the large time commitment of a cannabis DUI involving a DRE as follows:

> *You're talking a 3 or 4 hour DUI arrest. It's a long procedure. And there's no standards for a DUI arrest for THC so how do you, even if you get a DRE to say "yeah they're impaired" and you get, you know, your analysis, how do you- you still can't prove DUI.*

Blood tests were also challenging for officers. Blood draws require a warrant, which could take a considerable amount of time to secure from a judge in many cases. One participant noted:

> *I haven't really done any but when I see patrol officers doing it, it looks like a big pain in the ass because they have to get a warrant, and call the judge and then they have to have someone come and take blood and then they have to send the blood off to the lab and so now we're getting so many marijuana DUIs to me it's like well that's not freeing us up at all, that's making it so we have an officer that's tied up even longer doing his DUIs that used to be real easy when you just get a alcohol DUI and you just say "here blow on this" and you're done so.*

Officer Discussions of Marijuana-Related Offenses: Interviews

Cannabis Crimes. The officer's perceptions of marijuana possession laws seem to focus on confusion regarding legal amounts, a lack of drive to enforce marijuana possession, and the way it is used as an opportunity to educate. Many of the officers explained that changes to the law regarding possession are unnecessarily confusing and that has been causing them enforcement issues: *Now the laws have become very confusing as far as you know possession amounts, legal possession amounts.*

The analysis revealed a substantial amount of discussion regarding perceptions of the act of smoking marijuana flower material and the varying facets surrounding it, including tenant complaints, combining smoking with alcohol, and the variety of locations where smoking is legal or illegal.

> *Like I said before, more of the calls for the odor, "oh hey my neighbor's smoking marijuana" those things have increased a bit.*

> *It seems like it's your average person that smokes marijuana for recreational purposes they're drinking alongside of it, they're drinking beer and maybe smoking marijuana, they're partying. Doing whatever is offered to them.*

Several officers discussed the laws regarding smoking marijuana in public, both within the context of the confusion regarding legal spaces in which to smoke, and the penalties for doing so, as illustrated by this one officer who demonstrates that handling infractions such as public smoking

are better handled in an informal manner:

> *If they uh, came across somebody that was maybe smoking marijuana outside, let's say, which is against the law, right? In a, in a public area, there may be a tendency to give them a warning and not necessarily to take enforcement actions which I consider would be formal.*

Juveniles. The officers' perceptions derived from the interviews regarding juveniles focused primarily on four organizing themes: juvenile usage of marijuana, marijuana as a gateway to other drugs, juvenile access to marijuana after legalization, and the concept of educating juveniles on the topic. Officers discussed their perceptions of juvenile marijuana usage which, as demonstrated below, was often contradictory. Some officers stated that youth possession of marijuana had increased since legalization and was now more frequent than possession of alcohol or cigarettes, as exemplified in this direct statement: *It's more-I see youth using or possessing marijuana more than cigarettes or alcohol, now.* However, other officers opined that no real change in juvenile possession has taken place. What is important about this contradiction is the demonstration of the conflicted nature of perceptions and reactions to marijuana legalization, with opposite perspectives regarding the same topic demonstrated by several officers.

> *I mean juveniles, uh we-we've had problems just like any other department, and with juveniles possessing marijuana and alcohol, and I don't, I don't see it as a-there, I don't see a big rise in juveniles possessing it.*

Officers frequently articulated their view of marijuana as a gateway drug leading to the use of illegal narcotics and poly-drug usage. While this is a contentious issue, many officers were verbose regarding their belief that marijuana is a dangerous gateway drug, even eschewing outside perspectives. Whether these views are accurate or not, they are prevalent throughout the interviews demonstrating that this is a commonly held view among the interviewed members of law enforcement (though not all), a finding which raises further questions.

> *Regardless of what people say, marijuana is a gateway drug, it is addictive, it is harmful.*

> *I mean he, and I'm not trying to say that everyone's going to start smoking weed and become a meth addict, but and this was a legitimate guy who owned his own business, had was very successful, married, had you know house the trucks, all the glorious stuff you get when you know you're successful and now he was scrounging copper wire out of an abandoned house to make 25 cents and he had attributed all that, all of his failures now from when he first started smoking weed when he was successful and had some extra coin and just started casually smoking marijuana and it just progressed down this horrible path for him.*

> *Um, the other thing's that it's a great gateway drug, you have these 15-16 year-old kids that, they get high off mom and dad's supply or older brother goes and buys it for them, and then they start looking into the poly-drug world.*

Perceptions of juveniles' involvement with marijuana ranged from issues with children coming to school smelling like marijuana to having immediate access to marijuana in the home from their parents' or siblings' personal stashes. Linked to this is the previous concept of marijuana as a gateway drug. This hypothetical example given by an officer demonstrates the complexities of marijuana enforcement, especially given the potent odor of weed. This is a prevalent issue within the data; officers can smell the marijuana but are unable to determine legality, such as with grow sites or private domiciles.

> *Say uh, say for example a fifth grader comes to school and just reeks like marijuana well one that doesn't mean that he's using marijuana it could just be that his parents are smoking marijuana and it's perfectly legal for them to do so and CPS can't do anything because again just because a kid smells of marijuana doesn't mean that they're using marijuana and you can't say it's a – they can't say this is a dangerous environment for the child to be in if it's legalized.*

Transnational Criminal Organizations. Contrary to the commonplace assumption that marijuana legalization would displace the illegal black market, several officers suggested that transnational criminal organizations were not only still importing and selling marijuana after legalization, but they were effectively operating as a competing re-seller, albeit an illegal one, with a cheaper product than can be purchased at legal retailers.

> *What we understand is they have expanded their customer base and they're just operating a parallel universe; the Mexican drug traffic organizations are just operating in tandem*

with California, Colorado, and Washington offering you an alternative product that's cheaper.

Illegal Grow Site Enforcement. Many officers expressed their view that enforcement of illegal grow sites is now minimal or has stopped completely since legalization. The officers shared that only substantially large scale grows are investigated now, whereas prior to legalization aerial flyovers were used to locate small grow sites that necessitated investigation.

Maybe a couple times a year we'd get a big grow because they'd do the flyovers. They've basically completely given up that kind of enforcement though.

We will only go after people that are growing marijuana when it's large scale and it's creating- it's creating a problem.

This trend highlights the issue that illegal growing is no longer an enforcement priority, even though officers suggested that large scale grows involve a variety of organized crime groups, substantial illicit finances, and substantial inter-state drug trafficking.

Officers noted a common theme prior to legalization that law enforcement resources would be reallocated in the wake of legalization to focus on other crimes, but many officers expressed that not only was this not the case, but for several officer's legalization has led to an increase in time spent on marijuana-related law enforcement. While this issue is relevant to several other superordinate themes, it also relates to the enforcement of illegal marijuana growers.

The other thing that was interesting to me is the legalization campaign was about how we're gonna now reassign law enforcement resources to deal with real crime, right? They would free-up all these resources, right? Well that's not what's happened. Now we see people coming back around to us saying, well, now we need you to go after the marijuana growers. It's the marijuana growers that just don't happen to have the state license, right? So, if we were actually to-my agency, in particular, and our task force-if we were to actually respond to some of those requests that have come our way, we would be more involved with marijuana enforcement than we were before I-502.

Illegal Grow Site Locations. Several officers discussed the complexities of illegal grow site locations and how they influence enforcement. This includes grow sites located on federal or state

property, and the complexities encountered in moving investigations forward. *We've had cases that in National Forests of people growing marijuana and they, the U.S. Attorney's Office declined.*

Further to this point is the complex issue of grow awareness, such as when officers smell marijuana and default to assuming the grow is legal, as it very well may be, which affords illegal growers the opportunity to remain undetected. This, coupled with the lack of effort to seek out illegal grow sites, suggests that officers believe that there are many illegal grow sites which they are unenthused or unwilling to investigate. This concern is exemplified in the following quote from a study participant.

> *Let's say a Vineyard out by the [redacted] area and you smell marijuana and you start to think to yourself, that's odd, but maybe somebody's out here growing weed because it's a legal grow. And you completely discount. And when you start discounting that stuff, that's where they continue to slide under the radar.*

Many officers discussed the usage of houses to conceal grow sites, including entire buildings. Some officers demonstrated how these set-ups are used by transnational criminal organizations to grow and distribute marijuana from within a legal state, with the prior comments regarding lack of investigation and enforcement makes it easier to do so. Officers shared examples of both large- and small-scale operations.

> *Typically, might see somebody growing marijuana in their basement, and maybe it's the entire basement, and they've got "some great ventilation and electrical systems set up, and maybe it's a shed. But not- not in (redacted), entire homes that are being used just to grow marijuana.*

> *The organized crime ring there that bring in cash, buys homes in our county for cash or it's hard to-- some of them, I think, have a mortgage but most of them are just cash rich-- and turn over that entire house to nothing but growing marijuana and then they, are far as we understand it, they are shipping it back East where they can get a lot more money in New York and South Carolina and [redacted], the places that have been mentioned to me as the where this is gonna go. So, and we found these homes and in our 30 cases with our 80 homes, we usually find a big stash of cash too so of the-in the 80 homes they've recovered over 1 million dollars in cash.*

Retail stores were discussed for several distinct reasons: 1) officers' perceptions of the ways in which they seem to be helping illegal distribution; 2) the prevalence of stores within cities, and 3) the costs and packaging of legal marijuana sold in retail stores. Officers seemed concerned with the ways in which retail stores lead to marijuana reselling while others, as mentioned previously, suggested that the prohibitive costs of legal marijuana are pushing consumers to illegal sources, as illustrated by these comments:

> *That you're not supposed to be sharing it with your friends, you're not- you can't go to the marijuana store, get an ounce and give an eighth of an ounce to each one of your friends and have them give you money and that's still distribution.*

> *So these-these, for an ounce of marijuana, you know, it's cheaper to go to a guy selling in the alley behind the marijuana store than it is to go into the store and buy it.*

Enforcement Priorities for Prosecutors. Officers discussed the enforcement priorities both before and after the passage of I-502, stating that many Washington prosecutors were already de-prioritizing marijuana before legalization and now will seldom prosecute except for quite extreme cases involving large volumes of contraband.

> *We had a mandate passed in our city, I think it was (redacted) or (redacted) years ago that it will be our lowest priority as a police department, marijuana will be. This was before it was legalized in the state, so it was already pretty low.*

It was clear that within many departments marijuana was already being de-prioritized prior to legalization, and that since legalization it may have actually become more of an enforcement priority. Officers stated that the complexities of effective marijuana enforcement are so inherently frustrating that in many cases they are simply avoided. In the case of DUI arrests, several officers interviewed stated that if there is also alcohol impairment that can be quantified at the roadside during a DUI, then any marijuana impairment that may be present is ignored.

> *It's almost to the point where it's so frustrating trying to keep up with it that I've almost given up on marijuana prosecution or investigations at all unless it's a substantial amount of marijuana or substantial like funds involved, you know, seizure.*

Traffic. This theme focused on officer perceptions of changes in DUI investigations, the logistics of searches, the usage of police dogs, and the importance of blood to marijuana-related offenses. Perceptions regarding marijuana DUIs included changes in prosecution, problems proving impairment, and the dangers of drivers impaired by marijuana. Officers seemed to believe that marijuana DUIs often were not being prosecuted, further complicating enforcement efforts. This is concerning for officers given the great effort involved in proving impairment with marijuana and obtaining search warrants for blood, that apparently may result in no prosecution. *I don't know I might be speaking out of turn because uh, my impression without data was they're not prosecuting these they're not prosecuting marijuana DUIs.*

One officer stated that post-legalization enforcement is so problematic that it would take serious events to change the system enough to make it usable. As it stands, marijuana DUIs are incredibly time-consuming and complex to investigate that the officer making the comment below believes the state legislature could make statutory changes to improve the situation. He opines:

> *But at the same time, nothing is prepared for the after effects of any of this, and so what ends up happening once you use marijuana DUIs for example, so you know, what it's going to take, is it's going to take 12 DUI marijuana fatalities to force families, to force the legislature to do something more constructive.*

K-9 Dogs. Officers discussed the role of police dogs since the passage of I-502. Dogs that had been trained to alert to all illicit drugs, including marijuana, have now become patrol dogs and not drug dogs since they could not help alert to only the illicit substances. Several officers discussed having to justify the use of police dogs in their departments since the passage of I-502, stating that just because marijuana is legal under specific circumstances there is still a need for a dog that can detect it under illegal circumstances. However, dogs that are trained to alert to a multitude of illegal drugs are now a problem for search legality since the dog may alert to a legal

amount of marijuana leading to a search that finds other illegal goods but no illegal drugs which effectively negates the search.

> *Uh so there was concerns at that time of the marijuana dogs and how they'd be functional in law enforcement and how it affected me was then I had to justify to the prosecutor's office that just because a legal ounce of marijuana is legal for someone over 21 doesn't mean that they're not going to, just like they did before grow in mass quantities and still sell and transport on our streets and highways and so someone carrying an ounce in their front seat doesn't mean that they don't have 25 pounds in the back.*

Logistics of Searches. Officers discussed the changing nature of search warrants at length, including the means by which they are obtained, the training they are given on writing them, and their increased usage because of the need to obtain blood to demonstrate marijuana impairment under the 5 ng/ml *per se* standard. Officers are now reportedly very proficient at writing search warrants for blood because of how frequently they are required to do so.

> *Because if you believe that a driver's impaired, and you establish probable cause for their arrest, or reasonable suspicion to detain them and you believe it is a drug, or narcotic, that is affecting their driving, you have to do a search warrant for blood.*

> *Most of our deputies are so proficient now at writing search warrants for blood that they just get it done.*

Blood Draws. As mentioned previously, blood is now a critical component for marijuana impairment enforcement since blood draws seem to be the *de-facto* method for proving marijuana impairment, the use of warrants to take blood samples has increased, affecting both productivity and the workload backlog of the state toxicology lab. Many officers explained the sheer time taken by blood draw search warrants for suspected marijuana impairment investigations. One officer stated that an officer may only be able to complete one per night: *I have traffic deputies that I know can do two driving while impaired breath samples a night, but typically if you're dealing with a complicated blood draw search warrant you're looking at one.* Other officers clearly demonstrated the extent of the time lost to blood warrants, as stated here: *So, if you do a DUI marijuana with a*

*blood warrant, I mean most guys are probably averaging 3 to 4 hours***.**

Officers described the role that alcohol plays in dealing with DUIs. Given the complexity and time-consuming nature of marijuana DUIs, officers noted that if alcohol was also a factor then the marijuana was not even tested for as part of the case processing. *But on the straight alcohol DUI, if they're in 1.0 [sic] alcohol and we know they're smoking marijuana, we're stopping with the alcohol.*

As mentioned previously, officers faced with alcohol and potential marijuana impairment will effectively ignore the marijuana impairment and focus just on the alcohol as it is easy to investigate, confirm, and handle within a short space of time. One officer clearly explicates this: *Uh, because if you have the alcohol piece, uh you're not usually gonna go write a search warrant and get the blood as well to do both 'cause you have enough just with alcohol.*

BWC Analysis of Cannabis-Related Traffic Stops: Traffic Incident Characteristics

For a quantitative examination of traffic incidents, records for 162 incidents involving alcohol, cannabis, or other substances in two Washington jurisdictions were analyzed for the period March 23, 2016 to February 6, 2019. Table 1 presents frequencies and percentages regarding characteristics of these incidents. Information on 75 incidents were provided by Agency A, and on 87 by Agency B. A total of 56 hours, 45 minutes, and 19 seconds of police-driver interaction was annotated, with the average interaction of 21 minutes. Thirty-four incidents entered either a police agency or hospital, with annotations of the incident stopping at the time of entry. There was a total of 288 unredacted BWC videos associated with these incidents, due to multiple officers being involved in a number of traffic stops. Indeed, though most incidents involved only one officer (53.1%), almost 26 percent involved two officers, with the remaining involving either three or four or more officers (14.2% and 6.8%, respectively). A total of 75 officers from the two

agencies were involved in the incidents. Furthermore, most incidents occurred in 2018 (55.6%) and between the times of 11:00 PM to 6:59 AM (62.3%). This time is particularly relevant as these are most often associated with targeted enforcement initiatives for impaired driving.

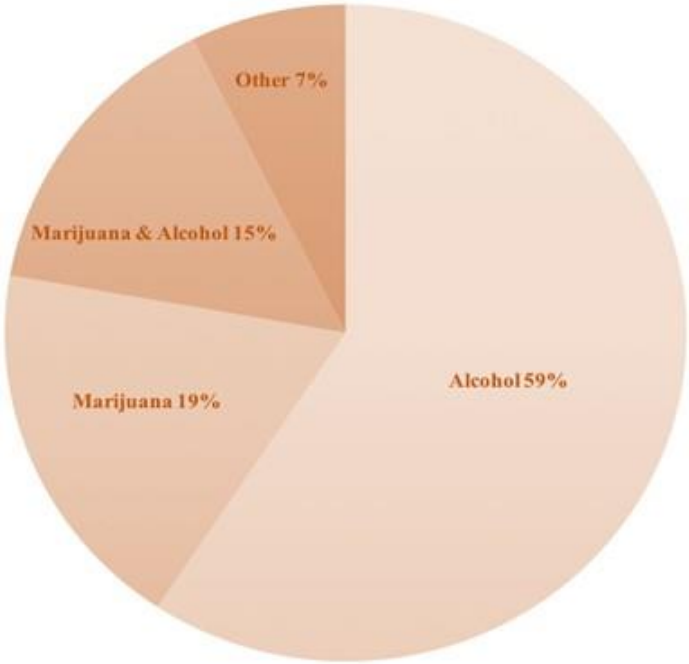
Concerning the type of suspected impairing substances, as visualized in Figure 13 most incidents involved solely alcohol (59.3%). The remaining incidents involved cannabis (18.5%), cannabis and alcohol (14.8%), and other impairing substances (7.4%). Most incidents contained bystanders (59.3%), with a little over 83 percent of those involving the bystanders interacting with the officer. Lastly, the intensity of these incidents was mostly categorized as a normal interaction (67.3%), with 33 percent categorized as having a medium/high-level of intensity. Note variation between agencies is expected as one agency was from the enforcement unit tasked with making impaired stops, whereas the other agency contacts reflect a broader range of duties. There were experiential differences between the agencies and arguably within one agency—that is, some stops were more frequently associated with specific officers.

Table 1: Traffic Incident Characteristics (N = 162)	
Measure	**Frequencies (%)/Mean (SD)**
Agency	
A	75 (46.3)
B	87 (53.7)
Year	
2016	3 (1.9)
2017	46 (28.4)
2018	90 (55.6)
2019	23 (14.2)

Time of Incident	
7:00 AM – 2:59 PM	3 (1.9)
3:00 PM – 10:59 PM	58 (35.8)
11:00 PM – 6:59 AM	101 (62.3)
Length of Interaction (MM:SS)	21:01 (11:37)
Substance Involved	
Alcohol	96 (59.3)
Marijuana	30 (18.5)
Marijuana & Alcohol	24 (14.8)
Other Substance	12 (7.4)
Number of Officers Involved in Incident	
1	86 (53.1)
2	42 (25.9)
3	23 (14.2)
4+	11 (6.8)
Bystanders Present	
None	66 (40.7)
One	43 (26.5)
Two - Four	31 (19.1)
Five - Ten	14 (8.6)
More than 10	8 (4.9)
Bystander Interaction[a]	80 (83.3)

Incident Intensity	
Normal Interaction	109 (67.3)
Medium/High-Level of Intensity	53 (32.7)
Note. [a]Only calculated for incidents in which bystanders were present.	

Figure 13: Type of Substance Involved in Traffic Incidents



Driver Characteristics and Behaviors

Table 2 presents descriptive statistics for driver characteristics and measures of certain behaviors. Most incidents involved male drivers (73.5%) and those identified by the researchers as being white (77.2%). Driver resistance only occurred in a little over 12 percent of incidents. The driver attempting to deceive the officer was more common and was present in a little over 31 percent of incidents. An example of deception that is common in traffic incidents involving alcohol or drugs is lying about whether they are under the influence of a substance. Lastly, almost 30 percent of incidents involved the driver use profanity.

Table 2: Driver Characteristics and Behaviors (N = 162)

Measure	Frequencies (%)
Male Driver	119 (73.5)
Driver Race	
White/Caucasian	125 (77.2)
Black/African American	17 (10.5)
Other	22 (12.3)
Ethnicity – Hispanic	26 (16.0)
Resistance	20 (12.3)
Attempted Deception	51 (31.5)
Profanity Use	48 (29.6)

Police Officer Behaviors

Table 3 presents descriptive statistics for measures of certain police officer behaviors. Almost half of the incidents involved the officer stating a reason for stopping or encountering the suspect (49.4%), with a little over two-fifths involving the officer asking for the drivers' input on the reason (41.4%). In almost 23 percent of incidents, the officer asked the driver about their wellbeing (i.e., are you feeling okay?). A little over 18 percent of incidents involved the officer using profanity in the interaction, with the officer explaining the next steps to the driver in over half (i.e., you will receive a citation in the mail with information regarding your court date). Officer empathy, de-escalation tactics, and use of force occurring in a low percentage of incidents (11.1%, 10.5%, and 8.6%, respectively). In addition to the officer behaviors mentioned, a number of procedure-related measures were captured as well. Almost half of the incidents involved the officer stating that the driver was being recorded by their BWC, with almost 18 percent of these statements being made prior to an arrest occurring. Furthermore, the driver was reminded of their rights in a little over forty-seven percent of incidents, with almost four percent being reminded prior to an arrest occurring. Most incidents involved the officer searching the suspect (73.0%). The average duration of a search was one minute and twenty-one seconds, with almost 5 percent being

conducted prior to an arrest occurring. Furthermore, as these incidents involved traffic stops and some type of substance involvement, we identified whether a standard field sobriety test (SFST) was conducted. Most incidents were associated with a field sobriety test being conducted with an average duration of six minutes and eight seconds. The last officer behavior we captured was whether there was an arrest, detainment, and/or a citation occurred. Only thirteen percent of incidents did not involve an arrest, detainment, or citation. Many incidents involved an arrest (80.2%) with a little over four percent involving a detainment and an arrest, and the remaining involving another type of outcome (i.e., citation or detainment only).

Table 3: Police Officer Behaviors (N = 162)

Measure	Frequencies (%)/Mean (SD)
Stop Reason Given	80 (49.4)
Officer Asks Driver Input on Reason	67 (41.4)
Officer Asks about wellbeing	37 (22.8)
Officer Empathy Statement	18 (11.1)
Officer Uses De-escalation Technique	17 (10.5)
Officer Profanity	30 (18.5)
Officer Statement of BWC Recording to Driver	80 (49.4)
Officer Statement of BWC Recording Before Arrest Occurred	29 (17.9)
Officer Read Driver their Rights	77 (47.5)
Officer Read Driver their Rights Before Arrest Occurred[b]	6 (3.7)
Conducted Searched	119 (73.0)
Duration of Search (MM:SS)[c]	01:14 (01:21)
Search Conducted Before Arrest Occurred[c]	8 (4.9)
Officer Explains Next Steps	86 (53.1)
Field Sobriety Test Conducted	120 (74.1)
Duration of Field Sobriety Test (MM:SS)[d]	06:08 (02:49)
Use of Force	14 (8.6)
Arrest/Detainment/Citation Occurred	
No	21 (13.0)
Arrested	130 (80.2)
Detained & Arrested	7 (4.3)
Other	4 (2.5)

Note. [a]Only calculated for incidents in which the officer stated the suspect was being recorded. [b]Only calculated for incidents in which the driver was read their rights. [c]Only calculated for incidents in which a search occurred. [d]Only calculated for incidents in which a field sobriety test was conducted.

Summary of Body Worn Camera Findings

The approach to the BWC analysis was documenting cannabis-involved interactions and examining to what extent they may differ when compared to other suspected impairment interactions. The qualitative component of this research documented officer perceptions that legalization increased time-in-field handling suspected traffic related impairment of cannabis. Working with institutional partners it was determined call logs were not an appropriate data source given high variability and a lack of precision. As such, BWC footage provided an opportunity to

document officer time associated with these contacts and how these contacts transpired. Importantly, this sample of 162 interactions should not be viewed as generalizable. In what follows, we present the results of multivariate analysis examining how/if objective measures of incident characteristics, driver characteristics/behaviors, and police officer behaviors vary by type of substance (alcohol, cannabis, alcohol and cannabis and other substances) involved in traffic incidents.

Table 4 shows the results of the ordinary least squares (OLS) regression to examine if, and how, the duration of a contact varies based on the suspected substance type. Results demonstrate no statistically significant differences between the race or gender of the driver and the duration of the field contact. Interactions involving suspected impairment associated with "other" drugs, in comparison to those involving suspicion of alcohol, take more time. Not surprising, interactions involving an SFST were associated with longer contacts. In traffic incidents where a field sobriety test was conducted, we found no statistically significant results indicating that while controlling for race and gender of the suspect, the duration of the field sobriety tests do not differ significantly between the substances involved in the traffic incident.

Table 4: OLS Regression Examining Duration of Conduct Involving Suspected Impairment

Variables	Duration of Interaction (n=162)	Duration of FST (n=120)
Race (Other Reference)		
White	41.82 (290.23)	17.36 (45.81)
African American	-133.79 (406.25)	-40.54 (68.75)
Gender		
Male	294.82 (215.18)	-17.70 (35.34)
Suspected Impairment (*Alcohol Reference)*		
Cannabis	418.64 (289.99)	-5.45 (45.95)
Alcohol and Cannabis	172.33 (263.11)	-16.93 (46.69)
Other Drugs	2476.93*** (370.13)	71.58 (61.00)
Field Sobriety Test Conducted		
Conducted	667.14** (218.12)	
Constant	1073.6** (363.95)	369.28*** (46.88)
R-Squared (Prob > F)	.24***	-.02

* p < .05., ** p < .01., *** p < .001.

Next, we use a series of binary logistic regressions to better understand how/if officer behaviors vary depending on the substance involved in the traffic incident. In these analyses, we control for the race and gender of the suspect. As displayed in Table 5, as it concerns the officer stating the reason for the stop and explaining the reason for the stop, we do not observe any statistically significant differences concerning the suspected substance of impairment. Our original intent was to code for admissions of guilt. However, there were concerns admission of using a substance was not admission of impaired driving. In fact, across our review of BWC footage, it was rare for an officer to ask if the person felt impaired. Rather, questions focused on 1) if they used a substance, and 2) the duration of time of the most recent exposure. As such, we turned our

attention to deception. Importantly, and as aforementioned, the measure of deception necessitates proof. As such, our measure of deception is best viewed as "proven deception." During the interaction, the suspect must make a declarative statement, which is later proven to be false. For example, if a driver responded, "I have not had a drink today" and later in the interaction stated, "I may have had a few earlier." The incongruence between these two statements represents deception. Additionally, a driver when asked if they had cannabis, stating no, who later, during a search revealed cannabis would be coded as deception. Results indicate that, when controlling for the race and gender of the driver, incidents involving "Other Drugs" were statistically more likely to engage in deception. Given the potential for high emotionality within these interactions, we were interested in capturing directed profanity. Results indicate the odds that the driver uses profanity increases if the traffic incident involves both alcohol and cannabis when controlling for other variables in the model ($p < .001$).

Table 5: Logit Regression Examining Encounter Level Measures

Variables	Officer Asks About Well-Being	Officers Provides Stop Reason	Officers Explains Stop Reason	Proven Deception	Suspect Profanity
Race (Other Reference)					
White	.13	-.24	-.58	.49	-.16
	(.61)	(.49)	(.52)	(.60)	(.56)
African American	.24	-.05	-.38	1.13	.62
	(.84)	(.68)	(.73)	(.77)	(.77)
Gender					
Male	.13	-.51	.58	-.48	-.30
	(.44)	(.36)	(.44)	(.39)	(.41)
Suspected Impairment (*Alcohol Reference)*					
Cannabis	-1.77	.46	.06	-.19	-1.27
	(1.05)	(.49)	(.54)	(.57)	(.78)
Alcohol and Cannabis	.76	.51	-.20	.72	1.56***
	.46	(.44)	(.52)	(.46)	(.46)
Other Drugs	.10	.19	-.03	1.59*	.27
	(.72)	(.62)	(.72)	(.66)	(.67)
Constant	-1.46	.39	-.99	-1.17*	-.79
	(.65)	(.52)	(.57)	(.62)	(.58)
R-Squared (Prob > F)	.05	.01	.01	.06*	.09**

* p < .05., ** p < .01., *** p < .001.

RESEARCH QUESTION 2: What are the effects of marijuana legalization on crime, crime clearance, and other policing activities statewide, as well as in urban, rural, tribal, and border areas?

To address this research question, we present quantitative analysis on crime and crime clearance trends using an interrupted time-series analysis approach, as well as qualitative analyses derived from our focus group sessions and personal interviews. The qualitative data analysis suggested that officers were experiencing shifts in the character of their policing activities that might not be captured with crime and crime clearance rate analyses alone. As such, we conclude with a brief analysis of calls for service data from a select group of our MOU partners.

Legalization and Crime Rates

One of our primary tasks was to assess the degree to which legalization was related to serious crime rates in Washington. One of the early research publications (Lu et al., 2020) detailed our analytic approach and the results. We estimated a series of multi-group interrupted time-series models comparing Washington to a set of 21 "control" states (those without any laws permitting legal access to marijuana) from 1999 to 2016 on monthly violent and property crimes (UCR Index Crimes), as well as additional models examining monthly rape, robbery, aggravated assault, burglary, larceny, and motor vehicle theft crime rates. The 21 states included in the control-group for this analysis are: Alabama, Georgia, Idaho, Indiana, Iowa, Kansas, Kentucky, Mississippi, Missouri, Nebraska, North Carolina, Oklahoma, South Carolina, South Dakota, Tennessee, Texas, Utah, Virginia, West Virginia, Wisconsin, and Wyoming. These states are quite different from Washington in terms of geography and politics, yet we opted for these states as a control group to better isolate the effects of recreational legalization, as including states with medicinal laws would create overlaps that are difficult to parse out.

The statistical models presented include a "treatment" by "time" pre-intervention interaction, which allows the researcher to determine whether the pre-treatment trends for the control states are similar to Washington. Results indicate that property crime rates overall, burglary rates, larceny, and robbery rates were significantly different pre-treatment, whereas violent crime rates overall, aggravated assault, and auto theft rates trends were not significantly different between Washington and the control states. Therefore, the comparison is not perfect and this implies some caution should be taken in our results as definitive as there could be some additional differences between Washington and the control states that our analysis cannot control for directly. Importantly, however, visual inspection of these models (available later in the report) indicate that most of these departures from the parallel lines assumption are not particularly large. Motor vehicle theft presents an additional problem in that it contained nonstationarity patterns that our models could not correct for and, therefore, should be interpreted with additional caution. Other details on the limitations of our models are available in Lu et al. (2019).

For our models, we estimated a series of Prais-Winsten time-series models which account for autocorrelation and correct for heteroskedasticity (variance). These models also accounted for seasonal variation by the inclusion of dummy variables for each month in the 18-year series. To ensure robustness, we estimated the models using a variety of different specifications, including examining multiple interruption points (both December 2012 for legalization and July 2014 for initiation of legal retail sales), each interruption point individually, as well as models which examined the natural logarithm of crime rates to further protect against heteroskedasticity. Lastly, we calculated the augmented Dickey-Fuller statistic for each outcome variable to test for stationarity (variance over time). The analysis revealed that only the models for auto theft were non-stationary.

Put briefly, our results did not reveal any broad findings suggesting that legalization increased *or* decreased serious crime rates in Washington compared to the control states. The full tabular results for these models are available in the published article. Here, we present graphic evidence (derived from simplified versions of the interrupted time series models to better facilitate visual inspection) related to both violent and property crime, even when disaggregated by Part 1 crime type.

Figure 14: Violent Crime Rates in Washington and Control States, 1999-2016
Previously published in Lu, et al. (2019).

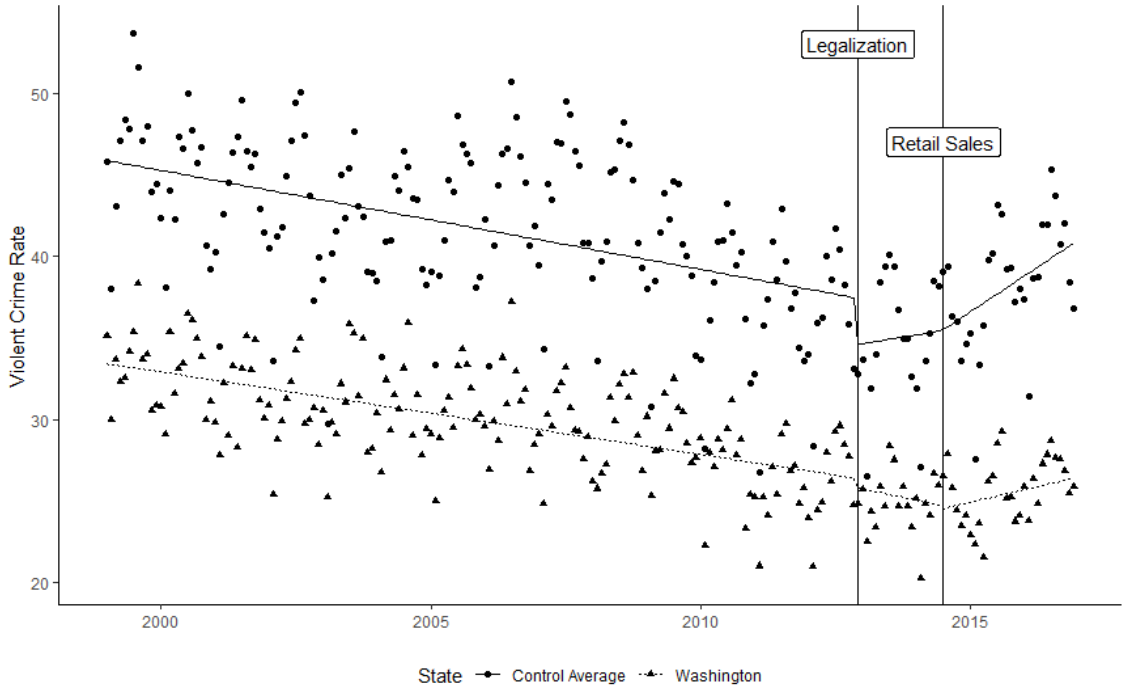
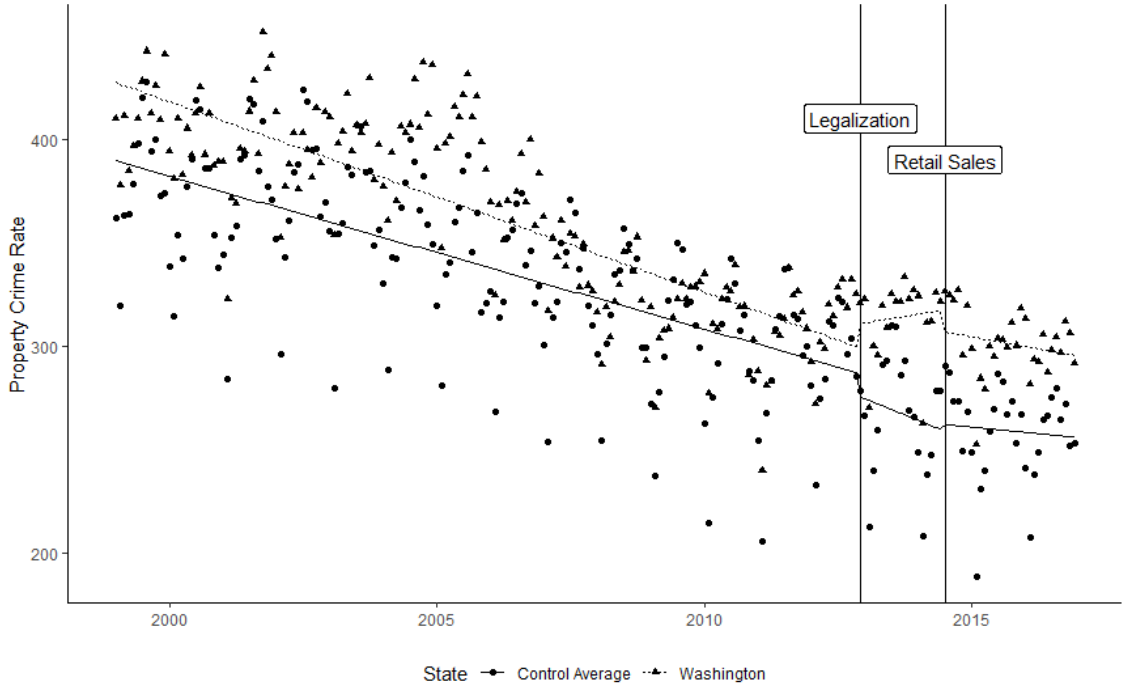


Figure 15: Property Crime Rates in Washington and Control States, 1999-2016
Previously published in Lu, et al. (2019).



As demonstrated in the figures above, Washington's violent crime rate has historically run lower than the control states, while the property crime rate has exceeded the average of the control states. Overall, however, the trends prior to legalization were very similar for Washington and the control states. Post legalization, but before the start of legal retail sales, there is an increase in property crime and a decrease in violent crime in Washington that are not observed in the control state average. These appear to be short-term shifts, however, as after July of 2014 (the start of retail sales) the Washington violent and property crime rate trends continue to mimic closely the control state average. We also present these crime trends disaggregated by aggregated assault (Figure 16), robbery (Figure 17), burglary (Figure 18), larceny (Figure 19), and motor vehicle theft (Figure 20) below. Overall, there is no apparent pattern by which Washington's crime rates diverged substantially from those states with no legalization laws over the same time period.

Figure 16: Monthly Aggravated Assault Rates Per 100,000 in Washington and Control States

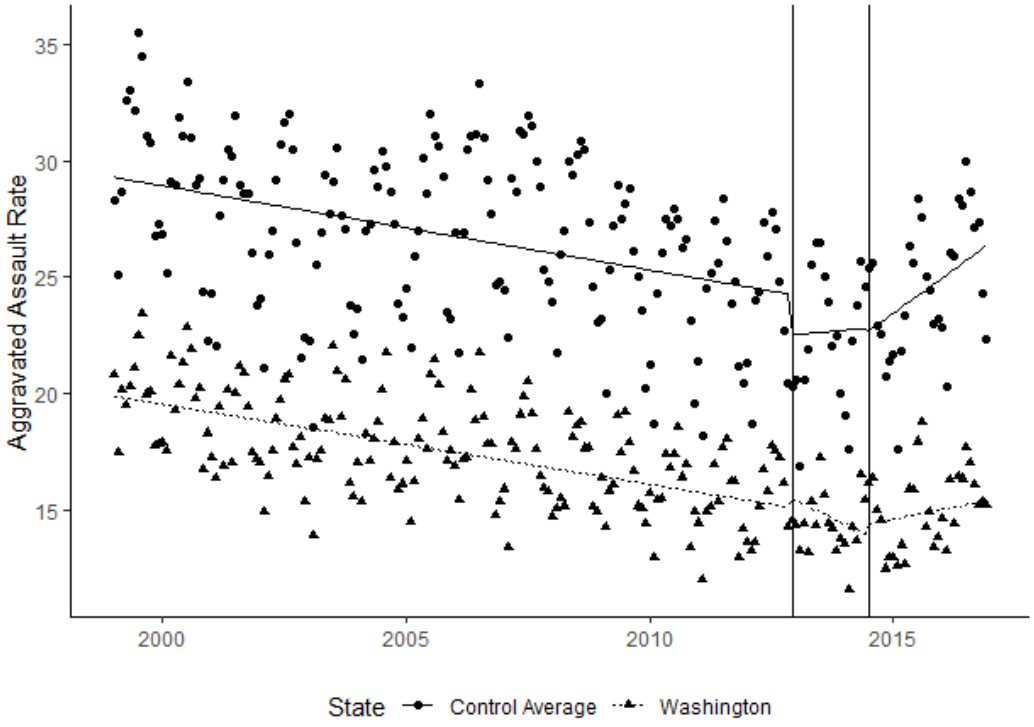


Figure 17: Monthly Robbery Rates Per 100,000 in Washington and Control States

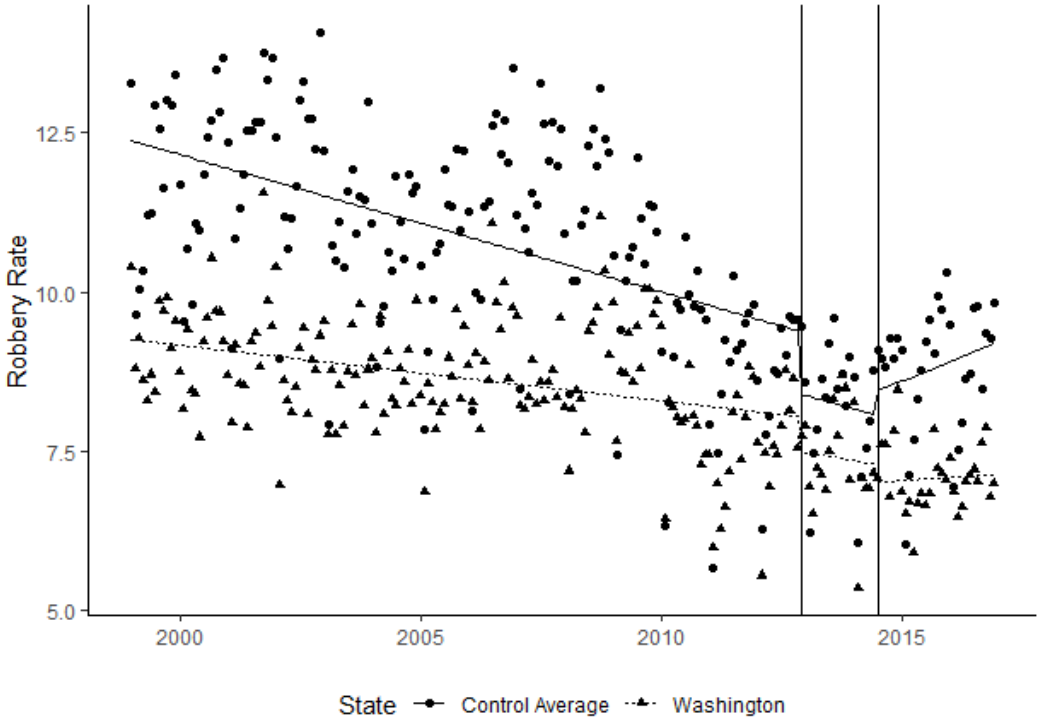


Figure 18: Monthly Burglary Rates Per 100,000 in Washington and Control States

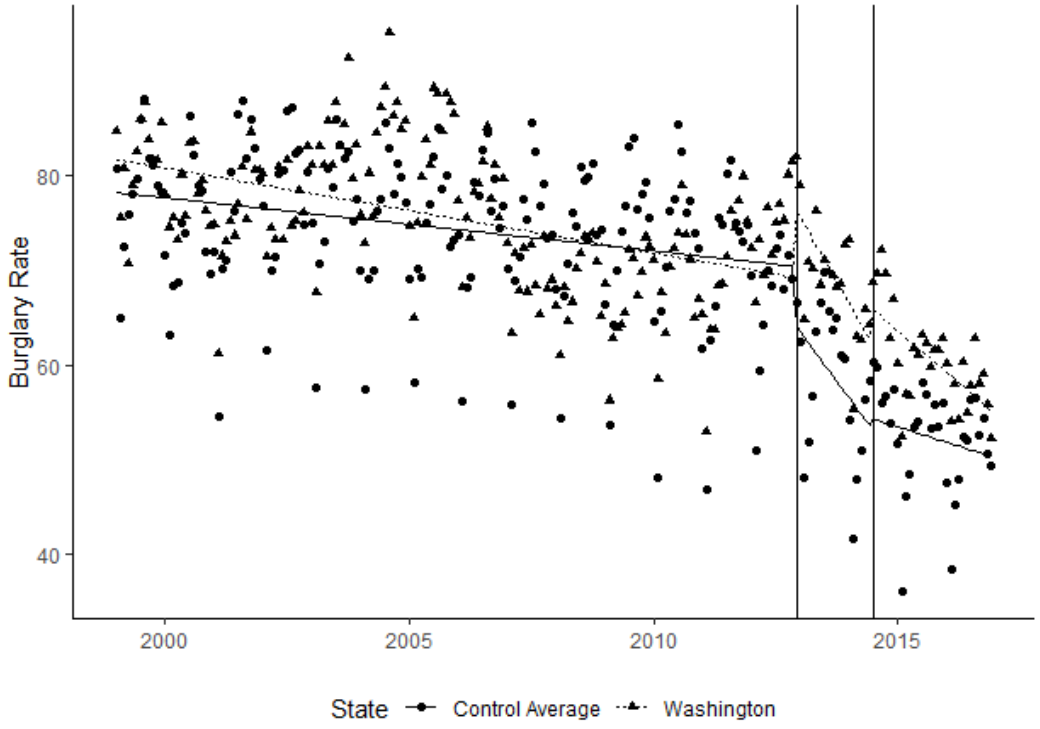


Figure 19: Monthly Larceny Rates Per 100,000 in Washington and Control States

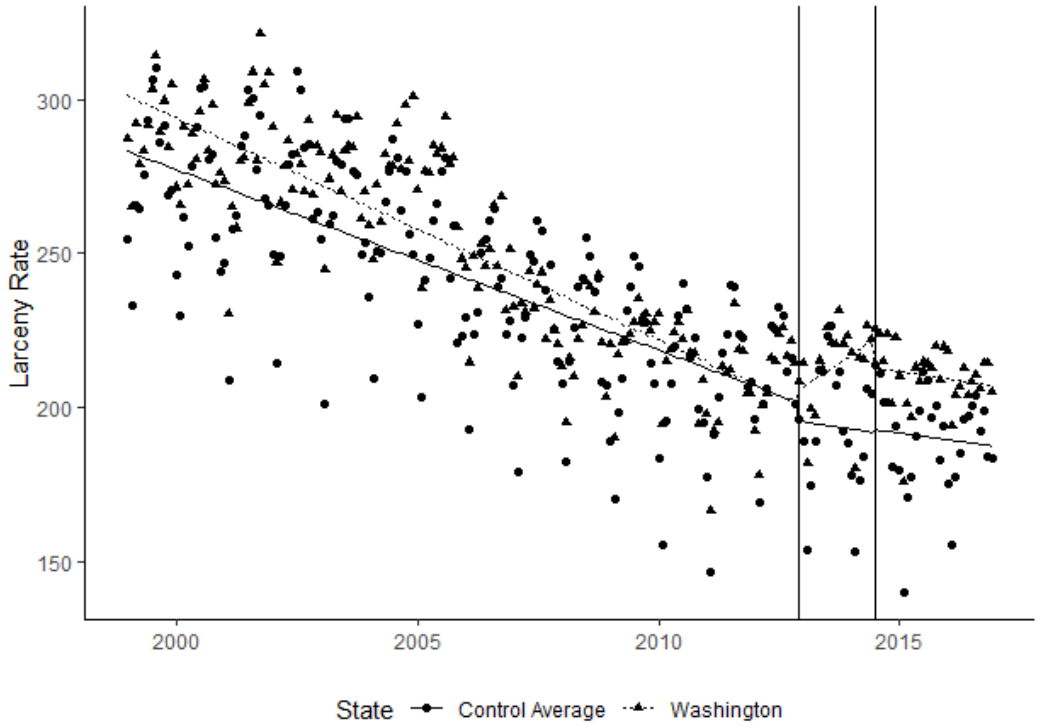
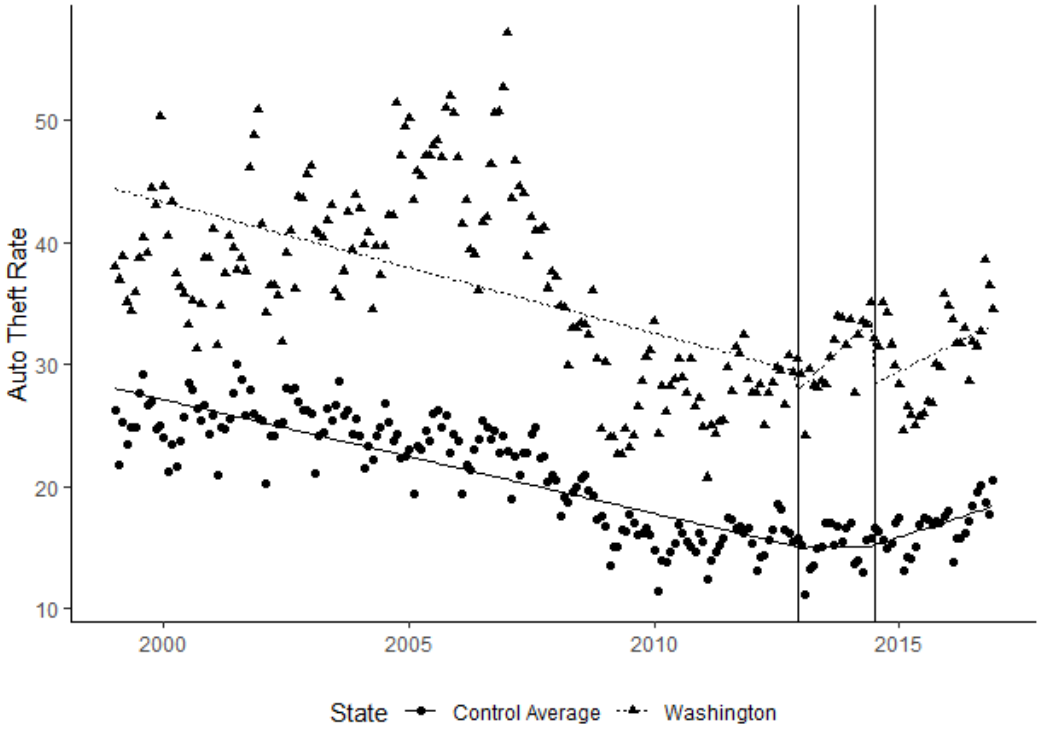


Figure 20: Monthly Auto Theft Rates Per 100,000 in Washington and Control States



Legalization and Crime at Lower Levels of Aggregation

In addition to studying state-level trends, we also examined regions within Washington to determine if there were differences in the potential effects of legalization at lower levels of government. Given that Washington State law allows counties and cities to permit or prohibit the establishment of retail stores, we were interested in examining differences between areas which have allowed and those which have prohibited the establishment of marijuana retail locations.

First, we present basic time series plots for counties in Washington, segregated by those which allow for recreational sales and those that do not. Figures 10 through 17 display these results for the "legal", "banned", "banned then legal", and "legal then banned" counties for violent and property crimes, respectively. For each of these charts the blue curve represents the loess-smoothed curve of violent or property crime rates from January 2011 to December 2016. We include the city of Seattle in these analyses. While not a county, its size and importance justify its analysis.

Figures 21 through 24 display violent crime trends across Washington counties by the cannabis sales status. While there is considerable county-to-county level variation in violent crime trends, overall violent crime rates remained stable for most counties, regardless of their rules on cannabis sales. There is no evidence that counties that banned sales, temporarily banned sales, or temporarily allowed sales differ systematically from counties that allow recreational sales.

Figures 25 through 28 display property crime rates for counties by sales status. Overall, trends for property crime show a decline in Washington. There are some exceptions, but these exceptions do not appear to coincide with any particular legalization status. One county that banned and then later allowed sales, Chelan County, for example, shows an increase in property crime following the start of sales. A similar trend is trend is documented in Garfield County, though in that county sales were still banned at the time of this research.

Figure 21: Violent crime trends in counties allowing recreational sales

This resource was prepared by the author(s) using Federal funds provided by the U.S. Department of Justice. Opinions or points of view expressed are those of the author(s) and do not necessarily reflect the official position or policies of the U.S. Department of Justice.

Figure 22: Violent crime trends in counties banning recreational sales

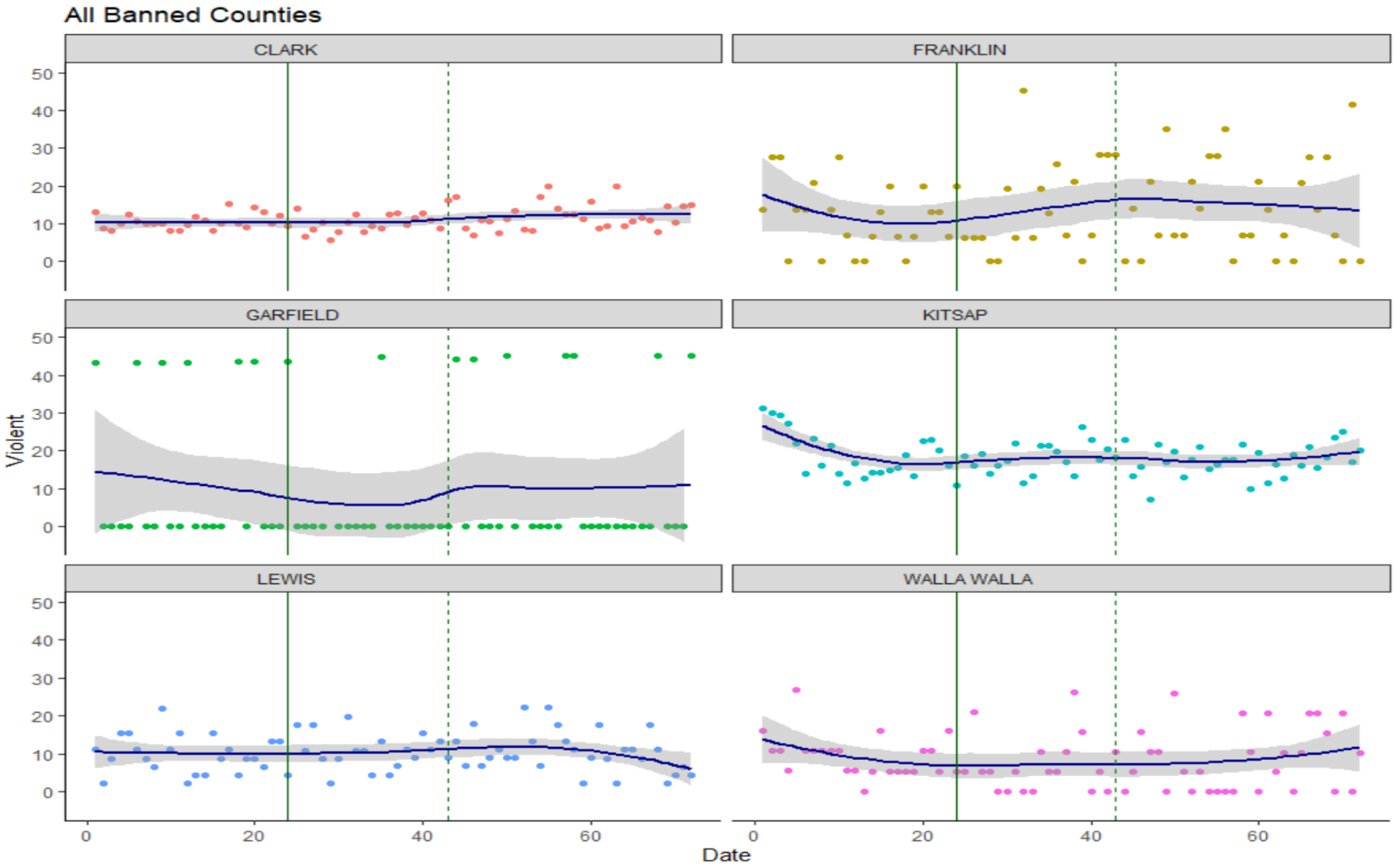
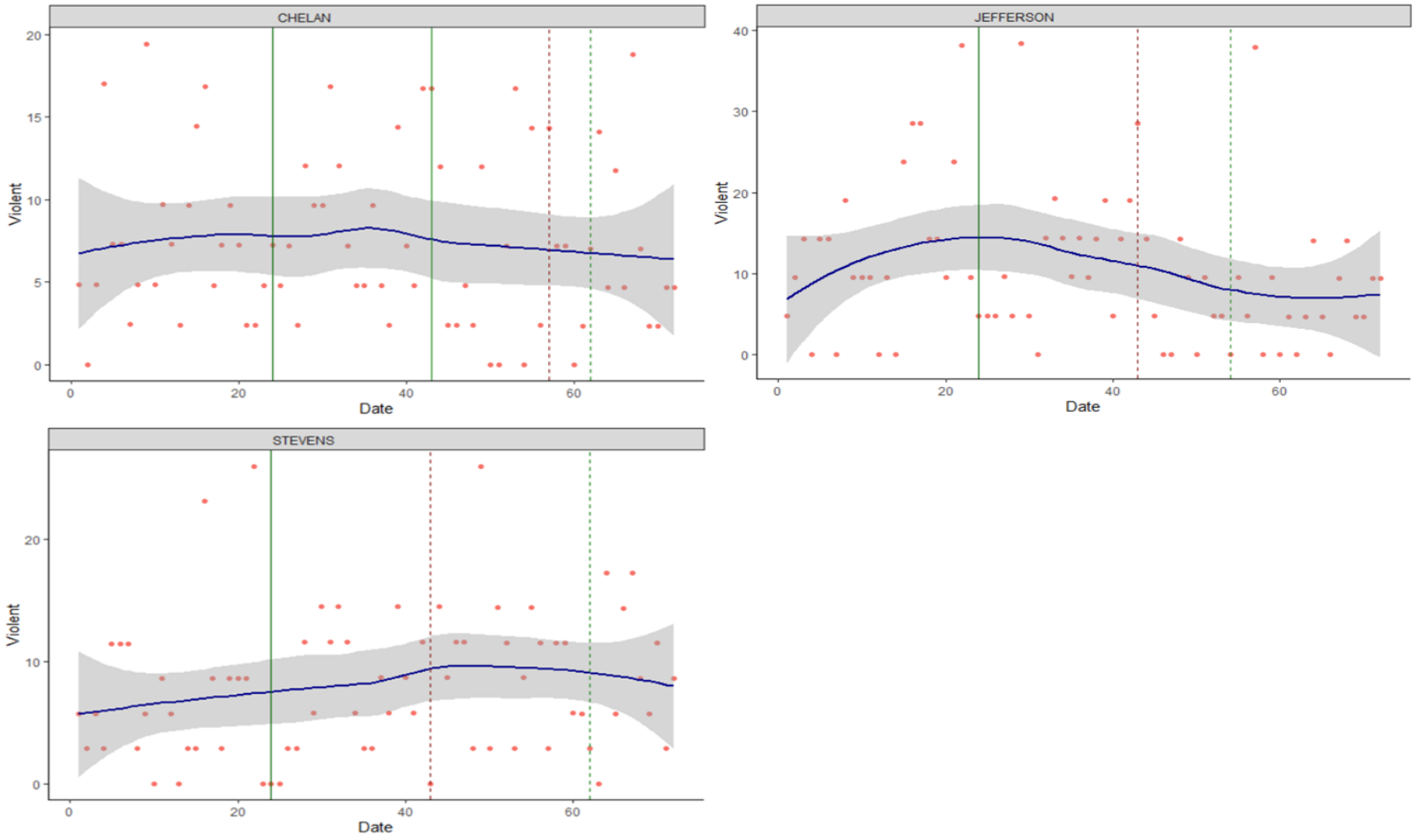


Figure 23: Violent crime trends in counties which initially banned but now allow sales



This resource was prepared by the author(s) using Federal funds provided by the U.S. Department of Justice. Opinions or points of view expressed are those of the author(s) and do not necessarily reflect the official position or policies of the U.S. Department of Justice.

Figure 24: Violent crime trends in counties which initially allowed but now ban sales

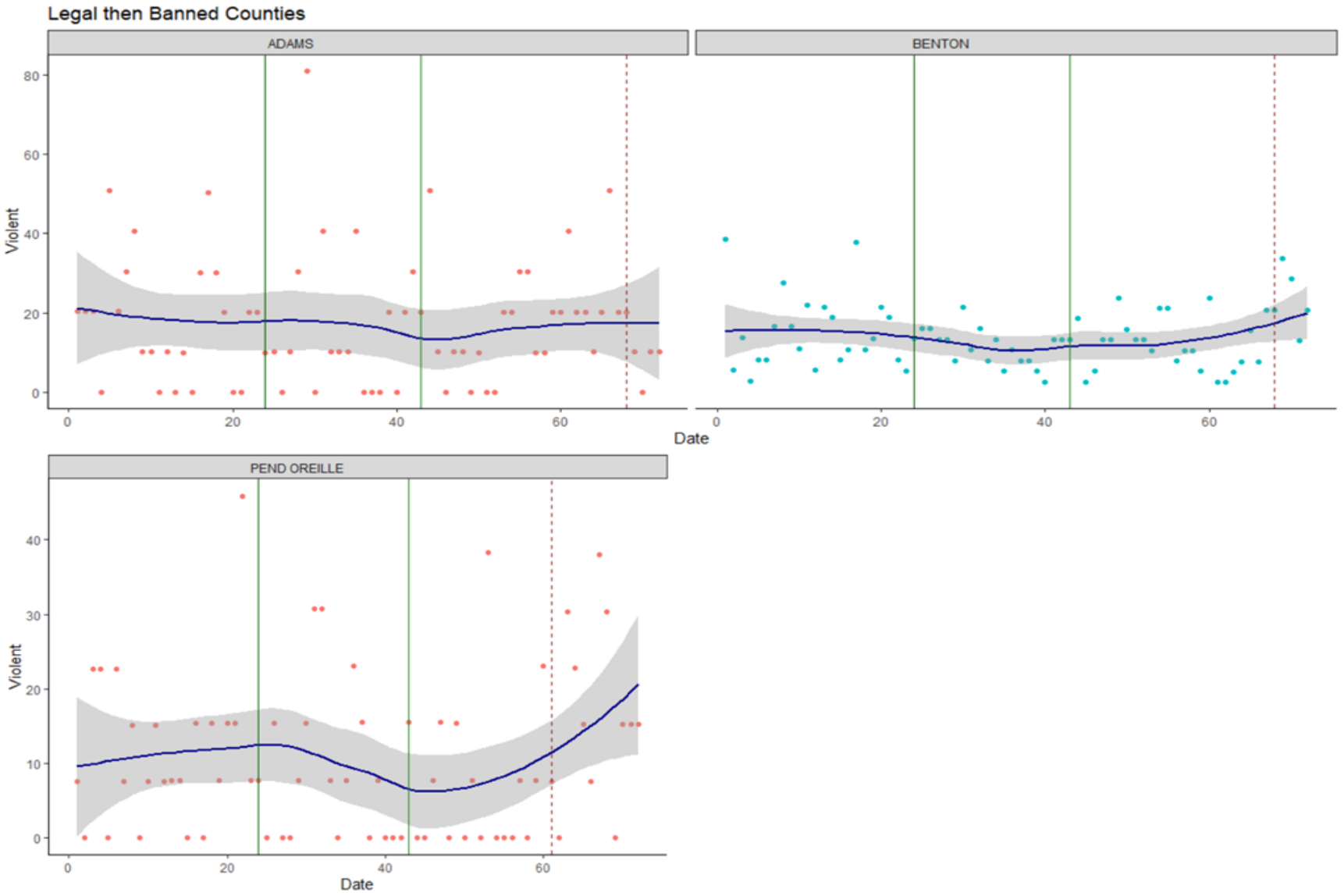


Figure 25: Property crime trends in counties allowing recreational sales

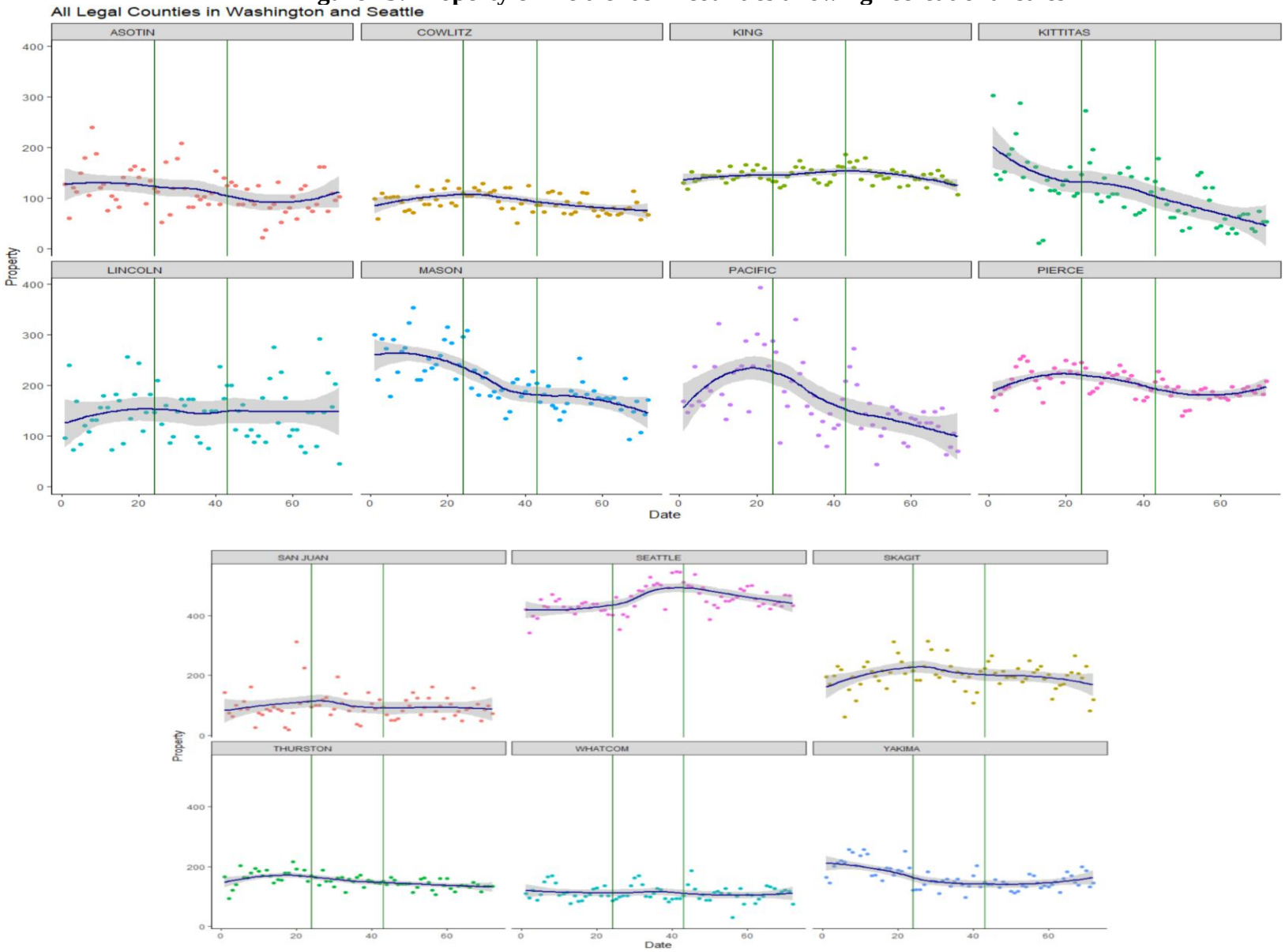


Figure 26: Property crime trends in counties banning recreational sales

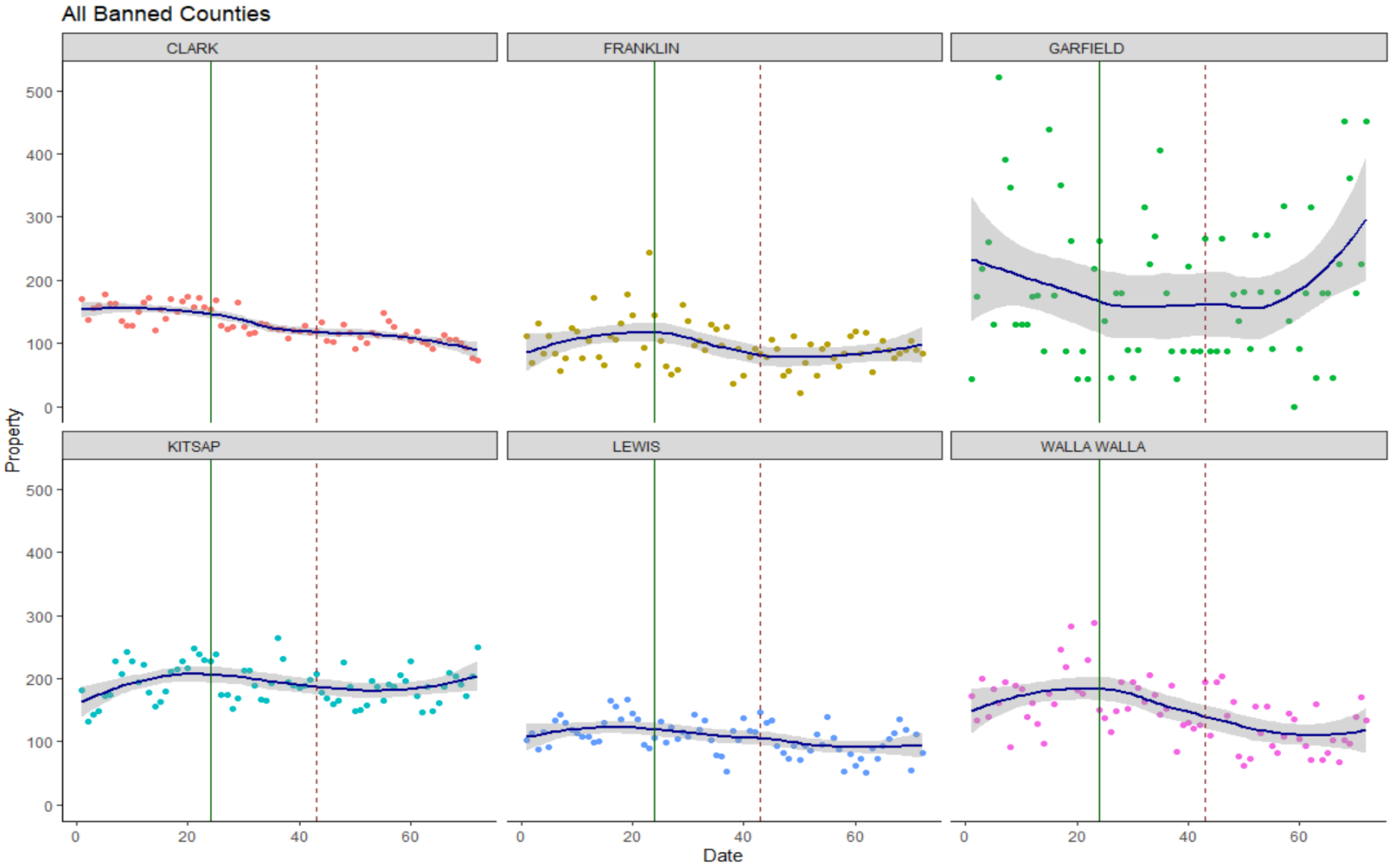


Figure 27: Property crime trends in counties which first banned but now allow sales

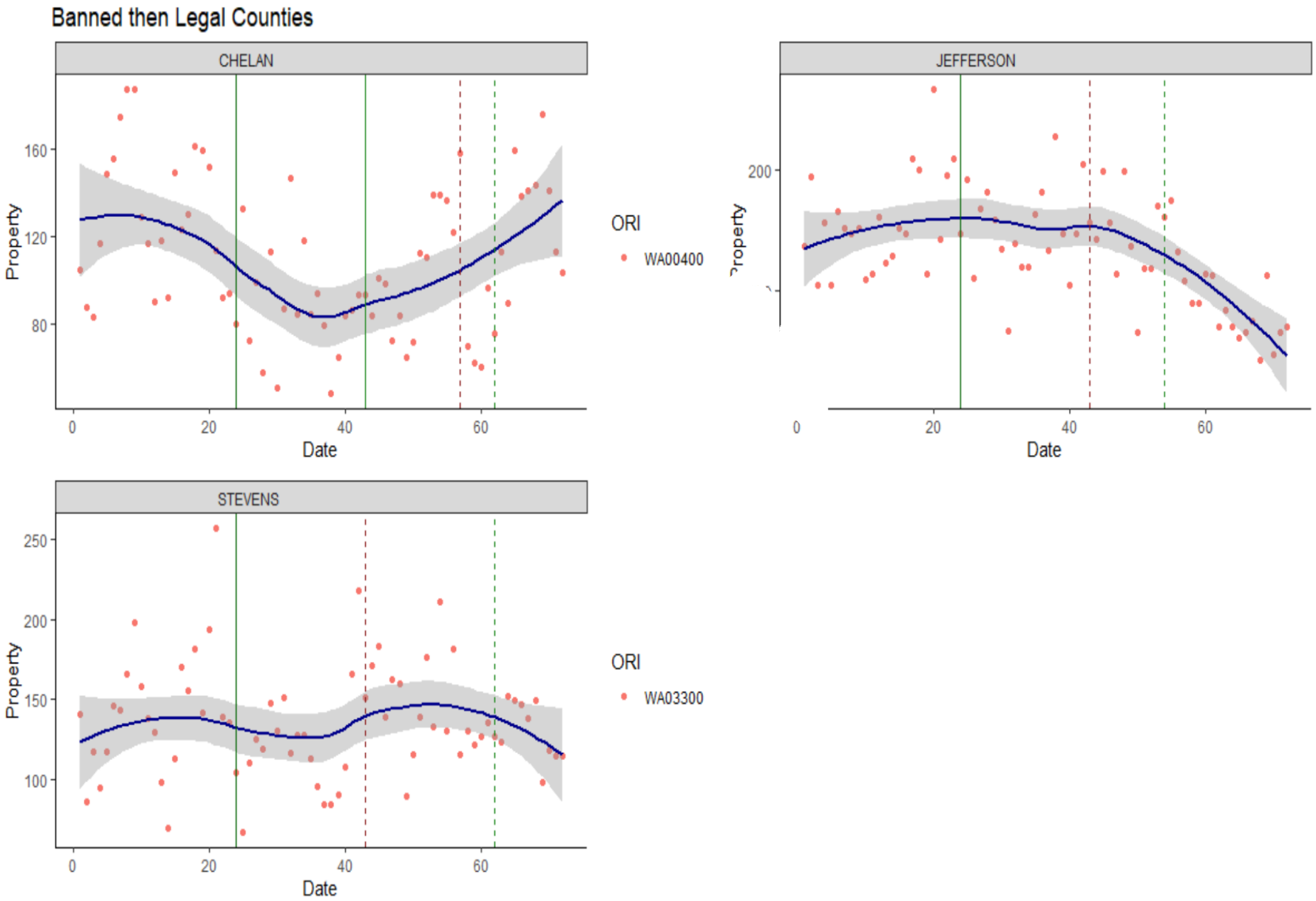
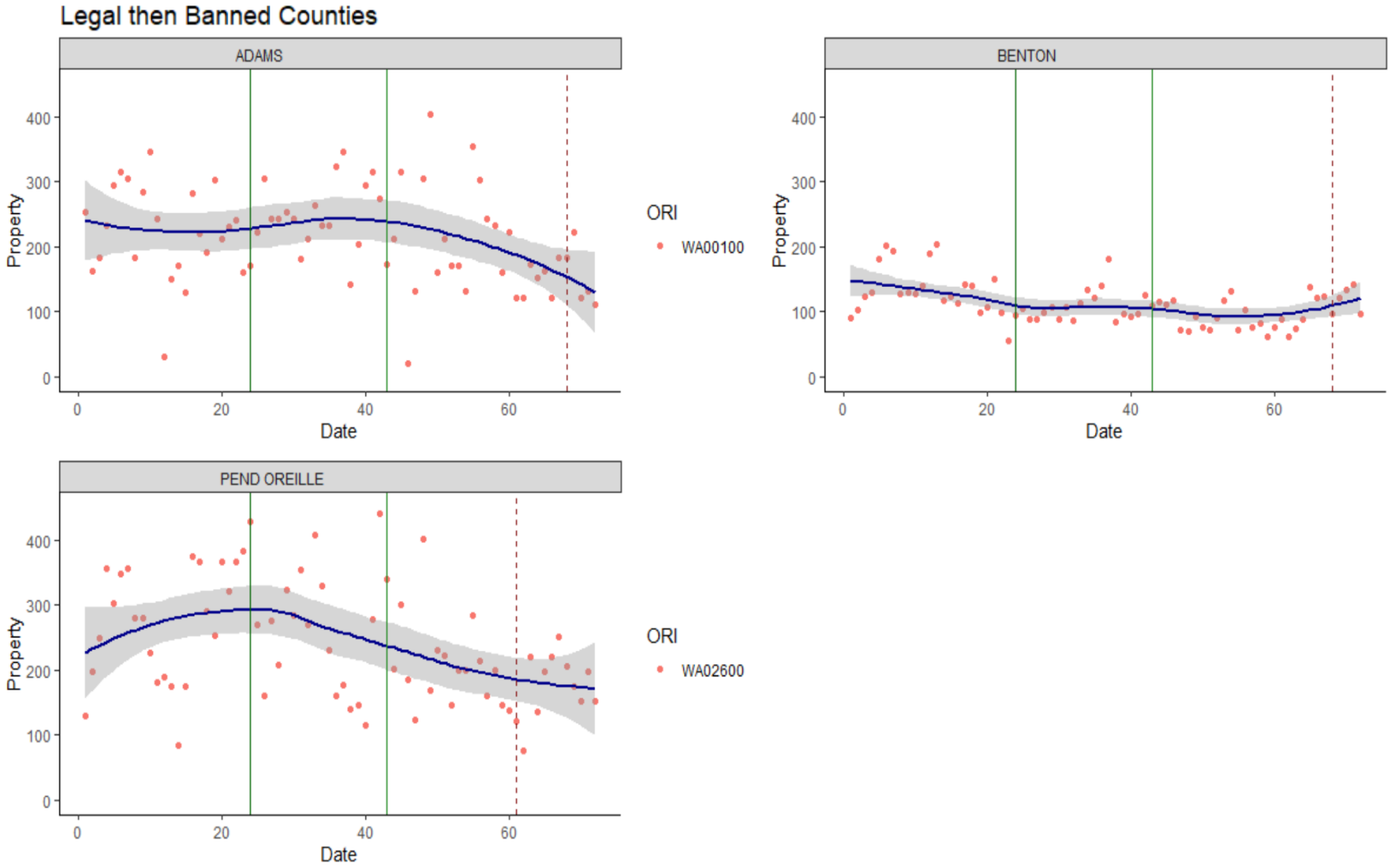


Figure 28: Property crime trends in counties which initially allowed but now ban sales



Legalization and Clearance Rates

Police Performance and Marijuana Legalization

While researchers continue to debate how best to measure police performance, we begin our analysis testing assertations made by the proponents of legalization. Specifically, how legalization would allow agencies to allocate more resources to the solving of serious crimes, including claims that police would become more effective in their crime fighting work. Recognizing clearance rates are often used as a measure of police performance, we undertook a multi-group interrupted time series examining the short-term effects of legalization on clearance rates in Washington.

Results, published in the journal *Police Quarterly*, indicated that some crime categories experienced improvements in clearance rates (see Makin, Willits, Wu, DuBois, Lu, Stohr, Koslicki, Stanton, Hemmens, Snyder, Lovrich, 2019). As displayed in Figures 29, 30 and 31 confirmed within the interrupted time-series regression results, clearance rates improved for the categories of violent crime and burglary. As displayed in Table 6, there was an immediate effect for improvements in clearance rates for motor vehicle theft, though this increase did not persist. While this research design does not permit us to unequivocally state that legalization is the reason for the improvements in both states, these results provide an initial indication that legalization, in some part, contributed to improvements and did not have an adverse effect on police performance – as measured by clearance rates.

Table 6: Interrupted Time-Series Analysis Results on Crime Clearance Rates per Month for Washington

	Violent Crime	Property Crime	Rape	Robbery	Agg. Assault	Burglary	Larceny	Motor Vehicle Theft
US Trend Before I-502	-.005	.014	.021	-.019	.030	-.001	.018	-.007
	(.037)	(.019)	(.057)	(.037)	(.049)	(.015)	(.021)	(.027)
Pre-Treatment Intercept	2.172	-3.108**	-.188	2.605+	2.080	-2.034**	-2.733**	-8.993**
Difference between WA & US	(1.554)	(.496)	(2.737)	(1.519)	(1.361)	(.367)	(.632)	(.702)
Pre-Treatment Slope Difference	-.083	-.067**	-.148	-.063	-.113+	-.057**	-.062*	-.032
between WA & US	(.069)	(.022)	(.121)	(.069)	(.065)	(.018)	(.028)	(.034)
Immediate Average Legalization	2.399*	1.656**	1.195	2.831**	3.392**	.996*	1.780**	2.029*
Effect	(1.028)	(.531)	(1.665)	(1.083)	(1.297)	(.429)	(.587)	(.886)
Post-Treatment Average Slope	-.045	-.015	-.105	-.015	-.129*	.006	-.030	-.013
	(.050)	(.027)	(.079)	(.054)	(.065)	(.022)	(.030)	(.041)
Immediate WA Effect	-1.910	.637	-1.393	-2.082	-1.842	.982+	.155	2.997**
	(1.802)	(.705)	(3.012)	(1.823)	(2.062)	(.576)	(.869)	(1.154)
Post-Treatment WA Effect	.183*	.026	.280+	.141	.021	.064*	.001	.035
	(.091)	(.035)	(.154)	(.094)	(.109)	(.028)	(.042)	(.056)
Constant	31.929**	18.896**	36.180**	29.876**	55.111**	12.302**	21.340**	16.425**
	(.749)	(.396)	(1.148)	(.783)	(1.019)	(.317)	(.442)	(.537)
$F_{7, 3376}$	1.86+	131.99**	5.09**	2.34*	7.37**	90.66**	85.08**	186.78**

+ p <0.1, *p< 0.05, **p<0.01

Figure 29: Violent Crime Clearance in Washington, 2010 to 2015

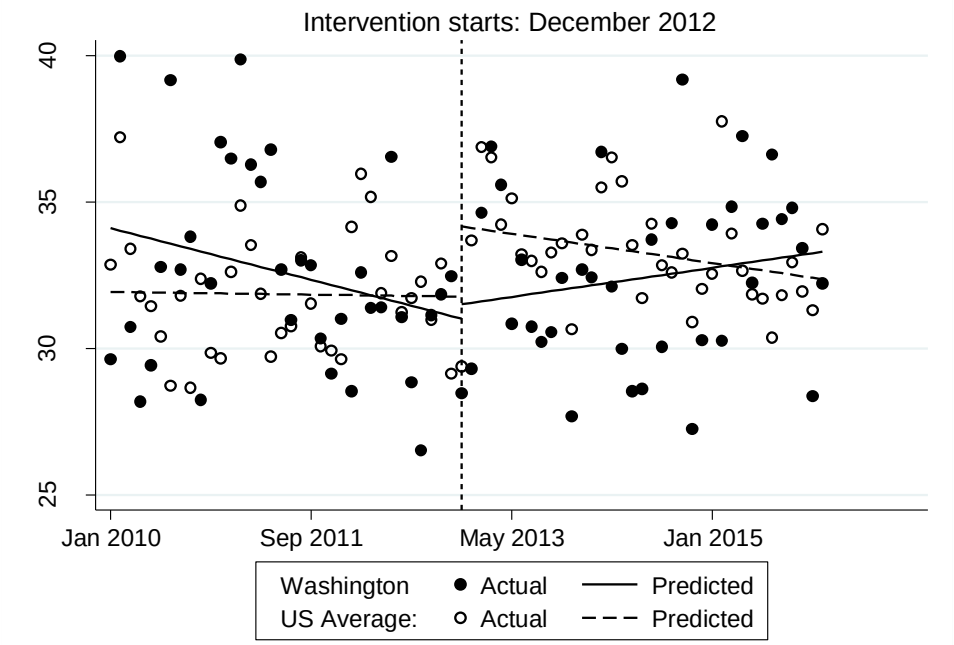


Figure 30: Property Crime Clearance in Washington, 2010 to 2015

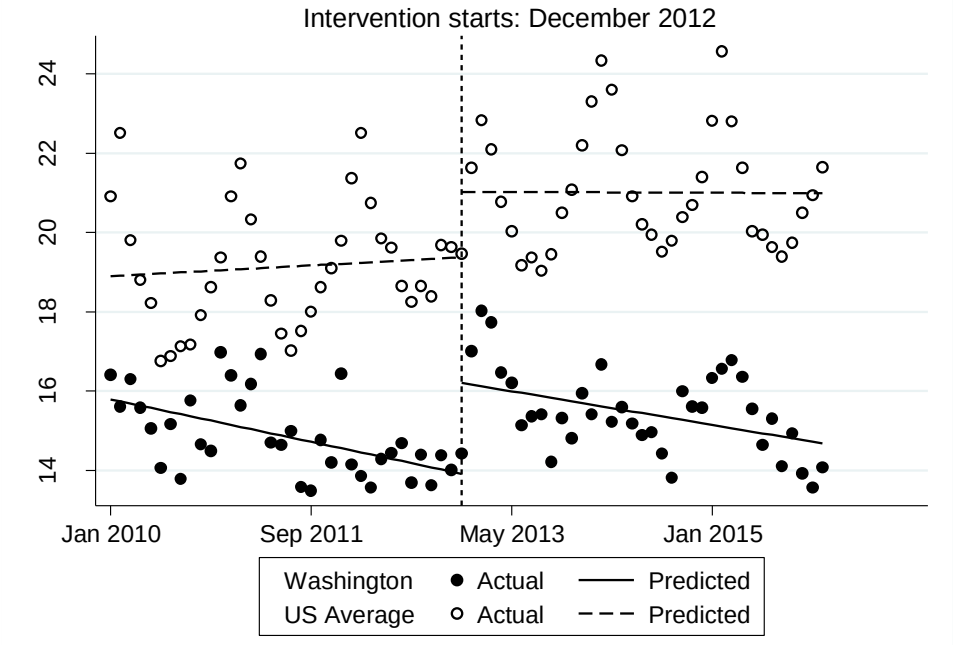


Figure 31: Burglary Clearance in Washington, 2010 to 2015

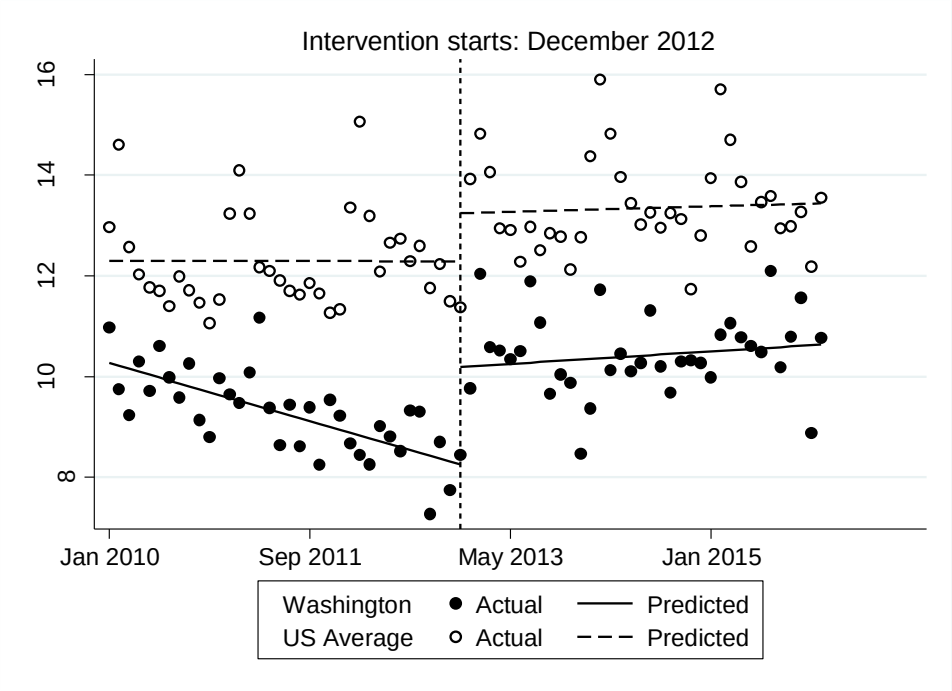
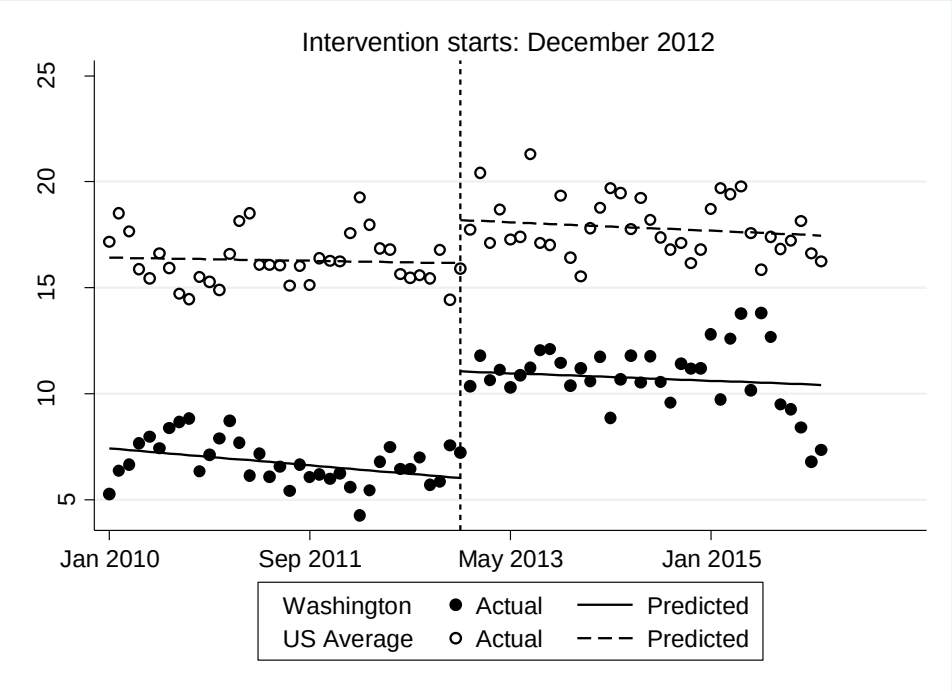


Figure 32: Motor Vehicle Thefts Clearance in Washington, 2010 to 2015

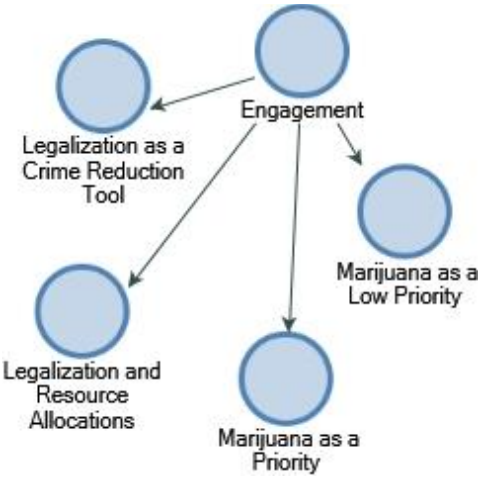


Qualitative Findings: Focus Groups

Analysis of focus group results yielded several dominant themes, coalescing around several superordinate themes for the engagement, exploration, and exit phases. Given limitations with the length of this final report, and the significant analysis that took place for the qualitative portion of the grant, we present a summary of the qualitative portion of both the focus groups and interviews. For the complete analysis of these results, please refer to Stohr et al. (2020). To provide a visual depiction of these data, we present the thematic analysis nodes associated with each phase of the focus groups and a brief summary of the phase.

Engagement Phase. As depicted in Figure 33, analysis of officer experiences in a pre-legalization environment produced four superordinate themes: Cannabis as a Low Priority, Cannabis as a Priority, Legalization and Resource Allocations, and Cannabis as a Tool. Importantly, these superordinate themes represented both optimism about legalization itself and reservations about being prepared for implementation and concerns for the potential adverse effects of legalization.

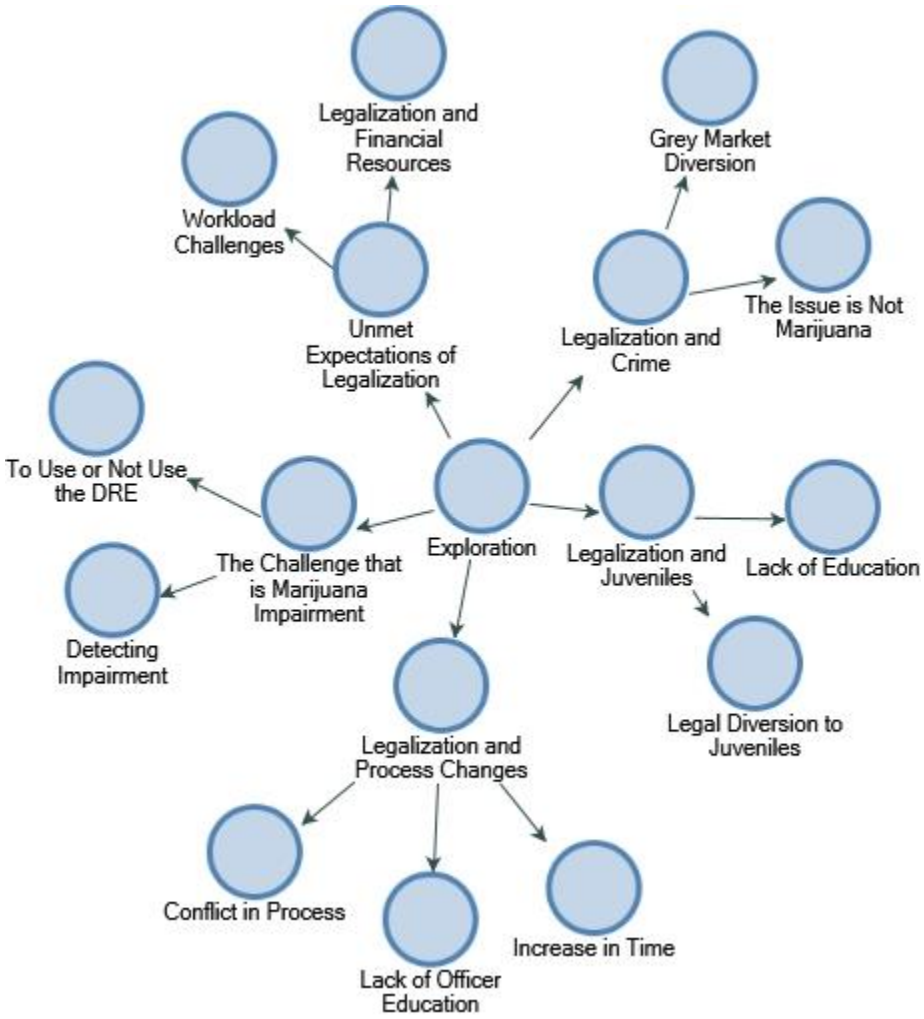
Figure 33: Officer Experiences: Subordinate Themes



Exploration Phase. Given participants, are operating under legalization, most of the unique comments were associated with their experiences and as such developed five

superordinate themes: Crime, Juveniles, Process Changes, Marijuana Impairment, and Unmet Expectations and eleven organizing themes. Figure 34 depicts the organizing structure of the thematic analysis.

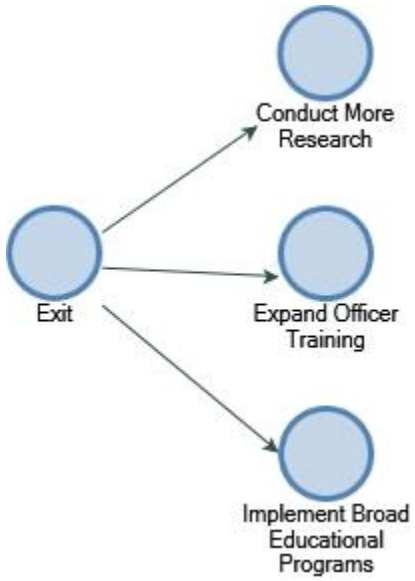
Figure 34: Thematic Analysis Organizing Structure



Exit Phase. As the last phase of the focus group, participants were given an opportunity to reflect upon their experiences and provide guidance for agencies who would soon find themselves operating under a legalized environment and recommendations for future research. Analysis revealed three organizing themes: Implement Broad Educational Programs, Conduct More Research, and Expand Officer Training. As depicted in Figure 35, analysis of this section

reveals a profound realization among the participants that legalization would not be undone nor rolled back, that pragmatically speaking they needed to move forward, and the thematic analysis resonated around these themes.

Figure 35: Future Research Organizing Themes



Focus Group Summary

Increased crime? Officers involved in the focus groups did not, as a consensus, share the belief that legalization increased crime overall or increased any specific crimes. One participant noted, *"I don't see that, as far as property crimes go, I think all of us know that's more related to heroin and meth. ..... I don't think of marijuana when I think of property crimes."* This is a point echoed across many of the sessions, that drugs other than cannabis were typically associated with any increase in property crime in a particular jurisdiction. However, this general view on the cannabis and crime linkage did not directly translate into legalization having no influence whatsoever. Consider the following thoughtful elaboration by a focus group participant:

> *Our property crimes are statistically higher, but… um… I think that is in relation to harder drugs… um… but then again…again from personal experience, a lot of times we had people that would sell marijuana, local people to support a harder drug habit. You've taken away that income stream from them [by legalization] and so they resort to*

> *property crimes to support that harder drug habit. Because if you've taken away their ability to sell that marijuana, the marijuana that they were willing to…it's a low-grade, in the drug world, a low-grade low-risk drug to sell as far as the clientele isn't going to shoot you for marijuana or is less likely to than meth or heroin. So they would sell that lower risk drug to support that habit, and when you take that away from them, they have to resort to something else.*

What is particularly interesting about this quote is that while these participants did not directly link cannabis, as a gateway to crime, or other drugs they were introducing the notion that prior to legalization some of those addicted to other substances had an illicit, and non-violent, means of obtaining money (cannabis sales) for their drugs of choice. However, in a legalized environment this opportunity was lessened. This change in market circumstances, as mentioned by another focus group participant, had an impact on drug dealers as well.

> *I know the names (of some dealers) that were selling Marijuana when I was (working) prior to legalization, because it was profitable, as soon as it did not become profitable for them anywhere… A leopard is not gonna change its spots, and so then they started transitioning to pills and opioids. ….. But they're now victimizing communities in a completely different manner, because now they're still going to be a drug dealer they just switched to something harder.*

Workload Challenges. According to the officers taking part in the focus group sessions, legalization has not decreased their workload. For a good proportion of focus group participants working under legalization has meant responding to and initiating more interactions involving cannabis. As experienced by one participant, *"[people] come up and stand next to me and you see them break out their grinder and you know, they put it in their pipe and they just sit there and it's like… "what're you doing"… and they say, "oh well it's legal now!"… like, "no, it's like alcohol, you can't just do it out in public, you know"… "Oh I didn't know that!"*

These new interactions are troublesome to officers not solely because of a widespread misunderstanding of the law. Rather, as shared by many different focus group participants, the decision to limit consumption to "private spaces, and out of view of the public" in practical terms

meant for some substantial number of individuals that the only they could consume product that was legally purchased was to violate the law. Consider the following commonplace scenario in urban population centers; if the lease agreement for an apartment includes a no-smoking provision, where can the lessee legally consume their state-certified legal cannabis smoking product? Focus group participants from both the urban and college-hosting areas shared concerns for such persons, noting that responding to calls and initiating these calls would inevitably lead to these sorts of discussions about the inherent unfairness of the rules around legally permissible and impermissible cannabis use.

An important issue regarding these interactions over location of permissible use is the pressure police officer participants frequently experienced from the community to intervene in cases of outdoor use. As this participant from an urban population center shared,

> *The other general type of call that we get now that we didn't get before is from landlords or apartment complexes, we have a lot here in town. And you know, we get the call from the young mom getting the marijuana smoke into the bassinette bedroom and before, again, we would go up and enforce that because it was illegal. Now, we say that's a landlord problem... yeah we pass those calls onto the landlords, but it doesn't lessen our work. We still have the initial call, we still have to go up to [deal with] the yelling and screaming and everything else that takes place and associate with that because it doesn't change...Those calls don't go away, I mean it doesn't free us up. We still get those calls, we still respond, we still deal with them whether it's the general public or the bus driver or the neighbor. So I don't know what free time they're talking about.*

Participants also shared concerns over the lack of added resources following legalization, though this was particularly noticeable among the non-urban agencies sharing concerns that they have not noticed any increases in the budgetary allocations to local law anticipated as state revenues began to climb rapidly after legalization. This is particularly salient given that the statute providing for legalization explicitly allocated funds for the purposes of public safety.

> *…. part of the big sales pitch to the general public was we'll increase money to public safety, we'll increase money to education, and how you know let's, we'll start programs as far as educating our youth the impacts and all of that and… um… I'm still waiting for the*

money to come our way -- cause it's not coming into the education component, I'll tell you that.

Qualitative Findings: Interviews

When analyzing the interview transcripts, we used the NVivo software. The themes were coded into relative sentiment; namely positive and negative in valence, and then subsequently divided into very positive and moderately positive, and very negative and moderately negative sentiments. Out of the 6,000 unique comments transcribed, more than 4,500 were coded as being negative in overall sentiment. Figure 36 provides a visual representation of the thematic expression of the focus group data using NVIVO. The analysis of the data revealed five super-ordinate themes, each with a multitude of organizing themes beneath them. Figures 37 and 38 represent word clouds associated with the interview data. It is important to note that all the following themes reflect both positive and negative sentiment concerning officer perceptions of marijuana legalization. The five super-ordinate themes relate directly to the officer's perceptions of law enforcement's ongoing interactions with marijuana-related issues. When possible, the results of the analysis are illustrated through direct quotations from the transcriptions.

Figure 36: Raw Thematic Analysis

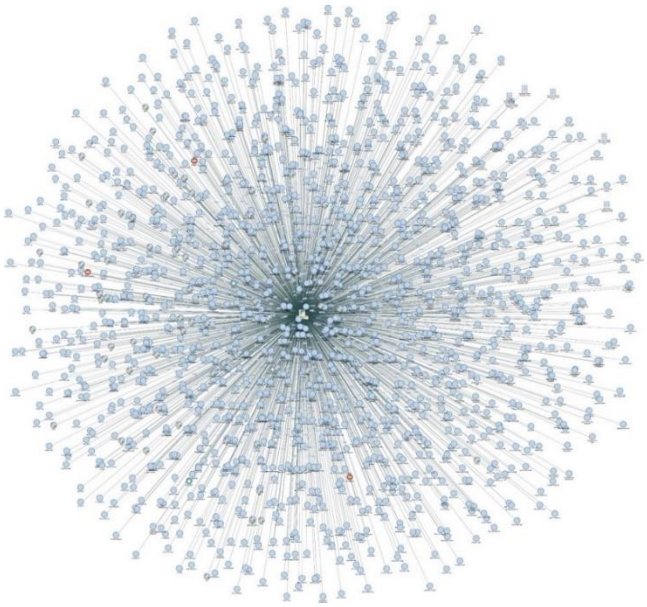


Figure 37: Positive Word Cloud

Figure 38: Negative Word Cloud

Node Analysis. As aforementioned, analysis of the interviews produced five super-ordinate themes relate directly to officer perceptions and experiences of law enforcement's ongoing interactions with marijuana-related issues. Furthermore, these five superordinate themes were associated with a range of organizing themes. Figures 39-43 provide a visual depiction of these organizing themes.

Figure 39: Marijuana

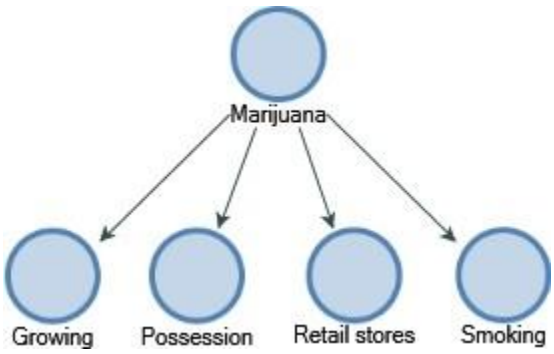


Figure 40: Enforcement

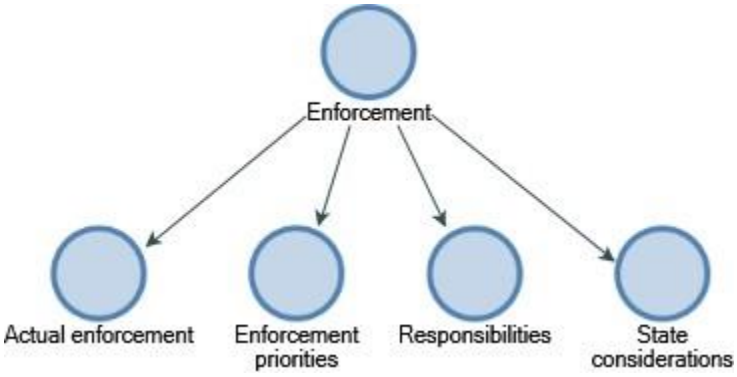


Figure 41: Juveniles

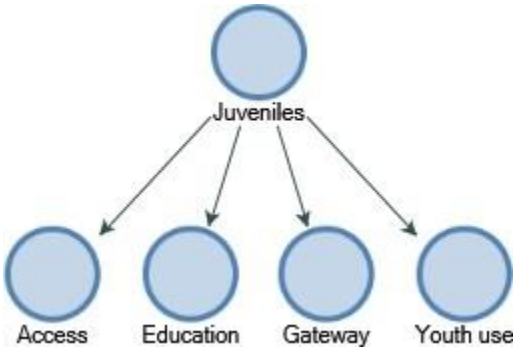


Figure 42: Law Enforcement Resources

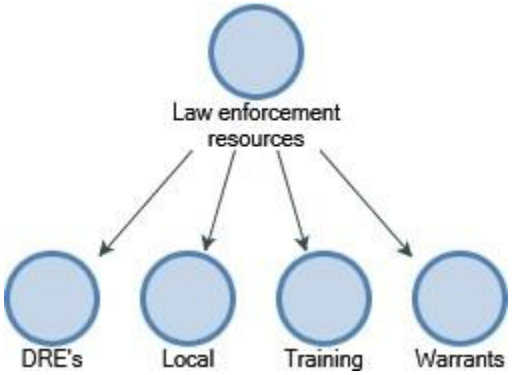
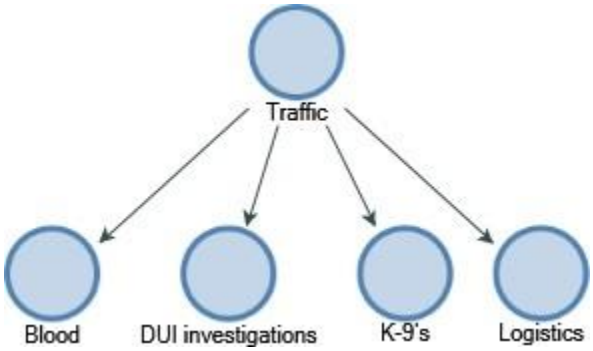


Figure 43: Traffic



Interview Summary

Education. There seems to be consensus from officers that there is a lack of education for juveniles regarding marijuana, including legalities, permissible amounts, and the associated dangers of high potency plant material and concentrates. As these two quotes demonstrate, many officers believe that there is a lack of education for juveniles regarding the legalization of marijuana, as well as the negative effects of using it early in life even though it is now legal and generating vast sums of state revenue. Other officers suggested that funding for drug education is more important than funding for drug enforcement.

> *I don't feel like there's been any effort at educating people on I guess any negative effects of using marijuana.*
>
> *Not necessarily enforcement but drug education…*

Law Enforcement Resources. Officer's perceptions on law enforcement resources focused mainly on issues regarding locally available resources, often compared to other localities or the state level, warrants, officer training, and DREs. The officers taking part in focus groups and personal interviews suggested that issues with state resources seemed to primarily focus on the logistics involving state crime laboratory backlogs due to blood tests for marijuana, which relates to the 5 ng/ml "*per se* standard" for marijuana about which officers tend to have strong opinions. This apparently arbitrary (politically arrived at rather than science-based) standard creates a problem for officers in several ways, but the most noticeable logistical issue is the lab test for

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which there are substantial backlogs. *Get a warrant, take blood, send it to the state toxicology lab, where there's a long, long delay.*

Officer Training. A majority of officers' perceptions on training were focused on a significant lack thereof with regard specifically to post I-502 enforcement and marijuana-related training. Additionally, police officers were often troubled by a lack of consistency regarding training on the handling of marijuana-related situations. The officers highlighted a worrying issue present since legalization, that there was a lack of training regarding how they operate with regards to issues affected by I-502. One officer stated this very succinctly:

> *We do have annual search warrant training, in regards to DUIs, and that obviously relates to drugs. But a legal update in regards to enforcement marijuana law? No.*

Search Warrants. The topic of search warrants was discussed at considerable length by officers, typically due to the requirements regarding warrants for roadside searches and blood draws to test for marijuana (THC) in the bloodstream. Officers stated that these searches are a substantial burden on their time on patrol, suggesting that contrary to previous assumptions, post-legalization officers are spending more time working on marijuana-related cases than prior to legalization.

> *That takes an officer off the road for hours, because you have to come into the station, you have to draft the search warrant, the affidavit –you have to draft the search warrant.*

Drug Recognition Experts. The problems with warrants and roadside searches links to the usage of DREs to determine marijuana-related impairment. Currently, officers are quite able to determine alcohol impairment at the roadside with a combination of a preliminary breath test (PBT) using a portable device and the standard field sobriety test (SFST); however this is not the case with marijuana impairment, leading to the necessity for DRE or ARIDE officers being required in order to confirm impairment. Officers demonstrated that this has become a burden for

their departments, as stated by this one officer:

> *Which is- has been a big uh burden on law enforcement in general, you know, we- you usually having to either bring in a drug recognition expert, a DRE, to help with that, um and/or write search warrants to get blood.*

Enforcement and Resources. The officers' perceptions regarding enforcement involved state-level considerations such as state-lines, enforcement priorities and their changing nature, the responsibilities of different law enforcement components such as code enforcement, and the actual enforcement of the law as it stands.

> *But there's more people that are smoking marijuana, including- it's quite prevalent among the homeless population, along with alcohol, but there's just more calls for service related to marijuana and that hasn't transferred into more officers on the street.*

Cross-State Enforcement. Several officers discussed their perceptions regarding the major complications of enforcing marijuana law across state lines from Washington, and the lack of awareness of the charges that could be faced. Related to this is the issue with legally purchased marijuana being taken across state lines to be sold. The illegality of marijuana in border and nearby states creates complex legal issues and need for formal agreements regarding enforcement, as well as a perceived increase in inter-state drug transportation, both deliberate and out of ignorance of the law. Officers, such as this one, expressed concerns regarding how to deal with legal marijuana and state lines:

> *I think I've touched bases on it, transportation across state lines, how are we gonna address it, how are we gonna do it legally, understanding the laws, PSA needs to be sent out "this is not acceptable."*

> *It's just the going over there, buying your personal amount, and then transporting it across state lines.*

As mentioned previously, many officers are of the opinion that there is a substantial illegal market in Washington perpetuated by those who cannot acquire marijuana legally, or do not want to pay retail prices. However, some officers suggested that a majority of illicit marijuana is actually

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transported out of the legal state.

> *And my understanding that there, the black market does not supply a very large percentage of the-the weed that's sold in Washington except for among young people who can't get it legally, there's still an-- it's still a good way to get money is, is to sell the pot but mostly it's going across state lines.*

Enforcement in Washington. One prevalent theme that emerged was focused on the difficulties of enforcing marijuana-related laws within the state since I-502. Further to this is the issue with people who technically have not broken laws but operate within precarious areas. Many officers perceived the enforcement of marijuana laws as an impossible mandate:

> *From a law enforcement point of view, everything is so watered down, our marijuana laws are almost unenforceable***.**

In addition, there are issues surrounding enforcement for people who engage with marijuana within a legal but gray area, as demonstrated by this one officer. The actions themselves are legal, but very close to becoming illegal or possibly suggesting previous illegal behavior.

> *We're talking adults, over the age of 21 that are actually going to work with marijuana in their vehicle, legal amount not more than 28 grams, just the legal amount.*

Analysis of officer experiences produced overall themes that were predominantly negative in sentiment. This suggests that from the officer's perspectives the legalization of marijuana has yielded more negative outcomes and complications than positive outcomes and solutions. This is not to say that some officer and police managers admitted voting for the law and/or supported it despite the problems it presented for enforcement.

There was a substantial amount of synergy regarding certain themes and components, such as the increased complication of DUI investigations that involved marijuana due to issues with legal limits, search warrants, a lack of training, and absence of a method of conducting roadside testing for impairment. Officers had generally consistent views that the 5 ng/m THC *per se* standard is an arbitrary number and not representative of marijuana impairment.

Who came up with that number and how are-how are we articulating that some-a female or somebody who's never smoked marijuana that has two nanograms of THC in their system is not affected, you know?

Officers also demonstrated a substantial lack of training received regarding changes in policy and procedure after marijuana legalization. The concerns regarding juvenile usage were synergistic and demonstrated concerns regarding increased accessibility and the implications surrounding it, both in terms of using marijuana at an early age and being exposed to it in ever more social settings. A subsequent component of this involves the consensus regarding the unknown; meaning the next generation growing up with legal marijuana and how that may or may not affect their health, perspectives on drug use overall, and making contributions to the broader society as a whole over the course of their lifetimes.

There was divergence regarding certain themes which seemed to predominantly relate to differing locales and agencies. Different departments either approached legalization differently to begin with, had distinct problems in their locality, or were mightily affected by resource disparities. As mentioned previously, some officers articulated issues with laboratory blood tests for THC, including crime labs with very long blood test backlogs, often upwards of six months. Other officers explained that marijuana was already a low priority for their locality, even going so far as stating that prosecutors were avoiding prosecuting for simple possession even before legalization. Analysis clearly demonstrated the conflicted nature of officer perceptions considered *in toto* as in some circumstances police have both positive and negative perceptions regarding the same specific issues. The legalization of marijuana clearly means different things to different people in different positions and in different areas; this is as true of the police as it is the general public.

A final consideration that emerged from the data analysis was that of outliers, which within the context of this research seems to be those interviewees that see I-502 as a very damaging policy

change and one of the worst things to happen to the State of Washington. The term "Pandora's box" was used on several occasions by a small minority of interviewees, demonstrating their views on the subject. One interviewee opined the following: *This is probably one of the worst decisions the people of this state made. We've legalized it, we've opened up Pandora's box.* It should be noted that in this regard that officers in Washington were more likely to view the law favorably than were those in Idaho.

Calls for Service

Across the debates concerning legalization, and its impact on public safety, most claims concerned predicted changes in crime rates. However, during the qualitative portion of this project, officers shared that legalization was not influencing crimes to any great extent, and importantly that an emphasis on crime rates was somewhat of a misguided focus. Rather, according to these officers, we should instead focus our attention to changes in the nature of calls for service to which the police are responding. According to these officers, their perception is that policing under a legalized environment had *increased* their workload, with an emphasis highlighted in those jurisdictions with recreational dispensaries. In conversations with a partnering agency, the Pullman Police Department (PPD), agency leadership was interested in determining if the recreational sale of marijuana was associated with changes in calls for service. Additionally, in conversations with the Moscow Police Department (MPD) there were questions concerning if, and to what extent, recreational sales in Washington was affecting their jurisdiction. Given that Pullman, Washington and Moscow, Idaho are bordering communities, we collected monthly measures of calls for service received between January of 2005 and December of 2016.

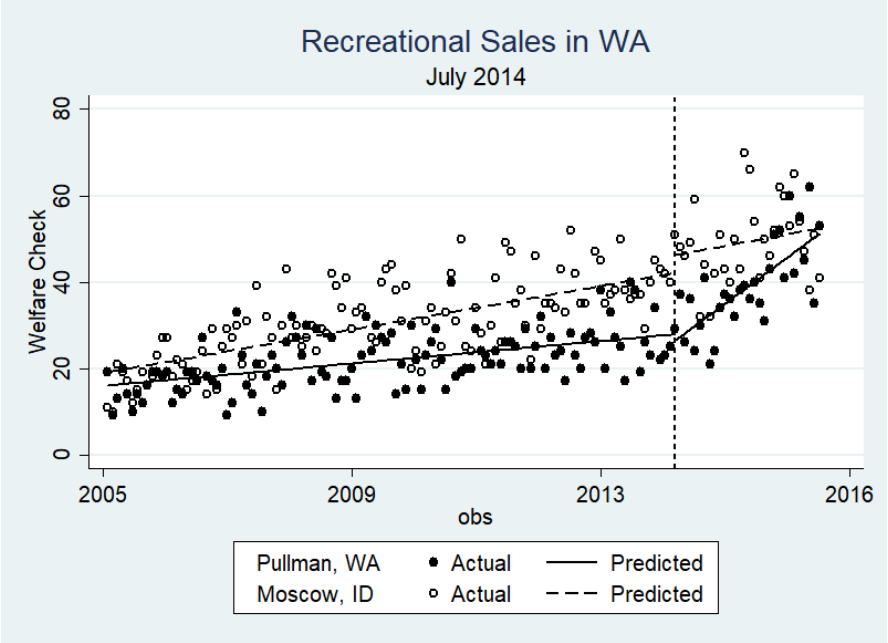
Number of Calls for Service. Our analysis of those calls indicated that recreational sale of marijuana in Washington was associated with changes in the number of calls for service received

by the PPD. As shown in Figure 44, while both departments experienced increases starting in 2005, there is a substantial increase after the onset of recreational sales. Results indicate that on average the PPD is responding to 8.54 ($p<.02$) more calls for service every month. While an increase of only 8 calls may seem insignificant, it is important to note these are monthly increases, so in aggregate the PPD is responding to 102 more calls for service per year under recreational sales conditions.

To better understand how calls for service shifted, we attempted to disaggregate by call type. While not all calls could be disaggregated (a result of too few observations), results of this analysis indicated a minor shift in calls associated with "welfare checks" for the PPD. On average, PPD experienced an increase of 12 calls for service, per month , as associated with recreational sales. Overall, results of this analysis suggest that recreational sales were associated with an increase in calls for service for the PPD and no change for MPD. Importantly, these results do not document changes in calls across any of what would be considered Part I index crimes; rather, this increase is more associated with changes in the nature of calls for lower level offenses.

Figure 44: Calls for Service
Previously published in Makin et al. (2020).

Figure 45: Welfare Checks
Previously published in Makin et al. (2020).



Calls for Service in a Large Municipality. In addition to exploring the impact of legalization and recreational sales in two bordering communities, we attempted to replicate the

study with two larger municipalities. Unfortunately, we were unable to obtain a suitable control group for this study, and as such relied upon a single group interrupted time-series analysis (ITSA) design. Admittedly, the use of a single-group ITSA is problematic and these results should be viewed as exploratory. However, given statements made by stakeholders, examining changes to calls for service in a larger municipality seemed prudent. Using data provided by the Seattle Police Department, we obtained monthly measures of officer-initiated contacts and dispatch-initiated contacts. Importantly, these data include unique counts of events and the number of officers dispatched to a unique event. As such, there are four outcomes modeled in this section, 1) Officer-Initiated Contacts, 2) Officer-Initiated Contacts (CAD Event), 3) Dispatch-Initiated Contacts, and 4) Dispatch-Initiated Contacts (CAD Events). Starting in January of 2010 and going out to December of 2018, we modeled two interruption points – legalization and retail sales. As such, we have four potential data sources to examine to determine to what extent legalization *and* recreational sales contributed to changes in officer-initiated contacts and dispatch-initiated contacts.

Officer-Initiated Contacts. As displayed in Figures 46 and 47, starting in 2010 officer-initiated contacts were decreasing in the city, and continued to decrease under legalization conditions. Results of the ITSA regression indicate that legalization did not contribute to the decrease in contacts. However, the results do suggest that the commencement of retail sales of marijuana within the city was associated with increases in officer-initiated contacts. Taking into consideration leadership instabilities experienced within the Seattle Police Department during this time period, we attempted to model potential interactions between the DOJ investigation of the agency, a subsequent consent decree that would follow, and the selection of the new Chief of Police. Accounting for each of these developments, the calls for service results continue to suggest

that the presence of retail sales of marijuana in the city were associated with increases in police contacts.

Figure 46: Legalization, Recreational Sales, and Officer-Initiated Contacts

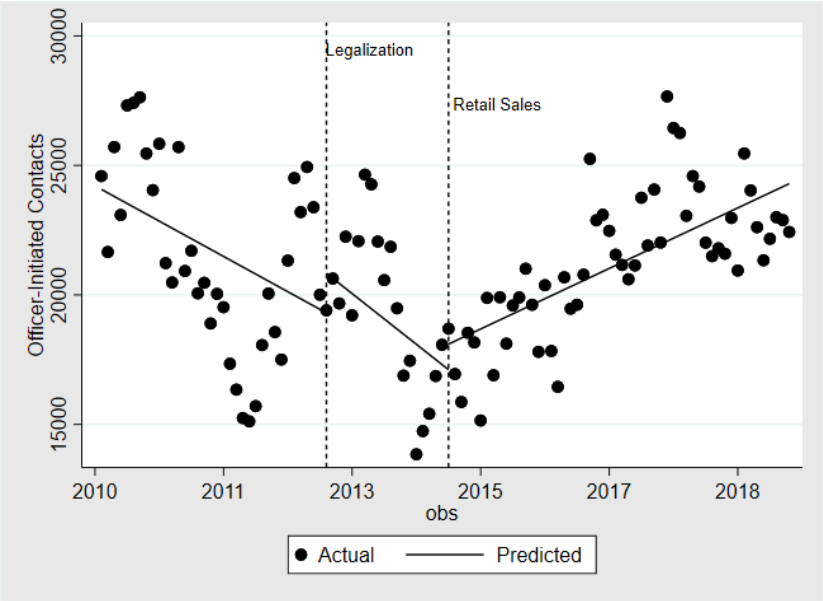


Figure 47: Legalization, Recreational Sales, and Officer-Initiated Contacts (CAD Event)

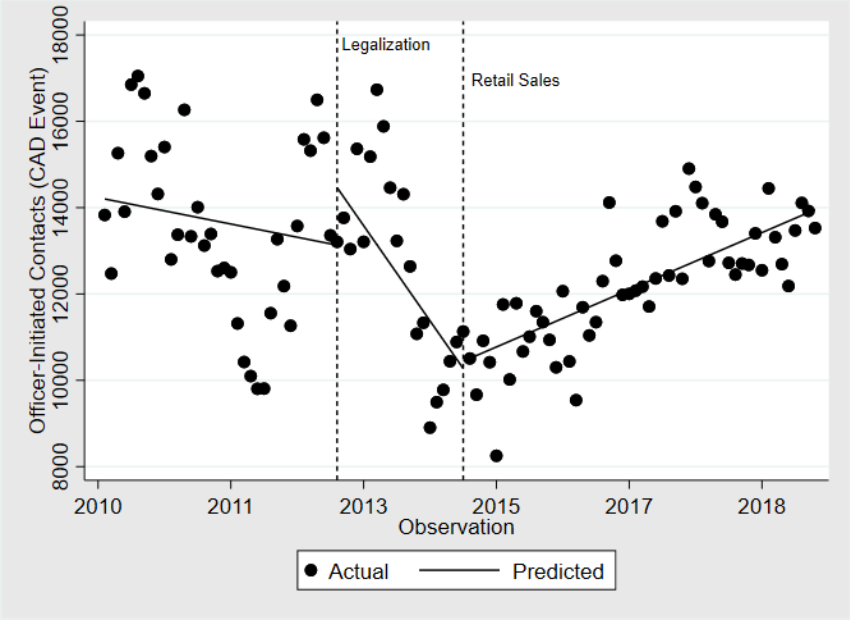


Table 7: Interrupted Time-Series Analysis Results on Officer-Initiated Contacts (Single Group)

	Officer-Initiated Contacts	Officer-Initiated Contacts (CAD Events)
Trend Before Legalization	-136.27 (74.96)	-30.56 (46.69)
Immediate Effect for Legalization	1538.68 (1790.65)	1334.24 (1285.54)
Post-Treatment Effect for Legalization	-59.64 (162.20)	-190.07 (105.04)
Immediate Effect for Recreational Sales	986.67 (1229.60)	167.95 (805.29)
Post-Treatment Effect for Recreational Sales	312.78** 139.23)	286.88 91.09)
Constant	24074** (1557)	14201.28** (946.07)
$F_{(5,102)}$	.30**	.28**
Transformed Durbin-Watson	2.24	2.18
Observations	108	108
*p< 0.05, **p<0.01,		

Dispatch-Initiated Contacts. Results of the analysis for dispatch-initiated contacts indicate that neither legalization nor initiation of retail sales, when controlling for monthly autocorrelation, were associated with changes in dispatch-initiated calls for service. While dispatch-initiated calls for service have increased within the city, our results do not indicate that these increases can be attributed to either legalization or retail sales.

Figure 48: Legalization, Recreational Sales, and Dispatch-Initiated Contact

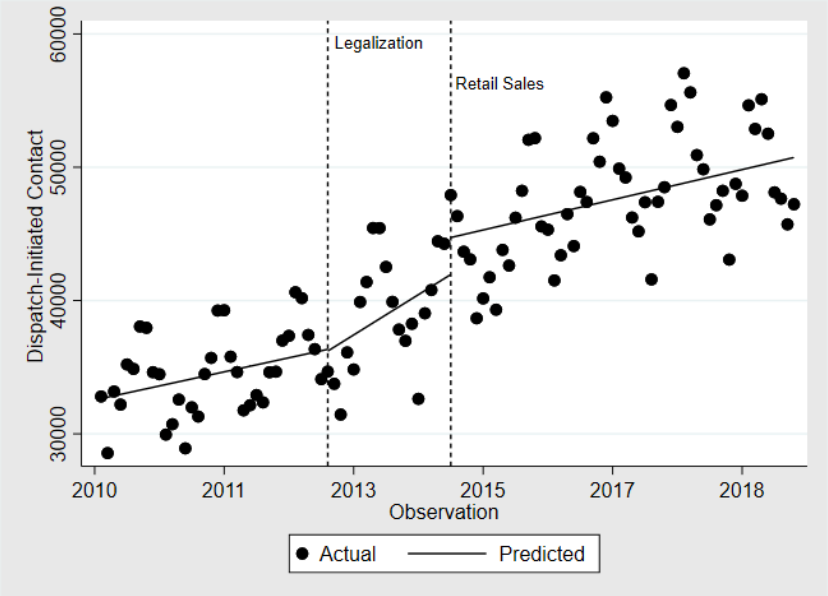


Figure 49: Legalization, Recreational Sales, and Dispatch-Initiated Contact (CAD Events)

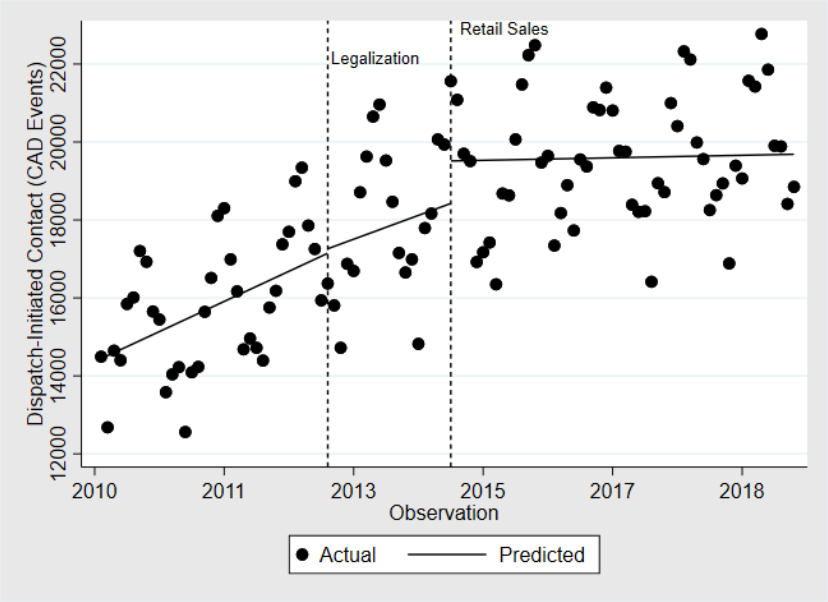


Table 8: Interrupted Time-Series Analysis Results on Dispatch-Initiated Contacts (Single Group)

	Dispatch-Initiated Contacts	Dispatch-Initiated Contacts (CAD Events)
Trend Before Legalization	105.53 (75.40)	77.30 (38.42)
Immediate Effect for Legalization	-128.21 (1304.42)	114.90 (583.72)
Post-Treatment Effect for Legalization	196.71 (211.97)	-16.12 (109.36)
Immediate Effect for Recreational Sales	2773.47 (2277.16)	1090.499 (1157.19)
Post-Treatment Effect for Recreational Sales	-188.97 (203.19)	-57.94 (102.82)
Constant	32645** (1683.37)	14440.98** (795.33)
$F_{(5,102)}$	.44**	.27**
Transformed Durbin-Watson	2.02	1.94
Observations	108	108
*p< 0.05, **p<0.01,		

These results are exploratory so long as we lack a suitable control jurisdiction for comparison. Ongoing research associated with these data is making use of spatial analysis by documenting the presence, and density, of retail dispensaries. We are examining if these observed increases are associated with specific geographic locations within the Seattle Police Department's

jurisdiction. Lastly, we are working with the Seattle Police Department to disaggregate the contact types, allowing for more nuanced analysis into what specific types of contacts are associated with the observed increase.

STUDY LIMITATIONS

Our research methodology necessarily entailed a number of limitations that would prevent the wholesale generalization of the results. For instance, most of the data was collected from one state (Washington) and which was one of the two "pioneer" states involved in legalization in this country. For example, the calls for service data were obtained from a limited number of agencies and are likely not generalizable to the entire state, much less the country. The crime data is extracted from the UCR database (as not all of Washington was National Incident Based Reporting System [NIBRS] compliant for all years under study) which is known to suffer from a number of limitations, including: undercounting of some crimes, a lack of contextual information about criminal activity, and missing incidents not reported to the police. Our specific samples are further limited to agencies which reported all data for all 12 months over the study periods in question. This results in the omission of some agencies (though for Washington, we still capture major metropolitan areas). Future work making use of time-series imputation strategies would be beneficial to check the robustness of our results. While the calls for service data address some limitations of UCR data (for instance, calls for service data are better suited for the analysis of minor crimes), these data still do not address the limitation that only incidents reported to the police are analyzed, nor do they address coverage as they are based on an even smaller number of agencies. Put simply, if legalization resulted in a shift in criminal behavior that was not reported to the police or if these effects happened in areas for which we did not have data, our quantitative analyses would be incapable of detecting it. Similarly, the body-

worn camera (BWC) analysis was exploratory in nature and the data represent two agencies that are geographically and organizationally disparate. As an exploratory component, these results are not generalizable.

The qualitative findings of this study offer insight into the lived experiences of officers, deputies, troopers, trainers, supervisors, administrators, and prosecutors, and are not without their limitations. Our qualitative data are limited by issues of generalizability (they may not represent the opinions of law enforcement professionals more broadly) and potentially be issues of selection bias (it is possible that those with the strongest opinions were perhaps most likely to volunteer to participate in focus groups and interviews). As with any research design employing purposive sampling, these results are not generalizable. They do not represent the lived experiences of all law enforcement officers or justice system representatives, nor adequately capture the totality of the lived experiences of this study's participants. While we were able to obtain a large, and diverse sample of participants, we unfortunately were unable to engage officers from all municipalities in Washington, and across all law enforcement domains. These results emphasized and sought to document experiences pre- and post-legalization. While we made every effort to restrain our analysis to issues involving cannabis legalization effects on law enforcement and crime, our participants, as reflected in our findings, often gravitated towards broader frustrations involving police resourcing, training, and prosecutorial practices. Lastly, while our qualitative data is well-suited for capturing the perceptions of police officers, they are also limited in this regard. Police perceptions of legalization may be skewed and not reflective of the broader process of legalization.

KEY FINDINGS AND POLICY RECOMMENDATIONS

After over three years of field research and writing up results on the effects of cannabis legalization on law enforcement and crime in Washington State, we are now able to identify a

number of noteworthy principal findings. We hope that our work will help policymakers, law enforcement and social services practitioners and stakeholder groups involved with marijuana legalization in their state, or considering such an effort, anticipate both the predictable and unanticipated outcomes for public health and public safety that the commercialization of cannabis brings in its wake.

Key Findings

1. Crime. Neither cannabis-related crime nor more serious offenses seemed to be affected by legalization. This finding was derived from a rigorous examination of the quantitative (UCR data, see above discussion and Lu et al., 2019) and was confirmed in the qualitative (focus groups and interviews) analyses (see above discussion). Certainly, the sharp decrease in cannabis-related crimes is to be expected from the legalization of its possession of small amounts; however, de-prioritization by the police likely explains some of this decrease as well (see Figure 2 under Findings).

2. De-prioritization of Cannabis Crimes. Before, but especially since legalization, there has been a de-prioritization of cannabis crime by both police and prosecutors. Though this approach was not universally accepted in all jurisdictions across Washington, most of the police and prosecutors made this point in the focus groups and interviews conducted across the state.

3. Traffic. In virtually all focus groups and interviews with law enforcement there was widespread concern expressed about increased drugged driving since legalization, and much discussion about the difficulty in detecting it and documenting impairment for successful prosecution. Law enforcement patrol officers and their supervisors tend to believe, based on their own experience and those of their colleagues, that there are many more drivers who are impaired by cannabis consumption on the road than there were before legalization. Research compiled by the

Washington Traffic Safety Commission (e.g., See Grondel, Hoff, & Doane, 2018) indicates that there is good reason to be concerned, though whether there are more drugged drivers since legalization is not yet clear as there is also more testing for it than there was previously. Grondel and his colleagues (2018) found, through the administration of self-reported surveys, that there are a significant proportion of drivers who drive shortly after consuming THC, and even some chronic users of marijuana who believe, whether true or not, that its consumption improves their driving. In some jurisdictions DREs were widely used in cannabis-related cases, but in others, due to the need to be timely in extracting blood for laboratory testing, DREs have been rarely if ever used post legalization. Many officers who have the Advanced Roadside Impaired Driving Enforcement (ARIDE) training performed by DREs have proceeded to secure search warrants for blood based on their knowledge that THC metabolizes quickly post-consumption and the likelihood of capturing 5 ng/ml (the per se standard for presumption of impairment in Washington) is greatly reduced if blood is not taken early in a suspected case of impaired driving.

4. Transnational Criminal Organizations. In the interviews there were a few police managers and officers who indicated that they suspected there were transnational criminal organizations involved in the growing, production and sale of marijuana in the state. Most of the municipal and county police officers indicated that they were not involved in the investigations done of these areas, and that this was the purview of the Washington State Liquor and Cannabis Board and the Washington State Patrol.

5. Illegal Grow Operations. In the interviews a significant number of law enforcement officers expressed the belief that illegal grow operations were somewhat common, and that even some legal operations were selling some of their product illegally "out the back door" for transport outside the state. Having said this, few police managers or officers opined that there was crime

associated with retail sales outlets, especially once they became settled in their respective communities where local governments issued permits for operation in locations not near school, parks and other venues where youth exposure would be heightened.

6. K-9 Dogs. More than a few officers lamented the declining need for K-9s in cannabis detection post legalization. As a result of legalization, the dogs trained for the detection of marijuana could no longer be used for normal duty. Some have been retained for use in school detection applications, but in general new K-9 dogs not trained to detect cannabis must be secured or abandonment of the popular K-9 program has to be considered.

7. Loss of a Search Tool. Several officers in the interviews remarked on how the legalization of marijuana had hampered their ability to search a vehicle. Previously, the smell of cannabis had been used as a justification for a search in many cases; however, under conditions of legalization that practice is no longer allowed. As a direct result, several of the police officers interviewed expressed concern that other illegal activity might be occurring and they could no longer use the smell of marijuana to detect it.

8. Clearance Rates. Our research on clearance rates in both Washington and Colorado indicates that after legalization occurred the clearance rate for several crimes improved. This change was particularly pronounced in Colorado. Legalization did not appear to have a negative impact on the ability of the police to clear cases. Our results provide an initial indication that legalization, in some part, contributed to improvements and did not have an adverse effect on police performance – as measured by clearance rates (see Figures 29 and 30 under Findings).

9. Workload Challenges. In both the focus groups and in the interviews police officers often noted that legalization has likely increased their workload, particularly as concerns traffic offenses. While a DUI involving alcohol would normally take a couple hours of processing, one involving

THC or other drugs (in part because of search warrants required for blood testing) might take as long as four hours of an officer's time. In addition, especially in the first few years of legalization before people adjusted to the reality of legalization, the police reported that they received far more calls for service involving marijuana-related nuisance complaints. These complaints typically were about people (adults and minors) smoking in public, or the smell of marijuana being smoked in apartment buildings, commercial spaces, parking facilities, and in public parks.

10. Drug Recognition Experts. Most departments reported that they did not have sufficient timely access to DREs. Therefore, calling them in from a distance, when their travel time and the amount of time they would have to devote to the 12-step examination of the driver, might lead to further degradation of the THC in the detainee's bloodstream. This was one of the reasons that one sizeable department indicated that their informal policy was to *never* use DREs when THC was suspected as the source of impairment of a driver. One agency has created a headquarters clinic in which blood draws are done as soon as a search warrant (24-hour electronic warrants are now available in much of the state) is obtained and six of the agency's officers have been certified as phlebotomists so that one will be available at all times. In this agency scant use is made of DREs.

11. Cross-State Enforcement. The Idaho police in both focus groups and interviews voiced frequent complaints about the number of THC-impaired drivers crossing the state line between Washington and Idaho. When erratic drivers were stopped, the Idaho officers reported that many drivers seemed surprised that they could not drive after using cannabis or were not allowed to bring marijuana into Idaho they had purchased legally in Washington. Officers also noted that they had witnessed an uptick in the number of drivers and vehicle passengers who were quite apparently involved in the transportation of legally purchased cannabis across state lines from Washington for resale in their state or in a neighboring state where prohibition remained in force (e.g., Utah

and Wyoming). Officers from one Idaho agency reported substantial asset forfeitures related to monetary seizures associated with drug trafficking that included cannabis. Agency enforcement resources were enhanced through asset forfeitures they claimed.

12. Enforcement in Washington. There was some concern expressed by several officers and police supervisors and managers that the enforcement of restrictions on cannabis use included in Initiative 502 were very difficult to execute. For example, restriction to use "in private places" for apartment renters leaves virtually precious few places to use cannabis. Likewise, widespread use out-of-doors in parks or on watercraft, though illegal, are uses which no police agency wishes to deny citizens in legal possession of state-approved marijuana products. For many of the officers, enforcement difficulty concerns were most directly focused on youth use in public spaces and the difficulties of the detection of THC-impaired adult drivers.

13. Calls for Service. Our analysis of calls for service in two relatively small college towns (one in Washington, and the other in Idaho) suggests that police calls for service did increase in the Washington town after recreational sales began, while they decreased in the Idaho town. Notably, a majority of this increase was for social welfare check calls. Our preliminary examination of calls for service data from one large municipality would indicate that neither legalization, nor the beginning of retail sales of cannabis, were associated with increases in calls for service.

Other Insights

1. Concern About Youth. There was a generalized concern, apparent from both the focus groups and the interviews, about the effect of legalization on youth use and greater exposure to cannabis as a result of legalization. Having said this, a number of officers reported that because of the difficulties inherent in documenting youth offending with cannabis (e.g., vaping and consumption of edibles), the ubiquity of cannabis in private homes post legalization, and the reticence of most

prosecutors to accept youth possession cases, de-prioritization has taken place in this area as well in many jurisdictions. Public schools with SROs (School Resource Officers) and/or local police liaison officers have a decided preference for referral of cases to a school-based restorative justice, learning-focused process as opposed to referral to juvenile court in most areas of the state.

2. Youth and Family Education. Several officers complained in the interviews that not nearly enough education about the hazards of cannabis consumption for youth has taken place. Their concern was particularly focused on how cannabis affected driving, and the lack of education provided to youth and their families both before legalization and since.

3. Law Enforcement Resources and Training. Although some officers and police managers indicated that some of the funds derived from cannabis taxes had trickled down to their department for training and other initiatives, most officers and their supervisors felt that far too little new resources and/or targeted training have been made available to local law enforcement to deal with cannabis-related law enforcement issues. Many of the interviewees felt they had not been trained by their agency or provided sufficient access to relevant training outside of their agency, for them to effectively enforce the provisions of the new law.

Policy Recommendations

After our exhaustive review of both quantitative and qualitative data, much of it spanning several years, and the focus groups and interviews involving the participation of 25 agencies and over 153 law enforcement participants from both Washington and Idaho, we were able to identify 16 distinct noteworthy findings as regards to the effect of the legalization of marijuana on crime and law enforcement. We now offer 6 recommendations that are derivative from these findings, several of which were articulated by the state's law enforcement and prosecutorial community.

1. *Law Enforcement Training.* In addition to the need for much more work on public education than was anticipated (see our 7th recommendation below), there is a parallel need for *much more training of law enforcement officers* to better prepare them to enforce marijuana laws as adjustments are made to accommodate the growth of the cannabis industry. Once a state recognizes the enormous new revenue stream it can realize from marijuana commercialization, industry lobbyists will quite predictably pressure state policymakers to reduce restrictions on the number of growing and retail sales outlets and the places where legally purchased cannabis can be used. Without *ongoing updated training* of the police there will be a continuation of the complaints we documented on the part of law enforcement that too little preparation was provided to police officers to effectively enforce I-502, and too little updating of information is being provided as state legislative changes take place to facilitate the growth of the newly forming cannabis industry.

2. *Traffic Safety.* With respect to *traffic safety and cannabis-impaired driving*, the absence of tools equivalent to the accuracy, quality, and roadside collection capabilities of alcohol breath testing devices leads law enforcement officers to perceive that cannabis-impaired driving is a problem for which they are not adequately prepared and for which they are lacking proper tools. While the prevalence of alcohol impaired driving is declining in Washington and elsewhere, the incidence of cannabis impairment and co-incident alcohol and cannabis impairment appears to be rising (Berning, Compton, & Wochinger, 2015; Ramirez, et. al., 2016). Without making adequate provision for the enhancement of existing DRE programs and the expansion of ARIDE training programs, there is little chance that law enforcement can rise to the challenge of reaching the Target Zero goal of no traffic fatalities by the year 2030. Likewise, making use of dash mounted and body worn camera footage from cannabis-involved traffic stops reflecting best practices and

inappropriate officer conduct alike provides another important potential tool for effective officer training.

3. *Prosecutor Training.* Our interviews with prosecutors revealed the need for the training of prosecutors in the area of cannabis-impaired driving cases. Reliance on the established "blood evidence paradigm" so appropriate to alcohol impairment is causing major problems when the source of impairment is cannabis. As the science of cannabis impairment is developing it is increasingly clear that THC presence in the blood is not indicative of impairment, particularly in the case of medical marijuana users and chronic users of recreational marijuana. Researchers in Colorado and Washington have shown the limitations inherent in reliance on blood THC levels for the imputation of impairment in controlled dosage studies of occasional and chronic users. Accordingly, the AAA Foundation and the National Highway Traffic Safety Administration (NHTSA) have both concluded that per se laws are no longer advisable (Logan, Kacinko & Beirness, 2016; NHTSA, 2010). Occasional users are impaired by low levels of THC presence, but chronic users are not impaired even when higher levels of THC are found in the blood stream (Sewell, Poling, Sofuoglu, M., 2010). The inclination of ARIDE-trained officers to seek early blood draws in suspected cases of cannabis impairment has resulted in a major backlog of blood testing in the state toxicology lab, and delayed test results have become a major problem for the successful prosecution of cases where genuine impairment is indeed present but "speedy trial" standards are in force. As with law enforcement personnel, prosecutors in those states following in the path of Washington and Colorado will need access to training in the ways in which the alcohol-based Standard Field Sobriety Test, even with ARIDE training enhancement, is likely to make successful prosecution of cannabis-impaired driving cases problematic. It is recommended that some portion of any state revenues derived from marijuana sales be earmarked for the training

of prosecutors tasked with assisting officers in the effective enforcement of state impaired driving statutes.

4. *Black Market Detection.* A principal benefit of marijuana legalization was thought to be the disappearance of the *black market.* Our research revealed that this outcome was not realized. In fact, the advent of legalization has made it much more difficult for the police to interdict illegal marijuana and much easier for new forms of the black and gray markets to arise and to persist. The Washington legislature in 2019 allocated $3 million to the Washington State Patrol to address the problem of the persistence of a black market in marijuana in the state, and the presence of organized crime (domestic and international) in these markets. In states following along the path of Washington and Colorado it is important that resources be allocated to assure the effective investigation and successful prosecution of black market and gray market (resale of products legally purchased to parties not permitted to make such purchases) activities. Illegal cross-state transport and penetration into markets in states where marijuana possession is prohibited is one of the primary areas of insufficient police resources for effective prevention and prosecution.

5. *Welfare Calls for Service.* Our study of calls for service data revealed that a state which legalizes recreational marijuana should anticipate that local law enforcement agencies will likely experience *an increase in calls for service* that are not crime-related, but rather pertain to making welfare checks related to marijuana use. A proportion of these calls will entail the police making connection with social service agencies and health providers for their timely assistance, and often require follow-up checks on such cases long after the first call is received. The workload effects for police officers in such cannabis-related calls for service are likely to be substantial, particularly in smaller agencies where the supply of officers on duty at any one time is typically rather limited. We recommend that some portion of state marijuana revenue be ear-marked in an account for local

law enforcement workload support to be requested by agencies where such calls for service arise with some frequency.

6. *Public Education.* The state would be wise to allocate more resources to *the education of its citizens* about the challenges associated with medical and recreational marijuana, their responsible adult use, and their likely adverse effects for adolescent use given its present-day high potency. Such public education regarding vulnerable youth and adverse effects on the cognitive abilities of drivers deserve top-priority consideration. Provisions were indeed made for just such important work in I-502, making use of marijuana sales revenues precisely for these purposes. However, *little new funding* for such work already being done in this area by some school districts, some county public health authorities, and numerous youth drug abuse nongovernmental organizations (NGOs) materialized; instead, prior funding has been **s***upplanted* (not enhanced) by I-502 revenues. This is a serious mistake which should not be made in other states.

Dissemination

In addition to the early research findings published in Police Quarterly (Makin et al., 2019) and Justice Quarterly (Lu et al., 2019), future research articles will explore the police perspective on enforcement of boating regulations post legalization (Stanton et al., 2021 in the *Journal of Qualitative Research*), implementation of legalization using focus group data (Stohr et al., 2021 in the *Justice Evaluation Journal*), and the effect of legalization on calls for service (Makin et al., 2021 in *Policing and Society*). Findings were presented to federal experts at an NIJ Briefing in 2019, and to law enforcement partner agencies and stakeholder groups throughout the project. They include the U.S. Attorney's Offices for Eastern Washington and Western Washington, Northwest High Intensity Drug Trafficking Area (NW HIDTA), the Washington State Liquor and Cannabis Board (WSLBC), the Washington Association of Prosecuting Attorneys (WAPA), the

Washington Association of Sheriffs and Police Chiefs (WASPC), the Washington State Institute for Public Policy (WSIPP), the Washington State Patrol (WSP), the Washington Traffic Safety Commission (WTSC), the Washington State Parks and Recreation Commission, the Washington Department of Fish and Wildlife, the National Association of State Boating Law Administrators (NASBLA), and The Cannabis Alliance. Presentations were also delivered at conferences of the Western Association of Criminal Justice, the Academy of Criminal Justice Sciences, and the American Society of Criminology. Desensitized research data will be archived at the Inter-university Consortium for Political and Social Research (ICPSR) so that the benefit of our work can be extended to other scholars and researchers.

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APPENDIX A:
CASE STUDY ANALYSIS

Introduction

Fifteen police organizations signed *Memorandums of Understanding* (MOUs) with the Washington State University Department of Criminal Justice and Criminology committing to participate in a three-year study of the *Effects of Marijuana Legalization on Law Enforcement and Crime*. The study was conducted between January 2017 and June 2020 and included the collection of agency-specific data obtained from each organization for purposes of conducting well-documented agency case studies. It is necessary to capture the experiences of a wide range of types of local police agencies – large and small, urban/suburban and rural, and dealing with state, municipal and county, and tribal jurisdictions alike.

Data were requested from all fifteen agencies for the calendar year 2016, with repeated reminders being sent for these 2016-based data. Despite those multiple requests, some MOU partner agencies chose to report 2017 data based on the belief that it was the most recent data available. Since there is little reason to suspect large changes to have occurred in these agencies between 2016 and 2017, we believe the data for both years are likely highly comparable. Fourteen of the 15 police organizations with MOUs provided either 2016 or 2017 agency demographic data. However, some agencies declined to provide data for some of the categories requested; those cases are identified in the tables below as "*No Entry."* Moreover, one MOU organization was a multi-agency regional drug task force, and as such was not included in the demographic data collection effort inasmuch as the multi-agency entity does not fit the parameters for individual agency case study analysis.

Agency Representation

Ten of the 14 MOU police organizations represented municipal police departments that included two sovereign tribal agencies. Nine of the 10 local police departments were from Washington jurisdictions and one was located in the state of Idaho. Three of the 14 MOU signatory organizations were county sheriff's departments, including two such agencies from Washington state and one from Idaho. There was also one MOU state agency represented from Washington State (see Table A-1). We provide a visual representation of our MOU signatory coverage in Washington in Figure 1, though we would note that the quantitative data we employed included agencies from 30 of the 39 counties in Washington, covering approximately 60% of the state's population and all of the major metropolitan areas (including Seattle, Spokane, Tacoma, and Vancouver). Furthermore, given that some of our MOU-signing partner-agencies have statewide jurisdiction (i.e., the Washington State Patrol), our qualitative data also covers the entire state as well.

Service Area Populations

Four *police departments* served rural areas of less than 50,000 population, including among them two sovereign *tribal* areas. Two *police departments* (one rural and one suburban) served populations of between 50,000 and 100,000, and two *police departments* serviced metro areas of more than 200,000 residents. One large urban area *police department* provided coverage for a population of more than 700,000 persons. Three county sheriff's departments serve county populations of approximately 150,000, 160,000 and 500,000, respectively. The *state* agency provides service to Washington state's entire population of more than 7.5 million people (see Table 5).

Sworn Officer Age and Veteran Distribution

Ten of the 14 agencies reported the average ages of their sworn officers. Eight of the 10 reporting agencies were police departments listing a combined total of 2,384 sworn officers with an average age of 42. The county sheriff's department located in Washington that reported age data for its 227 sworn officers showed an average age of 43. State agency data showed 1,024 sworn officers with an average age of 40 (see Table A-1). Eleven agencies reported on their employees with military veteran status, with that status ranging widely, from a low of 4% to a high of 64% of sworn officers (see Table 3).

Supervisory Classifications

In addition to Chiefs of Police, 5 of the 10 police departments utilized Assistant Chiefs. Two county sheriff's departments operate with Undersheriff positions, while the state agency employed multiple Assistant Chiefs in addition to the Chief. Additional command staff positions ranging from Lieutenant through Major were utilized by 13 of the 14 agencies, with one tribal agency reporting no command staff below the rank of Chief. With the sole exception of one county sheriff's department that reported the Sergeant position as non-applicable, the remaining 13 agencies identified the use of multiple Sergeants. Urban police departments and the state agency in particular reported employing large complements of Sergeants (see Table A-1).

Sworn Officer Genders

The 14 agencies listed 3,465 male officers and 465 female officers, with females making up 11.8% of the total number of officers. Six of the 14 agencies had fewer than 5 female officer employees. These 6 agencies were all rural, with a complement of 160 male and 12 female officers reflecting a 7% female officer representation for these departments. Police agencies with the highest levels of female officer representation were found amongst urban and suburban areas on

the western side of Washington state, with the top three agencies ranging from 14.7% to 25.3% (see Table 2).

Sworn Officer Racial and Ethnic Categorization

Agencies reported race demographics as 3,208 White, 192 Hispanic, 167 black/African-American, 71 American Indian/Alaskan Native, 128 Asian, 22 Hawaiian/Pacific Islander, and 111 Other (WSP-No entry for the Other category). The WSP listed an additional category reflecting the combining of the ancestries of 29 persons from Asian, Hawaiian, and Pacific Island descent. Agency racial demographics varied from 100% White (county sheriff's department) to 92.3% non-white (tribal police department) (see Table 2).

The largest reporting urban area police department featured the greatest degree of racial diversity, registering at more than 1-in-4 (28.7%). In contrast, the police department showing the highest Hispanic officer representation at 22.2% served a community of almost 100,000 people, of whom 46.2% were Hispanic. One county sheriff's department served an area of more than 160,000 population, of which an estimated 94.5% were White (U.S. Census 2018); this law enforcement agency reported that 100% of their officers are White (see Table A-2).

Sworn Officer Educational Achievement and Agency Education Incentives

Three police departments and one county sheriff's department declined to report the educational attainment levels of their officers. Five police departments (i.e., two rural, one suburban, one urban, one tribal) reported that more than 80% of their officers have at least some college. Seven of the 10 reporting agencies listed at least one officer with a graduate or professional degree. One police department located in an Idaho university town reported that 14% of their officers held either graduate or professional degrees, which was the highest level of formal educational attainment among the reporting agencies. Twelve of the 14 agencies reported offering

educational incentives for their officers and staff, with 9 of these law enforcement agencies listing higher compensation for additional educational achievement. Seven of the 14 agencies also identified some level of tuition incentive payment having been established to encourage employees to take advantage of access to education (see Table A-3).

Agency Specialized Units

Fourteen agencies reported having specialized units within their organizations. Nine of the 14 agencies had either narcotics units or participated in multi-agency narcotics task forces. Four urban police departments, one county sheriff's department, and the state agency reported having specialized gang units, with the county sheriff's department gang unit also serving to address drug and property crime issues. Four urban police departments, two county sheriff's departments, and the state agency listed homicide units or participation in major or general crime units including multi-agency task forces. Several additional specialized units listed across different agencies involved Special Assault Investigators (SAI), Special Weapons and Tactics (SWAT), Auto Theft Task Force (ATTF), High Tech Crimes (HTC), Forensics, Sexual Assault Response Team (SART), Marine Patrol, Search and Rescue, Canines, and School Resource Officers (SROs) (see Table A-4).

Violent Crime and Clearance Rates

Six agencies (i.e., one urban, one suburban, one county-Idaho, two rural including one located in Idaho, one Tribal) reported violent crime and associated clearance rates. The urban police department violent crime rate was more than 20 times higher (20.8 per 1000 population) than the suburban, county, and rural agencies, and reported a violent crime clearance rate of 38.7%. Comparably, among non-tribal agencies, the county sheriff's department located in Idaho had the highest violent crime clearance rate (58.76%) at .61 violent crimes per 1,000 population, while the

rural police department located in Washington state listed a clearance rate of 23.8% at .63 violent crimes per 1,000 population. The rural police department located in Idaho reported a violent crime clearance rate of 55.5% for .71 violent crimes per 1,000 population. In contrast, violent crime and clearance rate data reported by one tribal agency listed a violent crime clearance rate at 86% for 23 violent crimes committed. (see Table A-5).

Property Crime and Clearance Rates

The aforementioned agencies (i.e., one urban, one suburban, one county-Idaho, two rural including one located in Idaho, one Tribal) also reported property crime rates ranging widely from 7.95 to 96.4 per 1,000 population, and property crime clearance rates likewise ranging widely from 7% to 45%. Notably, the suburban and urban property crime clearance rates were the lowest at 7% and 8.3%, respectively. The agency with the highest property crime clearance rate was represented by a tribal police department at 45% (see Table A-5).

Drug Crime and Clearance Rates

Only five (one urban, two rural, one county-Idaho, one tribal) of the reporting agencies identified both drug crime and clearance rates. Drug crimes ranged from 1.35 to 8.4 per 1,000 population, with the highest rate listed for a tribal area in western Washington that is located near large urban populations and features open access to the area on the part of the general public. Drug crime clearance rates were reported from 77.27% for the rural Idaho police department to 95% for tribal authorities. In comparison, the urban police department showed a drug crime rate of 3.1 per 1,000 population, and a drug crime clearance rate of 85.1% (see Table A-5).

Conclusions

The data collected revealed that the 14 police, sheriff, state, and tribal departments submitting data are serving a highly varied geographic (urban, suburban, rural, state, and tribal)

and demographically diverse set of population areas across Washington state and northern Idaho. The average age of sworn officers among these agencies ranged from 40 to 43, reflecting a predominance of experienced officers. Gender representation for females was reported at 11.8% overall, with the highest representation (25.3%) located in a suburban area of western Washington State. Agency racial demographics varied from 100% White (county sheriff's department) to 92.3% non-white (tribal police department), with the largest reporting urban police department featuring the greatest racial diversity at 28.7% (see Table A-2).

Although several departments declined to provide sworn officer educational data, five police departments (i.e., two rural, one suburban, one urban, one tribal) reported that more than 80% of their officers have at least some college, while half of the agencies listed at least one officer with a graduate or professional degree. In addition, a majority of agencies reported that they provided educational incentives for their officers, including higher compensation for additional educational achievement. Moreover, half of the agencies reported that they provided some level of tuition incentive payment (see Table A-3).

All the reporting agencies had specialized units, with two-thirds of them having assigned narcotics units or report participating in multi-agency narcotics task forces. Other specialized units or participation in multi-agency task forces included gang, property, homicide, and major or general crime sections. Several agencies also employed units involving Special Assault Investigators (SAI), Special Weapons and Tactics (SWAT), Auto Theft Task Force (ATTF), High Tech Crimes (HTC), Forensics, Sexual Assault Response Team (SART), Marine, Search and Rescue, Canine, and School Resource Officers (SROs) (see Table A-4).

Agencies reported violent crime rates ranging from .6 (tribal area) to 20.8 (urban area) per 1,000 population. In turn, violent crime clearance rates varied from 23.8% (rural) to 86% (tribal).

Property crime rates reported varied between a low of 7.95 and a high of 96.4 per 1,000 population, while property crime clearance rates ranged widely as well from 7% to 45%. (see Table A-5).

Table A-1: Number of Sworn and Non-Sworn Officers and Law Enforcement Personnel in Command Positions

	Sworn Officers	Non-Sworn Officers	Assistant Chief (AC) /Undersheriff (US)	Major	Commander	Captain	Lieutenant	Sergeant	Average Age
Kirkland PD	101	36	0	0	0	3	6	13	40
Kootenai CSO	13	13	1 US	0	0	6	6	N/A	Entered N/A
Moscow PD	35	0	0	0	0	3	0	4	40.59
Neah Bay Tribal PD (Makah)	13	0	0	0	0	0	0	2	No Entry
Pullman PD	30	3 CE*** 11 Staff	0	0	1	0	0	4	42
Seattle PD	1413	566	6 AC	0	0	25	60	181	47.82
Spokane CSO	227	76	2 US	0	2 (Inspector)	0	8	27	43
Spokane PD	319	90	1 AC	2	0	6	15	39	42.31
Suquamish Tribal PD	11	0	1 AC	0	0	0	0	3	No Entry
Tacoma PD	330	38	3 AC	0	0	4	14	42	42.60
WSP	1024	1205	4 AC	0	12 (Civil Service)	21	40	153	40
WSUPD	21	0	1 AC	0	0	1	0	5	42
Yakima CSO	61	6-DOS	0	0	2 – Division Chiefs	0	2	11	No Entry
Yakima PD	135	57	N /A	0	N/A	2	5	17	40

***CE - Code Enforcement Officers – Limited Commissioned Officers
AC - Assistant Chief
US – Undersheriff
DOS-Department of Security

Table A-2: Gender, Racial, and Ethnic Demographics

	Number of male officers	Number of female officers	White	Black/ African-American	Hispanic/ Latino/ Latina	American Indian/ Alaskan Native	Asian	Hawaiian/ Pacific Islander	Other
Kirkland PD	106	36	121	1	2	1	1	4	6
Kootenai CSO	71D* 89P**	9D* 4P**	80 93	0	0	0	0	0	0
Moscow PD	31	4	33	0	2	0	0	0	0
Neah Bay Tribal PD (Makah)	12	1	1	1	0	11	0	0	0
Pullman PD	27	3	28	1	0	0	1	0	0
Seattle PD	1201	207	1008	107	73	23	93	14	95
Spokane CSO	216	11	212	1	7	2	4	1	0
Spokane PD	287	32	291	2	9	6	1	1	9
Suquamish Tribal PD	10	1	7	1	0	2	0	1	0
Tacoma PD	281	49	267	19	13	3	27	0	1
WSP	931	93	897	30	46	21	29 – Asian and HI/PI Combined		No Entry
WSUPD	21	1	19	1	1	0	0	0	0
Yakima CSO	59	2	51	1	9	1	0	0	0
Yakima PD	123	12	100	2	30	1	1	1	0

*D - Detention Facility Officers

**P - Patrol Officers

Table A-3: Educational Attainment, Educational Incentives, and Veteran Demographics

	HS	Some Coll., or 2 Yr. Deg.	4 Yr. Coll. Deg.	Grad or Pro Deg.	Education Incentive	Higher Pay	Hiring & Promotion Preference	Tuition Cover/ Reimb.	Mil Vet/ % Sworn Officers
Kirkland PD	4	29	53	8	Yes	Yes	No	No	No Entry
Kootenai CSO	N/A	N/A	N/A	N/A	Yes	Yes- Rank	No	If Funded	Not Tracked
Moscow PD	2	6	22	5	Yes	No	No	Some	5 (14%)
Neah Bay Tribal PD	13	3	2	0	No	N/A	N/A	N/A	4 (31%)
Pullman PD	No Entry	10	19	1	Yes	Yes- 2% AD 4% BD	No	No	7 (23%)
Seattle PD	N/A Entry	N/A Entry	N/A Entry	N/A Entry	Yes	No Entry	Aid Order of Promo.	No Entry	174 (12%)
Spokane CSO	All Sworn have HS or GED	22	42	5	Yes	Yes	No	No	22 (10%)
Spokane PD	N/A Entry	N/A Entry	N/A Entry	N/A Entry	Yes	Yes- Sgts. & Below 1% AD 2% BD	N/A	Yes- Pre-Approved Classes	12 (4%)
Suquamish Tribal PD	No Entry	9	2	No Entry	No Entry	No Entry	No Entry	No Entry	7 (64%)
Tacoma PD	N/A Entry	N/A Entry	N/A Entry	N/A Entry	Yes	No Entry	No Entry	Yes	N/A Entry
WSP	306	359	338	19	Yes	Yes WSP-TA 2% AD / 4% BD / WSP-LCA 2% AD 4% BD / 6% / MD	Yes- Veteran	Yes	238 (23%)
WSUPD	5	14	2	0	Yes	0	0	Tuition Waiver- $5.00 for 6 Credits Per Sem.	5 (23%)
Yakima CSO	61	8	19	1	Yes	Yes	No	No	20 (33%)
Yakima PD	20	28-AD / 40- Some College	46	1	Yes	Yes	No	Manage-ment Only Lt./Cpt.	37 (27%)

AD - Associate Degree
BD - Bachelor Degree
MD - Master Degree
WSPTA - Washington State Patrol Troopers Association (Represents Troopers and Sergeants)
WSPLCA - Washington State Patrol Lieutenants and Captains Association

Table A-4: Specialized Units and Specialist Officer Assignments

	Special Units in Agency	Narcotic	Gang	Homicide	Special Task Force	DRE	ARIDE	Property Crimes	Traffic Enforce-ment	Other
Kirkland PD	Yes	N/A	N/A	N/A	N/A	2	N/A	N/A	N/A	2 Invest.
Kootenai CSO	Yes	N/A	N/A	N/A	Yes	Yes	N/A	N/A	Yes	Dive Res. /SWAT
Moscow PD	Yes	1	N/A	N/A	N/A	N/A	N/A	1	1	N/A
Neah Bay Tribal PD (Makah Tribe)	Yes	N/A	N/A	N/A	N/A	N/A	1	N/A	N/A	1 Det.
Pullman PD	Yes	1-Drug TF	N/A	N/A	N/A	1	12	N/A	N/A	4 Det. / 1 SRO
Seattle PD	Yes	30	18	25	N/A	Yes	N/A	N/A	57	N/A
Spokane CSO	Yes	See Other	See Other	20-MCU	Yes	1	1	See Other	10	28-DPG 11-SRDs 6-K9
Spokane PD	Yes	8	See Spec. TF	13-MCU	9	2	N/A	6	10	49
Suquamish Tribal PD	Yes	1 Part-Time	N/A	N/A	N/A	2	2	N/A	N/A	Tracker
Tacoma PD	Yes	13	3	4	N/A Entry	3	N/A Entry	15	7	15-SA 13-Forensics
WSP	Yes	12	2	41-Assigned Regional Task Forces	6-MEC-TF	82	790	N/A	43-ADAT 25-TZT 39-Motors 13-SHCAT	13-Auto Theft TF/ 4-High Tech Crimes
WSUPD	Yes	0	0	0	0	1	12	0	0	3-SART-1-Forensics
Yakima CSO	Yes	1	0	5-Gen. Crimes 1-Sgt. 4-Det.	3	0	Several Trained	Same as Homi-cide / Gen. Crimes	4	6-MD 1- S&R 1-CD 1-MP 2-SCD
Yakima PD	Yes	1-Sgt. 3-Ofc.	3-Sgt./ 6-Ofc./ 2-Det.	1-Sgt. 4-Det.	N/A	3	15	5-Det.	1-Sgt. 4-Ofc.	1-K9 / 1-Sgt. 7-Ofc. (SRO)

MECTF-Missing and Exploited Children Task Force
ADAT-Aggressive Driving Apprehension Team
TZT-Target Zero Team
SHCAT-Serious Highway Crime Apprehension Team
SRO-School Resource Officer
SRD-School Resource Deputy
MD-Marine Deputy
S&R-Search and Rescue
CD-Civil Division
MP-Mountain Pass
SCD-Special Crimes Detective
DPG-Drug/Property/Gang Unit
SART-Sexual Assault Response Team
SA-Special Assault
MCU-Major Crimes Unit

Table A-5: Crime Rates and Clearance/Arrest Rates

	Violent Crime Rate	Violent Crime Clearance Rate	Property Crime Rate	Property Crime Clearance Rate	Drug Crime Rate	Drug Crime Clearance %
Kirkland PD (2017) Pop.-89,557 (2018-Est. Census)	.76 / 1,000 Population	48%	29.6 / 1,000 Population	7%	No Entry	79%
Kootenai CSO (2017) Pop.-161,505 (2018-Est. Census)	.61 / 1,000 Population	58.76%	7.95 / 1,000 Population	27.51%	7.32 / 1,000 Population	91.07%
Moscow PD (2016) Pop.-25,766 (2018-Est. Census)	.71 / 1,000 Population	55.5%	19.20 / 1,000 Population	13.37%	4.34 / 1,000 Population	77.27%
Neah Bay Tribal PD (Makah)(2017) Pop.-1,213	.6 / 1,000 Population	Do Not Track	.2 / 1,000 Population	Do Not Track	.4 (MJ) / 1,000 Population	Do Not Track
Pullman PD (2017-NIBRS) Pop.-34,019 (2018-Est. Census)	.63 / 1,000 Population	23.8%	16.5 / 1,000 Population	19.1%	1.35 / 1,000 Population	57.8%
Seattle PD (2016) Pop.-744,955 (2018-Est. Census)	6.14 / 1,000 Population	No Entry	56.57 / 1,000 Population	No Entry	2.32 / 1,000 Population	No Entry
Spokane CSO Pop.-514,631 (2018-Est. Census)	No Entry	No Entry	No Entry	No Entry	No Entry	No Entry
Spokane PD (2016) Pop.-219,190 (2018-Est. Census)	5.97 / 1,000 Population	No Entry	76.88 / 1,000 Population	No Entry	N/A Entry	No Entry
Suquamish Tribal PD (2016) Pop.-2,140 (2010 Census)	10.75 / 1,000 Population	86%	57.01 / 1,000 Population	45%	8.4 / 1,000 Population	95%
Tacoma PD (2017) Pop.-216,279 (2018-Est. Census)	20.8 / 1,000 Population	38.7%	96.4 / 1,000 Population	8.3%	3.1 / 1,000 Population	85.1%
WSP (2017) Pop.-7,535,591 (2018-Est. Census)	2.64 / 1,000 Population	N/A Entry	49.59 / 1,000 Population	N/A Entry	1.66 / 1,000 Population	N/A Entry
WSUPD	No Entry	No Entry	No Entry	No Entry	No Entry	No Entry
Yakima CSO Pop.-251,446 (2018-Est. Census)	No Entry	No Entry	No Entry	No Entry	No Entry	No Entry
Yakima PD (2016) Pop.-93,884 (2018-Est. Census)	1.39 / 1,000 Population	No Entry	20.86 / 1,000 Population	No Entry	.96 / 1,000 Population	No Entry

APPENDIX B:
FOCUS GROUP SCRIPT
Focus Group Questions

Purpose:
With support from (Agency Point of Contact), you are being asked to take part in this federally funded study carried out by Washington State University on the passage of I-502 and specifically what effects this new law has had on policing in your agency.
We have selected each of you to participate in this study because of your experiences and any insight you provide could prove helpful to other states and their police agencies who are considering legalization of marijuana.
I have a few specific questions that I want to present to the group, though I truly want this to be more of a conversation about your experiences.

Engagement:

(1) Prior to I-502 how was marijuana possession handled in your agency?

(2) Now thinking about post legalization how is marijuana possession handled in your agency?

Exploration:

(3) Since the passage of I-502, how has the way you do your job changed?

(4) Would you argue that I-502 has made things easier for police agencies or more challenging?

(5) Can you think of any *specific incidents* where I-502 has made your job more difficult/easier?

(6) Have you noticed any key changes or issues that you would attribute to the passage of I-502?

(7) As we end the focus group, I am curious if the passage of I-502 resulted in any unexpected changes that we have not discussed.

(8) Is there any noteworthy experience, post I-502, that you believe is important to share with agencies in other states who are in the pre-implementation stage or are considering legalization?

APPENDIX C:
INTERVIEW SCRIPTS

Interview Questions for Police Officers

Instructions: Thank you for agreeing to talk to me about your experiences and opinions regarding policing since the legalization of marijuana via the passage of I-502. Information from this interview will be used as part of a broader study where we detail how legalization has affected law enforcement. Your answers will be recorded and transcribed to assist in the processing of data. Your participation is completely voluntary, and your responses will be kept anonymous. In any publications about this research we will not use your name. Your comments will be either grouped together with others or you will be referred to more generally as a law enforcement professional. As we move through the interview, please tell me if you would like to skip a question or if you would like further clarification.

1.) First, please begin by telling me what, if anything, is different about your job since the passage of I-502?
    a. Prompt: Any new challenges or difficulties since legalization?
    b. Prompt: Have you chosen or been asked to focus more or less on any specific crimes since the legalization of recreational marijuana? [Prompt for details]
    c. Prompt: Have you noticed any changes in your interactions with the community since marijuana was legalized? [Further prompt – any differences in the types of people you engage with?
    d. Prompt: What about your interactions with juveniles?
    e. Prompt: Have you noticed that people are more likely to admit possession of MJ when you talk to them now? If true, is it true for both adults and juveniles?

2.) Have you received any specific instructions or training regarding marijuana from your supervisors?
    a. Prompt: Any additional training about how to handle DUI, or smoking in public?

3.) What are your thoughts on the DRE Program? [further prompt about drugged driving and traffic more broadly]

4.) Thinking about the legalization of marijuana in a broader context, what do you think some of the changes have been, beyond the effects on your job?
    a. Prompt: Do you have more or fewer resources (e.g. time, staff and officer support, etc.) to do your job since passage of the legalization law? Which is it? Please explain.
    b. Prompt: Have you noticed a difference in prosecutorial handling of drug offenses, including cannabis offenses, since legalization of marijuana? If so, please explain.
    c. Prompt: Have complaints from citizens increased or decreased since legalization of marijuana? [Further prompt about causes]. Can you describe the types of complaints related to MJ that you typically see/hear about?

5.) In your opinion, have there been any unexpected outcomes, either positive or negative, as a result of the legalization of marijuana? If so, what are they?
    a. Prompt: Are the police seeing any change in cross state border transport of marijuana? If yes, could you describe the more typical types of these offenses?
    b. Prompt: Are you noticing any changes in the black market for drugs?
    c. Prompt: What about how dispensaries are handled and policed in your area?

6.) What about your personal opinion on the legalization of marijuana? Has this changed since legalization? What, if any, benefits were there to marijuana being illegal?

7.) What recommendations do you have for police administrators and policymakers interested in improving the ability of the police to deal with the legalization of cannabis?

8.) Do you have any other comments or insights about legalization that you would like to share with the research team?

Interview Questions for Police Administrators

Instructions: Thank you for agreeing to talk to me about your experiences and opinions regarding policing since the legalization of marijuana via the passage of I-502. Information from this interview will be used as part of a broader study where we detail how legalization has affected law enforcement. Your answers will be recorded and transcribed to assist in the processing of data. Your participation is completely voluntary, and your responses will be kept anonymous. In any publications about this research we will not use your name. Your comments will be either grouped together with others or you will be referred to more generally as a law enforcement professional. As we move through the interview, please tell me if you would like to skip a question or if you would like further clarification.

1. First, please begin by telling me what, if anything, is different about your job since the passage of I-502?

a. Prompt: Any new challenges or difficulties since legalization?
b. Prompt: Have you decided or been asked to focus more or less on any specific crimes since the legalization of recreational marijuana? [Prompt for details]
c. Prompt: Have you noticed any changes in your interactions with the community since marijuana was legalized? [Further prompt – any differences in the types of people you engage with?
d. Prompt: What about your interactions with juveniles or their parents?

2. Have you given any specific instructions or training regarding marijuana to officers in your agency?

a. Prompt: Any additional training about how to handle DUI, or smoking in public?

3. What are your thoughts on the DRE Program? [further prompt about drugged driving and traffic more broadly]

a. Prompt: Does your department need more DRE officers? Why or why not?

4. Thinking about the legalization of marijuana in a broader context, what do you think some of the changes have been, beyond the effects on your job?

a. Prompt: Do you have more or fewer resources (e.g. time, staff and officer support, etc.) to do your job since passage of the legalization law? Which is it? Please explain.

b. Prompt: Have you noticed a difference in prosecutorial handling of drug offenses, including cannabis offenses, since legalization of marijuana? If so, please explain.

c. Prompt: Have complaints from citizens increased or decreased since legalization of marijuana? [Further prompt about causes]. Can you describe the types of complaints related to MJ that you typically see/hear about?

5. In your opinion, have there been any unexpected outcomes, either positive or negative, as a result of the legalization of marijuana? If so, what are they?

a. Prompt: Are the police seeing any change in cross state border transport of marijuana? If yes, could you describe the more typical types of these offenses?
b. Prompt: Are you noticing any changes in the black market for drugs?
c. Prompt: What about how dispensaries are handled and policed in your area?
d. Prompt: Any changes in crime or calls for service?

6. Have you experienced any issues in hiring, or anticipate any issues, associated with the passage of I-502?

7. What recommendations do you have for police administrators and policymakers interested in improving the ability of the police to deal with the legalization of cannabis?

8. Do you have any other comments or insights about legalization that you would like to share with the research team?

Focus Group/Interview Questions for Prosecutors

1. Describe the **changes** in enforcement, including prosecution, of marijuana laws in your jurisdiction since passage of I-502?
2. Do you think that police officers in your jurisdiction are making fewer, as many, or more **drug-related stops** as they were before legalization of marijuana? Which is it? Please explain.

    Follow-Up: Has the prosecution of DUI(D) changed in your jurisdiction?
3. What, if anything, is different about **your job** since passage of I-502? Are there more or fewer challenges to doing your job since legalization of marijuana? Has the prosecution of drug offenses changed in your office? Please explain.
4. Do you have more or fewer **resources** (e.g., time, staff, education funding) in your office since passage of the legalization law? Please explain.
5. Has the nature of **marijuana usage** changed in your jurisdiction as a result of passage of I 502? If so, how is it different?
6. How has the prosecution of **juveniles** for marijuana offenses since passage of the law?
7. Have your **clearance or conviction rates** changed since passage of the law? Has the change impacted referrals to alternative courts, or your use of agreements such as contracts for dismissal or stipulated orders of continuance?
8. **What instructions have you given** to police officers or other prosecutors you supervise about how to handle marijuana offenses?
9. Has your office provided any **additional training** after passage of the law that was related to how to change traffic stops or handle drug offenses or offenders? If so, what was the training about? How long was it? Do you think it was useful? Why or why not?
10. In your opinion have there been any **unexpected outcomes**, either positive or negative, as a result of the legalization of marijuana? If so, what are they?
11. Has **the racial or ethnic make-up of the people stopped** or arrested changed since passage of the legalization law? If so, how so?
12. Has **organized crimes presence** in your community increased or decreased as a result of legalization? Which is it? On what do you base this perception?
13. Does your jurisdiction need **more DRE officers**? Why or why not?

14. Have **complaints from citizens** increased or decreased since legalization of marijuana? Do you think the change, if any, is attributable to legalization? Why or why not? Can you describe the types of complaints related to MJ that you typically see/hear about now?
15. Are burglaries and **crimes associated with dispensaries or legal grow operations** a problem?
16. Is your jurisdiction seeing an increase in **cross-state border transport of marijuana**? If yes, could you describe the more typical types of these offenses?
17. Does your department work with other state/county or city police departments and prosecutors on marijuana-related cases? If so, has your relationship changed since passage of I-502? On what types of cases do you **collaborate**?
18. Do you think that the **black market** in cannabis sales has increased, stayed the same, or decreased since legalization? Which is it? On what do you base this perception?
19. **What recommendations do you have for policymakers** (e.g., city or county managers, state legislators, the governor) interested in improving the ability of the police to deal with the legalization of cannabis?

ANY ADDITIONAL THOUGHTS YOU HAVE CAN BE SHARED BY E-MAIL TO:

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APPENDIX D:
BWC CODEBOOK

Police-Driver Interactions BWC Codebook

Agency A or B

Incident Year

Length of Interaction

MM:SS

Number of Officers Involved

1 = 1
2 = 2
3 = 3
4 = 4+

Time of Incident

1 = 7:00 AM – 2:59 PM
2 = 3:00 PM – 10:59 PM
3 = 11:00 PM – 6:59 AM

Stop Time Type

0 = None
1 = Agency
2 = Hospital

Stop Reason

0 = No Reason Given
1 = Reason Given

Officer Asks for Driver Input on Stop Reason

0 = No
1 = Yes

Officer Asks About Driver's Wellbeing

0 = No
1 = Yes

Officer Empathy Statement

0 = No
1 = Yes

Gender of Driver

1 = Male
2 = Female

Race of Driver

1 = White or Caucasian
2 = Black or African American
3 = Other

Ethnicity of Driver

0 = Non-Hispanic
1 = Hispanic

Bystander(s) Present

0 = 0
1 = 1
2 = 2 – 4
3 = 5 – 10
4 = 10+

Bystander Interaction with Officer

0 = No
1 = Yes

Driver Attempted Deception

0 = No
1 = Yes

Substance Related

0 = None
1 = Alcohol
2 = Marijuana
3 = Marijuana & Alcohol
4 = Other Drug

Driver Resistance

0 = No
1 = Yes

Officer Uses De-Escalation Tactic

0 = No
1 = Yes

Profanity Use by Officer

0 = No
1 = Yes

Profanity Use by Driver

0 = No
1 = Yes

Intensity of Incident

1 = Normal Situation
2 = Medium/High-Level of Intensity

Officer Reads Driver Their Rights

0 = No
1 = Yes

Officer Reads Driver Their Rights Prior to Arrest

0 = No
1 = Yes

Driver Searched by Officer

0 = No
1 = Yes

Duration of Driver Search

MM:SS

Driver Search Conducted Prior to Arrest

MM:SS

Officer Statement of BWC Recording to Driver

0 = No
1 = Yes

Officer Statement of BWC Recording to Driver Prior to Arrest

0 = No
1 = Yes

Officer Explains Next Steps to Driver

0 = No
1= Yes

Detainment/Citation/Arrest Made?

0 = No
1 = Arrested
2 = Detained & Arrested
3 = Other

Field Sobriety Test Conducted

0 = No
1 = Yes

Field Sobriety Test Duration

MM:SS

Officer Used Force Against Driver

0 = No
1 = Yes