Evaluating the Public Safety Effects of Colorado's Amendment 64, Which Legalized Marijuana for Recreational Use.

Milaad Hashmi

Lessons for jurisdictions currently banning, or considering banning, recreational marijuana dispensaries.

Simon Fraser University, Pol 451- Dr. Anil Hira

Table of Contents

Executive Summary

Objectives. Marijuana legalization is a controversial and consequential issue that stands as one of the most important policy questions in recent memory. In 1975, Colorado was one of the first states to decriminalize marijuana; and more recently, in November 2012 became one of the first states, along with Washington, to pass a ballot initiative that legalized marijuana for recreational purposes (Miron, J, 2014). As such, Colorado's drug policies serve as highly instructive natural experiments into the proposed positive and negative consequences of marijuana legalization. This paper will not address the myriad claims made on both sides of the debate; instead, this paper will examine the specific claim made by critiques, that marijuana legalization, and in particular retail marijuana sales, would increase crime rates and diminish the public safety of the citizens of Colorado.

Methods. Using data from Colorado's judiciary and municipal police departments this study will address the effect of legalizing marijuana for recreational use on crime rates by conducting a comparative analysis between Denver and Colorado Springs. In doing so, this paper will reveal the effect of retail marijuana dispensaries on crime rates by judging the change in crime rates in Denver-home to 45% of the recreational market-against Colorado Springs-home to none (Baca, 2015).

Results. The preliminary results indicate there has not been a statistically significant change in crime rates in Denver pre and post-legalization; and moreover, there is no statistically significant difference in crime rates between Denver and Colorado Springs. *Conclusions.* Although its too early to arrive at any firm conclusions, it may be said that the preliminary findings suggest that cannabis legalization has not fomented

additional criminal activity and disorderly conduct related to the distribution of licenses in Denver for the retail sale of recreational marijuana. Therefore, it is propounded to Colorado Springs and other jurisdictions banning retail dispensaries that such actions do not appear to mitigate criminal activity presumed to be associated with marijuana consumption.

Report Limitations

This study's primary limitation is time. Only one year and five months of data are available in the post-legalization period. Thus, the analysis of whether significant changes in the key measure occurred, wherein we assess the before and after effects in criminal behavior in counties that have allowed recreational marijuana dispensaries to counties that have not, is highly provisional. Furthermore, any observed effects do not necessarily implicate marijuana policy because a range of other political, social, and economic factors affects crime rates. This limitation is slightly mitigated inasmuch as the study is comparing two counties within a state, which have reasonably similar political, social and economic circumstances. That is, where the confounding variables (exogenous variables that correlate with both recreational marijuana sales and crime rates that may lead to spurious conclusions about the relationship under investigation) are likely to be aligned.

Evaluation Team

Milaad Hashmi, a 3rd year student at Simon Fraser University, has completed this evaluation. Milaad is currently studying Political Science and Economics, and is

interested in the social, ethical, and economic dimensions of human decision-making. Milaad is currently enrolled in Political Science 451: Public Policy Analysis, which has greatly informed the methodological structure of this evaluation. Further, the author was previously enrolled in Pol 315: Quantitative Research Methods in Political Science, which has provided the statistical background demonstrated in this evaluation. Insofar as marijuana policy is concerned the author does not have any direct experience in the field and therefore is examining the data without any biases or preconceived notions of the effects of marijuana legalization.

Background

Historically, Colorado has had one of the more progressive citizenries in the U.S.A with respect to marijuana policy. In 1975, Colorado was one of the first states to decriminalize marijuana; then in November 2000, Colorado was one of the first states to legalize medical marijuana in a statewide referendum. This progressive streak was further solidified on November 6, 2012, when Colorado voters passed a statewide ballot initiative that authorized any individual 21 years or older to purchase and possess up to one ounce of marijuana, and grow up to 6 plants for personal consumption (Miron, J, 2014). The bill, Amendment 64, which also legalized retail stores, cultivation sites and edible factories, was passed into law in December 2012. As part of the Amendment, Colorado was required to construct a comprehensive regulatory, legal and tax framework that would permit business to sell to recreational customers (Hudak, 2014, p.3).

In designing these frameworks the architects of amendment 64 were concerned that political "foot-dragging" and bureaucratic stagnation would undermine the implementation of the policy. These concerns were not without cause. In a September

2012 statement, Colorado Governor John Hickenlooper formally announced his opposition to the amendment, saying, "Colorado is known for many great things—marijuana should not be one of them" (Hudak, 2014, p.7) To insulate the program from political posturing, the architects of amendment 64 provided both state and local administrators with a firm deadline to construct the necessary regulatory protocols, by October 2013. In the intervening year a taskforce was created, comprised of 34 standing members, and many more temporary members, assigned to working groups that engaged specific topics related to the polices implementation. Including: administrative communication and staffing, the distribution of licenses, homegrown marijuana, tax incentives, marijuana tourism, and many more (Hudak, 2014, p.5-7).

Membership on the task force both included and consulted many passionate supporters and critiques of the policy. Such efforts to foster internal coordination, discussion and debate are not common in the public sector, despite the important advantages they confer to those most affected by public policy. Regular communication encourages stakeholders with diverse viewpoints to collaborate and compromise around their shared interests; and also better understand their disagreements. The Director of the task force Brohl, noted, "The task-force model has been used throughout the process…and keeps everyone at the table"(Hudak, 2014, p. 6). The degree of interaction has affected the implementation of the policy in numerous ways. Including, and perhaps most significantly, the decision to defer to local municipalities to regulate the number of dispensaries allowed in their jurisdiction. This prerogative has allowed, in particular, opponents the opportunity to circumvent the amendment by passing ballot initiatives to disallow the retail sale of recreational marijuana in their jurisdiction. Colorado Springs,

the second largest city in Colorado with a population of 438, 886, is one of those

jurisdictions (Hudak, 2014) The location of marijuana dispensaries is "controversial due

to perceptions that these dispensaries increase crime and other problems in the

neighborhoods where they are located"(Freisthler, B et al, 2013, p 3). Therefore, by

denying licenses to retail dispensaries Colorado Springs, and a handful of other much

smaller jurisdictions in Colorado, intend on limiting the negative social problems

perceived to occur in and around these dispensaries. These decisions provide the

opportunity to estimate the effect of recreational marijuana dispensaries on criminal

activity. Unfortunately, there remains a dearth of empirical research into the effects of

these regulatory strategies in states where the drug itself is not prohibited-and this is

important. Marijuana remains legal in Colorado Springs; the only restriction is with

respect to the retail sale-not consumption- of marijuana. Furthermore, an analysis on the

crime axis is all the more important because projected tax revenue, a prime motivator for

proponents of the amendment, is not relevant for individual municipalities who receive

only a fraction of the 15% excise tax and 28 % sales tax on recreational sales. For

example, Denver, home to 45 percent of the Colorado marijuana market, has only

collected about 200,000 from the $53 million generated for state coffers (Cannabis Policy

reform, n.d) (Baca, 2015).

The rest of this paper examines these interventions designed to limit problems

related to the influx of marijuana dispensaries across two cities in Colorado: Denver, the

largest city in Colorado (accounting for 45% of recreational marijuana sales) and

Colorado Springs, accounting for none. In doing so, this paper will provide guidance for

those states in the process of legalizing cannabis, namely Oregon and Alaska, on issues

involving, but not limited to: the distribution of licenses, regulatory parameters, and effects on criminal activity, etc. Finally, this paper will answer the question: does the local legal context of the dispensaries encourage crime or not?

Stakeholders

Inclusivity has been and remains one of the more important features of Colorado's approach to marijuana legalization. The formal regulations that emerged by January 1, 2014 (the day recreational dispensaries officially opened across the state) were the product of a cooperative process that involved government, industry, the medicinal and recreational marijuana community, the general citizenry, advocates and opponents-as defined in the map above (Hudak, 2014). Beginning with the primary stakeholder in the

policy, the (1) *state government* is responsible for the design, implementation and administration of the amendment. They also serve as a conduit, working diligently with industry officials in the regulatory process, while also receiving feedback from supporters and detractors-as expressed in a series of organized advocacy groups. *Industry (2),* as mentioned, plays a central role in the regulatory process. For the purposes of generating effective feedback and administrative guidance, the limited number of firms-limited because of quotas and the States emphasis on vertical integration, wherein all stages from cultivation, transportation, and sales are handed by a common firm- and the novelty of the policy requires there to be "a link between the regulator and the regulated"(Hudak, 2014, p.12).

Although relations between industry and government may elicit accusations of collusion, these are mitigated in two respects: One, industry remains beholden to their customers; and two, the great diversity of citizens (including advocates, detractors and the indifferent) consulted by regulators. *Recreational Marijuana* (3) consumers, in particular, are vital. They provide the demand for the sales, production and transportation of marijuana along with the revenue for the government through state level taxes. Relatedly, this group simultaneously constitutes the largest stakeholder directly benefiting from, and injured by, the policy. According to the research a non-trivial proportion of users are expected to become addicted to the substance, to the detriment of their social and professional lives (Kleiman, 2011).

Medical consumers (4) on the other hand, have much less influence given that medicinal marijuana has been legal in Colorado since 2000. In particular there are 91 licensees for medical dispensaries in Colorado Springs alone (The Gazette, 2015).

Although, the steady growth of medicinal patients-registered rose by 5.6% to 117,000 in 2014-suggests a possible regulatory failure of the policy (Stockton, 2015). That is to say, misaligned tax incentives (2.9% for medicinal marijuana vs. 15% for recreational) have repelled medical consumers from the more expensive recreational markets. Further, *the taxpaying public of Colorado* (5), are another key stakeholder. This segment, non-consumers and non-producers, communicates directly with marijuana customers through the tax dollars they generate and potential public safety problems they foment-as well be addressed later in this study.

With respect to tax revenue, as of February 1, 2015 Colorado earned $53 million in tax revenue, the state estimated it would bring in more than $70 million in their first year of legalization (Stockton, 2015). The taxpaying public, having assessed the preliminary outcomes can then express their grievances or compliments to the government though a number of avenues. In the first place, the law was enacted on a referendum and may be abolished on one also. However, such a ballot initiative is unlikely given a 2014 public survey that suggests 57 % of Colorado residents continue to support legalization, up from 55 % that approved the referendum in 2012 (Hudak, 2014, p.10). Secondly, voters can communicate directly with the regulatory board through monthly public meeting held in across the state. Thirdly, and likely most effectively, voters can express their feelings though organized lobbying groups both for and against the policy. The *Colorado marijuana industry group and the national cannabis industry group (6),* for example, lobby on behalf of legalized marijuana and provide information and support for recreational and medical cannabis operators and consumers in Colorado (Marijuana industry Group). Alternatively, (7) *Safe Street Alliance*-a group which defines itself as a

non-profit aimed at reducing violent crime, amongst others, are currently suing the State

of Colorado alleging the State is violating federal law by promoting the

commercialization of marijuana (Woolf, 2015).

This brings to the fore another complication, cannabis remains a schedule one

offense according to the (8) *Federal government.* Although, the US Department of Justice

(DOJ) announced that it would not interfere with marijuana legalization in states with

"[S]trong and effective regulatory and enforcement systems," it still remains to be seen

what exactly their response will be to the raft of legalization amendments passing across

the Unites States (Miron, J, 2014, p.5). Particularly relevant, are the current constitutional

challenges by (9) *Nebraska and Oklahoma,* Colorado's neighbors are aggrieved by the

cross state transfer of cannabis into their territory-where it is illegal (Woolf, 2015). They

will no doubt be monitoring the success/failure of the policy as evidence that will inform

future legislative decisions. However, there influence on the state cannabis policy is quite

limited, apart from the current judicial challenge.

Causal Theory

Distribution of Marijuana Licenses

Recreational sale and consumption of Marijuana

Increase Marijuana Usage

Increase abuse of Marijuana, and consumption of alcohol

Increase in personal and property crimes

Colorado Springs's decision to not distribute recreational licensees for the retail sale of marijuana was premised on the assumption that by forgoing recreational dispensaries, the city would limit criminal activity that would have otherwise taken place around or in those dispensaries. This causal theory contains three primary assumptions, which will be addressed in order.

First, the assumption that the recreational sale of marijuana leads to increased use. In this respect, city level consumption data in Colorado and reliable estimates of the size of the illicit marijuana market were not available to the author. Therefore, as an alternative, the author examined the effect of legalizing marijuana on the cultivation of recreational cannabis plants from January to December 2014.

Figure 1: Cultivation of Retail Plants by Month
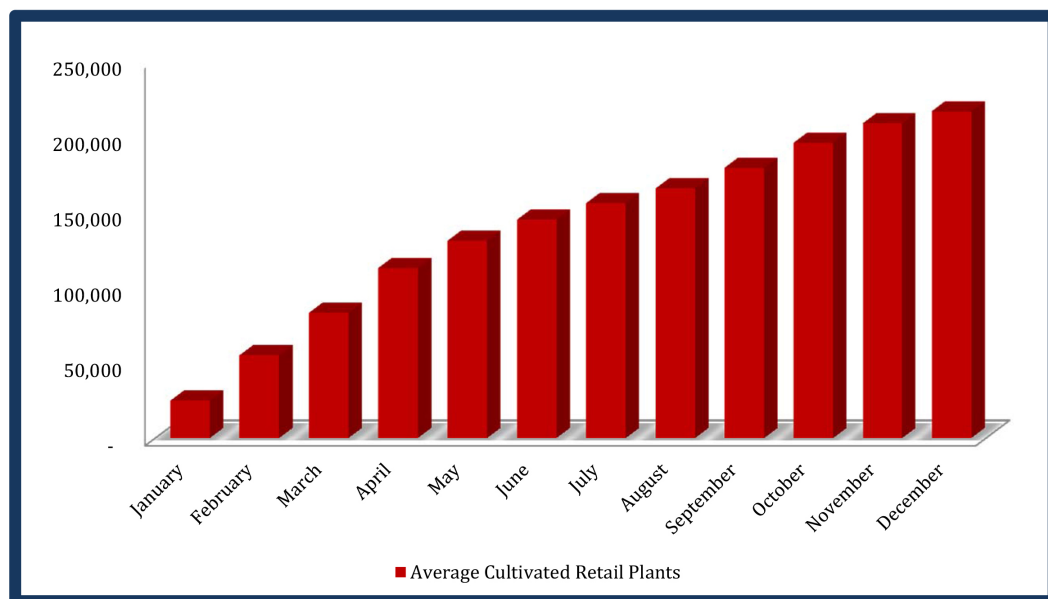
16

Source: Stockton, 2015 & Colorado Department of Revenue, 2014

From January to December, the cultivation of recreational marijuana grew from 25,000 registered plants to over 200,000. Over the same time period, the number of recreational marijuana dispensaries grew from 156 to 306. Overall, this amounted to $313 million in sales. Combined with medicinal sales, marijuana was a $700 million industry by years end (Stockton, 2015). These results are consistent with the hypothesis that the legalization of recreational marijuana leads to increased consumption-as evidenced in the cultivation of plants, and sales. However, the exact effect depends on the change in price (which is not assessed in this study) and the elasticity of demand, which is poorly estimated in the literature (Anderson & Rees, 2013).

Second, the causal theory assumes increased marijuana usage will lead increased marijuana and/or alcohol abuse. As this paper examines the effects on crime, not health, the relationship between alcohol and marijuana is most relevant. In this respect, the literature is diverse. Research by Anderson, Hansen, and Rees (2013) for example, suggests that as marijuana becomes more available young adults will respond by consuming more alcohol. Alternatively, research by Farrelly et al (1999) found that marijuana and alcohol were compliments among teenagers, not substitutes. However, according to Anderson and Rees (2013, p.1) "Studies based on clearly defined natural [not including Colorado post January 2014] experiments generally support the hypothesis that marijuana and alcohol are substitutes." Therefore, they conclude states that legalize marijuana for recreational use should expect to see a decrease in drinking rates among the same populations. The full extent of this prediction will be, by extension, examined in the subsequent section of this paper, where changes in crime rates will be assessed in two Colorado counties.

Third, the causal theory assumes a relationship between alcohol consumption and crime. Here the empirical research is consistent. The evidence suggests a positive relationship between alcohol consumption and deviant social behavior (Anderson & Rees, 2013). Further, the reduced black market for marijuana may have a similar and parallel effect on crime reduction. It is important to emphasize, however, that the alcohol studies were observing the link between alcohol and crime independent of marijuana consumption. Thus, a study, of the type conducted in this report, is needed to estimate marijuana legalization's true effect on crime in a population-assuming alcohol and marijuana are substitutes.

Methodology

This study will focus specifically on the criminality axis of cannabis legalization. That is to say, the study will analyze how crimes against property and person have changed in the year following the legalization of cannabis in Colorado.

Those in favour of the Amendment argued legalization would reduce criminal activity by (1) reducing alcohol consumption and (2) allowing regulation that actively educated young people to the potential harm of marijuana consumption-a stark contrast to the prior system whereby the State took a back seat to the elicit markets (Miron, 2014, p.2). Furthermore, proponents suggested legalization, by decreasing crime rates, would place downward pressure on state law enforcement expenditures. Detractors, meanwhile, argued legalization would foment increased criminal activity in the jurisdictions where municipal governments distributed licenses to recreational marijuana dealers.

In light of these contrasting stories, this study will perform a series of inferential statistical tests to ascertain the effect of either allowing or refusing recreational marijuana dispensaries in Colorado. Although the data were compiled from population level data sets, it was determined, given the short time span under consideration and the preliminary nature of the data, that the author should treat the before and after measures as samples that would indicate the potential longer term "population" effects. This study will first conduct a paired sample t-tests on the before and after effects of amendment 64 (specifically, January 1 to March 1, 2014 vs. January 1, to March 1, 2015) on 2 outcome variables: property and violent crime (see figure 3).

Figure 2: CRIME IN THE CITY AND COUNTY OF DENVER BASED ON UCR STANDARDS

| TYPE OF OFFENSE		JAN-MAR 2014		JAN-MAR 2015		CHANGE	
		#	%	#	%	#	%
VIOLENT CRIME	Homicide	8	0.1%	13	0.2%	5	62.5%
	Rape	94	1.5%	122	2.0%	28	29.8%
	Robbery	252	4.1%	240	4.0%	-12	-4.8%
	Aggravated Assault	529	8.6%	594	9.9%	65	12.3%
	SUBTOTAL	883	14.3%	969	16.1%	86	9.7%
PART 1 PROPERTY	Burglary	1,138	18.5%	1,010	16.8%	-128	-11.2%
	Larceny (Except Theft from MV)	2,120	34.4%	1,806	30.0%	-314	-14.8%
	Theft from Motor Vehicle	1,152	18.7%	1,362	22.6%	210	18.2%
	Auto theft	822	13.4%	848	14.1%	26	3.2%
	Arson	42	0.7%	22	0.4%	-20	-47.6%
	SUBTOTAL	5,274	85.7%	5,048	83.9%	-226	-4.3%
PART 1 TOTAL		6,157	100.0%	6,017	100.0%	-140	-2.3%

Source: Denver Police Department

The data were retrieved from Denver's municipal police department, which archives daily case fillings and incidence as reported by the police officers (Raids Online, n.d.).The data were compiled according to the Uniform Crime Reporting (UCR) standard,

which is the primary standard used by the FBI to record and compare crime across law enforcement jurisdictions in the United States. It tracks eight primary offenses: murder, rape, robbery, aggravated assault, burglary, theft, auto theft and arson (Crime Statistics and Maps, 2015). For all intents and purposes, these data meet reliability and validity standards required to justify inclusion in this report.

This study will also examine changes in the number of marijuana arrests, as a partial corollary/metric indicating the fall in criminal activity. And therefore, by assigning an informed estimate of about $300 to each prosecution, serves as a proxy for changes in law enforcement expenditures (Marijuana Legalization After One year… n.d.). Unfortunately, in this case, updated government provided data were not available- the next census is scheduled for 2016. Therefore, these results are quite tenuous and should be treated with suspicion. Finally, the study will perform an independent sample t-test that compares the crime effects in Denver and Colorado Springs, from May 19, 2014 to May 19, 2015. Thereby, ascertaining the difference in crime with or without the presence of recreational marijuana retailers. Here, both data sets are divided by their populations (649,495 in Denver vs. 439,886 in Colorado Springs) and then multiplied by 100,000, to control for Denver's larger size. The data for Colorado Springs, were likewise, provided by their municipal police departments, and collated according to the UCR standard; and therefore, meet the same standards of internal and external validity of the Denver data. Finally, although there are no licensed marijuana dealers in Colorado Springs, the drug remains legal there. Thus, the results are mitigated inasmuch as people can purchase marijuana in other counties and consume it in Colorado Springs.

Findings

Descriptive statistics. Figure 3 shows monthly data for Denver on murder, aggravated assault, robbery and burglary. These statistics do not indicate a significant increase in crime after the decriminalization or legalization of marijuana, against historical trends. Rather, the empirical data suggest marijuana legalization, and in particular the distribution of licenses in Denver, has placed downward pressure on total crime rates. Comparing January-March 2014 to January-March 2015 there has been a -2.3 % change in aggregate crime rates -from 6,157 to 6,017 reported incidence (Crime Statistics and Maps, 2015). The slight decrease in crime in Denver, however, is overshadowed, as one would expect, by the dramatic decrease in Marijuana possession arrests, over 95% since 2010. In 2010, 9,011 people were arrested for marijuana possession while 461 were arrested in 2014. Assuming each case cost roughly $300 to adjudicate, the state of Colorado saved approximately $2,565,000 in adjudication costs for possession cases in 2014 compared to 2010(Marijuana Legalization in Colorado After One…, n.d.)

Figure 3. Monthly Violent Crimes - Denver, CO
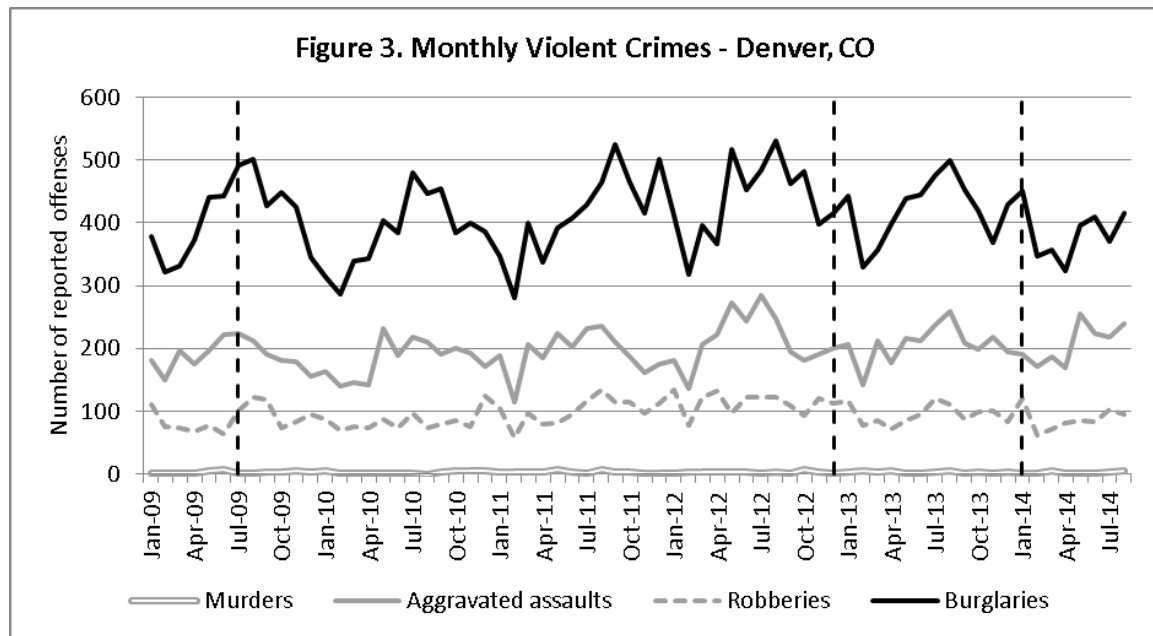
Source: Miron J. 2014

Inferential Statistics. The paired sample t-tests assessing the difference in means

for violent crime (p=0.287) and property crime (p=0.629) in Denver proved insignificant

at the 0.05 levels (see figure 4 in Appendix). Therefore, indicating an insignificant

change in crime in Denver, before and after legalization. Likewise, the independent

sample t-test (Equality of variance assumed at the 0.05 level) was insignificant for violent

crime (p=0.718) and property crime (p=0.990) at the 0.05 levels (see figure 5 in

Appendix). Therefore, one cannot reject the null hypotheses that there is no difference in

crime rates between Denver in Colorado Springs, despite the knowledge that Colorado

Springs has refused to issue licenses to recreational marijuana dispensaries under the

assumption that such action would reduce the risk to public safety (Raids Online, n.d.).

Recommendations and Conclusions

If preliminary, short term, outcomes prove to be indicative of the longer-term trend then the implications are threefold:

- The evidence provided suggests there is a misalignment of revenue incentives between the State of Colorado and her municipalities. Although the State serves to benefit greatly from tax revenue and reduced law enforcement expenditures, the municipalities do not. Therefore, the municipalities do not have sufficient financial incentives to distribute zoning licenses to recreational marijuana retailers.

- The evidence provided suggests marijuana legalization does not foment criminal activity related to its consumption. Therefore, it is expected that Amendment 64 will not have any negative effects on the public safety of the citizens of Colorado. With respect to the causal theory, then, one may reject the hypotheses that marijuana and alcohol are complements. In light of this I would recommend to the State, further allow market forces to determine consumption and distribution patterns, as the present protectionist mechanisms intended to secure the public safety of Colorado (quotas, barriers to entry etc.) would appear to be unnecessary.

- The presence, of lack thereof, of recreational dispensaries inside a jurisdiction where marijuana is legal does not seem to have an impact on crime rates. Therefore, it is recommended to Colorado Springs, and similarly situated jurisdictions, that refusing marijuana dispensaries does not improve your public safety; but rather, simply, results in lost economic activity that would surround the

retail stores. Hopefully, counties in Alaska and Oregon, in particular, take heed of this message.

Again, while considering the limitations of this small two-city sample, the evidence is encouraging. The location of recreational marijuana dispensaries does not have an effect on crime, and Amendment 64 has not increased crime rates in Colorado. Future studies may capitalize on the increased data available in Colorado and other States to conduct a cross-sectional analysis of the effects of marijuana legalization in larger populations, across greater time spans.

References

Amendment 64 Use and Regulation of Marijuana. (n.d.). Retrieved from http://www.colorado.gov/cs/Satellite?blobcol=urldata&blobheader=application/pdf&blob
      key=id&blobtable=MungoBlobs&blobwhere=1251834064719&ssbinary=true

Anderson, M., & Rees, D. (2013). The Legalization of Recreational Marijuana: How Likely Is the Worst-Case Scenario? *Journal of Policy Analysis and Management, 33*(1), 221-232.

Anderson, D. M., Hansen, B., & Rees, D. I. (2013). Medical marijuana laws, traffic fatalities, and alcohol consumption. *Journal of Law and Economics*, **56**, 333–369.

Baca, R. (2015, February 12). Chart: Colorado marijuana sales hit $700 million for 2014. Retrieved from http://www.thecannabist.co/2015/02/12/colorado-marijuana-sales-2014-700-million/27565/

Crime Statistics and Maps. (2015). Retrieved, from http://www.denvergov.org/police/PoliceDepartment/CrimeInformation/CrimeStatisticsMaps/tabid/441370/Default.aspx

Farrelly, M. C., Bray, J. W., Zarkin, G. A., Wendling, B. W., & Pacula, R. L. (1999). *The effects of prices and policies on the demand for marijuana: Evidence from the National Household Surveys on Drug Abuse*. NBER Working Paper No. 6940. Cambridge, MA: The National Bureau of Economic Research.

Freisthler, B., Kepple, N., & Sims, R. (2013). Evaluating Medical Marijuana Dispensary Policies: Spatial Methods for the Study of Environmentally-Based Interventions. *AM J Community Psychol, 51*(0), 278-288.

Hudak, J. (2014, July 1). Colorado's Rollout of Legal Marijuana Is Succeeding: A Report on the State's Implementation of Legalization. Retrieved from http://www.brookings.edu/~/media/research/files/papers/2014/07/colorado-marijuana-legalization-succeeding/cepmmjcov2.pdf

Kleiman, M. A. R. (2011), Cannabis Policy Moving Beyond Stalemate. Addiction, 106: 1194–1196

Marijuana Legalization After one Year of Retail Sales and Two Years of Decriminalization. (2014, July 1). Retrieved from http://www.drugpolicy.org/sites/default/files/Colorado_Marijuana_Legalization_One_Year_Status_Report.pdf

Marijuana Industry Group. (2015, January 1). Retrieved from http://marijuanaindustrygroup.org

Medical marijuana industry still growing in Colorado. (2015, March 25). Retrieved from
        http://gazette.com/medical-marijuana-industry-still-growing-in-
        colorado/article/1548439

Miron, J. (2014, October 23). Marijuana Policy in Colorado. Retrieved from
        http://object.cato.org/sites/cato.org/files/pubs/pdf/working-paper-24_2.pdf

Raids Online. (2015, January 1). Retrieved from http://www.raidsonline.com/

Stockton, N. (2015, March 9). 5 Charts Explaining Colorado's First Year of Legal Weed.
        Retrieved from http://www.wired.com/2015/03/five-charts-explain-colorados-
        first-year-recreational-weed/

Woolf, N. (2015, February 19). Anti-marijuana group suing Colorado over legalisation of
        cannabis. Retrieved from http://www.theguardian.com/us-news/2015/feb/19/anti-
        marijuana-group-federal-lawsuit-colorado-legal-cannabis

Appendix

Figure 4

Paired Differences for Violent and Property Crime							
Jan-March 2014 to Jan-March 2015	Mean	Std. Deviation	Std. Error of Mean	95 % Confidence-Interval	t	df	Sig. (2-tail)
Pair 1 Violent Crime	-21.5	33.31	16.66	-74.50 to 31.50	-1.291	3	.287
Pair 2 Property Crime	45.2	193.61	86.59	-195.2 to 285.6	.522	4	.629

Figure 5

Group Statistics

	city	N	Mean	Std. Deviation	Std. Error Mean
Violent	C.S.	5	52.9117	49.36866	24.68433
	Denver	5	70.2425	76.91358	38.45679

Levene's Test for Equality of Variance			T-test for Equality of Means					
Violent Crime	F	Sig.	t	df	Sig.(2-tailed)	Mean Diff.	Std. Err Diff	95% Conf. Interval
Equality of Variance assumed	0.618	.462	-.379	6	.718	-17.33077	45.69727	-129.14797 to 94.48643

Group Statistics

	city	N	Mean	Std. Deviation	Std. Error Mean
Property	C.S.	5	401.9800	533.93568	266.96784
	Denver	5	406.3925	433.11967	216.55983

Levene's Test for Equality of Variance			T-test for Equality of Means					
Property Crime	F	Sig.	t	df	Sig.(2-tailed)	Mean Diff.	Std. Err Diff	95% Conf. Interval
Equality of Variance assumed	.213	.661	-.013	6	.990	-4.4120	343.75862	- 845.5595 to 836.7345